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Perception, experience and the use of public urban spaces by residents of urban neighbourhoods

In cities, public green open spaces offer residents a potentially better quality of life. The behavioural patterns by which people experience and use these spaces is therefore a valuable source of information for spatial planning. Indeed, studying how these spaces are used has also shown a significant difference between the intentions of planners and users. Only the frequency of visits to these public green spaces ultimately testifies to their appropriate and successful planning. Based on empirical research conducted in a residential area of Ljubljana, this article addresses the significance and methods of obtaining information on the experience and use of urban open spaces by residents of that neighbourhood. The article identifies factors (that could also be used by planners) that significantly impact satisfaction levels among the intended users of the neighbourhood. The focus group method and socio-spatial schema method were used, based on the assumption that a multi-method approach provides more accurate and reliable information that is verifiable, and therefore more useful in developing planning policies. According to the research findings, residents perceive their "neighbourhood" to be the area around their home in which they know each other and socialise with neighbours. The factors that trigger a sense of satisfaction with their neighbourhood are well-maintained green areas in the vicinity of their home, parks with trees that provide spaces for a variety of activities, tree-lined streets, green areas connected into a system, the opportunity to use these areas for recreation and sports, and street furniture for rest or play. The spatial elements that hinder the use of such open spaces are, in particular, busy streets, unprotected pedestrian crossings, large garage areas and car parking.

1   Introduction

The public open spaces of a city are all those areas open to people's *freely chosen* and spontaneous activities (Lynch, 1960). They are aimed at both city residents and visitors, and are therefore quite open to public use, whereas private open spaces (gardens and yards) are exclusively intended for owners' use. Urban open space is comprised of both green and non-green areas intended to satisfy various needs of both residents and visitors.

Green areas include green covers, ornamental plants, parks, tree-lined streets, playgrounds, green areas in front of and between residential buildings, gardens, cemeteries, and natural areas with trees. Other (i.e., non-green) urban open spaces are the paved surfaces of playgrounds, sport facilities, walkways, cycling routes, yards, hard-surfaced squares, and so on. Open public spaces are supposed to be designed to provide users with the opportunity to choose among different activities. This article deals in particular with the open public space of cities. Green areas have been given special attention because they are the most important open spaces for making life in cities more comfortable and of better quality.

Different meanings and functions of urban open spaces make it possible to establish connections between a space and an individual as a user. Indeed, people usually connect with their physical and social environment; they are attracted to public open spaces when the environment succeeds in becoming an important part of their everyday life and meets their needs and expectations. Stephen Carr et al. (1992) believe that the different aspects of public open spaces are reflected in the opportunities provided to users; that is, in responsive, democratic and meaningful public spaces. Responsive public spaces satisfy different users' requirements, such as comfort, relaxation, active and passive engagement, discovery and socialising. Integrated open spaces facilitate different uses and are accessible to different groups of people ("democratic spaces"). They allow residents and visitors to lay temporary claims and control over the space, and also provide opportunities to socialise. Space becomes meaningful when a strong connection is established between the environment and the user. In residential neighbourhoods, a sense of belonging and safety is developed by an individual that is connected into society through the use of local services and through socialising. Hence, open spaces in residential neighbourhoods play a particularly important role because they should facilitate and encourage residents to socialise and connect.

The human environment has two components: the physical environment of everyday life and the social environment of mutual relations. The experience, use and behaviour of residents are influenced by demographic, social, psychological and cultural factors. According to Roger G. Barker (1968), the behaviour of users within a given space cannot be determined outside the setting in which it occurs because they both constitute a part of the whole. Hence he points out that the subject of study is not a user's behaviour in itself, but rather the behavioural setting. Without considering the principles of human experience (the psychological aspect) and the environment (the environmental-spatial aspect), one is unable to improve the living environment. A number of researchers (e.g., Proshansky, 1972; Lewin, 1974; Mehrabian & Russell, 1974; Gifford, 1987; Bechtel, 1997; Cassidy, 1997; Bechtel & Churchman, 2002; Zeisel, 2006) draw attention to the close connection between an individual's behaviour and environment as a living space.

A consideration of experience, perception and use of open space by city residents is important for successfully implementing user-friendly spatial planning. Because users' experience and values are not directly visible, planners often neglect these and consequently the space might not suit users' needs and requirements. This is exactly why studying this aspect is of key importance for quality spatial planning. The discrepancies between the views of residents and planners were already being highlighted in the 1970s by several researchers (e.g., Proshansky, 1972; Wandersman, 1976, 1979; Porteous, 1977). Despite the vital relevance of this relationship, planners continue to neglect users' role and opinions. Based on their research, a number of authors (e.g., Bratina, 1997; Cooper, 1998; Goličnik, 2005; Jole, 2008; Jacobs, 2009) have noted that the views and positions of planners and users may vary greatly. After a project is completed, the designers and planners are rarely interested in users' reactions. The basic indicators of whether people find open spaces suitable are whether they visit the space and their manner of using it. According to Jane Jacobs (2008), parks in neighbourhoods that are frequently and widely used are successful and well planned. Those not used because they are not attractive or suitable are bound to degrade.

This article addresses the method and significance of collecting data on the experience and use of open spaces by city residents, and indicates the opportunities offered by including these findings in urban planning. I studied the views of residents on public open spaces, their experiences and the use of one of Ljubljana's residential areas. The aim was to identify the factors that influence satisfaction among the residents and their spatial definition.

The methodology used was a combination of focus groups and socio-spatial schema. I believe that this multi-method approach provides more valid and reliable results that are there-

fore more useful in developing planning guidelines. If data acquired through different methods prove incompatible, this may indicate either an inherent controversy in the nature and content of the phenomena studied, or an improperly selected methodology.

The first part of this article addresses the planning and role of urban green spaces, the condition of existing green areas in residential neighbourhoods in Ljubljana and the significance of including the public in the design process to enhance urban planning. The second part presents the applied methods and the findings of the empirical research.[1] Finally, the article illustrates the application of the data acquired in planning urban open spaces.

