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The role of open-air markets in the 15-minute city: A case study of Rynek Jeżycki in Poznań (Poland)

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Abstract

Diagnoses of the problems faced by modern cities prompt the search for tools to support sustainable urban practices that affect, for example, the propensity to walk. This article examines the role of open-air markets in Central Europe in the context of the 15-minute city concept. From the authors' perspective, the regional context plays an important role here due to development dynamics of the region, where urban markets served (after the Second World War until 1989) as substitutes for centralized economies. Today, we suggest, these markets create a kind of alternative to vertically integrated supermarkets and big-box stores. This study attempts to shed light on the role of open-air markets in the context of proximity-centered accessibility, through a case study of Rynek Jeżycki in Poznań (Poland). The findings of the study indicate that the traditional urban market formula fits into the concept of a 15-minute city, which provides grounds for cautious recommendations. The conclusions of the analysis are based on a study using a mixed-methods formula, including measures of pedestrian accessibility, crowd mapping, observation, questionnaire surveys, and in-depth interviews conducted with users of Rynek Jeżycki.

Keywords: Open-air markets, 15-minute city, Central Europe, pedestrian accessibility, mixed methods, Poznań, Poland

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1. Introduction

In recent years there has been a surge of interest in the concept of 15-minute cities, which focuses on urban and transportation planning practices enhancing non-motorized access to everyday destinations (Moreno et al., 2021). Proponents of the concept argue that its implementation would bring several benefits, including reduced greenhouse gas emissions, improved quality of life, and a strengthened sense of belonging to the local community. The 15-minute cities concept builds upon a long line of urban theorizing, going back at least to the human-centric planning ideas of Jane Jacobs (Jacobs, 1961). Growing number of research publications concerning the 15-minute cities or, more broadly, X-minute cities (Logan et al., 2022) seems to reflect a (rediscovered) academic interest in spatial proximity as a factor shaping human behavior in urban environments (Pajares et al., 2021). Such concepts engage with and seek to encourage urban planning approaches relying on accessibility by proximity, also called proximity-centered accessibility (Lanza et al., 2023). The overall idea is to redefine the spatiality of cities by reducing the need for long and frequent trips (Silva et al., 2023).

Despite growing body of evidence, there is still limited understanding of the actual importance and meaning of proximity for city residents. Physical closeness does not necessarily imply the ability or willingness to access a place. Measured proximity may deviate from perceived proximity due to limitations imposed for instance by the quality of pedestrian infrastructure (Guzman et al., 2024). Furthermore, research has increasingly highlighted the

subjective dimension of proximity, including the role of preferences for proximity in residential choices (Schultheiss et al., 2024). Yet, the role of perceptions of proximity in shaping proximity-oriented travel choices has been only explored to a limited extent.

Within this context, it is relevant to consider the role of elements within the urban built-up environment that have traditionally acted as focal points of urban neighborhoods. Historically, open-air markets have not only been a typical buying and selling point, but also a highly sociable place, at which people would meet and establish relationships within the community (URBACT, 2015, p. 14). Interest in open-air markets stems not only from the economic potential of local retail, but also from their role in constructing the social identity of cities or neighborhoods (Janssens & Sezer, 2013a, 2013b; see also the concept of place attachment, Lewicka, 2005, 2008). These attributes revolve around acts of exchange and the provision of basic products and services, of both local and outside origin. A classical definition indicates that open-air markets remain closely tied to the overall concept of markets, as they

“...embody a localized set of social institutions, social actors, property rights, products, transactional relationships, trade practices, and cultural meanings framed by a wide variety of factors including, but not limited to, ‘purely economic’ or ‘market’ forces” (Bestor, 2001, p. 9227)

In this sense, open-air markets have the status of ‘in-between’ institutions. They may act as an element connecting the city to the broader social-economic system, measured by the chains of supply

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and service provision, within a relatively stable social environment of craftsmen, merchants, and residents. Open-air markets 'shorten distances', making it possible to combine proximity with access to a wide range of goods from a variety of suppliers. At the same time, the repetition of relationships (social interactions) provides a basis for building ties and connections with the place (see also the concept of Everyday Urbanism, Chase et al., 1999). This constitutes the foundation of relative durability over time, providing a basis for imperfect continuity (Bestor, 2001).

In our framework, open-air markets, which are often located near the centers of districts or cities, are primarily associated with pedestrian movement. By acting as focal points of spatial proximity for their users, the markets offer the specificity of interactive relationships that accompany retail transactions within the context of stalls and between-stall spaces. They act as outdoor plazas situated along streets filled with numerous autonomous points in variable architectural forms. Consequently, open-air markets can be seen as not only 'imperfect continuity' of economic activity, but also as elements of continuity in lifestyles. They may be characterized as sharing the following features: (i) highlighting their local and community character; (ii) serving as instruments for improving the economic condition of the local community; (iii) providing education; (iv) fostering social cohesion; (v) serving as sources of social innovation; (vi) attracting visitors and tourists; (vii) contributing to revitalization; (viii) and serving as indicators of a pro-environmental lifestyle (Preston, 2023), where short supply chains guarantee freshness.

The functioning of open-air markets has been deeply embedded in the context of Central and Eastern Europe, contributing to the dynamics of socio-economic processes collectively referred to as the systemic transformation at the end of the 1980s and the 1990s, and the beginning of the new millennium (Sik & Wallace, 1999). In our understanding, Central and Eastern European open-air markets have refined their regional specificity, which includes informality and participation in an alternative economic circuit, as well as social morphogenesis.

Set against the background outlined above, this paper aims to fill a research gap concerning the role of open-air markets in the shaping of urban environments, with a particular focus on contemporary planning concepts such as the 15-minute city. We argue that due to their central locations within the urban built-up fabric and deep historical roots to their surrounding neighborhoods, open-air markets like Rynek Jeżycki could both benefit from, and contribute to the implementation of planning concepts focused on pedestrian accessibility. Yet, the positioning of open-air markets within an X-minute city vision requires a better understanding of the role of proximity as a factor affecting visitors' decisions.

Thus, this research aims to investigate the possibilities of adapting urban open-air markets in the context of the concepts of accessibility by proximity and the 15-minute city. The specific research questions we asked were the following:

- To what extent could Rynek Jeżycki be considered accessible in the context of accessibility by proximity?
- How relevant is perceived proximity as a motivation for visiting Rynek Jeżycki?

We propose an approach based on mixed methods that combines geographical and sociological perspectives, providing valuable insights to both researchers and practitioners trying to understand the role of open-air markets in the context of proximity-oriented urban planning.

The remainder of this paper is structured as follows: first, we provide a review of existing literature. Next, we introduce the case study and outline the methodological approach used in the paper. This is followed by a presentation of the results obtained through

accessibility analysis, crowd mapping, questionnaire surveys, and in-depth interviews. The final section presents a discussion and conclusions.

