

Barriers and accessibility in public squares: evidence from small towns in Upper Silesia (Poland)

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Abstract. Citizens have a fundamental right to access public spaces. Since the adoption of the *UN Convention on the Rights of Persons with Disabilities* in 2008, significant changes have been made to Polish law. This study aims to assess the accessibility of public spaces in Poland, using case studies of public squares in small towns. The research focuses on the region of Opole Silesia. Six towns were selected for the analysis. The research followed a two-stage approach – a structured literature review and field research, followed by an analysis of numerical and spatial data collected through a participatory access assessment method. The findings show that none of the spaces provide safe and independent mobility conditions for individuals with physical disabilities or blind or partially sighted persons. The main barrier to accessibility was the presence of poorly maintained or hazardous surfaces. This study showed slightly greater general awareness regarding the needs of individuals with mobility impairment.

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1. Introduction

1.1. People's rights to barrier-free space

Timothy Nugent's activism at the University of Illinois in 1949 is widely regarded as the inception of the 20th-century social movement for accessibility and equal rights for people with disabilities (Guffey, 2018: 144). Nugent coined the term "architectural barrier" in 1961 to describe barriers that prevent people with special needs from fully realising their potential and participating in society (Nugent, 1960).

In 1960, the University of Illinois developed the first *American accessibility guidelines, the American national standards specifications for making buildings and facilities accessible to and usable by the physically handicapped* (American National Standards Institute, 1961: 25). These laid the groundwork for accessibility legislation across the United States. In Europe, Selwyn Goldsmith's book *Designing for Disabled*, published in 1963, was one of the earliest publications aimed at helping designers accommodate people with disabilities (Guffey, 2020).

The concept of accessibility evolved worldwide, especially through the advocacy of disability rights organisations and campaigns for anti-discrimination legislation. The United States passed the *Americans with Disabilities Act (ADA)* in 1990 following the notable protests of people with disabilities in public spaces, known as the "Capitol Crawl" (Note 1). This seminal legislation explicitly states that "physical or mental disabilities in no way diminish a person's right to participate in all aspects of society fully" (ADA, 1990, §12101. Findings and purpose). This groundbreaking law paved the way for the adoption of the *United Nations Convention on the Rights of Persons with Disabilities* in 2008, signed by 81 countries. Although Poland ratified this policy in 2015, the *Act on Ensuring Accessibility for Persons with Special Needs* only came into force in 2019 in Poland (Note 2). Notably, most legislation measures in the US and Europe focus primarily on the built environment, while standards for the accessibility of open public spaces remain less defined.

This study examines whether accessibility to open public spaces in Polish towns improved after the implementation of the *Accessibility Act* (2019). We also identify specific features of public spaces (pavements, greenery, street furniture, and temporary decorations) that most significantly impact accessibility for individuals with special needs. The results of this study are important for understanding the extent of discrimination caused by architectural barriers in open public spaces and for the proper functioning of open urban public spaces, which will help cultivate a healthy and diverse society.

1.2. Functions of open public spaces and accessibility

Defining a public space is a complex and often ambiguous task (Gałkowski & Antosz, 2022). Many definitions emphasise accessibility as a key feature (Varna, 2014). Madanipour (2019) asserts that "accessibility" reflects power dynamics and considers accessibility to be a "key feature of public space". Access is the manifestation of relationships between people and a demonstration of authority and dominance over territory, a dynamic of inclusion and exclusion; that is, "the more accessible a place, the more public it becomes" (Madanipour, 2019: 46).

In urban sociology, "accessibility" refers more broadly to non-discriminatory access, in terms of physical ability and considering race, gender, religion, political views, or socio-economic status. We adopt Margaret Kohn's (2005) definition of open urban public space, which includes three components: ownership, accessibility and intersubjectivity. It is related to governmental ownership and non-restricted accessibility while supporting communication and social interaction (Kohn, 2005: 11). These interactions encompass encounters between strangers, friends and acquaintances.

This elementary definition establishes accessibility as a pivotal characteristic of public spaces. For Kohn, public spaces "foster communication and interaction" (Kohn, 2005: 11). Lofland (2007) distinguishes six essential functions of public spaces: a fertile environment for learning, space that provides

essential intervals for relaxation and rejuvenation, a nexus of communication, space that permits the “practice” of politics, an arena for the manifestation of social structures and conflicts, and a space that assists in forming cosmopolitans. Lofland (2007) points out that it is the most important physical space of social significance, where, through interactions and communication, we gather the experiences of other co-residents of the city, an area for exchanging views and creating a more tolerant, open society. A public space cannot function effectively if physical access barriers exclude people with special needs. As legitimate citizens, these individuals have a “right to the city”, as the city presents itself as a supreme embodiment of rights: the freedom to act, to assert one’s individuality in social engagement, to habitat or to inhabit, the right to creation, to involvement, and to ownership (Lefebvre, 1996: 64). Current classifications define public spaces based on function, form, user perception, and the valorisation of space (Carmona, 2010; Karaçor, 2016) and relate the framing of public space as a reflection of the state of social clout of the period (Amin, 2008).

In this research, “public space” refers to the openness, accessibility and use of an outdoor, publicly owned, historically shaped space (Mehna, 2014). In this analysis, we refer to the physical concept of space, defined as a morphological element, such as the town square, as the primary form of public space in European cities (Moughtin, 2003; Maahsen-Milan & Oliva, 2014). In traditional European cities, historic squares embody the quintessence of public open spaces (Carmona, 2019); excluding people with special needs from it can be understood as discrimination.

1.3. Public space and ex-market squares in Eastern European towns

In Poland, the majority of towns were founded during the Middle Ages, and the central public square remains a defining feature. In many small centres that have yet to develop a proper urban structure beyond the medieval town, the former market square is the only square in the city’s urban layout (Adamska, 2021: 11–12). This study refers to the physical concept of space and defines a morphological element, such as the public square, as the primary form of public space in European cities (Moughtin, 2003; Maahsen-Milan & Oliva, 2014).

Since their inception, market squares in cities have been assigned specific functions as central points of social, political and economic life. Vitruvius already emphasised the importance of this

element, describing its proportions depending on the number of inhabitants as the centre of the structure (Vitruvius, 1960: 81). Although their form, shape and structure differ depending on the time and place of their creation and the laws on which they were based, even within Silesia itself, but also beyond the country’s borders (Eysymontt, 2009: 72–74), their role as a centre of trade, community, and civic and political life has remained unchanged throughout European culture. Many of them shared common ideological assumptions, as Eysymontt describes, which were almost impossible to reconcile: an oval, limited outline and an internally ordered structure (Eysymontt, 2009: 73). Therefore, the need to separate open space, first for service and standard functions, then developed further since Greek and Roman times, was an expression of diverging social needs (Maahsen-Milan & Oliva, 2014: 82). Hence, the space of the central square was designated in earlier structures that were gaining an urban character, and in newly created cities, at the moment of the formation of a politically and socially conscious society, as an element from which the location of the new city was determined and whose dimensions formed the basis for determining the geometry of the rest of the city, regardless of the historical period or geographical location (Eysymontt, 2009: 52–62).