2 The significance of green urban areas

Today, more than 50% of the population lives in cities as opposed to about only about 10% one hundred years ago. The population in cities and the degree of urbanisation is constantly increasing. Australia, New Zealand, North America and Europe are the most urbanised parts of the world, with an urban population varying between 75 and 80% (SLONEP, 2011). In Slovenia, nearly half of the population lives in urban areas.[2] Population density, lifestyle and the use of urban land have the greatest impact on the quality of life within cities. Green and other open spaces are of huge importance because of their multi-functionality. Indeed, they are vital for everyday relaxation and for offering an experience of nature within a city environment, as well as helping maintain good health. In addition to being aimed at play and recreation, these spaces also play an important role in the design of the cityscape. The growth of population density in cities also increases the demand by city dwellers for green and other open spaces. The residents seek opportunities for direct contact with nature and greenery within their living environment. Hence it is important that open urban spaces have a lot of green areas, rich in trees and vegetation. A survey of 386 European cities (Fuller & Gaston, 2009) showed that the average green space coverage was 18.6%, ranging from the lowest (1.9%) in Reggio di Calabria (Italy), to the highest 46% in Ferol (Spain). Per capita green space provision varied from 3 to 4 m² per person in Cadiz, Fuenlabrada and Almeria (Spain) and Reggio di Calabria (Italy). Coverage per person was highest (over 300 m²) in Belgium (Liege), Finland (Oulu) and France (Valenciennes). A comparison of all the European cities included in the survey showed that coverage was lowest in the south and east, increasing to the north and northwest of the continent. Vienna stands out among the capitals with about 50% of the city and its surroundings covered by green areas. Vienna was

declared by Mercer several consecutive times to be the city with the world's best quality of living, and it is also called a Green City (Vienna International, 2014). Berlin is another modern European capital with good coverage of green areas, in particular with regard to their size. Based on good planning, the open space of the former Tempelhof Airport (Trajekt – Institute for Spatial Culture, 2012) became an excellent example of revitalising a huge degraded urban area into a twenty-first–century urban park.

With its green areas, and notably the two forested hills that extend right into the city centre and its natural hinterland, Ljubljana is one of the greenest European cities. In fact, 44% of the Municipality of Ljubljana (Act on Executive Spatial Plan for the City of Ljubljana, Ur. l. RS, no. 78/2010) is covered with green areas (public and private). According to data provided by the Municipality of Ljubljana (2010), public green spaces in the capital of Slovenia account for 19% of the total green areas of the municipality, which amounts to 1,778 hectares or 66 m² per person. Petra Vertelj Nared and Maja Simoneti (2011) note that, although these data are relevant, residents do not enjoy a large consolidated area, but rather numerous smaller areas in very different conditions, some of which are not even suitable for the development and growth of trees. According to the authors, green areas in the more densely populated part of the city account for only 6.5% of the total green areas of the Municipality of Ljubljana (Vertelj Nared & Simoneti, 2011). Davorin Gazvoda (2001) draws attention to the fact that urbanisation is gradually eradicating these smaller green and open areas in Slovenian cities. At the same time, the green and other open spaces in Ljubljana are often poorly maintained in residential neighbourhoods; that is, the green areas between multi-residential buildings that play an essential role in everyday use and in providing a better quality of life. Most inhabitants of Ljubljana (nearly two-thirds according to the Statistical Office of the Republic of Slovenia, 2011)[3] live in apartments in multi-use buildings or in blocks of flats without their own green open areas. One-third of the capital's population lives in detached houses that are assumed to have at least some yard or green area, whereas most of the population has no such space. Hence it can be assumed that there is a great need for public green space and other usable open areas within the residential neighbourhoods of Ljubljana.

At the first international conference on the significance of green areas that was held in Ljubljana, Werner Lendholt (1970) gave an example of a newly developed residential neighbourhood in Bremen (Germany) where the residents found quality open spaces almost more important than the residential buildings themselves. Homebuyers often purchase apartments located in a better-quality living environment where the "micro-location" of open spaces around the apartment and its neigh-

Figure 1: Neglected street furniture in the green spaces between blocks of flats in the research area in Ljubljana (photo: Nataša Bratina Jurkovič).

bourhood has many green design features (Noiseux et al., 2010). According to Hans Skifter Andersen (2011: 108), one of the six important factors that offer a quality living environment (preferences for home surroundings and locations) is being "close to nature and peaceful surroundings." Rachel Kaplan et al. (1998) indicate that a natural environment in an urban area can foster wellbeing and enhance people's ability to function effectively. Various studies testify to the increasing significance of green areas and vegetation in cities (e.g., Kearney 2006; Noiseux et al., 2010; Thompson, 2010; Kyttä, 2011; Sullivan, 2011; Jankovič Grobelšek, 2012). These authors illustrate the importance of quality living with green design features for promoting the health and wellbeing of residents. The term "salutogenic environment" (Kyttä, 2011) refers to a living environment that supports a healthy way of life. Open green spaces exert a significant positive impact on people's behaviour and health.

Regarding the importance of green areas, legal regulations in spatial planning at the national and local levels emphasise the establishment of a green system within a city. They define standards[4] for the size of green and other open areas, as well as appropriate accessibility levels by residents.[5] Despite clear requirements in spatial planning legislation, both planning and implementation of green and other open areas in practice mainly goes in the opposite direction; that is, a decrease in the existing areas, in particular due to new construction and thereby densification of the built-up area. The presence and size of green areas are only two criteria for providing good-quality open spaces. What also matters is how these spaces are designed and maintained, as well as ease of access for residents and other users. The public acceptance of green and other open areas depends on the characteristics of the space, such as availability, quality and accessibility. Trends in numerous European cities demonstrate that the quality of

existing urban green areas is generally decreasing (Smaniotto Costa et al., 2008). Due to increasing redevelopment of open urban spaces in Ljubljana (Cigoj & Gazvoda, 2008) and the degradation or poor maintenance of existing green areas in their neighbourhoods (Figure 1), residents are increasingly aware of the importance of green areas. Reactions can be sharp when it comes to deprivation, reduction or even abolition of existing green areas due to the construction of new buildings in the urban setting.

3 Significance of integrating residents into urban planning

Before implementing changes and major developments, one must get to know a city, its public open spaces and life in the neighbourhoods. Lia Ghilardi (see Megla, 2012) gives the example of New York, which has areas that have emerged organically and spontaneously. The neighbourhoods, and the city itself, supported these initiatives that emerged randomly and were then successfully developed. Green areas beside abandoned railway tracks were improved in a project. The authorities understood that the local community needed a park where people could get together, rest and enjoy the green vegetation and trees. Instead of leaving the abandoned area as it was, they provided green cover and created a quality public space. A similar development occurred in Paris in 2007, when part of an abandoned railway beside a compact residential area was transformed into a dynamic park, the Jardins d'Éole, offering playgrounds and sports areas, walkways, socialising and rest areas (Figure 2), all of which improved everyday life in the neighbourhood and facilitated quality leisure time being spent in this outdoor green space (see Jole, 2008).

