

ACCESSIBILITY OF PUBLIC SPACE IN GDAŃSK, POLAND, FOR SENIOR CITIZENS

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HIGHLIGHTS

- There is a growing need to adapt cities to meet the challenges of an ageing population.
- Satisfaction with green spaces and infrastructure varies by district characteristics.
- Inclusiveness of space for senior citizens depends mainly on 3 factors: access to green spaces, public transport and public space quality.
- Study expands on these findings by providing specific data from Gdańsk.

ABSTRACT

Background: The ageing population presents new challenges for modern cities, particularly in adapting public spaces to meet the needs of senior citizens. This study aims to identify and analyse the inclusivity of public spaces in selected districts of Gdańsk, considering urban and social factors, and assess how well these spaces accommodate the needs of the elderly population. **Material and Methods:** The study began with a demographic analysis of Gdańsk 2003–2023, focusing on the increasing number of residents aged ≥ 60 years. Based on this analysis, 3 districts were selected: Przymorze Wielkie, Młyniska, and Wzgórze Mickiewicza. They differ in terms of building typology and access to public transport and green spaces, which were studied using quality research methods. Finally, a geo-survey was conducted to collect spatial data on how seniors interact with their environment and identify barriers to accessibility in public spaces. **Results:** The demographic analysis revealed a rapid increase in the elderly population, which accounted for 28.1% of Gdańsk's population in 2022. The study found varying levels of access to green spaces and the quality of infrastructure in the selected districts. In Przymorze Wielkie, most seniors were satisfied with the availability of green spaces, while in Młyniska and Wzgórze Mickiewicza satisfaction levels were significantly lower. Additionally, the study highlighted differences in access to public transportation and infrastructure designed to meet the needs of older adults. **Conclusions:** The findings indicate a need to adapt public spaces and urban infrastructure to the needs of the ageing population. The diverse experiences of seniors across the districts of Gdańsk underscore the necessity for targeted urban interventions to improve the quality of life for older adults, particularly by enhancing access to green spaces, infrastructure, and essential services. *Med Pr Work Health Saf.* 2025;76(4):259–267

Key words: Gdańsk, urban health, urban planning, ageing population, inclusiveness of public space, senior-friendly infrastructure

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INTRODUCTION

The ageing population presents a significant challenge for modern cities, requiring well-considered urban and social interventions. There is a growing interest in assessing the importance of natural environments in rehabilitation, leading to a growing interest in utilising open spaces for therapeutic purposes [1–4].

The World Health Organization's (WHO) European Healthy Cities Network [5] highlights several key challenges for urban areas, including addressing the obesity epidemic, strengthening healthcare systems, and adapting to the impacts of climate change. The coronavirus disease 2019 pandemic has further exposed weaknesses in current systems, with seniors being one of the most

severely affected groups [6]. This underscores the urgent need for new solutions [7] and the development of strategies to design healthy cities that not only tackle these challenges but also create urban spaces where senior residents can thrive [8,9].

The concept of a healthy city is well-established in various studies [10–12]. According to WHO, a healthy city continually improves its physical and social environments, expanding resources that support residents in leading healthy lives [13]. A senior-friendly city, in particular, promotes independence and enhances cognitive function among older adults [14,15]. The WHO emphasises that physical activity is crucial to maintaining health [16]. Projections by Poland's Central Statistical Office [17] indicate that by 2050, individuals >60 years will comprise 40.4% of the population. Currently, 45.1%

of older adults in Poland report participating in physical activity <1 per week [17], signalling a pressing need to adapt urban spaces to better support the well-being of seniors.

The purpose of this study is to identify the factors that influence the health and needs of a particularly vulnerable group – the seniors, and to explore the conditions urban spaces must meet to be senior-friendly. Despite being a crucial demographic for urban design, seniors are often overlooked in favour of the working population [18]. This project aims to identify specific elements of the urban environment that promote inclusivity for senior citizens. The goal is to evaluate the presence and accessibility of these elements in the city of Gdańsk, assessing how well they meet the needs of seniors. This will involve analyzing the factors that influence seniors' mobility and activity and developing a comprehensive catalogue of urban elements that support active ageing, taking into account the diverse needs of this group [19].