It has long been established that, apart from its practical purposes, the most essential function of the square is its symbolic significance, linked to its aesthetic expression, and, above all, as evidence of a given community’s social and cultural awareness (Moughtin, 2003: 88; Mehta, 2014: 55). Thomas identified four social roles for public space, referring to being an area for public life, meeting place for different social groups space for the display of symbols and images in society or a part the system of communication between urban activities (Thomas, 1991; Mehta, 2014: 55). In small towns this role becomes even more crucial, as there are no other places that play that role. Despite the fact that, as stated by Mehta, “public spaces have never been completely inclusive. Historically, when public space played an active role in supporting daily life, certain groups were not allowed to participate” (Mehta, 2014: 58) the idea of inclusive and accessible public space could become the symbol of next step in the process of evolution of urban life. In this context, the accessibility of the market square will serve as evidence of a change in the approach to inclusiveness within the local community. If civilisation is defined as the culture of living in cities (Moughtin, 2003: 89), then the types of activities and the approach to the individual in the central, symbolic space of the city will consequently reflect the civilisational level.

At the same time, little has been written about ways to ensure the accessibility of open public spaces in other areas, such as architectural accessibility without a cultural perspective. The available literature focuses mainly on the problems of market spaces in small towns resulting from earlier changes and planning decisions primarily made after 1945 (Forczek-Brataniec & Brataniec, 2012; Kobylarczyk, 2012; Kuśnierz-Krupa & Krupa, 2015). It was written mainly before the entry into force of the Revitalisation Act, which standardised the measures taken, although similar diagnoses were attempted later (Starzecka, 2020). In such cases, specific revitalisation activities and their spatial effects were analysed more often (Mazur-Belzyt, 2016), whereas the social aspects of these activities were analysed less frequently (Borcz, 2008; Borcz, Niedźwiedzka-Filipiak, 2008).

It is only in the most recent literature that the revitalisation of small town market squares has gained attention as a phenomenon aimed not only at preserving the unique cultural heritage of urban structures and architectural features, but also at improving local living standards and accessibility (Zagroba et al., 2020). In this context, it has also become essential for revitalisation initiatives to include spaces subject to legal protection (including conservation measures). However, this is an even more complex issue, as its fundamental problem is determining the ranking of recommendations and setting priorities when specific guidelines begin to conflict.

1.4. Objective and construction of study

This study assesses the accessibility of public spaces in Poland, using the public squares of small towns as case studies, in the context of two key legislative developments: the *Accessibility Act* (2019) and the *Revitalisation Act* (2015). The topic of public space accessibility emerged several years ago and prompted the first attempts in Poland to identify elements requiring diagnosis in the process of assessing the accessibility of public spaces (Rawski & Kłopotowski, 2021). Until now, all studies conducted in urban areas in Europe have focused on large cities, particularly capitals such as Budapest (Szászák & Kecskés, 2020), Belgrade (Vasiljević-Tomić et al., 2017), Oslo (Lid, 2016; Maciejko & Czajka, 2020), Vilnius (Stauskis, 2018) and Lisbon (Vale et al., 2017; Maciejko & Czajka, 2020). Valenciennes is among the smallest cities where architectural accessibility surveys have been carried out (Dejeammes, 2009). Moreover, most of the studies on

the accessibility of public spaces have focused on the accessibility of the interiors of buildings or building complexes (Mesquita & Carneiro, 2016), not of squares or other open public areas, or on the accessibility of public transport as a method of achieving broader accessibility (Clercq & Bertolini, 2003; Kompil et al., 2019).

The most inaccessible places identified in previous studies are communicative spaces, such as ramps, stairs and walkways (Kapsalis et al., 2022), or the space around buildings (Basha, 2015). Inaccessibility can also be caused by inadequate maintenance, inadequate lighting, chaotic materials, inadequate finishes and inappropriate colours (Blackman et al., 2003). The existence of accessible buildings in an inaccessible space is also a problem (Vale et al., 2017). This study aims to confirm the thesis that flooring has the most significant impact on accessibility and that the recently introduced Acts in Poland are too vague to significantly impact accessibility. More specific accessibility standards tailored to local conditions will increase the level of general accessibility of public spaces.

Studies have also analysed textual materials such as project documents (Dejeammes, 2009; Lid, 2016; Rawski, 2020), scientific literature (Gleeson, 2001; Blackman et al., 2003; Kapsalis et al., 2022), interviews (Blackman et al., 2003; Lid, 2016) and research through design (Vasiljević-Tomić et al., 2017; Szászák & Kecskés, 2020). However, one of the most effective methods is participatory access assessment (Basha, 2015; Stauskis, 2018). This study contributes to the research niche of architectural accessibility assessment of urban space (urban squares) in smaller towns, using a participatory survey with people with disabilities.

2. Materials and methods

This study adopted a two-stage approach. The first stage involved a structured literature review, and the second stage involved field research and an analysis of the numerical, descriptive and spatial data collected through the participatory access assessment method. The numerical data were analysed by performing statistical calculations (arithmetic averages of the ratings for all sections and categories). The descriptive data (frequency of occurrence of given phrases and descriptions) were analysed and categorised. Spatial data were obtained through an inventory of a site plan obtained from publicly available, municipal cadastral resources at a scale of 1:500. The inventory was compiled during sampling

visits and completed during the main surveys. The data were analysed using morphological analysis tools.

A literature review protocol was developed based on the preferred reporting items for the systematic review and meta-analysis (PRISMA) protocol guidelines (Shamseer et al., 2015). It comprised four stages: identifying the publications, screening the publications, assessing the eligibility of the publications based on predefined criteria, and conducting the synthesis and forming a conclusion. The results are further described in a publication that summarises the literature (Kleszcz & Szczegielniak, 2025).

2.1. Selection of study sites

This study focused on smaller and medium-sized towns in the multicultural, cross-border regions of Opole Silesia. The study area was narrowed to the Opole Voivodeship, the smallest voivodeship in Poland), which has 37 towns. In Poland, small towns are considered to have a population below 20,000 (Paszkowski, 2015: 32; GUS, 2016), although some authors apply this limitation to 5,000 inhabitants (Szymańska & Grzelak-Kostulska, 2005: 61). Among the 37 towns in the Opolskie Voivodeship, 29 are small towns (population under 20,000) and 11 of those have a population below 5,000 (GUS, 2023a). Small towns are the most critical research areas for analysing the urban structure of the Opole region. Therefore, the search for the characteristics

of typical public spaces in the Opole region should begin with the area's most typical places (Carmona et al., 2003: 99–100), where the most significant changes associated with social transformation can be observed (Montgomery, 1998: 99).

Only six towns in the Opolskie Voivodeship met the combined criteria of being a small town and undergoing a revitalisation process during the period when the *Revitalisation Act* (after 2015) or the *Accessibility and Revitalisation Acts* were in force (after 2019) (Fig. 1). Among the six towns, Ujazd and Korfantów have fewer than 2,000 residents, Biała has a population of 2,303, and Dobrodzień has 3,486 residents. Otmuchów and Paczków emerged as the most populous towns, surpassing 6,000 inhabitants (GUS 2023a: 94). The revitalisation of squares was carried out before the introduction of the Accessibility Act (2019) or the Revitalisation Act (2015) in Dobrodzień, Otmuchów and Paczków, whereas it followed their introduction in Biała, Korfantów and Ujazd. According to official statistics concerning 2023, the disability rate in the analysed towns averaged 79 people per 1,000 (GUS, 2023b).

