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# Are Coastal Cities Senior-Friendly?

**Keywords:** seniors in cities, availability of services, coastal cities, population aging

## Introduction

The phenomenon of population ageing is a major challenge for society and, according to scientific projections, by 2060 more than 30 per cent of people will be over 65, while the age of 80 and over will have been reached by more than 12 per cent of the EU population. In 2021 in Poland, as indicated by the National Census, one in five respondents was 60 or older. Over the decade, there were more than 1.8 million senior citizens. Now, the elderly account for almost 23% of the population, and ten years ago they accounted for only 17%. As Kamińska, Ossowski<sup>1</sup> point out, the turn of the 20<sup>th</sup> and 21<sup>st</sup> centuries saw enhanced population ageing processes in many developed countries. Back in 2000, the global population of those aged 60 and over was estimated at 605 million, and this number is projected to have reached 2 billion by 2050. By then, the share of the seniors in the world population will be higher than the share of children aged 0–14.<sup>2</sup>

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- 1 Wioletta Kamińska, Wojciech Ossowski, “Wieloaspektowa ocena procesów starzenia się ludności na obszarach wiejskich w Polsce,” *Biuletyn Komitetu Przestrzennego Zagospodarowania Kraju PAN* 267 (2017): 9–36.
  - 2 Barry Mirkin, Mary B. Weinberger, “*The Demography of Population Ageing*”: Population Division, Department of Economic and Social Affairs (New York: United Nations Secretariat, 2000).

Not only is this mainly due to increasing life expectancy, but also to declining birth rates and a drop in fertility rates as well as changing family patterns. Senior citizens' lifestyle tends to change a lot. Some retirees decide to leave their place of residence and settle down in a different place, and so migration of retirees has now become an important new demographic phenomenon worldwide, in particular in developed countries. In many countries, the elderly are leaving their homes and coming to urban agglomerations where they have an easier life and better access to any services they need. The place of older people in society is a very important issue. It is seniors who ensure the transmission of traditions, culture and customs to the next generation.

In view of this fact, the aim of this study is to show the accessibility by migrant seniors to shops and pharmacies as basic daily services for this population group. It is assumed that retirees are flocking to large coastal cities in search of a higher quality of life. The research problem will be to identify whether the seniors' relocation has satisfied their need for accessibility to basic services they expect in urban public spaces and how many seniors have benefited therefrom. The authors' research is particularly relevant when considered against the guidelines of the Madrid International Plan of Action on Ageing (MIPAA), which sees an opportunity to improve the quality of life of older people.

Large cities should consist of many multifunctional areas endowed with the institutions necessary for living. Adapting the city to the needs of senior citizens is a significant task for local governments. Seniors should be able to do their most important grocery and medical shopping within walking distance. Measures to make cities age-friendly require the creation of bold city policies. Due to demographic trends, implementing programmes to adapt cities to the needs of senior citizens seems unavoidable in the near future.

## Literature review

A comprehensive literature review was carried out to identify the needs of the elderly in using public spaces. It provided a research background as well as a list of criteria to identify the major services for seniors.

Global literature on migration among retirees is very rich, therefore it is impossible to discuss all of it, and only the most relevant pieces can be focused on. The most important foreign studies on elderly migration include works by e.g.: Wiseman,<sup>3</sup> Litwak, Longino,<sup>4</sup>

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3 Robert F. Wiseman, "Why Older People Move," *Research on Ageing* 2 (1980): 141–154.

4 Eugene Litwak, Charles F. Longino, "Migration Patterns among the Elderly: A Developmental Perspective," *The Gerontologist* 27 (1987): 266–272.

Colsher, Wallach,<sup>5</sup> Rogers,<sup>6</sup> Haas, Serow,<sup>7</sup> Cuba, Hummon,<sup>8</sup> King, Warers, Williams,<sup>9</sup> Plane, Rogerson,<sup>10</sup> Fokkema,<sup>11</sup> Liaw, Ledent.<sup>12</sup>

Graves and Knapp<sup>13</sup> imply that the migration of older people is influenced by characteristics such as age, income, level of human capital, family situation, cultural amenities, climate, quality of the natural and social environment, provision of local public goods and the local tax system. Increases in retiree income, longer life expectancy and early retirement according to Rappaport<sup>14</sup> have led to the emergence of affluent and mobile retirees who want to change their lifestyles. Similar conclusions were reached by Graves and Knapp,<sup>15</sup> who, taking into account mobility preferences, indicated that retirees have a clear preference for destinations with higher wages and low housing prices. Housing adjustment as an important aspect in the migration decision process is also identified in the studies by Christel,<sup>16</sup> Gobillon and Le Blanc.<sup>17</sup> Newbold<sup>18</sup> argues that elderly migration has an economic impact on its destinations and plays an important role in the distribution of income in different regions as it affects the establishment of hospitals and cultural facilities for seniors and, as a consequence, fewer schools and sports facilities are built.

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- 5 Patricia L. Colsher, Robert B. Wallace, "Health and Other Social Antecedents of Relocation in a Rural Elderly Person," *Journal of Gerontology* 45 (1990), 1: 32–38.
  - 6 Andrei Rogers, "Return Migration to the Region of Birth Among Retirement-age Persons in the United States," *Journal of Gerontology* 45 (1990), 3: 128–134.
  - 7 William H. Haas III, William J. Serow, "Amenity Retirement Migration Process: A Model and Preliminary Evidence," *The Gerontologist* 33 (1993): 212–220.
  - 8 Lee Cuba, David M. Hummon, "Constructing a Sense of Home: Place Affiliation and Migration Across the Life Cycle," *Sociological Forum* 8 (1993), 4: 547–572.
  - 9 Russell King, Anthony M. Warnes, Allan Williams, "International Retirement Migration in Europe," *International Journal of Population Geography* 4 (1998), 2: 91–111.
  - 10 David A. Plane, Peter A. Rogerson, "Tracking the Baby Boom, the Baby Bust, and the Echo Generations," *How Age Composition Regulates US Migration. The Professional Geographer* 43 (1991), 4: 416–430.
  - 11 Tineke Fokkema, Jenny Gierveld, and Peter Nijkamp, "Big Cities, Big Problems: Reason for the Elderly to Move?" *Urban Studies* 33 (1996), 2: 353–377.
  - 12 Kao-Lee Liaw, Jacques Ledent, "Joint Effects of Ecological and Personal Factors on Elderly Interprovincial Migration in Canada," *Canadian Journal of Regional Science* 11 (1988), 1: 77–100.
  - 13 Philip E. Graves, Thomas A. Knapp, "Mobility Behavior of the Elderly," *Journal of Urban Economics* 24 (1988): 1–8.
  - 14 Jordan Rappaport, "Moving to Nice Weather," *Regional Science and Urban Economics* 37 (2007), 3: 375–398.
  - 15 Philip E. Graves, Thomas A. Knapp, "Mobility Behavior of the Elderly," *Journal of Urban Economics* 24 (1988): 1–8.
  - 16 Virginie Christel, "Trajectoires résidentielles des personnes âgées," *Données Sociales, La société française* 1 (2006): 525–529.
  - 17 Laurent Gobillon, David Le Blanc, "L'impact des contraintes d'emprunt sur la mobilité résidentielle et les choix entre location et propriété," *Annales d'économie et de statistique* 1 (2004): 15–45.
  - 18 Bruce K. Newbold, "Interprovincial Migration and Retirement Income Transfers Among Canada's Older Population: 1996–2001," *Environment and Planning* 40 (2008), 6: 1501–1516.

