CHAPTER 5

Sustainable Cities: Ageing and Accessibility in Türkiye

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1. Introduction

As of 2024, Türkiye's fertility rate remains below the population replacement level of 2.10 (Turkish Statistical Institute [TURKSTAT], 2025b), while the proportion of people aged 65 and older has reached 10.6% of the total population (TURKSTAT, 2025a). Türkiye has thus entered the demographic phase of population ageing, making it necessary for policymakers and researchers to examine urban accessibility. In Türkiye, the pace of population ageing has been more rapid than in many developed countries, leaving less time to prepare for and adapt institutional structures to the emerging needs of older adults (Eryurt, 2023).

The first significant international response to population ageing was the 1982 Vienna World Assembly on Ageing, followed by the 2002 Madrid International Plan of Action on Ageing, which outlined a comprehensive roadmap to guide national policy development (United Nations, 1982; 2002). In alignment with these global efforts, Türkiye developed its first National Plan on Ageing in 2007, in collaboration with universities and civil society organizations (State Planning Organization [Devlet Planlama Teşkilatı], 2007). A review of Türkiye's development planning shows that the 10th Development Plan (2014–2018) included the establishment of a "Special Commission on Ageing," which produced a report directly addressing issues related to quality of life (Republic of Türkiye Ministry of Development [Türkiye Cumhuriyeti Kalkınma Bakanlığı], 2014). In 2015, the "Türkiye Active and Successful Ageing Study" was conducted in collaboration with Ankara University and the Ministry of Health, incorporating indicators from the Active Ageing Index (United Nations Economic Commission for Europe [UNECE], 2015) to assess accessibility among the older population in Türkiye (Özmete, 2016). Even though efforts have been made to understand the needs of the older population in Türkiye, urban accessibility has not been sufficiently examined.

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Ensuring older adults' access to essential services within their local environments is crucial for creating sustainable cities and communities. However, Türkiye offers limited evidence of progress in this area, which is particularly concerning given the country's rapidly growing older population. Existing policies and practices do not adequately address inequalities in age-friendly urban development and accessibility. This study, therefore, seeks to examine the current state of urban accessibility for older adults in Türkiye.

The first step in addressing this issue involves understanding the geographical distribution and demographic characteristics of the ageing population in Türkiye, based on the most recent statistics. The initial point of reference is the rural–urban distribution of the older population. According to the latest data, 30.1% of older adults in Türkiye live in areas classified as rural, 14.6% in medium-density cities, and 55.3% in high-density urban areas (TURKSTAT, 2023). In contrast, only 16.1% of the general population aged 16–64 lives in rural areas. This demographic imbalance is largely a result of rural-to-urban migration among younger cohorts, which began in the 1950s. Data on the current young population living in urban areas suggest that future cohorts of the ageing population will be residing dominantly in urban areas. Thus, it can be assumed that Türkiye's older population in urban areas will increase. The statistics also show a tendency for the current population aged 65 and older to live in urban areas. Recent research shows that older adults in Türkiye have increasingly been migrating both from rural to urban areas and from large metropolitan centres to mid-sized cities (Koç&Saraç, 2018). These trends collectively suggest that the proportion of older adults living in medium- and high-density urban areas is likely to continue increasing, underscoring the relevance of this study's first research question: *(1) To what extent does the built environment in Türkiye support independent living among the ageing population?*

To answer this question, it is essential to consider both the living arrangements and the household composition of older adults in Türkiye. Two main indicators help illuminate these aspects. Regarding preferred living arrangements in the context of healthcare needs, among adults aged 50 and over, 54.6% prefer to stay in their own homes and receive in-home-care or day care services. Meanwhile, 24.2% would choose to live with an adult child, and only 5.9% would prefer to enter a nursing home (TURKSTAT, 2024). In many countries, there are alternative types of living arrangements for the older population, which can be categorised under institutional care, such as retirement housing, nursing homes, and care homes. Among them, nursing and care homes are where care is provided. Retirement Housing has three distinguished features: restricted occupancy by a minimum age threshold of 50, a communal lounge where activities such as coffee mornings are organised, and varying levels of support (Gray, 2015).

In Türkiye, institutional care options remain limited. Statistics indicate that ageing-in-place is the most widely accepted living arrangement, preferred over any form of institutional care. When it comes to living preferences, older people in Türkiye tend to remain in their own homes for as long as possible. If that is not feasible, they prefer to live with their children. Institutional settings are not a commonly preferred option. This trend suggests a likely increase in the number of community-dwelling older adults in the future. Our second research question is: *(2) What are the region-specific needs for ensuring sustainable and age-friendly cities in Türkiye, particularly in terms of public space, pedestrian infrastructure, and public transportation accessibility?*

A third key consideration is household composition, particularly the prevalence of older adults living alone. Currently, there are 1,750,900 older adults who are living alone, and 74% of them are women (TURKSTAT, 2025a). These figures highlight the need to better understand the lives of older people living alone as a social risk group —particularly older women— that must be addressed in urban policy and planning. Considering this group's needs and vulnerabilities, understanding how access to and utilisation of care are shaped should be a priority for social policy. Living alone as a community-dwelling older adult raises broader questions about the meaning of community as a social unit—beyond simply living outside of institutional settings, it involves coexisting and interacting with fellow community members. This also brings forth the question of what instrumental supports are necessary to enable access to care outside institutional frameworks.