Biała, Paczków and Ujazd were established in the 13th century, while Dobrodzień, Korfantów and Otmuchów trace their roots back to the 14th century (Krzysztofik, 2007). Five of the historical towns are listed in the Registry of Monuments of the Opolskie Voivodeship (*Wykaz obiektów zabytkowych*, 2021). Otmuchów and Paczków were added in 1949, followed by Dobrodzień (1953), Biała (1957) and Ujazd (1957). Korfantów is the only unlisted town. The distinctive chartered layout of Paczków, unparalleled on a national level, was officially recognised as a Monument of History by the President of the Republic of Poland in 2012 (*Executive Order of 22 October 2012 on the recognition as a historical monument of "Paczków—an old town complex with a medieval fortification system"*).

Biała, located on the river bearing the same name, has a rich history as a significant hub for regional trade, partly attributable to its strategic border position and the substantial Jewish community that resides there. The architectural layout of the Old Town has a symmetrical oval shape with a grid pattern, featuring a rectangular public square spanning ~1 ha. The mid-market block occupies 20% of the square (Adamska, 2019: 269–271).

In Dobrodzień, carpentry was vital to the town's economy. The Old Town has a small, partly connected grid layout. The irregular, quadrilateral square of ~1 ha was shaped by a fire in the 19th century and a decision to locate a free-standing church in the market block (Adamska, 2019: 279–281).



Fig. 1. Location of cities covered by the study against the background of Opole Voivodeship and Poland

Source: own elaboration

Korfantów's economy relies primarily on health-care. The layout of the Old Town is irregular, combining chequerboards and axial features. The small, quadrangular square covers 0.5 ha (Adamska, 2019: 304–306)

Otmuchów and Paczków are located in the Sudeten Foreland. The Bishops of Wrocław owned Otmuchów until the 19th century. During industrialisation, the sugar industry was the primary source of income for both towns. The layout of Otmuchów's Old Town is nearly rectangular and located at the foot of a castle hill. The public square is rectangular with a 6% slope toward the east and covers ~0.8 ha. The square has a mid-market block with a Renaissance town hall and tenement houses (Adamska, 2019: 335–337). Paczków's rectangular town square, central with regard to the medieval and modern town plans alike, covers ~1.4 ha. A mid-market block consisting of the town hall and tenement houses occupies ~15% of the square (Adamska, 2019: 338–340).

The Bishops of Wrocław founded Ujazd as a small agricultural and craft centre. The town is located on the slopes of the Chelm Ridge. It has an oval-shaped layout with a rectangular town square on a 4.5% slope and occupies ~0.7 ha (Adamska, 2019: 350–352).

2.2. Participatory access assessment

This study was conducted using the participatory access assessment method (Basha, 2015: 23; Stauskis, 2018), which was implemented through assisted walks by people with disabilities. This method is recommended as a promising approach for assessing accessibility (Blackman et al., 2003; Dejeammes, 2009; Lid, 2016). The walks were carried out in the early summer of 2024 (24 May in Paczków, 7 June in Ujazd, 21 June in Korfantów and Biała, 24 June in Otmuchów, and 11 September in Dobrodzień) and were preceded by site visits without people with disabilities in March 2024 (15 March in Korfantów and Biała, 22 March in Ujazd and Dobrodzień, and 23 March in Otmuchów and Paczków). The days chosen for the walks were either sunny or partly cloudy and rain-free with moderate temperatures (19–28°C).

The same people with disabilities participated in each study to ensure the highest possible objectivity and comparability of results. The assessors did not live in any of the towns in question, so their knowledge of all locations was comparable. The site visits were planned as day-long events, which required compensating participants for their time and their

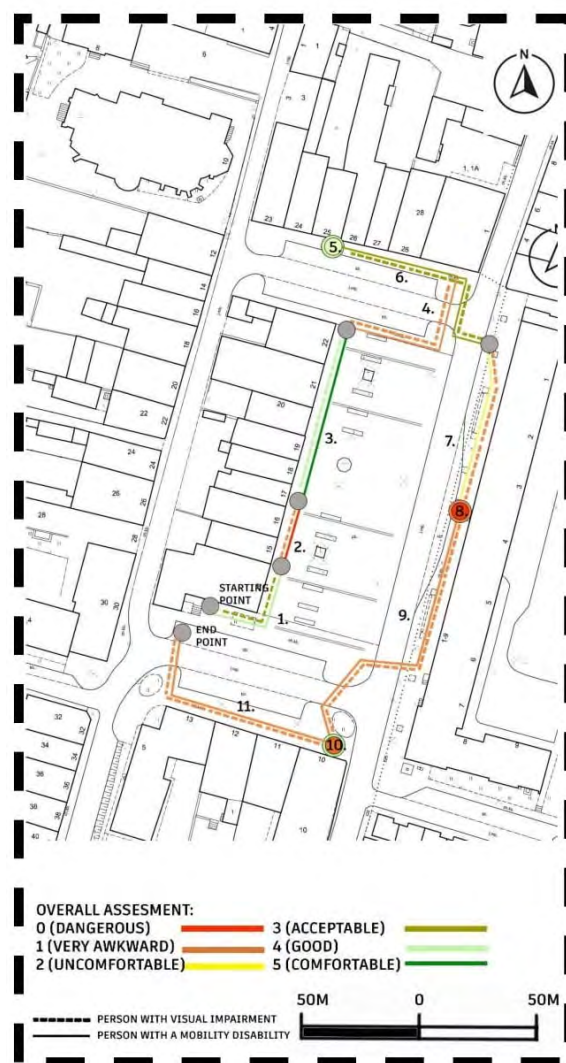


Fig. 2. Planned walk routes: Biała

Source: own elaboration

specific expert knowledge in the field of disability (which the study organisers did not possess).

During the preliminary site visit, the walk routes considered the specific characteristics of the public square. In each town, the walk started at an accessible parking space and included a walk along the square's pavement and a visit to places related to its culture or administration (e.g., community centre and Town Hall), gastronomy (e.g., restaurant and café) and recreation (e.g., green area, seating areas, and fountain) and ended at the starting point. The routes are presented in Figs. 2–7.

Walks were carried out and assisted by two people with special needs – one with a mobility disability and the other with a visual disability (Basha, 2015: 23). The participants were asked to walk the designated route independently where possible. The researchers photographed their progress, noted the