Prior to planning and implementing any changes, one has to get to know the lifestyle of the potential users as well as understand their use and experience of open urban places. The active integration of residents into the spatial planning process is highly recommended from the preliminary stages. It allows one to avoid the conflict situations that often arise between residents and the planners of major development projects of residential neighbourhoods over the provision of open public spaces. The question is how to identify residents' needs and requirements, understand their way of using open spaces and green areas and understand what is significant for residents, and thus help the project fulfil their needs and provide areas for enhanced quality living.

A number of authors (e.g., Gulič et al., 1985; Rus et al., 1994; Simoneti, 1996; Bratina, 1997; Abu-Ghazzeh, 1999; Goličnik, 2005, 2006; Jole, 2008; Kyttä, 2011; Bizjak, 2012, Ho et al., 2012) have determined that planning urban public space is far

Figure 2: The Jardins d'Éole park in the neighbourhood of La Villette (Paris) created on the bed of an abandoned railway. Illustrations of the area: a) central part, b) walkway along the blocks of flats, c) playground, d) platform and green cover, and the area bordering the railway (on the right) (photo: Nataša Bratina Jurkovič).

more successful when residents are integrated into the process in the early stages. Richard Sendi (2006) believes that a neighbourhood cannot be appropriately renovated without the active participation of the residents. Maja Simoneti (1996) points out that it would make sense to enforce more systematic integration of the residents into the design and maintenance of public green areas. The significance of collaboration between planners and users is also noted by Barbara Goličnik (2005). Referring to the example of Paris, Michele Jole (2008) emphasises the importance of considering the social dimension in the planning and construction of public parks and, based on research conducted in Nova Gorica, Nataša Bratina (1997) states that a user's experience of public open space is most often determined by psychological and structural aspects, as well as social usability. The psychological aspect is related to the direct experience and perception of a space, whereas the structural aspect shows that public urban spaces are an important spatial category in the urban structure. Further to this, Nataša Bratina (1997) notes that a multi-method approach is most appropriate when collecting such information because it allows users to participate and express their opinions. Ac-

cording to John Ziesel (2006), it is impossible to know how people perceive and experience the space unless they are asked. Marketta Kyttä (2011) also draws attention to researching the relationships between urban structures and the experiences of residents. She urges the necessity of such research not only at a general level, but also locality-specific. Such research has to relate to those that experience and use the space as well as the object or area of perception and experience. People experience their living environment more positively in lower-density neighbourhoods than in higher-density ones. The author also points out the rare application of environmental psychology research and theory in urban planning. In her opinion, urban planning should be more responsive to such research, which is primarily the task of spatial planners and designers.

Notwithstanding the impact that the living environment has on residents' satisfaction and comfort, several authors (Frick, 1986; Cooper, 1998; Massam, 2002) note that urban planners and designers in general do not excel in the environmental design of residential neighbourhoods where people should enjoy comfortable and high-quality life in public open spaces

Table 1: Focus group questions

Type of question	Question
Opening	Please introduce yourself and tell us how long you've lived in this neighbourhood.
Introductory	1. Do you use the green and other open spaces in the neighbourhood in your leisure time? How often do you use them?
Transition	2. How satisfied are you with the design and maintenance of the green areas in the neighbourhood?
	3. Are there enough green areas in the neighbourhood?
	4. Are the green areas adequately distributed?
	5. Are there enough other types of open areas?
Key	6. What do you like or find very good in the open spaces of the neighbourhood? Please explain your answer.
	7. What don't you like, or what bothers you about the open spaces of the neighbourhood? Please explain your answer.
	8. What do you usually do in the open spaces of the neighbourhood?
	9. What do you miss in the open spaces of the neighbourhood, or what activities can't you perform that you would like to?
	10. What do you as a user of these green and open spaces find as obstacles or as disturbing elements or issues in the open spaces of the neighbourhood?
Ending	11. What would you change to make the green and other open areas better or what improvements do you propose to the open spaces of the neighbourhood?
	12. Would you participate in voluntary maintenance of the open spaces and in making any improvements? How would you participate?
	13. Is there anything you would like to say but didn't have an opportunity to do so yet?

intended for daily use. The participation of residents and their opportunity to influence the decision-making process on spatial planning in order to improve the quality of life in residential areas are essential. If planners and designers do not know the needs of people living in a certain neighbourhood, they cannot appropriately plan and provide for improvements in these communities. Terry L. Cooper (1998) claims it is the task of those responsible in public administration to encourage participation in the decision-making process, in particular when it refers to planning new activities or renovating their neighbourhood. According to Cliff Moughtin (2003), it is important for planners and designers to pay attention to the users and their opinions, and to take note of the issues they bring up as well as their proposals. In his opinion, such collaboration could effectively help reduce the controversies that often arise between planners and users. Hence, data should be acquired by observing the behaviour of users of open urban spaces, and their opinions on the best use of open space within their own living area should be taken into consideration.

4 Methodology

In researching the perception, experience and use of open space in residential neighbourhoods, a combination of two methods was used: focus groups and a socio-spatial schema. The first method makes it possible to collect participants' opinions on various issues of perception and use of space, and the second facilitates a more accurate spatial location of data.

I sought answers to the following two sets of issues:
a. Experience and perception of space by residents:
- Perception of opportunities to fulfil their needs in open spaces;
- Significance of individual aspects of open space and its elements in experiencing these areas;
- Effect of open spaces on wellbeing and satisfaction;
- Interconnections between residents and neighbouring areas.

b. Use of open space in residential neighbourhoods:
- What areas they get together in and how they use them;
- Opportunities and restrictions on the fulfilment of their needs;
- Use of street furniture;
- Popularity of areas in the neighbourhood;
- Ratio between use of areas inside and outside the neighbourhood.

A focus group is a form of research in which a group of people actively participate and express their opinions. It is usually a meeting of a small number (from six to a maximum of twelve participants) that are guided in their discussion on a specific topic (Uwe Flick, 2009). It allows people to acquire

data on participants' viewpoints taken in the context of others' viewpoints. The discussion is based on the researcher's own plan or previously defined questions. The advantage of focus groups (see Zeisel, 2006; Barbour, 2007; Šarić, 2007; Stewart, 2007; Flick, 2009) is that they allow insight into a diversity of opinions on a specific topic.

Graphic and other visual approaches (cognitive maps) that determine how people imagine their environment and spatial relations offer useful data for spatial planning (Polič et al., 2002). They represent an individual's mental representation of space, which is a result of cognitive mapping of the environment, with location and content information. A socio-spatial schema (Lee, 1976) is one such method. On a cartographic map, participants circle the areas they most often use, those they consider their own, those they like and so on. This method has most frequently been used to determine the perceived area of a neighbourhood. In research on the perception of a local community (Polič et al., 1991) it has also been used to identify areas that residents find uncomfortable. The advantage of this method is that it provides quite accurate spatial locations for participants' answers.

