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ANALYZING ACCESSIBILITY TO URBAN SERVICES FOR NEW RESIDENTIAL BUILDINGS. A CASE STUDY OF CRAIOVA CITY

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Abstract: The present study uses methods based on Geographic Information System (GIS) to investigate the distribution of new residential buildings in Craiova (Romania) and assess their accessibility to key urban services. The focus is on collective housing developments constructed after 2015, encompassing both completed and ongoing projects. The research evaluates accessibility at the neighborhood level, considering key facilities and services such as banking services, pharmacies, kindergartens, primary schools, supermarkets, sport facilities, and green urban areas. Data for urban services were collected from open-source databases (OpenStreetMap, Copernicus Land Monitoring—Urban Atlas) and completed by field investigations. Isochrones, representing travel time from each residential building to the selected services, are used to measure the residents' accessibility by multiple travel modes. Additionally, the study considers the proximity of new residential buildings to the old historical city center, as a hub for shopping and leisure activities, and the walkability of the neighborhoods where the collective residences are located. The findings shed light on the spatial distribution of new residential developments in relation to essential urban services, providing valuable insights for urban planning and development strategies in Craiova, as well as for future residential investments.

Keywords: new residential buildings; accessibility; urban services; GIS; Craiova (Romania)

1. Introduction

The increasing demand for new housing is a permanent challenge in cities worldwide, especially in those characterized by constant development and modernization. The inhabitants' needs do not always match the form of the city and the urban development plans, thus causing important functional heterogeneity (Ouředníček & Kopecká, 2023). The continuous dynamics of the urban landscape brings various challenges to the fore, like problems related to the accessibility of urban services and the degree of walkability, which are among the most addressed issues in research studies (Anjomshoaa et al., 2017; Guida & Caglioni, 2020; Reisi et al., 2019).

Large cities encompass various urban services, from educational institutions and health services, to commerce, sports, and leisure facilities, and different housing types (Shen et al.,

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2020). Therefore, the ease of movement between different locations has an important role (Riggs & Sethi, 2020) in the implementation of urban planning strategies and land use policies (Shen et al., 2020). Various studies have shown that accessibility affects the quality of life and overall well-being of urban dwellers (Delbosc & Currie, 2018; Jaśkiewicz & Besta, 2014). Some American studies even use the term "desert" when referring to great distances or when describing areas with low access to financial services like ATMs, banks (Hegerty, 2022), or food stores (Jaskiewicz et al., 2016).

Reduced accessibility or less walkable neighborhoods are real challenges for people with mobility issues as they cannot move around freely and have difficulties in accessing essential services and participating in community activities (Gaglione et al., 2021, 2019). Therefore, the dynamic interaction between residential spaces and the availability of key services such as healthcare, education, transportation, and public amenities becomes increasingly critical. Accessibility is essential in ensuring the residents' access to essential services and resources that support their daily needs to live healthy, productive lives (Logan & Guikema, 2020). However, low-income residents, persons with disabilities, and people living in marginalized communities usually have limited access to essential urban services (Chiluba, 2019; Gilderbloom & Rosentraub, 1990). The ease of reaching a location, as defined by Sun et al. (2017), is an essential factor to consider when evaluating the livability of residential areas. Also, residential areas that have a strong sense of community and more opportunities for residents to engage in social activities are considered more socially accessible (Klein et al., 2021).

Different Geographic Information System (GIS) based methods like buffers or Euclidian distance (Kelobonye et al., 2020), isochrones (Allen, 2018), or pedestrian accessibility/walkability (D'Orso & Migliore, 2020; Zecca et al., 2020) were used to determine the level of accessibility to various urban services or other places of interest. Yhee et al. (2021) conducted an analysis on kindergartens, primary schools, parks, childcare facilities, sports facilities, and libraries using the Accessibility Index and a navigation application programming interface (API) to determine the walking and driving travel time between home and certain urban services. The authors chose to use an API, which calculates travel time more accurately, as he considered that the buffer method is not very accurate because it does not take into account pedestrian crossings.

Another way to evaluate the accessibility of a residential area is by considering its walkability score. Walkability refers to the ease and safety of walking in an area, and it is influenced by various factors such as the quality of pedestrian infrastructure, the proximity of amenities, and the population density. Some researchers correlated the prices of residential complexes with the walk scores, observing that walkable neighborhoods have a significant influence on apartment prices (Wittowsky et al., 2020; Yang et al., 2018). A study conducted in the United States confirms that a single-point increase in walk score causes apartment prices to rise about USD 700–3,000 (Cortright, 2009), and a 10-point increase is correlated with a 1–9% price increase (Pivo & Fisher, 2011).

