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Proximity to Priority: the 15-Minute City Reframed for Timișoara – Survey-Based Study

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Abstract. 15-Minutes City Concept has recently gained increased attention from specialists focused on accessibility, comfort and functional urban spaces. It primarily promotes spatial proximity of essential needs in terms of living. When adapted to the specific context of each city, it can become a powerful tool for increasing the quality of life. One of the groups that benefit the most consists of people with disabilities and those facing accessibility challenges. The study aims to analyze the compatibility of Timișoara, Romania with the 15-Minute City concept, also considering the experiences of people with disabilities. As the European Capital of Culture in 2023, the city experienced a notable increase in civic engagement and cultural activities. It has contributed to a new population outlook, focused more on accessibility and inclusive design. As most of the studies on this topic are focused on western Europe, analyzing technical data (maps, GIS, mobile data), this study, at this initial state, is focused on citizen opinion, behaviors and needs. The methodology used was a written survey, conducted among a total of 605 participants, of which 506 live in Timișoara or in its suburbs. Approximately 20% of the responders experience some form of disability or impairment. The survey was distributed both online and through random street interviews, in order to include individuals who are not active on social media, particularly elderly respondents. In addition, tailored interviews were conducted with visually impaired individuals to ensure their perspectives were adequately represented. The street-based data collection was addressed in three different areas of Timișoara: city center (Liberty Square), residential area (Bălcescu district), and commercial area (Iulius Town). The survey is focused on respondents' willingness to walk, frequency of accessing different types of public spaces, and the factors influencing their pedestrian route choices. The charts resulting from the survey can provide a clearer understanding of which urban functions citizens consider essential over others, a fact that leads to the need to locate these spaces in closer proximity than others. The results provide a brief insight into how citizens align with the characteristics of the city in the context of the 15-Minute City concept, while also highlighting perceptual differences between the general population and people with disabilities. There are major compatibilities in terms of walking time, frequents visits to green spaces, but also, in contrast with these, current limitations are car dependency, gaps in services like healthcare and accessibility services. Overall, the results are valuable, as they can guide future technical research toward a better understanding of the phenomena, support inclusive mobility improvements, inform the implementation of a 15-Minute City model in the Eastern European context, and point to new directions for research in this field.

Keywords: 15 Minute City Model, Timișoara, urban planning, public spaces, inclusive design, survey, accessible space.

INTRODUCTION

In terms of global destabilization due to the socio-economic context, people tend to be more and more aware of their proximal space. Cities must be analyzed and reorganized to be more sustainable, fair and transparent to their citizens. Moreover, adaptation for minorities groups, such as people with impairments, nowadays is necessary for the infrastructure of a city. The 15-minute city (15MC) model, suggested by Carlos Moreno, is an idealization of proximity: each citizen should have access in maximum 15 minutes by foot or by bicycle to the essential spaces like: home, work, medical centers, educational spaces, stores and recreational zones [1]. This concept is known for its sustainable characteristics like encouraging community life, reducing emissions and rethinking cities in the logic of proximity [2].

However, the latest literature shows that this urban model risks to become exclusive and not suitable for those that need it the most. It tends to avoid taking into consideration the diversity of physical and sensorial capacities of citizens. Studies shows us that people with different impairments or disabilities are often ignored or forgotten when pedestrian accessibility evaluation are made [3], [4]. Moreover, most of the analysed maps analysed in research or articles are only focused on fully abled bodies, without any disability. This aspect leads to the lack of adaptation to the needs of services for those who depend on assisted transport or have some form of sensorial or cognitive impairment [5].

The COVID-19 amplified these disparities, revealing how vulnerable are disabled individuals when it comes to the lack of infrastructure adapted to their needs [6]. On the other hand, due to the crisis, it accomplished to accelerate the development of some innovative solutions, such as flexible workspaces, nature interactions form home – initiatives like Nature Desks, Sedus Insights or UrbanLink15' had rethought the potential of the urban space from a human cantered perspective [7], [8].

