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Analysis of Selected Urban Quality of Life Indicators in the City District of Stenjevec, Zagreb

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ABSTRACT The aim of this paper is to analyse the urban quality of life in the City District of Stenjevec (City of Zagreb) based on selected objective and subjective indicators. Objective indicators show the level of accessibility to selected variables within the District, but the concept of urban quality of life is primarily understood as residents' level of satisfaction with four relevant domains (environment, transportation and infrastructure, accessibility of amenities and services, accessibility of sports and recreational facilities) and associated subdomains (N 31). The research was conducted on two levels. The first level was comprised of the analysis of accessibility in terms of walking distance to the kindergartens, elementary schools, bus stations, sports facilities and playgrounds. Geographic information system (GIS) was used to make a typology according to which areas within the District with excellent, good and poor accessibility have been identified. The second level of research based on subjective indicators included a questionnaire survey in order to find out the respondents' level of satisfaction and their evaluation of the District. The questionnaire survey was conducted in November of 2018 on a purposive sample of 228 respondents from all six local committees belonging to the District. The research results show that the District of Stenjevec has objectively satisfactory accessibility to the observed variables in most of its parts. Additionally, the results show that the respondents perceived it as a peaceful city district that is good for families, with the amenities and services easily accessible. On the other hand, some perceived disadvantages clearly show in which directions further steps are needed, in order to make urban quality of life in the District better.

Key words: Urban quality of life, objective indicators, subjective indicators, City District of Stenjevec, City of Zagreb.

1. Introduction

Quality of life refers to the overall well-being, i.e. the level of satisfaction with life. Life satisfaction of an individual is determined by external (objective) factors of their life, as well as by internal (subjective) perception and assessment of these factors (Salzai, 1980). Quality of life is such a complex concept that it is very difficult to understand it from a single perspective. Depending on the scientific perspective which investigates quality of life, aspects of the concept the researchers are turning their attention to also vary (van Kamp et al., 2003; Slavuj Borčić and Šakaja, 2017).

In geographical research on quality of life the main focus is on space. In other words, the ultimate goal of research is to acquire knowledge about a certain place, i.e. its characteristics that affect the quality of life of residents (Slavuj Borčić and Šakaja, 2017). Accordingly, geographical research on quality of life pays particular attention to elements such as accessibility, distance, distribution and overlapping of different natural and social phenomena in space (Krevs, 1998). The quality of life differs not only from person to person but also from place to place (Andraško, 2009), i.e. it depends to a large extent on a specific place of residence. Namely, every place of residence has both its advantages and disadvantages, and it is important to recognize them in order to minimize their effects on the quality of life of the residents or, even better, eliminate them completely.

The spatial scale at which the quality of life is to be investigated is an important issue for geographers. It primarily determines the degree to which knowledge about the quality of life will be generalized. The larger the scale of research and the larger the population, the higher the degree of generalization about the quality of life in the given place. One of the basic goals of geographical quality of life research is the applicability of the results obtained, and therefore, local-level analyses are most appropriate for such research. It is precisely such research that can provide relevant information which can be used to guide urban development policies. According to the results obtained, it is possible to develop different projects for the purpose of improving the quality of different places, for example the improvement of infrastructure and public transport, spatial distribution of schools and kindergartens, healthcare centres, sports facilities, green spaces, etc. (Mirošević and Jolić, 2015). In addition, there is much empirical evidence suggesting that it is important to investigate the relationship between people and places in order to understand and improve their overall quality of life. Namely, previous studies have shown that satisfaction with one's immediate living space and place of residence makes a significant influence on satisfaction with other aspects of life, as well as the overall life satisfaction (Jeffres and Dobos, 1995; Michalos and Zumbo, 1999; McCrea et al., 2005; McCrea et al., 2006; Horelli, 2006; Sirgy et al., 2000; Sirgy and Cornwell, 2002; Moro et al., 2008; Campbell et al., 1976).

In line with this consideration, geographical research on the urban quality of life have been conducted several times in Croatia thus far. Complex analyses at the level of statistical circles, local committees and city neighbourhoods based on objective

and subjective indicators were conducted in the cities of Zadar (Šiljeg et al., 2016; 2018), Rijeka (Slavuj, 2011; 2012a; 2012b; 2012c) and Požega (Mirošević and Jolić, 2015). A number of sociological papers (Svirčić Gotovac, 2015; Svirčić Gotovac and Zlatar, 2012; 2015a; Svirčić Gotovac, 2006; Rogić et al., 2004; Seferagić 1988; 1991; 1993 and other) and interdisciplinary papers (Podgorelec et al., 2017; Klempić Bogadi et al., 2016; Rogić et al., 1996) made a significant contribution to the understanding of the quality of life in Croatian settlements as well.

This paper is a contribution to urban quality of life studies at a local level. The aim of the research was to analyse the urban quality of life in the City District of Stenjevec (City of Zagreb) based on selected objective and subjective indicators. Although both of the indicators were used, the concept of urban quality of life was primarily observed as residents' subjective assessment of the aspects of urban environment relevant for the concept.

2. Research methodology and spatial framework

The urban quality of life analysis in the City District of Stenjevec was conducted based on objective and subjective indicators. Objective indicators have been in use since the 1960s in the quality of life research. They reflect objective conditions of a given place and are independent of subjective evaluations (Slavuj, 2012; Slavuj, 2014). Subjective indicators began to be applied during the 1970s due to the understanding that objective indicators cannot capture the complexity of the concept (Campbell et al., 1976; Andrews and Withney, 1974). Subjective indicators reflect individual perceptions and evaluations of external objective conditions and demonstrate the extent to which the subjective expectations of individuals have been met. Given that these types of indicators encompass different aspects of the quality of life, many scholars agree that it is important to combine them in order to embrace this multidimensional concept from different angles and gain a better understanding of it (Diener and Suh, 1997; Veenhoven, 1997; Noll, 2000; van Kamp et al., 2003; Michalos, 2005; Slavuj, 2012d).

