

Green Space Attributes for Enhancing Health and Well-being

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Introduction

The Covid-19 pandemic has challenged assumptions on how we think about and use urban environments (McCormack et al., 2022; Ottoni et al., 2022; Lennon 2021; Guida & Carpentieri, 2021; Lai et al., 2020). With their movements restricted and many working from home, city residents sought health and well-being opportunities within their neighbourhoods (Officer et al., 2022; Scott, 2020; Mitra et al., 2020). While pre-pandemic research identified the importance of positive perceptions of green and open spaces for neighbourhood quality of life (Douglas et al. 2019; Olsen et al., 2019; Weimann, 2019; Farahani & Maller, 2018), the pandemic has laid bare the importance of proximity and access to high quality public green space for urban residents (Noszczyk et al., 2022; Venter et al., 2021; Ugolini et al., 2020).

The health and well-being benefits and the multifunctional services provided by greenspaces have been increasingly recognised in policy and planning practice at international, national, and local levels (Kim & Song, 2019; Hansen et al., 2019; WHO, 2016). The United Nations' Sustainable Development Goal 11 includes the target of providing universal access to safe, inclusive and accessible, green and public spaces by 2030 (United Nations, 2015). While such policy guidance clearly supports an emphasis on green space provision for population health and well-being, it does not provide detailed guidance for planning in terms of the specific attributes required to tackle lifestyle illnesses in multiple cohorts and respond to the localisation of lifestyles facilitated by hybrid working in the wake of the Covid-19 pandemic. This is partly consequent on the aggregation and homogenisation of different spatial typologies in much planning policy into a measure of so called 'green space', without further qualification as to the type or quality of such spaces (Douglas et al., 2017; Bell et al., 2014).

Yet, as Barton (2010: 97) argues, professional planners can take a jaundiced view of the exponential growth of expectations placed on them by a society desperate to find solutions to difficult problems in the built environment, such as how to plan our public outdoor spaces to enhance health and well-being. This paper responds to planners' need for a clear evidence-based approach to how to better plan public green spaces in our cities. This is achieved by drawing on the results of a household survey which was specifically designed to understand the use of outdoor environments by adults in urban and suburban contexts in the cities of Dublin and Waterford in Ireland. These two cities capture the experience of a booming medium-sized European national capital city with considerable inflow of investment and high levels of development pressure on green spaces (Dublin, Figure 1), and the contrasting experience of a smaller city serving as the main urban centre in an increasingly challenged region confronting investment outflows and population migration to other regions (Waterford). As such, the analysis presented below has relevance to urban and suburban contexts in both high performing cities at the centre of commerce, administration and culture, and more provincial cities facing social and economic difficulties.

Specifically, the findings pertaining to the reported use and use-desires of the outdoor environment are explored. Use and perceptions of local and nearby green spaces in three locations are examined – an affluent suburb and a suburb characterised by high levels of socio-economic deprivation in Waterford, and an urban centre in Dublin characterised by a mix of affluence and socio-economic deprivation. The empirical investigation focused on variation by life-course and by environment type. Although the survey was conducted before the pandemic, by collecting and analysing this information using a 'Where? What? Why?' formulation, it is possible to better understand how populations in different urban

contexts and at different stages in their adult life perceive and use the outdoor environment, and the potential implications of such perceptions and behaviours for their health and well-being. Thus, by better understanding the characteristics of favoured outdoor environments, planners can replicate such characteristics as a means of responding to user-desires, thereby encouraging more frequent and meaningful use of public open spaces in our cities.