Three focus groups were conducted in the research. The discussion was based on a pre-formed twelve-question checklist (Table 1) relating mainly to green and other open areas, and to their condition, quality and use. A socio-spatial schema was acquired through a colour cartographic map of the city displaying the research area. The participants were asked to mark certain places and areas on the map (home, neighbourhood, and comfortable and uncomfortable zones).

4.1 Research area

The research included residential neighbourhoods in the area around Vito Kraigher Primary School in the Bežigrad district of Ljubljana.[6] The area in question has sports fields and other facilities, green spaces, basic provision of services (shops, including a bakery, a hairdresser, a beauty salon, a watchmaker, an optician, various bars and restaurants, a primary school, three preschools, a church, a library, a police station etc.) and also some small companies and craft workshops. The central area encompasses the primary school with a complex of sport grounds, an urban park and playground (Figure 5), a paved platform that functions as a square (Figure 6) and a tree-lined street (Figure 7), which is the primary connection with the city centre for pedestrians and cyclists. The central area is surrounded by a combination of blocks of flats and single-family houses with gardens (atrium, terraced and detached houses). On the western boundary, which borders a railway, there is a small railway station. The buildings housing craft and commercial activities along the railway line are combined with mainly single-family detached houses. There are also some neglected and abandoned structures that are falling apart and make the area look disorderly and degraded (Figure 13).

Compared with other parts of the city, the research area has a lot of green areas. There are mainly smaller, rather poorly designed green covers between blocks of flats (Figure 8), some tree-lined streets, a large city park with plenty of trees and a playground, some individual green areas with poorly maintained outdoor play equipment, some cycling routes and a few walkways intended exclusively for pedestrians as well as private green areas, such as home gardens. Close to the boundaries of the research area there is a recently constructed modern city park with a playground (Figure 9), a walkway and a cycling route that encircles Ljubljana and connects other urban green areas and city districts. Open spaces designed for recreation and sports are a complex of sports fields behind the school, as well as a sports park for athletics, football, tennis and running located on the western boundary of the research area across the railway tracks.

4.2 Participants

Adult residents (eighteen and older) that live in the area were invited to participate in the focus groups. They were invited personally by e-mail, in which the purpose, the participation in groups and the course of work were all explained. Most of the people invited (90%) responded to the invitation and participated in the focus groups. They were mainly parents of children that attend Vito Kraigher Primary School as well as some other younger and older residents. The three focus groups had a total of twenty-seven participants, of which seven were men and twenty women. The participants also included a person with special needs in a wheelchair. The participants mainly knew each other. Their age varied from twenty to eighty-four years (averaging 44.4 years). Thirteen participants live in an apartment building and the remaining fourteen live in a house with a yard (detached or terraced). Three participants have lived in this area since birth, but most of them have moved in from elsewhere and have lived in the area between eight and seventy-three years. The community mainly includes families with one or two children, whereas the older participant lived alone.

4.3 Proceedings

Focus groups were held in February 2013. At Vito Kraigher Primary School, three groups with eight, nine and ten participants were held with a duration varying from a minimum of one hour and thirty minutes to a maximum of two hours and ten minutes. The discussion was moderated by a researcher working from set questions, and was recorded with the prior

Table 2: Experience and use of public green areas in three focus groups

| Public green and other open areas	All answers
	(according to questions asked)
Significance	Public green areas are very important for everyday leisure time. The proximity and arrangement of green and other open areas improves the neighbourhood's quality of living.
Type of use	Green and other open areas are mainly used for children's play, sports (in particular running and cycling), walks (with and without a dog) and for connection (on foot, by bike) to other parts of the city.
Arrangement and maintenance of green areas	The larger central areas of urban parks and playgrounds are well designed, but poorly maintained. Smaller green areas between blocks of flats were considered very poorly arranged, very neglected and abandoned although they are important for daily use and offer a place for short breaks for residents. They highly appreciate tree-lined streets used for walks and cycling.
Presence of green and other open areas	There are enough green and other open areas in the neighbourhood. According to the residents, they experience the neighbourhood environment as being a "green neighbourhood" while simultaneously pointing out the shortage of such areas at the boundary of the research area.
Zones they appreciate and like using	The central park with the playground in front of the primary school, the more recent urban park at the boundary of the research area, the walkway and cycling route around the city, the sports fields and areas for recreation.
Disturbing factors and zones they do not appreciate and do not like using	Poorly maintained green areas, the neglected and inaccessible city centre football stadium, poor visibility, a sense of danger in the garage area located next to blocks of flats, poorly maintained service areas with an open market, abandoned buildings, the disorderly space around the railway workshops along the railway line.
Obstacles to using public open areas	Very busy streets, uncontrolled level crossings near the sports park, streets crowded with too many parked cars, neglected area along the railway, obstacles on sidewalks, lack of crossings for disabled people and parents with baby carriages.
What is missing	A connected system of green areas,[7] additional cycling routes, more tree-lined streets. In the single-family housing neighbourhood, residents miss a platform for playing basketball, shared green areas with benches and spaces to get together with neighbours.
Participation in spatial design	Most would voluntarily participate in designing and maintaining the open space in their neighbourhood.
Various (what they wanted to add or say)	The district community is not active enough in connecting with the municipal community. Due to an increased number of apartment break-ins over the last few years, they especially pointed out the issue of neighbourhood security. Nevertheless, they said they mainly feel safe in public open spaces except at night in the zones without sufficient lighting.

consent of the participants. The discussion was casual and dynamic in all focus groups. The participants exhaustively presented their opinions and they interacted with each other. At the end of the focus group discussion, all participants – according to socio-spatial schema – marked the map with the point where they live, the area they perceive as being their neighbourhood, the comfortable zones they like and often get together in, and any uncomfortable zones they do not like and do not get together in. The participants exhibited a good orientation on the map and marked the required areas. During data analysis, the acquired graphic data of all the participants was combined into one cartographic base together with all the data gathered on individual perceptions of the neighbourhood, the comfortable and uncomfortable zones, and so on. The response for each subject topic was averaged in the following manner:

the areas where answers were dense and repeated several times were marked as an average answer on the cartographic base. Hence I acquired three socio-spatial schemas for each individual question. Figure 4 shows the average of the response from all participants regarding their definition of comfortable and uncomfortable zones. The illustration shows the locations of the most relevant zones and their intersections (zones perceived as being both comfortable and uncomfortable).