The aim of analysis based on objective indicators was to identify areas within the District according to accessibility to the selected spatial variables. Variables used were selected on the basis of relevance to the topic and the availability of spatial data. Selected variables are as follows: accessibility of kindergartens, accessibility of elementary schools, accessibility of bus stations and accessibility of sports facilities and playgrounds. The purpose of applying these objective indicators was to obtain an insight into the objective situation in the District, regardless of the subjective evaluation of the respondents. Although the accessibility analysis was first performed for each variable separately, the paper presents aggregated accessibility results, i.e., the typology of accessibility of areas within the City District of Stenjevec. In other words, areas with excellent walking accessibility to kindergartens, elementary schools, bus stations, sports facilities and playgrounds, as well as those with good and poor accessibility to the mentioned variables were identified. These different

accessibility levels ultimately affect the urban quality of life in each local committee of this District. The analysis was made on the basis of residential-mixed land use according to the City of Zagreb Master Plan 2016. The data on the spatial location of selected variables were obtained from the City Office for the Strategic Planning and Development of the City. The western and southern part of the District (predominantly Stenjevec-South and the smaller part of Špansko-South) was excluded from the analysis because this area is intended soley for industrial and commercial use. ArcGIS 10.4.1 software was used to analyse the data collected. In addition, the 2001 and 2011 Population Censuses for the City of Zagreb (at the level of local committees and city districts) were used.

The second level of research, based on subjective indicators, included a questionnaire survey in order to find out the respondents' level of satisfaction and their evaluation of the selected characteristics of the District.

The questionnaire survey consisted of a total of 18 questions. Residents' satisfaction with four selected domains of the urban quality of life (environment, transportation and infrastructure, accessibility of amenities and services, and accessibility of sports and recreational facilities), i.e. with the associated subdomains was examined (N 31). Five-point Likert scale was used, with values determined as follows: *1 – extremely dissatisfied, 2 – mostly dissatisfied, 3 – neither satisfied nor dissatisfied, 4 – mostly satisfied, 5 – completely satisfied*. Questions about the greatest advantages and disadvantages of the District offered respondents the option of selecting a maximum of three closed-ended answers, while the question about suggestions/measures to improve the quality of life in the District was open-ended.

The questionnaire survey was conducted in November of 2018, using a purposive sample. The criterion for the selection of the sample was the place of residence (City District of Stenjevec) and the age of 18 or more. A total of 228 respondents were surveyed, with the basic guiding principle being that a dispersed sample should be collected, i.e. that the locations covered within the District should be as diverse as possible. At the same time, an effort was made to collect a proportional sample in each local committee, consistent with the number of residents of each local committee in relation to the total population of the City District of Stenjevec (City of Zagreb, 2018a). The share of respondents in the sample by place of residence is shown in Table 1. Most of the respondents were from the local committees of Špansko-South (27.2%), Špansko-North (24.6%), and Malešnica (17.5%), while the smallest share of respondents was from the "Matija Gubec" local committee (4.4 %).

Table 1.
Population in 2011, average population density, and number and share of respondents

Local committee	Population (2011)	Population density (population/km2)	Number of respondents	Sample share (%)
Malešnica	9,516	13,791	40	17.5
"Matija Gubec"	3,668	11,462	10	4.4
Stenjevec-South	7,898	958	36	15.8
Španski-South	13,510	13,376	62	27.2
Španski-North	10,731	15,330	56	24.6
Vrapče-South	6,067	5,014	24	10.5
Total	51,390	4,219	228	100

Source: City of Zagreb, official website of the City of Zagreb, 2018a; 2018 questionnaire survey

The questionnaire survey was conducted in two ways. Most of the data were obtained by a face-to-face survey (N 157) upon visiting local committees and selecting respondents based on their location of residence. The second part of the data was collected through an online survey form (N 71) published in the Facebook group called "Zakaj volim Španski" (The Reasons Why I Love Španski District) numbering over 11,000 members (mostly residents of Španski, but also of other parts of the Stenjevec District). Given the purposive sample that was used, the data collected by the questionnaire survey cannot be generalized on the District level, but they do provide a valuable insight into the satisfaction levels and evaluations of the respondents encompassed by the survey.

The sample included 60.5% women and 39.5% men. According to age structure, the largest number of respondents belong to the age group of 30-39-year olds (36%) and 18-29-year olds (27.2%). A quarter of the respondents (25.4%) are in the age group of 40-49-year olds, 7.9% of the respondents are in the age group of 50-64-year olds, and 3.5% of the respondents are aged 65 or more. The sample included 78.6% of employed population, 11.4% of students, 6.6% of retirees and 3.4% of unemployed population.