Despite the fact that research on the migration of Polish pensioners has not often been undertaken, the migration abroad and in large cities of Polish seniors has already been studied by Kałuża – Kopias,<sup>19</sup> Kurek,<sup>20</sup> and Walford, Kurek.<sup>21</sup> The reasons for senior migration have been signalled in recent years in Poland in studies by Pytel, Rahmonov,<sup>22</sup> Pytel,<sup>23</sup> Jankowski, Pytel,<sup>24</sup> and Kałuża, Damińska.<sup>25</sup>

Among the studies that have been carried out on urban accessibility, particular attention should be paid to the papers that analyse the social and spatial relationships in a city. Many researchers point to the importance of the concept of Universal Design. These include Colleoni,<sup>26</sup> Pafka, Dovey, Aschwanden,<sup>27</sup> Tang, Wong, Tang, Wai Wong,<sup>28</sup> Alonso López,<sup>29</sup> Arjona,<sup>30</sup> Bianco.<sup>31</sup> They indicate, among others,

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- 19 Dorota Kałuża-Kopias, "Migracje seniorów w największych miastach w Polsce," in: *Przestrzenne zróżnicowanie starzenia się ludności Polski, przyczyny, etapy, następstwa*, ed. Jerzy T. Kowaleski (Łódź: Wydawnictwo UŁ, 2012), 69–107; eadem, "Charakterystyka demograficzna imigrantów po sześćdziesiątym roku życia – Polska," *Acta Universitatis Lodzianensis. Folia Oeconomica* 291 (2013): 265–277.
  - 20 Sławomir Kurek, "Migration of the Elderly in Poland in 1991–2001," *Bulletin of Geography, Socio-Economic Series* 5 (2006): 161–172; idem, "Double Transitions? Regional Patterns of Population Ageing in Poland," *Geografiska Annaler: Series B, Human Geography* 93 (2011), 2: 163–184; idem, "Przestrzenne zróżnicowanie przemian demograficznych w Polsce w latach 2002–2011," *Space-Society-Economy* 13 (2014): 43–74.
  - 21 Nigel Stephen Walford, Sławomir Kurek, "A Comparative Analysis of Population Ageing in Urban and Rural Areas of England and Wales, and Poland Over the Last Three Census Intervals," *Population, Space and Place* 14 (2008), 5: 365–386.
  - 22 Sławomir Pytel, Oimahmad Rahmonov, "Migration Processes and the Underlying Reasons: A Study on Pensioner Migrants in Poland," *Population, Space and Place* 25 (2019), 3: 1–14. DOI: 10.1002/psp.2197.
  - 23 Sławomir Pytel, "Kierunki migracji emerytów w Polsce," *Folia Oeconomica, Acta Universitas Lodzianensis* 2 (2017), 328: 135–150.
  - 24 Sławomir Pytel, Grzegorz Jankowski, "Wpływ migracji osób starszych na rynek pracy w obszarach atrakcyjnych turystycznie w Polsce," *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu* 304 (2013): 253–263.
  - 25 Dorota Kałuża, Justyna Damińska, "Imigranci i emigranci po 60. roku życia w Polsce, in: *Starość i starzenie się jako doświadczenie jednostek i zbiorowości ludzkich*, eds. Jerzy T. Kowaleski, Piotr Szukalski (Łódź, Zakład Demografii UŁ, 2006), 414–420.
  - 26 Matteo Colleoni, "A Social Science Approach to the Study of Mobility: An Introduction," in: *Understanding Mobilities for Designing Contemporary Cities*, eds. Paola Pucci, Matteo Colleoni (Cham: Springer, 2016), 23–33.
  - 27 Elek Pafka, Kim Dovey, Gideon DPA Aschwanden, "Limits of Space Syntax for Urban Design: Axiality, Scale and Sinuosity," *Urban Analytics and City Science* 47 (2020), 3: 508–522.
  - 28 Bo-Sin Tang, Kenneth KH Wong, Kenneth SS Tang, Siu Wai Wong, "Walking Accessibility to Neighbourhood Open Space in a Multi-level Urban Environment of Hong Kong," *Environment and Planning B: Urban Analytics and City Science* 48 (2021), 5: 1340–1356.
  - 29 Fernando Alonso López, "La accesibilidad en evolución: La adaptación persona-entorno y su aplicación al Medio Residencial en España y Europa" (PhD diss., Universidad Autónoma de Barcelona, 2016).
  - 30 Gonzalo Arjona, *La accesibilidad y el diseño universal entendido por todos. De cómo Stephen Hawking viajó por el espacio* (Granada: La Ciudad Accesible, 2015).
  - 31 Lino Bianco, "Universal Design: From Design Philosophy to Applied Science," *Journal of Accessibility and Design for All* 10 (2020), 1: 70–97.

that Universal Design (UD) seeks to maximise accessibility for all members of society and help people with diverse abilities so that all benefit. It contributes to promoting access to goods and services, taking into account the needs of those users whose functioning is limited in some aspect. Calonge-Reillo,<sup>32</sup> and Cocco, Alonso-López,<sup>33</sup> also focused on universal urban accessibility for city dwellers. La Rosa et al.<sup>34</sup> consider the accessibility requirements and preferences of different social groups, such as children and the elderly. Many studies focus on the specific accessibility needs of the elderly (Iwarsson, Wilson,<sup>35</sup> Pacheco,<sup>36</sup> Puyuelo, Gual,<sup>37</sup> Yung, Conejos, Chan.<sup>38</sup>)

## Research concepts

For a senior citizen to make the decision to migrate and identify a new place to live that meets all their needs is incredibly difficult and only a few choose to do so.

