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SPATIAL PATTERNS OF ENTERTAINMENT MOBILITY IN CITIES

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Abstract: Cultural and entertainment activities have become an important part of the life of the city's population. Spaces of entertainment are being developed in almost all parts of the city—in the inner city, in larger neighborhoods both in the city center and on the outskirts, near the centers of labor, shopping areas (e.g., attractive streets or shopping malls), or recreation areas. Hence the need to research the spatial patterns of entertainment mobility in the city. Studies to date have found that people spatially adjust their consumer activities (including entertainment) to their primary functions (housing, going to work, school, and college). This paper examines mobility for the entertainment of various socio-economic groups (employees, students, unemployed, and pensioners). Attention is also focused on examining the neighborhood's entertainment mobility—near the place of residence. The paper uses data from the survey on daily population mobility in the territory covered by the General Plan of Belgrade (GPB), Serbia, conducted in 6,357 households. The main part of the research is the spatial analysis of the patterns of residents' mobility for entertainment. Spatial analyses is based on mapping of entertainment movements, and then interpreting the obtained cartographic representations. Based on that, regularities are recognized, i.e., spatial patterns of entertainment in the city.

Keywords: entertainment mobility; spatial patterns; attraction zones; neighborhood; Belgrade

1. Introduction

With the development of the cultural and entertainment industry, but also the consumer society and way of life, the consumption of culture and entertainment has become an important part of the life of the city inhabitants (Harvey, 1989; He et al., 2021; Pacione, 2009). Thus, spaces of entertainment are an important part of the city's structure (Gratz & Mintz, 1996). These are catering and service facilities, cultural institutions, retail spaces, sports facilities, parks, promenades, and the like.

Entertainment spaces have developed in almost all parts of the city—in the attractive inner city, in addition to specific city hubs and zones, in peripheral locations along important roads, or in revitalized areas of former industrial enterprises (Solujic et al., 2015, Slide 33; Urban-Net, 2010). Entertainment areas are also located in densely populated neighborhoods, near

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business centers, shopping areas (e.g., attractive streets or shopping malls), or recreation areas, like sports facilities, parks, promenades, riverbanks, etc. (Nagy, 2001; Petrović, 2009; Sykora & Bouzarovski, 2012). The number of entertainment facilities has increased especially in revitalized and gentrified neighborhoods, inhabited by a “new middle class” living a dynamic, consumerist lifestyle. Their needs have been accompanied by the emergence of numerous cafes, restaurants, bars, various shops, and service facilities (Bouzarovski et al., 2010; Caulfield, 1994; Haase et al., 2011; Redfern, 2003; Todorić & Ratkaj, 2011).

In post-socialist cities, such as Belgrade, the entertainment industry began to develop rapidly in recent decades as these cities transformed from centers of production to centers of consumption. Changes in their spatial structure have included the commercialization of urban cores, gentrification, the emergence of new hotspots of leisure activities, and the number of entertainment facilities has increased. It was followed by the explosion of retail, the emergence of large shopping malls as attractive spaces for “consumer experience”, leisure, and entertainment (Petrović, 2009; Sić, 2007; Sýkora et al., 2000).

Studies have found that people spatially adjust consumer activities (including entertainment) to primary functions (housing, going to work, school, and faculty) or shopping. Therefore, consumption spaces are often located near apartments, workplaces, schools, and colleges (Gorter et al., 2003; Novak & Sykora, 2007; van Leeuwen & Rietveld, 2011). Entertainment is an important element of the life of all socio-economic groups. Different groups (e.g., young people, pupils, students, employees, unemployed, parents with children, couples without children, the elderly, and pensioners) choose a place for entertainment depending on personal preferences, resources, and constraints, such as material, time, or space-side (Hägerstrand, 1970; van Leeuwen & Rietveld, 2011). Due to all the above, the neighborhood is expected to remain an attractive location for entertainment. Also, the importance of city entertainment hotspots (e.g., city center, riverbanks, etc.) is constant.

From all of the above arises the need to research the spatial patterns of entertainment in the city. Unlike work, school, and partly shopping mobility, which are mandatory and primary, leisure mobility is secondary and optional. It adapts to primary mobility (Novák & Sýkora, 2007; van Leeuwen & Rietveld, 2011). In this paper, the research on spatial patterns of entertainment mobility in the city is based on general regularities (rules) about the residents' spatial behavior. These are the rule of neighborhood (local) orientation of overall consumer and entertainment mobility, as well as the rule of targeted movements towards certain attractive “entertainment” locations (Eymann, 1995; Novák & Sýkora, 2007; van Leeuwen & Rietveld, 2011).

Based on the demographic and socio-economic characteristics of the residents of Belgrade and their mobility for the purpose of entertainment, three groups of respondents were singled out: 1) employees, 2) pupils (6+ years) and students, and 3) pensioners and unemployed. The group of pensioners and unemployed also includes housewives. Group of pensioners and unemployed means residents who conditionally do not participate in mandatory primary (work and school) movements. The paper examines the differences in entertainment mobility between these groups.