Population ageing poses diverse challenges across national contexts, shaped by variations in healthcare systems, housing markets, and cultural expectations around care. The demographic profile of Türkiye—marked by a growing urban, community-dwelling, and living-alone older population—highlights the urgency of planning age-friendly cities and communities as a pillar of sustainable urban development. Our third research question is: *(3) How does urban accessibility affect the psychological well-being of older adults?*

A key challenge lies in preparing for these demographic shifts in ways that ensure age-friendly strategies benefit both current and future generations of older adults (Van Hoof et al., 2018). To address this challenge, this study maps urban accessibility among Türkiye's 50+ population—not only those aged 65 and older—and aims to provide evidence-based insights to inform sustainable urban governance. As noted above, the country's rapidly ageing population underscores the urgent need for action by researchers and policy makers. To our knowledge, this is the first study in Türkiye to systematically examine urban accessibility among the older population using nationally representative data,

and the first to analyse the link between accessibility and well-being among adults aged 50 and over. Regional variation provides a comparative perspective that enhances understanding of disparities and contextual needs. The global ageing of urban populations necessitates the adoption of more age-friendly approaches within the broader frameworks of sustainable city development, urban planning, and governance.

To address the three research questions outlined above, the second section of this study presents the theoretical background, followed by a detailed explanation of the methodology. The results section first provides descriptive findings, followed by the outcomes of the multiple linear regression analysis. Finally, the findings are discussed, and policy recommendations are presented.

2. Theoretical Background

While the idea of sustainable cities and communities is widely accepted as a policy goal, its practical meaning remains debated. A sustainable city is one that ensures equitable access to resources, protects the environment, and fosters long-term well-being through integrated, locally grounded planning (Bulkeley & Betsill, 2005). Older age necessitates a responsive and adaptable environment that can accommodate the evolving physical and social needs of older adults. Accordingly, both urban and rural settings must be considered in evaluating how environments affect older people's lives (Steels, 2015).

As individuals age, their need for more specialized and resource-intensive services increases. In recent years, various strategies and policies have emerged to address the specific needs of older people (Steels, 2015). To respond to the challenges of an ageing population, global frameworks have emerged. A major policy tool developed to support such efforts is the Active Ageing Index (AAI), which provides a cross-national comparative framework based on four key dimensions: (1) employment, (2) social participation, (3) independent, healthy, and secure living, and (4) enabling environments for active ageing (European Commission & UNECE, 2019). These dimensions also align closely with local age-friendly policies, such as the promotion of walkable neighbourhoods, equitable access to healthcare and services, and community-based care models. The AAI serves as a reference for policymakers, highlighting priorities and urgencies in current ageing policies (UNECE/EC, 2015). By emphasizing social participation, independent living, and an enabling environment for older adults, the AAI is a tool ensuring that local policies foster equitable access to resources, support inclusive communities, and enhance the overall well-being of ageing populations through local infrastructure and services (European Commission & UNECE, 2019). We observe that the AAI's perspective aligns

with "sustainable age-in-place" practices, particularly in terms of the built environment's effectiveness in facilitating active social engagement (Landorf et al., 2008).

While the AAI offers a policy tool for evaluating ageing outcomes across countries, the WHO (World Health Organization)'s Global Age-Friendly Cities Guide provides a practical urban planning framework that operationalizes these principles at the municipal level. It encourages municipalities to adopt principles that support older adults' ability to live independently (Plouffe & Kalache, 2010). Older people are especially sensitive to their neighbourhoods, as they tend to spend more time at home, rely more on local resources, and are often more emotionally attached to their communities (Poulsen et al., 2011, p. 221). Environmental barriers—including poor lighting, narrow sidewalks, and unsafe crossings—can exert what Lawton and Nahemow (1973) called "environmental press" on older adults, generating stress and limiting activity (as cited in Buffel, 2017, p. 2). Access to services such as recreational areas and fresh food markets can encourage healthy habits like exercise and nutrition. In addition to the built environment, health is also shaped by social aspects of place, such as trust and social capital (Lochner et al., 1999). Public transit offers a low-cost and environmentally sustainable mode of transportation that supports independent mobility, making it particularly valuable for addressing the mobility needs of an ageing population. Given its potential to enhance mobility among older adults, it is essential to ensure that public transport systems are accessible to individuals of all abilities and provide reliable access to desired destinations (Ravensbergen et al., 2022).