Another issue addressed by researchers in connection to increased accessibility to various resources is access to public transport. Residential areas that have good access to public transport are considered more accessible than areas missing transport options and relying more on personal cars. Public transport can provide a viable alternative, less polluting and cheaper one, making it easier for residents to reach essential services and participate in community activities (Ceccato et al., 2020).

Research on residents' accessibility to urban services is well-documented (Park & Goldberg, 2021; Zhu et al., 2023), but there are gaps in understanding the dynamic accessibility, long-term urban planning impacts (Järv et al., 2018), community perception related to accessibility (International Transport Forum, 2017; Vandebona & Tsukaguchi, 2013), and interconnectedness of services, which is the approach of the present study.

In Romania, several studies approached population's accessibility mainly to health services (Merciu et al., 2013; Vîlcea & Avram, 2019), waste collection services (Mihai et al., 2012), urban green areas (Cernicova-Buca et al., 2023; Vîlcea & Șoșea, 2020), education (Hatos & Bernáth, 2007; Mosora & Mosora, 2013), and public transport network system (Bădău et al., 2020; Dragu et al., 2011; Vîlcea et al., 2018). In these research studies accessibility to different urban services is mainly assessed using GIS data processing and mapping. In addition, some are case studies on various aspects of accessibility in Craiova city or its metropolitan area.

This study focuses on the spatial distribution and accessibility of new and future residential buildings to most important urban services using GIS methods. Three methods were used to compare the results concerning the estimated and actual accessibility to urban services: walk score, buffer, and isochrone methods focusing on three types of movement: walking, cycling, and driving. Additionally, the study examines the proximity to the historical city center which is considered a hub for social interaction and leisure. The results of the research represent a useful tool for decision-makers, enabling them to enhance accessibility for all residents based on the patterns in collective housing development when considering strategic planning.

2. Study area

The study area is Craiova city, located in the south-western part of Romania, the residence of Dolj County and the only urban growth pole from the South-West Oltenia Development Region (Figure 1). The city has an area of 85.26 km^2, out of which approximately 48% is occupied by the built-up area. It has a population of 296,359 inhabitants (National Institute of Statistics – Romania, 2021), unevenly distributed throughout the city, and a density of 3,476 inhabitants/km^2. Craiova, together with 23 other localities, forms the Metropolitan Area of the City (H.C.L. al Mun. Craiova Nr. 297/2008, 2008; Legea nr. 350/2001 privind amenajarea teritoriului și urbanismul, 2001; O.G. nr. 26/2000 cu privire la asociații și fundații, 2000).

Historical influences, economic activities, transportation networks, and urbanization have determined the spatial structure of Craiova city. Zoning regulations, cultural factors, and population growth have contributed to the development of distinct residential, commercial, and recreational areas. The city's layout reflects a combination of historical heritage (Vîlcea et al., 2023), economic dynamics, and contemporary urban planning, shaping its unique character and functionality (Bădiță, 2013; Șoșea, 2013). As many other cities, Craiova has constantly expanded, especially after 2010, due more to urban sprawl than to population growth (Șoșea & Popescu, 2014). The economic changes, increasing financial potential, and changing lifestyles have led to an increased demand for new and more spacious housing. As a result, two types of new residential areas developed during the last decade in Craiova: individual houses, especially outside the city limits, and collective housing, which have grown inside the city limits. The present study focuses only on the residential projects with collective housing, as shown in the location of the study area.