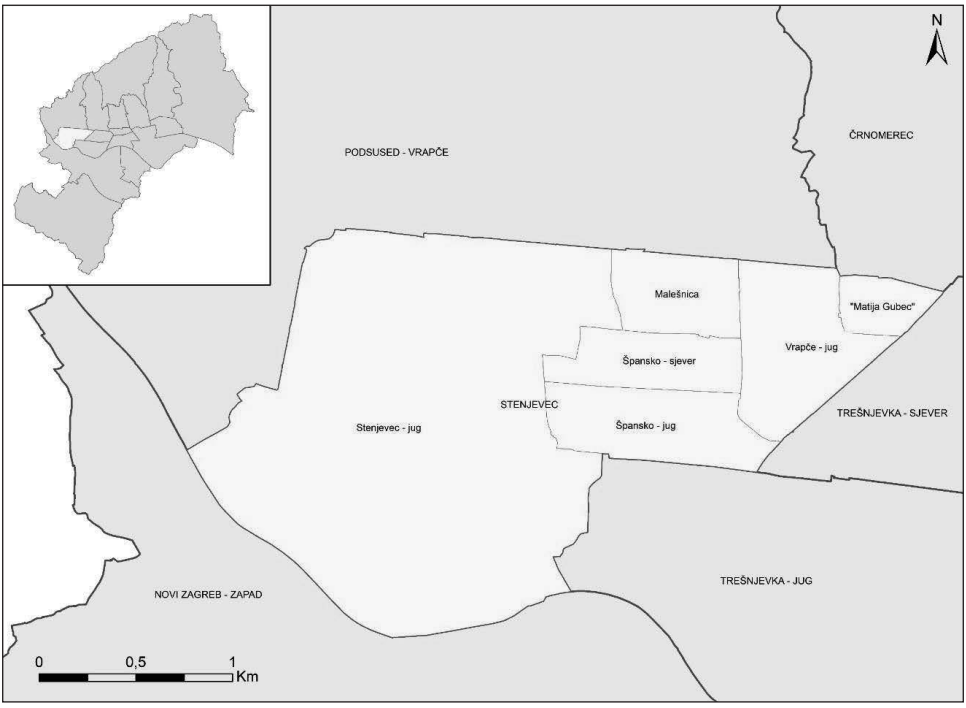
2.1. Spatial framework of research

The spatial framework of research is the City District of Stenjevec (City of Zagreb). The City of Zagreb's formal administrative-territorial structure consists of a total of 17 city districts and 218 local committees. The City District of Stenjevec consists of 6 local committees. The local committees are as follows: Malešnica, "Matija Gubec", Stenjevec-South, Španski-South, Španski-North, and Vrapče-South (City of Zagreb, 2018a).

Two thirds of the District area are urbanized, with the eastern part being the most urbanized and densely populated. This is especially true of the local committees of Malešnica and Špansko, where the residential character prevails, mostly in the form of apartment buildings. The high density rate is partly due to the state-subsidized housing construction programme (POS) in the south-eastern part of Špansko (Špansko-Oranice) where 31 new apartment buildings were built in the 2001-2009 period. On the other hand, in the areas of the "Matija Gubec" and Vrapče-South local committees, single-family homes, certain sole trades, and smaller companies prevail. In the north-western part, in the area of the Stenjevec-South local committee, mostly business amenities prevail. Up until recently they were typically industrial, but as of recently they are becoming more and more commercial and service and sole trade-based. Only the northernmost parts along the street of Samoborska cesta and the easternmost part next to Malešnica have a residential function. The southern part of the District (Stara loza), is mostly uninhabited (except for Savska opatovina) and is dominated by agricultural areas and a forest along the Sava River embankment (this applies to the area south of Ljubljanska avenija street to the Sava River (City of Zagreb, 2018a).

The City District of Stenjevec has a population of 51,390 (2011). In the 2001-2011 period, the population increased by 27.4%, which is the largest increase compared to all other city districts (Rajić et al., 2016). At the level of local committees, the largest relative population increase was recorded in Vrapče-South (44.2%), followed by Špansko-North and Špansko-South (both 36.5%), Stenjevec-South (28.9%) and Malešnica (10.8%). The "Matija Gubec" local committee increased its population only slightly, by 0.6%. In the 2001-2011 period, the city District of Stenjevec recorded the second highest natural population increase (2,566 inhabitants) out of all the districts in the city of Zagreb, just behind the Sesvete City District (2,725 inhabitants) (Rajić et al., 2016). In addition, a low ageing index (71.5) clearly illustrates a very young age structure of the Stenjevec District compared to the City of Zagreb, in which this index is much higher and stands at 118.9 (City of Zagreb, 2018b). The educational structure of the Stenjevec population is dominated by residents with completed secondary education (54.6%), while more than one fifth of the residents (27.2%) have completed university education. This is followed by residents with: completed primary education (12.6%), incomplete primary education (3%), with a master's and doctorate degree (1.8%), and without school education (0.4%) (Rajić et al., 2016).

Figure 1.
Geographical location of the Stenjevec City District and associated local committees



Source: City of Zagreb, City Office for the Strategic Planning and Development of the City; 2018.

2. Spatial analysis of selected objective indicators

In the geographical urban quality of life research special attention is placed on the aspect of spatial accessibility. Previous research has shown that the accessibility of amenities and services is one of the most important predictors of the overall neighbourhood satisfaction (Slavuj 2012c; Pacione 1984). Good accessibility makes it easier to satisfy everyday needs which ultimately leads to a greater satisfaction with living in a particular place. This is especially important for certain social groups, such as the elderly, children or the poor, who are more dependent on the resources of the immediate living space since they are usually less mobile and less self-sufficient in moving around the city. Good accessibility reduces negative aspects such as low levels of individual resources and thus significantly increases residents' quality of life.

The objective indicators analysis assessed accessibility to the following variables: 26 city kindergartens, 15 elementary schools, 13 sports facilities and playgrounds and 112 bus stations. Spatial data on selected variables were obtained from the City Office for Strategic Planning and Development of the City in 2019. The analysis considered the variables located within the boundaries of the District, as well as those located in the immediate vicinity of the District's boundaries. As residents are not limited by the

administrative boundaries of city districts in their daily movement, this reflects more clearly the practice of utilization of these variables. For example, the closest kindergartens, schools and sports facilities in the northern parts of the observed space (especially Stenjevec-South) are located in the adjacent territorial unit (Podsused-Vrapče) across the railway line (which is also the northern boundary of the District).

The accessibility typology of selected variables has been created on the basis of implementation of several steps. First, the distance criteria for the variables have been specified. Based on the bus station, kindergarten and elementary school variables, a classification has been made, whereby several areas have been identified: those within 400 m (up to 5 min on foot), within 400-800 m (5-10 min on foot) and those beyond 800 m (more than 10 min on foot). There is a slightly different classification for the sports facilities and playgrounds variable, for which the following areas have been identified: those located within 800 meters (up to 10 min on foot), those within 800-1200 m (10-15 min on foot) and those beyond 1200 m (more than 15 min on foot).