The aim of the research is to recognize and explain spatial patterns of movement with the purpose of entertainment in Belgrade. The research hypotheses are: 1) neighborhood is an important spatial determinant of entertainment activities; 2) different groups of residents (employees, pupils and students, pensioners and unemployed) move differently for

entertainment purposes; and 3) there are particularly attractive entertainment venues in the city, such as city center, riverbanks, and the like.

This research deals with the mobility of the inhabitants of Belgrade in the pre-COVID-19 period. As the period of lockdown and drastically reduced movements is over, entertainment mobility came to life again in Belgrade during 2021 and 2022, and it is assumed that the post-COVID-19 dynamics will continue according to the established rules from the pre-COVID-19 period.

2. Entertainment mobility and distribution of entertainment spaces in the city

Geographical surveys of entertainment mobility in cities are mainly part of broader studies of urban mobility (Novák & Sýkora, 2007) or have been incorporated into the topics of consumer mobility (Cachinho, 2014). The theoretical and conceptual foundations of research on mobility in space and time were laid by Hägerstrand (1970) in his time geography. He pointed out that individuals draw movements paths that are limited by various constrains. In this regard, clear patterns can be recognized in the schedule of activities that people perform on a daily, weekly, and even life level (e.g., going to work, shopping, leisure activities, vacations at home, etc.).

Urban mobility refers to all movements of people within cities. Researching the spatial and temporal patterns of mobility of the inhabitants of suburban settlements of the Prague metropolitan area, Novák and Sýkora (2007) deal with movements between the locations of home, workplace, school, shopping, entertainment (leisure). Leisure activities vary more in time, space, and type, compared to primary activities. Free time activities that take place outside the home are important for shaping the spatial structure of the city. When it comes to employees, results confirmed the dominance of the wider city center and compact city for leisure activities during weekdays. On weekdays, their way from work to home is interrupted by shopping and leisure (entertainment). Unlike them, mothers with children are largely tied to the neighborhood. The authors found a strong connection between the suburban zone and the entertainment and cultural amenities of the city center in general. This could be different for the elderly residents of suburban settlements, whose weekends are concentrated around the house and the garden. At the same time, younger, newly settled population of suburban settlements, with higher incomes and better education, retains ties and connections over the entire city area.

Leisure (entertainment) activities of students in the urban settings of the two cities of Lodz (Poland) and Turin (Italy) were studied by Zasina (2020). He included in the analysis of six leisure activities: 1. visiting cafes and pubs; 2. visiting night and music clubs; 3. visiting cultural venues; 4. visiting sports venues; 5. doing non-daily shopping; and 6. meeting friends at home. Results for both cities have shown that their activities outside the home all together are more often than socializing at home, but meeting friends at home is by far the most popular individual activity. Visiting music and night clubs is the rarest activity. Most students' leisure activities out of home in both cities take place in the central parts of the city, while to a much lesser extent near apartments or colleges. Thus, spaces of the majority of their leisure activities do not spatially overlap with their residence and education places.

The studies on culture and the entertainment industry became a popular topic in geographic research in the second half of the 1990s (Christiansen, 1995). Since then, studies have focused on two main aspects: 1) the spatial distribution characteristics of the cultural and entertainment

industry in cities and 2) the evolution of spatial distribution and the factors that affect it (location distribution and location selection) (He et al., 2019; He et al., 2021; Ryder, 2004). Great attention to this topic was paid by Chinese authors (Gutiérrez et al., 2021; Kim et al., 2021). Indeed, research on cultural and entertainment facilities is relatively modest (He et al., 2021).

Moreover, the same authors (He et al., 2021) studied the diversity and spatial distribution of cultural and entertainment facilities in Beijing and its influencing factors. They found that the diversity of these facilities is related to traffic accessibility and the historical and cultural meaning of the part of the city. The facilities are mostly concentrated in the city center, while their concentration and diversity are declining towards the periphery. This is especially true for cafes, clubs, theaters, and cinemas. The cause of this center-periphery pattern lies partly in the needs of the urban population. Spaces with a greater diversity of facilities also exist in some suburban locations, which are secondary centers of diversity of cultural and entertainment facilities. In the same research, authors also recognized the hotspots of entertainment, which are the most common in central business district (CBD). These hotspots can be divided into several different categories. The first includes universities and enterprises with centralized orientations, with very heavy traffic, where employees and students are the main consumers of entertainment. The second category is commercial center-oriented, with many famous picturesque places that combine cultural tourism and shopping. The third category of hotspots also includes centrally oriented business and office spaces (such as CBD). The fourth category consists of traffic hubs (railway, bus stations, etc.) that concentrate the flow of people and encourage neighboring commercial and entertainment facilities (He et al., 2021).