Given ongoing demographic changes, ensuring access to inclusive and tailored public spaces for senior citizens has become a critical issue. This study aims to identify and analyse the inclusiveness of spaces within selected districts of Gdańsk, considering various urban and social factors. As part of this research, factors such as access to green spaces, public transportation availability [20], and the presence of social and educational services were examined [8]. While numerous studies evaluate the accessibility and quality of existing urban infrastructure [21], this study specifically focuses on assessing these factors from the perspective of seniors. The project also provides recommendations to identify areas in need of improvement or redevelopment to better serve the ageing population.

MATERIAL AND METHODS

Research on the inclusivity of public spaces utilises a range of methodologies tailored to the characteristics of the space and its users. Qualitative methods, such as in-depth interviews and field observations [22,23], are often employed to gain insights into users' experiences. Participatory mapping [21] is another common approach for exploring these perspectives. Quantitative methods, such as geo-surveys and flow analysis, are used to gather statistical data on various aspects, including access to public transport [24] and green spaces [25].

Statistical studies, selection of case studies and rationale for choice

The research began with a demographic analysis of Gdańsk, utilising data provided by the Gdańsk City

Hall [26] covering the last 2 decades (2003–2023), as data for the year 2024 was not yet available. This analysis revealed a significant increase in the population aged ≥ 60 years during this period, highlighting the necessity of focusing on this age group in subsequent stages of the study. The first research method applied was case studies, which were used to describe 3 districts and highlight their urban features. To select the district for detailed investigation, desk research was conducted, involving a search for information to determine the optimal district choice. This included examining available source materials such as city strategies for senior inclusion, urban planning documents and strategies, as well as relevant scientific papers and monographs.

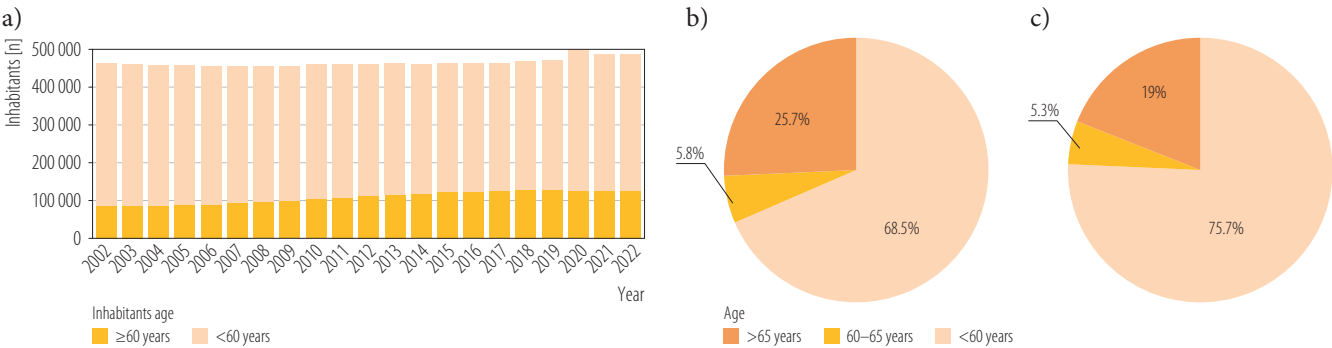
Following the initial demographic analysis, the study examined the population distribution in Gdańsk for the year 2023, considering gender and age, with a particular focus on those <60 years and ≥ 60 years. Additionally, district-specific demographic data was sourced from the publication *Gdańsk for Seniors* [26]. This analysis identified 5 districts with the highest concentration of residents aged ≥ 60 years. From these 5 districts, 3 were chosen for further investigation based on their distinct characteristics, including differences in size, building typology, and land-use. The rationale for selecting these districts was to ensure a comprehensive understanding of various urban environments and their capacity to accommodate the needs of an ageing population.

The quality research methods on chosen cases studies

The second method applied was the quality research method, used to assess the quality of the urban environment [27]. This involved several techniques, including site visits, documentation review, database compilation, and the collection of planning documents and strategies. The same methods were applied to all 3 case studies. Detailed analyses focused on transportation networks, the availability and quality of urban green spaces, land-use patterns, and the accessibility of essential services for senior residents. The results of the quality research are presented through a series of maps, illustrating the functional structure of the districts, public transport networks, access to senior amenities such as district centres, and an analysis of green spaces.