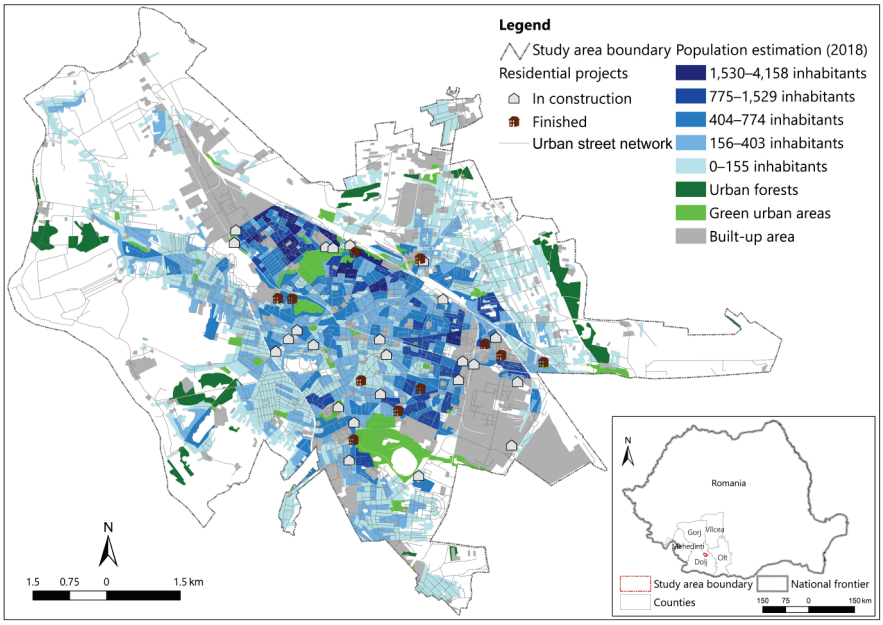

Figure 1. Location of the study area at national and regional level.

The location of the city at altitudes below 120 m facilitated the expansion of built-up areas within the administrative boundary and on its outskirts, but in recent years, the expansion has been more evident in the northern and southern areas of the city. In 2021, as a consequence of the increased built-up space, mainly residential, in the metropolitan area, the municipality decided to include new areas inside the city boundary. This decision is correlated with future policies and investments concerning the extension of urban services like water supply, sewerage and gas lines, new routes for bus lines, and even playgrounds and kindergartens. In 2022, we identified and studied 35 residential projects, including 24 ongoing and 11 newly completed.

3. Data and methods

In order to build up a comprehensive database, data collection was carried out in several stages. GIS methods were employed to analyze the spatial distribution of new residential buildings with collective housing and of the considered urban services. In terms of urban services, we consider it important for the residents to have access to primary education facilities (schools and kindergartens), pharmacies, banking services, supermarkets, and green urban areas for leisure activities (Table 1).

Table 1. Key urban services

Urban service	No. of considered units	Data type
Banking services	46	point
Education units (kindergarten and primary school)	81	point
Markets and supermarkets	68	point
Pharmacies	161	point
Sport and leisure facilities	24	point
Urban green areas (public parks and gardens, urban forests)	52	polygon

The database contains the inventory of the new residential buildings with collective housing (completed after 2015) and future residential areas (scheduled to be finished in the next two years), as well as six types of key urban services (Table 1). Spatial data were collected from two open-source databases—OpenStreetMap (n.d.) and Urban Atlas Land Cover/Land Use 2018 (vector), Europe, 6-yearly (European Environment Agency, 2020). The population data used to indicate highly populated areas were collected from Urban Atlas database and are estimations for 2018. The database was completed by digitizing the information collected through the analysis of Google Earth imagery (Google, n.d.), real estate information, and ads during field investigations, and they were mapped accordingly. Subsequently, the collected data were processed to establish the accessibility of the new residential buildings to key urban services and to classify them in five categories depending on the walk score (accessibility to urban services on foot; Figure 2).

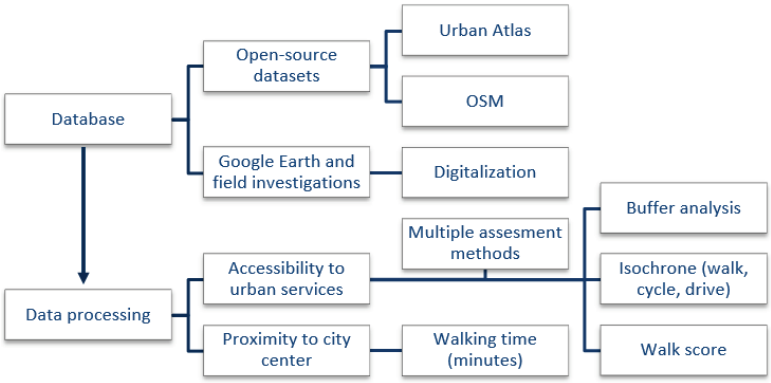

Figure 2. Research workflow.

Accessibility to urban services was assessed using three different methods with QGIS (Version 3.30 's-Hertogenbosch) software: isochrones render travel time from each residential project, considering walking, cycling, and driving modes; the Walk Score method evaluates neighbourhood walkability, while buffer analysis estimates the spatial extent of accessibility for different services. All methods—Walk score, Buffer analysis, and Isochrones—are employed to compare estimated and actual accessibility of residents. This approach allows for a comprehensive examination of the variations in accessibility to key urban services. The study also explores the proximity of new residential collective buildings to the historical city centre. The old city centre was renovated in 2015 and is considered a hub for shopping, social interaction, and leisure.