When it comes to studying with the older population, a devoted concept is the age-friendly city, defined as "a place where older people are actively involved, valued, and supported with infrastructure and services that effectively accommodate their needs" (Van Hoof et al., 2018). Following this concept, age-friendly communities are inclusive communities that promote autonomy by ensuring access to meaningful activities, relationships, and mobility. As Scharlach and Lehning (2013, pp. 110–113) argue, age-friendly environments must reduce disabling conditions and challenge ageist norms that otherwise lead to exclusion and decline. To maintain the well-being of community-dwelling older people, a holistic approach is needed (Lawler, 2001).

The concept of "ageing-in-place" reflects older adults' desire to remain in familiar physical and social environments as they age (Wiles et al., 2012). Starting from earlier studies, it refers to the ability of older people to continue to live in their own homes even after functional decline and increased dependence (Emlet & Moceri, 2012). This preference shows the importance of not only

the built environment but also social infrastructure in enabling autonomy in late life. Supporting ageing-in-place means supporting an independent living which requires both physical and social environments that are age-friendly and inclusive. In this study, ageing-in-place will be discussed, focusing on both the social and physical infrastructure.

In Türkiye, ageing-in-place is more than a preference; it is shaped by limited institutional care options and strong care norms which rely heavily on filial expectations. While this may reduce formal care costs (Gitlin, 2003), it also places pressure on families and communities to provide informal care, a responsibility that is increasingly strained under demographic changes (Akkan & Şanlı, 2023). The ageing population thus presents both a policy challenge and a social imperative to create environments that support autonomy, dignity, and mobility for older adults.

Built environments—such as pedestrian infrastructure, transportation systems, and public amenities—can either support or hinder ageing-in-place (WHO, 2007). These environments often determine whether older individuals can continue living independently or become reliant on others. For vulnerable social groups such as older adults, equitable access to resources is essential to advancing social justice and reducing urban inequalities. To our knowledge, there is no study in Türkiye that has analysed accessibility and the well-being of older adults at the national level using regionally comparative quantitative data.

This study aims to examine the extent to which built environments in Türkiye support independent living among older adults, identify region-specific accessibility needs for promoting sustainable and age-friendly urban development, and assess the impact of urban accessibility on the psychological well-being of individuals aged 50 and over. Drawing on the nationally representative 2023 Türkiye Ageing Profile Survey (N = 26,767), the study combines regional-level descriptive statistics and multiple linear regression analysis to explore both spatial inequalities in accessibility and their relationship to well-being.

3. Methods

To address our three research questions, we used nationally representative data that provide information on the urban accessibility of populations aged 50 and over. Utilizing such data enables the development of a comprehensive understanding of the extent to which different regions are age-friendly and helps identify the key areas of concern.

3.1. Data and Research Questions

The Türkiye Ageing Profile Survey was conducted by the TURKSTAT in collaboration with the Ministry of Family and Social Services. The field application was conducted from October 23 to December 18, 2023. The micro data set presents information on demographics, working life and economic conditions, health, independent living, care and social assistance, environment, participation in social life, life satisfaction, disasters and emergencies, rights and ageism, dwelling, and general information on the environment.

All settlements within the borders of the Republic of Türkiye were covered using the Address Based Population Register System (ABPRS). The data include 29,785 individuals aged 50 and above, drawn through a multi-stage cluster sampling method. The sample is nationally representative and covers all 12 NUTS-1 (The Nomenclature of Territorial Units for Statistics- 1) regions. Institutional populations (e.g., nursing homes, prisons, military facilities) were excluded. Only households with at least one-person aged 50+ were eligible.

In this study, we excluded proxy responses (see Chapter 3, 2, for further information) due to high data missing in certain variables. The final analytical sample consists of 26,767 self-respondents aged 50 to 90 (M = 62.8, SD = 9.2). There are 14,161 women (52.9%) and 12,606 men (47.1%) in our sample. The present study is guided by the following three research questions: (1) To what extent does the built environment in Türkiye support independent living among the ageing population? (2) What are the region-specific needs for ensuring sustainable and age-friendly cities in Türkiye, particularly in terms of public space, pedestrian infrastructure, and public transportation accessibility? (3) How does urban accessibility affect the psychological well-being of older adults?

3.2. Data Collection Instrument

Three questionnaires were used in the survey: (1) a household form to list all members, (2) a household questionnaire answered by a key respondent, and (3) an individual questionnaire asked to all-household members aged 50 and over. Data were primarily collected through computer-assisted personal interviews (CAPI). When in-person interviews were not possible, computer-assisted telephone interviews (CATI) were used. For individuals unable to respond due to age-related health issues, a household or non-household member provided information as a proxy. In such cases, subjective questions related to personal perceptions or experiences were omitted. Our study uses only data from the individual questionnaire and is designed at the individual level.