Geo-survey and data collection

The final phase of the research involved conducting a geo-survey in the selected districts, targeting locations frequently visited by older adults. These locations in-



Based on “Gdańsk dla seniorów, informator 2023/24” [26].

Figure 1. Comparison of a) the number of residents and people aged ≥60 years at the turn of 20 years and analysis of the percentage of residents in each age group by gender: b) female, c) men – in Gdańsk in 2022

cluded centres for senior, cultural institutions, and parish offices. The geo-survey aimed to gather spatial data on how seniors interact with their urban environment and identify potential gaps or barriers in accessibility. Insights from the geo-survey were critical in assessing the inclusiveness of public spaces and understanding how well these districts cater to the social and mobility needs of their ageing populations.

Further, a comparative analysis of the materials obtained as a result of field research, archival resources and statistical data was conducted. Due to the scope of this research, the focus was put on the accessibility of urban space of Gdańsk in 3 districts, as well as recommendations for planning and development practice. This multi-stage approach ensured that the study not only mapped demographic trends but also provided a nuanced understanding of how urban design and infrastructure impact the quality of life for older residents in Gdańsk.

RESULTS

The demographic analysis of Gdańsk residents over the past 20 years reveals a significant increase in the number of individuals aged ≥60 years. This substantial growth in the senior population occurred alongside a modest overall population increase (Figure 1a).

The data highlight the rapid ageing of Gdańsk’s population, with an average annual increase of approx. 2000 seniors, compared to an average annual rise of just 1000 residents in the total population. As of December 31, 2022, Gdańsk’s total population was 431 600, of which 121 438 were aged ≥60 years and, representing 28.1% of the city’s total population. Within this age group, there were 72 569 women and 48 869 men, indicating that the number of women was nearly double that of men (Figure 1b–c).

The analysis of the population across respective districts revealed that Chel m is the largest one in terms of population with only 29% of its residents being >60 years old, a percentage close to the average for the entire city. Nonetheless, Gda nsk has 5 districts where the percentage of residents aged >60 years exceeds 30% of the total population. These districts are:

-  abianka-Wejhera-Jelitkowo-Tysiąclecia,
- Przymorze Wielkie,
- Zaspa-M lyniec,
- M lyniska,
- Wzg rze Mickiewicza (Table 1).

Three districts were selected for further analysis based on their distinctive building typologies and locational characteristics. These are:

- Przymorze Wielkie: this district is characterized by predominantly multi-family housing from the 1960s and 1970s, including 10-story “fallowce” buildings, multi-story apartment blocks, and single-family homes. The area between the buildings contains numerous green spaces, including small parks and squares. Additionally, the district is in close proximity to the Bay and Regan Park, which offer a variety of walking and cycling paths, as well as recreational areas for relaxation.

Table 1. Gda nsk residents aged >60 years, Poland, data for 2023

District	Residents [%]
�abianka-Wejhera-Jelitkowo-Tysiąclecia	38.4
Przymorze Wielkie	36.9
Zaspa-M�lyniec	37.3
M�lyniska	30.2
Wzg�rze Mickiewicza	35.7

Based on “Gda nsk dla seniorów, informator 2023/24” [26].

- Młyniska: this district features a mix of industrial buildings and the “Green Triangle,” which serves as the main residential area. Though the residential area is relatively small, the presence of multi-family housing accommodates a significant number of residents. Green spaces are scattered between the apartment blocks, though they are poorly maintained. Furthermore, there are no parks or recreational areas in the immediate vicinity.
- Wzgórze Mickiewicza: primarily consisting of single-family residential buildings, this district is defined by its unique topography, as it is situated on a hill, which isolates it somewhat from neighboring areas. The district is surrounded by architectural barriers, including a busy road and a steep incline with stairs, creating mobility challenges for residents. The landscape offers views of the sea, industrial areas, and surrounding hills (Figure 2a).