2. Theoretical background

2.1 Open-air markets in CEE: From substitution to (unequal) competition

The substitutive character of retail trade, including its participation in alternative economic circulation, was particularly widespread when forms of trade prevailing in Western Europe, such as super- and hypermarkets, had not yet been introduced in Central and Eastern Europe (CEE) (Stenning, 2005). In Poland, open-air markets served as an alternative to the centralized distribution system of goods and services until 1989. They were also a channel through which an informal retail opening took place during the 1990s, including the consolidation of local retail and the emergence of middle-class segments around individual open-air markets.

Currently, many open-air market spaces in Central and Eastern Europe have disappeared due to the 'retail revolution' (Garb & Dybicz, 2006) and changing consumer patterns. Among those that have survived, a significant proportion consist of urban marketplaces (Bieszk-Stolorz & Dmytrów, 2021; Płaziak & Szymańska, 2019). Rynek Jeżycki – the case study described in this paper – is an example of this kind of place. Urban marketplaces are primarily or exclusively focused on selling retail products, with less emphasis on providing services. They offer a relatively diversified product assortment, ranging from everyday food and seasonal items to less frequently purchased goods such as clothing or flowers. Retail trade in Polish open-air markets typically takes place throughout the year, with six days (Monday to Saturday) of operation per week. Urban marketplaces are equipped with basic infrastructure, such as wooden or metal structures providing covered space (stalls) for conducting retail activities. They are usually managed by a municipal company or a federation of small retailers. Urban marketplaces are traditionally located in areas with good transportation accessibility, often in densely built-up areas and close to neighborhood centers.

2.2 Re-inventing open-air markets in contemporary Poland

Two types of academic reflection on urban marketplaces may be found in Poland. Spatial reflection formulates questions about the social functions of markets in the context of urban planning and/or urban revitalization. In terms of research proposals and spatial analysis, a significant focus has been placed on the postulate of multifunctionality and accessibility identified through the usability of space as meeting places, as opposed to semi-public spaces (with use limited by access to the main function, such as retail). Research has led to the design of practical tools and the dissemination of good practices, aiming to implement concrete changes in urban spaces (Mól & Siłuszek, 2019). In contrast, economic reflection focuses on questions related to the potential market capacity and, more specifically, the chances of survival of this form of retail in cities. Consumer studies suggest that open-air markets are not currently considered as the primary place for purchasing essential products (Malinowska, 2016, p. 118). They are primarily seen as seasonal or specialized supplement to other forms of retail. On the other hand, the level of customer service is typically highly valued, which identifies one of the key characteristics of decentralized trade. In such markets, direct relationships between sellers and customers have traditionally had central significance, also from the perspective of building trust, relationships, and social ties. It is also worth adding that another characteristic of this form of retail is the local character of products, which is likely more applicable to food products than industrial ones.

2.3 Open-air markets, pedestrian accessibility and the 15-minute city

The growing interest among planners and municipal authorities in improving pedestrian accessibility has prompted researchers to examine the positive and negative consequences of these changes within the context of relevant local opportunities, including retail facilities (see Merlin & Jehle, 2023 for a broader overview). It has been argued that positive changes linked to the promotion of pedestrian accessibility primarily include environmental benefits, such as reduced noise levels, lower emissions of pollutants and greenhouse gases, as well as improved traffic safety and health benefits resulting from increased physical activity. Conversely, potential negative outcomes include gentrification (Özdemir & Selçuk, 2017) and the possibility of exacerbating existing differences in how different urban areas adapt to pedestrian traffic.

Interest in pedestrian accessibility has been increasing in recent years particularly in conjunction with the growing popularity of concepts such as the 15-minute city (Moreno et al., 2021) or proximity-centered accessibility (Silva et al., 2023). Studies on retail accessibility in relation to the concept of the 15-minute city have been conducted in cities such as Bogotá (Guzman et al., 2021), Vancouver (Hosford et al., 2022), and Turin (Staricco, 2022). Pedestrian accessibility studies often focus on retail, particularly in central and older city districts, where this type of activity has traditionally played a significant role (Ortega et al., 2021). Due to historical reasons, such spaces have not been designed for motorized transportation. They have several features that make driving less convenient, including a shortage of designated parking spaces. In such contexts, proximity to (traditional) retail creates a precondition for comfortable pedestrian access to locations where locally produced food can be purchased. However, to address the needs of local communities, it is necessary to tailor the retail offering to local customers and adjust the volume of products and services to match the population size of a given area. A positive aspect of this situation is the reduction of the risk of food deserts (Helbich et al., 2017), provided that filtering processes and depopulation have not advanced.

From a public health perspective, open-air markets offer dual benefits in terms of regular physical activity and balanced, diversified diets. However, the topic of retail is broad and constitutes a discussion about systemic perspectives, which an open-air market inevitably is only an element of. Existing studies have taken

into account pedestrian accessibility to different forms of retail, including supermarkets and bakeries (Costa Braga França et al., 2022), discount shopping centers (Tahmasbi et al., 2019), as well as the availability of commercial space (retail floor area) without specifying the form of retail (Arellana et al., 2021). The cases of Granada (Ariza-Álvarez et al., 2021) and Saragossa (Arranz-López et al., 2019) demonstrate that walking accessibility to retail is crucial for individuals over the age of 65, both for daily purchases and those made less frequently. At the same time, senior groups show a clear preference towards small, traditional retail. The stimulating effect of retail on physical activity in seniors has also been highlighted by Negron-Poblete et al. (2016) based on studies conducted in the Greater Montreal area.

Walking accessibility to daily destinations such as retail facilities is not only dependent on the layout of the urban environment, but also on a set of individual characteristics, including the general level of physical fitness, particularly age. Willberg et al. (2023) emphasize the importance of overall physical ability, especially for seniors, in reaching everyday destinations. In combination with specific factors such as unfavorable weather conditions (e.g., snow, ice), accessibility is significantly reduced. In the case of Helsinki, in the worst scenario, only 34% of the elderly population had access to a retail store within walking distance, compared to 93% in the baseline scenario.

Despite growing evidence on pedestrian accessibility to retail facilities, there is still limited understanding of the relative importance of spatial proximity in choosing retail destinations. Existing studies have predominantly addressed the subject from a quantitative perspective (e.g., Suel & Polak, 2017; Verma et al., 2025). In this context, the paper proposes a mixed methods approach, which allows to account for both the measured and perceived aspects of proximity.