Similar findings on the spatial distribution of the entertainment industry in Xi'an were provided by the study of Xue et al. (2014; as cited in He et al., 2021). The authors singled out areas with high and areas with low density of facilities. The entertainment facilities are mainly concentrated in the central part of the city and have a radius of spread in the direction of the new district. Areas with low concentration are mostly scattered on the outskirts of the city. They find four spatially aggregated hot zones of the entertainment industry (four spatial patterns): business and tourist hot zone in the traditional city center, educational and recreational hot zone, high business hot zone, and hot zone of the new city district. On the locations of entertainment activities in Wuhan, He et al. (2019) pointed out that entertainment and leisure facilities have a point, circular, and ribbon pattern. They also found the spatial correlation between entertainment activities and street configurations in Wuhan.

When it comes to analyzing the factors that affect the distribution of these facilities, more attention is paid to the social and cultural environment in cities and the demands of residents for these types of enjoyment (He et al., 2021). Zhao et al. (2018; as cited in He et al., 2021) pointed out the findings that the peoples' habits in the consumption of culture, the level of education, and the atmosphere of cultural life have a substantial impact on the distribution of different types of cultural facilities. Huang and Zhou (2019; as cited in He et al., 2021) highlighted that the density of the employed population, the density of the road network and the land prices have a great influence on the number of cafes. The distance from the nearest faculties and universities impacts the number of independent cafes. They point out that the cafes in Shanghai have formed a spatial pattern of one main core and several secondary cores. The effect of urban clustering is the most important factor of

spatial pattern in the main urban area, and different types of cafes have different spatial clustering characteristics.

Van Leeuwen and Rietveld (2011) discuss population mobility in the wider metropolitan areas in five European countries. The factor of spatial distance is very important in the case of purchasing food products, but when people go shopping for fun, distance is less important. Also, the attractiveness of the central place (city) proved to be a significant factor in the same research because the city is attractive to both locals and the population of hinterland.

In accordance with these rules, patterns of spatial distribution of cultural and entertainment facilities have become important indicators for measuring the quality of life of residents and the degree of social and economic development (He et al., 2021; McCarthy, 2002). Moreover, for some population groups (e.g., young people, couples without children, and more affluent inhabitants) these facilities are also considered an important preference in the choice of housing location (Todorić, 2013).

3. Materials and methods

The main source of data in the research is a survey on daily local mobility of the inhabitants of the City of Belgrade, counting 17 municipalities and 478 traffic zones. (City Administration of the City of Belgrade, Secretariat for Transport of the City of Belgrade, 2015). By the random sampling method survey covered 1–1.5% of the inhabitants of each traffic zone including all household members over six years of age who were present on the day of the survey. The survey was conducted in April and May 2015. The respondents provided individual demographic and socio-economic data, household data and data on all their movements in the previous working day (24h)—on space, time, mode, and purpose of movement. The total number of recorded entertainment movements in this area was 2,865. Since this survey, no similar research on mobility in Belgrade has been conducted.

The sample included in this paper consists of 2,538 respondents who live on the territory of the General Plan of Belgrade (GPB) which encompasses 345 traffic zones (Generalni plan Beograda 2021, 2003). This is an area that includes 12 municipalities—10 central municipalities (continuously built urban area), and parts of two municipalities from the wider area (Grocka and Surčin). Respondents were divided into three groups: 1. Employees, 2. Pupils (6+ years) and students, and 3. Pensioners and unemployed (Table 1). This division is made having in mind the influence of demographic, socio-economic, and lifestyle factors (age, work status, income, leisure activities, and the like) on movements for entertainment.

Table 1. Sample and number of entertainment movements within GPB border

Groups of respondents	Number	%	Entertainment movements	
			Number	%
Total	2,538	100.0	2,763	100.0
Employees	833	32.8	876	31.7
Pupils and students	455	17.9	494	17.9
Pensioners and unemployed	1,250	49.3	1,393	50.4

Entertainment mobility includes all movements with the purpose of entertainment. These are leisure and entertainment activities in urban spaces or nature (promenades, pedestrian zones, parks, river banks), visits to catering facilities (cafes, bars, restaurants, night clubs), leisure shopping in shopping areas and malls, walks, visits to friends, visits to cultural

institutions or events (theatres, cinemas, exhibitions, concerts, sport events, and the like), and other activities that people consider entertainment. Spatial analysis included 2,763 entertainment movements within the boundaries of the GPB (Table 1).

The paper presents a spatial analysis of patterns of entertainment mobility, based on movements mapping and interpretation of the obtained results. It included three phases. In the first phase of mapping the phenomenon, data on mobility are presented on thematic maps by the choropleth method. This method gives a visually clear idea of the phenomenon and allows easy “reading” of the map (Burt et al., 2009). A vector base with division into 345 traffic zones (GPB area) was used. The basic indicator shown on the maps is the number of entertainment arrivals in each traffic zone. For the purpose of comparability of mobility patterns of unequal groups (employees, students, pensioners and unemployed), standard deviation (SD) measures were used. QGIS software was used for mapping, analysis, and interpretation of maps (results).