In Europe, the New European Bauhaus promotes co-creation of inclusive spaces integrated in public zones in a natural method, by encouraging the citizens to model their surroundings [9]. In Romania, major cities like Bucharest, Timișoara or Cluj had already started to actively apply these principles. Timișoara had a major advantage by being the European Cultural Capital 2023 and fortunately the organizations together with different charity associations made the most of it by investing a good amount of the resources to improve public spaces for impaired people [10].

Within this framework, the study is mainly focused on Timișoara and aims to understand residents' attitudes toward this model city, with a particular emphasis on the needs of individuals with impairments compared to others. By developing questionnaire-based research, the aim of this research is to discover which are the essential urban functions for the residents of Timișoara, if these are similar or not when it comes to the zone they live in or if there is a rule on how frequent these spaces are used. The 15-minute city can be sustainable by its true meaning only if it is accessible as much as it can be to anyone.

GAPS IN LITERATURE AND THE EASTERN EUROPEAN PERSPECTIVE

Even though the 15-minute city concept has been widely discussed by numerous researchers in different fields, the academic literature has several major gaps along that cause limitations in model practice.

A first critical aspect is related to the geographical distribution of research. An analysis was carried out in the Web of Science and Scopus & Elsevier by searching keyword such as "15-minute city" AND "impairment" OR "disabled", published from 2020 to 2025. The results for both databases were showing that all the results came from Western European countries, North America, Australia or Asia, while Romania and other Eastern European countries lack this king of studies 'Figure 1'. [3], [6], [11]. This under-representation of the Eastern European region indicates a lack of contextual adaptation and understanding of the specific challenges of cities with post-communist infrastructure, poor mobility and low civic participation.

Moreover, individuals with disabilities are poorly represented in this context. Even when they are mentioned, most of the time their needs are not genuinely taken into consideration. For example, the notion of 'time' becoming relative and measuring distances personalized to each person's needs might provide a more accurate framework. [3] Else, there is a problematic overlap between 'proximity' and 'accessibility'. As Nicoletti et.al. (2022), disadvantages communities have less access to basic urban infrastructure, and this becomes more obvious in the absence of adaptative urban policies. [12].

From a methodological perspective, there can be spotted a few omissions. Most of the studies are often based on GIS data along with OpenStreetMap data base, mathematical simulations or network analytics without integrating direct perception of the citizens about their surroundings. Yet, there can be found some articles that are taking this approach into consideration, by collecting participatory or quantitative data, although most of them do not include people with impairments [13]. This leads to a substantial gap between the theoretical design of the city and the real experiences of the citizens.

In Romania, cities like Timișoara, take into consideration, as explained before, participatory tools through initiatives such as UrbanLink15' or some initiatives in European Capital of culture 2023 programme, but there are currently no scientific studies assessing how the 15 minute city concept can be applied in a medium Eastern European city, from a disability perspective.

FIGURE 1. Country Distribution of 15 Minutes City Publications in Scopus, Elsevier (a) and Clarivate (b)
Source: author's representation

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URBAN CONTEXT AND LOCAL COMMITMENT TO INCLUSION

In the past few years, Timișoara stood out by being an example of participative and inclusive urbanism model in Romania, promoting integration of the minority communities along with impairment. Projects like "Alive Spaces" have engaged the local community to create temporary interventions with different events in public spaces meant for promoting accessibility and diversity [14].

At the national level, Romania has adopted the National Integrated Urban Development Strategy 2022-2035, which highlights the importance of resilient, green and inclusive cities. It encourages authorities to integrate the principles of sustainable development into local planning [15].

On a civic and professional level, AMAIS organization actively promotes inclusive design, and through the guide 'Inclusive Design: Exercises of empathy in design' supports the integration of the needs of people with disabilities in architectural and urban processes, contributing to the professionalization of accessibility in Romania [16].

All the examples related, suggest that Romania has a progressive opening towards inclusive design in public spaces. However, for a systemic impact, there is a consistent need for coherent politics that supports all citizens, including the vulnerable ones.