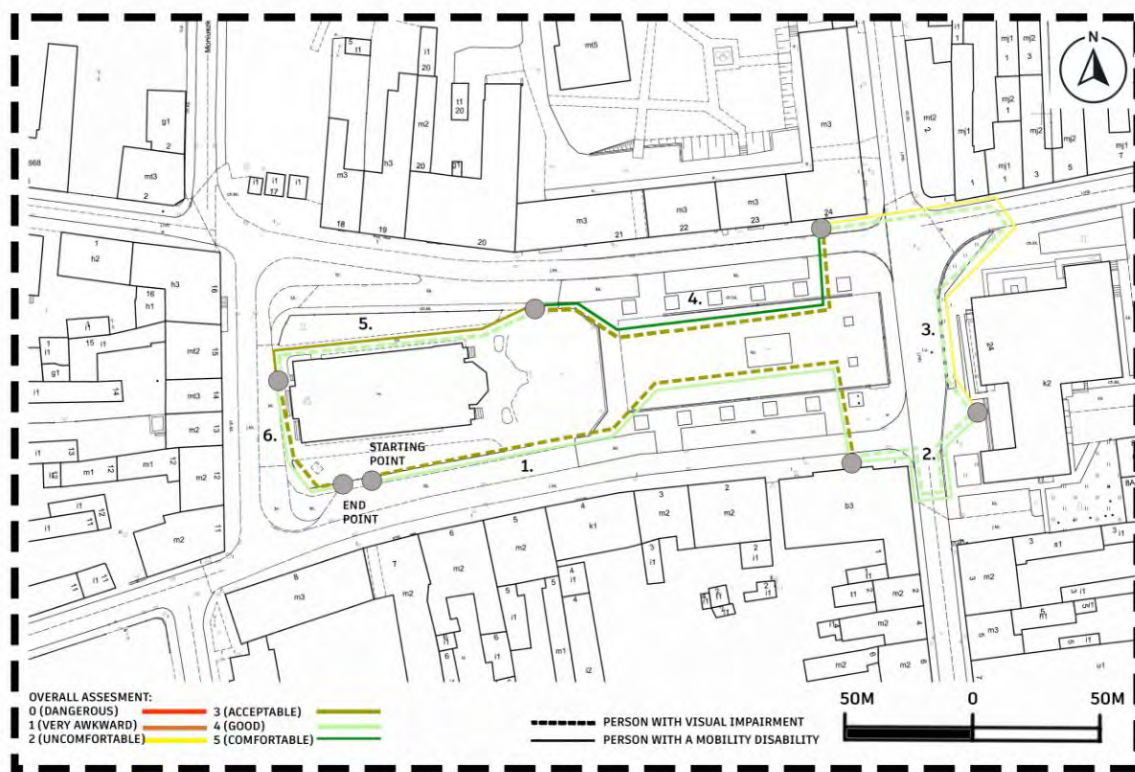


Fig. 3. Planned walk routes: Dobrodzień
 Source: own elaboration

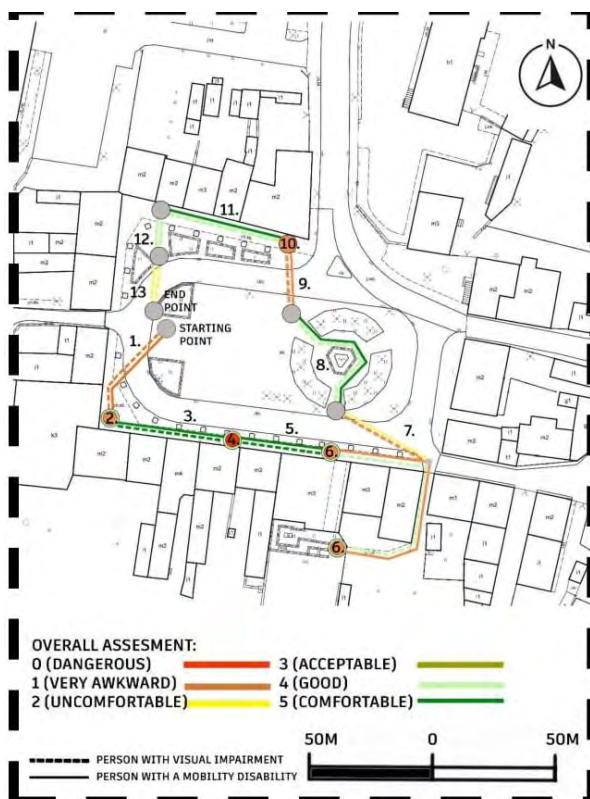


Fig. 4. Planned walk routes: Korfantów
 Source: own elaboration

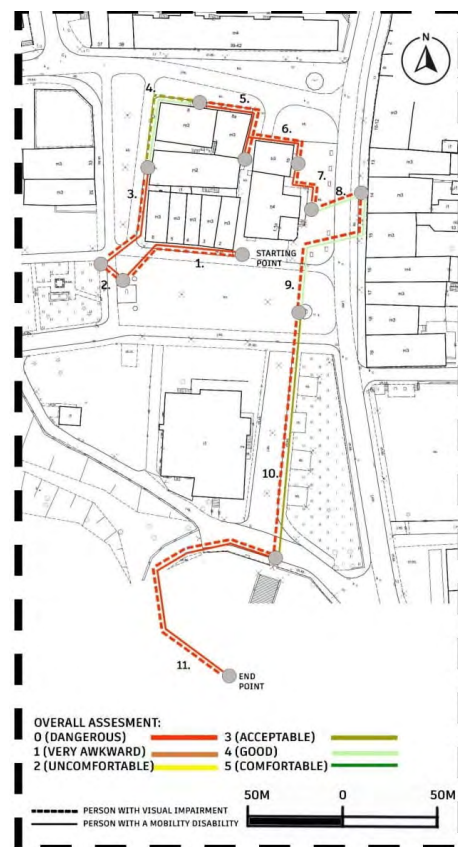


Fig. 5. Planned walk routes: Otmuchów
 Source: own elaboration

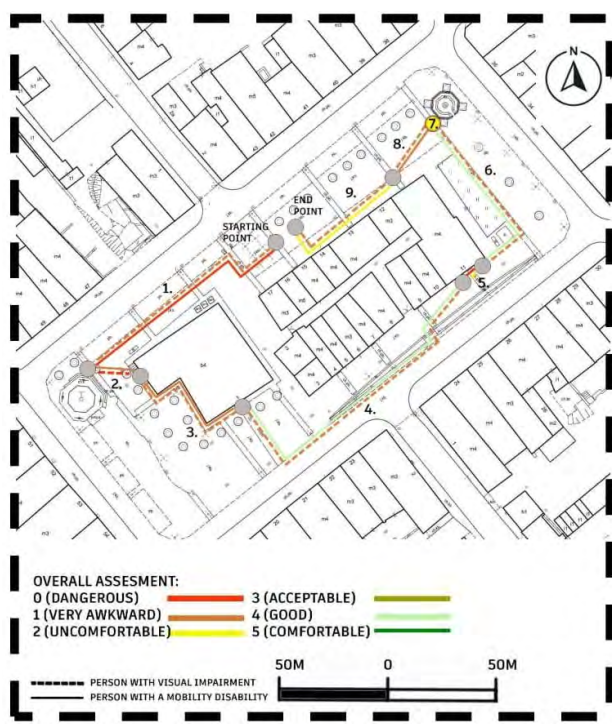


Fig. 6. Planned walk routes: Paczków
Source: own elaboration

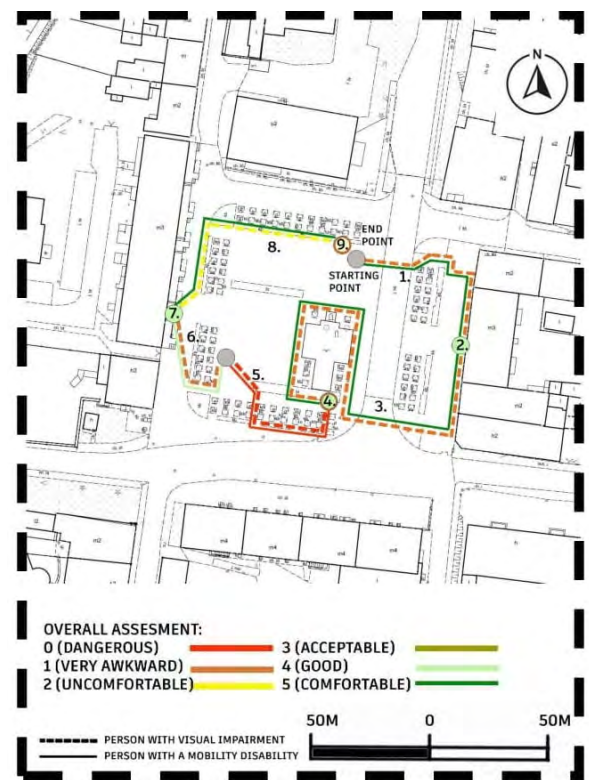


Fig. 7. Planned walk routes: Ujazd
Source: own elaboration

features assessed, and assisted where necessary. In one case (Otmuchów), the terrain conditions made independent progress impossible without endangering the participants' safety. The participants were recruited from local social enterprises related to people with disabilities. All the study's participants gave their informed consent to participate in the study and were paid for their travel and study time.