According to these criteria, with the help of the geographical information system (GIS), a total of 31 areas with overlapping of all selected variables were identified within the District. GIS Intersect analytical operation was used. It is a spatial analysis tool in which the overlapping of at least two layers or elements creates a new layer that encompasses only those parts of the entities which are located at the intersection of those layers or elements. Accordingly, areas located at the intersection of all given variables were identified.

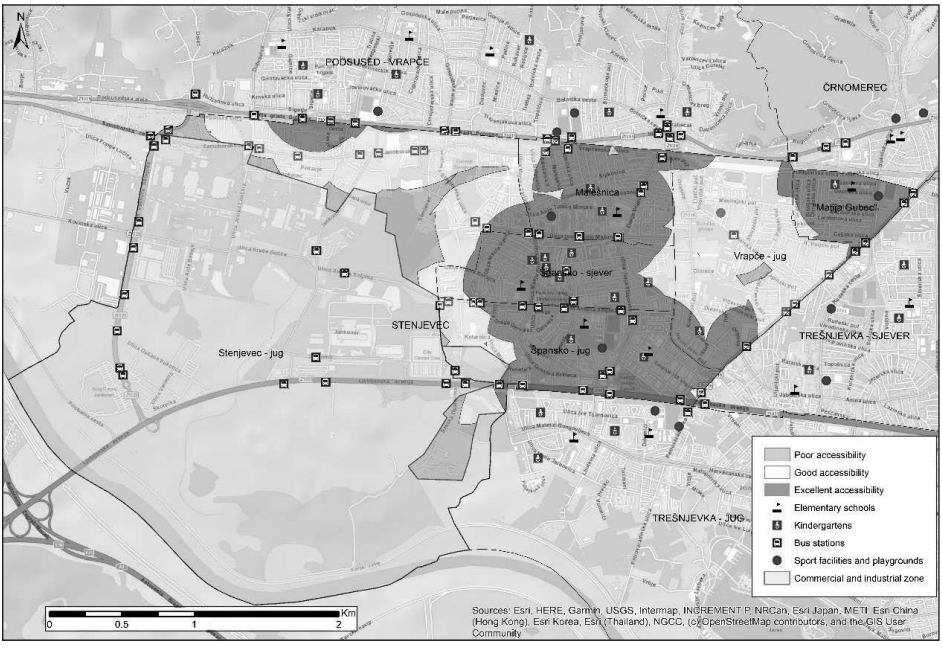
In the next step, a typology of those identified overlapped areas was made according to the given criteria. For bus stations, kindergartens and elementary schools variables the scoring was calculated so that areas within 400 m of the given variables received 2 points, areas located 400-800 m from the given variable received 1 point, and areas located more than 800 m from the given variable received 0 points. As regards the sports facilities and playgrounds variable, 2 points were awarded to areas within 800 m, 1 point to those between 800-1200 m and 0 points to those located more than 1200 m from the nearest sports facility or playground. The final step was to score and rank the areas within the Stenjevec City District. The areas could receive a maximum of 8 points and a minimum of 0 points, and the ranking was performed accordingly. The ranking showed which areas in the District have excellent, good and poor accessibility (or relatively poorer accessibility since the walking distance in question is 10/15 or more minutes).

The analysis showed that the walking distance to the observed variables is satisfactory in the District. The areas of the Malešnica, "Matija Gubec", Španski-North and Španski-South local committees have the best accessibility (Fig. 2). Excellent accessibility prevails in most parts of the Malešnica and "Matija Gubec" local committees, with a small proportion of areas with good accessibility. The residents of these local committees can reach the kindergartens, schools and bus stations within an average of 5 minutes on foot, whereas sports facilities and playgrounds take them an average of 10 minutes on foot. The situation is very similar in the Španski-North and Španski-South area, where excellent accessibility also prevails, with a slightly

higher proportion of good accessibility areas (especially in the western part of the local committees, but also in the eastern part of Špansko-North). The largest part of the Vrapče-South local committee has good accessibility (the area is predominately comprised of older, small single-family homes with narrow, mostly one-way streets). On the other hand, the southern outskirts of Vrapče-South have excellent accessibility. Among the observed spatial units, the largest share of poor accessibility areas is located in the area of the Stenjevec-South local committee. A smaller area in the northern part of that local committee has excellent accessibility. An area with good accessibility expands around this area, but a section of the committee with poor accessibility (highlighted in blue) is also noticeable. Residents living in parts of Stenjevec-South with poor accessibility to kindergartens, schools and bus stations have to spend an average of 10 minutes or more on foot to get to them, and an average of 15 minutes or more on foot to get to the sports facilities and playgrounds.

Moreover, it should be noted that the areas which have the poorest accessibility according to the analysis are also the parts of the District with the lowest average population density. As mentioned, the largest such area is located in parts of Stenjevec-South (highlighted in blue), where some newly built apartment buildings, urban gardens and other smaller single-family homes are located. Also, there are older single-family homes with surrounding large gardens south of the Ljubljanska avenija street (Fig. 2). This is the area of Savska opatovina, where agricultural land and a forest are located next to the Sava River embankment.

Figure 2.
Typology of areas in the Stenjevec city District according to walking accessibility to selected variables



Source: City of Zagreb, City Office for the Strategic Planning and Development of the City 2019; authors' research, 2019.