3.3. Variables

3.3.1. Descriptive Variables

To evaluate the built environment as supporting independent living, descriptive analyses were conducted across three types of accessibility: (1) public spaces, (2) pedestrian, and (3) public transportation. Variables with consistently low expected cell frequencies (e.g., reasons for being unable to go outside) were excluded from the chi-square analysis to ensure statistical validity and clarity.

Regional comparisons were based on the NUTS-1 classification (12 regions), which allows for spatially disaggregated insights into differences in urban accessibility for adults aged 50 and above (see Table 1).

Table 1. Population 50 Years Old and Over in Each Region (N = 26767)

	n	%
TR1	3367	12.6
TR2	1932	7.2
TR3	3472	13.0
TR4	2573	9.6
TR5	2657	9.9
TR6	2810	10.5
TR7	1861	7.0
TR8	2253	8.4
TR9	1390	5.2
TRA	1187	4.4
TRB	1416	5.3
TRC	1849	6.9

Regions and cities in each region are as follows: TR1 İstanbul (İstanbul), TR2 West Marmara (Tekirdağ, Edirne, Kırklareli, Balıkesir, Çanakkale), TR3 Aegean (İzmir, Aydın, Denizli, Muğla, Manisa, Afyonkarahisar, Kütahya, Uşak),

TR4 East Marmara (Bursa, Eskişehir, Bilecik, Kocaeli, Sakarya, Düzce, Bolu, Yalova), TR5 West Anatolia (Ankara, Konya, Karaman), TR6 Mediterranean (Antalya, Isparta, Burdur, Adana, Mersin, Hatay, Kahramanmaraş, Osmaniye), TR7 Central Anatolia (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir, Kayseri, Sivas, Yozgat), TR8 West Black Sea (Zonguldak, Karabük, Bartın, Kastamonu, Çankırı, Sinop, Samsun, Tokat, Çorum, Amasya), TR9 East Black Sea (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane), TRA North East Anatolia (Erzurum, Erzincan, Bayburt, Ağrı, Kars, Iğdır, Ardahan), TRB Central East Anatolia (Malatya, Elazığ, Bingöl, Tunceli, Van, Muş, Bitlis, Hakkari), TRC South East Anatolia (Gaziantep, Adıyaman, Kilis, Şanlıurfa, Diyarbakır, Mardin, Batman, Şırnak, Siirt).

Public space accessibility (coded as 1 = Yes, 2 = No) included the following binary items: going outside unassisted, transportation problems, environmental problems, security risks, inadequate stairs/ramps/sidewalks, poor lighting, lack of green areas, insufficient seating (e.g., benches, pergolas), and inadequate restrooms.

Pedestrian accessibility (coded as 1 = Yes, 2 = No) included problems with: crossing the street, walking on sidewalks, short traffic light durations, using pedestrian-priority zones, and seeing traffic signs/signals. Public transport accessibility (recoded as 1 = Yes, 0 = No) included: reaching bus stops, difficulty in waiting at the stop, boarding or exiting vehicles, and standing during trips.

3.3.2. Dependent and Independent Variables for Multivariate Analysis

Self-rated health was recoded following the Survey of Health, Ageing, and Retirement in Europe (SHARE) classification. Responses were dichotomized as 0 = "good or very good health" and 1 = "less than good health" (Mehrbrodt et al., 2019). Gender was recoded as 1 = male and 0 = female. Age was treated as a continuous variable, based on respondents' reported age at the time of the survey.

The following binary variables were coded as 1 = Yes and 0 = No: Living alone, ability to go outside without help, difficulty accessing healthcare services, feeling safe walking alone at night in one's neighbourhood, and difficulty moving around as a pedestrian (see Table 2).

Table 2. The Characteristics of the Sample (N = 26767)

	n	%
Age (n = 26767)		
50-64	16557	61.9
65-74	6929	25.9
75-90	3281	12.3
Self-rated health (n = 26767)		
Good or very good	17543	65.5
Less than good	9224	34.5
Living alone (n = 26767)		
Yes	3348	12.5
No	23419	87.5
Going outside unassisted (n = 26767)		
Yes	24422	91.2
No	2345	8.8
Difficulty accessing healthcare (n = 26689)		
Yes	6700	25.1
No	19989	74.9
Pedestrian difficulties (n = 5224)		
Yes	3172	60.7
No	2052	39.3
Safety walking at night (n = 25608)		
Yes	19746	77.1
No	5862	22.9