2.3. Accessibility assessment criteria

After the walk, the participants completed two evaluation tables to assess each section of the route. The assessment was divided into four categories: overall comfort, flooring, urban furniture, and greenery. A six-point rating scale was used, where 5 indicated

Table 1. Example of the evaluation table

Assessed section	Overall comfort rating		Floor rating		Urban furniture rating		Greenery rating		Difficulties/obstacles/ risks		Good solutions	
	Mobility impairment	Visual impairment	Mobility impairment	Visual impairment	Mobility impairment	Visual impairment	Mobility impairment	Visual impairment	Mobility impairment	Visual impairment	Mobility impairment	Visual impairment
Section 1, 2, 3, etc.	[For completion by tester]	[For completion by tester]	[For completion by tester]	[For completion by tester]	[For completion by tester]	[For completion by tester]	[For completion by tester]	[For completion by tester]	[For completion by tester]	[For completion by tester]	[For completion by tester]	[For completion by tester]

Source: own elaboration

“comfortable conditions”, 4 indicated “good conditions”, 3 indicated “acceptable conditions”, 2 indicated “uncomfortable conditions”, 1 indicated “very awkward conditions”, and 0 indicated “dangerous conditions”. The ratings of the space elements and overall rating were given independently (the overall rating was not an average of the element ratings) to identify elements that had the most significant impact on the overall rating. A second table provided descriptions of the elements (pavements, urban furniture, or greenery) to identify which elements were rated lowest and highest, thus creating a list of good practices and errors. Participants were also asked to identify obstacles, barriers, or hazards along the route and to identify promising solutions (Table 1).

3. Results

3.1. General results

Overall, the accessibility of public squares in the surveyed cities was very low (see Figs. 2, 3, 5, 7). Participants with visual impairment rated accessibility lower than participants with mobility impairment – in the overall assessment and in individual categories alike (see Table 2; Figs. 2, 3, 4, 5, 7). This may indicate that the needs of visually impaired people are less recognised, and solutions dedicated to their needs are less frequently implemented.

The average overall and individual accessibility ratings were generally higher in towns where the public squares were revitalised after the introduction of the *Accessibility Act* than in towns where they were revitalised before the *Accessibility Act*.

However, the differences were insignificant (see Table 2). This may indicate that legislative solutions related to accessibility are not thorough enough to significantly improve space accessibility.

Among the individual categories, greenery had the highest overall rating, followed by urban furniture and flooring. Korfantów’s public square received the highest overall score, and Paczków’s public square received the lowest score. In all separately assessed categories, average scores were higher when assessed by a person with a mobility impairment than when assessed by a person with a visual impairment (see Table 3).

The lower overall ratings for the accessibility of public squares compared to the ratings of individual sub-categories may be due to the accessibility being also influenced by other aspects such as the organisation of traffic, parking, noise, technology, and braille signs.

3.2. Inaccessible spaces and solutions

Understanding the specific barriers encountered by participants requires recognition that mobility challenges extend beyond individual obstacles. As Davey observe, “For many mobility-impaired people, the travel chain is negated by built-environment barriers” (Davey 1996). This concept of the interrupted travel chain provides crucial context for interpreting the extensive list of accessibility problems identified during the walking assessments in Upper Silesia central public squares.

The most common problems indicated by participants with a mobility impairment were related to the pavement (81), followed by urban furniture (33). There were no comments regarding greenery.

Table 2. Overall assessment of the surveyed public squares by location

Overall assessment			
	By a person with a mobility disability	By a person with a visual impairment	Average
Towns in which public squares were revitalised after the introduction of the <i>Accessibility Act</i>			
Biała	1.73	2.00	1.86
Korfantów	2.54	3.08	2.81
Ujazd	3.78	1.67	2.71
Average	2.68	2.25	2.46
Towns in which public squares were revitalised before the introduction of the <i>Accessibility Act</i>			
Dobrodzień	3.67	3.50	3.58
Otmuchów	1.18	0.27	0.73
Paczków	1.56	1.11	1.33
Average	2.14	1.63	1.88

Source: own elaboration

Table 3. Assessment of surveyed elements by location

Assessment of flooring			Assessment of urban furniture			Assessment of greenery		
By a person with a mobility disability	By a person with a visual impairment	Average	By a person with a mobility disability	By a person with a visual impairment	Average	By a person with a mobility disability	By a person with a visual impairment	Average
Towns in which public squares were revitalised after the introduction of the Accessibility Act								
Biała	3.36	3.64	3.50	2.89	2.89	2.89	3.60	3.80
Korfantów	4.23	3.92	4.08	3.75	3.88	3.81	4.44	4.33
Ujazd	3.56	1.89	2.72	3.43	2.29	2.87	3.40	3.60
Average	3.72	3.15	3.43	3.36	3.02	3.19	3.81	3.91
Towns in which public squares were revitalised before the introduction of the Accessibility Act								
Dobrodzień	2.83	3.50	3.17	4.40	3.20	3.80	4.40	4.00
Otmuchów	1.55	1.45	1.50	1.88	1.88	1.88	3.80	3.00
Paczków	1.67	1.33	1.50	1.29	1.57	1.43	3.13	2.63
Average	2.02	2.09	2.06	2.52	2.22	2.37	3.78	3.21

Source: own elaboration

Other comments (19) included the organisation of vehicle/bicycle and pedestrian traffic, lack of shade, and accessibility of buildings on the square. Some of the recurring problems (number in brackets refers to the number of times they occurred during all walks; Fig. 8) included:

- Uneven pavement (27);
- Lack of properly designated pedestrian crossings (11);
- Difference in height (10);
- Passages between elements on the walking route too narrow (10);
- Stairs (8);
- Parked cars blocking the passage (6);