METHODOLOGY

The methodology applied in this research is a quantitative one, based on a structured questionnaire distributed online and in-person across various districts of Timișoara. The objective was to discover the perceptions of the citizen regarding various aspects of public spaces of the city like proximity to the essentials, accessibility barriers, the relevance of this city model etc. To determine the size required for statistically significant results, the following standard formula was used:

$$n = \frac{N \times Z^2 \times p(1-p)}{(N-1)\, xe^2 + Z^2 \times p(1-p)} \tag{1}$$

Where n=required sample size, N=total population size (Timișoara ≈ 306.400 residents) [17], Z=z-score corresponding to the desired confidence level (1,96 for 95%), p= estimated proportion of the population (0,5 used for maximum variability), e=acceptable margin of error (0,05 or 5%), as proven by [18].

For a proportional amount of people with impairments reported to the whole amount of respondent, the following formula was used:

$$n_d = n \times p_d \tag{2}$$

Where n=amount of sample size, pd=estimated proportion of the population with disabilities (4%), as proven by [19]

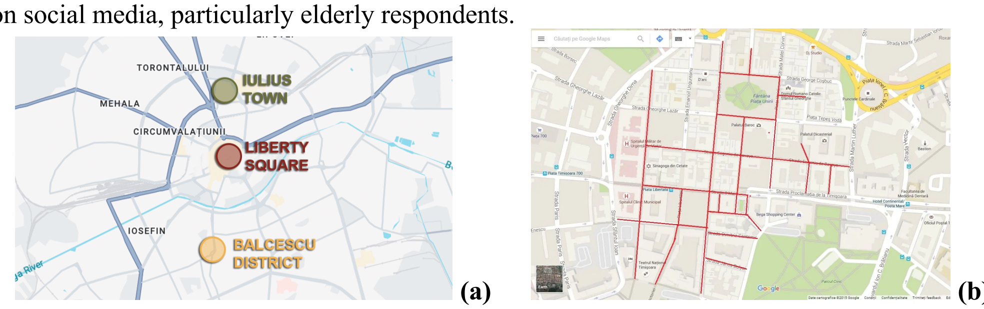
As for the total sample, the result of applying the formula (1) was n≈384, which means that the minimum amount of respondents are 384 to be representative at a 95% confidence level. When it comes to the number of respondents with some form of impairment (2), a minimum of 15 respondents are required for proportional representation.

The analysis is focused only on the inhabitants of Timișoara. The questionnaire was structured in three sections: basic demographics (Q 1-3), habits and perceptions related to mobility (Q 4-6) and behaviors and barriers in the use of public spaces (Q7-9). Questions 4-9 contributed to the results showed in the following part. Responders were asked to indicate the type of area they live in central, peripheral neighborhood or residential periphery (Q4), their main mode of transport: walking, car, public transport, bicycle (Q5) and the maximum time they are willing to walk (Q6). They also selected the factors that influence their pedestrian route choices: lighting, social points, cleanliness, slope etc. (Q7), the types of public spaces for which they would walk longer distances: park, medical centers, restaurants, markets etc. (Q8) and whether they experience any difficulty that affects access to public spaces, such as mobility or visual impairments (Q9).

RESULTS AND FINDINGS

Out of the estimated 384 respondents needed to ensure statistical representativeness, the survey conducted by this research has a total number of 605 participants, of which 506 live in Timișoara or in its suburbs with 68 of responders, out of 15 respondents that are experiencing some form of mobility or visual impairment.

The survey was addressed online and also randomly on the street, in order to ensure inclusion of individuals that are not active on social media, particularly elderly respondents.



(a) (b)

FIGURE 2. Distribution of places in Timișoara where the questionnaire was conducted (a), pedestrian street (b)
Source: (a) https://www.google.com/, author's edit; (b) https://www.opiniatimisoarei.ro/harta-strazilor-pietonale-din-centrul-istoric-la-timisoara-unde-vor-avea-interzis-soferii-dar-si-biciclistii/02/11/2015

The street-based data collection was addressed in three different areas of Timișoara: city center (Liberty Square), residential area (Bălcescu district), and commercial area (Iulius Town), the position in the city and the connection between them can be seen in 'Figure 2'.