3. Methodology

3.1 Case study description

The case study described in the article focuses on Rynek Jeżycki in Poznań, which is a prime example of an open-air market that is firmly ingrained into the built environment of the neighborhood and the city (Fig. 1). Its origins reach back significantly further

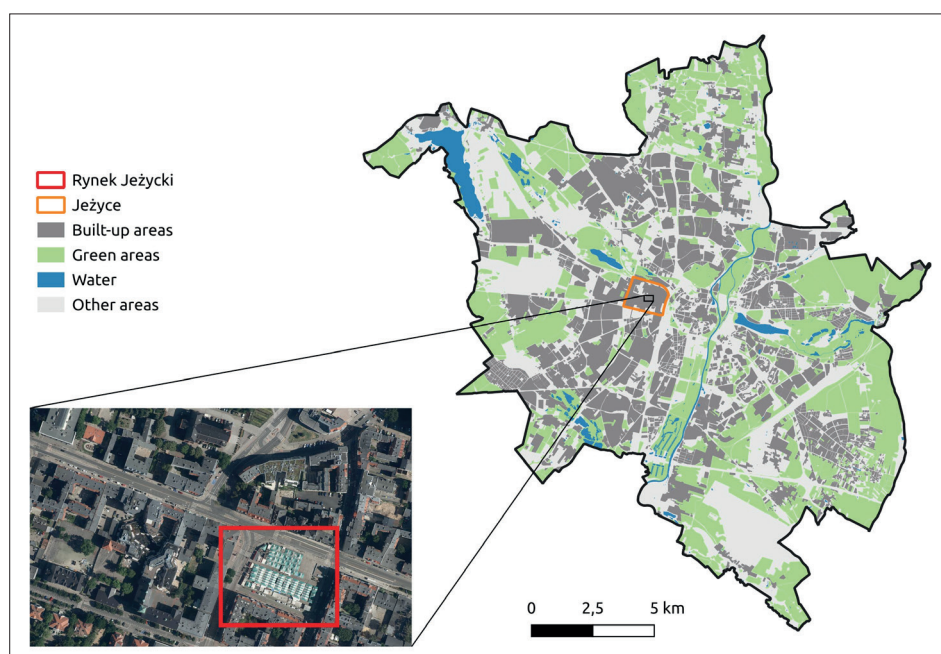


Fig. 1: Location of Rynek Jeżycki within Jeżyce and Poznań
Source: Authors' elaboration

into contemporary history, making it an interesting case study for the evolution of retail spaces embedded in the process of urbanization during the 19th and early 20th centuries, which has continued with varying intensity over the past century. The city of Poznań, due to the specificity of its step-wise expansion of administrative boundaries, is characterized by a relatively large number of open-air markets. Prior to the extension of urban boundaries between the second half of the 19th century and the early 20th century, these markets acted as local marketplaces for the residents of villages neighboring the city. The example of Jeżyce is emblematic of this trend. However, that relationship does not apply to more recent periods of socialist modernization, when centralized forms of retail were preferred. Thus, open-air markets are mostly absent from prefabricated housing estates.

Rynek Jeżycki has served as a focal point for the Jeżyce since its incorporation into urban boundaries at the beginning of the 20th century (Mierzejewska & Sikorska-Podyma, 2022). It retained its commercial function after World War I, when Poznań became part of Poland after a period of German annexation, as well as later during the subsequent German occupation during the World War II, and in the socialist period of the People's Republic of Poland (1945–1989). Jeżyce experienced several social and economic problems in the aftermath of the socio-economic transition after 1989, including significant population decline (Kotus & Rzeszewski, 2013). Today, it is a heterogenous, but rapidly changing and vibrant neighborhood that seeks to redefine its role in the wider urban environment.

3.2 Data and methods

The concept underlying this research was built upon sociological concerns regarding daily life habits (shopping customs) of residents in the district, geographical issues related to navigating the city, and the concept of a 15-minute city. These findings led to the hypothesis that there is a connection between the presence of an open-air market and the prospects for implementing the 15-minute city concept. The methodological approach used in the paper combines perspectives from human geography and economic-sociology, aiming to verify the relationship between the phenomenon of open-air markets, pedestrian mobility, and the concept of a 15-minute city. As part of the research project, various spatial analyses were conducted using geographic information systems.

Using the isochrone method, pedestrian accessibility to Rynek Jeżycki and other urban marketplaces in Poznań was calculated to determine the number and age structure of the population living nearby. However, there is a lack of consensus in the literature regarding the duration of pedestrian travel considered suitable for daily commutes. On one hand, individual characteristics play a role in time spent traveling, while on the other hand, some studies suggest that certain daily trips, particularly commuting to work, are more likely to involve longer journeys (Næss, 2005). In practice, the standard duration for retail purchases is often assumed to be 15 minutes (Guzman et al., 2021; Staricco, 2022), but this threshold may be too high for some individuals, particularly those with limited mobility (Willberg et al., 2023). Taking these considerations into account, the distance walked by pedestrians to Rynek Jeżycki and other marketplaces in Poznań was set at both 10 and 15 minutes. The lower value reflects the needs of individuals with mobility limitations as well as those who prefer spatial proximity. Isochrones corresponding to pedestrian travel distances were calculated using the Openrouteservice algorithm, which utilizes publicly available, open-source geographic data (Openstreetmap), assuming an average walking speed of 4.5 km/h. While such walking speed is broadly consistent with findings previously reported in the literature for densely built-up urban environments (Bosina & Weidmann, 2017), we recognize that the actual walking speed may in fact be lower for some individuals due to limitations mentioned above. In our analysis, this limitation is accounted for

by the inclusion of an additional time threshold of 10 minutes. Data on population size and age structure were obtained from the 2021 census conducted by the Central Statistical Office.

The study also draws on the results of a survey of users of Rynek Jeżycki conducted in July 2023, which included (a) computer-assisted questionnaire survey, and (b) crowd mapping of pedestrian routes to the market. The selection of respondents was non-probabilistic and was purposefully conducted among market users. The students conducting the survey were asked to select respondents from as diverse a group of users as possible. This selection method was dictated by a lack of prior knowledge about the social characteristics of market users, including the fact that they were not necessarily residents of the analyzed area (about whom we were able to obtain public demographic information). In the crowd mapping analysis, participants were asked to indicate the location from which they had arrived at Rynek Jeżycki. The coordinates of these locations were recorded by researchers using the QField application, allowing for an analysis of the routes taken using GIS technology. Utilizing the Openrouteservice algorithm available through the QGIS plugin, an attempt was made to reconstruct the possible route that participants could have taken on foot to reach the Rynek Jeżycki, assuming the selection of the shortest route.

During the study, 157 interviews (Tab. 1) were conducted among the visitors of Rynek Jeżycki, with additional information gathered about the routes participants took to reach the marketplace.