Visits to Outdoor Environments

To elicit responses, a standardised interviewer-administered household survey questionnaire with a mixture of closed and open-ended questions was designed with a particular focus on nearby green spaces. The survey was divided into six sections: (A) you and the outdoor environment; (B) your outdoor activity preferences; (C) your local area; (D) your health and well-being; (E) household information; and (F) general questions about you. The survey booklet extended to 20 A4 pages, comprising 217 unique variables. In each of the suburban case study locations in Waterford, a random sample of 300 addresses was drawn from the address model of the An Post GeoDirectory, a complete database of every address in Ireland (Fahey & Finch, 2012). In the urban environment, an inflated random sample of 600 addresses was drawn on the basis that earlier research had recorded low response rates in urban environments, particularly in locations where secure apartment blocks predominate (Douglas et al., 2019). This procedure resulted in 298 questionnaires being completed overall, 204 in the suburban environment within nine days, and 94 in the urban environment within ten days.

VARIABLE	URBAN (N=94) (%)	SUBURBAN (N=204) (%)
GENDER		
FEMALE	42.6	54.4
MALE	56.4	45.6
AGE		
18-34	53.2	21.6
35-54	37.2	35.3
55+	9.6	43.1
ORIGIN		
IRELAND (INCL. NORTHERN IRELAND)	25.2	91.2
ELSEWHERE	73.4	8.8

Table 1. Sample statistics for each neighbourhood type. Source: Authors

Table 1 reveals substantial diversity between the urban environment types which would be reflective of the typical profiles of such environment types in Ireland. The respondent age profile in the urban case study site was substantially younger than the combined suburban locations, with over 50% of respondents being younger than 35 compared to just under 22% in the suburban environment. Indeed, 43.1% of suburban respondents were aged 55 or over, compared to just

9.6% in the urban environment. As well as being older, over 90% of respondents in the suburban environment indicated their origin as Ireland, versus only 25.2% of urban residents. This clearly demonstrates the need to acknowledge population composition when considering user desires for green and open space attributes.

The survey opened with the administrator defining an outdoor space as 'any area outside of buildings', before asking respondents what type of outdoor environments they use or visit regularly. Respondents could identify up to four outdoor spaces that they used or visited regularly.

Where?

Respondents were first asked to identify the outdoor environment type where they undertake outdoor activity. Across the total sample, 'a public park or green space' emerged as the most commonly used or visited type of outdoor space. Following this, a canal or riverbank emerged as the second most commonly visited outdoor space. Respondents were also asked to indicate whether their most visited outdoor environment was in their local area, where 86.9% responded in the affirmative.

Disaggregating these responses, the most visited outdoor environment type by 18–35-year-olds was 'a public park or green space', with over half of respondents in this age cohort identifying this environment type. This suggests the potential importance of green space hubs such as parks for this age group. For the 35–54 age group, 'a public park or green space' was also the most visited environment. However, combined responses for 'a canal or riverbank', 'a coastal area or beach' and 'a greenway' exceeded 'a public park or green space' as the most visited environment types. This finding suggests that this middle-aged cohort (35–54) is more varied in the type of environment they visit, with linear green/blue environments emerging as important. For the 55+ cohort, 'a canal or riverbank' and 'a public park or green space' were almost equally identified as the most visited outdoor environments, followed by a 'coastal area or beach' and 'own garden'. The emergence of 'own garden' suggests the importance of nearby spaces for those in the upper age cohort who may be less mobile. Accordingly, this suggests the potential appropriateness of creating accessible environments which facilitate light or moderate physical activity.

The type of environment where each cohort walked was found to vary by context. In the urban context, 65.1% of those aged 18–34 identified public parks as the outdoor environment where they walked. This was followed by streets, roads, and footpaths (27.9%). Similar proportions were identified for the 35–54 cohort in the urban environment: parks and green spaces (61.5%); and streets, roads, and footpaths (26.9%). These two age cohorts comprised 89.7% of urban respondents who were active outdoors. This highlights the particular importance of public parks and green spaces (in conjunction with streets roads and footpaths) as locations for walking in the urban environment (Figure 2).