The areas covered by buffers and isochrones were compared to highlight the differences. The estimated access was calculated using the distance buffers (500 m, 1,000 m, and 1,500 m). Although used in many studies that assess accessibility, the buffer method is not very accurate, as the generated areas do not account for physical barriers. Thus, for more precise results regarding the actual access of the residents to urban services, isochrone method was used to map the space that can be covered by walking, cycling or driving using the street network within a specific time window. The isochrones were calculated using the travel time plug-in from QGIS.

The walking scores were calculated using the free online API calculator (it provides information on the walk score of a location; Brewster et al., 2009; Walk Score, n.d.). The website calculator provides a value for the walk score that is calculated using an algorithm that assesses the walkability of a location based on factors such as proximity to amenities (grocery stores, restaurants, and parks), population density, block length, intersection density, transit access, and the presence of walkable routes. The algorithm also considers road metrics like sidewalk presence and road width. In order to determine the time to reach a destination on foot, factors like distance, assumed walking speed, and natural obstacles such as rivers or highways are taken into account. Based on the location address of the residential buildings and the urban services existing on Google Maps, the API returned a score that helped us classify the locations of the residential projects in five classes depending on the resulted walk score. We compared the results with those obtained for the covered areas using the isochrone method.

The study assesses accessibility using three distinct methods as each have their advantages and limitations. The buffer method, the less adequate to assess accessibility, was completed by isochrone method that calculates accessibility by mapping reachable areas within a set time frame, considering transportation networks. The method captures spatial distribution, but may overlook pedestrian factors. Therefore, in contrast with the second method, the Walk Score evaluates walkability based on nearby amenities, providing a simple numeric score. It emphasizes pedestrian factors, but oversimplifies accessibility in diverse transportation areas. Combining the last two methods in the study, we provide a comprehensive perspective, with isochrone maps revealing spatial accessibility and Walk Score detailing pedestrian-friendly amenities.

4. Results

The study considered 35 new residential complexes and six types of urban services of primary interest. The new residential complexes are made up of studios, apartments with one, two, or three rooms varying between 32 and 120 m^2. The urban services, considered essential and needed in a close range for the residents' rapid reach, are relatively evenly distributed within the neighbourhoods of the city. To evidence areas with a high concentration of urban services, point density analysis was performed using interpolation (Figure 3). A higher concentration of such services is noted in the central area, except for the leisure and sport facilities, which are generally located in the city outskirts. Regarding the distribution of green urban areas, not all neighbourhoods have the same accessibility. While there are only three large urban parks located within the built-up area, urban forests are located at the city margins. Small green areas that are scattered around the city and located within a short walking distance, provide access for individuals who prefer short walks and who cannot or do not wish to visit large parks (Vîlcea & Șoșea, 2020).

The spatial analysis shows that all the 35 residential complexes are located within the city boundary, but only six of them are 15 minutes away from the city centre (Table 2). The most distant residential complexes are located within 45 to 60 minutes' walk from the city centre, while 12 of them within 30 to 45 minutes' walk. The distance between the city centre and all residential projects indicates that six of them are located at a distance greater than 3 km.

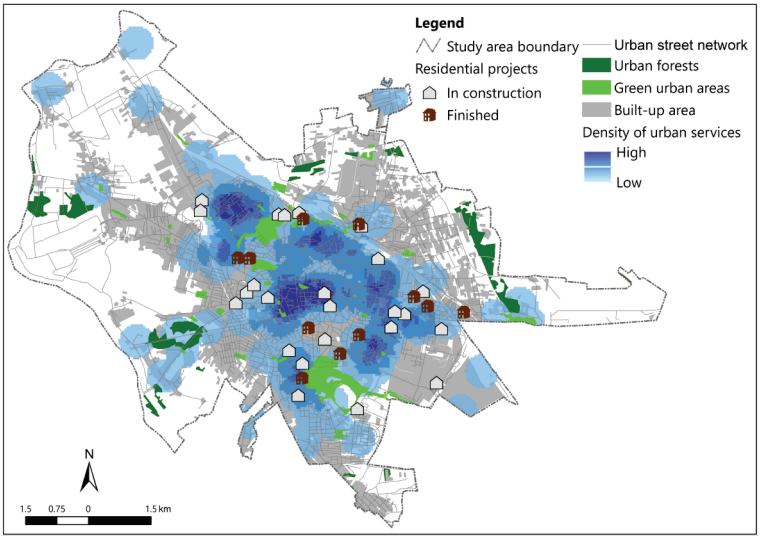

Figure 3. Areal distribution and density of essential urban services.

In terms of accessibility to urban services, two residential complexes (Henry Ford 3 Residence and Romanescu Park Residence) have no services for a distance of 10 or 15 minutes' walk. These are the residential buildings that registered the lowest values for the walk score and are far away from the city centre (Figure 4 and 5). Basically, the future residents of these complexes will be car-dependent to access most of the primary urban services.