To deepen the analysis, standardized tools such as IDI were employed (21), alongside observations (12-hour registration of market behavior). In-depth interviews were conducted in the market area (in adjacent semi-public spaces), sometimes in the private homes of open-market users. The selection of respondents was based on the quantitative part, as an extension of the reflection devoted to the Jeżycki market. The selection of respondents was based on their declared interest in the subject (answer to the question: would you agree to a short interview to expand on the content of the questionnaire interview?). The interviews were recorded, after prior consent was obtained, and then anonymized. The purposeful selection of the analyzed sample was based on the specificity of the research, where we aimed to establish, among other things, the social-demographic characteristics of retail users, taking into account that this group may have specific features. A closer look at the examined participants reveals that the visitors of Rynek Jeżycki are heterogeneous in terms of age, with women as the dominating group. Additionally, a significant proportion of individuals with higher education levels suggests a notable presence of middle-class consumers among them, many of whom inhabit areas surrounding new urban development investments

	Frequency	%	Cumulative %
Gender			
Man	49	31.2	31.2
Woman	107	68.2	99.4
Other	1	0.6	100.0
Total	157	100.0	
Education			
Primary education	6	3.8	3.8
Vocational education	20	12.7	16.6
Secondary education	53	33.8	50.3
Higher education	78	49.7	100.0
Total	157	100.0	
Age			
Up to the age of 20	24	15.3	15.3
From the age of 21 to 60	111	70.7	86.0
Over 61 years old	22	14.0	100.0
Total	157	100.0	

Tab. 1: Characteristics of the target sample tested both: the route-to-market place survey and the questionnaire survey
Source: Authors' elaboration based on survey in summer of 2023

on the outskirts of the city. It is worth highlighting that the information gathered about the visitors also provides some, albeit rather limited, evidence of gentrification occurring in this over-century-old district. In terms of qualitative analysis, 21 in-depth interviews with retail users were conducted. The interview scenarios covered issues related to pedestrian market accessibility, assessments of its functioning from a user's perspective, and opinions on the future of this specific market. The coding was open-ended and for the purposes of this article focused on three issues: market accessibility, how the market was used from the perspective of the declared place of residence, and the purpose of the respondent's visit. MAXQDA software was used for the analysis (210 pages of standard text). The proposed conclusions, presented at the end of the text, aim to classify the ways of describing the proximity of open-air markets.

4. Results

4.1 Competition from other forms of retail

The spatial structure of retail in Poznań has undergone dynamic changes over the past few years, primarily affecting large-format shops and convenience stores. The former offer a wide range of commonly purchased products, including fresh fruits and vegetables, meat and processed meats. From 2019 to 2024, the number of supermarkets in Poznań increased from 195 to 236 (Fig. 2). Even more dynamic changes were observed in the convenience store sector, which typically only offers basic product ranges. While there were 316 such stores in 2019, their numbers rose to 509 in 2024. To some extent, this rapid expansion can be attributed to the introduction of a ban on retail sales on Sundays in Poland, effective since 2018, from which many convenience stores are exempt. It is worth noting that there is also a change in the ownership structure of such stores, as the proportion of stores belonging to large networks has increased from approximately 40% to around 60%. Meanwhile, major forms of retail, such as shopping malls, which had previously experienced more rapid growth, currently appear to be experiencing some saturation and even a partial regression, resulting in the closure of certain mall facilities. The current changes present a significant challenge for traditional forms of retail.

4.2 Pedestrian accessibility of Rynek Jeżycki and other urban marketplaces

Based on the available data and the criteria specified in the Introduction, we identified nine functioning urban marketplaces in Poznań (Fig. 3). The majority of these are located within the city center or its immediate vicinity. These are areas whose current land use configuration was largely shaped in the 19th or early 20th centuries. The dominant type of construction is residential buildings. Two of the markets are situated slightly farther from the center in areas that were primarily developed in the second half of the 20th century, but still exhibit a compact character of urban development with relatively high population density.

Assuming a 15-minute walking time, Rynek Jeżycki is accessible to approximately 30,244 people. The least accessible market is accessible to approximately 17,761 people, while the most accessible market to 31,740 people, and the median value is 28,429 people. Assuming a 10-minute walking time, the population being able to reach Rynek Jeżycki is 19,806 people. Approximately 6,344 people live within the radius of the least accessible market, while 22,134 people reside within the radius of the most accessible market. The median value is 15,149 people.

Residents living within a 15-minute walking distance to Rynek Jeżycki are, on average, younger than the population living in proximity to other urban marketplaces and individuals without close access to an urban marketplace (Fig. 4). This is primarily due to a relatively lower proportion of people above 70 years old, as well as a higher proportion of individuals in their 20s and 30s. The proportion of children and youth, i.e., people under 19 years old, is also low among the population living in the vicinity of Rynek Jeżycki, as well as in other urban marketplaces. While there is not enough evidence of a reurbanization process taking place in the area surrounding Rynek Jeżycki, partial replacement of residents and new housing investments can be observed. These processes, manifesting themselves through an influx of young people – often students and graduates without children – have not yet been clearly observed in the vicinity of other market areas, though it cannot be ruled out that the popularity of these neighborhoods will increase in subsequent years due to similar demographic characteristics, especially in densely populated areas with predominantly multi-family housing.

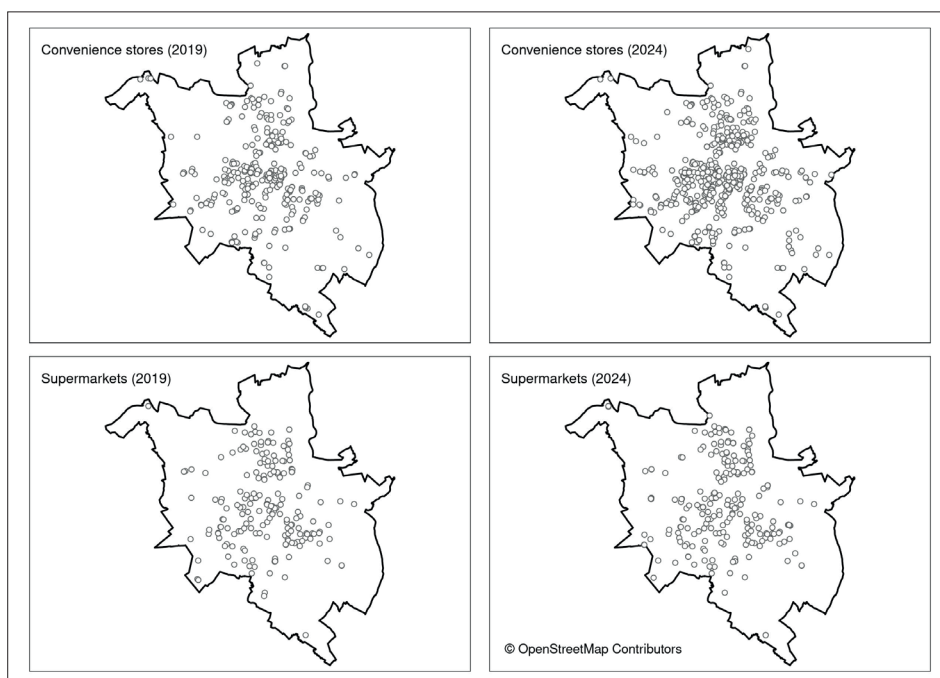


Fig. 2: Convenience stores and supermarkets in 2019 and 2024 in Poznań
Source: Authors' elaboration based on OpenStreetMap data