In analyzing the level of communication between districts, the focus was placed on public transport, including buses, trams, and inter-district connections. It was observed that, despite its large size, Przymorze Wielkie is very well connected. Bus lines with stops running along the main streets and a tram line running along the border with Przymorze Małe towards Sopot and the Main Town ensure easy access. Residents can easily travel to nearby districts, such as Oliwa, Zaspa, and Wrzeszcz, by public transport. Młyniska, with its specific development, is served by a tram line and a bus line along the main street. Additionally, residents of the “Green Triangle” housing estate benefit from being in close proximity to an Szybka Kolej Miejska (Fast Urban Railway) stop. Wzgórze Mickiewicza, on the other hand, is served by a single bus line, which is the only form of public transportation connecting it to other areas. However, this bus line does not cover the entire district, significantly hindering residents’ ability to travel beyond its borders. While residents can transfer from the local bus to other bus and tram lines to reach other parts of Gdańsk, access to tram stops is impeded by barriers such as busy streets, viaducts, and railway tracks (Figure 2b).

Subsequently, the availability of essential services and social spaces for seniors was analyzed. In Przymorze Wielkie, 4 senior clubs collaborate with the city of Gdańsk. The district also features outdoor gyms, petanque courts, and adult playgrounds, along with numerous service buildings. Key facilities for seniors, such as shops, libraries, clinics, and offices, have been highlighted on the Figure 2c. In Młyniska, near the “Green Triangle,” there are shops, a government office, and a church; however,

the district lacks public recreational spaces, such as outdoor gyms, and does not have any senior clubs. Wzgórze Mickiewicza has 2 shops, a government office, 2 outdoor gyms, and 1 senior club (Figure 2c).

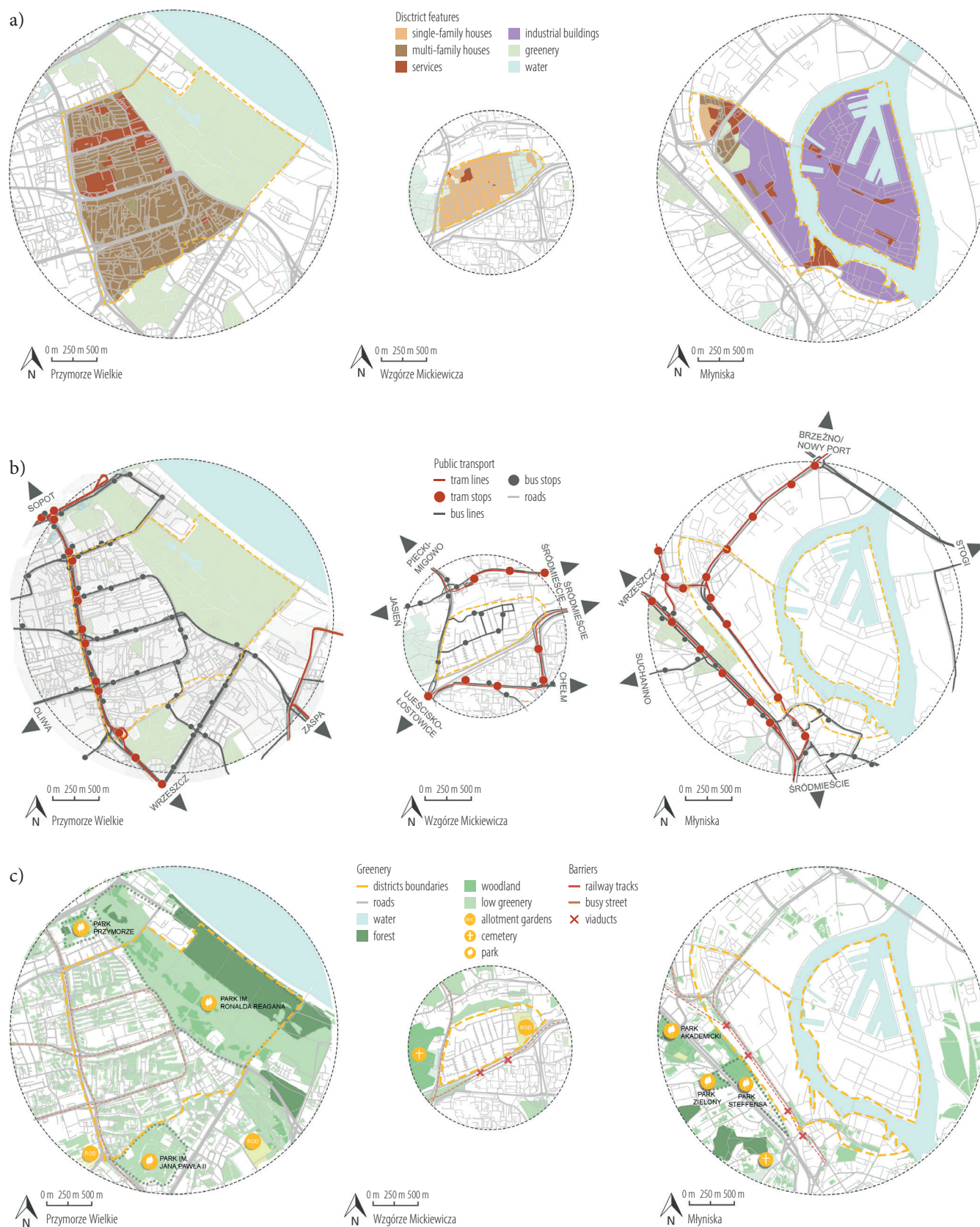
This study also included an analysis of green spaces in the 3 selected districts of Gdańsk, focusing on their size, usage, and accessibility. Communication barriers that hinder access to these areas were also examined. Due to its topography, Przymorze is characterised by a substantial amount of green spaces, including several parks, and its location in close proximity to the sea enhances its appeal. In contrast, Młyniska lacks significant green spaces, with the nearest park situated outside the district’s boundaries and separated by a railway line, which acts as a communication barrier.

