



Cyprus
University of
Technology

Faculty of Health Science

Doctoral Dissertation

**Assessment of the physical, built and social community
environment using Systematic Social Observation:**

***Development of the “Cyprus Neighborhood Observational Tool
for urban community environments”- CyNOTes***

Daphne Kleopa

Limassol, May 2023



Τεχνολογικό
Πανεπιστήμιο
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Σχολή Επιστημών
Υγείας

Διδακτορική Διατριβή

**Αξιολόγηση του φυσικού, δομημένου και κοινωνικού
περιβάλλοντος της κοινότητας μέσω Συστηματικής
Κοινωνικής Παρατήρησης**

*Ανάπτυξη εργαλείου επιτόπιας παρατήρησης της γειτονιάς για
το αστικό περιβάλλον της κυπριακής πόλης*

**«Cyprus Neighborhood Observational Tool for urban
community environments - CyNOTes»**

Δάφνη Κλεόπα

Λεμεσός, Μάιος 2023

CYPRUS UNIVERSITY OF TECHNOLOGY

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Presented by

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ABSTRACT

Background

There are several community assessment methods, all with advantages and disadvantages. For example, while census-based indicators of socio-economic disadvantage (SED) offer nationwide coverage across standard administrative areas, censuses are performed every 10 years and these indicators are not truly “contextual”. GIS-based measures are often restricted to the assessment of certain macro- and meso-scale features of the physical and built environment, while they are not able to capture either the social or micro-scale features of the community. On the other hand, perception surveys, other than often focusing on specific characteristics, such as the walkability in a community, are subjective in nature and prone to social desirability or other biases. Systematic Social Observations (SSO) is a methodology that enables the assessment of the micro-scale environment objectively via field auditing. SSO can provide useful supplementary information about the micro-scale neighbourhood environment, not captured by other assessment methods and, hence, the identification of environmental inequities which might impact health. Therefore, there is a need for valid audit tools, independent of residents’ perceptions, for profiling the health-related neighbourhood environment. This study explored the feasibility of neighbourhood audits for the first-time in the city of Limassol, Cyprus (population size, 2021 census: 258.900) by developing and field testing a Neighbourhood Observational Tool for the Cypriot urban community environment (CyNOTes). While similar studies commonly explore aspects of reliability of measurement, such as inter- and intra-rater agreement, this study assessed the performance of the audit tool while also employing an iterative multi-validation process for assessing several metric properties of the tool.

Methods

A two-phase mixed-methods iterative process was used to develop the Cyprus Neighborhood Observational Tool for urban community environments (CyNOTes). Phase I, pertained to the development of Tool and the first assessment of reliability and validity. The first draft of CyNOTes v1.0 was compiled based on a literature review of similar tools and was culturally adapted and content validated in focus groups with community professionals. In parallel, content validity was assessed as part of a social media ethnographic study of citizens’ experience whereby descriptions

and comments regarding neighbourhood problems on the Municipality's and Mayor's Facebook pages were analysed using deductive and inductive content analysis. In the first instance, the feasibility study tested the CyNOTes across 15 randomly selected streets from three groups of neighborhoods, stratified by the educational attainment of the residents. Two independent raters audited the street for intra- and inter-rater agreement. The prevalence, variability and observed differences of audited neighborhoods' features were investigated and organized along a pre-set typology of 17-21 domains. Phase II pertained to Neighborhood Audits and further validation of CyNOTes v2.0, after 25 new items were added as a result of Phase I. The prevalence in micro-scale neighbourhood features were assessed across 45 neighbourhoods along the social disadvantage continuum to assess know-group validity (social gradient/ environmental inequity). Associations were also assessed between neighbourhood audit scores and a larger set of census-based indicators of socio-demographic composition and built environment to further assess criterion validity. A citizen's perception survey was performed with the use of Place Standard Tool (N=444) to assess the concurrent validity. Finally, predictive validity was assessed by exploring associations with Physical and Mental health-related Quality of Life of residents using the SF-36 survey tool (N=450, second sample). The extent to which residents' neighborhood assessment (Place Standard) and self-rated quality of life (SF-36) differed across neighborhoods classified according to CyNOTes domains were explored in mixed random effect models.

Results

Content validity was supported by residents' and professionals' descriptions of neighbourhood problems, giving rise to a 151-item inventory, 126 from the literature and 25 arising via a Nominal Group Technique consensus process and deductive content analysis of social media posts. In **Phase I**: Neighborhoods with lower educational attainment scored statistically lower in over half the domains of CyNOTes v1.0, mainly reflecting resident (e.g. condition of housing and grounds) rather than infrastructure features (i.e. street quality, pedestrian environment). Differences were apparent in domains with generally high (e.g. lack of physical disorder) or generally low scores (e.g. existence of recreational and public spaces). The only exception was for the domain of safety which, nevertheless, it was assessed through the presence of security-related features which were more prevalent in higher education neighborhoods,. There were negative correlations (spearman's rho -0.3 to -0.5, p-value<0.05) between several domains and population

over 65 and non-Cypriot population, providing indications of environmental inequity. The strongest correlations (-0.6 to -0.7, p -value<0.01) were observed with older built (pre-1980) and vacant/for demolition houses. Cluster analysis revealed a profile of neighbourhoods with generally more adverse conditions in several domains (quality of housing, pedestrian environment, physical and social disorder); however, not in terms of public spaces and outdoor amenities. In contrast, neighbourhoods with generally more favourable features tended to score lower in terms of safety-related features. Residents in neighbourhoods with more adverse features reported lower physical (48.0, SD 8.9 vs 50.7 SD 7.2; $p = 0.05$) and mental (48.3 SD 7.9 vs 50.9 SD 7.2; $p = 0.04$) health-related quality of life. In the inductive content analysis of Facebook posts, the central theme was “Citizens’ voice” (“...*Why does nobody cares? Is someone walking in our neighbourhoods?...*”). Six themes and several sub-themes emerged including “Comparisons” to contrast the differing conditions between high-profile locations versus “left out” residential neighbourhoods (“*Yes, the city centre, the waterfront is a jewel, what about the neighborhoods?*”) or to compare their experience to “another place-another time”. Citizens expressed “Mixed feelings”, referred to “Consequences”, identified “Causes”, placed “Responsibility” and offered “Suggestions”. In **Phase II:** In CyNOTes v2.0, items were re-organized in 9 domains (internal consistency=0.5-0.9), revealing a 3-factor higher structure. In seven domains, a stepwise pattern of lower mean scores was observed along the socio-economic continuum using educational attainment as a proxy as well as a composite census-based Index of Socioeconomic Disadvantage, developed for the purposes of the wider study. This was true both for domains rated generally high across neighborhoods (e.g. lack of physical disorder) as well as low (e.g. outdoor spaces). Even though the audit revealed a systematic pattern of less favourable conditions along the socio-economic continuum, the residents' assessment was not always in the expected direction. The Place Standard perception survey revealed a U-pattern with residents in the middle category often likely to give less favourable ratings. While on a 1-10 subjective perception of neighbourhood position, residents in lower education neighbourhoods gave a rating of 6.6 on average compared to 8.1 in the higher group, they tended to rate aspects of their neighbourhood more favourably. With the exception of “identity and sense of belonging” ($M = 5.8$, $SD = 2.0$) and “opportunities for social interaction” ($M = 5.3$, $SD = 2.1$), physical and built aspects of the environment were rated close to the middle point on the Place Standard scale 1: large to 7: little room for improvement. The lowest score was

recorded for “influence and sense of control” ($M = 3.4$, $SD = 2.4$) across all groups on neighbourhoods, also reflecting the central theme of the content analysis. Even though not always statistically significant, a systematic pattern of higher self-rated health was observed in better-off neighborhoods across most CyNOTes domains. “Pedestrian environment” captured the largest difference for both physical (1.34 95% CI 0.42,2.26), $p = 0.005$ per tertile increase) and mental health (1.46 95% CI 0.54,2.40); $p = 0.003$. “Social contact” and “Safety: lack of security-related features” were more likely to be rated favorably in disadvantaged neighborhoods, however no associations with quality of life were observed.

Conclusions

CyNOTes offers a reliable and valid tool that can offer supplementary information of the micro-environment not captured by other community assessment methods. The study revealed the variability and environmental inequity in the neighborhood environment in the city of Limassol. Social gradient and clustering of adverse features were observed across Limassol neighborhoods. In neighbourhoods with adverse features residents reported lower physical and mental health-related quality of life. The social gradient in neighbourhood conditions was not always reflected in the perception survey. With the exception of social aspects, residents did not rate the built and physical environment favorably. “Influence and sense of control” was rated lowest, while “Citizens’ voice” emerged in the inductive content analysis of residents’ lived experience. Overall, CyNOTes showed good metric properties in terms of known-group validity (social gradient), criterion validity (census indicators), concurrent (resident’s perception) and predictive (quality of life) validity. CyNOTes offers the potential for scaling-up in the context of public health research, policy and advocacy as a culturally relevant audit tool of the health-related neighborhood micro-scale environment of a Cypriot city. Neighbourhoods audits can trigger and widen the conversation among the local research community and policy-makers alike about the relationship between health and place.

Keywords: systematic social observation, neighborhood environment, micro-scale features, community assessment, social gradient, audit, perception survey, environmental inequity.

ΠΕΡΙΛΗΨΗ

Εισαγωγή

Υπάρχει πληθώρα μεθοδολογικών προσεγγίσεων για την αξιολόγηση του περιβάλλοντος της κοινότητας και η κάθε προσέγγιση συγκεντρώνει πλεονεκτήματα αλλά και μειονεκτήματα. Για παράδειγμα, οι απογραφικοί δείκτες κοινωνικο-οικονομικού μειονεκτήματος έχουν μεν το πλεονέκτημα της εθνικής κάλυψης σε επίπεδο τυποποιημένων διοικητικών μονάδων, εντούτοις, τα δεδομένα από τις απογραφές είναι διαθέσιμα μόνο κάθε 10 χρόνια, ενώ τέτοιοι δείκτες δεν αναφέρονται απαραίτητα σε περιβαλλοντικά χαρακτηριστικά της ίδιας της κοινότητας αλλά συχνότερα στη κοινωνικο-δημογραφική σύνθεση της. Από την άλλη, τα γεωγραφικά συστήματα πληροφοριών (GIS) περιορίζονται συνηθέστερα στη αξιολόγηση χαρακτηριστικών του φυσικού και δομημένου περιβάλλοντος, και μάλιστα σε μακρο- ή μέσο-επίπεδο, ενώ δεν προσφέρονται για την αξιολόγηση του κοινωνικού περιβάλλοντος της κοινότητας ή χαρακτηριστικών του περιβάλλοντος σε μικρό-επίπεδο της γειτονιάς. Οι δειγματοληπτικές έρευνες απόψεων των πολιτών, πέραν του ότι συνήθως επικεντρώνονται σε συγκεκριμένες πτυχές, όπως για παράδειγμα, κατά πόσο μια κοινότητα είναι φιλική προς το περπάτημα, τα δεδομένα που προκύπτουν από αυτές έχουν εκ φύσεως υποκειμενικό χαρακτήρα και είναι επιρρεπή σε σφάλματα μέτρησης, όπως της κοινωνικά αποδεκτής απάντησης και διαφορικών προσδοκιών των συμμετεχόντων. Η Συστηματική Κοινωνική Παρατήρηση (ΣΚΠ/SSO) είναι μια μεθοδολογία που επιτρέπει την αντικειμενική αξιολόγηση των χαρακτηριστικών του μικρό-περιβάλλοντος της κοινότητας μέσω επιθεώρησης πεδίου. Η ΣΚΠ μπορεί να προσφέρει συμπληρωματικές χρήσιμες πληροφορίες για το μικρό-περιβάλλον της γειτονιάς που δεν αποτυπώνονται εύκολα μέσω εναλλακτικών μεθοδολογικών προσεγγίσεων, και επομένως, επιτρέπει την περαιτέρω ταυτοποίηση τυχόν κοινωνικο-περιβαλλοντικών ανισοτήτων. Συνεπώς, συμπληρωματικά από τις απόψεις και αντιλήψεις των ίδιων των κατοίκων, υπάρχει ανάγκη ανάπτυξης έγκυρων εργαλείων επιθεώρησης της γειτονιάς από ανεξάρτητους παρατηρητές με στόχο την αποτύπωση του σχετιζόμενου με την υγεία περιβάλλοντος της γειτονιάς. Η παρούσα μελέτη (α) διερεύνησε για πρώτη φορά στη Κύπρο την εφαρμοσιμότητα της μεθόδου της επιτόπιας επιθεώρησης γειτονιών στη πόλη της Λεμεσού (πληθυσμός από την απογραφή 2021: 258.000) και (β) ανέπτυξε και αξιολόγησε τις μετρικές ιδιότητες του Εργαλείου Επιτόπιας Επιθεώρησης με το ακρωνύμιο CyNOTes (Neighbourhood Observational Tool

for the Cypriot urban community environments) στο αστικό περιβάλλον της Κυπριακής πόλης. Παρόμοιες μελέτες στη διεθνή βιβλιογραφία συνήθως περιορίζονται στην αξιολόγηση της αξιοπιστίας της μέτρησης του εργαλείου επιθεώρησης, όπως για παράδειγμα η αξιοπιστία μεταξύ παρατηρητών ή η χρονική σταθερότητα της μέτρησης εντός του ίδιου παρατηρητή. Η παρούσα μελέτη κατέγραψε την εφαρμοσιμότητα και χρησιμότητα του εργαλείου, υιοθετώντας μια διαδοχική διαδικασία αξιολόγησης πολλαπλών μετρικών χαρακτηριστικών του εργαλείου που αναφέρονται τόσο σε πτυχές αξιοπιστίας όσο και σε πτυχές εγκυρότητας της μέτρησης.

Υλικό-Μέθοδος

Το εργαλείο CyNOTes αναπτύχθηκε σε δύο φάσεις, οι οποίες εξελίχθηκαν διαδοχικά, συνδυάζοντας μεικτή μεθοδολογία. Η Φάση I αφορούσε στην ανάπτυξη και πιλοτική αξιολόγηση της εφαρμοσιμότητας της μεθόδου όσο και της αξιοπιστίας και εγκυρότητας της πρώτης έκδοσης του εργαλείου. Η πρώτη έκδοση (CyNOTes v1.0) συντάχθηκε στη βάση παρόμοιων εργαλείων επιθεώρησης της γειτονίας μετά από ανασκόπηση της βιβλιογραφίας και πολιτισμική προσαρμογή στο περιβάλλον της Κυπριακής γειτονίας. Η εγκυρότητα περιεχομένου αξιολογήθηκε σε συνεργασία με διεπαγγελματική ομάδα εργασίας με επαγγελματίες των οποίων το πλαίσιο εργασίας τους είναι στη κοινότητα. Παράλληλα, η εγκυρότητα περιεχομένου αξιολογήθηκε στο πλαίσιο διαδικτυακής εθνογραφικής μελέτης της εμπειρίας των πολιτών. Η μελέτη αφορούσε σε ανάλυση περιεχομένου, με επαγωγική και παραγωγική μέθοδο, των σχολίων και τοποθετήσεων των δημοτών αναφορικά με τα προβλήματα των γειτονιών όπως αυτές αποτυπώνονταν σε σχετικές αναρτήσεις στα Μέσα Κοινωνικής Δικτύωσης (Facebook) του Δήμου και Δημάρχου Λεμεσού. Σε πρώτη φάση, η πιλοτική αξιολόγηση της εφαρμοσιμότητας και χρησιμότητας του CyNOTes αφορούσε σε τυχαίο δείγμα 15 γειτονιών, οι οποίες επιλέγηκαν μέσω στρωματοποιημένης τυχαίας δειγματοληψίας σε τρεις ομάδες με βάση το εκπαιδευτικό υπόβαθρο των κατοίκων από δεδομένα της απογραφής πληθυσμού. Δυο ανεξάρτητοι παρατηρητές επιθεώρησαν τις επιλεγμένες γειτονιές. Εξετάστηκε η αξιοπιστία μέτρησης τόσο μεταξύ παρατηρητών όσο και μεταξύ του ίδιου παρατηρητή σε χρονικό διάστημα δυο εβδομάδων. Υπολογίστηκε ο επιπολασμός (συχνότητα) και η μεταβλητότητα στα χαρακτηριστικών του μικρο-περιβάλλοντος των γειτονιών, όπως επίσης οι παρατηρούμενες διαφορές μεταξύ γειτονιών στο φάσμα του κοινωνικο-οικονομικού συνεχούς, στη βάση τυποποιημένης ταξινόμησης 17-21 διαστάσεων του

περιβάλλοντος της γειτονιάς. Η Φάση II, αφορούσε στη κύρια μελέτη, όπου πραγματοποιήθηκε επιτόπια επιθεώρηση σε μεγαλύτερο δείγμα γειτονιών και περεταίρω εγκυροποίηση της δεύτερης έκδοσης του εργαλείου CyNOTes v.2.0, το οποίο περιλάμβανε 25 νέα στοιχεία/ χαρακτηριστικά της γειτονιά τα οποία προστέθηκαν μετά τη Φάση I. Συγκεκριμένα, αξιολογήθηκε ο επιπολασμός των διαφόρων χαρακτηριστικών του μικρο-περιβάλλοντος της γειτονιάς σε δείγμα 45 γειτονιών σε όλο το συνεχές του κοινωνικό-οικονομικού μειονεκτήματος και αξιολογήθηκε η εγκυρότητα αντιπαραβολής γνωστών ομάδων μέσω αποτύπωση της παρατηρούμενης κοινωνικής διαβάθμισης (*«περιβαλλοντικής αδικίας»*). Επίσης, διερευνήθηκαν συσχετίσεις μεταξύ των σκορ των γειτονιών και ενός σετ κοινοτικών απογραφικών δεικτών της κοινωνικό-δημογραφικής σύνθεσης όσο και του δομημένου περιβάλλοντος ώστε να αξιολογηθεί η εγκυρότητα κριτηρίου. Πραγματοποιήθηκε επίσης δειγματοληπτική έρευνα μέσω ερωτηματολογίου στις επιλεγμένες γειτονίες ώστε να διερευνηθούν οι αντιλήψεις των ίδιων των πολιτών για την ποιότητα του περιβάλλοντος της γειτονιάς στη βάση του εργαλείου «Πρότυπη Γειτονιά» (N=444), κάτι που επέτρεψε την αξιολόγηση της συντρέχουσας εγκυρότητας του εργαλείου επιθεώρησης. Τέλος, η προβλεπτική εγκυρότητα του εργαλείου αξιολογήθηκε στη βάση της παρατηρούμενης συσχέτισης με τη Σχετιζόμενη με την Υγεία Ποιότητα Ζωής με βάση το εργαλείο SF-36 και τους δυο αθροιστικούς δείκτες για τη Σωματική και Ψυχική διάσταση (δεύτερο δείγμα πολιτών N=450). Χρησιμοποιήθηκαν μικτά μοντέλα παλινδρόμησης τυχαίων επιδράσεων για να εκτιμηθούν οι παρατηρούμενες διαφορές μεταξύ γειτονιών με διαφορετικό προφίλ στις διαστάσεις που επιθεωρεί το CyNOTes τόσο αναφορικά με (α) την αυτοαξιολόγηση των κατοίκων σχετικά με την ποιότητα του περιβάλλοντος της γειτονιάς («Πρότυπη Γειτονιά») και (β) τη Σχετιζόμενη με την Υγεία Ποιότητα Ζωή (SF-36).

Αποτελέσματα

Η εγκυρότητα περιεχομένου του CyNOTes επιβεβαιώθηκε μέσα από την παραγωγική ανάλυση περιεχομένου των περιγραφών των πολιτών στα μέσα κοινωνικής δικτύωσης για την κατάσταση και τα προβλήματα των γειτονιών όσο και μέσα από την άσκηση καθορισμού προτεραιοτήτων με την τεχνική της ονομαστικής ομαδοποίησης κατά την ομάδα εστίασης με επαγγελματίες των οποίων το πλαίσιο εργασίας τους είναι στην κοινότητα. Η τελική έκδοση του εργαλείου περιλαμβάνει 9 διαστάσεις στη βάση 151 στοιχείων, 126 από την ανασκόπηση της βιβλιογραφίας και 25 που προέκυψαν από τη διαδικασία της πολιτισμικής προσαρμογής. Στη **Φάση I**: διαφάνηκε ότι η ομάδα των

γειτονιών με το χαμηλότερο εκπαιδευτικό υπόβαθρο είχαν στατιστικά σημαντικά χαμηλότερα σκορ σε περισσότερους από τους μισούς δείκτες του CyNOTes v1.0, με μεγαλύτερες διαφορές όσον αφορά σε σχετιζόμενες με το οικιστικό περιβάλλον συνθήκες (π.χ. ποιότητα στέγασης και συντήρηση οικιστικών μονάδων) παρά στις δημόσιες υποδομές (π.χ. ποιότητα δρόμων και πεζοδρομιών, περιβάλλον φιλικό στο περπάτημα κτλ.), για τις οποίες καταγράφηκε μικρότερη μεταβλητότητα μεταξύ γειτονιών. Οι παρατηρούμενες διαφορές ως προς το εκπαιδευτικό υπόβαθρο της κοινότητας ήταν εμφανείς τόσο αναφορικά με δείκτες οι οποίοι είχαν γενικότερα υψηλότερα σκορ στο σύνολο των γειτονιών (π.χ. απουσία ενδείξεων διαταραχής στο φυσικό χώρο) όσο και σε δείκτες με γενικότερα χαμηλά σκορ (π.χ. δημόσιοι χώροι αναψυχής και ψυχαγωγίας). Η μόνη εξαίρεση ως προς την παρατηρούμενη κοινωνική διαβάθμιση αφορούσε στη διάσταση της ασφάλειας. Εντούτοις, πρέπει να αναφερθεί ότι το εργαλείο αξιολογεί την παρουσία στοιχείων σχετιζόμενων με την προστασία (π.χ. συστήματα ασφαλείας με κάμερες CCTV), που εμφανίζονταν συχνότερα σε γειτονιές με υψηλότερο εκπαιδευτικό υπόβαθρο. Παρατηρήθηκαν αρνητικές συσχετίσεις (spearman's rho -0.3 to -0.5, p-value<0.05) μεταξύ της ποιότητας του μικροπεριβάλλοντος της γειτονιάς και απογραφικών πληθυσμιακών δεικτών, π.χ. ποσοστό πληθυσμού άνω των 65 ή ποσοστό μη-κύριων κατοίκων, αναδεικνύοντας την περιβαλλοντική ανισότητα/αδικία εις βάρος κοινωνικο-οικονομικά μειονεκτικών πληθυσμιακών ομάδων. Οι ισχυρότερες συσχετίσεις (-0.6 έως -0.7, p-value<0.01) αναφορικά με τους απογραφικούς δείκτες παρατηρήθηκαν με το ποσοστό των κατοικιών με ημερομηνία ανέγερσης πριν το 1980 και το ποσοστό εγκαταλελειμμένων οικιών ή/και οικιών προς κατεδάφιση. Η ανάλυση συστάδων ανέδειξε ένα προφίλ γειτονιών με γενικότερα μειονεκτικότερες συνθήκες σε πολλαπλές διαστάσεις (όπως ποιότητα στέγασης, περιβάλλον φιλικό προς το περπάτημα, φυσική και κοινωνική διαταραχή), όχι όμως παράλληλα σε διαστάσεις που αφορούν τους δημόσιους χώρους, αστικό εξοπλισμό και άλλες διευκολύνσεις. Σε αντίθεση, γειτονιές με ευνοϊκότερο προφίλ τείνουν να έχουν χαμηλότερα σκορ σε σχέση με χαρακτηριστικά που αφορούν το αίσθημα ασφάλειας. Οι κάτοικοι σε γειτονιές με δυσμενέστερο προφίλ ανέφεραν χειρότερη σχετιζόμενη με την υγεία ποιότητα ζωής τόσο ως προς τη σωματική (48.0, SD 8.9 vs 50.7 SD 7.2; p = 0.05) όσο και τη ψυχική (48.3 SD 7.9 vs 50.9 SD 7.2; p = 0.04) διάσταση. Στην επαγωγική ανάλυση περιεχομένου των αναρτήσεων των πολιτών στο Facebook, το πυρηνικό θέμα ήταν «Φωνή στους πολίτες» (« ...*Μα γιατί να μην νοιάζεται κανένας; Περπατάει κανείς στις γειτονιές μας;...*»). Αναδείχθηκαν έξι κύρια

θέματα και πολλά επιμέρους θέματα, συμπεριλαμβανομένων των «Συγκρίσεων» μεταξύ κεντρικών περιοχών της πόλης έναντι των «παραμελημένων» οικιστικών γειτονιών (*«Ναι, το κέντρο της πόλης, ο μόλος, είναι ένα κόσμημα, τι γίνεται όμως με τις γειτονιές μας;»*), ή ακόμα με αναφορές σε εμπειρίες από *«κάποιο άλλο τόπο»* που έχουν επισκεφτεί στο εξωτερικό ή *«κάποια άλλη χρονική στιγμή»* του παρελθόντος. Οι πολίτες εξέφραζαν «μεικτά συναισθήματα», αναφέρονταν στις «συνέπειες» της υποβάθμισης των γειτονιών, ανέλυαν τις πιθανές «αιτίες» του προβλήματος, απέδιδαν «ευθύνες» και πρόσφεραν τις δικές τους «εισηγήσεις». Στη **Φάση II**: τα στοιχεία του CyNOTes v2.0, επαναταξινομήθηκαν σε 9 διαστάσεις (δείκτης εσωτερικής συνοχής Cronbach $\alpha = 0.5-0.9$), αποκαλύπτοντας μια ιεραρχικά ανώτερη εννοιολογική δομή 3 παραγόντων. Σε 7 από τις 9 διαστάσεις του περιβάλλοντος της γειτονιάς υπήρχαν σαφείς ενδείξεις κοινωνικής διαβάθμισης με προοδευτικά χαμηλότερα σκορ στο συνεχές του κοινωνικο-οικονομικού μειονεκτήματος τόσο στη βάση του εκπαιδευτικού υποβάθρου των κατοίκων, όπως στην φάση I, όσο και στη βάση ενός σύνθετου δείκτη πολλαπλού κοινωνικο-οικονομικού μειονεκτήματος. Αυτό το μοτίβο ήταν κοινό τόσο για διαστάσεις που κατέγραψαν γενικότερα υψηλά σκορ στο σύνολο των γειτονιών, καθώς και σε διαστάσεις με γενικότερα χαμηλά σκορ. Αν και η επιτόπια επιθεώρηση ανέδειξε ένα συστηματικό μοτίβο χειρότερων περιβαλλοντικών συνθηκών σε γειτονίες με μεγαλύτερο κοινωνικο-οικονομικό μειονέκτημα, η αυτοαξιολόγηση από τους ίδιους τους κάτοικους δεν ήταν πάντοτε προς την αναμενόμενη κατεύθυνση. Η αξιολόγηση των πολιτών στη βάση του εργαλείου «Πρότυπη Γειτονιά» ανέδειξε ένα μοτίβο σχήματος U, όπου συχνότερα οι κάτοικοι στη μεσαία κατηγορία έδιναν τις χαμηλότερες βαθμολογίες, συγκριτικά με όσους διέμεναν σε γειτονίες με μεγαλύτερο κοινωνικο-οικονομικό μειονέκτημα. Οι κάτοικοι σε γειτονίες με μεγαλύτερο εκπαιδευτικό / κοινωνικο-οικονομικό μειονέκτημα δεν αξιολογούσαν το περιβάλλον της γειτονιάς απαραίτητα αρνητικά, αν και τοποθετούσαν τη γειτονιά τους σχετικά χαμηλότερα στην κοινωνική σκάλα με μέσο όρο 6.6 (σε 10-βάθμια σκάλα κοινωνικής θέσης) συγκριτικά με τη βαθμολογία 8.1. που έδωσαν κατά μέσο όρο οι κάτοικοι στις λιγότερο μειονεκτικές γειτονίες. Οι δυο διαστάσεις που έλαβαν συγκριτικά υψηλότερες βαθμολογίες από του πολίτες (σε 7-βάθμια κλίμακα) ήταν: *«ταυτότητα και αίσθημα του ανήκει»* ($M = 5.8$, $SD = 2.0$) και *«ευκαιρίες για κοινωνική αλληλεπίδραση»* ($M = 5.3$, $SD = 2.1$). Αντιθέτως, οι πλείστες πτυχές που αφορούσαν το φυσικό και δομημένο περιβάλλον της γειτονιάς βαθμολογήθηκαν πιο κοντά στο μέσο σημείο σε κλίμακα 1: μεγάλο μέχρι 7: μικρό

περιθώριο βελτίωσης. Η χαμηλότερη βαθμολογία καταγράφηκε αναφορικά με το «βαθμό επιρροής και αισθήματος ελέγχου» ($M = 3.4$, $SD = 2.4$), εύρημα το οποίο συνάδει με το πυρηνικό θέμα της ανάλυσης περιεχομένου. Τέλος, παρόλο που οι παρατηρούμενες διαφορές δεν ήταν πάντοτε στατιστικά σημαντικές, αναδείχθηκε ένα συστηματικό μοτίβο με υψηλότερα σκορ στη Σχετιζόμενη με την Υγεία Ποιότητα Ζωής στις γειτονιές με τις πιο ευνοϊκές περιβαλλοντικές συνθήκες αναφορικά με όλες τις διαστάσεις που αξιολογεί το CyNOTes. Η διάσταση «περιβάλλον φιλικό προς το περπάτημα» κατέγραψε τις μεγαλύτερες παρατηρούμενες διαφορές τόσο ως προς τη Σωματική διάσταση της ποιότητας ζωής (αύξηση 1.34 μονάδων κατά μέσο όρο στα τριτημόρια του κοινωνικο-οικονομικού μειονεκτήματος, 95% CI (0.42,2.26); $p = 0.005$) όσο και ως προς τη Ψυχική διάσταση (1.46, 95% CI 0.54,2.40); $p = 0.003$). Η «κοινωνική επαφή» και η «ασφάλεια» ήταν οι μόνες διαστάσεις που έλαβαν υψηλότερα σκορ επιθεώρησης στις πιο κοινωνικο-οικονομικά υποβαθμισμένες γειτονιές, ωστόσο δεν παρατηρήθηκαν συσχετίσεις με τη σχετιζόμενη με την υγεία ποιότητα ζωής.

Συμπεράσματα

Το εργαλείο επιθεώρησης CyNOTes προσφέρει ένα αξιόπιστο και έγκυρο εργαλείο το οποίο επιτρέπει τη συλλογή συμπληρωματικής πληροφορίας για το μικρο-περιβάλλον της αστικής γειτονιάς που δεν μπορεί να αξιολογηθεί εύκολα με άλλου είδους μεθοδολογικές προσεγγίσεις. Η παρούσα μελέτη ανέδειξε το βαθμό της μεταβλητότητας και της περιβαλλοντικής ανισότητας στο περιβάλλον της γειτονιάς στη πόλη της Λεμεσού. Υπήρχαν σαφείς ενδείξεις κοινωνικής διαβάθμισης στην ποιότητα του μικρο-περιβάλλοντος της γειτονιάς, ενώ αναδείχθηκε ένα συστηματικό προφίλ συγκέντρωσης δυσμενέστερων χαρακτηριστικών στις ίδιες γειτονιές. Σε γειτονιές με δυσμενέστερο προφίλ, οι πολίτες αυτοαξιολόγησαν χαμηλότερα τη σωματική και ψυχική διάσταση της ποιότητας ζωής. Σε αντίθεση με τα ευρήματα της επιθεώρησης, το φαινόμενο της κοινωνικής διαβάθμισης δεν αντικατοπτριζόταν πάντοτε στις αντιλήψεις των πολιτών, όπως καταγράφηκαν στην δειγματοληπτική μελέτη πεδίου. Με εξαίρεση την κοινωνική διάσταση, οι κάτοικοι δεν βαθμολόγησαν το δομημένο και φυσικό περιβάλλον των γειτονιών ευνοϊκά. Χαρακτηριστικό ήταν το εύρημα ότι η χαμηλότερη βαθμολογία στη δειγματοληπτική μελέτη καταγράφηκε στη διάσταση «βαθμός επιρροής και αίσθημα ελέγχου», σε συνέπεια με το πυρηνικό θέμα της ποιοτικής ανάλυσης δεδομένων η οποία είχε προηγηθεί («Φωνή στους πολίτες»). Καταληκτικά, διαφάνηκε ότι το εργαλείο CyNOTes είχε καλές μετρικές ιδιότητες, συμπεριλαμβανομένων της εγκυρότητας

αντιπαραβολής γνωστών ομάδων (ανάδειξη του γνωστού φαινομένου της κοινωνικής διαβάθμισης), εγκυρότητας κριτηρίου (συσχετίσεις με απογραφικούς δείκτες), συντρέχουσα εγκυρότητα (σύγκριση με αυτοαξιολόγηση των πολιτών) και προβλεπτική εγκυρότητα (παρατηρούμενες συσχετίσεις με τη σχετιζόμενη με την υγεία ποιότητα ζωής). Το CyNOTes προσφέρει τη δυνατότητα περαιτέρω ανάπτυξης και χρήσης σε μελλοντικές ερευνητικές μελέτες μεγαλύτερης κλίμακας ως ένα πολιτισμικά κατάλληλο εργαλείο επιθεώρησης του σχετιζόμενου με την υγεία μικρό-περιβάλλοντος της γειτονιάς. Πέραν από τη χρήση του για ερευνητικούς σκοπούς, το CyNOTes αποτελεί χρήσιμο συμπληρωματικό εργαλείο αξιολόγησης της κοινότητας στο πλαίσιο της πρακτικής και διαμόρφωσης πολιτικής Δημόσιας Υγείας, όπως επίσης και εργαλείο συνηγορίας των πολιτών. Η επιτόπια επιθεώρηση του περιβάλλοντος της γειτονιάς, ως μέθοδος, μπορεί να ενθαρρύνει αλλά και να διευρύνει το διάλογο αναφορικά με τους κοινωνικο-περιβαλλοντικούς προσδιοριστές της υγείας.

Λέξεις κλειδιά: συστηματική κοινωνική παρατήρηση, περιβάλλον της γειτονιάς, μικρό-περιβάλλον, αξιολόγηση κοινότητας, κοινωνική διαβάθμιση, επιτόπια επιθεώρηση, έρευνα αντιλήψεων, περιβαλλοντική αδικία, κοινωνικο-περιβαλλοντική ανισότητα.

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LIST OF ABBREVIATIONS

AAH:	The African American Neighborhood Assessment Scale
CANVAS:	Computer Assisted Neighborhood Visual Assessment System
CASCADDE:	Community Audit of Social, Civil, and Activity Domains in Diverse Environments
CCTV:	Closed Circuit Television
CI:	Confidence Interval
CMU:	Condensed Meaningful Units
COURAGE:	The Collaborative Research on Ageing in Europe Built Environment Outdoor Checklist
CUBEST:	China Urban Built Environment Scan Tool
CyNOTes:	Cyprus Neighbourhood Observational tool for auditing urban community environments.
CYNMA:	Cyprus Nurses and Midwives Association
EPOCH :	Environmental Profile of a Community's health
GIS:	Geographical Information System
HrQoL:	Health-related Quality of Life
IQV:	Index of Qualitative Variation
IQR:	Inter-Quartile Range
MCS:	Mental Component Score
MoNAT:	Montréal Neighbourhood Assessment Tool
NCDs:	Non-Communicable Diseases
NGT:	Nominal Group Technique
NIfETy:	The Neighborhood Inventory for Environmental Typology
NOC:	Neighborhood Observation Checklist

PCS:	Physical Component Score
QoL:	Quality of Life
REAT:	Residential Environment Assessment Tool
SD:	Standard Deviation
SED:	Socio-Economic Disadvantage
SEP:	Socio-Economic Position
SES:	Socio-Economic Status
SPOTLIGHT:	Sustainable Prevention of Obesity Through Integrated Strategies
SPSS:	Statistical Package for Social Science
SRH:	Self-Rated Health
SSO:	Systematic Social Observation
UN:	United Nations
WASABE:	Wisconsin Assessment of the Social and Built Environment
WHO:	World Health Organisation

1 INTRODUCTION

“Place” can directly or indirectly influence health-related quality of life for individuals (Cummins et al., 2007). It is argued that place and health reinforce each other and that there is an equal relationship between people and place. Indeed, it has been well-documented that the conditions in which people grow, live, work, and age have a major impact on health (Marmot & Bell, 2012). According to Marmot et al., (2012), the general characteristics of someone’s environment such as socioeconomic status, living and working conditions, along with other individual lifestyle factors have a major impact on an individual’s health trajectory and also on society (Marmot & Bell, 2016). In fact, health in terms of being socially determined is referred to by Geoffrey Rose as the “cause of all causes” (Geoffrey Rose as cited in (Marmot, 2017)).

Many epidemiologists have recognized the impact of the environment and other societal factors on health. The impact of socioenvironmental exposures on health has been investigated for many years. The identification of various socioenvironmental exposures may be linked to a broad range of physical and mental health outcomes (Berkman L. and Kawachi I., 2000). It is well recognized that the social, physical, and mental well-being of individuals as well as societies as a whole, are affected by their physical and/or built environment and vice versa (Berkman L. and Kawachi I., 2000).

In the nineties, social epidemiology focused on ecological-level exposures that are not captured by investigating features at only an individual level (Macintyre et al. 1993; Kaplan 1996; Kawachi and Kennedy 1997; Kawachi et al. 1997 as cited in Berkman L. and Kawachi I., 2000). Such exposures are features of the local environment, for example, grocery stores, parks, housing conditions, voting participation, pedestrian and cycling environment, neighborhood safety, etc. These exposures have a direct or indirect impact on health either by their availability or accessibility (Jones and Moon 1993; DiezRoux et al. 1997 as cited in Berkman L. and Kawachi I., 2000).

Over the years, many models have been devolved to illustrate determinants of health and the ecological features that might affect health. One of the most important and well-known models of health determinants is the 1991 Dahlgren and Whitehead model (Dahlgren and Whitehead, 1991). This model suggests that human health is influenced by various socio-environmental determinants. These determinants are well described in the

Dahlgren and Whitehead 1991 model which shows the influences on health of individual lifestyle factors in the middle level of the model, and living and working conditions as well as the general socioeconomic, cultural and environmental conditions in the outer layer (Whitehead & Dahlgren, 2006).

According to the World Health Organization (WHO) and other health and economic organisations many diseases are diseases of poverty. Moreover, many other problems are not just the product of poverty, but contribute to the perpetration of poverty by slowing economic growth. Behavioural risk factors include nutrition, physical activity, smoking, and alcohol intake that lead to noncommunicable diseases (NCDs). Aspects of the current economic shift, growing urbanisation, and 21st-century lifestyles all contribute to this risk. There may be a feedback loop at work among these communities, wherein being poor makes people more vulnerable to the risky behaviours that can lead to NCDs, and NCDs themselves may contribute significantly to the cycle of poverty. Individuals with a lower socioeconomic status are disproportionately affected by the rising rates of NCDs.

Inspired by a model from Dahlgren and Whitehead (1991), the Barton and Grant model published in 2006 highlights the increasing importance of the impact on health from the natural and built environments. The purpose of the model is to examine whether the modern way of planning and building cities, which were originally designed to eliminate basic health problems, is currently affecting health. In contemporary terms, these are urban determinants of health.

One of the most common and current examples is the obesogenic environment. Since many modern cities do not encourage physical activity due to the lack of pedestrian or walking features (Gasevic et al., 2011), the built environment contributes to health problems such as obesity and cardiovascular disease (Gullón et al., 2015). Another important factor is exposure to pollutants in the environment (Middleton et al., 2010). Additionally, the proximity of houses (Serag El Din et al., 2013) to major traffic roads might contribute to air pollution that increases lung cancer and other respiratory diseases.

According to Barton and Grant (2006), their model was inspired by Dahlgren and Whitehead's model, but their model had a stronger focus on sustainable development and ecosystem theories that would be able to improve the health-related quality of life of citizens.

Such concepts, as mentioned by the Dahlgren and Whitehead model and Barton and Grant make public health a transdisciplinary field. Consequently, methodologies that are used to measure such exposures are more likely to be complex. Social determinants of health should be recognized and measured not as a result of individual choices, but measured using various ecological indicators (Berkman L. and Kawachi I., 2000).

There is currently considerable debate about the most appropriate way to measure environmental features that might have an impact on health, such as a neighborhood environment or at a city, state, or country level (Brulle & Pellow, 2006). Various community assessment methods can be used to profile communities, all with strengths as well as shortcomings. Traditionally, area-level indices of socio-economic deprivation or disadvantage are used to profile communities, inform policy, and guide resource allocation.

Even though such indices have a long history in various areas of Europe, there are no generally accepted measures of socioeconomic disadvantage in Cyprus and, as a result, such statistics have not been in use in either public health research or policy. There are also additional concerns about the use of census indices as a means of profiling communities. Such profiles are data-driven (i.e., dependent on the availability of routine data), time-bound (i.e., often based on decennial census data), and calculated for administrative areas that are often large and heterogeneous. More importantly, they are not truly “ecological” as they commonly reflect the socio-demographic composition of a community’s residents (i.e., who lives there), rather than actual features of the neighborhood environment itself. Furthermore, census-based area-level single indicators or composite indices describe area sociodemographic characteristics, but do not capture important health-related features of the microscale environment of a place.

Other approaches commonly used in community assessments include the use of GIS measures, which are often restricted to capturing specific features of the built environment, such as land use and green space, and aggregated measures of local residents’ perceptions regarding features of the built environment, such as walkability, or psycho-social environment, such as trust and reciprocity (Mujahid et al., 2007) (Augusta et al., 2012). Observer-based audit ratings have been proposed as an alternative as there is need for integration of methodological approaches to profile the micro-scale neighborhood environment to better understand health inequalities which they might be

attributable to environmental inequities that exist within the cities .The micro-scale environment is defined as features at the street rather than neighbourhood level, such as presence and width of sidewalks, obstructions and barriers for walkability, street lighting, trees, gardens, graffiti and other physical evidence of physical disorder, etc.) (Kim et al., 2014).

Systematic Social Observation (SSO) is a new method used in the context of observational studies in the field of social and environmental epidemiology. SSO is a currently-evolving method and widely used as a systematic method to assess the neighborhood environment (Schaefer-McDaniel et al., 2010). Various studies (Schaefer-McDaniel et al., 2010); (Nickelson et al., 2013) have developed audit tools to obtain objective information on how specific community and neighborhood characteristics might influence peoples' social and health behaviors. Such neighborhood audit tools can be generic (assessing various features of the neighborhood environment) or domain specific, for instance to assess/quantify walkability (Sallis et al., 2015), or the cycling environment (Pikora et al., 2002). Other methods are age specific such as tools focusing on the needs of younger (Leung et al., 2010) or older population groups (Chaudhury et al., 2011). Such micro-environmental audits provide relevant information about physical-built environmental characteristics as well as various social and health behaviors that might influence health-related quality of life (Diez Roux, 2001).

The SSO method was first mentioned in public health academic literature from the landmark study Project on Human Development in Chicago Neighborhoods (Sampson & Raudenbush, 1999). Several generic or feature-specific neighborhood audit tools were developed (Nickelson et al., 2013). Systematic social observation can provide supplementary information about contextual features of the health-related neighborhood environment that is not captured by other methods.

1.1 Contribution and originality of the study

In the international literature, many studies have developed such neighbourhood audit tools; however most of them seem to focus on assessing the intra- and inter-reliability agreement of audits. It wasn't until recently that more studies in this rapidly-growing field are focusing on the use of multi-validation mixed-method procedures.

The present study was designed as an observational methodological study with the aim to develop a reliable and valid neighbourhood audit tool for the Cypriot urban neighborhoods and thus assess the physical, built, and social health-related neighborhood environment in the city of Limassol for the first time using SSO. The main goal of the study was to test the feasibility of neighborhood audits in the city of Limassol, Cyprus. The set objectives were:

(a) to develop a culturally-relevant neighbourhood audit tool and evaluate its metric properties using an iterative process of multi-validation mixed-method procedures, and

(b) to profile a purposefully-selected sample of Limassol's neighborhoods along the socio-economic disadvantage continuum and explore the degree and extent of social gradient in health-related features of the urban neighborhood environment, as an indicator of environmental inequity in citizens' experiences of "place".

At the local/national level, the use of SSO as a method is in itself a major contribution of the study, since it is the first implementation and evaluation of the feasibility of the method in question in the urban environment of a Cypriot city. The use of multi-validation mixed-method procedures in the context of developing a neighbourhood audit tool is one of the core elements of originality of the study at an international level. As mentioned above, many similar studies in the international literature commonly focus on the reliability of measurement through assessing inter/intra-observed agreement. In contrast, this study was strategically designed as a methodological study of assessing various metric properties of the proposed neighbourhood audit tool (CyNOTes) in an iterative series of sub-studies, each with distinct objectives in order to address both reliability (inter/intra observer agreement) but also validity, namely face, content, construct, known-group, criterion, concurrent and predictive validity.

The combination of SSO with a variety of other community assessment methods provide opportunities for method and data triangulation of the findings. Specifically, this study also

(a) incorporated census-based indicators of the socio-demographic, socio-economic and built environment in the community assessment as well as a composite

index of socio-economic disadvantage (SED), developed in the context of the wider ‘*Cyprus Neighbourhood and Health*’ community study

(b) provided an ‘ethnographic’ portrait of the citizens’ lived experience in the residential environment of Limassol as depicted in their social media interactions with the local authorities,

(c) performed a citizen’s self-rated survey of the satisfaction with the quality of the neighbourhood environment with the use of the ‘Place Standard’ questionnaire, and

(d) assessed the self-reported health-related quality of life among residents of neighbourhoods with different SED and micro-scale neighbourhood environment.

Through the combination of quantitative and qualitative methodologies, the study revealed a social gradient in the urban neighborhood environment, documenting both the environmental inequity in the citizens’ experience and its correlation with the health-related quality of life of citizens. The most important contribution of the study is showcasing the applicability and feasibility of the method of Systematic Social Observation in the urban environment of a Cypriot city and its usefulness as a complementary method of community assessment both in the context of research as well as in the context of Community and Public Health practice and policy.

Furthermore, it should be noted that CyNOTes also offers an advocacy tool, by and on behalf of citizens, to highlight neighborhood problems, the need for improvement, the necessity of democratic consultation and more substantial citizen participation in decision-making for urban planning, something which emerged through the quantitative and qualitative findings of the study itself. It is indicative to mention that this study was placed under the auspices of the office of the Healthy Cities Network of the Cyprus Ministry of Health. In fact, to some extent, the impact of the study in the context of advocacy is best highlighted by the fact that it contributed to the decision of the Municipality of Limassol to proceed with the submission of their application to join the WHO Healthy Cities Network, for which an essential requirement in the initial stages is preparation of a City Health Profile, with an emphasis on socio-geographical inequalities.

2 THEORETICAL FRAMEWORK

This study is theoretically guided by the theoretical model of Diez-Roux and Mair, which shows us that purely individual-based explanations for inequalities are insufficient. This theoretical model indicates that our health not only depends on our behaviours, but may also involve direct as well as indirect pathways. These pathways include both socio-behavioural pathways (e.g., an adverse environment promotes, hinders or sustains adverse health-related behaviours) and psycho-social pathways (e.g., differential exposure, vulnerability, or outcomes as result of social inequity and sustained exposure to stressful environments) (Diez-Roux and Mair, 2010).

The theoretical model also indicates that the individual characteristics are linked with residential segregation and spatial inequalities that are influenced by a neighborhood's physical and social environment which act as behavioral mediators and stressors that eventually affect health (Diez Roux and Mair Christina, 2010). For example, built-environment characteristics such as the quality of public and/or natural spaces can affect social cohesion and interaction and/or can contribute to the safety and norms that are dynamically formed in a community/neighborhood. In addition, the neighborhood environment can influence behavioral characteristics like people's choices towards healthy eating or physical activity as a coping mechanism to deal with stress. Noteworthy, individual characteristics can make one more susceptible to or conversely more apt at overcoming specific adverse neighborhood deficiencies or hazards. It is important to recognize that being able to identify specific neighborhood features that have a direct or indirect impact towards health is essential in order to justify the synergistic neighborhood health effect.

Environmental justice has a long history (Brulle & Pellow, 2006). Importantly, the phenomenon of social gradient might be attributable to environmental inequity that could exist in the neighbourhood environment (Northridge et al., 2003). Environmental deprivation is observed in different socio-spatial distributions within a country as environmental quality progressively becomes worse and moves downward on the social ladder (Pearce et al., 2010). This is also apparent by the phenomenon of a social gradient that recognises that there is a social structure, commonly unequal in terms of resources and opportunities, and as you go down that structure from more privileged (no matter how

you measure it at the level of the individual or the level of the community) to more disadvantaged, there are progressively worse health outcomes. It is evident that within countries and cities, socioeconomic position plays an important role in health (WHO, 2020). The lower an individual's socioeconomic position the worse their health (WHO, 2020). This observation has been studied and recognized for centuries (Antonovsky, 1967 as cited in Berkman L. and Kawachi I., 2000). Even in 1567, Paracelsus observed that people working in mines seemed to have higher rates of disease. Similarly, in the 19th century, systematic studies by Villerme in Paris investigated the relationship between rent levels of various areas in Paris and mortality rates (Berkman L. and Kawachi I., 2000). In Upper Silesia, even specific diseases, such as typhus, have been associated with poor living conditions (Berkman L. and Kawachi I., 2000). In the early twentieth century, as epidemiology and research on public health evolved in the United States and Great Britain, attention was drawn to the increased risk of disease by disadvantaged socioeconomic status (Goldstein & Duffy, 1994).

Efforts have been made to improve physical environments such as housing, noxious work environments, water supply, sanitation, nutrition, and access to immunization (Berkman & Kawachi, 2000). Paying attention to these factors has improved life expectancy, and therefore, social disparities have been improved (Link, 2016). Health can be affected by the micro-features and/or different amenities available in the neighborhood environment directly or indirectly. The mechanisms by which aspects of the neighbourhood environment are linked to health are complex and not always easy to unpack as they are commonly synergistic and involve direct pathways as well as indirect pathways. These pathways include both socio-behavioural pathways (e.g., an adverse environment promotes, hinders or sustains adverse health-related behaviours) and psycho-social pathways (e.g., differential exposure, vulnerability, or outcomes as result of social inequity and sustain exposure to stressful environments) (Diez-Roux and Mair, 2010). For example, built environmental characteristics such as the quality of public and/or natural spaces can affect social cohesion and interaction and/or can contribute to the safety and norms that are dynamically formed in a community/neighborhood. Behavioral characteristics can influence people's choices such as unhealthy eating or physical activity as a coping mechanism to deal with stress (Diez Roux and Mair Christina, 2010). Noteworthy, those individual characteristics can help to overcome or make one more

susceptible to specific neighborhood deficiencies or hazards (Diez Roux and Mair Christina, 2010). Social inequalities and residential segregation synergistically result in spatial inequalities, therefore, environmental inequities. The impact that the neighbourhood environment has on health might be also triggered by different personal characteristics such as how vulnerable a person is or whether a person has the financial resources to help mitigate adverse effects of the neighborhood environment. Figure 1 shows a schematic representation of the synergistic effect that residential segregation, neighborhood physical and social characteristics as mediators to behavioral vulnerabilities, stress and consequently individual health.

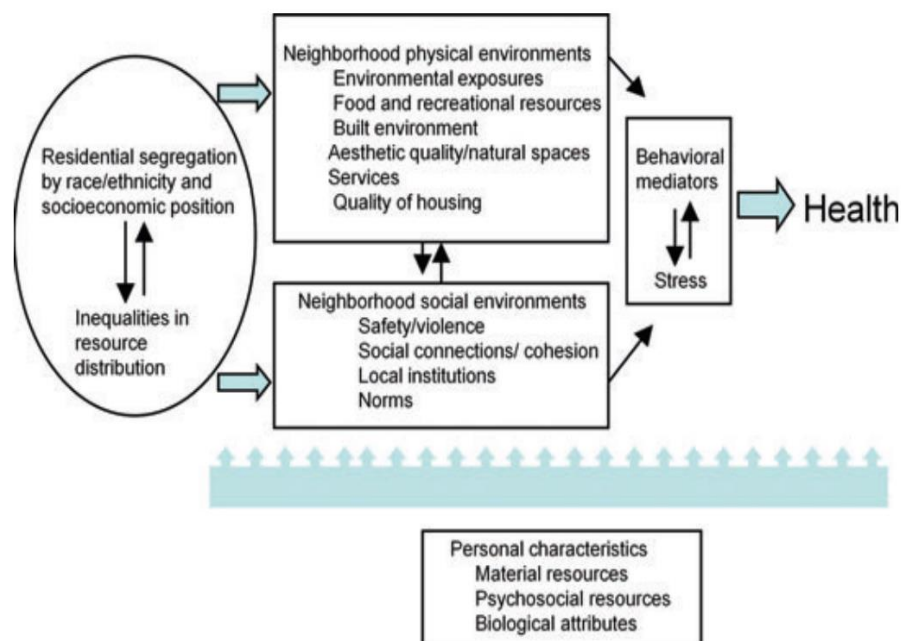


Figure 1: Schematic representation of the contributions of neighbourhood environments to health inequalities (Ana V Diez Roux et al., 2010).

It is challenging and methodologically unsophisticated to try and draw inferences from studies using neighborhood census proxies and their causal effect on human health only by identification of the socioeconomic position of residents in specific neighborhoods. Therefore, there is a need to investigate neighborhood health effects by observing the neighborhood constructs that might have a true impact on human health (Diez Roux and Mair, Christina, 2010). Researchers are interested in going beyond neighborhood census characteristics and are utilizing third-generation observational studies that have greater methodological sophistication. Such studies are a combination of both quantitative and qualitative methods as well as the observation of various neighborhood features which might be able to capture a holistic picture of the environmental inequities that exist and which are not assessed by other community assessment methods. Systematic Social Observation (SSO) studies are not studies on neighborhood composite socioeconomic scores/indices, but studies that can capture the true ecological measures of specific features of the micro-environment that might have a direct or indirect impact on different health outcomes (Nickelson et al., 2013).

The search of microenvironment features as well as the interest in observing spatial differences and associations in different socioeconomic status areas have raised the question of environmental equity (Northridge et al., 2003) and justice (Brulle & Pellow, 2006). This indicates the unequal distribution of environmental risk as well as the quality of facilities and amenities, and also that the maintenance provided lower socioeconomic status might be attributable to the phenomenon of a social gradient.

There has been thru the years an interest in investigating neighborhood features that can improve health-related factors of quality of life. Such features include economic, physical, built, and social features. Economic features may include satisfaction with home value in the neighborhood, cost of living in the community, socio-economic status of neighborhood and neighborhood improvement (Sirgy Joseph and Cornwell Terri, 2002). The physical and built environment would include satisfaction with the upkeep of homes and yards, landscape in the neighborhood, street lighting, crowding and noise level, proximity of the neighborhood to facilities and quality of the pedestrian environment. Social features involve social interactions with neighbors, satisfaction with outdoor play spaces and people living in the neighborhood, ties with people in the community, crime in the community, race relations in the community and thus, the sense of privacy at home

(Sirgy Joseph and Cornwell Terri, 2002). The recognition of such neighborhood characteristics and also the ability to measure such characteristics can assist local authorities and individuals to advocate for the improvement of features in the built, physical and social neighborhood. Therefore, there is a need to assess the prevalence and variability of such neighborhood features objectively as well as systematically. Being able to quantify such features might also assist researchers to develop ecological indicators that would be able to supplement the census data. Such metrics are needed to identify the environmental inequities that might exist within cities. This study is based on a theoretical framework of a synergistic effect from the physical, social, and built-neighborhood environment, and associated reinforcing mechanisms that can be utilized to depict the social gradient phenomenon within the city of Limassol (Diez Roux and Mair C, 2010).

3 PLACE AND HEALTH RELATED QUALITY OF LIFE

Scholars in a wide range of disciplines are increasingly exploring the relationship between place and health, and recently, the field of public health has been encouraged to recognize the concept of place as a potential contributing factor to well-being (de Azevedo et al., 2013) ;(Cummins et al., 2007). It is evident that over the last few decades, the concept of place has developed into a versatile construct (Eyles John & Williams Allison, 2012). Since the early 1990s, there is a renewed interest in social epidemiology of the area analysis and the effect that different types of places such as neighbourhoods, localities and regions might have on health-related quality of life (Macintyre & Ellaway, 2000). It has been discussed that different health behaviours such as smoking, diet, and physical activity cannot be understood only by individual choices but is needed to take into account the broader environment. Such an environment can be behavioural attitudes as well as the influence of family or even the community. Health-related quality of life might be influenced also by other wider social factors such as economic or urban policies or even specific cultural structures (Macintyre & Ellaway, 2000). Therefore, there is an emphasis on ‘place’ and how people’s experiences in different localities can influence their health status and health behaviour (Jones & Moon, 1993).

More recent studies explore the socio-geographical inequalities that might exist by measuring perceived happiness and exploring the relationship between quality of life and place attachments (de Azevedo et al., 2013) ;(Bolam et al., 2006). Place may affect health in many ways (Muhajarine et al., 2008). Different place features may affect different health outcomes(Gattino et al., 2013); (Wright et al., 2010);(Sirgy Joseph and Cornwell Terri, 2002). Place features within different areas around the globe but also the same countries and cities differ. Such features can be physical (B. T. Taylor et al., 2011a), built (Feuillet et al., 2016) and social (Berkman & Kawachi, 2000) characteristics that can be found within the micro-environment of the city such as the neighbourhood environment. The existence as well as the quality of such features might lead to environmental inequities (Northridge et al., 2003) which synergistically might impact the health-related quality of life and social inequities.

Having people at the heart of planning and shaping the physical, built and social neighbourhood environment based on their needs is at the heart of urban planning.

Engaging future generations in the development and creation of their living places creates an environment that would work towards their health and well-being and makes an aspiration to everyone (Barton et al., 2021). This is also interlinked with the Ottawa Charter for Health Promotion which states: *“Health is created and lived by people within the settings of their everyday life; where they learn, work, play and love. Health is created ..by ensuring that the society one lives in, creates conditions that allow the attainment of health by all its members”* (WHO,1986,p7 as cited in Barton et al, 2021).

The WHO promotes a healthy neighbourhood environment across the individual lifespan. For example, in early life, the physical environment plays an important role in healthy independent life but towards the end of life some old people are dependent on social support. Therefore, the neighbourhood environment should enable fewer individuals that fall below the dependence with the need for social support threshold (Barton et al., 2021). This would be achievable by creating intergenerational neighbourhoods that have both child-friendly places and is also promoting healthy ageing through surroundings, facilities and amenities that would make both generations feel comfortable in their localities. Social cohesion is affected also by social inequalities (Ellina, Middleton, Lambrinou, & Kouta, 2021). Ellina et al., 2021 explored the extent of social inequalities in health-related quality of life among urban middle-aged residents in Limassol, Cyprus. This study showed that social gradient appears in all social indicators. Specifically, being male and highly educate and having a high-income full-time job while also engaging in mild physical activity has a significantly higher impact on health-related quality of life compared to other middle age adult groups in Limassol (Ellina et al., 2021). Consequently, well-being might be socially determined.

The social determinants of health are defined as the conditions in which people are born, work, live and age and the conditions that are shaping their daily life. Such conditions usually are formed by economic policies, socio-cultural norms, social policies and political decisions (M. Marmot & Bell, 2012). There is a growing acceptance of the ‘population health or health determinants approach in which health is defined as a complete state of physical, mental and social wellbeing and not merely the absence of disease’. A variety of forces and factors in people’s lives and environments may have a greater impact on their health than access to, or the provision of, medical services.

Socioeconomic status, education level, geography, cultural identity, social inclusion and integration, community, and infrastructure are some of the determinants.

The economic hardship and the impact that has on health has been also apparent in a Swedish study of a random representative sample of 23,153 men and 28,261 women aged 16-84 years. This study showed that the lack of economic capital and social capital which involved the economic hardships defined as low household income, inability to meet expenses and lacking cash reserves; as well as the level of social capital defined as social participation, interpersonal and political/institutional trust observed a synergistic effect on health outcomes and the potential risk of poor health (Ahnquist, Wamala, & Lindstrom, 2012). It is also indicated in this study that social structures and socio-economic patterns might play a significant role or be the cause of all major health causalities (Michael Marmot, 2017).

In 2007 the social determinants of health have been referred by Sir Michael Marmot as the “cause of the causes” (Michael Marmot, 2007). Ten years later and despite having socioeconomic status being recognized as having an impact on health, in 2017 Sir Michael Marmot answers the question that social stratification should be embedded into the field of epidemiology and that ignoring it because it is a vague topic, would be ignoring a major source of alternating health in a society (Michael Marmot, 2017a). In addition, he is outpointing that nowadays not only the social gradient in health is a component that epidemiologists need to study but there is also progress in understanding its causes as well as addressing them. Addressing the social gradient will improve the health of worst-off in the society and narrow the gap in health inequities. Health inequity which comes from the existence of health inequalities has been recognized for the past 30 years as a reason to demand Health for all policy in the World Health Organisation (Valentine, Koller, & Hosseinpour, 2016); (Greer et al., 2022).

As cities and places play a vital role in the reduction of health inequalities various scholars tried to show the impact that place might be affecting health. Inspired by Whitehead and Dahlgren’s model(Whitehead & Dahlgren, 2006) which mostly shows the relationship between physical, social and economic development, the model by Barton et al., 2006 tried to capture how health determinants are influenced by the environment that people live (Barton & Grant, 2006). Basic health problems in the 19th century had their solutions found due to the development of town planning, however, as years passed city

planning has been separated from health. Cities' infrastructure no longer considers the fact that they are humans' habitats. Also, decisions about cities are not taken based on the needs of humans across their lifespans. In recent years (Glanz et al., 2016); (Feuillet et al., 2016) scientists tried to explore the impact that the built and physical environment has on the adaptation of various health behaviour such as physical inactivity (Sallis et al., 2015) triggering obesity and cardiovascular disease (Bethlehem, Mackenbach, Ben-rebar, et al., 2014), increasing pollution triggering asthma resulting to what has been called as environmental inequality (Brulle & Pellow, 2006);(Middleton et al., 2010). However, despite the extensive literature about the impact that cities have on human health taking action towards that is a complex procedure. In this effort, the Barton et al., 2006 model tried to include eco-system theories as well as sustainable development principles. Being able to quantify or develop ecological indicators that can measure or define environmental inequity within cities plays a crucial role towards achieving some of the sustainable development goals.

3.1 Socio-geographical inequalities and place effects on Health

In recent years, there has been a growing interest in socio-geographical inequalities. In the field of social epidemiology there is a need to understand geographical health determinants and the distribution of disease and identification of such environmental inequities has led to the development of technical methodological advances, such as multilevel modelling, spatial analysis methods and the use of both quantitative and qualitative approaches. These technical advances have been developed to help researchers find ways to measure risk, understand culture and difference, and identify inequalities. This led to the creation of a holistic and ecological approach to understanding the socio-geographical inequalities, population health and environmental deprivation (Eyles John & Williams Allison, 2012). As part of the country's development plan and the need to understand what represents a "good" place but also what constituted a good "quality of life" surveys and the development of various indicators have been well documented (Mohan & Twigg, 2007). Other studies have focused on the measurement of social cohesion and material deprivation in the neighbourhoods, in this effort of contextualizing determinants of health and the impact that neighbourhood aggregation has on health (Stafford et al., 2003);(Ana V Diez Roux et al., 2010). It has been

documented that social cohesion tended to be lower in more materially deprived areas and that this might contribute to spatial socio-geographical inequalities and hence health inequalities (Stafford et al., 2003). In 2002, Kawachi stated that the relation between income inequality and spatial concentration of poverty was apparent. There was an increasing trend from 1970 to 1990 from 38% to 41% of people living in poor neighbourhoods and a typical affluent American family lived in neighbourhoods where about 39% were also affluent and this was increased by 52% by 1990. This has a causal effect on society as a whole since the local housing is increased and consequently, lower-income families are displaced. This resulted in other social issues. For example, many workers had to commute to work which increased the number of hours being away from their families (Kawachi, 2002). This also triggered various lifestyle changes such as burnout, stress, alcohol and drug misuse, sleeping problems, car accidents as well as increasing pollution. It is well noted that these socio-geographical inequalities and the concentration of poverty have been associated with an increased risk of mortality for seniors as well as younger residents of the urban neighbourhood in the United States. However, the mortality risk among the youngest residents in the more affluent communities of the United States has been rare and for the senior residents was lower the mortality risk compared with the less affluent communities. Income inequality and residential segregation were each independently associated with mortality and there was a need for a multilevel analysis to emphasize the contextual effects from the compositional effects of poverty in the micro-environment and smaller areas (Kawachi, 2002). The investigation of the micro-environment of a community which is usually the smaller unit of the community i.e. the neighbourhood environment draws interest to various researchers to explore the various features and mechanisms of the neighbourhood environment that might have an impact on health (Meijer et al., 2012); (A. V. Diez Roux, 2001)(Ana V. Diez Roux & Mair, 2010)(Nickelson et al., 2013).

Research on geographical inequalities in health is increasing showing different areas to experience different levels of health. Place equity, as well as environmental inequities, are spatially organized since it has been observed that people living in neighbourhoods with lower average income have shorter lives, highest unemployment and more environmental adverse conditions (i.e. air quality, high noise, traffic danger, poor housing, little greenspace, more crime and high drug dependence) (Barton et al.,

2021). Therefore, neighbourhood planning to reduce such spatial and environmental inequities plays a vital role in the general reduction of health inequities. Consequently, being able to identify the features that might consist in a neighbourhood environment that directly or indirectly might be affecting health-related quality of life might assist in more targeted community development as well as public health interventions.

3.2 Socio-geographical inequalities in Cyprus

In Cyprus, the research on socio-geographical inequalities is still in its infancy. In a study comparing urban versus rural areas and premature mortality, a significant association was observed between the two (Zannoupas et al., 2015).

The geodemographic area classification and association with mortality were also investigated in an ecological study of small areas of Cyprus (Lamnisos, Middleton, et al., 2019). This study also indicated that there are geographical inequalities in mortality since there was a clear distinction between ageing, socially isolated and resource-scarce rural communities versus metropolitan areas with a younger population, higher educational attainment and professional occupations (Lamnisos et al., 2019 p. 6). Furthermore, a different study by Lamnisos et al., 2019 developed small-area socioeconomic deprivation indices based on census data and explore the association with premature mortality. The study indicated that different aspects of socioeconomic deprivation may be important in rural and urban areas in Cyprus (Lamnisos, Lambrianidou, et al., 2019). In another recent study by Lamnisos et al., 2019 exploring all-cause mortality in 401 small communities in Cyprus in different geodemographic area classification tried to investigate the magnitude of inequality in all-cause mortality across the different area classes (Lamnisos, Middleton, et al., 2019). The study indicated that there is a clear classification of communities with profiles based on different socio-economic indicators and that there are health inequalities in all cause-mortality between urban-rural areas with urban areas at a disadvantage. However, it was unclear if the higher mortality rates in urban areas were due to material deprivation and/or any other differences in lifestyle and behaviour determinants since they have not been captured in this study (Lamnisos, Middleton, et al., 2019). Social inequalities were also apparent in the study by Ellina et al., 2021 which was previously mentioned. Specifically, in this study, the social gradient appears in all social indicators (Ellina et al., 2021).

3.3 The synergistic effect of place and health

It is now accepted that there is cross-level interaction between people- places and the synergistic effects of “place” attributes. The debate about what aspect of “place” matters to health as well as the investigation of various neighbourhood features and the effect that have on health has been explored by various scholars in the past (Roux, 2001);(Galster, 2010);(Hasanzadeh et al., 2018). Such mechanisms are referred to as social-interactive mechanisms, environmental mechanisms, geographical mechanisms, and institutional mechanisms (Galster, 2010); In 2003 a study by Badlan et al.,(2003) questioning who does well where, and exploring if neighbourhood disadvantage increases the impact of socioeconomic position (SEP) on self-rated health (SRH); showed that those lived in worse-off neighbourhoods were more likely to report poor SRH than those living in the better-off neighbourhoods, however, the citizen with low SEP but living in better-off neighbourhoods had a similar probability of reporting excellent SRH as those with the highest SEP living in the worst-off neighbourhoods.

Another study, exploring the sense of place (defined as the perceptions that residents have of their environments, encompassing social and structural features (Williams & Kitchen, 2012) and health in Canada recognized how the built environment and socio-economic status (SES) might affect health. This study explored the Quality of Life of citizens in different SES neighbourhoods and found that the sense of place was highest among people in higher SES neighbourhoods but also in people that owned a house, residents of single-detached houses, retired residents and those living in the neighbourhood more than 10 years (Williams & Kitchen, 2012). Interestingly, the focus of the results was the strong association observed between the sense of place and self-perceived mental health across the three different levels of SES neighbourhoods (Williams & Kitchen, 2012).

Perceived neighborhood features as well as sociodemographic factors were significantly correlated to self-rated health and quality of life and there is a difference between high versus low socioeconomic status neighborhoods. Therefore, in recent years there is a great interest in studying the synergistic effect that the physical, social and built neighbourhood environment has on human health (Ana V. Diez Roux & Mair, 2010).

Understanding place and the role that humans play in place and vice versa, is a complex topic.

There is a need to understand the compositional and contextual explanations for differences identified in “place” and the impact that has on outcomes such as mortality, health, health risk and health behaviours. Compositional for place differences translates that different types of individuals live in different places and that the differences between these individuals account for the observed difference between places (Macintyre & Ellaway, 2000). However, a contextual explanation would be that different types of place characteristics such as the social, physical or built environment can directly or indirectly influence the health of individuals living in an area. For example, in non-polluted areas, people of whatever socioeconomic status might live longer, or higher socioeconomic status individuals might live longer wherever they live because they have the resources to cope with different types of environments.

Manski developed a typology of “group” effects which can be adapted to the study of neighbourhoods. In his typology Manski distinguishes three types of group effects (1) effects of aggregate outcomes at the group level on individual-level outcomes (which he terms “endogenous” effects); (2) contextual effects of group composition; and (3) environmental effects (Manski, 1993)(Manski, 1993). Association with area-level (census-based) indicators of socioeconomic disadvantage/ deprivation: they mainly exist on existing health indicators such as mortality rates but also on other socioeconomic characteristics of the communities such as the census (every 10 years and large scale instead of the neighbourhood environment) data that may not capture important features of the built & social environment. Therefore, as it is clearly explained by the composition versus the context debate establishing that place does matter and in fact, it might have a synergistic effect.

The synergistic effect of the place is well described in the article *Neighborhood and Health* by Diez Roux and Mair in 2010. In their analysis, the authors explained how various chronic disease outcomes (such as obesity and its risk factors) and mental health (such as depression and its symptoms). These chronic outcomes suggest that they might be a cross-level interaction of place and individuals through tapping onto the neighbourhood features of the Physical environment such as the quality of air and water, latitude, climate etc or availability of healthy environment at home, work and play, or

even in services provided publicly or privately to support people in their daily lives such as education, transport, street cleaning, lighting, policing etc. or even the sociocultural features of a neighbourhood such as ethnic and religious history of a community, norms, values, levels of crime, community engagement and networks of community support, or even the housing and street condition, the density, and the reputation of an area (Macintyre & Ellaway, 2000);(Ana V. Diez Roux & Mair, 2010). In Cyprus, not many studies tried to explore the synergistic effect of Multiple Built-environment Characteristics on health. For example, a study tried to explore the obesogenic environment of the city. An obesogenic environment is an environment that promotes unhealthy behaviours such as less walking or cycling due to the lack of sufficient urban infrastructure for such lifestyle behaviours but also it promotes the consumption of unhealthy diets such as fast food and sweet food outlets available, especially near a school environment. For example. A study by Chrystalleni et al., (2014) tapped onto several built environment features and showed that the development of childhood obesity was correlated with the built environment features due to the lack of physical activity but due to the dietary food choices of the children around that built environment (Chrystalleni et al., 2014). Therefore, what are those micro-environment features in the Cypriot neighbourhoods that might be contributing to the appearance of environmental inequities between different areas and hence might depict the phenomenon of social gradient? The micro-scale environment is defined as features at the street rather than neighbourhood levels, such as the presence and width of sidewalks, obstructions and barriers for walkability, street lighting, trees, gardens, graffiti and other physical evidence of physical disorder etc) (Kim et al., 2014). In this study, the researchers will explore the physical, built and social environment features of the neighbourhood environment.

3.3.1 Physical Environment Features

They are various physical features that have been documented and reported in previous studies that might be contributing towards the satisfaction that a citizen might have about their neighbourhood environment. For instance, under the physical environment –researchers explored the link between green space and health (B. T. Taylor et al., 2011b). Furthermore, upkeep of homes and yards, the landscape in the neighbourhood, noise level, air pollution, traffic measures, the nearness of the neighbourhood to facilities and amenities needed; and overall satisfaction with the quality

of the environment in the community (Sirgy Joseph and Cornwell Terri, 2002);(Schaefer-McDaniel et al., 2010);(Nickelson et al., 2013);(Quinn et al., 2016).

3.3.2 Social Environment Features

On the social environment features are expected to observe features of social interaction with neighbours, outdoor play space; the ties that people develop in the community, the level of crime, racial relations in the community, the sense of privacy at home, the notion of social capital and social cohesion for example how social support and participation may act as a buffer against the negative health effects of socioeconomic disadvantage, as well as how mental health is affected by social cohesion etc. (Berkman & Kawachi, 2000);(Congdon, 1996); (Uphoff et al., 2013).

3.3.3 Built Environment Features

Furthermore, under-built environment features. Researchers explore the link between the pedestrian environment, the cycling environment, the quality of the streets, the public transport available, the safety of walking or cycling, parking spaces, destinations, distance, density, barriers for walking and other street characteristics. Such neighbourhood features might influence positively or negatively the level of physical activity that citizens have in their daily mobility from and towards their residential places. Specifically, various scholars tried to investigate the link between built environment and chronic diseases, such as obesity, diabetes and cardiovascular disease, usually what is referred to in the literature as the obesogenic environment (Sallis et al., 2015); (Leung et al., 2010); (S. Lee & Talen, 2014); (Cerin et al., 2011); (Gasevic et al., 2011); (Bethlehem, Mackenbach, Ben-rebah, et al., 2014); (Feuillet et al., 2016); (Chrystalleni et al., 2014); (Adkins et al., 2012).

4 COMMUNITY ASSESSMENT METHODS

Although there is a vast literature between place and health, most of these studies have focused on identifying the socioeconomic and cultural characteristics of a region through the use of proxy measures such indices of deprivation, often based on census data. Various community assessment methods can be used to profile communities, all with strengths as well as shortcomings. There is a wide variety of metrics used to assess a community's profile (A. V. Diez Roux, 2007). Most approaches have restrictions on the environmental factors they may tap on. Traditionally, area-level indicators or composite indices of socio-economic deprivation or disadvantage are used to profile communities, advocate for better community conditions and guide resource allocation. Even though such indices have a long history elsewhere in Europe (Lamniso, Lambrianidou, et al., 2019a), there are no generally accepted measures of the area measures of socioeconomic disadvantage in Cyprus. More importantly, such area-level single indicators or composite indices, often originating from census or other routine data sources, are not truly ecological. With some exceptions that may represent the macro-scale residential environment (e.g. population density, median household income, crime rates, etc), these indicators commonly reflect the socio-demographic composition of a community's residents rather than actual features of the neighbourhood environment itself. Census or other routine/administrative data-based indicators commonly describe socioeconomic disadvantage/deprivation as well as other constructs e.g. income inequality, social fragmentation etc. The advantage of census data are their availability and repeatability. The disadvantage of such method is that they do not provide the socio-demographic composition (who lives there), they are consider poor proxies of the true constructs of interest and are not most relevant in terms of causal processes and their boundaries are arbitrary, also they take place only every 10 years.

Similarly, other approaches, such as GIS measures, are restricted to capturing specific features pertaining to the built, rather than social environment, often at the meso-scale (defined as environmental features at the neighbourhood-level), such as traffic density, land use diversity, destinations, street connectivity etc. (Kim et al.,2014). In contrast to their utility in measuring aspects of the natural and built environments (such as air pollution and land use, respectively). As such, they do not capture important features of the microscale environment. The advantage of such methodology is that they

are ecological, they are objective and you can measure multiple features of the environment. The disadvantages are that the data are not always available, they are restricted to the physical and built environment domains and they are not easily extended to features of socio-cultural environment. Also, they do not reflect actual utilization of differential quality of available resources.

Another community assessment method is the aggregated indicators from survey data (at area level) such as person-based surveys which most commonly assess features of psychosocial environment using single (e.g. levels of trust, reciprocity) or composite indices (e.g. social cohesion, social control, collective efficacy). While these are versatile and can refer to features of the built environment, such as walkability, or the psychosocial environment, such as trust and reciprocity, they are subjective (Mujahid et al., 2007)(Augusta et al., 2012). Also, another disadvantage is that they are costly, commonly opportunistic, not nationwide, they are aggregated to administrative areas, there is a social desirability bias, and variation bias when associating with self-rated health measures with perceptions.

Furthermore, another method is the qualitative or mixed methods studies which they involve interviews and focus groups with residents on health-related aspects of physical, built or social environment of purposefully selected from areas of interests (e.g. deprived communities). Participatory methods such as the use of photo voice or studies that engage citizens to sketch their neighbourhood environment (Palència et al., 2020); (Chow et al., 2014);(Topmiller et al., 2015) also fall within the qualitative research category. However, the advantage of this method is that a researcher can capture lived experiences, the disadvantage is that the results are not easily generalizable.

The Systematic Social Observations/ Audits method (SSO) offers a good alternative of assessing the micro scale environment of the neighborhood (Sampson & Raudenbush, 1999b). This method it is an observer-based rating method by field auditors base on checklists (e.g. quality of housing, rubbish, gardens, fences, parks) and/or people activity and public behaviours (e.g. social exchange). The advantage of this method it is that is assessing the microscale environment, it is a truly contextual method and objective. The disadvantage is that is difficult to cover large areas and it is costly to scale up (however, other studies managed to use it virtually using geospatial tools(Curtis et al., 2013). In addition, there is a chance of observe bias if the auditors are not well trained to tap on to

the same scale when measuring features especially about the quality and/or appearance which it is something subjective in nature. Each tool needs to be tailor-made to the chosen community that would be assessed and appropriate inter-intra reliability and validation procedures need to be performed in order to have a standard tool for a specific area or region. The micro-scale environment is defined as features at the street rather than neighbourhood level, such as presence and width of sidewalks, obstructions and barriers for walkability, street lighting, trees, gardens, graffiti and other physical evidence of physical disorder etc) (Kim et al.,2014). A detailed description of such methodology/ audit tools will unfold in the next chapter.

Table 1, below, summarizes the advantages and disadvantages of several community assessment methods.

Table 1: Summary of the advantages and disadvantages of several community assessment methods

Method	Measure	Advantages	Disadvantages
Census- or other administrative-based indices	Socioeconomic deprivation or income inequality or other aspects of an area's social and economic environment, expressed as the sociodemographic composition of an area (i.e. characteristics of people that live there). They may include some ecological-level variables, such as proportion of vacant houses, or crime statistics, or election turnout.	• Data availability • National coverage • Standardization • Repeatability	• Not meaningful geographical scale (large areas, arbitrary boundaries etc.) • Time bound (e.g. decennial census) • Not truly contextual measures of community environment • Often poor proxies of true construct of interest or not most relevant in terms of causal processes
Aggregate indicators from specially-designed surveys or opportunistic use of survey data	Based on person-based perceptions of the feature under study aggregated to the community level. Most commonly features of psychosocial environment using single indicators (e.g. levels of trust, reciprocity) or composite indices (e.g. social cohesion, social control, and collective efficacy). Also, more general features, such as residents' assessment of physical disorder, sense safety, quality of services, etc.	• Perception of residents themselves about needs and problems of neighborhood • Characteristics of the psychosocial environment or other characteristics not easily captured by other methods • Opportunistic use of community surveys performed for other purposes at aggregate geographical level	• Not national coverage, aggregation to administrative areas with arbitrary relevance • Resource expensive to scale-up • Possible social desirability bias due to subjective nature • Possible differential expectations across socioeconomic disadvantage continuum • Common method variance when associating residents' perceptions with self-rated health outcomes
Truly "ecological" measures	Either based on routine sources e.g. % deserted houses, number of local organizations in an area, crime statistics, etc. or based on GIS and/or remote sensing for features of the built environment (e.g. land use), physical environment (e.g. air pollution) or service environment (e.g. availability of facilities).	• Truly contextual measures of community environment • Commonly nationwide or at least regional coverage • Objectivity, standardization, repeatability in measurement • Often, combining multiple features	• Dependent on data availability • Often restricted to physical and built environment domains • Do not capture microscale features or socio-relational aspects of the community, • Reflecting availability or accessibility, not necessarily actual utilization or differential quality of available resources

Qualitative and participatory methods	Interviews, focus groups and participatory methods (e.g. photo mapping and photovoice) with residents purposefully selected from areas of interest (e.g. deprived communities).	• Resident-centred: lived experience of residents with regards to health-related aspects of their physical, built or social environment • Residents' definition of "neighbourhood" • Participatory learning opportunities and community empowerment	• Commonly limited geographical coverage • Areas of special interest e.g. most deprived communities • Generalizability of findings • No quantitative indicators to explore associations with community health outcomes
Field audit measures	Observer-based ratings based on inventories and/or checklists either on foot or car ("windshield" surveys) and/or use of geospatial tools to record aspects and features of the microscale community environment (e.g. rubbish, gardens, fences) and/or public behaviours (e.g. social exchange).	• Free of residents' perceptions and potential differential expectations across socioeconomic disadvantage continuum • Standardization and "objectivity" in measurement • Wide range of features and aspects of the microscale neighborhood environment • Contextual quantitative indicators to explore associations with community health outcomes	• Limited geographical coverage • Observer bias and reliability of measurement • Resource intensive if "field audits" and/or technology dependent if virtual audits • Researcher-centred: Lack of generally accepted items capturing characteristics, aspects of features of the physical, built or social environment most relevant to residents

Ref: (Schaefer-McDaniel et al., 2010)

5 SYSTEMATIC SOCIAL OBSERVATION

Systematic Social Observations (SSO) is a way of assessing neighborhoods and communities as a key measurement strategy for a wide variety of social phenomena using observational methods. In neighborhoods studies, they commonly take the form of field audits, whereby researchers walk or drive (termed, windshield surveys) through an area of interest and record their observations on a standard form or inventory). The SSO terminology was first described by Alber J. Reiss, Jr. (1971) *as a measure independent of the perceptions of survey respondents and can tap into aspects of the social and physical environment that survey respondents have difficulty describing accurately* (Reiss (1971) as cited in Sampson and Raudenbush (1999)) (Sampson & Raudenbush, 1999)

One of the first studies that used SSO for community assessment was the Landmark study on the: Project on Human Development in Chicago Neighborhoods

Chicago neighborhood study (Sampson & Raudenbush, 1999a). In this study, more than 23,000 street segments in Chicago were assessed. They had used also police records, and an independent survey of more than 3,500 residents that tapped onto the collective efficacy of residents in achieving informal social control. In this study they also tried to reshape the observation of the urban communities by assessing the broader implication of it based on the systematic observation and video-based approaches (Sampson & Raudenbush, 1999b). This study was based on the “broken window” theory developed by Wilson and Kelling in 1982 who argued that even minor public disorder as the case of broken windows, or drinking in the street, or graffiti attracts crime because it shows that no one really cares in that specific neighborhood (Wilson et al., as cited in Sampson & Raudenbush, 1999b). The theory of broken windows has gain great interest in criminology and it has led public policy and police actions in various cities on the elimination of both physical and social disorder. This theory also led to the ideas that visual incivilities of the physical and built environment matter and it can be systematically observed with the method of SSO. In their analysis the authors define social disorder as a behavior involving strangers and considered threatening, such as verbal harassment on the street, open solicitation for prostitution, public intoxication, and rowdy groups of young males in public; the term physical disorder was defined as the deterioration of urban landscape, such as graffiti on building, abandoned cans, broken windows, and

garbage in the streets. All these together they are referred as “incivilities” by Albert Hunter in 1985 which he mentions that they are central to neighborhoods public presentation. Jane Jacob’s classic observation of urban life in the 1950’s evoked a concern with the threats of disorder to neighborhood civility (Sampson & Raudenbush, 1999b). It is described that the streets, parks, and sidewalks still belong to non-one and therefore to everyone. However, the concept of disorder it is a theoretical concept to such spaces, but it is something that cannot be ignored since it influences the minds of insiders and outsiders alike such as potential home buyers, real estate agents, insurance agents, and investors or it might influence people’s choice of moving.

The systematic social observation of disorder was a way for the researchers to observe public places but also to observe the sights, sound and how the neighborhood feels. Albert J. Reiss in 1971 referred to this methodology of observations as measurement strategy for natural social phenomena (Sampson & Raudenbush, 1999b). The term “systematic” is referred to the process by which observations and recording are done according to explicit rules that permit replication; the term “observation” refers to the fieldwork /researcher who needs to be independent to what he/she observes and the term “social” refers to “events and their consequences, including properties of organization, can be observed more or less as they occur” (Sampson & Raudenbush, 1999b). The methodological challenges and complexity of methods used for understanding place, community and neighborhood impact on humans’ health and behavior have been recognized and previously described. Despite neighborhood being an ecological construct, many studies tried to draw inferences from individual based indicators, therefore, integrated methodologies offer a holistic approach for exploring various features that they might impacting health with a direct or indirect way. In the study of Sampson and Raudenbush in 1999, the authors tried to redefine the term disorder, clearly specifying that it is not a matter of etiology but as some of the physical incivilities might not considered crimes but maybe soft crimes such as graffiti, smashed windows, drug vials in the streets etc. could be classified and quantified (Sampson & Raudenbush, 1999b).

Beyond or even as a construct of crime is also the social control that can be observed in a neighborhood. While studying crime and disorder there is a focus on poverty and lack of social resources, it is worth mentioning that neighborhoods from

lower socioeconomic status they also tend to show other economic deprivation features such as repairing of buildings, cleanliness and renovation of commercial areas since many of the apartments and commercial enterprises tend to be vacant therefore, there is no incentive for any improvement in the area. Residential stability as well as strong social network it is also important for the well-being of residents. The social stability and cohesion are not just important because humans are by nature social beings but stability in the neighborhood is linked to better maintenance and agency for improvement. This also goes in hand with the concept of “collective efficacy” that benefits the residents as well as the neighborhoods as a mediate mechanism of social control and structure that prevents public incivilities and disorder (Sampson & Raudenbush, 1999b).

Numerous SSO audit tools have been developed and assessed since the Chicago study (Schaefer-McDaniel et al., 2010). (Nickelson et al., 2013). Many auditing methods are broad in scope, evaluating all facets of a neighborhood's physical, constructed, and social environments, while others zero in on one particular component of interest, such the pedestrian setting (Clifton et al., 2007). Having a single, all-encompassing instrument is problematic, if not pointless, according to reviews by Schaefer-McDaniel et al. (Schaefer-McDaniel et al., 2010) and Nickelson et al. (Nickelson et al., 2013). Because of this, it would be challenging to compare study results appropriately both because different factors important to public health may be country-specific and certainly urban environments vary widely across regions in the world. While it may be impossible to standardise on a single neighbourhood audit tool, researchers can use the wide variety of existing tools to their advantage by determining which aspects and features are most important in various cultural contexts. This will allow for the development of "tailor made" audit tools that more accurately reflect the physical, built, and social environment in each country. Together with more conventional methods, such as census-based data, quantitative surveys, and qualitative studies, these tools may prove useful in providing a more complete and holistic profile of a neighbourhood, allowing for a more precise evaluation of the characteristics of that area and their possible impact on community health.

Specifically, the literature review by Shaefer-MacDaniel et al., in 2010 aimed to examine the methodological details of neighborhood observations focusing on the lack of a review of all the tools that have been developed so far using systematic social

observations. The review examined 51 English language studies published from 1990 onward focusing on their 1) methodological rigor (how data were collected and how they were analysed, 2) geographical boundaries (i.e. how neighborhoods were spatially defined) 3) the relationship between neighborhood observations and residents' health (i.e. how studies examined and analyzed any possible link between health and observed neighborhood characteristics). This review concluded that there was a wide heterogeneity of the studies in how observations and contacted and analysed and therefore it was impossible to compare studies. The implications and suggestions of the researchers on this review were that researchers should aim to develop their own tools and modifying the method and building upon the literature in order to meet their own needs since the methodologies were difficult to be standardized. The authors also suggested to future researchers to provide more details about the methodological and analytical details used of their observations and explain how any why they decided to do what they did. Lastly, they explained how difficult it is to provide one definition for the term "neighborhood" since each country, city and/or community has its own definition and usually it depends from the availability of contextual data rather than study purpose. Therefore, the author suggested that interdisciplinary dialogue about the concepts and methods used examining "neighborhoods" (Schaefer-McDaniel et al., 2010).

Later on, the systematic literature review by Nickelson et al., in 2013 aimed to create an inventory about the neighborhood environment audit tools of the domains and subdomains assessed. A total of 31 article have been included in this review and they have identified 20 domains and 291 subdomains. Audit instruments most commonly assessed Streets/Traffic, Safety, Land Uses, and Physical Disorder domains. Least commonly assessed domains were Barriers, Neighborhood Identification/Legibility, Steepness, Views/Enclosure, and Ethnic Identification (Nickelson et al., 2013). The domains identified varied from 1 to 36 subdomains and the authors suggested that this review would help future researcher to customize their neighborhood assessment audit tools by choosing the characteristics/items that might be most relevant with their neighborhood environment (Nickelson et al., 2013).

In the effort of developing an urban neighborhood observational tool for the Cypriot neighborhoods the researchers of this study have search the international literature (the search strategy is described in the chapter 6 of this thesis) to identify

additional tools (post-dated the two systematic reviews identified) that exist and explore if specific items or neighborhood characteristics assessed elsewhere, might be relevant for the Cypriot neighborhood environment and therefore they had to be included in the Cyprus Neighborhood Observational Tool for community (CyNOTes). The scoping review of all the studies found is described below.

6 SCOPING REVIEW

6.1 Methodology of Scoping Review

The aim of this scoping review was to map audit tools used in research in the period 2010-2021 that are featuring evaluation of neighborhood environment in terms of their built, physical and/or social characteristics. The research reporting on such tools can be (a) part of a pilot, feasibility and/or validation study with the aim to assess the metric properties of the audit tool and/or (b) part of a wider community-based study to investigate associations with perceptions of residents about the neighborhood environment and/or specific health outcomes, health behaviours or other health-related outcomes.

6.2 Objectives

- 1) To identify studies, published post-2010, which developed and empirically tested an observation audit tool for aspects and features of neighborhood environment, irrespective of the main focus of the study and/or audit tool (e.g. in terms of the features and/or domains of the neighborhood built, physical or social environment evaluated).
- 2) To identify neighborhood audit tools developed post-2010 until 2021 and compile a supplementary inventory of these tools, which will be used to develop new or modified/adapted versions applicable for neighborhood environment screening in various settings, either be newly developed for the purposes of the study or modified versions (e.g. new setting) or adapted versions (e.g. virtual assessments using geospatial tools such as Google Street view) of previously developed tools.
- 3) To describe the methodology used in the development of these tools and the range of methods with respect to
 - a) the selection of domains, set of items, response scale (e.g. theory-based, based on previous tools, focus groups with expert panels or residents),
 - b) the process of data collection (e.g. definition of neighborhood, number of auditors, audit time),
 - c) the validation process and the assessment of their metric properties (e.g. face and content validity, inter and intra-rated agreement, high-order

dimensions and construct validity, concurrent and predictive criterion validity etc)

6.3 Search strategy

The literature search strategy was developed and applied in the electronic database Scopus; there were searched publications published from 2010 until 2021. The search was performed with customized search algorithms consisting of specific key words related to either in the title or abstract, a) the method, b) the geography, c) output.

Specifically, a three-level strategy was used with the following keywords

Keyword used:

(audit* OR scan OR "direct observation*" OR "social observation*" OR "systematic observation*" OR "systematic social observation*" OR sso)

AND

(neighborhood OR neighborhood OR environment* OR "built environment" OR "neighb* environment" OR "community environment" OR "urban environment" OR "community"))

AND

(tool OR instrument OR checklist OR scale OR inventory))

Applying the following restrictions (limits):

(LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015) OR LIMIT-TO (PUBYEAR , 2014) OR LIMIT-TO (PUBYEAR , 2013) OR LIMIT-TO (PUBYEAR , 2012) OR LIMIT-TO (PUBYEAR , 2011) OR LIMIT-TO (PUBYEAR , 2010))

AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "ip"))

The SCOPUS search returned 3394 hits. After reviewing titles and abstracts, 166 relevant potential titles and abstracts were selected for further review.

6.4 Study selection and Eligibility Criteria

Two independent reviewers applied selection criteria by consensus for selecting the studies that would be included for full text evaluation by setting specific inclusion and exclusion criteria. The inclusion and exclusion criteria of the studies are described below.

6.4.1 Inclusion Criteria

- Studies whose main aim was to either develop, or modify, or culturally adapt an audit tool for the physical, built and/or social community/neighborhood environment.
- Studies included irrespective of whether the audit tool which is generic (several domains) or domain-specific (e.g. pedestrian environment), population-group specific (e.g. elderly) and/or health outcome specific (e.g. physical activity) and referring to the community environment i.e. the unit of assessment is the neighborhood, community and/or streetscape environment (no other specific setting such as audit of parks, schools, food stores, walking trails, etc).
- Studies which describe the development process will be included.
- Studies, where the main aim was to explore the association between an aspect of the neighborhood environment and a health outcome will be, are included only if the development phase/validation of the tool is explicitly described in the article.

6.4.2 Exclusion criteria

- Studies which audited specific settings other than community/ neighbourhood environment (such as audit of parks, schools, food stores, walking trails, etc).
- Studies used an established tool, in the context of a wider community-based study to collect data for the “ exposure” of interest” but the development phase/validation of the tool is not explicitly described in the article.
- If any of these studies developed a new tool or significantly modified/adapted an existing tool (in a new setting) but the development/validation is described elsewhere, then, these were including the article that describes the development, if fulfills the other criteria including the year of publication (post 2010). However, if any of these studies developed a new tool or adapted a tool, AND the

development is described in this article BUT adequate detail about the development process is not provided, then did not include.

6.5 General findings from scoping review

As previously mentioned and as it was suggested by the authors of the reviews described above, the researchers tried to develop a “tailor made” audit tool for the Cypriot environment and they searched the academic literature for all the existing tools that have been developed using the SSO method. Some of those tools were generic for example, they were aiming to assess the physical, social and built environment features therefore, the items included were tapping onto observable characteristics related to the physical, social and built environment. Others were more feature specific either they tried to assess specific characteristics that would be related to a specific health outcome or behavior such as the pedestrian environment to assess walkability and hence physical activity levels or they were referred to a specific age group such as youth, girls, seniors etc. Other studies tried to digitalize the tool using the assessment through a virtual technology or using other technological tools such as using the tool but instead of being in the field, the audit was performed through the use of Google Street View and GIS technology. Some other studies tried to find association with specific outcome or health behavior, and some other studies performed reliability and validity testing. Lastly, few tools have been developed for the rural environment.

The main scope of the systematic review it was 1) to identify various domains and items/features that might be suitable for the development of the Cypriot tool 2) to identify and understand various methodological aspects (such as data analysis, scoring, reliability and validity procedures) of the studies that could help to identify gaps in the literature and see the possibility of filling some of those gaps with the current study. All the 46 studies/tools identified are described below in more detail according to a) Name of the observational (audit) tools (section 6.4.1) b) Country of origin (section 6.4.2) c) Generic audit tools (section 6.4.3) d) Research context (section 6.4.4) e) Domain and/or population-group specific (section 6.4.5) f) Specific neighborhood environment (section 6.4.6) and other methodological details (section 6.5) such as a) Sample size (section 6.5.1) and selection of streets, blocks and neighborhoods, b) Number of observers/raters rating time and data collection (section 6.5.2) c) type of data and details on method of scoring

(section 6.5.3) d) Reliability testing (section 6.6) , e) Validity testing (section 6.7). A tabular presentation of the identified studies appear in the Appendices, Specifically [APPENDIX III](#) summarises the research context of studies, [APPENDIX IV](#) summarises the data collection methods , [APPENDIX V](#) summarises the Reliability and Validity details.

6.5.1 Name of the observational (audit) tools

Many studies were named after the name of the tool developed or tested in that particular study. They had interesting names usually, including the particular geographical region evaluated or the purpose that the tool has been developed, followed by a specific acronym that could help summarise the full name of the tool. For example:

- The African American Neighborhood Assessment Scale (AAH) and Krause five-time scale (Andresen et al., 2013);
- Wisconsin Assessment of the Social and Built Environment (WASABE) (Malecki et al., 2014) ;(Bailey et al., 2014);
- Computer Assisted Neighborhood Visual Assessment System (CANVAS) (Bader et al., 2015);
- Active Neighborhood Checklist (Wilson et al., 2012);
- Tally of Observations in Urban Regions (Kepper et al., 2017);
- Community Audit of Social, Civil, and Activity Domains in Diverse Environments (CASCADDE) (Knapp et al., 2016);
- Neighborhood Observation Checklist (NOC) ;
- Montréal Neighbourhood Assessment Tool (MoNAT) (Paquet et al., in 2010); (Parson et al., 2011);
- Residential Environment Assessment Tool (REAT 2.0) (Poortinga et al., 2017) and the Neighborhood Inventory for Environmental Typology (NifETy) (Milam et al., 2016).
- Environmental Profile of a Community's health (EPOCH) (Chow et al., 2010);
- The Collaborative Research on Ageing in Europe Built Environment Outdoor Checklist (COURAGE) (Quintas et al., 2014);
- Sustainable Prevention of Obesity Through Integrated Strategies (SPOTLIGHT) (Bethlehem et al., 2014);

- China Urban Built Environment Scan Too (CUBEST) (Su et al., 2014a).

6.5.2 Country of origin of the SSO tools identified

SSO neighbourhood tools originated from all over the world. Nevertheless, the majority of the tools identified were from various regions of the United States America (USA). Specifically about 24 studies have been developed for specific regions of the USA (Andresen et al., 2013); (Boarnet et al., 2011); (Sallis et al., 2015); (Odgers et al., 2012); (W. C. Taylor et al., 2012); (Topmiller et al., 2015); (Kemner et al., 2015); Madison (Malecki et al., 2014), Portland Oregon –Lents (Adkins et al., 2012), Washington D.C (Adu-Brimpong et al., 2017), US metropolitan and city centre areas (Bader et al., 2015), Wisconsin (Bailey et al., 2014) Boston - Massachusetts (Ben-Joseph et al., 2013), Baltimore (Milam et al., 2016), Portland Oregon (Wilkerson et al., 2012), St.Louis Indianapolis (Wilson et al., 2012), New York City (Rundle et al., 2011); (Fisher et al., 2010) , Southeast Louisiana (Kepper et al., 2017), Pennsylvania (Knapp et al., 2016), Arizona (Lee & Talen, 2014), Dallas-Texas (Leonard et al., 2011), Northern California (Leung et al., 2010), Deep South (Robinson et al., 2014).

A number of other studies were from Canada. Specifically, these were 5 (Chaudhury et al., 2011); (Gasevic et al., 2011), Montreal (Paquet et al., in 2010); (Shareck et al., 2012) and Toronto (Parson et al., 2011) Ottawa (Lafontaine et al., 2017).

Few studies were from China (Su et al., 2014) and specifically Shanghai (Alfonzo et al., 2014) . One study was from ASIA-Hong Kong (Cerin et al., 2011) and another study from New Zealand (Badland et al., 2010).

Moreover, some other studies identified in Europe. Specifically, about 8 studies were from European regions. For example, from the UK there were 3 studies, Wigan (Griew et al., 2013), Cambridgeshire (Wu et al., 2014) Carmarthenshire ,Wales, Cardiff (Poortinga et al., 2017). One study was identified to be for neighborhoods in the Netherlands (Bethlehem et al., 2014). Two other studies were from Spain- Valencia (Marco et al., 2017); Madrid (Gullon et al., 2015).

Another study referred to a tool developed for three European countries Finland, Poland and Spain (Quintas et al., 2014).

Similarly, two studies described an SSO relevant for 5 different countries such as Canada Colombia Brazil China India (Chow et al., 2010); (Chow et al., 2014) and Belgium, France, Hungary, the Netherlands and the UK (Feuillet et al., 2016).

6.5.3 Generic multi-dimensional tools of the neighbourhood environment

Several studies identified were referred to generic tools, i.e. tools that are multi-dimensional, covering more than one dimension of the neighborhood environment. Specifically, about thirteen studies were describing the development or the use of a SSO aimed to assess general characteristics of the neighborhood environment such as the physical, social and built environment (Andresen et al., 2013); (Malecki et al., 2014), (Bader et al., 2015); (Bailey et al., 2014); (Wilson et al., 2012); (Rundle et al., 2011);(Kepper et al., 2017); (Knapp et al., 2016); (Leonard et al., 2011); (Paquet et al., 2010); (Parson et al., 2011); (Lafontaine et al., 2017); (Poortinga et al., 2017). Another tool identified could be characterized as generic however, it was focused on assessing circumstances in a neighborhood at Nighttime (Milam et al., 2016). These are along with the domain based on Nickelson's taxonomy they tap on.

6.5.3.1 Research Context and main focus of the studies

Generic tools are usually tapping on features of the general neighborhood environment. The main focus of the studies identified was mainly the description of the development of the tool, the inter and intra-rated reliability agreement and the validity procedures followed if any. For example, they study by Malecki et al. (2014) created the Wisconsin Assessment of the Social and Built Environment (WASABE), an objective audit tool meant to supplement a statewide household-based health examination survey and provide participants with objective measurements of their communities. This study contains reliability and validity procedures used to develop the WASABE, and it provides details the about the tool's creation and implementation. Core concepts were drawn from previous active living surveys, such as the Systematic Pedestrian and Cycling Environmental Scan, the Walking Suitability Assessment Form, the Analytic Audit Tool, the St. Louis Active Neighborhood Checklist, Irvine-Minnesota Inventory, and the Pedestrian Environment Scan (Malecki et al., 2014).

Similarly, the study by Bailey et al., 2014 used the WASABE tool to observe association between perceived and objective measures of citizens perceptions about their

neighborhood environment using a self-administered questionnaire to assess the construct and concurrent validity of the tool (Bailey et al., 2014); Several, other studies tried to audit the neighbourhood environment remotely by using google street view or virtually. For example, the study by Bader et al., 2015 describes the development and features of the CANVAS software and reports the results of a virtual field test that measured walkability and physical disorder on a nationwide sample of street segments. It is a web-based software application, using a combination of Google Forms, a simple computer gateway interface (CGI), and the Google Maps application programming interface. (Bader et al., 2015); Similarly, the study of Wilson et al., 2012 assessed reliability with three types of methods (field, imagery and virtual) to evaluate the degree of agreement between field audits and audits derived from interpretation of three types of omnidirectional imagery, also to observe the temporal-seasonal effects or changes in built environment between audit dates (Wilson et al., 2012).

Another study compared neighborhood measurements coded in 2008 using Street View with neighborhood audit data collected in 2007. The purpose was to measure concordance between field audit and Street View data. The tool was adopted from previous audit tools (Rundle et al., 2011); Similarly, the study by Kepper et al., 2017 presents the face validity of a parcel-level audit tool (expert panel) and is assessing the inter/intra-rater agreement of two sources (field vs virtual) and two levels of spatial resolution (street vs parcel). This study is drawing attention on the importance of geographical resolution and related implications as well as the ‘definition’ of neighborhood (Kepper et al., 2017); A similar study was the study by Leonard et al., 2011 that developed a systematic neighborhood observation instrument for collecting data at very high spatial resolution. They collected data on the health status of individuals residing in this neighborhood and compared the costs and benefits of using data at this high spatial resolution (Leonard et al., 2011);

Furthermore, some other studies tried to find correlations with other contextual environmental characteristics. For example, the study by Paquet et al., in 2010 assessed the metric properties of an instrument to observe the structural and contextual environmental characteristics of urban neighborhoods with respect to urban form, negative attributes and positive attributes. The tool name was the Montréal Neighbourhood Assessment Tool (MoNAT) and it was based on the results of an

extensive literature review about neighbourhoods and health, and it was developed formulated through an iterative process with urban experts, research team members, and field testers. (Paquet et al., in 2010); Another study tried to validate the REAT 2.0 audit instrument, particularly in relation to the aspects of neighborhood conditions, natural surveillance, and natural elements, as well as to explore the associations of overall neighborhood quality with residents' attachment to their neighborhood (Poortinga et al., 2017). Lastly, another study tried to investigate and establish the metric properties of a Neighborhood Inventory for Environmental Typology (NifETy) instrument for nighttime ratings by using reliability and test re-test correlation to measure internal consistency and validity with daytime measures. This was part of a larger study assessing neighborhood physical and social disorder (Milam et al., 2016).

Therefore, the research context and main focus of the studies as well as the theoretical and conceptual basis of such tools varies and each one of this is developed for a different scope and measuring different outcome. This is the challenge that researchers have to face as there is a need to develop and/or adopt an SSO tool to their needs since there is not a standardized tool but at the same time the specificity of such tools gives the opportunity to each country/city to explore different methodological approaches for reliability and validation procedures. This can lead to exploration of innovative methodologies either for adopting the tools with a specific technology that would assist the audits and assessment therefore, improve the logistics. Or even innovative methodologies that would enhance citizen's participation on the assessment of their neighborhood environment reflecting on their needs and enhance citizen's collective efficacy towards improving and maintaining their neighbourhood environment.

6.5.3.2 Domain and/or population-group specific, with sub-sections on each domain

Each tool also assessed several different domains and items based on the purpose of the study or even the cultural specificity of the region was assessing. Domains were varying from 5-10 and, under each domain, there were several items in subdomains i.e. features that the auditors could tap onto in order to capture the specific characteristics of interest in the neighborhood environment. Items in the tools could be up to 150. The domains for each study generally fall into 8 categories. Such categories are a) general land use, b) characteristics of general environment, streets & sidewalks c) commercial establishments, services, and institutions d) residential land use e) non-residential land

use f) parks, playgrounds, outdoor public spaces g) people (residents' activity and behaviours) h) incivilities (physical disorder). These categories are classified in more detailed by Nickelson et al., 2013 typology [APPENDIX II](#). Each study might name items/ neighbourhood features in a different way. Some studies name them “factors”, or “items”, or other “dimensions” etc. Therefore, for the purpose of this study we adopted the word ‘items’ and the researchers scanned through the studies to identify the different items assessed. Items, in general, refer to the smaller dimension of the neighborhood micro-environment and they belong to broader category referred to as ‘domains. For example, as it can be seen on the table which breaks down domains derived from generic studies compared to the studies tapping onto the specific ones shows the variability that exists. Generic studies tend to tap onto a larger number of domains compared to the specific ones. The generic items can be seen on table 2 and table 3 shows studies with specific items.

6.5.4 Specific Neighborhood Environment i.e. specific-dimension, covering one dimension of the neighbourhood environment

The main theoretical as well as conceptual framework of those studies is that an SSO tool was developed in order to assess a specific health outcome of the neighborhood environment or attributed due to the specific lack or presence of specific characteristics. Such studies as previously mentioned were studies assessing the obesogenicity, or food environment, or safety. Some may even be population-group specific e.g. elderly, youth and child friendly neighborhoods. For example, walking and obesogenic environment (Boarnet et al., 2011) tapping onto features related to walking and cycling paths or food environment; similarly other studies were assessing features/items related to physical activity (Sallis et al., 2015); (W. C. Taylor et al., 2012); (Topmiller et al., 2015); (Su et al., 2014); (Griew et al., 2013); (Adkins et al., 2012); (Adu-Brimpong et al., 2017), (Ben-Joseph et al., 2013); (Lee & Talen, 2014), or the walkability and Obesogenic environment (Gasevic et al., 2011); (Alfonzo et al., 2014); (Cerin et al., 2011) specific Pedestrian and cycling environment (Badland et al., 2010). Another study referred to items about walkability features for older adults (Chaudhury et al., 2011); or specific environmental determinants for cardiovascular health (Chow et al., 2010); or another study referred to items related to Children -Healthy Eating and Physical Activity (Kemner et al., 2015); or children's friendly neighborhoods (Odgers et al., 2012); or energy intake of young girls

(Leung et al., 2010). Other tools seem to be health outcome specific such as studies focusing on mental health (Wu et al., 2014) or neighborliness (Wilkerson et al., 2012) or aimed to assess inequalities in smoking (Shareck et al., 2012) or disabilities (Quintas et al., 2014). Table 2 shows the various domains that each study taps onto. Even though some studies are domain specific they might contain times that tap on several domains based on Nickelson's taxonomy.

Table 2 Studies with Generic (non-domain specific) audit tools

No.	Reference	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		Amenities for outdoor public	Architecture/Building characteristics	Barriers	Cycling environment	Ethnic identification	Land use	Landscaping/nature features	Maintenance/appearance	Neighborhood identification	Parking & driveways	Pedestrian environment	Physical disorder	Recreational uses/public spaces	Safety	Sidewalks	Signs/messages	Smell/ pollution/noise	Steepness	Streets/ traffic	Views/Enclosure	Social disorder (& social behaviours)
1	Andresen et al., 2013		x				x		x			x	x	x		x	x	x		x		
2	Malecki et al., 2014	x			x				x			x				x				x		x
3	Bader et al., 2015	x	x	x	x		x	x				x	x			x	x	x		x	x	
4	Bailey et al., 2014	x			x				x			x				x				x		x
5	Wilson et al., 2012		x	x	x		x				x	x	x			x			x	x		
6	Rundle et al., 2011	x			x						x	x	x			x	x					x
7	Kepper et al., 2017				x		x						x		x		x			x		
8	Knapp et al., 2016	x	x	x					x		x	x		x	x	x						x
9	Leonard et al., 2011	x					x	x	x				x		x	x		x		x		x
10	Paquet el al., in 2010	x	x					x			x	x	x		x			x		x		x
11	Parson et al., 2011	x	x		x		x	x	x		x		x	x	x		x	x		x		x
12	Lafontaine et al., 2017	x	x					x	x			x										

Table 3 Studies with domain-specific audit tools.