In the second phase, the maps of movements were analyzed in detail—the position of the visited traffic zones (with positive values of standard deviations) was considered, and then their equipment with entertainment facilities (i.e., spaces) was analyzed, based on the identification of objects on a digital Google map and satellite image. Therefore, the spaces of traffic zones have been analyzed by a combination of quantitative and qualitative approaches, which has numerous advantages (Burt et al., 2009). Based on the spatial distribution and specificity of the visited traffic zones, in the third, synthetic phase, general spatial patterns were recognized, and several regularities (rules) were formulated that explain the spatial patterns of entertainment mobility. In this way, the findings are generalized, systematized, and classified.

4. Results

4.1. Total entertainment mobility

For detailed analysis, entertainment mobility is divided into two components—interzonal and intrazonal (Table 2). The first one indicates movements outside the residential traffic zone and

Table 2. Interzonal and intrazonal entertainment movements

Entertainment movements	Number	Interzonal (%)	Intrazonal (%)
Employees	876	90.2	9.8
Pupils and students	494	92.3	7.7
Pensioners and unemployed	1,393	90.0	10.0

may indicate a higher attendance of some more attractive traffic zones in the city. Intrazonal mobility means movements within the traffic zone of the place of living. They are important because they can be considered neighborhood mobility and

indicate the residents' familiarity and awareness of local content. Given that 90% of movements are interzonal, it is clear that this component was decisive in determining the patterns of overall entertainment mobility.

The total entertainment movements of all respondents (with both mobility components) are shown in Figure 1. At first glance, almost the same spatial pattern of total and interzonal movements is obvious, while the pattern of the intrazonal component differs significantly from them.

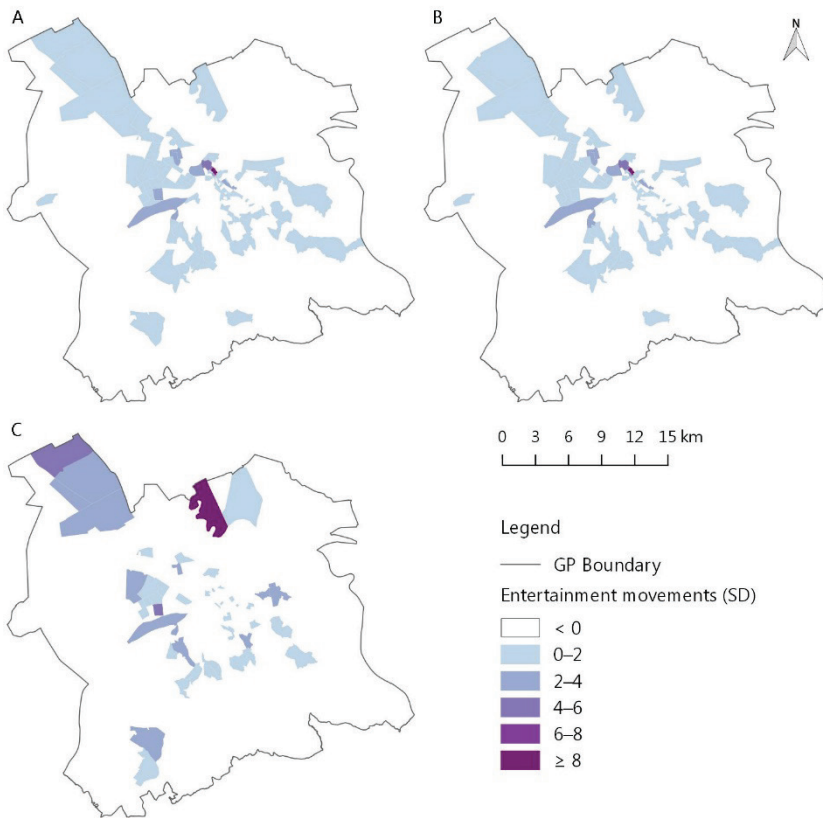


Figure 1. Destinations of total (A), interzonal (B), and intrazonal (C) entertainment movements.

Note. Adapted from *Prostorni obrasci ponašanja potrošača u Beogradu* [Spatial behavior patterns of consumers in Belgrade; Unpublished doctoral dissertation], by J. Todorić, 2019, University of Belgrade, Faculty of Geography.

In the case of total and interzonal mobility, a striking difference between the city center and the periphery is noticeable. It is a consequence of the large difference in the number of arrivals between the zones, with values greater than eight standard deviations (SD). A map of total entertainment mobility indicates the orientation of the visited entertainment zones around the main traffic routes (Batajnica road to NW, Ibar highway to SW, Smederevo road to SE), although this pattern cannot be considered a rule.