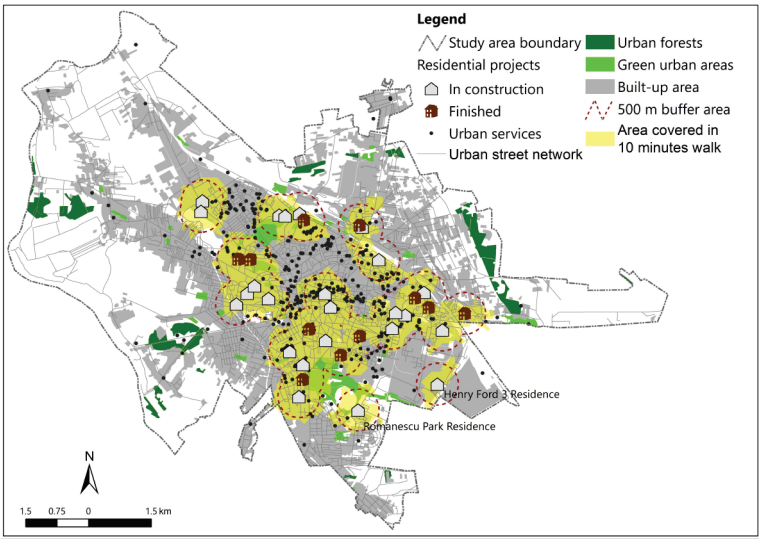

Figure 4. Isochrone map showing what is accessible in a 10-minute walk and in 500 m buffer zone from residential complexes.

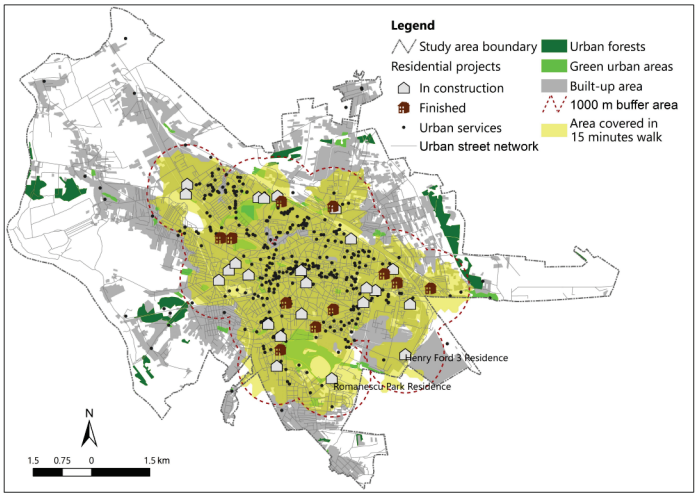

Figure 5. Isochrone map showing what is accessible in a 15-minute walk and in 1,000 m buffer zone from residential complexes.

Although cycling is not very common for the residents of Craiova, we consider this type of movement to be quick, healthy, and non-pollutant. Despite the benefits offered by cycling, Craiova is not a friendly city for cyclists and few investments have been implemented in this direction. There are only a few bicycle tracks (9.1 km in total) along three main boulevards. In the absence of special lines designated for bikes, the alternative is to use the streets together with the cars, which exposes people to a high risk of accidents. Analyzing the areas covered in 10 minutes of cycling and those covered by the 1,500-meter buffer, it resulted that, in most cases, cycling is a good alternative to access most of the urban services (Figure 6). Few sport arenas and part of the urban forest areas lay outside the 10 minutes' cycling coverage.

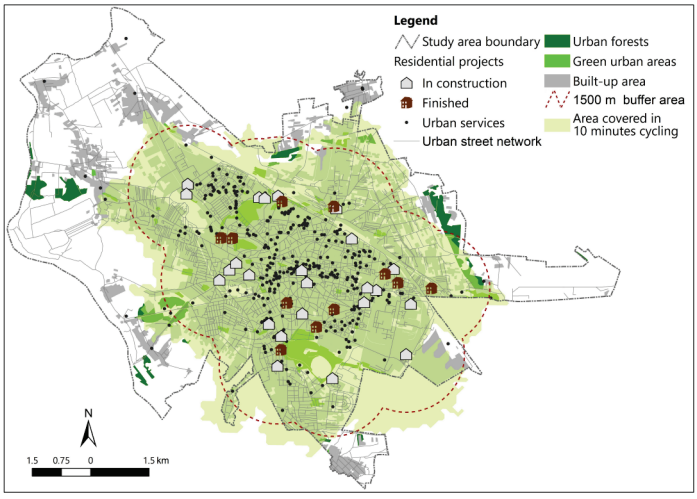

Figure 6. Isochrone map showing what is accessible in a 10-minute cycling and in 1,500 m buffer zone from residential complexes.