Study	Domain-specific audit tool	Findings
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		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
No.	Reference	Amenities for outdoor public spaces	Architecture/Building characteristics	Barriers	Cycling environment	Ethnic identification	Land use	Landscaping/nature features	Maintenance/appearance	Neighbourhood identification	Parking & driveways	Pedestrian environment	Physical disorder	Recreational uses/public spaces	Safety	Sidewalks	Signs/messages	Smell/ pollution/ noise	Steepness	Streets/ traffic	Views/Enclosure	Social disorder (& social behaviours)
Studies with domain specific audit tools																						
1	Boarnet et al., 2011	x	x	x	x		x	x		x	x	x				x	x	x	x	x	x	x
2	Sallis et al., 2015	x	x					x				x	x	x		x						
3	W. C. Taylor et al., 2012	x	x		x		x					x	x			x				x		x
4	Topmiller et al., 2015				x		x				x	x				x	x					
5	Adkins et al., 2012			x			x		x		x	x								x		
6	Adu-Brimpong et al., 2017	x					x									x				x		
7	Ben-Joseph et al., 2013	x		x	x		x	x			x	x	x	x		x	x			x		x
8	Lee & Talen, 2014		x	x			x	x	x		x	x			x	x				x		
9	Chaudhury et al., 2011	x							x							x						

10	Su et al., 2014	x	x	x	x					x	x	x	x		x			x	x
11	Griew et al., 2013	x			x	x		x	x		x	x	x		x	x	x		x
12	Chow et al., 2010	x					x						x				x		x
13	Chow et al., 2014	x	x			x		x	x	x	x				x	x	x	x	x
14	Kemner et al., 2015	x				x						x							
15	Odgers et al., 2012					x			x		x	x		x	x	x			x
16	Fisher et al., 2010	x	x			x			x		x			x	x	x			x
17	Leung et al., 2010	x				x		x				x	x						x
18	Gasevic et al., 2011	x				x				x		x						x	x
19	Alfonzo et al., 2014	x				x		x			x		x	x					x
20	Cerin et al., 2011	x	x	x					x		x	x		x					x
21	Badland et al., 2010					x		x	x	x		x	x	x	x	x	x	x	x
22	Wu et al., 2014							x	x		x			x		x			

23	Bethlehem et al., 2014	x	x		x		x		x		x		x					x	
24	Marco et al., 2017		x					x			x								
25	Gullon et al., 2015	x			x		x	x	x		x			x	x			x	x
26	Feuillet et al., 2016		x	x	x		x				x	x						x	
27	Quintas et al., 2014				x		x	x		x	x	x		x	x		x		x
28	Wilkerson et al., 2012		x							x	x		x	x				x	
29	Shareck et al., 2012		x	x			x	x		x	x	x				x	x	x	x

6.6 Methodological Details

6.6.1 Sample size and selection of streets, blocks, neighborhoods

The definition of a neighborhood is also something that varies between studies and between different geographical settings. For example, some studies were referred to blocks but others to segments etc. Indeed, the definition of a neighborhood is not an easy answer as also stated by Barton et al., 2021 in their recent book of “Shaping Neighborhoods for local health and global sustainability” (Barton et al., 2021). Each study had a different purpose therefore, the choice of neighborhood varied. It could be defined either administratively, aesthetically, socially, or in terms of functionality (Barton et al., 2021).

The sample size and the selection of streets, blocks, and neighborhoods varies for each study identified as well. The important thing to note while selecting the studies is that an explanation was provided by each study, depending on the conceptual framework of each study or even if this was able to represent a statistically appropriate sample. Most of the studies tried to audit a sample of neighborhoods along the continuum of socioeconomic status, to be able to observe any differences and inequities in the urban city environment that might exists. For example, some studies selected a random sample of neighborhoods (Andresen et al., 2013);(Bader et al., 2015) ;(Cerin et al., 2011b) ;(Griew et al., 2013);(Milam et al., 2016a);(Wilkerson et al., 2012a);(Paquet et al., 2010). Such as 446 randomly selected neighborhood blocks across 242 residential Neighborhood Statistical Areas (Milam et al., 2016), or 8 neighborhoods in Portland, Oregon randomly sampled street segments within each neighborhood (Wilkerson et al., 2012). In another study by Andresen et al., 2013 483 blocks were rated, with 120 randomly-selected blocks (Andresen et al., 2013). Furthermore, some other studies tried to capture a representative sample of different socioeconomic status neighborhoods (Kepper et al., 2017); (Marco et al., 2017); (Feuillet et al., 2016); (Leonard et al., 2011); (Shareck et al., 2012). For example, the study by Kepper et al., 2017 selected a street segment sample (n=42) that reflected mixed poverty level and land use and allowed the reliability procedures of the tool to be determined across different socioeconomic status neighborhoods, such us, six street segments per poverty threshold (high, middle, low poverty). Another study, by Marco et al., 2017 chose all census block groups (n=92)

or the study by Leonard et al., 2011, were 32 block groups were selected which they were falling into seven census tracts and 1778 face block observations were completed. In addition, the study by Sharek et al., 2012, choose 4 Montreal neighborhoods operationalized as census tracts, administrative units often used as surrogates for neighborhoods in health research. Lastly, a study chooses neighborhoods based on convenience sampling. This study was the study by Chow et al., 2010 were a convenience sample of 86 urban and rural communities from 5 countries were chosen (Chow et al., 2010). Therefore, each study chooses neighborhoods based on their methodological needs as well as outcomes that they were researching for.

Other studies, gave a description and justification of their neighborhood selection based on the outcomes they wanted to observe, such as the cycling paths and pedestrian environment that might have a specific destination. For example, a 147 street segments (block faces) 891 street segments observers examined a total of 891 street segments. Eligible segments included street segments that were accessible to pedestrians and that fell within the study area of 1.0×1.0 miles (1,609×1,609 m) (Boarnet et al., 2011); or a Subsample of 120 neighborhoods (Odgers et al., 2012); or 30 block groups (W. C. Taylor et al., 2012); or five neighborhoods that adjoin an urban trail system (Topmiller et al., 2015); Another study audited 31 communities, 41 environmental audits, 17 direct observations (Kemner et al., 2015); In addition, another study described their sample as a 400 meter non-Euclidean street network buffer around each selected household. Equivalent to 5-10 minutes' walk. The resulting street network polygon includes a representation of the routes pedestrians and cyclists normally rely on for travel around each house-hold. Within polygons, units of analyses were defined as street segments and intersections. The distance between two intersections, or from one intersection to the edge of the polygon boundary, was termed a segment. Therefore, researchers tried to capture what one might say a radius of specific communities (Malecki et al., 2014). Another study took a sample of neighborhoods from 4 sub-areas ,2 of which included concentrations of green features and two adjacent control areas matched for socio-demographic and physical characteristics 321 scored segments to analyze (Adkins et al., 2012).

6.6.2 Number of observers/ raters, rating time and data collection

The number of observers varied from one or two observers most commonly up to 5 observers depending on number of neighborhoods the study had to audit (Andresen et al., 2013); (Bailey et al., 2014);(Bethlehem et al., 2014);(Ben-Joseph et al., 2013); (Chaudhury et al., 2011b); (Poortinga et al., 2017); (Su et al., 2014b); (B. T. Taylor et al., 2011). For example, the study by Andresen et al., was performed by two auditors, the study by Bethlehem et al., by two blinded researchers, the Ben-Joseph study used 4 auditors. Most often, the auditors were either researchers of an academic institution or fieldworkers trained to do the audit. For example, the study by Chaudhury et al., 2011 used four research assistants-two per region, for 4 audits in Portland which they were observed in 8-hour shifts over a 7-week period and then audits in another city in Vancouver were observed in 2-6 hours shifts (average shift length was 4 hours) over a 10-week period. Each segment needed 7.4 minutes to be audited. Another study by Su et al., 2014 2 auditors independently assessed all of the 205 street segments at the same time. Lastly, the study by Taylor et al., 2011, was performed by pairs of auditors for safety reasons. The rating time varied also from 5 to 45 minutes per segment again, depending of the length of their segments, neighborhood radius as well as number of variables their audit tool included.

In addition, some studies were auditing the neighborhoods by walking each neighborhood (Kemner et al., 2015); (Wilkerson et al., 2012); (Paquet et al., 2010); (Chow et al., 2010); and some other studies were using google street view for a virtual audit of the neighborhood (Wilson et al., 2012) ;(Odgers et al., 2012); (Marco et al., 2017); (Griew et al., 2013);(Ben-Joseph et al., 2013); (Bader et al., 2015). Few studies, performed the audits while driving (Milam et al., 2016); (Fisher et al., 2010); (Leonard et al., 2011). An interesting approach was also the case of a study that used mixed methods by doing environmental audits and digital photography group level assessments (GLA), in this study they produced 15 paper maps (from sketch mapping exercise) and then integrated those data into GIS maps (Topmiller et al., 2015).

6.6.3 Type of data and details on method of scoring (overall score, score per domain)

As with all the other methodological procedures the method of scoring (overall score, score per domain) and data analysis varies between studies. In general, the majority of studies look at each distinct item of their tools while some create composite scored by domain. The composite scoring was created by combining different categories of items and creating an average score across each neighborhood. For example, the study by Malecki et al., 2014, described that the majority of items on the tool used were dichotomous indicating yes/no or presence/absence of features. The tool used counts items, measures frequencies or quantities and is also capturing features related to destinations and quality (Malecki et al., 2014). The composite scores specifically they were created defining a high scoring community the ones with a score in the top tertile of scores and low scoring community if they were in the bottom tertile of scores created a means of summarizing items into simple scores of 5 domains. For each domain, points were allocated to the main characteristics contributing to components of the domain and the total points summed within domains described the community as high scoring if they had a score in the top tertile of scores and a low scoring community if they were in the bottom tertile of scores. The scores were calculated by summing items in each domain, giving roughly equal weighting to each feature. Another example, was by the study of Wilkerson et al., 2012 in which the final score was create by summing the unweighted scores from the six questions, yielding a total of six possible points with more points indicating a greater degree of neighborliness. For analysis those with a neighborliness score less than 3 were grouped into one category because of the low frequency of responses in these categories, resulting in a five-category outcome with a higher score indicating more neighborliness. In addition, the study by Quintas et al., 2014, scale ranged from 1 (indicating a negative aspect) to 5 (corresponding to a positive feature). Hence, higher scores represented positive environments and lower scores negative environments. Global scores were computed both section by section and in the overall checklist, rescaling the resulting scores from 0 to 100, where 0 -indicates a worse environment, whereas 100 is the best one. In general, most of the studies were creating scores per domain and/or per neighborhood.

Another study described in detailed the scoring system used. Similarly, they were assigning 0 point to neighborhood feature (s) with little to no positive effect on Physical activity engagement

which this is what this kind of tool was aiming to measure. Then 1 or 2 points conferred positive effect and presence on either one side (1 point) or both sides (2 points) of the street segment. Then for each street segment they scored the five sections/domains assessed from the tool and consolidated the scores to compute the total street segment score. The audit total (overall neighborhood) score is the sum of scores from the 12 street segments audited per address (Adu-Brimpong et al., 2017).

6.7 Reliability testing

Most of the studies identified applied reliability procedures to test their tools. Specifically, inter-rater reliability (between two different observers) (Cerin et al., 2011) ;(Chaudhury et al., 2011); (Chow et al., 2010); (Chow et al., 2014) ; (Sallis et al., 2015) ;(Shareck et al., 2012); (Kemner et al., 2015); (Milam et al., 2016); (Wu et al., 2014); (Poortinga et al., 2017); (Parson et al., 2011) (Odgers et al., 2012); (Su et al., 2014) rather than intra rating reliability procedures (between the same observer) (Griew et al., 2013), (Bethlehem et al., 2014) ;(Paquet el al., in 2010); (Gullon et al., 2015) was more frequently applied, and some studies used multi reliability procedures. For example, the study by Poortinga et al., 2017 used a pair of independent assessment of the unit postcodes of the revised audit instrument used. Furthermore, in the study by Chaudhury et al., 2011 the inter-rater reliability was assessed by comparing the audits of paired observers for one-quarter of the total number of segments observed in the two cities they audited the neighborhoods. In one city the results indicate that at least two-thirds of items within each domain were highly reliable across the two observers with the lowest percentage agreement found for aesthetic items (Chaudhury et al., 2011b).

An example of a study that used both intra and inter-rater agreement was the study by Kepper et al., 2017 were the study assessed the inter/intra-rater agreement of two sources (field vs virtual) and two levels of spatial resolution (street vs parcel). This study can be also referred as a multi-reliability procedure as was compared with four SSO methods: 1) street-level in person; 2) street-level virtual; 4) parcel-level in person; and 4) parcel-level virtual. So, the intra-level reliability (observed agreement and kappa coefficient) was calculated to identify if parcel-level methods produce results comparable to traditional street-level observation (Kepper et al., 2017). Similarly, another study by Griew et al., 2013 tested the inter-rater and intra-rater reliability of a newly

developed street audit tool designed specifically for use with Google Street View and tested also the reliability of this desk-based measure when compared with on-foot street audits across a range of land-use types within the UK (Griew et al., 2013). On a different note, the study by Paquet et al., 2010 assessed inter and intra rater reliability. Specifically, for each street section, one dwelling unit was randomly selected by evaluators who then separated and independently completed the rating tool, walking the length of both sides of the street section, starting on opposite sides and from opposite ends. The results of this study showed an excellent inter-rater reliability for urban form items, with the majority of items having kappa scores above 0.80, similarly, the intra-rater reliability was excellent overall for items pertaining to urban form (Paquet et al., 2010).

6.8 Validity testing

Although, inter and intra rater agreement procedures were widely used throughout the studies identified, validity procedures were also applied, even if not described as such. However, it appears that there was a major heterogeneity between the studies in terms of defining the validity procedure. Therefore, the researchers had to explore the studies and create a standardised procedure for defining the type of validity each study followed. As it was concluded from the review of the studies, many studies adopted some kind of validity procedures however, there was a scarcity of studies which adopted multi-validity procedures. Some examples, as well as the definition of the standardised procedure for identifying the type of validity adopted are described below.

6.8.1 Face validity

The definition adopted for face validity procedures was the *extent to which a measuring instrument looks as though it is measuring what it purports to measure*". In operational terms, this might take the form of an assessment of similarity between the tool and other similar tools as part of a literature review. Commonly, it may also take the form of a consultation with an expert panel who reviews the tool and assesses based on judgement the relevance, reasonableness, appropriateness and/or representativeness of its content and/or identifies by consensus any ambiguous items and proposes changes and modifications.

Few studies performed face validity procedures (Cerin et al., 2011) (Chow et al., 2010) (Parsons et al., 2010); (Paquet et al., 2010); (Kepper et al., 2017); (Knapp et al., 2016); (Malecki et al., 2014); (Lafontaine et al., 2017). For example, the study by Cerin et al., 2011 used an expert panel to evaluate the tool, the study by Chow et al., 2010 performed face validity to review the tools by collecting citizens perceptions of their community, the study by Parsons et al., 2010 also used face validity procedures through review of the tool and the use of use of qualitative methodology an expert panel reveled the tool's shortcomings in capturing important features of the neighbourhoods under study. Furthermore, the study by Paquet et al., 2010 used face validity using a theory-driven review and expert panel opinion. In addition, the study by Knapp et al., 2016 performed face validity of parcel-level audit tool (expert panel) was performed to determine whether parcel level methods produce results comparable to traditional street-level observations. The study by Malecki et al., 2014, performed face validity by reviewing the instrument's ability to capture a range of social and built environment features in urban and rural communities.

Therefore, some studies even if performed face validity procedures in their description was not necessarily stated as such, but using the standardised definitions the researchers of this study identified that expert panel or systematic reviews were among the most frequently used procedures performed to assess the face validity of the tools.

6.8.2 Content validity

The definition adopted for content validity is "*The degree to which the items in an instrument adequately represent the universe of content for the concept being measured*". In operational terms, the process might involve a thorough conceptualization of the construct which might come from several sources both bibliographic such as underpinning theoretical frameworks, conceptual models, concept analyses, scoping reviews etc as well as empirical such as consultations with experts and/or findings from a qualitative inquiry. Consultation with expert panels may also be part of face validity rather than content validity assessment. A major difference is that in the context of content validity assessment, the process is commonly more structured and often follows a quantitative approach to identify (e.g. by employing consensus methods such as Nominal Group Technique, Delphi study, etc), rate the relevance, suitability or other quality of items, assess agreement across expert ratings with by item and the tool as a whole and summarize the process

in terms of degree of agreement. In the context of a face validity assessment, the process may take a more qualitative approach with the aim of describing agreement as well as suggested changes, modifications and/or additions.

Several studies performed content validity procedures (Chaudhury et al., 2011); (Shareck et al., 2012) ; (Parsons et al., 2010a); (Paquet et al., 2010); (Gullón et al., 2015). For example, the study by Chaudhury et al., 2011 performed additional qualitative observations what they called secondary observation form. This was accompanying the audit tool and it was a form that captures global aspects of the neighbourhood and provides a qualitative assessment of the setting from the perspective of the observers. The observers provided a form based on feedback from qualitative experts and research assistants who had used the original form. This form asks the observers to comment on primary and secondary land use, quality of public gathering places, and pedestrian safety and convenience at the neighbourhood level (Chaudhury et al., 2011). Another study by Shareck et al., 2012 in terms of content validity, they used an expert panel and focus groups to deduct 'reflective indicators' of latent constructs which are postulated to relate to smoking (Shareck et al., 2012). Another study by Parson et al., 2010a used a mixed methods approach, the content analysis consisted of an independent coding of qualitative data by researchers to find common themes and categories, from discussions they concluded that there was a need for a separate "comments" section within the SSO tool. The comments were documented and independently coded by the research team using content analysis approach and emerge themes and sub-categories were created. A focus group was also conducted after the data collection was completed to elaborate on the field working experience , the focus groups was audio-taped recorder and transcribed-verbatim and provided additional information for positive features of the instrument, perceived shortcomings, suggestions for improving the instrument, reflections on fieldwork experiences (including surprises, expectations, the role of social interactions with residents), and perceptions regarding what constitutes an 'appealing' neighbourhood environment. These data served to clarify and expand on some of the themes that emerged during analysis of the written comments (Parsons et al., 2010a); Similarly, another study by Paquet et al., 2010 assessed content validity using a theory driven review and expert panel opinion. Lastly another study, by Gullon et la., 2015 performed content validity procedures for the original tool developed in New

Zealand using stakeholder interviewer and Delphi study, which was then modified for Madrid (Gullón et al., 2015).

Therefore, here also one might conclude that content validity procedures vary between studies, and for different purpose based on each study aims, summarizing qualitative procedures to be taking place and offering the mix-methods approach for the development of SSO tools.

6.8.3 Convergent validity

Moving forward to the convergent validity procedure, the definition used was that is “An approach to construct validation that involves assessing the degree to which two methods of measuring a construct yield similar information (e.g. converge)”. Convergent validity is the attempt to produce evidence that a tool being assessed shows a correlation with another tool which measures a similar or related construct that we would theoretically expect to correlate. If measurements are correlated, then the validation of both tools is enhanced. In operational terms, this may take the form of assessing the extent to which an audit tool measurement correlates with a different method of measuring the same, similar or related construct. For instance, in the context of an audit tool, this may take the form of assessing the association of audit scores (e.g. pedestrian environment) with digital map analysis of related features (e.g. connectivity, parks and green spaces etc). It should be noted that, in the context of audit tools, an assessment of the convergence between objective (audit) and subjective (residents’ perceptions) assessment of the neighbourhood environment is often performed. While this approach may also be thought of as a form of convergence validity (i.e. two different methods to assess a similar or related construct), we opted for the term concurrent validity appreciating the fact that residents’ perceptions can be considered an ‘experience’ which is influenced by the neighbourhood conditions rather than an assessment of the same or similar construct.

One study identified used convergent validity procedures (Poortinga et al., 2017) as they used against digital map analysis of related features, measured with another audit instruments . The neighborhood conditions and condition of residential units and grounds scales were assessed for their correlations with elements from another instrument (Poortinga et al., 2017). This research of the REAT 2.0 instrument showed that most underlying constructs can be validated against residents’ own neighborhood perceptions and that the convergent validity of the instrument, which

was tested against digital map data, can be improved for a number of miscellaneous urban form items (Poortinga et al., 2017).

6.8.4 Discriminant validity

The discriminant validity definition adopted was “the ability to differentiate the construct from other similar constructs”. Discriminant validity is the attempt to produce evidence that a tool being assessed can distinguish the construct of interest from other constructs that we would theoretically expect to be distinct. In operational terms, this may take the form of assessing the extent to which measurements between this tool and another tool which taps on a related but distinct construct are not highly correlated, in which case the validation of both tools is enhanced. Alternatively, if the tool itself is able to show that measurements in sub-domains are able to identify differences between related constructs which nevertheless are hypothesized to be different, then the validity is enhanced. The process of assessing the correlation between more (convergence) and less theoretically related (discriminant) domain-specific scores may be considered to pertain to this type of construct validity. This type of validity seems to be rarely assessed in the context of audit tools. The study of Paquet et al (2010) could be considered an exception whereby the authors explored the hypothesized direction of correlation between domain-specific scores i.e. an inverse correlation between ‘positive’ (e.g. maintenance) and ‘negative’ attributes (e.g. rubbish, graffiti). In addition, the study by Knapp et al (2017) assessed also the discriminant validity (based on correlations between domain scores), among the key variables as well as a standard Walk Score, population density, and a previously validated measure of community socioeconomic deprivation. In addition, correlations were examined between summary metrics and three measures of community obesity (Knapp et al., 2016).

6.8.5 Factorial Construct validity

The factorial Construct validity definition used is that is “A method of identifying dimensions underlying a broader construct”, commonly by employing statistical procedures such as factor analysis and principle component analysis to identify a structure among the tool’s items and/or domains. This may take the form of assessing the hypothesised latent structure of the scale using confirmatory factor analysis (as in Marco el al 2017) or identifying a higher-order

dimensionality using exploratory factor analysis (as in Feuillet et al 2016 who also performed a hierarchical cluster analysis to identify a typology of neighbourhoods based on the identified factors). Several other studies also used this type of validity procedure (Andresen et al., 2013); (Bailey et al., 2014); (Chaudhury et al., 2011a); (Parsons et al., 2010); (Odgers et al., 2012a); (B. T. Taylor et al., 2011); ((Knapp et al., 2016); (Leonard et al., 2011); (Leung et al., 2010). For example, the study by Andresen et al., (2013) used factor analysis for higher-degree dimensions and similarly the study by Parson et al., (2010a) used construct (factorial) validity to identify a higher-order dimensionality of domains and meta-categories.

6.8.6 Known-group construct (or contrast) validity

Definition: “A technique for estimating the construct validity of an instrument through an analysis of the degree to which the instrument separates groups predicted to differ based on a known characteristic or theory”. Thus, operationally, this type of validity is determined by the degree to which an instrument can demonstrate different scores for groups known to vary on the variables being measured. The most common application in the case of audit tools would be an investigation into the association of audit scores with census-based socioeconomic disadvantage indicators or indices or other objective indicators in order to assess the extent to which the instrument captures the expected social gradient in environmental inequity. Such cases identified through the systematic review are the studies by (W. C. Taylor et al., 2012); (Knapp et al., 2016); (Malecki et al., 2014); (Gullón et al., 2015); (Lafontaine et al., 2017); (Leung et al., 2010). For example, the study by Taylor et al., (2012) explored the relationship among income status, health and the environment such as friendliness towards physical activity. The results indicated that the low-income neighbourhoods had significantly greater density and land use diversity than the high-income neighbourhoods. High- and middle-income neighbourhoods had significantly fewer manifestations of physical disorder and incivility than low-income neighbourhoods. Features of physical activity-promoting environments were found in each income level neighbourhood (W. C. Taylor et al., 2012). Furthermore, the study by Knapp et al. (2016) audited communities that were from previously established in a different study about their socio- economic deprivation and obesity trajectories in children using electronic health records (Knapp et al., 2016).

In addition, the study by Malecki et al., 2014 investigated the prevalence and density of features which were estimated for strata formed according to several sociodemographic and urbanicity factors. (Malecki et al., 2014); Similarly, the study by Lafontaine et al., 2017 performed field audits within 15 neighbourhoods. The selections were based on neighbourhood SES quintiles, 5 high, medium and low neighbourhoods. Each of these neighbourhoods were located based on residential zones defined by City of Ottawa by-laws: R1—Residential First Density (detached dwellings), R2—Residential Second Density (two unit dwellings), R3—Residential Third Density (multiple attached dwellings), R4—Residential Fourth Density (low rise apartments), R5—Residential Fifth Density (mid/high-rise apartments) and the RM-Mobile Home (Retrieved from http://www.ottawa.ca/residents/bylaw/a_z/zoning/parts/pt_06/index_en.html) Within Ottawa, high density zoning (tower blocks and multiunit apartments, R4 and R5 in Fig. 3) can be indicative of lower income areas when compared to low density residential zoning (single family homes to town homes, R1–R3) (Lafontaine et al., 2017 p 3).

6.8.7 Criterion validity

Definition: “The extent to which scores of an instrument are correlated with some external criterion”. The external criterion might be a well-accepted instrument that measures the same construct of interest (‘gold standard’). Operationally, the validity is supported if the tool’s score is a predictor of the selected criterion. For the purpose of this classification, the term criterion validity was reserved for the case of assessing the correlation of the instrument of interest with a generally-accepted measure of the same construct for example, assessing a walkability audit tool against an objective ‘walk score’ (a gold standard) calculated using GIS data. For example, the study by Adu-Brimpong et al., 2017 used the Walk Score and explored positive correlations between overall neighbourhood quality scores. In addition, the study by Knapp et al., 2016 also used WalkScore as part of Criterion Validity. Concurrent and Predictive Validity are also criterion-related validity assessments (see below) since the selected criterion is a condition, behaviour, experience or other characteristic or phenomenon either measured at the present (concurrent) or for a related construct or in the future (predictive) or for a specific outcome which can be theorized to relate to the construct of interest. Thus, they were identified as a district category.

6.8.8 Concurrent validity

Definition: “It reflects an instrument’s ability to distinguish individuals or areas who differ on a present criterion”. Operationally, this commonly takes the form of assessing the correlation between a score and a condition, behaviour, experience or other characteristic or phenomenon measured at the present (concurrently) which is hypothesized to related to the construct of interest. In the case of audit tools, this type of validity assessment commonly takes the form of assessing the correlation between the objective (audit) and subjective (residents’ perceptions) assessment of the neighbourhood environment. While this approach may also be thought of as a form of convergence validity (i.e. two different methods to assess a similar or related construct), we opted for the term concurrent validity appreciating the fact that residents’ perceptions can be considered an ‘experience’ which is influenced by the neighbourhood conditions rather than an assessment of the same or similar construct. For example, the study by Adkins et al., 2012 is referred as concurrent as it is having theoretically relevant construct based on residents’ perceptions. Specifically, the researchers performed a survey-based respondent mapping exercise in which study area residents were given a map of their respective sub-area and asked to indicate with a small circle the street segments where they liked walking and an ‘X’ where they did not like walking (Adkins et al., 2012);

Furthermore, the study by Bailey et al., 2014 used also concurrent validity against resident’s perceptions using the Survey of the Health of Wisconsin a self-administered questionnaire against the Wisconsin Assessment of the Social and Built Environment, an audit-based instrument assessing built environment features around each participant’s residence (Bailey et al., 2014). In addition, the study by Chow et al., 2010 looked into resident’s perceptions using an interviewer-administered questionnaire to collect residents’ perceptions of their community, however there was no association with audits (Chow et al., 2010); Similarly, the study by Poortinga et al., 2017 also assessed concurrent validity against resident’s perception of several aspects of neighbourhood and they found that neighbourhood attachment was significantly associated with the overall audit score (Poortinga et al., 2017); The study also of Odgers et al., 2012 also assessed the concurrent validity against local resident’s survey on neighbourhood problems local resident surveys of disorder and safety using the families participated in the Environmental Risk (E-Risk) longitudinal

twin study against a virtual SSO study which was conducted to test whether Google Street View could be used to reliably capture their neighbourhood conditions of those families (Odgers et al., 2012a).

Concurrent validity was also assessed in the Su et al., 2014b study with exploring residents' perceptions of built environment using NEWS-A against objective measures such as SSO audit instrument and exploring also the association with Physical Activity measures as an outcome after adjusting for other individual-level characteristics including SES and BMI (confounders) with the use of multimodels. The results of the study indicated that the negative neighbourhood features, including SSO-rated disorder and decay and dangerousness corresponded with local resident reports, demonstrated a graded relationship with census-defined indices of socioeconomic status, and predicted higher levels of antisocial behaviour among local children and the positive neighbourhood features, including SSO-rated street safety and the percentage of green space, were associated with higher prosocial behaviour and healthy weight status among children. (Su et al., 2014b). The study also by Malecki et al., 2014 assessed concurrent validity against residents' perceptions of neighbourhood using three questions from a state-wide household health examination survey (the Survey of the Health of Wisconsin (SHOW) included personal interview, a self-administered questionnaire and a physical exam which was based on the social determinants of health model and included information on a wide variety of health measures and health determinants against the WASABE objective SSO audit tool. The tool was able to capture variance in neighbourhood features in for a diverse sample of SHOW participants (Malecki et al., 2014); Lastly, the study by Quintas et al., 2014 also used concurrent validity within the audit tool which includes a version that captures resident's perceptions however, the results are not presented in this article and the authors are referred to future intention to assess the association between objective and subjective measures (Quintas et al., 2014).

6.8.9 Predictive validity

Definition: "It refers to the adequacy of an instrument in differentiating between people's performance on a future criterion". Operationally, this type of criterion-based validity is commonly assessed in terms of the degree to which the test measure can predict a future condition, behaviour, experience or other characteristic or phenomenon measured at the present (concurrently) which is

hypothesized to be related or postulated to be an outcome to the construct of interest. In the case of audit tools, the dimension of time (current conditions and future events) were less often the focus of attention. However, a characteristic that often distinguished studies in terms of their approach was whether they assessed the extent to which the neighborhood audit score correlated with residents' subjective perceptions about the construct of interest (e.g. walkability) or some objective health-promoting behaviour (e.g. physical activity) as intended outcome or 'result'. Thus, in order to distinguish Predictive validity from Concurrent validity, Predictive validity, as a term, was reserved for the cases where the study assessed whether the audit score was associated with an 'outcome' that relates to the construct under investigation. This may take the form of assessing a domain-specific outcome (e.g. more physical activity in neighbourhoods with higher pedestrian-environment scores) or a more general outcome (e.g. better quality of life in neighbourhoods with less adverse environment).

For example, the study by Poortinga et al (2017) use the term 'predictive validity' to refer to the association between audit observations and neighborhood attachment, while they use the term 'concurrent' to refer to the association with resident's perceptions of several aspects of neighbourhood. While it is understandable to separate between 'perceptions of neighborhood quality' (concurrent) and 'attachment' (predictive), it might also be problematic as attachment to neighborhood might not necessarily be an outcome (and hence a good criterion to assess predictive validity) but can be thought of as a 'cause' i.e. people who are more attached to their neighborhood for one reason or another may perceive the conditions of their neighborhood better or even invest more and be more actively involved in upholding the conditions. Authors recognize this ("... based on the premise that good quality environments afford the development of stronger emotional bonds (although bonds may also contribute to good quality environments") (Poortinga et al., 2017).

Other studies assessed the predictive validity usually exploring the association with physical activity and obesity data (Alfonzo et al., 2014) or walking (Boarnet et al., 2011) or against series of 'physical activity' variables from residents' surveys and accelerometers across different age-groups in order to develop a short (mini) version of MAPS audit tool (Sallis et al., 2015), or the use of specific physical activity tools such as the IPAQ (Su et al., 2014b) or using community-level summary measures of obesity (Knapp et al., 2016) or even exploring health promoting behaviours that could influence physical activity and diet (Malecki et al., 2014),

similarly measuring physical activity and BMI levels (Lafontaine et al., 2017) or against self-reported health status (Leonard et al., 2011) or against total energy intake and physical activity levels (Leung et al., 2010).

A study assessed predictive validity again lung function of citizens (Andresen et al., 2013). The study by Milam et al., 2006 assessed predictive validity of the tool against local crime data since this tool was developed for nighttime use. Another study assessed predictive validity of the tool against survey data on ‘neighborliness’ operationalized as a 6-item scale tapping on reciprocity and trust, and adjusting for census or other aggregate level variables of socio-demographic environment (Wilkerson et al., 2012b) Lastly, predictive validity was also assessed against outcomes of interest from resident and teacher surveys, such as prosocial and antisocial behavior as well as healthy weight among local children. (Odgers et al., 2012b).

All definitions used were based on the definitions as described in the book by Polit & Beck. *Nursing Research: Generating and assessing evidence for Nursing Practice*. 9th Ed (Polit and Beck, 2008).

6.9 Summary of Findings

Overall, as previously mentioned for other methodological aspects of the tools developed, each study adopted measures and combined different types of methodologies and tools as well as indicators that could assess different types of validity based on the needs of each study.

Only few studies used multi-validation procedures were several types of validity have been assessed. Such studies were the study by Parsons et al., (2010) ,Paquet et al., (2010) and Knapp et al., (2016). For example, the study by Parsons et al., 2010 used mixed-methods to evaluate 176 block faces in 6 Toronto neighbourhoods from different level of income by trained raters. They performed face validity (review and expert panel), content validity (against qualitative observations of raters based on written comment analysis and focus group discussions), construct (factorial) validity (to identify a higher-order dimensionality of domains / “meta categories”) and lastly known-group (construct) validity (against neighborhoods of different income status). Multi-validation procedures were also used in the study of Paquet et al.,2010 which is a theory-driven review and used face validity (expert panel opinion) and discriminant validity (based on

hypothesized direction of correlation between domain-specific scores e.g. inverse correlation between ‘positive’ and ‘negative’ characteristics) , in this study also the internal consistency was assessed within domains similarly with our study which the items of the tool will be classified using a pre-determined taxonomy, however, in this study this is what it is called face validity. Paquet et al., assessed 250 street blocks within 30 socio-economically diverse census tracts of the Montreal Metropolitan Census Area which one might say that this was a criterion validity assessment.

Lastly, a more recent study that used multi-validation procedures is the study of Knapp et al., (2016) which the authors developed a new reliable instrument for rural, suburban and urban settings with multiple dimensions. Using the CASCADDE (The Community Audit of Social, Civil, and Activity Domains in Diverse Environments) which is an iPad-based instrument incorporating GPS coordinates and photography and is assessing 214 items in seven summary indices, focusing on identified the obesogenic environment and other health outcomes, they assessed face validity since is based on adopting previous tools and assessed criterion validity since they assessed walkability against an accepted Walkscore. Also, Known-group construct validity was determined against measures of socioeconomic disadvantage and population density, discriminant validity which was based on correlations between domain scores and lastly, predictive validity as it used community-level summary measures of obesity.

Therefore, as it is indicated by an overview of some studies currently available, rarely a study used multi-validation procedures. CyNOTes study would attempt to use an iterative process to assess both reliability and validity. For instance, the feasibility study will evaluate the metric properties of the tool using inter and intra-observer agreement. It will also be culturally adopted to the Cypriot urban environment using face and content validation procedures using focus groups (expert panel) as well as the use of an innovative content validity procedure such as the use of a virtual ethnographic study. In addition, CyNOTes will assess the concurrent validity to find out any possible association with citizen’s perceptions with a door-to-door survey in the audited neighborhoods . Furthermore, CyNOTes will try to assess the criterion validity as it will try to capture the gradient (environmental inequity) across of a different socioeconomic status based on neighborhoods a) educational attainment (which was the basic sampling strategy for selecting neighborhoods), b) a series of census-based indicators of socio-demographic and built

environment and c) a composite SED index. Lastly, the predictive validity will be assessed using the social gradient identified in Health-Related quality of life and the link that might have with the neighbourhood environment. As indicated by the overview of studies above and the research undertaken by the research team, health inequities might be attributable to environmental inequities. Quantification and the synthesis of complex ecological indicators as well the integration of also other methods such as the use of qualitative methods might assist to observe the micro-environment characteristics of neighbourhoods that have not being able to be identified objectively using other methods. The iterative and multivalication procedure used to develop the CyNOTes offers an innovative methodology for capturing the environmental inequities and hence depict the social gradient that might exists in Limassol-Cyprus for the first

The aims, objectives as well as the methodology of this research unfold in the following chapters.

Table 4: Validity types used in each study

No.	Reference	Face validity ¹	Content validity ²	Convergent validity ³	Discriminant validity ⁴	Factorial Construct validity ⁵	Known-group construct validity ⁶	Criterion validity (gold standard) ⁷	Concurrent validity ⁸	Predictive validity ⁹
1	(Adkins et al., 2012)								+	
2	(Adu-Brimpong et al., 2017)							+		
3	(Alfonzo et al., 2014)									+
4	(Andresen et al., 2013)					+				+
5	(Bader et al., 2015)							+		
6	(Bailey et al., 2014)					+			+	
7	(Bethlehem et al., 2014)									
8	(Ben-Joseph et al., 2013)									
9	(Badland et al., 2010)									
10	(Boarnet et al., 2011)									+
11	(Cerin et al., 2011)	+								
12	(Chaudhury et al., 2011)		+			+				
13	(Chow et al., 2010)	+							+	
14	(Chow et al., 2014)									
15	(Dills et al., 2012)							+		
16	(Griew et al., 2013)									
17	(Gasevic et al., 2011)									
18	(Sallis et al., 2015)									+
19	(Shareck et al., 2012)		+							
20	(Kemner et al., 2015)									
21	(Milam et al., 2016)									+
22	(Wilkerson et al., 2012)									+
23	(Wilson et al., 2012)									

¹ **Face validity:** Using an expert panel to review the tool

² **Content validity:** Theoretical model, scoping review, expert panel and focus groups

³ **Convergent validity:** Multimethod validation procedures

⁴ **Discriminant validity:** Based on hypothesized direction of correlation between domain-specific scores e.g. inverse correlation between ‘positive’ and ‘negative’ characteristics

⁵ **Factorial Construct validity:** Studies attempted to identify a higher-order dimensionality

⁶ **Known-group construct validity:** Against Neighborhood Deprivation Index

⁷ **Criterion validity (gold standard):** Studies that investigated the association with census or other objective indicator

⁸ **Concurrent validity:** Studies engaged Perceptions of neighbors

⁹ **Predictive validity:** Often functions as criterion validity for a virtual tool but for the purposes of this table the term parallel form reliability was preferred

24	(Wu et al., 2014)									
25	(Poortinga et al., 2017)			+				+	+	+
26	(Parsons et al., 2010a)	+	+			+				
27	(Paquet et al., 2010)	+	+		+					
28	(Odgers et al., 2012)					+			+	+
29	(Su et al., 2014)								+	+
30	Taylor et al., 2011									+
31	(W. C. Taylor et al., 2012)					+	+			
32	(Topmiller et al., 2015)									
33	(Rundle et al., 2011)									
34	(Kepper et al., 2017)	+								
35	(Knapp et al., 2016)	+			+	+	+	+		+
36	Macro et al., 2017						+	+		
37	(Malecki et al., 2014)	+					+		+	+
38	(Quintas et al., 2014)								+	
39	(Feuillet et al., 2016)					+				
40	(Fisher et al., 2010)									
41	(Gullón et al., 2015)		+				+			
42	(Lafontaine et al., 2017)	+					+			+
43	(S. Lee & Talen, 2014)									
44	(Leonard et al., 2011)					+				+
45	(Leung et al., 2010)					+	+			+
46	(Robinson et al., 2014)									

7 AIMS AND OBJECTIVES

The main aim of this study is to develop, evaluate, and pilot-test a reliable and valid audit tool for Cypriot urban neighborhoods. It is part of a wider community-based survey “Quality of Life and urban neighborhood environment.”

The objectives will be distributed in two phases of the study: the pilot Phase I followed by the full implementation of CyNOTes in Phase II. These two phases contributed to developing a pilot tool CyNOTes 1.0 and a final tool CyNOTes 2.0. Each Phase consists of four consecutive stages with different data samples, collection, and analysis.

7.1 Aims

1) To develop a structured audit tool for the physical, built, and social health-related micro-scale features of the urban Cypriot neighbourhood environment.

2) To assess the intra- and inter-rater agreement of the tool and explore the face, content, factorial construct, known-group construct validity, criterion, concurrent and predictive validity of the CyNOTes tool.

3) To depict a snapshot of the prevalence and variability in micro-scale neighbourhood features across a sample of neighbourhoods in the city of Limassol and assess the degree and extent of environmental inequity in terms of socioeconomic disadvantage and its correlation with the health-related quality of life of residents.

7.2 Objectives

The objectives of each phase are described below along with each stage. Each phase is also presented diagrammatically on figure 2 and 3 below.

7.2.1 Phase I. Feasibility Study

At Phase I the first version of the tool was developed and pilot tested to perform the following:

At STAGE A the development and cultural adaptation of an urban neighborhood observational tool based on similar tools from the international literature was performed.

At STAGE B a feasibility/Pilot study of the first version of the tool in a small neighborhood sample of Limassol city aiming to assess the metric properties, and specifically intra- and inter-rater reliability, as well as identification of problematic features (e.g. floor or ceiling effects) and/or possible ambiguities about the functional definitions (cultural and semantic understandings) to the wording of the questions and/or on evaluation scales to guide any necessary changes for the final version of the tool (intra- and inter-observer reliability).

At STAGE C an evaluation of the face and content validity of the observational tool based on the opinion of community professionals by organized focus group and identification of additional items for the final version of the tool was performed (face and content validity).

At STAGE D an assessment of the content validity of the tool according to citizens' perceptions of the urban community environment using document content analysis of various public comments on the social media pages of Limassol Municipality was performed (content validity).

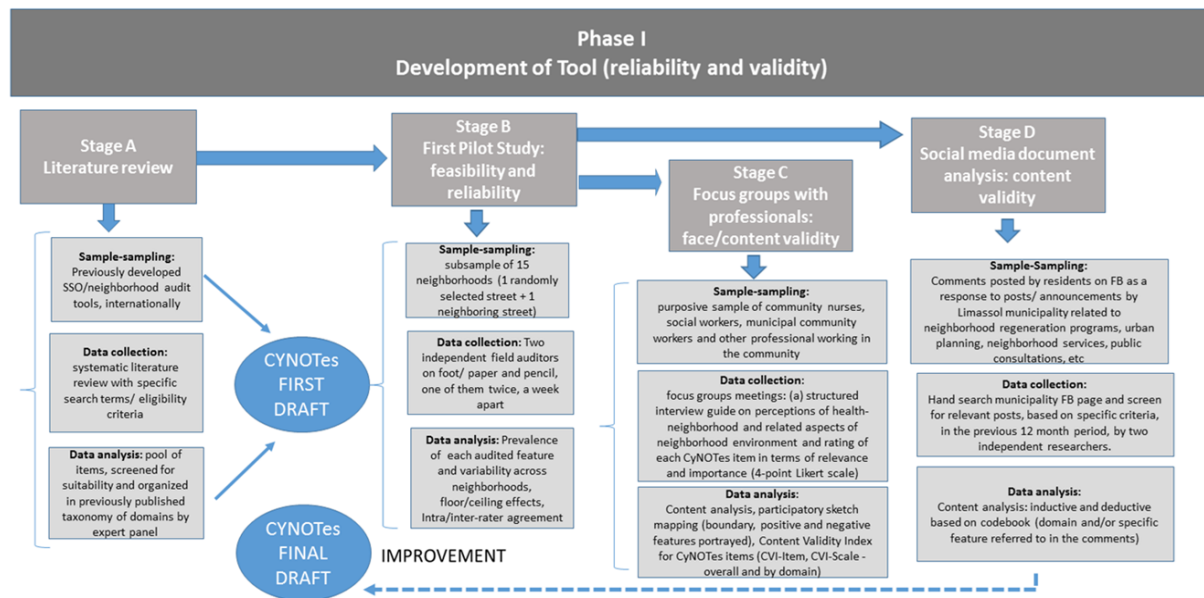


Figure 2 Phase I Feasibility Study-Development of CyNOTes V 1.0 (reliability and validity).

7.2.2 Phase II. Implementation of CyNOTes

At Phase II the final version of the tool adopted from the pilot study will be rolled out in a larger sample of Limassol neighbourhoods to perform the following: At STAGE A the prevalence and creating a cross-sectional ‘snapshot’ of CyNOTes built, social and physical micro-scale features of neighbourhood environment in Limassol was explored (prevalence and variability of features).

At STAGE A the construct validity of the tool was assessed using exploratory factor and cluster analysis and the internal consistency of various summary domains of the physical, built, and social environment was also explored (factorial construct validity).

At STAGE B citizens’ perception of the quality of their neighborhood environment, examine the social patterning by individual and area characteristics and explore associations between subjective ratings and audit data was investigated (concurrent validity).

At STAGE C the variability in the neighborhood environment and the social gradient based on the observed relationship with objective census-based single and composite indicators of socioeconomic disadvantage was investigated (know-group validity and criterion validity).

At STAGE D the differences in Health-related Quality of Life, as reported in a sample of residents across the audited neighbourhoods in a previous survey, across neighbourhoods classified according to the observed features in the residential environment was investigated (predictive validity).

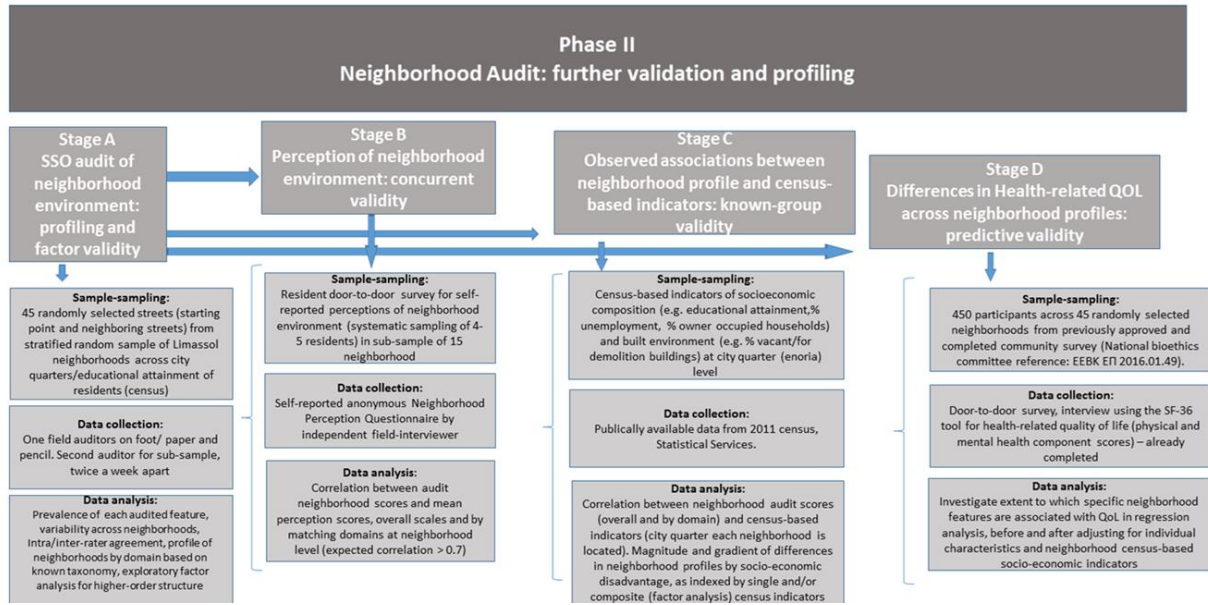


Figure 3 Phase II Neighbourhood audit- Development of CyNOTes V 2.0 (further validation and profiling).

8 METHODOLOGY

8.1 Study Design

This is a Systematic Social Observations audit study of the neighbourhood environment using mixed methods to validate the audit tool employing both quantitative and qualitative methods as appropriate for each aspect of the multi-validation process. Specifically, the face and content validity of the tool was confirmed by focus groups and a virtual ethnographic study with the use of qualitative methodologies and the prevalence, variability, factorial construct validity, concurrent validity, known-group validity and predictive validity was confirmed using quantitative methodologies.

8.2 Study site

The metropolitan area of Limassol consists of 7 municipalities with a population size of 235.300 as per 2011 census and 258.900 as per 2021 census (official statistics, <https://www.cystat.gov.cy/en>).

The municipalities are: 1) Limassol, 2) Pano Polemidia, 3) Kato Polemidia, 4) Mesa Geitonia, 5) Agios Athanasios, 6) Germasogia and 7)Ypsonas. Municipalities in the city Limassol are further divided for administrative and census purposes into 38 city quarters (median population 3894, IQR: 434-6169) and 124 postcodes (median population 1320, IQR: 798-2014), with significant variability in terms of both population size as well as their socio-demographic profile.

In the absence of a composite index or a generally accepted indicator of socio-economic deprivation or disadvantage, the percentage of the adult population with tertiary education (2011 census) was used to place neighbourhoods along the continuum of socioeconomic disadvantage. The 2021 census was not available at the time the study was performed. This ranges substantially across city quarters from a low of 2.9% in the parish of Jedi Mosque, Municipality of Limassol (also the smallest quarter in population size) to 38.9% in Agios Georgios Frangoudis, Municipality of Agios Athanasios. At the postcode level, this ranges from 2.9% to 52.2% (Median: 21.1%, IQR: 15.0%-29.4%).

8.3 Ethical Issues:

The study protocol was approved by the Departmental Postgraduate Studies Committee and the Cyprus National Bioethics Committee (EEBK EII 2018.01.131). There was no participation of individuals at any stage of the present study while the SF-36 data reported here originated from a previously completed Quality of Life survey approved by the Cyprus National Bioethics Committee (EEBK EII 2016.01.49).

Even though photographic material is a common feature in similar field audits, the approved protocol for the present study ensured that no photographic material would be taken in order to avoid the likelihood of people featuring unintentionally without their consent and/or putting the field researcher in the vulnerable position to justify the activity during potential interactions with residents and/or identification or labelling of specific neighbourhoods. While not keeping a photo archive deprives the opportunity of creating a photo-indexed Guide to standardize the training and evaluation process in the future, any ethical considerations were considered more important at this stage. Furthermore, this decision was guided by the importance of avoiding labelling certain neighbourhoods as “problematic”. In addition, the census-data used are open access by the statistical services of Cyprus, for the use of Place Standard questionnaire an approval was taken by the developers of the tool and participation was anonymous and voluntary. Furthermore, the focus groups participants also signed a consent form and the content used from Facebook pages since it was a public domain there was no need for asking permission to analyse its content.

8.4 PHASE I Development of the Tool (reliability and validity)

Phase I is developed into four consecutive stages aiming at the development of the final version of the tool before its use in the main research (PHASE II). The four stages of PHASE I and the methodology that is used at each stage are described below in more detail. In Phase I, the researchers have conducted a literature review to develop and culturally adapt an urban neighborhood observational tool based on similar tools from the international literature (Stage A) and the feasibility study where the reliability and validity of the tool have been tested, and identification of problematic features or semantic understandings (Stage B). Furthermore, the face

and content validity of the observational tool based on the opinion of community professionals in focus groups (Stage C) as well as social media content analysis (Stage D) to improve the face and content validity of tool have been performed more items were added to the final version of the tool.

8.4.1 STAGE A Development of the tool

The bulk of items for the first draft of CyNOTes (*Cyprus Neighbourhood Observation Tool for auditing urban community environments*) were sourced from two generic audit tools, namely the 140-item Healthy Environments Partnership's Neighbourhood Observational Checklist – HEP NOC (Zenk et al., 2007) and the 98-item St Michael's Neighbourhood Observation Data Collection Tool (Parsons et al., 2010b), after permission was granted by the authors. Repetitive items were identified and the face validity of each item in terms of relevance to the urban environment of a Cypriot city was discussed and debated among the research team. It was deemed necessary to adapt or slightly modify a number of items, mainly in terms of wording either in the stem and/or the response set, while items not considered relevant by consensus were not included. A number of other commonly used feature-specific audit tools were consulted in the process of making modifications, such as the Irvine-Minnesota Inventory (Boarnet, et al, 2006) on the built environment as related to physical activity, PEDs scan (Clifton, et al, 2007) for the pedestrian environment and NifETy (Furr-Holden, et al, 2008) for physical and social disorder.

8.4.1.1 Description of the CyNOTes tool

The first draft of CyNOTes consisted of 123 items, purposefully organized into 8 sections to facilitate the audit starting from more general aspects to more specific features, namely: A. General land use, B. General environment, streets and sidewalks, C. Services and Amenities, D. Residential land use, E. Non-residential land use, F. Parks, playgrounds, and other public spaces, G. People and H. Incivilities. Items in CyNOTes require the auditor either (1) to note the presence or absence of certain features (Yes/No) and/or (2) give a rating on a 4- or 5-point response scale in terms of the condition (e.g. maintenance of residential buildings, parks, and public spaces), quality (e.g. pavements and paved roads) or frequency of certain features (e.g. window security bars, traffic flow, rubbish, etc). A number of items are in the form of checklists (e.g. marking all

features that are present in the neighbourhood or people's activity and behaviour), commonly serving the purpose of more detailed profiling if relevant without necessarily forming part of an aggregate score. In the first instance, a pre-set typology based on Nickelson et al (2013) was used to capture an overall neighbourhood profile and CyNOTes items were matched to this typology by consensus, as shown in the relevant table ([APPENDIX II](#)). The first draft of CyNOTes v 1.0 appears in full in [APPENDIX VI](#). The typology consists of 21 thematic domains, after the inclusion of Social Disorder which was not explicitly considered by Nickelson et al (2013). However, for score calculation purposes, some domains were subsequently merged with conceptually similar domains or not considered due to small number of items, resulting in a total of 17 domains.

The 8 sections of the tool with few examples for each section are described below:

Sections A (General land use):

- How is the land used on this block face?
- How would you characterize the predominant land use on this block face?

Section B (Characteristics of general environment, streets & sidewalks):

- Type of street?
- What is the traffic flow?

Section C (Commercial Establishments, Services, and Institutions):

- Please look at the list below and indicate the presence of institutions that you observed on this block face.

Section D (Residential Land Use):

- What are the types of housing on this block face
- Roughly how many residences are there in this block face
- In general, how would you rate the condition of the most of the houses/ residential building on the block face

- What is the average height of residence borders?
- What proportion of residence buildings have window security bars or gratings on doors or windows?

Section E (Non-Residential Land Use):

- How many vacant/undeveloped lots are there in this block face?
- What is the overall condition of the vacant/undeveloped property?

Section F (Parks, Playgrounds, Outdoor public spaces):

- Is there a park or playground?
- What is the overall condition of playgrounds/ parks?

Section G (People): Are there any people visible outdoors?

- What is the reaction of neighbours towards raters?
- Did you see any children the block face?

Section H (Incivilities): Indication of physical and social disorder, such as garbage, graffiti, vandalism, abandoned houses.

- Is there garbage, junk or litter (incl. broken glass, clothes, paper)
- Are there empty beer containers or liquor bottles on the street or sidewalks, in yards, or vacant lots?
- Are there any piles (significant accumulations) of garbage or dumped materials on any of the streets or sidewalks, in yards/lots or gutters?

8.4.1.2 Metric properties of CyNOTes

All metrics are either objective or subjective observations. Those features which are more generic observations, such as characteristics of the city neighborhood planning (i.e. presence/absence of specific feature), will be objectively measured. These will be captured using

a series of binary indicators to describe the presence or absence (Yes or No) of a specific feature of the neighborhood.

In contrast, those metrics which require judgments of the auditor, such as the quality of the roads, pavements, level of maintenance of residential and non-residential units, or level of maintenance of other public spaces such as parks and green spaces, will be subjective. These features are measured using a 4- or 5-degree Likert scale.

8.4.1.3 Scoring

For the scoring of each Neighborhood and each domain, the researchers classified the items of the tool in domains based on the taxonomy suggested by Nickelson (Nickelson et al., 2013) adding social behaviors/social disorders as a new domain, thus resulting in 21 domains.

A **composite score** was calculated **per domain** as the sum of the items with theoretical range to the total number of items in that domain. For consistency, all 21 domain scores were also transformed to a common 0 (worst) -100 (best) based on the number of items/questions summed and divided by the maximum score each domain can take (based on its number of items) and multiplied by 100 (value-min)/ (max-min) X 100. Note that some variables (items) are binary and some are ordinal (commonly with 4- or 5-point rating scales). Some items allow multiple responses (for example, people's activity) and/or result in nominal variables. These items were considered to be profile questions as there is no clear ordinal classification across the possible responses (e.g. exercising, doing chores, walking, socializing, etc). Therefore, these were excluded from the domain responses in all ordinal items and were expressed using a common rating scale of 0 to 1 expressing worst-off and better-off environments, using reverse coding is necessary. Thus, while binary items were coded 0-1 for the presence/absence of the audited feature, a 5-point ordinal item commonly assessing the quality or condition of the feature (e.g. poor to excellent) was expressed as 0, 0.25, 0.50, 0.75, and 1. However, due to the new additional features that needed to be added for the new version of CyNOTes 2.0 after the focus group, the typology used in the pilot study might need to be changed and group some domains together for better internal consistency within the final version of [APPENDIX X Cy-NOTes 2.0](#).

Table 5: Taxonomy of domain as defined by Nickelson et al., 2013

1 Amenities for outdoor public spaces	2 Architecture/building characteristics	3 Barriers	4 Cycling environment	5 Ethnic identification	6 Land use	7 Landscape/ Nature features
Conveniences and comfort features in outdoor public spaces	Building attributes, permanent, not easily changed	Obstacles, difficult to overcome or off-putting to pedestrians/ cyclists	Features that hinder or promote an environment conducive to cycling	Displays, signage, murals tailored to a specific ethnic group	Functional purpose of land segments	Characteristics of surrounding scenery
8 Maintenance/ appearance	9 Neighborhood identification	10 Parking & driveways	11 Pedestrian environment	12 Physical disorder	13 Recreational uses/ public spaces	14 Safety
Current condition of buildings, grounds, public spaces, that are not permanent, can change	Unique features that give definition/ unique character to particular neighborhood	Parking vehicles	Features that hinder or promote an environment conducive to pedestrian activity	Characteristics that render environment unsightly and potentially unsafe	Destinations and facilities open to the public	Physical indicators of level of protection from harm one might expect
15 Sidewalks	16 Signs/messages	17 Smell, pollution and noise	18 Steepness	19 Streets/ traffic	20 Views/Enclosure	21 People/ Social behaviours/ disorder
Characteristics of paved walking paths	Visible signs and advertisements	Experienced levels of noise, pollution and smell	Street incline	Features of paved vehicular paths and traffic intensity	Existence, extent and appeal of views (features not in the immediate area)	People's observed activity and behaviours

8.4.2 STAGE B Focus Groups with Professionals Content validity

8.4.2.1 Composition of Focus Group

A focus group was performed to examine the face and content validity of the tool but also to improve the cultural specificity of the tool. Therefore, an invitation via email was sent to the six Limassol municipalities as well as the Cyprus WHO Healthy City Coordinator, and the Chief Hygiene Inspector of the Cyprus Ministry of Health. In addition, invitations were sent to a Non-Governmental Organisation (NGO) as well as the Community Nursing division of the CNMA (Cyprus Nursing and Midwife Association). Lastly, invitations were sent to active citizens that have been frequently engaged with various local stakeholders for the urban neighborhood environment of the Limassol/City such as the members from the Cyprus Scientific and Technical Chamber (CSTC-ETEK) and Cyprus Community Welfare Service. In total 14 invitations have been sent. The composition of the group anticipated having an interest in the neighborhood environment and the impact that has on the health-related quality of life of the city due to their occupation, educational background, and experiences in the field. Eleven participants responded and gathered in a in two hours focus group workshop.

The participants were from:

- Cyprus Ministry of Health (1 Cyprus WHO Healthy Cities Coordinator);
- Limassol Municipality (1 Hygiene inspector);
- Ypsonas Municipality (1 Hygiene inspector);
- Germasogeia Municipality (1 Hygiene inspector);
- Mesa Geitonia Municipality (1 Hygiene inspector);
- Cyprus Community Welfare Services (2 Social workers);
- Community Nursing Association (2 Community Nurses’);
- Cyprus Scientific and Technical Chamber (1 active member Mechanical Engineer);
- Cyprus University of Technology (1 Research Assistant);

The facilitator (1 Ph.D. supervisor) made a presentation to help participants understand the purpose of the focus group and a researcher (1 Ph.D. student) was taking notes during the focus group. The focus group took place in Limassol at the Cyprus University of Technology premises.

8.4.2.2 Data Collection

The participants were welcomed and they were asked to introduce themselves to the group. A 20 minutes presentation was given to get them thinking about the importance of the neighborhood environment and health-related quality of life. Then, a round table discussion took place using open-ended questions ([APPENDIX IX](#)) for the participants to express their thoughts about various features that need to be able to be captured/identified in the neighborhood environment, as well as their general perception of the Limassol's built, physical and social environment. The questions were tailored to match the characteristics that the CyNOTes are auditing as well as questions that could help enhance the CyNOTes in terms of its ability to be able capturing specific socio-cultural characteristics that the first version was lacking. A two hours discussion among the 11 participants and 2 facilitators/researcher was recorded and a transcribed verbatim, however, it was used to set the scene but not directly used to develop the audit tool. It would be analysed at a later stage to gain an in-depth understanding of the perceptions around "healthy places".

In addition, using a Nominal Group Technique (NGT) the participants were asked to complete a participatory research and exercise ([APPENDIX IX](#)) to express their opinion in terms of setting priorities for the Cypriot urban neighborhood environment. The NGT method occurred in four consecutive stages (Vella et al., 2000). The first stage was the silent generation of ideas, the second stage was the round-robin, the third stage was the grouping of suggestions and the fourth stage was the voting. During the silent generation of ideas stage, participants were asked for fifteen minutes to independently nominate on the given structured document ten priorities of the built, physical and social neighborhood urban environment that they believe indirectly or directly influence the citizens' health-related quality of life and if they believe they had to be included in the CyNOTes tool which was under development. Due to shortage of time, stage two, three, and four had to be performed via email.

8.4.2.3 Data Analysis:

For the round-robin stage, the researchers grouped the suggested themes in terms of their relevance and checked for repetition. The themes were organized into major themes and sub-themes and they were enumerated with a Greek letter in alphabetical order and consecutive numbers if they were subthemes (A, B, Γ and/or A1, A2, etc). For the voting stage a structured document with instructions was sent to the focus group participants and asked to vote on a Likert scale of 1 to 5 (1=not important, 2=not so important, 3=important, 4=very important, 5=extremely important. Replies from all 11 participants were collected, and the suggestions were matched to the CyNOTes items for areas or topics not represented or deemed important to reinforce, new items were developed by consensus of the research team.

The answers to the structured exercise about priorities were analysed using Microsoft Excel. The average score across themes and sub-themes was a percentage rating of at least very important and extremely important (4 or 5). This criterion was set to a priori as >80% rating at least very important >50% rating extremely important. Furthermore, items were ranked by using the Index of Qualitative Variation equation

$$IQV = K(1002 - \Sigma Pct^2) / 1002(K - 1)$$

In addition, by cross-tabulating and checking, researchers checked if any suggestions emerging from the focus group/ rankings did not already appear in some manner and form in CyNOTes.

8.4.3 STAGE C Feasibility Study.

8.4.3.1 Study Site:

The study took place across the 7 Municipalities of Limassol (36 enories): Limassol, Kato Polemidia and Pano Polemidia, Mesa Geitonia, Agiou Athanasiou, Germasogia and Ypsonas Municipalities. It was a stratified sample of neighborhoods from 3 different groups of neighbourhoods by educational attainment (High, Medium, Low), which were previously used in another study that assessed the Quality of Life (QoL) of Limassol citizens. In each neighbourhood, two streets were audited resulting in 30 streets in the total sample.

The selected streets were purposefully selected to form three groups of 10 streets each in terms of the level of educational attainment of the residents based on 2011 population census data. The three groups of neighborhoods correspond to ~10%, ~20%, and ~30% in terms of the proportion of residents with University level education at the level of city quarters (“enoria/Parish”). Census data are divided for administrative purposes into 38 city quarters (median population 3894, IQR: 434-6169) and 124 postcodes (median population 1320, IQR: 798-2014), with significant variability in terms of their socio-demographic profile.

In the absence of a composite index or a generally accepted indicator of socio-economic deprivation or disadvantage, the percentage of the adult population with tertiary education (2011 census) was used to place neighborhoods along the continuum of socioeconomic disadvantage. This ranges substantially across the city quarter from a low of 2.9% in the parish of Jedi Mosque in the Municipality of Limassol (which is also the smallest quarter in population size) to 38.9% in Agios Georgios Frangoudis in the Municipality of Agios Athanasios. At the postcode level, this ranges from 2.9% to 52.2% (Median: 21.1%, IQR: 15.0%-29.4%)

The fifteen street addresses were randomly selected from 15 different city quarters as starting points. The street addresses were selected from three groups of neighbourhoods stratified according to the proportion of adult residents with tertiary education as per the census to represent the continuum of sociodemographic disadvantage (<15%, lowest quartile), ~20% and >30%, highest quartile). In addition to the selected street address (N=15), an additional street segment (N=15) was audited in each case. The boundaries of the neighborhood to be audited were set a priori as (a) the full length of the selected street segment from start to finish, past any intersections, considering both block faces, and (b) any street segments that cross or are perpendicular to the selected street from the point where they meet the selected street to the next intersection (average 250m, IQR: 150-300) considering both block faces.

The 15 selected neighborhoods (2 streets per neighborhood) form part of a larger sample of 45 neighborhoods randomly selected from a postal directory of all streets (N=4218 across the 38 different city quarters “enories”), stratified by level of educational attainment and population size.

8.4.3.2 Data collection procedure

To evaluate inter- and intra-observer agreement, two trained auditors rated the selected neighborhoods, independently of each other and blinded as per the socio-economic status of that postcode. One of the auditors returned to the neighborhood two weeks later for the second assessment. For the neighborhood profiling, the ratings of the second assessment were used, since some modifications were made between the two assessments. The audit was performed on foot using paper and pencil. Auditors were asked to walk the full length of the selected street segment to observe the general area before filling the first section of the tool and then walk back and forth as many times as necessary to observe more closely the detailed features to fill the next sections of the tool. Finally, the auditors were asked to fill in the last sections about People and Incivilities based on their overall experience and observations while in the area. Auditors were also asked to document in a section at the end of the form their overall experience, any interaction or reaction of residents and more importantly to note which items and why were difficult to assess to inform necessary changes (misleading or ambiguous wording, inappropriate response scale, additional features or aspects that seemed important or relevant but not covered by any of the items on the tool etc). Auditors recorded the start and finish time, as well as the starting and finishing point of the specific street audited to calculate the approximate length in Google maps. All observations were collected between 4:00 PM and 7:00 PM during daylight hours in the same month (March). Audits needed 30-40 min and no photographs were taken during the visit.

8.4.3.3 Data Analysis:

The prevalence of each audited feature and variability across neighborhoods was calculated as the frequency/proportion of occurrence of each response in the response set of each item on the tool for the first audits and similar for the second rater's audit. The suitability of included items in the tools was firstly assessed in terms of the observed lack of variability. To assess the observed variability in each item, the IQV (Index of Qualitative Variation) was estimated using a formula in Excel.

$$IQV = K (1001 - \Sigma Pct^2) / 1002 (K - 1).$$

This is a measure of dispersion used for categorical variables. It is based on the ratio of the total number of differences in the distribution to the maximum number of possible differences

within the same distribution. It varies from 0 to 1 (or 0% to 100%) with higher numbers indicating maximal variation (equal spread over all possible categories in the response set i.e. evenly distributed). Items with IQV>80% were considered to show high variation, 50-80% moderate, and 20-50% low. Items with IQV less than 20% were considered to exhibit very low variation across audited neighborhoods. Items with floor or ceiling effects were also identified.

To assess the reliability of each item in terms of the level of stability over time the intra-rater/observer agreement (i.e. test-re-test a week apart). Also, the inter-rater/observer (i.e. between two different auditors) agreement was calculated in terms of percent agreement as well as Cohen's kappa scores of agreement. Differences in the frequency of each audited item across neighbourhood groups were assessed in a series of chi-square tests. Internal consistency was calculated using Cronbach's alpha coefficient, testing 0.70-0.90=good consistency.

Summary statistics (mean, median, SD, IQR) and spearman's correlation coefficient between domains were also calculated.

For ordinal variables, a weighted kappa score of agreement (and equivalently % weighted agreement) was used giving more weight to adjacent responses and progressively less weight/zero to those further away/opposite ends of the scale. Kappa score adjusts the observed agreement for agreement occurring by chance (Landis & Koch, 2008). Score >0.60 and >0.80 is commonly considered to indicate substantial to high agreement respectively, with 0.4-0.59 moderate, 0.2-0.4 low, and <0.2 very little agreement. However, often low kappa scores can be seen, even though the agreement is quite high; for example, in items with low variability or floor/ceiling effect. Thus, kappa scores are not always appropriate, and % agreement (uncorrected for chance agreement) was also used in parallel to assess the reliability (Boarnet et al., 2006).

For criterion validity, the socio-economic status of the neighbourhood was defined using educational attainment as a proxy. The sample of neighborhoods was stratified according to the proportion of adult residents with tertiary education (~10%, ~20%, and ~30%) as per the most recent census data to capture the full range of socio-economic disadvantage continuum each neighborhood was profiled in terms of a summative score for each of the 17 domains, expressed on a 0-100 scale, with higher scores suggesting more favorable features. One-way ANOVA as

well as the Kruskal-Wallis test were used to calculate differences in domain scores across the three types of neighborhoods defined by educational attainment.

The association between summary domain scores and other census-based area-indicators of the built environment or socio-demographic composition was also assessed by calculating Pearson and Spearman correlation coefficients. Namely, the indicators used were: % population over 65+, % houses built prior 1980, % non-Cypriot population, % single-parent households, % apartment blocks/mixed use, % vacant /for demolition units. The data were publicly available at city quarter (enoria) and postcode level from the 2011 census, Cyprus Statistical Services. The 2021 census data were not available at the time of the study, and due to Covid-19-related delays they have still not been released to this date. Based on the initial observations for items with low inter and intra-reliability, modifications were made (clarification language and response sets).

8.4.4 STAGE D -Virtual Ethnographic Study using Social Media document analysis

A virtual ethnographic study using social media document analysis was performed. This enhanced the content validity of the audit tool and identification of areas of concern not reflected in CyNOTes 1.0 (deductive analysis), as well as captured an in-depth understanding of citizens' perceptions of their neighborhood environment (inductive analysis).

8.4.4.1 Data Sample:

The researchers identified and analyzed Facebook comments from the social media pages of the Mayor and Limassol Municipality, focusing on posts related to neighborhood regeneration plans. The use of virtual ethnography from Facebook and other social media platforms has been well documented (Baker, 2013). The content and themes identified were analyzed using a deductive and inductive approach (Erlingsson & Brysiewicz, 2017);(Elo & Kyngäs, 2008).

The use of qualitative descriptive approaches such as deductive and inductive analysis (Vaismoradi et al., 2013) has been used to identify specific themes and subthemes. Using content analysis researchers tried to identify trends and patterns of words, the frequency they are used, and their relationships by using a systematic coding and categorization approach to explore large

amounts of textual information (Vaismoradi et al., 2013). The thematic analysis identified and reported patterns (themes) within the comments [which were hand-searched under the municipality and mayor's Facebook comments] (Braun & Clarke, 2006).

The aim was to build a conceptual model that described an ethnographic phenomenon as to be captured naturalistically from the comments that citizens were posting under the municipality's and mayor's announcements. Firstly, the deductive content analysis has been used to structure an analysis based on previously described taxonomy of domains, and secondly, the inductive analysis was used to go from specific to more general concepts and the comments/concepts have been combined to create a larger picture or general statement (Elo & Kyngäs, 2008).

8.4.4.2 Data Collection:

The content of the municipality and mayor's Facebook page was hand-searched for posts/comments by residents as a response to posts/announcements by Limassol municipality related to neighborhood regeneration programs, urban planning, neighborhood services, public consultations, etc. over 12 months by two independent researchers.

To identify the comments for analysis the researches had to set eligibility criteria. The eligibility criteria for choosing the posts were: 1) if the original Facebook post was related to the neighborhood and/or community environment, 2) if the comment was related to the Municipal Public Consultation/debate, 3) if comments tapped in Neighborhood specific problems and quality of life. In addition, the frequency a specific theme appeared was also noted.

Then, the data have been prepared, organized, and reported for data analysis and able to identify patterns as well as gain an in-depth understanding of citizens' perceptions of the neighbourhood environment. For the deductive approach, the Nickelson et al., 2013 taxonomy to sort and categorise under the specific domains. For the inductive approach, the various themes and subthemes identified have been organized to present a narrative that categorises subthemes to a generic nuclear topic.

8.4.4.3 Data Preparation and Organization

The comments were organized, structured and analysed using deductive and inductive analysis. In a word and excel document, the researchers reported the number of posts, the number of comments, the Facebook post (related to the neighborhood and/or community environment), provided a code (close to the data), organized into a category (group of codes that related to each other it was the domain (from published typology) or it is a narrower aspect of that domain. The process was undertaken independently by two members of the research team, who discussed their original coding, and agreed upon deliberation by consensus, involving a third member of the team where necessary.

Then comments were organized into the domains of the 20 plus one taxonomy. Each domain could be matched to several comments plus some comments were matching with several other domains. In addition, next to the alternative chosen domain the closest relevant CyNOTes item referring to this issue were reported. Furthermore, some topics identified in Facebook posts not explicitly covered, or not covered fully in CyNOTes were also reported. Then, the comments were organized in themes and translated into English. The frequency of specific issues mentioned was also calculated and noted.

Both the deductive and inductive content analysis, each comment was transcript verbatim, read in its entirety as well as in the context of the original post and other comments to get an overall impression. Meaningful units (MU) were identified, often representing a full sentence or only a short phrase. For the deductive analysis having the typology as a framework, the researchers selected coded comments and then matched them under the suitable CyNOTes domain linking to a specific item. For the inductive analysis, comments were coded, then through abstraction were grouped into a condensed meaningful unit of sub-categories with a similar description and progressively grouped in categories and themes, reaching the nuclear topic/theme upon reviewing by consensus the narrative. A manifest analysis was preferred for this stage, staying close to the actual content, while progressively the categorization of related categories moved into more latent constructive avoiding nevertheless a high degree of abstraction.

8.4.4.4 Data Reporting

The deductive analysis and the Facebook comments that have been identified were reported under the CyNOTes taxonomy. The specific item from CyNOTes that could be matched with a specific Facebook comment/word was highlighted. This assisted to emphasise the similarity that the Facebook comments had along with the items that CyNOTes is auditing the neighborhood environment. The inductive analysis of the data has been reported in a schematic circle of various comments that were creating themes, sub-themes, and a major nuclear topic.

The Virtual Ethnographic Study (Stage D) contributed to developing the final CyNOTes v2.0 tool ([APPENDIX X Cy-NOTes 2.0](#)) by adding more items to the tool. Specifically, through this process along with the focus groups (Stage C) 25 new items were added. The 25 new items are presented in the results section.

8.5 PHASE II Implementation of CyNOTes -Neighborhood Audit: further validation and profiling

As previously mentioned PHASE II consisted of another four consecutive stages and they are described below in detail. At stage A, a new sample of neighborhoods has been audited using the new version of CyNOTes v2.0 in three different educational attainment neighborhoods (~10% low, ~20% medium, ~30% high). At stage B, a citizen's perceptions door to door survey as was performed using the Place standard tool after validating it in a nationwide cross-sectional internet-based survey. At stage C the association between neighborhood profiles and census-based indicators was calculated and lastly, at stage D the differences in Health-related Quality of Life across neighborhood profiles have been also calculated. All four stages of Phase II have contributed to further validation and profiling of the neighborhood built, and physical and social environment using the new version of CyNOTes v2.0.

8.5.1 STAGE A: profiling and factor validity

8.5.1.1 *Sample-Sampling*

The new version of CyNOTes was used to audit forty-five (n=45) across a randomly selected stratified sample of Limassol neighbourhoods across city quarters (enoria/Parish) according to educational attainment. The specific neighbourhoods were selected as they were used in a previous study by Ellina et al., 2021 where the health-related quality of life of Limassol citizens was assessed. Data for Health-related Quality of Life of residents originated from the original community survey (Ellina et al., 2021).

This was a door-to-door survey which included a sample of residents aged 45-64 from 45 neighbourhoods, fifteen of which are the neighbourhoods audited here (N = 150, 15 per street, with 50:50 gender quota). Health-related Quality of Life in the original study was measured using the widely used SF-36 questionnaire, which provides a summative score for physical and mental components of quality of life. More specifically, parishes and communities were ranked in terms of the percentage of the population with university education, an indicator which is one of the most commonly accepted socio-economic indicators and was the only one available at the stage of sampling from the open access files of the Cyprus Statistical Service (Ellina et al., 2021).

8.5.1.2 *Data Collection and Coding*

One field auditor on foot with paper and pencil has audited the CyNOTes v2.0. Each audit took about 30-40 minutes. The auditor had to walk twice the neighborhood up and down to verify the items identified, as well as, to observe any social behaviors.

8.5.1.3 *Data Analysis*

All data were entered into Microsoft Excel in a coded form. A **composite score** was calculated **per domain** as the sum of the items with a theoretical range to the total number of items in that domain as described in Phase I. For consistency, all domain scores were also transformed to a common 0-100 scale using $(\text{value} - \text{min}) / (\text{max} - \text{min}) \times 100$. Note that some variables (items) are binary and some are ordinal (commonly with 4- or 5-point rating scales). Some items allow multiple responses (for example, people's activity) and/or result in nominal variables. These items

were considered to be profile questions as there is no clear ordinal classification across the possible responses (e.g. exercising, doing chores, walking, socializing, etc). Therefore, these have been excluded from the domain scores. Items were originally into domains based on the typology suggested by Nickelson et al 2013 (Nickelson et al., 2013) with the addition of social behaviors/social disorders. Responses in all ordinal items were expressed using a common rating scale of 0 to 1 expressing worst-off and better-off environments, using reverse coding was necessary. Thus, while binary items were coded 0-1 for the presence/absence of the audited feature, a 5-point ordinal item commonly assessing the quality or condition of a feature (e.g. poor to excellent) was expressed as 0, 0.25, 0.50, 0.75, and 1. However, due to the new additional features that have been in the CyNOTes after the virtual ethnographic study and further cultural adaptation, the typology used in the pilot study has been subsequently changed and from the 21 domains where iteratively reduced to 9 domains through a process of assessing the internal consistency of domains by merging similar or related domains.

8.5.1.4 Prevalence

The prevalence of each audited feature across neighbourhoods was calculated as the frequency (proportion) of occurrence across the response set of each item.

8.5.1.5 Testing Internal Consistency within Domains

Internal consistency of items within new domains was calculated using Cronbach's alpha coefficient. Summary statistics (mean, median, SD, IQR) were calculated for each domain using SPSS statistical software.

8.5.1.6 Testing association between Domains

Spearman's and Kendall's correlation coefficient between domains were calculated for highest correlation between domains. Item-item and item-total correlations as well as the alpha coefficient if each item is deleted in turn were also calculated to assess whether and which item shows the least consistency with the rest in the same domain starting with the standard typology used in the pilot study. Through an iterative process of identifying items that showed a problematic internal consistency with the other items in that domain (i.e. Cronbach's alpha coefficient was substantially improved if specific item/s were removed), a new typology was formed by either (a)

including the identified item in a conceptually related domain after assessing the internal consistency of the new set of items or (b) removing it all together if no appropriate alternative domain was identified and/or showed no or very little variability. Furthermore, several domains with a small number of items were merged with conceptually related domains given that the estimated internal consistency coefficient of the new combined set was at least adequate and not lower than either of the domains alone. The strongest positive correlations as well as the negative correlations were identified. Correlations above 0.30 were considered important.

8.5.1.7 Testing for Higher order dimensionality

Exploratory factor analysis at the level of items was not performed due to the large number of items involved by comparison to the small sample of neighbourhoods. However, a higher-order dimensionality was explored at the level of domains using exploratory factor analyses of the 9 domains. The dimensionality of the new CyNOTes v 2.0 typology was assessed in principal components analysis using Kaiser-Meyer-Olkin coefficient and the Barlett's test of sphericity. This is also supported as the domains conceptually are loading to the same factor. The factor analysis promoted a further understanding of neighbourhood profiles, since the set of domains that appear to be more highly inter-correlated seem to portray certain types of neighbourhoods.

8.5.1.8 Comparing Domain Scores Across Neighborhoods by educational attainment.

Differences in mean and median domain scores across groups of neighborhoods defined by the level of educational attainment were assessed using parametric and non-parametric statistics. The use of Parametric and non-parametric statistical tests in parallel is used in the context of sensitivity analysis. Both were used to observe if distributions are highly skewed or there are outliers. However, non-parametric were not used exclusively, as there is a need to use regression models which are parametric. The p-value was observed from the non-parametric.

Therefore, One-way ANOVA, Kruskal-Wallis test (due to small sample size and asymmetrical distributions), and p-value for trend were used to assess differences in domain scores across groups of neighborhoods defined by educational attainment. Associations were explored across tertiles quartiles or quintiles of educational level at both parish and postcode level.

Comparing Domain Scores Across Neighborhoods by socioeconomic-disadvantage index. Differences in mean and median domain scores across groups of neighborhoods defined by socioeconomic-disadvantage index a composite indicator derived from a different study were also calculated. The socioeconomic-disadvantage index (low educational attainment, unemployment, not owner-occupied household, single-person household, divorced or widowed and single-parent households) which is a composite indicator derived from a different study (Lamnisis, Lambrianidou, et al., 2019b) .

Due to the small sample size (15 streets per category of education), statistical significance was not set to 0.05, but differences larger than 20% across groups of neighborhoods were considered important. Power analysis suggests that with a sample of 30, there is 80% power to detect a statistically significant difference at 5% only if observed differences in the proportion of a feature are of the magnitude of 10% Vs 60% at opposite ends of the education continuum (low Vs high educational attainment).

8.5.2 STAGE B Perception of neighborhood environment: Concurrent Validity

The neighborhood environmental perception as part of concurrent validity was assessed by using the “Place Standard tool” (PST) which is a questionnaire developed by NHS Scotland in partnership with the Scottish Government, Architecture and Design Scotland, and Glasgow City Council. The PST covers 14 aspects of the physical, built, and social neighborhood environment but it also promotes and encourages an inclusive dialogue among stakeholders to identify assets and resources as well as challenges, pinpoint areas for improvement, and assist in setting priorities by consensus. Launched in 2015, it has since been used extensively in Scotland to engage with communities, develop a shared understanding of priorities and actions and shape collaborative decisions. The tool can be used to assess different types and sizes of Places by individuals or groups. Available in multiple forms, including booklet, interactive, and web versions (www.placestandard.scot/), the tool allows flexibility. It can be used in print or digital form, in the context of surveys or focus groups, in formal settings, or walkabouts.

The PST contains a series of 14 items, each addressing a different dimension of Place, covering both physical as well as social aspects that can impact health and well-being. Namely, these are: Moving Around, Public Transport, Traffic & Parking, Streets & Spaces, Natural space,

Play & Recreation, Facilities & Amenities, Work & Local economy, Housing & Community, Social contact, Identity & Belonging Feeling safe, Care & Maintenance, Influence & Sense of Control. The Place Standard is designed to allow responders to provide a quantitative assessment of each dimension on a scale from 1 =large room for improvement to 7= little room for improvement as well as qualitative assessment in the form of free text to identify what shaped the particular rating. For each of the 14 items, prompts in the form of supplementary questions describe various aspects related to the domain for the responder's consideration. A nice feature of the tool is that the quantitative scores are displayed on a compass graph (radial plot) to provide an overall profile of Place and thus illustrate visual strengths (approaching the outward circle with the highest possible score of 7) and weaknesses (closer to inner circle with the lowest score of 1).

8.5.2.1 Translation to Greek

Permission to use the Place Standard was obtained by the developers. Copywrites for the usage of "Place Standard" was taken. The tool was translated and adapted into Greek from the original English using a forward and backward translation process. The full booklet version, which includes the introductory information and instructions for completion, was translated into Greek by two of the authors independently of each other. After discussion and consolidating any discrepancies, a single Greek version will be back-translated into English independently by the other two authors. Any issues were resolved by consensus with a focus on semantic equivalence. Place Standard translated booklet [APPENDIX XVI Place Standard Booklet](#)

8.5.2.2 Short version format for door-to-door survey and internet survey

The Place Standard tool was adapted to a shorter version. The first page provided information about the aims of the study, a description of the questionnaire structure (main and prompt questions), and instructions for completion. For this study, all prompt questions were included in a short version, however, the option for open-ended responses was not provided under each question but in the 14 questions where the participants were asked to refer to three priorities that need immediate action and what kind of actions they are suggestions about their neighborhood environment.

In terms of structure, each domain of the Place Standard was presented on the same page. Each question was followed by a response scale from 1-7 with characterizations at either end whereby 1= large room for improvement and 7= little room for improvement. In each case, the responder was asked to consider a range of aspects related to these dimensions before providing a rating, again as per the original Place Standard, by providing all prompt questions. Place Standard short version format [APPENDIX XVII Place Standard Short version](#)

Finally, a variation of the MacArthur Scale of Subjective Social Status (Singh-Manoux et al., 2005) was used to assess the individual's perception of the relative standing of their neighborhood in the social hierarchy. Commonly, such measures represent the social structure as a "ladder", often with 10 steps, and responders were asked to locate themselves, or in this case, their neighborhood, on the ladder, considering that the top represents those neighborhoods who are best off (most privileged) and the bottom the neighborhoods who are worst off (most disadvantages). Such measures are considered particularly relevant as they represent an internalized perception of position in the social hierarchy through a cognitive "synthesis" of several factors not always easy to capture by other indicators and through a process of social comparison, in this case, with other neighbourhoods (Noble & Heale, 2019).

8.5.2.3 *Adaptation to an online format*

The Place Standard tool was adapted to an online format using Google Forms. The first page provided information about the aims of the study, a description of the questionnaire structure (main and prompt questions), and instructions for completion. For this study, all prompt questions were included in the online version, however, the option for open-ended responses was not provided. Similarly, while the booklet version of the Greek translation of the Place Standard contains all features, including the identification of priorities and actions, these were not included in the online version. In terms of structure, each domain of the Place Standard was presented on a separate page. At the top of each page, there was a short introduction, as per the original Place Standard, on why this dimension of Place is important, followed by the main question featuring a response scale from 1-7 with characterizations at either end whereby 1=large room for improvement and 7=little room for improvement. In each case, the responder was asked to consider a range of aspects related to this dimension before providing a rating, again as per the original

Place Standard, by providing prompt questions. Each question featured a characteristic Cyprus-specific picture of the dimension in question to increase familiarization. Both public-domain pictures (e.g. a picture of the identifiable Municipality of Limassol building for “Influence and sense of Control”), as well as original photographs, were used as fit for purpose. For instance, “social contact” was portrayed by a photo of two elderly men playing backgammon on a front house veranda; which is a more common form of social activity in Cyprus in certain age groups than meeting people in formal or informal community settings.

8.5.2.4 Pilot testing of the Place Standard tool

Under the auspices of the Healthy Cities Office of the Cyprus Ministry of Health, an internet-based survey was performed in April-May 2019. It involved an open call to citizens to rate their neighborhood environment along the 14 dimensions of the Place Standard tool. Alongside the motto “*if we don’t measure it, we won’t improve it*”, the study material featured for promotional purposes an original street art image found on a wall in old Nicosia’s historic centre, depicting a café-like scene in a town square where people of all ages and backgrounds appear to have come together in a common task.

The purpose of the internet-based Place Standard survey reported here was to pilot use the tool for the first time in a Cypriot setting, assess its metric properties but also to provide a reference against which the profile of CyNOTes neighborhoods can be compared to. Other than widening participation beyond the sample of audited neighbourhoods, the collaboration with the Healthy Cities Office provided an opportunity to encourage a public dialogue about the importance of Place for health and well-being. The findings from the nationwide piloting of the Place Standard tool have been published (Kleopa et al., 2022).

8.5.2.4.1 Socio-demographic information and subjective neighborhood social position

Participants were also requested to provide basic socio-demographic information, including gender, age, nationality, educational attainment, marital and employment status, and whether they had any financial difficulties e.g. paying bills in the past 12 months. Participants also needed to provide information regarding the size of the household, house tenure status, house type, length of residence in the current address.

8.5.2.4.2 *Data collection process*

The online questionnaire was posted on a Facebook page created specifically for this purpose (Cyprus Neighbourhoods and Health study, @CyNeighborhoodsHealth). To maximise reach, the study was promoted in three ways: (a) through a press release to the mainstream media reporting the signing of Memorandum of Understanding between the University and the WHO Health Cities coordinating office of the Cyprus Ministry of Health, (b) with the use of paid Facebook ads and (c) forwarding to municipalities with the request to promote on their official websites and social media channels. Paid Facebook ads targeted both a wide audience (i.e. location “Cyprus” and age “over 18 years of age”) as well as a more targeted audience using a range of pre-selected options under ‘Hobbies and Activities’, such as Charity and causes, Community issues, Environmentalism, Politics, Sustainability, Volunteering, etc.

8.5.2.4.3 *Data Analysis*

The sociodemographic profile of participants was compared to the expected distribution of these characteristics in the Cypriot population according to the 2011 census. Postcodes, as provided by participants, were checked for inconsistencies based on municipality/ community and district of residence and were classified as urban or rural based on administrative criteria and linked to a series of census-based indicators that were publicly available at postcode level at the Statistical Services of Cyprus. Specifically, these include indicators of the built environment (% of houses built before 1980, % of apartment blocks and mixed-used buildings) and socio-demographic composition with a focus on specific population groups often associated with socioeconomic disadvantage (% of single-parent households and % non-Cypriot population and % of population aged 65 years and over).

Place Standard ratings were analysed both by calculating summary statistics (mean, SD, median, IQR, min, max) as well as frequencies of responses across the 7-point scale for each of the 14 items. A total score was also calculated as the sum of all 14 ratings (theoretical range: 14-98). Item-item and item-total correlations were examined by calculating Spearman’s correlation coefficient. Ratings of 1-2 (i.e. least satisfied), 3-5 (around midpoint), and 6-7 (most satisfied) were grouped for further analysis. The extent to which the frequency of low ratings (1 or 2) is inversely associated with the neighbourhood’s social position (as assessed by participants) was

explored and the likelihood of responders to express dissatisfaction along the social disadvantage continuum was estimated in logistics regression models.

After assessing sampling adequacy with the Kaiser–Meyer–Olkin coefficient and the Barlett’s test of sphericity, Exploratory Factor Analysis (EFA) with principle component extraction and orthogonal rotation was performed to assess the dimensionality of the Place Standard. The criteria for the number of factors to be retained were: eigenvalues greater than 1, examination of the scree plot, and factor loadings of 0.4 or higher. The factors were interpreted in terms of capturing distinct aspects of the neighborhood environment and factor scores were calculated as the unweighted sum of items with high loadings on each factor. The internal consistency of the overall scale and identified subscales were assessed using Cronbach’s alpha coefficient. K-means cluster analysis was also performed to classify responders’ neighbourhoods in relatively homogeneous groups based on all 14 Place Standard ratings. A different number of clusters were specified to identify clusters that are as distinct from each other as possible. Differences in overall and sub-scale mean scores by (a) socio-demographic characteristics of the participants, (b) participants’ subjective assessment of neighbourhood social position and (c) across quartiles of neighbourhoods objectively classified according to census indicators were explored using one-way ANOVA.

Linear regression was used to explore the association between mean scores and area-level characteristics before and after adjusting for individual socio-demographic characteristics to control for the confounding effect of the potentially differing profile of responders across these groups of neighbourhoods.

The validation of the PST has been published (Kleopa et al., 2022). The full version of the published paper appears in [APPENDIX XVIII](#) .

8.5.2.5 Door-to-door survey

8.5.2.5.1 Sample-Sampling

A systematic random sample of >450 residents (N=444) across the same stratified sample of forty-five neighbourhoods audited using CyNOTes v 2.0 responded to the “Place Standard” tool.

8.5.2.5.2 *Data Collection*

Independent field interviewers performed a door-to-door survey about perceptions of neighborhood environment. The short version was used consisting of 14 short questions with a Likert scale from 1 to 7 (1 large space of improvement and 7 little spaces of improvement). In addition, citizens were asked open-ended questions to mention the top three priorities that they need to be improved as well as to describe the actions that are needed to improve those priorities.

8.5.2.5.3 *Data analysis*

8.5.2.5.3.1 Assessment of the 14 domains of the neighborhood environment of the Place Standard tool

Descriptive statistics were used to analyse the sociodemographic characteristics of the participants using frequency on SPSS software. Place Standard ratings were analysed both by calculating summary statistics (mean, SD, median, IQR, min, max) as well as frequencies of responses across the 7-point scale for each of the 14 items. A total score was calculated as the sum of all 14 ratings (theoretical range: 14-98).

8.5.2.5.3.2 Associations between the assessment of the 14 Place Standard Domains and socio-demographic characteristics

Associations between the assessment of the 14 Place Standard Domains and different socio-demographic characteristics was explored using stepwise regression models.

8.5.2.5.3.3 Observed differences Place Standard across neighborhoods by educational attainment and socio-economic disadvantage index.

To observe mean differences (SD) score and percentage of participants reporting that large improvements are needed across the 14 domains of the Place Standard across tertiles of neighborhoods (lower, middle, higher) by census-based postcode-level educational attainment was explored using logistic regression models.

The extent to which the frequency of low ratings (1 or 2) is inversely associated with the neighborhood's social position (as assessed by participants) was explored and the likelihood of responders expressing dissatisfaction along the educational attainment and social disadvantage

continuum was estimated in logistic regression models. The difference in overall and subscale mean scores by (a) socio-demographic characteristics of participants, b) participants' subjective assessment of neighborhood social position, and c) across quartiles of neighborhoods objectively classified according to census indicators was explored using one-way ANOVA.

Differences in mean scores of the 14 domains of the Place Standard questionnaire across tertiles of neighborhood according to the composite socioeconomic disadvantage index was also explored after adjusting for sociodemographic characteristics of the responders (N=444). Linear regression was used to explore the association between mean scores and area-level characteristics before and after adjusting for individuals' socio-demographic characteristics to control for the confounding effect of the potentially differing profile of responders across these groups of neighborhoods.

Stepwise linear regression analysis was used to explore whether the perceptions of place vary by sociodemographic characteristics. It is important to identify which variables may have a confounding effect across neighborhoods on the observed association between neighborhood characteristics (e.g. SED) and outcome of interest (e.g. Place Standard) due to the different composition of the sample. In addition, observed differences in mean (SD) score and percentage of participants reporting that large improvements are needed across the 14 domains of the Place Standard across tertiles of neighborhoods of increasing census-based postcode-level educational attainment and census-based postcode-level composite socioeconomic disadvantage were explored using one-way ANOVA for continues variables calculating differences in mean scores across tertiles of education and disadvantage. Chi-square X^2 for percentage was used to explore the association between the percentage of participants who reported that there was a need for large improvements across the 14 domains of the Place Standard across tertiles of neighborhoods by the census-based postcode-level composite socio-economic disadvantage index and after adjusting for sociodemographic characteristics of the responders. This was also calculated for each of CyNOTes domains' scores factor after adjusting for sociodemographic characteristics of responders.

The differences in the mean perception scores of the 14 domains of the Place Standard questionnaire across tertiles of neighborhood according to the composite socio-economic disadvantage index after adjusting for sociodemographic characteristics of the responders were

explored in multivariable mixed model regression analysis. Mixed regression models were used because of the lack of independence due to the clustering at the neighborhood level (10 people per neighborhood). In the first instance, differences were explored across tertiles as a categorical variable using the worst-off tertile as a reference group (B coefficient). If the observed pattern is suggestive of a stepwise pattern across tertiles with decreasing levels of SE disadvantage then the analysis was repeated to express the observed relationship in linear terms (per tertile increase).

A mixed regression model was also be used to identify differences in mean scores of the 14 domains of the Place Standard questionnaire across tertiles of neighborhood according to each of CyNOTes domains' score after adjusting for sociodemographic characteristics responders. It was expected that the CyNOTes domains would be a better match with similar constructs of Place Standard tool.

8.6 STAGE C Associations between CyNOTes and indicators of neighborhood socioeconomic deprivation

A number of census-based indicators of socioeconomic disadvantage were also collected in order to assess association with CyNOTes scores. The data were publicly available from the 2011 census, Cyprus Statistical Services, namely:

- % population over 65+,
- % retired population,
- % population with chronic health problems,
- % unmarried adults,
- % divorced, correlations with % up to secondary education,
- % tertiary education,
- % illiterate population,
- % non-Cypriot population,
- % non-Cypriot-non-EU population,
- % migrants from abroad,
- % population mobility (the year before),
- % unemployment,

- % non-professional occupations,
- % elementary occupations,
- % multi-dwelling/-use houses,
- % non-permanent residences,
- % houses built prior 1980,
- % houses build prior 2001,
- % non-owner occupied, households with no PC,
- % households with no PC/internet,
- % households no central heating,
- % single-person households,
- % single-parent households. at the city quarter (enoria) level.

8.6.1 Data analysis:

The association between summary domain scores and census-based area-indicators of the built environment or socio-demographic composition was also assessed by calculating Pearson correlation coefficients was used. Z-scores expressed the level of the indicator compared to all the other neighborhoods in Limassol as a standardized form.

8.7 STAGE D Differences in Health related QOL across neighborhood Profiles: predictive validity.

8.7.1 Sample-Sampling

Differences in Health-related Quality of Life across neighborhood profiles have been observed from a sample of 450 participants across 45 randomly selected neighborhoods from previously approved and completed community survey (National bioethics committee reference: EEBK EII 2016.01.49). This is the same set of 45 randomly selected neighborhoods used to test the CyNOTes.

8.7.2 Data Collection

The data have been collected through a door-to-door survey, using the SF-36 validated tool for health-related quality of life. More information about the data collection process in the original study can be found in Ellina et al., 2021 (Ellina et al., 2021).

8.7.3 Data Analysis

The data collected have been analysed to investigate the extent to which specific neighborhood features are associated with health-related quality of life after adjusting for a) individual characteristics such as gender and age and b) social position (education and income) and random effect (for postcode).

The physical and mental health component scores have been created for the SF-36 Health-related Quality of Life questionnaire in residents aged 45-64 (N=450) across tertiles of neighborhood according to census-based area-level socio-economic disadvantage indicators and CyNOTes Domain scores. For the analysis, a mixed model linear regression with a fixed effect for the parameters of interest and random effects for neighbourhoods to adjust for possible clustering was used. Estimates were first calculated across tertiles as a categorical variable (with better off as reference) and subsequently, analysis was repeated to express the observed association in linear terms (change per tertile increase). Models adjusted for gender and age (model 1) and further adjusted for (income and education) to control for the potential confounding effect of individual-level characteristics associated with QoL which are also expected to vary across types of neighbourhoods (demographic composition).

9 RESULTS PHASE I: Development of Tool (reliability and validity)

9.1 Results Stage A: CyNOTes first draft

The description of the first draft of the tool is described in the Methodology section. The first CyNOTes v 1.0 draft consisted of 123 items tapping on features of the physical, built and social environment. ([APPENDIX IV Cy-NOTes 1.0](#)).

9.2 Results Stage B: First Pilot Study: feasibility and reliability

9.2.1 Prevalence of each audited feature and variability across neighborhoods

The prevalence of each audited feature was calculated for all three audits (main and repeat). The first CyNOTes draft consisted of 123 items tapping on features of the physical, built and social environment. The prevalence of each audited feature was calculated for all three audits (main and repeat). Most of the CyNOTes items (78%) exhibited high (IQV >80%) or at least moderate (IQV=50-80%) variability across the audited streets according to the Index of Qualitative Variation (IQV).

Table 6 presents a summary of the observed variability across audited items (first audit), organized according to the different sections of the tool. An example of an item with high variability (IQV=96.9%) was the “*frequency of litter*” which was recorded as: none in 36.7%, a little/light in 26.7%, some in 20% and a lot/heavy in 16.7% of the audited streets. As example of moderate variability (IQV=73.2%) was “*street traffic*” which varied as follows across audited streets: No traffic or very light in 63.3%, Light or Occasional in 16.7%, Moderate in 13.3%, Heavy in 6.7% and Very heavy in 0.0% of cases.

Twenty-four items showed low (IQV=20-50%) or very low (IQV <20%) variability; nevertheless, these items were not excluded from further analysis due to their conceptual importance. Very low variability across audited neighborhoods were due to either floor (i.e. featuring in none or nearly none of the audited streets) or ceiling effects (i.e. featuring in all or nearly all). Very low IQV items due to floor effects were: speed reducing measures (IQV=0.0), pedestrian crossings (IQV=0), advertisements of unhealthy products (IQV=0), vandalism (IQV=0.0), misbehaving teenagers (IQV= 0), misbehaving children (IQV= 0), misbehaving adults

(IQV=12.9), greenbelts trails or paths (IQV=12.9), bicycle facilities (IQV=8.6), bikeability rating (IQV=12.9), drinking alcohol (IQV= 12.9) and loud music (IQV=12.9). Very low IQV items due to ceiling effects were: sidewalks on both sides of the street (IQV=12.9) and sidewalk continuity (IQV=12.9).

Table 6 Audited features with low variability according to the Index of Qualitative Variability across the sample of street segments (N=30).

CyNOTes section	Number of items with low IQV due to floor or ceiling effects			
	20-50%		<20%	
A. Land use				
Number of items	1	0	0	0
Floor or ceiling	Ceiling effect			
Name of items	Predominant land use			
B. Characteristics of the general environment, streets and sidewalks				
Number of items	1	4	2	6
Floor or ceiling	Ceiling effect	Floor effect	Ceiling effect	Floor effect
Name of items	Outdoor lighting	- Street buffer - Public transport - Uniformity - Ethnic orientation	- Sidewalks (number) - Sidewalks complete/continuous	- Street crossings - Speed reducing measures - Greenbelts, trails or paths - Bicycle facilities - Bikability rating - Unhealthy ads
D. Residential Land use				
Number of items	0	0	0	0
E. Non-Residential Land use				
Number of items	0		0	
F. Parks, Playground, Outdoor public space				
Number of items	1	0	0	0
Floor or ceiling	Ceiling effect	Floor effect	Ceiling effect	Floor effect
Name of items		Other play spaces occupants		
G. People				
Number of items	0	1	0	4
Floor or ceiling	Ceiling effect	Floor effect	Ceiling effect	Floor effect
Name of items		Teenagers in groups		- Drinking Alcohol - Misbehaving adults - Misbehaving teenagers - Misbehaving children
H. Incivilities				
Number of items	0	2	0	1
Floor or ceiling	Ceiling effect	Floor effect	Ceiling effect	Floor effect
Name of items		- Unpleasant smells - Dirt or dust in the air		- Vandalism - Loud music

9.2.2 Intra-rater and Inter-rater agreement across items

With a few exceptions, most items showed at least moderate intra- (in a 2 week-period) and inter-rater (between the two auditors) agreement. Table 7 presents a summary of the intra- and inter-rater agreement, with a focus on items with poor (20%-40%) or very poor (<20%) agreement. In terms of the intra-rater agreement, the large majority of items showed high agreement, especially when weighted rather than exact agreement was considered. Only a small number of items (N=5) showed poor intra-rater agreement. In one case, namely Parking arrangements, this could be justified due to possible temporal variability between audits, while for the other four items (namely, Neighborhood Markers, Security bars – residential, Security bars – commercial and Vacant/ Undeveloped lots), it was apparent that unclear definitions were responsible, and thus further clarifications were provided for these items according to the auditor's relevant comments.

In terms of inter-rater agreement, the exact agreement was generally higher for items recording presence vs absence of features, rather than items with a more subjective response scale (e.g. condition of houses, residential grounds, street surfaces, sidewalks, public spaces, vacant lots). Nevertheless, intra-rater agreement appeared much improved when weighted agreement was considered. Inter-rater agreement was poor for fifteen items. For five (N=5), this could be attributed to possible temporal variability between audits; namely, parking arrangements, parking violations, piles of garbage, barking dogs and renovations. For the other ten items (N=10), low agreement was attributed to problematic definitions and/or unclear instructions. No items were removed and the necessary clarifications were provided to improve the reliability of measurement.

Table 7 CyNOTes items with low or very low intra- and/or inter-rater agreement

Intra-rater agreement	>80% Very high	80%-60% High	60%-40% Moderate	40%-20% Poor	<20% Very poor
% exact agreement	52 items	50 items	20 items	4 items	0 items
Name of items				• Neighborhood markers • Security bars - residential • Condition of public spaces • Recreational facilities- types	
% weighted agreement	97 items	28 items	0 items	1 item	0 items
Name of items				• Neighborhood markers	
PABA Kappa	52 items	45 items	24 items	5 items	0 items
Name of items				• Neighborhood markers • Security bars - residential • Security bars - commercial • Vacant/ undeveloped lots • Parking arrangements	
Inter-rater agreement	>80% Very high	80%-60% High	60%-40% Moderate	40%-20% Poor	<20% Very poor
% exact agreement	55 items	38 items	22 items	10 items	0 items
Name of items				• Condition ○ Street surfaces ○ Public spaces ○ Most houses ○ Most residential grounds ○ Vacant lots • Sidewalks ○ width ○ condition ○ obstructions • Other play spaces ○ types ○ count	
% weighted agreement	95 items	24 items	6 items	0 items	0 items

PABA Kappa	45 items	49 items	15 items	9 items	6 items
				• Neighborhood uniformity • Parks/Playgrounds • Other play spaces • Condition ○ Public spaces ○ Sidewalks • Parking violations • Piles of garbage • Renovations • Barking dogs	• Vacant lots • Sidewalk ○ width ○ shade • Open view • Housing type (predominant) • Parking arrangements
Note: For checklist items, intra- and inter-agreement calculations were performed only for the most prevalent type of features recorded, otherwise items used only for profiling were not considered.					

[APPENDIX II](#) shows the arrangement of the 123-CyNOTes items in the domain typology as classified by consensus for the purposes of the calculation of composite scores, along with a definition of each domain. Eighteen items referred to general auditing questions (i.e. mode of transportation, weather conditions, similarity of streets in wider neighborhood) or non-ordinal checklist items for the purposes of further profiling (e.g. park and playground occupants, people's activity, etc), and hence were not considered in the calculation of composite scores. For three of the typology domains, a composite score was not computed since they consisted of only one or two items (namely, Neighborhood Identification, Views/Enclosure and Steepness). Barriers (2 items) and Sidewalks (4 items) were combined into a single domain. Furthermore, a separate domain for Social Disorder (6 items), not included in the published typology was added. Finally, at the analysis stage, six items were excluded due to problematic coding and/or low internal consistency with the rest of the items in their domain.

Overall, 94 of the CyNOTes items were included in the calculation of 17 domain composite scores, ranging from 3 to 10 items. Only five items were considered in more than one domain, namely (1) “predominant type of residential housing” in both Architecture & Building Characteristics and Land Use, (2) “Decoration and external beautification features” in both Architecture & Building Characteristics and Maintenance & Appearance, (3) “General area attractiveness” in both Architecture & Building Characteristics and Landscape & Nature features, (4) “Obstructions for walkability” in both Sidewalks & Barriers and Pedestrian Environment, (5) “Obstructions for bikeability” in both Sidewalks & Barriers and Cycling Environment.

Table 8 presents bivariate Spearman correlation coefficients between domain scores. The strongest correlations were observed between Maintenance & Appearance and Architecture & Building characteristics ($\rho = 0.82$), Parking & Driveways and Maintenance & Appearance ($\rho = 0.71$), Parking & Driveways and Architecture & Building characteristics ($\rho = 0.64$), while the Safety domain (referring to lack of security-related features) was negatively correlated with Architecture & Building characteristics ($\rho = -0.71$) and Maintenance and Appearance ($\rho = -0.70$).

Table 9 presents Cronbach's alpha coefficients for internal consistency of the items by domain as well as summary statistics of the 17 composite scores. With the exception of four domains, namely amenities for outdoor public spaces ($\alpha = 0.50$), ethnic identification ($\alpha = 0.42$), signs/messages ($\alpha = 0.44$) and smell, pollution, noise ($\alpha = 0.29$), the other domains showed acceptable internal consistency across the items that comprise them.

The highest alpha coefficients between items were observed for: Architecture & Building characteristics ($\alpha = 0.87$, 10 items), Landscape & Nature features ($\alpha = 0.91$, 4 items), Maintenance & Appearance ($\alpha = 0.83$, 10 items), Physical Disorder ($\alpha = 0.79$), Public Spaces & Recreational use ($\alpha = 0.78$) and Social Disorder ($\alpha = 0.75$).

The remaining domains showed moderate internal consistency (0.50-0.70); however, all items were retained since removing any items did not result in a meaningful improvement of the internal consistency.

Table 8 Spearman correlations between domains

	Domain 1	Domain 2	Domain 4	Domain 5	Domain 6	Domain 7	Domain 8	Domain 10	Domain 11	Domain 12	Domain 13	Domain 14	Domain 15	Domain 16	Domain 17	Domain 19	Domain 21
Domain 1	1.00																
Domain 2	-0.33	1.00															
Domain 4		0.39	1.00														
Domain 5				1.00													
Domain 6		0.41	0.49		1.00												
Domain 7		0.77				1.00											
Domain 8		0.82	0.30			0.61	1.00										
Domain 10		0.64	0.43		0.40	0.48	0.71	1.00									
Domain 11		0.61		-0.34		0.59	0.57	0.46	1.00								
Domain 12		0.62				0.65	0.60		0.29	1.00							
Domain 13	0.60		0.34								1.00						
Domain 14		-0.71	-0.27		-0.28	-0.53	-0.70	-0.62	-0.37	-0.34		1.00					
Domain 15		0.39	0.58		0.51	0.28	0.44	0.35	0.34		0.34	-0.36	1.00				
Domain 16				-0.38								0.33		1.00			
Domain 17		0.61		-0.31	0.28	0.47	0.63	0.58	0.55	0.49		-0.42			1.00		
Domain 19		0.36		-0.40	0.36			0.32	0.36						0.30	1.00	
Domain 21	-0.33						0.37	0.31									1.00

Note: only correlations higher than $p=0.30$ are displayed in the table. In bold, those statistically significant at 5% level

Table 9 Summary statistics (original and transformed 0-100 range, with lower scores reflecting adverse features) and alpha coefficient for internal consistency by domain.