5   Results and discussion

The results of this empirical research are substantive and methodological. The substantive results identified key factors for consideration in planning a public open space. The meth-
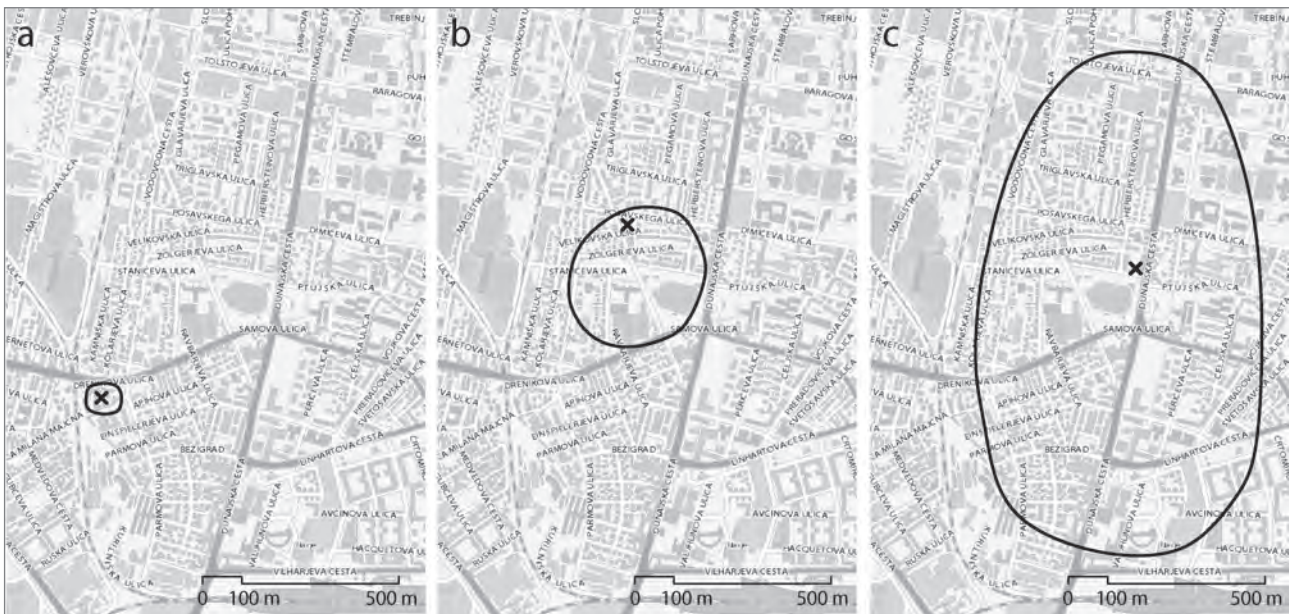
Figure 3: Examples of three extreme responses about one's neighbourhood on a socio-spatial schema; the place of residence (marked "x") and neighbourhood (circled): a) an example of a neighbourhood as a small area around a residence, b) an example of a neighbourhood as a medium-sized area around a residence, c) an example of a very large neighbourhood area (Illustration: Nataša Bratina Jurkovič).

odological results testified to the usefulness of focus groups when used in combination with the socio-spatial schema in identifying the factors relevant for acquiring data on spatial perception, use and planning. The results of both methods complement and do not exclude each other. The findings acquired in focus groups (comfortable and uncomfortable zones) were confirmed by the socio-spatial schema.

The participants provided useful data and offered proposals and critiques of the existing conditions that planners would do well to consider in renovating public open spaces in the research area. The findings of the focus groups (Table 2) pointed out the significance, use and condition of the areas in question, as well as the attitude of residents towards public green areas in their everyday leisure time. The residents expressed satisfaction with the extent of the green areas but not with their distribution, which is too centralised. In their opinion, the central areas are well designed but poorly maintained, whereas the smaller green areas (and in particular those between the blocks of flats) are rather neglected. They defined the obstacles they find disturbing in the use of open spaces, indicated shortcomings and activities they miss, and expressed their willingness to participate in redesigning the spaces. Attentive and concentrated participation in focus groups showed the interest of residents towards the condition of public green and open areas as well as towards their design and maintenance. The participants with yards by their houses said that, although they use them every day for relaxation, they still use public open spaces to do sports and other recreation activities or just to socialise. Due

to the lack or non-existence of such areas in neighbourhoods with single-family houses, their residents said they miss them.

The answers also show some significant discrepancies in residents' views, although the method is mainly aimed at acquiring common views. The discrepancies were most evident between the views of the younger and older participants. Younger participants believe the area is too quiet and lacks a centre to hang out and engage in activities. They miss a square with a bar, bakery and similar services (a "city beat") that could develop into a central meeting point for friends and neighbours. Older participants pointed out the very opposite; they want a quieter environment with more green design features, more waste bins and benches on the walkways where they could rest. Discrepancies also occur between the views of participants with families with preschool children and those with older children, who independently use open spaces. Those with small children stated that the diversity and design of playgrounds is adequate, except that some areas around the blocks of flats are neglected and the play equipment is not maintained. The participants with older children indicated a lack of small areas with urban equipment intended specifically as a children's hangout (such as place to play basketball or table tennis, several benches placed together for socialising, etc.). Parents that take their children for walks in baby carriages and a participant with a wheelchair noted that the open spaces are generally not adapted to physically disabled persons. In addition, they also mentioned poor visibility and unprotected crossings, and particularly an uncontrolled level railway crossing (Figure 10) that

COMFORTABLE ZONES

1 – City park with playground in front of the
      school
2 – North city park
3 – Ljubljana sports park
4 – Tivoli city park
5 – Sports areas
6 – Tree-lined street
7 – Neighbourhood of blocks of flats with yards
8 – Northern section of single-family house
      neighbourhood

UNCOMFORTABLE ZONES

A – Area along the railway line
B – Area between the railway line and the street
      with provision of services
C – Very busy streets
D – Southern section of single-family house
      neighbourhood
E – Petrol station with a large parking lot
F – Industrial zone

Legend

——— Comforable zones
•••••• Unconfortable zones

0   100 m   500 m

Figure 4: Illustration of comfortable zones that residents like going to and uncomfortable zones they do not like going to; average of all answers (Illustration: Nataša Bratina Jurkovič).

presents an insurmountable obstacle for disabled people and prevents them from reaching the sports parks and walkways on the other side of the track. There were some differences between the participants that live in single-family houses and those in blocks of flats. The residents from single-family houses miss shared public areas for hanging out with neighbours and for use by teenagers. They believe their private yards cannot fulfil the same need for a spontaneous hangout area for both teenagers and adults in close proximity to their homes.