The ratio between male and female responses is 49,6% female, 49,8% male and 0,4 prefer not to answer. The age of the responders is also proportional to each other: under 18 years old - 18%, 18-24 yo - 14%, 25-34 yo– 16%, 35-44 yo– 14%, 45-54 yo– 11%, 55-64 yo– 12%, over 65 yo– 15%. The demographic balance gives us a more accurate view when interpreting the answers.

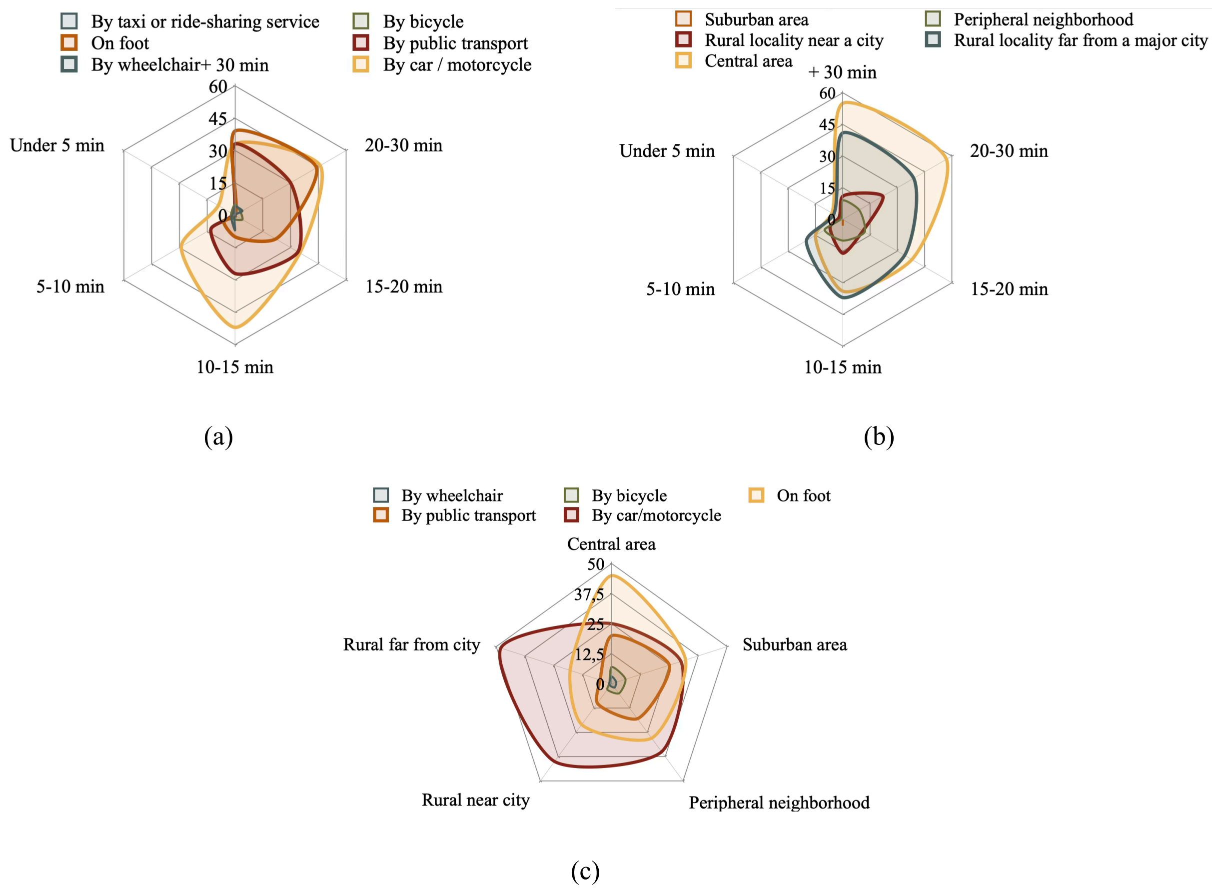


FIGURE 3. Association between walking time, area type and transportation mode
Source: authors' representation