4. Analysis of subjective indicators – questionnaire survey results

This section presents the results of the conducted questionnaire survey. Levels of satisfaction with the following domains, i.e. subdomains, were examined: **environment** (the aesthetic appearance of the environment, the amount of public green spaces, maintenance of public green spaces, air quality, traffic noise); **transport and infrastructure** (parking spaces, quality of roads, quality of sidewalks, proximity to public transport stops, interconnection with other parts of the city, frequency of public transport lines, number of bike paths, garbage collection and maintenance of cleanliness, sewage and drainage); **accessibility of amenities and services** (kindergarten, elementary school, post office, bank, library, healthcare centre, pharmacy, market, convenience store, shopping centre, cafes, restaurant, tradesman services); **accessibility of sports and recreational facilities** (sports facilities and playgrounds, children's playgrounds, parks and other recreational areas, social gathering venues). The results are given with respect to the reported average level of satisfaction (by specifying the basic measures of central tendency) for each individual subdomain (Tab. 2) and the distribution of certain responses (frequency/percent) was described. The answers to the open-ended questions have been coded into appropriate categories.

Features of the *environment* represent a significant factor in the appeal of a particular place. Among the examined subdomains, the respondents were on average most satisfied with the amount of public green spaces (3.41), with the largest share of respondents being mostly satisfied with it (33.3%), while they expressed the highest average dissatisfaction with air quality (2.96), with a total of 32.5% of respondents being dissatisfied with it.

Regarding the domain of *traffic and infrastructure*, the respondents from the District were on average most satisfied with the proximity to public transport stops (3.82; a total of 67.1% of the respondents were satisfied) compared to the other subdomains offered. With the frequency of public transportation, 30.7% of respondents were neither satisfied nor dissatisfied (3.2), while with the interconnection with other parts of the city 28.9% of respondents were mostly satisfied (3.18). A total of 45.6% of those surveyed were dissatisfied (2.61) with the number of bike paths. On average, the respondents were least satisfied with parking spaces, as well as with garbage collection and maintenance of cleanliness (2.23), i.e. over 60% of respondents were extremely dissatisfied and mostly dissatisfied with these aspects of life in the District.

Regarding the domain of *accessibility of amenities and services* in the City District of Stenjevec, respondents expressed the highest average satisfaction with the accessibility of pharmacies (4.16), shopping centre (4.15) and cafes (4.14), with over 45% of respondents being completely satisfied with it. A total of 25.8% of the respondents were dissatisfied with the accessibility of kindergartens (3.28), while 45.2% were satisfied with it. A total of 62.3% of respondents were satisfied with the accessibility of elementary schools. On average, the respondents expressed the least satisfaction with the accessibility of healthcare centres (3.11), with a total of 34.2% of respondents being dissatisfied with it, and restaurants (3.09; most responses were in the category of neither satisfied nor dissatisfied, 36.4%).

Regarding the domain of accessibility of sports and recreational facilities, respondents were on average most satisfied with the accessibility to playgrounds (3.27), the highest being those who are neither satisfied nor dissatisfied (30.7%), while 24,6% were mostly satisfied. As regards the accessibility of sports facilities and playgrounds, the highest number of respondents were neither satisfied nor dissatisfied (31.1%, 2.89). As regards the accessibility of parks and recreational areas, the highest number of respondents were neither satisfied nor dissatisfied (29.4% of respondents) and mostly dissatisfied (24.1%, 3.05).

When asked about overall life satisfaction in the District, a total of 61.9% of respondents expressed satisfaction, i.e. the average level of satisfaction is 3.68. The fact that 77.6% of the respondents do not intend to change their place of residence in the near future further confirms the fact that the respondents are relatively satisfied with life in this District.

Table 2.
Average level of subdomain satisfaction, standard deviation, and number of responders who provided answers

ENVIRONMENT	M	SD	N
Aesthetic appearance of the environment	3.12	1.104	228
Amount of public green spaces	**3.41**	1.190	228
Maintenance of public green spaces	3.06	1.020	228
Air quality	**2.96**	1.057	228
Traffic noise	3.21	1.209	228
TRANSPORT AND INFRASTRUCTURE			
Parking spaces	**2.23**	1.143	228
Quality of roads	2.74	0.997	228
Quality of sidewalks	2.89	1.054	228
Proximity to public transport stops	**3.82**	1.063	228
Interconnection with other parts of the city	3.18	1.199	228
Frequency of public transport lines	3.20	1.107	228
Number of bike paths	**2.61**	1.165	228
Garbage collection and maintenance of cleanliness	**2.23**	1.088	228
Sewage and drainage	3.16	1.080	228
ACCESSIBILITY OF AMENITIES AND SERVICES			
Kindergarten	3.28	1.283	228
Elementary school	3.79	1.094	228
Post office	3.22	1.279	228
Bank	3.75	1.112	228
Library	3.67	1.154	227
Healthcare centre	3.11	1.318	228
Pharmacy	**4.16**	1.026	228
Market	3.83	1.122	228
Convenience store	4.03	0.989	228
Shopping centre	4.15	1.001	228
Cafes	4.14	0.979	228
Restaurant	**3.09**	1.107	228
Tradesman services (hairdressers, shoemakers, tailors...)	3.81	1.056	227

ACCESSIBILITY OF SPORTS AND RECREATIONAL FACILITIES			
Sports facilities and playgrounds	2.89	1.164	228
Children's playgrounds	**3.27**	1.218	228
Parks and other recreational areas	3.05	1.181	228
Social gathering venues (local committees, associations, clubs, ...)	**2.68**	1.041	228
OVERALL SATISFACTION WITH THE DISTRICT	**3.68**	0.774	228

The respondents were also asked to point out the greatest advantages and disadvantages of the District. The questions were closed-ended, with the respondents being asked to choose at least one and a maximum of three advantages/disadvantages they considered to be relevant for their District. When asked about the main advantages of the District (Tab. 3.), the respondents indicated *peaceful part of the city* as the most frequent answer (65.4%). Then, the respondents thought that the District is *great for family life*, which was pointed out as a great advantage by 64.5% of them. Also, the *proximity of all necessary amenities and services* was pointed out as one of the great advantages, with 63.2% of the respondents choosing this answer. Slightly less than a third of respondents (31.1%) mentioned *good traffic connections* as one of the advantages of the District. Out of the remaining advantages, 13.6% of respondents chose *cleanliness, maintenance and appearance of the environment,* and 11.8% chose the *good neighbours* category.