The most attractive zone and the only one with values of eight and more SDs, is the zone of Student Square in the urban core, which includes the steam side of Knez Mihailova Street and spaces that, in addition to sights and cultural facilities abound in mass consumer goods—retail, cafes, restaurants, pubs, fast food, etc. The zone of Kalemegdan, which is connected to the Student Square zone, is next in terms of attractiveness, but only in the category 4–6 SDs, in which it is also the only one. In this zone there are the Fortress and large park, the Pedagogical Museum, the Military Museum, the Gallery of the Natural History Museum, numerous monuments, an amusement park, a zoo, several catering facilities, etc.

In the next category (2–4 SDs) there are eight traffic zones, mostly in the central part of the city. The first of all is the traffic zone of Knez Mihailova Street, which includes the odd-number side of the street and continues on the Student Square zone. In this zone there are also numerous attractive consumer facilities—retail, cafes, bars, and similar catering facilities, especially concentrated on Obilićev venac Street. There is also Tašmajdan zone, which includes Tašmajdan Park, the Duško Radović Theater and the Children's Cultural Center, the RTS Gallery, the Tašmajdan Stadium, and the neighboring zone of Vuk Karadžić, where the Student dormitory Lola is located, Cyril and Methodius Park, catering facilities in the Kraljice Marije Street, Cultural Institution "Vuk Karadžić", and numerous restaurants, pubs, cafes, and clubs. On the left bank of the Sava, in New Belgrade, the Ušće zone includes a large park, restaurants, and rafts on the Sava and the Danube, the Museum of Contemporary Art, a skate park and probably the most important consumer facility—Shopping Center Ušće. This group includes two neighboring traffic zones in New Belgrade (Old Mercator and the Yugoslavia Hotel). In this area there are two hotels, a shopping center, rafts on the Danube, numerous fast-food restaurants, etc. Another zone in New Belgrade stand out in this category (zone of Block 70), with Chinese shopping center and numerous rafts on the Sava River. Outside the central part of the city, there is the Ada Ciganlija zone, which includes the waterside and the lake, as well as numerous retail and catering facilities on Banovo Brdo, smaller shopping malls, shops, cafes, bars, restaurants, pubs, and numerous catering facilities in Ada Ciganlija. We can say that all the mentioned traffic zones contain recognizable and attractive consumer (cultural and entertainment) contents at the level of the entire city.

Zones of 0–2 SDs are the most numerous and are located in all Belgrade municipalities. However, they are more densely distributed around the city center and moving away from it they become less frequent. It is also possible to perceive the orientation around the traffic routes. We can assume that these zones are primarily of local importance for the inhabitants of that area.

In the case of intrazonal movements, the pattern is significantly different, because the traffic zones that "bounced" are located on the periphery. The most important is the Borča zone (over eight SDs), followed by the Batajnica zone and Block 70 zone (4–6 SDs). These movements are more prevalent in traffic zones with large populations. They do not necessarily appear in attractive traffic zones, but they can be found in the zones of Block 70 in New Belgrade, the Yugoslavia Hotel in Zemun, and the zone of Ada Ciganlija. Borča belongs to the group of peripheral zones with a larger number of inhabitants that are well equipped with various entertaining contents in order to satisfy the needs of the local population. This group also includes eight traffic zones in the outer and peripheral parts of the city.

4.2. Entertainment mobility of employees

The total entertainment mobility of employees is most represented in the category 0–2 SDs (Figure 2). The distribution of these zones retains the general rule of the center–periphery, with some elements of the placement around the roads, but the most striking is the highlighting of the attraction zones. Here, the zone of Student Square that exceeds eight SDs is also recognized, as well as the zone of Kalemegdan in the next category (4–6 SDs). Next (2–4 SDs) is the Ada Ciganlija zone, the Terazije zone in the urban core, which includes the Terazije Theater, the Dom Sindikata (Trade Union Hall), the Historical Museum of Serbia, numerous catering facilities and the neighboring Republic Square zone in the center, where "Staklenac" shopping center is, the upper

part of Skadarska Street with numerous restaurants and bars, Cetinjska Street with numerous cafes and clubs, as well as the Vuk Karadžić zone on Zvezdara.