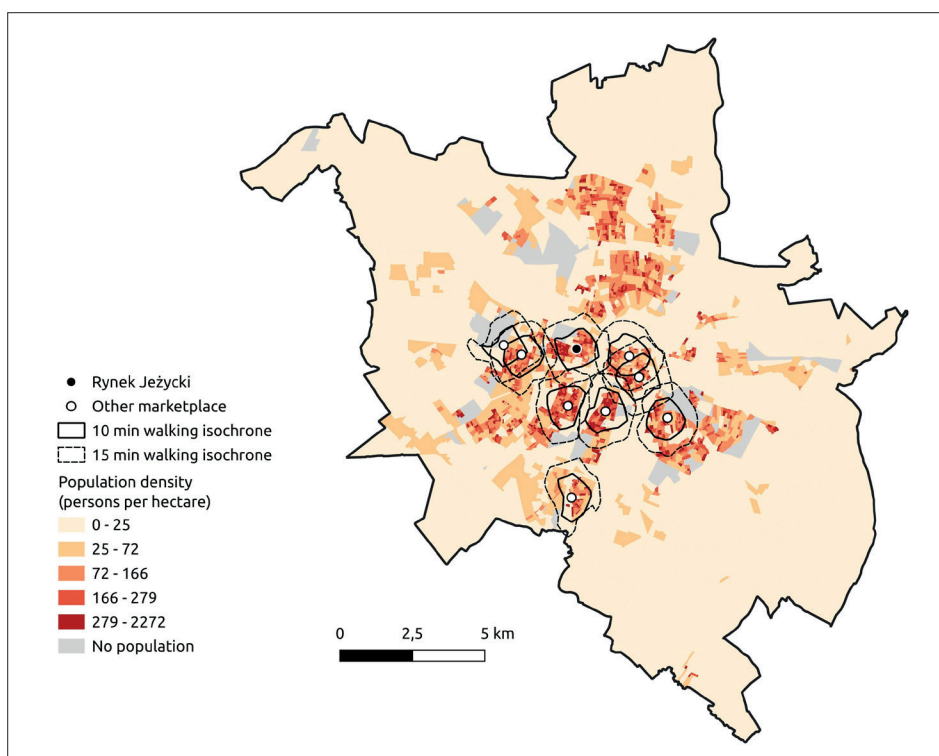


Fig. 3: Locations of open-air markets in Poznań and the extent of pedestrian access
Source: Authors' elaboration based on 2021 Census data

The age structure of the population presents a similar picture when assuming a 10-minute walking time as the threshold value (Fig. 5). The proportion of people aged 20 to 30 living in the vicinity of Rynek Jeżycki is slightly higher in this case. Regardless of whether there is a 10-minute or 15-minute walking distance, the combined proportion of residents under 40 years old living in the vicinity of Rynek Jeżycki clearly exceeds 50%. This finding suggests that the future of Rynek Jeżycki increasingly depends upon its capability to cater for the needs of younger individuals, who are accustomed to frequenting diverse forms of retail, including both stationary and online shopping.

The small-scale pedestrian accessibility of Rynek Jeżycki can be better understood using crowd mapping analysis. In total, 129 routes were recorded as origin and destination pairs by surveying the visitors of Rynek Jeżycki using the crowd mapping tool. Out of these, 109 routes were contained within the 15-minute walking isochrone. These

results show that the majority of study participants reported having reached Rynek Jeżycki from locations situated in close proximity, which allowed for walking as the preferred travel mode (around 80% of trips within the 15-minute walking isochrone).

After having filtered out respondents who declared having walked from a parked car, a ride-hailing service, or a public transport stop, we reached 91 pedestrian trips originating from nearby locations (i.e., around 70% of all registered trips). In an attempt to reconstruct the geography of walking accessibility, probable routes for these trips were estimated from origin-destination pairs using the OpenRouteService algorithm (Fig. 6). Results suggest that the east-west and north-south axes play a major role in facilitating accessibility. The findings also highlight the potential of Rynek Jeżycki as a retail destination within a short walking distance, which reinforces arguments emphasizing the locational aspects in the attractiveness of open-air markets.

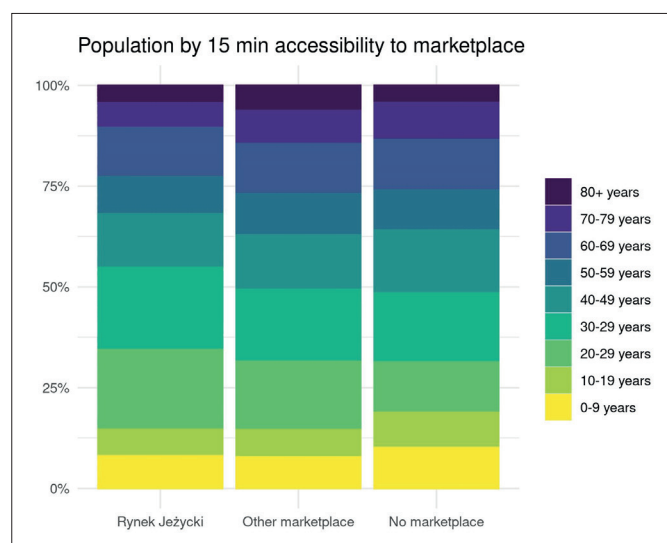


Fig. 4: Age structure of population by 15-minute accessibility to a marketplace. Source: Authors' survey