On the other hand, the greatest disadvantage pointed out by over half (56.1%) of those surveyed in the District (Tab. 5) refers to the aspect of traffic, i.e. the response *poor quality of roads and lack of parking spaces*, while a third of respondents (33.8%) believe that *poor organization of public transport* is present in the District. Therefore, adding up these two responses related to traffic, it can be seen that almost all respondents pointed out traffic as the main problem of the District (89.9%).

Table 3.
Perceived advantages and disadvantages in the City District of Stenjevec

ADVANTAGES	N	%
Peaceful part of the city	149	65.4
Great for family life	147	64.5
Proximity of all necessary amenities and services	144	63.2
Good traffic connections	71	31.1
Cleanliness, maintenance and appearance of the environment	31	13.6
Good neighbours	27	11.8
DISADVANTAGES	**N**	**%**
Poor quality of roads and lack of parking spaces	128	56.1
Lack of sports and recreational facilities	85	37.3
Poor organization of public transport	77	33.8
Unclean and neglected environment	58	25.4
Insufficient amenities and services	40	17.5
Poor municipal infrastructure	39	17.1
Lack of parks and green vegetation	39	17.1
I am satisfied with everything and would not change anything	20	8.8

Source: Questionnaire survey, 2018

Likewise, the respondents were posed an open-ended question, asking them to express their opinions and needs on what should be done to improve the urban quality of life in the District (Fig. 3). The question was answered by 164 respondents out of 228 (71.9%). The most frequent responses were again related to the aspects of traffic (61.6%). More specifically, the respondents would prefer to have more parking spaces, new pedestrian crossings (across roads and the railway), noise barriers along the rail tracks, traffic interventions that will affect better traffic regulation and flow, e.g. introduction of roundabouts, more frequent bus routes and more efficient public transport, and they especially regret that there are no trams in their District. The respondents also complain about poor north to south interconnection, i.e. with the city districts of Prečko, Vrbani and Jarun. A respondent from Špansko-South proposed to "*Introduce more roundabouts, and separate bike paths from footpaths,*" and a female respondent from the same committee stated: "*Flatten the sidewalks so that babies in strollers and the disabled can be mobile*." A respondent from Špansko-North stated: "*Introduce stricter controls on unauthorized parking alongside the Špansko market area, because, even though the signs are clear, they are being ignored; delivery vans and private vehicles occupy more than three quarters of the traffic lane, making obstructed pedestrian crossings impossible to cross*."

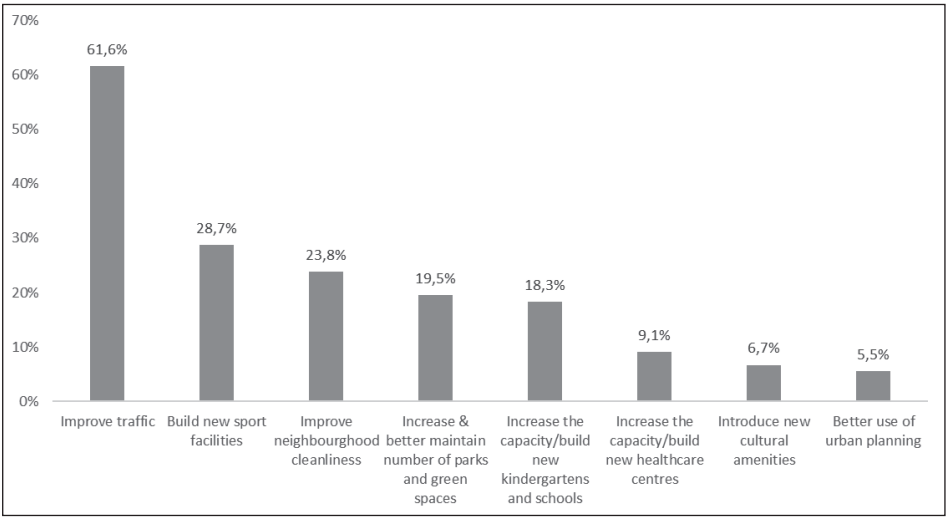
In the close-ended question about the disadvantages of the District, slightly more than a third of respondents (37.3%) thought that there was a *lack of sports and recreational facilities* in the District. Likewise, in the open-ended question, almost a third of respondents pointed out the need to build new sports and recreational facilities, more specifically 11% of them cited that they wanted to see the "*promised pool*" built in place of the current kart circuit in Špansko, and generally they demanded "*more sports fields, running tracks, and multi-purpose sports facilities*".

In the close-ended question, a quarter of the respondents (25.4%) pointed out *unclean and neglected environment* as one of the main disadvantages. The respondents emphasised that more frequent garbage collection is needed, as well as better organization of waste management, more frequent cleaning of the environment by responsible services, in addition to the increase of green areas, parks and recreational areas and their better maintenance. A female respondent from Stenjevec-South stated that she would like to see "*better organization of waste collection, i.e. biowaste bins need to be introduced and waste recycling needs more work*". A Špansko-South female respondent stated: "*More frequent collection of plastic and paper, fines for not cleaning up behind pets,*" and a female respondent from Stenjevec-South asked for "*More frequent inspections by municipal services monitoring officers, because there are dogs' faeces everywhere*."