In the suburban context, different preferences were recorded, with greenways and trails emerging as the preferred location for walking among the 18–34 cohort (35.1%). Streets, roads and footpaths were next (29.7%), followed only then by parks (21.6%). Given the local availability of parks in the suburban case study locations, this potentially demonstrates a preference among 18–34-year-olds for linear and looped walks integrated into the urban landscape as opposed to dedicated park provision (i.e., green space hubs). For 30.6% of suburban 35–54-year-olds, streets, roads, and footpaths were the environment types where walking took place, followed by parks (27.4%) and greenways/trails (17.7%). For the 55+ age group in the suburban context, streets, roads and footpaths (38.6%) were the most common



Figure 2. Poorly designed public urban green space in Dublin. Source: Authors



Figure 3. Poorly designed suburban urban green space in Waterford. Source: Authors.

environment for walking, followed jointly by parks (20%) and greenways (20%). These results affirm the central importance of streets, roads, and footpaths for activity across all age groups in the suburban environment. Furthermore, it highlights the potential importance of green networks as opposed to green space hubs for activity across all age cohorts. As such, it provides nuance regarding the use desires of different cohorts in different parts of the urban environment, thereby countering presumptions that all city residents value parks above everything else in the creation of health and well-being enhancing environments (Figure 3).

What?

Across the entire sample, walking (including dog walking) was by far the most popular activity undertaken in the outdoor environment. This was quite consistent across age cohorts. In the urban environment, 66.2% of respondents identified walking as their primary outdoor activity. This was followed by visits to the playground, with 20.5% of respondents aged 18–34 and 19.2% of 35–54-year-olds offering this response. This suggests the potential importance of destinations for children’s play in addition to adequate walking routes for these cohorts. Here, respondents identified a secondary activity, with public parks specified by the majority in all age groups as the location where this activity took place, followed by streets, roads, and footpaths. Cycling (30.8%), running/jogging (23.1%), and socialising (23.1%) were identified as secondary activities for the 18–34 age group. For the 35–54 group, cycling (33.3%) and running/jogging (22.2%) were the key secondary activities identified. A negligible number of respondents aged 55+ in the urban environment identified a secondary activity.

In the suburban environment, walking was again the key recorded activity, with 81.7% of respondents identifying this as the primary activity they undertook outdoors. A total of 4.2% of 18–34-year-olds, 5.9% of 35–54-year-olds, and 2.3% of 55+ year olds identified visits to the playground as the activity they undertook in the outdoor environment. Here, 52 respondents identified a secondary activity. For the 18–34 and 35–54 cohorts, greenways and/or green routes/trails (including river and canal walks) were identified as the location where this took place. Cycling was identified by 50% of the 18–34 and 35–54 cohorts as a secondary activity that they undertook outdoors, dropping to 13.6% for those aged 55+. For this latter age cohort, socialising was an important secondary activity (27.3%), followed by another sport (22.7%), suggesting different use desires by different age cohorts in urban and suburban contexts.

Why?

Across the entire sample, ‘quiteness’, followed by ‘green landscape character’ were identified as the key characteristics that attracted respondents to their favourite outdoor environments. A preference for ‘quiteness’ indicates the role that many green spaces play as urban refuges from noise pollution and other urban stressors, which can be enhanced through effective landscape design. However, when compared across the urban and suburban samples, key differences could be identified according to age cohort. In the urban environment, ‘green landscape character’ (45.5%) was the most attractive characteristic for the 18–34 cohort, followed by ‘quiteness’ (22.7%). For the 35–54 cohort, green landscape character was also highly valued (33.3%), followed by ‘quiteness’ (29.6%). For the 55+ cohort, ‘quiteness’ was the most valued characteristic in the urban environment (42.9%). This suggests that, within the urban environment, significant value is placed on ‘green character’ which may well be perceived as lacking from their immediate residential environment, with ‘quiteness’ also being important, particularly for the 55+ age cohort. In the suburban environment, ‘quiteness’ was highly valued by all cohorts as a primary characteristic of their favourite outdoor environment – 18–34, 47.2%; 35–54, 51.7%; and 55+, 48.6% – substantially more than green landscape character, which was the second most highly ranked primary characteristic: 18–34, 13.9%; 35–54, 25%; and 55+, 31.4%.