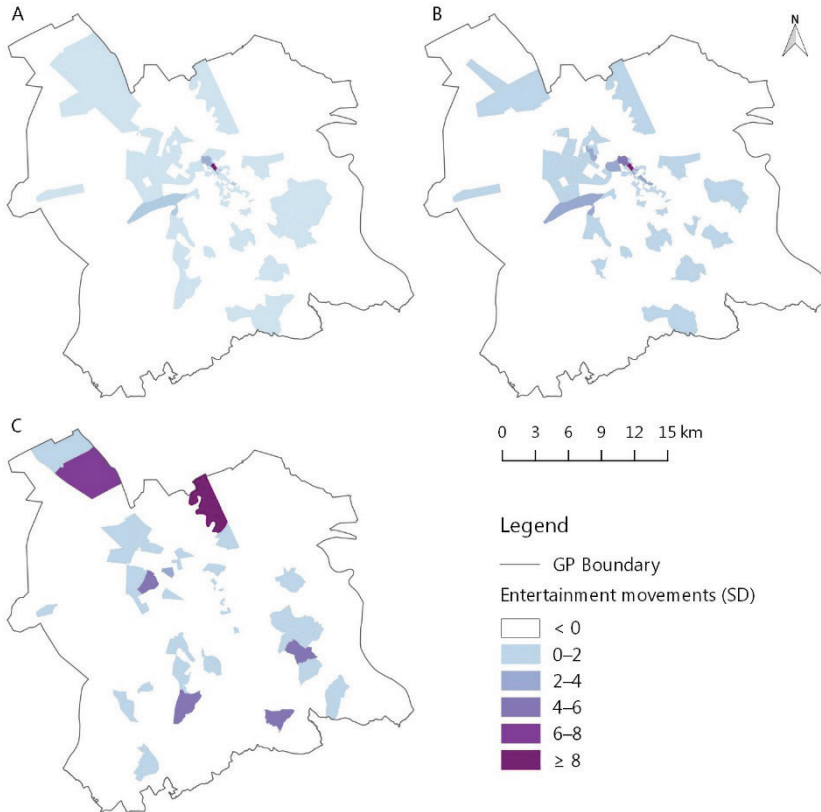


Figure 2. Destinations of entertainment movements of employees: total (A), interzonal (B), and intrazonal (C).
Note. Adapted from *Prostorni obrasci ponašanja potrošača u Beogradu* [Spatial behavior patterns of consumers in Belgrade; Unpublished doctoral dissertation], by J. Todorić, 2019, University of Belgrade, Faculty of Geography.

In this case, too, the picture of interzonal mobility shows a pattern very similar to the pattern of total movements: with the rules of the center–periphery and the same zones of attraction (Student Square, Kalemegdan). In the category of 2–4 SDs there are numerous already mentioned traffic zones in the very center of the city, as well as other consumer-attractive spaces—Ada Ciganlija, Ušće, and the like. The most numerous zones are with 0–2 SDs and they are located in all Belgrade municipalities. They attract the population of the surrounding area.

Employees' intrazonal entertainment movements are concentrated in population-large settlements in outer parts of the city—Borča, Batajnica, Bežanija, Petlovo brdo, Beli Potok, and Kaludjerica. In the lower category is the zone near the Fontana center (2–4 SDs) in New Belgrade, which has two high schools and two faculties. Zones in the lowest category of SD are also characteristic of larger settlements with numerous leisure facilities.

4.3. Entertainment mobility of pupils and students

The entertainment mobility of pupils and students is shown in Figure 3. The total movements are almost entirely the result of interzonal components, especially the zones of attraction, which are manifested with equal intensity. In terms of interzonal mobility, this rule is characteristic, as well as the rule of the center–periphery. By far, the most attractive location for entertainment for this group of residents is the Student Square zone, which exceeds eight SDs. Behind it, in the category 4–6 SDs there are two zones in the urban core—the Knez Mihajlova zone and the Tašmajdan zone. In the following category (2–4 SDs) are the center of Zemun, the Yugoslavia Hotel zone, the Old Mercator zone, Ušće, Delta City zone (with two major shopping centers), Ada Ciganlija, Kalemegdan, and the zone of Vuk Karadžić Street. Other zones (0–2 SDs) occur in all the city municipalities.