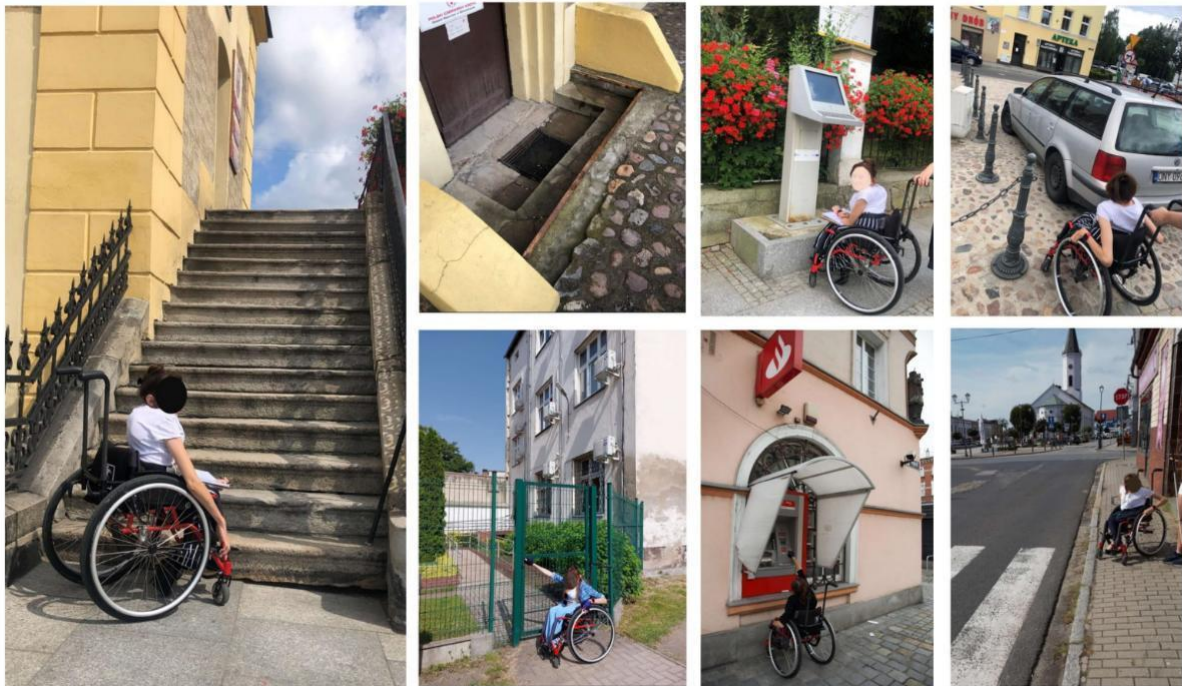


Fig. 8. Examples of inaccessible spaces and solutions as indicated by a person with a mobility disability
Source: own elaboration

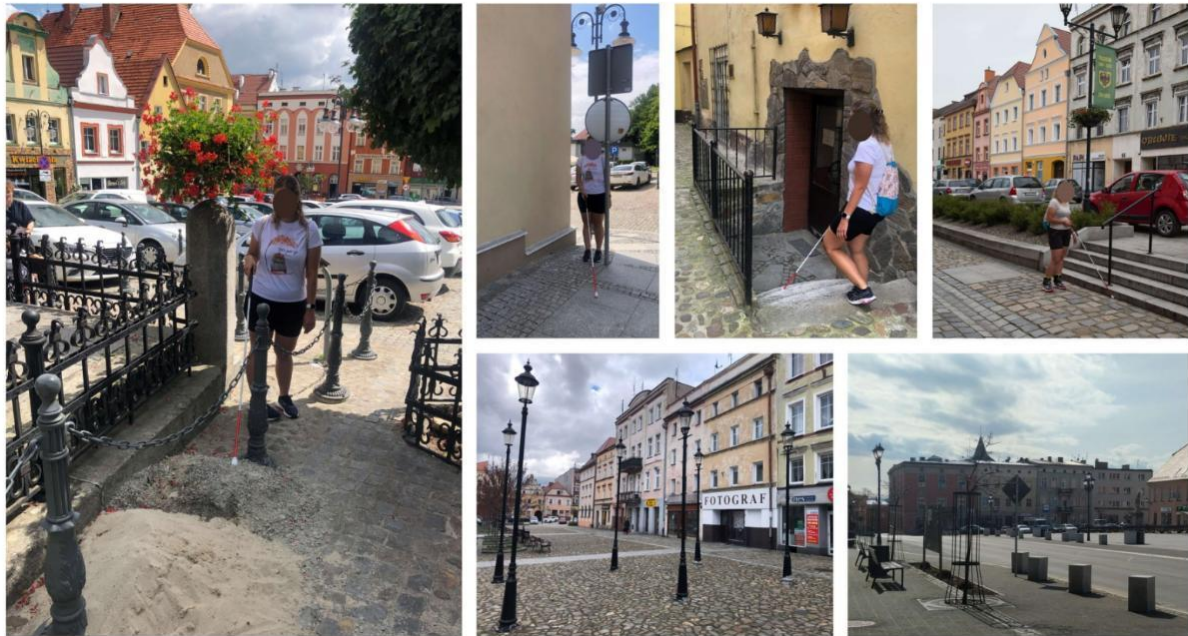


Fig. 9. Examples of inaccessible spaces and solutions as indicated by a person with visual impairment

Source: own elaboration

- Obstacles along the route, randomly located items (6);
- Incorrectly designed ramp or no ramp (6).

The most frequently indicated problems by visually impaired persons were related to the pavement (143), followed by urban furniture (52). Other comments (40) included the organisation of vehicle/bicycle and pedestrian traffic, lack of shade, and access to the buildings on the square, with only one comment on urban greenery. Recurring problems (Fig. 9) included:

- Blind attention fields missing or incorrect (35);
- No guidelines for the visually impaired (31);
- Obstacles along the route, randomly located items (23);
- Lack of properly designated pedestrian crossings (10);
- Lack of adequately marked entrances to buildings (10);
- Lack of reference points in space, causing the blind person to “meander” (9).

Participants with visual impairments provided the most comments. The highest number of comments, irrespective of the type of disability, concerned pavements, followed by urban furniture. Pavements and public furniture are the most frequently used public spaces and have the most significant impact on comfort.

3.3. Good practices and solutions

During the walk, participants with mobility impairment indicated 34 reasonable solutions. The highest number of reasonable solutions was related to urban furniture (15), followed by pavements (11) and other solutions, such as alternative access (7). The most frequently mentioned solutions (see Fig. 10) were:

- Flat, even flooring (11);
- Appropriately designed and positioned benches (3);
- Adequately, operably designed and placed handrails (3)

During the walk, 21 solutions were identified by the visually impaired; most were related to urban furniture (14), followed by flooring (6) and alternative access (5). Reasonable solutions (see Fig. 11) included:

- Flat, even flooring (4);
- Appropriately designed and positioned benches (3);
- Well-designed, accessible and safe fountain (3);
- Kerbed roadside gutter as a guiding element (3)

The results suggest that the urban squares included in this study were not well designed in terms of



Fig. 10. Examples of good practices and solutions as indicated by a person with a mobility disability
Source: own elaboration



Fig. 11. Examples of good practices and solutions as indicated by a person with visual impairment
Source: own elaboration

accessibility for people with disabilities. The reasonable solutions were primarily related to urban furniture and flooring, which confirms the importance of these two elements in the design of public spaces.

3.4. Material solutions

In Central and Eastern Europe, stone has long been used to surface roads, streets and pavements; however, until the late Middle Ages, less-durable wood or

gravel predominated (Piekalski & Wachowski, 2010; Piekalski, 2014; Mruczek, 2019). The largest Silesian city, Wrocław, did not cobble its main routes until the late 14th century (Chorowska, 2010). This process occurred much later in smaller towns.

Building traditions related to the paving of representative spaces can be identified by stone surfacing whose upper layer is not held together by a binding material. This tendency is maintained in historic city squares (Grzybowska, 2009). In general, conservation considerations are aimed at consolidating or restoring old surfaces with similar material. Therefore, to ensure accessibility of historic areas, special attention should be paid to the requirements of modern traffic, including the use of stone elements with an even profile.