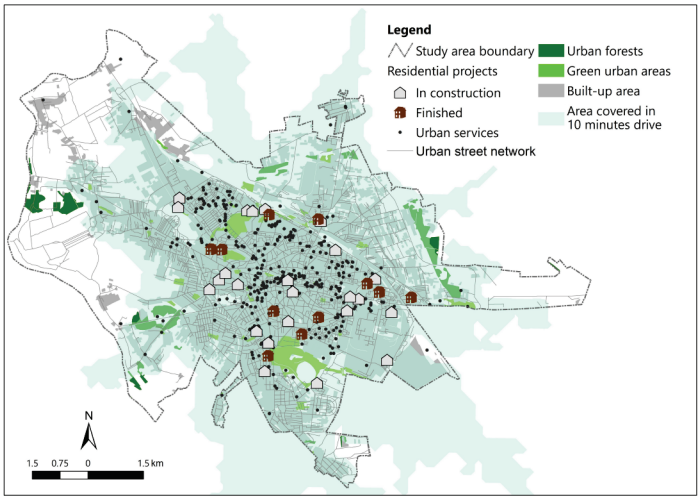

Figure 7. Isochrone map showing what is accessible in a 10-minute driving from residential complexes.

Isochrones were created for walking mode and car driving mode, as three residential areas are car-dependent, while 14 of them are partially dependent on car to access certain urban services. For 33 residential areas, essential urban services like stores, bank services, schools, pharmacies, and green areas can be reached on foot in maximum 15 minutes. The analysis also showed that there are small differences between the areas included in the range of the 500-meter buffer and the 10-minutes walk isochrone. The most notable difference between the areas covered using two different methods is between the 1,000-meter buffer and the 15-minutes walk isochrone (Figure 4 and 5). The difference confirms that there are inconsistencies between the estimated access (calculated by using a straight line) and the real access, closer to reality, mapped using the street network and time interval (Allen, 2018).

If we consider other means of transport, like cycling or driving, the residents' accessibility to any type of urban services increases to almost 100%. The 10-minute isochrone using the cycling method shows that one person can reach a wide range. Also, the remotest residential buildings have access to some urban services, if their residents use bikes. When it comes to driving, the accessibility exceeds the administrative limits of the city only in ten minutes, but traffic was not taken into account (Figure 7). Traffic may change the accessibility in terms of time, especially during rush hours for certain urban areas.

Accessibility is important (Kelobonye et al., 2020), but accessibility in terms of walking is considered of high importance when rating properties. Not only does walking confer a wide range of benefits for human health and environment (Guida & Caglioni, 2020), but its importance increased greatly during the pandemic of COVID 19 (Zecca et al., 2020). In terms of walkability, the walk score indicator was developed to measure the walkability of any address. Meanwhile it has become a widely used tool in real estate and urban planning to assess the walkability of neighbourhoods and cities (Cortright, 2009; Reisi et al., 2019). Walkability refers to the extent to which an area or neighbourhood is pedestrian-friendly, making it easy and safe for people to walk and move around without relying on cars or other vehicles. The accessibility of a residential area is often evaluated by considering its walkability score (Carr et al., 2010).

Table 2. The values of walk score and walking time for the new residential complexes

Residential project	Walk score*					Walking time (minutes)**			
	0–24	25–49	50–69	70–89	90–100	0–15	16–30	31–45	46–60
AEE Park Residence				**72**			28		
AEE Billa Residence				**73**			28		
AEE Sucpi Residence				**70**				35	
Cittadella Residence				**75**			27		
Atrium Residence				**78**			20		
Happy Residence			63				27		
Happy Residence 2				**84**			27		
Happy Residence 3			52				24		
Vladimirescu Residence 2				**77**			23		
Bujorului Residence					**91**	**15**			
Magnolia Residential Complex			61					34	
Green Life Residence			55					44	
DMR Residence				**73**		**15**			
Deceneu Residence			69				30		
KLS Residence			51					34	
Decebal Residence			68					37	
Gloria Residence			55					40	
President Residence				**84**			25		
Dacia Residence			56					31	
King Traian Residence				**84**		**10**			
Complex Henry Ford 3	20								52
Romanescu Park Residence	21								47
Morgan Residence				**71**			26		
Park Condominium				**75**			25		
Metropolis Residence					**92**	**10**			
Authenticity apartments		48				**15**			
1 Mai Residence AER			68				26		
West Gate Residence			60						48
Win Madona Residence				**80**		**12**			
Eva Residence			61				20		
Lăpuș Residence			53					44	
Cornițoiu Residence				**73**				35	
Rovine Residence				**76**				33	
Complex 1 Mai Apartments			57					33	

Note. * Values calculated by using online API (Walk Score, n.d.); ** Travel time in minutes from each location of the residential complex to the historical city centre; Bolded values indicate a high Walk score and short Walking time.