Two research concepts were applied in the study: Wolpert's<sup>39</sup> and the 15-minute city. The Wolpert's approach assumes that the utility of a given place, the individual's level of aspiration, the space for action and the life-cycle phase of a particular person are fundamental to migrant behaviour, including that of migrant-retirees. For Wolpert, the utility of a given place, is the sum of the benefits that a migrant can obtain, as he states that a migrant is a person aiming at achieving a sufficient level of satisfying his/her needs, and if he/she is below this level, he/she will strive to find a new place of action, and the search process is variable with the age and life cycle phase.

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- 32 Fernando Calonge-Reillo, "Recursos de movilidad y accesibilidad urbana en los municipios del sur del área metropolitana de Guadalajara, México," *Urbano* 21 (2018): 48–57.
- 33 Francesco Cocco, Fernando Alonso López, "Ajustes razonables en la rehabilitación de polígonos de viviendas: Aplicación al barrio Montserrat de Terrassa (Barcelona)," *ACE: Architecture, City and Environment* 10 (2015), 29: 31–58.
- 34 Daniele La Rosa, Chika Takatori, Hiroyuki Shimizu, Riccardo Privitera, "A Planning Framework to Evaluate Demands and Preferences by Different Social Groups for Accessibility to Urban Greenspaces," *Sustainable Cities and Society* 36 (2018): 346–362.
- 35 Susanne Iwarsson, Git Wilson, "Environmental Barriers, Functional Limitations, and Housing Satisfaction Among Older People in Sweden: A Longitudinal Perspective on Housing Accessibility," *Technology and Disability* 18 (2006), 2: 57–66.
- 36 Andrea Pacheco Barzallo, "Espacio público y envejecimiento activo en los barrios Bardegual y Los Llanos," *Territorios en Formación* 11 (2017): 101–119.
- 37 Marina Puyuelo, Jaume Gual: "Diseño prospectivo y elementos de uso en parques urbanos a partir de la experiencia de las personas mayores," *Medio Ambiente y Comportamiento Humano* 10 (2009), 1y2: 137–160.
- 38 Esther HK Yung, Sheila Conejos, Edwin HW Chan, "Social Needs of the Elderly and Active Aging in Public Open Spaces in Urban Renewal," *Cities* 52 (2016): 114–122.
- 39 Julian Wolpert, "Behavioral Aspects of the Decision to Migrate," *Papers of the Regional Science Association, Springer-Verlag* 15 (1965), 1: 159–169.

The 15-minute city concept seems to have become an answer to the emerging problems of ageing cities. It was described and presented in 2016 by Moreno. The idea was popularised by Anne Hidalgo, Mayor of Paris, who turned the idea of the 15-minute city into an important element of her campaign when she ran for re-election in 2020. The guiding principle of the proposed 15-minute city is to organise the structure of the city in such a way that each inhabitant can meet most, if not all, of their daily needs in a standard quarter of an hour on foot or by bicycle. It is about planning housing development according to the simplest conceivable principle of proximity. There should be, among others, workplaces, schools, medical centres, shops, offices, parks, as well as public transport within this time span - all what ensures a wider contact with the city. The city dweller should be able to access basic services, including green areas for leisure and recreation.

### Research materials and methods

Research was carried out on the basis of an acquired senior migration database starting from 2021 in order to show their accessibility to the services addressed to them, i.e., shops and pharmacies. The database contained their addresses, age, and gender. Thanks to it, the place of residence of the senior citizen upon arrival in the large coastal cities was established. The database was obtained from the Centre for Information Technology (COI). The data on the location of pharmacies, grocery stores and minimarkets within the surveyed towns was another one to have been obtained. The databases used in the spatial study came from the open resources of the National Geoportal - the Database of Topographic Objects (BDOT) and were verified and updated using data from OpenStreetMap (OSM) and ArcGIS Online resources. With these sources, it was possible to determine the accessibility of seniors to the major service they use. Pomeranian cities with more than 100,000 inhabitants were selected as the study focus area, i.e., Gdansk, Szczecin, Gdynia, and Koszalin.

Having analysed different methods of measuring spatial accessibility to public services (Guagliardo,<sup>40</sup> Yang, Goerge, Mullner,<sup>41</sup> Wang<sup>42</sup>), the authors adopted the following research procedure:

1. The number and location of all seniors who flowed into the studied cities in 2021 were identified.

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40 Mark F. Guagliardo, "Spatial Accessibility of Primary Care: Concepts, Methods and Challenges," *International Journal of Health Geographics* 3 (2004), 1: 1–13.

41 Duck-Hye Yang, Robert Goerge, Ross Mullner, "Comparing GIS-based Methods of Measuring Spatial Accessibility to Health Services," *Journal of Medical Systems* 30 (2006), 1: 23–32.

42 Fahui Wang, *Quantitative Methods and Socio-economic Applications in GIS* (Boca Raton: CRC Press, 2014).

2. The location of all services rated as most important was identified, and then shops and pharmacies were selected for further analysis.
3. Buffers to the selected service within 15 minutes or 775 metres from the senior's residence were established.
4. The total number of pharmacies and shops in the buffer was counted.

In this study, an analysis of the accessibility within pedestrian time of up to 15 minutes was carried out with an elderly person's walking speed of 3.1 km/h (Rudzik, Nawrat-Szołtysik<sup>43</sup>). The acquired data were operationalised using ArcGIS software and mathematical calculations.

In Poland, the starting point of the elderly age is formally defined by the Act of 11 September 2015 on the elderly, in which, Article 4 defines an elderly person as a person who has turned 60 years of age. According to the definition proposed by the World Health Organisation (WHO), the limit for the onset of old age is also 60 years, while according to the United Nations (UN) it is 65 years. For their study, the authors assumed that a senior citizen is a person who has reached the age of 60 for women and 65 for men.

A migrant is defined as a person who has arrived in a municipality for the purpose of residence, either internally or externally, and has confirmed the fact of arrival by registering with the authorities.