Respondents were also asked to identify specific attributes, defined as ‘additions and improvements’, which would encourage them to use the outdoor en-

vironment. These ranged from streets, roads, and footpaths, to parks, greenways, and wilderness areas. Pre-defined response options were not provided. Instead, respondents were free to propose their own attributes in an open field, and these responses were subsequently grouped into 15 common themes. The table below categorises the responses and identifies the proportion of urban and suburban respondents who suggested each attribute.

ATTRIBUTE	URBAN (%)	SUBURBAN (%)
ENHANCED PEDESTRIAN INFRASTRUCTURE	28.7	43.6
IMPROVED PLAY FACILITIES FOR CHILDREN	9.6	21.6
MORE BINS, PARTICULARLY FOR DOG LITTER	10.6	20.1
ENHANCEMENT OF EXISTING PARKS AND GI	12.8	19.1
ENHANCED CYCLING INFRASTRUCTURE	4.3	9.8
IMPROVED STREET AND PATH LIGHTING	6.4	6.9
ADDITIONAL SEATING INCLUDING PICNIC BENCHES	4.3	3.4
ADDITION OF NEW PARKS INCLUDING DOG PARKS/AREAS	6.4	2.9
ADULT GYM EQUIPMENT	2.1	2.9
IMPROVED SPORTS FACILITIES	N/A	2.9
IMPROVED SECURITY	7.4	2.5
TOILET FACILITIES	2.1	2.5
ADDITION AND ENHANCEMENT OF GREEN ROUTES	3.2	N/A
CATERING FACILITIES INCLUDING COFFEE STAND	2.1	N/A

Table 2. Attributes for increased use of the outdoor environment. Source: Authors

Clear differences in responses emerged between urban and suburban environments, with a greater variety of attributes desired in the urban environment. This likely reflects the more heterogeneous profile of the inhabitants in this environment compared to the more homogenous profile of the suburban environment as recorded in the survey.

Planning Healthy Cities

In both urban and suburban environments, the enhancement of pedestrian infrastructure emerged as the most sought-after attribute which would encourage increased usage of outdoor environments. This includes the addition and enhancement of footpaths, pedestrianised areas, and pedestrian crossings, in addition to improved pedestrian signage and pedestrian safety measures, such as safety railings and traffic calming measures like speed ramps. Other attributes identified in both environment types included the enhancement of existing parks, including the extension thereof and the improved surfacing of walkways/cycleways. The addition of bins, particularly for dog litter, improved street and path lighting and more seating, including picnic benches, were also identified as

attributes which would increase the use of outdoor spaces. Other attributes, identified as important for the increased usage of the outdoor environment include improved play facilities for children, which was identified by over 20% of suburban and 9.6% of urban respondents. Similarly, enhanced cycling infrastructure was mentioned by both urban and suburban respondents. These findings supply greater nuance to our understanding of user-desires by clearly suggesting that some additions and improvements may be more effective in urban rather than suburban environments, and vice versa.

A notable finding across all age cohorts was the relative failure of ‘sports fields’ or dedicated ‘sporting infrastructure’ to emerge as the most visited environment type for a substantial proportion of respondents. Indeed, while 18–34-year-olds recorded the greatest proportion of primary visits to sports fields, this represented less than 5% of primary visits to outdoor environments for this cohort. However, this study did not include youth respondents (under 18), so this finding may well be exaggerated in the absence of views from the full life-course. It does, however, bring into question the tendency of open space policy and funding streams to focus on the provision of sports fields and other dedicated sporting infrastructure for health and well-being. Instead, for all age cohorts, key outdoor assets such as public green spaces (including city and town parks) and linking green and blue corridors (i.e., canals, riverbanks, coastal walks, greenways, etc.) emerged as the most visited environments (Figure 4). Based on our survey findings, in Box 1 we outline how this evidence translates to green space design principles.