The three radar charts from 'Figure 3' analyze the relationship between Q6-walking time willingness with Q5 – main mode of transportation (a) and with Q4 – type of area they live in (b) and the relationship between transportation mode and area type they live in. The left side graph (a) shows that most of the responders tend to use their personal car. By analyzing the comparison, it can be seen that people who travel mostly by foot have the highest concentration of responses of 20-30 minutes walking time while public transport users are equally willing to walk 15-20 minutes and more than 30 minutes. Vehicle drivers are mostly willing to walk 10-15 minutes. The second graph (b) shows most of the responders live in the central area of Timișoara. For the ones that live in the central area and peripheral neighborhood have the same level of willingness to walk proportionally with the number of responses from each category. Most of them are willing to walk more than 20 minutes. The ones that live outside of the city tend to report lower walking time. The third graph (c) shows that there is a strong association between living in central areas and walking, as well as between rural residences and car transportation.

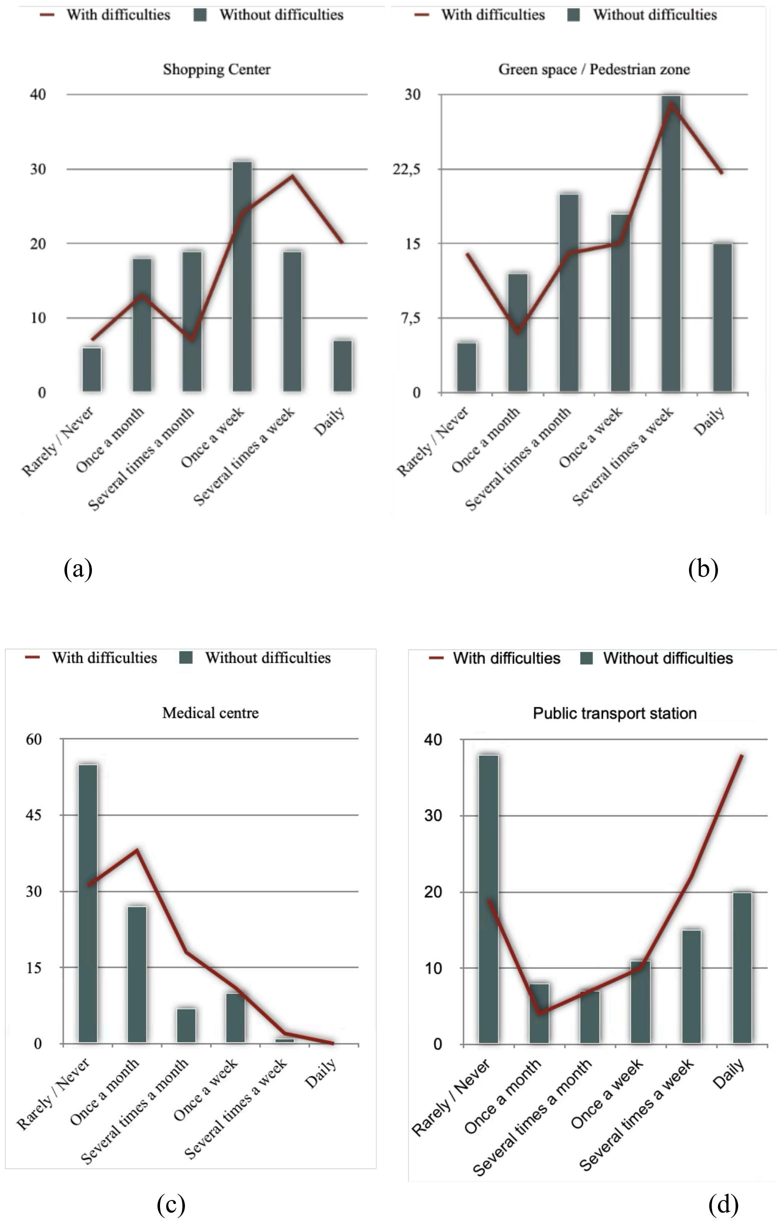


FIGURE 4. Frequency of main public space use by accessibility difficulty status
Source: authors' representation