### Demographic and economic changes in coastal cities

Demographic changes in the regained lands had a major impact on the population processes in the post-war years. According to Szymańska,<sup>44</sup> the structure of the settlement network of the coastal regions between 1950 and 2004 was transformed in the demographic, social and economic spheres. Changes in the demographic potential of cities became a particular expression of those transformations. Overall, the coastal regions saw an increase in the number of cities from 90 to 104 between 1950 and 2004, respectively. The demographic growth rate in the urban population was much higher in that period, as all cities had a total of 971,300 inhabitants in 1950, and as many as 2,639,300 in 2004. This was confirmed by Rydz, Zaleski,<sup>45</sup> who indicated that between 1950 and 1988 coastal

43 Marcin Rudzki, Agnieszka Nawrat-Szołtysik, "Monitoring parametrów chodu osób w podeszłym wieku wsparciem dla ich opiekunów i fizjoterapeutów," *Acta Bio-Optica et Informatica Medica, Inżynieria Biomedyczna* 22 (2016), 4: 273–280.

44 Wioletta Szymańska, "Rozwój demograficzny miast średniej wielkości na tle przemian ludnościowych regionów nadmorskich (ze szczególnym uwzględnieniem Wałcza, Szczecinka i Lęborka)," *Słupskie Prace Geograficzne* 3 (2007): 55–72.

45 Eugeniusz Rydz, Jerzy Zaleski, *Rola i funkcje Słupska na tle sieci osadniczej Środkowego Wybrzeża* (Słupsk: Wyższa Szkoła Pedagogiczna, 1992).

regions were characterised by a constant and uninterrupted surge in the urban population. This was due not only to the intensive demographic development of cities, but also to the rising level of urbanisation, reflected particularly in the years 1965–1980 by increased migration from the countryside to cities as a result of the increasingly intensive industrialisation of urban centres. Rydz<sup>46</sup> points out that the contemporary network of urban settlements in Pomerania has resulted from the overlapping of various factors, of which the most important were historical elements, economic and political transformations and demographic processes. This is because the historical factor led to the formation of the basic foundations of today's urban network, while the other factors, interpenetrating each other, influenced the pace of urban growth processes and the forms of urban life associated therewith.

Cicharska<sup>47</sup> points to an important trend present in Pomeranian cities. In her work, she discusses the irreversible process of population ageing, which is also noticeable throughout the country. This phenomenon could be halted by introducing favourable changes in the national family and pro-natalist policies, as well as the providing of appropriate care conditions.

The coastal cities selected for the study are complex organisms in economic terms. The analysis of economic growth shows that in three cities: Gdansk, Gdynia, and Szczecin, the main driving force is the developed seaport. Furthermore, the services and industrial sectors play a significant role there. In Koszalin, a lower economic growth in comparison to the one in the aforementioned cities is due to the fact that the city mainly relies on the service sector. An analysis of employment shows that Gdansk and Gdynia concentrate a large number of jobs in the maritime sector, services, tourism and other industries. Industry and the seaport are also major employers in Szczecin, while in Koszalin employment tends to be concentrated in the service sector and industry. The highest standard of living is observed in Gdansk and Gdynia due to well-developed service sector, high standard of infrastructure, and tourism. A relatively high standard of living is recorded in Szczecin and an average one in Koszalin. Well-developed infrastructure, transport and communication networks are in Gdansk and Gdynia. However, in Szczecin there is good infrastructure, too, especially related to the seaport. In Koszalin the infrastructure is the least developed out of the analysed cities.

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46 Eugeniusz Rydz, "Miejska sieć osadnicza makroregionu północnego," *Koszalińskie Studia i Materiały* 1 (1979): 5–17.

47 Aleksandra Cicharska, "Przemiany demograficzne w małych miastach województwa pomorskiego," *Problemy Rozwoju Miast* 3 (2014): 13–20.



## Results

Nowadays, in coastal voivodeships, as well as throughout Poland, a steady growth in the proportion of post-working age persons is observed. This process is particularly evident in the West Pomeranian Voivodeship, where the proportion of senior citizens increased from 17% to 24% in 2012 and 2021, respectively. The percentage of those in the post-working age group significantly exceeds average values for Poland. The most difficult demographic situation is in Koszalin with almost 28% of residents in the post-working age group. It is also difficult in Gdynia and Szczecin, yet slightly better in Gdansk, where more than 24% of senior citizens reside, but as many as 18% are in the pre-working age (Table 1).

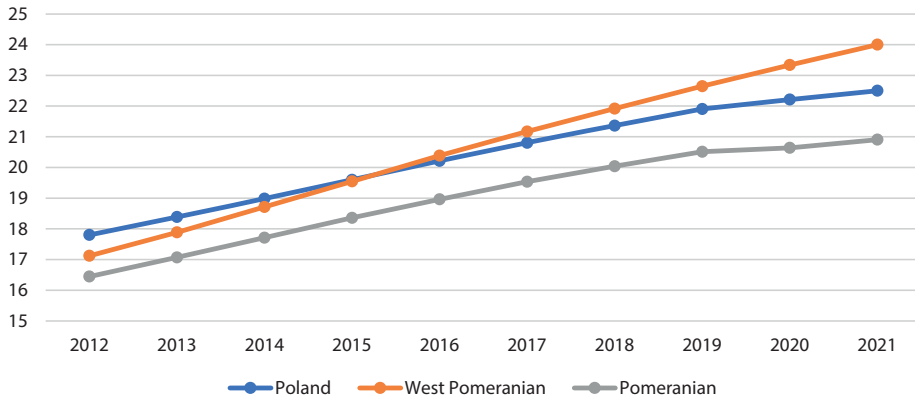
**Table 1.** Demographic structure of the large cities of Pomerania in 2021

CITY	Population	% of residents in working age	% in pre-working age	% in post-working age
Gdansk	470,621	57.2	18.3	24.5
Szczecin	395,513	57.3	16.5	26.1
Gdynia	243,918	56.8	16.5	26.7
Koszalin	104,994	55.8	16.5	27.6
Polska	38,080,411	59.2	18.2	22.6

Source: own elaboration based on stat.gov.pl.