Domain	No of Items	Range (0-100 scale)	Min	Max	Mean	StDev	Median	IQR	Alpha	Alpha, if item deleted	Highest inter-item correlation
D1: Amenities for outdoor public spaces	4	0-4 (0-100)	0.00 (0)	2.67 (67)	1.15 (29)	1.03 (26)	0.67 (17)	0.33-2.33 (8-59)	0.50	0.62 (bus stop)	0.55
D2: Architecture & Building characteristics	9	0-9 (0-100)	0.83 (9)	9.00 (100)	5.05 (56)	2.43 (27)	5.34 (59)	1.83-7.5 (33-78)	0.87	0.89 (storeys of buildings)	0.87
D4: Cycling environment	3	0-3 (0-100)	0.00 (0)	1.42 (47)	0.38 (13)	0.45 (15)	0.33 (11)	0.00-1.00 (0-33)	0.69	N/A	1.00
D5: Ethnic identification	3	0-3 (0-100)	0.00 (0)	2.00 (67)	0.47 (16)	0.73 (24)	0.00 (0)	0.00-2.00 (0-67)	0.42	N/A	0.23
D6: Land use	6	0-6 (0-100)	1.83 (31)	5.00 (83)	3.18 (53)	0.64 (11)	3.17 (53)	2.5-3.83 (42-64)	0.64	0.67 (vacant lots)	-0.64
D7: Landscape & Nature features	4	0-4 (0-100)	1.00 (25)	3.67 (92)	2.17 (54)	0.91 (23)	2.51 (63)	1.33-2.84 (33-71)	0.91	0.93 (attractiveness)	0.83
D8: Maintenance & Appearance	10	0-10 (0-100)	2.00 (20)	8.5 (85)	5.25 (53)	1.91 (19)	4.75 (48)	3.50-7.25 (35-73)	0.83	0.86 (public spaces condition)	0.80
D10: Parking & Driveways	3	0-3 (0-100)	0.50 (17)	3.00 (100)	1.45 (48)	0.92 (31)	1.00 (33)	1.00-2.00 (33-67)	0.61	N/A	0.78
D11: Pedestrian Environment	8	0-8 (0-100)	0.33 (4)	5.34 (67)	3.10 (38)	1.32 (16)	3.50 (44)	2.00-4.00 (25-50)	0.59	0.61 (street buffer)	0.93
D12: Physical Disorder (lack of)	10	0-10 (0-100)	3.67 (37)	10.00 (100)	7.83 (78)	1.71 (17)	8.17 (82)	6.35-9.67 (64-97)	0.79	0.80 (beer cans/ alcohol bottles)	0.91
D13: Public spaces & recreational uses	6	0-6 (0-100)	0.00 (0)	5.25 (88)	1.94 (32)	1.47 (25)	1.67 (28)	0.66-2.75 (11-46)	0.78	0.78 (vacant lots)	0.73
D14: Safety	6	0-6 (0-100)	2.25 (38)	5.75 (96)	4.00 (67)	1.00 (16)	4.00 (67)	3.5-4.75 (58-79)	0.57	0.59 (protected by dogs)	0.53
D15 & 3: Sidewalks (presence) & Barriers (lack of)	6	0-6 (0-100)	1.75 (29)	6.00 (100)	3.34 (56)	1.09 (18)	3.21 (53)	2.50-3.83 (42-64)	0.56	0.62 (number of sidewalks)	0.49
D16: Signs & Messages (lack of)	5	0-5 (0-100)	2.16	4.50	3.83	0.65	4.00	3.50-4.25	0.44	0.63 (billboards)	0.75

			(43)	(90)	(77)	(13)	(80)	(70-85)			
D17: Smell, Pollution, Noise (lack of)	6	0-6 (0-100)	2.50 (42)	6.00 (100)	5.00 (83)	1.00 (17)	5.00 (83)	4.00-6.00 (67-100)	0.29	0.38 (stray dogs)	0.42
D19: Streets (quality) & Traffic (lack of)	4	0-4 (0-100)	0.33 (8)	3.00 (75)	2.06 (52)	0.63 (16)	2.17 (54)	1.83-2.50 (46-63)	0.57	0.59 (speed reduction)	0.51
D21: Social Disorder (lack of)	6	0-6 (0-100)	2.00 (33)	6.00 (100)	5.15 (86)	0.76 (13)	5.50 (92)	4.50-5.50 (75-92)	0.75	0.86 (unsupervised children)	1.00

Figure 4 presents the distribution of scores for all seventeen domains across the 30 audited neighborhoods. Even though a direct comparison across domains should generally be avoided, it should be noted that the three domains with generally higher scores were: absence of social disorder (6 items), absence of smell, pollution & noise (6 items) and absence of physical disorder (10 items), while generally lower scores were recorded for amenities for outdoor public spaces (4 items), public spaces and recreational uses (6 items), cycling environment (3 items), pedestrian environment (8 items) and ethnic identification (3 items). More importantly, there was wide variability between audited neighborhoods in nearly all domains. A notable exception was lack of social disorder for which most neighborhoods scored relatively high, with not much variability. The domains with the largest variability were: Architecture & Building Characteristics, Landscape & Nature features and Maintenance & Appearance.

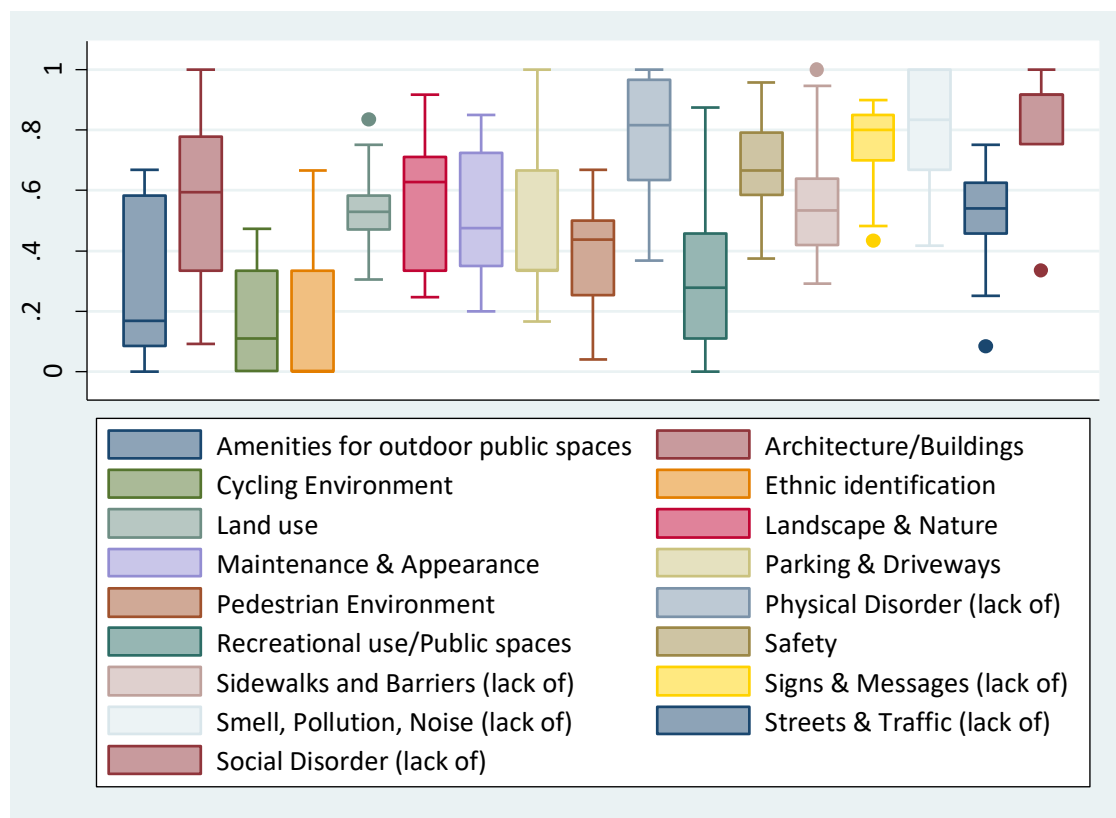


Figure 4 Box plots the observed range/distribution of domain scores across the audited neighborhoods.

9.2.3 Differences in mean and median domain scores across three groups of neighborhoods defined by level of educational attainment.

There was evidence of a social gradient in most domains. Table 10 presents differences in median domain scores across the three groups of neighborhoods classified according to the educational attainment of adult residents. More adverse conditions were generally recorded in neighborhoods with lower education attainment across all domains with a few exceptions. As also portrayed graphically in Figure 5, there was a stepwise pattern of higher scores in several domains across increasing educational attainment even if observed differences were not always statistically significant (p -value for trend < 0.10 in at least half of the domains). Differences appeared larger in resident-related features (e.g. maintenance of housing and private grounds) rather than built features and public services infrastructure, with equally low scores across the socioeconomic continuum. Safety features (in this case, tapping on security-related features such as CCTV cameras, security bars etc) was the exception, as these features were more prevalent in higher education neighborhoods. A reverse trend was observed in the case of safety domain where, the higher educational neighborhoods showed lower scores (i.e. 58,3 vs 70.8, p value for trend $= 0.09$).

A social gradient was apparent in domains for which neighborhoods scored relatively high (e.g. lack of physical disorder) as well as in domains for which neighborhoods generally scored low (e.g. recreational/public spaces). Across the three groups of neighborhoods, differences appeared larger in terms of resident-related features i.e. appearance and maintenance of residential buildings, rather than public-related infrastructure, which tend to be equally low across the board. Good quality sidewalks, condition of streets and other publicly-controlled features are not the most defining features of lower Vs higher SES neighborhoods. On the other hand, better quality housing; private gardens etc are more defining features in the higher SES neighborhoods. In contrast, safety -related features, such as alarm systems, security bars and higher fences around private residences are more likely to be found in higher SES neighborhoods. It is not clear whether this reflects actual and/ or perceived concern of the residents. Social disorder was not frequent in terms of direct behaviors (i.e. misbehaving) but in indirect physical evidence, e.g. more garbage, more dog droppings, more abandoned vehicles, more parking violations in neighborhoods with lower educational attainment.

Table 10 Differences in mean and median domain scores across three groups of neighborhoods defined by level of educational attainment
([APPENDIX VII detailed table](#))

	Low educational attainment group (N=10)	Middle educational attainment group (N=10)	High educational attainment group (N=10)	p-value Kruskal-Wallis	P-value for trend
	Median (IQR)	Median (IQR)	Median (IQR)		
D1: Amenities for outdoor public spaces	4.1 (0.0-25.0)	29.2 (16.8-66.8)	25.0 (16.8-58.3)	0.27	0.21
D2: Architecture/Building characteristics	48.1 (29.7-61.2)	39.8 (20.3-77.8)	83.3 (70.4-88.9)	0.04	0.03
D4: Cycling environment	0.0 (0.0-11.0)	5.5 (0.0-33.3)	11.0 (11.0-33.3)	0.15	0.04
D5: Ethnic identification	0.0 (0.0-0.0)	16.7 (0.0-33.3)	0.0 (0.0-33.3)	0.33	0.23
D6: Land use	51.4 (47.2-58.3)	54.2 (44.5-58.3)	52.8 (47.2-58.3)	0.97	0.88
D7: Landscape/Nature features	43.8 (24.8-62.8)	48.0 (37.3-62.8)	62.8 (62.8-75.3)	0.32	0.15
D8: Maintenance/Appearance	38.8 (35.0-50.0)	41.3 (32.5-65.0)	72.5 (57.5-75.0)	0.03	0.02
D10: Parking & Driveways	33.3 (33.3-33.3)	33.3 (16.7-100.0)	50.0 (33.3-100.0)	0.31	0.10
D11: Pedestrian environment	43.8 (41.6-50.0)	27.1 (16.6-45.8)	47.9 (29.3-54.1)	0.10	0.63
D12: Physical disorder (lack of)	66.8 (63.3-96.7)	76.8 (66.8-83.4)	88.4 (83.4-96.7)	0.11	0.07
D13: Recreational uses/Public spaces	10.4 (5.5-15.3)	35.4 (25.0-54.2)	35.4 (16.7-59.8)	0.04	0.06
D14: Safety (lack of security-related features)	70.8 (66.7-79.2)	70.8 (41.7-95.8)	58.3 (58.3-66.7)	0.20	0.09
D15 & D3: Sidewalks & Barriers (lack of)	43.0 (37.5-54.2)	58.3 (45.8-75.0)	59.7 (41.7-70.8)	0.11	0.09
D16: Signs /Messages (lack of)	82.5 (70.0-85.0)	80.0 (73.2-85.0)	80.0 (56.6-85.0)	0.93	0.69
D17: Smell, pollution, noise (lack of)	70.8 (66.7-100.0)	83.3 (66.7-100.0)	100.0 (83.3-100.0)	0.16	0.04
D19: Streets (quality) & Traffic (lack of)	50.0 (45.8-62.5)	58.3 (41.8-66.8)	54.1 (45.8-58.3)	0.84	0.99
D21: Social disorder (lack of)	87.5 (75.0-91.7)	91.7 (83.3-91.7)	91.7 (91.7-91.7)	0.61	0.26

9.2.4 Criterion Validity: correlations between CyNOTes domain scores and select census-based community indicators across the audited neighborhoods.

The criterion validity of the tool was further assessed in terms of the correlation with other census-based indicators. The strongest correlations were observed with indicators of the built environment, such as the proportion of older built dwellings (pre-1980), the proportion of vacant or for demolition houses and the proportion of blocks or mixed-use units.

Figure 7 graphs the Spearman's correlations coefficients between each of the census-based indicators (at postcode level) and each of the CyNOTes domains. Correlations higher than 0.3 or -0.3 are depicted in the Figure in orange colour as they were statistically significant.

There were negative correlations between several domains and census indicators reflecting the sociodemographic composition of an area, such as the proportion of population over 65 and proportion of non-Cypriot population, suggesting more adverse experience for certain population groups and further supporting the criterion validity of the tool. Interestingly, correlations with % single-person households did not seem to follow the same pattern – see *Figure 7*.

It is interesting to note that, unlike most CyNOTes domains, Safety (which nevertheless focuses on lack of security-related features) showed positive correlations with most census indicators of socio-economic disadvantage. It is also indicative to note that Ethnic Identification (measuring signs of ethnic diversity, either than Cypriot or Greek) showed positive correlations with postcode-level proportion of non-Cypriot population, but also with the proportion of apartment blocks and mixed used buildings as well as proportion of vacant/for demolition housing units.

9.2.5 Predictive validity with health-related quality of life

In terms of the health-related quality of life (as measured by SF-36 among 10 residents per audited neighborhood in a previous community-based study), there was clear evidence of a social gradient across the three groups of neighbourhoods defined by differing educational attainment levels. Specifically, there was a statistically significant increase of 2.41 (95% CI 0.81, 4.01; p-valued for trend<0.001) and 1.70 (95% CI 0.25, 3.16; p-value for trend=0.22) points in the physical and mental component score of the SF-36 respectively across the three groups of neighbourhoods

-not shown in detail. There was also evidence of effect modification by gender ($p = 0.04$ and 0.03 for physical and mental quality of life), with larger differences observed among female residents in the magnitude of 4.5 (95% CI 2.1, 6.8) and 3.0 (95% CI 0.8, 5.2) for physical and mental quality of life respectively, which is considered clinically significant on the SF-36 scale.

To facilitate a comparison of health-related quality of life between neighborhoods with differing micro-environment profiles, cluster analysis was performed to classify the audited neighborhoods based on all domain scores. The analysis revealed two profiles of neighbourhoods – see Table 11. The first group consisted of neighbourhoods with generally more adverse conditions in most domains (namely, quality of housing, pedestrian environment, physical and social disorder; however, not in terms of the presence of public spaces and outdoor amenities which did not appear to be a discriminatory feature between neighbourhoods with more or less favourable conditions. In contrast, neighbourhoods with generally more favourable features tended to score lower in terms of safety-related features.

The first cluster consisted of neighbourhoods with generally higher socio-economic disadvantage as also attested by the observed statistically significant difference in terms of the proportion of adult residents with university education.

A comparison of SF-36 quality of life scores of residents between neighbourhoods with more adverse vs more favorable features revealed statistically significant differences in both physical (48.0, SD 8.9 vs 50.7 SD 7.2 respectively; $p = 0.05$) as well as mental (48.3 SD 7.9 vs 50.9 SD 7.2; $p = 0.04$) health-related quality of life, with larger differences recorded among female residents – see Table 10.

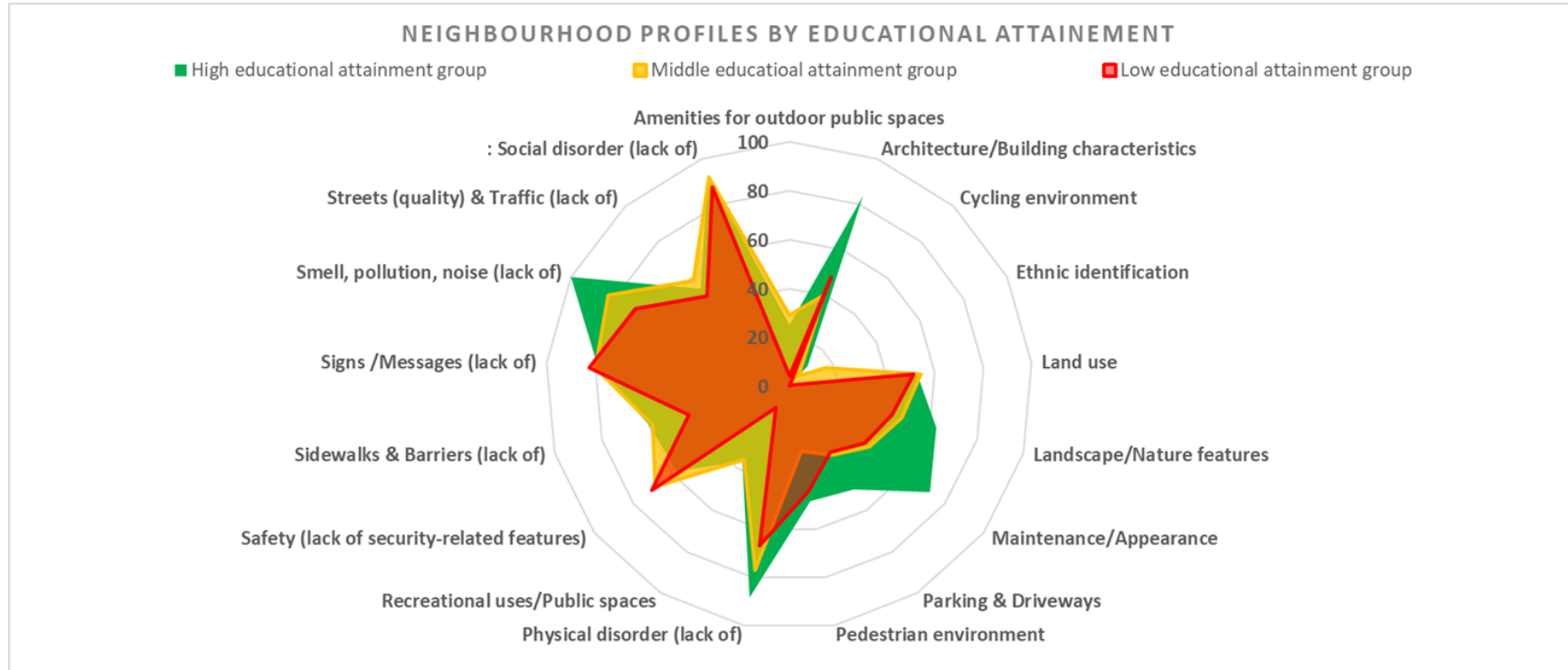


Figure 5 Radial plot profiles of observed differences in domain scores across three groups of neighbourhoods stratified by the educational attainment of the residents

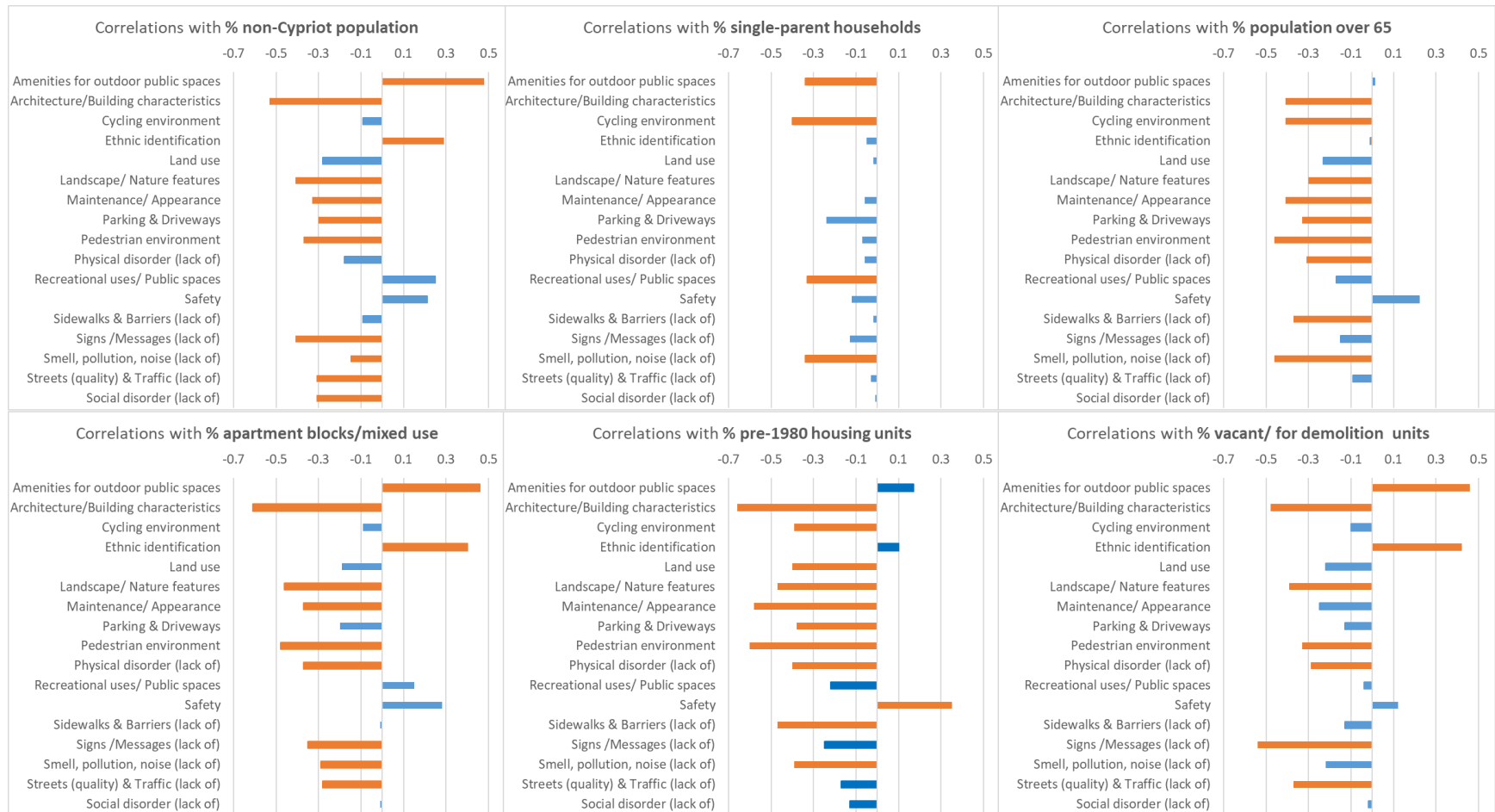


Figure 6 Correlations between CyNOTes domain scores and select census-based community indicators across the audited neighborhoods.

Table 11 Classification of audited neighbourhoods according to CYNOTes domain scores along with observed differences in proportion of adult population with tertiary education and SF-36 health-related Quality of Life scores.

Cluster 1 as compared to Cluster 2:	Cluster1 – M (SD)	Cluster2 – M (SD)	P-value
CyNOTes domains			
Adverse conditions in terms of:			
Architecture/Building characteristics (d2)	38.3 (22.3)	80.3 (12.6)	<0.001
Landscape/Nature features (d7)	38.7 (19.0)	68.2 (15.6)	<0.001
Maintenance/Appearance (d8)	39.4 (8.7)	70.4 (6.1)	<0.001
Parking & Driveways (d10)	27.8 (7.9)	55.6 (31.7)	<0.001
Pedestrian environment (d11)	31.9 (15.9)	45.9 (13.5)	<0.001
Physical disorder (lack of) (d12)	63.0 (9.3)	91.7 (8.6)	<0.001
Sidewalks & Barriers (lack of) (d15& d3)	52.3 (17.1)	66.9 (21.4)	<0.001
Smell, pollution, noise (lack of) (d17)	75.0 (11.2)	95.8 (9.4)	<0.001
Social disorder (lack of) (d21)	81.5 (18.9)	90.3 (7.5)	0.001
Favourable conditions in terms of			
Amenities for outdoor public spaces (d1)	37.1 (27.7)	16.7 (20.0)	<0.001
Recreational uses/Public spaces (d13)	38.3 (25.8)	28.9 (18.9)	0.017
Safety (d14)	75.0 (13.0)	59.7 (11.5)	<0.001
Streets (quality) & Traffic (lack of) (d19)	54.2 (18.6)	47.9 (12.3)	0.022
No difference in terms of:			
Cycling environment (d4)	15.1 (17.3)	18.5 (12.4)	0.19
Ethnic identification (d5)	11.1 (22.3)	11.1 (15.8)	1.00
Land use (d6)	52.4 (16.2)	54.2 (6.21)	0.43
Signs /Messages (lack of) (d16)	77.8 (10.1)	76.4 (15.1)	0.50
Educational attainment (%)	17.6 (8.2)	21.4 (8.9)	<0.001
Health-related QoL			
Physical Health Component score - PCS	48.0 (8.9)	50.7 (7.2)	0.052
Men	48.8 (8.0)	50.4 (6.7)	0.35
Women	47.3 (9.7)	51.1 (7.9)	0.085
Mental Health Component Score - MCS	48.3 (7.9)	50.9 (6.5)	0.038
Men	50.0 (6.8)	51.9 (6.0)	0.22
Women	46.5 (8.7)	49.9 (6.9)	0.086

9.3 Results Stage C: Focus Groups with professionals: face and content validity

Twelve participants from municipalities, hygiene inspectors, community nurses and social workers shared their thoughts. Using the focus group's opinions and consensus among the research team, 19 new items /questions were added to the CyNOTes v1.0. Table 12 presents the Nominal Group Technique results and the new items included in revised draft of CyNOTes.

Table 12 Nominal Group Technique and new items included in revised draft of CyNOTes

Item	Title	% at least very important	% extremely important	Index of qualitative variation	New items included in revised draft of CyNOTes	
58	Sewage System and rain water drainage	100%	91%	21%	... any stagnant waters or visibly blocked rain ducts ?	...any mold or damp visible on houses walls from the outside?
55	Late night noise (e.g. from nightclubs)	100%	82%	37%		
56	Livestock zones and stray animals	100%	82%	37%	... notice or hear any farm animals (e.g. chickens) in area?	... any stray cats ?
29	Disability-friendly infrastructure	100%	73%	50%	... infrastructure for disable citizens , ...?	
34	Rubbish and “hot spots” for germs	100%	73%	50%	... « hot spots » for germs , insects, or rodents?	... carcasses of dead animals?
44	Sidewalk quality	100%	73%	50%	... untrimmed trees, unkempt plants or weeds on pavements?	
68	Indications of illicit substance use	100%	64%	58%	... any condoms or syringes in public places?	
42	Pedestrian friendly environment	100%	55%	62%	... any vehicles cars or motorbikes moving down the street at high speed ?	
57	Strong odours (i.e. restaurants)	100%	45%	62%		
54	General noise and visual pollution	91%	82%	39%	... attractiveness of billboards and signage , include. uniformity?	
53	Air quality	91%	64%	64%		
61	Relationships and contact with neighbours	91%	64%	64%	... any houses with their front doors open (e.g. in case a neighbour drops by)?	... instances of social contact or gatherings (e.g. playing backgammon, drinking coffee on veranda, chatting)?
63	Homelessness	91%	64%	64%	... any people begging/asking for money either from residents or passers byers?	
66	Unaccompanied children in public places	91%	64%	66%	... young children (under) moving around ... unaccompanied by an adult ?	
48	Access to public transport	91%	55%	70%		

52	Industrial or construction sites	91%	55%	70%	... any industrial tracks and/or big commercial vehicles passing through?
62	Respect for vulnerable groups and needs of others	91%	55%	70%	... easy for citizens on wheels (e.g. stroller, disable cart) to move ...?
67	Bottles of alcohol in public spaces	91%	55%	72%	... discarded trimmings of plants and trees in public spaces or vacant lots?
27	Garbage cans and recycling bins	91%	45%	72%	
36	General cleanliness and level of care	91%	45%	72%	
43	Pedestrians and cyclists in the neighborhood	91%	45%	72%	
64	Illegal public behaviour (e.g. driving violations)	91%	45%	72%	... any driving violations , such as overtaking, speeding, not stopping at stopping signs, etc
8	Road traffic	91%	36%	70%	... road works or other construction work in progress e.g. street surfaces, pavements, etc?
37	Level of maintenance of the area	91%	36%	70%	
38	Vandalism and graffiti	91%	36%	70%	
41	Cycling friendly environment	91%	36%	70%	... bikability, even in the absence of a shoulder/lane , i.e. considering the road?
1	Indications of crime and delinquent behaviour	82%	73%	54%	...any security fences, bars or security devices in institutions , if present (schools etc)?
3	General feeling of insecurity and perceived lack of safety	82%	64%	66%	
30	Trees, plants, and other green spaces	82%	64%	66%	... purposely planted trees or other vegetation on sidewalks or between sidewalk and street?
65	Occupied parking spaces for people with disabilities	82%	64%	66%	... disable spaces/ access occupied by cars or blocked by other obstructions?
35	Droppings from dogs or other pets/animals	82%	55%	74%	

31	Specially designed green areas	82%	45%	81%	... establishments (commercial or institutional) for people to meet/have social contact (coffee shops, youth centers etc)? ... frequented by people? What age-groups would you say these establishments mainly cater for?
39	Abandoned cars	82%	45%	79%	
45	Walking paths	82%	45%	79%	
59	Opportunities and places for social contact	82%	45%	79%	
50	Uninhabited/abandoned houses and buildings	82%	36%	79%	
46	Cycling paths	82%	27%	74%	
47	Barriers to pedestrians/ cyclists e.g. trees on the pavement, etc.	82%	27%	76%	
20	Open public spaces	73%	55%	79%	

9.4 Results Stage D: Social Media Document analysis: content validity in Virtual Ethnographic Study

9.4.1 Sample

Three hundred forty-eight (N=348) comments from twenty-seven (N=27) posts related to the neighborhood environment were identified and considered in the analysis. Using deductive content analysis, a total of 310 Condensed Meaningful Units (CMUs) were identified and coded accordingly based on the neighborhood feature, aspect or characteristic they were referring to (e.g. recycling bins, litter, etc). Frequencies of comments according to CyNOTes domains appear in Table 14. These were tapping onto 19 out of the 21 typology domains as summarized in Table 14. The domain that was not identified was the Views/Enclosure domain.

For the inductive analysis, a total of 289 CMUs was identified and coded. The codes were organized under categories, with seven themes and several sub-themes emerging as schematically represented in Figure 7. The vast majority of comments were in Greek and occasionally some were in English. The comments that were in the Greek language were either written in the Greek or Latin alphabet, and spelling mistakes were widespread. For the purposes of the presentation of the findings, quotes were translated in English and back-translated in Greek to ensure semantic equivalence. A list of items (elements, characteristics, topics) in FB posts not explicitly covered, or not covered fully in CyNOTes is also presented at table 15.

9.4.2 Deductive Content Analysis

Some domains were reflected more strongly than others in citizen's comments based on the relative number of CMUs identified. Codes from the deductive analysis were compiled under the relevant CyNOTes domain; this quantitative (count) content analysis allowed a sense of which topics/ aspects were more prevalent among citizen's concerns. Furthermore, the process (a) assessed the extent to which there were matching CyNOTes items, while in parallel (b) identified CyNOTes items that were reflected in the Facebook codes. The summary of this process appears in Table 14, while a description of the findings follows.

Most prevalent (N=62 of 310 CMU) were comments referring to Physical Disorder. Citizens were commenting about widespread litter, accumulation of rubbish, or general level of cleanliness. These comments were most often referring to the general neighborhood (e.g. streets, pavements) while other times people were pointing to specific destinations or features of the neighborhood (e.g. parks, vacant lots, school yard etc). Often, comments were in relation to a perceived inaction from the authorities. For example, one citizen, characteristically commented: *"It's been two weeks since I called [meaning to bring to the attention of the authorities] to clean the park which is full of rubbish and piles of dumped material and appears deserted even by those who were supposed to clean it at least once a month"*. A number of comments stroke a humoristic, yet exaggerated, tone to highlight the infrequency by which neighborhoods were cleaned, for example: *"...no broom has come past here in three months"* or *"Yeah, rubbish on the side I saw back in the 90's and still the same, nothing will change"*, to add a pessimistic tone to the message.

Many of people's references related to physical disorder were specifically about animal droppings, and, hence, highlighted the indifference of fellow citizens beyond the role of the authorities. For instance, one person commented: *"they [referring to people, presumably other neighbours] take their dogs in the morning to do their p.. [sic] but do not pick up [after the dog]"*, or another person, wanting to emphasize the extent of the problem, commented: *"your every step will feel like you are in a minefield amongst all the animal droppings. What happened to civilization? Cleanliness? Zero!!!!"*. Other than animal droppings, there were no specific references to other types of litter, for example cigarette butts or packets and beer or alcohol containers, commonly singled out in neighborhood audit tools. There were, however, a few but characteristic comments about dumped syringes and condoms e.g. *"...our children find condoms in the yards"*.

There were also comments covering the full range of items related to physical disorder commonly included in audit tools, including in the case of CyNOTes, such as dumped material, abandoned or beaten-up vehicles (e.g. in vacant lots) and of course graffiti (*"Can the graffiti misery be stopped?"*) and vandalisms (*"...having their own kind of fun by taking it out on the walls and shop windows"*). With regard to the last two categories, comments often stoke an angrier tone accompanied by calls for stricter policing: *"In terms of the graffiti, I'd rather not comment, we simply ask you to find a way to catch those who do it and their punishment should be to clean-up"*

at their own expense”. Another person commented: “...something beautiful is done and there are people who just ruin it ...such a pity. We need policing”.

Less prevalent comments referred to Parking & Driveways (N=31 of 310 CMU) were citizen’s raised discussion about parking arrangements, availability or lack of car parks. These comments were often referred to parking-related behaviours. For example, one citizen’s characteristic comment: “*All neighbourhood roads have turned into parking lots*” [meaning the public open space has been transformed into parking area illegally]. Other comments were referred to parking on pavements and other violations, such comments “...also the audacious parking on the street must finally be put to an end”, “*Infinite examples*” and “*What bothers me is cars parked on pavements*”. Few comments were referred to private driveways/garages “*this thing with parking has no end if you don’t park directly in front of your house, someone else will park there...*” [can’t park in front of your house because someone else has]- not clear if this refers to the lack of private driveways (for instance in the city centre) or a habit of not using them either for convenience or even in order block others parking outside their houses;

Other comments also less prevalent referred to Recreational uses/Public Spaces (N=30 of 310 CMUs) were citizen’s raised discussions about the lack of and/or condition of parks and playgrounds. For example, one citizen’s comment: “*The entire area* [meaning neighborhood area] *without a single playground for our children*” and another comment “*I totally understand but it is a pity for a park in a densely-populated areas such as ours, for a playground to have the bases* [meaning where the equipment would be installed] *and all the special flooring but to have no playground equipment*”.. Some comments also were referred to the improper use of vacant lots, as well as suggestions about reclaiming public spaces/vacant lots “...constructing *ILLEGALLY* garages, warehouses etc. As a result of these illegal activities vehicles find it difficult to U-turn, rubbish trucks find it difficult to drive into the road...[referring to a no through road]”. Another comment referred to the suggestions that was send to the municipality regarding open empty vacant lots “*Please remember some older written suggestions* [meaning that I have send you] *with regards to providing* [referring to subsidizing] *seeds and plants and giving advice so that every empty unused lot in consultation with the owner...can host aromatic plants, flowers and local herbs*”. Limited references to other public recreational spaces (e.g. squares, as in CyNOTes which nevertheless are very rare in residential neighborhoods) or destinations such as places in the city

center that could be connected and become a walking path for the citizens “...[name of popular square] and [name of another square] and [name of another square] *should be an attractive area for walking around...*”, with the exception of requests for dog-friendly spaces/destinations “...we would like to have parks where we can take our dogs...” (e.g. parks, paths)

Similarly, less prevalent comments but related to the comments above were comments about the Sidewalks and Barriers (N=17 of 310 CMU). Citizens were discussing obstructions to walking and/or cycling either due to infrastructure problems (e.g. broken pavements) with a characteristic comment “*Bombed pavements* [meaning looking as if a bomb has fallen on them]” or lack of maintenance (e.g. untrimmed trees and weeds) “*Untrimmed trees and bushes converted small walking paths into natural trails*” or other comments referred to people’s activity (e.g. parking on pavements, rubbish) “*Appropriation of public pavements, barbecues on pavements, planted trees on small sidewalks, trees hanging* [meaning untrimmed] *on the street. Gas bottles of small supermarkets on the sidewalk, much clutter on various streets*”. No comments referred to shade/shaded pavements (as in CyNOTes).

Comments related to the Pedestrian environment were rather common (N=20 of 310 CMU) referring to the general walkability, obstructions but also pedestrian safety. A characteristic comment: “*To go from* [naming specific landmark] *toward* [naming destination] *(which is a distance of about 300 metres?) you have to say your prayers three times and watch out in case a car comes out from a side-street because the road turns into a single-lane due to all the parked cars* [meaning on both sides]...*Can something be done about this DOWNFALL?*”. There were also some more general references to the lack of a walking-culture referring to the fact it is not in the citizen’s culture to walk or using other means of transportation other than their private vehicle, a characteristic comment: “*The time has come for people to realise that they have to start using other means* [meaning of transport] *than cars...their feet and bicycles...*”. No explicit reference to buffers between pavement and street, greenbelts, trails, which is not surprising as these features are extremely rare beyond specific locations (for example, walking path in the dry river bed along the city quarters). Nevertheless, the specific post by the Municipality mentioned these features as part of the planned project “environmental neighborhoods” and even included pictures.

There were also comments discussing about the Amenities for outdoor public spaces (N=18 of 310 CMU) such as specific amenities and facilities in outdoor public spaces (e.g. trash,

recycling, bins, dog paths/bins BUT not phones, benches etc.) describing the nonexistence of public Trash bins and also the lack of sufficient available bins for recycling a characteristic comment: *“...and there is not a single Trash bin for people to throw their litter they don’t exist. Recycle bins, nowhere...”*, also the presence of public spaces/ recreational facilities (but mainly parks/playgrounds with useable playground equipment AND NOT squares or other public spaces mentioned in CyNOTes) with a very characteristic comment showing the environmental inequity that exists: *“Why doesn’t our neighbourhood park have any playground equipment?”*. Also, some references to public transportation both in the context of availability of services as well as infrastructure (even if only with regards to central locations, and not citywide coverage/neighbourhoods) such comment was: *“Curious to know, how often will the bus run and till how late? Anyone know?”*

Furthermore, citizen’s comments also referred to Social disorder/Public Behaviours (N=20 of 310 CMU) describing disorderly social behaviours (mainly littering, vandalism but also arguing). Characteristic comments were describing social behaviours that were not pleasant for the neighbors due to ghettos that are created in parks or even due to the accumulation of animal droppings that people do not look after them. Such characteristic comments *“and now to the issue of parks and green spaces. ...some spaces have turned into meeting places for a bunch of disrespectful people, drug users, (animal lovers) who spoil with animal droppings (without fault of the animals), and the neighbours are going through torture”* *“...spaces that will attract all the loiterers is not what we need”*. CyNOTes records disorderly behaviour (in general) and only drinking alcohol on public is observed as a discrete item. Also, other comments referred to general disregard for others and the law (referring to illegal activity) *“If as a nation we cannot control delinquent behaviours what can I say??”* *“a very nice city in which most do not follow the law”*. Also, some comments in terms of lack of “positive” public activity such as children playing in the neighborhood (like in olden days) *“..it used to be a residential neighborhood where our children played in the streets”*. CyNOTes included an item about children but the focus was on whether they play outdoors unsupervised. Therefore, researchers needed to rethink this item and what it actually means as playing outside might be suggestive of a sense of safety but it might also be more characteristic of deprived areas and simply show lack of time or neglect on behalf of parents.

Comment about Smell, Pollution, Noise (N=17 of 310 CMU) were referring to the constant noise from vehicles, motorcycles and entertainment centers with loud music, such characteristic comments were “...*the gathering of young and old motorcycle riders with terrible noise!!!*”, “..*bars, clubs and not only [referring to other sources] playing very loud music which is not permitted...*”, other comments were referring to smells (mainly due to rubbish, stagnant waters and blocked rainwater gutters); “...*the rainwater drainage smells very very bad it needs disinfection thanks*” and to a lesser extent air pollution/ quality such characteristic comment “..*to have a place to go for a walk without traffic pollution*”, . Also, they were citizen’s discussions about insects and possible infestations “*It is very annoying with terrible smells attracting flies and much more*” (which CyNOTes does not explicitly record).

In addition, they were Citizen’s discussions about the Land Use (N=16 of 310 CMU) with some references to mixed-land use (residential vs industrial). In fact, most comments were more generic referring to urban planning and how specific vested interests have turned residential areas into industrial areas, a characteristic comment “...*as unfortunately vested interests have turned our homes to industrial areas ...*”. Other comments were given attention to vacant and undeveloped plots, emphasising the lack of sufficient city planning and making suggestions how the city space is being used, a characteristic comment was “*This is when the lack of planning and errors of the past will be revealed, when small dispersed spaces used to be left unused, instead of [providing for] large spaces as parks to attract citizens to use them*”. Some other comments referred to the local economic/ small businesses. “...*[name of main street] is a residential road. Small businesses are struggling to survive and compete with the big sharks. Their customers are community residents with children and the elderly*”, In terms of institutions and commercial establishments some mention of landmarks (e.g. fire stations, municipal market, library etc). However, this was in the context of identifying/defining an area, and not so much in terms of destinations (to walk to, spend time, etc). A single reference to population density (included in CyNOTes) in the context of justifying further the need for an organised playground.

Furthermore, less frequently appeared comments were related to the description of Landscaping/Nature Features (N=14 of 310 CMU) with the vast majority referring to the lack of greenery/ green areas in public spaces and/or lack of maintenance of green areas, characteristic comment was “..*the walking path from [specific landmark] towards [specific location] appears to*

have been abandoned in terms of green [meaning vegetation]”. Hence, the focus is on the authorities’ responsibility for maintaining the greenery in the city such comment was “...*plants dry up n never get replaced...*” other comments were referred to the fact that there is so much cement instead of greenery “*Let’s focus on the city’s environment, there is already enough cement*”. One single reference to the potential contribution of residents in making an area greener with pots in balconies or trees/plants in residential gardens (as in CyNOTes) Here also the comment that has been also previously mentioned about the potential that the neighbourhoods have to create community vegetable gardens with the characteristic comment about the use of empty plots “*Please remember some older written suggestions [meaning that I have send you] with regards to providing [referring to subsidizing] seeds and plants and giving advice so that every empty unused lot in consultation with the owner...can host aromatic plants, flowers and local herbs*”.

They were some less prevalent comments about Streets/Traffic (N=13 of 310 CMU) mainly describing conditions of street surfaces and lack of maintenance few characteristic comments were “...*the roads have germinated with grass after 30 whole years... they need to be layered with tarmac [asphalt]...*”; “*Reeeeeee [meaning ahoy]....there is no street markings they faded...*”; “*the roads, when are they going to be fixed?????*”. Some other comments were about the traffic system and traffic congestion “...*a solution needs to be found for the difficult matter of traffic congestion*” , but mainly with reference to main roads, rather than the residential neighborhoods. No direct comments about speeding or speed reduction measures in residential neighborhoods (as in CyNOTes). Also, some mention of the type of traffic that goes through neighborhoods (i.e. trucks) “*Trucks should be banned from the residential area..*”;.Type of traffic is not recorded in CyNOTes, only volume.

Moreover, some less prevalent comments were about the Maintenance/Appearance (N=13 of 310 CMUs) referred to the lack of maintenance of public spaces and public infrastructure and more importantly to safeguard anything new that is developed and try to maintain it, a characteristic comment “...*there should be initiatives for environmental neighborhoods but there should also be maintenance in order to avoid having them turn into jungles and rubbish dumps*” and hence the authorities’ responsibility. Limited references to housing and residential gardens/ yards, and hence,

citizens' responsibility; such comment was suggesting for an environmental policy *"...it should be a law about 1/3 of houses to be green as in other countries..."*.

A number of comments were about the Neighborhood Identification (N=12 of 310 CMU); however, citizens referred to iconic/ central locations and not so much in terms of monuments, markers and other features that give definition to residential neighborhoods. However, there is a wider theme running through - prioritizing "high-profile" location (giving them an identity, the "showroom") versus residential neighborhoods (with no identity, or even some negative labels, "the ghetto") a characteristic comment referring to specific neighborhoods that they are considered to be the most deprived area and being a ghetto *"when are you going to bother with [naming specific city quarter] possibly the most deprived area the ghetto of Limassol"*. *"Limassol however is not only select spots which act as showrooms. There are neighborhoods which also need attention like ours"*, *"Yes the centre, the waterfront are jewels, the neighborhoods?"*.

No direct reference to uniformity in an area (as item in CyNOTes). However, it has become apparent that "uniformity" as currently in CyNOTes does not adequately distinguish between "positive" forms of uniformity and "negative" forms of uniformity. For instance, the uniformity in the housing/public environment in a deprived area (the ghetto) versus the uniformity one might observe in a wealthier neighborhood (larger nicer houses with gardens etc.)

With regard to comments discussing the Architecture/Building Characteristics (N=9 of 310 CMU) of the neighbourhood, some characteristic comments were concerns about high-rises newly developed buildings in the city that remind a different nation such as Dubai *"Out of control and unnecessary "development" in Limassol. What is needed is unfortunately not done. A recent trend towards turning the city into a mini-Dubai [ref: to high-rise buildings], which has no sense"*, not so clear links to characteristics of the built and housing environment (e.g. types of housing, architectural features such as verandas, forms of external beautification on residential buildings/yards).-Also, no mention of vertical mixed use (as in CyNOTes). The majority of comments are general references to the urban design, with a focus on urban decay a characteristic comment *"...with all due respect, our communities are abandoned."*, lack of neighbourhood regeneration projects, and deprived/ disadvantaged neighbourhoods characteristic: *"...[specific neighbourhood] when you will take action is the most deprived community and the Limassol ghetto..."*

Very few comment referred to the Cycling Environment (N=4 of 310 CMUs) and more superficially about the bikability of the city in general, as well as improper use of infrastructure, if available (i.e. parked vehicles and other obstructions) and issues with connectivity of cycle paths. Specific comments were raising the issue of safety while cycling in the city or from one destination to another i.e. going to school “...at last, we will be able to uninterrupted and safely cycle to school,”; or other comment about obstructions in cycling paths such as cars and untrimmed trees «...first all vehicles should be removed from the cycling path and especially Municipality ones and those for trimming [meaning the trees] which are parked there ALL day and the motorbikes and then you can make a new one [cycling path] elsewhere”.

Even fewer comments were referred to Ethnic Identification (N=2 of 310 CMU). There was no direct reference to physical evidence/presence of ethnic/national signs, symbols or murals (as in CyNOTes). However, there are a couple of references to immigrant groups, who are attributed (using clearly racist language) the squalor in public spaces: “...an area of squalor as a result of f...[sic. referring to foreigners].... This can change. No project can change the squalor caused by the uncontrollable [racist word] immigr....[sic. referring to immigrants]”. Another characteristic comment was about the sea front transcultural market that happens every Sunday “... do something about the molos seafront, every Sunday with their usual market it is an absolute gypsy...”. The only item in CyNOTes that indirectly taps on this aspect is the extent to which the auditor heard any language other than Greek during the visit. Of course, it should be noted that in the context of CyNOTes this is perceived as a positive aspect of a neighbourhood as it potentially taps on multiculturalism and acceptance of diversity. The aspect of non-acceptance of diversity is not explicitly measured, and the extent to which this is observable in the context of an audit is not clear;

With regard to Safety (N=4 of 310 CMU), comments, with the exception of a reference to the possibility of car theft: “...and when you go back to get it [referring to a car] you can't find it because it has been stolen overnight”, there were no references to security features in residential or commercial buildings (as in CyNOTes). Comments regarding safety were more likely to refer to safety features in a school to deter school ground vandalism. For instance, a characteristic comment: “You are very well aware of the problem and this is exactly the reason why the School Authority has installed these high fences around the perimeter of the school yard”.

A number of comments about Signs and Messages (N=3 of 310 CMU), only referred to the issue of the lack of uniformity/ aesthetics in signage and visual pollution. A characteristic comment: *“Something should be done with the signs. A plan is needed to minimize the visual pollution.. , More discrete inscriptions starting from the city centre.”* Also, there were some references to the need of keeping citizens informed about municipality public consultations and other events. However, no direct references to items in CyNOTes such as presence of advertisements (especially, for unhealthy products), billboards or “for sale/rent signs” (proxies for population mobility/ neighborhood stability);

One comment has raised the issue of Steepness (N=1 of 310 CMU) which was only in reference to problems caused by flash floods due to the steepness of the road with the characteristic comment *“...our road is steep and when it rains we always have a problem”*

Table 13 Frequencies of codes from deductive content analysis matched by relevant items in CyNOTes.

Sample of codes from deductive content analysis	CyNOTes domains/items matched to FB comments	CyNOTes domains/items not matched to FB comments	Codes from FB comments not captured in CyNOTes
Amenities for outdoor public spaces (N=18 of 310 CMU)			
Public spaces and parks, Playground equipment, Amenities and courtesies in public spaces (i.e. Trash/Dog bins, Recycling, etc), Sports fields and other recreational facilities, Public transportation	Type of public spaces Courtesies and amenities Recreational facilities Public transportation		
Architecture/Building Characteristics (N=9 of 310 CMU)			
Abandonment & urban decay, Neighborhood regeneration, Aesthetics, Deprived communities, High-rises, Residential gardens, Verandas and balconies	Architecture/ urban design Interesting and Attractive Multi-storey buildings Balconies & terraces Private yards/gardens	Types of housing Vertical-mixed use Residential borders	
Cycling Environment (N=4 of 310 CMU)			
Bikability, Cycling lane, Improper use of walking/cycle lanes, Connectivity	Bikability Lanes and Bicycle facilities	Obstructions	Connectivity
Ethnic Identification (N=2 of 310 CMU)			
Presence of “foreigners” (racist comments)	Other languages	Ethnic orientation National symbols	
Land Use (N=16 of 310 CMU)			
Urban planning & development, Residential area & density, Green Zones, Industrialization, Institutions (Schools, Library, Police station, Fire brigade), Commercial establishments, Vacant/undeveloped lots	Predominant land use Industrial/Commercial establishments, Institutions Vacant/undeveloped lots Residential density		
Landscaping/Nature Features (N=14 of 310 CMU)			
Cement city, Landscaping, Tree planting, Nature features, Untrimmed trees/ unkempt vegetation, Subsidies for residential gardens	Trees/ Vegetation Other nature features General attractiveness Private yards/gardens (trees and plant pots)		Dry plant and trees in public and residential areas
Maintenance/Appearance (N=13 of 310 CMU)			
Housing conditions (damp, peeling walls), Dangerous/dilapidated buildings, Restorations, Renovations &	Housing and gardens External decoration		Road works or other construction work in

Maintenance, Residential gardens, Decorated balconies, Construction works & Unfinished projects, Improper use of Vacant lots, General neighborhood problems	Building Renovations Condition of public spaces, Vacant lots, commercial/ industrial buildings		progress (streets, pavements, etc), Housing conditions (damp, peeling walls)
Neighborhood Identification (N=12 of 310 CMU)			
Monuments/Markers of special area, High profile vs residential locations, Ghettoization	Monuments/ markers Neighborhood uniformity		Ghettos
Parking & Driveways (N=31 of 310 CMU)			
Parking arrangements, Parking lots, Private Vs Public parking lots, Driveways & Garages, Cars on pavements, Parking violations	Parking arrangements Driveways/private garages Cars on pavements Parking violations		
Pedestrian environment (N=20 of 310 CMU)			
Walkability, Street crossings, Connectivity, Walking paths, Pedestrian safety & convenience, Outdoor lighting	Walkability Street crossings Safety and convenience Trails & paths Outdoor lighting	Buffers, greenbelts	Connectivity
Physical disorder (N=62 of 310 CMU)			
Abandoned/ beat-up vehicles, Dangerous/ dilapidated buildings, General cleanliness and physical disorder, Litter & Garbage piles, Syringes/Condoms, Dumped materials, Animal droppings, Graffiti, Vandalism, Blocked gutters	Abandoned vehicles Dilapidated buildings Garbage and general litter Dumped materials Animal droppings Graffiti & Vandalism	Alcohol cans/bottles Cigarettes butts/ packages	Condoms/Syringes Trach accumulation in gutters
Recreational uses/Public Spaces (N=30 of 310 CMU)			
Presence/Condition of park, playgrounds & other public spaces, Presence /condition of playground equipment, Recreational facilities & destinations, Conditions of vacant/ undeveloped lots and other spaces, Improper/Illegal use of public spaces and vacant lots, Subsidies for gardens in vacant lots	Park/playground Vacant lots/undeveloped spaces (use & condition) Recreational facilities/ equipment and condition, Condition of other spaces	Private toys/ equipment (condition)	Improper/ illegal use of public spaces and vacant lots, beneficial use (e.g. subsidies for vegetable plots and gardens)
Safety (N=4 of 310 CMU)			
Security bars/fences or other features (mainly public buildings, rather than residential/ commercial), Car theft	Security bars or other features in residential and commercial buildings	Residential fences Dog signs	Security bars/fences in public buildings (e.g. schools)
Sidewalks and Barriers (N=17 of 310 CMU)			

Sidewalks presence, continuity, conditions & obstructions, Untrimmed trees/ unkempt vegetation, Wet pavements, Pavement bollards	Presence of Sidewalks, Continuity, Condition, General obstructions and safety (e.g. bollards, wet)	Shade	Untrimmed trees/ unkempt vegetation (on pavements)
Signs and Messages (N=3 of 310 CMU)			
Events & Events' announcements Commercial signs (visual pollution)	Signs/ Events (type) Billboards	Unhealthy ads "For sale/rent" signs	General visual pollution, lack of uniformity in signage, quantity and type
Smell, Pollution, Noise (N=17 of 310 CMU)			
Unpleasant smells (incl. urine, sewage), Stagnant water/Blocked rainwater drainage, Mosquitoes, Air quality, Dust/Industrial work, Noise pollution, Loud music, Stray dogs	Unpleasant smells Dirt/dust/pollution Noise & Loud music Stray dogs	Barking dogs	Stagnant water, Blocked rainwater drainage, Mosquitoes, Insects, Rodents, Germ "hot spots"
Steepness (N=1 of 310 CMU)			
Steep road (in relation to flash floods)	Steep/hilly		Flash floods
Streets/Traffic (N=13 of 310 CMU)			
Street type, Traffic volume/flow, Trucks in residential areas, Street signage, Street surface conditions	Street type Traffic volume/flow Street surfaces conditions	Speed reducing measures	Type of traffic (e.g. trucks in residential areas), Lack of street signage
Views/Enclosure (N=0 of 310 CMU)			
		Open views Attractive views	
Social disorder/Public Behaviours (N=20 of 310 CMU)			
Public activity (e.g. Walking, Cycling, etc), Unsupervised children in public spaces, Occupants of parks/ public spaces, Disorderly behaviour (Littering, Arguments, Drinking, Drug use, Urinating etc)	People/children activity Unsupervised children Occupants of public spaces Disorderly/misbehaving Drinking alcohol	Reaction of neighbours	Arguments

Table 14 Virtual Ethnographic Study using deductive content analysis.

Amenities outdoor spaces	Architecture & Buildings	Cycling Environment	Ethnic identification	Land use	Landscaping/Nature
"...not a single Trash bin ... they don't exist. Recycle bins, nowhere..." "...cement-filled, bone-dry park which for decades now fulfils no purpose" "Why doesn't our neighborhood park have any playground equipment?"	"Out of control and unnecessary 'development'. Recent trend towards turning the city into a mini-Dubai [ref: to high-rise buildings]" "...our communities are abandoned"	"...at last, we will be able to uninterrupted and safely ...cycle..." "...vehicles should be removed from the cycling path ...parked there ALL day and the motorbikes and then you make a new one [cycling path] elsewhere"	"...an area of squalor as a result of f...No project can change the squalor caused by the uncontrollable [racist word] immigr..."	"... lack of planning and errors of the past will be revealed, when small dispersed spaces were left unused, instead of large spaces as parks..." "...a residential road. Small business struggling to survive & compete with big sharks" "...vested interests have turned our homes to industrial areas"	"walking path... has been abandoned in terms of green" "...plants dry up n never get replaced..." "Let's focus on the city's environment, there is already enough cement"
Maintenance/Appearance	Neighbor. Identification	Parking & Driveways	Pedestrian environment	Physical disorder	Recreational/Public spaces
"...drowning in underground water and our houses have peeled from damp" "...pay attention to the multistorey buildings ...a public danger..." "...initiatives ...but there should also be maintenance to avoid them turn into jungles & rubbish dumps"	"... possibly the most deprived area the ghetto" "Limassol is not only select spots ... showrooms. There are neighborhoods which also need attention" "Yes the centre, the waterfront are jewels, the neighborhoods?"	"...audacious parking on the street. Infinite examples" "... cars parked on pavements" "residential roads have turned into parking lots" "...if you don't park in front of your house, someone else will"	"Walking is difficult, especially at night. Dogs reign the pavements" "To go from ...to (which is a distance of about 300 metres?) you have to say your prayers [referring to safety] three times and watch out in case a car comes out from a side-street"	"...sit on our verandas for some rest and see abandoned beaten-up cars on pavements" "...a park ...full of rubbish and piles of dumped material" "... every step like a minefield from the animal droppings." "...graffiti I'd rather not comment" "something about vandalism"	"The entire area without a single playground for our children" "...a pity ... playground to have [...] special flooring but no playground equipment" "... providing seeds and plants and giving advice so that every unused lot in consultation with the owner...can host aromatic plants, flowers & local herbs"
Safety	Sidewalks & Barriers	Signs & Messages	Smell, Pollution, Noise	Social disorder	Streets & Traffic
"...you go back to get it [car] you can't find it because it has been stolen overnight" "... this is exactly the reason why the School Authority has installed high fences around the school yard"	"Inexistent pavements" "Bombed pavements" "Appropriation of public pavements, barbecues... planted trees on small sidewalks, trees hanging [untrimmed] on the street... much clutter on various streets"	"Something should be done with the signs. ... minimize the visual pollution. More discrete inscriptions ..."	"... terrible smells attracting flies" "...a place for a walk without traffic pollution" "...suffering from noise pollution but also dirt" "...gathering of young n old riders ...terrible noise!!!"	"...meeting places for bunch of disrespectful people, drug users... torture" "a very nice city in which most do not follow the law" "...spaces that attract all the loiterers" "If ...we cannot control delinquent behaviours ...?"	"...roads, when are they going to be fixed?????" "...no street markings" "...roads have germinated with grass after 30 whole years... layered with tarmac" "Trucks ...banned from the residential area..." "...traffic congestion"

9.4.3 Inductive Content Analysis

The researchers also analysed the Facebook comments using an inductive content analysis to examine citizen's feelings about their neighbourhood environment. For this analysis, 289 CMUs were used. Six themes and several subthemes emerged along with a central/nuclear topic.

The nuclear/central topic emerging from the analysis was CITIZENS' VOICE, referring to the important role that citizens themselves can play into the regeneration of their neighbourhoods and their expressed need to be represented in the decision-making process and have their voice heard. Several comments were about active participation in decision making procedures and how authorities coming closer to people can help improve things for the better. A characteristic quote was "*...Citizens' opinions should be taken into consideration...*" while other comments were questioning about the fact that no one cares and that local authorities should walk and talk to people. Such comments were:

"...Why does nobody care about this aspect? Is someone walking in our neighbourhoods?",

"...Walk in the communities and talk to the people...",

"...[one] should walk the city neighbourhoods on a daily basis and always be thinking how it can be made better, it can be done without necessarily spending much money...".

The last comment is particularly interesting in that it is seemingly suggesting to actually perform neighbourhood audits (as a cost-effective way to observe first-hand) to understand the problems while walking the neighbourhoods.

The nuclear topic highlights the need that when authorities make plans for people's places, citizens should be informed and invited to open public debates or even asked way ahead about what they believe should be done. Walk in the neighbourhoods, talk to people, inform them for new plans of their neighbourhood ahead of a time.

It is also interesting that some of the comments were drawing attention to the differences between "high-profile" [meaning affluent] neighborhoods vs "lower-profile" [meaning deprived] neighborhoods and specifically how mostly all the attention has been given to the sea-front side of the city but the neighborhoods have been left behind. Citizens also referred to consequences due to adverse neighbourhood environment, they commented about what might be the causes of adverse neighbourhood conditions, they were making comparisons with other places they visited

abroad, they had mixed feelings and voiced opinions in terms of who actually has the ultimate responsibility and made recommendations for improvement. These specific themes and subthemes are described in more detail below.

One topic that emerged from the inductive content analysis was about the **CONSEQUENCES** that adverse neighbourhood conditions might have. Such consequences referred to both health risks and hazards but also the local economy and affordability of housing, environmental and other public health issues as well as unsustainable practices. Specifically, citizens referred to the possible effects an adverse neighbourhood environment may have on “Health and Quality of Life”, including poor air quality due to traffic pollution (“...*we do not have an area to walk without pollution...*” or “...*the health of the citizens’ is at risk...*”). Of course, a number of comments were linking health with place while expressing a degree of optimism that some regeneration plans will improve their quality of life “...*we hope that this planning will take place soon and therefore, the Quality of Life of Citizens will be improved...*”).

Beyond health, citizens also referred to the consequences of an adverse neighbourhood environment may have on the “Local Economy and Housing”. For example, comments referred to the devaluation of properties (“...*our properties are constantly devalued...*”) or to uncontrolled gentrification, posting characteristic comments such as (“...*the quality of life should not be devaluated in order for some people to make more money...*”). Citizens often referred to environmental issues, such as sea pollution, flash floods especially after a strong rain, or the quality of drinking water (“... *the public drinking water is undrinkable.... everyone says that it stinks...*”). The consequences mentioned were mostly related to the health-related quality of life but also the local economy and housing.

People were identifying **CAUSES**: why and what processes cause these adverse conditions in neighbourhoods. Some people commented about “Money and Power” often referring to vested interests (a characteristic quote: “...*who dare to put a fight with vested interests...*”). Others were attributing the cause to a “Lack of vision and planning” with inaction from the authorities or even setting wrong priorities. Comments mentioned politics and how pre-election campaigns are full of promises but then there is inaction by the elected politicians (“...*What needs to be done, is unfortunately not done...*”). People described how they pay taxes but see no results from the authorities (“...*we hope you do not forget [specific community] that only pays taxes ...*”).

In addition, some of the comments were about setting wrong priorities from politicians, meaning that people and the neighbourhood environment are commonly not in their top priorities, unlike pre-election promises. A characteristic comment was “...*we want to see actions and not just empty words...*”. Citizens described how mayors and municipality officials make promises during elections but promises seem to last only as long as the election campaigns: “...*mobile phones are full of pre-election messages from various municipality officials and when you need someone they do not answer or they belong to a different municipal committee...*”.

The third topic that emerged from the inductive analysis was about **COMPARISONS**. Some citizens were making comparisons between the differing conditions in high-profile locations versus low-profile locations, feeling “...*left out...*”. and how attention is given only to the seafront promenade but everything else is left underdeveloped. (“...*Yes, the city centre, the waterfront is a jewel, what about the neighborhoods...*”). Citizens were also making comparisons with places they visited abroad: “...*we’ve all been in other places [abroad], and we ALL say, ohh it is so nice here!*”. or remembering the better days of the past: “...*another place-another time...*”. Almost, all comments indicated, through comparisons with another place or another time, how things could be different and that they could be improved if there was a will.

People expressed **MIXED FEELINGS** such as praise vs disappointment, disbelief on proposed actions vs satisfaction, hopes and wishful thinking that could range from “hope” (“...*we can only hope for the best*”) to “disappointment or disbelief” about proposed actions (“...*voice crying in the wilderness...*”). Often comments were about how disappointed citizens are with the existing situation but several others comments were more positive, as they were either praising the initiative that the municipality was taking to improve the neighbourhood conditions, expressing hope even if they were skeptical how things might change for the better or were not convinced that things would be improved.

When it comes to **RESPONSIBILITY**, citizens often placed that to “Authorities; Inaction” (“...*Someone at the Municipality should take responsibility...*”). They report making formal complaints but commenting that authorities are inactive and should be more responsive. Nevertheless, beyond the responsibility of the authorities, several of the comments were about “Everyone’s role” tapping on social (ir)responsibility (“...*Of course is our responsibility and our cultural norms...*”).. Another characteristic comment was about collective responsibility: “...*Let’s*

be more clean outside our house and you will see how nice our city would be...” while some comments stroke a sarcastic tone criticizing the mentality of people referring to them as animals: *“...it’s not the four-legged animals who cause the problems, but the two-legged ones...”*. This topic highlighted the importance of collective responsibility and action towards the community, directly linking the issue to citizens own behaviours, beyond the responsibility of the authorities. People identified that the responsibility to maintain good neighbourhood conditions also rests with residents themselves as an essential part of our culture. People were calling for more action by the authorities but also more action from the citizens themselves.

The sixth topic was about **SUGGESTIONS**. Perhaps not surprisingly, suggestions ranged from the need to strengthen “Law and Order” to the need for more “Citizens’ participation” through a sense of social responsibility and volunteer actions. In the first case, comments were tapping, for instance, on the need for more policing (*“...more policing...”*) and other means of monitoring to avoid vandalism etc. The suggestions made by the citizens mostly referred to the fact that law and order is not enforced and, that especially for the case of vandalism, a different approach should be taken by the authorities including fines and punitive measures (*“...you should catch the ones doing graffiti’s and make them clean it with their own money”*). Comments were referring to other specific illegal activity and appropriation that goes unpunished, for instance, pavements that have been illegally converted into preparing street food or planting trees etc (*“...Pavements that people took ownership in order to be able to cook or plant trees...”*). However, since citizens acknowledged that it is “everyone’s role”, a number of suggestions clearly referred to the need for people to become more socially responsible. There were calls for volunteerism and collective action: *“ it is only with cooperation, collaboration, and collective action that we can move forward”*.

9.4.4 Additional quotes beyond the typology and CyNOTes items

Through this process, a number of Condensed Meaningful Units were also identified that were not explicitly or fully reflected in the original version of CyNOTes (Table 15). These items were considered for the final CyNOTes.

Table 15 List of ITEMS (elements, characteristics, topics) in FB posts not explicitly or fully covered in CyNOTes.

Potential Items	Quote	Notes
Road works/other work in progress (streets, pavements)	<i>"the roads, when are they going to be fixed????"</i>	only building renovations mentioned in CyNOTes
Φρεάτια (blocked, smelly)	<i>"It is very annoying with terrible smells attracting flies and much more"</i>	
Stagnant water and sewage	<i>"...the rainwater drainage smells very very bad it needs disinfection thanks"</i>	
Condoms, needles in public spaces	<i>"Toddlers find condoms in their yards"</i>	
Insects, rodents, and other "hot spots" for germs	<i>"It is very annoying with terrible smells attracting flies and much more"</i>	
Damp	<i>"in [specific area] we are drowning in underground water and our houses have peeled from the damp (sic. moisture) that rises to the surface"</i>	only general condition of houses, not explicitly looking for signs of damp
Flash floods	<i>"...our road is steep and when it rains we always have a problem"</i>	BUT difficult to observe unless it's raining
Untrimmed trees on small pavements & Unkempt pavements	<i>"Untrimmed trees and bushes converted small walking paths into natural trails"</i>	rather than shade as in CyNOTes only general condition in CyNOTes, perhaps we should add χόρτα
DRY plants and trees in public and residential areas	<i>"Untrimmed trees and bushes converted small walking paths into natural trails"</i>	only general maintenance of residential gardens in CyNOTes
Explicit use of vacant lots/ illegal activity	<i>"...constructing ILLEGALLY garages, warehouses etc As a result of these illegal activities vehicles find it difficult to U-turn, rubbish trucks find it difficult to drive into the road...[referring to a no throw road]"</i>	consider specifying types of use
Security features in public buildings such as schools if present	<i>"You are very well aware of the problem and this is exactly the reason why the School Authority has installed these high fences around the perimeter of the school yard"</i>	only security features in commercial buildings in CyNOTes
Visual pollution/ ugly signage/ lack of uniformity/ quantity and type	<i>"Something should be done with the signs. A plan is needed to minimize the visual pollution. More discrete inscriptions starting from the city centre."</i>	only general and not so useful questions about signage in CyNOTes
Type of passing through traffic in residential areas	<i>Trucks should be banned from the residential area."</i>	only volume in CyNOTes

Figure 7 Virtual Ethnographic Study Inductive Analysis



10 RESULTS PHASE II :CyNOTes V 2.0: Further validation and profiling

This next section presents the validation and profiling of the systematic social observation of 45 neighborhoods using CyNOTes v2.0. These neighborhoods were randomly selected across a stratified sample of Limassol neighborhoods. These were classified into three categories i.e., low N=15, medium N=15, high N=15 educational attainment based on the tertiles of 2011 census data.

To validate CyNOTes v2.0 , several dimensions of validity were assessed. Each is covered in turn.

10.1 Results Stage A : Neighborhood profiles – prevalence of features-developing new typology and factor validity

The prevalence of the items was classified and presented in a new domain typology for all neighborhoods and by educational attainment. The frequency of each of the CyNOTes items across the 45 neighborhoods audited by domain are represented in the [APPENDIX XI: Prevalence of CyNOTes features and characteristics across all 45 neighborhoods by domain.](#)

As mentioned in the methods section a new typology of CyNOTes v2.0 has been formulated. A new typology was needed due to the new items added in the tool but also because of the larger and possibly more heterogenous sample of 45 neighborhoods rather than the 15 pilot neighborhoods. Furthermore, it was deemed important to reduce the number of domains in further analysis. This was a decision of the researcher team after reviewing the Cronbach alpha coefficients across the original typology which were not as high as in those observed at the pilot study (Table 16). The results of process included two steps (a) merging theoretically-relevant Domains and/or (b) excluding items due to low internal consistency with other items in their Domain or other theoretically relevant Domain and/or items with no or very low variability.

For example:

- New domain 1 (Outdoor public spaces, Recreation and Nature Features) was merged with Amenities for outdoor public spaces (old domain 1) and Recreational Uses/Public Spaces (old domain 13) and some items for Landscaping/Nature features (old domain 7).

- New domain 2 (Architecture & Building Characteristics) which remained the same as old Domain 2 with some items from old Domain 6 (Land Use).
- New Domain 3 (Sidewalks & Barriers (lack of) was merged with barriers (old domain 3) and Sidewalks (old domain 15).
- New Domain 4 (Pedestrian & Cycling Environment) was created by merging the Cycling environment (old domain 4) and Pedestrian Environment (old domain 11).
- New Domain 5 (Neighborhood and Ethnic Identification) was developed by merging the Neighborhood identification (old domain 9) and Ethnic Identification (old domain 5) and Signs/Messages (old domain 16).
- New Domain 6 (Maintenance and Appearance) remained the same as old Domain Maintenance and Appearance with addition of some items from Landscaping/Nature features.
- New Domain 7 (Safety) has remained the same as the old Domain 14 with one additional item.
- New Domain 8 (Physical Disorder) remain the same as old Domain 12 with 4 additional items: B39: carcasses of dead animals are included, B38: stagnant water or visible blocked rain ducts, H11: noxious smells during your observation and H12: unpleasant levels of dirt in the air.
- New Domain 9 ((Social Contact and Social Disorder (lack of)) are merged items remained the same as old Domains 19,20,21.

A number of items (N=12) were not included in any domain:

- B3: Conditions of street surfaces (normally, in Domain 18 Streets/Traffic)
- B5: Roadworks in progress (normally, in Domain 18 Streets/Traffic)
- B27: Steepness (normally, in Domain 11 Pedestrian environment)
- B28: Public transport (normally, in Domain 1 Amenities for outdoor public spaces)
- B40: Germ “hot spots” (normally, in Domain 17 Smell/Pollution/ Noise)
- B49: Other languages (normally, in Domain 5 Ethnic Identification)
- C1: Commercial (normally, in Domain 6 Land use)
- C2: Institutions (normally, in Domain 6 Land use)

- D22: Stray cats (normally, in Domain 17 Smell/Pollution/ Noise)
- D27: Farm animals (normally, in Domain 17 Smell/Pollution/ Noise)
- H13: Loud music (normally, in Domain 17 Smell/Pollution/ Noise)
- H14: General noise (normally, in Domain 17 Smell/Pollution/ Noise)

Table 16 Summary statistics (transformed 0-100 range, with lowest scores reflecting adverse environment) and alpha coefficient for internal consistency by neighbourhood environmental domain

Domain	No of Items	Min	Max	Mean	StDev	Median	IQR	Alpha	Alpha, if deleted (item)
Amenities for outdoor public spaces (domain1)	5	0.00	75.0	34.22	22.68	35.00	12.50-50.00	0.585	0.761(B28)
Architecture/Building characteristics (domain 2)	6	29.16	91.66	62.50	14.43	58.00	52.08-72.91	0.633	0.644(D4)
Barriers (domain 3)	4	0.00	62.50	15.00	14.80	12.50	6.25-18.75	0.492	0.458 (B23,B24)
Cycling environment (domain 4)	4	0.00	50.00	17.10	12.47	18.75	6.25-25.00	0.732	0.788(B44)
Ethnic identification (domain 5)	3	0.00	50.00	20.74	18.25	33.33	0.00-33.33	0.164	0.601(B49)
Land use (domain 6)	6	16.66	87.50	59.35	13.18	65.50	52.08-66.66	0.126	0.393 (D2)
Landscaping/nature features (domain 7)	4	13.25	76.25	44.70	15.53	44.50	31.75-57.37	0.174	0.233(B34)
Maintenance/ appearance (domain 8)	13	26.92	88.46	52.56	15.23	50.00	41.34-63.46	0.831	0.841(E8)
Neighborhood identification (incl. Views/ Enclosure) (domain 9)	6	16.66	66.66	34.81	10.66	33.33	25.00-41.66	0.615	0.658 (B45)
Parking & driveways (domain 10)	4	19.25	75.00	54.93	12.94	56.25	50.00-62.75	0.354	0.405(B12)
Pedestrian environment (incl. Steepness) (domain 11)	10	22.50	77.50	52.55	11.05	52.50	46.25-60.00	0.387	0.552(B27)
Physical disorder (domain 12)	13	46.15	90.38	65.17	12.61	65.38	53.84-72.11	0.655	0.694(H9)
Recreational uses/ public spaces (domain 13)	9	5.66	75.55	39.74	14.68	44.55	30.61-47.61	0.582	0.649(E2)
Safety (domain 14)	9	22.22	86.11	60.92	14.65	61.11	51.38-72.22	0.492	0.578 (E7)
Sidewalks (domain 15)	5	25.00	75.00	62.33	14.75	65.00	50.00-75.00	0.250	0.517 (B32)
Signs/messages (domain 16)	3	25.00	83.33	64.81	12.29	66.66	66.66-70.83	0.471	0.640 (B55)
Smell/ pollution/ noise (domain 17)	10	57.50	92.50	74.88	9.39	75.00	67.50-82.50	0.040	0.240 (D21)
Streets/ traffic (domain 18)	6	25.00	75.00	47.50	11.86	50.00	39.58-52.08	-0.630	-.0904(B1crct)
Social disorder (domain 19)	6	50.00	100.00	83.53	9.64	83.33	83.33-91.66	0.256	0.375(G7)
Social Contact (domain 20)	10	5.00	52.60	24.04	10.45	22.50	15.00-30.35	0.228	0.508 (G3)
Social Profile (domain 21)	9								

Table 17 Summary statistics of CyNOTes scores (transformed 0-100 range, with lowest scores reflecting adverse environment) and Cronbach's alpha for internal consistency, by neighborhood-environmental domain.

New Domain	No of Items	Min	Max	Mean	StDev	Median	IQR	Cronbach's Alpha	Alpha (after deleting least correlated item)	Highest correlation between items (specific items)
Domain 1 Outdoor public spaces, Recreation and Nature Features (N=14)	14	3.57	82.14	43.53	18.84	44.64	32.14-58.92	0.820	0.837(F6)	Kendall's 0.849 (F10-F11) Spearman's 0.917 (F10-F11)
Domain 2 Architecture & Building Characteristics (N=11, excl. profile)	11	31.81	94.5	71.61	12.99	72.72	65.90-80.68	0.601	0.627 (D2)	Kendall's 0.747 (B56-B57) Spearman's 0.806 (B56-B57)
Domain 3 Sidewalks & Barriers (lack of) (N=10)	10	15.00	75.00	37.00	14.64	35.00	26.25-43.75	0.674	0.696 (B16)	Kendall's 0.665 (B19-B11) Spearman's 0.743 (B19-B11)
Domain 4 Pedestrian & Cycling Environment (N=18)	18	23.61	68.05	46.38	11.30	47.22	36.11-54.86	0.640	0.673 (B6)	Kendall's 0.843(B42-B43) Spearman's 0.919 (B42-B43)
Domain 5 Neighborhood and Ethnic Identification (N=10, excl. profile)	10	22.50	80.00	44.94	15.92	37.50	32.50-55.00	0.747	0.764(B50,B51)	Kendall's 0.989(B48-B47) Spearman's 0.998 (B48-B47)
Domain 6 Maintenance and Appearance (N=17)	17	32.35	79.41	51.40	11.49	50.00	41.17-58.82	0.715	0.777 (E2)	Kendall's 0.876(F12-F13) Spearman's 0.953 (F12-F13)
Domain 7 Safety (N=10)	10	20.00	87.50	59.27	15.10	60.00	50.00-70.00	0.588	0.611(D16)	Kendall's 0.464 (D19-D20) Spearman's 0.519 (D19-D20)
Domain 8 Physical Disorder (lack of) (N=17 excl. profile)	17	52.94	92.64	71.20	10.48	70.58	63.23-77.94	0.650	0.679 (H3)	Kendall's 0.789(B14-B15) Spearman's 0.832 (B14-B15)
Domain 9 Social Contact & Social Disorder (lack of) (N=13) (excl. profile)	13	30.76	73.07	53.94	9.56	51.92	46.15-59.61	0.499	0.550 (G19)	Kendall's 0.807 (G19-G22) Spearman's 0.807 (G19-G22)

Table 18 Spearman correlation between domains.

	New Domain 1 Outdoor public spaces, Recreation and Nature Features (N=14)	New Domain 2 Architecture & Building Characteristics (N=11)	New Domain 3 Sidewalks & Barriers (lack of) (N=10)	New Domain 4 Pedestrian & Cycling Environment (N=18)	New Domain 5 Neighborhood & Ethnic Identification (N=10, excl. profile)	New Domain 6 Maintenance and Appearance (N=17)	New Domain 7 Safety (lack of security- related features) (N=10)	New Domain 8 Physical Disorder (lack of) (N=17 excl. profile)	New Domain 9 Social Contact & Social Disorder (lack of) (N=13)
New Domain 1 Outdoor public spaces, Recreation and Nature Features (N=14)	1.00	-0.025	0.254	0.401	0.035	0.362	-0.117	0.092	0.286
New Domain 2 Architecture & Building Characteristics (N=11, excl. profile)		1.00	0.353	0.348	0.409	0.441	-0.332	0.429	-0.506
New Domain 3 Sidewalks & Barriers (lack of) (N=10)			1.00	0.508	0.280	0.383	-0.274	0.593	-0.448
New Domain 4 Pedestrian & Cycling Environment (N=18)				1.00	0.601	0.382	0.074	0.372	-0.109
New Domain 5 Neighborhood and Ethnic Identification (N=10, excl. profile)					1.00	0.328	0.017	0.387	-0.266
New Domain 6 Maintenance and Appearance (N=17)						1.00	-0.504	0.463	-0.104
New Domain 7 Safety (lack of security-related features) (N=10)							1.00	-0.327	0.285
New Domain 8 Physical Disorder (lack of) (N=17 excl. profile)								1.00	-0.399
New Domain 9 Social Contact & Social Disorder (lack of) (N=13) (excl. profile)									1.00

10.1.1 Descriptive Statistics

Table 17 shows summary statistics for the nine new neighbourhood environment domains. Each domain score was scaled from 0 (worst) to 100 (best) for comparability. In all cases, lower scores reflect a more adverse neighborhood environment. For example, the domain ‘Lack of Physical Disorder’ reflects that an environment does not show signs of physical disorder, and thus a 100 would correspond to no indication of disorder in the neighborhood.

As shown in Table 17 the number of items across domains ranged from a low of 10 (“Sidewalks and lack of Barriers” and “Safety”) to a high of 18 (“Pedestrian and Cycling Environment”). The highest average score across audited neighbourhoods was recorded for “Architecture and Building Characteristics” (mean 71.6; SD=13.0) followed by lack of “Physical Disorder” (mean 71.20, SD=10.48). The lowest average scores were recorded for “Sidewalks and lack of Barriers” (mean 37.00 SD=14.64) and “Neighborhood and Ethnic Identification” (mean 44.94 SD=15.92). For the other four domains, average scores were around the midpoint of the 0-100 scale, namely “Pedestrian and Cycling environment” (mean 46.38, SD 11.30), “Maintenance and Appearance” (mean 51.40, SD 11.49), “Social Contact & lack of Social Disorder “(mean 51.9, SD 53.9) and “Safety” (mean 59.3, SD 15.1).

Table 17, further reports statistics on the distribution of the neighborhood domain scores. With few exceptions, the distribution of scores was fairly symmetrical, as the median and means were closely aligned. There was, however, substantial variability within each domain (as indicated by the std. deviation). Since all domains are transformed to the same scale, high standard deviations correspond to greater variability in the aggregate score. The domain with the highest variability across neighborhoods was “Outdoor public spaces, recreation and nature features” (SD=18.84, IQR: 32.14-58.72, Min=3.57, Max=82.14), whereas the least variable domain “Social contact and lack of Social Disorder” (SD=9.56, IQR: 46.2-59.6, Min=30.8, Max=73.1).

10.1.2 Internal Consistency within Domains

All domains had acceptable item internal consistency as Cronbach’s alpha coefficients were above 0.60 (ranging from 0.60 for “Architecture and Building Characteristics” to 0.82 for

“Outdoor public spaces, Recreation and Nature Features”). However, two exceptions were “Social Contact & lack of Social Disorder” and “Safety”, with lower alpha coefficients of 0.499 and 0.588 respectively.

Table 17 also shows the calculation of Cronbach’s alpha if least correlated item was deleted. Specifically, the largest improvement in internal consistency would be observed for “Maintenance and Appearance” (by deleting the E2 item), increasing Cronbach’s alpha from 0.72 to 0.78 and for “Social Contact and lack of Social Disorder” (by deleting the G19 item) Cronbach’s alpha increased from 0.499 to 0.550. Since, the increase in alpha was not large and the items were deemed theoretically, important to retain, no more changes were made.

The Table 17 identifies the CyNOTes items with the highest inter-item Spearman’s and Kendall’s correlation within each domain. A higher correlation here indicates that the items are conceptually more closely. As mentioned above, “Safety” was the domain with the lowest inter-item correlation (Spearman’s $r = 0.519$), which was moderate. This lowest correlation within the domain was observed between items D19: “What proportion of residence buildings have signs indicating they are protected by private security services?” and D20: “What proportion of residence buildings have signs indicating they are protected by dogs?” In contrast, “Neighborhood and Ethnic identification” was the domain with the highest inter-item correlations (Spearman’s 0.998). This highest correlation within the domain was observed between items “B48: How **attractive** is the open view?” and “B47: Is this segment/area characterized by having a significant **open view** of an object or spot of interest (e.g. square, green space etc) or a wider scene beyond the segment?”.

10.1.3 Correlations Between Domains

Table 18 shows the Spearman correlation between domains (displaying those higher than $r=0.30$ with bold font as they were statistically significant at 5% level) for all of the nine new neighbourhood environment domains. Almost all domains are moderately correlated with each other, which is unsurprising because they seek to capture broad aspects of the urban health related neighborhood environment and suggest a clustering of adverse characteristics across domains.

Interestingly, several domains exhibit strong or negative correlations between them which are worth highlighting. The strongest positive correlation was observed between the domains of “Pedestrian & Cycling Environment” and “Neighborhood and Ethnic Identification” (Spearman’s $r=0.60$). It is more likely that a more favourable “Pedestrian & Cycling Environment”, most likely the result of improvement project, creates a more consistent “Neighborhood and Ethnic Identification”.

Another strong, positive correlation was observed between “Sidewalks & Barriers” and lack of “Physical Disorder” lack of ($r = 0.59$). This might be due to the fact that a more favourable sidewalk environment, appeared in higher educational attainment neighbourhoods where there was lack of “Physical Disorder”.

Also, strong positive correlation has been observed between of the domain of “Sidewalks & Barriers” and “Pedestrian & Cycling Environment” ($r=0.51$) which was also expected, as both domains capture the continuity of the walkability and cyclability of the neighborhood.

There were also a series of negative correlations. The strongest negative correlation was between the domain “Architecture & Building Characteristics” and “Social Contact & Lack of Social Disorder” ($r = -0.51$). The “Social Contact and lack of social disorder” domain has been negatively correlated with most other domains.

Another strong negative correlation was observed between domain “Maintenance and Appearance” with “Safety and lack of security-related features” ($r = -0.50$). This indicates differences in socioeconomic status neighbourhoods as also supported by safety.

Moderate positive correlated domains were “Architecture & Building Characteristics” and “Maintenance and Appearance” ($r = 0.44$) as both domains try to audit and classify the level of maintenance that private and public buildings and spaces might have, as well as how interesting

or not their appearance was. Similarly, moderate positively correlation has been observed between the domains of “Architecture & Building Characteristics and “Lack of Physical Disorder” ($r=0.43$).

No correlation was observed between “Outdoor public spaces, Recreation and Nature Features” and “Neighborhood and Ethnic Identification” ($r=0.04$); “Pedestrian & Cycling Environment” and “Safety-lack of security related features” ($r=0.07$); These insignificant correlations might simply reflect that these domains conceptually do not fit with each other. Surprisingly there was also no link between “Outdoor public spaces, Recreation and Nature Features” and “Lack of Physical Disorder” ($r=0.09$), since it was expected an increase with more outdoor spaces (including parks) as it might be more physical disorder since these areas attract more people.

10.1.4 Dimensionality of the new typology of CyNOTes v 2.0

The dimensionality of the new CyNOTes v 2.0 typology of nine factors was assessed in principle components analysis as shown in Table 19. KMO (Kaiser-Meyer-Olkin) Measure of Sampling Adequacy was 0.694 and Bartlett's Test of Sphericity gave a p -value <0.001 , supporting that the data are appropriate for principle component analysis. Using set criteria for the number of factors to be retained (given values greater than 1, examination of the scree plot and factor loadings of 0.4 or higher), a clear structure was observed after orthogonal (Varimax) rotation, with minimal cross-loading. The three factors explained 71.9% of the total variance, suggesting that the reduction of 9 domains to 3 retains a high percentage of the original variability and, hence, the reduced typology could be used in further analysis for simplicity.

In terms of the factor loadings, the observed dimensionality was readily interpretable since conceptually-related CyNOTes domains generally loaded on the same factor, describing three composite aspects of the neighbourhood environment. The only domain that showed cross-loading was D3: Sidewalks & Barriers (lack of), which loaded both on the first factor (which generally points to more socio-economically privileged neighborhoods) and the second factor (which taps on walkability). While this is understandable, as more privileged neighbourhoods tend to be newer developments (i.e. located away from the city-centre, featuring more spacious surroundings, including wider pavements), this domain was included for the purposes of calculating composite

(factor) domain scores, in the second factor which is conceptually more related (along with D4: Pedestrian and Cycling Environment).

The factor analysis promoted a further understanding of neighbourhood profiles, since the set of domains that appear to be more highly inter-correlated seem to portray certain types of neighbourhoods. Table 19 presents the observed higher-order dimensionality of the CyNOTes v2.0.

Specifically, four of the CyNOTes domains loaded on the first factor, explaining 27.8% of the total variance; these corresponded to:

- D6: Maintenance & Appearance
- D8: Physical Disorder (lack of)
- D3: Sidewalks & Barriers (lack of)
- D7: Safety (lack of security-related features), the latter with a negative factor loading.

This factor domain seems to tap on a “*more aesthetically pleasing*” neighbourhood environment both in terms of housing appearance as well as upkeep of outdoor public spaces, with no visible indications of physical disorder. This may point to socio-economically privileged neighbourhoods. The fact that the CyNOTes Safety domain, which taps on the lack of security-related features (i.e. CCTV cameras, high fences etc), loads negatively on this factor reinforces the interpretation that neighbourhoods which score high on this factor are more likely to be ‘rich’ neighbourhoods. However, to avoid labeling neighbourhoods with adjectives such as ‘rich’, ‘privileged’, or equivalently ‘poor’, ‘disadvantaged’, we opted for purely descriptive names for the factor domains which remain close to the original CyNOTes domain names.

The second domain generally taps on Walkability (D4: Pedestrian & Cycling Environment and D3: Sidewalks & lack of Barriers). It is interesting that D5: Neighbourhood and Ethnic Identification also loads on this factor. This domain mainly taps on signs of neighbourhood identity (e.g. indications of uniformity or character). A well-maintained pedestrian environment with uniformity (e.g. pavements throughout the neighbourhood, cars parked in garages, or at least alongside the road rather than on the pavement, lack of other walkability barriers. etc) can contribute to a sense of place uniformity and identity. Furthermore, neighbourhood regeneration projects commonly focus on improving the pedestrian and cycling environment (i.e. fixing

pavements, providing signage, cycling routes, walking paths etc); thus, shaping community identity through introducing uniformity in the built environment. It also interesting to note that a distinct domain tapping on pedestrian environment emerged in the analysis. This may suggest that, while a better pedestrian environment is generally associated with more socio-economically privileged neighbourhoods (also indicated by the observed cross-loading of D3: Sidewalks & lack of Barriers), it is not a unique feature of privileged neighbourhoods.

Lastly, the third factor had high loading from three CyNOTes domains, namely D1: Outdoor Public Spaces, Recreation and Nature features, D9: Social Contact and lack of Social Disorder and, interestingly, D2: Architecture and Building Characteristics. While, it might be expected for public space (D1) to be correlated with social contact (D9), the negative factor loading of D2 neighbourhoods with organized public spaces (e.g. park, green area and/or other outdoor spaces) tend to be located in more central parts of the city with higher housing density, older residential buildings, lack of garages and/or front gardens and other features that D9 captures.

Table 19 Dimensionality of the new CyNOTes v 2.0 typology.

	Domain Factor 1 Good maintenance, less physical disorder, more security-related features	Domain Factor 2 Better walkability and neighborhood identity	Domain Factor 3 Outdoor public spaces & social contact
Domain 1: Outdoor public spaces, Recreation & Nature Features			0.766
Domain 2: Architecture & Building Characteristics			-0.490
Domain 3: Sidewalks & Barriers (lack of)	0.526	0.559	
Domain 4: Pedestrian & Cycling Environment		0.895	
Domain 5: Neighborhood & Ethnic Identification		0.824	
Domain 6: Maintenance & Appearance	0.776		
Domain 7: Safety (lack of security-related features)	-0.881		
Domain 8: Physical Disorder (lack of)	0.636		
Domain 9: Social Contact & Social Disorder (lack of)			0.786
Total variance explained= 71.9%	27.8%	25.6%	18.5%
KMO Measure of Sampling Adequacy= 0.694			
Bartlett's Test of Sphericity, p-value <0.001			

Table 20 Differences in mean and median domain scores across three groups of neighborhoods defined by tertiles level of educational attainment at postcode level.

New Domain	Low educational attainment group		Medium educational attainment group		High educational attainment group		p-value one-way ANOVA	p-value Kruskal-Wallis	P-value for trend
	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)			
1 Outdoor public spaces, Recreation and Nature Features (N=14)	39.76 (19.25)	39.28 (28.57)	42.02 (20.85)	44.64 (33.92)	48.80 (16.22)	53.57 (25.00)	0.401	0.341	0.192
2 Architecture & Building Characteristics (N=11, excl. profile)	70.75 (10.72)	72.72 (9.09)	66.06 (16.46)	68.18 (22.72)	78.03 (8.17)	79.54 (11.36)	0.036	0.047	0.127
3 Sidewalks & Barriers (lack of) (N=10)	33.50 (16.11)	32.50 (22.50)	34.83 (12.72)	32.50 (17.50)	42.66 (14.12)	42.50 (27.50)	0.182	0.148	0.086
4 Pedestrian & Cycling Environment (N=18)	43.33 (10.16)	41.66 (15.27)	43.51 (13.58)	36.11 (20.83)	52.31 (7.56)	52.77 (13.88)	0.042	0.039	0.028
5 Neighborhood and Ethnic Identification (N=10, excl. profile)	42.33 (16.94)	37.50 (22.50)	44.33 (12.83)	45.00 (22.50)	48.16 (18.06)	42.50 (27.50)	0.605	0.569	0.321
6 Maintenance and Appearance (N=17)	45.78 (11.86)	44.11 (14.70)	49.50 (10.48)	48.52 (13.23)	58.92 (8.13)	58.82 (13.23)	0.003	0.002	0.001
7 Safety (lack of security-related features) (N=10)	64.00 (15.52)	65.00 (22.50)	61.16 (16.55)	62.50 (17.50)	52.66 (11.27)	52.50 (12.50)	0.100	0.070	0.038
8 Physical Disorder (lack of) (N=17 excl. profile)	66.56 (8.25)	64.70 (11.76)	70.29 (10.95)	67.64 (17.64)	76.76 (10.02)	77.94 (11.76)	0.023	0.026	0.006
9 Social Contact & Social Disorder (lack of) (N=13, excl. profile)	55.12 (8.83)	53.84 (13.46)	55.15 (12.40)	55.76 (21.15)	51.53 (6.82)	50.00 (7.69)	0.503	0.432	0.310

Table 21 Differences in mean and median domain scores across five groups of neighborhoods defined by quintiles of educational attainment at postcode level.

New Domain

	Low		Low-Medium		Medium		Medium-High		High		p-value one-way ANOVA	p-value Kruskal- Wallis	P-value for trend
	educational attainment group												
	Mn (SD)	Md (IQR)	Mn (SD)	Md (IQR)	Mn (SD)	Md (IQR)	Mn (SD)	Md (IQR)	Mn (SD)	Md (IQR)			
Domain 1 Outdoor public spaces, Recreation and Nature Features (N=14)	36.30 (16.39)	39.28 (21.42)	39.68 (22.81)	42.85 (42.85)	46.42 (19.90)	44.64 (28.57)	46.03 (18.68)	50.00 (33.92)	49.20 (17.0)	53.57 (25.89)	0.596	0.585	0.106
Domain 2 Architecture & Building Characteristics (N=11, excl. profile)	67.67 (10.27)	70.45 (18.18)	71.71 (10.60)	72.72 (11.36)	71.96 (14.68)	77.27 (18.18)	66.41 (16.73)	72.72 (20.45)	80.30 (9.09)	81.81 (13.63)	0.176	0.115	0.147
Domain 3 Sidewalks & Barriers (lack of) (N=10)	28.33 (14.19)	25.00 (21.25)	34.72 (16.74)	32.50 (13.75)	38.88 (13.64)	42.50 (18.75)	35.27 (9.55)	32.50 (13.75)	47.77 (13.83)	47.50 (22.50)	0.066	0.046	0.009
Domain 4 Pedestrian & Cycling Environment (N=18)	41.97 (7.66)	41.66 (14.58)	42.90 (11.79)	40.27 (18.75)	46.75 (12.99)	47.22 (23.61)	44.29 (12.25)	44.44 (18.05)	56.01 (6.40)	56.94 (12.50)	0.050	0.059	0.012
Domain 5 Neighborhood and Ethnic Identification (N=10, excl. profile)	43.88 (15.36)	37.50 (22.50)	41.66 (17.27)	37.50 (20.00)	45.83 (14.41)	45.00 (26.25)	39.16 (9.01)	35.00 (15.00)	54.16 (20.57)	55.00 (43.75)	0.333	0.616	0.287
Domain 6 Maintenance and Appearance (N=17)	42.97 (8.78)	41.17 (14.70)	49.01 (13.25)	47.05 (14.70)	51.79 (11.87)	48.52 (23.52)	52.77 (8.71)	52.94 (12.50)	60.45 (8.71)	61.76 (13.97)	0.020	0.020	0.001
Domain 7 Safety (lack of security-related features) (N=10)	70.83 (14.36)	72.50 (22.50)	60.83 (15.05)	62.50 (23.75)	58.33 (15.76)	60.00 (15.00)	58.33 (12.11)	57.50 (18.75)	48.05 (11.37)	50.00 (18.75)	0.026	0.021	0.002
Domain 8 Physical Disorder (lack of) (N=17 excl. profile)	64.37 (6.52)	64.70 (11.76)	66.50 (9.96)	66.17 (15.44)	75.65 (9.70)	75.00 (16.17)	69.28 (11.40)	64.70 (14.70)	80.22 (6.58)	77.94 (10.29)	0.003	0.004	0.001
Domain 9 Social Contact & Social Disorder (lack of) (N=13, excl. profile)	58.11 (9.41)	53.84 (15.38)	53.63 (7.0)	53.84 (9.61)	54.10 (11.78)	48.07 (22.11)	53.41 (12.89)	50.00 (16.34)	50.42 (5.15)	50.00 (6.73)	0.581	0.497	0.123

10.1.5 Comparing Domain Scores across groups of Neighborhoods defined by educational attainment level.

Table 20 and 21 shows the differences in mean and median domain scores across groups of neighborhoods, stratified by tertiles and quintiles of educational attainment respectively. Educational attainment was calculated at postcode level. To assess how domain scores across neighborhoods with increasing educational attainment, both parametric and non-parametric statistical tests were used. Furthermore, we assessed whether there was a stepwise increase by calculating p-value for trend across groups of neighborhoods.

As shown in the Table 20 the majority of domains exhibited a stepwise increase in domain score in association with the level of educational attainment. Specifically, for 4 out of 9 domains, statistically significant better score values were observed in the high educational attainment neighborhoods and worst score values were seen in the lower educational attainment neighborhoods. In 1 of the 9 domains, “safety” there was a significant inverse association while “social contact and social disorder” there was insignificant association. Finally, in the remaining 4 domains no clear trend was observed.

Turning to the positive associations, “Lack of Physical disorder”, scored (66.6 S.D = 8.25) in the low educational group, (70.3 S.D = 11.0) in the medium educational group and (76.8 S.D = 10.0) in the high educational group. This trend was significant ($p = 0.006$). Such a pattern was expected since there were more frequent observations of abandoned cars, dumped materials, graffiti and, in general, waste in parks and other public spaces in medium-high as well as in medium-low educational attainment neighborhoods.

Similarly, a substantially higher domain score for “Maintenance and Appearance” was found in neighborhoods with greater educational attainment (58.9 S.D = 8.13) compared with medium (49.50 S.D = 10.48) and low educational attainment (45.8 S.D=11.86) neighborhoods. This was also significant ($p < 0.001$). This can be justified since in many cases the lower educational attainment group of neighborhoods appeared to have many streets and pavements in disrepair as well as green spaces and parks with dilapidated benches and playgrounds.

Lastly, a significantly higher domain score for “Pedestrian & Cycling environment” was found in neighborhoods with greater educational attainment (52.31 S.D=7.56) compared with medium (43.51 S.D= 13.58) and low educational attainment (43.33 S.D = 10.16) neighborhoods. This was also significant ($p < 0.028$). This can be justified since the greater educational attainment neighborhoods have wider pavements and roads making it easier to cycle and with fewer barriers as compared to the medium and low educational attainment neighborhoods.

One domain had a significant inverse pattern, which related to how the question was negatively rather than positively framed. Specifically, “Safety-Lack of Security-related features” with mean difference scored higher (64.00 S.D =15.52) in the low educational attainment group, lower in the medium educational attainment group (61.16 S.D=16.55) and even lower in the higher educational attainment group (52.66 S.D =11.27). This was also statistically significant with p-value for trend $p < 0.04$. This was expected since the physical representations of security-related features did not reflect an unsafe neighbourhood (e.g. crime) and hence the need to own such security devices; it reflected the residents’ perceptions of the level of safety in their area or even simply their financial ability to own security devices for their properties.

Interestingly, “Lack of Social Contact and Social Cohesion” showed the same level for low (55.1 S.D=8.83) and medium-educational attainment neighborhoods (55.15 S.D= 12.4), with an unusual slight decrease in score for the high educational attainment neighborhoods (51.5 S.D = 6.82). However, given the small magnitude of this reduction, there was no statistical significance in p-value for trend ($p > 0.31$).

There was no trend seen for the remaining domains. These were “Lack of Sidewalks and Barriers”, “Neighbourhood and Ethnic Identification”, “Outdoor public spaces, recreation and nature”, and “Architecture and Building Characteristics.” However, it is worth noting for “Architecture and Building Characteristics” that a U-shaped curve appeared, where the medium educational attainment group had a lower score than the low educational attainment group, and this trend was significant according to the Kruskal-Wallis test ($p < 0.05$).

The stepwise association observed across tertiles was also observed at the level of quintiles (Table 20), suggesting that the phenomenon observed holds even at more detailed level.

Turning to the positive associations, “Maintenance and Appearance” had a stepwise increase in scores from low educational attainment (42.97 S.D=8.78), to the low-medium (49.01 S.D =13.25) to the medium (51.79, S.D =11.87), and medium-high group (52.77 S.D= 8.71) respectively with the highest educational attainment group of neighbourhoods having the highest scores (60.45 S.D= 8.71); p-value for trend <0.001. This stepwise increase in scores was statistically significant.

Similarly, a positive trend was observed for “Lack of Physical Disorder.” Here the lowest educational group receives the lowest score (64.37 S.D=6.52) and the low-medium group the second-lowest score (66.50 S.D =9.96). The score continues to increase in the medium group (75.65 S.D= 9.70) but decreased slightly in the medium-high group (69.28 S.D=11.40). The highest score was seen in the highest educational attainment group (80.22 S.D = 6.58) and this trend was statistically significant ($p<0.001$).

A slightly different pattern has been observed, with some middle educational attainment neighborhoods scoring lower than the low educational groups. Specifically, the “Pedestrian & Cycling Environment” score was higher 46.75 (S.D=12.99) in the Medium educational attainment group (44.29, S.D= 12.25) compared to medium high group . More importantly, consistently through with the general upward trend, the high educational attainment group (56.01 S.D=6.40) had on average the highest scores compared to the low educational group.

Similarly, the “Sidewalk & Barriers (lack of)” scored lower in the low educational attainment group (28.33 S.D =14.19), higher in the low-medium group (34.72 S.D=16.74), higher in the Medium group (38.88 S.D 13.64) then lower in the medium-high group (35.27 S.D= 9.55). The highest score was observed in the high educational attainment neighborhood (47.77 S.D 13.83). This trend was also statistically significant ($p< 0.009$).

One domain had a significant inverse pattern, which nevertheless is a fact of the operational definition used. Specifically, “Safety (Lack of Security-related features)” had the highest score in the low educational attainment group (70.83 S.D =14.36), followed by the low-medium group (60.83 S.D=15.05) and decreased further in the medium (58.33 S.D=15.76) and medium-high group (58.33 S.D= 12.11). The lowest-scoring was observed in the highest educational attainment

group (48.05 S.D=11.37). The trend was statistically significant ($p<0.002$). This is justified since physical representation of security related features do not necessarily reflect an unsafe neighborhood. Instead, they may reflect the residents' perceptions of the level of safety in their area or even simply their financial ability to own security devices for their properties.

Similarly, "Social contact and lack of Social disorder" also appeared to display a stepwise decrease, showing the low educational attainment groups to score best (58.11 S.D = 9.41) and higher than the low-medium group (53.63 S.D= 7.0) followed by the low-medium group (54.10 S.D =11.78) and the medium-high group (53.41 S.D =12.89) with the lowest scoring to be observed in the high group (50.42 S.D=5.15). However, this was not statistically significant ($p>0.123$) while the observed pattern is not clearly stepwise in the middle groups, there is an obvious difference between.

There was also no significant trend seen for the remaining domains: "Neighborhood and Ethnic Identification", "Architecture and Building Characteristics", and "Outdoor public spaces, Recreation and Nature Features" the two ends of the continuum with the lowest education group of neighborhoods scoring higher in terms of the social environment compared to the highest education group.

Replication of such calculations were made also at tertile and quartile parish level census data. The overall conclusion of such replication showed that even looking at the educational attainment continuum using postcode or parish-level the results are the same. The results of these calculations are presented in the [APPENDIX XIV](#) and [APPENDIX XV](#).

10.1.6 Differences in neighbourhood environment by Socio-Economic Disadvantage (SED) Index

The tables above showed that unambiguous environmental inequities exist across neighborhood with different levels of educational attainment.

As shown in the Table 22 the majority of domains exhibited a stepwise increase in domain score in association with postcode-level of composite Index of Socio-economic Disadvantage (SED). Specifically, for 7 out of 9 domains, show a stepwise increase whereby more affluent neighbourhoods (i.e. lowest SED) score higher compared to the most disadvantaged neighbourhoods which they gather the lowest scores. The middle group is commonly somewhere in the middle, sometimes closer to the bottom tertiles “Architecture & Building Characteristics” (68.94 S.D =12.65) and other times closer to the top tertile “Pedestrian & Cycling Environment” (49.07 S.D =11.77). In general, they were higher score for “Architecture & Building Characteristics”, “Sidewalks & Barriers (lack of)”, “Pedestrian & Cycling Environment”, “Maintenance and Appearance” and “Physical Disorder (lack of)” among the lowest Socioeconomic disadvantage group.

Two domains appeared to be reverse. These were “Safety” (lack of security features)” and “Social Contact & Disorder (lack of)”. Showing that the highest socioeconomic disadvantage neighbourhoods meaning the less affluent were lacking of security related features compared to the lowest socioeconomic disadvantage neighbourhoods similarly as in the case of educational attainment. The Social contact and lack of Disorder also appeared to be scoring worse in the lowest socioeconomic disadvantage neighbourhoods (more affluent) compared to the highest socioeconomic disadvantage groups (worse off neighbourhoods).

Table 22 Differences in mean and median domain scores across tertiles of neighborhoods according to postcode-level Composite Index of Socio-economic Disadvantage (SED).

	Lowest SED		Second Tertile		Highest SED		One-way ANOVA	Kruskal-Wallis	P-value for trend
	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)			
New Domain 1 Outdoor public spaces, Recreation & Nature Features (N=14)	48.92 (15.94)	50.00 (23.21)	46.42 (21.48)	48.21 (39.29)	35.24 (16.93)	35.71 (23.21)	0.104	0.118	0.045
New Domain 2 Architecture & Building Character. (N=11)	77.58 (15.53)	81.82 (18.19)	68.94 (12.65)	72.73 (18.19)	68.33 (8.52)	70.45 (13.64)	0.091	0.016	0.050
New Domain 3 Sidewalks & Barriers (lack of) (N=10)	46.00 (15.78)	42.50 (32.50)	36.16 (10.89)	35.00 (17.50)	28.83 (12.13)	27.50 (20.00)	0.004	0.007	0.001
New Domain 4 Pedestrian & Cycling Environment (N=18)	49.91 (11.20)	51.39 (20.83)	49.07 (11.77)	50.00 (15.27)	40.18 (8.70)	37.50 (13.89)	0.029	0.032	0.017
New Domain 5 Neighborhood & Ethnic Identification (N=10)	50.33 (21.34)	40.00 (45.00)	44.50 (10.00)	45.00 (20.00)	40.00 (13.56)	35.00 (20.00)	0.207	0.337	0.075
New Domain 6 Maintenance and Appearance (N=17)	59.71 (11.84)	61.76 (17.65)	50.98 (8.39)	50.00 (10.29)	43.53 (8.01)	44.12 (16.18)	<0.001	0.001	0.000
New Domain 7 Safety (lack of security features) (N=10)	48.33 (14.47)	50.00 (25.00)	63.00 (10.74)	62.50 (15.00)	66.50 (13.88)	65.00 (22.50)	0.001	0.005	0.001
New Domain 8 Physical Disorder (lack of) (N=17)	78.04 (11.41)	77.94 (14.70)	70.00 (7.34)	70.59 (10.29)	65.98 (8.91)	64.71 (11.77)	0.003	0.008	0.001
New Domain 9 Social Contact & Disorder (lack of) (N=13)	49.50 (5.32)	48.08 (7.70)	54.74 (12.82)	51.92 (21.16)	57.60 (7.69)	53.85 (13.07)	0.059	0.027	0.019

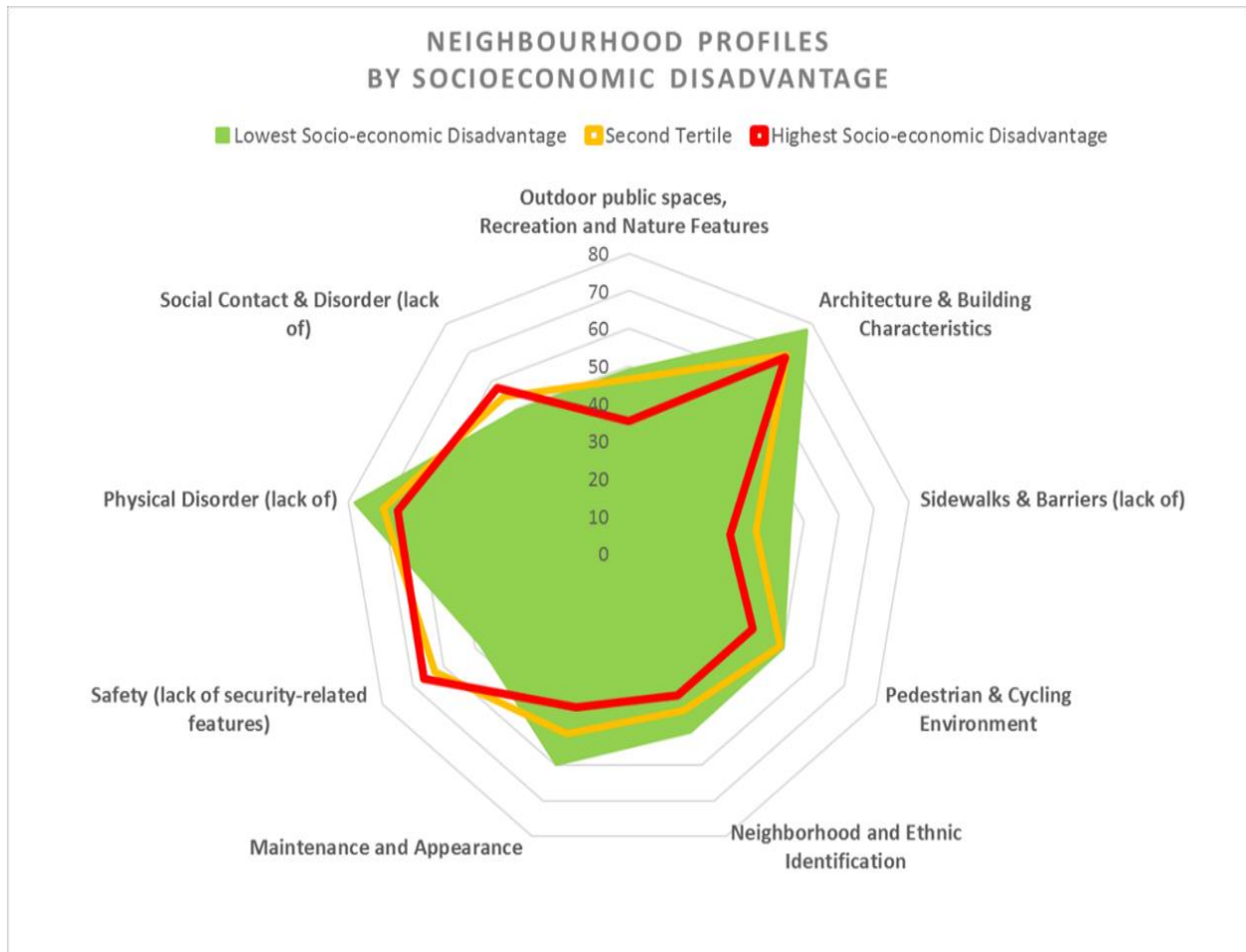


Figure 8 Neighbourhood Profiles by Socioeconomic Disadvantage

10.2 Results Stage B Perception of neighborhood environment: Concurrent Validity

The concurrent validity of the CYNOTes has been investigated by exploring the citizen's perception of their neighborhood environment. A door-to-door survey has been performed using the Place Standard questionnaire in the 45 stratified samples of the neighborhoods that have been audited with the CyNOTes.