Wzgórze Mickiewicza, while containing numerous allotment gardens, lacks parks or publicly accessible green spaces. The only park that residents can directly access is located near the district’s northern border. A distinguishing feature of Wzgórze Mickiewicza is its isolation from the rest of Gdańsk, separated by multiple barriers, including railway tracks, a major road, and a steep hill. To the west, the district is bordered by the sea (Figure 2c).

Thereafter interviews with 61 seniors from 3 chosen districts were conducted. The interviews focused on the well-being of senior citizens and their subjective evaluation of the urban space. In Przymorze 25 seniors were interviewed, in Młyniska – 12 and in Wzgórze Mickiewicza – 19. Additionally, 5 respondents were from neighboring districts (Figure 3a–b). They were guests in the district using its infrastructure, however, their responses weren’t used in further analyses.

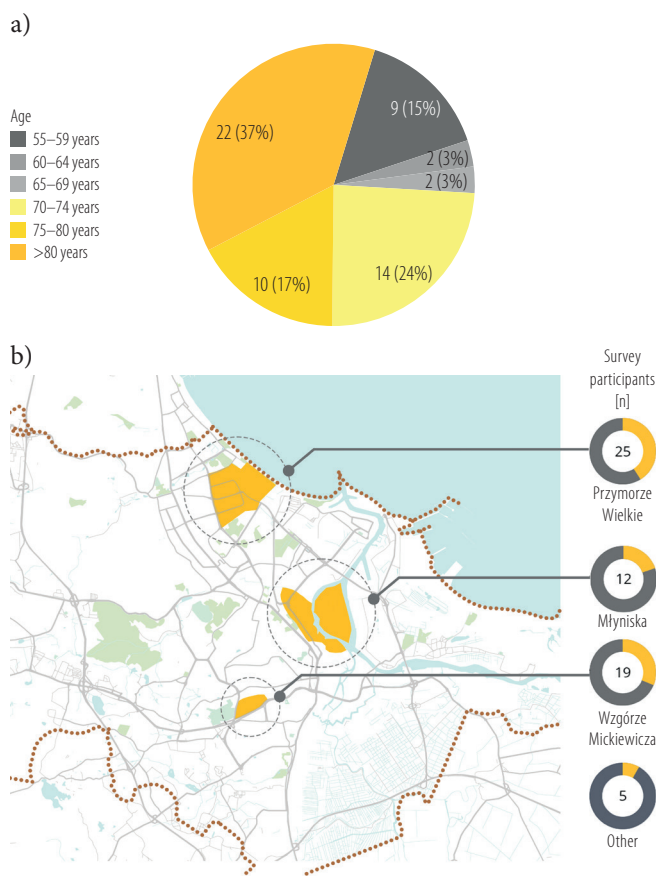
The initial questions of the survey focused on the age and gender of the respondents. Following this demographic inquiry, the study examined how well public spaces accommodate seniors. This began by investigating how often seniors leave their homes, which provided a comprehensive understanding of the respondents’ basic characteristics before exploring their interactions with their environment. The frequency of leaving home was regarded as a critical indicator of the usability and accessibility of urban spaces for the elderly. Over 60% of the surveyed seniors reported leaving their homes several times a day; however, only 34% participated in outdoor activities within their district. The largest group, comprising 39%, indicated no participation in such activities (Table 2).