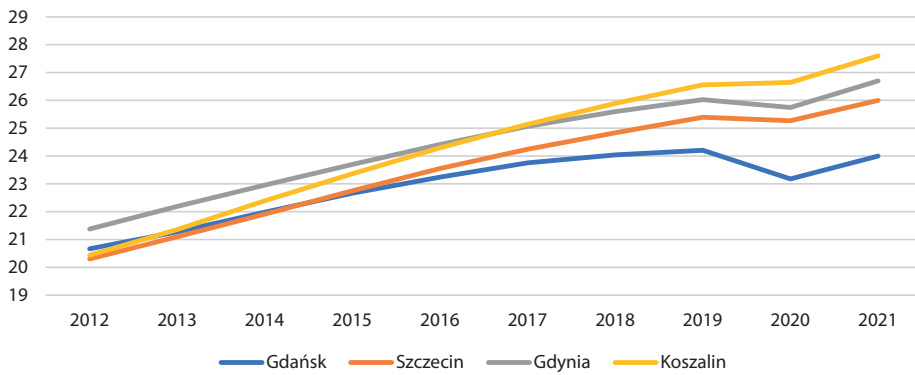
An analysis of the demographic structure of the large coastal cities shows that the ageing of their population is well advanced. The study conducted in the largest cities of Pomerania shows that since 2012, when the level in all cities oscillated around 21%, in Koszalin it increased to over 27%. The general tendency is worse in the voivodeships, for example in the West Pomeranian Voivodeship the percentage of the population in the post-working age group rose from 17 to 24% (Figure 1 and 2).

The COVID-19 pandemic had a considerable impact on the age structure of the population of large cities in both Poland and Pomerania. This can be most clearly observed in Gdansk, where the share of those in the post-working age group dropped by 1% in 2020.



**Figure 1.** Percentage share of the post-working age population in the population structure

Source: own work on the basis of stat.gov.pl.



**Figure 2.** Percentage share of the post-working age population in the population structure of the largest Pomeranian cities.

Source: own work on the basis of stat.gov.pl.

## Elderly migrations

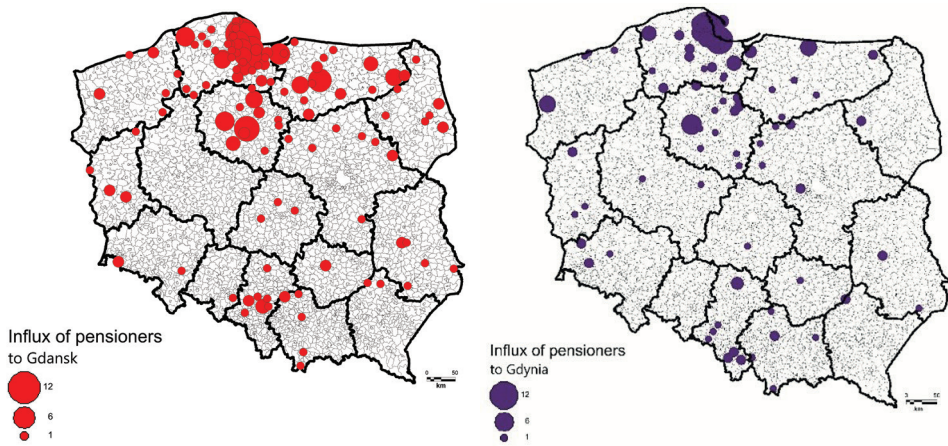
The age structure of the population of Pomeranian cities is further influenced by senior migrants. In 2021, 865 seniors migrated to the analysed cities, with 317 to Gdansk, 214 to Szczecin and 216 to Gdynia. One hundred and nineteen people migrated to Koszalin. The oldest person to arrive in Szczecin was born in 1920, in Gdansk in 1926, in Gdynia in 1924 and in Koszalin in 1924, with women significantly dominating the inflow to all cities. Seniors mainly flowed into all the cities analysed from the municipalities closest to them (Table 2).

**Table 2.** Number of males and females arriving in the selected cities in 2021

CITY	females	males	total
Koszalin	87	32	119
Gdynia	145	71	216
Gdansk	236	81	317
Szczecin	151	63	214

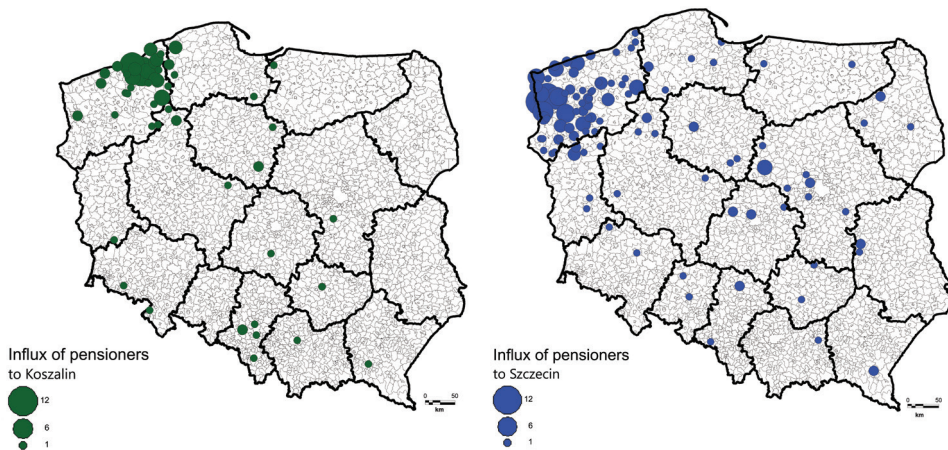
Source: own elaboration based on COI.

Over the next decade, the number of senior citizens among city users is bound to increase. This will be a consequence of both migration flows and increasing life expectancy. Studies of the directions of inflow indicate that the more attractive the city with easy access to services, the greater the distance from which seniors are coming. This is particularly evident in Gdansk, Szczecin or even Gdynia (Figure. 3 and 4). The situation is different in Koszalin, which receives mainly residents of the surrounding municipalities (Fig. 4). This results in new challenges for the cities, particularly in terms of making changes to the local environments, adapting the place of residence to the changing age structure of the population and, consequently, to their changing needs. The increase in the proportion of older people in society, who think differently from young people and who are aware of their greater biological limitations, is forcing important transformations in the functioning of cities.



**Figure 3.** Municipalities with an influx of seniors to Gdansk and Gdynia in 2021

Source: own elaboration based on COI.