As part of the research on preferences for home surroundings and locations, Skifter Andersen (2011) found differences in preferences between young people, families with children and the elderly. Young people's preferences are proximity to social networks, being close to city life and transport. In contrast, the proximity of social networks is not so important for the elderly; they expressed preferences for nature and peaceful sur-roundings. Findings from his study, conducted with Danes, are consistent with those from the participants in my research in Ljubljana.

The views and opinions of residents expressed in the context of focus groups facilitated the interpretation of the data acquired through the socio-spatial schema. The matters that participants raised during discussion were also marked on a map; that is, they were included in their socio-spatial schema. Most par-ticipants marked all of the required zones. It is interesting to note, however, that six participants marked only comfortable zones, claiming that there were no zones they considered un-comfortable. Some participants also marked zones outside the neighbourhood (i.e., outside the map area using a line and ar-row) where they like going: Tivoli Park, Rožnik Hill, Mostec Recreational Park, and Mount Saint Mary (*Šmarna gora*). These are elevated natural green areas that are very popular among citizens for walks and recreation.

5.1 Perception of neighbourhood

The examples from Figure 3 show that participants can perceive their neighbourhood in very different ways. Some perceive it as merely the area in close proximity to their residence (Fig-ure 3a, 50–100 m in diameter; ten responses) whereas others see the neighbourhood in a wider extent, covering nearly the total research area, or even broader (Figure 3c, 700–1300 m diameter; four responses). Some participants mark the neigh-bourhood as an oval area around their point of residence, whereas others precisely marked certain streets and spaces they find relevant on the map. Two participants indicated their neighbourhood to be the area close to their home that they find comfortable and liked going to. Hence their neigh-bourhood and comfortable zone intersect. Most participants perceive their neighbourhood as a medium-sized area around

their residence, at a scale that ensures they still know each other and where they get together with their neighbours (Figure 3b, 250–450 m in diameter; thirteen responses).

The definition of a neighbourhood and its functions has an important role in the experience and use of this space by its

Figure 5: Park with playground identified in the research as the central and most popular and frequently visited green area in the school district; a) playground, b) walkway in the park and c) outdoor play equipment in the park (May 9th Square [*Trg 9. maja*] 1, Bežigrad, photo: Nataša Bratina Jurkovič).

Figure 6: Area in front of the primary school that functions as a square, next to the central park with playground (May 9th Square [*Trg 9. maja*] 1, Bežigrad, photo: Nataša Bratina Jurkovič).

Figure 7: Tree-lined street and cycling route used as a primary connection with the city centre (Waterworks Street [*Vodovodna cesta*], photo: Nataša Bratina Jurkovič).

Figure 8: Smaller, poorly maintained green cover with outdoor play equipment (Glavar Street [*Glavarjeva cesta*], photo: Nataša Bratina Jurkovič).

Figure 9: Modern city park with playground and fenced dog area (north city park, photo: Nataša Bratina Jurkovič).

residents. Residents feel connected with the area and are more personally responsible and critical of events in an area they perceive as their neighbourhood than they are towards other parts of a broader area of everyday use. Jane Jacobs (2009) defines the meaning of urban neighbourhoods and argues that most residents of larger cities are very dependent on the functioning of their neighbourhood in everyday life, and at the same time they can fulfil their needs in the entire area of a city.

5.2 Comfortable zones

Comfortable zones are well represented and participants marked a large number and extent of these. The participants generally marked the total research area as comfortable for living and using. Comfortable zones were marked either as several smaller areas or more extensively, so they included all the popular areas they like using. If one compares all positive areas (Figure 4) marked by the majority of residents on the socio-spatial schema, it can be seen that all residents find the central park with a playground in front of Vito Kraigher Primary School (marked 1; for a photo see Figure 5) to be comfortable. They marked some additional individual areas (Figure 4): large city parks popular for playing, taking walks and

recreation (marked 2 and 4), a tree-lined street (marked 6) and the sports fields (marked 3 and 5). Some comfortable zones intersect with uncomfortable zones.

5.3 Uncomfortable zones

Uncomfortable zones are only identified in particular places and not throughout the research area. Residents were almost unanimous in the identification of these zones (Figure 4). They marked them along the railway line (marked with A; for a photo see Figure 11, and B; for a photo see Figure 13), which surrounds the research area, as well as some other smaller areas (Figure 4), such as very busy streets (C), a petrol station with a neglected parking lot (E), an industrial zone with a heating plant (F; for a photo see Figure 12). Some participants did not mark any uncomfortable zones because they did not perceive any as such. It is interesting that, regarding the area along the railway line, its southern section (A; for a photo see Figure 11b), appears twice, both as an uncomfortable and comfortable zone. This means that the area has potential, but should be redesigned according to the proposals set out by the residents.

Figure 10: Uncontrolled level crossing for pedestrians near the Ljubljana Sports Park (photo: Nataša Bratina Jurkovič).
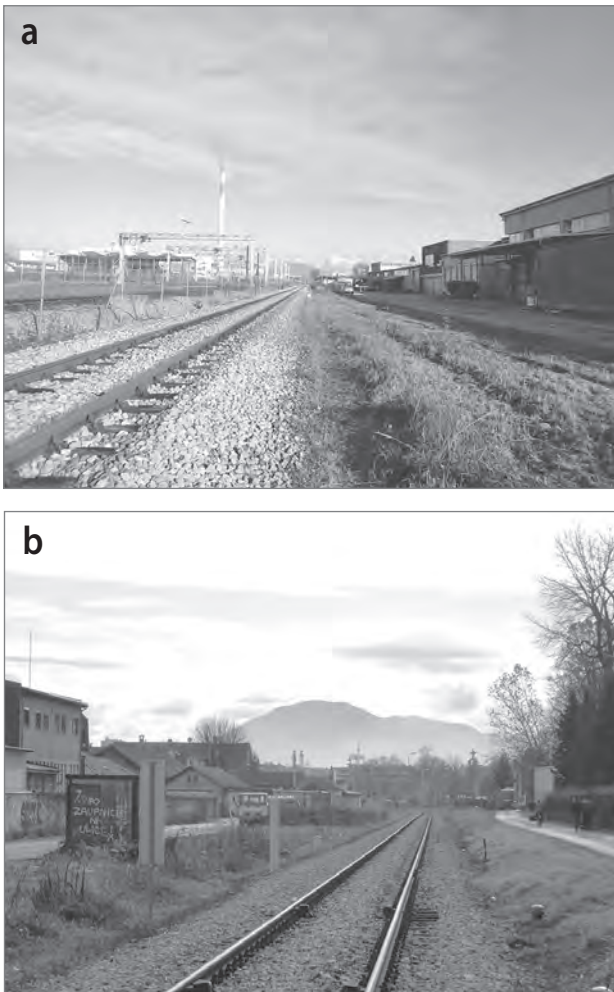
Figure 11: Degraded and neglected area along the railway line in the direction of Kamnik marked as uncomfortable: a) view north towards the Kamnik–Savinja Alps and b) view south (photos: Nataša Bratina Jurkovič).