The Geriatric Depression Scale (GDS) was used as a continuous outcome variable to proxy psychological well-being. Items 5, 7, 9, 15, 19, 21, 28, 29, and 30 were recoded as 0 = Yes, 1 = No, while all other items were coded as 1 = Yes, 0 = No. A total score was calculated, ranging from 0 to 30, with higher scores indicating more depressive symptoms. The value for Cronbach's Alpha for the GDS was $\alpha = .897$ ($M = 9.15$, $SD = 6.5$). Normality was examined using the Kolmogorov–Smirnov test, which was significant ($D = .123$, $p < .001$), which formally indicates a deviation from a normal distribution. However, as Tabachnick and Fidell (2013) note (cited in Pallant, 2020), normality tests

are highly sensitive to large sample sizes, where even trivial departures from normality can yield significant results. Therefore, in addition to the significance test, we inspected descriptive statistics (skewness and kurtosis) and visual plots (histogram and Q–Q plots). These indicated that the distribution of the GDS was approximately normal, with skewness and kurtosis values within the recommended ±1.0 range. Accordingly, the assumption of normality was considered adequately met for the planned analyses.

Evidence from SHARE data indicates that access to local services is linked to fewer depressive symptoms and greater psychological resilience (Stoeckel & Litwin, 2015). Furthermore, age-friendly neighbourhood design (Cheng et al., 2019) and the availability of walkable, safe environments (Scharlach & Lehning, 2013) have been identified as key determinants of urban accessibility for older people.

3.4. Analysis

The analysis was conducted in two stages.

Stage 1. Descriptive Analysis and Chi-Square Tests: To explore regional variation in built environment accessibility and autonomous living among adults aged 50 and over, chi-square tests of independence were conducted. Categorical variables and binary indicators were compared across 12 NUTS-1 regions. Adjusted standardized residuals were calculated to identify regions with significantly higher or lower frequencies. A threshold of ±2.0 was used to denote statistically significant deviations (Field, 2009, p.740). Effect sizes were evaluated using Cramér's V, interpreted according to Rea and Parker's (1992) classification: 0.10 = weak, 0.20 = moderate, 0.40 = relatively strong.

Stage 2. Linear Regression Analysis: A multiple linear regression analysis was conducted to assess the relationship between the built environment and well-being, measured by the total score on the Geriatric Depression Scale (GDS). Independent variables included age, gender, perceived health status, living alone, ability to go outside unassisted, pedestrian difficulties, difficulty accessing healthcare, and perceived safety when walking alone at night. All predictors were entered simultaneously. The model's overall effect size was evaluated using R^2 and Adjusted R^2 values. The Statistical Package for Social Sciences (SPSS 23) software was used for data analysis. After finalising the sample, the reliability of the scale was first examined using Cronbach's alpha coefficient. The distribution of numerical variables was assessed through Q–Q plots, P–P plots, skewness and kurtosis values, and the Kolmogorov–Smirnov test results. Given the characteristics of the dependent variable and the nature of the research question, multiple linear regression was selected, following the verification of its

underlying assumptions. In the model, the variance inflation factor (VIF) was checked to ensure that it remained below 10, thereby confirming the absence of multicollinearity. Model fit was evaluated using the Durbin–Watson statistic (acceptable range: 1.5–2.5). A significance level of $p < 0.05$ was adopted to indicate statistical significance

4. Results

4.1. Descriptive Analysis Results

Our detailed descriptive analysis revealed several key findings that highlight the main areas of concern for each region. The primary accessibility barriers were identified as the lack of green spaces, insufficient seating and resting areas, inadequate toilet facilities, concerns regarding safety and security, and environmental challenges. These issues were particularly pronounced in three regions: İstanbul (TR1), East Marmara (TR4), and the Mediterranean (TR6).

With respect to pedestrian accessibility and barriers, our findings pointed out short traffic light durations and the limited visibility of traffic signs as major concerns. These problems were especially evident in Northeast Anatolia (TRA), Central East Anatolia (TRB), Southeast Anatolia (TRC), the Aegean (TR3), East Marmara (TR4), and the East Black Sea (TR9).

4.1.1. Accessibility of Public Spaces

4.1.1.1. Going Outside Unassisted

Chi-square tests revealed statistically significant regional differences in the ability of adults aged 50 and over to go outside without assistance. Although the association was weak in strength, the results indicate a variation across Türkiye's 12 NUTS-1 regions (see Table 3).

In East Marmara (TR4), the ability to go out without assistance is higher than expected (AR = +5.5). Similarly, İstanbul (TR1), West Marmara (TR2), and the Aegean (TR3) also show higher-than-expected levels of independent outdoor activity (AR = +4.6; AR = +3.3; AR = +3.0, respectively). By contrast, in Southeast Anatolia (TRC), the inability to go out without assistance is higher than expected (AR = –10.6). Likewise, Northeast Anatolia (TRA) and Central East Anatolia (TRB) exhibit higher-than-expected levels of inability to go out without assistance (AR = –5.5; AR = –4.9, respectively).