The results of the door to door survey are presented below.

10.2.1 Sociodemographic characteristics of the participants

A targeted sample of 10 participants was set on each neighborhood. Table 23 presents the socio-demographic characteristics of the participants (n=444). The majority of the sample was females (61.9%), with an age range from <35 to 65+ years old of Cypriot nationality. 38.5% had tertiary-university education and 48.2% had full-time employment. More than half of the participants (75.2%) were residing in the neighborhood for more than 10 years and owned a house (82.5%) instead of renting. Lastly, 30.6% have reported experiencing financial difficulties in the past 12 months.

Table 23 Socio-demographic characteristics of the participants (N=444).

Variable	Groups	N	%
Gender	Male	169	38.1%
	Female	275	61.9%
Age	<35	95	21.4%
	35-49	101	22.7%
	50-64	124	27.9%
	65+	122	27.6%
	Not reported	2	0.5%
Nationality	Cypriot	402	90.5%
	Not Cypriot	42	9.5%
Marital status	Married/Cohabiting	303	68.2%
	Single	82	18.5%
	Divorced/ Separated/ Widowed	58	13.1%
	Not reported	1	0.2%
Educational attainment	Up to lower secondary	103	23.2%
	Upper secondary	111	25.0%
	Tertiary-University	171	38.5%
	Postgraduate	57	12.8%
	Not reported	2	0.5%
Employment status	Full-time employment	214	48.2%
	Part-time employment	40	9.0%
	Unemployment	38	8.6%
	Not economically active/ Retired	152	34.2%
Residency in current address	More than 10 years	334	75.2%
	3-10 years	51	11.5%
	Less than 3 years	59	13.3%
House tenure	Owner-occupied	366	82.5%
	Privately renting or other	78	17.5%
House type	Detached	312	70.3%
	Semi-detached	87	19.6%
	Apartment in block of eight or less	20	4.5%
	Apartment in block of eight or more	25	5.6%
Financial difficulties previous 12 months	No	305	68.7%
	Yes	136	30.6%
	Not reported	3	0.7%

10.2.2 Assessment of the 14 domains of the neighborhood environment using the Place Standard tool

Table 24 presents summary statistics (mean, median, min, max) across the 14 domains of Place Standard for the overall sample (i.e. across all neighborhoods). A higher score indicated more satisfaction with this aspect since the place standard asks responders to rate on scale from 1, indicating need for large improvement to 7, indicating need for little improvement. The table also presents the percentage of participation who reported large (1-2) improvement vs little (6-7) improvement is needed.

The vast majority of citizens places their neighbourhood in the middle, around midpoint (6-8) of the ladder. As many as 27.9% of responders placed their neighbourhood on the top steps of the social ladder, and only 17.8% of them placed their neighbourhood on the bottom steps.

As shown in Table 23 the domain with the largest percentage of residents that gave lower scoring was the domain of “Influence & Sense of Control (48%)” ,then “Play and Recreation (41.7%)”, then “Traffic and Parking(39.6%)” and then “Public transport (35.4%)”. In contrast, identity and belonging received the highest score by comparison with only 10.1% reporting that large improvements were needed.

The highest scores meaning less improvement is needed, were between Identity and Belonging (5.80), Feeling safe (4.78), Social Contact (4.78), Facilities & Amenities (4.67), Street & Spaces (4.65). The lowest scores meaning large improvement is needed were between Traffic and Parking (3.64), Play and Recreation (3.59).

Interestingly, for “Influence & Sense of Control”, citizens responded that needed large improvement which matches with the nuclear topic described in the virtual ethnographic study, where citizens wanted to have a voice and wanted to be able to have more control of their neighborhood environment.

Table 24 Assessment of the 14 domains of the neighborhood environment on a scale of 1 (large improvement) to 7 (little improvement) of the Place Standard tool (N=444).

Place Standard	Summary statistics				Percentage reporting ...		
	N	Mean (SD)	Median	Min-Max	Large improvement (responses 1-2)	Around midpoint (3-5)	Little improvement (responses 6-7)
Q1: Moving around	444	4.15 (2.11)	4	1-7	26.1%	44.8%	29.1%
Q2: Public transport	444	3.95 (2.35)	4	1-7	35.4%	31.8%	32.9%
Q3: Traffic & Parking	444	3.64 (2.25)	3	1-7	39.6%	33.6%	26.8%
Q4: Streets & Spaces	443	4.65 (2.08)	5	1-7	19.2%	40.2%	40.6%
Q5: Natural space	444	4.16 (2.25)	4	1-7	31.8%	34.7%	33.6%
Q6: Play & Recreation	444	3.59 (2.27)	3	1-7	41.7%	31.8%	26.6%
Q7: Facilities & Amenities	444	4.67 (2.15)	5	1-7	21.2%	35.1%	43.7%
Q8: Work & Local economy	444	4.05 (2.25)	4	1-7	30.9%	35.6%	33.6%
Q9: Housing & Community	442	3.64 (2.06)	4	1-7	34.5%	42.8%	22.3%
Q10: Social contact	443	4.78 (2.23)	5	1-7	22.3%	30.0%	47.6%
Q11: Identity & Belonging	442	5.80 (1.82)	7	1-7	10.1%	19.1%	70.6%
Q12: Feeling safe	444	4.78 (2.17)	5	1-7	20.3%	32.2%	47.5%
Q13: Care & Maintenance	444	3.97 (2.02)	4	1-7	27.5%	46.6%	25.9%
Q14: Influence & Sense of control	444	3.61 (2.32)	3	1-7	42.8%	29.8%	27.5%
Total score (theoretical range: 14-98)	439	59.26 (15.76)	61	20-94			
	N	Mean (SD)	Median	Min-Max	Relatively disadvantaged (1-5)	Around midpoint (6-8)	Relatively privileged (9-10)
Subjective assessment on 1-10 ladder of neighborhood's social position	444	7.14 (2.03)	7	1-10	17.8%	54.3%	27.9%

Figure 9 shows the citizens' responses (grouped from free text) when asked about the three priorities for action in their neighborhoods. The citizens mostly referred to "Play, playgrounds, and other green spaces" and "Garbage, animal droppings, and other physical disorder" (more than 32%). This was followed by "Traffic and Parking arrangements", "Pavement/ Pedestrian environment (including speeding)" and "Street surface and maintenance" (about 25%). It is interesting to note that while residents rated Public Transport low, only about 10% (i.e. one in 10) included this in their top 3 priorities, possibly suggesting a car-cultural whereby, while dissatisfied with the availability and/or quality of public transport, this aspect does not feature high in citizens' priorities for action. Similarly, only less than 10% included the lack of "Facilities and Amenities, including recycling" in their neighborhoods as a top priority. However, whether this indicates a weak environmental/ green culture and/or whether even more basic needs, such as lack of good quality pedestrian environment, outdoor spaces, and general physical order and cleanliness, take priority is not clear.

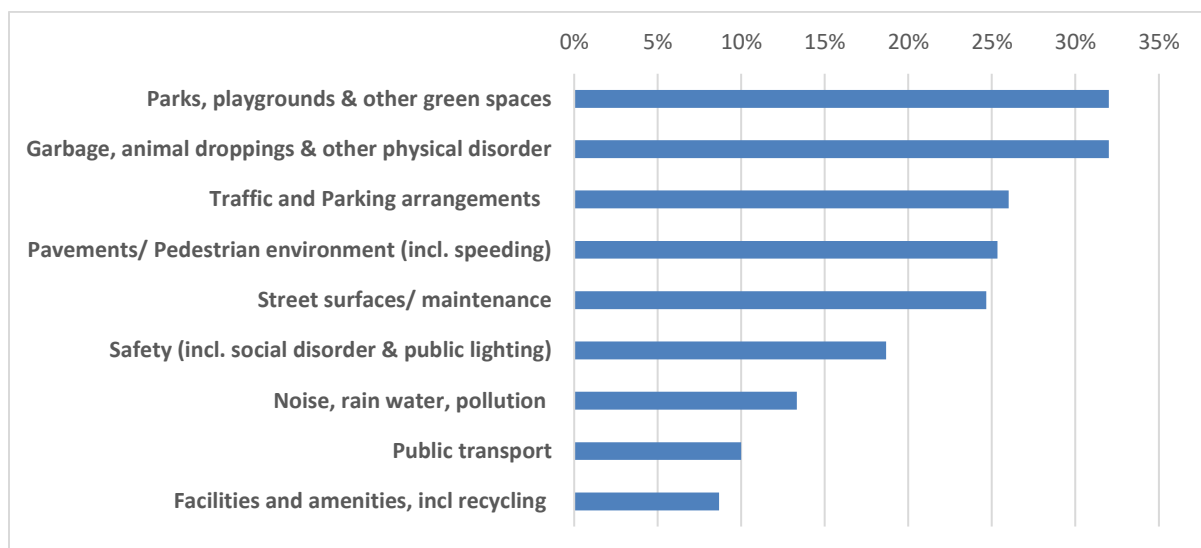


Figure 9 Frequency of reported "priorities for action" (free -text-Place Standard door to door survey).

10.2.3 Associations of subjective ratings of neighborhoods according to the Place Standard questionnaire with individual socio-demographic characteristics

As mentioned in the methodology section, a series of stepwise regression models were used to identify which individual socio-demographic characteristics are associated with the residents' own ratings of the set of audited neighbourhoods; for example, whether people in older age-groups tend to give higher ratings on average than people in younger age-groups. This was important because of the convenience sampling in the door-to-door survey. While effort was taken to apply quota sampling (at least by gender and age-group), this was not always achieved, thus, the composition of sampled participants differs across audited neighbourhoods in terms of their socio-demographic characteristics need to be included in the model later on in order to adjust them as potential confounders. This was necessary the socio-demographic background of responders differs in the models looking at differences at area level (i.e., Tables 28 and onwards). This was essential as the CyNOTes domains were not a direct match with the Place Standard questionnaire domains and therefore those socio-demographic variables were adjusted as confounders. In addition, we had to consider that these socio-demographic variables may influence the results. As a result, any observed differences in average ratings across neighbourhoods need to be adjusted for the potentially confounding effect of the different socio-demographic composition of the sample of residents who participated in the survey; for instance, continuing from the example above, if the sample of residents in one of the audited neighbourhoods tends to be older in age, and given that there is evidence to suggest in the overall sample that older people tend to rate more favourably than younger age-groups, then a higher observed rating in that neighbourhood might simply represent this differing age composition across the neighborhoods.

Table 25 shows the socio-demographic characteristics associated with each one of the 14 Place Standard Domain ratings, whereby b coefficients from the regression models are reported along p-values. Only associations which were statistically significant at the 10% level were included in the final models. It appears that for some domains (e.g. "*Moving around*") there were no statistically significant associations with any of the nine socio-demographic variables included in the models (see first row of Table 24). However, for other domains, 1-2 socio-demographic characteristics of residents appeared to be associated with the ratings, while for a number of

domains (i.e. “*Streets and Spaces*” or “*Feeling Safe*”), as many as four predictor variables were associated with residents’ ratings. Taking the domain “*Feeling safe*”, as an example, it appears that non-Cypriots (b coeff 1.21) and single people (b coeff 0.54) tend to give statistically significant higher ratings on average compared to people of Cypriot nationality and married people. Ratings of safety also show a tendency to be higher on average across increasing age (by 0.28 across successive age-groups; $p < 0.001$) but they were on average lower among people who reported financial difficulties (-0.54; $p = 0.016$), which was indeed one of the characteristics which showed more consistent associations across multiple domains.

Focusing on the overall picture in order to identify certain socio-demographic characteristics that are consistently associated with higher or lower Place Standard ratings across multiple domains, a mixed picture emerges. A number of characteristics seem to be more consistently associated with the ratings across multiple domains of Place Standard (e.g. financial difficulties or non-Cypriot nationality), while other characteristics (e.g. gender) are associated with only one domain or even none (e.g. house ownership). In terms of gender, the women who participated in the door-to-door survey tended to give lower ratings on average (by -0.44 on a 1-7 scale) than men with regard to the domain “*Housing and Community*”, which taps on the quality and variety of housing options in an area. In contrast, there was no evidence that ratings differed between home owners and non-owners neither with regard to the domain “*housing and community*” nor with any other Place Standard domain. In fact, the latter observation may seem surprising given the fact that the proportion of owner-occupied households in an area is often included in international area-level composite indices of socio-economic environment as an indicator of residential stability in a neighbourhood, a condition assumed to promote higher attachment and involvement in the care and maintenance of the area among home owners.

Nevertheless, with the exception of home ownership, all other socio-demographic characteristics were associated with at least one, if not more domain ratings. In fact, a number of characteristics were consistently associated with multiple domains. Among these: older age, non-Cypriot nationality and marital status (in particular, being single) were all associated with more favorable ratings by 0.3-1.2 on average on several aspects of the neighborhood environment. In contrast, people who reported financial difficulties in the last 12 months gave on average lower ratings by 0.4-0.8 on a 1-7 scale across multiple domains, including both aspects of the built

environment, such as “traffic and parking” and “streets and spaces”, as well as aspects of the social environment, such as “social contact”, “identity and belonging”, and “feeling safe”. The strongest association was observed with domain “influence and sense of control” compared to people who did not report any financial difficulties (b coeff -0.81, $p=0.001$).

One of the more consistent findings was that people of non-Cypriot nationality tend to give more favourable ratings on average compared to Cypriots across multiple domains, including the quality of “Public transport” (by 0.75 on 1-7 scale; $p=0.061$); the quality of “Streets and Spaces” (by 0.73; $p=0.032$); “Natural Space” (by 1.11; $p=0.003$); “Work and Local Economy” (by 0.76; $p=0.037$); “Feeling Safe” (by 1.21; $p=0.001$); and perhaps surprisingly, even “Influence and Sense of Control” (by 0.32; $p=0.001$).

A number of other findings are worth mentioning here:

- The only domain for which a statistically significant association was observed with educational attainment was for “Social Contact”, whereby a tendency for slightly lower ratings on average was observed across participants with higher educational attainment (-0.28; $p=0.011$).
- People not in employment (not economically active, unemployed or retired) were more likely to rate “Play and Recreation” in the neighbourhood lower (-0.54; $p=0.040$), even though, interestingly, they tend to rate more favorably on average the domains: “Housing and Community” (0.41; $p=0.042$) and “Care and Maintenance” (0.50; $p=0.010$).

The purpose of this analysis was to identify the socio-demographic characteristics that might have a confounding effect in the comparison across groups neighbourhoods (next sections) due to the differing composition of the sample of residents. Since, with some exceptions, nearly all characteristics investigated here showed some association with one or more domains, it was decided to include all these variables in the analysis even if this significantly reduces the statistical power of the analysis to detect statistically significant differences.

The next two sections of the thesis present the observed differences in mean Place Standard ratings across neighborhoods classified by (a) educational attainment and (b) the composite socio-economic disadvantage index, while the following section repeats the analysis after controlling for the socio-demographic characteristics of the responders.

Table 25 Associations between the assessment of the 14 Place Standard Domains and Socio-demographic characteristics.

Place Standard	Gender: Females	Across older ages	Nationality: Not Cypriot	Marital: Single	Marital” Divorced/ Widowed	Across higher Education	Un/Not employed or Retired	Less than 10 years residency	Not house owners	Financial difficulties
Q1: Moving around										
Q2: Public transport			0.75; p=0.061	0.56; p=0.046				-1.21; p<0.001		
Q3: Traffic & Parking								-0.50; p=0.044		-0.39; p=0.091
Q4: Streets & Spaces		0.30; p=0.004	0.73; p=0.032	0.53; p=0.065						-0.41; p=0.058
Q5: Natural space		0.35; p=0.001	1.11; p=0.003	0.63; p=0.041						
Q6: Play & Recreation		0.45; p=0.001		0.68; p=0.032			-0.54; p=0.040			
Q7: Facilities & Amenities										
Q8: Work & Local economy			0.76; p=0.037							
Q9: Housing & Community	-0.44; p=0.028				-0.84; p=0.005		0.41; p=0.042			
Q10: Social contact						-0.28; p=0.011				-0.63; p=0.008
Q11: Identity & Belonging		0.38; p<0.001		0.43; p=0.081						-0.42; p=0.022
Q12: Feeling safe		0.28; p=0.008	1.21; p=0.001	0.54; p=0.008						-0.54; p=0.016
Q13: Care & Maintenance				0.84; p=0.001			0.50; p=0.010			
Q14: Influence & Sense of control			0.32; p=0.001							-0.81; p=0.001

Table 26 Observed differences in mean (SD) score and percentage of participants reporting that large improvements are needed across the 14 domains of the Place Standard across tertiles of neighborhoods by census-based postcode-level educational attainment.

	Tertiles of neighborhoods according to educational attainment (% tertiary education)				Tertiles of neighborhoods according to educational attainment (% tertiary education)			
Place Standard domains	Lower (N=146)	Middle (N=148)	Higher (N=150)	p-value	Lower (N=146)	Middle (N=148)	Higher (N=150)	p-value
	% reporting large improvements are needed				Mean (SD)			
Q1: Moving around	28.1%	31.1%	19.3%	0.020	4.12 (2.11)	3.66 (2.07)	4.65 (2.06)	<0.001
Q2: Public transport	29.5%	38.5%	38.0%	0.057	4.36 (2.42)	3.73 (2.32)	3.76 (2.27)	0.036
Q3: Traffic & Parking	32.9%	50.7%	35.3%	0.015	3.90 (2.21)	3.19 (2.23)	3.85 (2.25)	0.010
Q4: Streets & Spaces	21.9%	27.9%	8.0%	<0.001	4.47 (2.10)	4.29 (2.26)	5.19 (1.78)	<0.001
Q5: Natural space	39.0%	31.8%	24.7%	0.020	3.79 (2.33)	4.07 (2.20)	4.59 (2.16)	0.007
Q6: Play & Recreation	50.7%	41.2%	33.3%	0.045	3.25 (2.37)	3.61 (2.24)	3.91 (2.16)	0.040
Q7: Facilities & Amenities	24.0%	26.4%	13.3%	0.023	4.73 (2.26)	4.35 (2.26)	4.91 (1.88)	0.071
Q8: Work & Local economy	33.6%	32.4%	26.7%	0.004	3.48 (2.11)	4.22 (2.36)	4.28 (2.21)	0.024
Q9: Housing & Community	33.6%	37.7%	32.7%	0.904	3.64 (2.04)	3.54 (2.12)	3.73 (2.02)	0.740
Q10: Social contact	23.3%	19.6%	24.2%	0.471	4.86 (2.31)	4.89 (2.22)	4.60 (2.17)	0.467
Q11: Identity & Belonging	12.3%	14.4%	4.0%	0.042	5.71 (2.00)	5.58 (1.96)	6.10 (1.43)	0.042
Q12: Feeling safe	26.0%	29.1%	6.0%	<0.001	4.70 (2.33)	4.18 (2.28)	5.46 (1.67)	<0.001
Q13: Care & Maintenance	31.5%	27.7%	23.3%	0.298	3.84 (2.09)	4.09 (2.09)	3.97 (1.87)	0.562
Q14: Influence/Sense of control	43.8%	48.0%	36.7%	0.183	3.47 (2.27)	3.50 (2.38)	3.85 (2.31)	0.294
Total score (theoretical range: 14-98)					58.28 (16.72)	57.02 (15.37)	62.47 (14.71)	0.008
	% placing neighborhood at 5 or lower				<0.001	Mean (SD)		
Subjective assessment on 1-10 ladder of neighborhood’s social position	22.6%	21.6%	9.3%	6.67 (2.06)		6.80 (1.96)	7.95 (1.82)	<0.001
	% placing neighborhood at 9 or higher							
	18.5%	19.6%	45.3%					

10.2.4 Differences in Place Standard ratings across neighbourhoods classified according to educational attainment

Table 26 shows observed differences in mean (SD) ratings across the 14 domains of the Place Standard Tool (theoretical score 1=large improvement to 7= little improvement) across three groups of neighborhoods, stratified by the level of educational attainment. Educational attainment group (lower-middle-high) was operationalized according to the percentage of residents with tertiary education as recorded in the 2011 census and distributed into tertiles. In parallel, the Table also shows the percentage of survey responders who reported that large improvements are needed (responses 1 or 2) and thus expressed a high level of dissatisfaction with a particular Place Standard domain. One-way ANOVA and chi-square tests were used respectively to assess in the first instance whether the Place Standard mean ratings (i.e. using the full scale as a continuous variable) or the percentage of responders who reported that large improvements are needed in a particular domain (i.e. focusing on the bottom-end of the scale) differ across neighborhoods with higher greater educational attainment.

Furthermore, as also shown at the bottom of Table 26, it was also important to assess in the first instance the extent to which the social classification of neighborhoods using educational attainment, a census-based indicator of social position, is consistent with the residents' own subjective assessment of their neighborhood social position (as operationalized by a 10-step ladder). As expected, a stepwise and statistically significant increase was observed across the three groups of neighborhoods in terms of the residents' own assessment of their neighbourhood social position, even though the magnitude of the difference was not large in absolute terms, Specifically, survey participants in the group of neighbourhoods with high educational attainment (i.e. higher social position) placed their neighbourhoods around the 8th step of the ladder on average (M=7.95, SD=1.82). Survey participants in neighborhoods with lower educational attainment group placed their neighbourhoods lower on the ladder compared to the higher educational attainment group, but with no much difference between them – M=6.80 (SD 1.96) in the middle group and M= 6.67 (SD 2.06) in the lower educational attainment group. In fact, while more than 1 in 5 participants from lower and middle educational attainment neighbourhoods placed their neighbourhoods at step 5 or lower on the subjective social ladder, the equivalent percentage in the higher educational

attainment group was 9.3% (one in ten), with nearly half of all people (45.3%) in this group placing their neighbourhood at the top two steps of the ladder, further confirming the validity of using educational attainment to place neighborhoods on the socio-economic continuum. .

In terms of the residents' assessment of the quality of the neighbourhood environment, for the majority of domains (10-11 out of 14 total), ratings appeared, as expected, generally higher on average in the tertile of neighbourhoods with higher educational attainment, even if the differences were not always statistically significant and/or the observed pattern was not always stepwise across decreasing educational attainment. In fact, in many cases, the lowest ratings were observed in the middle category, rather than the bottom tertile. The observed pattern can be also clearly observed in the graphical representation in Figure 6, which shows the mean ratings across the three different educational attainment groups. However, as it can be seen in Table 26, the observed pattern across the three groups of neighborhoods is similar, irrespective of whether the analysis is based on mean ratings or on the percentage of residents expressing the highest levels of satisfaction

The green line on Figure 10 (representing the top group of neighbourhoods) tends to be further out than the other two lines on the radial plot suggesting higher satisfaction with the quality of "place". However, the red line (representing the bottom category in terms of educational attainment) is not always the line which is further in (closer to the middle of the radial plot). Instead, often it is the middle category (in orange) which represents the lowest mean scores in the PST ratings. Of course, it should be reminded that the radial plot, which is the standard method of presenting the Place Standard, points to a higher satisfaction with "place", the fuller the corresponding diagram is. In this case, ratings are generally low across the board as they rarely exceed score 5 (on a 1-7 scale) even in the most advantageous group of neighbourhoods in terms of their educational attainment.

It is not clear to what extent the non-stepwise pattern observed in several domains (with the middle category recording less satisfaction with neighbourhood conditions) represents actual more unfavourable conditions experienced by residents in these neighbourhoods or even whether the same interpretation can be given across all domains. In fact, given the fact that a more consistent stepwise pattern of neighbourhood quality was recorded in the audit survey across increasing social position, it may be also likely that this U-shape pattern whereby, ratings in the

middle educational attainment group are lower compared to both ends of the continuum may be a product of differential social desirability bias or even differential expectations among people in neighborhoods. The first term point to a phenomenon, whereby people in lower social status neighbourhoods may be more reluctant to “complain” (and perhaps more so in a personal interview) about their neighbourhoods even though they are aware of the more unfavorable conditions compared to elsewhere. The second term would point to a phenomenon whereby there is an actual different point of reference as to what constitutes “good” or “bad” neighbourhood hence manifesting as different expectations. While it is likely that all three processes are at play, no inference can be drawn from a survey study design.

Considering the overall picture with the purpose of grouping the observed patterns, the following observations emerge:

- In a total of 11 (out of 14) Place Standard domains, a lower percentage of residents in the top educational attainment group of neighborhoods expressed dissatisfaction (or equivalently, gathered higher mean ratings on average) compared to residents in the bottom category, even if
 - the observed differences were not statistically significant (4 domains: “Influence and sense of Control”, “Care and Maintenance”, “Housing and Community” and “Social Contact”)
 - the observed pattern was not necessarily stepwise, since the lowest ratings were not observed in the bottom educational attainment group (in 7 domains)
- In 4 domains, a clear stepwise pattern was observed along the educational attainment continuum, whereby a progressively increased statistically significant percentage of residents expressing dissatisfaction was recorded in each successive group of neighborhoods. These where
 - “Natural space”, whereby 24.7% (1 in 4) responders reported strong dissatisfaction in the top vs 31.8% in the middle vs 39.0% (nearly half) in the bottom group of neighbourhoods in terms of educational attainment; p-value=0.020
 - “Play and Recreation”, whereby as many as 33.3% (1 in 3) responders reported strong dissatisfaction in the top but the equivalent figure was higher (41.2%) in the middle

- and even higher (50.7%) in the bottom group of neighbourhoods in terms of educational attainment; p-value=0.045
- “Work and Local Economy”, with equivalent figures ranging from 26.7% to 32.4% and 33.6% respectively; p-value=0.004
 - “Care and Maintenance”, where even though a clear stepwise pattern was observed (23.3% vs 27.7% vs 31.5%), the observed differences were not as large to be statistically significant at the 5% level (p-value=0.298)
- In 2 domains, the observed pattern was actually reverse, whereby the percentage of responders expressing dissatisfaction was actually lower in the tertile of neighbourhoods with the lowest educational attainment. These were:
 - “Public transport”, which might indeed reflect the more central position of these neighborhoods
 - “Traffic and Parking”, which, nevertheless, may be surprising given the fact that these neighbourhoods tend to be closer to the city centre. The highest level of dissatisfaction with this aspect was recorded in the middle group where at least half of the residents (50.7%) reported that large improvements are needed compared to about one in three in both the bottom and top quartile of educational attainment (with 32.9% and 35.3% respectively).
 - Finally, as suggested above, while in the majority of domains, the highest ratings were recorded in the top educational attainment group of neighbourhoods, the lowest ratings were not always recorded in the bottom tertile of neighborhoods, but often in the middle educational attainment group.

Some of the largest differences across groups of neighbourhoods were observed in terms of “Feeling Safe” ($p < 0.001$) and “Streets & Spaces” ($p < 0.001$). With regard to the former, it is interesting to note that, while only 6% of responders (i.e. one in about 20) in neighbourhoods with higher educational attainment expressed dissatisfaction in terms of safety, the equivalent figures in the rest of the neighbourhoods were 26.0% and 29.1% i.e. one in four. In the CyNOTes audits a reverse pattern was recorded in terms of safety. However, as already discussed, CyNOTes operationalizes safety as the lack of security-related features (such as CCTV cameras, high fences, window/ doors bars etc). As such it is more likely to reflect financial ability to install security-

features rather than a perception of safety in the absence of such features. The Place Standard residents' survey confirms this interpretation since lower educational attainment neighbourhoods may score higher on safety on the CyNOTes but as many as one in four residents expressed concern about safety.

Another interesting finding is the fact that “Influence and sense of control”, mainly tapping on the extent to which residents feel that they participate and/or influence decision about their neighbourhoods scored generally low across all neighbourhoods with no statistically significant differences across groups of neighbourhoods. While the percentage of residents in higher educational attainment neighbourhoods expressing dissatisfaction about this aspect was somewhat lower at 36.7% by comparison to elsewhere (i.e. 43.8% in the bottom tertile and 48.0% in the middle tertile), it is worth noting that 1 in 3-4 people in the survey felt that large improvements are needed in terms of citizens' participation in decision-making. This comes in agreement with the nuclear theme of the social media ethnographic study (inductive content analysis). Other Place Standard domains which scored low across all neighbourhoods include: “Public Transport” and “Play and Recreation”

Lastly, in term of the total Place Standard score (theoretical range: 14-98), the highest mean score (which indicates higher satisfaction with “place”) was recorded among residents in the top tertile of neighborhoods according to educational attainment ($M=62.47$, $S.D=14.71$) compared with 58.28 ($S.D=16.72$) in the lower and 57.02 ($S.D=15.37$) and middle tertile. The difference among the three groups of neighborhood was statistically significant ($p=0.008$), however, there was no much difference between the bottom and middle tertile. It is not clear whether this represents actual ‘similarity’ in the quality of the neighbourhood environment between these groups of neighbourhoods, or to some extent it might also be suggestive of expectation bias and/or social desirability bias. For instance, an ‘inflation’ of subjective ratings among residents in lower educational attainment neighbourhoods. and/or, reversely, ‘deflation’ in the middle group, possibly a result of higher expectations.

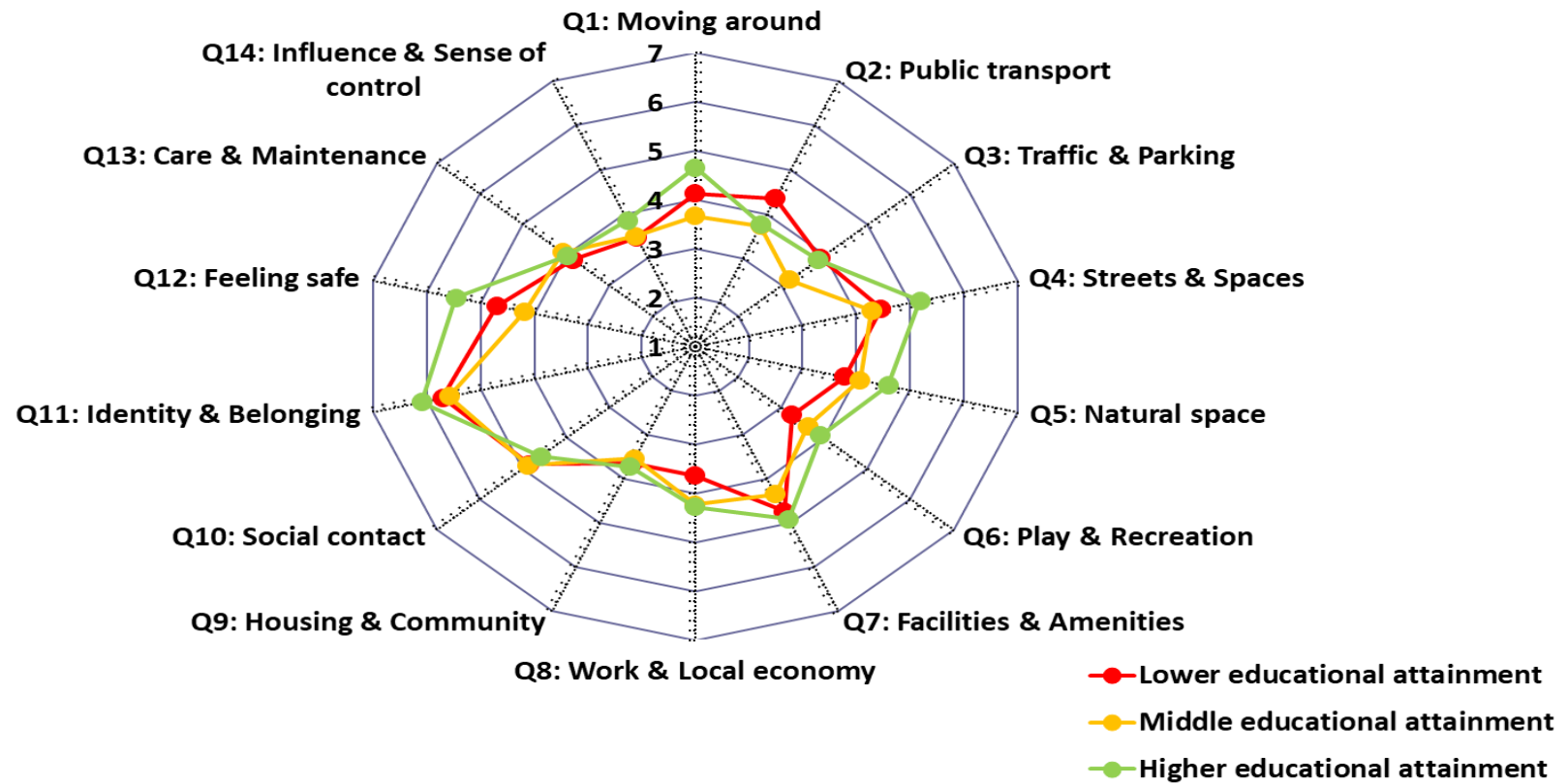


Figure 10 Differences in domain mean scores across groups of neighborhoods by educational attainment.

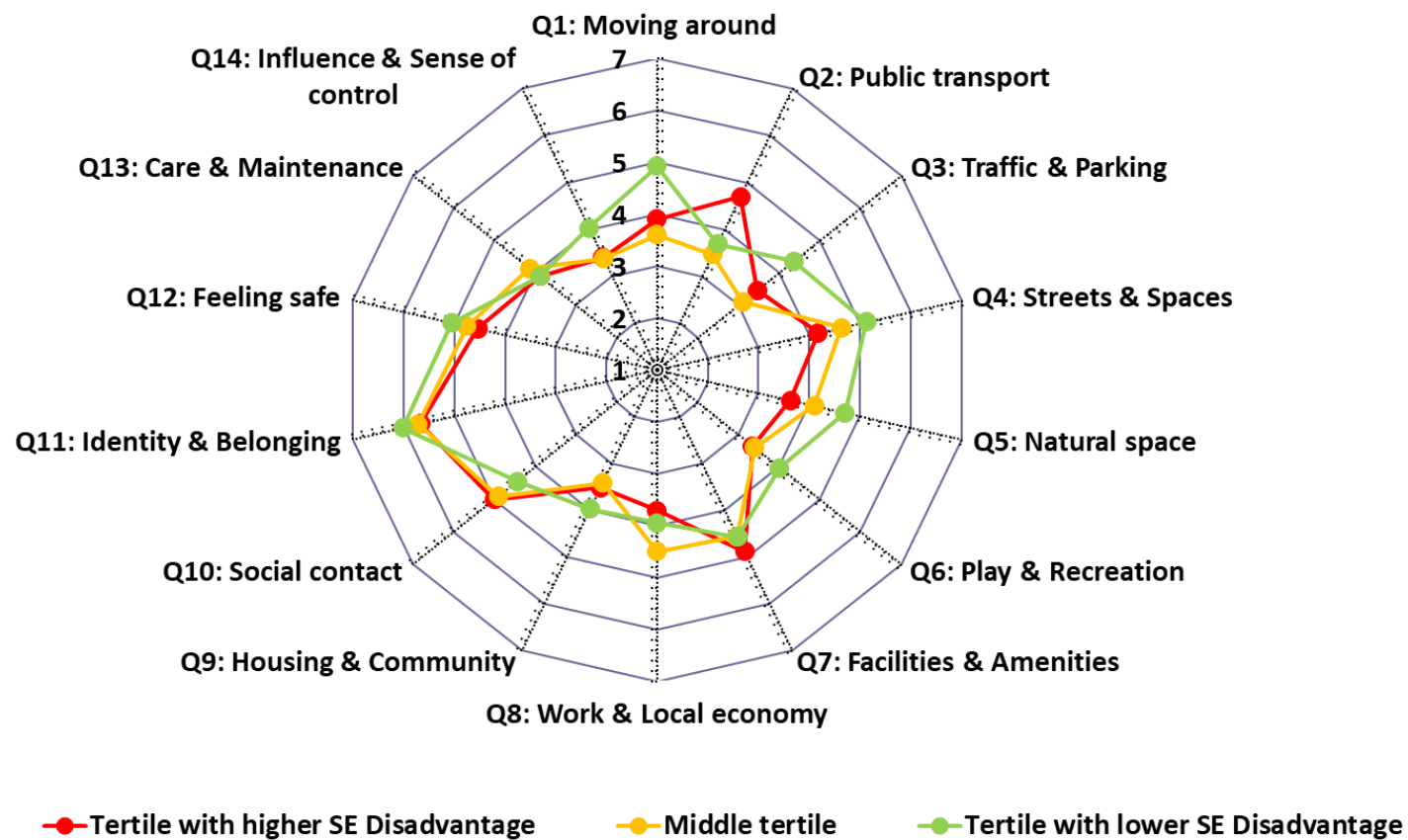


Figure 11 Differences in Place Standard domain mean scores across groups of neighborhoods by SED index.

10.2.5 Differences in Place Standard ratings across neighbourhoods classified according to composite socio-economic disadvantage index

The analysis was repeated after reclassifying the audited neighbourhoods using the composite index of socio-economic disadvantage (SED index), rather than just educational attainment. Table 27 shows the observed differences in the mean (SD) score as well as percentage of participants reporting that large improvements are needed across the 14 domains of the Place Standard across three groups of neighborhoods, stratified by tertile levels of the composite SED index. The observed pattern can be also clearly observed in the graphical representation in Figure 11, which shows the mean ratings across the three different groups of neighbourhoods classified by socio-economic disadvantage.

As shown in Table 27, residents in neighbourhoods with lower socio-economic disadvantage rated their neighbourhoods generally higher across most domains, with only few exceptions. This is also clearly indicated in Figure 11 where the green line (representing the bottom tertile of SED. i.e. more privileged neighbourhoods) can be seen to be fuller compared to the other two lines on the radial plot. The only exceptions are: “Work & Local Economy”, and “Care & Maintenance”. In the case of the former, the observed differences were statistically significant with the bottom and top tertile scoring lower on average compared to the middle group. In the case of the latter, while the middle group had higher mean scores, the observed differences by SED were not large and not statistically significant.

In general, larger differences were observed when neighborhoods were classified according to the composite index rather than educational attainment alone. Specifically, in 7 out of 14 domains, the observed differences were statistically significant, while in a further 3 domains marginal statistical significance was observed (p-values of 0.06-0.07). In 4 domains, there was no statistically significant differences, namely:

- “*Housing & Community*” and “*Care & Maintenance*”; however, these aspects of the built-environment were rated generally low across all neighbourhoods irrespective of socio-economic disadvantage, and

- “*Identity and Belonging*” and “*Feeling Safe*”, whereby these aspects of the social environment were rated generally higher across all neighbourhoods.

However, even though differences were not statistically significant, there was still an indication of a stepwise increase in residents’ perceptions with regard to aspects of the social environment according to SED. For instance, the percentage of responders who reported that large improvements are needed with regard to Safety, increased progressively from 15.3 to 19.6% and 26.0% across increasing socio-economic disadvantage. Similarly, while feelings of “identity and belonging”, tapping on neighbourhood attachment, were generally high across all neighbourhoods, the proportion of residents who expressed dissatisfaction in neighbourhoods with higher SED (12.3%) compare to residents in neighbourhoods with lower SED (6.0%).

In general, the patterns observed when the neighbourhoods were classified according to a composite SED were similar to those observed when neighbourhoods were classified only based on the educational attainment of the residents. As previously, residents in low SED neighbourhoods rated their neighbourhoods more favourably by comparison across nearly all domains with only a few exceptions. However, the lowest scores were not always recorded in the higher SED neighbourhoods. Thus, while more privileged neighbourhoods present a generally more favourable profile compared to both other groups and for most Place Standard domains, the observed pattern was not always clearly stepwise across increasing level of SED.

A clear stepwise pattern of less favourable ratings was observed for the following neighbourhood aspects, whereby a progressively higher proportion of residents expressing dissatisfaction was recorded across the SED continuum

- “*Streets & Spaces*”: with 11.4% (one in ten) of residents expressing dissatisfaction in more privileged neighbourhoods compared to 19.6% (one in five) and 26.7% (one in four) across increasing levels of SED. This represents more than a 2-fold difference across the two ends of the continuum and it is strongly significant ($p < 0.006$).
- “*Natural Space*”: where the equivalent figures are 22.0% (lower SED) to 32.3% to 42.5% (higher SED); This difference also represents more than a 2-fold difference across the two ends of the continuum and it is strongly significant ($p < 0.006$).

- “*Facilities & Amenities*”: 19.3% (low SED) to 21.7% to 22.6% (high SED); $p=0.038$
- “*Play & Recreation*”: 32.7% (low SED) to 44.6% to 47.9% (high SED); $p=0.056$

The above domains represent both features of the built, natural/ physical and service environment (rather than the social environment). Furthermore, it should be noted that differences between low vs high SED were recorded both for features that were generally rated more favourable across all neighbourhoods (such as “*Facilities and Amenities*”) as well as features rated less favourably across neighbourhood (such as “*Play & Recreation*” or “*Natural Space*”). The latter is not surprising since parks and green spaces are not a common feature across Limassol neighbourhoods, or when such public green spaces exist they are not necessarily well-maintained.

In one domain (“*Public Transport*”), the observed trend was reverse. While as many as 41.2% and 42.0% of residents in the bottom and middle SED tertile expressed dissatisfaction with this aspect, the equivalent proportion among residents in the tertile with the highest levels of socio-economic disadvantage was 22.6% ($p\text{-value}<0.001$).

Looking at the overall Place Standard score, the mean score in the low SED (better-off) neighbourhoods was 62.57 ($SD=15.33$). With a theoretical range of 14-98, this represents only a moderate rating even in the better-off neighbourhoods (about 60% of the highest possible score). The mean score was 57.81 ($SD=17.01$) in the higher SED (worse-off) neighbourhoods and 57.35 ($SD=14.39$) in the middle tertile, with statistically significant difference ($p=0.007$).

Lastly, it should be mentioned that as many as half of the residents (46.0%) in the low SED (i.e. better-off) group of neighbourhoods citizens placed their neighbourhood at the top two steps of the 10-step social ladder was lower in the low SED (the better-off neighborhoods) with only 14.7% of them placing it at the middle of the social ladder or lower. In contrast, the percentage of residents in the high SED (i.e. worse-off) group who placed their neighbourhood at the top of the social ladder was only 13.0%, while as many as one in four (25.3%) placed it at or below the middle of the social ladder. The concurrence between residents’ subjective assessment about their neighbourhood’s position on the social ladder (as compared to all others) and the SED index (based on a series of census variables) reinforces the predictive validity of the SED index itself.

It should be noted that such subjective measures are considered particularly relevant as they represent an internalized perception of position in the social hierarchy through a cognitive “synthesis” of several factors not always easy to capture by other indicators and through a process of social comparison, in this case, with other neighbourhoods. Thus, it is not surprising that when repeating the analysis by classifying neighbourhoods based on the residents’ own subjective assessment of social position, a striking stepwise pattern of progressively worse scores were observed across all Place Standard domains, with the exception of “Public Transport” and “Work and local Economy” which was rated quite low by everyone and/or for which no significant differences were observed.

The findings of this analysis are presented in the radial plot in Figure 11. It is interesting to note that the largest differential was observed for “Identify and Belonging”. People who identified their neighbourhood at the top two steps of the social ladder, assigned a score of 6.67 on average (i.e. near perfect on the scale of 1-7), whereas, people who placed their neighbourhood at the middle of the social ladder or lower assigned, on average, a score of 4.27 with regard to this aspect. While this may represent same-source bias (i.e. an expected correlation between the subjective assessment of neighborhood social position and neighborhood quality/problems measured at the level of the same person (same-source), it is also likely to represent neighbourhood attachment to some degree. For instance, people with a high level of attachment to their neighbourhood may be both less likely to be critical while at the same position their neighbourhood higher up on the social ladder. The cognitive process by which people perceive neighbourhood social position is not well understood. However, the much stronger associations observed with the subjective measure of social position (social ladder) rather than objective measures (educational attainment, composite SED index) might suggest that perceptions of quality of the neighbourhood environment may also play a role in people’s cognitive ‘synthesis’ of factors that affect their internalized sense of where their neighbourhood lies on the social position scale.

Table 27 Observed differences in mean (SD) score and percentage of participants reporting that large improvements are needed across the 14 domains of Place Standard by SEDindex.

	Tertiles of neighborhoods according to the Composite Socio-economic Disadvantage Index				Tertiles of neighborhoods according to the Composite Socio-economic Disadvantage Index			
Place Standard domains	Lower (N=150)	Middle (N=148)	Higher (N=146)	p-value	Lower (N=150)	Middle (N=148)	Higher (N=146)	p-value
	% reporting large improvements are needed				Mean (SD)			
Q1: Moving around	16.7%	32.4%	29.5%	<0.001	4.92 (2.02)	3.60 (2.03)	3.90 (2.08)	<0.001
Q2: Public transport	42.0%	41.2%	22.6%	<0.001	3.69 (2.36)	3.47 (2.21)	4.70 (2.31)	<0.001
Q3: Traffic & Parking	28.0%	48.0%	43.2%	<0.001	4.35 (2.26)	3.11 (2.12)	3.46 (2.19)	<0.001
Q4: Streets & Spaces	11.4%	19.6%	26.7%	0.006	5.13 (1.88)	4.64 (2.12)	4.18 (2.15)	<0.001
Q5: Natural space	22.0%	31.1%	42.5%	0.004	4.71 (2.07)	4.10 (2.18)	3.64 (2.38)	<0.001
Q6: Play & Recreation	32.7%	44.6%	47.9%	0.056	4.02 (2.19)	3.41 (2.16)	3.35 (2.39)	0.018
Q7: Facilities & Amenities	19.3%	21.7%	22.6%	0.038	4.57 (2.05)	4.55 (2.13)	4.88 (2.27)	0.331
Q8: Work & Local economy	34.0%	22.3%	36.3%	0.074	3.95 (2.29)	4.49 (2.13)	3.71 (2.25)	0.008
Q9: Housing & Community	30.7%	37.0%	36.3%	0.116	3.97 (2.14)	3.41 (1.94)	3.52 (2.06)	0.044
Q10: Social contact	26.2%	19.6%	21.2%	0.066	4.44 (2.20)	4.91 (2.20)	5.00 (2.23)	0.071
Q11: Identity & Belonging	6.0%	12.2%	12.3%	0.250	6.01 (1.54)	5.72 (1.88)	5.66 (2.01)	0.205
Q12: Feeling safe	15.3%	19.6%	26.0%	0.148	5.05 (2.10)	4.76 (2.11)	4.53 (2.28)	0.125
Q13: Care & Maintenance	26.7%	24.3%	31.5%	0.499	3.88 (1.94)	4.14 (2.00)	3.88 (2.10)	0.459
Q14: Influence/Sense of control	34.7%	50.0%	43.8%	0.021	4.03 (2.39)	3.38 (2.26)	3.40 (2.27)	0.021
Total score (theoretical range: 14-98)					62.57 (15.33)	57.35 (14.39)	57.81 (17.01)	0.007
	% placing their neighborhood at 5 or lower			<0.001	Mean (SD)			
Subjective assessment on 1-10 ladder of neighborhood’s social position	14.7%	13.5%	25.3%		7.90 (1.92)	7.06 (1.93)	6.45 (1.97)	<0.001
	% placing their neighborhood at 9 or higher							
	46.0%	24.3%	13.0%					

10.2.6 Residents' subjective assessment of neighborhood (Place Standard) according to the composite socio-economic disadvantage index after adjusting for sociodemographic characteristics of the responders

Table 28 shows differences in mean scores of the 14 domains of the Place Standard questionnaire between tertiles of neighbourhoods according to the composite socio-economic disadvantage index after controlling for sociodemographic characteristics of the responders. As explained earlier, this was important in order to adjust for the differing socio-demographic composition of each neighbourhood sample of residents, given that there was evidence to suggest that certain individual characteristics are associated with the tendency of giving generally higher or lower ratings (see section 10.3.3). Only when there was evidence of a stepwise pattern between successive tertiles of SED (i.e. either progressively higher or lower scores), the model was repeated to estimate the average increase or decrease as a linear term across the SED continuum, along with the p-value for trend. Table 28 shows the negative associations with SED in red (i.e. lower scores the higher the socio-economic disadvantage) and the positive associations in blue (i.e. higher scores the lower the socio-economic disadvantage). Statistically significant linear trends are highlighted in bold.

In general, adjusting for socio-demographic characteristics of the survey participants did not change the original inference. There was evidence to suggest that average ratings were generally higher in neighbourhoods with lower socioeconomic disadvantage (better-off) compared to worse-off neighbourhoods in at least nine of the 14 Place Standard domains,. In fact, in seven of these domains, there appeared to be a clear stepwise decrease in citizens' average scores according to increasing socio-economic disadvantage even after adjusting for individual characteristics of the survey responders.

While the observed trend was statistically significant only in three of these domains, this was possibly due to the small sample size in conjunction to the large number of variables included in the models. Nevertheless, a largely consistent pattern emerged of progressively higher scores across decreasing levels of SED. More importantly, the analysis confirmed that the observed associations remain even after considering the socio-demographic differences introduced by sampling.

The largest statistically significant difference was observed with regard to “Natural Space”. Compared to neighborhoods with high SED (reference group), the ratings were higher on average by 0.48 (95% CI -0.45,1.40) and by 1.21 (95% CI 0.28,2.13) in the middle and in the better-off neighborhoods respectively, representing an average decrease in the magnitude of -0.60 (95% CI -1.06, -0.15; $p=0.011$) in residents’ ratings (theoretical scale 1-7) across tertiles of neighbourhoods with increasing levels of socio-economic disadvantage.

The second largest difference was observed across increasing SED for “Streets and Spaces”. This was an average decrease in the magnitude of -0.53 (95% CI -0.90, -0.16; $p=0.006$). This was followed by “Influence and sense of Control” with an average decrease of -0.37 (95% CI -0.72, -0.01; $p=0.016$) across increasing levels of socio-economic disadvantage. However, it appears that this was largely driven by the higher average score in the better-off neighbourhoods since there was not much difference in average scores between the middle and worse-off tertile of SED.

A linear trend of smaller stepwise decreases across tertiles of increasing SED, albeit not statistically significant, was also observed in four additional domains of the Place Standard: “Play & Recreation”, “Housing & Community”, “Identity & Belonging” and “Feeling Safe”.

In three Place Standard domains, a reverse pattern was observed whereby residents in better-off neighborhoods gave on average lower scores compared to residents in neighborhoods with higher SE disadvantage; namely, “Public Transport”, “Facilities and Amenities” and “Social Contact”. For the latter in particular, even though observed differences were small and not statistically significant, there appeared to be a stepwise increase in the magnitude of 0.25 (95% CI -0.25, 0.75) in average scores across decreasing SE disadvantage. This represents a difference of about 0.5 on the 1-7 response scale on opposite ends of the socio-economic continuum.

There were no statistically significant differences in residents’ assessments of “Work and Local Economy”, “Care and Maintenance”, “Facilities & Amenities” according to SE disadvantage.

Table 28 Differences in mean scores of the 14 domains of the Place Standard questionnaire across tertiles of neighborhood according to the composite SED index after adjusting for sociodemographic characteristics of the responders (N=444).

	Tertiles of neighborhoods according to Composite Socio-economic Disadvantage Index						
	Better off		Middle		Worse off	Across tertiles with increasing SED (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	0.99 (0.26, 1.71)	0.009	-0.38 (-1.10, 0.34)	0.289	Ref		
Q2: Public transport	-0.87 (-1.81, 0.08)	0.073	-1.23 (-2.18, -0.28)	0.011	Ref		
Q3: Traffic & Parking	0.91 (0.02, 1.81)	0.045	-0.35 (-1.24, 0.54)	0.434	Ref		
Q4: Streets & Spaces	1.06 (0.31, 1.81)	0.007	0.50 (-0.24, 1.25)	0.181	Ref	-0.53 (-0.90, -0.16)	0.006
Q5: Natural space	1.21 (0.28, 2.13)	0.012	0.48 (-0.45, 1.40)	0.302	Ref	-0.60 (-1.06, -0.15)	0.011
Q6: Play & Recreation	0.74 (-0.27, 1.75)	0.148	0.01 (-1.00, 1.02)	0.988	Ref	-0.37 (-0.87, 0.13)	0.144
Q7: Facilities & Amenities	-0.26 (-1.02, 0.50)	0.492	-0.41 (-1.17, 0.34)	0.278	Ref		
Q8: Work & Local economy	0.18 (-0.86, 1.22)	0.726	0.68 (-0.36, 1.71)	0.194	Ref		
Q9: Housing & Community	0.54 (-0.25, 1.33)	0.176	0.03 (-0.76, 0.82)	0.934	Ref	-0.27 (-0.66, 0.12)	0.172
Q10: Social contact	-0.49 (-1.51, 0.52)	0.331	-0.13 (-1.15, 0.88)	0.793	Ref	0.25 (-0.25, 0.75)	0.326
Q11: Identity & Belonging	0.47 (-0.04, 0.98)	0.071	0.04 (-0.47, 0.55)	0.865	Ref	-0.24 (-0.49, 0.02)	0.069
Q12: Feeling safe	0.54 (-0.18, 1.26)	0.139	0.17 (-0.56, 0.89)	0.644	Ref	-0.27 (-0.63, 0.09)	0.134
Q13: Care & Maintenance	0.14 (-0.45, 0.74)	0.627	0.35 (-0.25, 0.94)	0.245	Ref		
Q14: Influence/Sense of control	0.73 (0.03, 1.44)	0.042	-0.01 (-0.71, 0.70)	0.984	Ref	-0.37 (-0.72, -0.01)	0.016
Total score (range: 14-98)	5.64 (-0.47, 11.75)	0.070	-0.58 (-6.67, 5.52)	0.849	Ref		
Subjective assessment of neighborhood's social position	1.47 (0.79, 2.14)	<0.001	0.57 (-0.11, 1.24)	0.097	Ref	-0.73 (-1.07, -0.40)	<0.001
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7 Residents' subjective assessment (Place Standard) by CyNOTes domains across tertiles of neighborhood according to each CyNOTes domain .

Tables 29-35 show the differences in mean scores of the 14 domains of the Place Standard questionnaire across tertiles of neighborhood according to each of CyNOTes domains' (1-9) scores and factor after adjusting for sociodemographic characteristics of the responders (N=444). In each case the Place Standard domains that were conceptually expected (hypothesized) to show a stronger association are highlighted.

10.2.7.1 Differences of Place Standard questionnaire according to CyNOTes Domain 1: Architecture & Building Characteristics

Table 29 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain 1: Outdoor public spaces, Recreation and Nature Features score and factor after adjusting for sociodemographic characteristics of the responders. The domain score was distributed into tertiles (Worse-off, Middle, Better-off). To assess whether Place Standard scores increased in neighborhoods with better CyNotes scoring, calculations were made to assess differences between the tertiles and across tertiles with increasing domain score (N=444).

As shown in Table 29 in the majority of the domains (at least 10 out of 14 total) the observed pattern was indicative of a stepwise association. Residents in neighborhoods that were rated worse in terms of this domain, scored their neighbourhoods lower on average compared to residents in the better neighbourhoods (Outdoor public spaces, Recreation and Nature Features).

In fact, in seven of these domains, there appeared to be a stepwise increase in citizens' average scores across tertiles of neighborhoods with better scores in the "Outdoor Public Spaces, recreation and Nature Feature "domain. Specifically, Streets and Spaces were assessed on average lower in the middle (-0.16; 95% CI 0.93,0.60) compared to the better-off neighborhoods while, in the tertile of neighborhoods with the worse audit scores in this domain, residents assessed Streets and Spaces even lower on average (-0.88; 95% CI -1.64,-0.11). Expressed as a linear trend, this represents a 0.44 increase (95% CI 0.06,0.82) on a 1-7

point scale across tertiles with increasing (worse- to better-off) Outdoor Spaces domain scores, suggesting a positive and statistically significant association ($p=0.024$).

“Streets and Spaces” was one of the items expected to show an association with this domain. Other domains expected to show an association with this domain were “Natural Space” and “Play and Recreation”. Indeed, both of these features were assessed less favorably by residents in the neighborhoods with the lowest audit scores, even though the observed differences were not statistically significant. There was a positive association between the better audit ratings for Outdoor Public Spaces for “Feeling Safe”, “Care & Maintenance” and “Influence/ Sense of control” the latter was also statistically significant($p=0.020$).

In one Place Standard item, a reverse pattern was observed whereby residents in the better-rated neighborhoods gave on average lower scores compared to residents in the worse-off neighborhoods; namely, “Public Transport” with a 0.39 (95% CI -0.63,1.40) higher score in the worse-off neighborhoods, compared to the better-off neighborhoods and 0.15 higher (95% CI -0.86,1.17) in the middle group compared to the better off neighborhoods.

There did not appear to be any systematic pattern and/or statistically significant differences in residents’ assessments of “Moving Around”, “Traffic & Parking”, “Facilities and Amenities”, “Work and Local economy”, “Housing and Community”, “Social Contact” and “Identity and Belonging”, according to Outdoor public spaces, Recreation and Nature Features.

Table 29 Differences of Place Standard questionnaire according to CyNOTes Domain 1: Outdoor public space, Recreation and Nature Features.

	Domain 1: Outdoor public spaces, Recreation and Nature Features						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	-0.41 (-1.23, 0.42)	0.323	0.17 (-0.65, 1.00)	0.671	Ref		
Q2: Public transport	0.39 (-0.63, 1.40)	0.446	0.15 (-0.86, 1.17)	0.761	Ref	-0.19 (-0.70, 0.31)	0.441
Q3: Traffic & Parking	-0.36 (-1.29, 0.58)	0.443	0.60 (-0.33, 1.54)	0.200	Ref		
Q4: Streets & Spaces	-0.88 (-1.64, -0.11)	0.025	-0.16 (-0.93, 0.60)	0.673	Ref	0.44 (0.06, 0.82)	0.024
Q5: Natural space	-0.59 (-1.56, 0.37)	0.221	0.13 (-0.84, 1.09)	0.786	Ref	0.30 (-0.18, 0.78)	0.219
Q6: Play & Recreation	-0.73 (-1.75, 0.29)	0.156	-0.39 (-1.41, 0.63)	0.442	Ref	0.36 (-0.14, 0.87)	0.151
Q7: Facilities & Amenities	-0.14 (-0.90, 0.62)	0.714	0.23 (-0.53, 1.00)	0.543	Ref		
Q8: Work & Local economy	-0.73 (-1.61, 0.15)	0.102	-1.88(-2.76,-1.00)	0.000	Ref		
Q9: Housing & Community	0.30 (-0.48, 1.07)	0.448	0.74(-0.34,1.52)	0.061	Ref		
Q10: Social contact	-0.12(-1.13,0.88)	0.805	0.50(-0.51,1.51)	0.323	Ref		
Q11: Identity & Belonging	-0.16 (0.68,0.37)	0.555	-0.15(-0.65,0.41)	0.637	Ref		
Q12: Feeling safe	-0.66 (-1.36,0.04)	0.064	-0.61 (-1.31,0.09)	0.088	Ref	0.33 (-0.01,0.68)	0.065
Q13: Care & Maintenance	-0.18 (-0.78,0.41)	0.534	0.03(-0.56,0.64)	0.896	Ref	0.09 (-0.20,0.39)	0.524
Q14: Influence/Sense of control	-0.84 (-1.54,-0.13)	0.021	-0.56 (-1.27,0.14)	0.115	Ref	0.42 (0.07,0.76)	0.020
Total score (range: 14-98)	-4.56 (-10.85,1.74)	0.151	-0.77(-7.07,5.54)	0.807	Ref	2.28 (-0.83,5.41)	0.147
Subjective assessment of neighborhood's social position	-0.86(-1.64,-0.09)	0.029	-0.24(-1.02,0.53)	0.523	Ref	0.43 (0.05,0.81)	0.027
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.2 Differences of Place Standard questionnaire according to CyNOTes

Domain 2: Architecture & Building Characteristics

Table 30 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain's 2: Architecture & Building Characteristics after adjusting for sociodemographic characteristics of the responders. The domain score was distributed into tertiles (Worse off, Middle , Better off).

As shown in Table 30 the majority of the Place Standards domains (at least 12 out of 14 total) exhibited a stepwise association across neighborhood audit for Architecture and Building Characteristics. In neighborhoods which were rated worse in terms of “ Architecture and Building Characteristics” assessed their neighbourhoods worse on average compared to residents in the better-off neighbourhoods .

In fact, eleven of these domains, there appeared to be a stepwise increase in citizens' average scores across tertiles of neighborhoods with increasing audit scores. Specifically, Traffic and Parking were assessed on average lower by -0.77 (95% CI-1.63,0.10) in the middle group and by -1.60 (95% CI -2.43,-0.78) in the worse-off group . Expressed as a linear trend, this represents a 0.80 increase (95% CI 0.40,1.21) on a 1-7 point scale across tertiles with increasing (worse- to better-off) Architecture and Building Characteristics domain scores suggesting a positive and statistically significant association ($p<0.001$).

Other domains that were expected to show an association were “Streets and Spaces”, “Housing and Community” and “Care and Maintenance”. Indeed, all three of these features were assessed less favorably by residents in the neighborhoods with the lowest audit scores, even though the observed differences were only statistically significant for the “Streets and Spaces” and “Housing and Community” ($p=0.000$ and $p=0.002$ respectively).

Interestingly, there was also a positive association between better audit ratings for Architecture and Building Characteristics and higher residents' scores in “Influence/ Sense of control” and “Identity and Belonging”.

In one Place Standard item, a reverse pattern was observed whereby residents in the better rated neighborhoods in the CyNOTes audit gave on average lower scores compared to residents in the worse off neighborhoods; namely, “Work

and Local economy” with a 0.43 (95% CI -0.60,1.50) higher score in the worse-off neighborhoods, and a 0.20 score (95% CI -0.90,1.30) in the middle group compared to the better off neighborhoods.

There did not appear to be any systematic pattern and/or statistically significant differences in residents’ assessments for “Public Transport” and “Facilities and Amenities”, according to Architecture and Building Characteristics.

Table 30 Differences of Place Standard questionnaire according to CyNOTes Domain 2: Architecture & Building Characteristics

	Domain 2: Architecture & Building Characteristics						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	-1.19 (-1.93, -0.45)	0.002	-0.44 (-1.22, 0.34)	0.26	Ref	0.60 (0.23, 0.96)	0.002
Q2: Public transport	0.13 (-0.88, 1.13)	0.802	0.40 (-0.65, 1.46)	0.442	Ref	-	
Q3: Traffic & Parking	-1.60 (-2.43, -0.78)	0.000	-0.77 (-1.63, 0.10)	0.082	Ref	0.80 (0.40, 1.21)	0.000
Q4: Streets & Spaces	-1.40 (-2.10, -0.71)	0.000	-0.80 (-1.51, -0.10)	0.030	Ref	0.70 (0.40, 1.03)	0.000
Q5: Natural space	-1.10 (-1.97, -0.13)	0.026	-0.30 (-1.24, 0.70)	0.576	Ref	0.53 (0.10, 0.99)	0.023
Q6: Play & Recreation	-0.32 (-1.34, 0.71)	0.536	-0.17 (-1.24, 0.90)	0.749	Ref	0.60 (-0.40, 0.70)	0.532
Q7: Facilities & Amenities	0.33 (-0.40, 1.04)	0.351	0.83 (0.08, 1.60)	0.031	Ref		
Q8: Work & Local economy	0.43 (-0.60, 1.50)	0.405	0.20 (-0.90, 1.30)	0.722	Ref	-0.22 (-0.73, 0.30)	0.397
Q9: Housing & Community	-1.13 (-1.84, -0.41)	0.003	-0.50 (-1.21, 0.30)	0.226	Ref	0.60 (0.21, 0.92)	0.002
Q10: Social contact	-0.70 (-1.64, 0.34)	0.190	-0.70 (-1.71, 0.40)	0.193	Ref	0.31 (-0.20, 0.80)	0.203
Q11: Identity & Belonging	-0.90 (-1.32, -0.45)	0.000	-0.24 (-0.71, 0.22)	0.300	Ref	0.45 (0.23, 0.70)	0.000
Q12: Feeling safe	-0.46 (-1.17, 0.30)	0.205	-0.40 (-1.14, 0.37)	0.307	Ref	0.22 (-0.13, 0.58)	0.212
Q13: Care & Maintenance	-0.31 (-0.90, 0.30)	0.286	-0.02 (-0.63, 0.60)	0.956	Ref	0.16 (-0.13, 0.45)	0.266
Q14: Influence/Sense of control	-0.75 (-1.42, -0.10)	0.030	-1.01 (-1.72, -1.30)	0.006	Ref	0.40 (-0.00, 0.70)	0.049
Total score (range: 14-98)	-9.14 (-14.90, -3.44)	0.002	-3.64 (-9.64, 2.35)	0.227	Ref	4.60 (1.80, 7.42)	0.002
Subjective assessment of neighborhood's social position	-1.70 (-2.30, -1.10)	0.000	-1.12 (-1.80, -0.50)	0.001	Ref	0.84 (0.54, 1.14)	0.000
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.3 Differences of Place Standard questionnaire according to CyNOTes Domain 3 :

Sidewalks and lack of Barriers

Table 31 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain's 3: Sidewalks and lack of Barriers scores and factor after adjusting for sociodemographic characteristics of the responders from the Place Standards.

Specifically, "Moving around" were assessed on average lower by -0.08 (95% CI -0.90,0.75) with no statistically significant association ($p=0.850$) in the neighborhoods of the middle group compared to the better-off neighborhoods while in the tertile of neighborhoods with the worse audit scores in this domain, residents assessed "Moving around" even lower on average by -0.60 (95% CI -1.41,0.22); with no statistically association being observed $p=0.149$.

As shown in Table 31 the majority of the domains (at least 9 out of 14 total) exhibited a stepwise relationship in domain score in association with the level of Sidewalks and lack of Barriers. Residents in neighborhoods which were rated better-off in terms of this domain, assessed their neighbourhoods better compared to residents in the worse-off neighbourhoods. Specifically, 2 out of 14 domains show a significant increase, consistent with a positive social gradient, corresponding to better score values in the middle neighborhoods and worse scores values in the worse-off scored CyNOTes neighborhoods in terms of lack of Sidewalks and Barriers. In 3 of the 14 domains, the trend was inverse but not statistically significant. In total, for 12 out of 14 domains there was no trend observed. In fact, for five of these domains, there appeared to be a stepwise decrease in citizens' average scores across tertiles of neighborhoods with better scores in this domain.

Expressed as a linear trend, this represents a 0.30 increase (95% CI -0.11,0.70) on a 1-7 point scale across tertiles from worse to better-off and in terms of with increasing Sidewalks and lack of Barriers domain scores, although this had no statistically significant association ($p=0.145$).

"Moving around" was one of the items expected to show an association with the domain "Sidewalks and lack of Barriers". Other domains expected to show an association with this domain were "Streets and Spaces", "Traffic and Parking. Indeed, both of these features "Streets and Spaces" and "Traffic and Parking" were assessed less favorably by residents in the worse off

neighborhoods with low audit scores compared to the middle neighborhoods. Specifically, “Traffic and Parking” had a stepwise decrease in the middle-scored neighborhoods of -0.34 (95% CI -1.26,0.60) and a -1.07 decrease (95% CI -2.00,-0.20) in the worse off neighborhoods.

Expressed as a linear trend, this represents a 0.54 increase (95% CI 0.10,1.00) on a 1-7 point scale across tertiles from worse- to better-off neighborhoods showing a positive and statistically significant association ($p=0.021$). Interestingly, there was a strong positive association between better audit ratings in terms of Sidewalks and lack of Barriers and higher residents’ scores for “Identity and Belonging”. There was a stepwise decrease of -0.22 (95% CI -0.70,0.30) in the middle category and further with a decrease of -0.78 (95% CI -1.24,-0.31) in the worse off compared to the better off which was statistically significant ($p=0.002$).

Expressed as a linear trend, this represents a 0.40 increase (95% CI 0.16,0.62) on a 1-7 point scale across tertiles from worse to better off neighborhoods and increasing domain scores for “Sidewalks lack of Barriers” showing a positive and statistically significant association ($p=0.001$).

In addition, for two items, “Housing and Community” and “Social Contact”, residents in the worse-off rated neighborhoods gave on average lower scores compared to residents in middle neighborhoods although, no statistical association was observed.

It has been observed for “Influence/Sense of Control” having lower a score in the Middle group and a higher score in the worse off neighborhoods. There did not appear to be any systematic pattern and/or statistically significant differences in residents’ assessments of “Play and Recreation” and “Care and Maintenance”, across tertiles and in terms of “Sidewalks and lack of Barriers” domain.

Table 31 Differences of Place Standard questionnaire according to CyNOTes Domain 3: Sidewalks and lack of Barriers

	Domain 3: Sidewalks & Barriers (lack of)						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	-0.60 (-1.41,0.22)	0.149	-0.08 (-0.90,0.75)	0.850	Ref	0.30 (-0.11,0.70)	0.145
Q2: Public transport	0.40 (-0.62,1.41)	0.434	0.32 (-0.70,1.34)	0.531	Ref	-0.20 (-0.70,0.30)	0.431
Q3: Traffic & Parking	-1.07 (-2.00,-0.20)	0.023	-0.34 (-1.26,0.60)	0.459	Ref	0.54 (0.10,1.00)	0.021
Q4: Streets & Spaces	-0.63 (-1.42,0.20)	0.113	-0.54 (-1.33,0.26)	0.181	Ref	0.31 (-0.08,0.70)	0.111
Q5: Natural space	-0.48 (-1.46,0.51)	0.333	-0.27 (-1.26,0.72)	0.583	Ref	0.24 (-0.25,0.72)	0.328
Q6: Play & Recreation	-0.11 (-1.14,0.91)	0.824	-0.51 (-1.54,0.52)	0.320	Ref		
Q7: Facilities & Amenities	-0.40 (-1.14,0.35)	0.295	-0.40 (-1.14,0.35)	0.295	Ref	0.20 (-0.17,0.57)	0.288
Q8: Work & Local economy	-0.54 (-1.60,0.51)	0.305	-0.30 (-1.31,0.80)	0.608	Ref	0.30 (-0.25,0.80)	0.299
Q9: Housing & Community	-0.15 (-0.91,0.62)	0.701	0.66 (-0.11,1.43)	0.093	Ref		
Q10: Social contact	0.42 (-0.55,1.39)	0.382	1.05 (0.72,2.02)	0.036	Ref		
Q11: Identity & Belonging	-0.78 (-1.24,-0.31)	0.002	-0.22 (-0.70,0.30)	0.346	Ref	0.40 (0.16,0.62)	0.001
Q12: Feeling safe	-0.53 (-1.22,0.17)	0.131	-0.82 (-1.53,-0.12)	0.022	Ref		
Q13: Care & Maintenance	0.14 (-0.44,-0.45)	0.626	-0.17 (-0.75,0.50)	0.624	Ref		
Q14: Influence/Sense of control	-0.40 (-1.07,0.36)	0.326	-0.69 (-1.42,0.04)	0.063	Ref		
Total score (range: 14-98)	-4.90 (-11.16,1.40)	0.122	-2.35 (-8.70,3.90)	0.457	Ref	2.50 (-0.64,5.54)	0.117
Subjective assessment of neighborhood's social position	-1.09 (-1.83,-0.35)	0.005	-0.80 (-1.54,-0.05)	0.037	Ref	0.54 (0.18,0.91)	0.005
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.4 Differences of Place Standard questionnaire according to CyNOTes

Domain 4: Pedestrian and Cycling Environment

Table 32 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain's 4: Pedestrian and Cycling Environment scores and factor after adjusting for sociodemographic characteristics of the responders from the Place Standards.

As shown in Table 32 the majority of the domains (at least 12 out of 14 total) exhibited a stepwise relationship in domain scores in association with the level of Pedestrian and Cycling Environment. Residents in neighborhoods which were rated better off in terms of this domain, assessed their neighbourhoods higher compared to residents in the worse-off neighbourhoods.

In fact, in ten of these domains, there appeared to be a stepwise decrease in citizens' average scores from better-off to worse-off scored neighborhoods. Interestingly, for 6 out of the 14 questions, the trend was inverse. Further, two out of the 14 questions plus another one (the subjective assessment of neighborhood's social position) showed a statistically significant association. Finally, for the remaining 12 domains there was no trend observed.

Specifically, "Moving around" was assessed on average lower by -0.70 (95% CI -1.50, 0.10) in the showing no statistically significant difference ($p=0.074$) in the worse-off neighborhoods while in the middle group scored 0.40 (95% CI -0.43, 1.14) showing also no statistically significant difference ($p=0.369$).

"Streets and Spaces" was one of the items expected to show an association with this domain. It scored lower -0.01 (95% CI -0.79, 0.76) in the middle neighborhoods (and in relation to Pedestrian and Cycling Environment) with no statistically significant association ($p=0.971$) and even lower at -0.80 (95% CI -1.54, -0.02) in the worse-off neighborhoods but this was a statistically significant association ($p=0.045$).

Expressed as a linear trend, this represents a 0.40 increase (95% CI 0.01, 0.80) on a 1-7 point scale across tertiles from worse to better-off neighborhoods in relation to increasing Pedestrian and Cycling Environment domain scores showing a positive and statistically significant association ($p=0.044$).

Another domain that was expected to show an association “Pedestrian and Cycling Environment” was “Traffic and Parking”. This showed a stepwise decrease having the worse off neighborhoods scoring lower -0.83 (95% CI -1.73,0.07) with no statistically significant difference ($p=0.070$) compared to the middle neighborhoods that scored 0.25 (95% CI -0.68,1.18) with also no statistically significant difference. Even across tertiles there was no statistically significant difference ($p=0.073$). Interestingly, there was a positive association between better audit ratings for “Pedestrian and Cycling environments” and residents’ scores for “Feeling Safe”. It can be observed that the middle neighborhoods scored -0.10 (95% CI -0.80,0.60) with no statistically significant association ($p=0.767$) compared to the worse-off neighborhoods which scored lower (95% CI -1.65,-0.34) with a statistically significant association ($p=0.004$).

Expressed as a linear trend, this represents a 0.50 increase on a 1-7 point scale (95% CI 0.17,0.83) across tertiles from worse to better off neighborhoods and in relation to increasing Pedestrian and Cycling Environment domain scores suggesting a strong positive and statistically significant association ($p=0.004$).

In few Place Standard items, a reverse pattern was observed whereby residents in the better rated neighborhoods gave on average lower scores compared to residents in the worse off neighborhoods; Namely, “Work and Local economy” with a 0.72 (95% CI -0.30,1.73) score in the worse-off neighborhoods and no statistical association ($p=0.153$), and a -0.03 score (95% CI -1.07,1.01) in the middle group with no statistical significant association ($p=0.959$) to the better off neighborhoods.

There did not appear to be any statistically significant differences in residents’ assessments of “Public transport”, “Natural Space”, “Play and Recreation”, “Facilities and Amenities”, “Work and Local economy”, “Housing and Community”, “Social Contact”, “Influence/Sense of control” between tertiles and in relation to Pedestrian and Cycling Environment audit rate.

Table 32: Differences of Place Standard questionnaire according to CyNOTes Domain 4: Pedestrian and Cycling Environment.

	Domain 4: Pedestrian & Cycling Environment						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	-0.70 (-1.50,0.10)	0.074	0.40 (-0.43,1.14)	0.369	Ref		
Q2: Public transport	0.66 (-0.31,1.62)	0.179	0.90 (-0.09,1.90)	0.074	Ref		
Q3: Traffic & Parking	-0.83 (-1.73,0.07)	0.070	0.25 (-0.68,1.18)	0.594	Ref	0.42 (-0.04,0.90)	0.073
Q4: Streets & Spaces	-0.80 (-1.54,-0.02)	0.045	-0.01 (-0.79,0.76)	0.971	Ref	0.40 (0.01,0.80)	0.044
Q5: Natural space	-0.45 (-1.39,-0.50)	0.343	0.41 (-0.56,1.40)	0.395	Ref		
Q6: Play & Recreation	0.22 (-0.80,1.21)	0.658	0.82 (-0.20,1.84)	0.114	Ref		
Q7: Facilities & Amenities	-0.33 (-1.00,0.35)	0.338	0.74 (0.05,1.44)	0.037	Ref		
Q8: Work & Local economy	0.72 (-0.30,1.73)	0.153	-0.03 (-1.07,1.01)	0.959	Ref		
Q9: Housing & Community	-0.10 (-0.90,0.72)	0.862	0.25 (-0.58,1.06)	0.547	Ref		
Q10: Social contact	0.55 (-0.44,1.53)	0.266	0.68 (-0.33,1.70)	0.183	Ref		
Q11: Identity & Belonging	-0.40 (-0.90,0.13)	0.144	-0.06 (-0.60,0.46)	0.810	Ref	0.19 (-0.10,0.44)	0.141
Q12: Feeling safe	-0.99 (-1.65,-0.34)	0.004	-0.10 (-0.80,0.60)	0.767	Ref	0.50 (0.17,0.83)	0.004
Q13: Care & Maintenance	-0.21 (-0.80,0.38)	0.481	0.03 (-0.60,0.63)	0.924	Ref	0.10 (-0.20,0.40)	0.478
Q14: Influence/Sense of control	-0.10 (-0.80,0.90)	0.880	-0.22 (-0.98,0.53)	0.554	Ref		
Total score (range: 14-98)	-3.00 (-9.03,3.02)	0.320	3.92 (-2.27,10.12)	0.208	Ref		
Subjective assessment of neighborhood's social position	-0.98 (-1.71,-0.24)	0.010	-0.08 (-0.83,0.70)	0.834	Ref	0.50 (-0.12,0.90)	0.011
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.5 Differences of Place Standard questionnaire according to CyNOTes Domain 5: Neighborhood and Ethnic Identification

Table 33 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain's 5: Neighborhood and Ethnic Identification scores and factor after adjusting for sociodemographic characteristics of the responders from the Place Standards.

As shown in Table 33 the majority of the domains (9 out of 14 in total) exhibited a stepwise relationship in domain score in association with the level of Neighborhood and Ethnic Identification. Residents in neighborhoods which were better-off in terms of this domain assessed their neighbourhood better compared to the residents in the worse-off neighbourhoods.

Three appeared to be reverse and one of this showed a statistically significant association. In total, three questions appeared to be statistically significantly associated with this domain. The rest did not show any statistical association.

Specifically, two questions that were expected to show an association were the "Identity and Belonging" and "Feeling Safe". In the case of "Identify and Belonging" the better off neighborhoods scored better 0.05 (95% CI -0.50,0.60) ($p=0.846$) compared with the worse off neighborhoods that rated less favourably -0.30 (95% CI -0.82,0.24) but there was no statistically significant difference compared to the better- off neighborhoods ($p=0.846$ and $p=0.270$ respectively). Expressed as a linear trend, this represents a 0.15 increase (95% CI -0.12,0.41) on a 1-7 point scale across tertiles with increasing (worse- to better-off) Neighborhood and Ethnic Identification scores showing no statistically significant association ($p=0.274$).

Similarly, the domain about "Feeling Safe" also appeared to show a stepwise decrease with middle neighborhoods scoring -0.11 (95% CI -0.84,0.63) and no statistically significant association between the tertiles ($p=0.769$) and the worse off neighborhoods scoring -0.31 (CI -1.10, 0.44) and with also no statistically significant association ($p=0.411$). Expressed as a linear trend, this represents a 0.15 increase (95% CI -0.22,0.52) on a 1-7 point scale across tertiles worse to better off with increasing Neighborhood and Ethnic Identification scores showing no statistically significant association ($p=0.408$).

The domain “Moving around” appeared to be scoring slightly better in the worse off scored neighborhoods and in relation to Neighborhood and Ethnic Identification at -0.80 (95% CI 1.60, -0.00) with a statistically significant association ($p=0.049$) while the middle neighborhoods scored -0.84 (95% CI -1.63, -0.10) also being statistically significantly associated ($p=0.036$). Expressed as a linear trend, this represents a 0.40 increase (95% CI 0.00, 0.80) on a 1-7 point scale across tertiles (from worse- to better-off with) Neighborhood and Ethnic Identification domain scores, suggesting a positive and statistically significant association ($p=0.050$).

For, the domain “Traffic and Parking”, the middle group reported slightly better -1.02 (95% CI -1.92, -0.12) with statistically significant difference ($p=0.028$) compared to the worse-off neighborhoods at -1.10 (95% CI -1.98, -0.20) with also statistically significant difference ($p=0.023$). Expressed as a linear trend, this represents a 0.54 increase (95% CI 0.08, 0.99) on a 1-7 point scale across tertiles worse to better off Neighborhood and Ethnic Identification domain scores suggesting a positive and statistically significant association ($p=0.023$).

A reverse pattern was observed whereby residents in the better rated neighborhoods gave on average lower scores compared to residents in the worse off neighborhoods; Namely, “Work and Local economy” with 1.54 (95% CI 0.60, 2.50) higher score in the worse-off neighborhoods with statistically significant difference ($p=0.002$) and 0.80 (95% CI -0.14, 1.74) in the middle neighborhoods but no statistically significant difference between the tertiles ($p=0.094$). Expressed as a linear trend, this represents a -0.77 decrease (95% CI -1.24, -0.30) on a 1-7 point scale across tertiles worse to better off with increasing Neighborhood and Ethnic Identification domain scores, suggesting a positive and statistically significant association ($p=0.002$).

Interestingly, for the question about “Social Contact” which in the CyNOTes scored worse in the better off neighborhoods compared with the worse-off neighborhoods, in this case it was reversed. The worse off neighborhoods scored lower 0.31 (95% CI -0.70, 1.31) compared to the better off neighborhoods scoring 0.70 (95% CI -0.31, 1.70) but, this was not statistically significantly associated between the neighborhoods.

A similar reverse pattern is observed with the question of “Influence/Sense of control” indicating that the worse-off neighborhoods scored better 0.30 (95% CI -0.44, 1.04) as opposed

to the middle scoring -0.30 (95% CI -1.00,0.50) although, there was no statistically significant difference compared to the better off neighborhoods.

There did not appear to be any systematic pattern and/or statistically significant differences in residents' assessments of "Street and Spaces", "Play and Recreation", "Housing and Community", "Care and Maintenance", and of the subjective assessment of neighborhood's social position.

Table 33: Differences in mean scores of the 14 domains of the Place Standard questionnaire according to CyNOTes Domain 5: Neighborhood and Ethnic Identification .

	Domain 5: Neighborhood and Ethnic Identification						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	-0.80 (-1.60,-0.00)	0.049	-0.84 (-1.63,-0.10)	0.036	Ref	0.40 (0.00,0.80)	0.050
Q2: Public transport	0.71 (-0.30,1.70)	0.149	-0.23 (-1.20,0.74)	0.639	Ref		
Q3: Traffic & Parking	-1.10 (-1.98,-0.20)	0.023	-1.02 (-1.92,-0.12)	0.028	Ref	0.54 (0.08,0.99)	0.023
Q4: Streets & Spaces	-0.60 (-1.36,0.25)	0.172	-0.30 (-1.09,0.50)	0.463	Ref	0.30 (-0.12,0.70)	0.167
Q5: Natural space	-0.44 (-1.43,0.54)	0.367	-0.53 (-1.50,0.45)	0.281	Ref		
Q6: Play & Recreation	-0.20 (-1.21,0.90)	0.741	-0.16 (-1.20,0.90)	0.751	Ref	0.09 (-0.43,0.60)	0.738
Q7: Facilities & Amenities	-0.31 (-1.10,0.45)	0.410	0.06 (-0.70,0.81)	0.877	Ref		
Q8: Work & Local economy	1.54 (0.60,2.50)	0.002	0.80 (-0.14,1.74)	0.094	Ref	-0.77 (-1.24,-0.30)	0.002
Q9: Housing & Community	-0.31 (-1.12,0.50)	0.440	-0.22 (-1.02,0.60)	0.584	Ref	0.16 (-0.24,0.56)	0.434
Q10: Social contact	0.31 (-0.70,1.31)	0.539	0.70 (-0.31,1.70)	0.169	Ref		
Q11: Identity & Belonging	-0.30 (-0.82,0.24)	0.270	0.05 (-0.50,0.60)	0.846	Ref	0.15 (-0.12,0.41)	0.274
Q12: Feeling safe	-0.31 (-1.10,0.44)	0.411	-0.11 (-0.84,0.63)	0.769	Ref	0.15 (-0.22,0.52)	0.408
Q13: Care & Maintenance	-0.22 (-0.83,0.39)	0.473	-0.15 (-0.74,0.45)	0.619	Ref	0.11 (-0.20,0.41)	0.467
Q14: Influence/Sense of control	0.30 (-0.44,1.04)	0.418	-0.30 (-1.00,0.50)	0.458	Ref		
Total score (range: 14-98)	-2.02 (-8.50,4.50)	0.534	-2.09 (-8.50,4.30)	0.513	Ref	1.01 (-2.20,4.21)	0.529
Subjective assessment of neighborhood's social position	-0.70 (-1.50,0.14)	0.105	-0.50 (-1.24,0.35)	0.254	Ref	0.33 (-0.10,0.72)	0.102
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.6 Differences of Place Standard questionnaire according to CyNOTes Domain 6:

Maintenance and Appearance

Table 34 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain's 6: Maintenance and Appearance scores and factor after adjusting for sociodemographic characteristics of the responders from the Place Standards.

As shown in Table 34 the majority of the domains (at least 10 out of 14 total) exhibited a stepwise relationship in domain score in association with the level of Maintenance and Appearance. Residents in neighborhoods which were rated worse-off in terms this domain assessed their neighbourhoods worse compared to residents in the better-off neighbourhoods which they assessed their neighborhoods better.

The three questions that could possibly support the concurrent validity between the domain of Maintenance and Appearance and the Place Standard tool are the questions about “Streets and Spaces”, “Housing and Community” and “Care and Maintenance”. Specifically, these questions showed a stepwise decrease since for two of these questions the better off neighborhoods scored better than the worse off neighborhoods. There was however a reverse pattern.

For example, “Street and Public Spaces” appeared to show a stepwise decrease with a higher score -0.60 (CI -1.41,0.20) in the better-off neighborhoods and no statistically significant difference ($p=0.135$) and a score of -0.71 (CI-1.52, 0.10) in the worse off neighborhoods also with no statistically significant difference ($p=0.083$). Expressed as a linear trend, this represents a 0.35 increase (CI-0.10,0.75) on a 1-7 point scale across tertiles worse -to better off with increasing Maintenance and Appearance domain scores showing no statistically significant association ($p=0.088$).

In addition, the “Housing and Community” also showed a stepwise decrease with better rating in the middle neighborhoods -0.40 (CI -1.20,0.50) with no statistically significant association ($p=0.384$) while in the worse off neighborhoods scored -0.50 (CI-1.30,0.33) with also no statistically significant difference ($p=0.238$). Expressed as a linear trend, this represents a 0.24 increase (CI -0.20,0.64) on a 1-7 point scale across tertiles worse-to

better off with increasing (worse- to better-off). “Maintenance and Appearance” domain scores , but no statistically significant association ($p=0.240$).

Conceptually, the Place Standard item about “Care and Maintenance” was expected to have an association. It showed a reverse pattern whereby residents in the middle neighborhoods gave on average lower scores compared to residents in the worse-off neighborhoods, with a 0.20 (CI -0.55,0.80) higher score in the worse-off neighborhoods compared to 0.08 (CI -0.53,0.70) in the middle neighborhoods. Expressed as a linear trend, this represents a -0.10 decrease (CI -0.40,0.23) on a 1-7 point scale across tertiles (worse-to better-off) Maintenance and Appearance domain scores, with no statistically significant association ($p=0.611$).

Similarly, a reverse pattern was also observed for the question of “Social Contact” where the worse off neighborhoods scored better 0.14 (CI -0.91,1.20) compared to the middle group with a lower scoring -0.04 (CI -1.10,1.01).

The only question that appeared to be statistically significantly associated was the “Subjective assessment of neighborhood’s social position” whereby residents in the better rated neighborhoods gave on average higher scores -0.70 (CI-1.41,0.10) with no statistically significant difference compared to worse-off rated neighborhoods which rated lower -1.30 (CI-2.00,-0.50) with statistically significant difference ($p=0.002$). Expressed as a linear trend, this represents a 0.62 increase (CI 0.30,1.00) on a 1-7 point scale across tertiles worse-to better -off with increasing (worse- to better-off) Maintenance and Appearance domain scores, suggesting a positive and statistically significant association ($p=0.001$).

There did not appear to be any statistically significant differences in residents’ assessments of “Moving around”, “Traffic and Parking”, “Natural Space”, “Play and Recreation”, “Social Contact”, “Identity and Belonging”, “Feeling Safe”, “Influence/Sence of Control”

Table 34: Differences in mean scores of the 14 domains of the Place Standard questionnaire according to CyNOTes Domain 6: Maintenance and Appearance.

	Domain 6: Maintenance and Appearance						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	-0.37 (-1.21,0.50)	0.373	-0.70 (-1.53,0.13)	0.097	Ref		
Q2: Public transport	0.55 (-0.50,1.60)	0.290	0.13 (-0.90,1.16)	0.798	Ref	-0.30 (-0.80,0.23)	0.275
Q3: Traffic & Parking	-0.40 (-1.40,0.60)	0.409	-0.80 (-1.73,0.22)	0.126	Ref		
Q4: Streets & Spaces	-0.71 (-1.52,0.10)	0.083	-0.60 (-1.41,0.20)	0.135	Ref	0.35 (-0.10,0.75)	0.088
Q5: Natural space	-0.53 (-1.53,0.46)	0.286	-0.70 (-1.67,0.31)	0.176	Ref		
Q6: Play & Recreation	-0.30 (-1.34,0.80)	0.585	-0.60 (-1.63,0.50)	0.268	Ref		
Q7: Facilities & Amenities	-0.10 (-0.90,0.72)	0.864	-0.01 (-0.80,0.80)	0.988	Ref	0.03 (-0.40,0.42)	0.859
Q8: Work & Local economy	-0.14 (-0.94,1.22)	0.798	-0.01 (-1.10,1.06)	0.979	Ref	0.10 (-0.61,0.50)	0.787
Q9: Housing & Community	-0.50 (-1.30,0.33)	0.238	-0.40 (-1.20,0.50)	0.384	Ref	0.24 (-0.20,0.64)	0.240
Q10: Social contact	0.14 (-0.91,1.20)	0.790	-0.04 (-1.10,1.01)	0.941	Ref		
Q11: Identity & Belonging	-0.45 (-1.00,0.10)	0.089	-0.51 (-1.03,0.00)	0.051	Ref		
Q12: Feeling safe	-0.33 (-1.10,0.42)	0.378	-0.40 (-1.12,0.40)	0.317	Ref		
Q13: Care & Maintenance	0.20 (-0.50,0.80)	0.615	0.08 (-0.53,0.70)	0.794	Ref	-0.10 (-0.40,0.23)	0.611
Q14: Influence/Sense of control	-0.24 (-1.00,0.50)	0.513	-0.60 (-1.33,0.16)	0.119	Ref		
Total score (range: 14-98)	-3.00 (-9.43,3.43)	0.351	-5.14 (-11.54,1.30)	0.113	Ref		
Subjective assessment of neighborhood's social position	-1.30 (-2.00,-0.50)	0.002	-0.70 (-1.41,0.10)	0.076	Ref	0.62 (0.30,1.00)	0.001
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.7 Differences of Place Standard questionnaire according to CyNOTes Domain 7: Lack of Security-related features

Table 35 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain's 7: Lack of Security-related features scores and factor after adjusting for sociodemographic characteristics of the responders from the Place Standards.

As shown in Table 35 the majority of the domains (at least 10 out of 14 total) exhibited a reverse stepwise relationship in domain score in association with the level of Safety (lack of security-related features). In almost all Place Standard domains, a reverse pattern was observed whereby residents in middle neighborhoods gave on average lower scores compared to residents in the worse off neighbourhoods and in terms of Lack of security-related features.

The question about Feeling safe in your neighborhood which was conceptually related to domain 7 that measures Lack of Security -related features showed the opposite. The worse-off neighborhoods scored lower -0.10 (95%CI-0.83,0.70) with no statistically significant association ($p=0.822$) compared to the middle neighborhoods that scored higher 0.20 (95%CI -0.54,0.94) with also no statistically significant difference ($p=0.587$) between the tertiles. This was expected as domain 7 measures the lack of security related feature and in the better off neighbourhoods this featured appeared to be common according to the CyNOTes audits.

In fact, in five of these domains, there appeared to be a stepwise decrease in citizens' average scores across tertiles of neighborhoods with better scores in this domain 7. Specifically, the perceived "Housing and Community" appeared to be scoring higher in the worse off neighborhood 0.93 (95%CI 0.20,1.71) with statistically significant difference ($p=0.019$) and the middle scoring 0.42 (CI-0.35,1.20) with no statistically significant difference ($p=0.276$) between the tertiles of neighborhoods. Expressed as a linear trend, this represents a -0.47 decrease (95%CI -0.85,-0.10) on a 1-7 point scale across tertiles with increasing (worse- to better-off) Safety (lack of security-related features) showing a positive and statistically significant association ($p=0.018$).

Similarly, the question about “Traffic and Parking” scored better 0.50 (CI-0.50,1.47) in the worse off neighborhoods with no statistically significant difference ($p=0.327$) while in the middle neighborhoods which scored lower 0.25 (CI-0.73,1.22) with no statistically significant difference ($p=0.612$). Expressed as a linear trend, this represents a -0.24 decrease (95%CI -0.73,0.24) on a 1-7 point scale across tertiles with increasing (worse- to better-off) Safety (lack of Security-related features) but with no statistically significant difference ($p=0.321$).

Lastly, the subjective assessment of neighborhood’s social position was rated higher 0.95 (CI 0.17,1.73) in the worse off neighborhoods which was statistically significant ($p=0.017$) compared to the middle neighborhoods scoring 0.66 (CI-0.10,1.43) with no statistically significant association ($p=0.089$). Expressed as a linear trend, this represents a -0.51 decrease (CI -0.90,-0.10) on a 1-7 point scale across tertiles with increasing (worse- to better-off) Safety (lack of security and safety features) showing a statistically significant association ($p=0.017$).

There did not appear to be any statistically significant differences in residents’ assessments of “Public transport”, “Play and Recreation”, “Facilities and Amenities”, “Work and Local economy”, “Social Contact”, “Care and Maintenance”, “Influence/Sense of Control”.

Table 35: Differences in mean scores of the 14 domains of the Place Standard questionnaire according to CyNOTes Domain 7: Safety (lack of security-related features)

	Domain 7: Safety (lack of security-related features)						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	0.40 (-0.50,1.24)	0.353	0.20 (-0.63,1.04)	0.626	Ref	-0.20 (-0.62,0.22)	0.347
Q2: Public transport	0.24 (-0.80,1.30)	0.646	0.30 (-0.74,1.30)	0.580	Ref		
Q3: Traffic & Parking	0.50 (-0.50,1.47)	0.327	0.25 (-0.73,1.22)	0.612	Ref	-0.24 (-0.73,0.24)	0.321
Q4: Streets & Spaces	0.36 (-0.50,1.20)	0.378	0.23 (-0.60,1.04)	0.568	Ref	-0.20 (-0.60,0.23)	0.374
Q5: Natural space	0.10 (-1.00,1.10)	0.917	-0.01 (-1.00,1.00)	0.990	Ref	-0.03 (-0.52,0.50)	0.915
Q6: Play & Recreation	0.12 (-0.91,1.20)	0.812	0.71 (-0.31,1.72)	0.169	Ref		
Q7: Facilities & Amenities	0.30 (-0.50,1.04)	0.450	0.60 (-0.20,1.33)	0.118	Ref		
Q8: Work & Local economy	0.16 (-0.91,1.23)	0.770	0.31 (-0.75,1.37)	0.559	Ref		
Q9: Housing & Community	0.93 (0.20,1.71)	0.019	0.42 (-0.35,1.20)	0.276	Ref	-0.47 (-0.85,-0.10)	0.018
Q10: Social contact	0.53 (-0.50,1.55)	0.300	-0.14 (-1.15,0.90)	0.779	Ref		
Q11: Identity & Belonging	0.50 (-0.05,0.98)	0.074	0.50 (-0.05,1.00)	0.073	Ref	-0.23 (-0.50,0.03)	0.081
Q12: Feeling safe	-0.10 (-0.83,0.70)	0.822	0.20 (-0.54,0.94)	0.587	Ref		
Q13: Care & Maintenance	-0.04 (-0.65,0.57)	0.908	0.20 (-0.43,0.78)	0.560	Ref		
Q14: Influence/Sense of control	0.10 (-0.67,0.90)	0.797	-0.24 (-1.00,0.52)	0.531	Ref		
Total score (range: 14-98)	3.70 (-2.80,10.13)	0.258	3.00 (-3.38,9.38)	0.348	Ref	-1.82 (-5.01,1.40)	0.258
Subjective assessment of neighborhood's social position	0.95 (0.17,1.73)	0.017	0.66 (-0.10,1.43)	0.089	Ref	-0.51 (-0.90,-0.10)	0.017
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.8 Differences of Place Standard questionnaire according to CyNOTes

Domain 8: Lack of Physical disorder scores

Table 36 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain's 8: lack of Physical disorder scores and factor after adjusting for sociodemographic characteristics of the responders from the Place Standards.

As shown in Table 36 the majority of the domains (at least 11 out of 14 total) exhibited a stepwise relationship in domain score in association with the level of Physical Disorder (lack of). Residents in neighborhoods that were rated better-off in terms of Physical Disorder (lack of), assessed their neighbourhoods better compared to residents in the worse-off neighbourhoods. Two of the Place Standard appeared to be reverse and two more were statistically significantly associated with this domain.

The two questions expected to show concurrent validity with this specific domain are "Housing and Community" and "Care and Maintenance". The "Housing and Community" showed a stepwise decrease in citizens' average scores across tertiles of neighborhoods with better scores in this domain. Specifically, it scored on average -0.25 (%95 CI -1.20,0.60) in the middle neighborhoods with no statistical significance ($p=0.543$), compared to the worse off neighborhoods that scored rated slightly lower -0.30 (%95CI -1.10,0.53).

Expressed as a linear trend, this represents a 0.13 increase (%95 CI -0.30,0.52) on a 1-7 point scale across tertiles with increasing (worse- to better-off) Physical disorder (lack off) showing no statistically significant association ($p=0.513$).

On the other hand, "Care and Maintenance" appeared to be scoring lower -0.40 (%95 CI -1.00,0.23) in the middle-scored neighborhoods in terms of lack of Physical disorder with no statistically significant association ($p=0.227$) compared to the worse-off neighborhoods which scored higher 0.10 (%95 CI-0.52,0.64) with no statistically significant association ($p=0.833$).

Turning into the positive associations. The question about "Identity & Belonging" appeared higher in the middle neighborhoods -0.40 (%95 CI-0.91,0.12), with no statistically significant association ($p=0.126$) compared to the worse off neighborhoods which were rated lower -0.50 (%95 CI-1.00, -0.01), with statistically significant association ($p=0.047$).

Expressed as a linear trend, this represents a 0.25 increase (%95 CI 0.00,0.50) on a 1-7 point scale across tertiles with increasing (worse- to better-off) Physical disorder (lack of) showing a positive statistically significant association ($p=0.048$).

A statistically significant association across tertiles with decreasing (worse to better off) Physical disorder (lack of) domain scores was the question of “Work and Local Economy”. Specifically, “Work and Local economy” appeared to be scoring higher 1.10 (%95 CI 0.10,2.03) in the worse off neighborhoods compared to the middle neighborhoods which scored lower 0.16 (%95 CI-0.90,1.20). Expressed as a linear trend, this represents a -0.53 decrease (%95 CI-1.02,-0.04) on a 1-7 point scale across tertiles with decreasing (worse- to better-off) lack of Physical Disorder, suggesting a statistically significant association ($p=0.033$).

In addition, the subjective assessment of neighborhood’s social position appeared to showed that the middle neighborhoods (in terms of lack of physical disorder) scored higher -1.00 (%95 CI-1.74,-0.30) with statistically significant difference between the tertiles of neighborhoods ($p=0.010$) compared to the worse off neighborhoods that were rated slightly lower -1.10 (%95 CI-1.78, -0.34). Expressed as a linear trend, this represents a 0.52 increase (95%CI 0.20,0.90) on a 1-7 point scale across tertiles with increasing (worse- to better-off) lack of Physical disorder domain scores, suggesting a positive and statistically significant association ($p=0.006$).

There did not appear to be any statistically significant differences in residents’ assessments of “Moving Around”, “Traffic and Parking”, “Streets and Spaces”, “Natural Space”, “Facilities and Amenities”, “Social Contact”, “Feeling Safe”, “Influence/Sense of control”.

Table 36: Differences of Place Standard questionnaire according to CyNOTes Domain 8: Lack of Physical disorder

	Domain 8: Physical Disorder (lack of)						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	-0.40 (-1.20,0.40)	0.316	-1.00 (-1.80,-0.20)	0.021	Ref		
Q2: Public transport	0.30 (-0.74,1.30)	0.597	0.04 (-0.99,1.08)	0.936	Ref	-0.13 (-0.63,0.40)	0.590
Q3: Traffic & Parking	-1.04 (-1.93,-0.15)	0.023	-1.10 (-2.01,-0.20)	0.022	Ref		
Q4: Streets & Spaces	-0.75 (-1.50,-0.00)	0.049	-0.97 (-1.74,-0.21)	0.014	Ref		
Q5: Natural space	-0.54 (-1.45,0.40)	0.242	-1.20 (-2.14,-0.30)	0.014	Ref		
Q6: Play & Recreation	-0.54 (-1.51,0.44)	0.271	-1.10 (-2.10,-0.04)	0.041	Ref		
Q7: Facilities & Amenities	-0.10 (-0.83,0.67)	0.825	-0.20 (-0.93,0.62)	0.693	Ref		
Q8: Work & Local economy	1.10 (0.10,2.03)	0.036	0.16 (-0.90,1.20)	0.749	Ref	-0.53 (-1.02,-0.04)	0.033
Q9: Housing & Community	-0.30 (-1.10,0.53)	0.513	-0.25 (-1.10,0.60)	0.543	Ref	0.13 (-0.30,0.52)	0.513
Q10: Social contact	0.30 (-0.72,1.30)	0.578	0.56 (-0.50,1.60)	0.275	Ref		
Q11: Identity & Belonging	-0.50 (-1.00,-0.01)	0.047	-0.40 (-0.91,0.12)	0.126	Ref	0.25 (0.00,0.50)	0.048
Q12: Feeling safe	-0.36 (-1.02,0.31)	0.288	-0.95 (-1.64,-0.30)	0.008	Ref		
Q13: Care & Maintenance	0.10 (-0.52,0.64)	0.833	-0.40 (-1.00,0.23)	0.227	Ref		
Q14: Influence/Sense of control	-0.20 (-0.90,0.52)	0.592	-0.73 (-1.50,0.00)	0.050	Ref		
Total score (range: 14-98)	-3.15 (-9.10,2.80)	0.289	-7.70 (-13.80,-1.60)	0.015	Ref		
Subjective assessment of neighborhood's social position	-1.10 (-1.78,-0.34)	0.005	-1.00 (-1.74,-0.30)	0.010	Ref	0.52 (0.20,0.90)	0.006
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.9 Differences of Place Standard questionnaire according to CyNOTes Domain 9:

Social Contact and lack of social disorder

Table 37 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain's 9: Social Contact and lack of social disorder scores and factor after adjusting for sociodemographic characteristics of the responders from the Place Standards.

As shown in Table 37 the majority of social Contact and lack of social disorder" domains (6 out of 9 total) exhibited a stepwise relationship in domain score in association with the level of educational attainment. Specifically, they showed a significant decrease, consistent with a social gradient, corresponding to lower ratings in the middle neighborhoods in terms of "Social Contact and Lack of Social Disorder" compared to the worse-off neighborhoods rated higher.

In fact, the questions that were expected to conceptually show an association was the question about "Social contact". The worse-off neighborhoods perceived social contact to be lower -0.34 (CI-1.33,0.70) with no statistical significance ($p=0.499$) compared to the middle neighborhoods which scored higher 0.20 (CI 0.84,1.22) with also no statistical significance.

Furthermore, the "Social Contact and lack of social disorder" domain appeared to be reversely associated with "Identity and Belonging" with the worse off neighborhoods to be rated higher 0.50 (CI-0.03,1.00) and no statistically significant difference ($p=0.065$) compared with the middle neighborhoods to be rated lower 0.00 (CI-0.52,0.51) with no statistically significant difference ($p=0.989$).

In addition, the question about "Influence decisions and having a sense of control about things that are happening in their neighborhood" appeared to be reversely associated as the middle neighborhoods had higher mean difference higher 0.30 (CI-0.50, 1.10) not being statistically significant difference ($p=0.436$) and the worse off neighborhoods had a mean difference 0.20 (CI-0.53,0.94) with no statistically significant difference ($p=0.576$).

Turning into the positives. The question about "Traffic & Parking" showed a reverse stepwise increase with having the worse off neighborhoods in terms of "Social Contact and lack of Social disorder" to be scoring higher 1.30 (CI 0.40,2.15) and being statistically significant ($p=0.006$)

compared to the middle neighborhoods scoring lower 0.60 (CI -0.32,1.50) and not showing any statistically significant association ($p=0.199$).

Expressed as a linear trend, this represents a -0.63 decrease (95%CI -1.10,-0.20) on a 1-7 point scale across tertiles with decreasing (worse- to better-off) Social Contact and lack of social disorder domain scores in terms of, suggesting a and statistically significant association ($p=0.005$).

Similarly, for the question regarding the subjective assessment of neighborhood's social position there was also a stepwise reverse association with the worse off neighborhoods to be scoring higher difference 1.02 (CI 0.30,1.80) with statistical significance ($p=0.008$) compared to the middle neighborhoods scoring lower 0.62 (CI-0.14, 1.40) and no statistical significance ($p=0.107$).

Expressed as a linear trend, this represents a -0.51 decrease (95%CI -0.90,-0.14) on a 1-7 point scale across tertiles with decreasing (worse- to better-off) Social Contact and lack of social disorder domain scores in terms of, suggesting a positive and statistically significant association ($p<0.007$).

There did not appear to be any statistically significant differences in residents' assessments of "Public Transport", "Natural Space", "Play and Recreation", "Facilities and Amenities", "Work and Local Economy", "Feeling Safe" and "Care and Maintenance".

Table 37: Differences in mean scores of the 14 domains of the Place Standard questionnaire according to CyNOTes Domain 9: Social Contact and lack of Social Disorder .

	Domain 9: Social Contact & Social Disorder (lack of)						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	0.60 (-0.30,1.40)	0.178	0.30 (-0.60,1.13)	0.495	Ref	-0.30 (-0.70,0.13)	0.173
Q2: Public transport	-0.34 (-1.32,0.64)	0.490	0.44 (-0.60,1.50)	0.384	Ref		
Q3: Traffic & Parking	1.30 (0.40,2.15)	0.006	0.60 (-0.32,1.50)	0.199	Ref	-0.63 (-1.10,-0.20)	0.005
Q4: Streets & Spaces	0.61 (-0.20,1.40)	0.124	0.40 (-0.44,1.17)	0.369	Ref	-0.30 (-0.70,0.10)	0.121
Q5: Natural space	0.40 (-0.60,1.32)	0.447	-0.30 (-1.30,0.70)	0.545	Ref		
Q6: Play & Recreation	-0.30 (-1.25,0.73)	0.600	-0.88 (-1.90,0.14)	0.089	Ref		
Q7: Facilities & Amenities	-0.04 (-0.80,0.71)	0.907	-0.03 (-0.80,0.80)	0.946	Ref		
Q8: Work & Local economy	-0.60 (-1.60,0.42)	0.249	0.32 (-0.71,1.40)	0.532	Ref		
Q9: Housing & Community	0.65 (-0.12,1.41)	0.096	0.04 (-0.80,0.84)	0.917	Ref	-0.33 (-0.71,0.10)	0.092
Q10: Social contact	-0.34 (-1.33,0.70)	0.499	0.20 (-0.84,1.22)	0.707	Ref		
Q11: Identity & Belonging	0.50 (-0.03,1.00)	0.065	-0.00 (-0.52,0.51)	0.989	Ref		
Q12: Feeling safe	0.20 (-0.54,0.90)	0.610	0.40 (-0.40,1.13)	0.306	Ref		
Q13: Care & Maintenance	0.22 (-0.40,0.81)	0.452	-0.05 (-0.70,0.60)	0.875	Ref		
Q14: Influence/Sense of control	0.20 (-0.53,0.94)	0.576	0.30 (-0.50,1.10)	0.436	Ref		
Total score (range: 14-98)	3.30 (-2.98,9.57)	0.295	2.12 (-4.40,8.62)	0.514	Ref	-1.64 (-4.74,1.50)	0.291
Subjective assessment of neighborhood's social position	1.02 (0.30,1.80)	0.008	0.62 (-0.14,1.40)	0.107	Ref	-0.51 (-0.90,-0.14)	0.007
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.10 Differences of Place Standard questionnaire according to CyNOTes Domain

Factor 1 : Good maintenance, less physical disorder, more security-related features

Table 38 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain Factor 1 about; “Good maintenance, less physical disorder, more security-related features” after adjusting for sociodemographic characteristics of the responders from the Place Standards.

There was a stepwise increase pattern moving from worse off to better off neighborhoods having on average the better off neighborhoods to be scoring higher than the worse off neighborhoods in terms of Good maintenance, less physical disorder, more security-related features suggesting a positive association . In fact, 10 out of 14 questions from the Place Standard questionnaire on average were rated higher in the middle-scored neighborhoods compared to the worse off neighborhoods in terms of Good maintenance, less physical disorder, more security-related features.

For example, Q4:Streets & Spaces , scored higher -0.60 (%95CI-1.40,0.20) with no statistically significant difference ($p=0.142$) in the middle neighborhoods compared to the worse off neighborhoods where it scored -0.65 (%95CI-1.44,0.14) but with no statistically significant difference ($p=0.104$).

Another example which was expected to show an association with Factor 1 “Good maintenance, less physical disorder, more security-related features” was Q9 “Housing and Community” scoring lower in the worse off neighborhoods -0.53 (%95CI -1.32,0.30) with no statistical significance ($p=0.185$) and scoring -0.30 (%95CI -1.10,0.52) in the middle neighborhoods with no statistically significant difference ($p=0.488$).

Conceptually, another association was expected for Q12: feeling safe with middle group neighbourhoods showing higher mean difference -0.10 (CI -0.80,0.70) and no statistically significant difference ($p=0.879$) compared to the worse-off neighbourhoods showing lower mean difference -0.20 (CI-0.92,0.60) with no statistically significant difference ($p=0.629$).

Another example which was expected to show an association with Factor 1 “Good maintenance, less physical disorder, more security-related features” was Q11: Identity &

Belonging having the worse off neighbourhoods to be scoring lower -0.53 (%95 CI -1.04,-0.02) and being also statistically significant ($p=0.041$) compared to the middle -0.24 (%95CI-0.75,0.30)

but not being statistically significant ($p=0.357$). Across the tertiles with increasing domain scores moving from better off to the worse off, there was a stepwise increase of 0.30 (%95CI 0.01,0.52) with a statistically significant difference between the three tertiles of neighbourhoods ($p=0.039$).