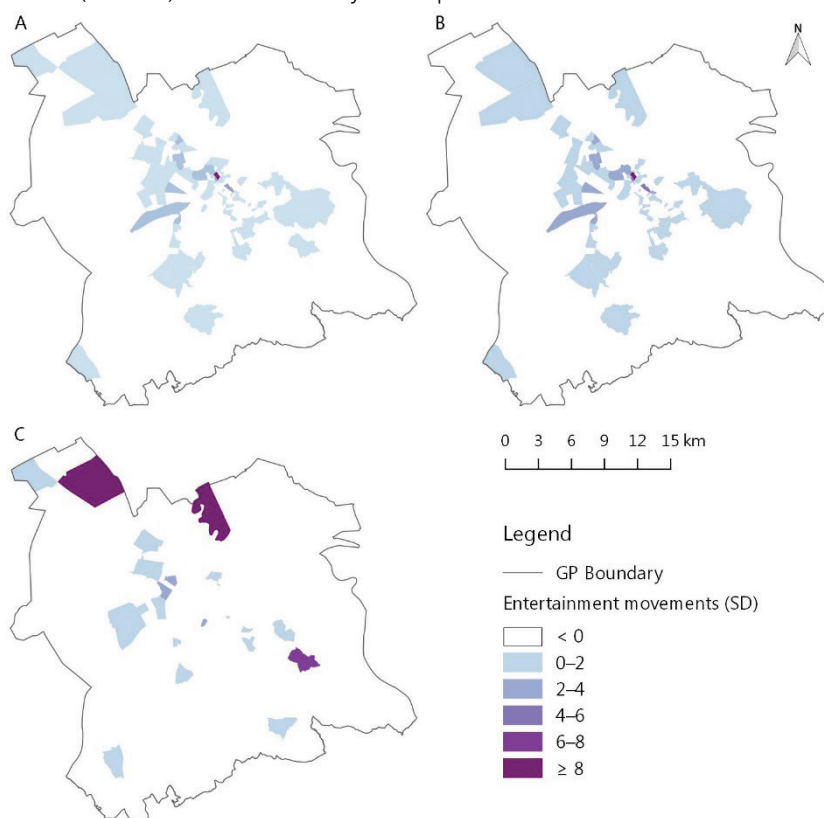


Figure 3. Destinations of entertainment movements of pupils and students: total (A), interzonal (B), and intrazonal (C).

Note. Adapted from *Prostorni obrasci ponašanja potrošača u Beogradu* [Spatial behavior patterns of consumers in Belgrade; Unpublished doctoral dissertation], by J. Todorić, 2019, University of Belgrade, Faculty of Geography.

Intrazonal movements, on the contrary, are most intense in the peripheral, population-large and “self-sufficient” areas—Batajnica and Borča in the category over eight SDs, and Kaludjerica with 6–8 SD. Then there are the Senjak zone and the Fontana zone (the high school zone next to Studentski

Grad), and the Airport City zone in New Belgrade. Among the other 20 zones in the 0–2 SD category are those with riverbanks and promenades, cafes, and rafts, and different consumption facilities.

4.4. Entertainment mobility of pensioners and unemployed

The entertainment mobility of the pensioners and unemployed are very similar to the destinations of the other two groups (Figure 4). The area of Student Square, in this case, also exceeds eight SDs. In the next category of 4–6 SDs, there are Kalemegdan and Borča, and then (2–4 SDs) 11 zones—Ušće, the Yugoslavia Hotel, Bežanija, Delta City, Banovo Brdo and Ada Ciganlija, Tašmajdan, Vuk Karadžić, Slavija, Vidikovac, and Kaludjerica. Other zones (0–2 SDs) are distributed throughout the city. These movements, as well as those of employees, and pupils and students, are characterized by the highlighting of attraction zones, center–periphery structure and poor tracking of transportation axes. The picture of interzonal component shows that it defines the pattern of total entertainment mobility of pensioners and the unemployed.

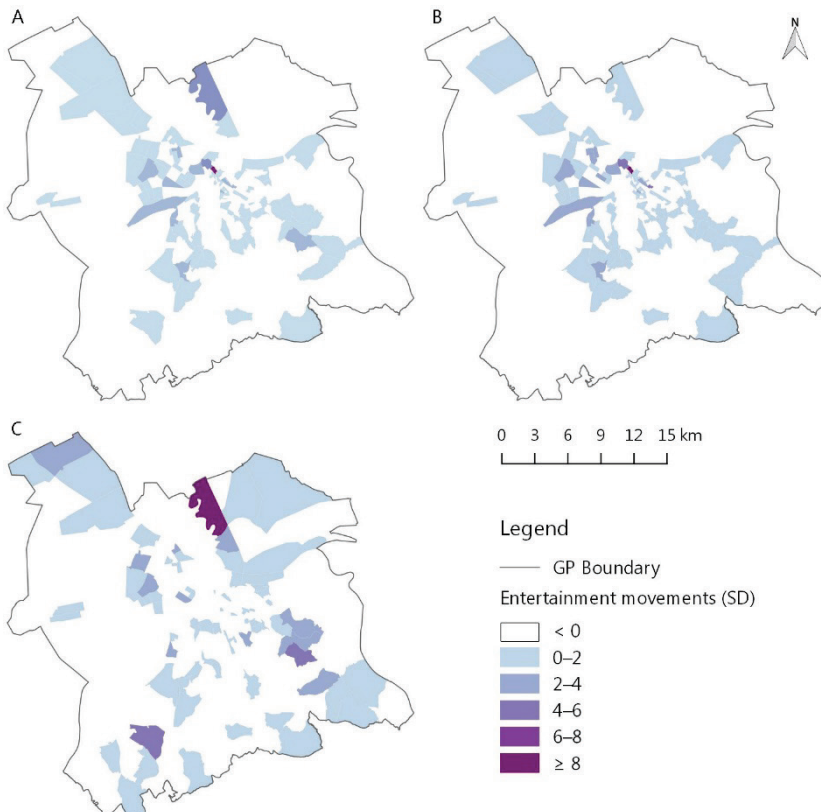


Figure 4. Destinations of entertainment movements of pensioners and unemployed: total (A), interzonal (B), and intrazonal (C).