According to studies (Sarr et al., 2010; Reisi et al., 2019; Riggs & Sethi, 2020) walkability is determined by several factors like: sidewalks and footpaths as their availability and quality make it easy and safe for pedestrians to walk; street connectivity (density of streets and intersections that makes it easy for pedestrians to reach their destination without having to walk too far or cross busy roads); land use mix that encourages people to walk and explore their neighbourhood; safety offered by the presence of pedestrian crossings, speed limits, traffic signals, and aesthetics that can also encourage people to walk and spend time in the neighbourhood. The calculation of walk score implies the combination of all factors considered weighted in order to generate an overall walkability score. This score provides a quantitative

measure of how easily residents can access various services and amenities within the neighbourhood on foot. The present studies used a free API calculator (Walk Score, n.d.), available online to obtain the overall score for all residential projects. The values for walk score are between 0 and 100 points. There are five classes established and presented on the website where the free calculator provides the possibility to estimate a value for a particular location. The highest values between 90 and 100 are considered a walker's paradise, as daily errands do not require a car for completion. Values between 70 and 89 indicate very walkable areas as most jobs can be accomplished on foot, while score between 50 and 69 are considered somewhat walkable. The lowest values between 49 and 25 and 24 and 0 describe areas that are car-dependent because the fulfilment of most needs requires a car.

The residential buildings were classified into the mentioned five categories (Table 2) depending on the values of the walk score obtained. Results show that only two places have over 90 points (Bujorului and Metropolis Residences), meaning that daily errands do not require a car, although in almost half of the new residential complexes most of the errands can be accomplished on foot. High walkability scores indicate that the respective areas are pedestrian-friendly and easy to navigate (Bereitschaft, 2018; Lee & Park, 2022), and with access to essential services. Four residential complexes scored high on the proximity to the city centre and on the walk score: Bujorului Residence, DMR Residence, King Traian Residence, and Win Madonna Residence (Table 2). We see that there is also a connection between a relatively high walking score and the proximity to the city centre where most urban services are present.

Additionally, a high level of accessibility to urban services determines a significant increase in the prices of the residential buildings and only people with a high income can afford paying higher prices in order to have a rapid access to urban services (Cortright, 2009; Yang et al., 2018). Prices for an apartment in a new residential complex are relatively high. Prices differ depending on the location and proximity to important facilities like public transport, schools, and supermarkets. The average prices for the most desired two-room apartments varied between 65,000 EUR and 135,000 EUR (Figure 8).

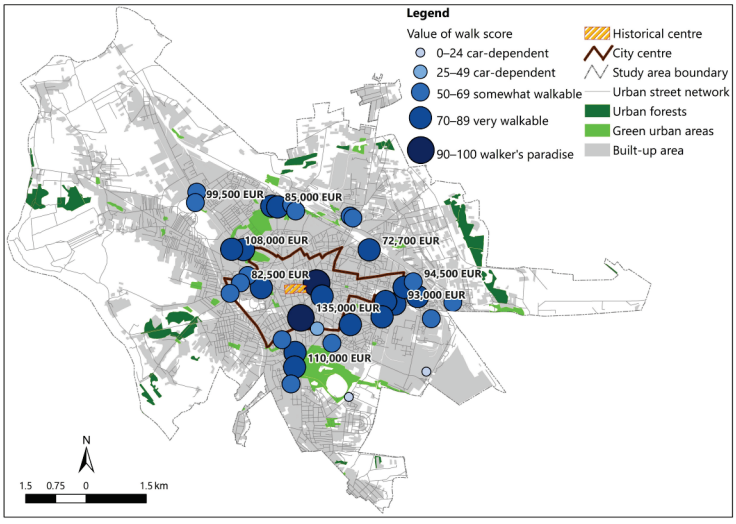

Figure 8. Value of walk score and properties' prices.