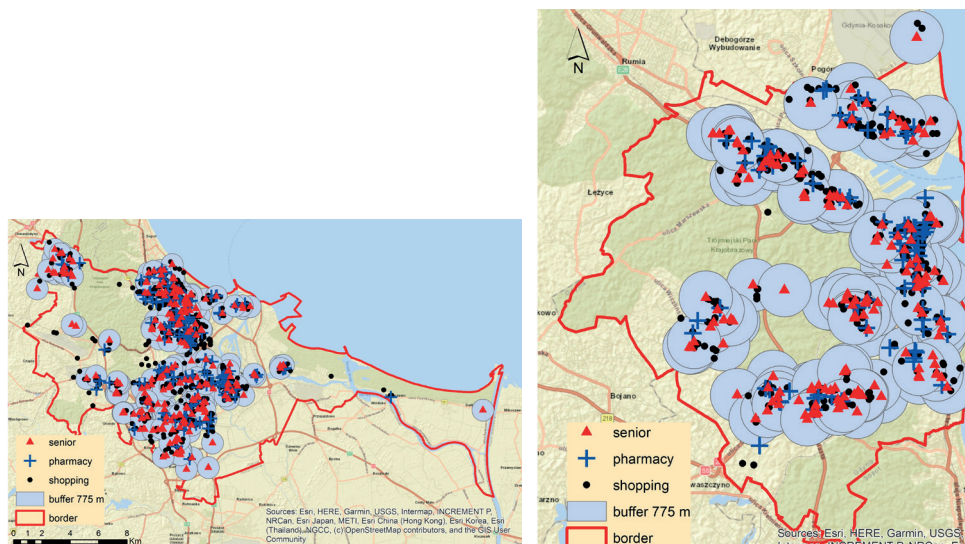


**Figure 4.** Municipalities with an influx of seniors to Koszalin and Szczecin in 2021

Source: own elaboration based on COI.

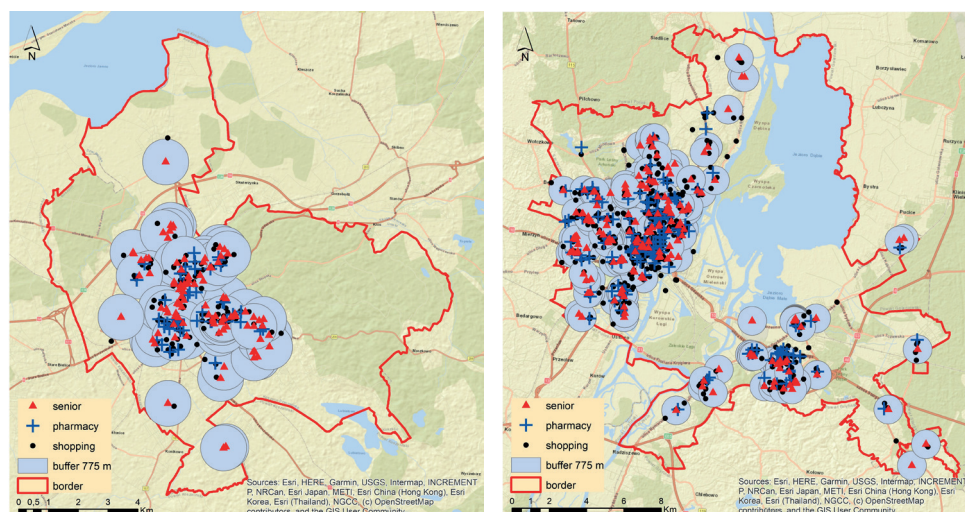
Analysis regarding seniors' accessibility to shops and pharmacies shows that this varies greatly in each of the cities analysed. In Gdansk and Szczecin, almost 20% of seniors had access to more than 30 shops within 15 minutes (Table 3 and 6, Figure 5 and 6). Three senior migrants in Szczecin had access to more than 80 shops within 775 m. As far as pharmacies are concerned, the situation was definitely the most favourable in Koszalin, where almost 20% of seniors had access to more than 10 pharmacies at a 15-minute distance. At the same time, the study indicated that almost 14% of seniors have no access to pharmacies within this distance and more than 8% of seniors have

no access to shops (Table 5). Residents of Gdynia face by far the most difficult situation, as only 6% of seniors there have access to more than 10 pharmacies within a 15-minute walking distance (Table 4, Figure. 5). In all the cities, except for Koszalin, seniors have very good access to shops and only about 1 to 2 % need to walk longer than 15 minutes to do their shopping (Figure 6).



**Figure 5.** Location of shops and pharmacies in relation to the residence of senior citizens – migrants in Gdansk and Gdynia

Source: own compilation based on COI and BDOT.



**Figure 6.** Location of shops and pharmacies in relation to the residence of seniors – migrants in Koszalin and Szczecin

Source: own compilation based on COI and BDOT.

**Table 3.** Access of seniors to shops and pharmacies in Gdansk

% of seniors with access to shops in Gdansk	number of shops within 775 m from the residence of a senior citizen in Gdansk	% of seniors with access to pharmacies in Gdansk	number of pharmacies within 775 m from the residence of a senior citizen in Gdansk
1	2	3	4
0.32	64	1.28	14
1.28	56	1.28	12
0.32	54	1.28	11
0.64	52	4.47	10
0.32	48	4.79	9
0.96	47	2.56	8
0.64	46	7.99	7
1.92	44	5.43	6
0.32	42	7.99	5
0.96	41	12.78	4
0.64	40	12.78	3
0.32	39	9.27	2
2.56	38	17.57	1
1.28	37	10.54	0
0.96	36		
0.64	35		
0.32	34		
1.92	33		
0.64	31		
2.88	30		
2.24	29		
1.60	28		
0.64	27		
0.96	26		
0.96	25		
1.92	24		
0.64	23		
2.24	22		

1	2	3	4
1.60	21		
4.47	20		
1.92	19		
7.67	18		
2.56	17		
4.47	16		
8.63	15		
3.51	14		
2.24	13		
2.56	12		
0.96	11		
4.15	10		
3.51	9		
1.28	8		
2.88	7		
3.83	6		
5.43	5		
2.56	4		
1.28	3		
0.64	2		
1.28	1		
1.60	0		

Source: own elaboration based on COI and BDOT.

**Table 4.** Access of seniors to shops and pharmacies in Gdynia

% of seniors with access to shops in Gdynia	number of shops within 775 m from the residence of a senior citizen in Gdynia	% of seniors with access to pharmacies in Gdynia	number of pharmacies within 775 m from the residence of a senior citizen in Gdynia
1	2	3	4
0.93	61	0.93	21
0.47	56	0.47	19
0.47	53	0.93	16

1	2	3	4
0.93	47	0.93	13
0.47	44	2.79	10
1.86	42	0.93	9
0.47	39	2.79	8
0.47	34	2.79	7
0.47	32	1.86	6
0.47	31	17.67	5
2.79	30	15.81	4
0.47	29	14.42	3
0.93	28	10.70	2
1.86	27	18.14	1
3.26	26	8.84	0
0.47	25		
2.33	24		
1.40	22		
0.47	21		
3.26	20		
5.58	19		
2.33	18		
7.44	17		
3.26	16		
1.86	15		
5.12	14		
5.58	13		
6.51	12		
5.58	11		
6.05	10		
5.58	9		
3.72	8		
3.72	7		
2.33	6		
3.72	5		



1	2	3	4
6.05	4		
0.47	2		
0.47	1		
0.47	0		

Source: own elaboration based on COI and BDOT.