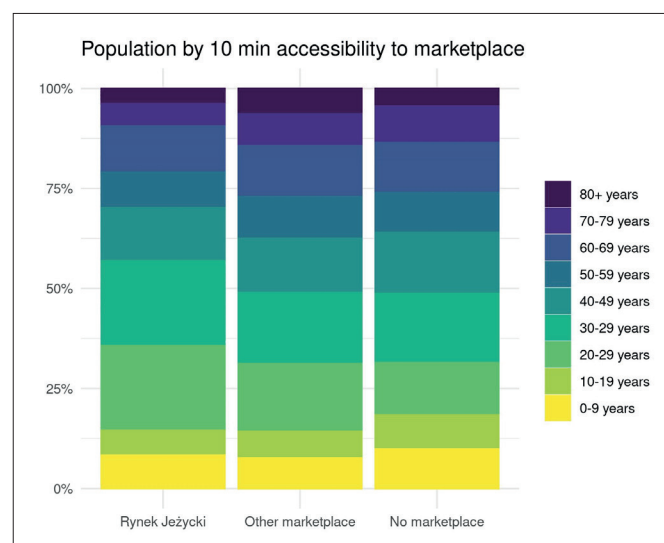


Fig. 5: Age structure of population by 10-minute accessibility to a marketplace. Source: Authors' survey



Fig. 6: Small scale accessibility of Rynek Jeżycki: pedestrian routes within the 15-minute isochrone
Source: Authors' survey

4.3 Reasons for walking and for visiting Rynek Jeżycki

4.3.1 Reasons for (not) walking

While simply living near the marketplace does not imply a propensity to use it, findings from the questionnaire survey were used to validate and expand upon the results of the accessibility analysis. Results suggest certain lifestyle factors that influence the use of open-air markets. The study was divided into two parts. In the first part, participants were asked about their general attitude towards walking, while the second part focused on motivations for visiting Rynek Jeżycki and perceptions of this venue. The most important reasons for taking a walk to visit Rynek Jeżycki, according to respondents, were favorable weather conditions, proximity to the destination, attention to one's own health, and closeness to the destination. Less significant factors were perceptions of walking as a means of maintaining well-being, spending free time, or strengthening social relationships. A small proportion of respondents indicated that they generally have a negative attitude towards walking (Fig. 7).

In addition to external factors such as unfavorable weather and excessive distances, participants mentioned subjective factors discouraging them from walking, such as inadequate pavement conditions, excessive crowding, high levels of vehicular traffic, or the use of sidewalks by cyclists and electric scooter riders. The least frequently cited reason for avoiding walking was a low attractiveness of the surrounding environment (Fig. 8). Discouraging factors indicate constraints resulting from population density, which is consistent with the arguments gathered from the in-depth interviews (further analyzed later in the article).

4.3.2 Reasons for visiting Rynek Jeżycki

Further insights into the role of Rynek Jeżycki in the local context may be gained from responses to the question about motivations for visiting. Accessibility on foot was identified as the most important reason, alongside access via public transportation. Some respondents also mentioned that visiting the market is a habitual activity, which suggests that identity-based aspects may

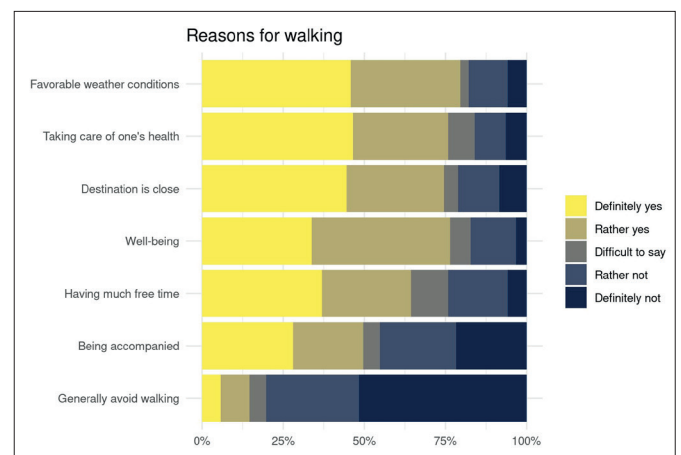


Fig. 7: Reasons for walking identified by study participants
Source: Authors' survey

be factors influencing decision-making. Less significant reasons included the availability of goods sold at the market, including both basic and specialty products (Fig. 9).

The individuals surveyed perceive Rynek Jeżycki as a location that can be accessed using different forms of transportation and one that is safe during the day (Fig. 10). In relation to aspects related to the market's commercial function (freshness of products, friendly atmosphere, courteous shopkeepers), the assessments are generally favorable, although a relatively significant proportion responded with 'rather yes'. This suggests that a considerable part of the respondents also had some negative experiences in this regard. A relatively large group of people also positively evaluated the ease of parking in the vicinity of the market, which is somewhat surprising given its location within a densely built urban area. The smallest group of respondents noted that the market evokes cleanliness, whereas in the case of assessing safety at night, a significant portion of respondents had neither positive nor negative associations, suggesting that they do not visit the market during this time.

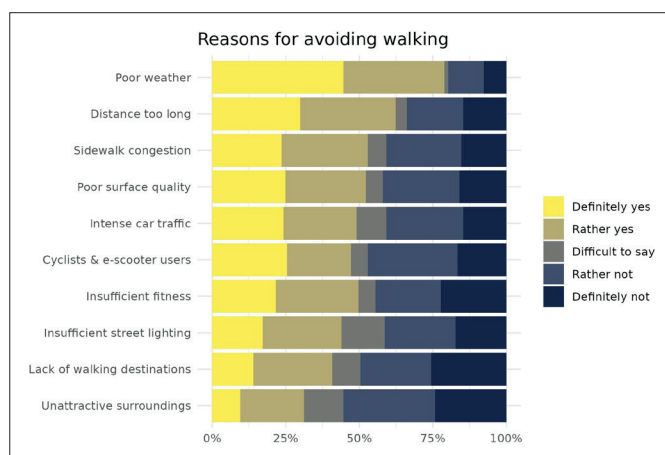


Fig. 8: Reasons for avoiding walking according to study participants
Source: Authors' survey

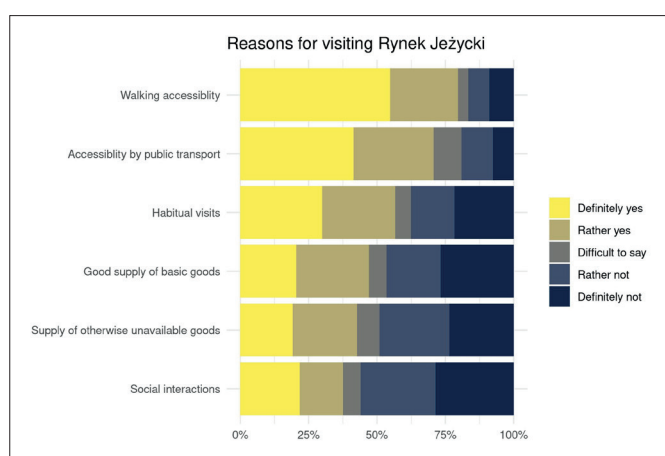


Fig. 9: Reasons for visiting Rynek Jeżycki according to study participants. Source: Authors' survey