The price information was collected from real estate ads and webpages of the real estate developers. For projects already finished or sold-out, prices were not available. A common practice among real estate developers is to sell the apartments in advance, before finishing the construction and prices may vary depending on the financial option chosen by the buyer. The price analysis indicated that residences close to the city centre or close to important urban services have higher prices for the two-room apartments, even if the living surface is smaller (around 60 m^2). For the city of Craiova, a surface of 60 m^2 for a two-room apartment is considered very good, since apartments built during the communist period are between 30 and 50 m^2.

6. Discussion and conclusion

The concepts of walkability and accessibility have been criticised in the literature due to concerns like gentrification or equity challenges, as they may lead to the exclusion of lower-income residents and increase social inequalities (Geurs et al., 2016; Pinna et al., 2021; Tiznado-Aitken et al., 2018). An increased attention on pedestrian accessibility may ignore the importance of other transportation modes, neglecting the diverse mobility requirements of cyclists (designated and delimited corridors), public transportation users, and even private car dependents. Therefore, one of the objectives in the present study was to address residents' accessibility from the point of view of multiple transportation means.

The present study uses GIS methods to assess the residents' accessibility to essential urban services in Craiova city. The novelty of the study results from the use of multiple analysis methods, which provides a comprehensive approach to assess accessibility by multiple travel modes, integrating GIS methods and data collection strategies. The integration of open-source databases and field investigations ensures a robust dataset, therefore addressing potential inaccuracies in GIS methods. The second approach in terms of novelty results from the fact that the authors considered multiple urban services and their accessibility, different from other studies (Damurski et al., 2020; Shen et al., 2020), which focus mainly on a classification of facilities into several categories, such as transportation, commercial, cultural, or health services. The study does not focus on the residents' financial status and social profile, but includes a simple analysis of the average prices of apartments with considerations on the location of the residential buildings and financial potential of their possible inhabitants.

Despite its limitations, the multi-method approach of the present research offers a comprehensive assessment, highlighting the connection between residential spaces and key urban services (Skalicky & Čerpes, 2019). The findings outline the importance of considering various factors in urban planning to ensure an equitable access to essential resources, providing a valuable insight for decision-makers in terms of future urban planning projects and for future residential investments in Craiova.

The study of accessibility to urban services in Craiova city reveals a relatively even distribution of essential services across neighbourhoods, with a notable concentration in the city centre. The city of Craiova has witnessed a growing demand for new housing in the last two decades, resulting in an emergence of modern residential complexes with collective housing. The field observations revealed that the new residential buildings tend to offer more services like commercial spaces and pharmacies at the ground floor and even outdoor playgrounds for residents only. Some of the new complexes are gated community, offering their residents not only private parking lots, but also a more sense of security by limiting the

access through barriers or gates and private security. Most residential buildings are big complexes, but some of them are only two- or three-floor apartment buildings, located in all areas of the city. Another important aspect revealed during field observations was that almost all these new residential buildings, with collective housing, have few private gardens or other green spaces that are common to old apartment blocks, although good access to a park is considered essential for the residents. This may be an important aspect to consider for future real estate developers.

The analysis shows that most of the residential complexes are located in areas with a high density of buildings, only a few being located on the outskirts of the city. Regarding the stage of completion, most of them are in different phases of construction, being partially put into use and only a few are fully finished. Several residential projects were expected to be finished in 2023.

The results of the study indicate that most residential buildings are located in areas with high access to urban services of primary interest, at a maximum distance of 2 km and at a distance of 15–20 minutes' walk from the central area of the city. Except a few cases, the accessibility of the present or future residents to essential urban services is relatively high. Also, half of the locations have a good score on walkability, but only six locations are less than 15-minute walk away from the historical city centre. The isochrone method identified cycling as a viable alternative for accessing urban services within a 10-minute range for most residential areas, despite the limited infrastructure of the city dedicated exclusively for cycling. Car dependence is observed for three of the residential projects analyzed, and partial car dependence is noted in 14 of them. Walkability, measured by the walk score, is an important factor in evaluating residential areas. While only two complexes score over 90 points in walkability, 15 locations resulted in signifying excellent pedestrian-friendly environments, thus having a good walkability.

Favourable accessibility to urban services is linked to high prices for residential buildings, making them less affordable for individuals with lower incomes. Proximity to key facilities, such as public transport and schools, significantly influences apartment prices in new residential complexes. The present study may be improved with further research regarding the social status of the residents of the city of Craiova. Also, correlation between income and affordability of the new residential complexes may be another aspect to consider. During the last decade, the majority of new residential areas built in Craiova have provided better access to urban services, bigger apartments, and higher comfort. Still, the real estate developers address the needs of a small part of the population that can afford to purchase a new house on the market. This trend may lead to urban segregation and gentrification in certain areas and further devastation of urban neighbourhoods with old and decaying buildings.

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