**Table 5.** Access of seniors to shops and pharmacies in Koszalin

% of seniors with access to shops in Koszalin	number of shops within 775 m from the residence of a senior citizen in Koszalin	% of seniors with access to pharmacies in Koszalin	number of pharmacies within 775 m from the residence of a senior citizen in Koszalin
1	2	3	4
0.86	29	1.72	14
1.72	27	1.72	13
4.31	26	2.59	12
3.45	25	6.90	11
6.03	24	4.31	10
2.59	23	7.76	9
2.59	22	7.76	8
6.03	21	12.93	7
3.45	20	10.34	6
10.34	19	2.59	5
5.17	18	8.62	4
0.86	17	3.45	3
1.72	16	6.90	2
2.59	15	8.62	1
4.31	14	13.79	0
0.86	13		
2.59	12		
2.59	11		
1.72	10		
0.86	9		
6.03	8		
2.59	7		

1	2	3	4
0.86	6		
1.72	5		
2.59	4		
2.59	3		
8.62	2		
1.72	1		
8.62	0		

Source: own elaboration based on COI and BDOT.

**Table 6.** Access of seniors to shops and pharmacies in Szczecin

% of seniors with access to shops in Szczecin	number of shops within 775 m from the residence of a senior citizen in Szczecin	% of seniors with access to pharmacies in Szczecin	number of pharmacies within 775m from the residence of a senior citizen in Szczecin
1	2	3	4
0.46	89	0.46	24
0.46	87	0.92	20
0.46	82	0.46	19
0.46	79	1.38	18
0.46	76	0.92	15
0.92	67	0.92	14
0.46	65	3.67	13
0.92	63	1.38	12
1.38	62	1.83	11
0.46	59	3.67	10
0.46	58	1.38	9
0.46	57	0.92	8
1.38	56	6.88	7
0.92	49	4.13	6
0.92	48	3.67	5
0.92	45	11.01	4
0.46	44	5.96	3
0.46	41	22.02	2

1	2	3	4
0.92	37	22.02	1
1.83	35	6.4	0
0.92	32		
1.38	30		
1.38	27		
0.46	26		
1.38	25		
1.83	24		
3.67	23		
0.46	22		
0.46	21		
1.38	19		
1.83	18		
6.42	17		
3.21	16		
1.83	15		
3.21	14		
1.83	13		
4.59	12		
5.50	11		
4.13	10		
4.13	9		
6.42	8		
2.75	7		
3.67	6		
5.05	5		
6.88	4		
2.29	3		
3.67	2		
1.83	1		
2.29	0		

Source: own elaboration based on COI and BDOT.

## Discussion

With an increasingly ageing population in our cities and a growing influx of seniors into towns and cities, the adaptation of services to the elderly is vital when planning them. In the world of literature, there are numerous studies on the accessibility of different services for the elderly, which support the research carried out in this article. Distance to services has a significant impact on their accessibility for seniors. This is particularly important in terms of daily mobility. As Peace<sup>48</sup> rightly observed, unfriendly streets force older people experiencing temporary or permanent incapacity to limit their activities to visiting only the closest public facilities, even if their quality is considerably lower than those at a greater distance. The studies have consistently shown that the ability to move outside the home is essential for maintaining quality of life (Banister, Bowling,<sup>49</sup> Golob, Hensher,<sup>50</sup> Mollenkopf et. al.,<sup>51</sup> Schmocker et. al.<sup>52</sup>). Moving out of home not only aims to meet basic needs such as buying groceries or medical supplies, but also involves more frequent visits to the doctor or even the hospital.

Research by Ariste,<sup>53</sup> sought to determine the extent to which the distribution of health professionals and seniors in urban and rural Canada differed from each other and from the national average. The results indicated that there were twice as many nurses per 1,000 seniors in urban Canada than in rural Canada. However, the gap was threefold for physicians. Research on access to health care was also conducted by Shah, Milosavljevic, Bath.<sup>54</sup> Using the two-step floating catchment area (2SFCA) method and census tracts, the authors sought to identify potential inequalities in access to medical care. The results show that Alberta has a better overall provincial access score

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- 48 Sheila Peace, "The Activity Patterns of Elderly People in Swansea, South Wales, and South-East England," in: *Geographical Perspectives on the Elderly*, ed. Anthony Warnes, 281–301 (Chichester: John Wiley, 1982).
- 49 David Banister, Ann Bowling, "Quality of Life for the Elderly: The Transport Dimension," *Transport Policy* 11 (2004), 2: 105–115.
- 50 Thomas F. Golob, David A. Hensher, "The Trip Chaining Activity of Sydney Residents: A Cross-section Assessment by Age Group with a Focus on Seniors," *Journal of Transport Geography* 15 (2007), 4: 298–312.
- 51 Heidrun Mollenkopf, Fiorella Marcellini, Isto Ruoppila, eds. *Enhancing Mobility in Later Life: Personal Coping, Environmental Resources and Technical Support; the Out-of-home Mobility of Older Adults in Urban and Rural Regions of Five European Countries*, vol. 17 (Amsterdam: IOS Press, 2005).
- 52 Jan-Dirk Schmöcker, Mohammed Quddus, Robert B. Noland, Michael G.H. Bell, "Mode Choice of Older and Disabled People: A Case Study of Shopping Trips in London," *Journal of Transport Geography* 16 (2008), 4: 257–267.
- 53 Ruolz Ariste, "Availability of Health Workforce in Urban and Rural Areas in Relation to Canadian Seniors," *The International Journal of Health Planning and Management* 34 (2019), 2: 510–520.
- 54 Tayyab Ikram Shah, Stephan Milosavljevic, Brenna Bath, "Determining Geographic Accessibility of Family Physician and Nurse Practitioner Services in Relation to the Distribution of Seniors Within Two Canadian Prairie Provinces," *Social Science & Medicine* 194 (2017): 96–104.

than Saskatchewan for both GPs and nurses collectively (11.37 vs 9.77). The results also show that the GP and nurse services are likely to address the gap in access to primary health care. However, the combined access results uncovered inequalities in access to primary health care services for older people in both regions, particularly in rural communities. This research confirms the results obtained by the authors of this paper. Seniors living in peripheral areas face difficulties in accessing the services addressed to them, whereas living in the city centre offers excellent access to many shops and pharmacies.