Most attention is paid to the form, texture, colour or pattern of the wearing surfaces of historic markets, squares and passages, which are the subjects of activities undertaken by conservators or art historians (Grzybowska, 2009). An important task for technologists is to consider appropriate technical parameters that will ensure the operational durability of the surface under specific environmental conditions and assumed operational loads.

The Polish standards currently in force (*PN-EN 12058*; *PN-EN 12371*; *PN-EN 12372*; *PN-EN 1341*; *PN-EN 1342*; *PN-EN 1343*; *PN-EN 13755*; *PN-EN 14157*) present basic standards for stone elements intended for pavements are informed by the Act on Construction Products and Regulation (EU) No 305/2011 of the European Parliament and Council. Stone elements for pavements are subject to a procedure for obtaining

product authorisation for use in domestic trade; that is, the procedure for determining the assessment and verification of construction products based on the relevant harmonised standards or European and national technical assessments, depending on whether they are marked with the CE mark or the national construction “B mark”.

Construction products intended for floors (pavements – i.e., slabs and curbs) made of natural stone and paving stones, are called “rigid flooring products”. The 4th system of assessment and verification of the constancy of performance is required (regulation on the method of declaring the performance of construction products and the method of marking them with a construction mark on 17 November 2016). This is the least rigorous of the six systems and covers only the need to perform initial-type testing and conduct factory production control (the manufacturer carries out both activities) without the involvement of authorised research units (notified bodies).

The best-rated floors (see Table 3) in terms of the possibility of movement included the surfaces in Korfantów (4.23; Fig. 12-3) and Ujazd (3.56; Fig. 12-6), whereas, in terms of accessibility for people with visual disabilities, the surfaces in Korfantów (3.92) and Biała (3.64) dominated (Fig. 12-1). The lowest average scores in terms of possibility of movement and accessibility for people with visual impairments were for surfaces in Otmuchów (1.55 and 1.45, respectively; Fig. 12-4) and Paczków (1.67 and 1.33, respectively; Fig. 12-5).

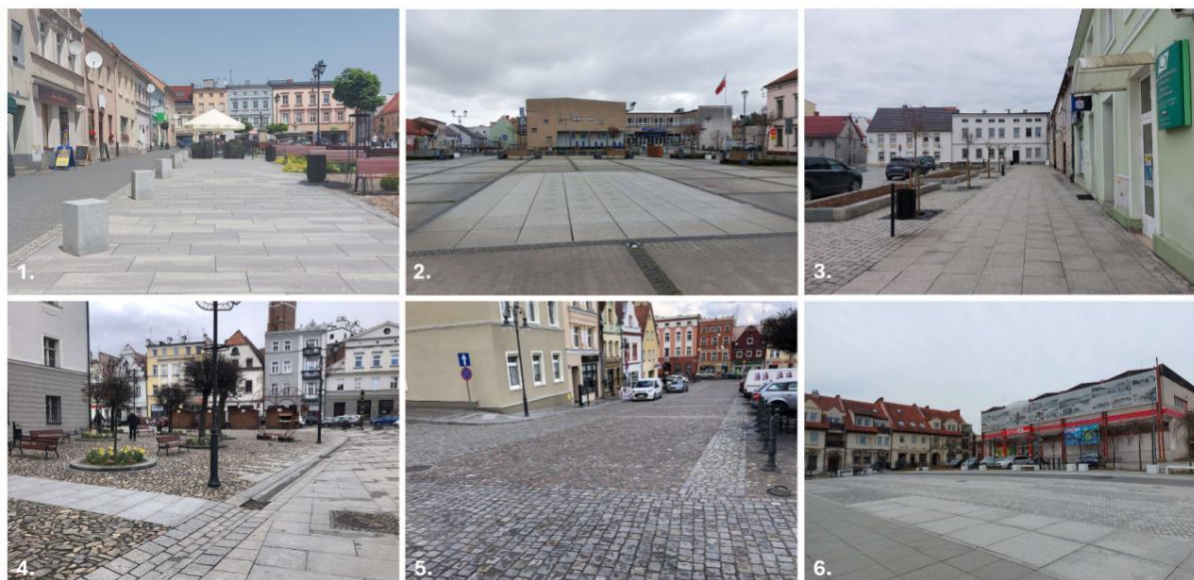


Fig. 12. Different surfaces of the analysed market squares: 1 – Biała, 2 – Dobrodzień, 3 – Korfantów, 4 – Otmuchów, 5 – Paczków, and 6 – Ujazd

Source: own elaboration

The pavement surfaces of Biała were made of various materials, including crushed granite cubes (10×10 cm), dark cubes (20×20 cm) and concrete slabs (20×20 cm and 60×90 cm (Fig. 12, picture 1). In Dobrozdzień, the pavement surfaces were made of crushed granite cubes (6×6 cm to 8×8 cm) and granite slabs (60×60 cm). The roadways were mainly regular granite cubes (10×10 cm), but other materials were also used, such as concrete cubes, asphalt and fieldstone (cobblestone) (see Fig. 12, picture 4).

The paving surface in Korfantów was made of granite cobblestones (10×10 cm to 25×25 cm; light and dark grey) and flamed granite slabs (50×50 cm) (see Fig. 12, picture 3). In Otmuchów, we observed various surfaces, including crushed granite cobblestones (6×6 cm to 14×14 cm), often with irregular shapes and surfaces. Fieldstone was also used on the roadways and partly on the pavements, creating a “cathead” surface. Granite slabs (60×60 cm) were also used on the pavement (see Fig. 12, picture 4).

The paving surface in Paczków was partly made (within the pavements) of burnt granite slabs (50×50 cm and 50×100 cm). Most pavement surfaces were made of granite cubes (6×6 cm, 10×15 cm, and 20×20 cm). Irregular fieldstone (20×20 cm) was also used, creating a “cathead” surface. Most pavements served as car parks. In many places in the pedestrian area of the square, linear drainage was in the form of a gutter lined with granite cubes of various sizes (see Fig. 12, picture 5). In Ujazd, the surface was made of granite cubes (10×10 cm to 15×15 cm) and flamed granite slabs (60×60 cm, 60×120 cm, and 120×120 cm) in contrasting light and dark grey (see Fig. 12, picture 6).

In almost all the locations, two material solutions were dominant for surfaces and urban furniture (apart from wooden elements): granite and concrete. Fieldstones were also used, usually being very irregular in shape and varied in size.

The field studies (see Tables 2 and 3) show that material solutions did not have a significant impact on the overall assessment of the floors (surfaces) or urban furniture (the scale of assessments of elements used for pedestrian and road surfaces and other elements of urban space equipment was adopted as user assessments from 0 to 5). The highest- and lowest-rated locations used similar material solutions.

In the analysed parts of the routes, the most significant problems were the lack of a designated pedestrian lane (pavement), very (chaotically) diversified surfaces, different types of paving elements, parking spaces for people with disabilities being located on a steep slope, too poorly diversified colour schemes for flooring elements (no contrasts), and cobblestone surfaces. The materials and products used did not directly impact accessibility difficulties. However,

the layout and construction of pedestrian routes and the logistics related to the location of parking spaces, access from the parking lot to the sidewalk, and the lowering of sidewalks at pedestrian crossings, had a more significant impact on accessibility.

4. Discussion

The research focused on the Opole Voivodeship region of Poland. These results should be verified by referring to the national scale to relate them to regions in other countries. It is also essential that the adopted evaluation criteria for the analysed cases be verified for analogous towns and regions elsewhere in the country. The findings cannot be generalised, as these are obtained by adopting a reference to national legislation. Although arising from the implementation of European regulations, these are hyper-local solutions.