Other regions, such as West Anatolia (TR5), Mediterranean (TR6), and West Black Sea (TR8), displayed weak and statistically non-significant deviations, suggesting moderate or average levels of accessibility. In East Black Sea (TR9), residuals were negligible, indicating no substantial regional divergence.

4.1.1.2. Accessibility Barriers

Among respondents who did use public spaces (n= 21,295), notable regional variation was observed in their reported difficulties (see Table 3). Regional differences were evident in the reporting of lack of green spaces among adults aged 50 and older, with a moderate effect size. İstanbul (TR1), East Marmara (TR4), and Mediterranean (TR6) reported significantly more problems related to green space availability than expected, with adjusted residuals ranging from +2.3 to +22.9. By contrast, West Marmara (TR2), Aegean (TR3), West Black Sea (TR8), and East Black Sea (TR9) exhibited significantly fewer reports of green area shortages than expected, with adjusted residuals ranging from –4.4 to –10.8.

Regional differences were also evident in the reporting of inadequate toilet facilities among adults aged 50 and older, with a moderate effect size. İstanbul (TR1), East Marmara (TR4), and Mediterranean (TR6) reported significantly more problems related to inadequate toilet access than expected, with adjusted residuals ranging from +7.7 to +16.5. By contrast, West Marmara (TR2), Aegean (TR3), West Anatolia (TR5), Central Anatolia (TR7), West Black Sea (TR8), East Black Sea (TR9), and Southeast Anatolia (TRC) exhibited significantly fewer reports of toilet-related difficulties than expected, with adjusted residuals ranging from –12.2 to –3.4.

Regional differences were also evident in the reporting of insufficient seating and rest areas among adults aged 50 and older, with a weak to moderate effect size. İstanbul (TR1), East Marmara (TR4), and Mediterranean (TR6) reported significantly more problems related to insufficient seating than expected, with adjusted residuals ranging from +4.7 to +13.9. By contrast, West Marmara (TR2), West Anatolia (TR5), West Black Sea (TR8), and East Black Sea (TR9) exhibited significantly fewer reports of seating-related difficulties than expected, with adjusted residuals ranging from –10.6 to –4.4.

Regional differences were also evident in reports of safety and security problems among adults aged 50 and older, with a weak to moderate effect size. İstanbul (TR1), East Marmara (TR4), and Mediterranean (TR6) reported significantly more problems related to safety and security than expected, with adjusted residuals ranging from +3.8 to +18.7. By contrast, West Marmara (TR2), Aegean (TR3), West Anatolia (TR5), West Black Sea (TR8), East Black Sea (TR9), and Southeast Anatolia (TRC) exhibited significantly fewer reports of safety- and security-related difficulties than expected, with adjusted residuals ranging from –7.6 to –2.3.

Regional differences were also evident in the reporting of environmental problems among adults aged 50 and older, with a weak to moderate effect

size. İstanbul (TR1), East Marmara (TR4), and Mediterranean (TR6) reported significantly more problems related to environmental conditions than expected, with adjusted residuals ranging from +3.9 to +17.0. By contrast, West Marmara (TR2), Aegean (TR3), West Anatolia (TR5), West Black Sea (TR8), East Black Sea (TR9), and Northeast Anatolia (TRA) exhibited significantly fewer reports of environmental difficulties than expected, with adjusted residuals ranging from –9.3 to –2.0.

Regional differences were evident in stair-related accessibility problems among adults aged 50 and older, with a weak effect size. İstanbul (TR1), Mediterranean (TR6), West Black Sea (TR8), and Central East Anatolia (TRB) reported significantly more stair accessibility problems than expected, with adjusted residuals ranging from +2.5 to +4.6. By contrast, West Marmara (TR2) exhibited a markedly positive deviation, with significantly fewer individuals reporting stair-related difficulties (AR = –11.2). East Black Sea (TR9) also performed better than expected (–5.7), indicating potentially more accessible residential environments.

Regional differences were also evident in reported poor lighting conditions among adults aged 50 and older, with a weak effect size. İstanbul (TR1), Mediterranean (TR6), Central East Anatolia (TRB), and Southeast Anatolia (TRC) reported more lighting-related problems than expected, with adjusted residuals ranging from +4.3 to +6.7. By contrast, West Marmara (TR2), Aegean (TR3), and East Black Sea (TR9) exhibited fewer reports of poor lighting than expected, with adjusted residuals ranging from –3.1 to –7.7.