A reverse U-shape appeared in Q6: “Quality of play and recreation” which appeared to be higher than -0.44 (%95CI -1.50,0.60) in the middle-scored neighborhoods and rated less favorably in the worse-off -0.50(%95 CI -1.53,0.52) and better off neighborhoods than with no statistically significant differences ($p=0.390$).

The Subjective assessment of neighborhood’s social position across tertiles with increasing domain scores (95% CI) a 0.62 (95%CI 0.30,1.00) per tertile increase with a statistically significant difference ($p=0.001$).

Table 38 Differences of the 14 domains of the Place Standard questionnaire and CyNOTes Domain Factor 1: Good maintenance, less physical disorder, more security related features.

	Domain Factor 1 (Good maintenance, less physical disorder, more security-related features)						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	-0.41 (-1.24,0.42)	0.320	-0.40 (-1.23,0.44)	0.342	Ref	0.21 (-0.20,0.62)	0.316
Q2: Public transport	0.03 (-1.00,1.05)	0.957	-0.13 (-1.16,0.90)	0.794	Ref		
Q3: Traffic & Parking	-0.60 (-1.56,0.40)	0.218	-0.50 (-1.50,0.50)	0.308	Ref	0.30 (-0.20,0.80)	0.214
Q4: Streets & Spaces	-0.65 (-1.44,0.14)	0.104	-0.60 (-1.40,0.20)	0.142	Ref	0.32 (-0.10,0.72)	0.102
Q5: Natural space	-0.60 (-1.60,0.40)	0.211	-0.90 (-1.82,0.11)	0.080	Ref		
Q6: Play & Recreation	-0.50 (-1.53,0.52)	0.328	-0.44 (-1.50,0.60)	0.390	Ref	0.30 (-0.30,0.80)	0.324
Q7: Facilities & Amenities	-0.20 (-1.00,0.61)	0.681	-0.20 (-1.00,0.60)	0.638	Ref	0.10 (-0.30,0.50)	0.677
Q8: Work & Local economy	-0.20 (-1.20,0.90)	0.763	0.40 (-0.70,1.43)	0.464	Ref		
Q9: Housing & Community	-0.53 (-1.32,0.30)	0.185	-0.30 (-1.10,0.52)	0.488	Ref	0.27 (-0.13,0.70)	0.180
Q10: Social contact	-0.10 (-1.10,0.95)	0.878	-0.11 (-1.14,0.92)	0.831	Ref	0.04 (-0.50,0.55)	0.876
Q11: Identity & Belonging	-0.53 (-1.04,-0.02)	0.041	-0.24 (-0.75,0.30)	0.357	Ref	0.30 (0.01,0.52)	0.039
Q12: Feeling safe	-0.20 (-0.92,0.60)	0.629	-0.10 (-0.80,0.70)	0.879	Ref	0.10 (-0.30,0.50)	0.623
Q13: Care & Maintenance	0.00 (-0.60,0.61)	0.988	0.21 (-0.40,0.81)	0.488	Ref		
Q14: Influence/Sense of control	-0.40 (-1.10,0.40)	0.339	0.10 (-0.67,0.82)	0.839	Ref		
Total score (range: 14-98)	-4.41 (-10.73,2.00)	0.166	-3.20 (-9.53,3.15)	0.316	Ref	2.21 (-0.92,5.33)	0.162
Subjective assessment of neighborhood's social position	-1.23 (-2.00,-0.51)	0.001	-0.60 (-1.33,0.12)	0.102	Ref	0.62 (0.30,1.00)	0.001
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.10 Differences of Place Standard questionnaire according to CyNOTes

Domain Factor 2 : Better walkability and neighborhood identity

Table 39 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across tertiles of neighborhoods according to the CyNOTes domain Factor 2 about “Better walkability and neighborhood identity” after adjusting for sociodemographic characteristics of the responders (N=444) gathered using the Place Standard tool. There was a stepwise increase pattern moving from better off to worse off neighborhoods with the better off neighborhoods to be scoring higher than the worse off neighborhoods in terms of better walkability and neighborhood identity suggesting a positive association . In fact, 10 out of 14 questions from the Place Standard questionnaire on average scored higher in the neighborhoods compared to the worse off neighborhoods in terms of walkability and neighborhood identity. As expected, Q1: moving around, scored lower -0.90 (CI-1.62,-1.41) with a significant association ($p=0.021$) compared to the better off neighborhood which scored 0.50 (CI-0.30,1.20) but, with no statistically significant difference ($p=0.217$).

Another example which was expected to show an association with Factor 2 Better walkability and neighborhood identity was Q3 about “Traffic density and the availability of Parking”, showing a lower mean difference in the worse off neighborhoods -1.10 (CI-2.00,-0.20) with statistically significant difference ($p= 0.022$) compared to -0.20 (CI-1.10,0.75) and no statistically significant difference in the middle neighborhoods.

Across the tertiles with increasing domain scores moving from better off to worse off neighborhoods, residents assessed the Traffic and Parking on average 0.54 (CI 0.10,1.00) with statistically significance difference ($p=0.022$)

Conceptually, another expected association was with Q4: “Quality of streets and public spaces” having a stepwise increase from worse-off neighbourhoods to worse-off neighbourhoods, showing the better-off (middle group) neighbourhoods with a mean difference 0.05 (CI-0.71,0.80) and no statistical significance ($p=0.900$) compared to the worse off neighbourhoods with mean difference -0.90 (CI-1.61,-0.10) with statistically significant difference ($p=0.029$). Across the tertiles with increasing domain scores (95% CI) moving from better off to worse off residents were

assessed to have a stepwise increase of 0.42 (0.04,0.81) with a statistically significant difference between the three tertiles of neighbourhoods for “Quality of Public Streets and Spaces” ($p=0.032$).

Another expected association with factor 2 “Better walkability and neighbourhood identity” was with Q8: Work and Local economy. Interestingly, the worse-off neighbourhoods appeared to have a higher mean difference 0.90 (CI -0.12,1.92) with no statistically significant difference ($p=0.082$) compared to the better-off neighbourhoods 0.50 (CI-0.60,1.50) and no statistically significant difference ($p=0.369$).

A reverse pattern has been also observed in four questions. Among those four questions of the Place Standard tool, a statistically significant difference was not observed hence no association with the CyNOTes tool. The reverse pattern observed showed Q2: “the availability of Public Transport” to have a higher mean difference 0.74 (CI -0.30,1.74) in the worse off neighbourhoods meaning worse environment, compared to the better off neighborhood (middle) scoring lower 0.63 (CI -0.40,1.62). Therefore, the middle neighborhoods appear to have less favorable outcome compared to both the worse-off and better -off neighborhoods. Also, across the tertiles with increasing domain scores moving from better off to worse off, there was a stepwise decrease - 0.40 (-0.90,0.12) with no statistical significance difference ($p=0.137$).

A reverse U shape appeared in Q6: About the “quality of play and recreation” which appeared to be higher 0.70 (CI-0.31,1.70) in the middle neighborhoods with no statistical difference ($p=0.170$) compared to both the worse off -0.10 (CI-1.10,0.95) and the better off neighborhoods.

A U shape appeared in Q10: “Social Contact” showing the middle group to have lower 0.30 (CI-0.72,1.30) outcome with no statistically significant difference ($p=0.568$) compared to both the worse off 0.54 (CI-0.50,1.60) and better off neighborhoods ($p=0.290$). Therefore, the middle category appears to have less favorable outcome compared to the worse-off and better -off neighborhoods. In addition, across the tertiles with increasing domain scores residents assessed Social Contact on average lower -0.30 (CI-0.80,0.23) on a 1-7 point scale across tertiles of neighborhoods with increasing (worse-off to better off) in terms of better walkability and neighborhood identity domain scores, suggesting a negative but not statistically significant association ($p=0.284$) (i.e. decreasing audit scores decreasing Place Standard Score).

Lasly, in the Subjective assessment of neighborhood's social position there was also a stepwise increase showing a positive association from worse off neighborhoods -1.00 (CI-1.74,-0.25) and statistically significant difference ($p=0.010$) to better off -0.10 (CI-0.82,0.67) and no statistically significant difference ($p=0.840$). Across the tertiles with increasing domain scores worse-off to better off the Subjective assessment of neighborhood's social position on a 1-7 point scale (worse-off to better off) and in terms of better walkability and neighborhood identity domain scores, scored 0.5 (CI 0.12,0.90) suggesting a positive and statistically significant association ($p=0.011$) (i.e. increasing audit scores increasing Place Standard Score).

Table 39: Difference between the 14 domains of the Place Standard questionnaire and the CyNOTes Domain Factor 2: Better walkability and neighborhood identity.

	Domain Factor 2 (Better walkability and neighborhood identity)						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	-0.90 (-1.62,-1.41)	0.021	0.50 (-0.30,1.20)	0.217	Ref		
Q2: Public transport	0.74 (-0.30,1.74)	0.209	0.63 (-0.40,1.62)	0.209	Ref	-0.40 (-0.90,0.12)	0.137
Q3: Traffic & Parking	-1.10 (-2.00,-0.20)	0.022	-0.20 (-1.10,0.75)	0.715	Ref	0.54 (0.10,1.00)	0.022
Q4: Streets & Spaces	-0.90 (-1.61,-0.10)	0.029	0.05 (-0.71,0.80)	0.900	Ref	0.42 (0.04,0.81)	0.032
Q5: Natural space	-0.70 (-1.63,0.30)	0.155	0.30 (-0.70,1.23)	0.548	Ref		
Q6: Play & Recreation	-0.10 (-1.10,0.95)	0.907	0.70 (-0.31,1.70)	0.170	Ref		
Q7: Facilities & Amenities	-0.30 (-1.01,0.44)	0.432	0.53 (-0.20,1.30)	0.145	Ref		
Q8: Work & Local economy	0.90 (-0.12,1.92)	0.082	0.50 (-0.60,1.50)	0.369	Ref		
Q9: Housing & Community	-0.01 (-0.82,0.80)	0.983	-0.03 (-0.84,0.80)	0.945	Ref		
Q10: Social contact	0.54 (-0.50,1.60)	0.290	0.30 (-0.72,1.30)	0.568	Ref	-0.30 (-0.80,0.23)	0.284
Q11: Identity & Belonging	-0.50 (-1.00,0.10)	0.083	-0.11 (-0.62,0.40)	0.665	Ref	0.23 (-0.03,0.50)	0.082
Q12: Feeling safe	-0.90 (-1.60,-0.25)	0.008	0.30 (-0.40,0.92)	0.400	Ref		
Q13: Care & Maintenance	-0.20 (-0.80,0.43)	0.571	-0.20 (-0.80,0.43)	0.569	Ref		
Q14: Influence/Sense of control	-0.20 (-0.93,0.60)	0.640	-0.20 (-0.90,0.60)	0.679	Ref		
Total score (range: 14-98)	-3.70 (-9.81,2.50)	0.236	3.20 (-3.00,9.30)	0.303	Ref		
Subjective assessment of neighborhood's social position	-1.00 (-1.74,-0.25)	0.010	-0.10 (-0.82,0.67)	0.840	Ref	0.50 (0.12,0.90)	0.011
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.2.7.11 Differences of Place Standard questionnaire according to CyNOTes Domain

Factor 3 : Outdoor public spaces and social contact

Table 40 shows differences in mean scores of the 14 domains of the Place Standard questionnaire across three groups of neighborhoods, stratified by the level of CyNOTes domain Factor 3 (Outdoor public spaces and social contact) after adjusting for sociodemographic characteristics of the responders from the Place Standards. The domain score was distributed into tertiles (Worse-off, Middle, Better-off). To assess whether Place Standard scores increased in neighborhoods with better CyNOTes scoring, the significance of trends was tested between the tertiles and across tertiles with increasing domain score (N=444).

Almost half of the questions showed a stepwise increase meaning from worse off to better off scores of Outdoor public spaces and social contact, the values were increasing suggesting a positive association.

In fact, almost 6 out of the 14 questions appeared to have this pattern. However, 10 out of 14 questions appeared to be reversed and 2 out of 14 showed a statistically significant association.

The questions that were expected to show an association with this domain are “Streets & Spaces”, “Natural Space”, “Play and Recreation” and “Facilities and Amenities”, “Social Contact” and “Identity and Belonging”.

For example, the question of “Streets and Spaces” appeared to have a stepwise increase pattern since moving from worse off to better off neighborhoods (in terms of Outdoor public spaces and social contact) the worse off neighborhoods were rated lower 0.20 (CI-0.63,0.99) with no statistically significant association ($p=0.658$) compared to the middle 0.40 (CI-0.41,1.20) with also no statistically significant association ($p=0.329$).

Similarly, the question about “Natural Space” also showed a stepwise increase, with the worse-off scored neighborhoods being rated lower 0.10 (CI-0.84,1.04) with no statistically significant association ($p=0.831$) compared to the middle neighborhoods which were rated higher 0.92 (CI-0.02,1.90) and no statistically significant association ($p=0.054$).

The question about “Social Contact” did not show any trend since the worse off neighborhoods were rated lower -0.00 (CI -1.03,1.02) with no statistically significant association

($p=0.989$) compared to the middle neighborhoods that were rated 0.10 (CI -0.92,1.12) with no statistically significant association ($p=0.843$). This appears to be reverse compared with the CyNOTes results since in the audits worse off neighborhoods scored better in terms of social contact compared to the better off neighborhoods.

Turning into the negatively associated. The question about “Traffic and Parking” appeared to be equally rated between the worse off and middle neighborhoods with the worse-off neighborhoods scoring 1.00 (0.04,1.90) statistically significant association ($p=0.040$) and the middle neighborhoods scoring 1.00 (0.10,1.91) with also a statistically significant association ($p=0.033$).

Expressed as a linear trend, this represents a -0.50 decrease (95%CI -0.94,-0.02) on a 1-7 point scale across tertiles with increasing (worse- to better-off) Outdoor public spaces and social contact domain scores, suggesting a negative and statistically significant association ($p=0.042$).

“Housing and Community” was also significantly associated in a reverse pattern. The worse off scored neighborhoods were rated higher 0.98 (CI 0.24,1.74) with statistically significant association ($p=0.011$) compared to the middle neighborhoods which were rated lower 0.53 (CI -0.22,1.30) with no statistically significant association ($p=0.164$).

Expressed as a linear trend, this represents a -0.50 decrease (95%CI -0.90,-0.12) on a 1-7 point scale across tertiles with increasing (worse- to better-off) Outdoor public spaces and social contact domain scores, suggesting a negative and statistically significant association ($p=0.010$). A reverse U shape pattern has been observed with the Subjective assessment of neighborhood’s social position with higher in the middle neighborhoods 0.50 (CI-0.33,1.30) and no statistically significant difference ($p=0.288$) and lower in the worse off neighborhoods 0.43 (CI-0.40,1.22) and no statistically significant difference ($p=0.247$).

Table 40: Differences between the Place Standard questionnaire according to CyNOTes Domain Factor 3: Outdoor public spaces and Social Contact.

	Domain Factor 3 (Outdoor public spaces and social contact)						
	Worse off		Middle		Better off	Across tertiles with increasing domain scores (95% CI)	p-value
	B coefficient (95% CI)	p-value	B coefficient (95% CI)	p-value			
Q1: Moving around	0.51 (-0.30,1.30)	0.206	0.90 (0.10,1.65)	0.036	Ref		
Q2: Public transport	0.14 (-0.90,1.20)	0.775	-0.21 (-1.23,0.80)	0.675	Ref		
Q3: Traffic & Parking	1.00 (0.04,1.90)	0.040	1.00 (0.10,1.91)	0.033	Ref	-0.50 (-0.94,-0.02)	0.042
Q4: Streets & Spaces	0.20 (-0.63,0.99)	0.658	0.40 (-0.41,1.20)	0.329	Ref		
Q5: Natural space	0.10 (-0.84,1.04)	0.831	0.92 (-0.02,1.90)	0.054	Ref		
Q6: Play & Recreation	-0.32 (-1.33,0.70)	0.528	0.50 (-0.52,1.50)	0.339	Ref		
Q7: Facilities & Amenities	-0.13 (-0.90,0.65)	0.730	0.20 (-0.60,0.94)	0.625	Ref		
Q8: Work & Local economy	-0.91 (-1.92,0.10)	0.077	-0.80 (-1.80,0.23)	0.128	Ref	0.50 (-0.05,1.00)	0.075
Q9: Housing & Community	0.98 (0.24,1.74)	0.011	0.53 (-0.22,1.30)	0.164	Ref	-0.50 (-0.90,-0.12)	0.010
Q10: Social contact	-0.00 (-1.03,1.02)	0.989	0.10 (-0.92,1.12)	0.843	Ref		
Q11: Identity & Belonging	0.32 (-0.20,0.83)	0.213	0.42 (-0.10,0.93)	0.102	Ref		
Q12: Feeling safe	-0.32 (-1.10,0.41)	0.374	0.04 (-0.70,0.80)	0.904	Ref	0.20 (-0.20,0.52)	0.372
Q13: Care & Maintenance	0.30 (-0.32,0.90)	0.354	0.04 (-0.60,0.63)	0.891	Ref	-0.14 (-0.43,0.20)	0.350
Q14: Influence/Sense of control	-0.20 (-1.00,0.55)	0.586	-0.10 (-0.85,0.65)	0.788	Ref	0.10 (-0.30,0.50)	0.582
Total score (range: 14-98)	2.00 (-4.40,8.30)	0.537	4.33 (-2.00,10.63)	0.173	Ref		
Subjective assessment of neighborhood's social position	0.43 (-0.40,1.22)	0.288	0.50 (-0.33,1.30)	0.247	Ref		
Adjusted for gender, age category, education, nationality (Cypriot vs Other), marital status (Single and Divorced or Widowed), occupational status (Employed vs Other), house tenure (Owner vs other), years of residence (Less vs More than 10 years) and reported financial difficulties past 12 months (Yes vs No).							

10.3 Results Stage C: Correlations between neighborhood profile and census-based built environment and socio-demographic indicators

The known-group validity of the CyNOTes was further assessed in terms of the correlation with other census-based indicators. Hence, this will assist to identify the environmental inequities that might exist within the 45 stratified sample of audited neighborhoods. Specifically, the correlations observed were between the CyNOTes 9 domains and a) CyNOTes profiles and census-based socio-demographic indicators b) census-based indicators of educational and occupational disadvantage c) census-based indicators of material disadvantage d) census-based indicators of social composition and residential stability e) census-based indicators of built environment. The environmental inequities are confirmed in almost all along with all socio-demographic indicators since looking at the figures below in almost all indicators the CyNOTes domains were negatively correlated (orange bars) the ones that were almost positively correlated (blue bars) with all census-based indicators were the Safety (lack of security-related features) and Social Contact & Disorder (lack of).

10.3.1 Correlations between neighbourhood CyNOTes profiles and census-based socio-demographic indicators

In almost all CyNOTes domains there was a negative correlation with census-based socio-demographic indicators. Specifically, neighbourhoods with high percentage population over age 65 was negatively correlated with seven out of nine domains. The highest negative correlation was with Domain 6 Maintenance and Appearance (-0.446) having also a statistically significant difference ($p < 0.01$) and Domain 3 Sidewalks & Barriers (lack of) (-0.377) also having a statistically significant difference ($p < 0.01$). Domain 7 Safety (lack of security-related features) (0.362) having statistically significant difference ($p > 0.05$) and Domain 9 Social Contact & Disorder (lack of) (0.277) appear to be positively correlated but not having statistically significant difference.

In addition, neighbourhoods with high percentage retired population also was highly negatively correlated with Domain 6 Maintenance and Appearance (-0.493) having also a

statistically significant difference ($p < 0.01$) and neighbourhoods with high percentage with chronic health problems or disability was highly negatively correlated with Domain 6 Maintenance and Appearance (-0.585) having also a statistically significant difference ($p < 0.01$).

In almost all census-based socio-demographic indicators Domain 9 Social Contact & Disorder (lack of) was positively correlated with the neighbourhoods high percentage in single-person households to be the highest positive correlation (0.412) having also a statistically significant difference ($p < 0.01$).

Lastly, in all census-based socio-demographic indicators Domain 7 Safety (lack of security-related features) was reverse with the neighbourhoods with high percentage with chronic health problems or disability to have the highest positive correlation (0.459) and having also statistically significant difference ($p < 0.05$) and Domain 6 Maintenance and Appearance to have the highest negative correlation (-0.585) having also a statistical significant difference ($p < 0.01$). These are also presented schematically on figure 12.

10.3.2 Correlations between neighbourhood CyNOTes profiles and census-based indicators of educational and occupational disadvantage

Looking into the census-based indicators of educational and occupational disadvantage, it is observed that the neighbourhoods with high percentage of at least tertiary education to be positively correlated with almost all CyNOTes domains. Specifically, the highest correlation appeared to be with Domain 6 Maintenance and Appearance (0.506) having also a statistically significant difference ($p < 0.01$) and the lowest to be with Domain 1 Outdoor public spaces & Nature Features (0.171). The neighbourhoods with high percentage of unemployment appeared to have the highest correlation with Social Contact & lack of Disorder (0.462) and having also statistically significant difference ($p < 0.01$). These are also presented schematically on figure 13.

10.3.3 Correlations between neighbourhood CyNOTes profiles and census-based indicators of material disadvantage

Among the census-based indicators of material disadvantage were the neighbourhoods with high percentage of households with no central heating, high percentage households with no PC/internet, and high percentage with non-owner-occupied households. The highest positively correlation was among the neighbourhoods with high percentage of households with no central heating and Domain 7 Safety (lack of security –related features) (0.501) and having also statistically significant difference ($p<0.01$). The highest negatively correlation was with Domain 6 Maintenance and Appearance (-0.594) and having also a statistical significance difference ($p<0.01$). These are also presented schematically on figure 14.

10.3.4 Correlations between neighbourhood CyNOTes profiles and census-based indicators of social composition and residential stability

Looking at the correlations between neighbourhoods CyNOTes profiles and census-based indicators of social composition and residential stability it appears that the neighbourhoods with high percentage of non-Cypriot population were positively correlated with Domain 1 Outdoor public spaces and Nature Features (0.325) having also statistical significant difference ($p<0.05$) and Social Contact & Disorder (lack of) being also positively correlated (0.274) with no statistically significant difference. These are also presented schematically on figure 15.

10.3.5 Correlations between neighbourhood CyNOTes profiles and census-based indicators of built environment

The correlations observed with the built environment indicate that, in general, most of the CyNOTes domains are consistently worse across increasing “disadvantage”.

For example, the neighbourhoods with high percentage of houses built prior 1980 and prior 2001 showed the highest negative correlation with Sidewalks & Barriers (lack of) (-0.662) and being also statistically significant ($p<0.01$) and (-0.713) being also statistically significant ($p<0.01$).

However, the neighbourhoods with high percentage of non-permanent residences appeared to be highly positively correlated with Domain 1 Outdoor public spaces & Nature Features (0.445) having also a statistically significant difference ($p < 0.01$). These are also presented schematically on figure 16.

Overall, in almost all socioeconomic indicators the domain that appeared to be reverse was the lack of safety features and interestingly also in some cases the lack of social contact and social disorder domain. The highest percentage of tertiary education showed the lowest association with the lack of safety features and the highest correlation appeared to be in the neighbourhoods with higher percentage of house that have no central heating. Interestingly, the neighborhoods also with the highest percentage of tertiary education appeared to have the lowest correlation with the lack of social contact and social disorder whereas the neighborhoods with the highest unemployment rate appeared to have the highest correlation. The neighborhoods with the highest percentage of population mobility the year before appeared to show a mixed pattern between the different domains of CyNOTes.

Table 41: Correlations between CyNOTes domains and census-based indicators (*0.05,0.01 statistically significant).**

	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6	Domain 7	Domain 8	Domain 9
% population over age 65	-0.076	-0.165	-0.377*	-0.331*	-0.305*	-0.446**	0.362*	-0.435**	0.277
% retired population	-0.105	-0.199	-0.420**	-0.390**	-0.379*	-0.493**	0.374*	-0.442**	0.272
% with chronic health problems or disability	-0.376*	-0.179	-0.409**	-0.226	-0.066	-0.585**	0.459*	-0.424**	0.208
% unmarried adults	0.006	-0.511**	-0.399**	-0.225	-0.508**	-0.370*	0.329*	-0.461**	0.419**
% divorced adults	0.170	-0.357*	-0.286	-0.225	-0.491**	-0.177	0.158	-0.340*	0.360*
% adults with up to secondary education	-0.233	-0.209	-0.418**	-0.405**	-0.185	-0.550**	0.434**	-0.449**	0.207
% with at least tertiary education	0.171	0.229	0.385**	0.417	0.192	0.506**	-0.374*	0.442**	-0.203
% illiterate	-0.339*	-0.277	-0.310*	-0.189	-0.068	-0.444**	0.429**	-0.303*	0.201
% non-Cypriot population	0.325*	-0.356*	-0.178	-0.144	-0.367*	0.058	-0.051	-0.299*	0.274
% non-Cypriot, non-EU population	0.117	-0.413**	-0.327*	-0.218	-0.477**	-0.169	0.106	-0.298*	0.331*
% migrants from abroad	0.117	-0.431**	-0.166	-0.121	-0.331*	-0.057	0.022	-0.373*	0.240
% population mobility (year before census)	0.238	-0.202	0.071	-0.094	-0.130	0.154	-0.209	-0.277	0.080
% unemployed economically active pop	-0.079	-0.429**	-0.459**	-0.348*	-0.226	-0.466**	0.446**	-0.471**	0.462**
% nonprofessional occupations	-0.117	-0.349*	-0.373*	-0.390**	-0.168	-0.500**	0.375*	-0.519**	0.071
% elementary or agricultural occupations	-0.019	-0.348*	-0.526**	-0.405**	-0.539**	-0.403**	0.228	-0.480**	0.404**
% multi-dwelling and mixed-use buildings	0.375*	-0.371*	0.006	0.067	-0.302*	0.041	-0.031	-0.223	0.234
% non-permanent houses	0.445**	-0.155	0.075	-0.089	-0.232	0.161	-0.254	-0.184	0.123
% houses built prior to 1980	-0.008	-0.409**	-0.662**	-0.489**	-0.542**	-0.539**	0.387**	-0.560**	0.350*
% houses built prior to 2001	-0.109	-0.432**	-0.713**	-0.422**	-0.458**	-0.518**	0.477**	-0.476**	0.377*
% not-owner occupied households	0.114	-0.233	-0.446**	-0.370*	-0.200	-0.474**	0.355*	-0.345*	0.190
% single-person households	0.209	-0.483**	-0.229	-0.249	-0.530**	-0.204	0.106	-0.388**	0.412**
% single-parent households	-0.153	-0.289	-0.451**	-0.296*	-0.398**	-0.431**	0.371*	-0.339*	0.305*
% households with no PC	0.028	-0.285	-0.475**	-0.459**	-0.352*	-0.443**	0.349*	-0.496**	0.352*
% households with no PC or internet	-0.024	-0.350*	-0.521**	-0.505**	-0.379*	-0.523**	0.406**	-0.553**	0.364*
% houses without central heating	-0.255	-0.432**	-0.556**	-0.503**	-0.439**	-0.641**	0.501**	-0.594**	0.361*

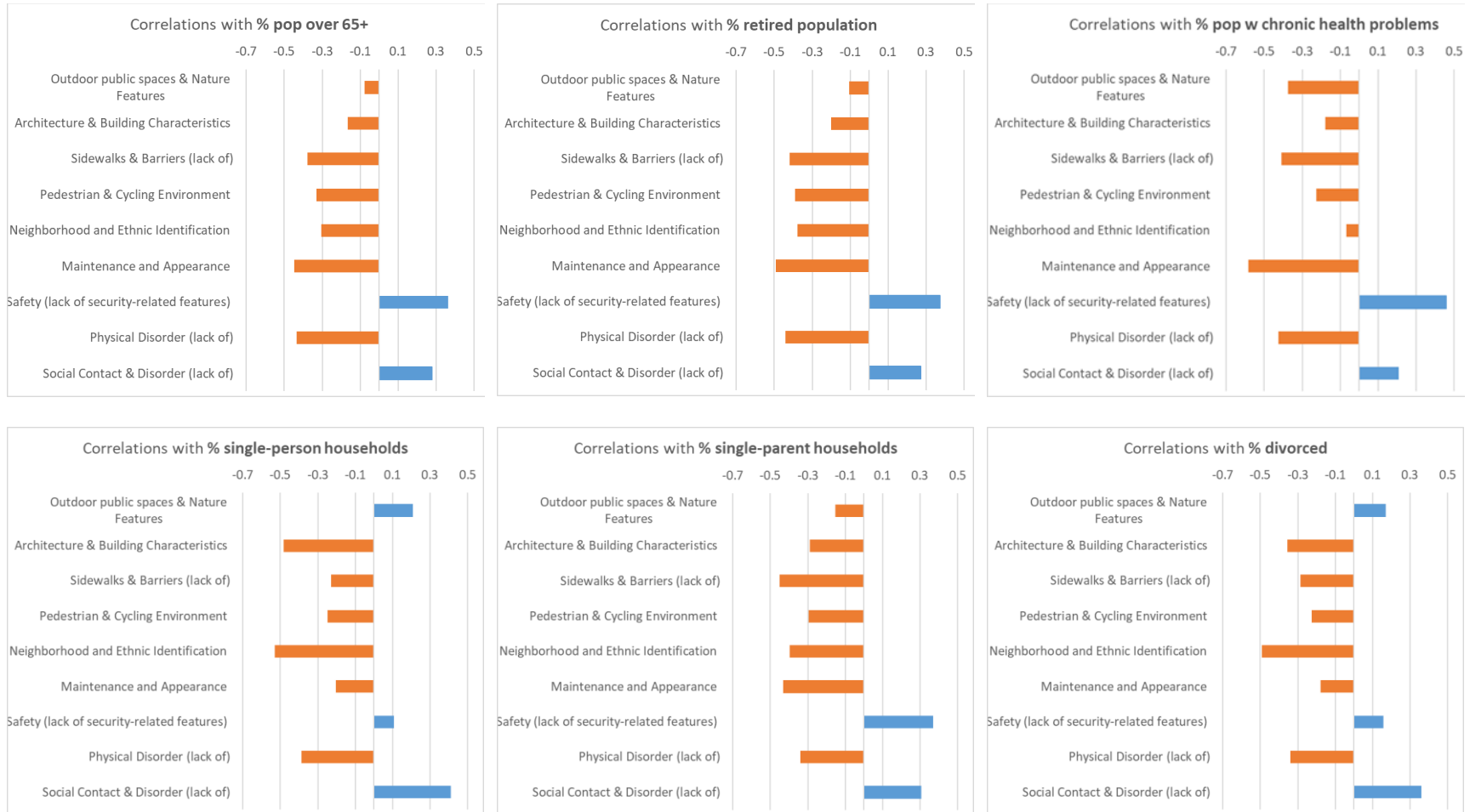


Figure 11: Correlations between neighbourhood CyNOTes profiles and census-based socio-demographic indicators.

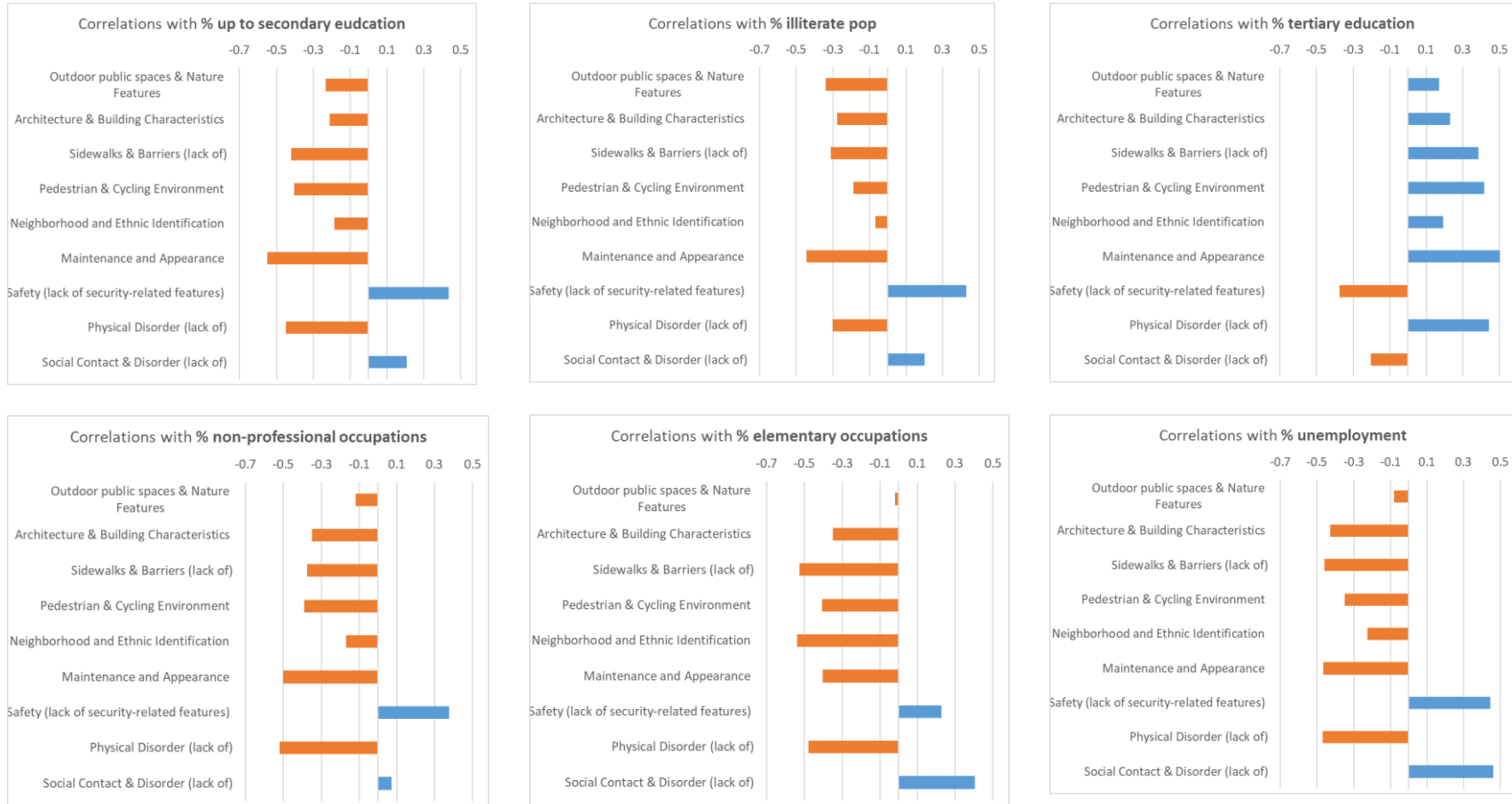


Figure 12: Correlations between neighbourhood CyNOTes profiles and census-based indicators of educational and occupational disadvantage.

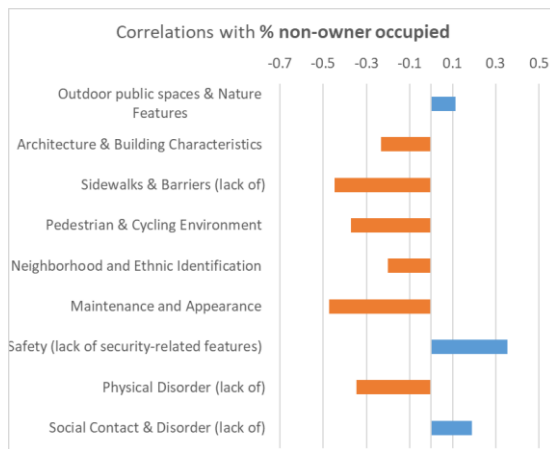
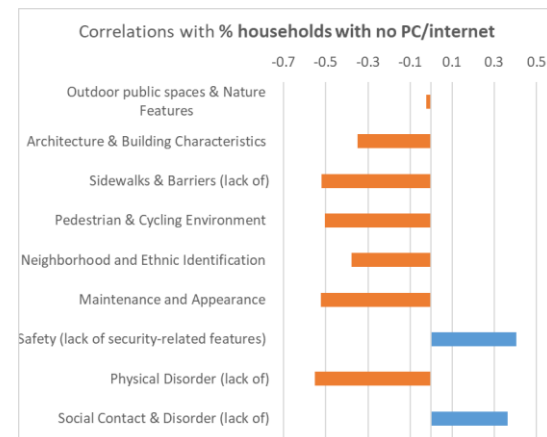
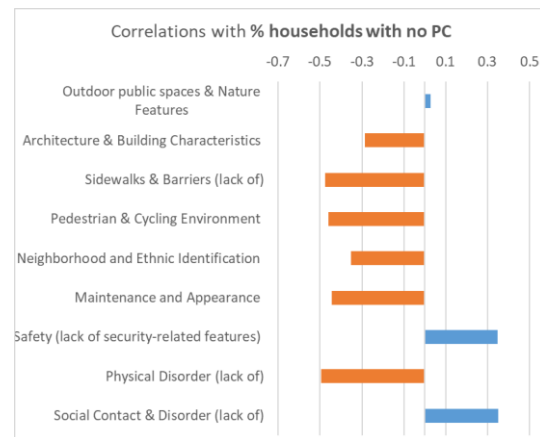
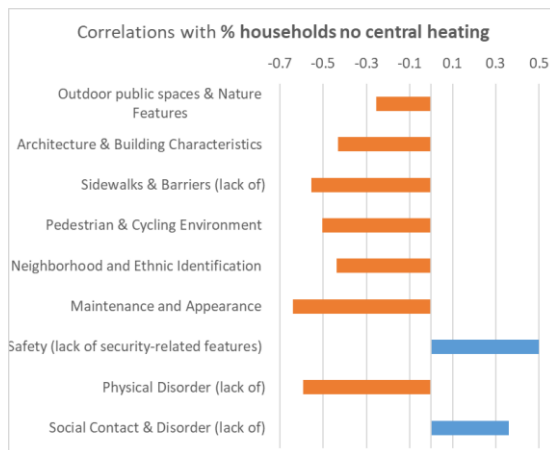


Figure 13: Correlations between neighbourhoo CyNOTes profiles and census-based indicators of material disadvantage.

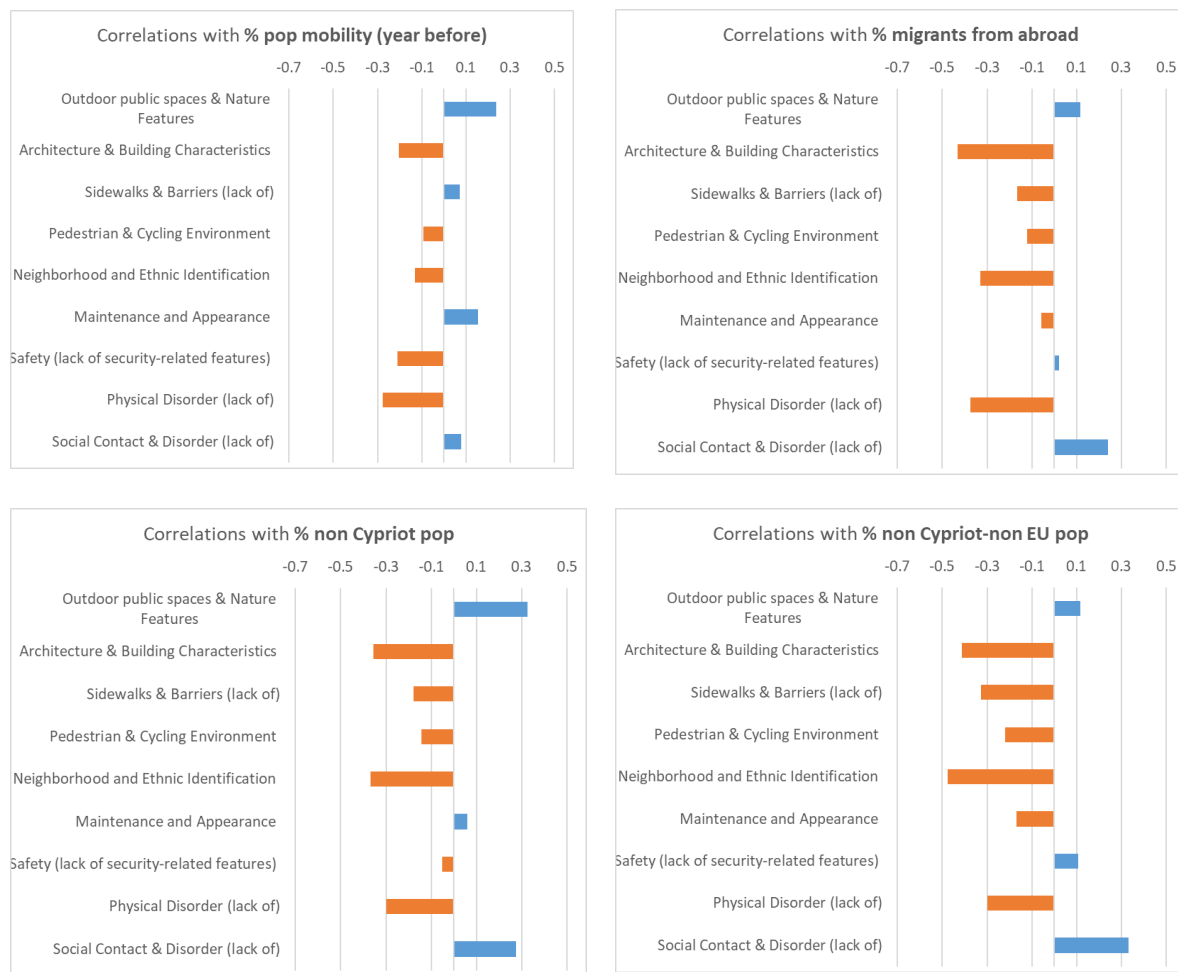


Figure 14: Correlations between neighbourhood CyNOTes profiles and census-based indicators of social composition and residential stability.

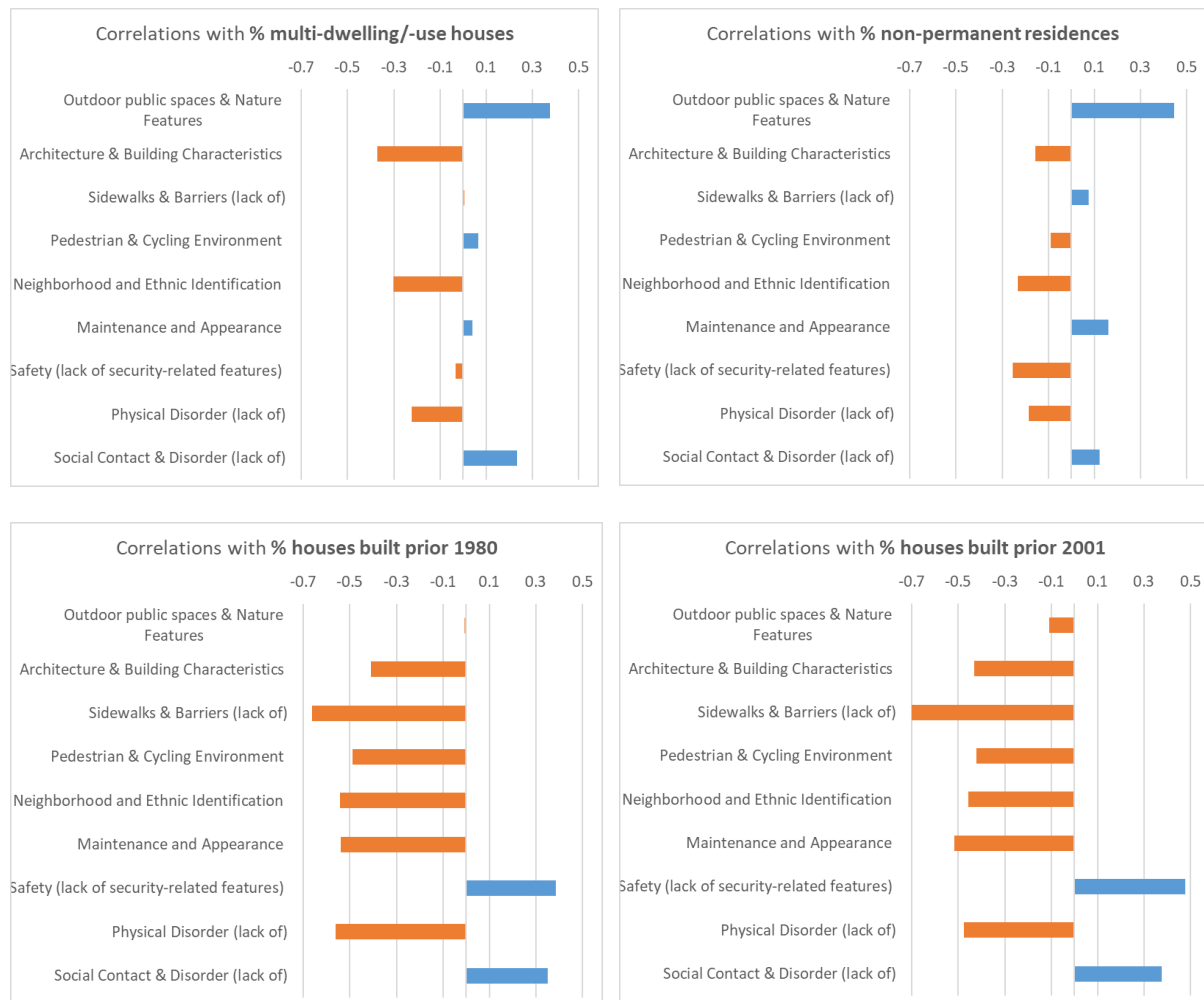


Figure 15: Correlations between neighbourhood CyNOTes profiles and census-based indicators of built environment.

10.4 Results Stage D: Differences in Health-related QOL across neighborhood profiles: predictive validity

The predictive validity of CyNOTes was assessed by comparing the Physical (table 41) and Mental (table 42) Component Score of the SF-36 Health-related Quality of Life questionnaire among residents aged 45-64 (N=450). To facilitate this comparison, neighbourhoods were classified based on (a) educational attainment of residents as recorded in the census, (b) census-based area-level composite socio-economic disadvantage index and (c) each of the nine CyNOTes Domain Scores. In addition, the analysis also looked at three CyNOTes aggregate Domain Factors i.e. Domain Factor 1 (Good maintenance, less physical disorder, more security-related features) , Domain Factor 2 (Better walkability and neighborhood identity), Domain Factor 3 (Outdoor public spaces and social contact).

In all cases, the difference in the mean score between worse off, middle and better off neighbourhoods was calculated per tertile increase (a) after adjusting for gender and age and (b) further adjusting for social position (education and income).

As illustrated in the Figures, with the re-classification of neighbourhoods (i.e. not in terms of census-based SED index, but according to their audit ratings) across the 9 different CyNOTes domains, a social gradient emerges in terms of quality of life scores, both in terms of the Physical as well as the Mental Component Scores of the SF36. In green, the tertile of neighbourhoods with the highest rating according to that domain is presented in the figures, while in red, it is the tertile of neighbourhoods with the lowest audit rating- see Figures 19 and 20. In general, it is observed that almost in all CyNOTes domains more affluent neighborhoods do better in terms of the Physical and Mental component score. However, while higher QoL scores were consistently recorded in the better-off areas, the worse off areas are not always the ones with the lowest score or did not appear that dissimilar from the middle category.

The main exception was the Safety Domain, for which the tertile of neighbourhoods with the highest scores appeared to have better PCS and MCS scores. However, this is not surprising since this domain taps on physical evidence of security-related features which, as indicated earlier, are more prevalent in better-off neighbourhoods. Lastly, it should be noted that the smallest differences were observed for domain Social Contact.

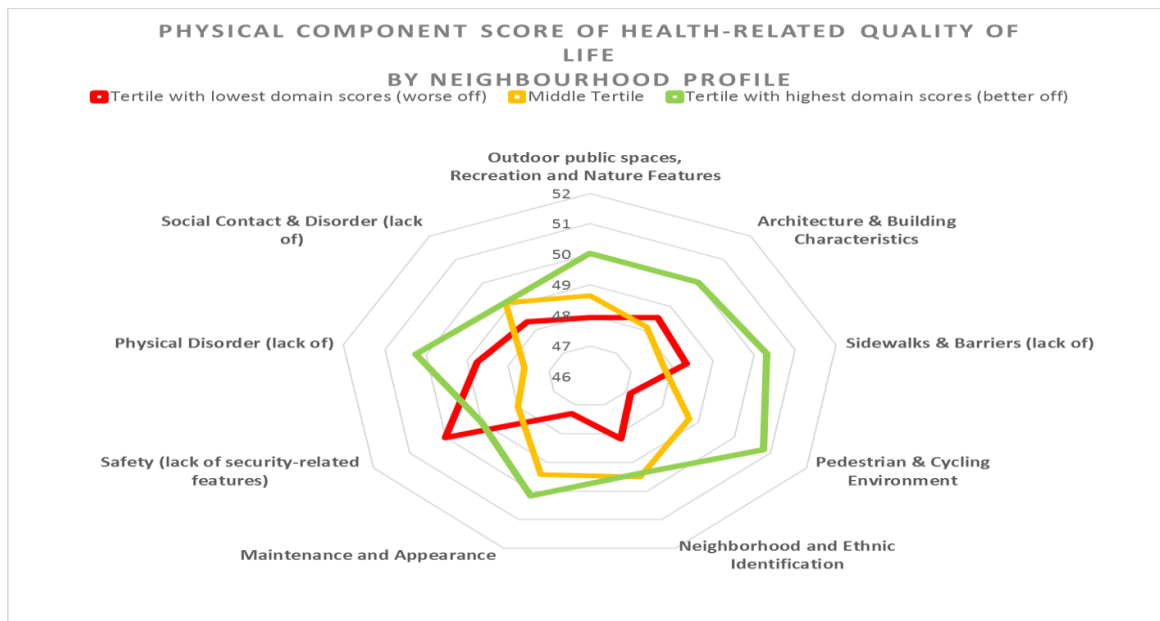


Figure 16 Differences in Health-related QOL across neighborhood profiles: predictive validity (Physical Component Score)

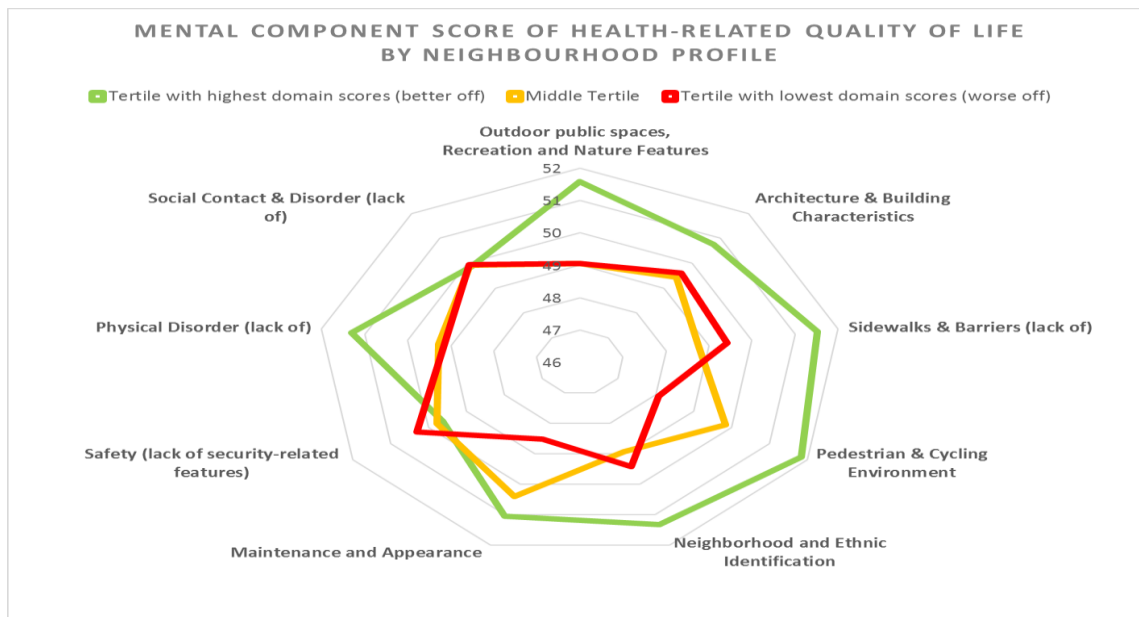


Figure 17 Differences in Health-related QOL across neighborhood profiles: predictive validity (Mental Component Score)

Table 42: Physical Component Score of the SF-36 Health-related Quality of Life questionnaire according to census-based area level socioeconomic disadvantage indicators and CyNOTes Domain Scores.

	Adjusted for age and gender							Further adjusted for education and income
	Worse off		Middle		Better off		Per tertile increase (95% CI); p-value	Per tertile increase (95% CI); p-value
	M (SE)	Mean Difference (95% CI); p-value	M (SE)	Mean Difference (95% CI); p-value	M (SE)			
Educational attainment (% with tertiary education)	47.24 (0.73)	-3.84 (05.93, -1.75); p=0.001	48.31 (0.75)	-2.77 (-4.86, -9.67); p=0.011	51.08 (0.73)	Ref	1.92 (0.88, 2.96); p=0.001	1.01 (0.01, 2.02); p=0.048
Composite socioeconomic disadvantage index	46.89 (0.75)	-3.57 (-5.70, -1.44); p=0.002	49.31 (0.75)	-1.16 (-3.29, 0.98); p=0.28	50.46 (0.75)	Ref	1.79 (0.73, 2.84); p=0.001	1.30 (0.37, 2.23); p=0.007
Domain 1: Outdoor public spaces, Recreation and Nature Features	47.92 (0.83)	-2.10 (-4.44, 0.24); p=0.08	48.65 (0.82)	-1.38 (-3.71, 0.96); p=0.24	50.03 (0.82)	Ref	1.05 (-0.11, 2.21); p=0.07	0.88 (-0.08, 1.84); p=0.07
Domain 2: Architecture & Building Characteristics	48.52 (0.78)	-1.52 (-3.84,0.80); p=0.20	48.13 (0.90)	-1.91 (-4.34,0.52); p=0.12	50.03 (41.88)	Ref	0.72 (-0.44,1.88); p=0.22	0.63 (-0.33,1.60); p=0.19
Domain 3: Sidewalks & Barriers (lack of)	48.35 (0.81)	-1.94 (-4.24,0.35); p=0.10	47.80 (0.81)	-2.31 (-4.61,-0.02); p=0.05	50.30 (0.81)	Ref	0.97 (-0.19,2.13); p=0.10	0.78 (-0.10,1.84); p=0.11
Domain 4: Pedestrian & Cycling Environment	47.12 (0.74)	-3.70 (-5.80,-1.58); p=0.001	48.76 (0.78)	-2.03 (-4.20,0.13); p=0.07	50.80 (0.75)	Ref	1.84 (0.80,2.88); p=0.001	1.34 (0.42,2.26); p=0.005
Domain 5: Neighborhood and Ethnic Identification	48.18 (0.85)	-1.18 (-3.58,1.21); p=0.32	49.50 (0.85)	-0.32 (-2.71,2.08); p=0.80	49.40 (0.84)	Ref	0.59 (-0.60,1.78); p=0.32	0.31 (-0.68,1.31); p=0.53
Domain 6: Maintenance and Appearance	47.30 (0.80)	-2.81 (-5.12,-0.51); p=0.02	49.42 (0.80)	-0.70 (-3.00,1.61); p=0.55	50.16 (0.85)	Ref	1.44 (0.29,2.59); p=0.02	0.98 (0.00,1.97); p=0.05
Domain 7: Safety ((lack of security-related features)	50.00 (0.82)	0.90 (-1.50,3.27); p=0.46	48.00 (0.80)	-1.03 (-3.40,1.32); p=0.38	49.00 (0.90)	Ref	-0.46 (-1.70,0.75); p=0.45	-0.29 (-1.31,-2.73); p=0.60
Domain 8: Physical Disorder	48.74	-1.52	47.60	-2.70	50.25	Ref	0.73	0.44

(lack of)	(0.78)	(-3.76,0.73); p=0.18	(0.83)	(-5.02,-0.38); P=0.02	(0.80)		(-0.42,1.89); p=0.21	(-0.54,1.42); p=0.37
Domain 9: Social Contact & Social Disorder (lack of)	48.33 (0.82)	-0.84 (-3.21,1.53); p=0.48	49.15 (0.88)	-0.03 (-2.80,2.42); p=0.98	49.17 (0.85)	Ref	0.42 (-0.75,1.60); p=0.47	0.51 (-0.46,1.48); P=0.30
Domain Factor 1 (Good maintenance, less physical disorder, more security-related features)	48.38 (0.84)	-1.46 (-3.85,0.90); p=0.30	48.40 (0.83)	-1.45 (-3.81,0.92); p=0.92	49.84 (0.84)	Ref	0.73 (-0.45,1.91); p=0.22	0.48 (-0.50,1.47); p=0.33
Domain Factor 2 (Better walkability and neighborhood identity)	47.14 (0.80)	-2.33 (-4.58,-0.08); p=0.04	49.95 (0.80)	0.47 (-1.76,2.72); p=0.67	49.47 (0.79)	Ref	1.16 (0.12,2.31); p=0.05	0.66 (-0.33,1.70); p=0.20
Domain Factor 3 (Outdoor public spaces and social contact)	47.64 (0.83)	-1.84 (-4.18,0.49); p=0.12	49.50 (0.82)	-0.02 (-2.36,2.31); p=0.98	49.50 (42.04)	Ref	0.92 (-0.24,2.08); p=0.12	0.76 (-0.20,1.75); p=0.12

Table 43: Mental Component Score of the SF-36 Health -related Quality of Life questionnaire according to census-based area-level socioeconomic disadvantage.

	Adjusted for age and gender							Further adjusted for education and income
	Lowest scores		Middle		Better off		Per tertile increase (95% CI); p-value	Per tertile increase (95% CI); p-value
	M (SE)	Mean Difference (95% CI); p-value	M (SE)	Mean Difference (95% CI); p-value	M (SE)			
Educational attainment (% with tertiary education)	48.69 (0.71)	-3.12 (-5.15, -1.10); p=0.003	49.20 (0.73)	-2.61 (-4.65, -0.58); p=0.013	51.81 (0.71)	Ref	1.56 (0.54, 2.58); p=0.004	0.86 (-0.18, 1.89); p=0.103
Composite socioeconomic disadvantage index	48.63 (0.74)	-2.85 (-4.94, -0.76); p=0.09	49.63 (0.74)	-1.86 (-3.95, 0.23); p=0.08	51.49 (0.74)	Ref	1.43 (0.39, 2.46); p=0.008	0.99 (0.00, 1.97); p=0.05
Domain 1: Outdoor public spaces, Recreation and Nature Features	49.06 (0.75)	-2.52 (-4.62, -0.42); p=0.02	49.06 (0.74)	-2.52 (-4.61, -0.43); p=0.02	51.58 (0.74)	Ref	1.26 (0.20, 2.32); p=0.02	1.23 (0.28, 2.17); p=0.01
Domain 2: Architecture & Building Characteristics	49.60 (0.75)	-1.16 (-3.038, 1.05); p=0.30	49.43 (0.82)	-1.32 (-3.63, 0.99); p=0.30	50.75 (0.82)	Ref	0.56 (-0.54, 1.66); p=0.31	0.32 (-0.67, 1.32); P=0.52
Domain 3: Sidewalks & Barriers (lack of)	49.43 (0.74)	-2.09 (-4.18, 0.00); p=0.05	48.76 (0.74)	-2.76 (-4.90, -0.70);	51.52 (0.74)	Ref	1.04 (-0.03, 2.12); p=0.06	0.71 (-0.28, 1.70); p=0.20
Domain 4: Pedestrian & Cycling Environment	48.07 (0.68)	-3.76 (-5.69, -1.85); p=0.00	49.85 (0.71)	-1.99 (-3.97; -0.01); p=0.05	51.84 (0.70)	Ref	1.88 (0.93, 2.83); p<0.001	1.46 (0.54, 2.40); p=0.003
Domain 5: Neighborhood and Ethnic Identification	49.42 (0.76)	-1.91 (-4.10, 0.23); p=0.08	48.94 (0.76)	-2.39 (-4.53, -0.30); p=0.03	51.33 (0.75)	Ref	0.96 (-0.13, 2.05); p=0.083	0.62 (-0.038, 1.63); p=0.22
Domain 6: Maintenance and Appearance	48.52 (0.73)	-2.53 (-4.70, -0.35); p=0.02	50.40 (0.73)	-0.70 (-2.90, 1.50); p=0.53	51.04 (0.80)	Ref	1.30 (0.21, 2.36); p=0.02	0.92 (-0.10, 1.92); p=0.10

Domain 7: Safety ((lack of security-related features)	50.30 (0.80)	0.68 (-1.63,2.99); p=0.60	49.78 (0.80)	0.15 (-2.12,2.43); p=0.90	49.62 (0.83)	Ref	-0.34 (-1.49,0.80); p=0.55	-0.17 (-1.21,0.90); p=0.75
Domain 8: Physical Disorder (lack of)	49.15 (0.74)	-2.15 (-4.30,-0.03); p=0.05	49.28 (0.80)	-2.02 (-4.21,0.17); p=0.10	51.30 (0.76)	Ref	1.06 (0.00,2.12); p=0.10	0.70 (-0.30,1.70); p=0.16
Domain 9: Social Contact & Social Disorder (lack of)	49.94 (0.78)	0.08 (-2.16,2.32); p=0.95	49.91 (0.83)	0.05 (-2.30,2.40); p=1.00	49.86 (0.80)	Ref	-0.04 (-1.14,1.10); p=0.95	0.26 (-0.74,1.26); p=0.60
Domain Factor 1 (Good maintenance, less physical disorder, more security-related features)	49.45 (0.76)	-1.91 (-4.04,0.23); p=0.08	49.00 (0.75)	-2.38 (-4.52,-0.24); p=0.03	51.35 (0.76)	Ref	0.10 (-0.13,2.04); p=0.10	0.70 (-0.34,1.65); p=0.20
Domain Factor 2 (Better walkability and neighborhood identity)	48.20 (0.75)	-2.85 (-4.95,-0.76); p=0.01	50.42 (0.73)	-0.62 (-2.70,1.50); p=0.55	51.04 (0.73)	Ref	1.42 (0.38,2.50); p=0.01	1.00 (-0.00,2.00); p=0.10
Domain Factor 3 (Outdoor public spaces and social contact)	48.70 (0.78)	-1.60 (-3.80,0.60); p=0.15	50.77 (0.77)	0.51 (-1.71,2.70); p=0.64	50.26 (0.80)	Ref	0.80 (-0.30,1.89); p=0.20	0.94 (-0.04,1.91); p=0.10

In terms of the Physical Component score, it can be observed that after adjusting for age and gender, the neighbourhoods with high percentage of tertiary education had an increase 1.92 (95% CI 0.88-2.96) which was statistically significant ($p=0.001$). Classifying neighbourhoods according to the composite socioeconomic disadvantage index, an increase of 1.79 (95% CI 0.73, 2.84) was observed across decreasing disadvantage which was also statistically significant ($p=0.001$). After, further adjusting for education and income, these associations attenuated but remained statistically significant with an increase of 1.01 (95% CI 0.01, 2.02) across increasing educational attainment ($p=0.048$) and 1.30 (95% CI 0.37, 2.23) across decreasing socio-economic disadvantage ($p=0.007$).

In terms of the CyNOTes domains, the domain that showed the strongest and statistically significant increase in Physical Component Scores (PCS) across tertiles was Domain 4: Pedestrian & Cycling Environment. After adjusting for age and gender, a 1.84 (95% CI 0.80, 2.88); $p=0.001$) increase in PCS was observed across tertiles of neighbourhoods with increasing Pedestrian and Cycling Environment scores. This association attenuated but remained statistically significant after further adjusting for education and income of the residents. As 1.34 (95% CI 0.42, 2.26; $p=0.005$ per tertile increase, the observed association appears similar in strength to the association observed with the composite Socio-Economic Disadvantage Index. Similarly, Domain 6: Maintenance and Appearance captured a significant increase in PCS with 1.44 (95% CI 0.29, 2.59); $p=0.02$ across tertiles of increasing scores, which was statistically significant after further adjusting for education and income at 0.98 (95% CI 0.00, 1.97; $p=0.05$). Lastly, for Physical Component Score, the higher-order domain with the strongest association was Domain Factor 2: Better walkability and neighborhood identity. There was a significant increase in PCS across tertiles after adjusting for age and gender 1.16 (95% CI 0.12, 2.31); $p=0.05$, which nevertheless attenuated and was no longer significant after further adjusting for education and income. Differences in mean Physical Component Scores across tertiles of increasing CyNOTes scores are also illustrated in Figure 19.

In terms of the Mental Component Score, an increase of 1.56 (95% CI 0.54-2.58) was observed across tertiles of increasing educational attainment, after adjusting for age and gender, which was statistically significant ($p=0.004$). After further adjusting for education and income, the observed associations attenuated to 0.86 (95% CI -0.18, 1.89) and was no longer statistically

significant at the 5% level ($p=0.103$). Similarly, using the composite Socio-economic Disadvantage Index to classify the neighbourhoods, an increase of 1.43 (95% CI 0.39, 2.46) was observed, which was also statistically significant ($p=0.008$). The observed association attenuated but remained statistically significant after adjusting for education and income to an increase of 0.99 (95% CI 0.00, 1.97) across tertiles of decreasing Socio-economic Disadvantage Index ($p=0.05$).

The CyNOTes domains which showed the strongest association with the MCS was Domain 1: Outdoor public spaces, Recreation and Nature Features and Domain 4: Pedestrian & Cycling Environment. Interestingly, in both cases the observed associations were stronger than those captured by educational attainment and Socio-economic Disadvantage Index. In the case of Domain 1, a 1.26 (95% 0.20, 2.32) increase in MCS was observed ($p=0.02$) across tertiles of increasing scores after adjusting for age and gender and 1.23 (95% 0.28, 2.17) after further adjusting for education and income ($p=0.01$).

For Domain 4, a statistically significant increase in MCS of 1.88 (95% CIT 0.93, 2.83) was recorded across tertiles of improved scores ($p<0.001$), which even though attenuating after further adjusting for education and income, remained strong and statistically significant at 1.46 (95% 0.54, 2.40); $p=0.003$.

Domain 6: Maintenance and Appearance also captured a significant increase across tertiles of improved scores when only adjusting for age and gender at 1.30 (95% CI 0.21, 2.36; $p=0.02$), which was nevertheless no longer statistically significant after adjusting for education and income.

Lastly, similarly to the Physical Component Score, the higher-order Domain with the strongest observed association with the Mental Component Score was Domain Factor 2: Better walkability and neighborhood identity. There was a significant increase of 1.42 in mean MCS (95% CI 0.38, 2.50); $p=0.01$ per tertile of increasing scores after adjusting for age and gender, which nevertheless attenuated to 1.00 (95% CI -0.00, 2.00); $p=0.10$ after also adjusting for education and income. Differences in mean Mental Component Scores across tertiles of increasing CyNOTes scores are also illustrated in Figure 20.

11 DISCUSSION

11.1 Summary of Findings

CyNOTes v1.0 showed good metric properties and profiled the variability in the urban neighbourhood environment in Cyprus for the first time. The study profiled the variability in the urban neighbourhood environment and documented both clustering and social gradient of adverse neighbourhood features reflecting the socioeconomic disadvantage continuum. In terms of domains, lower scores were observed in terms of built features (e.g., cycling & pedestrian environment) and public services & infrastructure (e.g. parks & recreational use). Neighborhoods with lower educational attainment scored statistically lower in over half the domains, mainly reflecting resident (e.g. condition of housing, grounds) rather than infrastructure features (i.e. street quality, pedestrian environment). Differences were apparent in domains with generally high (e.g. lack of physical disorder) or generally low scores (e.g. existence of recreational and public spaces). Interestingly, security-related features were more prevalent in higher education neighborhoods.

In the perceptions survey, three in four participants were home owners and lived in the neighbourhood for over 10 years. With the exception of “identity and sense of belonging” and “opportunities for social interaction”, physical and built aspects of the environment were rated close to the middle point on a scale 1: large to 7: little room for improvement. “Parks, playgrounds and green space” and “garbage, animal droppings and other physical disorder” were the most commonly mentioned priorities for action in the free text by one in three participants. The lowest score was recorded for “influence and sense of control” While on a 1-10 subjective perception of neighbourhood position, residents in lower education neighbourhoods gave a rating of 6.6 on average compared to 8.1 in the higher group, they tended to rate aspects of their neighbourhood more favourably.

Even though the audit revealed a systematic pattern of less favourable conditions along the socio-economic continuum, the perception survey revealed a U-pattern with residents in the middle category more likely to give less favourable ratings. Based on the Place Standard tool, Limassol residents’ rate social aspects of their neighbourhood environment more favourably than aspects of

the built and physical environment. The social gradient was not always reflected in the perception survey.

With the exception of social aspects, residents did not rate the built and physical environment favorably. “Influence and sense of control” was rated lowest while “Citizens’ voice” emerged in the inductive content analysis of residents’ lived experience matching with the lowest score which was recorded for “influence and sense of control” in the Place Standard tool.

Content validity was supported by residents’ and professionals’ descriptions of neighbourhood problems, giving rise to a 17-domain, 151-item inventory, 126 from the literature and 25 arising via Nominal Group Technique consensus and content analysis of social media posts formulating the CyNOTes v2.0. Lower scores were observed along the socio-economic continuum using educational attainment as a proxy as well as a composite census-based Index of Socioeconomic Disadvantage. The observed social gradient confirmed the known-group validity of the tool while associations observed with a wide range of census-based indices further confirmed the criterion validity, also highlighting environmental inequity in terms of socio-economically disadvantaged population groups. Furthermore, in neighbourhoods with adverse features residents reported lower physical and mental health-related quality of life confirming the predictive validity of the tool.

11.2 Strengths and Limitations

The study has its strengths as well as some limitations. The strengths are mainly focusing on the multiple validation procedures that have been used to develop and validate the CyNOTes while previous studies either did not perform validation procedures or only used one validation procedure. Despite the limitations, CyNOTes appeared to be a reliable and valid tool that can be used to quantify various neighbourhood features of the Cypriot urban neighbourhood environment.

11.2.1 Pilot study

While the pilot study was based on small sample of neighbourhoods, the process findings guided the development of the second updated version of the tool. Limited resources and time (two audits, one week apart in 30 streets) were also a drawback. In order to increase the sample size, it

was decided to restrict the assessment to the selected streets (N=15) as well as one of its adjacent streets (N=15). Commonly, the definition of neighborhood varies across studies, but it usually involves auditing all streets within a buffer zone (say, 300 meters around the selected street), or similarly, a selected street and all the streets or street segments that cross or are perpendicular to the selected street (e.g. from the point where they meet the selected street to the end of the street segment up to the next block). It should be noted, however, that in most studies in the published literature, sample sizes tend to be larger because a separate audit is performed by street segment along the same street, defined as the part of the street between two intersections. In the case of this study, a single audit was performed for the entire street length, rather than for every street segment on that street, i.e. resulting in one data point, rather than many. While the practice which is more common elsewhere would have resulted in more audit data, and hence a larger sample size, it was not deemed appropriate in this case both because the typical residential street in Cyprus is not as long, and it is not as common to find sudden changes in the neighborhood environment along the same street.

In addition, the first version of the CyNOTes tool was mainly based on US- or Canada-based tools; therefore, some of the items that were included might not be culturally relevant and, similarly, many other features of Cypriot neighborhood environment that may be more appropriate might have been missed out. For instance, a better measure of a positive social environment is evidence of socializing activity among neighbors on front terraces, or open front doors, a typical feature in more traditional Cypriot neighborhoods. Nevertheless, this was aim of CyNOTes 2.0, to increase the cultural specificity of the tool whereby an iterative process was employed which involved (a) expert panel face validity, (b) content validity based on community professionals' opinion, (c) further, assessing content validity through the citizens' ethnographic study, all of which are clear strengths of the study compared to similar studies elsewhere.

Furthermore, even though the two raters worked independently and were blinded by each other, the fact they did not have standard training is a limitation of the study. Commonly, such audit tools are supplemented by a training manual that contains a list of definitions for all features to be assessed, a glossary of terms, and often but not always, photographic material which accompanies all or some of the items to be assessed and the relevant response set, especially in the case of rating scales e.g. examples of what constitutes poor to excellent housing maintenance or

condition of sidewalks, etc. The lack of photographic materials can be considered a drawback but it was deemed necessary in the first application to by-pass personal data protection and other ethical concerns. The assistance that training manual, as well as a training workshop on the field, can help improve the inter-observer agreement and Cronbach alpha scores, especially for the less objective variables such as the ones assessing quality on a Likert scale. Therefore, creating a training manual and perhaps digitalising the tool could be one of the next possible steps for operationalising the tool out of the scope of institutional research.

11.2.2 Concurrent validity: Perceptions Survey

The neighborhoods perception survey using the Place Standard questionnaire also had its disadvantages. The fact that Place Standard's questions were not a one-to-one match with the domains of CyNOTes could also create some ambiguities between specific definitions or the aspect of the specific audited features of the CyNOTes versus the questions which were made to the citizens via the use of Place Standard tool. This also adds to the fact that Place Standard was applied by individual interviews and not participatory methods in a group which would help the citizens discuss their answers. Residents' perceptions being described only quantitatively does not tap into the actual lived experiences of residents.

Nevertheless, assessing concurrent validity between the audit and residents' subjective assessment is a clear strength of the study compared to similar studies elsewhere. Given the length of CyNOTes, and hence inappropriateness for perception survey, the Place Standard was deemed the right choice for the purpose.

In addition, even if it was only piloted in the city of Limassol, urban neighborhoods are not dissimilar in Cypriot cities. In fact, the online survey using Place Standard had nationwide reach, whereby the validity of the tool was tested and confirmed (Kleopa et al., 2022). Therefore, Place Standard can be considered a quick response door-to-door survey that helped the researchers to understand citizens' perceptions of their neighbourhood built, physical and social environment and as an initial effort to quantify their perceptions. Further studies might be needed, using participatory methods.

11.2.3 Content validity: virtual ethnographic study and focus groups

While an effort was made to gather inter-disciplinary focus groups for the cultural adaptation of the tool, most representatives from the municipalities were hygiene inspectors. It would be best if a wider range of disciplines were represented, for example, police officers (i.e. neighbourhood watch) could help contribute to the safety features of the neighborhood environment, or urban planners and architects could help enhance the focus on the built and physical features assessed in CyNOTes. Nevertheless, with a range of disciplines, and hence perspectives, beyond those of hygiene inspectors, by widening the participation to community nurses, social workers and urban planners, while the coordinator of the Healthy Cities initiative was also present.

Furthermore, the virtual ethnographic study also had its limitations. It is worth mentioning that virtual ethnographic studies as a methodology to develop systematic social observation tools cannot stand on their own. They can be used as a form of validation and assist triangulation of various results, probably identified from quantitative methodologies.

The review of Facebook complaints and comments over 12 months focused on the Municipality of Limassol (official Facebook page and municipality and mayor). These comments were scanned through by two independent observers and the issues identified could be possibly applied to other Limassol municipalities as the urban Cypriot Neighborhoods do not vary between different municipalities and we do not expect that citizens' views would differ in other municipality pages across Limassol or even nationwide.

In addition, the Virtual Ethnographic Study (Facebook Study) was more likely to portray negative aspects of neighborhood environment rather than positive ones. For instance, when researchers tried to match the Facebook comments with the CyNOTes domains, from the Mayor's and Municipalities announcements regarding neighborhood regeneration plans, it was obvious that Limassol citizens were more likely to comment about negative neighborhood features and experiences they have in the city such as illegal parking, lack of cycling roads, illegal premises in the neighborhood environment that can be used for parking or abandon cars, etc. Therefore, the virtual ethnographic study assisted in enhancing the CyNOTes features but mostly with regard to negative features, characteristics or behaviors. In contrast, the focus group findings contributed to positive aspects of the neighbourhood environment; for instance, social connection because

participants were given the chance to discuss what constitutes a “good neighbourhood” while this introduces some balance in the content validity, future development of CyNOTes could explore positive features further.

Another limitation is the fact that only specific topics were covered, hence, perhaps not covering wide topics of importance to residents. Such topics could be related to other social determinants of health that directly or indirectly are linked to the place where citizens live and might affect their health. For example, childcare and maternity assistant services, amenities that should be around 15 minutes’ radius of a person residence, such as leisure centers, sports centers, or community engagement places within that radius. Since the original posts were more related to infrastructure and physical environment perhaps some of the other social or even commercial determinants of health were not corrected.

Also, the fact that the ethnographic study was virtual could also have its drawbacks. For example, the fact that it was a virtual study, the validity of some comments is questionable, either because the ethnographer was not able to explore deeper meanings in the descriptions, or experiences, or even distinguish between the intentions (e.g. political motivation). Furthermore, the sample is not representative due to the voluntary nature, however, the fact that it was spontaneous (rather than in response to a cue from a researcher) is an advantage.

Lastly, since it was a virtual ethnographic study. Researchers were unable to capture any senses from the comments of the people such as feelings compared to the non-virtual ethnography. However, in many cases, the researcher could identify the anger and frustration from the tone and detailed description of people’s comments.

Despite the limitations, it was a great opportunity for the researcher to use the comments and compare them with the CyNOTes typology. The successful matching of those comments with the domains of the CyNOTes not only confirms the content validity of the tool, but also guided further the development by adding items which were not represented, enhancing the cultural relevance of the tool.

11.2.4 Known-group validity: social gradient in CyNOTes

With regard to the known-group validity, 2011 census data were used to stratify the neighborhoods according to socio-economic disadvantage. This was unavoidable since 2021 census data were not available at the time of the study (and not even released in full at the time of writing). Nevertheless, the fact that CyNOTes captured the social gradient in environmental inequity along the socio-economic disadvantage continuum with a range of single indicators as well as a composite index confirms its criterion validity. Furthermore, while 2011 census data do not capture changes in this period, it was not the purpose of the study to rank neighbourhoods but simply to group them. Thus, a rough criterion was sufficient since huge changes (e.g. a neighbourhood moving from the bottom to the top of the (SED scale) are not expected.

11.2.5 Predictive validity: Health-Related Quality of Life

Similarly, the fact that audits were performed 1-2 years after the completion of the QoL survey introduces a timing mismatch since the neighborhood environment might have improved or worsened in this period, influencing the health-related quality of life of citizens accordingly. Nevertheless, CyNOTes was still able to capture the social gradient of Health-related Quality of Life.

11.3 Methodological Considerations

The main strength of this study is that the development of the CyNOTes performed both reliability and validity procedures. In fact, intra and inter-rater agreement has been performed, as well as multi-validation procedures and not just a single validity procedure as similar studies in the literature. For example, most of the studies tried to assess criterion validity with objective measures, or predictive validity with health outcomes.

11.3.1 Reliability of field audits

As it has been mentioned, reliability procedures are often performed by similar studies. Such studies that used inter and intra-observer reliability and validity were (Milam et al., 2016b),(Malecki et al., 2014),(Bethlehem, Mackenbach, Ben-rebah, et al., 2014) ,(Su et al.,

2014a), (Andresen et al., 2013),(Freitas et al., 2013),(Paquet et al., 2010) for developing an objective community assessment tool ; however, this process only assesses the reliability of the measurement and does not tap on the validity.

For example, the study by Malecki et al., 2014 uses inter-rater reliability exploring the percentage agreement across segments that were rated by the auditors within most of one week of one another aiming to assess comparability and reproducibility across many different pairs of raters (Malecki et al., 2014), Furthermore, the study by Bethlehem et al.,(2014) performed inter-observer and intra-observer reliability procedures. In the inter-observer, the first auditor performed virtual audits in the selected neighbourhoods and the second auditor conducted virtual audits in the same streets per neighbourhoods, independently from the first auditor. In the intra-observer reliability, the virtual audit was performed twice by the same auditor with a ten-days delay between the two audits to reduce recall bias. Both, intra- and inter-observer reliability results showed high degree of conformity between the second virtual audit with few exceptions such as “Aesthetics”, Litter and “Graffiti” for Intra-observer reliability and for Inter-observer reliability “Aesthetics, and Land use-mix were found to have the lowest Kappa scores and percentage agreement. High percentage of agreement was reported in the category for Public Transport attractiveness.

Fisher et al., 2000 also tested inter-rater reliability and internal consistency. This was a reduced-item version of an environmental audit tool for physical-activity resources in a rural setting namely PEDS. They have tested it in five rural school districts in western New York. There was no single validation procedure mentioned while developing this tool (Fisher et al.,2000).

In rarer cases, a study assessed multiple aspects of reliability. For example, the study by Kepper et al., 2017 presented multi-procedures of inter and intra-rater reliability (observed agreement and kappa coefficient) was compared for four SSO methods: (1) street-level in person; (2) street-level virtual; (3) parcel-level in person; and (4) parcel-level virtual. Intra-rater reliability (observed agreement and kappa coefficient) was calculated to determine whether parcel- level methods produce results comparable to traditional street-level observation (Kepper et al., 2017). This study also used face validity with the parcel-level audit tool (expert panel).

Inter and Intra-rater reliability was also used in virtual audits of streetscapes between trained and untrained crowdworkers conducting walkability audits in Japan with the use of Google Street

View. Having good inter-source and inter-rater reliability virtual auditing was suggested to be a good alternative to reduce costs and enable large-scale recruitment while maintaining reliability (Hanibuchi et al., 2019). However, in the case of Cyprus, it might be difficult to scale-up in the absence of google street view.

11.3.2 Content Validity

The fact that CyNOTes content validity has been confirmed using focus groups and a virtual ethnographic study contributes to trigger further research a neglected topic which, although it has been several times discussed among policy makers, its improvement and implementation it is challenging. The use of virtual ethnographic methods has been previously used in town planning and it is well described by Greed Clara., 1994 (Greed, 1994).

“Ethnography is assisting to understand various urban-human social phenomena” (Greed 1994 p.195). Compared to quantitative methods which usually investigate the “what” or “how many”, ethnography can give answers to “why” something exists, ‘who’ is affected and ‘how’. Very importantly the use of ethnography and in general qualitative methods of any form which is engaging citizens’ opinion for neighbourhood environment are important for addressing people’s needs about their place and neighborhoods.

In the context of developing systematic social observation audit tools some studies were more methodologically centered and others more theoretically centered. The methodological centered studies tried to confirm various forms of validity and the theoretically-centered studies explore the potential of how qualitative methodologies such as “citizen’s participation” develop themes and identifying potential emerging pattern from the results. Both methodologically centered and theoretically centered studies are valuable for supplementing existing but also future research.

The content validity with the use of focus groups was previously used in other studies as well. Two studies used focus groups with a deductive approach (Shareck et al., 2012) (Topmiller et al., 2015). For example, the study by Topmiller et al., 2015 used participatory approaches including focus groups in engaging the community to develop a place-based understanding of physical activity. However, the purpose was to engage the community and not to develop an audit tool. The study by Topmiller et al., 2015 used multiple methods (audits, focus group, sketch mapping) in

engaging the community and youth to develop a place-based understanding of physical activity (Topmiller et al., 2015). Even though this study did not use the citizen's perceptions to develop a tool, it showed the importance of engaging community to gain an in-depth understanding of their neighborhood needs. This study used the audits as a mean to engage the community by using an existing audit tool instead (Topmiller et al., 2015).

Furthermore, another example of content validity, was the study by Parson et al. (2010), which nevertheless focused on the fieldworkers experience rather than citizens, they used a mixed methods approach. The content analysis consisted of parallel and independent coding of qualitative data by researchers to find common themes and categories. Specifically, the study included separate "comments" section within the SSO tool. The comments were documented and independently coded by the research team using content analysis approach from which themes and sub-categories emerged. A focus group was also conducted after the data collection was completed to elaborate on the fieldworking experience, the focus group was audio-taped and transcribed verbatim. This process provided additional information for positive features of the instrument, perceived shortcomings, suggestions for improving the instrument, reflections on fieldwork experiences (including surprises, expectations, the role of social interactions with residents), and perceptions regarding what constitutes an 'appealing' environment. These data served to clarify and expand on some of the themes that emerged during analysis of the written comments (Parsons et al., 2010a); Similarly, another study by Paquet et al., 2010 they did content validity using a theory driven review and expert panel opinion. Lastly, the study by Gullon et la., 2015 performed content validity procedures for the original tool developed in New Zealand using stakeholder interviews and a Delphi study, in order to modify for use in Madrid (Gullón et al., 2015).

The results for this study, content validity took two forms: engaging in focus groups with community professionals and engaging citizens' opinions through the virtual ethnographic study. In fact, both deductive analysis and inductive analysis were employed with the purpose of assessing the CyNOTes per se but also provide a wider understanding of citizens' experience in the process.

The lack of public participation in the process of shaping the built environment has been previously highlighted (Geddes et al., 2019). As Geddes et al., 2019 mentioned in their evaluation

of many urban planning design practices, is that designers make assumptions about users' needs based on existing defined criteria that might improve the quality of space. They also highlight the fact that the use of participation in urban planning and shaping of neighborhoods depends on politics and decisions that local authorities might have in their agenda. The level of participation, the commitment needed, the engagement, the ethics and the coordination of multiple views and incentives is not always considered (Geddes et al., 2019) as they should. Throughout the years, various methodologies have been used that engage participation in urban and/or rural planning and design. For example, 1) Change by Design (Frediani, 2016), 2) Charrette (Lundström et al., 2016), 3) Informal Activities (Hou & Kinoshita, 2007), 4) Iterative and Recursive Prototyping (Aalto et al., 2018), 5) Local Economic Development (Majale, 2008) 6) Participatory Rural Appraisal (Halkatti et al., 2003); 7) Role Playing (Valladares, 2017). 8) Scenarios (Celino & Concilio, 2010), 9) Visual Mapping (Esposito De Vita et al., 2016), Working Group (Al-Nammari, 2013) etc.

Beyond the actual method employed to engage with the local community, a theoretical paper highlights the importance of having citizen's opinions for sustainable local development. This approach will not only improve the sustainability of various decisions but empowers citizens' feelings toward belonging, having control, and of course cultivating collective responsibility over the decisions that affect their neighborhoods and hence their everyday lives (Dassah, 2013).

In general, the use of ethnography through social media is not new. As stated by Wang and Liu in 2021 the use of ethnography in a virtual environment, such as analysing information from various social media platforms did not change anything from the importance of immersion and reflexivity that ethnographies use (Wang & Liu, 2021). The use of qualitative methodologies for understanding the needs of citizens is also highlighted. While quantitative research is more traditionally accepted, the multicultural world and the need for people-centered environments, needs a holistic approach towards the sustainable development of neighborhoods, towns and cities with the use of mixed-methods (Thompson, 2006). Specifically, the use of participatory planning is considered as a fair & democratic approach to take towards urban planning as it engages citizens about various decision taken for their place. The main theme of the inductive analysis of this virtual ethnographic study "Citizen's Voice" can be interpreted both from a bottom up approach (citizen associations, committees, and other similar entities) as well as from a participatory process promoted (adoption of participatory process promoted by institutional actors) aiming not only on

the collective opinions, but activating the need of civil society in the political decision-making process (Farinosi et al., 2019). This is also highlighted by Horgan and Dimitrijevic, 2019 in their study in which they present tools and technologies used for participatory processes in sustainable urban planning, with the framework of social innovation using simple conversations to smart tools that would help adopt a multidisciplinary approach to urban transformation (Horgan & Dimitrijević, 2019). However, as discussed by Horgan & Dimitrijevic, even technological approaches are adopted to engage citizens and have a way to gather the information needed, when decision-making is needed for large scale projects there is no better substitute for the face-to-face engagement with citizens (Horgan & Dimitrijević, 2019). The use of ethnographic studies is highlighted as part of social innovative approach that can play an important role on understanding citizen's needs.

This statement is further reinforced by the principles of “place-making”, which are less about passive and more about active participation in a collaborative process of co-creating shared values, perceptions, memories and traditions that give meaning to and connect people to geographic space (Donaldson & João, 2020). Even in settings with much longer history and stronger tradition of place-based initiatives, community empowerment requires great attention to both breadths as well as the depth of participation (Lewis et al., 2019).

Community engagement is also highlighted in another study by the use of a combination of public surveys and semi-structured interviews with experts. This research study evaluated opportunities and constraints for green infrastructure (GI) that would add value and assist place-making in public realm developments for impact assessment (Donaldson & João, 2020). The study leads to the conclusion that a collective approach is needed. The inclusion and participation addressing health inequalities is also discussed in Lewis et al., 2019 showing that citizen's participation alone is insufficient. Therefore, empowerment through citizen's participation alone is not sufficiently performed and it is an area that needs greater attention (Lewis et al., 2019). Therefore, the questioning of whose “Responsibility is ... and who dares to put a fight with vested interests...” as emerged in the inductive analysis of this virtual ethnographic study was expected. Citizen's may not feel empowered on making decisions or even expressing sufficiently their needs of their neighbourhood. Participatory methods are not only for local governance to take an insight into what people need but are a method to empower citizens on taking control of their environment

as well as having a collective responsibility and action for sustaining and shaping their neighbourhood environment.

Participatory planning and decision making have been reported by various scholars and especially in the recent report of UN-HABITAT 2022 which is an update of 2001 (<https://bit.ly/3FzdV31>) (UN-Habitat, 2021). Local authorities should start considering local people's opinions in their decisions otherwise the sustainability of their actions is questionable .

Participatory and participation as well as collective engagement can be implemented through numerous ways of qualitative research methods that can capture citizens experiences, needs and expectations. Such methodologies have been described. For example, documentary investigation, participant observation, focus groups, and interviews were able to capture unexplored features, dimensions, and living experiences in the social body in the Municipality of Peccioli, an ancient medieval village in Tuscany, Italy (Farinosi et al., 2019). In addition, an interesting methodology is a qualitative GIS (QualGIS) method used by Battista and Manaugh (in 2019)(Battista & Manaugh, 2019). The QualGIS methods helps understand more insights into the pedestrian environment which are not possible to be understood by assessing only the physical features. Sentiments and senses from walking interviews in a qualitative geographic information system assists in shaping conclusions about the walking environment by letting participants describe those silent features of their walking experience. This methodology can incorporate various qualitative methodologies such as multimedia, transcripts, and open-ended reflections that allow triangulations of data that yield an understanding of the habitual use of the neighbourhood environment (Battista & Manaugh, 2019).

Participatory methods for urban planning have been also recently documented in the UN-Habitat report in 2021, where 357 cities are using participatory planning methodologies and collecting spatial data to foster sustainable urban development and enhance cohesion between displaced and host communities. Specifically, the report is referred to the localization of the Sustainable Development Goals (SDGs) and how cities can become more prepared for climate change and more resilient or any future pandemics (UN-Habitat, 2021).

Therefore, can be concluded that the traditional way of decision-making and the formulation of various policies for the built, physical, and social environment is not of “one person’s” decision

neither “one department’s” decision but a holistic approach should be considered. Participatory and qualitative methods can supplement any quantitative measurements and the subjective opinions of citizens about their neighbourhood environment can enhance the understanding of the insights of the neighbourhood environment while this study employed a limited range of quantitative methods with the purpose of accessing and shaping the audit tool, future studies should focus on understanding citizens experiences with the adoption of participatory and other qualitative research methods.

11.3.3 Perception of neighborhoods environment against audits.

The concurrent validity of the tool has been confirmed assessing citizen’s perceptions of their neighborhood environment using the Place Standard tool against the CyNOTes audits. Except for social aspects, residents did not rate the built and physical environment favorably. Among the ‘Place Standard’, the question about “Influence and sense of control” was rated lowest in the perception survey. This matches with the nuclear topic of the virtual ethnographic study that citizens want their voices to be heard.

In addition to the door-to-door survey, an online survey that was performed had the advantage of reaching a larger number of people. Nationwide, the case of this study, there was participation from all over the island, even though the online survey was actively promoted for only two weeks. While this may be suggestive of the potential for scaling-up in the context of a needs assessment exercise, it is highly unlikely that online surveys can promote a sense of participation, especially as a stand-alone activity as in our study, compared to a structured and iterative process driven by a coalition of academic institutions, local authorities, and advocacy groups in the context of wider community engagement and development. Unfortunately, in our study, we did not gather feedback on the actual usefulness of the Place Standard. Future work should consider using the Place Standard in the context of participatory learning and action research among diverse community groups.

The social gradient was not always reflected in the perception survey compared to the audits. The audits indicated a pattern of less favourable conditions along the socioeconomic continuum confirming the social gradient, compared to the perception survey whereby often a U shape pattern emerged. Residents in more disadvantage neighborhoods did not rated conditions in their

neighbourhood. This might have indicated differential expectations (expectation bias) of their neighborhood environment across social groups by using perceptions surveys. Previous studies have explored the discordance between perceived and objective neighborhood data. For example, the study by Bailey et al., (2014) used the Survey of the Health of Wisconsin, using a self-administered questionnaire against the Wisconsin Assessment of the Social and Built Environment audit tool which assessed the built environment features around each participant's residence. This study concluded that perceived and objective neighborhood environment data are not interchangeable and the level of discrepancies depends by citizens perceptions (Bailey et al., 2014); However, it is not clear whether the interview method might have affected the findings through a process of social desirability (e.g. citizens' being reluctant to rate their neighbourhoods unfavourably). Nevertheless, the fact that all participants across, the SED continuum gave generally low ratings does not confirm this assumption, hence, it is more likely that expectation bias process might also be at play, whereby residents' in neighbourhoods with objectively less favourable conditions might have lower expectations for their neighbourhood environment , a phenomenon that requires further investigation.

In addition, the study by Roda et al., (2016) also explored the extent to which citizen's perceptions reflect objectively to audit tools of the neighborhood environment (Roda et al., 2016) with discrepancies to be identified in more subjective features such as "aesthetics" compared to more objective features of existence or not the existence of specific features(Roda et al., 2016). Furthermore, a systematic review on this issue, focusing only on physical activity outcomes, found generally low to moderate agreement between objective and perceived neighbourhood environment measures across 85 studies, concluding that these are not inter-changeable and may represent different constructs (Orstad et al., 2017). A recent study that designed a new questionnaire on active mobility, based on existing questionnaires and a typology of factors developed from the interviews with citizens, identified discrepancies whereby even standard items commonly used in walkability questionnaires, such as community life or even quality of sidewalks, were not strongly reflected in people's perceptions (Hess et al., 2017). While studies identified several socio-demographic as well as environmental factors that may relate to this disagreement, reported associations were not always consistent across studies. Other than highlighting that both approaches are necessary and complementary, the review concluded that it is important to explore

the way different environments may influence perceptions and the extent to which these may be differential across sociodemographic groups (Orstad et al., 2017). Interestingly, another study combined audits with citizens' perceptions is the study by Meyer et al., 2020. In this study the researchers identified large difference between systematic observations and perceived importance for identifying the Physical Activity resource priorities such as the quality and quantity of features, amenities, and incivilities that can influence Physical activity. High discordance between audits and perceived important were the sidewalks, non-street lighting, and noise, trails/paths, fenced-in open fields, drinking fountains, and litter. However, despite the large differences identified, the (PA Space Methodology for Assessment and Prioritization) PASMAP methodology, provides an evidenced-based tool for priorities for planning and advocacy (Umstattd Meyer et al., 2020).

While in recent years, several municipalities and communities across Cyprus have revisited their approaches and have started to introduce community-led neighbourhood groups, it is fair to say that “community engagement”, more often than not, takes the ‘traditional’ form of public presentation of the local authorities’ planning with limited input or feedback from citizens, even though these sessions are commonly termed public consultations due to their open-call nature.

Nurse-Bray (2019) gives a detailed account of the principles, processes, tools and skills needed for community engagement (Nurse-Bray, 2019), which is best understood as a continuum according to the International Association for Public Participation (www.iap2.org) that ultimately depends on the level of control in decision-making and ranges from providing information to the public about a problem and potential solutions at one end through consultation, involvement, collaboration and empowerment at the other end. Given that the PCT's main purpose is to be used as a community engagement and “place-making” advocacy tool, it offers an opportunity to re-think, test and restructure previously ineffective processes in Cyprus (Nurse-Bray, 2019).

As part of the SPOTLIGHT project, virtual audits using Google Street View of 60 neighbourhoods across 5 European countries were compared to self-reported responses of around 6000 people across these neighbourhoods (Roda et al., 2016). Focusing on 10 obesogenic features in the neighbourhood environment, the study found higher agreement in the case of the service environment (e.g. presence of food outlets, recreational facilities, and other destinations), while there was a greater mismatch in features with a higher degree of subjectivity pertaining to the built

or physical environment (e.g. condition of pavements, litter and graffiti), with residents, for example, perceiving a highly walkable neighbourhoods by objective criteria as less walkable or vice versa. Noting this discordance, the authors highlight the importance of factoring residents' perceptions beyond objective measures in community assessments since it is ultimately perceptions and their determinants that are important, which may include both socio-demographic and psychosocial factors. In this study, people who reported financial problems were consistently more likely to rate their neighbourhoods unfavourably. This likely reflects actual disadvantaged neighbourhood conditions, also supported by the lower scores recorded in areas with a higher socioeconomic disadvantage as indicated by census indicators.

Previous studies have also identified that perceptions can be affected by personal circumstances. Kamphuis et al (2010) showed that across 14 neighbourhoods in Eindhoven, Netherlands, objective (audited) neighbourhood conditions largely explain the perceptions of unattractiveness and unsafeness among lower income groups, however mental well-being and psychosocial factors, including perceptions of neighbourhood social cohesion, also contributed (Kamphuis et al., 2010). A qualitative study of the lived experience of 28 adults across five diverse neighbourhoods in Brussels developed a socioecological conceptual framework of how citizens experience and perceive their residential environment (Lauwers et al., 2021).. The study delineated complex and bi-directional interactions between neighbourhood aspects and mental well-being that involve an inter-play of both physical and social contextual aspects of place alongside institutional (e.g. role, responsibility, and responsiveness on behalf of local authorities) and individual factors, including personal life and socio-economic circumstances, highlighting, even more, the need for participatory approaches both in gaining an in-depth understanding of citizens' experience of engagement or disengagement as well as a process in itself in cultivating a sense of community. Poortinga et al (2017) found that residents' attachment to neighbourhood was predicted by the overall quality of neighbourhood environment (audited using the REAT 2.0 tool) even though, interestingly, it was property-level (related to people's personal space such as the condition of houses and front yards) than street-level (related to public spaces) indicators that were more predictive (Poortinga et al., 2017).

Besides identifying the potentially important distinction between the public vs private realm of "place" and what people perceive as their "neighbourhood", this also raises questions as to the

determinants of attachment, as a pre-perquisite of taking action. In this study, the Place Standard's "Identity and sense of Belonging", which is the item that would best tap on attachment, showed positive but weak associations with other PST items, except for "social contact". Furthermore, while the 'social environment' construct (these two items) was inversely associated with the subjective assessment of neighbourhood's social position, the observed variability in the scores did not appear to be associated with any individual- or area-level variables. Neighbourhood social cohesion and attachment are much more complex concepts with important nuances that cannot be adequately captured by one item. Hes et al (2019) makes a distinction between "sense of belonging" which reflects the relationship between one's self with place versus "place attachment" which reflects the collective relationship of the community with place, and thus its identity (Hes et al., 2019). Citizens' participation in general, all Place Standard items received moderate or low ratings, with the exception of safety. It is important to highlight that "influence and sense of control" was the item that was rated lowest among the participants.

Due to the inherent volunteer bias in our study, and in the absence of relevant research evidence on this issue from Cyprus, no direct inference can be drawn as to whether the low sense of influence and control reflects the widespread perception of citizens' in Limassol & Cyprus respectively. It should be noted, however, that this finding appears consistent with the only other comprehensive implementation of the Place Standard tool in Cyprus we are aware of. Specifically, the Action Plan for the historic centre of Nicosia developed by the Cyprus Energy Agency as part of the Sustainable Development of Historic Areas (SUSHI) project of the European Climate-KIC action (Cyprus Energy Agency, Nicosia, 2021). Influence and sense of control was also rated particularly low among the interviewed sample of 221 people who either live, work or visit the area, and second lowest to Natural spaces, perhaps not surprising given the inner-city profile of the surveyed area.

Also, consistent with our findings, aspects of the built environment were also rated generally lower by the participants in the SUSHI study while, similarly to our findings, the social environment, as well as sense of safety, were the items rated comparatively higher compared to all the rest. While drawing direct comparisons across different settings should be avoided, it is also worth mentioning that in a similar study using the Place Standard Skopje, North Macedonia,

participants also rated this aspect particularly low relative to other dimensions and second only to Traffic & Parking (Gjorgjev et al., n.d.).

Specifically, in that study, Gjorgjev et al (2020) reported that as many as 55.4% of the 278 participants identified the need for large improvements in this aspect (i.e. score of 1 or 2 on the 7-point scale)(Gjorgjev et al.,2020.) a percentage comparable to the 60.3% of participants recorded in this study. Interestingly, the Skopje study juxtaposed the rating of an online Place Standard survey ratings with the ratings obtained during focus groups with citizens and municipality officials. Perhaps not surprisingly, the authors reported generally higher average scores across nearly all dimensions among those participating in focus groups compared to the online survey, including influence and sense of control. While it is not clear from the study's report whether the higher level of satisfaction among focus group participants can be attributed to the actual process of participation itself, the authors concluded that the use of the Place Standard "increased knowledge and confidence among citizens and enthusiasm for active involvement in decision making".

Another study exploring the citizen's perceptions of walkability and determinants of walking behavior of seniors in Toronto Canada, used mixed methods approach such as audits with the SWEAT-R as an objective measure and focus groups, go-along interviews and traditional interviews with seniors across the audited neighborhoods. It is highlighting the importance of engaging citizens cultivating a feeling of belonging to a community and a sense of voice and control (E. Lee & Dean, 2018).

11.3.4 Social gradient in neighbourhood environment and environmental inequity

CyNOTes was used to profile the variability and inequity in the urban neighborhood environment in the city of Limassol. A social gradient of more adverse features in the neighborhood environment was documented with neighborhoods with lower educational attainment and higher Socio-economic disadvantage scoring lower in general.

Few studies (Marco et al., 2017),(Malecki et al., 2014) focused on the social gradient and showed that there is a clear more adverse environment in the neighborhoods with higher SED as observed in this study. The study by Marco et al., 2017 assessed correlations between the audit

scores and socioeconomic and criminality indicators and it indicated that the general neighborhood disorder factor was highly correlated with socioeconomic indicators. For example, higher scores in the general factor were related to lower neighborhood education level and lower cadastral property (Marco et al., 2017). The physical decay factor was negatively related to cadastral property value and education level. Therefore, high scores in the physical decay factor tended to co-occur with lower cadastral property values and lower education level (Marco et al., 2017).

In addition, the study by Malecki et al., 2014 investigated the prevalence and density of features which were estimated for strata formed according to several sociodemographic and urbanicity factors (Malecki et al., 2014); higher prevalence of non-residential destinations and sidewalk density were observed in residents of lower SES/high EHI census block groups (Malecki et al., 2014 p. 8). Confirming the ability of such tools to explore for the social gradient phenomenon within cities.

Another study by Taylor et al., (2012) showed that the low-income neighbourhood had a significantly greater density and land use diversity than the high-income as well as middle income neighborhoods had significantly less physical disorder and incivilities than the low-income neighborhoods. (W. C. Taylor et al., 2012); CyNOTes is documenting the social gradient in most domains and several socioeconomic disadvantage indicators and that was not always replicated in the perceptions survey.

11.3.5 Predictive Validity –Association with Health-related Quality of Life.

Predictive validity was confirmed with exploring the association with Health-related Quality of Life which was assessed in a previously completed study, in the 45 audited neighborhoods. The Physical and Mental Component Score of the SF-36 Health-related Quality of Life questionnaire among residents aged 45-64 (N=450) showed a social gradient across both tertiles of neighborhood according to census-based area-level socio-economic disadvantage indicators and as well as CyNOTes Domain scores. These associations persisted even after adjusting for gender and age and further adjusting for social position (education and income). It was observed that in better-off neighborhoods both physical and mental component score of health-related quality of life has highest scores. It is important to note that beyond the expected associations with SED indicators. This was also observed when neighbourhoods were re-classified according to their audit ratings

across these 9 different domains. A social gradient also emerged in terms of quality of life scores. Higher QoL scores were consistently recorded in the better-off neighbourhoods, even though the worse-off areas are not always the ones with the lowest score or did not appear that dissimilar from the middle category. In neighbourhoods with adverse features residents reported lower physical and mental health-related quality of life.

The socioeconomic inequality in mental well-being has been also confirmed by other studies (Mitchell et al., 2015);(Dimitrova & Dzhambov, 2017). For example, the study by Mitchel et al., (2015) emphasized certain neighbourhood characteristics which have an impact on mental well-being such as good access to green/recreational areas compared with those with poorer access (Mitchell et al., 2015); A systematic review also highlights the importance of built environment and neighbourhood characteristics on physical and mental health. Suggesting that neighborhoods that are characterized as more walkable, either leisure-oriented or destination-driven, are associated with increased physical activity, increased social capital, lower overweight, lower reports of depression, and less reported alcohol abuse (Renalds et al., 2010).

Other studies also confirmed predictive validity measuring different outcomes. For example, the study by Alfonzo et al., (2014) explored association between built environment features and walking and obesity in China as they examined income and obesity in urban areas . The study by Boarnet et al., (2011) also assessed how well the IMI predicts physical activity and walking as well as how density, street pattern, pedestrian infrastructure and variety of social and economic factors affect walkability. The study by Sallis et al., (2015) measures walking or bicycling for transportation and leisure or neighborhood physical activity with age-appropriate surveys. Furthermore, the study by Su et al., (2014b) also assessed the predictive validity of the tool since they used a multi-level model to assess the extent to which individual (subjective) perceptions of environment and neighborhood level (objective) audit measurements are associated with physical activity measures after adjusting for Socio-economic status and BMI as confounders. A study using also the IPAQ questionnaire used it as a predictive validity procedure assessing walking and bicycling for transportation in already audited neighborhoods that used systematic social observation which consistent of six dimensions about land use, public transportation, streetscape, conditions and aesthetics, places for walking and bicycling, and social environment. In this study

only, streetscape item from the tool was association with walking and bicycling for transportation in adults (Lopes et al., 2018).

Furthermore, several other studies expected association with health outcomes by the studies themselves as a predictive validity procedure. The focus is different in each study depending on the aspect of the environment assessed, especially if a domain –specific audit tool is used online the present study which developed a generic tool. Predictive validity even if not mentioned in the studies referenced above as such, it was the association of the audit tool with a health outcome. For this study it was measured against health-related quality of Life. The Physical and Mental component score showed the social gradient that exists as almost in all CyNOTes domains more affluent neighborhoods do better. For instance, the study by Andersen et al.,(2013) measured lung function against environmental neighborhood features. Or against local crime data (Milam et al., 2016b); Predictive validity was also confirmed against survey data on ‘neighborliness’ operationalized as a 6-item scale tapping on reciprocity and trust, and adjusting for census or other aggregate level variables of socio-demographic environment (Wilkerson et al., 2012); against residents’ attachment to neighborhood (Poortinga et al., 2017); against outcomes of interest from resident and teacher surveys, such as prosocial and antisocial behavior as well as healthy weight among local children (Odgers et al., 2012a);

11.3.6 Conclusion

In summary, the profiled variability in urban neighbourhood environment of Limassol confirmed the existence of a social gradient of adverse features while it was observed that certain population groups are at a disadvantage. There is also a social gradient in physical and mental health-related quality of life and this was consistent in neighbourhoods with better scores across nearly all domains that CyNOTes captured. However, the social gradient was not always reflected in the perception survey, indicating the need for both approaches (field audits and perceptions surveys) to be used in parallel in the context of community assessment. In addition, the description of neighbourhood problems by citizens tapped directly or indirectly on CyNOTes typology. In addition, having “Influence and Sense of Control” rated lowest in perception survey, which was consistent with the nuclear theme of “Citizens’ voice” which emerged from the inductive content analysis of residents’ lived experience. The perception survey identified that social aspects were

not rated unfavourably, while, the built and physical environment of neighbourhoods was not rated equally favourably by the residents.

This study is a methodological study that developed a standard, valid and reliable audit tool. It would serve as a supplementary tool to profile the health-related urban neighbourhood microenvironment more importantly; the study can trigger and widen conversation among the local research community and policy-makers about health and place. This study is supporting the content validity of the tool through the focus groups and virtual ethnographic study, also through the use of an expert panel the face validity is confirmed, the concurrent validity is confirmed by the perception survey, the predictive validity is confirmed by the health related quality of life physical and mental components associations, the known-group validity-criterion validity against different socioeconomic indicators and factorial construct validity for higher-order structure.

12 IMPLICATIONS FOR RESEARCH AND POLICY

12.1 Implications for Research

CyNOTes holds the potential to trigger the development of further research related to community needs assessment and the link between place and health. In addition, regarding future research, this methodological study shows how participatory methods can be used to enhance research in Cyprus. It is the first attempt to capture environmental inequities in the Limassol city of Cyprus. This study developed a standard, reliable, and valid tool. Despite, some of the limitations identified the study provided a snapshot of the health-related micro-environment of neighbourhoods in Limassol.

The CyNOTes is a generic tool that taps onto various features of the physical, built and social environment, therefore, the methodology can be used to create more feature-specific tools, for example, a tool that will assess the walkability of the neighborhoods or a tool that will assess the obesogenic environment or tools that will be able to assess the cyclability or routes to schools etc or even a tool that will assess the social environment. Furthermore, exploring the extent of spatial inequities might be the main purpose of the present tool, however, the different items/metrics that are being collected using CyNOTes can be combined with different kinds of already existing measurements to create composite epidemiological indicators. For example, the combination of different variables can create an indicator of how friendly a neighborhood might be to children or new mothers or disable people in wheelchairs etc. In general, being able to quantify the neighbourhood characteristics, and in general the micro-environment, can provide a “snapshot” that with any different kind of census or other indicators measurements, might not be possible to be capture.

In the literature, there is a variety neighbourhood audit tools. A number of studies (Parsons et al., 2010a),(Dunstan et al., 2005)(Dunstan et al., 2005),(Caughy et al., 2001) (St . Michael ’ s Neighborhood Observation Data Collection Tool, 2006) have developed generic audit tools where the tool was tapping on features of physical, built and social environments, while other studies developed tools focusing on features of a particular outcome- such as obesity, diabetes and hypertension, therefore focusing on micro-environment features that encourage physical activity

levels (Boarnet et al., 2006) such as the pedestrian infrastructure and walkability (Pikora et al., 2002), bikeability (Clifton et al., 2007). Other studies were focused on different health outcomes such as depression and mental health; therefore, they were focusing on the social environment with features related to social cohesion and collective efficacy and physical disorder (Milam et al., 2016b). Furthermore, some studies were developed aiming to tackle issues such as improvement of quality of life of a specific age population senior (Chaudhury et al., 2011)/young population for safe routes for school (Adkins et al., 2012).

The reviews of Schaefer-McDaniel et al (Schaefer-McDaniel et al., 2010) and Nickelson et al (Nickelson et al., 2013) suggest that due to the cultural-specificity of different environments (i.e. North American Vs European cities) it would be difficult, if not meaningless, to have a universal tool. This also means that it would be difficult to adequately compare findings across studies due to the wide variability in urban environment, while some features important to community health may be universal, a number of features may be country specific. However, despite the inability to adopt a universal neighborhood audit tool, the large variability in existing tools provides an opportunity for researchers to explore what aspects and features may be a relevance in different cultural settings in order to develop ‘tailor made’ audit tools that best capture the country –specific physical, built and social environment which may be related to the health of residents.