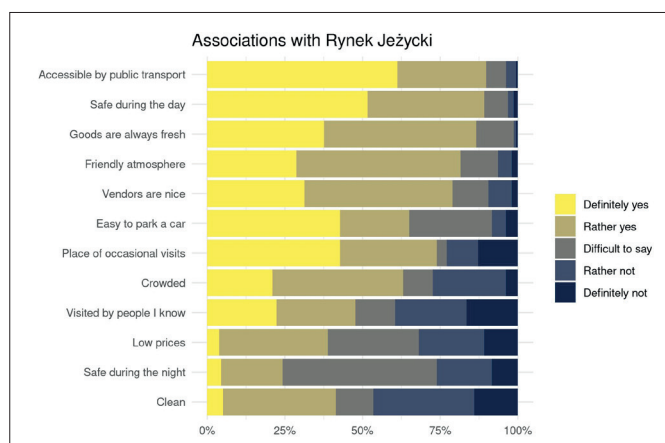


Fig. 10: Associations of study participants with Rynek Jeżycki
Source: Authors' survey

4.3.3 In-depth understanding of proximity

Three types of market space usage were identified based on its connectivity features. The first type can be described metaphorically as identity-driven proximity, resulting from the mentioned aspect of an individual's self-identity, such as their long-term familiarity with the location and their usual shopping habits. One of the interviewees explicitly shared her personal perspective on the market, stating:

"I used to go to the market with my parents when I was little, and then as soon as I became independent, I was also sent there to buy things like food or clothes. Honestly, it wasn't something I really enjoyed at first. It felt like a chore, carrying those bags, especially since we lived so close, just 15–20 minutes on foot. But one time, during that trip, my head started thinking that maybe the market is different from what I thought – there are better products, more natural ones, tastier and healthier too, and you can find them in a store, not at a discount. So now I have this feeling that I don't like buying vegetables at discount stores, like at [store name]." (W18)

Sometimes identity does not stem directly from habit or custom, but takes the form of declaring a specific lifestyle:

"Well, basically all the time, except in winter. The reason is that I really dislike supermarkets and I really dislike supermarket quality, which is why I shop here in Jeżyce, just as I did previously in Wilda. I mainly used small markets." (M16)

The second type of market space usage relates to the nature of connectivity. It is associated with the market's location in the center of a densely built-up area with multi-family buildings (100-year-old Art Nouveau district with buildings developed by developers in post-industrial areas). This type of use can be described as convenient proximity, characterized by arguments referring to the convenience.

"Because the Market Square has always been there, and you just go there sometimes or pass by it, because there are two trams and two lines, I mean two routes, there are three lines, but there are also a lot of buses, so let's say it's some kind of transport hub there." (W21)

"Perhaps it's not an obvious place, but I feel that it's a place like any other. Maybe it's just a matter of getting used to it, but this place is also cool. The bus stops, which are everywhere, are a plus, and this is really the heart of Jeżyce. It's difficult to get to other places by tram, so this is relatively good, although it does create crowds..." (W11)

The third type can be described as 'trespass' proximity which refers to the market's transferable character, influenced by its location on a street that serves as the district's main communication artery. In this context, the market appears as an exception to the monotony of the street, a characteristic point of encounter, and an additional destination point for visitors.

"Well, the thing is, I don't avoid it or go there very often, because I do walk through it and I'm not going to make a huge detour to avoid the place. I'd rather walk through the middle of it, look at something, for example, if I spot something, I'll take a look at it, for example..." (W17)

This form of proximity seems to be least related to place and most entangled in spatial communication parameters.

The presence of these types of usage (proximity) is reflected in the specificity of Jeżycki Market, which is in our opinion – a result of its multifunctionality or heterogeneity in the social (and not just utilitarian) sense of the term. This is the result of the long history of the place, but also of town planning conditions related to the market's location (street layout, location near by the axis of main pedestrian and transport routes). The vitality of the place is perceived as an effect of location, but also social adaptability of the place, and the more cultural context of 'reurbanization'.

4.3.4 Proximity and the future of the open-air market

The prevailing opinion is that the market is well-connected, a feature considered one of its key advantages. The issue of connectivity is directly tied to the issues of proximity and accessibility. One respondent shared their experience with the market, saying:

"When it's crowded, I only approach my trusted sellers, buy what I need, and leave. It's hard to navigate, it's hot, people get annoyed quickly. On the other hand, when there are fewer people, I enjoy walking along all the alleys and exploring something interesting. Sometimes it takes me up to two hours." (W1)

Another respondent mentioned the mono-functionality of traditional retail market types:

"It's just that the market can have something that catches your eye, like a sculpture or something that makes it stand out. But what I've seen is that there are just trash cans." (M5)

A similar comment was made by the same respondent:

"Producers will come by themselves if the market is visually appealing, because then sellers will also want to be there to utilize its potential." (M5)

The changing understanding of market functions and usage suggests changes in the concept of markets, including the increasing importance of infrastructure durability and the growing significance of symbolic spheres that complement functional attributes. One respondent stated:

"...it was busier than now. Now it's quite closed off in Poznań. I don't know how it is in other cities – maybe... everything is becoming more standardized. Like, they're building those same stands, which are permanently attached to the ground... these are things that are built." (M6)

This respondent also mentioned a shifting vision for the future of markets, one that goes beyond just offering products and their quality attributes, also pointing to a focus on lifestyle preferences among residents, emphasizing quality of life (self-realization values) rather than price. This makes it possible to identify potential recommendations for similar markets, complementing communication with aspects of symbolic, cultural, and even environmental significance (e.g., proposals to plant trees within the market area).

Attention was also drawn to the temporal aspect of using the market and the status of Saturday as a 'market day', when users usually meet up. One respondent shared their perspective:

"Saturday is also different here on Rynek Jeżycki. On one hand, it's crowded, but on the other hand, everyone displays their products on Saturdays, items that are not available on other days of the week. Saturday is a basic day for me, and I usually try to go there if I don't have any plans in the morning. During the week, it serves as a place to buy something urgently or forget something, as I often buy things on Saturdays too. Since I'm not a person who plans my meals, sometimes I end up going back from work and visiting the market again." (W18)

In summary of this indepth-view, the market's proximity may be an element of users' identity, at least for some of them, which does not contradict its functional attributes compared to other forms of retail. The arguments in favor of the market demonstrate indicated multifunctional or heterogeneous character, which is aligned with the cited typology of motivations. The findings of the qualitative research suggest two essential findings: the tangible presence of the city's 15-minute spaces (the convenient proximity type) and the integration of the market into the urban offering, which includes not only access to products but also cultural values embedded in urbanity.