The proposed methodology introduces several limitations, including the scope and the possibility of repeating studies in other locations, due to their repeatability and the need for the same people to participate in subsequent series of studies. At the same time, adopting a financial compensation method for participation in the study may also limit the possibility of repeating the scenario in other circumstances.

The literature analysis did not answer the question of the possibility of valorising specific criteria for evaluating public spaces regarding paving, urban furniture and greenery. Currently, they are treated similarly in assessments. This valorisation (the conclusion of this analysis) is only fully validated for the cases analysed. Owing to the specific nature of the examined public open spaces, the use of which depends on weather conditions, it is necessary to repeat the field study under different weather conditions to confirm the results of the surveys.

In the case of the pavements of the squares, a significant proportion of the described flaws that caused the low rating of this element were due to implementation errors. It is necessary to check whether the standard parameters for the material and its assembly, as laid down in the standards, have been complied with (see *PN-EN 1926*; *PN-EN 12371*; *PN-EN 12372*; *PN-EN 1341*; *PN-EN 1342*; *PN-EN 14157*). A comparison between the information provided in the building permit and the state of its implementation could also provide several answers.

The limitations of the study include its costs, the small research sample, the subjectivity of assessments, and the small group of respondents. These

made the opinions expressed impossible to verify. This research should be repeated with the broadest possible specialist groups to include the widest range of disabilities. Such an inclusive approach is essential because empirical studies confirm that different categories of pedestrians evaluate the same route in markedly different ways. As Moura et al. (2017) observe, “Results show clear differences in walkability scores for distinct pedestrian groups, namely between adults and seniors or impaired-mobility pedestrians.”

The study used the participatory access assessment method, which is expected to yield the most accurate results for assessing the quality of public spaces in cities (Basha, 2015; Stauskis, 2018). The results obtained, compared to studies using other research methods, such as the analysis of planning documents and design or implementation documentation (Dejeammes, 2009; Lid, 2016; Rawski, 2020), significantly expanded the scope of knowledge about which elements in squares most strongly affect their accessibility and the perceptions of the quality of the space by people with disabilities. Unlike previous research that highlighted the quality and chaotic nature of surface finishes, lighting or furnishing as the most important criteria affecting the accessibility of spaces (Blackman et al., 2003), this study points to the consistency and logic of paving as the main elements affecting the accessibility of public squares. Davey's work on older people's mobility also contains similar observations: “poorly maintained surfaces may deter older people from venturing outdoors [...]” (Davey, 1996).

According to our research, issues related to the organisation of pedestrian and vehicular traffic, proper designation and signage of pedestrian crossings, and car parking spaces are also important, which overlaps in part with other studies that emphasise the importance of designating pedestrian zones to increase accessibility (Vale et al., 2017).

5. Conclusions

This study's findings raised significant concerns. None of the surveyed open public spaces provided conditions that ensured safe and independent access for individuals with physical disabilities. These central urban public spaces continue to function as spaces of exclusion, particularly for social groups affected by permanent or temporary disabilities. This study showed a slightly higher general awareness of the needs of individuals with mobility impairment. Interestingly, similar problems have been reported

in the UK, as Manley writes: “Technical solutions [are] directed particularly at the stereotype of the disabled wheelchair user rather than at the needs of the wider disabled community” (Manley, 1996).

The study answers the first research question, showing a slight increase in accessibility for people with special needs in the squares revitalised after the introduction of the *Accessibility Act* in 2019. However, further legislative and urban policy changes are required. One excellent step is the implementation of local accessibility standards, which are common in the largest cities in Poland and Europe. Interestingly, the introduction of Accessibility Standards in Local Administration, a new document drafted by Poland's Ministry of Interior and Administration and social partners (3), contains a detailed set of guidelines covering buildings and open public spaces. Further amendment to the Minister of Infrastructure's regulations is also being prepared that is expected to address the issue of accessibility more comprehensively and include open public spaces.

This study shows that the main barrier to the accessibility of open public spaces in the small towns of the Opole Voivodeship was poorly maintained or hazardous surface conditions that made it impossible for wheelchair users and people using walking frames or crutches to move independently across large squares. Conditions for visually impaired users were even more challenging. A surface that is too uneven, plus a lack of elements that enable people to find and keep their bearings, obstacle-free paths, and marking at critical points, all mean that blind and partially sighted people are excluded from the independent use of prominent public spaces in cities and towns. The lack of warning signs at critical locations, such as pedestrian crossings, poses a significant threat to all users. Surface problems are compounded by other architectural barriers, such as poorly selected and positioned street furniture and decorative elements. Incorrectly designed flowerpots, benches and cycle racks made of materials with poor colour contrast and a lack of sensory markings reduce accessibility for the visually impaired. Urban greenery emerged as a third barrier factor, especially in the context of proper maintenance.

Despite the study's methodological limitations, these findings clearly indicate directions for further changes in legal requirements and local policies. Such changes are crucial for improving accessibility and creating inclusive, fully accessible open public spaces. The introduction of the *Accessibility Act* has improved the overall situation in public spaces, but not sufficiently. It is necessary to introduce accessibility standards for public spaces that are tailored to local conditions and specificities. Accessibility

depends on many factors, of which architectural aspects (flooring, urban furniture and greenery) comprise only a small part. A complete analysis should consider solutions related to the organisation of traffic, alternative ways to ensure accessibility, and site-specific technical solutions. Similar conclusions can be drawn from British research (Manley, 1996).

The analysis indirectly shows that revitalisation measures and conservation requirements within public spaces are often in conflict with the goal of ensuring full accessibility. Future research should focus on solutions to guide the potential refinement of the Accessibility Act and support the formulation of specific standards for accessibility in public spaces. As Purcell (2013: 318) wrote: “urban society draws inhabitants into the center, into vital urban spaces where they encounter each other and engage in collective and meaningful negotiations about what kind of city they desire”.

These invisible negotiations in local politics should not occur without the participation of people with special needs, including those with disabilities. They are citizens who have the right to participate in social events and independently use urban spaces, and, as Manley expresses, “barrier-free built environment is a right to be enjoyed by all citizens regardless of ability” (Manley, 1996). A key strategy for eliminating architectural barriers in the spirit of universal and inclusive design is the more precise specification of legal requirements. There is also a need for broader awareness training for designers and authorities to improve local policies and the quality of projects.

Notes

1. This groundbreaking law was preceded by a number of accessibility legislations, including the Fair Housing Amendments Act of 1988. This amendment constitutes an addition to the Civil Rights Act of 1968, a foundational legislative act that establishes civil liberties within the United States and prohibits discrimination on the basis of race, colour, religion, gender, or national origin.
2. Prior to this, provisions pertaining to accessibility were incorporated into Polish legislation, albeit in a dispersed manner. These provisions primarily feature in the Regulation of the Minister of Infrastructure, which stipulates the technical requirements that buildings and their location must meet. This document dates back to the 1980s, and

the first provisions regarding the ergonomics of wheelchair users were introduced in the 1990s. Presently, the authorities, in collaboration with disability advocacy organisations, are preparing an update, which is set to introduce substantial changes to accessibility requirements.

3. This document has been produced as a further development of the accessibility standards produced as part of the European Union Cohesion Policy 2021–2027 (Standardy dostępności dla polityki spójności 2021–2027).

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