The stocked area chart from 'Figure 4' illustrates how often responders use different types of public spaces (Q8) such as shopping centers, educational institutions, medical centers, gym, public transport stations, restaurants, cultural centers, green spaces / pedestrian zones. Overall, green spaces and shopping centers are distinguished by a high level of frequency daily or several times a month. On the opposite side, educational spaces, medical centers, along with cultural spaces have a lower rate of frequency: rarely, never, or once per month. Restaurants and cafes, public transport stations and sport zones are moderate in terms of visits; they are usually frequent several times per week or once a month

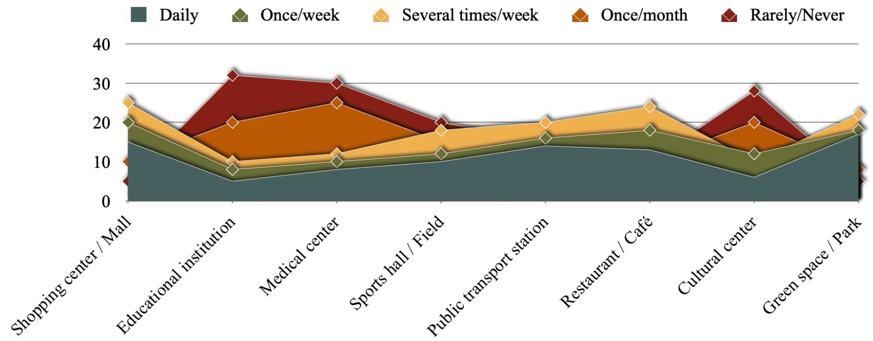


FIGURE 5. Frequency use of different public spaces
Source: authors' representation

The chart from 'Figure 5' illustrates the frequency with which respondents with and without accessibility difficulties visit some of the spaces mentioned in the previous chart from 'Figure 4' like (a) shopping centers, (b) parks, (c) medical centers or (d) public transport stations (Q8 correlated with Q9). It is noted that people without difficulties access all these spaces significantly mor frequently, with a balanced distribution across all frequency categories. In contrast, people with access difficulties tend to use those spaces less often, except public transport stations, where high values also appear for these categories in case of daily use. The biggest difference between the two groups is observed in medical centers, where those with difficulties face a lower frequency of access.

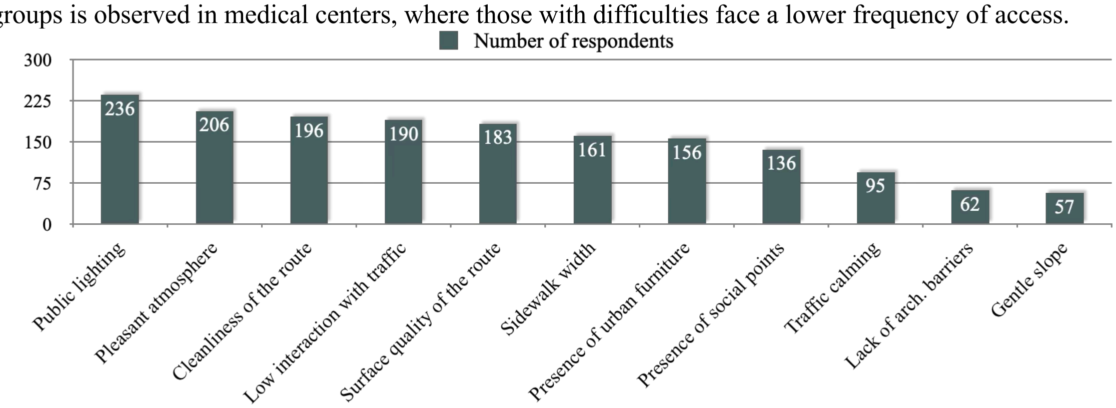


FIGURE 6. Factors influencing the choice of pedestrian routes
Source: authors' representation

The graph in 'Figure 6' shows the distribution of responders regarding the factors influencing the choice of one pedestrian route over another. According to the data collected, the most important feature is public lighting, followed by a pleasant atmosphere and the cleanliness of the route, indicating a major concern for environmental comfort and safety. On the other hand, features directly associated with accessibility, such as the lack of architectural barriers or slight slope, were less mentioned.