Accessibility planning is a key alternative to mobility planning. This issue was addressed by Arranz-López, Soria-Lara, Witlox, Páez<sup>55</sup> indicating that accessibility varies from location to location; it also changes as a result of differences in individual willingness to reach destinations by specific modes of transport. The authors assessed non-motorised accessibility (walking and cycling) to three types of retail activities: daily, weekly, and occasional. The researchers' results indicated that the willingness of seniors (>65 years) to reach retail shops on foot differed significantly from young employed, young unemployed and adults. The research showed how measurements of relative accessibility can predict potential risk of social exclusion. In the coastal cities studied by the authors of this paper, only about 1 to 2 % of seniors could not access shops and about 10 % could not access pharmacies. These findings indicate that seniors living in large cities are not at risk of social exclusion.

A similar study of the inter-relationship between locationally disadvantaged communities and poor transport services was conducted by Engels, Liu.<sup>56</sup> They indicated that limited access to private and public transport is often identified as a major contributor to social isolation and economic poverty. The authors highlight that to date, insufficient research attention has focused on seniors, and it is seniors who are often subject to social exclusion. The main reason for exclusion is the difficulty of travelling away from home to access services and amenities. The researchers analysed a municipality with large spatial concentrations of seniors, some of whom do not have easy access to a car. Using various data sources for the municipality of Melbourne, they showed that the social exclusion of non-car driving seniors is further exacerbated by a public transport system that is unable to adequately serve the entire municipality. For the time being, the incidence of location and transport disadvantage is limited to small areas of the municipality, but as seniors age and no longer have a driver's licence, the problem may become more severe. The results obtained are consistent with those of the authors of this paper and recognise the role of the location of services targeted at seniors. The concept

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55 Aldo Arranz-López, Julio A. Soria-Lara, Frank Witlox, Antonio Páez, "Measuring Relative Non-motorized Accessibility to Retail Activities," *International Journal of Sustainable Transportation* 13 (2019), 9: 639–651.

56 Benno Engels, Gang-Jun Liu, "Social Exclusion, Location and Transport Disadvantage Amongst Non-driving Seniors in a Melbourne Municipality, Australia," *Journal of Transport Geography* 19 (2011), 4: 984–996.

of the 15-minute city is also confirmed. A consequence of ageing is the inability to drive, which can lead to social exclusion for those living away from the city centre.

Negron-Poblete, Séguin, Apparicio<sup>57</sup> studied the ageing of a suburban zone in terms of seniors' quality of life. In this study, they analysed the potential for pedestrian accessibility in three inner suburbs of the Greater Montreal Area. They complemented this analysis with observations of physical and spatial characteristics. They indicated that pedestrian accessibility is not only affected by long travel distances, but also by various obstacles from land use. Their work revealed the need for urban planners to find a balance between local pedestrian accessibility and public transport. This balance can be created through the concept of the 15-minute city, as discussed in this paper. Creating accessibility to basic services will reduce the social exclusion of senior citizens.

## Conclusion

It should be the aspiration of the leaders of every city to create the conditions for a decent life for its inhabitants. This is a universal goal that should be pursued in any size of city, not only in large cities as shown in the authors' research. Accessibility to services by the elderly in particular is the key to preventing social exclusion.

During the COVID-19 pandemic, the idea of the 15-minute city gained a lot of popularity and now many cities have declared their intention to implement it, seeing it as a stimulus for urban regeneration. During the pandemic, it was the neighbourhood that played the most important role of a self-help group providing for basic needs. On the other hand, reducing the travel time to reach the basic places within a 15-minute walk would be environmentally friendly and have a positive impact on saving the environment and air quality.

The conclusions drawn from the research clearly indicate that, in future, cities will become a refuge for older people because of the facilities they can find there. The increasing number of senior citizens and their age structure will mean that their presence in urban areas can no longer be ignored. This group of city users will force city authorities to adapt their public spaces to the needs of senior citizens. At present, 98% of residents in large coastal cities have easy access to shops and 90% to pharmacies. In view of the low mobility of senior citizens, this result is satisfactory and does not indicate potential social exclusion.

The next step should be to provide seniors with opportunities to participate in physical activity, as well as social and economic life in order to improve their quality of life.

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57 Paula Negron-Poblete, Anne-Marie Séguin, Philippe Apparicio, "Improving Walkability for Seniors Through Accessibility to Food Stores: A Study of Three Areas of Greater Montreal," *Journal of Urbanism: International Research on Placemaking and Urban Sustainability* 9 (2016), 1: 51–72.

Seniors themselves wish to feel needed and are keen to get involved in various initiatives in their local communities. All these measures can lead to a really good life for the elderly in our towns and cities in the future.

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English version: Mark Atkinson

#### SUMMARY

An analysis of the demographic structure of large coastal cities shows that the ageing of their populations is well advanced. Therefore, counteracting the social exclusion of the elderly should become the most important task of the local authorities. The authors decided to review the situation of seniors migrating to the largest coastal cities. The aim of the study was to analyse the accessibility to shops and pharmacies' whereabouts as basic, everyday services for this group. The findings are highly optimistic and very satisfactory. It was concluded that only a small proportion of the elderly influx into the coastal cities do not find a shop or pharmacy within a 15-minute walking distance. The vast majority can do their grocery and medical shopping in the immediate vicinity.

### Czy miasta nadmorskie są przyjazne seniorom?

**Słowa kluczowe:** seniorzy w miastach, dostępność usług, miasta nadmorskie, starzenie się społeczeństwa

#### STRESZCZENIE

Przeprowadzona analiza struktury demograficznej dużych miast nadmorskich pokazuje, że proces starzenia się ich społeczeństwa jest mocno zaawansowany. W związku z tym faktem najważniejszym zadaniem samorządów miejskich powinno stać się przeciwdziałanie wykluczeniu społecznemu osób starszych. Autorzy postanowili zweryfikować tę sytuację wśród seniorów napływających do największych miast nadmorskich. Jako cel badań przyjęli przeanalizowanie dostępności, do sklepów i aptek jako podstawowych, codziennych usług dla tej grupy społeczeństwa. Uzyskane wyniki są bardzo optymistyczne i zadowalające. Stwierdzono, iż tylko nieliczna część osób starszych, która napłynęła do miast nadmorskich nie ma w odległości 15 minut pieszo sklepu lub apteki. Znacząca większość zakupy spożywcze i medyczne może zrobić w najbliższej okolicy.

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