An indication of the growing interest in neighborhood audits is the fact that a recent review has identified 13 studies that used virtual neighborhood assessment methods(Charreire et al., 2014). Unlike other European cities, a virtual walk-through using Google Street View is currently not possible for any of the Cypriot cities. Nevertheless, the possibility of carrying out neighborhood assessments remotely offers a great potential for scaling-up this method. In the recent years, several more neighborhood audit tools have been developed since the last published reviews.

Mixed methods methodology is currently emerging for the development and evaluation of the Health Effects of specific neighborhood infrastructure. For example, the ‘Salut Als Carrers’ (Health in the Streets) study, a study of the evaluation of the Health Effects of Superblock in Barcelona aims to explain the various interventions in different neighborhoods in Barcelona using

quasi-experimental and health impact assessment (HIA) approaches. Such approaches were quantitative methods (pre-post health surveys, pre-post environmental measurements, pre-post environmental walkability measures (MAPs tool) , use of public space and physical activity (SOPARC tool), pre-post traffic injury measures, the comparison of pre-post assessment with previous HIAs) and various qualitative studies to analyze citizens perceptions (focus groups ,ethnographic observation and semi-structured interviews) (Palència et al., 2020). Therefore, CyNOTes gives an opportunity/need to develop similar methodologies in Cyprus.

As the UN-Decade of Healthy Ageing 2021-2030 in a Climate-changing World explores the relationships between place and health since people age in places, measuring the built environment for healthy aging is very important. A recent review of such neighborhood audit tools has raised the importance of how environmental and specific neighborhood/community features can support the aging populations by gathering the different characteristics of the built environment that various systematic social observations tools are assessing (Kan, Forsyth, & Molinsky, n.d.)(Kan et al., n.d.-b) . Other studies, highlighting as well the importance and the need for healthy aging, tried to engage older adults to advocate for age-friendly walkable communities in a pilot study where seniors were taught to evaluate pedestrian environments using the validated MAPS-mini audit tool. The engagement of the seniors to evaluate their street environment using systematic social observations served also as an advocacy group tool and created an awareness of the importance that the built environment has for healthy aging (Patch et al., 2021). Therefore, CyNOTes can show the methodology on how to develop such feature specific tools for Cyprus.

12.2 Implications for Public Health Policy and Practice

Neighborhoods audits can trigger and widen conversation among the local research community and policymakers about health and place. Indeed, the different validation procedures and the various data collection procedures have attracted the interest of the Cyprus W.H.O healthy cities network. Actions towards the concept of “Place and Health” as well as the engagement of decision-makers towards healthier neighborhoods and improvement of health-related quality of life in urban settings have already been initiated.

Since CyNOTes captured variability in neighbourhood environment across as different levels of socioeconomic disadvantage, the study holds the potential to initiate a public debated about the social determinants of health and the need for Health in all Policies (Valentine et al., 2016)(Valentine et al., 2016) . Public Health is nowadays a transdisciplinary field that needs the engagement and sensitization of various key actors for improving the health-related quality of life. While the focus in this study was methodological study it might be able to create awareness about the importance of neighbourhood micro-environments, for health the indicators that still can be developed and used for further research. The neighbourhood environment has been shown to play a crucial role in mental, social and physical well-being and therefore, already, a lot of countries are taking actions towards improving the quality of life in the neighbourhood environment. The use of participatory methods as well as the collective action that is needed towards achieving the sustainable development goals can also be highlighted in this study.

CyNOTes is adding to the literature an objective and valid generic tool suitable for the Cypriot-Urban physical, built and social environment, while it might also be relevant for countries with similar neighborhood morphology and infrastructure.

Audit tools do not replace other community needs assessment methods, but can provide useful supplementary method to allow for a more comprehensive profiling of a community. This will allow planning and implementation of relevant neighborhood regeneration programmes and the formulation of targeted measures and interventions based on actual observable needs of the community. However, the most important anticipated benefit of the study is in terms of advocacy. The tool will offer citizens, either as individuals or as organized groups a means by which to showcase in a systematic and comparative way the needs of their own community.

This is the first study in Cyprus to highlight the connection between place and health .The use of qualitative methods showed to researchers what is behind the numbers and even though many of the citizen's opinions might be biased or specific requests might need a different legislative reformation, their voice had to be heard, documented and taken into consideration for a possible solution/action. Lastly, it draws attention to the need for participatory research as a tool of empowerment as well as for building resilient and sustainable communities.

The study has been included in the activities of the Office of the Network of the World Organization of Healthy Cities Network (WHO Healthy Cities Network) of the Ministry of Health of Cyprus, with which a relevant memorandum of cooperation has been signed. Although Cyprus participates in the WHO Healthy Cities Network, so far no municipality in Cyprus has officially joined the network, which requires a political commitment from the local government recently, two municipalities (Limassol and Geroskipou) applied for the current programme and is expected to develop their healthy city profile and strategic planning.

12.3 Further development of the tool

This study is the first attempt to record the health-related environment of the Cyprus neighborhood. The main deliverable of this study is the CyNOTes tool itself, which will be a valid, reliable, and culturally adapted to the specifics of the city of Cyprus, a tool to be offered for future use by the competent services of both Municipalities in the city of Limassol but also more widely than other Municipalities of Cyprus or other cities of the Mediterranean in the context of the needs assessment of the communities through a comprehensive, systematic and comparative approach. The development of relevant virtual web browsing tools, such as Google Street View, now allows evaluation to be done remotely, offering great scale-up in cities where this is possible and also offers the potential for crowd sourcing data.

In addition, the length of the tool (tapping on 151 neighbourhood features) make it challenging to use in paper-and-pencil form; thus, future implementations should look into developing a digital version. This will not only help to improve the logistics of the neighbourhood audits but also the data analysis procedures. In addition, a digital version would allow scaling-up

in the context of research to a larger number of neighbourhoods but also potentially in the context of neighbourhood advocacy with the real-time use by citizen's themselves.

Future research should be focusing on adopting participatory action research and learning methodologies. In the context of further developing CyNOTes, such methodologies would be ideal in exploring citizens' perceptions and explore the extent to which specific neighbourhood features might be perceived and expressed as positive or negative which perhaps might vary between different genders (Leung et al., 2010), age and population groups. This can be in the form of focus groups, qualitative research on specific settings such as schools, hospitals, geriatric centers or even in field studies in select neighbourhoods.

The need for participatory research (and innovative methodologies such as photo voice, or photo-diaries) while developing the new version of CyNOTes is particularly highlighted since the actual lived experiences of residents may vary substantially across different population groups while even the meaning different individuals may assign to the same features may also vary substantially. The differential experience of citizens should also consider the gender dimension explicitly in relation to socio-economic disadvantage.

Furthermore, it might be important for further development of CyNOTes, or any other neighbourhood assessment tool, to also consider the potential 'negative' as well as the 'positive' aspects of the neighborhood and influences that such neighbourhood features might have on residents' well-being. Future community studies would benefit by incorporating other relevant concepts of the psycho-social environment of a neighbourhood in their assessment (for instance, social capital, neighbourhood attachment, identity and belonging and so on), While this was beyond the aims of the present study, such evaluation may be necessary in order to explore aspects of a community's social environment, which admittedly is much harder to capture in a field audit compared to the readily visible features of the built and physical environment.

13 CONCLUSIONS

This community-based study evaluated the feasibility, reliability and validity of a comprehensive and systematic approach to community assessment. This is the first study to capture the health-related environment of the Cypriot urban neighborhood. The study developed and assessed a culturally-relevant audit tool that can provide supplementary information about health-related aspects and features of the Cypriot urban neighborhood environment. Alongside more traditional approaches, such as census-based indices, GIS measures, quantitative residents' perceptions surveys and qualitative studies, CyNOTes can provide a more comprehensive neighborhood profile and thus more accurately assess the neighborhood characteristics and their association with community health. Indicatively, the WHO Health Cities movement is promoting the integration of such methodological approaches in profiling a neighborhood in the context of better understating health inequalities at the local level. In fact, it is a recommendation of the WHO Network of Healthy Cities in the context of the expansion of methodological tools as they offer valuable, and complementary to other sources, information on the natural, structured and social environment of the neighborhood. The design and implementation of relevant programs for the revitalization of the neighborhood environment can be based on the data as they will allow prioritization of needs, rational allocation of resources, and formulation of targeted measures and interventions based on the real needs of the community. The most important benefit lies in drawing attention to the very concept of the neighborhood and in the significant expansion in the understanding of the role that the neighborhood environment plays in ensuring and promoting the health and quality of life of the inhabitants.

Community health and community health inequalities are not prominent features in the public health debate in Cyprus. Providing the first quantifiable evidence of the unequal experience of citizens, it is expected that the study will trigger and widen the conversation among the local research community and policy-makers alike about the wider social determinants of health, and the role of the neighborhood environment in promoting health and health-related behaviors. The main achievement is the CyNOTes tool itself, which offers the potential for scaling up in the context of needs assessment and health surveys in an integrated, systematic and comparative approach, designing targeted neighborhood improvement programs and policies as well as an

advocacy tool. Citizens want to have a “voice” to express their concerns about neighborhood problems as well as to participate in decision-making. Participatory research and approaches should be the core element for the sustainable development of urban cities.

14 KEY MESSAGES:

- A social gradient of adverse neighbourhood environment was observed using CyNOTes.
- Audit tools provide supplementary information about community environment not captured in census-based indices.
- Based on the Place Standard tool, Limassol residents' rate social aspects of their neighbourhood environment more favourably than aspects of the built and physical environment.
- Neighbourhood observed-based audits, independent of residents' perceptions surveys can supplement each other in city health profiling.
- Clustering and social gradient of adverse neighbourhood features.
- Lower physical and mental health-related quality of life in neighbourhoods with lower educational attainment and more adverse features.
- A virtual ethnographic study of citizens' comments on social media offers an in-depth understanding of the neighbourhood experience.
- Citizens want to have a "voice" to express their concerns about neighbourhood problems as well as to participate in decision-making.

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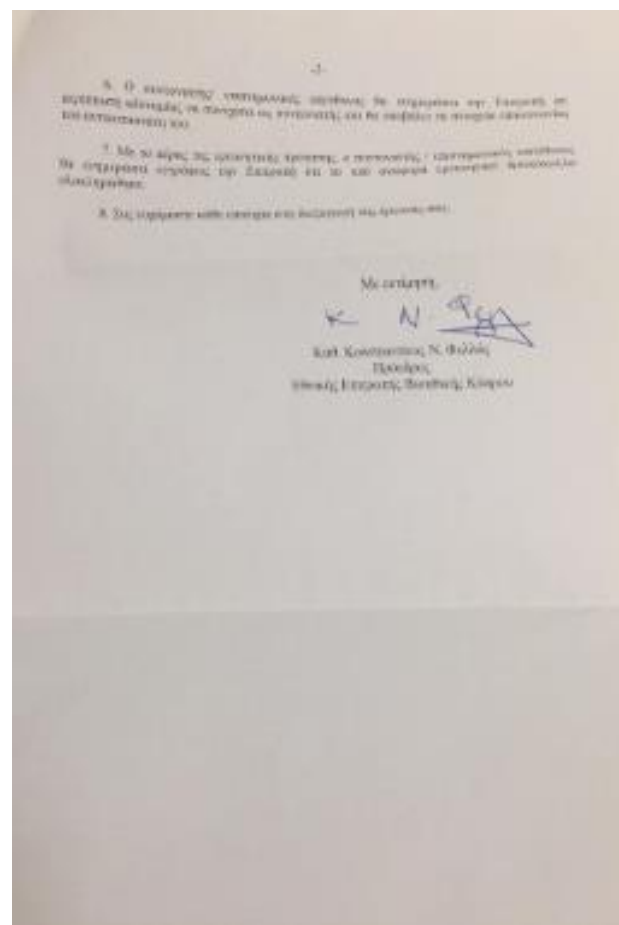
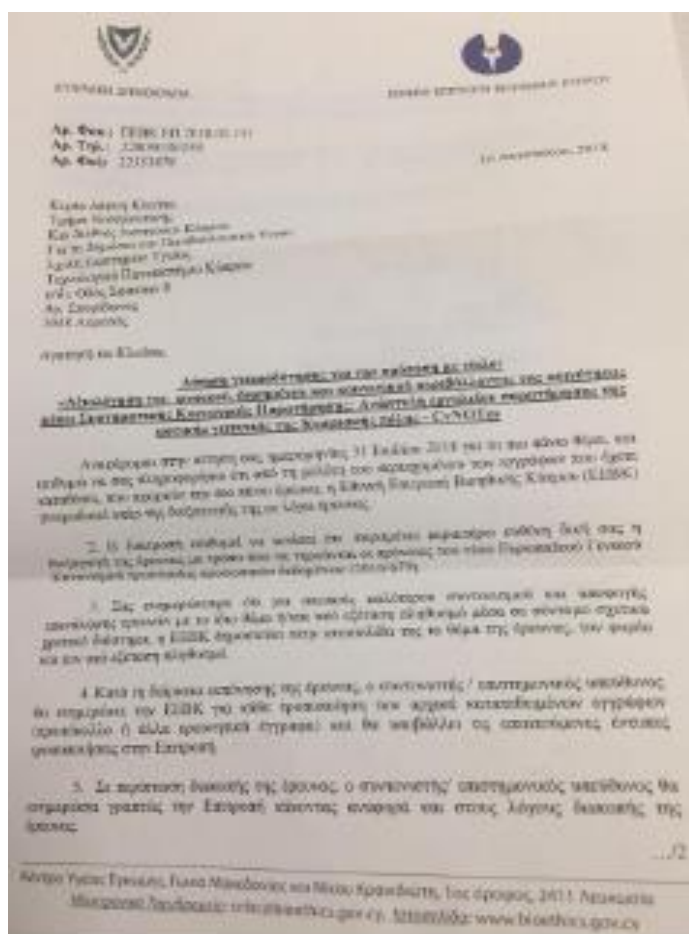
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16 APPENDICES

APPENDIX I: Ethical Approval



APPENDIX II: Typology of Domains for CyNOTes v 1.0

Domain taxonomy for the classification of the 123 items of the first draft of the CyNOTes v 1.0

1 Amenities for outdoor public spaces	2 Architecture/building characteristics	3 Barriers	4 Cycling environment	5 Ethnic identification	6 Land use	7 Landscaping/nature features
<i>Def: conveniences and comfort features in outdoor public spaces</i>	<i>Def: building attributes, permanent, not easily changed</i>	<i>Def: obstacles in the environment, difficult to overcome or off-putting to pedestrians/cyclists</i>	<i>Def: features that hinder or promote an environment conducive to cycling</i>	<i>Def: displays, signage, murals tailored to a specific ethnic group</i>	<i>Def: functional purpose of land segments</i>	<i>Def: characteristics of surrounding scenery</i>
B28,B35,B37,F10,F11	B56,B57,D4,D5,D14,D15,	B22,B23,B24	B41,B42,B43,B44,	B49,B50,B51	A1, A2,C1,C2,D1,D2,D3,E1	B29,B30,B31,B34,
8 Maintenance/appearance	9 Neighborhood identification (incl. Views/ Enclosure)	10 Parking & driveways	11 Pedestrian environment (incl. Steepness)	12 Physical disorder	13 Recreational uses/ public spaces	14 Safety
<i>Def: current condition of buildings, grounds, public spaces, that are not permanent, can change</i>	<i>Def: unique features that give definition to a particular neighborhood</i>	<i>Def: parking vehicles</i>	<i>Def: features that hinder or promote an environment conducive to pedestrian activity</i>	<i>Def: characteristics that render environment unsightly and potentially unsafe</i>	<i>Def: destinations and facilities open to the public</i>	<i>Def: physical indicators of level of protection from harm one might expect</i>
D6,D7,D8,D9,D10,D11,D13,D14,D25,D26,E3,E8,F12,F13	B45,B46,B47,B48,D23,E6	B10,B11,B12, D12	B7,B8,B9,B13,B20,B26,B27, H15	B14,B15,D24,E9,H1,H2,H3,H4,H5,H6,H7,H8,H9,H10	B36,E2,F1,F2,F4,F5,F6,F7,F9	B52,D16,D17,D18,D19,D20,E4,E5,E7,
15 Sidewalks	16 Signs/messages	17 Smell/ pollution/ noise	18 Streets/ traffic	19 Social disorder	20 Social Contact	21 Social Profile
<i>Def: characteristics of paved walking paths</i>	<i>Def: visible signs and advertisements</i>	<i>Def: experienced levels of noise, pollution and smell</i>	<i>Def: features of paved vehicular paths</i>	<i>Def: People's observed activity and behaviours, that indicate social fragmentation</i>	<i>Def: People's observed activity and behaviours, that indicate positive social contact and/or social integration</i>	<i>Def: Profiling of people and activity in the neighborhood (PROFILE ONLY, no scoring)</i>
B16,B17,B21,B32,B33	B53,B54,B55	B38,B39,B40,D21,D22,D27,H11,H12,H13,H14,	B1, B2,B3, B4, B5,B6,B18	B19,G6,G7,G18,G19,G20,G21,G22,	F3,F8,G1,G2,G3,G13,G14,G15,D16,G17,	B21,G4,G5,G8,G9,G10,G11,G12,

APPENDIX III: Research Context of Studies

Study Reference or literature family: <i>Country AND city/cities or neighborhood/s</i>	#	Main focus of study (Part of bigger study)	Tool Name <i>Number of domains, subdomains and items</i>	Domains assessed (and items in each domain if mentioned)
Adkins, A., Dill, et al.; (2012). <i>(USA) Portland Oregon -Lents</i>	1	Environmental Audis and survey-based respondent mapping tool for micro-scale built environment (Part of Bigger Study)	<i>New Developed audit tool that combined elements from previously developed instruments (Michael et al., 2006; Clifton et al., 2007)</i> 9 domains 50 items	• Street characteristics • Adjacent land use • Pedestrian environment • Safety interventions • Roadway characteristics • Walking environment characteristics • Adjacent land use characteristics • Green streets • Green street controls
Adu-Brimpong et al., 2017 <i>(USA) Washington D.C</i>	2	-Evaluation of a scoring method for virtual neighbourhood audits utilizing the Active Neighborhood Checklist (the Checklist) -Assess street segment representativeness in low-income neighbourhoods.	The Active Neighborhood Checklist (the checklist) 5 domains 89 items	• Land-Use type • Public Transportation Availability • Street characteristics • Environment Quality • Sidewalk/Walking/Biking features
Alfonzo M et al.,2014 <i>(China) Shanghai</i>	3	Association between built environment features and walking and obesity in china	Irvine-Minnesota Inventory-China (IMI-C) 10 domains 286 items	• Density/building height • Proximity/land use mix connectivity • Form • Parks and Public Space • Pedestrian infrastructure/amenities • Bike infrastructure/amenities • Personal Safety • Traffic Safety • Aesthetics • Recreational Facilities
Andresen E et al., 2013 <i>USA</i>	4	Compare two methods on neighbourhood audits: 5-item Krause and 18-item AAH Neighborhood Assessment Scale (NAS)	AAH NEIGHBORHOOD ASSESSMENT SCALE -18 item Krause five-time scale	
Bader et al (2015) <i>US metropolitan and city centre areas</i>	5	Describe the development and features of the CANVAS software and report the results that measured walkability and physical disorder on a nationwide sample of street segments.	CANVAS 9 domains 187 items	• Land use • Sidewalks • Buildings • Nature • Traffic design • Disorder • Amenities • Aesthetics & design

Bailey et al., 2014 <i>USA (Wisconsin)</i>	6	Examine the associations between perceived and objective measures of 12 non-residential destinations, as well as previously unexplored sociodemographic, lifestyle, neighbourhood and urbanity predictors of discordance Survey of Health of Wisconsin (SHOW)	WASABE 12 domains	• Pedestrian access • Park • Trail • Recreation Center • Fitness Center • Other Restaurant • Grocery Store • Religious Center • School • Golf Course • Pharmacy • Pool
Bethlehem et al., 2014	7	Examines the reliability and validity of the SPOTLIGHT-Virtual Audit Tool (S-VAT)	S-VAT 8 domains 42 items	• Walking related items • Cycling related items • Public transport • Aesthetics • Land use-mix • Grocery stores • Food outlet • Physical activity facilities
Ben-Joseph et al., 2013 Boston , Massachusetts	8	Assess the relative accuracy and usefulness of web tools in evaluating and measuring street-scale built environment characteristics.	Brownson et al., 2004a 2004b 6 major domains	• Land use environment • Transportation environment and social environment • Recreational facilities • Physical Disorder (Esthetics) • Social environment
Badland et al., 2010 New Zealand	9	Explore the efficiencies of physically and virtually conducting the NZ-SPACES audit within the neighbourhood context and secondly, to assess the level of agreement between the physical (criterion) and virtual (test audits).	NZ-SPACES 7 Domains 21 subdomains 51 items	• Walking • Function • Safety • Aesthetics • Destinations • Cycling • Function • Safety • Aesthetics • Destinations
Boarnet et al., 2011 USA	10	How well the IMI predicts physical activity and walking behaviour and develops shortened, validated audit tools Twin Cities Walking Study	Irvine Minnesota Inventory 178 questions	• Walkability
Cerin, E., et al 2011 (ASIA) Hong Kong 8 urban and sub-urban locations of Hong-Kong.	11	Develop and evaluate the Environment in Asia Scan Tool—Hong Kong version (EAST-HK)	Environment in Asia Scan Tool—Hong Kong version (EAST-HK) 4 domains 91 subdomains and items	• Functionality • Safety • Aesthetics

				• Destinations
Chaudhury, H et al., 2011 Canada Vancouver, British Columbia and Portland, Oregon Neighbourhoods	12	Presents the reliability results of using the SWEAT-R in a selection of neighbourhoods within the metropolitan regions of Portland, Oregon and Vancouver, British Columbia The paper also compares descriptive neighbourhood data gathered using SWEAT-R in the two regions.	SWEAT-R 4 domains 10 /165 or 300items	• Functionality • Destinations • Aesthetics • Safety and Comfort (Personal and Traffic Safety)
Chow et al., 2010 Canada Colombia Brazil China India	13	Evaluate features of the built environment of communities using a standard set of photos for inter-rater reliability of the instrument.	EP-NET 5 domains 37 items	• Facilities and safety features • Aesthetics/Beatification • Community disorder • Urbanization/density • Overall appeal
Chow et al., 2014 Canada, Colombia, Brazil, China and India	14	Describes the design and testing of reliability of the EPOCH (Environmental Profile of a Community's Health) instrument. Part of PURE (Prospective Urban and Rural Epidemiology study of cardiovascular risk factors and disease	EPOCH 1 5 domains 38 subdomains 3 groups of questions	• Community characteristics • Community observation walk • Assessment of a tobacco retail outlet • Assessment of a grocery store • Assessment of a local restaurant
Griew et al., 2013 Wigan , UK	15	Test the inter-rater and intra-rater reliability of a newly developed street audit tool designed specifically for use with Google Street View	FASTVIEW Domains 9 Subdomains 26	• Pavement width and obstructions • Pavement surface quality • Kerb paving quality • Road permeability • Way finding and legibility • Lighting • Personal security • User conflict • Environment quality
Gasevic et al., 2011 Canada	16	Outline challenges commonly faced by and identify some solutions to aid researchers in future assessments of the BE based on our experience in assessing the BE directly in over 40 communities representing a cross-section of environmental heterogeneity. part of the Prospective Urban Rural Epidemiology (PURE) study	Irvine-Minnesota Inventory I for BE features Physical Activity and Nutrition Features audit tool, 125 items	

Sallis et al., 2015 (USA Seattle/King County, Washington; San Diego County; California; and the Baltimore, Maryland–Washington, DC)	17	Develop and evaluate a brief audit instrument that quantifies modifiable attributes of environments	MAPS-Mini 5 domains 15 items	• Destinations and land use • Streetscape characteristics • Aesthetics and social characteristics • Crossings/intersections • Street segments
Sharek et al., 2012 Montreal, Canada	18	Developed a theoretically-anchored observation tool to be used in the Interdisciplinary Study on Inequalities in Smoking (ISIS) which aims to understand how neighbourhoods influence social inequalities in smoking in Montreal, Canada.	ISIS 97 indicators 4 domains 8 subdomains	• Physical Domains • Economic domain • Institutional domain • Local sociability domains
Kemner et al., 2015 United States and Puerto Rico	19	Describe the tool and protocol development process as well as the complementary training and capacity-building activities to facilitate local data collection using environmental audit and direct observation methods.	6 domains	• Parks and place spaces • Active transportation • Farmers' markets • Corner stores • Child care nutrition standards • Child care physical activity
Milam et al; (2016) USA Baltimore	20	Assessment of validity of audit tools during night-time hours Part of larger study assessing neighbourhood physical and social disorder	NIfETy (Neighborhood Inventory for Environmental Typology) 1 domain 19 items	• Neighbourhood (physical and social) disorder
Wilkerson et al., 2012 Portland Oregon	21	Assess whether objective measured micro-level features of the physical environment were independently or in combination associated with increased neighbourliness. (Reciprocal relationships and trust of neighbours as well as neighbourly knowledge and contacts.	Senior Walking Environmental Assessment Tool (SWEAT) 5 domains	• Front porches • Traffic-calming devices • Bars on windows • Litter/Graffiti • Sidewalk connectivity
Wilson et al., 2012 St.Louis Indianapolis	22	Evaluate the degree of agreement between field audits and audits derived from interpretation of three types of omnidirectional imagery.	Active Neighborhood Checklist 79 dichotomous variables	• Land use characteristics • Sidewalks • Shoulders and bike lanes • Street characteristics • Quality of the environment for pedestrians
(Wu et al., 2014) (Cambridgeshire) England	23	Examine the inter-method reliability of the two audit methods for assessing community environments with a specific focus on physical features related to mental health.	REAT and Google Street View 4 domains 8 subdomains 28 items	• Physical incivilities • Territorial functioning • Defensible space • Natural environment
Poortinga et al., 2017 Carmarthenshire Wales Cardiff	24	Validate REAT 2.0 audit instrument, in particular in relation to the aspects of neighbourhood condition, natural surveillance, and natural elements;	REAT 4 domains 18 items	• Neighbourhood conditions • Natural surveillance • Natural Elements • Miscellaneous (Urban Form)

		Explore the associations of overall neighbourhood quality with residents' attachment to their neighbourhood.		
Parsons et al., 2010 Canada Toronto	25	This study evaluated the performance of a systematic social observational (SSO) tool (adapted from previous studies of American and British neighbourhoods) in a Canadian urban context.	7 domains 98 items subset 41 variable items identified	• Characteristics of streets and sidewalks, • Residential land use, • Non-residential • Land use (commercial, industrial or vacant), • Parks and playgrounds, • Commercial establishments, services, and institutions, • People • Incivilities
Paquet et al., 2010 Canada Montreal	26	Measurement properties of an instrument that was developed to directly observe structural and contextual environmental characteristics of urban neighbourhoods with respect to urban form, negative attributes and positive attributes.	Montréal Neighbourhood Assessment Tool (MoNAT) 3 domains 46 items	• Urban form • Positive characteristics • Negative characteristics
(Dills et al., 2012) (USA) DeKalb County, Georgia	27	Examines Microscale pedestrian environments by quantifying and comparing walkability along specific routes.	Neighborhood Parks and Active Living (NPAL) 1 Domain Walkability 12 elements of the pedestrian environment	• Walkability measures
Odgers, C. L., et al. (2012). (USA)	28	Use of technology (Google Street View) for systematic social observations to capture the neighbourhood conditions of families participating in the Environmental-Risk (E-Risk) Longitudinal Twin Study.	Virtual SSO with Google Street View 5 Domains 17 items	• Physical disorder • Physical decay • Neighbourhood dangerousness • Street safety • Percentage of green space
Su, M., et al., (2014). (China) Zhejiang Province Hangzhou Shangcheng District and Xiacheng District	29	Develop an urban built environment evaluation tool and conduct necessary reliability and validity tests.	China Urban Built Environment Scan Tool (CUBEST) 6 domains 49 items	• Residential Density • Street Connectivity • Accessibility • Walkability (segments with sidewalks) • Bike lane quality • Aesthetics
Taylor, B. T., et al., (2011)(B. T. Taylor et al., 2011). southwest part of Sydney (Australia)	30	Assess the correlation between assessments of the quality of public open space using (1) the remote method (making use of Google Earth Pro) (2) direct observation with a well-established measure of quality, the Public Open Space Tool (POST). Testing new technology Google Earth	POST 4 domains 33 items 80 sub items	• Activity domain • Aesthetics domain • Amenity domain • Safety domain

Taylor, W. C., et al., (2012). USA (Harris County -Houston)	31	Examined the relationship between income levels, features of the environment and friendliness toward physical activity.	St. Louis Environmental Checklist Audit 4	• Population Density • Land-use Diversity • Street Design • Physical Disorder/Incivilities
Topmiller, M., et al., (2015). (USA) Covington, Kentucky-Ohio	32	Multi-layered approach for gaining local knowledge of neighbourhood environments that engages youth as core searchers and active knowledge producers	NWA (16 items) subjective assessment of safety Group Level Assessment (GLA) Neighbourhood Sketch Mapping Integration Process of Data into GIS maps	• Safety • Lack of recreational resources
Rundle et al., 2011 (New York City)	33	Assess the feasibility of using Google Street View to audit neighbourhood environments.	Google Street View 7 domains 143 items	• Aesthetics • Physical disorders • Pedestrian safety • Motorized traffic and parking • Infrastructure for active travel • Sidewalk amenities • Social and commercial activity
Kepper et al., 2017 Southeast Louisiana	34	A novel, parcel-level SSO methodology and assesses whether this new method can be collected reliably using Google Street View and is feasible	5 items	• Physical disorder • Physical decay • Safety • Street safety • Land use
Knapp et al., 2016 Pennsylvania	35	Development, implementation, and testing of the Community Audit of Social, Civil, and Activity Domains in Diverse Environments (CASCADDE).	CASCADDE (Community Audit of Social, Civil, and Activity Domains in Diverse Environments 214 items 7 domains (index)	• Physical activity-promoting features • Physical environment features that promote safety • Aesthetic quality • Social cohesion for physical activity, • Barriers to physical activity • Commercial and civic intensity • Incivilities
(Marco et al., 2017) Valencia Spain	36	Assess the psychometric properties of a neighbourhood disorder observational scale using Google Street View in a Spanish city.	Neighborhood Disorder Observational Scale 3 factors	• Physical disorder: • Social disorder • Physical decay
Malecki et al., 2014 USA	37	Development and implementation of the WASABE and presents reliability and validity data for this tool.	WASABE 115 items 5 domains 19 features	• Neighbourhood characteristics • Transportation environment • Non-residential destinations • Social environment • Street connectivity

Quintas , 2014 (Finland Poland Spain)	38	Cross-check information about the built environment. Positive or negative impact on the extent of participation by ageing members of the local community.	CBE-OUT 9 domains 128 items	- Streetscape - Walkways - Bikeways - Street crossing/ intersections - Parking facilities - Public facilities and features of the street - Land-use visible along the street/road - Site decay/urban blight - Street activity
Feuillet et al., 2016 (Belgium, France, Hungary, Netherlands, UK)	39	A GSV-based virtual audit tool was developed to assess potential obesogenic environmental characteristics and used in 59 neighbourhoods in five European urban regions. (SPOTLIGHT)	SPOTLIGHT 8 domains 36 items	- Walking - Cycling - Public Transport - Aesthetics - Land use mix - Grocery stores - Food outlets #Recreational Facility related items
Fisher et al., 2010 New York	40	Test inter-rater reliability and internal consistency of a reduced-item version of an environmental audit tool for physical-activity resources in a rural setting.	Pedestrian Environmental Data Scan (PEDS), 4 domains 18 items	- Environment - Pedestrian facility - Walking/Cycling environment - Road attributes
Gullon et al., 2015 Madrid , Spain	41	Test if the Madrid Systematic Pedestrian and Cycling Environment Scan (M-SPACES) can differentiate walking and cycling environments across different urban-form areas in Madrid, Spain; Assess the validity of the M-SPACES in a virtual urban setting using Google Street View; To assess the reliability (intra- and inter-rater) of the M-SPACES audit Tool. Part of Heart Healthy Hoods (HHH)	M-SPACES from NZ-SPACES Domains 8 Subdomains/Elements 21 Items 49	- Walking - Function - Safety - Aesthetics - Destinations - Cycling Function - Safety - Aesthetics - Destinations
Lafontaine et al., 2017 Ottawa	42	Observational audit method and systematic social observation instrument (SSOI)	Systematic Social Observation Instrument (SSOI) 10 Domains (10 item scale)	- Infrastructure - Cleanliness of streets and properties - Presence of trees - Quality of trees - Landscaping - Flowers and shrubs - Houses well-spaced - Upkeep of homes - Presence of outdoor furniture - Quality of outdoor furniture - Pedestrian

Lee and Talen, 2014 USA Arizona	43	Reviews the various in-person and secondary source auditing methods that have been developed over the past decade. Tests feasibility of a GIS/Google Street View hybrid method against an in-person auditing method.	Irvine Minnesota Inventory (IMI) 3 factors 17 domains 94 items	• Street crossing • Street characteristics • General land uses • Other land uses • Barriers • Sidewalks • Mid-block crossing • Street trees • Buildings • Other features of buildings • Garages • Parking • Driveways • Maintenance • Freeways • Traffic features • Other features of the segment
Leonard et al., 2011 Dallas, Texas	44	Developed a systematic neighbourhood observation instrument for collecting data at very high spatial resolution. Collected data on the health status of individuals residing in this neighbourhood. Compared the costs and benefits of using data at this high spatial resolution.	Neighborhood Observation Checklist (NOC) 2 domains 31 items	• Items observed at the parcel level • Items observed at face block level
Leung et al., 2010 Northern California	45	Examined associations between neighbourhood characteristics and energy intake and expenditure among young girls.	Modified St Louis Audit tool 5 domains 68 items checklist	• Land use environment • Transportation environment • Facilities • Park or playground contents and • Physical disorder
(Robinson et al., 2014) USA (Deep South)	46	To describe the built environmental, policies, and availability of facilities for physical activity in eight rural communities to inform a diet and physical activity intervention as part of an ongoing academic-community partnership to eliminate cancer health disparities in the Deep South	RALA tools (3 instruments) The Street Segment Assessment (SSA) 6 domains The Town-wide Assessment (TWA) 3 domains The Town-Program and Policy Assessment (PPA) 2 domains	• SSA- terrain, walkability, safety features, road/traffic conditions, connectivity, and use. • Two questions asked for a subjective assessment of the segment as walkable and aesthetically pleasing. • TWA-characteristics of the community as a whole including population, total area, and presence of recreational amenities • PPA- captures information on community programs and policies that support physical activity (e.g., policies on bike lanes and transportation and programs offered by the public recreational department)

APPENDIX IV: Details of data collection and other methodological aspects

#	Study Reference or literature family <i>Country AND city/cities or neighbourhood/s</i>	Period of data collection (year, season, time of day)	Number of observers/ raters and rating time	Method of data collection	Number & selection of streets, blocks, neighbourhoods	Other details in terms of data collection methods
1	Adkins, A., Dill, et al.; (2012). <i>(USA) Portland Oregon - Lents</i>	February and April 2010	12 volunteers	Walking	4 sub-areas ,2 of which included concentrations of green features and two adjacent control areas matched for socio-demographic and physical characteristics 321 scored segments to analyse	Units of analysis individual street segments
2	Adu-Brimpong et al., 2017 <i>(USA) Washington D.C</i>	-	3 research assistants received training 1 conducted the audit 6 participants were randomly selected for a second look by another research assistant, blinded to the results of the first audits.	Virtual	16 street segments approximately 4 blocks in length 972 street segments were audited, 948 were included in this study as only the 12 closest street segments for each address were available for all participants 12street segments per home address	GSV imagery and the checklist were used for virtual audits
3	Alfonzo M et al.,2014 <i>(China) Shanghai</i>	Irvine Minnesota Inventory	-	-	-	-
4	Andresen E et al., 2013 <i>USA</i>	summer /early fall daylight hours	2 interviewers rated	Walking	483 blocks 120 randomly selected blocks	Training and quality control
5	Bader et al (2015) <i>US metropolitan and city centre areas</i>	Summer and fall 2011	3 auditors	Virtual audits	Randomly ordered metropolitan and central city samples 112 segments 291 street faces	The streets were not used in the reliability study.
6	Bailey et al., 2014 <i>USA (Wisconsin)</i>	Summer 2011	5-10 minutes	Walking	652 households n=836 400-meter buffer	Trained raters systematically gathered data on the number and type of destinations for each segment within the specific buffer.

7	Bethlehem et al., 2014	-	2 blinded researchers	Virtual audits	4 urban neighbourhoods 40 streets 128 street segments	Google street view. The assessors received training on using the S-VAT in the street view feature. Researchers did not conduct audits in the city in which they lived.
8	Ben-Joseph et al., 2013 Boston , Massachusetts	Summer 2010	4 auditors	Virtual	84 residential street segments (21 participants in a larger study who resided at locations 10-20 miles north, west, and south of downtown Boston. The nearest street intersection to each respondent's geocoded address was used to map street segments within 1000m of the intersection)	Utilizing all three web tools with Google Maps, Google street view and Microsoft Oblique Viewer simultaneously
9	Badland et al., 2010 New Zealand	January-February 2010	1 filed researcher Physical = 148.5 min Virtual=115.3 min	Physical Audit Virtual Audit	4 neighbourhoods 5 contiguous meshblocks 12 street segments (the initial street segment start point for each neighbourhood was randomly generated using GIS procedures and thereafter the segments to be audited were selected sequentially.	Two neighbourhoods were audited virtually first followed by the physical audits and the remaining two neighbourhoods were assessed in the reverse order. .
10	Boarnet et al., 2011 USA	2004	2 observers	Walking	147 street segments (block faces) 891 street segments	Eligible segments included street segments that were accessible to pedestrians and that fell within the study area of 1.0x1.0 miles (1.609x1.609m)
11	Cerin, E., et al 2011 (ASIA) Hong Kong 8 urban and sub-urban locations of Hong-Kong.	2011 Weekdays during daytime	4 pairs of raters and 3 pairs of auditors used the EAST-HK two separate days /12.38 min.	Walking	Randomly selected residential blocks from a pool of 32 Tertiary Planning Units 422 segments were assessed 331 street segments assessed; (approximately 110 per pair), while the	2-day training programme including a presentation and explanation of the audit tool, field assessment of a number of street segments and an in-class discussion and comparison of the results with individualized feedback and additional training.

					remaining pair was assigned the dichotomous/ordinal version of the EAST-HK (91 street segments assessed). Half of the segments (n=204) were audited twice by the same auditors, 7–14 days apart	
12	Chaudhury, H et al., 2011 Canada Vancouver, British Columbia and Portland, Oregon Neighbourhoods	September to early December in 2007	Four research assistants (two per region) 4 Audits in Portland were observed in 8-hour shifts over a 7-week period. Audits in Vancouver were observed in 2–6 hour shifts (average shift length was 4 hours) over a 10-week period. 7.4minutes Per segment	Walking	8 neighbourhoods	Increase variability of physical environmental features that could be observed using the audit tool, half of the selected neighbourhoods in each region were chosen to represent more traditional, urban neighbourhoods while the other half were chosen to represent post ward suburban neighbourhoods.
13	Chow et al., 2010 Canada Colombia Brazil China India	-	3 observers conducted the walk and we were sent 3 sets of photos from each community average 10 to 15 minutes and a maximum of 20 minutes per community	Walking	Convenience sample of 86 urban and rural communities from 5 countries	Assessors were instructed as to where to stand to take photos, the views they were to obtain, and how to overlap images to achieve full coverage of a street scene.
14	Chow et al., 2014 Canada, Colombia, Brazil, China and India	May 2008 first assessment March 2009	3 researcher each independently	Walking?	93 rural and urban communities in Brazil, Canada, China, Colombia and India	Manuals and training slides were translated and distributed prior to a two-hour training session. Face-to-face training was conducted in China, India and the Ontario site in
15	Griew et al., 2013 Wigan , UK	-	-	Virtual	A total of 216 eligible audit links were identified within the study area, of these 25% (n = 54) were randomly selected for auditing based on recommendations 54 links	Aimed to maintain homogeneity within links by setting the maximum link length at 300 meters thus minimizing the potential for links to straddle different land uses.

					5.36 kilometres or road network	
16	Gasevic et al., 2011 Canada	-	3 auditors in Vancouver 3 in Hamilton 8 in Quebec	Walking	1100 for Urban and 570 for rural settings 14500 in Vancouver 17000 in Hamilton 5000 in Quebec for a total of approximately 36500 segments within the three centres in Canada.	Hands-on, 3-day training session at each centre was employed in order to make sure all raters understood the training materials and rated environmental features consistently.
17	Sallis et al., 2015 (USASeattle/King County, Washington; San Diego County,California; and the Baltimore, Maryland– Washington, DC)	Not Mentioned	Not Mentioned	Walking	0.25 mile route from participant residences toward the nearest non-residential destination for children (n=758), adolescents (n=897), younger adults (n=1655), and older adults (n=367).	Active transportation and leisure physical activity were measured with age-appropriate surveys, and accelerometers provided objective physical activity measures
18	Sharek et al., 2012 Montreal, Canada	May and June 2009 8:30 AM and 1:00 PM on days not scheduled for garbage or recycling pick-ups, that were not public holidays and when no rain was forecast.	3 raters	Walking	4 Montreal neighbourhoods operationalized as census tracts, administrative units often used as surrogates for neighbourhoods in health research	4 census tracts were randomly chosen from those previously sampled for a study on eating behaviour and obesity. In each neighbourhood 14 street sections were randomly chosen from those more than 60 m in length, for a total of 60 street sections
19	Kemner et al., 2015 United States and Puerto Rico	Part of the Healthy Kids, Healthy Communities program	4 individuals from the community 2 to 15 individuals participating in the training	Walking	31 communities 41 environmental audits 17 direct observations	Customized trainings were conducted by the evaluation team to increase capacity and understanding for evaluation activities.
20	Milam et al; (2016) USA Baltimore	Two waves during summer months, one year apart (June to September 2005 and 2006) 10pm-2am Thursday, Friday, Saturday & Sunday nights	Total number of observers: not specified Pair of raters (only one rating, other driving) Rating time: not specified	Driving	446 randomly selected neighbourhood blocks across 242 residential Neighborhood Statistical Areas	Both sides of street along the block face
21	Wilkerson et al., 2012 Portland Oregon	-	-	Walking	8 neighbourhoods in Portland, Oregon randomly sampled street	-

					segments within each neighbourhood	
22	Wilson et al., 2012 St. Louis Indianapolis	2008 and 2009 July 2008 2007	-	Field audits Interpretation of archived imagery New imagery Virtual	Four sociodemographic classes proportional to the total the current sample included 369 segments (167 in St Louis and 202 in Indianapolis) 11 segments during	All auditors were trained to use the checklist using a protocol developed earlier
23	Wu et al., 2014 (Cambridgeshire) England	July and August 2012 1. The assessments of 48 postcodes were finished in 5.5 working days by physical audits and 4.5 days by visual image audits	1 assessor	Virtual	48 postcodes in Cambridgeshire 24 in Cambridge city 24 in rural areas of Ely	Residential Environment Assessment Tool (REAT) Google street view Physical/ visual image audits Since there was only one assessor, the visual and physical audits were separated by at least one-week interval to avoid contamination.
24	Poortinga et al., 2017 Carmarthenshire Wales Cardiff	30 May and August 8 2012	Pairs of trained observers 9 minutes	Walking	Two hundred seventy- one unit postcodes (a full postcode designates an area with a number of addresses or a single major delivery point)	-
25	Parsons et al., 2010 Canada Toronto	August and October 2006 9:00-15:30 and 17:00-20:00	-	Walking	Six neighbourhoods ,3 different SES	All raters underwent a week- long intensive training programme
26	Paquet et al., 2010 Canada Montreal	On weekdays between 9 a.m. and 5 p.m. for 6 weeks from late June to early August 2003.	2 trained evaluators	Walking	250 street blocks within 30 socioeconomically diverse census using a stratified random sampling approach	The samples were based on the expected maximum number that could be evaluated during the three summer months of the study. Montréal CTs were first stratified by socio-economic status based on tertiles of average household income (2001 Canada Census). Ten CTs were then randomly selected within each stratum.
27	Dills, J. E., Rutt, C. D., & Mumford, K. G. (2012). (USA)	January 2006-May 2007	Paired observers collected data on 446 street segments	Walking and GIS	160 routes to parks 610 street segments	During data collection, observers were provided with maps showing study routes in

	DeKalb County, Georgia		20- to 30-min walk			the neighbourhoods around each park. On the maps, routes began at the address of a study participant's home.
28	Odgers, C. L., et al. (2012). (USA)	March 2009-March 2010	12-30 minutes	Google street view High Definition image camera-equipped cars Observations were recorded using online survey software which meant that no additional data entry resources were required (as the data could be directly exported from the survey software) and that incoming data could be monitored and analysed in real time.	Subsample of 120 neighbourhoods	-
29	Su, M., et al., (2014). (China) Zhejiang Province Hangzhou Shangcheng District and Xiacheng District	October to December in 2011 /daylight hours	2 auditors independently assessed all of the 205 street segments at the same time.	Walking	205 street segments (n=104)	Half of the segments (n = 104) were audited twice by the same auditor after a two-week time interval.
30	Taylor, B. T., et al.,. (2011). southwest part of Sydney (Australia)	2009	The remote method took 4 hours, whereas direct observation took 42 hours	Virtual Walking	50 open spaces were assessed	Raters for each method were blind to scores obtained from using the other method.
31	Taylor, W. C., et al., (2012). USA (Harris County -Houston)	March 2005 to October 2006. daylight hours (from 8:00 AM to 5:00 PM) at various times of the day and on various days of the week 50 % morning and 50% afternoon	Data collection was completed by pairs of auditors for safety reasons.	Walking/driving	30 block groups	10 nonadjacent and nonboundary block groups from each income status were randomly selected. A half mile radius was drawn from the centroid of each block. 10 blocks were randomly assigned to the auditors blinded from the income classifications of block groups.
32	Topmiller, M., et al., (2015). (USA) Covington, Kentucky-Ohio	Summer 2012	250 sidewalks, took over 500 pictures, commented on 16 poster prompts, identified four major themes (from the GLA), and produced 15 paper maps (from the sketch mapping exercise)	Environmental Audits and Digital Photography Group Level Assessment (GLA) Neighbourhood Sketch Mapping Integration Process of Data into GIS maps	five neighbourhoods that adjoin an urban trail system	Fifteen youth were enrolled in the 2012 summer program and CGN staff recruited 100% of participants. A multidisciplinary research team collaborated with CGN staff to design a program that would (1) engage youth in fun

			groups of two or three			activities where they could learn about digital photography and their local environments, and (2) collect data that could be used to inform stakeholders about the corridors between trail system access points and other important public spaces for children, including parks and schools.
33	Rundle et al., 2011 (New York City)	Not mentioned	Not mentioned	Virtual	37 block faces in high walkability neighbourhoods	19 blocks from poor ($\geq 20\%$ poverty), 19 blocks from nonpoor ($<20\%$ poverty) census tracts matched on neighbourhood walkability
34	Kepper et al., 2017 Southeast Louisiana	Observations 13 week in August to November The GSV images were dated 2011-2015 with an average of 23 months (range, 2-56 months) elapsed between the GSV image and the in-person SSO data collection.	5 raters completed a total of 188 parcel-level ratings	Walking Virtual	Street segment sample (n.42) reflected mixed poverty level and land use and allowed instrument reliability to be determined across urban and rural neighbourhood types Six street segments per poverty threshold (high, middle, low poverty)	Land use categories were defined using GSV evaluation: 1. all parcels classified as residential land use (residential) 2. one or more parcel classified as commercial/business, industrial building, or institution (commercial); 3. one or more parcel classified as a vacant lot/open space, recreational facility, park, or playground (recreational)
35	Knapp et al., 2017 Pennsylvania	2013-2015 5:30 am and 4:30pm during daylight hours Data were gathered in every month except February	10 -15 minutes per observation	Walking	30 communities 15 observation points per community	Accommodate observation of rural communities using a radial observation area centered on a fixed point. The tool was implemented on an iPad to speed data collection, reduce data entry, and to combine geotagging, photography, and map-based apps (software available from authors on request).
36	Macro et al., 2017 Valencia Spain	Google Street View images assessed were from 2014 and 2015	Two groups of two research assistants not directly involved in the project	Virtual	All census block groups (N = 92)	-

37	Malecki et al., 2014 USA	Summers June-August 2010-2011	4-8 minutes walk	Walking	A 400-meter non-Euclidean street network buffer around each selected household. Equivalent to 5-10 minutes' walk.	2009 (n=65) and 2010 (n=618) SHOW participant households.
38	Quintas , 2013 (Finland Poland Spain)	Between May 2011 and March 2012	Supervisors	Walking or Car	Total 2452 Finland 245 Poland 972 Spain 1235	Data were collected within 500m in both directions starting from the entrance of the located address.
39	Feuillet et al., 2016 (Belgium, France, Hungary, Netherlands, UK)	2014	-	Virtual	59 neighbourhoods in 5 European urban regions 12 neighbourhoods in each urban region of Europe 3 neighbourhoods from each SES category 4486 street segments	-
40	Fisher et al., 2010 New York	Last 2 weeks of September 2007 Observations between 9:00 A.M. and 7:00 P.M.	2 observers approximately 15 street segments to assess on each of five-day trips. 12 minutes to complete a street-segment assessment.	Driving	50 of these streets 6764 street segments Five rural, western New York school districts were the study communities 10 streets per school district for the strata containing very-rural farm areas. The remaining strata to sample at least 15 streets each to ensure uniformity of coverage.	Data collection included randomly assigning 50 street segments to a second observation team so that we could conduct an inter-rater reliability test.
41	Gullon et al., 2015 Madrid , Spain	Monday morning 8:00 am Between February and May 2014 May 2008 and February 2014	Two researchers conducted physical and virtual audits of the 36 census sections previously identified using	Walking Virtual	Three areas (N=500 street segments) were selected for variation in population density.	-
42	Lafontaine et al., 2017 Ottawa	In 2011, audits were completed between November and December on Saturdays In 2012, audits between June and August each weekday, ensuring	2 auditors each year Overall, six different observers were used over the three-year period, two independent observers in each year.	Random sampling design is assessed by comparing results to a complete block-by block audit of 167 block faces 15 neighbourhoods of 3 different SES quintile;	Walking Virtual	Google Street View was used to train the auditors Practice observation sessions (excluding the neighbourhoods in the study sample) were completed using the same SSOI and tools (iPad

		that data collection did not take place the day prior to, or of, garbage pick-up. In 2013, audits took place daily from mid-July to mid- August	Saturday's between 9:00 am and 5:00 pm. Each week, three or four neighbourhoods were observed.	5 high, medium, and low neighbourhoods.		with GIS Kit) used for real-time field observations. A two-week period of training was utilized.
43	Lee and Talen, 2014 USA Arizona	April 2012.	2 observers	10 street segments	Walking Virtual	Training sessions were organized using the IMI Codebook (Day, Boarnet, and Alfonzo 2005) and the Training Protocol PowerPoint (Alfonzo, Day, and Boarnet 2005) in order to enhance inter-rater reliability.
44	Leonard et al., 2011 Dallas, Texas	January 2009 and February 2009, weekday between the times of 9:00 a.m. and 4:30 p.m. Over a five-week period.	Two observers (several pairs) One member of the pair drove the vehicle, while the other member operated the computer. Average of 10.5 minutes making observations on each face block in the neighbourhood.	Driving	32 block groups falling into seven census tracts. A total of 11,552 parcel and 1,778 face block observations were completed	Several checks were instituted to assure data quality. In addition to the neighbourhood observational data, a short door-to-door survey was conducted to collect basic demographic data from neighbourhood residents.
45	Leung et al., 2010 Northern California	June to November 2007	-	Walking	One audit form for both sides of each highlighted street segment and were blinded to the addressed of the residences. A mean of 10.8 segments were observed per girl, with 2,328 street segments observed in total.	To ensure accuracy, duplicate audits were conducted on 246 street segments by different observers.
46	Robinson et al., 2014 USA (<i>Deep South</i>)	Not Mentioned	Two to four CHARPs in each county were selected because of their familiarity with their community and established relationship with DSN. (27 CHARPs)	Walking	117 segments in 22 towns. 60 of the segment assessments were conducted in the four AL counties and 57 were completed in the four MS counties.	CHARPs attended a 2–3 hour training session for his/her specific community on the use of the tool. Training included didactic instruction and field testing. As part of the training, each CHARP was given 3 practice street segments similar to the ones they would be assessing.

APPENDIX V Reliability and Validity details

#	References	Validity (type & details)	Reliability (type & details)	Other assessments	Associations with (a) environmental indicators & (b) health or health-related outcomes
1	Adkins, A., Dill, et al.; (2012). <i>(USA) Portland Oregon - Lents</i>	Concurrent (with theoretically relevant construct based on residents' perceptions)	Inter-rater agreement	Human scale, transparency, tidiness, enclosure and imageability.	Two subjective ratings were included: one assessing attractiveness for walking and the other perceived safety for walking
2	Adu-Brimpong et al., 2017 <i>(USA) Washington D.C</i>	Criterion (using Walk score, an accepted measure, as a gold standard)	Inter-Rater Reliability Coefficient	-	Captures neighbourhood features in low-income, residential areas and may aid in delineating impact of specific built environment features on health behaviours and outcomes
3	Alfonzo M et al., 2014 <i>(China) Shanghai</i>	Predictive (physical activity and obesity data)	Data on walking and other physical activity and obesity levels from 1070 collected through a street intercept survey	State of Place Index is a score composed of eleven sub-scores that measure urban design dimensions empirically tied to walking (10 sub-scores) and bicycling (1 sub-score). Each level dimensions were composed of a subset of the 286 individuals-built environments items contained in the IMI-C.	1) Built environment and walking, 2) between the design of the built environment and obesity 3) between walking and obesity and income in urban settings in China
4	Andresen E et al., 2013 <i>USA</i>	Construct (factor analysis for higher-degree dimensions) Predictive (lung function)	Retest Interrater reliability	Mismeasurement analysis	-
5	Bader et al (2015) <i>US metropolitan and city centre areas</i>	Criterion (Krause scale) Parallel form reliability between virtual and field audit	Inter-rater reliability	-	Walkability and Physical disorder
6	Bailey et al., 2014 <i>USA (Wisconsin)</i>	Construct (using kriging as a latent construct) Concurrent (against resident's perceptions)	Reliability on a different study	Percent Agreement between Perceived and Objective Measures of non-residential destinations	Sociodemographic/lifestyle, health and mental health status, neighbourhood perception and urbanicity levels.
7	Bethlehem et al., 2014	Criterion Validity	Inter- Intra observer reliability	-	Obesogenic environment
8	Ben-Joseph et al., 2013 Boston, Massachusetts	Comparison of on-site and web-based audits	-	Agreement of Google Maps, Google street view, and MS Visual Oblique	Built environment on physical activities
9	Badland et al., 2010 New Zealand	Criterion (physical)	Test-retest reliability levels	-	Built environment attributes associated with walking and cycling
10	Boarnet et al., 2011 USA	Predictive (walking)	Reliable measurement of urban design features		How density Street pattern Mixed use

					Pedestrian infrastructure And variety of social and economic factors affect walking
11	Cerin, E., et al 2011 (ASIA) Hong Kong 8 urban and sub-urban locations of Hong-Kong.	Face validity (expert panel)	Inter- and Intra-rater reliability	Differences in area estimates between street-segment sampling strategies.	-
12	Chaudhury, H et al., 2011 Canada Vancouver, British Columbia and Portland, Oregon Neighbourhoods	Content (additional qualitative observations) Construct/Known-group (urban vs suburban and income level)	Inter-rater reliability	Variability of physical environment features	physical environmental characteristics and their associations with physical activity in older adults.
13	Chow et al., 2010 Canada Colombia Brazil China India	Face validity (review of tools) Concurrent (residents' perceptions)	Inter-rater reliability	Creation of summary scores	-
14	Chow et al., 2014 Canada, Colombia, Brazil, China and India	-	Inter-rater reliability (auditing photos using a standard protocol)	Resident's perceptions of their community	Physical environment
15	Griew et al., 2013 Wigan , UK	Parallel from reliability	Inter and intra-rater reliability	-	This research was conducted as part of the wider FAST study measuring environmental associations with adult's physical activity.
16	Gasevic et al., 2011 Canada	-	-	Tested usability and feasibility of GPS	Nutrition and physical Activity??
17	Sallis et al., 2015 (USA Seattle/King County, Washington; San Diego County, California; and the Baltimore, Maryland–Washington, DC)	Predictive (against series of 'physical activity' variables from residents' surveys and accelerometers across different age-groups)	Inter-observer reliability	Walking or bicycling for transportation and leisure or neighbourhood physical activity were measured with age-appropriate surveys, and total physical activity was measured with accelerometers.	Physical Activity
18	Sharek et al., 2012 Montreal, Canada	Content validity (theoretical model, scoping review, expert panel and focus groups to deduct 'reflective indicators' of latent constructs which are postulated to relate to smoking). Focus group, mentioned but not presented in detail.	Inter-rater reliability	Temporal Stability	Inequalities in smoking
19	Kemner et al., 2015 United States and Puerto Rico	-	Inter-rated reliability	-	-
20	Milam et al; (2016) USA Baltimore	Predictive (against local crime data)	Inter-rater reliability	Factor analysis	Previously associated with youth-reported alcohol, tobacco and other drugs.
21	Wilkerson et al., 2012 Portland Oregon	Predictive (against survey data on 'neighbourliness' operationalized as a 6-item scale tapping on reciprocity and trust,	Reliability tested on a previous study	An interview-administered survey conducted during the same time period, including questions	Built environment

		and adjusting for census or other aggregate level variables of socio-demographic environment		regarding neighbourliness 2000 tax-assessor data	
22	Wilson et al., 2012 St. Louis Indianapolis	-	Reliability between three types of audits (field, imagery and virtual) which is not of direct interest to us	-	Build environment
23	Wu et al., 2014 (Cambridgeshire) England	-	Parallel form reliability between field and virtual	Image and Virtual “walked through”	Mental well-being
24	Poortinga et al., 2017 Carmarthenshire Wales Cardiff	Concurrent (against resident’s perceptions of several aspects of neighbourhood) Predictive validity (against residents’ attachment to neighbourhood) Criterion (against an accepted audit tool used as gold standard) Convergent (against digitally map analysis of related features)	Inter-rater reliability	-	Neighbourhood Attachment
25	Parsons et al., 2010 Canada Toronto	Face validity (review and expert panel) Content validity (against qualitative observations of raters based on written comment analysis and focus group discussions) Construct (factorial) validity (to identify a higher-order dimensionality of domains/ ‘meta-categories’) Known-group (construct) validity (against neighbourhoods of different income status)	Inter-rater reliability	Qualitative data to capture certain aspects of the BFs being evaluated to capture interactions with residents, raters’ sense of personal safety, and aesthetic appeal of the block face.	Socioeconomic Status
26	Paquet et al., 2010 Canada Montreal	Face/content validity (using theory-driven review and expert panel opinion, although process not presented in great detail) Discriminant validity (based on hypothesized direction of correlation between domain-specific scores e.g. inverse correlation between ‘positive’ and ‘negative’ characteristics)	Inter- and intra-rater reliability Internal Consistency	-	-
27	Dills, J. E., Rutt, C. D., & Mumford, K. G. (2012). (USA) DeKalb County, Georgia	-	The reliability measures?	-	Association between walkability measures and walking to parks
28	Odgers, C. L., et al. (2012). (USA)	Concurrent (against local residents’ survey on neighbourhood problems)	Inter-rated reliability	-	Association between neighbourhood socioeconomic status and child outcomes

		Known-group construct validity (against postulated graded relationship with census-defined indices of socioeconomic status) Predictive (against outcomes of interest from resident and teacher surveys, such as prosocial and antisocial behaviour as well as healthy weight among local children.			Consumer based geo-demographic classifications of deprivation and health Local resident surveys of disorder and safety Parent and teacher assessments of children's antisocial behaviour, prosocial behaviour and body mass index.
29	Su, M., et al., (2014). (China) Zhejiang Province Hangzhou Shangcheng District and Xiacheng District	Concurrent (residents' perceptions of built environment using NEWS-A) and predictive (IPAQ for physical activity) validity	Inter-rater reliability	Authors use a multi-level model to assess the extent to which individual (subjective) perceptions of environment and neighbourhood-level (objective) audit measurement are associated with physical activity measures (outcome) after adjusting for other individual-level characteristics including SES and BMI (confounders)	Urban built environment related to physical activity
30	Taylor, B. T., et al., (2011). southwest part of Sydney (Australia)	Convergent validity	Agreement between the remote and direct assessment methods	-	The study assessed the correlation between the remote method of assessing the quality of public open spaces (using Google Earth and the shorter POST) and direct observation of public open spaces using the original POST
31	Taylor, W. C., et al., (2012). USA (Harris County - Houston)	Known-group construct validity (against neighbourhood income level)	Auditors had to contact a solo audit with reliable and accurate results	Not Mentioned	Population density and income are negatively related Land use diversity and income are negatively related Street design and income are positively related Physical disorder/incivilities and income are negatively related.
32	Topmiller, M., et al., (2015). (USA) Covington, Kentucky-Ohio	No Adapting items from existing tools that have been tested for validity and reliability; however, no such testing was completed for the new tool	NO adapting items from existing tools that have been tested for validity and reliability; however, no such testing was completed for the NWA	-	Youth report safety and a lack of recreational resources as inhibiting physical activity
33	Rundle et al., 2011 (New York City)		Parallel form reliability between field and virtual (or concordance as authors describe it)	Not mentioned	Not mentioned
34	Kepper et al., 2017 Southeast Louisiana	Face validity of parcel-level audit tool (expert panel)	inter/intra-rater agreement of two sources (field vs virtual) and two levels of spatial resolution (street vs parcel).	1)Street level in person 2)Street level virtual 3) Parcel –level in person 4) Parcel-level virtual	Poverty

35	Knapp et al., 2016 Pennsylvania	Face validity (based on adapting previous tools) Criterion validity (against accepted Walkscore as gold standard) Known-group construct validity (against measures of SED and population density) Discriminant validity (based on correlations between domain scores) Predictive validity (using community-level summary measures of obesity)	Reliability	-	Correlation with BMI Socioeconomic deprivation Standard Walk Score Population density
36	Macro et al., 2017 Valencia Spain	Construct factorial validity (using confirmatory factor analysis to test the latent structure of the scale) Known-group construct validity (against indices of SED i.e. education and property value) Predictive validity (against indicators of criminality)	Inter-Rater Reliability	Confirmatory factor analyses were performed to test the latent structure of the scale.	In addition, correlations between the factor scores and socioeconomic and criminality indicators
37	Malecki et al., 2014 USA	Face validity (based on review and formative process to identify primary domains of the social and built environment associated with range of outcomes of interest) Concurrent (against residents' perceptions of neighbourhood using three questions) Predictive (against health promoting behaviours i.e. physical activity and diet) Known-group construct validity (against 5-variable composite index of economic hardship)	Inter-Rater Reliability	Descriptive analyses-prevalence of selected built and social environmental features Built and social environment data Sociodemographic factors Health behaviours Perceived environment Economic deprivation	Socioeconomic status
38	Quintas , 2013 (Finland Poland Spain)	Concurrent validity (as the audit tool also includes a version that captures residents' perceptions)	-	-	Built environment and Aging in Europe
39	Feuillet et al., 2016 (Belgium, France, Hungary, Netherlands, UK)	Construct factorial validity (using factor analysis to identify a higher-order dimensionality and hierarchical cluster analysis to identify a typology of neighbourhoods based on the identified factors)	The validity and reliability (using test-retest) of the tool was previously demonstrated in a random sample street from four Dutch neighbourhoods (Bethleem et al., 2014)	Multiple factor analysis Fisher's exact tests	Obesogenic environment and SES neighbourhoods
40	Fisher et al., 2010 New York	-	Inter-rater reliability Assessing reliability after adaptation of established tool for rural settings	-	Built environment for physical-activity
41	Gullon et al., 2015 Madrid, Spain	Content validity (for the original tool developed in New Zealand using	Inter- and Intra-Rater Reliability Also, assessed the parallel form reliability of virtual versus field audits	Using stakeholder interviews and a Delphi study, four factors were identified that likely support	Cycling and Walking?

		stakeholder interviews and Delphi study, which was then modified for Madrid) Known-group validity to assess the discriminatory ability of the tool in different types of neighbourhoods defined by urban form on the basis of population density as a proxy		physical activity behaviour within the neighbourhood environment: Within the same Delphi group, depending on the importance for supporting neighbourhood walking and cycling, weights were applied	
42	Lafontaine et al., 2017 Ottawa	Face validity (based on literature review and iterative process, previously described, of selecting the items, which is nevertheless not presented) Known-group validity (against indices of SES) Predictive validity (against health outcomes such as IPAQ physical activity and BMI)	Interrater reliability Also assessed internal consistency to assess whether all items tap on the same latent construct 'aesthetic score' (which is a reliability rather than a validity test).	Compare the neighbourhood average aesthetics index score, Qs, to three health determinants: Neighbourhood SES, self-reported overweight or obese BMI and physical activity. Neighbourhood SES was calculated for 96	The correlation between Qs and self-reported overweight or obese (BMI) SES. IPAQ.
43	Lee and Talen, 2014 USA Arizona	-	Inter-rater reliability	- Developed a hybrid method to streamline audits using GIS and Google Street view	-
44	Leonard et al., 2011 Dallas, Texas	Construct factorial validity (to identify higher-order dimensionality) Predictive validity (against self-reported health status)	Inter-rater reliability	Factor analysis using a principal factor method with a promax rotation was implemented to distill the parcel-level data into summary variables.	Geographic Aggregation Study audited at a very high spatial resolution and then tested summary scores at various levels of geographical aggregation A door-to-door survey collected data on subjective health status using a 5-level scale but details are not presented
45	Leung et al., 2010 Northern California	Construct factorial validity (using exploratory factor analysis to identify a higher-order structure of five neighbourhood scales) Known-group construct validity (against Neighbourhood Deprivation Index) Predictive validity (against total energy intake and physical activity from survey data among cohort under investigation)	Internal reliability	This is a study among a sub-set of participants in a cohort study and investigated the association of neighbourhood environment domains (measured via audit) with diet and physical activity outcomes after adjusting for individual-level covariates and area-level deprivation.	energy intake and expenditure among young girls and whether any of these associations were modified by race/ethnicity.
46	Robinson et al., 2014 USA (Deep South)	-	-	RALA Segment Assessment Town Program and Policy Assessment Town Wide Assessment	Physical Activity

APPENDIX VI: CyNOTes v1.0

Cypriot Neighborhood Observation Tool for auditing community environments

Data Collector Name:

Date:

Time of Day:

Neighbourhood:

of obs. made in this neighbourhood:

Street segment/length:

of obs. made on this street segment:

General information

1. What mode of **transportation** are you using?
Walking.....1
Driving.....2
2. What are the current **weather** conditions?
Sunny, hot & humid.....1
Sunny & pleasant.....2
Partly sunny.....3
Cloudy.....4
Rainy.....5

A. General land use

1. Based on street-level footage, how is the **land used** on this block face?
(**Mark all that apply**)
Residential (not vacant).....1
Commercial, business, professional.....2
Industrial, warehouse, manufacturing.....3
Institutional (school, church, medical).....4
Parking lot.....5
Vacant lot or open space.....6
Vacant residential house/building.....7
Vacant non-residential.....8
Park or playground.....9
Waterfront.....10
Expressway.....11
2. How would you characterize the **predominant land use** on this block face?
(**Code the predominant form**)
Primarily residential.....1
Primarily commercial.....2
Primarily industrial.....3

- Primarily institutional.....4
Primarily recreational.....5
Primarily vacant/undeveloped lots.....6
Mixed (AVOID if possible).....7
Other.....8

B. Characteristics of the general environment, streets and sidewalks

1. **Type of street (Code all that apply)**
Major/busy street.....1
Moderately busy street.....2
Side street (to major road).....3
Residential road.....4
Dead-end street.....5
One-way street.....6
2. What is the **traffic flow**?
No traffic/Very light.....1
Light (occasional).....2
Moderate 3
Heavy.....4
Very heavy (steady stream).....5
3. How would you rate the condition of the **street surfaces**?
Poor (sizeable cracks, potholes, broken curb along MOST or all).....1
Fair.....2
Moderately good.....3
Very good (no cracks, potholes, or broken curb).....4
Under construction.....5
4. Are there **speed reducing measures** on the street? (**Code all that apply**)
None.....0
Speed bump.....1
Roundabout.....2
Reduced speed limit posted.....3
School/playground zone.....4
Other (please specify).....5
5. Are there places intended/marked for pedestrians to **cross the street**? (*from I-M inventory*)
Many.....2
Some.....1
None.....0

6. For an individual who is on this segment, how **safe** (traffic wise) do you think it is to **cross** the street? (*from I-M inventory*)
 Pretty/Very safe.....2
 Not very safe/unsafe.....1
7. For an individual who is on this segment, how **convenient** (traffic wise) do you think it is to cross the **street**? (*from I-M inventory*)
 Pretty/Very convenient.....2
 Not very/inconvenient.....1
8. What are the **parking arrangements** on the block face? (**Code the predominant form**)
 None.....0
 Mostly street.....1
 Mostly off-street (e.g. driveways)....2
 Mostly private parking lots.....3
 Mostly public lots.....4
9. Are there **cars parked** on the **pavement**?
 No 0
 Yes 1
10. Did you observe any **parking violations** on the block face?
 No 0
 Yes 1
11. Are there **abandoned cars/trucks/SUVs** on any of the streets, alleys or lots visible on this block face?
 None.....0
 One or two.....1
 Three or four.....2
 More than four.....3
12. Are there **old, beat-up cars/trucks/SUVs** on the street, in driveways or yards on this block face?
 None.....0
 One or two.....1
 Three or four.....2
 More than four.....3
13. How many sides of the street have **sidewalks** (*from I-M inventory*)
 None.....0
 One.....1
 Two.....2
14. Is the **sidewalk complete/ continuous** on one or both sides? (*from I-M inventory*)
 Neither.....0
 Continuous, on one side.....1
 Continuous, on both sides.....2
15. How would you rate the **walkability** of this segment?
 No sidewalks.....0
 Narrow sidewalk, both sides (<3 ft).1
 Narrow sidewalk, one side (<3 ft)...2
 Wide sidewalk, one side (3-6 ft)....3
 Wide sidewalk, both sides (3-6 ft)....4
 Very wide, > on one side (>6 ft).....5
16. **Obstructions** for walkability on sidewalks (e.g. parked cars, lamb posts/trees, pots, discontinuity etc)
 None.....0
 A little.....1
 Some.....2
 A lot 3
17. Is there a **buffer** (e.g. parked cars, landscaped “buffer”, strips) between sidewalk and street? (*from I-M inventory*)
 No 0
 Yes 1
18. How would you rate the **condition** of the **sidewalks** on the block face?
 No sidewalks.....0
 Poor (holes, sizeable cracks, crumbling, or uneven along MOST surface).....1
 Fair (holes, sizeable cracks, crumbling, or uneven along SOME of the surface).....2
 Moderately good (holes and cracks, only, OCCASIONALLY).....3
 Very good.....4
 Under construction.....5
19. Are there **greenbelts, trails or paths** other than sidewalks along the street? (*from I-M inventory*).
 No 0
 Yes 1
 ..

20. Is there **outdoor lighting** on the segment (including street lights, public paths or public spaces)? (*from I-M inventory*).
 No 0
 Yes 1
21. How **steep** or hilly is this segment? (*from I-M inventory*).
 Steep slope.....2
 Moderate slope.....1
 Flat or gentle slope.....0
22. Is there **public transportation** (e.g. a bus stop) in this block face?
 No 0
 Yes 1
23. Are there **purposely planted trees/ or other vegetation** between the sidewalk and the street **or in other public spaces**? (*adapted question/responses from HEP-NOC*)
 None.....0
 1-49% of the block face (a few).....1
 50%-99% (some/a lot).....2
 100% (most/all).....3
24. Are there **trees** in people's gardens? (*added*)
 None.....0
 1-49% 1
 50%-99%.....2
 100%.....3
25. Is the sidewalk shaded by **trees**? (*from I-M inventory*)
 Yes/Somewhat 1
 No.....2
26. Are there houses with **purposely planted vegetation** (including healthy pots and baskets)?
 None.....0
 1-49% 1
 50%-99%.....2
 100%.....3
27. Mark all types of **public spaces** on this area (*from I-M inventory*)
 Park/Playground.....1
 Playing or sport field.....2
 Plaza/square/courtyard.....3
- Public garden.....4
 Beach.....5
 Vacant lot/undeveloped land.....6
 Nature feature.....7
 None.....8
28. What is the general **condition of the public spaces**? (**Code all that apply**)
 Poor/deteriorated.....1
 Fair.....2
 Good/well-kept.....3
 Mixed (extreme difference).....4
29. What **public courtesies** are visible? (**Code all that apply**)
 None.....0
 Trash cans/bins (non-residential).....1
 Public phones 2
 Newspaper dispenser.....3
 Public seating/benches.....4
 Drinking fountains.....5
30. Are there **bicycle facilities**? (**Code all that apply**)
 None.....0
 Bicycle parking/stands.....1
 Bicycle lanes.....2
 Other 3
31. How would you rate the **bikability** of this segment, on shoulder/marked lane, not considering the road?
 No shoulder/marked lane.....0
 Narrow paved shoulder (<3 ft).....1
 Wide paved shoulder (>3 ft).....2
 Narrow marked lane (<3 ft).....3
 Wide marked lane (>3 ft).....4
32. **Obstructions** for bikability (on shoulder/marked lane, not on the road)
 None.....0
 A little.....1
 Some.....2
 A lot 3
33. Are there indications of **neighborhood uniformity**?
 No 0
 Yes 1

34. Are there signs which denote a **neighborhood name or monuments/ markers (e.g. statue, banner etc) that indicate someone is entering a special area? (from I-M inventory)**
 No 0
 Yes 1
35. Is this segment characterized by having a significant **open view** of an object or scene that is not on the segment? *(from I-M inventory)*
 No 0
 Yes 1
36. How **attractive** is the open view? *from I-M inventory)*
 Attractive.....0
 Neutral.....1
 Unattractive.....2
 No views.....3
37. Does any business, institution or residence feature an explicit display of symbols, colors, names, signs with **ethnic orientation?** *(modified from HEP-NOC)*
 No 0
 Yes 1
38. Does any business, institution or residence feature an explicit display of **GREEK/CYPRIOT national** symbols, colors, names, signs? *(added)*
 No 0
 Yes 1
39. What other **types of signs** are visible? **(Code all that apply)**
 None.....0
 Cultural events.....1
 Popular entertainment.....2
 Local athletic events.....3
 Political events/gathering.....4
 Neighbourhood social events.....5
 Neighbourhood crime watch.....6
 Neighbourhood helper/helping hand.7
 Security warnings.....8
 Beware of guard dog.....9
 No trespassing.....10
 No Parking 11
 No visitors/sales people.....12
- Unreadable signs.....13
 Commercial signs/ads.....14
 Other.....15
40. Are there **billboards** present on this segment? *(from I-M inventory)*
 Some/ A lot 2
 Few 1
 None 0
41. Are any of the following **advertisements** visible on the block face *(from HEP-NOC)?*
 Sign advertising tobacco products....1
 Sign advertising beer/other alcohol...2
 Sign advertising fast food.....3
 None of the above.....4
42. Rate the **attractiveness** of this segment? *(from I-M inventory)*
 Attractive.....3
 Neutral 2
 Unattractive 1
43. How **interesting** is the architecture/ urban design of this segment *(from I-M inventory)*
 Interesting 3
 Somewhat interesting 2
 Uninteresting 1

C. Commercial Establishments, Services, and Institutions

1. Please look at the list below and indicate the presence of **commercial establishments** that you observed on this block face. Are there any...(CIRCLE WHAT APPLIES)

01. Street vendors
02. Banks
03. Check cashing services
04. Pawn shops
05. Second hand stores/thrift shops
06. Massage parlour
07. Sex stores/porno shops/peep shows
08. Video store
09. Video games/pool halls
10. Liquor stores
11. Bars
12. Coffee shops: traditional
13. Coffee shops/cafe
14. Restaurants
15. Fast food/take out places
16. Hotels/motels
17. Cinema/theatre
18. Parking lot (commercial)
19. Barber shops and beauty salons
20. Dry cleaners/tailors
21. Laundromats
22. Clothing store
23. Discount stores (e.g. WalMart)
24. Convenience stores/7-11s
25. Food stores (e.g. bakery, butcher)
26. Grocery stores: large chain
27. Grocery stores: independent
28. Drug store/pharmacy
29. Specialty stores (e.g. books, software)
30. Variety stores
31. Electronics stores
32. Appliance sales/rental/ repair/etc
33. Home repair/hardware/lumber
34. Garden stores/nurseries
35. Furniture store: new
36. Furniture store: used
37. Gas station
38. Car repairs/garages
39. Car sales
40. Travel agents
41. Real estate
42. Manufacturing: light

43. Manufacturing: heavy
44. Warehouses
45. Other: specify.....
46. None

2. Please look at the list below and indicate the presence of **institutions** that you observed on this block face. Are there any (CIRCLE WHAT APPLIES)

01. Churches and religious Institutions
02. Police station
03. Courts/jails/detention centers
04. Fire station
05. Post office
06. Employment/manpower offices
07. Welfare offices
08. Public services
09. Health or medical clinic
10. Hospital
11. Day care center/nursery schools/children's centers
12. Public schools: elementary
13. Public schools: junior high
14. Public schools: high school
15. Public schools: technical
16. Schools: parochial or religious
17. Schools: private, trade/technical
18. Schools: private schools
19. Schools: college or university
20. Recreation/community center
21. Utilities: gas, water, electric
22. Community-based organization/ Charitable organizations
23. Library/ies
24. Other, specify.....
25. None

D. Residential Land Use

1. What are the **types of housing** on this block face? (**Code all that apply**)

No residential units	0
Single-family houses, detached.....	1
Single-family housed, semi-detached.....	2
Duplexes.....	3
Row houses.....	4
Low rise apartment buildings (seven or more units, one to four floors)	5
Mid-rise apartment buildings (4-10 floors)...	6
High-rise apartment buildings (> 10 floors)..	7
Housing units over commercial store fronts .	8
Other, specify	9

2. What type of residential housing occupies the **most** space on the block face? (from HEP-NOC)

No residential units	0
Single-family houses, detached.....	1
Single-family housed, semi-detached.....	2
Duplexes.....	3
Row houses.....	4
Low rise apartment buildings (seven or more units, one to four floors)	5
Mid-rise apartment buildings (4-10 floors)...	6
High-rise apartment buildings (> 10 floors)..	7
Housing units over commercial store fronts .	8
Other, specify	9

3. Roughly **how many residences** are there in this block face?

Less than 20	1
20–49	2
50–99	3
100+.....	4

4. How many **storeys high** are the majority of the buildings?

One.....	1
Two.....	2
Three to four.....	3
Five to nine.....	4
More than 10.....	5

5. How many buildings contain **vertical-mixed use** (i.e. building has different uses on different floors) (*from I-M inventory*)

Some/a lot.....1

Few.....	2
None	3
No building > 1 story.....	4

6. How would you rate the **condition** of the **best house/residential building** on the block face?

Abandoned, unusable.....	1
Poor/badly deteriorated/neglected.....	2
Fair (multiple minor/one major repair).....	3
Good (touch-up repair/cosmetic repairs)....	4
Excellent (new/newly renovated).....	5

7. How would you rate the **condition** of the **worst house/residential building** on the block face?

Abandoned, unusable.....	1
Poor/badly deteriorated/neglected.....	2
Fair (multiple minor/one major repair).....	3
Good (touch-up repair/cosmetic repairs)....	4
Excellent (new/newly renovated).....	5

8. In general, how would you rate the **condition** of the **most of the houses/ residential building** on the block face?

Abandoned, unusable.....	1
Poor/badly deteriorated/neglected.....	2
Fair (multiple minor/one major repair).....	3
Good (touch-up repair/cosmetic repairs)....	4
Excellent (new/newly renovated).....	5
Mixed (Extreme difference) AVOID THIS RESPONSE IF POSSIBLE.....	6

9. How would you rate the condition of the **best residential grounds** on the block face?

None/not applicable.....	0
Poor (significantly neglected).....	1
Fair (somewhat neglected).....	2
Good (e.g. slightly overgrown).....	3
Excellent (tented/cared for regularly).....	4

10. How would you rate the condition of the **worst residential grounds** on the block face?

None/not applicable.....	0
Poor (significantly neglected).....	1
Fair (somewhat neglected).....	2
Good (e.g. slightly overgrown).....	3
Excellent (tented/cared for regularly).....	4

11. How would you rate the condition of the **most of the residential grounds** on the block face?

None/not applicable.....0
 Poor (significantly neglected).....1
 Fair (somewhat neglected).....2
 Good (e.g. slightly overgrown).....3
 Excellent (tented/cared for regularly).....4
 Mixed (Extreme difference) 5

12. How many residences have private **driveways/private garages?** (*adapted from I-M inventory*)

Some/ A lot 2
 Few 1
 None.....0

13. What proportion of residences have some **form of decoration/external beautification** (e.g. decorated gardens/ balconies, nameplates, window boxes)?

None.....0
 1/2 or fewer of residences.....1
 More than 1/2 of residences.....2
 All.....3

14. Approximately what proportion of residences on this block face have their own **private yard/ garden space?**

None.....0
 Less than 1/4.....1
 Between 1/4 and 1/2.....2
 More than 1/2.....3
 All.....4

15. Approximately what proportion of residences have their own front **private balcony, porch or terrace?**

None.....0
 Less than 1/4.....1
 Between 1/4 and 1/2.....2
 More than 1/2.....3
 All.....4

16. Approximately what proportion of the residential buildings have a **border?**

None 0
 Less than 1/4.....1
 Between 1/4 and 1/2.....2
 More than 1/2.....3
 All.....4

17. What is the average **height of residence borders?**

Below waist level.....1
 Below head level.....2
 Above head level.....3

18. What proportion of residence buildings have **window security bars or gratings** on doors or windows?

None.....0
 Less than 1/4.....1
 Between 1/4 and 1/2.....2
 More than 1/2.....3
 All.....4

19. What proportion of residence buildings have signs indicating they are protected by **private security services?**

None.....0
 Less than 1/4.....1
 Between 1/4 and 1/2.....2
 More than 1/2.....3
 All.....4

20. What proportion of residence buildings have signs indicating they are **protected by dogs?**

None.....0
 Less than 1/4.....1
 Between 1/4 and 1/2.....2
 More than 1/2.....3
 All.....4

21. Are there any barking dogs in this segment? (*adapted from I-M inventory*)

No.....0
 Yes.....1

22. Do you see any stray or loose **dogs?** (*from HEP-NOC*)

No.....0
 Yes.....1

23. What proportion of residences have “**for sale**” or “**for rent**” signs?

None.....0
 Less than 1/10.....1
 One in ten to 1/4.....2
 More than 1/4.....3

24. What proportion of residences are
burned out, boarded up, or abandoned?

None.....	0
Less than 1/10.....	1
One in ten to ¼.....	2
More than ¼.....	3

25. Are any of the residential buildings
being **renovated?** (ADDED)

No	0
Yes	1

E. Non-Residential Land Use

1. How many **vacant/undeveloped lots** are there in this block face?
None 0
Less than ¼.....1
Between ¼ and ½.....2
More than ½.....3
All.....4
2. What is the overall **condition of the vacant/undeveloped property?**
No vacant/underdeveloped property...0
Poor.....1
Fair.....2
Good.....3
Mixed (extreme difference).....4
3. What is the overall **condition of the commercial/industrial buildings/grounds?**
No commercial/industrial buildings...0
Abandoned, unusable.....1
Poor/deteriorated (major repairs).....2
Fair (multiple minor repairs/1 major)...3
Good (near perfect, touch-up repairs)...4
Excellent (new or newly renovated)...5
Mixed (extreme difference).....6
4. What proportion of the commercial/industrial buildings have **security bars/grating on windows and/or pull-down metal security blinds on the doors and entrances?**
None.....0
Less than ¼.....1
Between ¼ and ½.....2
More than ½.....3
All.....4
5. What proportion of the commercial/industrial properties have **security fences, high mesh fencing with barbed wire or spiked tops and/or security devices?**
None.....0
Less than ¼.....1
Between ¼ and ½.....2
More than ½.....3
All.....4
6. What proportion of the commercial / industrial buildings have “**for sale**” or “**for rent**” signs?
None.....0
Less than 1/10.....1
One in ten to ¼.....2
More than ¼.....3
7. Are any of the commercial/industrial buildings being **renovated**?
No 0
Yes 1

F. Parks, Playground, Outdoor public spaces

1. Is there a **park or playground**?
No 0
Yes (unfettered access).....1
Yes (controlled access).....2
2. What is the overall **condition of playgrounds/ parks?**
Poor/deteriorated.....1
Fair.....2
Good.....3
Excellent.....4
Mixed (extreme difference).....5
3. Who are the **occupants of the playgrounds/parks?**
No one.....0
Adults only.....1
Adults with children.....2
Teen groups.....3
Groups of unaccompanied children...4
Mixed usage.....5
4. What **other play spaces** are available?
(Code all that apply)
None (Skip to question #60).....0
Sidewalks.....1
Open or undeveloped/vacant lots.....2
Street 3
Public gardens.....4
Plaza/square 5
Residence grounds.....6
Dead-end street or cul-de-sac.....7
Concrete slab (for basketball, etc.).....8
Other public space 9

- Other sports fields.....10
Other.....11
5. Are any **vacant lots or open or undeveloped spaces** (not fenced in)? (modified from HEP-NOC)
- In good condition (well-kept).....1
 - In poor condition (poorly kept).....2
 - Equipped with playground equipment.....3
 - Used for gardens.....4
 - Used for parking.....5
 - Set up with chairs or furniture for socializing.....6
 - None of the above.....7
6. What is the overall **condition of public use recreational spaces or grounds, other than parks & playgrounds assessed above (including vacant lots)?** (from HEP-NOC)
- None.....0
 - Poor/deteriorated (e.g. trash, overgrown, broken glass etc).....1
 - Fair (moderate trash, somewhat overgrown etc).....2
 - Good (very little or no trash, grass cut, no broken glass).....3
 - Excellent.....4
 - Mixed (extreme difference).....5
7. Who are the **occupants of other play spaces?**
- No one.....0
 - Adults only.....1
 - Adults with children.....2
 - Teen groups.....3
 - Groups of unaccompanied children.....4
 - Mixed usage.....5
8. What kinds of **recreational facilities/destination** are on the block face? (Code all that apply)
- None 0
 - Park.....1
 - Playground.....2
 - Sports/playing fields/courts 3
 - Swimming pool 4
 - Community yards/gardens.....5
 - Community centre.....5
 - Gym/indoor facility.....6
 - Plaza/Square.....7
 - Vacant lots/undeveloped land.....8

- Beach 9
- Nature feature.....10
- Other (specify).....11

9. Do the **recreational facilities contain:**
- Sports fields/courts.....1
 - Sports stands/seating.....2
 - Sports equipment.....3
 - Playground equipment.....4
 - Picnic tables.....5
 - Pools.....6
 - Bike/walking paths.....7
 - None of the above.....8
10. In general, how would you rate the condition of the **public use recreational equipment** on the block face? (from HEP-NOC)
- None.....1
 - Poor (needs major repair, unusable).....2
 - Fair (peeling paint, minor repair, usable)3
 - Good.....4
 - Excellent.....5
11. What proportion of private residence grounds have **toys or play equipment?**
- None.....0
 - Less than ¼.....1
 - Between ¼ and ½.....2
 - More than ½.....3
 - All.....4
 - Not applicable/no yards.....5
12. In general, how would you rate the **condition of the toys or play equipment** in private **residence** grounds? (added)
- None.....1
 - Poor (needs major repair, unusable).....2
 - Fair (peeling paint, minor repair, usable)3
 - Good.....4
 - Excellent.....5

G. People

1. Are there any **people** visible outdoors?
- Yes.....1
 - No.....2
2. **Who** do you see? (Code all that apply)
- Adults (ages 18 and up).....1
 - Teenagers (ages 13-17).....2

Preteens (ages 6-12).....3
 Preschool children (ages 5 and under)...4

3. What is the **reaction of neighbours to raters?** (Code all that apply)
 None or very little notice taken.....0
 Friendly greeting.....1
 Glances of idle curiosity.....2
 Blatant speculative stares.....3
 Treated with suspicion.....4
 Residents ask raters what they are doing.....5
 Entered into conversation.....6
 People tell raters what to do for neighbourhood.....7
 Verbally or physically harassed..... 8

4. Did you see any **children** the block face?
(Code all that apply)
 Did not see children 0
 Sitting or standing on the porch or in the front yard.....1
 Playing on the porch or in the front yard.....2
 Walking, playing in a park/ playground/recreational space.....3
 Sitting/standing/playing in street 4
 Sitting/standing/playing in an undeveloped/vacant lot.....5
 Walking on the sidewalk or street.....6

5. **How many children** (under 12 yrs old) did you see?
 One to five.....1
 Six to 11.....2
 12 or more.....3

6. What proportion of **children were under adult supervision?**
 None.....0
 Less than ¼.....1
 Between ¼ and ½.....2
 More than ½.....3
 All.....4

7. Did you see any **teenagers** in the neighbourhood?
 No (Skip to question #79).....0
 Yes 1

8. Did you see any **teenagers in groups** of three or more?
 No (Skip to question #79).....0
 Yes 1

9. Were teenagers in the groups you saw **male, female, or mixed?**
 All male..... 1
 All female 2
 Mixed male/female 3

10. What do you see **teenagers** doing?
(Code all that apply)
 Did not see teenagers 0
 Walking, not necessarily for exercise.....1
 Gardening or landscaping.....2
 Socializing/talking with other teenagers....3
 Doing home chores, or car care.....4
 Sitting or standing on the porch 5
 Supervising children.....6
 Standing/loitering on the sidewalk.....8
 Drinking alcohol.....9
 Smoking.....10
 Waiting at a public transit stop.....11
 Walking a dog.....13
 Exercising/ active behavior.....15
 Encaging in recreational activity.....16
 Other.....17

11. What **adult activity** did you observe?
(Code all that apply)
 Did not see adults 0
 Walking, not necessarily for exercise.....1
 Gardening or landscaping.....2
 Socializing.....3
 Doing home repair, or car care.....4
 Sitting or standing on the porch 5
 Supervising children.....6
 Patronizing business establishments.....7
 Standing/loitering on the sidewalk.....8
 Drinking alcohol.....9
 Smoking.....10
 Waiting at a public transit stop.....11
 Getting into or out of vehicles..... 12
 Walking a dog.....13
 Conducting home-based vending.....14
 Exercising/ active behavior.....15
 Encaging in recreational activity.....16
 Other.....17

12. Did you see any people **drinking alcohol** openly in the block face?
 No 0
 Yes 1

13. Did you see **disorderly or misbehaving groups of children**?
 No 0
 Yes 1

14. Did you see **disorderly or misbehaving groups of teenagers**?
 No 0
 Yes 1

15. Did you see **disorderly or misbehaving groups of adults**?
 No 0
 Yes 1

16. Did you hear or see another **language** other than English in the block face?
 Did not hear or see any non- English language(s).....0
 Heard or saw other language(s).....1

H. Incivilities

1. Is there **garbage, junk or litter (incl. broken glass, clothes, paper)** on any of the streets or sidewalks, in yards, or vacant lots?
 None 0
 A little/light 1
 Some.....2
 A lot/heavy.....3

2. Are there **empty beer containers or liquor bottles** on the street or sidewalks, in yards, or vacant lots?
 None 0
 A little/light.....1
 Some.....2
 A lot/heavy 3

3. Are there **cigarettes or cigar butts or discarded cigarette packages** on any of the streets or sidewalks, in yards/lots or gutters?
 None 0

A little/light.....1
 Some.....2
 A lot/heavy 3

4. Are there any **piles (significant accumulations) of garbage or dumped materials** on any of the streets or sidewalks, in yards/lots or gutters?
 No.....0
 Yes.....1

5. Are there **animal droppings/fouling** on the sidewalks/street?
 None 0
 A little/light.....1
 Some.....2
 A lot/heavy 3

6. Is there **graffiti** on any of the buildings, sidewalks, walls, or signs?
 None 0
 A little.....1
 Some.....2
 A lot.....3

7. What **types of graffiti** are visible? (**Code all that apply**)
 Political.....1
 Tagging.....2
 Art 3
 Message (lyrics, love).....4
 Message (obscene).....5
 Other.....6

8. Is there **painted-over graffiti** on any of buildings, sidewalks, walls, or signs?
 None 0
 A little.....1
 Some.....2
 A lot.....3

9. How much **vandalism** (other than graffiti e.g. broken windows, broken telephone boxes, damaged equipment etc) is present on public spaces or private properties (e.g. broken windows)?
 None 0
 Some (2 or less occurrences) 1
 Moderate (many small or up to one significant occurrence).....2

Extensive (large areas of small or more than one significant occurrence).....3

10. Do what extent did you experience any **unpleasant noxious smells** during your observation (urine, rotting garbage, etc.)?

Not at all 0

Some 1

Quite a bit.....2

11. Do what extent did you experience **unpleasant or noxious levels of dirt or dust in the air** during your observation?

Not at all 0

Some 1

Quite a bit.....2

12. How **noisy** is the street? (from HEP-NOC)

Very quiet 1

Fairly quiet.....2

Somewhat noisy.....3

Very noisy.....4

13. Did you hear **loud music** playing from boom boxes or any of the buildings in the neighbourhood?

No 0

Yes 1

Walk along the block face to answer any unanswered questions

Now, walk along the streets perpendicular to the street you have just assessed.

Think How characteristic is this street of the wider neighborhood

1. How similar would you say is the audited street to the adjacent streets/ wider neighborhood?

Very similar.....1

Somewhat similar.....2

Somewhat dissimilar.....3

Very dissimilar.....4

Comments:

Please include any comments that may bear on the observations recorded. For example, was the weather unusual or severe? Was one side of the street considerably nicer than the other side? You may also use this space to record ad libitum observations of anything interesting/relevant that cannot be recorded onto the survey.

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

APPENDIX VII Differences across three groups of neighborhoods defined by level of educational attainment

	Low educational attainment group		Medium educational attainment group		High educational attainment group		p-value one-way ANOVA	p-value Kruskal-Wallis	P-value for trend
	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)			
Amenities for outdoor public spaces: domain1	19.2 (27.0)	4.1 (0.0-25.0)	35.1 (26.3)	29.2 (16.8-66.8)	31.7 (23.5)	25.0 (16.8-58.3)	0.36	0.27	0.21
	<i>Notes: Neighborhoods with the lowest educational attainment tend to score lower in terms of amenities for outdoor public spaces, but differences not statistically significant. Other two groups not much difference.</i>								
Architecture/Building characteristics: domain 2	48.7 (18.0)	48.1 (29.7-61.2)	46.1 (28.3)	39.8 (20.3-77.8)	73.5 (26.6)	83.3 (70.4-88.9)	0.04	0.04	0.03
	<i>Notes: Neighborhoods with the highest educational attainment have statistically significantly higher scores in terms of architecture and building characteristics, compared to the other two groups of neighborhoods.</i>								
Cycling environment: domain 4	5.5 (10.8)	0.0 (0.0-11.0)	14.7 (18.0)	5.5 (00-33.3)	17.7 (14.1)	11.0 (11.0-33.3)	0.17	0.15	0.04
	<i>Notes: All three groups of neighborhoods score very low in terms of cycling environment, but there appears to be a trend favoring the better-off neighborhoods in terms of educational attainment of the residents.</i>								
Ethnic identification: domain 5	6.7 (21.1)	0.0 (0.0-0.0)	23.3 (27.4)	16.7 (0.0-33.3)	16.7 (23.6)	0.0 (0.0-33.3)	0.32	0.33	0.23
	<i>Notes: It appears that neighborhoods at either end of the educational attainment continuum tend to have lower scores in terms of ethnic identification, but no clear pattern can be inferred.</i>								
Land use: domain 6	53.9 (12.7)	51.4 (47.2-58.3)	53.6 (10.0)	54.2 (44.5-58.3)	51.7 (10.6)	52.8 (47.2-58.3)	0.89	0.97	0.88
	<i>Notes: no observed difference in terms of land use across neighborhoods with different educational attainment.</i>								
Landscape/Nature features: domain 7	48.7 (25.3)	43.8 (24.8-62.8)	51.3 (21.8)	48.0 (37.3-62.8)	63.1 (20.6)	62.8 (62.8-75.3)	0.33	0.32	0.15
	<i>Notes: Even though differences are not large, there appears to be a slight, non-significant, trend of better scores in terms of landscape and nature features by level of educational attainment.</i>								

Maintenance/Appearance: domain 8	44.0 (13.2)	38.8 (35.0-50.0)	47.5 (20.1)	41.3 (32.5-65.0)	66.0 (16.9)	72.5 (57.5-75.0)	0.02	0.03	0.02
	<i>Notes: There is a clear statistically significant trend of better scores in terms of maintenance and appearance by level of educational attainment.</i>								
Parking & Driveways: domain 10	33.3 (13.6)	33.3 (33.3-33.3)	53.3 (37.5)	33.3 (16.7-100.0)	58.3 (32.6)	50.0 (33.3-100.0)	0.16	0.31	0.10
	<i>Notes: Even though differences are not large, there appears to be a slight, non-significant, trend of better scores in terms of parking and driveways by level of educational attainment.</i>								
Pedestrian environment: domain 11	42.5 (9.2)	43.8 (41.6-50.0)	30.0 (19.8)	27.1 (16.6-45.8)	43.0 (16.7)	47.9 (29.3-54.1)	0.14	0.10	0.63
	<i>Notes: Neighborhoods at either end of the educational attainment continuum seem score higher in terms of walking environment compared to the middle group, even though differences are not statistically significant.</i>								
Physical disorder (lack of): domain 12	73.0 (20.6)	66.8 (63.3-96.7)	74.1 (15.7)	76.8 (66.8-83.4)	87.7 (11.2)	88.4 (83.4-96.7)	0.10	0.11	0.07
	<i>Notes: Observed differences are not large, as all types of neighborhoods score quite high in terms of lack of physical disorder, but there appears to be a clear trend of better scores by increasing educational attainment.</i>								
Recreational uses/Public spaces: domain 13	18.5 (21.0)	10.4 (5.5-15.3)	42.9 (26.2)	35.4 (25.0-54.2)	35.8 (21.5)	35.4 (16.7-59.8)	0.07	0.04	0.06
	<i>Notes: Neighborhoods with the lowest educational attainment tend to score lower in terms of recreational uses and public spaces, than other two groups of neighborhoods.</i>								
Safety (lack of security-related features): domain 14	71.3 (9.3)	70.8 (66.7-79.2)	69.2 (24.4)	70.8 (41.7-95.8)	60.8 (10.2)	58.3 (58.3-66.7)	0.33	0.20	0.09
	<i>Notes: Even though all score high in terms of safety, it appears that neighborhoods with the highest educational attainment tend to score somewhat lower; more likely to reflect perceived lack of safety.</i>								
Sidewalks & Barriers (lack of): domain 15 & 3	46.0 (10.5)	43.0 (37.5-54.2)	59.9 (16.8)	58.3 (45.8-75.0)	61.1 (22.8)	59.7 (41.7-70.8)	0.12	0.11	0.09
	<i>Notes: Even though differences are not large, there appears to be a clear trend of better scores in terms of the presence of sidewalks and lack of barriers by increasing educational attainment.</i>								
Signs /Messages (lack of): domain 16	77.0 (13.8)	82.5 (70.0-85.0)	78.8 (8.2)	80.0 (73.2-85.0)	73.8 (16.4)	80.0 (56.6-85.0)	0.70	0.93	0.69
	<i>Notes: No differences in terms of signs and messages by level of educational attainment.</i>								
Smell, pollution, noise (lack of): domain 17	75.8 (19.0)	70.8 (66.7-100.0)	83.3 (15.7)	83.3 (66.7-100.0)	92.5 (13.9)	100.0 (83.3-100.0)	0.09	0.16	0.04

	<i>Notes: While all groups of neighborhoods score high in terms of lack of smell, pollution and noise, there appears to be a trend favoring neighborhoods with higher educational attainment</i>								
Streets (quality) & Traffic (lack of): domain 19	49.2 (18.9)	50.0 (45.8-62.5)	54.2 (15.7)	58.3 (41.8-66.8)	51.3 (13.6)	54.1 (45.8-58.3)	0.79	0.84	0.99
	<i>Notes: No clear observed pattern in terms of quality of streets and traffic by level of educational attainment.</i>								
Social disorder (lack of): domain 21	85.0 (9.5)	87.5 (75.0-91.7)	83.3 (18.4)	91.7 (83.3-91.7)	89.2 (7.9)	91.7 (91.7-91.7)	0.58	0.61	0.26
	<i>Notes: No observed differences across groups of neighborhoods, as all score high in terms of lack social disorder.</i>								

APPENDIX VIII Nominal Group Technique

CyNOTes

Ημερομηνία: 12/12/2018

ΔΟΜΗΜΕΝΗ ΑΣΚΗΣΗ ΚΑΘΟΡΙΣΜΟΥ ΠΡΟΤΕΡΑΙΟΤΗΤΩΝ

μέσω ονομαστικής ομαδικής τεχνικής (nominal group technique)

Παρακαλείστε όπως σημειώσετε ανεξάρτητα ο ένας από τον άλλο τα 10 κυριότερα στοιχεία του φυσικού, δομημένου και κοινωνικού περιβάλλοντος που κατά την κρίση σας με άμεσο ή έμμεσο τρόπο επηρεάζουν την υγεία και την ποιότητα ζωής των κατοίκων και πιστεύετε θα πρέπει να συμπεριληφθούν στο εργαλείο επιθεώρησης της αστικής γειτονιά το οποίο που αναπτύσσετε.

Μην διστάσετε να κάνετε διευκρινιστικές ερωτήσεις.

1^ο ΣΤΑΔΙΟ: Παραγωγή ιδεών (Silent generation of ideas) – 15 λεπτά

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

2° ΣΤΑΔΙΟ: Καταγραφή εισηγήσεων (round robin) – 15 λεπτά

Με τη σειρά, ο κάθε παρευρισκόμενος εισηγείται ένα θέμα. Όλα τα προτεινόμενα θέματα θα αναγράφονται στο χαρτοπίνακα. Η διαδικασία συνεχίζεται μέχρι να εξαντληθούν τα θέματα. Όπου χρειάζεται, τα θέματα ομαδοποιούνται ώστε να μην υπάρχει επανάληψη.

3° ΣΤΑΔΙΟ: Διευκρινήσεις και ομαδοποίηση (grouping of suggestions) – 15 λεπτά

Με τη συμφωνία των μελών της ομάδας τα προτεινόμενα θέματα ομαδοποιούνται περαιτέρω με βάση τη συνάφεια. Ο τελικός κατάλογος θεμάτων (και σχετικών υπο-θεμάτων), απαριθμούνται **με τα γράμματα του αλφαβήτου** (Α, Β, Γ ή και Α1, Α2, κτλ αν πρόκειται για υπο-θέματα). *Πιο κάτω υπάρχει χώρος για τις σημειώσεις σας, εάν το χρειαστείτε.*

4° ΣΤΑΔΙΟ: Ψηφοφορία και καθορισμός προτεραιοτήτων (voting) – 15 λεπτά

Να επιλέξετε τα 5 σημαντικότερα θέματα από τον κατάλογο. Ακολουθώντας, να τα ταξινομήσετε σε σειρά προτεραιότητας σε κλίμακα 1-5 ως προς το βαθμό σημαντικότητας, δίνοντας την υψηλότερη βαθμολογία (5) στο πιο σημαντικό θέμα, και αντίστοιχα (1) σε αυτό το οποίο αν και επίσης σημαντικό το κατατάσσετε χαμηλότερα συγκριτικά με τα υπόλοιπα.

Η διαδικασία ολοκληρώνεται με την καταμέτρηση των ψήφων.

APPENDIX IX CyNOTes v2.0

CyNOTes

Cyprus Neighborhood Observation Tool for
auditing urban community environments

Other (Specify:)

8

B.Characteristics of the general environment, streets and sidewalks

Data Collector Name:

Date:

Time of Day:

Neighbourhood:

of obs. made in this neighbourhood:

Street segment approximate length:

General information

1. What mode of **transportation** are you using?

Walking	1
Driving	2
2. What are the current **weather** conditions?