Subsequent questions focused on the seniors’ satisfaction with the availability of green and recreational areas.



The map created in QGIS software (open source), based on data from field survey.

Figure 2. The analysis of distinctive development typologies and locational features: a) function of land in the surveyed districts, b) public transportation in selected districts, c) types of greenery in the area and in its closest surroundings – conducted in Gdańsk, Poland, April–June 2024



The map created in QGIS software (open source), based on data from field survey.

Figure 3. Residents of Gdańsk >55 years of age who took part in a survey on the well-being of seniors and their subjective evaluation of urban spaces by the number of answers given a) by age group, b) by the location of selected neighborhoods – survey conducted in Gdańsk, Poland, April–June 2024

The study results revealed significant differences between districts in terms of the availability of these spaces and their associated infrastructure. In Przymorze, 89% of respondents expressed satisfaction with the accessibility of parks and green spaces. In contrast, only 10% of seniors in Młyniska felt the same, while 20% expressed neutral opinions, and 70% reported dissatisfaction. In Wzgórze Mickiewicza, opinions were nearly evenly split, with 44% of seniors satisfied and 39% dissatisfied. These results suggest that seniors in districts with more green spaces tend to exhibit higher levels of satisfaction.

Seniors' satisfaction with the availability of outdoor sports facilities was also analysed. In Przymorze, despite the presence of numerous places for physical activities, seniors were not entirely satisfied. On a scale 1–5 (where 1 represents deep dissatisfaction and 5 signifies deep satisfaction), 28% of respondents rated their contentment as 1 or 2, indicating their lack of satisfaction, while 32% expressed satisfaction by rating these facilities

as 4 or 5. In Młyniska, 75% of seniors rated the availability of sports facilities between 3 and 5, even though the nearest facilities were located outside the district. In Wzgórze Mickiewicza, responses were evenly split between satisfied and dissatisfied seniors.

Although the general assessment of infrastructure by seniors varied, most ratings were positive. Only when questions addressed specific infrastructure elements, such as sidewalks, lighting, ramps for wheelchairs, and pedestrian crossings, did concerns arise. In Przymorze, seniors pointed out the lack of benches. In Młyniska the poor condition of sidewalks, ramps, handrails, benches, and lighting were brought to light. In Wzgórze Mickiewicza from all addressed elements of infrastructure only lighting was considered sufficient. Additionally, in open-ended questions, seniors highlighted issues such as inadequate evening lighting, which prevents them from leaving their homes after dark, uneven sidewalks in certain parts of the city, where they fear tripping, and a lack of benches for rests during longer walks.

A greater challenge for seniors was posed by factors negatively impacting their well-being in their respective districts. In Przymorze, these factors included homeless individuals, the presence of wild animals, and poor lighting. These issues were particularly noted around their homes and public green spaces.

However, despite them, >83% of seniors reported feeling safe in Przymorze. In Młyniska, seniors specifically pointed out homeless individuals, those consuming alcohol, and very poor lighting. This problem was described around a green square where benches are often occupied by the homeless. Therefore only half of the seniors reported feeling safe in their district. In Wzgórze Mickiewicza, the main problem was the presence of wild animals entering seniors' properties, allotment gardens, and the park. Regardless, 95% of seniors stated that they feel safe in their district.

Overall, >75% of seniors feel safe in their district, and despite negative factors, issues with road infrastructure, public transportation, or lack of park areas, >73% of seniors report leaving their homes ≥ 1 a day.