Green space principles

- › Accessible spaces with good links (pedestrian paths and cycleways) to nearby neighbourhoods
- › A networked approach: emphasising green infrastructure networks (rather than isolated parks) can provide new opportunities for connecting existing and new green spaces and creating new linkages between urban and rural areas. Examples include greenways and linear parks, local greenways or cycleways that link to regional and national greenways, de-culverting watercourses to provide new blue corridors.
- › Inclusive design, catering for local needs from young to old and all physical abilities. Green spaces that are designed to support very specific functions tend to attract limited groups of users
- › Well managed and maintained, creating a high-quality environment: poorly managed spaces or vandalism prompt negative perceptions among potential users
- › Multifunctional uses: examples include spaces that encourage active mobility, physical activity and sports, relaxation and tranquillity, and opportunities for social exchange (e.g., incorporate community gardens, encourage park runs etc)
- › Enhance urban greening through planting strategies that mitigate noise and air pollution and maximise local biodiversity gain and facilitate sustainable drainage (e.g., deciduous wooded and wildflower meadow areas)
- › Create multisensory restorative environments that help mitigate the psychological stresses of modern living through the provision of ‘restive places for rejuvenation’.

Box 1. Translating evidence to design principles.



Figure 4. An accessible, networked and multifunctional approach to public urban green space provision (Naas Road Local Area Plan: greening strategy: Dublin). © Áit-Place, Urbanism + Landscape, 2013

Conclusion

There is general scientific consensus that public outdoor space, and green space in particular, provides benefits for enhancing health and well-being, both physical and mental. However, the identified benefits have yet to be fully translated into actionable interventions to be implemented in urban and regional planning. To address this 'implementation gap', the analysis presented in this paper adopted a 'Where? What? Why?' formulation that enabled the probing of those reasons for use and non-use of existing public outdoor spaces, with a particular focus on green spaces.

The analysis presented above suggests that the planning of public green space should be underpinned by an evidence-informed approach that understands in greater detail how these spaces relate to diverse 'user' needs across different cohorts. This suggests that enhancing public green spaces as health promoting environments requires that consideration be given not only to proximity and accessibility of green space, but also the specific design attributes that afford different groups opportunities for healthy activities and how peoples' needs vary over their life-course (Douglas et al., 2017). As such, it is clearly important to understand the salient aspects of green space that have a bearing on health and quality of life for each cohort (Figure 5).



Figure 5. An inclusive, networked, multifunctional and restorative environment (Balbriggan Riverpark: Dublin). © Ait-Place, Urbanism + Landscape, 2020

The study found that high quality green spaces and linking pedestrian infrastructures were identified as key features for health and well-being for adults of all ages in both urban and suburban environments. Furthermore, ‘quiteness’ and ‘green landscape character’ were identified as the overriding characteristics of favourite outdoor environments. These findings are corroborated by research undertaken during the Covid and post-Covid era, which identified the importance of greenspaces for population health and well-being (e.g., Noszczyk et al., 2022; Officer et al., 2022).

The analysis reveals that different age cohorts in different contexts (urban/suburban) value differently the attributes of public outdoor spaces. Hence, presumptions that ensuring proximity or access to green space might adequately addresses the challenge of healthy city planning are erroneous and may do little to encourage the more frequent use of such spaces. The study found that, while most respondents valued the opportunities that their local environments provided for walking and cycling, they were not fully satisfied with the current provision of pedestrian infrastructure and walking routes. The kind of provision that would increase their satisfaction and potentially their usage varied by environment type and age cohort. Hence, those involved in planning the public realm would do well to heed the need for greater sensitivity to a life-course perspective in the planning of healthy cities. More specifically, this study identified preferences among adults for a networked approach in the design of pedestrian routes in the urban and suburban environment and the need for a multifunctional approach to greenspace design which is context appropriate and responsive to local users’ needs. While this study did not include children and youth, the wider literature would support a similar perspective whereby multifunctional spaces are also important to this cohort (e.g., Mitra et al., 2020). As such, this study provides some further direction for action as we negotiate new challenges in the planning of public green spaces posed by the intensification of their use resultant from the pandemic-prompted localisation of living, working, and recreating.

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