Sunny, hot & humid	1
Sunny & pleasant	2
Partly sunny	3
Cloudy	4
Rainy	5

A.General land use

1. Based on street-level footage, how is the **land used** on this block face? (**PROFILE ONLY: Mark all that apply**)

Residential (not vacant)	1
Commercial, business, professional	2
Industrial, warehouse, manufacturing	3
Institutional (school, church, medical)	4
Parking lot	5
Vacant lot or open space	6
Vacant residential house/building	7
Vacant non-residential	8
Park or playground	9
Waterfront	10
Expressway	11
2. How would you characterize the **predominant land use** on this block face? (**Code ONLY predominant form**)

Primarily residential	1
Primarily commercial	2
Primarily industrial	3
Primarily institutional	4
Primarily recreational	5
Primarily vacant/undeveloped lots	6
Mixed (AVOID, if possible)	7

1. Type of street (Mark all that apply)

Major/busy street	1
Moderately busy street	2
Side street (to major road)	3
Residential road	4
Dead-end street	5
One-way street	6

2. What is the **traffic flow**?

No traffic/Very light	5
Light (occasional)	4
Moderate	3
Heavy	2
Very heavy (steady stream)	1

3. How would you rate the condition of the **street surfaces**?

Very Poor (sizeable cracks, potholes, broken curb along MOST or all)	1
Poor (problems along more than half the length of the street)	2
Fair (occasional problems but less than half the length of street)	3
Moderately good (problems in only one or two places)	4
Very good (no major cracks, potholes, or broken curb throughout)	5

6. Are there any **speed reducing measures** on the street?

None	0
Otherwise CODE ALL THAT APPLY	
Speed bump	1
Roundabout	2
Reduced speed limit posted	3
School/playground zone	4
Other (Specify)	5

7. Are there places intended and/or marked for pedestrians to **cross the street**?

Many	5
Some	3
None	1

8. For an individual on foot, how **safe** (traffic wise) do you think it is to **cross** the street?

Very safe (presence of speed reducing measures and no/very light passing through traffic and no obstructions)	5

Pretty safe	4	One	4
Not very safe	2	Two or three	3
Very unsafe (no speed reducing measures, steady stream of traffic, fast coming cars, obstructions for visibility)	1	Four or five	2
		More than five	1
9. For an individual on foot, how **convenient** (e.g. not having to walk far to cross with safety) do you think it is to cross the **street**?
- | | |
|---------------------|---|
| Very convenient | 5 |
| Pretty convenient | 4 |
| Not very convenient | 2 |
| Very inconvenient | 1 |
10. What are the **parking arrangements** on the block face? (**Code the predominant form**)
- | | |
|------------------------------------|---|
| None | 1 |
| Mostly street | 2 |
| Mostly private parking lots | 3 |
| Mostly public lots | 4 |
| Mostly off-street (e.g. driveways) | 5 |
11. Are there **cars parked** on the **pavement**?
- | | |
|---|---|
| No, not at all | 5 |
| Yes, but only 1-2 occasions | 4 |
| Yes, more frequent than 1-2 occasions | 3 |
| Yes, very frequent e.g. along more than ¼ of the length of the road | 2 |
| Yes, along more than ½ of the length of the road | 1 |
12. Did you observe any **parking violations**, other than parking on the pavement, such as illegal parking, blocking driveway or other access, parking on disable spaces, etc?
- | | |
|------|---|
| No | 5 |
| Some | 3 |
| Many | 1 |
13. Are there **abandoned cars/trucks** on any of the streets, alleys or lots visible on this block face?
- | | |
|----------------|---|
| None | 5 |
| One | 4 |
| Two or three | 3 |
| Four or five | 2 |
| More than five | 1 |
14. Are there **old, beat-up cars/trucks** on the street, in driveways or yards on this block face?
- | | |
|------|---|
| None | 5 |
|------|---|
15. How many sides of the street have **sidewalks**?
- | | |
|---------|---|
| Neither | 1 |
| One | 3 |
| Both | 5 |
16. Is the **sidewalk complete/ continuous** on one or both sides?
- | | |
|-------------------------------------|---|
| Yes, no problems with continuity | 5 |
| Occasional problems here and there | 4 |
| Some problems on at least one side | 3 |
| A lot of problems on both sides | 2 |
| No continuity throughout/both sides | 1 |
17. How would you rate the **walkability** of this segment?
- | | |
|---|---|
| No sidewalks on either side | 1 |
| Narrow sidewalk, one side, none on the other (not wide enough for two people to cross each other) | 2 |
| Narrow sidewalk on both sides | 3 |
| Wide sidewalk, at least one side | 4 |
| Wide sidewalk, both sides | 5 |
18. **Obstructions** for walkability on sidewalks (e.g. parked cars, lamp posts/trees, pots, discontinuity, untrimmed trees or plants blocking the way, etc)?
- | | |
|---|---|
| None | 5 |
| A little (1-2 places, not that significant) | 4 |
| Some (more than 1-2 places) | 3 |
| A lot (frequent) | 2 |
| Throughout (very frequent) | 1 |
19. Is there a **buffer** (e.g. parked cars, landscaped strips) between sidewalk and street for separation between pedestrians and passing traffic?
- | | |
|-----------------------------------|---|
| No, nowhere | 1 |
| Couple of places, not significant | 2 |
| In several places | 3 |
| Generally, only few exceptions | 4 |
| Yes, nearly throughout | 5 |
20. How would you rate the **condition** of the **sidewalks** on the block face?
- | | |
|--|---|
| No sidewalks | 1 |
| Poor (holes, sizeable cracks, crumbling, or uneven along MOST surface) | 2 |

Fair (holes, sizeable cracks, crumbling, or uneven along SOME of the surface)	3	28. Are there houses with purposely planted vegetation (including healthy pots and baskets)?	
Moderately good (holes and cracks, only, OCCASIONALLY)	4	None	1
Very good	5	1%-24% of houses	2
Under construction	9	25%-49% of houses	3
		50%-99% of houses	4
		100%	5
21. Are there **greenbelts, trails, paths or lanes** intended for walking, other than sidewalks in the area?
- | | |
|-----|---|
| Yes | 5 |
| No | 1 |
22. Is there **outdoor lighting** on the segment (including street lights, public paths or public spaces)?
- | | |
|---|---|
| Not at all, area would be dark at night | 1 |
| Not as much as needed | 2 |
| Normal, probably like anywhere else | 3 |
| Yes, probably more than elsewhere | 4 |
| Yes, a lot, very well lid | 5 |
23. How **steep** or hilly is this segment?
- | | |
|----------------------|---|
| Steep slope | 1 |
| Moderate slope | 3 |
| Flat or gentle slope | 5 |
24. Is there **public transportation** (e.g. a bus stop, on a bus route) in this block?
- | | |
|-----|---|
| Yes | 5 |
| No | 1 |
25. Are there purposefully planted trees or other vegetation in **other public spaces** (e.g. green area)?
- | | |
|---------------------------|---|
| None, nowhere | 1 |
| Yes, in one or two places | 3 |
| Yes, some/a lot | 5 |
26. Are there **trees** in people's front gardens?
- | | |
|-------------------|---|
| None | 1 |
| 1%-24% of houses | 2 |
| 25%-49% of houses | 3 |
| 50%-99% of houses | 4 |
| 100% | 5 |
27. Is the sidewalk shaded by **trees**?
- | | |
|-----------------------------------|---|
| Yes, in many places | 5 |
| Somewhat, at least in some places | 3 |
| No, nowhere | 1 |
29. Mark all types of **public spaces** on this area
- | | |
|---|---|
| None | 0 |
| Otherwise CODE ALL THAT APPLY (<i>and count occurrences of different types for the purposes of coding 0-25-50-75-100</i>) | |
| Playground/Park | 1 |
| Playing or sport field | 2 |
| Plaza/square/courtyard | 3 |
| Public garden/green area | 4 |
| Beach | 5 |
| Vacant lot/undeveloped land | 6 |
| Nature feature | 7 |
| Other (Specify:) | 9 |
30. What is the general **condition of the public spaces**?
- | | |
|---|---|
| None | 0 |
| Very poor/very deteriorated | 1 |
| Poor, not very well-kept | 2 |
| Fair | 3 |
| Good/well-kept | 4 |
| Very good/very well-kept | 5 |
| Mixed (extreme difference, AVOID if possible) | 9 |
31. What **public courtesies** are visible?
- | | |
|---|---|
| None | 0 |
| Otherwise CODE ALL THAT APPLY (<i>and count occurrences of different types for the purposes of coding 0-25-50-75-100</i>) | |
| Trash cans/bins (non-residential) | 1 |
| Public phones | 2 |
| Public seating/benches | 3 |
| Recycling facilities | 4 |
| Dog bins | 5 |
| Other (Specify:) | 9 |
32. Are there **bicycle facilities**?
- | | |
|---|---|
| None | 0 |
| Otherwise CODE ALL THAT APPLY (<i>and count occurrences of different types for the purposes of coding 0-50-100</i>) | |
| Bicycle parking/stands | 1 |
| Bicycle lanes | 2 |
| Other (Specify:) | 3 |

33. How would you rate the **bikability** of this segment, on shoulder/marked lane, not considering the road?
- | | |
|--|---|
| No shoulder/marked lane, a cyclist would have to cycle on the road | 1 |
| Narrow marked lane/paved shoulder | 3 |
| Wide marked lane/paved shoulder | 5 |
34. **Obstructions** for bikability (on shoulder/marked lane, or, if not present, on the road)
- | | |
|----------|---|
| A lot | 1 |
| Many | 2 |
| Some | 3 |
| A little | 4 |
| None | 5 |
35. Are there indications of **neighborhood uniformity**?
- | | |
|---------------------------------|---|
| No, extreme difference | 1 |
| Fairly, like anywhere else | 3 |
| Yes, more so than anywhere else | 5 |
36. Are there signs or indications which denote a **neighborhood** name or monuments/markers (e.g. statue, banner etc) that indicate someone is entering a **special area**?
- | | |
|-----|---|
| Yes | 5 |
| No | 1 |
37. Is this segment/area characterized by having a significant **open view** of an object or spot of interest (e.g. square, green space etc) or a wider scene beyond the segment?
- | | |
|-----|---|
| Yes | 5 |
| No | 1 |
38. How **attractive** is the open view?
- | | |
|----------------------------|---|
| No views | 0 |
| Otherwise, RATE AS FOLLOWS | |
| Unattractive | 1 |
| Neutral | 3 |
| Attractive | 5 |
39. Did you hear another **language** other than Greek while in the area?
- | | |
|-------------------------------------|---|
| No, did not hear any other language | 1 |
| Yes, heard other language(s) | 5 |
40. Does any business, institution or residence display symbols, colors, names, and/or signs with **ethnic orientation**?
- | | |
|---------------------------------------|-------|
| None | 1 |
| 1-2 occurrences | 2 |
| More than 1-2 occurrences | 3 |
| Quite common | 4 |
| Very common | 5 |
| <i>If quite/very common, specify:</i> | |
41. Does any business, institution or residence display **GREEK/CYPRIOT national** symbols, colors, names and/or signs?
- | | |
|---------------------------------------|-------|
| None | 1 |
| 1-2 occurrences | 2 |
| More than 1-2 occurrences | 3 |
| Quite common | 4 |
| Very common | 5 |
| <i>If quite/very common, specify:</i> | |
42. What other **types of signs** are visible?
- | | |
|---|---|
| None | 0 |
| Otherwise, CODE ALL THAT APPLY (Group: positive, safety and social) | |
| Cultural or Athletic events | 1 |
| Neighbourhood social events | 2 |
| Neighbourhood crime watch | 3 |
| Security warnings | 4 |
| Beware of guard dog | 5 |
| No Parking | 6 |
| No visitors/sales people | 7 |
| Other (Specify:) | 8 |
43. Are there **billboards/signage** present on this segment, including shops and other businesses' signage?
- | | |
|----------------|---|
| Excessive | 1 |
| A lot | 2 |
| Some | 3 |
| Rare, 1-2 only | 4 |
| None | 5 |
44. Are any of the following **advertisements** visible on the block face?
- | | |
|--|---|
| None | 5 |
| Otherwise INDICATE ALL THAT APPLY (<i>and count occurrences for the purposes of coding 0-25-50-75-100</i>) | |
| Sign advertising tobacco products | 1 |
| Sign advertising beer/other alcohol | 2 |
| Sign advertising fast food | 3 |
| Other <u>unhealthy</u> (Specify:.....) | 9 |

45. How **interesting** is the architecture/ urban design of this segment?

Interesting	5
Somewhat interesting	3
Neutral/Uninteresting	1

46. On the whole, rate the **attractiveness** of this segment?

Very attractive	5
Attractive	4
Neutral	3
Unattractive	2
Very unattractive	1

C. Commercial Establishments, Services, and Institutions

1. Please look at the list below and indicate the presence of **commercial establishments** that you observed on this block face. **Are there any...?** (CIRCLE WHAT APPLIES)
 01. Street vendors
 02. Banks
 03. Check cashing services
 04. Pawn shops
 05. Second hand stores/thrift shops
 06. Massage parlour
 07. Sex stores/porno shops/peep shows
 08. Video store
 09. Video games/pool halls
 10. Liquor stores
 11. Bars
 12. Coffee shops: traditional
 13. Coffee shops/cafe
 14. Restaurants
 15. Fast food/take out places
 16. Hotels/motels
 17. Cinema/theatre
 18. Parking lot (commercial)
 19. Barber shops and beauty salons
 20. Dry cleaners/tailors
 21. Laundromats
 22. Clothing store
 23. Discount stores /wholesales
 24. Convenience stores/7-11s/kiosks
 25. Food stores (e.g. bakery, butcher)
 26. Grocery stores: large chain
 27. Grocery stores: independent
 28. Drug store/pharmacy
 29. Specialty stores (e.g. books, software)
 30. Variety stores
 31. Electronics stores
 32. Appliance sales/rental/ repair/etc
 33. Home repair/hardware/lumber
 34. Garden stores/nurseries
 35. Furniture store: new
 36. Furniture store: used
 37. Gas station
 38. Car repairs/garages
 39. Car sales
 40. Travel agents
 41. Real estate
 42. Manufacturing: light
 43. Manufacturing: heavy
 44. Warehouses
 45. Other: specify.....
2. Please look at the list below and indicate the presence of **institutions** that you observed on this block face. **Are there any...?** (CIRCLE WHAT APPLIES)
 01. Churches and religious institutions
 02. Police station
 03. Courts/jails/detention centers
 04. Fire station
 05. Post office
 06. Employment/manpower offices
 07. Welfare offices
 08. Public services
 09. Health or medical clinic
 10. Hospital
 11. Day care center/ nursery schools
 12. Public schools: elementary
 13. Public schools: junior high
 14. Public schools: high school
 15. Public schools: technical
 16. Schools: parochial or religious
 17. Schools: private, trade/technical
 18. Schools: private schools
 19. Schools: college or university
 20. Recreation/community center
 21. Utilities: gas, water, electric
 22. Community organizations/Charities
 23. Library/ies
 24. Other, specify.....
 -
 -
 -
 -

D. Residential Land Use

1. What are the **types of housing** on this block face? (**Code all that apply**)

No residential units	0
Single-family houses, detached	1
Single-family housed, semi-detached	2
Duplexes	3
Row houses	4
Low-rise apartment block (7 or more units, 1-3 floors)	5
Mid-rise apartment block (4-10 floors)	6
High-rise apartment block (> 10 floors)	7
Housing units over commercial stores	8
Other (Specify:)	9

2. What type of **residential housing** occupies the **most** space on the block face?

No residential units	0
Single-family houses, detached	1
Single-family housed, semi-detached	2
Duplexes	3
Row houses	4
Low-rise apartment block (7 or more units, 1-3 floors)	5
Mid-rise apartment block (4-10 floors)	6
High-rise apartment block (> 10 floors)	7
Housing units over commercial stores	8
Other (Specify:)	9

3. Roughly **how many residences** are there in this street segment (not whole area)?

Less than 10	5
10-20	4
20-49	3
50-99	2
100+	1

4. How many **storeys high** are the majority of the buildings?

One	5
Two	4
Three to four	3
Five to nine	2
More than 10	1

5. How many buildings contain **vertical-mixed use** (i.e. building has different uses on different floors)?

A lot/quite common	1
Some, common	2
Rare, 2-3 only	3
None	4
No building > 1 story	5

6. How would you rate the **condition** of the **best house/residential building** on the block face?

Abandoned, unusable	1
Poor/badly deteriorated/neglected.	2
Fair (multiple minor/one major repair)	3
Good (touch-up /cosmetic repairs)	4
Excellent (new/newly renovated)	5

7. How would you rate the **condition** of the **worst house/residential building** on the block face?

Abandoned, unusable	1
Poor/badly deteriorated/neglected.	2
Fair (multiple minor/one major repair)	3
Good (touch-up /cosmetic repairs)	4
Excellent (new/newly renovated)	5

8. In general, how would you rate the **condition** of the **most of the houses/ residential building** on the block face?

Abandoned, unusable	1
Poor/badly deteriorated/neglected.	2
Fair (multiple minor/one major repair)	3
Good (touch-up /cosmetic repairs)	4
Excellent (new/newly renovated)	5
Mixed (extreme difference)	9
AVOID IF POSSIBLE	

9. How would you rate the condition of the **best residential grounds** on the block face?

None/not applicable	1
Poor (significantly neglected)	2
Fair (somewhat neglected)	3
Good (e.g. slightly overgrown)	4
Excellent (tented/cared for regularly)	5

10. How would you rate the condition of the **worst residential grounds** on the block face?

None/not applicable	1
Poor (significantly neglected)	2
Fair (somewhat neglected)	3
Good (e.g. slightly overgrown)	4
Excellent (tented/cared for regularly)	5

11. How would you rate the condition of the **most of the residential grounds** on the block face?
- | | |
|--|---|
| None/not applicable | 2 |
| Poor (significantly neglected) | 1 |
| Fair (somewhat neglected) | |
| Good (e.g. slightly overgrown) | |
| Excellent (tented/cared for regularly) | |
| Mixed (extreme difference) | |
| AVOID IF POSSIBLE | |
12. How many residences have private **driveways/private garages**?
- | | |
|-------------------------|---|
| Practically all | 5 |
| A lot, 50%-99% | 4 |
| Some, 25%-49% | 3 |
| Only few, less than 25% | 2 |
| None | 1 |
13. What proportion of residences have some **form of decoration/external beautification** (e.g. decorated gardens/ balconies, nameplates, window boxes)?
- | | |
|--------------------------------|---|
| None | 1 |
| Rare, less than ¼ | 2 |
| Between ¼ and ½ | 3 |
| More than ½ | 4 |
| Near all, with some exceptions | 5 |
14. Approximately what proportion of residences on this block face have their own **private yard/ garden space**?
- | | |
|----------------------------------|---|
| None | 1 |
| Rare, less than ¼ | 2 |
| Between ¼ and ½ | 3 |
| More than ½ | 4 |
| Nearly all, with some exceptions | 5 |
15. Approximately what proportion of residences have their own front **private balcony, porch or terrace**?
- | | |
|----------------------------------|---|
| None | 1 |
| Rare, less than ¼ | 2 |
| Between ¼ and ½ | 3 |
| More than ½ | 4 |
| Nearly all, with some exceptions | 5 |
16. Approximately what proportion of the residential buildings have a **border**?
- | | |
|-------------------|---|
| None | 5 |
| Rare, less than ¼ | 4 |
| Between ¼ and ½ | 3 |
17. What is the average **height of residence borders**?
- | | |
|-----------------------------------|---|
| 2 Below or just above waist level | 5 |
| 3 Below head level. | 3 |
| 4 Above head level | 1 |
| 5 | |
18. What proportion of residence buildings have **window security bars or gratings** on windows (not including decorative gratings on traditional doors)?
- | | |
|-----------------|---|
| None | 5 |
| Less than ¼ | 4 |
| Between ¼ and ½ | 3 |
| More than ½ | 2 |
| Nearly all | 1 |
19. What proportion of residence buildings have signs indicating they are protected by **private security services**?
- | | |
|-----------------|---|
| None | 5 |
| Less than ¼ | 4 |
| Between ¼ and ½ | 3 |
| More than ½ | 2 |
| Nearly all | 1 |
20. What proportion of residence buildings have signs indicating they are **protected by dogs**?
- | | |
|-----------------|---|
| None | 5 |
| Less than ¼ | 4 |
| Between ¼ and ½ | 3 |
| More than ½ | 2 |
| Nearly all | 1 |
21. Are there any **barking dogs** in this segment?
- | | |
|-----|---|
| No | 5 |
| Yes | 4 |
22. What proportion of residences have **“for sale” or “for rent” signs**?
- | | |
|---------------|---|
| None | 5 |
| One or two | 4 |
| Three or four | 3 |
| Five-Ten | 2 |
| More than 10 | 1 |
23. What proportion of residences are **burned out, boarded up, or abandoned**?
- | | |
|---------------|---|
| None | 5 |
| One or two | 4 |
| Three or four | 3 |

Five-Ten	2	More than ½	2
More than 10	1	Nearly all	1

24. Are any of the residential buildings being renovated? No 1 Yes, one or two 2 Yes, three or four 3 Yes, five to ten 4 Yes, more than 10 5	5. What proportion of the commercial/ industrial properties have security devices (alarms) and/or security fences, high mesh fencing with barbed wire or spiked tops? None 5 Less than 1/10 4 Between 1/10 and ½ 3 More than ½ 2 Nearly all 1

E.Non-Residential Land Use

1. How many vacant/undeveloped lots are there in this block face? None 5 One or two 4 Three or four 3 Five to ten 2 Many, more than ½ 1	6. What proportion of the commercial / industrial buildings have “for sale” or “for rent” signs? None 5 One or two 4 Three or four 3 Five-Ten 2 More than 10 1
2. What is the overall condition of the vacant/undeveloped property? No vacant/undeveloped property 0 Otherwise RATE AS FOLLOWS Poor 1 Fair 3 Good 5 Mixed (extreme difference) 9 AVOID if possible	7. Are any of the commercial/industrial buildings being renovated? No 1 Yes, one or two 2 Yes, three or four 3 Yes, five to ten 4 Yes, more than 10 5
3. What is the overall condition of the commercial/industrial buildings and grounds? No commercial/industrial buildings 0 Abandoned, unusable 1 Poor/deteriorated (major repairs) 2 Fair (multiple minor repairs/1 major) 3 Good (near perfect, touch-up repairs) 4 Excellent (new or newly renovated) 5 Mixed (extreme difference) 9 AVOID if possible	4. What proportion of the commercial/ industrial buildings have security bars/grating on windows and/or pull-down metal security blinds on the doors and entrances? None 5 Less than 1/10 4 Between 1/10 and ½ 3

F.Parks, Playgrounds, Outdoor Public Spaces

1. Is there a park, playground, green space? Yes (unfettered access) 5 Yes (controlled access) 3 No 1	2. What is the overall condition of playgrounds/ parks/green spaces? Abandoned, unusable 1 Poor/deteriorated 2 Fair 3 Good 4 Excellent 5 Mixed (extreme difference) 9 AVOID if possible

3. Who are the **occupants of the playgrounds, parks, green spaces?**
 No one 0
 Otherwise CODE ALL THAT APPLY (*for the purposes of coding, count different groups of occupants*)
 Adults only 1
 Adults with children 2
 Teen groups 3
 Groups of unaccompanied children 4
4. Are there **play spaces other than parks, playgrounds and residential gardens**, including open or undeveloped spaces?
 Yes, relatively good and safe alternatives for children to play 5
 Yes, but relatively unsafe options (general feeling of unsafety, dangers, passing traffic) 3
 None 1
5. Are any **vacant lots or open or undeveloped spaces** (not fenced in)?
 Yes, in good condition 5
 Yes, in poor condition 3
 No vacant lots/undeveloped spaces 1
6. How are the vacant lots or open undeveloped spaces used-**what or who** do you see?
 Nothing notable 0
 Otherwise CODE ALL THAT APPLY
 Children playing 1
 Equipped with playground equipment 2
 Used for gardens 3
 Chairs/furniture for socializing 4
 Used for parking 5
 Illegal/improper use or activity 6
 Other (*Specify:.....*) 7
7. What is the overall **condition of public use recreational spaces or grounds**, other than parks & playgrounds assessed above (**including vacant lots**)?
 None 1
 Poor/deteriorated (e.g. trash, overgrown, broken glass etc) 2
 Fair (moderate trash, somewhat overgrown etc) 3
 Good (very little or no trash, grass cut, no broken glass) 4
 Excellent 5
8. Who are the **occupants of other play spaces?**
 No one 0
 Otherwise CODE ALL THAT APPLY (*for the purposes of coding, count different groups of occupants*)
 Adults only 1
 Adults with children 2
 Teen groups 3
 Groups of unaccompanied children 4
9. What kinds of **recreational facilities/ destination** are on the block face?
 None 0
 Otherwise CODE ALL THAT APPLY (*for the purposes of coding, count different types*)
 Park/Green space 1
 Playground 2
 Sports/playing fields/courts 3
 Swimming pool 4
 Community yards/gardens 5
 Community centre (organized) 6
 Gym/indoor facility 7
 Plaza/Square 8
 Vacant lots/undeveloped land 9
 Beach 10
 Nature feature 11
 Other (*Specify:*) 12
10. Do the **recreational facilities contain:**
 None 0
 Otherwise CODE ALL THAT APPLY (*for the purposes of coding, count different types*)
 Sports fields/courts 1
 Sports stands/seating 2
 Sports equipment 3
 Playground equipment 4
 Picnic tables 5
 Pools 6
 Bike/walking paths 7
 Other (*Specify:*) 8
 9
11. In general, how would you rate the **condition of the public use recreational equipment?**
 None 1
 Poor (need major repair, unusable) 2
 Fair (peeling paint/ minor repairs but usable) 3
 Good 4
 Excellent 5

12. What proportion of private residence grounds (yards, front porches, or anywhere visible) have **toys or play equipment**?

None	1
Less than 1/10	2
Between 1/10 and ½	3
More than ½	4
Nearly all	5

13. In general, how would you **rate the condition of the toys or play equipment** in private residence grounds?

None	1
Poor (need major repair, unusable)	2
Fair (peeling paint/ minor repairs but usable)	3
Good	4
Excellent	5

G.People

1. Are there any **people** visible outdoors?

Yes, a lot	5
Yes, many	4
Yes, some	3
Yes, only one or two	2
No	1

2. **Who** do you see?

No one	0
Otherwise CODE ALL THAT APPLY (<i>for coding, count different types</i>)	
Older people (over 65+)	1
Adults (ages 18 and 64)	2
Teenagers (ages 13-17)	3
Preteens (ages 6-12)	4
Preschool children (ages 5 and under)	5

3. What is the **reaction of neighbours** to raters? (**Code all that apply**)

None or very little notice taken	1
Friendly greeting	2
Glances of idle curiosity	3
Blatant speculative stares	4
Treated with suspicion	5
Asked raters what they are doing	6
Entered into conversation	7
Have suggestions for neighbourhood	8
Verbally or physically harassed	9

4. Did you see any **children** on the block face?

Did not see any children	0
Otherwise CODE ALL THAT APPLY	
Sitting/standing on porch or front yard	1
Playing on porch or front yard	2
Walking/playing in park/ playground/other public space	3
Sitting/standing/playing in the street	4
Sitting/standing/playing in undeveloped/ vacant lot	5
Walking on the sidewalk or street	6

5. **How many children** (under 12 years old) did you see?

None	1
One to two	2
Three to four	3
Five to ten	4
More than 10	5

6. How many children were not **under adult supervision**?

No children in public spaces	0
Otherwise RATE AS FOLLOWS	
None, all accompanied by adults	5
One to three	3
More than four/five	1

7. Did you see any **teenagers** in the neighbourhood?

Yes	5
No	1

8. Did you see any **teenagers in groups** of three or more?

Yes	5
No	1

9. Were teenager groups **male, female, or mixed**?

All male	1
All female	2
Mixed male and female	3

10. What do you see **teenagers** doing?

Did not see any teenagers	0
Otherwise CODE ALL THAT APPLY	
Walking, not necessarily for exercise	1
Cycling, not necessarily for exercise	2
Gardening or landscaping	3
Socializing/talking, other teenagers	4
Doing home chores, car care	5

Sitting/standing on porch	6
Supervising children	7
Patronizing business establishments	8
Standing/loitering in public area	9
Drinking alcohol	10
Smoking	11
Waiting at a bus stop	12
Getting into or out of vehicles	13
Walking a dog	14
Exercising/ active behavior	15
Engaging in recreational activity	16
Other (<i>Specify:</i>)	17

11. What **adult activity** did you observe?

Did not see any adults	0
Otherwise CODE ALL THAT APPLY	
Walking, not necessarily for exercise	1
Cycling, not necessarily for exercise	2
Gardening or landscaping	3
Socializing/talking with others	4
Doing home repair, car care	5
Sitting or standing on porch	6
Supervising children	7
Patronizing business establishments	8
Standing/loitering in public area	9
Drinking alcohol	10
Smoking	11
Waiting at bus stop	12
Getting into or out of vehicles	13
Walking a dog	14
Exercising/ active behavior	15
Engaging in recreational activity	16
Other (<i>Specify:</i>)	17

12. Did you see any people **drinking alcohol** openly in the block face?

No	5
Yes	1

13. Did you see **disorderly or misbehaving groups of children?**

No	5
Yes	1

14. Did you see **disorderly or misbehaving groups of teenagers?**

No	5
Yes	1

15. Did you see **disorderly or misbehaving groups of adults?**

No	5
Yes	1

H. Incivilities

1. Is there **garbage, junk or litter** (incl. broken glass, clothes, paper) on streets or sidewalks, in yards, or vacant lots?

None	5
Very little, very rare	4
Some, here and there	3
A lot	2
Heavy/Widespread	1

2. Are there **empty beer containers or liquor bottles** on streets or sidewalks, in yards, or vacant lots?

None	5
Very little, very rare	4
Some, here and there	3
A lot	2
Heavy/Widespread	1

3. Are there **cigarettes or cigar butts or discarded cigarette packages** on any of the streets or sidewalks, in yards/lots or gutters?

None	5
Very little, very rare	4
Some, here and there	3
A lot	2
Heavy/Widespread	1

4. Are there **piles (significant accumulations) of garbage or dumped materials** on streets or sidewalks, in yards/lots or gutters?

Yes	1
No	5

5. Are there any **animal droppings** on the sidewalks/ street?

None	5
Very little, very rare	4
Some, here and there	3
A lot	2
Heavy/Widespread	1

6. Is there **graffiti** on any of the buildings, sidewalks, walls, or street signs?

None	5
Very little, very rare	4

Some, here and there	3	12. Did you hear loud music playing from boom boxes or any of the buildings in the neighbourhood or entertainment venues?	
A lot	2	From boom boxes	1
Heavy/Widespread	1	From residential buildings	2
		From entertainment venues	3
7. What types of graffiti are visible? (Code all that apply)		Yes, heard music but not loud	4
Political	1	No, didn't hear any music	5
Tagging	2		
Art	3	13. In general, how noisy is the street (construction of buildings, workshops etc)?	
Message (lyrics, love)	4	Very quiet	5
Message (obscene)	5	Fairly quiet	4
Other	6	Somewhat noisy	2
Specify:		Very noisy	1
.....			
.....			
8. Is there painted-over graffiti on any of buildings, sidewalks, walls, or signs?		14. During your stay in the area, were there any vehicles cars or motorbikes moving down the street at high speed ?	
None	5	None	5
Some	3	One or two	3
A lot	1	Many	1
9. How much vandalism (other than graffiti e.g. broken windows, broken telephone boxes, damaged equipment etc) is present on public spaces or private properties (e.g. broken windows)?			
None		Walk along the block to answer any 5 unanswered questions or to re-consider your 4 previously recorded answer, if necessary.	
Rare (2 or less small occurrences)	3		
Moderate (more than 2 small occurrences or one significant occurrence)	2	Now, walk along the streets perpendicular to the street you have just assessed. Think how 1 characteristic is this street of the wider neighborhood	
A lot (several small or more than one significant occurrence)	1		
Extensive (large areas of small or more than two significant occurrences)		How similar would you say is the audited street to the adjacent streets/ wider neighborhood ?	
10. To what extent did you experience any unpleasant noxious smells during your observation (urine, rotting garbage, etc.)?		Very similar	1
Not at all	5	Somewhat similar	2
A little	3	Somewhat dissimilar	3
Quite a bit	1	Very dissimilar	4
11. To what extent did you experience unpleasant levels of dirt in the air (e.g. resuspension of soil from vacant lots, construction materials etc)		If dissimilar, record the reasons below, and decide whether a new audit form needs to be completed in order to capture these differences:	
Not at all	5	_____	
A little	3	_____	
Quite a bit	1	_____	

Comments:

Please include any comments that may bear on the observations recorded. You may also use this space to record ad libitum observations of anything interesting or relevant which cannot be recorded onto the survey.

[illegible]

CyNOTes

Cyprus Neighborhood Observation Tool for auditing urban community microscale environments



Credit: Photograph of street art, entitled *'People of Cyprus'*, by street artist Paparazzi (<https://www.facebook.com/paparazziartstudio>),.

Caption: This street art is depicting a cafe-like scene in what could be a town square, where people of all ages and backgrounds appear to have come together in a common task. It is inspired by the 17.5 metre-long painting *'The world of Cyprus'*, by Cypriot artist Adamantios Diamantis (1900-1994), now part of the permanent Cypriot Collection of the A.G. Leventis Gallery, Nicosia, Cyprus. Back in his day, Diamantis travelled widely across the island to study village life and he would then symbolically transport all the various people he met across all corners of the island in his monumental art. Similarly, Paparazzi is bringing together his *'People of Cyprus'*, all these decades later, while adding light and colour, in stark contrast to the grey shades in the painting that inspired this gathering of people from all corners of what might be a single neighborhood. This beautiful street art featured on a wall on Pythonos Street in the historic centre of Nicosia (old town), but sadly no longer exists.

APPENDIX X: Prevalence of CyNOTes features and characteristics across all 45 neighborhoods by

Domain

Domain 1: Outdoor public spaces, Recreation and Nature Features (N=14) <i>Def: destinations and facilities open to the public, conveniences and comfort features in outdoor public spaces & characteristics of surrounding scenery</i>			Number of neighbourhoods (N)	Percentage of neighbourhoods (%)
Are there purposively planted trees or other vegetation on the sidewalks or between the sidewalk and the street? (B29)				
None, nowhere			3	6.7%
In a couple of spots (very occasional)			6	13.3%
A few spots e.g. 25%-49% of the area			14	31.1%
Some/A lot e.g. 50%-99%			12	26.7%
Many, nearly everywhere			10	22.2%
Are there purposefully planted trees or other vegetation in other public spaces (e.g. green area)? (B30)				
None, nowhere			14	31.1
Yes, in one or two places			12	26.7
Yes, some/a lot			19	42.2
Mark all types of public spaces on this area (from I-M inventory) (B35)				
None of the following	Park/Playground	Beach	16	35.6
At least one of the following	Playing or sport field	Vacant lot/undeveloped land	22	48.9
At least two of the following	Plaza/square/courtyard	Nature feature	7	15.6
	Public garden/green area	Other (specify)		
What is the general condition of the public spaces? (B36)				
None			5	11.1
Very poor/very deteriorated			14	31.1
Poor, not very well-kept			8	17.8
Fair			9	20.0
Good/well-kept			5	11.1
Very good/very well-kept			4	8.9
What public courtesies are visible? (B37)				
None of the following	Trash cans/bins (non-residential)		22	48.9

One of the following	Public phones Public seating/benches Recycling facilities Dog bins Other (specify)	7	15.6
Two of the following		7	15.6
Three of the following		6	13.3
Four of the following		3	6.7
Is there a park, playground, green space? (F1)			
Yes (unfettered access)		14	31.1
Yes (controlled access)		3	6.7
No		28	62.2
What is the overall condition of playgrounds/ parks/green spaces? (F2)			
Abandoned, unusable		17	37.8
Poor/deteriorated		7	15.6
Fair		8	17.8
Good		7	15.6
Excellent		6	13.3
Are there play spaces other than parks, playgrounds and residential gardens, including open or undeveloped spaces?(F4)			
Yes, relatively good and safe alternatives for children to play		6	13.3
Yes, but not safe options (general feeling of unsafety, dangers, passing traffic)		8	17.8
None		31	68.9
Are any vacant lots or open or undeveloped spaces (not fenced in)? (F5)			
Yes, in good condition		7	15.6
Yes, in poor condition		30	66.7
No vacant lots/undeveloped spaces		8	17.8
How are the vacant lots or open undeveloped spaces used-what or who do you see? (Code all that apply) (F6) F6.2 , F6.3 or F6.4 ?			
Nothing notable and/or Used for parking and/ Illegal/improper use or activity		41	91.1
Children playing and/or Equipped with playground equipment and/or Used for gardens and/or Chairs/furniture for socializing		4	8.9
What is the overall condition of public use recreational spaces or grounds, other than parks & playgrounds assessed above (including vacant lots)? (from HEP-NOC) (F7)			
None		8	17.8
Poor/deteriorated (e.g. trash, overgrown, broken glass etc)		25	55.6
Fair (moderate trash, somewhat overgrown etc)		8	17.8
Good (very little or no trash, grass cut, no broken glass)		3	6.7

Excellent				1	2.2
What kinds of recreational facilities/ destination are on the block face? (F9)					
None of the following	Park/Green space Playground Sports/playing fields/courts Community yards/gardens	Community centre (organized) Swimming pool Gym/indoor facility	Plaza/Square Vacant lots/ undeveloped land Beach Nature feature Other	9	20.0
One of the following				19	42.2
Two or more of the following				17	37.8
Do the recreational facilities contain (F10)					
None of the following	Sports fields/courts Sports stands/seating Sports equipment Playground equipment	Picnic tables Pools Bike/walking paths Other, specify	20	44.4	
One of the following			22	48.9	
Two of more of the following			3	6.7	
In general, how would you rate the condition of the public use recreational equipment? (from HEP-NOC) (F11)					
None				20	44.4
Poor (need major repair, unusable)				4	8.9
Fair (peeling paint, minor repairs but usable)				14	31.1
Good				3	6.7
Excellent				4	8.9

Domain 2: Architecture & Building Characteristics (N=11, excl. profile) <i>Def: building attributes, permanent, not easily changed (including parking arrangements and driveways)</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)
How would you characterize the predominant land use on this block face? (A2)		
Mixed Residential, Commercial, Industrial	4	8.9
Primarily Residential, Commercial	1	2.2
Primarily Residential	40	88.9
What are the parking arrangements on the block face? (Code the predominant form) (B10)		
None		
Mostly street	4	8.9
Mostly private parking lots		
Mostly public lots	6	13.3
Mostly off-street (e.g. driveways)	35	77.8
How interesting is the architecture/ urban design of this segment (from I-M inventory) (B56)		
Interesting	5	11.1
Somewhat interesting	11	24.4
Neutral/Uninteresting	29	64.4
On the whole, rate the attractiveness of this segment? (from I-M inventory) (B57)		
Very attractive	3	6.7
Attractive	7	15.6
Neutral	13	28.9
Unattractive	6	13.3
Very unattractive	16	35.6
What type of residential housing occupies the most space on the block face? (from HEP-NOC) (D2)		
Low- to high-rise apartment block (7 or more units, 1-3 floors to >10 floors)	7	15.6

Duplexes or Row houses or Housing units over commercial stores	9	20.0
Single-family houses, detached or semi- detached	29	64.4
Roughly how many residences are there in this street segment (not whole area)? (D3)		
Less than 10	10	22
10-20	16	35.6
20-49	17	37.8
50-99	1	2.2
100+	1	2.2
How many storeys high are the majority of the buildings? (D4)		
One	4	8.9
Two	35	77.8
Three to four	4	8.9
Five to nine	2	4.4
More than 10	0	0.0
How many buildings contain vertical-mixed use (i.e. building has different uses on different floors)? (from I-M inventory) (D5)		
A lot/quite common	3	6.7
Some, common	5	11.1
Rare, 2-3 only	16	35.6
None	20	44.4
No building > 1 story	1	2.2
How many residences have private driveways/private garages? (adapted from I-M inventory) (D12)		
Practically all	33	73.3
A lot, 50%-99%	7	15.6
Some, 25%-49%	4	8.9
Only few, less than 25%	1	2.2

None	0	0.0
Approximately what proportion of residences on this block face have their own private yard/ garden space? (D14)		
None	0	0.0
Less than $\frac{1}{4}$	1	2.2
Between $\frac{1}{4}$ and $\frac{1}{2}$	3	6.7
More than $\frac{1}{2}$	5	11.1
Nearly all, with some exceptions	36	80.0
Approximately what proportion of residences have their own front private balcony, porch or terrace? (D15)		
None	0	0.0
Less than $\frac{1}{4}$	0	0.0
Between $\frac{1}{4}$ and $\frac{1}{2}$	3	6.7
More than $\frac{1}{2}$	4	8.9
Nearly all, with some exceptions	38	84.4

Domain 3: Sidewalks & Barriers (lack of) (N=10) <i>Def: characteristics of paved walking paths and obstacles in the environment, difficult to overcome or off-putting to pedestrians/ cyclists</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)
Are there cars parked on the pavement? (B11)		
No, not at all	14	31.1
Yes, but only 1-2 occasions	7	15.6
Yes, more frequent than 1-2 occasions	12	26.7
Yes, very frequent e.g. along more than ¼ of the length of the road	8	17.8
Yes, along more than ½ of the length of the road	4	8.9
Did you observe any parking violations, other than parking on the pavement, such as illegal parking, blocking driveway or other access, parking on disable spaces, etc? (B12)		
No	38	84.4
Some	7	15.6
Many	0	0.0
How many sides of the street have sidewalks? (from I-M inventory) (B16)		
Neither	1	2.2
One	3	6.7
Both	41.1	91.1
Is the sidewalk complete/ continuous on one or both sides? (from I-M inventory, adapted) (B17)		
Yes, no problems with continuity	5	11.1
Occasional problems here and there	7	15.6
Some problems on at least one side	9	20.0
A lot of problems on both sides	12	26.7
No continuity throughout on both sides	12	26.7
Obstructions for walkability on sidewalks (e.g. parked cars, lamb posts/trees, pots, discontinuity, untrimmed trees or plants blocking the way, etc)? (B19)		
None	13	28.9
A little (1-2 places, not that significant)	12	26.7
Some (more than 1-2 places)	13	28.9

A lot (frequent)	4	8.9
Throughout (very frequent)	3	6.7
How would you rate the condition of the sidewalks on the block face? (B21)		
No sidewalks	2	4.4
Poor (holes, sizeable cracks, crumbling, or uneven along MOST surface)	13	28.9
Fair (holes, sizeable cracks, crumbling, or uneven along SOME of the surface)	16	35.6
Moderately good (holes and cracks, only, OCCASIONALLY)	6	13.3
Very good (or Under construction)	8	17.8
How easy would it be for citizens on wheels (e.g. stroller, disable cart) to move about in the neighborhood? (added after review) (B22)		
Very Difficult	24	53.3
Somewhat Difficult	17	26.7
Neither easy, nor difficult	4	8.9
Somewhat Easy	2	4.4
Very Easy	3	6.7
Is there any infrastructure for disable citizens, such as continuous pavements, sloping pavement for crossing, ramps for disable access, dedicated parking spaces for disable, access to public spaces, etc? (added after review) (B23)		
No	44	97.8
Yes	1	2.2
If so, are disable spaces/ access occupied by cars or blocked by other obstructions? (B24)		
Yes or No infrastructure	44	97.8
No	1	2.2
Are they any untrimmed trees, unkempt plants or weeds on the pavements? (added after review) (B33)		
Very heavy, many places, all along	13	28.9
A lot/heavy, several places	3	6.7
A little, more than occasional	11	24.4
Very occasional, 1-2 spots	16	35.6
None	2	4.4

Domain 4: Pedestrian & Cycling Environment (N=18) <i>Def: features that hinder or promote an environment conducive to pedestrian or cycling activity</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)
Type of street (Code all that apply) (B1)		
Major or moderately busy street	4	8.9
Side street (to major road)	16	35.6
Residential road and/or Dead-end street and/or One-way street	25	55.6
What is the traffic flow? (B2)		
No traffic/Very light	2	4.4
Light (occasional)	7	15.6
Moderate	14	31.1
Heavy	10	22.2
Very heavy (steady stream)	12	26.7
Do you see any industrial tracks and/or big commercial vehicles passing through the residential area? (added after review) (B4)		
Many	8	17.8
Some	12	26.7
None	25	55.6
Are there any speed reducing measures on the street? (B6)		
None	39	86.7
At least one of the following: Speed bump, Roundabout, Reduced speed limit, School/playground zone, Other	6	13.3
Are there places intended and/or marked for pedestrians to cross the street? (from I-M inventory) (B7)		
None	40	88.9
Some	4	8.9
Many	1	2.2
For an individual on foot, how safe (traffic wise) do you think it is to cross the street? (from I-M inventory, adapted) (B8)		
Very unsafe (no speed reducing measures and steady stream of traffic and fast coming cars and obstructions for visibility)	4	8.9
Not very safe	10	22.2

Pretty safe	19	42.2
Very safe (presence of speed reducing measures and no/very light passing through traffic and no obstructions)	12	26.7
For an individual on foot, how convenient (e.g. not having to walk far to cross with safety) do you think it is to cross the street? (from I-M inventory, adapted)(B9)		
Very inconvenient	3	6.7
Not very convenient	6	13.3
Pretty convenient	17	37.8
Very convenient	19	42.2
Did you observe any driving violations, such as overtaking, speeding, not stopping at stopping signs, etc (added after review)(B13)		
Many	0	0.0
Some	4	8.9
No	41	91.1
How would you rate the walkability of this segment? (B18)		
No sidewalks on either side	1	2.2
Narrow sidewalk, one side, none on the other (not wide enough for two people to cross each other)	2	4.4
Narrow sidewalk on both sides	10	22.2
Wide sidewalk, at least one side	6	13.3
Wide sidewalk, both sides	26	57.8
Is there a buffer (e.g. parked cars, landscaped “buffer”, strips) between sidewalk and street so that there is a separation between pedestrians and passing traffic? (from I-M inventory)(B20)		
No, nowhere	44	97.8
In couple of places, not enough to be significant	1	2.2
In several places	0	0.0
Yes, generally the case, only few exceptions	0	0.0
Yes, nearly throughout	0	0.0
Are there greenbelts, trails, paths or lanes intended for walking, other than sidewalks in the area? (from I-M inventory). (B25)		
No	39	86.7
Yes	6	13.3

Is there outdoor lighting on the segment (including street lights, public paths or public spaces)? (from I-M inventory) (B26)		
No, not at all, area would be dark at night	0	0.0
Not as much as needed	14	31.1
Normal, probably like anywhere else	25	55.6
Yes, probably more than elsewhere	1	2.2
Yes, a lot, very well lid	5	11.1
Is the sidewalk shaded by trees? (from I-M inventory) (B32)		
No, nowhere	5	11.1
Somewhat, at least in some places	27	60.0
Yes, in many places	13	28.9
Are there bicycle facilities? (Code all that apply) (B41)		
None	45	100
Bicycle parking/stands and/or Bicycle lanes	0	0/0
How would you rate the bikability of this segment, on shoulder/marked lane, not considering the road? (B42)		
No shoulder/marked lane, a cyclist would have to cycle on the road	22	48.9
Narrow marked lane	1	2.2
Narrow paved shoulder	5	11.1
Wide marked lane		
Wide paved shoulder	17	37.8
Obstructions for bikability (on shoulder/marked lane, or if not present on the road)(B43)		
A lot	22	48.9
Many	15	33.3
Some	4	8.9
A little	3	6.7
None	1	2.2
How would you rate the bikability of this segment, even in the absence of a shoulder/lane, i.e. considering the road? (added after review)(B44)		

Very unsafe (e.g. fast passing cars, not enough space, many obstructions such as parked cars)	8	17.8
Not very safe	15	33.3
Pretty safe	16	35.6
Very safe (e.g. no/very light traffic, or wide roads, no obstructions such as parked cars)	6	13.3
During your stay in the area, were there any vehicles cars or motorbikes moving down the street at high speed? (added after review)(H15)		
Many	10	22.2
One or two	13	28.9
None	22	48.9

Domain 5: Neighborhood and Ethnic Identification (N=11, excl. profile) <i>Def: unique features that give definition to neighborhood, including visible signs/ advertisements and displays tailored to a specific ethnic group</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)
Are there indications of neighborhood uniformity? (B45)		
No, extreme difference	14	31.1
Fairly, like anywhere else	23	51.1
Yes, more so than anywhere else	8	17.8
Is this segment/area characterized by having a significant open view of an object or spot of interest (e.g. square, green space etc).or a wider scene beyond the segment? (from I-M inventory) (B47)		
No	38	84.4
Yes	7	15.6
How attractive is the open view? (from I-M inventory) (B48)		
No views	38	84.4
Unattractive	1	2.2
Neutral	0	0.0
Attractive	6	13.3
Does any business, institution or residence display symbols, colors, names, signs with ethnic orientation? (modified from HEP-NOC)(B50)		
None	38	84.4
1-2 occurrences	7	15.6
More than 1-2 occurrences	0	0.0
Quite common	0	0.0
Very common	0	0.0
Does any business, institution or residence display GREEK/CYPRIOT national symbols, colors, names, signs? (added) (B51)		
None	40	88.9
1-2 occurrences	5	11.1
More than 1-2 occurrences	0	0.0
Quite common	0	0.0

Very common	0	0.0
Are there billboards/signage present on this segment, including shops and other businesses' signage? (from I-M inventory, adapted)(B53)		
Excessive	1	2.2
A lot	3	6.7
Some	12	26.7
Rare, 1-2 only	11	24.4
None	18	40.0
How would characterize the attractiveness of billboards and signage, including uniformity? (added after review) (B54)		
Very unattractive (exceptionally standing out compared to elsewhere)	2	4.4
Somewhat unattractive (worse than elsewhere in terms of quantity, uniformity and attractiveness)	4	8.9
Neutral (might not be uniform but not that different to elsewhere)	20	44.4
Somewhat attractive (better than elsewhere in terms of quantity, uniformity and attractiveness)	1	2.2
Very attractive (e.g. unusually uniform compared to elsewhere or none)	18	40.0
Are any of the following advertisements visible on the block face (from HEP-NOC)? (B55)		
Sign advertising tobacco products, Sign advertising beer/other alcohol, Sign advertising fast food, Other <u>unhealthy</u> (specify)	26	57.8
None	19	42.2
What proportion of residences have “for sale” or “for rent” signs? (D23)		
None	32	71.1
One or two	12	26.7
Three or four	1	2.2
Five-Ten	0	0.0
More than 10	0	0.0
What proportion of the commercial / industrial buildings have “for sale” or “for rent” signs? (E6)		
None	39	86.7
One or two	5	11.1
Three or four	1	2.2

Five-Ten	0	0.0
More than 10	0	0.0
Are there signs or indications which denote a neighborhood name or monuments/ markers (e.g. statue, banner etc) that indicate someone is entering a special area? (from I-M inventory)		
Yes	0	0.0
No	45	100.0

Domain 6: Maintenance and Appearance (N=17) <i>Def: current condition of buildings, grounds, public spaces, that are not permanent, can change</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)
Are there trees in people's front gardens? (B31)		
None	0	0.0
1%-24% of houses	3	6.7
25%-49% of houses	9	20.0
50%-99% of houses	21	46.7
100%	12	26.7
Are there houses with purposively planted vegetation (including healthy pots and baskets)? (B34)		
None	6	13.3
1%-24% of houses	16	35.6
25%-49% of houses	9	20.0
50%-99% of houses	6	13.3
100%	8	17.8
How would you rate the condition of the <u>best</u> house/residential building on the block face? (D6)		
Abandoned, unusable	0	0.0
Poor/badly deteriorated/neglected	2	4.4
Fair (multiple minor/one major repair)	2	4.4
Good (touch-up repair/cosmetic repairs)	4	8.9
Excellent (new/newly renovated)	37	82.2
How would you rate the condition of the <u>worst</u> house/residential building on the block face? (D7)		
Abandoned, unusable	16	35.6
Poor/badly deteriorated/neglected	13	28.9
Fair (multiple minor/one major repair)	8	17.8
Good (touch-up repair/cosmetic repairs)	5	11.1
Excellent (new/newly renovated)	3	6.7

In general, how would you rate the condition of the <u>most</u> of the houses/ residential building on the block face? (D8)		
Abandoned, unusable	1	2.2
Poor/badly deteriorated/neglected	7	15.6
Fair (multiple minor/one major repair)	17	37.8
Good (touch-up repair/cosmetic repairs)	12	26.7
Excellent (new/newly renovated)	8	17.8
How would you rate the condition of the <u>best</u> residential grounds on the block face? (D9)		
None/not applicable	0	0.0
Poor (significantly neglected)	0	0.0
Fair (somewhat neglected)	4	8.9
Good (e.g. slightly overgrown)	5	11.1
Excellent (tented/cared for regularly)	36	80.0
How would you rate the condition of the <u>worst</u> residential grounds on the block face? (D10)		
None/not applicable	0	0.0
Poor (significantly neglected)	30	66.7
Fair (somewhat neglected)	9	20.0
Good (e.g. slightly overgrown)	5	11.1
Excellent (tented/cared for regularly)	1	2.2
How would you rate the condition of the <u>most of the</u> residential grounds on the block face? (D11)		
None/not applicable	0	0.0
Poor (significantly neglected)	8	17.8
Fair (somewhat neglected)	18	40.0
Good (e.g. slightly overgrown)	9	20.0
Excellent (tented/cared for regularly)	10	22.2
What proportion of residences have some form of decoration/external beautification (e.g. decorated gardens/ balconies, nameplates, window boxes)? (D13)		
None	0	0.0

Very rare	1	2.2
Less than ½ of residences	7	15.6
More than ½ of residences	15	33.3
Near all, with some exceptions	22	48.9
Is there any mold or damp visible on houses walls from the outside? (added after review) (D25)		
More than ½	6	13.3
More than ¼	7	15.6
Between 1/10 and ¼	13	28.9
Less than 1/10	13	28.9
None	6	13.3
Are any of the residential buildings being renovated?(D26)		
No	2	4.4
Yes, one or two	14	31.1
Yes, three or four	19	42.2
Yes, five to ten	5	11.1
Yes, more than 10	5	11.1
How many vacant/undeveloped lots are there in this block face? (E1)		
Many, more than ½	4	8.9
Five to ten	2	4.4
Three or four	15	33.3
One or two	15	33.3
None	9	20.0
What is the overall condition of the vacant/undeveloped property? (E2)		
Poor	32	71.1
Fair	3	6.7
Good or No vacant/undeveloped property	10	22.2

What is the overall condition of the commercial/industrial buildings and grounds? (E3)		
Abandoned, unusable	5	11.1
Poor/deteriorated (major repairs)	6	13.3
Fair (multiple minor repairs/1 major)	5	11.1
Good (near perfect, touch-up repairs)	5	11.1
Excellent (new or newly renovated) or No commercial/industrial buildings	24	53.3
Are any of the commercial/industrial buildings being renovated? (E8)		
No	30	66.7
Yes, one or two	11	24.4
Yes, three or four	2	4.4
Yes, five to ten		
Yes, more than 10	2	4.4
What proportion of private residence grounds (yards, front porches, or anywhere visible) have toys or play equipment? (F12)		
None	28	62.2
Less than 1/10	12	26.7
Between 1/10 and ½	5	11.1
More than ½	0	0.0
Nearly all	0	0.0
In general, how would you rate the condition of the toys or play equipment in private residence grounds? (added)(F13)		
None	28	62.2
Poor (need major repair, unusable)	1	2.2
Fair (peeling paint, minor repairs but usable)	4	8.9
Good	6	13.3
Excellent	6	13.3

Domain 7: Safety (lack of security-related features) (N=10) <i>Def: physical indicators of level of protection from harm one might expect</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)
Are there any barking dogs in this segment? (adapted from I-M inventory) (D21)		
Yes	25	55.6
No	20	44.4
What other types of signs are visible? (B52) safety		
More than one of the following: Security warnings, Beware of guard dog	28	62.2
One of the following: Security warnings, Beware of guard dog	12	26.7
None	5	11.1
Approximately what proportion of the residential buildings have a border? (D16)		
None	37	82.2
Less than $\frac{1}{4}$	4	8.9
Between $\frac{1}{4}$ and $\frac{1}{2}$	4	8.9
More than $\frac{1}{2}$	0	0
Nearly all, with only some exceptions	0	0
What is the average height of residence borders? (D17)		
Above head level	7	15.6
Below head level	8	17.8
Below or just above waist level	30	66.7
What proportion of residence buildings have window security bars or gratings on windows (not including decorative gratings on traditional doors)? (D18)		
Nearly all	2	4.4
More than $\frac{1}{2}$.	1	2.2
Between $\frac{1}{4}$ and $\frac{1}{2}$.	4	8.9
Less than $\frac{1}{4}$	12	26.7
None	26	57.8
What proportion of residence buildings have signs indicating they are protected by private security services? (D19)		

Nearly all	2	4.4
More than ½.	3	6.7
Between ¼ and ½.	13	28.9
Less than ¼	15	33.3
None	12	26.7
What proportion of residence buildings have signs indicating they are protected by dogs? (D20)		
None	2	4.4
Less than ¼	2	4.4
Between ¼ and ½	13	28.9
More than ½	21	46.7
Nearly all	7	15.6
What proportion of residence buildings have signs indicating they are protected by dogs? (D20)		
Nearly all	2	4.4
More than ½	2	4.4
Between ¼ and ½	13	28.9
Less than ¼	21	46.7
None	7	15.6
What proportion of the commercial/ industrial buildings have security bars/grating on windows and/or pull-down metal security blinds on the doors and entrances? (E4)		
Nearly all	2	4.4
More than ½	1	2.2
Between 1/10 and ½.	0	0.0
Less than 1/10	19	42.2
None	23	51.1
What proportion of the commercial/ industrial properties have security devices (alarms) and/or security fences, high mesh fencing with barbed wire or spiked tops? (E5)		
Nearly all	2	4.4
More than ½.	1	2.2

Between 1/10 and ½.	2	4.4
Less than 1/10	14	31.1
None	26	57.8
Are they any security fences, bars or security devices in <u>institutions</u>, if present (schools etc)? (added after review) (E7)		
Yes (high fences, locked gates)	16	35.6
Yes (bars or windows/doors, security devices or guards)	6	13.3
No or No institutions present	23	51.1

Domain 8: Physical Disorder (<i>lack of</i>) (N=17 excl. profile) <i>Def: characteristics than render environment unsightly and potentially unsafe</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)
Are there abandoned cars/trucks on any of the streets, alleys or lots visible on this block face? (B14)		
More than five	5	11.1
Four or five	0	0.0
Two or three	5	11.1
One	8	17.8
None	27	60.0
Are there old, beat-up cars/trucks on the street, in driveways or yards on this block face? (B15)		
More than five	4	8.9
Four or five	0	0.0
Two or three	5	11.1
One	6	13.3
None	30	66.7
Do you see any stagnant waters or visibly blocked rain ducts? (<i>added after review</i>)(B38)		
Yes	0	0.0
No	45	100.0
Do you see any carcasses of dead animals? (<i>added after review</i>)(B39)		
Yes	0	0.0
No	45	100.0
What proportion of residences are burned out, boarded up, or abandoned? (D24)		
More than 10	0	0.0
Five-Ten	0	0.0
Three-four	8	17.8
One or two	15	33.3
None	22	48.9

Are there discarded trimmings of plants and trees in public spaces or vacant lots? (added after review) (E9)		
Yes	25	55.6
No	20	44.4
Is there garbage, junk or litter (incl. broken glass, clothes, paper) on any of the streets or sidewalks, in yards, or vacant lots? (H1)		
Heavy/Widespread	12	26.7
A lot	3	6.7
Some, here and there	19	42.2
Very little, very rare	5	11.1
None	6	13.3
Are there empty beer containers or liquor bottles on the street or sidewalks, in yards, or vacant lots? (H2)		
Heavy/Widespread	0	0.0
A lot	0	0.0
Some, here and there	3	6.7
Very little, very rare	4	8.9
None	38	84.4
Do you see any condoms or syringes in public spaces? (added after review) (H3)		
Yes	1	2.2
No	44	97.8
Are there cigarettes or cigar butts or discarded cigarette packages on any of the streets or sidewalks, in yards/lots or gutters? (H4)		
Heavy/Widespread	1	2.2
A lot	4	8.9
Some, here and there	15	33.3
Very little, very rare	16	35.6
None	9	20.0
Are there any piles (significant accumulations) of garbage or dumped materials on any of the streets or sidewalks, in yards/lots or gutters? (H5)		
Yes	37	82.2

No	8	17.8
Are there animal droppings/fouling on the sidewalks/street? (H6)		
Heavy/Widespread	1	2.2
A lot	4	8.9
Some, here and there	9	20.0
Very little, very rare	18	40.0
None	13	28.9
Is there graffiti on any of the buildings, sidewalks, walls, or signs? (H7)		
Heavy/Widespread	1	2.2
A lot	6	13.3
Some, here and there	13	28.9
Very little, very rare	12	26.7
None	13	28.9
Is there painted-over graffiti on any of buildings, sidewalks, walls, or signs? (H9)		
None	40	88.9
Some	4	8.9
A lot	1	2.2
How much vandalism (other than graffiti e.g. broken windows, broken telephone boxes, damaged equipment etc) is present on public spaces or private properties (e.g. broken windows? (H10)		
Extensive (large areas of small or more than two significant occurrences)	0	0.0
A lot (several small or more than one significant occurrence)	1	2.2
Moderate (more than 2 small occurrences or one significant occurrence)	2	4.4
Rare (2 or less small occurrences)	3	6.7
None	39	86.7
To what extent did you experience any unpleasant noxious smells during your observation (urine, rotting garbage, etc.)? (H11)		
Quite a bit	2	4.4
A little	11	24.4

Not at all	32	71.1
To what extent did you experience unpleasant levels of dirt in the air (e.g. resuspension of soil from vacant lots, construction materials etc) (H12)		
Quite a bit	4	8.9
A little	10	22.2
Not at all	31	68.9

Domain 9: Social Contact & Social Disorder (lack of) (N=14) Def: People’s activity and behaviours, that indicate positive social contact and/or lack of social disorder		Number of neighbourhoods (N)	Percentage of neighbourhoods (%)
Who are the occupants of the playgrounds, parks, green spaces? (F3)			
No one	Adults only Adults with children Teen groups Groups of unaccompanied children	30	66.7
At least one group of the following:		12	26.7
Two or more groups of the following:		3	6.7
Are there any people visible outdoors? (G1)			
No			
Yes, only one or two		11	24.4
Yes, some		16	35.6
Yes, many		6	13.3
Yes, a lot		12	26.7
Who do you see? (G2)			
No one	Older people (over 65+) Adults (ages 18 and 64) Teenagers (ages 13-17) Preteens (ages 6-12) Preschool children (ages 5 and under)	0	0.0
One of the following groups:		22	48.9
Two of the following groups:		14	31.1
Three of the following groups:		3	6.7
Four of the following groups:		6	13.3
How many children were not under adult supervision? (G7)			
None, all accompanied by adults		30	66.7
No children in public spaces		1	2.2
One to three		11	24.4
More than four/five		3	6.7
Where any establishments (commercial or institutional) where people can meet/have social contact (coffee shops, youth centers etc) frequented by people? (added after review) (G14)			
No		39	86.7
Yes, but not very busy		3	6.7

Yes, busy		3	6.7
What age-groups would you say these establishments cater for? (Code all that apply) (G15)			
At least one of these groups	Teenagers Young adults Older adults Elderly, male Elderly, female	29	64.4
Two of these groups		13	28.9
Three of these groups		2	4.4
At least four of these groups		1	2.2
Did you see any other instances of social contact or gatherings (e.g. playing backgammon, drinking coffee on veranda or neighbours chatting)? (added after review) (G16)			
None at all		25	55.6
One or two instances		18	40.0
Appears frequent/common		2	4.4
Did you see any houses with their front doors open (e.g. in case a neighbour drops by)? (added after review)(G17)			
No		21	46.7
One or two		23	51.1
Appears frequent/common		1	2.2
Did you see any people begging/asking for money either from residents or passers byers? (added after review) (G18)			
Yes		1	2.2
No		44	97.8
Did you see any people drinking alcohol openly in the block face? (G19)			
Yes		3	6.7
No		42	93.3
Did you see disorderly or misbehaving groups of children? (G20)			
No		45	100.0
Yes		0	0.0
Did you see disorderly or misbehaving groups of teenagers? (G21)			
Yes		2	4.4
No		43	95.6

Did you see disorderly or misbehaving groups of adults? (G22)		
Yes	2	4.4
No	43	95.6

APPENDIX XI: Prevalence of CyNOTes features and characteristics by Domain across all three groups of the 45 neighbourhoods according to educational attainment of residents at postcode level.

Domain 1: Outdoor public spaces, Recreation and Nature Features (N=14) <i>Def: destinations and facilities open to the public, conveniences and comfort features in outdoor public spaces & characteristics of surrounding scenery</i>			Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi-square)	p-value for trend
Are there purposively planted trees or other vegetation on the sidewalks or between the sidewalk and the street? (B29)									
None, nowhere			3	6.7%	0.0	6.7	13.3	0.815	0.278
In a couple of spots (very occasional)			6	13.3%	6.7	20.0	13.3		
A few spots e.g. 25%-49% of the area			14	31.1%	33.3	33.3	26.7		
Some/A lot e.g. 50%-99%			12	26.7%	33.3	26.7	20.0		
Many, nearly everywhere			10	22.2%	26.7	13.3	26.7		
Are there purposefully planted trees or other vegetation in other public spaces (e.g. green area)? (B30)									
None, nowhere			14	31.1	33.3	33.3	26.7	0.945	0.832
Yes, in one or two places			12	26.7	26.7	20.0	33.3		
Yes, some/a lot			19	42.2	40.0	46.7	40.0		
Mark all types of public spaces on this area (from I-M inventory) (B35)									
None of the following	Park/Playground Playing or sport field Plaza/square/courtyard Public garden/green area	Beach Vacant lot/ undeveloped land Nature feature Other (specify)	16	35.6	40.0	40.0	26.7	0.376	0.793
At least one of the following			22	48.9	46.7	33.3	66.7		
At least two of the following			7	15.6	13.3	26.7	6.7		
What is the general condition of the public spaces? (B36)									
None			19	42.2	60.0	33.3	33.3	0.386	0.138
Very poor/very deteriorated									
Poor, not very well-kept			8	17.8	13.3	33.3	6.7		
Fair			9	20.0	6.7	20.0	33.3		
Good/well-kept			5	11.1	13.3	6.7	13.3		
Very good/very well-kept			4	8.9	6.7	6.7	13.3		
What public courtesies are visible? (B37)									
None of the following	Trash cans/bins (non-residential) Public phones Public seating/benches Recycling facilities Dog bins Other (specify)		22	48.9	73.3	33.3	40.0	0.541	0.134
One of the following			7	15.6	6.7	26.7	13.3		
Two of the following			7	15.6	6.7	20.0	20.0		
Three of the following			6	13.3	6.7	13.3	20.0		
Four of the following			3	6.7	6.7	6.7	6.7		

Is there a park, playground, green space? (F1)							
Yes (unfettered access)	14	31.1	40.0	40.0	13.3	0.310	0.236
Yes (controlled access)	3	6.7	0.0	6.7	13.3		
No	28	62.2	60.0	53.3	73.3		
What is the overall condition of playgrounds/ parks/green spaces? (F2)							
Abandoned, unusable	17	37.8	53.3	46.7	13.3	0.188	0.082
Poor/deteriorated	7	15.6	13.3	20.0	13.3		
Fair	8	17.8	6.7	20.0	26.7		
Good	7	15.6	6.7	6.7	33.3		
Excellent	6	13.3	20.0	6.7	13.3		
Are there play spaces other than parks, playgrounds and residential gardens, including open or undeveloped spaces?(F4)							
Yes, relatively good and safe alternatives for children to play	6	13.3	20.0	20.0	0.0	0.071	0.078
Yes, but not safe options (general feeling of unsafety, dangers, passing traffic)	8	17.8	13.3	33.3	6.7		
None	31	68.9	66.7	46.7	93.3		
Are any vacant lots or open or undeveloped spaces (not fenced in)? (F5)							
Yes, in good condition	7	15.6	26.7	13.3	6.7	0.654	0.211
Yes, in poor condition	30	66.7	60.0	66.7	73.3		
No vacant lots/undeveloped spaces	8	17.8	13.3	20.0	20.0		
How are the vacant lots or open undeveloped spaces used-what or who do you see? (Code all that apply) (F6)							
Nothing notable and/or Used for parking and/ Illegal/improper use or activity	41	91.1	86.7	86.7	100.0	0.334	0.205
Children playing and/or Equipped with playground equipment and/or Used for gardens and/or Chairs/furniture for socializing	4	8.9	13.3	13.3	0.0		
What is the overall condition of public use recreational spaces or grounds, other than parks & playgrounds assessed above (including vacant lots)? (from HEP-NOC) (F7)							
None	8	17.8	26.7	13.3	13.3	0.776	0.683
Poor/deteriorated (e.g. trash, overgrown, broken glass etc)	25	55.6	53.3	60.0	53.3		
Fair (moderate trash, somewhat overgrown etc)	8	17.8	6.7	20.0	26.7		
Good (very little or no trash, grass cut, no broken glass)	3	6.7	6.7	6.7	6.7		
Excellent	1	2.2	6.7	0.0	0.0		

What kinds of recreational facilities/ destination are on the block face? (F9)										
None of the following	Park/Green space Playground Sports/playing fields/courts Community yards/gardens	Community centre (organized) Swimming pool Gym/indoor facility	Plaza/Square Vacant lots/ undeveloped land Beach Nature feature Other	9	20.0	26.7	26.7	6.7	0.166	0.329
One of the following				19	42.2	46.7	20.0	60.0		
Two or more of the following				17	37.8	26.7	53.3	33.3		
Do the recreational facilities contain (F10)										
None of the following	Sports fields/courts Sports stands/seating Sports equipment Playground equipment	Picnic tables Pools Bike/walking paths Other, specify	20	44.4	46.7	46.7	40.0	0.651	0.552	
One of the following			22	48.9	53.3	40.0	53.3			
Two of more of the following			3	6.7	0.0	13.3	6.7			
In general, how would you rate the condition of the public use recreational equipment? (from HEP-NOC) (F11)										
None				20	44.4	46.7	46.7	40.0	0.596	0.682
Poor (need major repair, unusable)				4	8.9	13.3	13.3	0.0		
Fair (peeling paint, minor repairs but usable)				14	31.1	26.7	20.0	46.7		
Good				3	6.7	0.0	13.3	6.7		
Excellent				4	8.9	13.3	6.7	6.7		

Domain 2: Architecture & Building Characteristics (N=11, excl. profile) <i>Def: building attributes, permanent, not easily changed (including parking arrangements and driveways)</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
How would you characterize the predominant land use on this block face? (A2)							
Mixed Residential, Commercial, Industrial	4	8.9	6.7	20.0	0.0	0.211	0.351
Primarily Residential, Commercial	1	2.2	6.7	0.0	0.0		
Primarily Residential	40	88.9	86.7	80.0	100.0		
What are the parking arrangements on the block face? (Code the predominant form) (B10)							
None							
Mostly street	4	8.9	6.7	20.0	0.0	0.124	0.218
Mostly private parking lots							
Mostly public lots	6	13.3	26.7	6.7	6.7		
Mostly off-street (e.g. driveways)	35	77.8	66.7	73.3	93.3		
How interesting is the architecture/ urban design of this segment (from I-M inventory) (B56)							
Interesting	5	11.1	6.7	6.7	20.0	0.003	0.002
Somewhat interesting	11	24.4	0.0	20.0	53.3		
Neutral/Uninteresting	29	64.4	93.3	73.3	26.7		
On the whole, rate the attractiveness of this segment? (from I-M inventory) (B57)							
Very attractive	3	6.7	6.7	6.7	6.7	0.004	0.000
Attractive	7	15.6	0.0	13.3	33.3		
Neutral	13	28.9	20.0	13.3	53.3		
Unattractive	6	13.3	6.7	26.7	6.7		
Very unattractive	16	35.6	66.7	40.0	0.0		

What type of residential housing occupies the most space on the block face? (from HEP-NOC) (D2)							
Low- to high-rise apartment block (7 or more units, 1-3 floors to >10 floors)	7	15.6	6.7	26.7	13.3	0.189	0.630
Duplexes or Row houses or Housing units over commercial stores	9	20.0	13.3	33.3	13.3		
Single-family houses, detached or semi- detached	29	64.4	80.0	40.0	73.3		
Roughly how many residences are there in this street segment (not whole area)? (D3)							
Less than 10	10	22	26.7	20.0	20.0	0.041	0.017
10-20	16	35.6	60.0	40.0	6.7		
20-49	17	37.8	13.3	33.3	66.7		
50-99	1	2.2	0.0	6.7	0.0		
100+	1	2.2	0.0	0.0	6.7		
How many storeys high are the majority of the buildings? (D4)							
One	4	8.9	20.0	6.7	0.0	0.515	0.126
Two	35	77.8	73.3	73.3	86.7		
Three to four	4	8.9	6.7	13.3	6.7		
Five to nine	2	4.4	0.0	6.7	6.7		
More than 10	0	0.0	0.0	0.0	0.0		
How many buildings contain vertical-mixed use (i.e. building has different uses on different floors)? (from I-M inventory) (D5)							
A lot/quite common	3	6.7	13.3	6.7	0.0	0.215	0.557
Some, common	5	11.1	13.3	20.0	0.0		
Rare, 2-3 only	16	35.6	20.0	26.7	60.0		
None	20	44.4	46.7	46.7	40.0		
No building > 1 story	1	2.2	6.7	0.0	0.0		

How many residences have private driveways/private garages? (adapted from I-M inventory) (D12)							
Practically all	33	73.3	66.7	73.3	80.0	0.262	0.466
A lot, 50%-99%	7	15.6	26.7	6.7	13.3		
Some, 25%-49%	4	8.9	0.0	20.0	6.7		
Only few, less than 25%	1	2.2	6.7	0.0	0.0		
None	0	0.0	0.0	0.0	0.0		
Approximately what proportion of residences on this block face have their own private yard/ garden space? (D14)							
None	0	0.0					
Less than ¼	1	2.2	0.0	6.7	0.0	0.861	0.795
Between ¼ and ½	3	6.7	6.7	6.7	6.7		
More than ½	5	11.1	13.3	13.3	6.7		
Nearly all, with some exceptions	36	80.0	80.0	73.3	86.7		
Approximately what proportion of residences have their own front private balcony, porch or terrace? (D15)							
None	0	0.0					
Less than ¼	0	0.0					
Between ¼ and ½	3	6.7	0.0	13.3	6.7	0.222	0.744
More than ½	4	8.9	20.0	6.7	0.0		
Nearly all, with some exceptions	38	84.4	80.0	80.0	93.3		

Domain 3: Sidewalks & Barriers (lack of) (N=10) <i>Def: characteristics of paved walking paths and obstacles in the environment, difficult to overcome or off-putting to pedestrians/ cyclists</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi-square)	p-value for trend
Are there cars parked on the pavement? (B11)							
No, not at all	14	31.1	33.3	33.3	26.7	0.754	0.683
Yes, but only 1-2 occasions	7	15.6	6.7	20.0	20.0		
Yes, more frequent than 1-2 occasions	12	26.7	26.7	26.7	26.7		
Yes, very frequent e.g. along more than ¼ of the length of the road	8	17.8	13.3	20.0	20.0		
Yes, along more than ½ of the length of the road	4	8.9	20.0	0.0	6.7		
Did you observe any parking violations, other than parking on the pavement, such as illegal parking, blocking driveway or other access, parking on disable spaces, etc? (B12)							
No	38	84.4	80.0	86.7	86.7	0.844	0.618
Some	7	15.6	20.0	13.3	13.3		
Many	0	0.0					
How many sides of the street have sidewalks? (from I-M inventory) (B16)							
Neither	1	2.2	0.0	6.7	0.0	0.080	0.152
One	3	6.7	20.0	0.0	0.0		
Both	41.1	91.1	80.0	93.3	100.0		
Is the sidewalk complete/ continuous on one or both sides? (from I-M inventory, adapted) (B17)							
Yes, no problems with continuity	5	11.1	26.7	6.7	0.0	0.330	0.014
Occasional problems here and there	7	15.6	20.0	13.3	13.3		
Some problems on at least one side	9	20.0	20.0	26.7	13.3		
A lot of problems on both sides	12	26.7	13.3	33.3	33.3		
No continuity throughout on both sides	12	26.7	20.0	20.0	40.0		

Obstructions for walkability on sidewalks (e.g. parked cars, lamb posts/trees, pots, discontinuity, untrimmed trees or plants blocking the way, etc)? (B19)							
None	13	28.9	40.0	33.3	13.3	0.794	0.646
A little (1-2 places, not that significant)	12	26.7	13.3	26.7	40.0		
Some (more than 1-2 places)	13	28.9	26.7	26.7	33.3		
A lot (frequent)	4	8.9	13.3	6.7	6.7		
Throughout (very frequent)	3	6.7	6.7	6.7	6.7		
How would you rate the condition of the sidewalks on the block face? (B21)							
No sidewalks	2	4.4	0.0	13.3	0.0	0.095	0.428
Poor (holes, sizeable cracks, crumbling, or uneven along MOST surface)	13	28.9	53.3	20.0	13.3		
Fair (holes, sizeable cracks, crumbling, or uneven along SOME of the surface)	16	35.6	13.3	40.0	53.3		
Moderately good (holes and cracks, only, OCCASIONALLY)	6	13.3	13.3	6.7	20.0		
Very good (or Under construction)	8	17.8	20.0	20.0	13.3		
How easy would it be for citizens on wheels (e.g. stroller, disable cart) to move about in the neighborhood? (added after review) (B22)							
Very Difficult	24	53.3	73.3	53.3	33.3	0.248	0.065
Somewhat Difficult	17	26.7	20.0	20.0	40.0		
Neither easy, nor difficult	4	8.9	0.0	20.0	6.7		
Somewhat Easy	2	4.4	0.0	6.7	6.7		
Very Easy	3	6.7	6.7	0.0	13.3		
Is there any infrastructure for disable citizens, such as continuous pavements, sloping pavement for crossing, ramps for disable access, dedicated parking spaces for disable, access to public spaces, etc? (added after review) (B23)							
No	44	97.8	100.0	100.0	93.3	0.360	0.221
Yes	1	2.2	0.0	0.0	6.7		
If so, are disable spaces/ access occupied by cars or blocked by other obstructions? (B24)							
Yes or No infrastructure	44	97.8	100.0	100.0	93.3	0.360	0.221
No	1	2.2	0.0	0.0	6.7		

Are they any untrimmed trees, unkempt plants or weeds on the pavements? (added after review) (B33)							
Very heavy, many places, all along	13	28.9	26.7	40.0	20.0	0.599	1.000
A lot/heavy, several places	3	6.7	6.7	0.0	13.3		
A little, more than occasional	11	24.4	20.0	33.3	20.0		
Very occasional, 1-2 spots	16	35.6	40.0	20.0	46.7		
None	2	4.4	6.7	6.7	0.0		

Domain 4: Pedestrian & Cycling Environment (N=18) <i>Def: features that hinder or promote an environment conducive to pedestrian or cycling activity</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
Type of street (Code all that apply) (B1)							
Major or moderately busy street	4	8.9	6.7	20.0	0.0	0.245	0.407
Side street (to major road)	16	35.6	46.7	20.0	40.0		
Residential road and/or Dead-end street and/or One-way street	25	55.6	46.7	60.0	60.0		
What is the traffic flow? (B2)							
No traffic/Very light	2	4.4	0.0	13.3	0.0	0.112	0.877
Light (occasional)	7	15.6	13.3	33.3	0.0		
Moderate	14	31.1	26.7	20.0	46.7		
Heavy	10	22.2	26.7	20.0	20.0		
Very heavy (steady stream)	12	26.7	33.3	13.3	33.3		
Do you see any industrial tracks and/or big commercial vehicles passing through the residential area? (added after review) (B4)							
Many	8	17.8	33.3	20.0	0.0	0.009	0.001
Some	12	26.7	46.7	13.3	20.0		
None	25	55.6	20.0	66.7	80.0		
Are there any speed reducing measures on the street? (B6)							
None	39	86.7	80.0	93.3	86.7	0.562	0.595
At least one of the following: Speed bump, Roundabout, Reduced speed limit, School/playground zone, Other	6	13.3	20.0	6.7	13.3		
Are there places intended and/or marked for pedestrians to cross the street? (from I-M inventory) (B7)							
None	40	88.9	80.0	93.3	93.3	0.609	0.176
Some	4	8.9	13.3	6.7	6.7		
Many	1	2.2	6.7	0.0	0.0		
For an individual on foot, how safe (traffic wise) do you think it is to cross the street? (from I-M inventory, adapted) (B8)							
Very unsafe (no speed reducing measures and steady stream of traffic and fast coming cars and obstructions for visibility)	4	8.9	6.7	20.0	0.0	0.144	0.586
Not very safe	10	22.2	20.0	20.0	26.7		
Pretty safe	19	42.2	46.7	53.3	26.7		
Very safe (presence of speed reducing measures and no/very light passing through traffic and no obstructions)	12	26.7	26.7	6.7	46.7		
For an individual on foot, how convenient (e.g. not having to walk far to cross with safety) do you think it is to cross the street? (from I-M inventory, adapted)(B9)							
Very inconvenient	3	6.7	6.7	13.3	0.0	0.686	0.772
Not very convenient	6	13.3	6.7	20.0	13.3		
Pretty convenient	17	37.8	46.7	26.7	40.0		
Very convenient	19	42.2	40.0	40.0	46.7		
Did you observe any driving violations, such as overtaking, speeding, not stopping at stopping signs, etc (added after review)(B13)							
Many	0	0.0					
Some	4	8.9	6.7	13.3	6.7	0.760	1.000
No	41	91.1	93.3	86.7	93.3		

How would you rate the walkability of this segment? (B18)							
No sidewalks on either side	1	2.2	0.0	6.7	0.0	0.150	0.397
Narrow sidewalk, one side, none on the other (not wide enough for two people to cross each other)	2	4.4	0.0	0.0	13.3		
Narrow sidewalk on both sides	10	22.2	40.0	20.0	6.7		
Wide sidewalk, at least one side	6	13.3	20.0	6.7	13.3		
Wide sidewalk, both sides	26	57.8	40.0	66.7	66.7		
Is there a buffer (e.g. parked cars, landscaped "buffer", strips) between sidewalk and street so that there is a separation between pedestrians and passing traffic? (from I-M inventory)(B20)							
No, nowhere	44	97.8	100.0	100.0	93.3	0.360	0.221
In couple of places, not enough to be significant	1	2.2	0.0	0.0	6.7		
In several places	0	0.0					
Yes, generally the case, only few exceptions	0	0.0					
Yes, nearly throughout	0	0.0					
Are there greenbelts, trails, paths or lanes intended for walking, other than sidewalks in the area? (from I-M inventory). (B25)							
No	39	86.7	93.3	86.7	80.0	0.562	0.288
Yes	6	13.3	6.7	13.3	20.0		
Is there outdoor lighting on the segment (including street lights, public paths or public spaces)? (from I-M inventory) (B26)							
No, not at all, area would be dark at night	0	0.0					
Not as much as needed	14	31.1	20.0	40.0	33.3	0.682	0.538
Normal, probably like anywhere else	25	55.6	66.7	46.7	53.3		
Yes, probably more than elsewhere	1	2.2	0.0	0.0	6.7		
Yes, a lot, very well lid	5	11.1	13.3	13.3	6.7		
Is the sidewalk shaded by trees? (from I-M inventory) (B32)							
No, nowhere	5	11.1	13.3	13.3	6.7	0.474	0.137
Somewhat, at least in some places	27	60.0	66.7	66.7	46.7		
Yes, in many places	13	28.9	20.0	20.0	46.7		
Are there bicycle facilities? (Code all that apply) (B41)							
None	45	100	100.0	100.0	100.0		
Bicycle parking/stands and/or Bicycle lanes	0	0/0					
How would you rate the bikability of this segment, on shoulder/marked lane, not considering the road? (B42)							
No shoulder/marked lane, a cyclist would have to cycle on the road	22	48.9	73.3	40.0	33.3	0.312	0.064
Narrow marked lane	1	2.2	0.0	0.0	6.7		
Narrow paved shoulder	5	11.1	6.7	13.3	13.3		
Wide marked lane							
Wide paved shoulder	17	37.8	20.0	46.7	46.7		
Obstructions for bikability (on shoulder/marked lane, or if not present on the road) (B43)							
A lot	22	48.9	73.3	40.0	33.3	0.422	0.072
Many	15	33.3	13.3	46.7	40.0		
Some	4	8.9	6.7	6.7	13.3		
A little	3	6.7	6.7	6.7	6.7		
None	1	2.2	0.0	0.0	6.7		

How would you rate the bikability of this segment, even in the absence of a shoulder/lane, i.e. considering the road? (added after review)(B44)							
Very unsafe (e.g. fast passing cars, not enough space, many obstructions such as parked cars)	8	17.8	26.7	26.7	0.0	0.412	0.298
Not very safe	15	33.3	33.3	20.0	46.7		
Pretty safe	16	35.6	26.7	40.0	40.0		
Very safe (e.g. no/very light traffic, or wide roads, no obstructions such as parked cars)	6	13.3	13.3	13.3	13.3		
During your stay in the area, were there any vehicles cars or motorbikes moving down the street at high speed? (added after review)(H15)							
Many	10	22.2	26.7	33.3	6.7	0.438	0.367
One or two	13	28.9	26.7	20.0	40.0		
None	22	48.9	46.7	46.7	53.3		

Domain 5: Neighborhood and Ethnic Identification (N=11, excl. profile) <i>Def: unique features that give definition to neighborhood, including visible signs/ advertisements and displays tailored to a specific ethnic group</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
Are there indications of neighborhood uniformity? (B45)							
No, extreme difference	14	31.1	40.0	33.3	20.0	0.585	0.115
Fairly, like anywhere else	23	51.1	53.3	46.7	53.3		
Yes, more so than anywhere else	8	17.8	6.7	20.0	26.7		
Is this segment/area characterized by having a significant open view of an object or spot of interest (e.g. square, green space etc).or a wider scene beyond the segment? (from I-M inventory) (B47)							
No	38	84.4	80.0	93.3	80.0	0.508	1.000
Yes	7	15.6	20.0	6.7	20.0		
How attractive is the open view? (from I-M inventory) (B48)							
No views	38	84.4	80.0	93.3	80.0	0.523	0.690
Unattractive	1	2.2	6.7	0.0	0.0		
Neutral	0	0.0					
Attractive	6	13.3	13.3	6.7	20.0		
Does any business, institution or residence display symbols, colors, names, signs with ethnic orientation? (modified from HEP-NOC)(B50)							
None	38	84.4	100.0	73.3	80.0	0.111	0.135
1-2 occurrences	7	15.6	0.0	26.7	20.0		
More than 1-2 occurrences	0	0.0					
Quite common	0	0.0					
Very common	0	0.0					
Does any business, institution or residence display GREEK/CYPRIOT national symbols, colors, names, signs? (added) (B51)							
None	40	88.9	100.0	86.7	80.0	0.207	0.085
1-2 occurrences	5	11.1	0.0	13.3	20.0		
More than 1-2 occurrences	0	0.0					
Quite common	0	0.0					
Very common	0	0.0					

Are there billboards/signage present on this segment, including shops and other businesses' signage? (from I-M inventory, adapted)(B53)							
Excessive	1	2.2	6.7	0.0	0.0	0.635	0.396
A lot	3	6.7	13.3	0.0	6.7		
Some	12	26.7	20.0	26.7	33.3		
Rare, 1-2 only	11	24.4	26.7	33.3	13.3		
None	18	40.0	33.3	40.0	46.7		
How would characterize the attractiveness of billboards and signage, including uniformity? (added after review) (B54)							
Very unattractive (exceptionally standing out compared to elsewhere)	2	4.4	13.3	0.0	0.0	0.043	0.074
Somewhat unattractive (worse than elsewhere in terms of quantity, uniformity and attractiveness)	4	8.9	26.7	0.0	0.0		
Neutral (might not be uniform but not that different to elsewhere)	20	44.4	26.7	53.3	53.3		
Somewhat attractive (better than elsewhere in terms of quantity, uniformity and attractiveness)	1	2.2	0.0	6.7	0.0		
Very attractive (e.g. unusually uniform compared to elsewhere or none)	18	40.0	33.3	40.0	46.7		
Are any of the following advertisements visible on the block face (from HEP-NOC)? (B55)							
Sign advertising tobacco products, Sign advertising beer/other alcohol, Sign advertising fast food, Other <u>unhealthy</u> (specify)	26	57.8	60.0	60.0	53.3	0.913	0.715
None	19	42.2	40.0	40.0	46.7		
What proportion of residences have “for sale” or “for rent” signs? (D23)							
None	32	71.1	86.7	60.0	66.7	0.307	0.156
One or two	12	26.7	13.3	40.0	26.7		
Three or four	1	2.2	0.0	0.0	6.7		
Five-Ten	0	0.0					
More than 10	0	0.0					

What proportion of the commercial / industrial buildings have “for sale” or “for rent” signs? (E6)							
None	39	86.7	93.3	86.7	80.0	0.635	0.196
One or two	5	11.1	6.7	13.3	13.3		
Three or four	1	2.2	0.0	0.0	6.7		
Five-Ten	0	0.0					
More than 10	0	0.0					
Are there signs or indications which denote a neighborhood name or monuments/ markers (e.g. statue, banner etc) that indicate someone is entering a special area? (from I-M inventory)							
Yes	0	0.0					
No	45	100.0					

Domain 6: Maintenance and Appearance (N=17) <i>Def: current condition of buildings, grounds, public spaces, that are not permanent, can change</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
Are there trees in people's front gardens? (B31)							
None	0	0.0					
1%-24% of houses	3	6.7	13.3	6.7	0.0	0.306	0.057
25%-49% of houses	9	20.0	33.3	20.0	6.7		
50%-99% of houses	21	46.7	26.7	53.3	60.0		
100%	12	26.7	26.7	20.0	33.3		
Are there houses with purposively planted vegetation (including healthy pots and baskets)? (B34)							
None	6	13.3	13.3	20.0	6.7	0.406	0.054
1%-24% of houses	16	35.6	46.7	40.0	20.0		
25%-49% of houses	9	20.0	26.7	13.3	20.0		
50%-99% of houses	6	13.3	0.0	13.3	26.7		
100%	8	17.8	13.3	13.3	26.7		
How would you rate the condition of the <u>best</u> house/residential building on the block face? (D6)							
Abandoned, unusable	0	0.0					
Poor/badly deteriorated/neglected	2	4.4	6.7	6.7	0.0	0.124	0.339
Fair (multiple minor/one major repair)	2	4.4	0.0	13.3	0.0		
Good (touch-up repair/cosmetic repairs)	4	8.9	6.7	20.0	0.0		
Excellent (new/newly renovated)	37	82.2	86.7	60.0	100.0		
How would you rate the condition of the <u>worst</u> house/residential building on the block face? (D7)							
Abandoned, unusable	16	35.6	46.7	33.3	26.7	0.799	0.241
Poor/badly deteriorated/neglected	13	28.9	20.0	40.0	26.7		
Fair (multiple minor/one major repair)	8	17.8	20.0	13.3	20.0		
Good (touch-up repair/cosmetic repairs)	5	11.1	6.7	13.3	13.3		
Excellent (new/newly renovated)	3	6.7	6.7	0.0	13.3		

In general, how would you rate the condition of the <u>most</u> of the houses/ residential building on the block face? (D8)							
Abandoned, unusable	1	2.2	0.0	6.7	0.0	0.319	0.022
Poor/badly deteriorated/neglected	7	15.6	26.7	13.3	6.7		
Fair (multiple minor/one major repair)	17	37.8	53.3	33.3	26.7		
Good (touch-up repair/cosmetic repairs)	12	26.7	13.3	26.7	40.0		
Excellent (new/newly renovated)	8	17.8	6.7	20.0	26.7		
How would you rate the condition of the <u>best</u> residential grounds on the block face? (D9)							
None/not applicable	0	0.0					
Poor (significantly neglected)	0	0.0					
Fair (somewhat neglected)	4	8.9	13.3	13.3	0.0	0.202	0.041
Good (e.g. slightly overgrown)	5	11.1	20.0	13.3	0.0		
Excellent (tented/cared for regularly)	36	80.0	66.7	73.3	100.0		
How would you rate the condition of the <u>worst</u> residential grounds on the block face? (D10)							
None/not applicable	0	0.0					
Poor (significantly neglected)	30	66.7	86.7	73.3	40.0	0.060	0.063
Fair (somewhat neglected)	9	20.0	6.7	13.3	40.0		
Good (e.g. slightly overgrown)	5	11.1	0.0	13.3	20.0		
Excellent (tented/cared for regularly)	1	2.2	6.7	0.0	0.0		
How would you rate the condition of the <u>most of the</u> residential grounds on the block face? (D11)							
None/not applicable	0	0.0					
Poor (significantly neglected)	8	17.8	40.0	6.7	6.7	0.087	0.008
Fair (somewhat neglected)	18	40.0	33.3	53.3	33.3		
Good (e.g. slightly overgrown)	9	20.0	20.0	20.0	20.0		
Excellent (tented/cared for regularly)	10	22.2	6.7	20.0	40.0		

What proportion of residences have some form of decoration/external beautification (e.g. decorated gardens/ balconies, nameplates, window boxes)? (D13)							
None	0	0.0					
Very rare	1	2.2	0.0	6.7	0.0	0.328	0.117
Less than ½ of residences	7	15.6	26.7	6.7	13.3		
More than ½ of residences	15	33.3	40.0	40.0	20.0		
Near all, with some exceptions	22	48.9	33.3	46.7	66.7		
Is there any mold or damp visible on houses walls from the outside? (added after review) (D25)							
More than ½	6	13.3	6.7	20.0	13.3	0.775	0.768
More than ¼	7	15.6	20.0	20.0	6.7		
Between 1/10 and ¼	13	28.9	26.7	20.0	40.0		
Less than 1/10	13	28.9	33.3	20.0	33.3		
None	6	13.3	13.3	20.0	6.7		
Are any of the residential buildings being renovated?(D26)							
No	2	4.4	6.7	6.7	0.0	0.498	0.021
Yes, one or two	14	31.1	46.7	26.7	20.0		
Yes, three or four	19	42.2	40.0	46.7	40.0		
Yes, five to ten	5	11.1	0.0	13.3	20.0		
Yes, more than 10	5	11.1	6.7	6.7	20.0		
How many vacant/undeveloped lots are there in this block face? (E1)							
Many, more than ½	4	8.9	6.7	6.7	13.3	0.878	0.631
Five to ten	2	4.4	0.0	6.7	6.7		
Three or four	15	33.3	46.7	26.7	26.7		
One or two	15	33.3	26.7	33.3	40.0		
None	9	20.0	20.0	26.7	13.3		

What is the overall condition of the vacant/undeveloped property? (E2)							
Poor	32	71.1	80.0	66.7	66.7	0.654	0.665
Fair	3	6.7	0.0	6.7	13.3		
Good or No vacant/undeveloped property	10	22.2	20.0	26.7	20.0		
What is the overall condition of the commercial/industrial buildings and grounds? (E3)							
Abandoned, unusable	5	11.1	26.7	6.7	0.0	0.040	0.001
Poor/deteriorated (major repairs)	6	13.3	20.0	20.0	0.0		
Fair (multiple minor repairs/1 major)	5	11.1	13.3	20.0	0.0		
Good (near perfect, touch-up repairs)	5	11.1	6.7	13.3	13.3		
Excellent (new or newly renovated) or No commercial/industrial buildings	24	53.3	33.3	40.0	86.7		
Are any of the commercial/industrial buildings being renovated? (E8)							
No	30	66.7	80.0	66.7	53.3	0.395	0.562
Yes, one or two	11	24.4	6.7	26.7	40.0		
Yes, three or four	2	4.4	6.7	6.7	0.0		
Yes, five to ten							
Yes, more than 10	2	4.4	6.7	0.0	6.7		
What proportion of private residence grounds (yards, front porches, or anywhere visible) have toys or play equipment? (F12)							
None	28	62.2	73.3	60.0	53.3	0.575	0.599
Less than 1/10	12	26.7	13.3	26.7	40.0		
Between 1/10 and ½	5	11.1	13.3	13.3	6.7		
More than ½	0	0.0					
Nearly all	0	0.0					
In general, how would you rate the condition of the toys or play equipment in private residence grounds? (added)(F13)							
None	28	62.2	73.3	60.0	53.3	0.265	0.202
Poor (need major repair, unusable)	1	2.2	0.0	6.7	0.0		
Fair (peeling paint, minor repairs but usable)	4	8.9	6.7	20.0	0.0		

Good	6	13.3	6.7	6.7	26.7		
Excellent	6	13.3	13.3	6.7	20.0		

Domain 7: Safety (lack of security-related features) (N=10) <i>Def: physical indicators of level of protection from harm one might expect</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15) (%)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
Are there any barking dogs in this segment? (adapted from I-M inventory) (D21)							
Yes	25	55.6	53.3	40.0	73.3	0.181	0.276
No	20	44.4	46.7	60.0	26.7		
What other types of signs are visible? (B52) safety							
More than one of the following: Security warnings, Beware of guard dog	28	62.2	46.7	60.0	80.0	0.262	0.189
One of the following: Security warnings, Beware of guard dog	12	26.7	40.0	33.3	6.7		
None	5	11.1	13.3	6.7	13.3		
Approximately what proportion of the residential buildings have a border? (D16)							
None	37	82.2	80.0	73.3	93.3	0.578	0.555
Less than ¼	4	8.9	13.3	13.3	0.0		
Between ¼ and ½	4	8.9	6.7	13.3	6.7		
More than ½	0	0					
Nearly all, with only some exceptions	0	0					
What is the average height of residence borders? (D17)							
Above head level	7	15.6	0.0	13.3	33.3	0.098	0.016
Below head level	8	17.8	13.3	26.7	13.3		
Below or just above waist level	30	66.7	86.7	60.0	53.3		
What proportion of residence buildings have window security bars or gratings on windows (not including decorative gratings on traditional doors)? (D18)							
Nearly all	2	4.4	6.7	6.7	0.0	0.480	0.483
More than ½.	1	2.2	0.0	0.0	6.7		
Between ¼ and ½.	4	8.9	6.7	0.0	20.0		
Less than ¼	12	26.7	20.0	33.3	26.7		
None	26	57.8	66.7	60.0	46.7		

What proportion of residence buildings have signs indicating they are protected by private security services? (D19)							
Nearly all	2	4.4	0.0	6.7	6.7	0.393	0.018
More than ½.	3	6.7	6.7	6.7	6.7		
Between ¼ and ½.	13	28.9	13.3	26.7	46.7		
Less than ¼	15	33.3	33.3	33.3	33.3		
None	12	26.7	46.7	26.7	6.7		
What proportion of residence buildings have signs indicating they are protected by dogs? (D20)							
None	2	4.4	0.0	6.7	6.7	0.513	0.340
Less than ¼	2	4.4	13.3	0.0	0.0		
Between ¼ and ½	13	28.9	40.0	26.7	20.0		
More than ½	21	46.7	33.3	53.3	53.3		
Nearly all	7	15.6	13.3	13.3	20.0		
What proportion of the commercial/ industrial buildings have security bars/grating on windows and/or pull-down metal security blinds on the doors and entrances? (E4)							
Nearly all	2	4.4	0.0	0.0	13.3	0.374	0.444
More than ½	1	2.2	6.7	0.0	0.0		
Between 1/10 and ½.	0	0.0	46.7	40.0	40.0		
Less than 1/10	19	42.2	46.7	40.0	40.0		
None	23	51.1	46.7	60.0	46.7		
What proportion of the commercial/ industrial properties have security devices (alarms) and/or security fences, high mesh fencing with barbed wire or spiked tops? (E5)							
Nearly all	2	4.4	0.0	0.0	13.3	0.426	0.203
More than ½.	1	2.2	0.0	6.7	0.0		
Between 1/10 and ½.	2	4.4	0.0	6.7	6.7		
Less than 1/10	14	31.1	40.0	33.3	20.0		
None	26	57.8	60.0	53.3	60.0		

Are they any security fences, bars or security devices in <u>institutions</u> , if present (schools etc)? <i>(added after review)</i> (E7)							
Yes (high fences, locked gates)	16	35.6	26.7	46.7	33.3	0.291	1.000
Yes (bars or windows/doors, security devices or guards)	6	13.3	26.7	0.0	13.3		
No or No institutions present	23	51.1	46.7	53.3	53.3		

Domain 8: Physical Disorder (lack of) (N=17 excl. profile) Def: characteristics than render environment unsightly and potentially unsafe	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
Are there abandoned cars/trucks on any of the streets, alleys or lots visible on this block face? (B14)							
More than five	5	11.1	33.3	0.0	0.0	0.001	0.000
Four or five	0	0.0					
Two or three	5	11.1	13.3	20.0	0.0		
One	8	17.8	33.3	13.3	6.7		
None	27	60.0	20.0	66.7	93.3		
Are there old, beat-up cars/trucks on the street, in driveways or yards on this block face? (B15)							
More than five	4	8.9	26.7	0.0	0.0	0.003	0.000
Four or five	0	0.0					
Two or three	5	11.1	13.3	20.0	0.0		
One	6	13.3	26.7	13.3	0.0		
None	30	66.7	33.3	66.7	100.0		
Do you see any stagnant waters or visibly blocked rain ducts? (added after review)(B38)							
Yes	0	0.0					
No	45	100.0	100.0	100.0	100.0		
Do you see any carcasses of dead animals? (added after review)(B39)							
Yes	0	0.0					
No	45	100.0	100.0	100.0	100.0		
What proportion of residences are burned out, boarded up, or abandoned? (D24)							
More than 10	0	0.0					
Five-Ten	0	0.0					
Three-four	8	17.8	20.0	20.0	13.3	0.466	0.151
One or two	15	33.3	46.7	33.3	20.0		
None	22	48.9	33.3	46.7	66.7		

Are there discarded trimmings of plants and trees in public spaces or vacant lots? (added after review) (E9)							
Yes	25	55.6	53.3	60.0	53.3	0.914	1.000
No	20	44.4	46.7	40.0	46.7		
Is there garbage, junk or litter (incl. broken glass, clothes, paper) on any of the streets or sidewalks, in yards, or vacant lots? (H1)							
Heavy/Widespread	12	26.7	46.7	26.7	6.7	0.200	0.004
A lot	3	6.7	13.3	6.7	0.0		
Some, here and there	19	42.2	33.3	40.0	53.3		
Very little, very rare	5	11.1	0.0	13.3	20.0		
None	6	13.3	6.7	13.3	20.0		
Are there empty beer containers or liquor bottles on the street or sidewalks, in yards, or vacant lots? (H2)							
Heavy/Widespread	0	0.0					
A lot	0	0.0					
Some, here and there	3	6.7	0.0	13.3	6.7	0.399	0.514
Very little, very rare	4	8.9	13.3	0.0	13.3		
None	38	84.4	86.7	86.7	80.0		
Do you see any condoms or syringes in public spaces? (added after review) (H3)							
Yes	1	2.2	0.0	0.0	6.7	0.360	0.221
No	44	97.8	100.0	100.0	93.3		
Are there cigarettes or cigar butts or discarded cigarette packages on any of the streets or sidewalks, in yards/lots or gutters? (H4)							
Heavy/Widespread	1	2.2	0.0	0.0	6.7	0.396	0.095
A lot	4	8.9	13.3	13.3	0.0		
Some, here and there	15	33.3	46.7	33.3	20.0		
Very little, very rare	16	35.6	33.3	33.3	40.0		
None	9	20.0	6.7	20.0	33.3		

Are there any piles (significant accumulations) of garbage or dumped materials on any of the streets or sidewalks, in yards/lots or gutters? (H5)							
Yes	37	82.2	93.3	80.0	73.3	0.345	0.157
No	8	17.8	6.7	20.0	26.7		
Are there animal droppings/fouling on the sidewalks/street? (H6)							
Heavy/Widespread	1	2.2	6.7	0.0	0.0	0.419	1.000
A lot	4	8.9	0.0	13.3	13.3		
Some, here and there	9	20.0	33.3	6.7	20.0		
Very little, very rare	18	40.0	26.7	53.3	40.0		
None	13	28.9	33.3	26.7	26.7		
Is there graffiti on any of the buildings, sidewalks, walls, or signs? (H7)							
Heavy/Widespread	1	2.2	6.7	0.0	0.0	0.874	0.187
A lot	6	13.3	20.0	13.3	6.7		
Some, here and there	13	28.9	26.7	33.3	26.7		
Very little, very rare	12	26.7	20.0	26.1	33.3		
None	13	28.9	26.7	26.7	33.3		
Is there painted-over graffiti on any of buildings, sidewalks, walls, or signs? (H9)							
None	40	88.9	86.7	100.0	80.0	0.361	0.367
Some	4	8.9	13.3	0.0	13.3		
A lot	1	2.2	0.0	0.0	6.7		
How much vandalism (other than graffiti e.g. broken windows, broken telephone boxes, damaged equipment etc) is present on public spaces or private properties (e.g. broken windows? (H10)							
Extensive (large areas of small or more than two significant occurrences)	0	0.0					
A lot (several small or more than one significant occurrence)	1	2.2	0.0	6.7	0.0	0.524	1.000
Moderate (more than 2 small occurrences or one significant occurrence)	2	4.4	6.7	6.7	0.0		
Rare (2 or less small occurrences)	3	6.7	0.0	6.7	13.3		
None	39	86.7	93.3	80.0	86.7		

To what extent did you experience any unpleasant noxious smells during your observation (urine, rotting garbage, etc.)? (H11)							
Quite a bit	2	4.4	0.0	6.7	6.7	0.337	0.332
A little	11	24.4	13.3	40.0	20.0		
Not at all	32	71.1	86.7	53.3	73.3		
To what extent did you experience unpleasant levels of dirt in the air (e.g. resuspension of soil from vacant lots, construction materials etc) (H12)							
Quite a bit	4	8.9	13.3	0.0	13.3	0.007	0.576
A little	10	22.2	13.3	53.3	0.0		
Not at all	31	68.9	73.3	46.7	86.7		

Domain 9: Social Contact & Social Disorder (lack of) (N=14) Def: People's activity and behaviours, that indicate positive social contact and/or lack of social disorder		Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi-square)	p-value for trend
Who are the occupants of the playgrounds, parks, green spaces? (F3)								
No one	Adults only Adults with children Teen groups Groups of unaccompanied children	30	66.7	73.3	60.0	66.7	0.609	1.000
At least one group of the following:		12	26.7	20.0	26.7	33.3		
Two or more groups of the following:		3	6.7	6.7	13.3	0.0		
Are there any people visible outdoors? (G1)								
No								
Yes, only one or two		11	24.4	13.3	20.0	40.0	0.289	0.748
Yes, some		16	35.6	53.3	26.7	26.7		
Yes, many		6	13.3	20.0	13.3	6.7		
Yes, a lot		12	26.7	13.3	40.0	26.7		
Who do you see? (G2)								
No one	Older people (over 65+) Adults (ages 18 and 64) Teenagers (ages 13-17) Preteens (ages 6-12) Preschool children (ages 5 and under)	0	0.0					
One of the following groups:		22	48.9	53.3	40.0	53.3	0.959	0.726
Two of the following groups:		14	31.1	26.7	33.3	33.3		
Three of the following groups:		3	6.7	6.7	6.7	6.7		
Four of the following groups:		6	13.3	13.3	20.0	6.7		
How many children were not under adult supervision? (G7)								
None, all accompanied by adults		30	66.7	73.3	46.7	80.0	0.256	0.371
No children in public spaces		1	2.2	0.0	6.7	0.0		
One to three		11	24.4	13.3	40.0	20.0		
More than four/five		3	6.7	13.3	6.7	0.0		

Where any establishments (commercial or institutional) where people can meet/have social contact (coffee shops, youth centers etc) frequented by people? (added after review) (G14)								
No		39	86.7	80.0	86.7	93.3	0.386	0.317
Yes, but not very busy		3	6.7	13.3	0.0	6.7		
Yes, busy		3	6.7	6.7	13.3	0.0		
What age-groups would you say these establishments cater for? (Code all that apply) (G15)								
At least one of these groups	Teenagers Young adults Older adults Elderly, male Elderly, female	29	64.4	40.0	73.3	80.0	0.234	0.035
Two of these groups		13	28.9	46.7	26.7	13.3		
Three of these groups		2	4.4	6.7	0.0	6.7		
At least four of these groups		1	2.2	6.7	0.0	0.0		
Did you see any other instances of social contact or gatherings (e.g. playing backgammon, drinking coffee on veranda or neighbours chatting)? (added after review) (G16)								
None at all		25	55.6	40.0	53.3	73.3	0.238	0.215
One or two instances		18	40.0	60.0	40.0	20.0		
Appears frequent/common		2	4.4	0.0	6.7	6.7		
Did you see any houses with their front doors open (e.g. in case a neighbour drops by)? (added after review)(G17)								
No		21	46.7	46.7	26.7	66.7	0.100	0.504
One or two		23	51.1	53.3	73.3	26.7		
Appears frequent/common		1	2.2	0.0	0.0	6.7		
Did you see any people begging/asking for money either from residents or passers byers? (added after review) (G18)								
Yes		1	2.2	0.0	6.7	0.0	0.360	1.000
No		44	97.8	100.0	93.3	100.0		
Did you see any people drinking alcohol openly in the block face? (G19)								
Yes		3	6.7	0.0	20.0	0.0	0.040	1.000
No		42	93.3	100.0	80.0	100.0		
Did you see disorderly or misbehaving groups of children? (G20)								
No		45	100.0	100.0	100.0	100.0		
Yes		0	0.0					

Did you see disorderly or misbehaving groups of teenagers? (G21)							
Yes	2	4.4	13.3	0.0	0.0	0.123	0.080
No	43	95.6	86.7	100.0	100.0		
Did you see disorderly or misbehaving groups of adults? (G22)							
Yes	2	4.4	0.0	13.3	0.0	0.123	1.000
No	43	95.6	100.0	86.7	100.0		

APPENDIX XII: Prevalence of CyNOTes features and characteristics by Domain across all three groups of the 45 neighbourhoods according to educational attainment of residents at parish (enories) level

Domain 1: Outdoor public spaces, Recreation and Nature Features (N=14) Def: destinations and facilities open to the public, conveniences and comfort features in outdoor public spaces & characteristics of surrounding scenery			Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi-square)	p-value for trend
Are there purposively planted trees or other vegetation on the sidewalks or between the sidewalk and the street? (B29)									
None, nowhere			3	6.7%	6.3	0.0	13.3	0.771	0.813
In a couple of spots (very occasional)			6	13.3%	12.5	14.3	13.3		
A few spots e.g. 25%-49% of the area			14	31.1%	37.5	28.6	26.7		
Some/A lot e.g. 50%-99%			12	26.7%	18.8	42.9	20.0		
Many, nearly everywhere			10	22.2%	25.0	14.3	26.7		
Are there purposefully planted trees or other vegetation in other public spaces (e.g. green area)? (B30)									
None, nowhere			14	31.1	37.5	14.3	40.0	0.390	0.546
Yes, in one or two places			12	26.7	18.8	28.6	33.3		
Yes, some/a lot			19	42.2	43.8	57.1	26.7		
Mark all types of public spaces on this area (from I-M inventory) (B35)									
None of the following	Park/Playground Playing or sport field Plaza/square/courtyard Public garden/green area	Beach Vacant lot/undeveloped land Nature feature Other (specify)	16	35.6	50.0	14.3	40.0	0.012	0.469
At least one of the following			22	48.9	50.0	42.9	53.3		
At least two of the following			7	15.6	0.0	42.9	6.7		
What is the general condition of the public spaces? (B36)									
None			19	42.2	68.8	14.3	40.0	0.024	0.173
Very poor/very deteriorated									
Poor, not very well-kept			8	17.8	6.3	35.7	13.3		
Fair			9	20.0	18.8	7.1	33.3		
Good/well-kept			5	11.1	6.3	21.4	6.7		
Very good/very well-kept			4	8.9	0.0	21.4	6.7		
What public courtesies are visible? (B37)									
None of the following	Trash cans/bins (non-residential) Public phones Public seating/benches Recycling facilities Dog bins Other (specify)		22	48.9	68.8	35.7	40.0	0.181	0.276
One of the following			7	15.6	12.5	14.3	20.0		
Two of the following			7	15.6	0.0	35.7	13.3		
Three of the following			6	13.3	6.3	14.3	20.0		
Four of the following			3	6.7	12.5	0.0	6.7		

Is there a park, playground, green space? (F1)							
Yes (unfettered access)	14	31.1	43.8	14.3	33.3	0.280	0.799
Yes (controlled access)	3	6.7	0.0	7.1	13.3		
No	28	62.2	56.3	78.6	53.3		
What is the overall condition of playgrounds/ parks/green spaces? (F2)							
Abandoned, unusable	17	37.8	56.3	21.4	33.3	0.242	0.127
Poor/deteriorated	7	15.6	18.8	21.4	6.7		
Fair	8	17.8	12.5	14.3	26.7		
Good	7	15.6	6.3	28.6	6.7		
Excellent	6	13.3					
Are there play spaces other than parks, playgrounds and residential gardens, including open or undeveloped spaces?(F4)							
Yes, relatively good and safe alternatives for children to play	6	13.3	31.3	7.1	0.0	0.69	0.018
Yes, but not safe options (general feeling of unsafety, dangers, passing traffic)	8	17.8	12.5	28.6	13.3		
None	31	68.9	56.3	64.3	86.7		
Are any vacant lots or open or undeveloped spaces (not fenced in)? (F5)							
Yes, in good condition	7	15.6	25.0	7.1	13.3	0.200	0.122
Yes, in poor condition	30	66.7	62.5	85.7	53.3		
No vacant lots/undeveloped spaces	8	17.8	12.5	7.1	33.3		
How are the vacant lots or open undeveloped spaces used-what or who do you see? (Code all that apply) (F6)							
Nothing notable and/or Used for parking and/ Illegal/improper use or activity	41	91.1	81.3	92.9	100.0	0.179	0.069
Children playing and/or Equipped with playground equipment and/or Used for gardens and/or Chairs/furniture for socializing	4	8.9	18.8	7.1	0.0		
What is the overall condition of public use recreational spaces or grounds, other than parks & playgrounds assessed above (including vacant lots)? (from HEP-NOC) (F7)							
None	8	17.8	18.8	7.1	26.7	0.357	0.968
Poor/deteriorated (e.g. trash, overgrown, broken glass etc)	25	55.6	62.5	71.4	33.3		
Fair (moderate trash, somewhat overgrown etc)	8	17.8	6.3	14.3	33.3		
Good (very little or no trash, grass cut, no broken glass)	3	6.7	6.3	7.1	6.7		
Excellent	1	2.2	6.3	0.0	0.0		

What kinds of recreational facilities/ destination are on the block face? (F9) 100 50 0										
None of the following	Park/Green space Playground Sports/playing fields/courts Community yards/gardens	Community centre (organized) Swimming pool Gym/indoor facility	Plaza/Square Vacant lots/ undeveloped land Beach Nature feature Other	9	20.0	31.3	7.1	20.0	0.546	0.777
One of the following				19	42.2	31.3	50.0	46.7		
Two or more of the following				17	37.8	37.5	42.9	33.3		
Do the recreational facilities contain (F10)										
None of the following		Sports fields/courts Sports stands/seating Sports equipment Playground equipment	Picnic tables Pools Bike/walking paths Other, specify	20	44.4	50.0	21.4	60.0	0.212	0.486
One of the following				22	48.9	43.8	64.3	40.0		
Two of more of the following				3	6.7	6.3	14.3	0.0		
In general, how would you rate the condition of the public use recreational equipment? (from HEP-NOC) (F11)										
None				20	44.4	50.0	21.4	60.0	0.209	0.971
Poor (need major repair, unusable)				4	8.9	12.5	14.3	0.0		
Fair (peeling paint, minor repairs but usable)				14	31.1	31.3	28.6	33.3		
Good				3	6.7	6.3	14.3	0.0		
Excellent				4	8.9	0.0	21.4	6.7		

Domain 2: Architecture & Building Characteristics (N=11, excl. profile) <i>Def: building attributes, permanent, not easily changed (including parking arrangements and driveways)</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi-square)	p-value for trend
How would you characterize the predominant land use on this block face? (A2)							
Mixed Residential, Commercial, Industrial	4	8.9	6.3	21.4	0.0	0.190	0.392
Primarily Residential, Commercial	1	2.2	6.3	0.0	0.0		
Primarily Residential	40	88.9	87.5	78.6	100.0		
What are the parking arrangements on the block face? (Code the predominant form) (B10)							
None							
Mostly street	4	8.9	6.3	21.4	0.0	0.069	0.258
Mostly private parking lots							
Mostly public lots	6	13.3	18.8	21.4	0.0		
Mostly off-street (e.g. driveways)	35	77.8	75.0	57.1	100.0		
How interesting is the architecture/ urban design of this segment (from I-M inventory) (B56)							
Interesting	5	11.1	0.0	7.1	26.7	0.010	0.000
Somewhat interesting	11	24.4	6.3	28.6	40.0		
Neutral/Uninteresting	29	64.4	93.8	64.3	33.3		
On the whole, rate the attractiveness of this segment? (from I-M inventory) (B57)							
Very attractive	16	35.6	62.5	35.7	6.7	0.143	0.001
Attractive	6	13.3	12.5	14.3	13.3		
Neutral	13	28.9	18.8	28.6	40.0		
Unattractive	7	15.6	6.3	14.3	26.7		
Very unattractive	3	6.7	0.0	7.1	13.3		