When asked about the disadvantages of the District, an approximately equal share of the respondents stated that there are *insufficient amenities and services* in the District (17.5%), that there is a *lack of parks and green vegetation* (17.1%) and that it has a *poor municipal infrastructure* (17.1%). Due to the increased influx of younger population (the average age in the District is 38 years) it was emphasized that there is a demand for educational institutions, schools and kindergartens. Accordingly, there is a demand for greater capacities of healthcare institutions, the introduction of

new social and cultural amenities, etc. A Španska-North female respondents stated: "*Parks and playgrounds for children need to be better maintained, where they can be safe and enjoy being carefree while playing and having fun. Build a new Healthcare Centre or remodel and upgrade the existing one, given the increased number of new residents"; "There are no cultural amenities, there are no green spaces for adult recreation. Illegal construction and disrespect for urban planning principles have become widespread…".* A female respondent from Vrapče-South thought that *"Rationalization of construction should be implemented because the existing infrastructure cannot support further construction."* A female respondent from Stenjevec-South thinks that "*more kindergartens and schools should be opened, and more parks should be built alongside new buildings*". The respondents also noted insufficient *lighting in children's parks*, and they emphasized the need to *better maintain dog parks* (Stenjevec-South). Respondents were also offered the answer *I am satisfied with everything and would not change anything* that was selected by 8.8% of responders.

Figure 3.
The most frequent categories of respondents' answers to an open-ended question about suggestions for improving the urban quality of life in the District



Source: Questionnaire survey, 2018

5. Discussion

Subjective assessment of residents' urban quality of life is expressed in the level of satisfaction with the examined characteristics of the urban environment, as well as in the main stated advantages/disadvantages of the District.

Almost two thirds of respondents believe that the District is peaceful and suitable for family life and that the necessary services and amenities are in close proximity.

The equipment of the District and the presence of state-subsidized housing (so-called POS programme) make Stenjevec an attractive district, especially for young families (as shown by the demographic composition), to whom such apartments are much more accessible. Furthermore, almost a third of respondents mentioned good traffic connections as one of the advantages. Some respondents (14%) cited cleanliness, maintenance and appearance of the environment as an advantage of the District, although it should be pointed out that there is a higher share of those who consider the unclean and neglected environment as a disadvantage of the District (25.4%). Some of the main District aspects the respondents would like to change in order to improve their urban quality of life include traffic, insufficient number of amenities and services, and the unclean and neglected environment, i.e. the state of waste management and maintenance of green spaces. In terms of traffic, the respondents were most dissatisfied with the condition of parking spaces, the quality of sidewalks and roads, and the cycling infrastructure. The lack of parking spaces is a consequence of intensive construction and interpolation of apartment buildings, as well as the increased degree of car usage. It can also be assumed that dissatisfaction with parking spaces would have been much more pronounced if the questionnaire survey had been conducted one month later, since a parking charge (zone 3) was introduced in one part of Španska as of December 1, 2018, which caused dissatisfaction among the citizens. Dissatisfaction with the cycling infrastructure is the result of disconnectedness of bike paths, insufficient trail extensions and insufficient parking spaces for cyclists, etc. In addition, obstacles such as garbage cans, parked cars and motorbikes that conflict with the cycling infrastructure present a major problem, as noted in research conducted by Lukić et al. (2011). The mentioned traffic problems are also among the main problems of the City of Zagreb as a whole, and not only of the City District of Stenjevec. A part of the respondents pointed out the poor organization of public transport, especially in the north-south direction, the desire for the introduction of trams and the insufficient frequency of bus routes. However, research conducted by Gašparović (2017), dealing with the coverage and frequency of urban public transport shows that the Stenjevec District has an above average level of coverage of daytime and night-time urban transport routes and the frequency of urban public transport compared to other districts in the City of Zagreb. Namely, as much as 82.3% of the residential surface area of the District is within 400 m with above-average frequency of public city transport (Gašparović, 2017). This result indicates that the link between objective characteristics of the urban environment and subjective assessment of this characteristic isn't a straight one. The same may be noted for the relationship between relative lower average level of satisfaction with the accessibility of sports facilities and playgrounds (2.89) and objectively satisfactory walking accessibility to the mentioned variables (based on objective indicators analysis). The complex and indirect links between objective and subjective indicators have been noticed in other urban quality of life studies as well (McCrea et al., 2006, Das, 2008).

The respondents also emphasised the lack of sports and recreational facilities and the need for greater care of public spaces, namely of green areas and children's playgrounds. The leisure facilities aspect is obviously underestimated, as residents noticed the lack of and insufficient attention that is given to such spaces in the Dis-

trict. However, lack of quality sports and recreational facilities and public spaces can also hamper socialization and local community formation, as well as the development of a sense of attachment with the local community and the place. A sense of belonging to the local community and a sense of attachment to the place of residence are important because, in addition to them affecting the overall satisfaction with the neighbourhood, they also have other important implications for the urban quality of life (Slavuj, 2012c). Specifically, a sense of attachment influences an individual's behaviour in terms of their activity in the community, as well as their relationship to the place. In other words, people who are more attached to the place and the local community are more often engaged in local activities and meetings and are more responsible towards the environment. In that sense, attachment to a place and a community, besides influencing individual behaviour, influences the situation in the local community as well (Slavuj, 2012c).

In addition, respondents pointed out the uncleanliness of the streets caused by infrequent waste collection, too few containers for waste separation, but also the carelessness and bad manners of the residents themselves. In this regard, it is important to consistently implement the activities outlined in the *City of Zagreb Waste Management Plan*, adopted in April 2018, which could address at least some of these problems. The Plan sets out the following goals, which are meant to be achieved by the end of 2022: to reduce the total amount of municipal waste produced by 5%, to separately collect 40% of the produced bio-waste mass, which is an integral part of municipal waste, to achieve the extraction from municipal waste of 60% of useful ingredients and biowaste and to separately collect 75% of the generated construction waste (City of Zagreb Waste Management Plan, 2018). The Plan also envisages the implementation of educational and informative activities (informing and educating the residents) and raising the awareness of the residents about sustainable waste management, which is extremely important.