5. Discussion

Retail facilities are often considered essential everyday destinations and are frequently included in pedestrian accessibility analyses. Such analyses are typically based on geographical data and assume homogeneity of user preferences (e.g., Tahmasbi et al., 2019). While research of this type can help better understand

the spatial heterogeneity of city structures, explaining the mechanisms of accessibility requires a deeper understanding of the proximity-focused perspective (Guzman et al., 2024).

The mixed-methods approach adopted in this article showed that proximity-based accessibility is an important, perhaps even primary, motivation for visiting Rynek Jeżycki. On the other hand, an expanded research perspective that uses both quantitative and qualitative methods allowed us to understand diverse motivations for visiting this place, including those related to customs and contextual aspects of identity (e.g., self-reliance). Some study participants suggested improvements in the physical design of the market, which in their view could make it more attractive. Qualitative research suggests that there is a need to extend the market's hours of operation while creating an alternative to multifunctional spaces, challenging the existing model in Poland, which has been dominated by certain retail categories (e.g., fixed stalls). However, overemphasizing physical aspects of spatial transformations may risk fostering the gentrification of places that previously had a more inclusive character (Özdemir & Selçuk, 2017).

While some of the findings reported in the study are mostly applicable to the local case, other findings may be transferable to other urban settings. In a number of cities, open-air markets constitute an essential element of the urban fabric. Yet, they are often overlooked in the broader study of proximity-oriented planning concepts. In general, open-air markets fit within the concept of the 15-minute city or, more broadly understood, the X-minute city, and the overall idea of 'living more locally' (Caramaschi, 2014). However, currently observed trends, particularly the development of other forms of retail like convenience stores and supermarkets, pose a threat to the sustainability of open-air markets.

Examples from some cities demonstrate that even in an era of universal retail availability, traditional retail spaces like open-air markets or shopping streets can remain valuable venues within local communities (Ozuduru et al., 2014; Staricco, 2022). On the other hand, the mere retail function of an open-air market may not be enough to ensure its long-term survival. In this context, literature highlights the function of open-air markets as places that foster social identity and provide opportunities for interactions. The dynamic nature of social relationships makes it challenging to maintain the traditional model of open-air markets, where both sellers and buyers maintain close relationships (Watson, 2009). As noted by Van Eck et al. (2022), open-air markets are 'moving marketplaces' whose local character is being redefined in the increasingly globalized world, but they undoubtedly have economic, social and cultural importance for the local communities. Our research, although based on a different methodological approach, allows us to draw a similar conclusion. We also share the observation by Morales (2011) that urban marketplaces, which have been considered by some as an exemplification of a 'wicked problem', may in fact constitute a 'wicked opportunity' for community redevelopment initiatives.

Reframing the question posed by Guzman et al. (2024), (spatial) proximity is not necessarily enough to constitute a long-term motivation for visiting a place/urban amenity. True proximity is socially constructed in a process that takes into account several aspects, including the quality of pedestrian infrastructure, but also, as shown in the present study, an individual's relationship with a particular place. By strengthening that relationship, stronger attachment to a place, and potentially also stronger societal bonds could be achieved. As our findings show, however, the mere act of visiting a local open-air market does not have to contribute to greater conviviality, which may be due partly due to spatial arrangements highlighting its function as a retail space and limiting the possibilities of other uses. Research presented

in the paper allows to tentatively suggest that different types of perceived proximity, including identity-based, convenience-driven, and trespass proximity, may lead to different forms of spatial behavior. These different forms of behavior could in turn affect the relationship between a place (amenity) and its users, leading to differentiated outcomes in terms of, for instance, visiting frequency or duration of stay.

6. Conclusions and recommendations

This paper has examined the role of Rynek Jeżycki, a long-established element of urban structure, in the context of the 15-minute city and accessibility by proximity. The specific research questions asked were the following:

1. To what extent could Rynek Jeżycki be considered accessible in the context of accessibility by proximity?
2. How relevant is perceived proximity as a motivation for visiting Rynek Jeżycki?

Regarding the first research question, results show that Rynek Jeżycki faces increased competition from other forms of retail, including convenience stores, which are also strongly oriented towards spatial proximity, but its location within the urban structure is generally beneficial from the point of view of pedestrian accessibility. The number of residents being able to reach Rynek Jeżycki within a 10 or 15-minute walk is higher than the median value for all open-air markets in Poznań, and the population living in its proximity is on average younger than the overall population of the city. That creates a possibility for attracting new groups of users. Most surveyed users reached Rynek Jeżycki on foot from a distance within a 15-minute walking isochrone, although the strength of this finding is limited by the non-representativeness of the sample.

Regarding the second question, we found that the relevance and specific meaning of proximity as a motivation for visiting Rynek Jeżycki was variegated among study participants. Based on the analysis of qualitative material from in-depth interviews, we propose a classification of proximity-related spatial behaviors. We found that some participants had a deeply rooted sense of proximity to Rynek Jeżycki, possibly linked to long established relationship with the area. These participants highlighted the long-term use of the market, which fits into the contexts of individual biography. In a way, this suggests the existence of '*genius loci*', which could be more based on function than in the symbolic sphere, and to a greater degree on individual experience. For others, however, the understanding of proximity was more related to 'passing by' or 'trespassing' through the place. These findings suggest that the mere spatial closeness of a place (destination, amenity) does not automatically lead to a unified understanding of proximity.

Research presented in this paper reveals an image of the market as a generally safe space offering basic products in a well-connected area, also accessible by public transportation (without the need for a car). It shows that places which were shaped predominantly under the influence of 'traditional' approaches to urban planning, rooted in the continuity of settlement that constituted the city in the XIX and XX centuries can act as a factor reinforcing accessibility policies. Such places may benefit from the changing demographic structure of the city, including in particular the influx of young people, but they also need to adapt to changing lifestyles and shifting preferences. This was evidenced by critical voices pointing out, for instance, limited product ranges, and concerns related to aesthetics. It has been noted that there is a lack of recognizable urban space elements that could serve as a local landmark strengthening the sense of identity among people visiting the market from this location.

Limitations of this study primarily stem from constraints of the data-collection process. Due to limited resources, it was only possible to obtain a non-representative sample of visitors of Rynek

Jeżycki. Furthermore, the visitors were only surveyed during one week in the summer of 2023. Therefore, the findings may not be applicable to the whole spectrum of visitors.

In terms of policy-related recommendations, our research suggests the need for implementing solutions that would expand the functions of Rynek Jeżycki beyond those closely linked to retail. This would possibly strengthen its attractiveness for diverse user groups, including those for whom the mere spatial closeness of the place does not contribute to a strong perceived sense of proximity. Overall, these recommendations also underscore the need for further research oriented towards regional Central European specificity, as well as comparative studies within the context of different trajectories of urban evolution across Europe.

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