What type of residential housing occupies the most space on the block face? (from HEP-NOC) (D2)							
Low- to high-rise apartment block (7 or more units, 1-3 floors to >10 floors)	7	15.6	12.5	21.4	13.3	0.706	0.720
Duplexes or Row houses or Housing units over commercial stores	9	20.0	12.5	28.6	20.0		
Single-family houses, detached or semi- detached	29	64.4	75.0	50.0	66.7		
Roughly how many residences are there in this street segment (not whole area)? (D3)							
Less than 10	10	22	25.0	14.3	26.7	0.305	0.218
10-20	16	35.6	43.8	50.0	13.3		
20-49	17	37.8	31.3	28.6	53.3		
50-99	1	2.2	0.0	7.1	0.0		
100+	1	2.2	0.0	0.0	6.7		
How many storeys high are the majority of the buildings? (D4)							
One	4	8.9	18.8	0.0	6.7	0.209	0.529
Two	35	77.8	75.0	71.4	86.7		
Three to four	4	8.9	6.3	14.3	6.7		
Five to nine	2	4.4	0.0	14.3	0.0		
More than 10	0	0.0	0.0	0.0	0.0		
How many buildings contain vertical-mixed use (i.e. building has different uses on different floors)? (from I-M inventory) (D5)							
A lot/quite common	3	6.7	12.5	7.1	0.0	0.540	0.811
Some, common	5	11.1	6.3	21.4	6.7		
Rare, 2-3 only	16	35.6	25.0	35.7	46.7		
None	20	44.4	50.0	35.7	46.7		
No building > 1 story	1	2.2	6.3	0.0	0.0		

How many residences have private driveways/private garages? (adapted from I-M inventory) (D12)							
Practically all	33	73.3	75.0	50.0	93.3	0.033	0.271
A lot, 50%-99%	7	15.6	18.8	21.4	6.7		
Some, 25%-49%	4	8.9	0.0	28.6	0.0		
Only few, less than 25%	1	2.2	6.3	0.0	0.0		
None	0	0.0	0.0	0.0	0.0		
Approximately what proportion of residences on this block face have their own private yard/ garden space? (D14)							
None	0	0.0					
Less than ¼	1	2.2	0.0	7.1	0.0	0.048	0.491
Between ¼ and ½	3	6.7	6.3	14.3	0.0		
More than ½	5	11.1	6.3	28.6	0.0		
Nearly all, with some exceptions	36	80.0	87.5	50.0	100.0		
Approximately what proportion of residences have their own front private balcony, porch or terrace? (D15)							
None	0	0.0				0.044	0.568
Less than ¼	0	0.0					
Between ¼ and ½	3	6.7	0.0	21.4	0.0		
More than ½	4	8.9	12.5	14.3	0.0		
Nearly all, with some exceptions	38	84.4	87.5	64.3	100.0		

Domain 3: Sidewalks & Barriers (lack of) (N=10) <i>Def: characteristics of paved walking paths and obstacles in the environment, difficult to overcome or off-putting to pedestrians/ cyclists</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi-square)	p-value for trend
Are there cars parked on the pavement? (B11)							
No, not at all	14	31.1	50.0	28.6	13.3	0.548	0.310
Yes, but only 1-2 occasions	7	15.6	6.3	14.3	26.7		
Yes, more frequent than 1-2 occasions	12	26.7	18.8	28.6	33.3		
Yes, very frequent e.g. along more than ¼ of the length of the road	8	17.8	12.5	21.4	20.0		
Yes, along more than ½ of the length of the road	4	8.9	12.5	7.1	6.7		
Did you observe any parking violations, other than parking on the pavement, such as illegal parking, blocking driveway or other access, parking on disable spaces, etc? (B12)							
No	38	84.4	81.2	85.7	86.7	0.906	0.679
Some	7	15.6	18.8	14.3	13.3		
Many	0	0.0					
How many sides of the street have sidewalks? (from I-M inventory) (B16)							
Neither	1	2.2	0.0	7.1	0.0	0.683	0.958
One	3	6.7	6.3	7.1	6.7		
Both	41.1	91.1	93.8	85.7	93.3		
Is the sidewalk complete/ continuous on one or both sides? (from I-M inventory, adapted) (B17)							
Yes, no problems with continuity	5	11.1	18.8	14.3	0.0	0.455	0.028
Occasional problems here and there	7	15.6	18.8	14.3	13.3		
Some problems on at least one side	9	20.0	31.3	14.3	13.3		
A lot of problems on both sides	12	26.7	18.8	21.4	40.0		
No continuity throughout on both sides	12	26.7	12.5	35.7	33.3		
Obstructions for walkability on sidewalks (e.g. parked cars, lamp posts/trees, pots, discontinuity, untrimmed trees or plants blocking the way, etc)? (B19)							
None	13	28.9	43.8	28.6	13.3	0.405	0.266
A little (1-2 places, not that significant)	12	26.7	18.8	28.6	33.3		
Some (more than 1-2 places)	13	28.9	18.8	28.6	40.0		
A lot (frequent)	4	8.9	12.5	14.3	0.0		

Throughout (very frequent)	3	6.7	6.3	0.0	13.3		
How would you rate the condition of the sidewalks on the block face? (B21)							
No sidewalks	2	4.4	0.0	14.3	0.0	0.090	0.156
Poor (holes, sizeable cracks, crumbling, or uneven along MOST surface)	13	28.9	50.0	28.6	6.7		
Fair (holes, sizeable cracks, crumbling, or uneven along SOME of the surface)	16	35.6	25.0	21.4	60.0		
Moderately good (holes and cracks, only, OCCASIONALLY)	6	13.3	12.5	14.3	13.3		
Very good (or Under construction)	8	17.8	12.5	21.4	20.0		
How easy would it be for citizens on wheels (e.g. stroller, disable cart) to move about in the neighborhood? (added after review) (B22)							
Very Difficult	24	53.3	62.5	57.1	40.0	0.828	0.100
Somewhat Difficult	17	26.7	25.0	28.6	26.7		
Neither easy, nor difficult	4	8.9	6.3	7.1	13.3		
Somewhat Easy	2	4.4	6.3	0.0	6.7		
Very Easy	3	6.7	0.0	7.1	13.3		
Is there any infrastructure for disable citizens, such as continuous pavements, sloping pavement for crossing, ramps for disable access, dedicated parking spaces for disable, access to public spaces, etc? (added after review) (B23)							
No	44	97.8	93.8	100.0	100.0	0.396	0.239
Yes	1	2.2	6.3	0.0	0.0		
If so, are disable spaces/ access occupied by cars or blocked by other obstructions? (B24)							
Yes or No infrastructure	44	97.8	93.8	100.0	100.0	0.396	0.239
No	1	2.2	6.3	0.0	0.0		
Are they any untrimmed trees, unkempt plants or weeds on the pavements? (added after review) (B33)							
Very heavy, many places, all along	13	28.9	25.0	42.9	20.0	0.877	0.606
A lot/heavy, several places	3	6.7	6.3	7.1	6.7		
A little, more than occasional	11	24.4	31.3	14.3	26.7		
Very occasional, 1-2 spots	16	35.6	37.5	28.6	40.0		
None	2	4.4	0.0	7.1	6.7		

Domain 4: Pedestrian & Cycling Environment (N=18) <i>Def: features that hinder or promote an environment conducive to pedestrian or cycling activity</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
Type of street (Code all that apply) (B1)							
Major or moderately busy street	4	8.9	12.5	7.1	6.7	0.968	0.502
Side street (to major road)	16	35.6	37.5	35.7	33.3		
Residential road and/or Dead-end street and/or One-way street	25	55.6	50.0	57.1	60.0		
What is the traffic flow? (B2)							
No traffic/Very light	2	4.4	0.0	14.3	0.0	0.330	0.593
Light (occasional)	7	15.6	18.8	21.4	6.7		
Moderate	14	31.1	25.0	28.6	40.0		
Heavy	10	22.2	31.3	21.4	13.3		
Very heavy (steady stream)	12	26.7	25.0	14.3	40.0		
Do you see any industrial tracks and/or big commercial vehicles passing through the residential area? (added after review) (B4)							
Many	8	17.8	37.5	14.3	0.0	0.003	0.000
Some	12	26.7	43.8	21.4	13.3		
None	25	55.6	18.8	64.3	86.7		
Are there any speed reducing measures on the street? (B6)							
None	39	86.7	81.3	78.6	100.0	0.173	0.134
At least one of the following: Speed bump, Roundabout, Reduced speed limit, School/playground zone, Other	6	13.3	18.8	21.4	0.0		
Are there places intended and/or marked for pedestrians to cross the street? (from I-M inventory) (B7)							
None	40	88.9	75.0	92.9	100.0	0.238	0.031
Some	4	8.9	18.8	7.1	0.0		
Many	1	2.2	6.3	0.0	0.0		

For an individual on foot, how safe (traffic wise) do you think it is to cross the street? (from I-M inventory, adapted) (B8)							
Very unsafe (no speed reducing measures and steady stream of traffic and fast coming cars and obstructions for visibility)	4	8.9	6.3	21.4	0.0	0.245	0.380
Not very safe	10	22.2	25.0	14.3	26.7		
Pretty safe	19	42.2	56.3	35.7	33.3		
Very safe (presence of speed reducing measures and no/very light passing through traffic and no obstructions)	12	26.7	12.5	28.6	40.0		
For an individual on foot, how convenient (e.g. not having to walk far to cross with safety) do you think it is to cross the street? (from I-M inventory, adapted)(B9)							
Very inconvenient	3	6.7	6.3	14.3	0.0	0.822	0.780
Not very convenient	6	13.3	12.5	14.3	13.3		
Pretty convenient	17	37.8	37.5	28.6	46.7		
Very convenient	19	42.2	43.8	42.9	40.0		
Did you observe any driving violations, such as overtaking, speeding, not stopping at stopping signs, etc (added after review)(B13)							
Many	0	0.0					
Some	4	8.9	6.3	14.3	6.7	0.693	0.956
No	41	91.1	93.8	85.7	93.3		
How would you rate the walkability of this segment? (B18)							
No sidewalks on either side	1	2.2	0.0	7.1	0.0	0.264	0.484
Narrow sidewalk, one side, none on the other (not wide enough for two people to cross each other)	2	4.4	0.0	7.1	6.7		
Narrow sidewalk on both sides	10	22.2	43.8	7.1	13.3		
Wide sidewalk, at least one side	6	13.3	6.3	14.3	20.0		
Wide sidewalk, both sides	26	57.8	50.0	64.3	60.0		
Is there a buffer (e.g. parked cars, landscaped “buffer”, strips) between sidewalk and street so that there is a separation between pedestrians and passing traffic? (from I-M inventory)(B20)							
No, nowhere	44	97.8	100.0	92.9	100.0	0.322	0.979
In couple of places, not enough to be significant	1	2.2	0.0	7.1	0.0		
In several places	0	0.0					
Yes, generally the case, only few exceptions	0	0.0					
Yes, nearly throughout	0	0.0					

Are there greenbelts, trails, paths or lanes intended for walking, other than sidewalks in the area? (from I-M inventory). (B25)							
No	39	86.7	93.8	78.6	86.7	0.475	0.554
Yes	6	13.3	6.3	21.4	13.3		
Is there outdoor lighting on the segment (including street lights, public paths or public spaces)? (from I-M inventory) (B26)							
No, not at all, area would be dark at night	0	0.0					
Not as much as needed	14	31.1	37.5	21.4	33.3	0.754	0.553
Normal, probably like anywhere else	25	55.6	56.3	57.1	53.3		
Yes, probably more than elsewhere	1	2.2	0.0	7.1	0.0		
Yes, a lot, very well lid	5	11.1	6.3	14.3	13.3		
Is the sidewalk shaded by trees? (from I-M inventory) (B32)							
No, nowhere	5	11.1	12.5	7.1	13.3	0.700	0.352
Somewhat, at least in some places	27	60.0	68.8	64.3	46.7		
Yes, in many places	13	28.9	18.8	28.6	40.0		
Are there bicycle facilities? (Code all that apply) (B41)							
None	45	100	100.0	100.0	100.0		
Bicycle parking/stands and/or Bicycle lanes	0	0/0					
How would you rate the bikability of this segment, on shoulder/marked lane, not considering the road? (B42)							
No shoulder/marked lane, a cyclist would have to cycle on the road	22	48.9	68.8	28.6	46.7	0.257	0.187
Narrow marked lane	1	2.2	0.0	7.1	0.0		
Narrow paved shoulder	5	11.1	6.3	21.4	6.7		
Wide marked lane							
Wide paved shoulder	17	37.8	25.0	42.9	46.7		
Obstructions for bikability (on shoulder/marked lane, or if not present on the road) (B43)							
A lot	22	48.9	68.8	28.6	46.7	0.097	0.304
Many	15	33.3	18.8	57.1	26.7		
Some	4	8.9	0.0	7.1	20.0		

A little	3	6.7	12.5	7.1	0.0		
None	1	2.2	0.0	0.0	6.7		
How would you rate the bikability of this segment, even in the absence of a shoulder/lane, i.e. considering the road? (added after review)(B44)							
Very unsafe (e.g. fast passing cars, not enough space, many obstructions such as parked cars)	8	17.8	31.3	7.1	13.3	0.447	0.204
Not very safe	15	33.3	25.0	50.0	26.7		
Pretty safe	16	35.6	37.5	28.6	40.0		
Very safe (e.g. no/very light traffic, or wide roads, no obstructions such as parked cars)	6	13.3	6.3	14.3	20.0		
During your stay in the area, were there any vehicles cars or motorbikes moving down the street at high speed? (added after review)(H15)							
Many	10	22.2	25.0	28.6	13.3	0.761	0.778
One or two	13	28.9	25.0	21.4	40.0		
None	22	48.9	50.0	50.0	46.7		

Domain 5: Neighborhood and Ethnic Identification (N=11, excl. profile) <i>Def: unique features that give definition to neighborhood, including visible signs/ advertisements and displays tailored to a specific ethnic group</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
Are there indications of neighborhood uniformity? (B45)							
No, extreme difference	14	31.1	37.5	42.9	13.3	0.077	0.022
Fairly, like anywhere else	23	51.1	62.5	35.7	53.3		
Yes, more so than anywhere else	8	17.8	0.0	21.4	33.3		
Is this segment/area characterized by having a significant open view of an object or spot of interest (e.g. square, green space etc).or a wider scene beyond the segment? (from I-M inventory) (B47)							
No	38	84.4	81.3	100.0	73.3	0.128	0.571
Yes	7	15.6	18.8	0.0	26.7		
How attractive is the open view? (from I-M inventory) (B48)							
No views	38	84.4	81.3	100.0	73.3	0.176	0.323
Unattractive	1	2.2	6.3	0.0	0.0		
Neutral	0	0.0					
Attractive	6	13.3	12.5	0.0	26.7		
Does any business, institution or residence display symbols, colors, names, signs with ethnic orientation? (modified from HEP-NOC)(B50)							
None	38	84.4	87.5	71.4	93.3	0.244	0.679
1-2 occurrences	7	15.6	12.5	28.6	6.7		
More than 1-2 occurrences	0	0.0					
Quite common	0	0.0					
Very common	0	0.0					

Does any business, institution or residence display GREEK/CYPRIOT national symbols, colors, names, signs? (added) (B51)							
None	40	88.9	100.0	85.7	80.0	0.188	0.079
1-2 occurrences	5	11.1	0.0	14.3	20.0		
More than 1-2 occurrences	0	0.0					
Quite common	0	0.0					
Very common	0	0.0					
Are there billboards/signage present on this segment, including shops and other businesses' signage? (from I-M inventory, adapted)(B53)							
Excessive	1	2.2	6.3	0.0	0.0	0.670	0.409
A lot	3	6.7	0.0	14.3	6.7		
Some	12	26.7	37.5	21.4	20.0		
Rare, 1-2 only	11	24.4	18.8	28.6	26.7		
None	18	40.0	37.5	35.7	46.7		
How would characterize the attractiveness of billboards and signage, including uniformity? (added after review) (B54)							
Very unattractive (exceptionally standing out compared to elsewhere)	2	4.4	6.3	7.1	0.0	0.530	0.263
Somewhat unattractive (worse than elsewhere in terms of quantity, uniformity and attractiveness)	4	8.9	18.8	7.1	0.0		
Neutral (might not be uniform but not that different to elsewhere)	20	44.4	37.5	42.9	53.3		
Somewhat attractive (better than elsewhere in terms of quantity, uniformity and attractiveness)	1	2.2	0.0	7.1	0.0		
Very attractive (e.g. unusually uniform compared to elsewhere or none)	18	40.0	37.5	35.7	46.7		
Are any of the following advertisements visible on the block face (from HEP-NOC)? (B55)							
Sign advertising tobacco products, Sign advertising beer/other alcohol, Sign advertising fast food, Other <u>unhealthy</u> (specify)	26	57.8	62.5	57.1	53.3	0.874	0.609
None	19	42.2	37.5	42.9	46.7		
What proportion of residences have “for sale” or “for rent” signs? (D23)							
None	32	71.1	81.3	64.3	66.7	0.530	0.248
One or two	12	26.7	18.8	35.7	26.7		
Three or four	1	2.2	0.0	0.0	6.7		
Five-Ten	0	0.0					

More than 10	0	0.0					
What proportion of the commercial / industrial buildings have “for sale” or “for rent” signs? (E6)							
None	39	86.7	87.5	85.7	86.7	0.658	0.624
One or two	5	11.1	12.5	14.3	6.7		
Three or four	1	2.2	0.0	0.0	6.7		
Five-Ten	0	0.0					
More than 10	0	0.0					
Are there signs or indications which denote a neighborhood name or monuments/ markers (e.g. statue, banner etc) that indicate someone is entering a special area? (from I-M inventory)							
Yes	0	0.0					
No	45	100.0	100.0	100.0	100.0		

Domain 6: Maintenance and Appearance (N=17) <i>Def: current condition of buildings, grounds, public spaces, that are not permanent, can change</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
Are there trees in people's front gardens? (B31)							
None	0	0.0					
1%-24% of houses	3	6.7	12.5	7.1	0.0	0.565	0.217
25%-49% of houses	9	20.0	25.0	21.4	13.3		
50%-99% of houses	21	46.7	31.3	57.1	53.3		
100%	12	26.7					
Are there houses with purposively planted vegetation (including healthy pots and baskets)? (B34)							
None	6	13.3	12.5	14.3	13.3	0.500	0.286
1%-24% of houses	16	35.6	43.8	35.7	26.7		
25%-49% of houses	9	20.0	18.8	28.6	13.3		
50%-99% of houses	6	13.3	6.3	21.4	13.3		
100%	8	17.8	18.8	0.0	33.3		
How would you rate the condition of the <u>best</u> house/residential building on the block face? (D6)							
Abandoned, unusable	0	0.0					
Poor/badly deteriorated/neglected	2	4.4	6.3	0.0	6.7	0.637	0.385
Fair (multiple minor/one major repair)	2	4.4	6.3	7.1	0.0		
Good (touch-up repair/cosmetic repairs)	4	8.9	12.5	14.3	0.0		
Excellent (new/newly renovated)	37	82.2	75.0	78.6	93.3		
How would you rate the condition of the <u>worst</u> house/residential building on the block face? (D7)							
Abandoned, unusable	16	35.6	50.0	21.4	33.3	0.427	0.105
Poor/badly deteriorated/neglected	13	28.9	25.0	35.7	26.7		
Fair (multiple minor/one major repair)	8	17.8	25.0	14.3	13.3		
Good (touch-up repair/cosmetic repairs)	5	11.1	0.0	21.4	13.3		
Excellent (new/newly renovated)	3	6.7	0.0	7.1	13.3		

In general, how would you rate the condition of the <u>most</u> of the houses/ residential building on the block face? (D8)							
Abandoned, unusable	1	2.2	0.0	0.0	6.7	0.195	0.101
Poor/badly deteriorated/neglected	7	15.6	31.3	7.1	6.7		
Fair (multiple minor/one major repair)	17	37.8	37.5	57.1	20.0		
Good (touch-up repair/cosmetic repairs)	12	26.7	18.8	21.4	40.0		
Excellent (new/newly renovated)	8	17.8	12.5	14.3	26.7		
How would you rate the condition of the <u>best</u> residential grounds on the block face? (D9)							
None/not applicable	0	0.0					
Poor (significantly neglected)	0	0.0					
Fair (somewhat neglected)	4	8.9	18.8	7.1	0.0	0.245	0.027
Good (e.g. slightly overgrown)	5	11.1	18.8	7.1	6.7		
Excellent (tented/cared for regularly)	36	80.0	62.5	85.7	93.3		
How would you rate the condition of the <u>worst</u> residential grounds on the block face? (D10)							
None/not applicable	0	0.0					
Poor (significantly neglected)	30	66.7	81.3	64.3	53.3	0.351	0.053
Fair (somewhat neglected)	9	20.0	18.8	14.3	26.7		
Good (e.g. slightly overgrown)	5	11.1	0.0	21.4	13.3		
Excellent (tented/cared for regularly)	1	2.2	0.0	0.0	6.7		
How would you rate the condition of the <u>most of the</u> residential grounds on the block face? (D11)							
None/not applicable	0	0.0					
Poor (significantly neglected)	8	17.8	25.0	28.6	0.0	0.029	0.004
Fair (somewhat neglected)	18	40.0	43.8	42.9	33.3		
Good (e.g. slightly overgrown)	9	20.0	31.3	7.1	20.0		
Excellent (tented/cared for regularly)	10	22.2	0.0	21.4	46.7		

What proportion of residences have some form of decoration/external beautification (e.g. decorated gardens/ balconies, nameplates, window boxes)? (D13)							
None	0	0.0					
Very rare	1	2.2	0.0	7.1	0.0	0.456	0.108
Less than ½ of residences	7	15.6	25.0	14.3	6.7		
More than ½ of residences	15	33.3	37.5	35.7	26.7		
Near all, with some exceptions	22	48.9	37.5	42.9	66.7		
Is there any mold or damp visible on houses walls from the outside? (added after review) (D25)							
More than ½	6	13.3	18.8	14.3	6.7	0.493	0.300
More than ¼	7	15.6	25.0	14.3	6.7		
Between 1/10 and ¼	13	28.9	25.0	14.3	46.7		
Less than 1/10	13	28.9	18.8	35.7	33.3		
None	6	13.3	12.5	21.4	6.7		
Are any of the residential buildings being renovated?(D26)							
No	2	4.4	6.3	7.1	0.0	0.009	0.001
Yes, one or two	14	31.1	68.8	7.1	13.3		
Yes, three or four	19	42.2	25.0	57.1	46.7		
Yes, five to ten	5	11.1	0.0	14.3	20.0		
Yes, more than 10	5	11.1					
How many vacant/undeveloped lots are there in this block face? (E1)							
Many, more than ½	4	8.9	6.3	7.1	13.3	0.987	0.583
Five to ten	2	4.4	6.3	0.0	6.7		
Three or four	15	33.3	31.3	35.7	33.3		
One or two	15	33.3	37.5	35.7	26.7		
None	9	20.0	18.8	21.4	20.0		

What is the overall condition of the vacant/undeveloped property? (E2)							
Poor	32	71.1	81.3	78.6	53.3	0.124	0.240
Fair	3	6.7	0.0	0.0	20.0		
Good or No vacant/undeveloped property	10	22.2	18.8	21.4	26.7		
What is the overall condition of the commercial/industrial buildings and grounds? (E3)							
Abandoned, unusable	5	11.1	25.0	7.1	0.0	0.055	0.002
Poor/deteriorated (major repairs)	6	13.3	12.5	21.4	6.7		
Fair (multiple minor repairs/1 major)	5	11.1	25.0	7.1	0.0		
Good (near perfect, touch-up repairs)	5	11.1	12.5	7.1	13.3		
Excellent (new or newly renovated) or No commercial/industrial buildings	24	53.3	25.0	57.1	80.0		
Are any of the commercial/industrial buildings being renovated? (E8)							
No	30	66.7	75.0	50.0	73.3	0.102	0.777
Yes, one or two	11	24.4	12.5	35.7	26.7		
Yes, three or four	2	4.4	12.5	0.0	0.0		
Yes, five to ten							
Yes, more than 10	2	4.4	0.0	14.3	0.0		
What proportion of private residence grounds (yards, front porches, or anywhere visible) have toys or play equipment? (F12)							
None	28	62.2	81.3	57.1	46.7	0.363	0.093
Less than 1/10	12	26.7	12.5	28.6	40.0		
Between 1/10 and ½	5	11.1	6.3	14.3	13.3		
More than ½	0	0.0					
Nearly all	0	0.0					

In general, how would you rate the condition of the toys or play equipment in private residence grounds? (added)(F13)							
None	28	62.2	81.3	57.1	46.7	0.317	0.022
Poor (need major repair, unusable)	1	2.2	6.3	0.0	0.0		
Fair (peeling paint, minor repairs but usable)	4	8.9	6.3	14.3	6.7		
Good	6	13.3	0.0	14.3	26.7		
Excellent	6	13.3	6.3	14.3	20.0		

Domain 7: Safety (N=10) <i>Def: physical indicators of level of protection from harm one might expect</i>	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
Are there any barking dogs in this segment? (adapted from I-M inventory) (D21)							
Yes	25	55.6	37.5	57.1	73.3	0.132	0.047
No	20	44.4	62.5	42.9	26.7		
What other types of signs are visible? (B52) safety							
More than one of the following: Security warnings, Beware of guard dog	28	62.2	31.3	71.4	86.7	0.026	0.007
One of the following: Security warnings, Beware of guard dog	12	26.7	50.0	21.4	6.7		
None	5	11.1	18.8	7.1	6.7		
Approximately what proportion of the residential buildings have a border? (D16)							
None	37	82.2	81.3	71.4	93.3	0.538	0.278
Less than ¼	4	8.9	6.3	14.3	6.7		
Between ¼ and ½	4	8.9	12.5	14.3	0.0		
More than ½	0	0					
Nearly all, with only some exceptions	0	0					
What is the average height of residence borders? (D17)							
Above head level	7	15.6	0.0	14.3	33.3	0.025	0.024
Below head level	8	17.8	12.5	35.7	6.7		
Below or just above waist level	30	66.7	87.5	50.0	60.0		
What proportion of residence buildings have window security bars or gratings on windows (not including decorative gratings on traditional doors)? (D18)							
Nearly all	2	4.4	0.0	7.1	6.7	0.415	0.028
More than ½.	1	2.2	0.0	0.0	6.7		
Between ¼ and ½.	4	8.9	0.0	7.1	20.0		
Less than ¼	12	26.7	31.3	21.4	26.7		
None	26	57.8	68.8	64.3	40.0		

What proportion of residence buildings have signs indicating they are protected by private security services? (D19)							
Nearly all	2	4.4	0.0	7.1	6.7	0.002	0.000
More than ½.	3	6.7	0.0	0.0	20.0		
Between ¼ and ½.	13	28.9	0.0	50.0	40.0		
Less than ¼	15	33.3	43.8	21.4	33.3		
None	12	26.7	56.3	21.4	0.0		
What proportion of residence buildings have signs indicating they are protected by dogs? (D20)							
None	2	4.4	0.0	7.1	6.7	0.591	0.052
Less than ¼	2	4.4	0.0	7.1	6.7		
Between ¼ and ½	13	28.9	25.0	28.6	33.3		
More than ½	21	46.7	50.0	35.7	53.3		
Nearly all	7	15.6	25.0	21.4	0.0		
What proportion of the commercial/ industrial buildings have security bars/grating on windows and/or pull-down metal security blinds on the doors and entrances? (E4)							
Nearly all	2	4.4	0.0	14.3	0.0	0.136	0.615
More than ½	1	2.2	0.0	7.1	0.0		
Between 1/10 and ½.	0	0.0					
Less than 1/10	19	42.2	31.3	50.0	46.7		
None	23	51.1	68.8	28.6	53.3		
What proportion of the commercial/ industrial properties have security devices (alarms) and/or security fences, high mesh fencing with barbed wire or spiked tops? (E5)							
Nearly all	2	4.4	0.0	14.3	0.0	0.420	0.949
More than ½.	1	2.2	0.0	0.0	6.7		
Between 1/10 and ½.	2	4.4	6.3	7.1	0.0		
Less than 1/10	14	31.1	37.5	28.6	26.7		
None	26	57.8	56.3	50.0	66.7		

Are they any security fences, bars or security devices in <u>institutions</u> , if present (schools etc)? <i>(added after review)</i> (E7)							
Yes (high fences, locked gates)	16	35.6	25.0	42.9	40.0	0.501	0.721
Yes (bars or windows/doors, security devices or guards)	6	13.3	25.0	7.1	6.7		
No or No institutions present	23	51.1	50.0	50.0	53.3		

Domain 8: Physical Disorder (lack of) (N=17 excl. profile) Def: characteristics than render environment unsightly and potentially unsafe	Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi- square)	p-value for trend
Are there abandoned cars/trucks on any of the streets, alleys or lots visible on this block face? (B14)							
More than five	5	11.1	25.0	7.1	0.0	0.004	0.000
Four or five	0	0.0					
Two or three	5	11.1	25.0	7.1	0.0		
One	8	17.8	31.3	7.1	13.3		
None	27	60.0	18.8	78.6	86.7		
Are there old, beat-up cars/trucks on the street, in driveways or yards on this block face? (B15)							
More than five	4	8.9	18.8	7.1	0.0	0.003	0.062
Four or five	0	0.0					
Two or three	5	11.1	18.8	14.3	0.0		
One	6	13.3	25.0	7.1	6.7		
None	30	66.7	37.5	71.4	93.3		
Do you see any stagnant waters or visibly blocked rain ducts? (added after review)(B38)							
Yes	0	0.0					
No	45	100.0	100.0	100.0	100.0		
Do you see any carcasses of dead animals? (added after review)(B39)							
Yes	0	0.0					
No	45	100.0	100.0	100.0	100.0		
What proportion of residences are burned out, boarded up, or abandoned? (D24)							
More than 10	0	0.0					
Five-Ten	0	0.0					
Three-four	8	17.8	31.3	0.0	20.0	0.245	0.310
One or two	15	33.3	31.3	42.9	26.7		
None	22	48.9	37.5	57.1	53.3		

Are there discarded trimmings of plants and trees in public spaces or vacant lots? (added after review) (E9)							
Yes	25	55.6	50.0	64.3	53.3	0.718	0.843
No	20	44.4	50.0	35.7	46.7		
Is there garbage, junk or litter (incl. broken glass, clothes, paper) on any of the streets or sidewalks, in yards, or vacant lots? (H1)							
Heavy/Widespread	12	26.7	43.8	28.6	6.7	0.070	0.002
A lot	3	6.7	12.5	7.1	0.0		
Some, here and there	19	42.2	37.5	42.9	46.7		
Very little, very rare	5	11.1	6.3	0.0	26.7		
None	6	13.3	0.0	21.4	20.0		
Are there empty beer containers or liquor bottles on the street or sidewalks, in yards, or vacant lots? (H2)							
Heavy/Widespread	0	0.0					
A lot	0	0.0					
Some, here and there	3	6.7	0.0	7.1	13.3	0.559	0.175
Very little, very rare	4	8.9	6.3	14.3	6.7		
None	38	84.4	93.8	78.6	80.0		
Do you see any condoms or syringes in public spaces? (added after review) (H3)							
Yes	1	2.2	0.0	7.1	0.0	0.322	0.979
No	44	97.8	100.0	92.9	100.0		
Are there cigarettes or cigar butts or discarded cigarette packages on any of the streets or sidewalks, in yards/lots or gutters? (H4)							
Heavy/Widespread	1	2.2	0.0	0.0	6.7	0.054	0.115
A lot	4	8.9	6.3	21.4	0.0		
Some, here and there	15	33.3	56.3	14.3	26.7		
Very little, very rare	16	35.6	37.5	35.7	33.3		
None	9	20.0	0.0	28.6	33.3		

Are there any piles (significant accumulations) of garbage or dumped materials on any of the streets or sidewalks, in yards/lots or gutters? (H5)							
Yes	37	82.2	100.0	78.6	66.7	0.048	0.016
No	8	17.8	0.0	21.4	33.3		
Are there animal droppings/fouling on the sidewalks/street? (H6)							
Heavy/Widespread	1	2.2	6.3	0.0	0.0	0.389	0.617
A lot	4	8.9	0.0	21.4	6.7		
Some, here and there	9	20.0	25.0	14.3	20.0		
Very little, very rare	18	40.0	37.5	50.0	33.3		
None	13	28.9	31.3	14.3	40.0		
Is there graffiti on any of the buildings, sidewalks, walls, or signs? (H7)							
Heavy/Widespread	1	2.2	6.3	0.0	0.0	0.307	0.040
A lot	6	13.3	25.0	14.3	0.0		
Some, here and there	13	28.9	31.3	21.4	33.3		
Very little, very rare	12	26.7	12.5	42.9	26.7		
None	13	28.9	25.0	21.4	40.0		
Is there painted-over graffiti on any of buildings, sidewalks, walls, or signs? (H9)							
None	40	88.9	93.8	92.9	80.0	0.608	0.164
Some	4	8.9	6.3	7.1	13.3		
A lot	1	2.2	0.0	0.0	6.7		
How much vandalism (other than graffiti e.g. broken windows, broken telephone boxes, damaged equipment etc) is present on public spaces or private properties (e.g. broken windows? (H10)							
Extensive (large areas of small or more than two significant occurrences)	0	0.0					
A lot (several small or more than one significant occurrence)	1	2.2	6.3	0.0	0.0	0.245	0.102
Moderate (more than 2 small occurrences or one significant occurrence)	2	4.4	12.5	0.0	0.0		
Rare (2 or less small occurrences)	3	6.7	6.3	0.0	13.3		
None	39	86.7	75.0	100.0	86.7		

To what extent did you experience any unpleasant noxious smells during your observation (urine, rotting garbage, etc.)? (H11)							
Quite a bit	2	4.4	0.0	7.1	6.7	0.700	0.671
A little	11	24.4	31.3	14.3	26.7		
Not at all	32	71.1	68.8	78.6	66.7		
To what extent did you experience unpleasant levels of dirt in the air (e.g. resuspension of soil from vacant lots, construction materials etc) (H12)							
Quite a bit	4	8.9	6.3	14.3	6.7	0.725	0.660
A little	10	22.2	25.0	28.6	13.3		
Not at all	31	68.9	68.8	57.1	80.0		

Domain 9: Social Contact & Social Disorder (lack of) (N=14) Def: People's activity and behaviours, that indicate positive social contact and/or lack of social disorder		Number of neighbourhoods (N)	Percentage of neighbourhoods (%)	Lower Educational Attainment (N=15)	Middle Educational Attainment (N=15)	Higher Educational Attainment (N=15)	p-value (chi-square)	p-value for trend
Who are the occupants of the playgrounds, parks, green spaces? (F3)								
No one	Adults only Adults with children Teen groups Groups of unaccompanied children	30	66.7	68.8	42.9	86.7	0.152	0.295
At least one group of the following:		12	26.7	25.0	42.9	13.3		
Two or more groups of the following:		3	6.7	6.3	14.3	0.0		
Are there any people visible outdoors? (G1)								
No								
Yes, only one or two		11	24.4	12.5	14.3	46.7	0.300	0.299
Yes, some		16	35.6	50.0	35.7	20.0		
Yes, many		6	13.3	12.5	14.3	13.3		
Yes, a lot		12	26.7	25.0	35.7	20.0		
Who do you see? (G2)								
No one	Older people (over 65+) Adults (ages 18 and 64) Teenagers (ages 13-17) Preteens (ages 6-12) Preschool children (ages 5 and under)	0	0.0					
One of the following groups:		22	48.9	56.3	35.7	53.3	0.047	0.979
Two of the following groups:		14	31.1	37.5	14.3	40.0		
Three of the following groups:		3	6.7	0.0	14.3	6.7		
Four of the following groups:		6	13.3	6.3	35.7	0.0		
How many children were not under adult supervision? (G7)								
None, all accompanied by adults		30	66.7	68.8	42.9	86.7	0.066	0.105
No children in public spaces		1	2.2	0.0	0.0	6.7		
One to three		11	24.4	18.8	50.0	6.7		
More than four/five		3	6.7	12.5	7.1	0.0		

Where any establishments (commercial or institutional) where people can meet/have social contact (coffee shops, youth centers etc) frequented by people? (added after review) (G14)								
No		39	86.7	87.5	78.6	93.3	0.073	0.793
Yes, but not very busy		3	6.7	12.5	0.0	6.7		
Yes, busy		3	6.7	0.0	21.4	0.0		
What age-groups would you say these establishments cater for? (Code all that apply) (G15)								
At least one of these groups	Teenagers Young adults Older adults Elderly, male Elderly, female	29	64.4	50.0	64.3	80.0	0.372	0.150
Two of these groups		13	28.9	43.8	28.6	13.3		
Three of these groups		2	4.4	0.0	7.1	6.7		
At least four of these groups		1	2.2	6.3	0.0	0.0		
Did you see any other instances of social contact or gatherings (e.g. playing backgammon, drinking coffee on veranda or neighbours chatting)? (added after review) (G16)								
None at all		25	55.6	43.8	42.9	80.0	0.169	0.107
One or two instances		18	40.0	56.3	50.0	13.3		
Appears frequent/common		2	4.4	0.0	7.1	6.7		
Did you see any houses with their front doors open (e.g. in case a neighbour drops by)? (added after review)(G17)								
No		21	46.7	37.5	50.0	53.3	0.519	0.634
One or two		23	51.1	62.5	50.0	40.0		
Appears frequent/common		1	2.2	0.0	0.0	6.7		
Did you see any people begging/asking for money either from residents or passers byers? (added after review) (G18)								
Yes		1	2.2	6.3	0.0	0.0	0.396	0.239
No		44	97.8	93.8	100.0	100.0		
Did you see any people drinking alcohol openly in the block face? (G19)								
Yes		3	6.7	0.0	14.3	6.7	0.294	0.447
No		42	93.3	100.0	85.7	93.3		
Did you see disorderly or misbehaving groups of children? (G20)								
No		45	100.0	100.0	100.0	100.0		
Yes		0	0.0					

Did you see disorderly or misbehaving groups of teenagers? (G21)							
Yes	2	4.4	12.5	0.0	0.0	0.150	0.092
No	43	95.6	87.5	100.0	100.0		
Did you see disorderly or misbehaving groups of adults? (G22)							
Yes	2	4.4	0.0	7.1	6.7	0.590	0.368
No	43	95.6	100.0	92.9	93.3		

APPENDIX XIII Differences in CyNOTes v2.0 scores across tertiles of neighborhoods according to educational attainment of residents at parish (enories) level.

New Domain	Low educational attainment group		Medium educational attainment group		High educational attainment group		p-value one-way ANOVA	p-value Kruskal-Wallis	P-value for trend
	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)			
1 Outdoor public spaces, Recreation and Nature Features (N=14)	36.60 (16.80)	39.28 (28.12)	53.31 (17.77)	50.00 (25.44)	41.78 (19.14)	39.28 (35.71)	0.044	0.056	0.426
2 Architecture & Building Characteristics (N=11, excl. profile)	70.45 (8.08)	72.72 (6.81)	64.28 (16.73)	64.77 (27.84)	79.69 (8.69)	79.54 (13.63)	0.004	0.008	0.052
3 Sidewalks & Barriers (lack of) (N=10)	33.28 (15.45)	31.25 (22.50)	35.71 (13.42)	32.50 (18.12)	42.16 (14.29)	42.50 (20.00)	0.226	0.171	0.093
4 Pedestrian & Cycling Environment (N=18)	42.62 (8.66)	42.36 (15.27)	47.22 (12.85)	48.61 (24.30)	49.62 (11.81)	47.22 (20.83)	0.217	0.238	0.083
5 Neighborhood and Ethnic Identification (N=10, excl. profile)	42.81 (14.94)	37.50 (23.75)	41.60 (10.85)	42.50 (16.87)	50.33 (20.01)	42.50 (42.50)	0.276	0.477	0.198
6 Maintenance and Appearance (N=17)	43.38 (8.00)	41.17 (13.97)	53.78 (11.03)	50.73 (17.64)	57.74 (10.55)	58.82 (16.17)	0.001	0.001	0.000
7 Safety (lack of security-related features) (N=10)	70.62 (11.08)	70.00 (18.75)	54.64 (16.52)	56.25 (25.62)	51.50 (9.90)	52.50 (15.00)	0.000	0.000	0.000
8 Physical Disorder (lack of) (N=17 excl. profile)	65.53 (7.3)	64.70 (10.29)	71.11 (10.89)	70.58 (15.80)	77.35 (10.04)	77.94 (11.76)	0.005	0.008	0.001
9 Social Contact & Social Disorder (lack of) (N=13) (excl. profile)	54.20 (8.49)	52.88 (14.90)	58.92 (9.82)	57.69 (16.34)	49.00 (8.35)	48.07 (6.15)	0.016	0.021	0.143

APPENDIX XIV Differences in CyNOTes v2.0 scores across quartiles of neighborhoods according to educational attainment of residents at parish (enories) level.

	Low educational attainment group		Medium-Low educational attainment group		Medium-High educational attainment group		High educational attainment group		p-value one-way ANOVA	p-value Kruskal-Wallis	P-value for trend
	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)			
New Domain 1 Outdoor public spaces, Recreation and Nature Features (N=14)	36.36 (16.13)	39.28 (21.42)	43.83 (21.99)	44.64 (41.07)	51.78 (15.99)	50.00 (28.57)	42.26 (19.75)	41.07 (34.82)	0.295	0.287	0.335
New Domain 2 Architecture & Building Characteristics (N=11, excl. profile)	71.07 (8.92)	72.72 (9.09)	67.35 (9.44)	65.90 (13.63)	65.49 (18.00)	68.18 (36.36)	81.62 (7.90)	80.68 (12.50)	0.009	0.006	0.068
New Domain 3 Sidewalks & Barriers (lack of) (N=10)	31.36 (17.36)	27.50 (22.50)	36.59 (14.06)	35.00 (17.50)	34.54 (10.11)	32.50 (15.00)	44.79 (14.35)	42.50 (15.62)	0.146	0.101	0.044
New Domain 4 Pedestrian & Cycling Environment (N=18)	42.67 (9.74)	43.05 (15.27)	40.65 (8.67)	37.50 (11.11)	50.00 (11.45)	50.00 (15.27)	51.73 (12.09)	54.16 (17.70)	0.044	0.037	0.013
New Domain 5 Neighborhood and Ethnic Identification (N=10, excl. profile)	43.63 (16.52)	37.50 (25.00)	37.50 (10.36)	35.00 (17.50)	44.09 (9.63)	45.00 (17.50)	53.75 (21.01)	56.25 (43.75)	0.099	0.229	0.072
New Domain 6 Maintenance and Appearance (N=17)	42.24 (7.83)	39.70 (13.23)	52.80 (11.77)	54.41 (14.70)	49.86 (9.98)	50.00 (17.64)	59.92 (9.40)	60.29 (15.07)	0.001	0.002	0.000
New Domain 7 Safety (lack of security-related features) (N=10)	72.95 (11.22)	72.50 (15.00)	54.09 (17.33)	57.50 (20.00)	60.00 (11.23)	57.50 (17.50)	50.83 (10.83)	51.25 (16.25)	0.001	0.002	0.002
New Domain 8 Physical Disorder (lack of) (N=17, excl. profile)	66.04 (7.36)	69.11 (8.82)	69.78 (11.89)	66.17 (17.64)	68.85 (9.68)	67.64 (14.70)	79.41 (8.29)	77.94 (9.55)	0.009	0.012	0.003
New Domain 9 Social Contact & Social Disorder (lack of) (N=13, excl. profile)	55.41 (8.37)	53.84 (13.46)	55.59 (9.03)	55.76 (19.23)	58.60 (10.90)	57.69 (21.15)	46.79 (6.15)	46.15 (5.28)	0.014	0.023	0.058

APPENDIX XV: Typology of Domains for CyNOTes v2.0

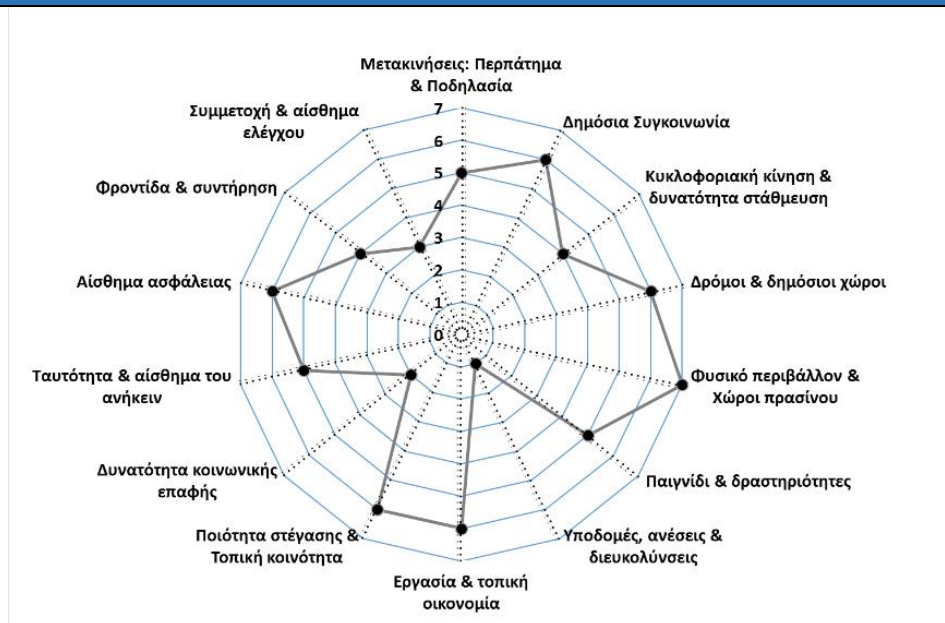
New Domain 1 Outdoor public spaces, Recreation and Nature Features (N=14)	New Domain 2 Architecture & Building Characteristics (N=11, excl. profile)	New Domain 3 Sidewalks & Barriers (lack of) (N=10)	New Domain 4 Pedestrian & Cycling Environment (N=18)	New Domain 5 Neighborhood and Ethnic Identification (N=11, excl. profile)	New Domain 6 Maintenance and Appearance (N=17)	New Domain 7 Safety (N=10)
<i>Def: destinations and facilities open to the public, conveniences and comfort features in outdoor public spaces & characteristics of surrounding scenery</i>	<i>Def: building attributes, permanent, not easily changed (including parking arrangements and driveways)</i>	<i>Def: characteristics of paved walking paths and obstacles in the environment, difficult to overcome or off-putting to pedestrians/ cyclists</i>	<i>Def: features that hinder or promote an environment conducive to pedestrian or cycling activity</i>	<i>Def: unique features that give definition to neighborhood, including visible signs/ advertisements and displays tailored to a specific ethnic group</i>	<i>Def: current condition of buildings, grounds, public spaces, that are not permanent, can change</i>	<i>Def: physical indicators of level of protection from harm one might expect</i>
Merged: Amenities for outdoor public spaces (old domain 1) and Recreational Uses/ Public Spaces (old domain 13) and some items from Landscaping/ Nature features (old domain 7)	Same as old Domain 2 with some items from old Domain 6 Land Use	Merged: Barriers (old domain 3) and Sidewalks (old domain 15)	Merged: Cycling environment (old domain 4) and Pedestrian Environment (old domain 11)	Merged: Neighborhood identification (old domain 9) and Ethnic Identification (old domain 5) and Signs/ Messages (old domain 16)	Same as old Domain Maintenance and Appearance with some items from Landscaping/ Nature features	Same as old Domain 14 with one additional item
B29, B30, B35, B36, B37, F1, F2, F4, F5, F6, F7, F9, F10, F11	A1 (Profile), A2, B10, B56, B57, D1 (Profile), D2, D3, D4, D5, D12, D14, D15	B11, B12, B16, B17, B19, B21, B22, B23, B24, B33	B1, B2, B4, B6, B7, B8, B9, B13, B18, B20, B25, B26, B32, B41, B42, B43, B44, H15	B45, B46, B47, B48, B50, B51, B53, B54, B55, D23, E6	B31, B34, D6, D7, D8, D9, D10, D11, D13, D25, D26, E1, E2, E3, E8, F12, F13	D21, B52 (safety), D16, D17, D18, D19, D20, E4, E5, E7
New Domain 8 Physical Disorder (lack of) (N=17 excl. profile)	New Domain 9 Social Contact & Social Disorder (lack of) (N=14)	Old Domain Land Use	Old Domain Landscaping/ Nature Features	Old Domain Parking & Driveways	Old Domain Smell/ Pollution/ Noise	Old Domain Social Profile
<i>Def: characteristics that render environment unsightly and potentially unsafe</i>	<i>Def: People's activity and behaviours, that indicate positive social contact and/or lack of social disorder</i>	Number of items included in new Domain 2 and some excluded	Some items included in new Domain 1 and some in new Domain 6	Some items included in new Domain 2 and some in new Domain 3	Some items included in new Domain 8 and some excluded	<i>Def: Profiling of people and activity (no scoring)</i>
B14, B15, B38, B39, D24, E9, H1, H2, H3, H4, H5, H6, H7, H8 (Profile), H9, H10, H11, H12	F3, G1, G2, G6/G7, G13, G14, G15, G16, G17, G18, G19, G20, G21, G22					F8, G3, G4, G5, G8, G9, G10, G11, G12
Not included in any domain (N=12): B3: Conditions of street surfaces (normally, in Domain 18 Streets/Traffic) B5: Roadworks in progress (normally, in Domain 18 Streets/Traffic) B27: Steepness (normally, in Domain 11 Pedestrian environment) B28: Public transport (normally, in Domain 1 Amenities for outdoor public spaces) B40: Germ "hot spots" (normally, in Domain 17 Smell/Pollution/ Noise) B49: Other languages (normally, in Domain 5 Ethnic Identification)			C1: Commercial (normally, in Domain 6 Land use) C2: Institutions (normally, in Domain 6 Land use) D22: Stray cats (normally, in Domain 17 Smell/Pollution/ Noise) D27: Farm animals (normally, in Domain 17 Smell/Pollution/ Noise) H13: Loud music (normally, in Domain 17 Smell/Pollution/ Noise) H14: General noise (normally, in Domain 17 Smell/Pollution/ Noise)			

New classification of CyNOTes items after (a) merging theoretically-relevant Domains and/or (b) excluding items due to low internal consistency with other items in their Domain or other theoretically relevant Domain and/or items with no or very low variability.

APPENDIX XVI Place Standard tool Booklet

Πρότυπη Γειτονιά

Το προφίλ της δικής μου γειτονιάς και περιθώριο βελτίωσης



Το εργαλείο “Πρότυπη γειτονιά” αποτελεί ένα τρόπο αξιολόγησης της γειτονιάς ή της κοινότητας.

Παρέχει ένα δομημένο πλαίσιο στο οποίο μπορεί να βασιστεί η συζήτηση γύρω από την ποιότητα του περιβάλλοντος μιας περιοχής.

Επιτρέπει να σκεφτείτε τόσο τα φυσικά χαρακτηριστικά μιας γειτονιάς (όπως, για παράδειγμα, το φυσικό περιβάλλον, τους δημόσιους χώρους, τους τρόπους μετακίνησης προς το κέντρο της πόλης), καθώς επίσης και τις κοινωνικές πτυχές της γειτονιάς (όπως, για παράδειγμα, τη δυνατότητα ανάπτυξης κοινωνικών επαφών). Μελέτες έχουν δείξει ότι ο τρόπος με τον οποίο είναι δομημένη μια γειτονιά, τόσο αισθητικά όσο και λειτουργικά, και τα αισθήματα που δημιουργεί στα άτομα που κατοικούν εκεί έχουν επίδραση στην υγεία και στην ποιότητα ζωής των ατόμων.

Το εργαλείο παρέχει καθοδηγητικές προτροπές για να κατευθύνει τη συζήτηση με τρόπο που να επιτρέπει να εξετάσει κανείς τις διάφορες πτυχές της γειτονιάς με συστηματικό και μεθοδικό τρόπο. Το εργαλείο εντοπίζει τα θετικά στοιχεία μίας περιοχής, καθώς και τα χαρακτηριστικά που χρήζουν βελτίωσης. Επομένως, μπορεί να χρησιμοποιηθεί στο πλαίσιο της αξιολόγησης της ποιότητας του περιβάλλοντος της γειτονιάς και να βοηθήσει με αυτό τον τρόπο στον προσδιορισμό προτεραιοτήτων.

Το εργαλείο είναι εύκολο στη χρήση με μηδενικό κόστος. Αποτελείται από 14 κύριες ερωτήσεις οι οποίες καλύπτουν στοιχεία τόσο του φυσικού όσο και του κοινωνικού περιβάλλοντος. Για την κάθε ερώτηση, παρέχονται συμπληρωματικές διευκρινιστικές ερωτήσεις ώστε να υποβοηθήσουν στην αξιολόγηση της συγκεκριμένης διάστασης. Όταν απαντηθούν οι 14 ερωτήσεις, τα αποτελέσματα μπορούν να μεταφερθούν στο κυκλικό διάγραμμα, το οποίο μοιάζει με πυξίδα ή ιστό αράχνης, ώστε να αποτυπωθεί το συνολικό προφίλ μιας γειτονιάς, όπως για παράδειγμα αυτό που εμφανίζεται στη προηγούμενη σελίδα.

Γιατί είναι σημαντική η γειτονιά;

Οι συνθήκες στο ευρύτερο περιβάλλον στο οποίο ζούμε και εργαζόμαστε έχουν σημαντική επίδραση στην ποιότητα της ζωής μας. Η βελτίωση του περιβάλλοντος της γειτονιάς μπορεί να συμβάλει στη διασφάλιση της ευεξίας των κατοίκων και στην αντιμετώπιση των άνισων ευκαιριών. Η αποτύπωση των υφιστάμενων αλλά και δυνητικών «περιουσιακών στοιχείων» μιας γειτονιάς είναι σημαντική στο πλαίσιο της λήψης στοχευμένων αποφάσεων και της ορθολογιστικής κατανομής των πόρων στη βάση πραγματικών αναγκών. Σε βάθος χρόνου, αυτή η προσέγγιση διασφαλίζει καλύτερα αποτελέσματα.

Ποιος μπορεί να χρησιμοποιήσει το εργαλείο;

Το εργαλείο έχει σχεδιαστεί με τρόπο ώστε να μπορεί να χρησιμοποιηθεί από όλους - άτομα, κοινότητες, κρατικές υπηρεσίες, ομάδες πολιτών και οργανωμένα σύνολα (εθελοντικές και μη-κερδοσκοπικές οργανώσεις) αλλά και τον ιδιωτικό τομέα. Παρόλο που ενδεχομένως οι διάφορες ομάδες και φορείς να θέλουν να χρησιμοποιήσουν το εργαλείο για διαφορετικούς λόγους και υπό διαφορετικές περιστάσεις, το εργαλείο επιτρέπει να αναπτυχθεί με συστηματικό και αποτελεσματικό τρόπο συλλογικότητα και διατομεακή συνεργασία.

Περιοχή υπό αξιολόγηση

Η χρήση του εργαλείου δεν εξαρτάται από το μέγεθος ή τον τύπο της περιοχής υπό αξιολόγηση. Είναι κατάλληλο για κοινότητες σε αστικά κέντρα ή σε αγροτικές περιοχές. Μπορεί να χρησιμοποιηθεί με αναφορά σε συγκεκριμένες γειτονιές είτε ακόμα και με αναφορά σε ολόκληρη την πόλη ή την κοινότητα. Μπορεί να χρησιμοποιηθεί για την αξιολόγηση γειτονιών που είναι πλήρως ανεπτυγμένες, όπως και για γειτονιές που βρίσκονται στο στάδιο του σχεδιασμού ανάπτυξης. Όσοι θα το χρησιμοποιήσουν για να αξιολογήσουν ομαδικά μια περιοχή, πρέπει να προσδιορίσουν εκ των προτέρων με σαφήνεια τα όρια της περιοχής υπό αξιολόγηση.

Οδηγίες χρήσεις του εργαλείου

Θα χρειαστεί να κάνετε τα πιο κάτω:

- Δηλώστε ποιος/οι είστε και το λόγο για τον οποίο χρησιμοποιείτε το εργαλείο. Πείτε αν συμπληρώνετε τα στοιχεία ως άτομο ή ως εκπρόσωπος ομάδας, και αποφανθείτε τα γεωγραφικά όρια της περιοχής που θα αξιολογήσετε (π.χ. γειτονιά, ενορία, δήμος, πόλη).
- Απαντήστε στην κάθε ερώτηση δίνοντας βαθμολογία σε κλίμακα από το 1 μέχρι το 7 ως προς το περιθώριο βελτίωσης που θεωρείτε ότι υπάρχει ως προς τη συγκεκριμένη πτυχή που αξιολογείται, όπου το 1 αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» (επομένως, η κατάσταση ως προς αυτή τη πτυχή δεν σας ικανοποιεί καθόλου) και το 7 αντιστοιχεί σε «**μικρό περιθώριο βελτίωσης**» (επομένως, είστε ιδιαίτερα ικανοποιημένος/η αφού κρίνετε ως θετική αυτή τη πτυχή).
- Για την κάθε ερώτηση παρέχονται υποβοηθητικές διευκρινιστικές ερωτήσεις για να σας βοηθήσει να απαντήσετε στο κύριο ερώτημα. Εάν συμπληρώνετε την αξιολόγηση ως ομάδα θα πρέπει πρώτα να συμφωνήσετε μεταξύ σας για τη βαθμολογία που θα δώσετε. Υπάρχει χώρος στο κάτω μέρος για να καταγράψετε τους λόγους για την απάντησή σας.
- Όταν θα έχετε απαντήσει σε όλες τις ερωτήσεις, σημειώστε το σημείο που αντιστοιχεί στη βαθμολογία που δώσατε σε κάθε μια από τις διαστάσεις στο κυκλικό διάγραμμα (ιστό αράχνης). Στο παράδειγμα (στη πρώτη σελίδα), η ερώτηση ως προς τις «Μετακινήσεις» βαθμολογήθηκε με '5'. Η επόμενη ερώτηση ως προς τη «Δημόσια συγκοινωνία» βαθμολογήθηκε με '6'. Τραβήξτε μία γραμμή για να συνδέσετε κάθε σημείο με το επόμενο όπως προχωράτε.
- Όταν ολοκληρωθεί όλο το διάγραμμα, μπορείτε να μελετήσετε το αποτέλεσμα όπως διαφαίνεται από το συνολικό προφίλ και να αποφασίσετε, με συναίνεση αν πρόκειται για ομάδα, ποιες είναι οι προτεραιότητες και οι απαιτούμενες δράσεις.

Μπορεί να υπάρξουν περιπτώσεις όπου η ερώτηση να μην σας φαίνεται σχετική ή να αισθάνεστε ότι δεν έχετε αρκετές πληροφορίες για να απαντήσετε. Σε αυτές τις περιπτώσεις είτε θα πρέπει να σκεφτείτε την περιοχή που αξιολογείτε ως μέρος μιας ευρύτερης περιοχής, είτε να βεβαιωθείτε ότι με κάποιον τρόπο έχουν ληφθεί υπόψη η απόψεις των μελών της κοινότητας.

Αποτελέσματα

Το διάγραμμα που προκύπτει είναι εύκολα κατανοητό. Αποτυπώνει συνολικά το προφίλ της περιοχής, τόσο ως προς τις πτυχές για τις οποίες πάει καλά, όσο και για τις πτυχές όπου υπάρχει περιθώριο βελτίωσης. Εάν μια περιοχή αξιολογήθηκε θετικά, τότε το συνολικό σχήμα που προκύπτει στο διάγραμμα θα είναι πιο γεμάτο, και θα προεκτείνεται προς την εξωτερική περίμετρο του κύκλου (όπως στο παράδειγμα, στην περίπτωση της «Δημόσια Συγκοινωνίας»). Εάν μια περιοχή αξιολογήθηκε λιγότερο θετικά, τότε το συνολικό σχήμα θα είναι μικρότερο, και πιο κοντά στο

κέντρο του διαγράμματος (όπως φαίνεται στο παράδειγμα στην περίπτωση των «Υποδομών, ανέσεων και διευκολύνσεων»).

Δεν υπάρχει σημείο αναφοράς ή ελάχιστο αποδεκτό πρότυπο. Το εργαλείο χρησιμοποιείται για να αποτιμήσει τα πλεονεκτήματα και θετικά στοιχεία μιας περιοχής και για να αναδείξει περιοχές όπου χρειάζεται ανάληψη σχετικής δράσης

Πότε χρησιμοποιείται το εργαλείο;

Το εργαλείο μπορεί να βοηθήσει στην επίτευξη ποικίλων στόχων.

Οι **δημότες/κοινότητες** μπορούν να χρησιμοποιήσουν το εργαλείο για να αξιολογήσουν τα θετικά στοιχεία της περιοχής τους και τις πτυχές που χρήζουν βελτίωσης. Αυτή η δραστηριότητα μπορεί να εμπίπτει στο πλαίσιο της ευρύτερης συζήτησης για την ανάγκη αναδιαμόρφωσης και αναζωογόνησης μιας περιοχής.

Οι **αρχές τοπικής αυτοδιοίκησης ή/και κοινοπραξίες αστικού σχεδιασμού** μπορούν να χρησιμοποιήσουν το εργαλείο στο πλαίσιο του προγραμματισμού των δράσεων και του καθορισμού προτεραιοτήτων. Οι αναπτυξιακές αρχές μπορούν να το χρησιμοποιήσουν για την αξιολόγηση των αναγκών της κοινότητας στο πλαίσιο της αναβάθμισης των γειτονιών ώστε να διασφαλίζουν ένα καλό περιβάλλον για τα άτομα που διαμένουν σε αυτές.

Τι μπορεί να γίνει στη συνέχεια;

Το εργαλείο «Πρότυπη γειτονιά» αποτελεί μέρος μιας διεργασίας, και όχι το τελικό αποτέλεσμα. Η διαδικασία δεν τελειώνει με τη χρήση του αφού το επόμενο στάδιο θα ήταν να αναλογιστεί κανείς ποιες ευκαιρίες δημιουργούνται για να αναπτυχθεί περαιτέρω η συζήτηση, χτίζοντας στα αποτελέσματα της αξιολόγησης και στις σχέσεις που δημιουργήθηκαν στο πλαίσιο της χρήσης του εργαλείου.

Το εργαλείο επιτρέπει την αξιολόγηση της γειτονιάς με συστηματικό τρόπο, και σε βάθος χρόνου, στο πλαίσιο της παρακολούθησης της εξέλιξης και του βαθμού βελτίωσης. Για να αξιοποιηθούν στο έπακρον οι δυνατότητες του εργαλείου, καλό είναι να καταγράφονται οι λόγοι για τη βαθμολόγηση. Με αυτό τον τρόπο καθορίζονται παράλληλα οι προσδοκίες των ατόμων για τη βελτίωση της γειτονιάς.

Μετακινήσεις: Περπάτημα και Ποδηλασία

Το περπάτημα και η ποδηλασία είναι ευεργετικά για την υγεία και το περιβάλλον. Ευχάριστες και ασφαλείς διαδρομές μπορούν να ενθαρρύνουν το περπάτημα και την ποδηλασία.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

**Η γειτονιά μου παρέχει αρκετές καλής ποιότητας διαδρομές όπου μπορώ να περπατήσω
και να ποδηλατήσω με ευκολία;**

Τώρα βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγηση σας:

- Υπάρχουν αρκετές διαδρομές για περπάτημα και ποδηλασία;
- Οι πεζοί και οι ποδηλάτες έχουν προτεραιότητα σε σχέση με τα αυτοκίνητα και τα άλλα μέσα συγκοινωνίας;
- Οι υφιστάμενες διαδρομές συνδέουν άμεσα και εμφανώς τα διάφορα σημεία που θα ήθελαν να πάνε οι κάτοικοι της περιοχής, όπως σχολεία, καταστήματα, πάρκα ή στάσεις δημόσιας συγκοινωνίας;
- Είναι οι διαδρομές σε καλή κατάσταση, αισθητικά ωραίες και ευχάριστες;
- Οι διαδρομές εξυπηρετούν τις ανάγκες όλων, ανεξαρτήτως ηλικίας ή επιπέδου κινητικότητας, και καθοδόν παρέχονται ανέσεις, όπως παγκάκια για ξεκούραση, για όσους μπορεί να τις χρειάζονται;
- Οι διαδρομές εμπνέουν ασφάλεια καθ' όλη τη διάρκεια του χρόνου και σε όλες τις ώρες της ημέρας;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Δημόσια Συγκοινωνία

Η πρόσβαση σε αξιόπιστες και οικονομικά συμφέρουσες υπηρεσίες δημόσιας συγκοινωνίας με καλή συνδεσιμότητα είναι σημαντική για οποιαδήποτε κοινότητα. Ένα καλό σύστημα δημόσιας συγκοινωνίας ενθαρρύνει τους κατοίκους να μετακινούνται με τρόπους που είναι ευνοϊκότεροι για το περιβάλλον.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Τα μέσα δημόσιας συγκοινωνίας εξυπηρετούν τις ανάγκες μου;

Τώρα βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Οι υπηρεσίες δημόσιας συγκοινωνίας είναι συχνές και αξιόπιστες;
- Μεταφέρουν τους κατοίκους της κοινότητας εκεί που θέλουν να πάνε;
- Τα μέσα δημόσιας συγκοινωνίας είναι ασφαλή και εύκολα προσβάσιμα σε όλα τα άτομα, ανεξαρτήτως ηλικίας ή επιπέδου κινητικότητας;
- Οι στάσεις των λεωφορείων βρίσκονται σε πρακτικά σημεία και σε κοντινή απόσταση από τα σπίτια και υπάρχουν καθίσματα στις στάσεις για εκείνους που τα χρειάζονται;
- Οι σταθμοί των λεωφορείων διαθέτουν απαραίτητες ανέσεις π.χ. τουαλέτες, ασφαλείς χώρους στάθμευσης αυτοκινήτων και σημεία φύλαξης ποδηλάτων;
- Έχουν όλοι την οικονομική δυνατότητα να χρησιμοποιήσουν τις υπηρεσίες δημόσιας συγκοινωνίας;
- Τα οχήματα και οι υποδομές είναι καλής ποιότητας και συντηρούνται επαρκώς;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Κυκλοφοριακή κίνηση και Δυνατότητα στάθμευσης

Η υπερβολική κίνηση στους δρόμους μπορεί να προκαλέσει προβλήματα σε άτομα που ζουν, εργάζονται ή επισκέπτονται μια περιοχή. Ένα οργανωμένο οδικό σύστημα κυκλοφορίας, με σχετικές διευθετήσεις ως προς τη στάθμευση, επιτρέπει στα άτομα να κινούνται στην περιοχή με ασφαλή τρόπο και να έχουν μια θετική εμπειρία.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Το οδικό σύστημα και οι διευθετήσεις ως προς τη στάθμευση εξυπηρετούν τις ανάγκες των κατοίκων και επιτρέπουν στα άτομα να διακινούνται στην περιοχή με ασφάλεια;

Τώρα βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία στην «**πυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγηση σας:

- Οι πεζοί έχουν προτεραιότητα σε σχέση με τα αυτοκίνητα και την άλλη οδική κίνηση;
- Τι επίδραση έχει η οδική κίνηση στην υγεία και ευημερία των κατοίκων (σκεφτείτε το θόρυβο και την ποιότητα του αέρα);
- Παρέχεται δυνατότητα στάθμευσης σε ασφαλείς τοποθεσίες;
- Χρησιμοποιούνται αποτελεσματικά κάποια μέτρα ελαχιστοποίησης της οδικής κίνησης προς όφελος της κοινότητας;
- Υπάρχουν υπερβολικά πολλά αυτοκίνητα με αποτέλεσμα την κυκλοφοριακή συμφόρηση στην περιοχή;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Δρόμοι και Δημόσιοι χώροι

Τα κτήρια, τα αξιοθέατα, τα ορόσημα, οι χώροι πρασίνου, τα σημεία θέας, και γενικότερα το φυσικό τοπίο συμβάλουν στη διαμόρφωση ενός ελκυστικού περιβάλλοντος και προσδίδουν ένα ιδιαίτερο χαρακτήρα σε μια περιοχή. Η διαμόρφωση του φυσικού χώρου μπορεί να βοηθήσει επίσης στον προσανατολισμό των ατόμων σε μια περιοχή.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Τα κτήρια, οι δρόμοι και οι δημόσιοι χώροι συνθέτουν ένα ελκυστικό και ευχάριστο περιβάλλον για τους κατοίκους και τους περαστικούς;

Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πτυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Τα κτήρια ή/και οι δημόσιοι χώροι δημιουργούν μια ευχάριστη εμπειρία για όσους διαμένουν στη περιοχή και τους περαστικούς;
- Υπάρχουν ιδιαίτερα θετικά στοιχεία, όπως ιστορικά κτήρια, τοπικά ορόσημα, δημόσιες πλατείες ή φυσικά στοιχεία, τα οποία κάνουν τη περιοχή αισθητικά πιο ελκυστική;
- Η παρουσία εγκαταλελειμμένων κτηρίων, αναξιοποίητων οικοπέδων ή υπερβολικού θορύβου στη περιοχή αφαιρούν από την εικόνα της γειτονιάς και επηρεάζουν αρνητικά την εμπειρία που θα είχε κανείς;
- Το δομημένο περιβάλλον, η οικοδομική διαρρύθμιση και οι διαθέσιμες διαδρομές βοηθούν τα άτομα να προσανατολιστούν στη περιοχή;
- Μπορεί να έχει κανείς θετική εμπειρία από την γειτονιά ανεξαρτήτως εάν είναι βράδυ, καθ' όλη τη διάρκεια του έτους, ή ακόμα και σε κακές καιρικές συνθήκες;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Φυσικό περιβάλλον και Χώροι πρασίνου

Το φυσικό περιβάλλον αναφέρεται σε πάρκα, δάση, λιβάδια, βιότοπους, ρυάκια και άλλα υδάτινα στοιχεία, αλλά επίσης σε δεντροφυτεμένους δρόμους και άλλους ειδικά διαμορφωμένους χώρους πρασίνου στην άκρη των δρόμων και των πεζόδρομων. Τα φυσικά στοιχεία σε μια περιοχή είναι ευεργετικά τόσο για τα άγρια ζώα και πουλιά όσο και για τους ανθρώπους αφού βελτιώνουν τη ποιότητα του αέρα και έχουν θετική επίδραση στην υγεία και στην ευεξία των κατοίκων.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Έχω πρόσβαση σε καλής ποιότητας φυσικό περιβάλλον

και χώρους πρασίνου;

Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Υπάρχει ποικιλία φυσικών στοιχείων και χώρων πρασίνου στην περιοχή;
- Υπάρχουν ευκαιρίες για τα άτομα να έρθουν σε επαφή με τη φύση;
- Οι διαθέσιμοι χώροι πρασίνου είναι ελκυστικοί, καλά συντηρημένοι και διαθέτουν ανέσεις για όσους τις χρειάζονται, για παράδειγμα παγκάκια;
- Η παρουσία υπερβολικού θορύβου ή κακής ποιότητας αέρα δεν επιτρέπει στα άτομα να ευχαριστηθούν αυτούς τους χώρους;
- Οι διαθέσιμοι χώροι πρασίνου είναι προσβάσιμοι σε όλους ανεξαρτήτως ηλικίας, επιπέδου κινητικότητας, φύλου, εθνικότητας, θρησκευτικών πεποιθήσεων ή σεξουαλικού προσανατολισμού;
- Οι υφιστάμενοι χώροι πρασίνου θα συνεχίσουν να ανταποκρίνονται στις ανάγκες των κατοίκων της περιοχής και στο μέλλον;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Παιχνίδι και Δραστηριότητες

Μια καλή γειτονιά ενθαρρύνει τα παιδιά να παίζουν και επιτρέπει στους ενήλικες να απολαμβάνουν δραστηριότητες αναψυχής, άσκησης ή αθλητισμού. Οι ευκαιρίες για παιχνίδι και αναψυχή μπορούν να βελτιώσουν την ποιότητα ζωής και την υγεία μας.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Έχω πρόσβαση σε διάφορους χώρους όπου παρέχονται ευκαιρίες

για παιχνίδι, δραστηριότητες και ψυχαγωγία;

Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Τι ευκαιρίες υπάρχουν για συμμετοχή σε δραστηριότητες άσκησης και ψυχαγωγίας; (μπορείτε να σκεφτείτε συγκεκριμένες ομάδες ατόμων, όπως παιδιά, έφηβους, ηλικιωμένους, παιδιά με αναπηρίες κτλ.)
- Οι διαθέσιμοι χώροι και υποδομές για παιχνίδι και ψυχαγωγία είναι καλής ποιότητας, με καλό επίπεδο συντήρησης και χρησιμοποιούνται στο μέγιστο των δυνατοτήτων τους;
- Οι διαθέσιμοι χώροι και υποδομές είναι εύκολα προσβάσιμοι και οικονομικά προσιτοί σε όλους;
- Επιτρέπουν στα παιδιά της γειτονιάς να βελτιώσουν τις δεξιότητες τους και να αποκτήσουν αυτοπεποίθηση κατά τη διάρκεια του παιχνιδιού;
- Η κοινότητα θεωρεί θετικό να παίζουν τα παιδιά σε εξωτερικούς χώρους;
- Οι χώροι και οι εγκαταστάσεις είναι προσβάσιμοι και εμπνέουν αίσθημα ασφάλειας ανεξαρτήτως της ώρας της ημέρας και της εποχής του χρόνου;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Υποδομές, Ανέσεις και Διευκολύνσεις

Οι υποδομές, ανέσεις και διευκολύνσεις αναφέρονται σε όλα εκείνα που είναι απαραίτητα στην καθημερινότητα μας και την κάνουν πιο ευχάριστη. Αυτές μπορεί να περιλαμβάνουν καταστήματα, σχολεία, βρεφοκομικούς σταθμούς, βιβλιοθήκες, ιατρεία αλλά και χώρους εστίασης, όπου μπορούμε να βγούμε για φαγητό, για ποτό και να συναντήσουμε φίλους. Η πρόσβαση σε τέτοιες εγκαταστάσεις και ανέσεις είναι σημαντική για τη διασφάλιση μιας υγιούς και ολοκληρωμένης ζωής.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

**Οι υποδομές και οι ανέσεις που υπάρχουν στη γειτονιά
εξυπηρετούν τις ανάγκες μου;**

Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πτυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγηση σας:

- Υπάρχουν στην περιοχή υποδομές που να καλύπτουν τις διάφορες ανάγκες των κατοίκων (για μάθηση, ιατρικές εξετάσεις, ψώνια, χαλάρωση κλπ.);
- Μπορούν όλοι να τις χρησιμοποιήσουν ανεξαρτήτως ηλικίας, φύλου, εθνικότητας, επιπέδου κινητικότητας, θρησκευτικών πεποιθήσεων ή σεξουαλικού προσανατολισμού;
- Οι εγκαταστάσεις και οι ανέσεις βρίσκονται σε κοντινή απόσταση και είναι εύκολα προσβάσιμες;
- Είναι καλής ποιότητας και έχουν ένα καλό επίπεδο συντήρησης;
- Οι εγκαταστάσεις και οι ανέσεις χρησιμοποιούνται στο μέγιστο των δυνατοτήτων τους και υποστηρίζουν ένα υγιές τρόπο ζωής;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Εργασία και Τοπική οικονομία

Οι ποιοτικές θέσεις εργασίας προσφέρουν σημαντικά πλεονεκτήματα όχι μόνο ως προς το εισόδημα αλλά και μέσω της κοινωνικής επαφής, του αισθήματος της ταυτότητας και της εργασιακής ικανοποίησης. Μία ευημερούσα τοπική οικονομία προσφέρει ευκαιρίες εργοδότησης και δημιουργεί τη δυνατότητα να αναπτυχθεί ολόκληρη η περιοχή σε πόλο προσέλκυσης κοινωνικής δραστηριότητας.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Η τοπική οικονομία είναι ανεπτυγμένη και οι επιχειρήσεις που δραστηριοποιούνται παρέχουν ποιοτικές θέσεις εργασίας;

Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πτυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Υπάρχει οικονομική δραστηριότητα στη περιοχή, η οποία συμβάλει στη δημιουργία διάφορων θέσεων εργασίας;
- Υπάρχουν ευκαιρίες εκπαιδευτικές, πρακτικής εξάσκησης ή εθελοντισμού για ανάπτυξη δεξιοτήτων και βελτίωση της εργοδοσιμότητας των ατόμων;
- Τα άτομα της κοινότητας έχουν ίσες ευκαιρίες εργοδότησης, χωρίς διακρίσεις λόγω ηλικίας, φύλου, εθνικότητας, θρησκευτικών πεποιθήσεων, σεξουαλικού προσανατολισμού ή ανικανότητας;
- Δραστηριοποιούνται στην περιοχή γραφεία εξεύρεσης εργασίας καθώς και οικονομικά προσιτά νηπιαγωγεία ώστε τα άτομα να μπορούν να βρουν και να διατηρήσουν μια θέση εργασίας;
- Υπάρχουν ευκαιρίες και χώροι ώστε να ιδρυθούν και να αναπτυχθούν τοπικές επιχειρήσεις;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Ποιότητα στέγασης και Τοπική κοινότητα

Η διαθέσιμες επιλογές στέγασης σε μια περιοχή (π.χ. μονοκατοικίες, πολυκατοικίες, με ενοίκιο, προς πώληση κτλ.) προσδιορίζουν τόσο τη δημογραφική σύνθεση της κοινότητας (ποιους προσελκύει) όσο και τη γενικότερη εικόνα και κουλτούρα μιας περιοχής. Είναι προτιμότερο μια κοινότητα να προσφέρει ποικίλες επιλογές για καλής ποιότητας κατοικίες, κατάλληλες για οικογένειες αλλά και για άτομα διαφορετικών ηλικιών και εισοδημάτων.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Η οικιστική διαρρύθμιση και επιλογές στέγασης στην περιοχή υποστηρίζουν τις ανάγκες της τοπικής κοινότητας;

Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Η οικιστική διαρρύθμιση είναι θετικό χαρακτηριστικό της περιοχής;
- Υπάρχουν κατοικίες καλής ποιότητας και διαφόρων ειδών για όλους τους τύπους των νοικοκυριών ;
- Ως προς το καθεστώς κατοίκησης (κατοικίες προς ενοικίαση, ιδιοκατοίκηση, κλπ) υπάρχουν διάφορες επιλογές που εξυπηρετούν άτομα με διαφορετικές ανάγκες, ανεξαρτήτως εισοδήματος;
- Τα διαφορετικά είδη κατοικιών συνυπάρχουν σε αρμονικό κλίμα;
- Το εύρος των διαθέσιμων επιλογών στέγασης επιτρέπει στα άτομα να παραμείνουν στην περιοχή ακόμα κι αν οι ανάγκες του νοικοκυριού αλλάζουν ή ενώσω τα άτομα μεγαλώνουν ηλικιακά;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Δυνατότητα κοινωνικής επαφής

Το αίσθημα απομόνωσης μπορεί να είναι επιβλαβές για την υγεία και την ευεξία μας. Μια καλή γειτονιά παρέχει ποικιλία χώρων όπου μπορεί κανείς να συναντήσει άλλα άτομα και να περάσει χρόνο μαζί τους.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Υπάρχουν ευκαιρίες και χώροι που προάγουν

την κοινωνική επαφή με άλλα άτομα της κοινότητας;

Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πτυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Υπάρχουν χώροι που δημιουργούν ευκαιρίες στα άτομα να συναντηθούν;
- Υπάρχει ποικιλία διαθέσιμων χώρων συνεύρεσης με άλλα άτομα της γειτονιάς, όπως εσωτερικοί όσο και εξωτερικοί χώροι, ειδικά διαμορφωμένοι για αυτόν τον σκοπό (π.χ. κοινοτικό κέντρο κτλ.) ή άτυποι;
- Αυτοί οι χώροι μπορούν να χρησιμοποιηθούν σε διαφορετικές ώρες τις ημέρες, καθ' όλη τη διάρκεια του χρόνου και ανεξαρτήτως καιρικών συνθηκών;
- Δημιουργούνται ευκαιρίες να βρεθούν και να γνωριστούν μεταξύ τους άτομα από όλες τις πληθυσμιακές ομάδες της κοινότητας και από διαφορετικές κουλτούρες ή με διαφορετικό υπόβαθρο;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Ταυτότητα και Αίσθημα του «ανήκειν»

Η εικόνα μιας γειτονιάς, η ιστορία της αλλά και οι αντιλήψεις των άλλων γι' αυτή μπορούν να επηρεάσουν και τα δικά μας συναισθήματα. Από τη άλλη, μια γειτονιά με ισχυρή τοπική ταυτότητα μπορεί ως αποτέλεσμα να καλλιεργήσει αισθήματα υπερηφάνειας για την γειτονιά, για τα μέλη της κοινότητας και προς τον ίδιο τον εαυτό μας.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Η γειτονιά μου έχει θετική ταυτότητα και νιώθω ότι ανήκω εδώ;

Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πτυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Ο κόσμος βλέπει θετικά αυτή τη γειτονιά;
- Είναι γνωστή η ιστορία, η κληρονομιά και η κουλτούρα της γειτονιάς και αποτελεί λόγο θετικών συναισθημάτων για τα άτομα ;
- Δραστηριοποιούνται τοπικές ομάδες και δίκτυα και συμβάλουν ώστε τα μέλη της κοινότητας να αισθάνονται ότι μπορούν να συμμετέχουν θετικά στη γειτονιά τους;
- Τα άτομα νιώθουν συνδεδεμένα με τους γείτονες τους και την ίδια την κοινότητα, όποιο και αν είναι το υπόβαθρο τους (εκπαιδευτικό, εισοδηματικό κτλ);
- Όλοι τα άτομα νιώθουν ότι ανήκουν και είναι μέλη αυτής της κοινότητας, ανεξαρτήτως ηλικίας, φύλου, εθνικότητας, θρησκευτικών πεποιθήσεων, σεξουαλικού προσανατολισμού ή ανικανότητας;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Αίσθημα ασφάλειας

Το αίσθημα ασφάλειας που εμπνέει μια περιοχή μπορεί να επιδράσει θετικά στην ευεξία των ατόμων, ενώ αντιθέτως το αίσθημα ανασφάλειας μπορεί να προσδιορίσει τον τρόπο με τον οποίο λειτουργούν και κινούνται τα άτομα σε μια περιοχή. Μια καλά σχεδιασμένη γειτονιά μπορεί να διασφαλίσει το αίσθημα ασφάλειας και να περιορίσει την εγκληματική και αντικοινωνική συμπεριφορά.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Αισθάνομαι ασφαλής σε αυτή τη γειτονιά;

Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πτυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Οι διαδρομές από το ένα μέρος στο άλλο εντός της περιοχής είναι ασφαλείς και πολυσύχναστες σε διαφορετικές ώρες της ημέρας και καθ' όλη τη διάρκεια του χρόνου;
- Υπάρχουν πολυσύχναστα κτήρια με θέα προς τους ανοικτούς δημόσιους χώρους ούτως ώστε να ενισχύει στα άτομα το αίσθημα ασφάλειας;
- Υπάρχουν κενές και εγκαταλελειμμένες κατοικίες και είναι συχνή η αντικοινωνική συμπεριφορά ή η εγκληματικότητα στη γειτονιά;
- Τα άτομα αισθάνονται ασφαλή τόσο στο σπίτι τους όσο και όταν βρίσκονται εκτός σπιτιού;
- Η γειτονιά είναι ασφαλής για όλους, ανεξαρτήτως ηλικίας, φύλου, εθνικότητας, θρησκευτικών πεποιθήσεων, σεξουαλικού προσανατολισμού ή ανικανότητας;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Φροντίδα και Συντήρηση

Οι καλά περιποιημένες γειτονιές μπορούν να δημιουργήσουν θετικά συναισθήματα στα άτομα, ενώ αυτές που δεν έχουν ένα καλό επίπεδο φροντίδας και συντήρησης μπορούν να οδηγήσουν στο αντίθετο αποτέλεσμα. Η επαρκής συντήρηση της γειτονιάς και των υποδομών της δίνει το μήνυμα ότι υπάρχει επαρκής υποστήριξη (από τον κρατικό μηχανισμό αλλά και από τους συμπολίτες) και έχει ως αποτέλεσμα τα άτομα να σκέφτονται θετικά για την περιοχή όπου ζουν.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Υπάρχει επαρκής φροντίδα και συντήρηση

στα κτήρια και στους δημόσιους χώρους;

Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Υπάρχει γενικότερα ένα καλό επίπεδο συντήρησης των διαφόρων υποδομών, όπως πάρκα, δημόσιοι χώροι και δημόσιες περιουσίες;
- Υπάρχουν συγκεκριμένα προβλήματα στη γειτονιά, όπως σκουπίδια, βανδαλισμοί ή ακαθαρσίες σκύλων;
- Υπάρχουν κατάλληλες διευθετήσεις για ανακύκλωση και απόρριψη σκυβάλων και η συλλογή τους είναι καλά οργανωμένη και συστηματική;
- Οι τοπικές αρχές, οι σπιτονοικοκύρηδες και οι κάτοικοι γνωρίζουν τις υποχρεώσεις τους και λαμβάνουν τις ανάλογες δράσεις όταν είναι απαραίτητο;
- Υπάρχει τοπικός σύνδεσμος κατοίκων και έχει αποτελεσματική δράση;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Συμμετοχή και αίσθημα ελέγχου

Οι κάτοικοι της περιοχής πρέπει να μπορούν να εκφράζουν την άποψη τους. Η συμμετοχή των πολιτών στη λήψη αποφάσεων και το αίσθημα ότι έχουν λόγο στις εισηγήσεις για βελτιωτικές αλλαγές συμβάλει στην ενδυνάμωση της κοινότητας. Το αίσθημα ελέγχου βοηθά τα άτομα να βλέπουν τη ζωή με θετικό μάτι.

Τώρα, σκεφτείτε τη γειτονιά την οποία αξιολογείτε και διερωτηθείτε:

Μου παρέχεται η ευκαιρία να συμμετέχω στη λήψη αποφάσεων και να συμβάλω ώστε τα πράγματα να αλλάξουν προς το καλύτερο;

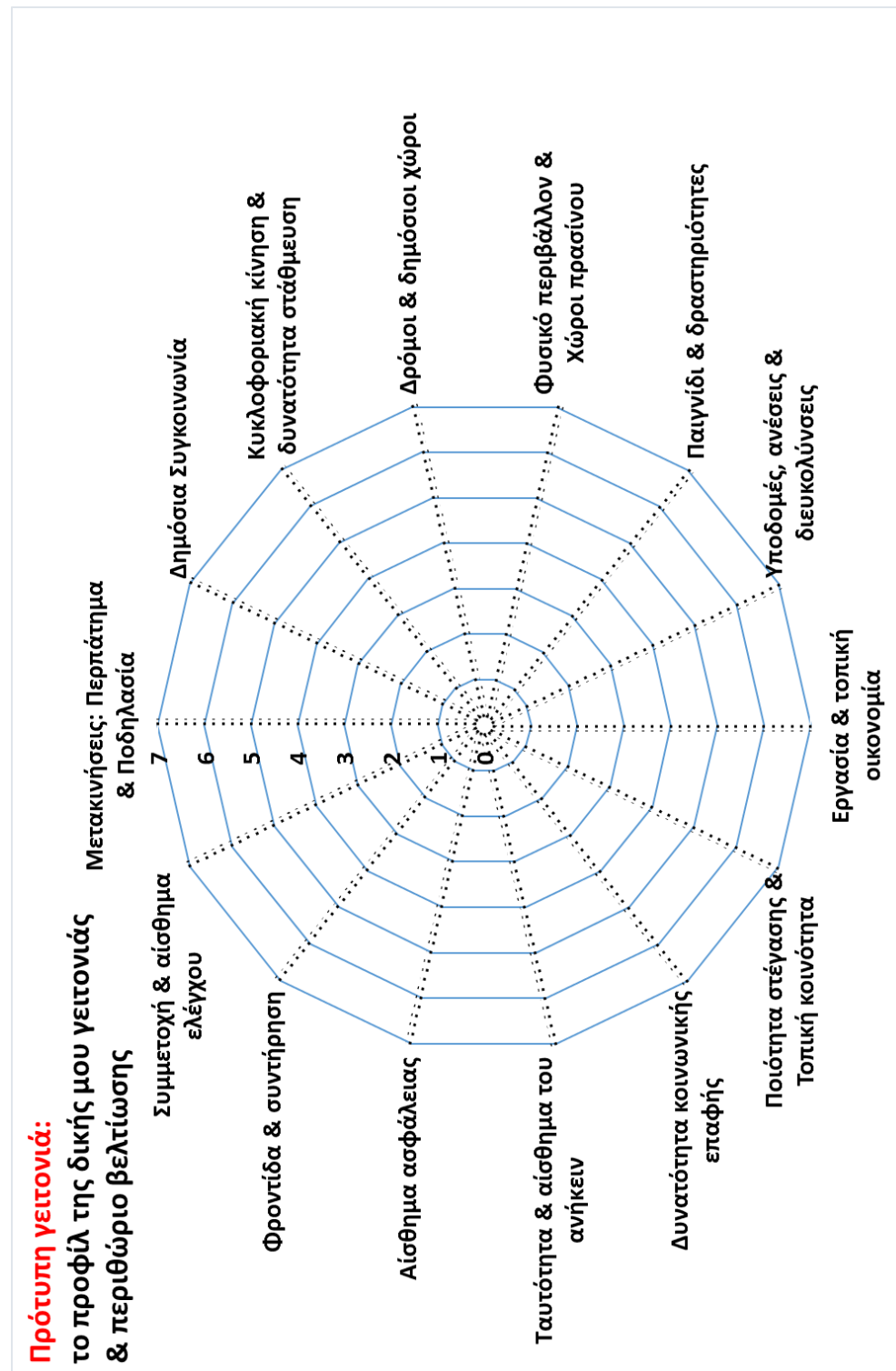
Στη συνέχεια, βαθμολογήστε τη γειτονιά σας από το **1 μέχρι το 7**, όπου το **1** αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το **7** σε «**μικρό περιθώριο βελτίωσης**». Σημειώστε τη βαθμολογία σας στην «**πτυξίδα**».

Μπορείτε να λάβετε υπόψη τα πιο κάτω στην αξιολόγησή σας:

- Τα άτομα έχουν την ευκαιρία να συμμετέχουν στη λήψη αποφάσεων για ζητήματα που τους επηρεάζουν;
- Όλοι μπορούν να συμμετέχουν, χωρίς διακρίσεις λόγω ηλικίας, φύλου, εθνικότητας, θρησκευτικών πεποιθήσεων, σεξουαλικού προσανατολισμού ή ανικανότητας;
- Οι τοπικές αρχές και υπηρεσίες επιτρέπουν στα άτομα να εμπλακούν ενεργά;
- Οργανισμοί και φορείς, όπως τοπικές αρχές αυτοδιοίκησης, υπηρεσίες υγείας ή πολεοδομικές αρχές, συνεργάζονται ενεργά με τα μέλη της κοινότητας για να κατανοήσουν τις ανάγκες τους;
- Οι κάτοικοι γνωρίζουν πώς να προβάλουν την άποψη τους και αισθάνονται ότι οι ανάγκες τους εισακούγονται;

Μπορείτε να καταγράψετε τους λόγους για τη βαθμολογία που δώσατε.

Όταν απαντήσετε όλες τις ερωτήσεις, σημειώστε την βαθμολογία που δώσατε στην κάθε ερώτηση στο αντίστοιχο σημείο στο πιο κάτω διάγραμμα που μοιάζει με πυξίδα ή ιστό αράχνης.



Προτεραιότητες για δράση

Ποια κύρια ζητήματα που χρήζουν αλλαγή έχετε εντοπίσει;

Ποιες θα λέγατε είναι οι τρεις κύριες προτεραιότητες; Θα ήταν χρήσιμο να τις καταγράψετε πιο κάτω.

Προτεραιότητες για δράση

Ποιες ενέργειες ή δράσεις πρέπει να γίνουν για να αντιμετωπιστούν αυτές οι προτεραιότητες;

Πιο κάτω, θα ήταν χρήσιμο να απαριθμήσετε τις τρεις πιο σημαντικές από αυτές τις δράσεις ή ενέργειες.

Επιμέλεια Ελληνικής μετάφρασης:

Τμήμα Νοσηλευτικής & Διεθνές Ινστιτούτο Κύπρου για την Περιβαλλοντική και Δημόσια Υγεία

Σχολή Επιστημών Υγείας



APPENDIX XVII Place Standard Short Version

«Πρότυπη γειτονιά»

Το προφίλ της δικής μου γειτονιάς και περιθώριο βελτίωσης

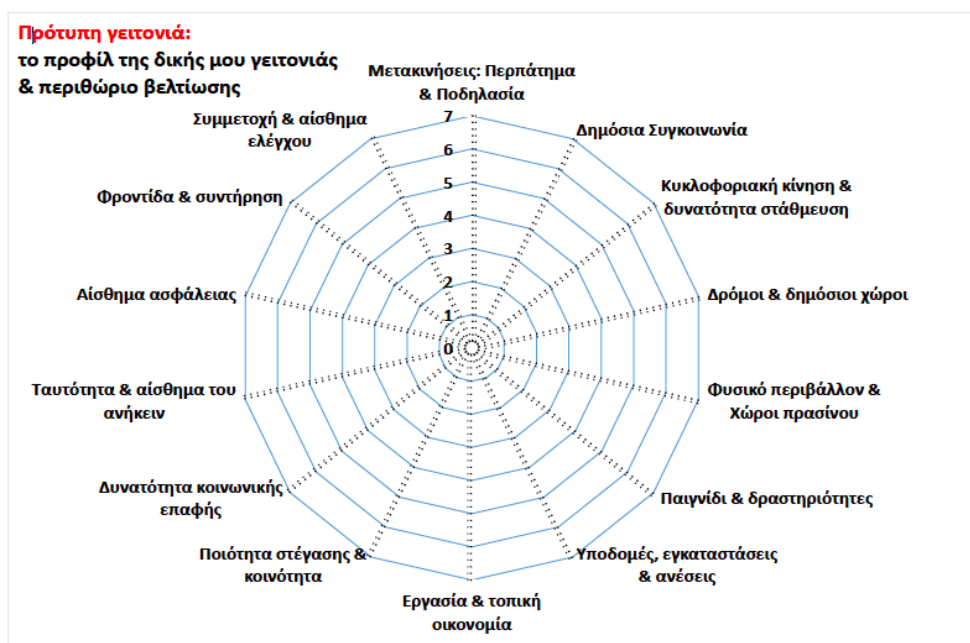
Το ερωτηματολόγιο «Πρότυπη γειτονιά» είναι ένα διεθνές εργαλείο αξιολόγησης της ποιότητας του περιβάλλοντος της γειτονιάς. Αποτελείται από 14 ερωτήσεις οι οποίες αναφέρονται τόσο σε πτυχές του φυσικού και δομημένου περιβάλλοντος όσο και του κοινωνικού περιβάλλοντος της γειτονιάς. Δεν υπάρχει σωστή ή λάθος απάντηση. Το εργαλείο χρησιμοποιείται για να αποτυπώσει τις θετικές πτυχές και τα πλεονεκτήματα μιας γειτονιάς όσο και για να αναδείξει τις πτυχές που ενδεχομένως χρήζουν βελτίωσης μέσω ανάληψης σχετικής δράσης.

Αναφορικά με τη δική σας γειτονιά, απαντήστε σε κάθε μια από τις 14 ερωτήσεις (επόμενη σελίδα) δίνοντας βαθμολογία από το 1 μέχρι το 7 με βάση τη κρίση σας για το περιθώριο βελτίωσης που θεωρείτε ότι υπάρχει ως προς τη συγκεκριμένη πτυχή που αξιολογείται, όπου :

Το 1 αντιστοιχεί σε **«μεγάλο περιθώριο βελτίωσης»**
(επομένως η κατάσταση ως προς αυτή τη πτυχή δεν σας ικανοποιεί καθόλου)
και

Το 7 αντιστοιχεί σε **«μικρό περιθώριο βελτίωσης»**
(επομένως, είστε ιδιαίτερα ικανοποιημένος/η αφού κρίνετε ως ιδιαίτερα θετική αυτή τη πτυχή).

Με βάση τη βαθμολογία που θα δώσει ο κάθε δημότης στην κάθε ερώτηση, αποτυπώνεται το συνολικό προφίλ της γειτονιάς στο πιο κάτω κυκλικό διάγραμμα, το οποίο θυμίζει ιστό αράχνης. Για την κάθε πτυχή που αξιολογείται παρέχονται υποβοηθητικές διευκρινήσεις στο σχετικό βιβλιαράκι το οποίο συμπεριλαμβάνετε στο φάκελο. Παρέχεται ως Οδηγός για να σας βοηθήσει να απαντήσετε στα ερωτήματα και μπορείτε να το κρατήσετε για δική σας χρήση. ΔΕΝ ΧΡΕΙΑΖΕΤΑΙ ΝΑ ΕΠΙΣΤΡΑΦΕΙ. ΠΑΡΑΚΑΛΩ ΝΑ ΕΠΙΣΤΡΑΦΕΙ ΜΟΝΟ ΤΟ ΠΑΡΟΝ 4ΣΕΛΙΔΟ ΕΡΩΤΗΜΑΤΟΛΟΓΙΟ.



Έχοντας υπόψη το περιβάλλον της δικής σας γειτονιάς, αναρωτηθείτε για τα πιο κάτω και κυκλώστε τον αριθμό που αντιστοιχεί στην απάντησή σας όπου το 1 αντιστοιχεί σε «**μεγάλο περιθώριο βελτίωσης**» και το 7 αντιστοιχεί σε «**μικρό περιθώριο βελτίωσης**»:

1 Μετακινήσεις: Περπάτημα και Ποδηλασία	1 2 3 4 5 6 7
Η γειτονιά μου παρέχει αρκετές καλής ποιότητας διαδρομές όπου μπορώ να περπατήσω ή να ποδηλατήσω με ευκολία;	
2 Δημόσια Συγκοινωνία	1 2 3 4 5 6 7
Τα μέσα δημόσιας συγκοινωνίας εξυπηρετούν τις ανάγκες μου;	
3 Κυκλοφοριακή κίνηση και δυνατότητα στάθμευσης	1 2 3 4 5 6 7
Το οδικό σύστημα και οι διευθετήσεις ως προς τη στάθμευση εξυπηρετούν τις ανάγκες των κατοίκων και επιτρέπουν στα άτομα να διακινούνται στη γειτονιά με ασφάλεια;	
4 Δρόμοι και Δημόσιοι χώροι	1 2 3 4 5 6 7
Τα κτήρια, οι δρόμοι και οι δημόσιοι χώροι συνθέτουν ένα ελκυστικό και ευχάριστο περιβάλλον για τους κατοίκους και για τους περαστικούς;	
5 Φυσικό περιβάλλον και Χώροι πρασίνου	1 2 3 4 5 6 7
Έχω πρόσβαση σε καλής ποιότητας φυσικό περιβάλλον και χώρους πρασίνου;	
6 Παιγνίδι και Δραστηριότητες	1 2 3 4 5 6 7
Έχω πρόσβαση σε διάφορους χώρους όπου παρέχονται ευκαιρίες για παιχνίδι, δραστηριότητες και ψυχαγωγία;	
7 Υποδομές, Ανέσεις και Διευκολύνσεις	1 2 3 4 5 6 7
Οι υποδομές (π.χ. καταστήματα, σχολεία, πεζόδρομοι) και οι ανέσεις ή διευκολύνσεις (π.χ. κάδοι απορριμμάτων, ανακύκλωση, κτλ) που υπάρχουν στη γειτονιά εξυπηρετούν τις ανάγκες μου;	
8 Εργασία και Τοπική οικονομία	1 2 3 4 5 6 7
Η τοπική οικονομία είναι ανεπτυγμένη (π.χ. καταστήματα και μαγαζιά σε κοντινή απόσταση) και οι επιχειρήσεις που δραστηριοποιούνται παρέχουν ποιοτικές θέσεις εργασίας για τους κατοίκους;	
9 Ποιότητα στέγασης και Κοινότητα	1 2 3 4 5 6 7
Η οικιστική διαρρύθμιση (π.χ. ποιότητα των σπιτιών, ποικιλία επιλογών στέγασης, ύψος των ενοικίων) στη περιοχή υποστηρίζει τις ανάγκες της τοπικής κοινότητας;	
10 Δυνατότητα κοινωνικής επαφής	1 2 3 4 5 6 7
Υπάρχουν ευκαιρίες και χώροι κοινωνικής συναναστροφής με τους γείτονες;	
11 Ταυτότητα και Αίσθημα του «ανήκειν»	1 2 3 4 5 6 7
Η γειτονιά μου έχει θετική ταυτότητα και νιώθω ότι ανήκω εδώ;	
12 Αίσθημα ασφάλειας	1 2 3 4 5 6 7
Αισθάνομαι ασφαλής σε αυτή τη γειτονιά;	
13 Φροντίδα και Συντήρηση	1 2 3 4 5 6 7
Υπάρχει επαρκής φροντίδα και συντήρηση στα κτήρια και στους δημόσιους χώρους;	
14 Συμμετοχή και Αίσθημα Ελέγχου	1 2 3 4 5 6 7
Μου παρέχεται η ευκαιρία να συμμετέχω στη διαδικασία λήψης αποφάσεων και να συμβάλω ώστε τα πράγματα να αλλάξουν προς το καλύτερο;	

Ποια κυρία ζητήματα που χρήζουν αλλαγή έχετε εντοπίσει; Ποιες θα λέγατε είναι οι τρεις κύριες προτεραιότητες;

1.
2.
3.

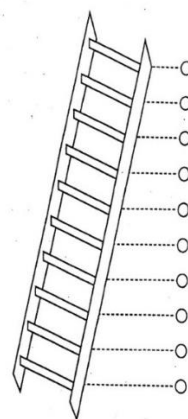
Ποιες δράσεις πρέπει να γίνουν για να αντιμετωπιστούν αυτές οι προτεραιότητες; Σημειώστε τις τρεις πιο σημαντικές πιο κάτω;

1.
2.
3.

1. Δείτε την πιο κάτω σκάλα

Σκεφτείτε ότι στην κορυφή της σκάλας είναι οι **πλέον προνομιούχες** γειτονιές, ενώ στο κάτω μέρος είναι οι **πλέον υποβαθμισμένες** γειτονιές.

Αν σκεφτείτε την ποιότητα του φυσικού, δομημένου και κοινωνικού περιβάλλοντος της δικής σας γειτονιάς, πού θα την τοποθετούσατε σε αυτή τη σκάλα σε σχέση με άλλες γειτονιές;



2. Είχατε συμμετάσχει σε προηγούμενη έρευνα του ΤΕΠΑΚ με θέμα την «Ποιότητα Ζωής των κατοίκων της Λεμεσού»;

ΝΑΙ ☐

ΟΧΙ ☐

Κοινωνικό-δημογραφικά Χαρακτηριστικά

1. Φύλο	☐ Άνδρας	☐ Γυναίκα	2. Ηλικία	 ετών	
3. Υπηκοότητα	☐ Κυπριακή	☐ Άλλη	(παρακαλώ δηλώστε)		
4. Οικογενειακή κατάσταση	☐ Παντρεμένος/η	☐ Ελεύθερος/η	☐ Διαζευγμένος/η Σε διάσταση	☐ Χήρος/α	☐ Σε συμβίωση
5. Αριθμός παιδιών	παιδιά κάτω των 18 παιδιά άνω των 18	6. Αριθμός μελών οικογένειας που διαμένουν στο ίδιο σπίτι (συμπεριλ. του εαυτού σας)			 άτομα
7. Εκπαίδευση	☐ Καμμία	☐ Δημοτικό	☐ Γυμνάσιο	☐ Λύκειο Τεχνική Σχολή	☐ Κολλέγιο/ Πανεπιστήμιο
8. Καθεστώς εργοδότησης	☐ Πλήρης απασχόληση	☐ Μερική απασχόληση	☐ Άνεργος/η	☐ Δεν εργάζομαι	
9. Τους τελευταίους 12 μήνες αντιμετωπίσατε δυσκολίες όσον αφορά στα τρέχοντα έξοδα του νοικοκυριού, όπως πληρωμή λογαριασμών, αγορά ειδών πρώτης ανάγκης, επίσκεψη σε γιατρό, κτλ;					☐ Ναι ☐ Όχι
10. Πόσο καιρό κατοικείτε στην παρούσα διεύθυνση;	☐ Λιγότερο από 1 χρόνο	☐ 1-3 χρόνια	☐ 3-5 χρόνια	☐ 5-10 χρόνια	☐ Πάνω από 10 χρόνια
11. Ιδιότητα/ ενοικιαζόμενη κατοικία ;	☐ Ιδιότητα	☐ Ενοικιαζόμενη	☐ Άλλο		
12. Τύπος οικίας	☐ Ανεξάρτητη οικία	☐ Ημι-ανεξάρτητη οικία	☐ Πολυκατοικία με λιγότερα από 8 διαμερίσματα	☐ Πολυκατοικία με Περισσότερα από 8 διαμερίσματα	

ΕΥΧΑΡΙΣΤΟΥΜΕ ΠΟΛΥ ΓΙΑ ΤΗ ΣΥΜΜΕΤΟΧΗ ΣΑΣ!

APPENDIX XVIII Piloting the Place Standard in a nationwide online survey

– Article Publication in BMC Public Health

Kleopa et al. *BMC Public Health* (2022) 22:267
<https://doi.org/10.1186/s12889-022-12706-y>

BMC Public Health

RESEARCH

Open Access



Profiling the variability and inequity in the residential environment in Cyprus according to citizens' ratings: a cross-sectional internet-based "Place Standard" survey

Daphne Kleopa^{1,2}, Andrie Panayiotou², Christiana Kouta¹, Chrystalla Kaiafa³ and Nicos Middleton^{1*}

Abstract

Background: The "Place Standard Tool" (PST) offers a practical framework for structuring conversations about physical and social dimensions of Place which impact on health and well-being. The aim of this study was to survey citizens' perceptions of Place across diverse settings in Cyprus. While the PST has been extensively used in the context of community engagement, its properties as a measurement tool haven't been explored.

Methods: An open call was addressed to citizens to rate their neighbourhood environment across the 14 PST items (1: large to 7: little room for improvement). Exploratory factor, cluster and regression analyses were used to explore the dimensionality of the scale, depict neighbourhood profiles and explore differences in ratings according to socio-demographic characteristics, area-level census indicators and residents' assessment of neighbourhood social position (10-step ladder).

Results: With the exception of safety ($M = 4.4$, $SD = 1.7$), 492 participants (mean age 42, 50% residents for > 10 years) from 254 postcodes (21.7% islandwide) did not rate other features favourably, with lowest scores for "influence and sense of control" and "public transport". A stepwise pattern of dissatisfaction was observed along the social position continuum both for features rated less as well as more favourably (e.g. social contact). For instance, among participants who placed their neighbourhood at the three top steps of the ladder, 48.8% gave a low rating for "influence and sense of control", while the equivalent figure was 81.0% at the bottom three steps ($OR = 4.5$, 95% CI 2.3, 8.6). A clear dimensionality of Built (6 items, Cronbach's $\alpha = 0.798$), Physical (3 items, $\alpha = 0.765$), Social (2 items, $\alpha = 0.749$) and Service (3 items, $\alpha = 0.58$) environment was identified. A social gradient was evident according to census measures of socio-economic disadvantage (e.g. pre-1980 housing, single-parent households) with larger differences in terms of the built than the social environment.

Conclusions: The study profiled the variability and documented the inequity in the health-related neighbourhood environment across Cypriot communities. The readily interpretable dimensionality of the scale supports its construct validity, allowing calculation of composite scores. The PST can be used as measurement tool in research as well as public health practice to advocate for neighbourhood initiatives which support and enhance citizens' participation.

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APPENDIX XVIX Developing and Field testing CyNOTes (phase I) – Article Publication in Cities & Health

CITIES & HEALTH
<https://doi.org/10.1080/23748834.2023.2182895>



ORIGINAL SCHOLARSHIP

OPEN ACCESS

Developing and field testing the Neighbourhood Observational Tool for auditing urban community environments (CyNOTes) in the city of Limassol, Cyprus

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ABSTRACT

Systematic Social Observation provides supplementary information about the micro-scale neighborhood environment. This study explored the feasibility of neighborhood audits for the first time in the city of Limassol, Cyprus (population size, 2021 census: 258,900). The prevalence and variability of audited features were investigated using the 126-Item CyNOTes Inventory, organised along a typology of 17 domains. Two independent audits, with a repeat in two weeks, were performed across 30 randomly selected street segments, stratified in three groups of neighborhoods according to the educational attainment of residents. Associations with census indicators and survey data on SF-36 Quality of Life among residents aged 45–64 ($N = 150$) were explored. More adverse conditions were recorded in low educational attainment neighborhoods, with differences apparent in domains with generally high as well as low scores. Neighborhood scores correlated with census indicators of the built environment, while negative correlations were observed with sociodemographic indicators, such as population aged over 65 and non-Cypriot population, suggesting social inequalities. In neighborhoods with more adverse features, lower physical and mental health-related quality of life were reported. Overall, the study documented environmental inequity. CyNOTes offers the potential for further development and scaling-up for public health research, policy, and advocacy.

ARTICLE HISTORY

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KEYWORDS

Neighborhood assessment;
neighborhood audit;
systematic social
observation; observer rating;
social gradient;
environmental equity

Introduction

The socio-physical and socio-economic context of the neighborhood environment can positively or negatively impact the health of citizens either directly or indirectly (Saelens and Handy 2010, James et al. 2016, Papadopoulos and Twaddle 2016). Various community assessment methods can be used to profile communities, all with strengths as well as shortcomings. Traditionally, area-level indicators or composite indices of socio-economic deprivation or disadvantage are used to profile communities, advocate for better community conditions, and guide resource allocation. Even though such indices have a long history elsewhere in Europe (Guillaume et al. 2015, Middleton et al. 2018), there are no generally accepted measures of the area measures of socioeconomic disadvantage in Cyprus.

More importantly, such area-level single indicators or composite indices, often originating from census or other routine data sources, are not truly ecological. With some exceptions that may represent the macro-scale residential environment (e.g. population density, median household income, crime rates, etc.), these indicators commonly reflect the socio-demographic

composition of a community's residents rather than actual features of the neighborhood environment itself. Similarly, other approaches, such as GIS measures, are restricted to capturing specific features pertaining to the built, rather than social environment, often at the meso-scale (defined as environmental features at the neighborhood-level), such as traffic density, land use diversity, destinations, street connectivity etc. (Kim et al. 2014). As such, they do not capture important features of the microscale environment. Micro-scale environment is defined as features at the street rather than neighborhood level, such as presence and width of sidewalks, obstructions and barriers for walkability, street lighting, trees, gardens, graffiti, and other physical evidence of physical disorder etc.) (Kim et al. 2014). A different approach is resident surveys, whereby aggregated measures of residents' perceptions are used either targeted or opportunistically to characterise the community environment. While these are versatile and can refer to features of the built environment, such as walkability, or the psycho-social environment, such as trust and reciprocity, they are subjective (Mujahid et al. 2007, Augusta et al. 2012).

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