Note. Adapted from *Prostorni obrasci ponašanja potrošača u Beogradu* [Spatial behavior patterns of consumers in Belgrade; Unpublished doctoral dissertation], by J. Todorić, 2019, University of Belgrade, Faculty of Geography.

Intrazonal movements of pensioners and unemployed indicate the opposite tendencies. The zones on the periphery are in larger categories here—Borča is again the first with over eight SDs, followed by Kaludjerica and Sremčica with 4–6 SDs. Then the peripheral zone of Batajnica, the center of Zemun, Bežanija, Block 23, Novi grad, Julino brdo, Medaković 2, part of Mirijevo, and parts of Kaludjerica, Kotež, and Leštane (2–4 SDs) appear. Population-large zones that contain numerous leisure facilities stand out, both in the central part of the city and on the outskirts. The zones in the lowest category (0–2 SDs) are distributed throughout the city and are very well represented on the outskirts of the city.

5. Discussion and conclusion

The presented results of the research on entertainment patterns of Belgrade's inhabitants mostly follow the rules that apply to other large cities and metropolitan areas. These are the rules of concentration of entertainment activities in the city center and secondary centers, the existence of attractive locations (hotspots) in different parts of the city, the existence and importance of different local entertainment venues and general importance of neighborhood orientation in choosing entertainment venues (Cachinho, 2014; He et al., 2019; He et al., 2021; Novák & Sýkora, 2007; van Leeuwen & Rietveld, 2011; Zasina, 2020).

By analyzing the spatial patterns of interzonal and entire entertainment mobility in Belgrade (for the total surveyed population and all the three separate groups), two rules that determine them can be defined. These are: (1) the center-periphery rule, which means the concentration of entertainment activities in the city center and their decline towards the periphery and (2) the rule of attractive entertainment zones (facilities or spatial units) that are universally attractive due to the presence of numerous and diverse entertainment content and spaces.

Data on intrazonal entertainment mobility speak in favor of the importance of local orientation in the choice of entertainment venues. The importance of the neighborhood is most obvious in the case of population-large traffic zones, which are consequently well equipped with facilities and spaces for entertainment and other consumer activities in general (shopping, recreation). In this regard, two rules can be defined that determine the spatial patterns of intrazonal mobility: (1) the rule of population size of the zone, which explains the occurrence of a large number of movements in a zone as a consequence of a large population and (2) the rule of intrazonal access to entertainment facilities. On the one hand, this rule often occurs together with the first because population-larger neighborhoods outside the city center are generally well equipped and meet the needs of the local residents. But, on the other hand, it also refers to the attraction zones, which are undoubtedly rich in entertainment facilities and spaces attractive to the inhabitants of the entire city, and the local population accordingly.

The research confirmed the initial assumption that the neighborhood is an important spatial determinant of entertainment activities. This is supported by the findings on the significant intrazonal attendance of traffic zones with a larger number of inhabitants, which are often located in suburban and peripheral locations. The assumption that there are especially attractive entertainment spaces in the city also proved to be correct, and it was unequivocally confirmed. Moreover, attraction zones are the most important rule of spatial distribution of entertainment movements in Belgrade for all the three examined groups. However, the hypothesis that different groups of residents (employees, pupils and students, pensioners and unemployed) move differently for entertainment purposes is incorrect. Groups

equally often have movements for entertainment (about one per day) and the rules of interzonal and intrazonal mobility are the same for all three groups of respondents. They visit the same city attraction zones and have similar neighborhood mobility.

In addition, the research obtained a general picture of the distribution of entertainment activities in Belgrade and identified some universal rules that determine the spatial patterns of entertainment mobility in the city. Attraction zones are recognized as the most prominent feature of the spatial distribution of entertainment in Belgrade. In addition, they are the most important determinant of entertainment mobility for all the groups of residents. Apart from being hotspots of entertainment, all attraction zones in Belgrade are at the same time spaces that concentrate some other contents and functions (business, education, shopping, recreation, etc). Examples are numerous zones in the city center (Student Square, Knez Mihajlova Street, Kalemegdan), those with facilities for shopping or recreation (Ušće, Ada Ciganlija). At the same time, this indicates that no zones in Belgrade exclusively intended for entertainment.

The living needs of residents in all parts of the city should be considered when planning entertainment facilities in the city. The significance of the city center and other attractive locations (hotspots) for entertainment is universal and constant, but the same goes for entertainment near the place of residence. In areas with high population density, the number of cultural and entertainment facilities should be increased accordingly in order to meet the structure of the cultural life of the community.

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