Figure 12: Industrial area with heating plant (photo: Nataša Bratina Jurkovič).

Figure 13: Largely neglected area along the railway line at the boundary of the research area: a) structures falling apart, b) abandoned areas, c) route along the railway tracks and d) neglected areas with waste (photo: Nataša Bratina Jurkovič).

Another such example is the southern section of a single-family housing residential district (D) that is seen as uncomfortable, whereas a broader area of the same section of the neighbourhood is enclosed within a larger comfortable zone. This district is effectively divided into two sections: the northern section is marked as comfortable (8) and the southern section is seen as an uncomfortable zone (D). This can be explained by the fact that the zone marked as comfortable is better designed, with a small park, a playground, a coffee shop and a pet clinic as well as less traffic due to a cul-de-sac. On the other hand, the southern section (D) provides fewer activities and has several structures that are neglected or even falling apart; in addition, it has constantly flowing traffic.

According to the answers given in the focus groups, the number and extent of marked comfortable and uncomfortable zones on the cognitive map depend on the residents' activity and their use of green and other open spaces within their residential neighbourhood. Participants that intensively use open spaces for everyday relaxation, physical exercise and other forms of recreation know the research area far better, and so they marked several different zones on the map. Participants that hardly ever or never use green and other open spaces in their residential neighbourhood marked only small zones around their home because they are not familiar with the broader area.

5.4   Spatial planning guidelines

The research findings show that residents find open public spaces in residential neighbourhoods very important. It illustrates how their perception of comfortable and uncomfortable zones, their condition, the design and maintenance of green and other areas, and the disturbing elements and obstacles in the spaces are all reflected in residents' everyday use. Some findings are expected; for example, the positive impact of regular maintenance of green areas and the provision of various activities in all open spaces. Some factors are mutually interdependent; if open spaces are well planned and custom-designed for the residents they are frequently visited and used, whereas if they are neglected, degraded or restricted by obstacles, they are empty – although they have the potential to be renovated and improved.

Based on my findings, I formulated some guidelines that can be applied to public open space planning in urban residential neighbourhoods:

- Proximity, good design and regular maintenance of green and other open areas are important if they are to offer a better quality of life in the neighbourhood.
- Residents use green and other open areas for a variety of activities, and therefore such activities have to be included

at the design and planning stage. Tree-lined streets forming green corridors for use as walkways and cycling routes are considered very important by residents. Diversity of use is seen to be advantageous and an attraction within urban open spaces.
- Planners and investors need to pay more attention to the quality of design of the smaller and more fragmented green and other open areas that lie in close proximity to residential buildings, and not just concentrate their design work on the larger central areas (such as parks, playgrounds and sports fields).
- Green ground areas in residential areas have to be evenly distributed and interconnected in a system that allows users to freely pass from one zone to another.
- The zones they appreciate and therefore like using are usually of high-quality design and are regularly maintained.
- The zones identified as uncomfortable are acting as disturbing factors in the urban space and need to be renovated and redesigned as soon as possible.
- The particular obstacles to the better use of open spaces are very busy streets, major intersections, uncontrolled street and level crossings, blocks of garages and parking areas with poor visibility, and any other neglected and degraded urban areas.
- What residents particularly wish for, and should therefore be considered in renovating or improving neighbourhoods, is a network of green areas connected in a green system, whereas single-family house residents wish for shared public open areas to get together in, even though they have private yards.
- Residents find security in their neighbourhood important, and so they expect good lighting on principal walkways and cycling routes.
- Generally, residents perceive their neighbourhood as a medium-sized area around their home, an area where they still know neighbours and where they get together with them. They are attached to this area, and find it very important; they perceive it as theirs and identify with it.
- Collaboration between the city district and their own neighbourhood is seen as very important. They believe they can help solve problems in their neighbourhood and thus influence city policy. In their opinion, the current level of collaboration is highly deficient.

5.5   Compliance of both method results

The results show compliance between data acquired by individual methods. This might be attributed to the consecutive implementation of proceedings, whereby the second (socio-spatial schema) followed the first, which addressed the research subject. The findings of other researchers (e.g., Lee,

1976; Polič, 2002, Kim & Penn, 2004; Lynch, 2010) suggest that the spatial features of configurations in real environments and the spatial features of cognitive maps in spatial cognition are closely related and in general they conform. Other researchers used methods individually for studies in spatial use and experience, but I have not noticed anyone using them both in a single research project. James Potter and Rodrigo Cantarerro (2006) indicated they used focus groups in their research as a preliminary method and used the results gathered to facilitate the formulation and adaptation of a subsequent questionnaire. Some authors (Kim & Penn, 2004; Kuipes et al., 2006; Lynch, 2010) note the successful use of different methods in the analysis of cognitive maps, which are graphical methods of providing spatial definition to answers on cartographic plans or sketches of a space drawn from participants' memory.

My research has shown that spatial characteristics such as traffic density, railway lines, parking lots, the existence of natural features, good or poor visibility, accessibility, maintenance or neglect, elements of urban furniture and other physical characteristics of the living environment all have an impact on the perception, experience and use of open public spaces. Any of these factors may function as obstacles that prevent or limit its use or, conversely, act as stimulators to promote use. Natural elements and good-quality well-designed open spaces have an important role in developing a sense of community. Green areas that provide several activities encourage residents to use them, and accordingly this increases the probability of social interaction (Kim & Kaplan, 2004). Parks and park-like public areas are dependent on usage and the acknowledgement and acceptance by residents (Jacobs, 2009). According to Jane Jacobs, it is only people actually using parks that determines whether they are popular or not. In her opinion, parks directly and expressively depend on the impact and attitude of the residents of that neighbourhood towards them. One has to be aware that only through an adequate allocation of spatial elements in an open space can planners allow full participation in activities by those living in the neighbourhood and thereby affect their use, experiences and perceptions of that space.

The focus group discussions showed that the spatial elements that make use and contact with green areas and other open spaces difficult are in particular busy streets and railway traffic, uncontrolled level crossings and crowded parking lots. Areas with poor visibility, such as garages and passageways, can also be perceived as dangerous and uncomfortable due to neglect and potential vandalism. Spatial elements that work as stimulators are mainly natural elements (trees and green cover) and elements of urban equipment that allow rest, sitting, and chatting, and offer views and at the same time privacy, even allowing the opportunity to rest, read and chat, as well as elements for play and sports activities. Nico Larco et al. (2012)

indicate that cities require pedestrian-friendly designs when planning open spaces because this allows frequent visits and "urban vibrancy".