DISCUSSION

The analysis of the results highlights several relevant aspects for understanding the use of public spaces in Timişoara, especially in relation to urban accessibility. The balanced distribution of respondents according to gender and age provides a representative framework for interpreting the data. In terms of acceptable walking time, it is important to highlight the general willingness of residents to walk considerable distances, most respondents being willing to walk between 15 and 30 minutes. There is a clear trend of increased availability among those who walk or use public transport while car users prefer shorter distances.

This difference may reflect personal preferences, as well as lack of infrastructure, especially in peripheral and rural areas. The clear association between the rural environment and the use of cars, underlines the influence of the urban context on the mode of mobility. The increased frequency of visits to commercial spaces and parks indicates the increased need daily, while reduced use of educational, cultural or medical facilities may reflect different priorities or barriers to access.

When it comes to educational spaces, low attendance must be correlated with the age of graduates. This aspect must be considered in the mapping analysis of the function from the perspective of the 15-minute city. Also, the correlation with accessibility difficulties highlights significant disparities in the use of spaces, which might indicate potential physical or psychological barriers. The exception is public transport stations, where use remains high even among these groups, suggesting an increased functional dependence on this mode of mobility. Finally, the data on the factors influencing the choice of pedestrian routes reveal a major orientation towards comfort and environmental safety, leaving aside accessibility issues.

This finding raises questions about the extent to which the real needs of persons with disabilities are understood and reflected in urban planning, reinforcing the need for clearer and more inclusive measures in local policies by improving walkability in peripheral areas, ensuring access to essential services for people with disabilities, and aligning urban functions with daily priorities.

Similar to the findings of Pardo et al. [20], who used participatory methods to define accessibility indicators based on user experience, this study highlights comparable gaps, seen here through reduced engagement with public spaces among people with disabilities. Both studies show that this group remains underrepresented in planning processes. The results reinforce the need to integrate functional accessibility and perception-based insights into local urban policy for truly inclusive 15-Minute Cities.

CONCLUSION

The study highlights a significant potential of Timișoara in terms of implementing specific principles of the 15 minutes city concept, due to high residents' behaviors and tendency of walking or using the public transport. The declared willingness to walk distances of more than 15-20 minutes indicates openness to a more sustainable local lifestyle. The high frequency of visits to parks and shopping areas confirms the importance of the proximity of these urban functions. However, the other functions should not be marginalized; on the contrary, they must be more attractive and accessible when needed, especially for the vulnerable groups who may rely on proximity and barrier-free access. At the same time, the analysis reflects relevant gaps between the two major groups, where people with disabilities report a lower frequency of some public centers.

Although the city has registered notable initiatives in terms of inclusiveness especially during the European Capital of Culture in 2023, accessibility barriers remain present and under-represented in the perceived priorities of the general population, according to the data on the criteria for choosing pedestrian routes. Since this research is constructed by the citizens' opinions and needs, the results offer a valorous input on the 15-minute city concept, which usually is focused on digital maps and analyzed mobility. The results support the need for integrated urban policies, focused on functionality, equity and proximity, adapted to Eastern European cities which often face accessibility and functional challenges due to historical and political context that have slowed urban development.

As a future direction, we aim to develop comparative GIS-based maps to analyze spatial access for respondents with and without disabilities. This approach will not only consider proximity but also the actual usability and accessibility of public spaces, providing a more complete understanding of functional inclusion.

Overall, Timișoara can be a good candidate for deepening the concept of a 15-minute city, focused on people with different kinds of impairments, taking into consideration that all the inequities related to accessibility and functional distribution must be rectified.

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