Regional differences were also evident in the reporting of public transport accessibility problems among adults aged 50 and older, with a week effect size. İstanbul (TR1), Mediterranean (TR6), Northeast Anatolia (TRA), Central East Anatolia (TRB), and Southeast Anatolia (TRC) reported more problems related to transport accessibility than expected, with adjusted residuals ranging from +3.6 to +10.0. By contrast, West Marmara (TR2), Aegean (TR3), East Marmara (TR4), West Anatolia (TR5), and East Black Sea (TR9) exhibited fewer reports of transport-related difficulties than expected, with adjusted residuals ranging from –8.7 to –3.9.

Table 3. Summary of Chi-Square Results for Public Space Use, Access Barriers, and Environmental Conditions by Region

Variable	n	Chi-square (df)	p-value	Cramér's V	Effect size
Going outside unassisted	26767	224.91 (11)	< .001	0.092	Weak
Inaccessible stairs	21295	202.91 (11)	< .001	0.098	Weak
Poor lighting	21295	230.66 (11)	< .001	0.104	Weak
Lack of green space	21295	717.93 (11)	< .001	0.184	Moderate
Insufficient seating/rest areas	21295	483.71 (11)	< .001	0.151	Moderate
Inadequate toilets	21295	673.06 (11)	< .001	0.178	Moderate
Transportation problems	21295	391.88 (11)	< .001	0.136	Weak
Safety concerns	21295	534.81 (11)	< .001	0.158	Moderate
Environmental problems	21295	496.21 (11)	< .001	0.153	Moderate

Note. All chi-square tests were statistically significant at p < .001. Cramér's V values represent effect sizes based on Rea and Parker (1992): 0.10 = weak, 0.20 = moderate, 0.40 = relatively strong. n indicates the number of valid cases used in each chi-square test.

4.1.2. Pedestrian Accessibility and Barriers

Chi-square tests revealed regional differences in all five indicators of pedestrian-related difficulties among adults aged 50 and older (see Table 4). Short traffic light durations showed these regional disparities, with a moderate effect size. Northeast Anatolia (TRA, +6.3), East Black Sea (TR9, +2.8), Aegean (TR3, +2.9), and East Marmara (TR4, +2.0) reported greater difficulties, whereas West Black Sea (TR8, –6.0), West Marmara (TR2, –4.6), and Mediterranean (TR6, –2.5) reported significantly fewer.

Difficulty seeing traffic signs or lights showed clear regional disparities, with a moderate effect size. Southeast Anatolia (TRC, +4.9), East Black Sea (TR9, +4.3), Northeast Anatolia (TRA, +4.1), and Central East Anatolia (TRB, +3.9) reported significantly more visual difficulties, whereas İstanbul (TR1, –4.5), West Black Sea (TR8, –4.2), and Mediterranean (TR6, –3.3) reported significantly fewer. These findings highlight considerable regional variations in pedestrian safety and accessibility for older adults across Türkiye.

The other three indicators had a weak effect. For difficulty crossing streets, Northeast Anatolia (TRA, +2.3) reported more difficulties, whereas İstanbul

(TR1, –3.3) and West Marmara (TR2, –2.3) reported fewer than expected. Difficulties walking on sidewalks also differed, with Central East Anatolia (TRB, +3.3) and Northeast Anatolia (TRA, +2.0) experiencing greater issues, while West Black Sea (TR8, –3.2) reported fewer difficulties. For using pedestrian-priority roads, Northeast Anatolia (TRA, +4.3), İstanbul (TR1, +3.7), and Southeast Anatolia (TRC, +2.6) reported more issues, while West Black Sea (TR8, –5.7) and West Marmara (TR2, –4.6) reported fewer problems.

Table 4. Summary of Chi-Square Results for Pedestrian Accessibility Barriers by Region

Variable	n	Chi-square (df=11)	p-value	Cramér's V	Effect size
Crossing the street	21295	30.72	.001	.077	Weak
Walking on sidewalks	21295	31.90	.001	.078	Weak
Short traffic light duration	21295	120.98	< .001	.152	Moderate
Using pedestrian-priority roads	21295	92.59	< .001	.133	Weak
Seeing traffic signs/ lights	21295	116.82	< .001	.150	Moderate

Note. All chi-square tests were statistically significant at $p < .001$. Cramér's V values represent effect sizes based on Rea and Parker (1992): 0.10 = weak, 0.20 = moderate, 0.40 = relatively strong. n indicates the number of valid cases used in each chi-square test.

4.1.3. Public Transport Accessibility Barriers

Regional differences were evident across all indicators related to public transport accessibility, with weak to moderate effect sizes (see Table 5). Difficulty accessing public transport stops differed by region. Central East Anatolia (TRB, +10.9), Southeast Anatolia (TRC, +6.7), and Northeast Anatolia (TRA, +4.9) reported more difficulties, whereas West Marmara (TR2, –6.7), Aegean (TR3, –5.3), East Marmara (TR4, –4.5), and İstanbul (TR1, –4.1) reported fewer problems.