As observed by Zlatar Gamberožić and Svirčić Gotovac (2016), many residential districts of Zagreb, especially Trešnjevka, Trnje, Malešnica, Španska and Radnička, Vukovarska and Heinzelova streets, have been overbuilt, which resulted in the destruction and diminishing of public space. For example, in Španska, high-rise apartment buildings (six to eight stories) are being intensively built on small parcels where three- to four-storey buildings were once built. The influx of residents to the newly constructed buildings creates an additional pressure on basic infrastructure, such as kindergartens, schools, healthcare facilities, etc. Therefore, the basic living needs infrastructure is burdened and over-capacitated, which seriously jeopardizes the urban quality of life in a particular district (Svirčić Gotovac and Zlatar, 2015b.). In this research, part of the respondents also emphasised insufficient amenities and services as well as the need to increase the capacity of healthcare centres, kindergartens and schools. For example, in the western part of Španska, the construction of new housing facilities created a lot of pressure on the educational infrastructure and consequently, in the "Ante Kovačić" elementary school, classes must be held in three shifts due to the large number of pupils (Zagrebinfo, 2019).

It is interesting to notice that almost two-thirds of the respondents are overall satisfied with the life in the District, despite the fact that there are a number of aspects (pointed out under disadvantages and having a relatively lower levels of satisfaction) that part of the respondents are not satisfied with. Therefore, the respondents gave a good overall assessment of the District, despite considering that some of its aspects are not satisfactory. People's tendency to provide satisfaction estimates that are skewed towards the positive side of the scale is a known effect in quality of life research. Many studies have revealed a tendency towards a positive neighbourhood evaluation (Marans and Rogers, 1975; Lu, 1999; Lovejoy et al., 2010). There are several potential explanations of this effect: a) individuals' tendency to become accustomed to and adapt to a place of residence from which they are unable to move out of, especially if resources are readily available to them outside their immediate place of residence (Lu, 1999; Wellman and Wortley, 1990); b) the ability of individuals to settle in their preferred neighbourhoods (Lee et al., 1994); c) the possibility that such an expression of satisfaction actually reflects a lack of concern or interest in the neighbourhood (Parkes et al., 2002). However, it is most likely that all of the factors together have a certain impact on the results, as well as some other potential reasons.

6. Conclusion

The aim of this paper was to analyse the urban quality of life in the City District of Stenjevec, Zagreb. In order to gain better understanding of the concept of urban quality of life, selected objective and subjective indicators were used in the research. Objective indicators have been applied in order to analyse the walking accessibility to kindergartens, elementary schools, bus stations and sports facilities and playgrounds. Spatial analysis conducted in geographic information system (GIS) identified parts of the local committees of the District with excellent, good and poor walking distance to the selected facilities. Generally, it can be concluded that most areas of the District have good and excellent accessibility.

The use of subjective indicators based on a questionnaire survey provided information on how the respondents perceived their urban quality of life in the District. The results show that almost two thirds of the respondents were satisfied with living in the District and perceived it as a peaceful part of the city great for family life, with important amenities and services in close proximity. Aspects that caused most dissatisfaction among residents have been identified as well. These aspects mainly relate to the lack of parking spaces, the quality of roads and sidewalks, the lack of bike paths, poor waste management and street maintenance, insufficient number of sports and recreational facilities, over-capacitated schools and kindergartens, etc. The disadvantages that were pointed out clearly indicate the directions in which further steps should be undertaken in order to make the urban quality of life in the District better.

The research results provide useful information for policy makers and local authorities that can be applied in order to promote and enhance the urban quality of life in the District of Stenjevec.

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Analiza odabranih pokazatelja kvalitete života u Gradskoj četvrti Stenjevec, Zagreb

Sažetak

Cilj rada jest analizirati kvalitetu života u Gradskoj četvrti Stenjevec (Zagreb) na temelju odabranih objektivnih i subjektivnih pokazatelja. Objektivni pokazatelji ukazuju na razinu dostupnosti odabranih sadržaja u četvrti, no koncept kvalitete života u gradu prvenstveno je shvaćen kao razina zadovoljstva stanovnika s četiri relevantne domene (okoliš, promet i infrastruktura, dostupnost sadržaja i usluga, dostupnost sadržaja za provođenje slobodnog vremena) te kao zadovoljstvo pripadajućim poddomenama (N 31). Istraživanje je provedeno na dvije razine. Prva razina uključivala je analizu pješačke dostupnosti do vrtića, osnovnih škola, autobusnih stanica, sportskih objekata i igrališta te je uz pomoć geografskog informacijskog sustava (GIS-a) napravljena tipologija dostupnosti prema kojoj su izdvojena područja unutar Četvrti s izvrsnom, dobrom i slabom dostupnošću do navedenih sadržaja. Druga razina istraživanja, temeljena na subjektivnim pokazateljima, obuhvatila je anketno istraživanje o zadovoljstvu i stavovima ispitanika prema Četvrti u kojoj žive. Anketno istraživanje provedeno je u studenom 2018. godine na prigodnom uzorku od 228 ispitanika iz svih šest mjesnih odbora koje pripadaju Četvrti. Rezutati istraživanja pokazuju da četvrt Stenjevec ima objektivno zadovoljavajuću dostupnost ispitivanih varijabli u svom najvećem dijelu te da je većina ispitanih stanovnika percipira mirnim dijelom grada, odličnom za obiteljski život u kojoj su im lako dostupni važni sadržaji i usluge. Percipirani nedostaci pak jasno pokazuju u kojem bi smjeru trebalo raditi kako bi kvaliteta života u Četvrti bila na još boljoj razini.

Ključne riječi: Kvaliteta života, objektivni pokazatelji, subjektivni pokazatelji, Gradska četvrt Stenjevec, Grad Zagreb.