DISCUSSION

The findings of this study underscore the urgent need to adapt urban environments to meet the demands of an ageing population. A key contribution of this research is its focus on the inclusiveness of public spaces across districts with diverse urban morphologies, providing insight into how seniors' needs are addressed in various

Table 2. Responses explaining the frequency of leaving home, participation in outdoor activities in the neighborhood, and adaptation of infrastructure for the elderly – the study conducted in Gdańsk, Poland, April–June 2024

Statement	Participants [n]		
	Wzgórze Mickiewicza	Młyniska	Przymorze Wielkie
The frequency of leaving home			
once every few weeks or less frequently	2	0	1
once a week	0	0	1
every 2–3 days	4	0	3
once a day	4	1	7
several times a day	9	11	13
Participation in outdoor activities in the neighborhood			
no, I do not participate	9	2	12
yes, but not in the neighborhood where I live	2	0	4
yes, occasionally	3	3	3
yes, regularly	5	7	6
Adaptation of infrastructure for the elderly			
very unfriendly, infrastructure completely unadapted, needs urgent changes	1	4	1
rather unfriendly, infrastructure poorly adapted, many areas to be improved moderately	4	3	6
infrastructure partially adapted, there are areas for improvement	10	4	4
rather friendly, infrastructure largely adapted	3	1	8
very friendly, infrastructure very well adapted	1	0	6

settings. Previous studies have highlighted the importance of accessible green spaces and infrastructure for older adults [2,28]; however, this study extends these findings by providing district-specific data from Gdańsk, showing how satisfaction with urban spaces varies depending on district characteristics. One of the most notable findings is the marked contrast in satisfaction levels among seniors across different districts. In Przymorze Wielkie, where well-maintained green spaces and recreational facilities are abundant, seniors reported high levels of satisfaction, supporting the notion that accessible outdoor spaces enhance the quality of life for older adults [29]. Conversely, in Młyniska and Wzgórze Mickiewicza, where access to green spaces is limited and infrastructure poses barriers, seniors expressed significantly lower satisfaction levels. These disparities suggest that districts with limited infrastructure require targeted interventions to improve accessibility, a key factor in promoting ageing in place. The study’s geo-survey methodology provided valuable spatial data, yielding a nuanced view of how seniors navigate their urban environments. This approach added depth to the findings, illuminating the physical and social barriers that limit

older adults’ mobility and participation in public life. However, the study’s relatively small sample size may not fully represent the diversity of the broader elderly population. Additionally, self-reported data from interviews could introduce bias, as personal circumstances may lead seniors to underreport or overreport their satisfaction. Despite these limitations, this research contributes to the expanding field of ageing and urban studies, underscoring the need for inclusive, senior-friendly environments. Future studies should incorporate larger, more diverse samples and examine additional factors (such as health status and social support networks) to provide a more comprehensive understanding of seniors’ needs in urban contexts.

CONCLUSIONS

This study offers valuable insights into how seniors interact with their urban environments across selected districts in Gdańsk. The collected data reveals varied experiences and perceptions of elderly residents regarding green spaces, infrastructure, and safety. These findings underscore the importance of customized urban

planning and policy interventions aimed at improving the quality of life for senior citizens in diverse urban settings.

Reaching the senior population during the study proved challenging. Information on activities for seniors in specific districts is scarce and often outdated, with many online resources listing incorrect contact details for senior centers. In-person conversations at senior clubs and centers proved essential for gathering information on activities, such as senior walking groups in Przymorze parks and yoga classes. Seniors were often reluctant to participate in online surveys, due to poor eyesight, limited proficiency with digital devices, and concerns about anonymity. Even during in-person meetings, seniors needed assistance with surveys because of visual impairments and health issues, which hindered their ability to complete questionnaires independently. Seniors often diverged from survey topics to discuss personal matters, highlighting the need for a more empathetic approach in data collection.

A major challenge for many seniors is declining health, particularly deteriorating vision, which discourages them from going out after dark. Despite these barriers, seniors reported making efforts to stay active, often leaving home several times a day for tasks such as shopping. They expressed awareness of the role physical activity plays in extending life expectancy and improving health outcomes.

AUTHOR CONTRIBUTIONS

Research concept: Dorota Dominika Kamrowska-Zaluska, Weronika Mazurkiewicz, Agnieszka Gębczyńska-Janowicz, Elżbieta Marczak

Research methodology:

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Statistical analysis: Weronika Glaubert, Magdalena Stramska,

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Interpretation of results:

Dorota Dominika Kamrowska-Zaluska, Weronika Mazurkiewicz, Agnieszka Gębczyńska-Janowicz, Elżbieta Marczak, Weronika Glaubert, Magdalena Stramska

References: Dorota Dominika Kamrowska-Zaluska, Weronika Mazurkiewicz, Agnieszka Gębczyńska-Janowicz, Elżbieta Marczak

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