William Sullivan et al. (2004) believe that the presence of trees and green cover results in a substantial increase in the use of open spaces. They determined that the physical characteristics of open space influence social contacts among neighbours and they can demonstrate that nature plays an important role in creating vital neighbourhood spaces. Stimulating spatial elements allow both passive and active engagement, relaxation, comfort and safety. According to Takemi Sugiyama et al. (2009), comfort and safety of open spaces are important characteristics for offering satisfaction with an urban neighbourhood. Anne R. Kearney (2006) argues that the proximity of shared open spaces with elements of nature has a positive impact on neighbourhood satisfaction ratings because residents are able to use the areas every day as well as have a natural view from their home. Fewer urban design characteristics that present obstacles and more stimulating elements on offer result in more socialising among residents and users, and promote a higher quality of life within a neighbourhood. The ratio between both of the forms mentioned above creates either a stimulating or inhibitory coefficient that – as a factor of social interaction and comfort – reflects the impact on the living environment. At the same time, one should bear in mind that good-quality well-designed open spaces with green areas in urban neighbourhoods play an important role in potential homebuyers' decision-making. Krystal Noiseux and Mark E. Hostetler (2010) suggest that planners consider that green design features are an important consideration for people's selection and purchase of an apartment. City investment in public open spaces in residential neighbourhoods has a vitally important role in increasing the quality of life for residents (Pallares-Barbera et al., 2011; Wu, 2013).

My research, and other similar research, may serve as a basis to prepare guidelines for planners and officials in spatial planning and for investors to improve and renovate the areas researched. My research presented the key points, the most popular and frequently visited areas, the obstacles and disturbing elements to the use of public open spaces, what the major issues are, what residents miss and what they want to change and improve in their neighbourhood.

6   Conclusion

This article illustrates how data were acquired on the experience and use of urban open spaces among residents, identifies the factors that significantly impact residents' satisfaction, and indicates the need and opportunity to integrate the key findings into urban planning guidelines. Based on the results,

the combination of focus groups and socio-spatial schema is a reasonable approach and offers an improvement of both methods regarding the reliability of the results and the spatial mapping of the data collected. The research has produced much useful information required for planning an urban living environment, such as the need to offer more tree-lined streets, the significance of regular maintenance and the renovation of smaller neglected green covered areas, and the provision of outdoor play equipment and more benches – especially on neighbourhood boundaries and not only in large city parks. There is a need to design a connected system of green areas that provides access to other urban complex green areas, and the formation of a green corridor along the currently neglected railway zone. Subject to particular criticism were designs that fail to provide access for the physically disabled. Notwithstanding their own yards, the residents of single-family houses still miss the provision of smaller public green areas with outdoor play equipment, and some benches in the area to get together in. The zones identified as uncomfortable and neglected definitely require renovation and improvement if they are to meet residents' needs. Zones marked as comfortable (together with arguments from the focus groups' discussions) function as central areas of events and are heavily used by both residents and visitors alike. Residents generally perceive their neighbourhood as a medium-sized area around their home, of a diameter that ensures that they still know their neighbours and in which they get together with them. In discussions, they were usually most critical about this area and offered the greatest number of proposals for improvements because this is an area of everyday living and hence they know it best.

If the renovation plans in cities are implemented without the participation of residents and other users of a neighbourhood or broader community area, there is a risk of inappropriate or even poor programme planning. Residents are sensitive to large-scale interventions by planners to existing open spaces, and such developments usually upset them because they do not actively participate in redesigning their living open space – a place they might even call their own "back yard". The research showed that this is how residents perceive the open spaces in their residential neighbourhoods. Real insight into what a community wants requires comprehensive analysis and contact with the local population. The public open space has to be examined from different perspectives, at different times of the year or times of day, the course of everyday life should be observed and the views and opinions of users should be discovered. One must not neglect users' opinions based on the argument that they are not planning experts. It is important that urban development plans, public open spaces and especially open spaces in residential neighbourhoods not simply be planned in offices separately from the end-users, but with their participation. The investors in and planners of residential

areas should bear in mind that high-quality and attractively-designed public open spaces with green areas represent added value to any apartment – a value they can use in marketing – and it can often be a decisive factor for someone purchasing an apartment.

Based on research findings, I conclude that the interest of both residents and the public towards open urban space can be directed through creative participation in urban spatial planning and the design of new activities. At the same time, public participation in the early stages of background research is reasonable and will help ensure the creation of quality and useful public open spaces. Such spatial research and analyses produce results that can provide useful guidelines for better-quality spatial planning and urban development.

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Notes

[1] This research is a part of the author's doctoral thesis, *The perception of living space and the behaviour of residents in urban neighbourhoods.*

[2] According to the census, on 1 January 2011 49.8% of the Slovenian population lived in urban areas (Statistical Office of the Republic of Slovenia, 2011).

[3] Author's own calculation of data into ratios based on the number of residences by type of building and the number of occupants, taken from the census (Statistical Office of the Republic of Slovenia, 2011).

[4] Standards for green areas in the Municipality of Ljubljana stipulate: "Every new apartment in a residential building has to be provided with a minimum of 15 m² of green cover, of which, at least 5 m² has to be provided for ball games to meet the needs of older children and teenagers, and at least 7.5 m² of the area must to be intended and designed for smaller children (up to 12 years) to play and for the remainder of residents: 4 m² for play areas and 3.5 m² for green cover" (Executive Spatial Plan for the City of Ljubljana, Ur. l. RS, no. 78/2010: 11441).

[5] "The allocation of green areas in compact urban areas has to be planned in a way that it provides residents with ten-minute safe access on foot" (Decree on Spatial Order in Slovenia, Ur. l. RS, no. 122/2004: 14711).

[6] The research area covered lies between Vienna Street (*Dunajska cesta*, to the east), Mašera–Spasić Street (*Mašera-Spasićeva ulica*, to the north), part of Podmilščak Street (*Podmilščakova ulica)* and the Ljubljana–Kamnik railway line (to the west) and Engine House Street (*Kurilniška ulica*, to the south).

[7] Residents want an interconnected system of green areas to provide green links along the way to the city's Tivoli Park and elevated natural green areas, such as Rožnik Hill, Mostec Recreational Park and Mount St. Mary (*Šmarna gora*), which are very popular among residents for walks and recreation.

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