Difficulties waiting at transport stops also varied. Central East Anatolia (TRB, +9.4), Southeast Anatolia (TRC, +7.5), Northeast Anatolia (TRA, +5.5), and İstanbul (TR1, +4.5) reported higher than expected waiting-related difficulties. In contrast, West Marmara (TR2, –7.4), Aegean (TR3, –5.5), East Marmara (TR4, –4.6), and East Black Sea (TR9, –4.2) showed lower difficulties.

Boarding and alighting difficulties differed by region ($\chi^2(11) = 149.95$, $p < .001$, Cramér's V = .110). Northeast Anatolia (TRA, +6.4), Southeast Anatolia (TRC, +4.9), and Central East Anatolia (TRB, +2.9) reported more difficulties. Conversely, Aegean (TR3, –6.0), West Marmara (TR2, –5.2), and East Black Sea (TR9, –3.2) had fewer difficulties.

Difficulty standing in public transport vehicles was also associated with the region. Southeast Anatolia (TRC, +6.9), Central East Anatolia (TRB, +3.5), and Northeast Anatolia (TRA, +3.4) reported greater standing difficulties. West Marmara (TR2, –8.0), Aegean (TR3, –8.0), East Black Sea (TR9, –5.7), and West Black Sea (TR8, –5.6) indicated fewer problems.

Table 5. Summary of Chi-Square Results for Public Transport Accessibility Barriers by Region

Variable	n	Chi-square (df=11)	p-value	Cramér's V	Effect size
Reaching the stop	12409	283.73	< .001	0.15	Weak
Difficulty in waiting at the stop	12409	314.52	< .001	0.16	Weak
Boarding/alighting problems	12409	149.95	< .001	0.11	Weak
Difficulty standing in the vehicle	12409	285.41	< .001	0.15	Weak

Note. All chi-square tests were statistically significant at $p < .001$. Cramér's V values represent effect sizes based on Rea and Parker (1992): 0.10 = weak, 0.20 = moderate, 0.40 = relatively strong. n indicates the number of valid cases used in each chi-square test.

4.2. Linear Regression Results

Perceived health status, healthcare accessibility, and the ability to go outside unassisted were the strongest determinants of depression. A multiple linear regression analysis was conducted to examine the association between urban accessibility and well-being among individuals aged 50 and older, using the Geriatric Depression Scale (GDS) score as the dependent variable. The model was statistically significant, $F(8, 4900) = 178.26$, $p < .001$, and accounted for approximately 22.5% of the variance in GDS scores ($R^2 = .225$, Adjusted $R^2 = .224$). The Durbin-Watson statistic was 1.640, indicating that the assumption of independent residuals was met. All variance inflation factor (VIF) values ranged between 1.070 and 1.202, confirming that multicollinearity was not a concern.

The strongest contributors to lower depression scores were better perceived health (β = -0.224, p < .001), the ability to go outside without help (β = -0.159, p < .001), and feeling safe walking alone at night (β = -0.127, p < .001). Difficulty accessing healthcare was the strongest contributor to higher depression scores (β = 0.165, p < .001), followed by living alone (β = 0.054, p < .001), and experiencing difficulty as a pedestrian (β = 0.074, p < .001). The last significant but weaker predictor was being male (β = -0.087, p < .001), men had lower levels of depression. Age was not a statistically significant predictor (B = 0.014, p = .158). These findings indicate that independent mobility and environmental safety are important determinants of well-being among older adults in Türkiye, beyond demographic and health-related factors (see Table 6).

Table 6. Multiple Linear Regression Predicting Geriatric Depression Score

Predictor	B	SE	β	t	p	95% CI
Constant	2.731	0.156		17.56	< .001	[2.426, 3.036]
Age	0.014	0.01	0.018	1.42	0.158	[-0.006, 0.033]
Gender (ref = female)	-0.393	0.053	-0.087	-7.41	< .001	[-0.497, -0.289]
Perceived health (ref = good health)	1.032	0.062	0.224	16.6	< .001	[0.910, 1.153]
Living alone (ref = no)	0.243	0.06	0.054	4.08	< .001	[0.125, 0.361]
Going outside unassisted (ref = no)	-0.701	0.058	-0.159	-12.02	< .001	[-0.814, -0.589]
Pedestrian difficulty (ref = no)	0.331	0.059	0.074	5.64	< .001	[0.216, 0.446]
Healthcare access difficulty (ref = no)	0.786	0.064	0.165	12.26	< .001	[0.661, 0.910]
Feels safe walking at night (ref = no)	-0.56	0.06	-0.127	-9.39	< .001	[-0.678, -0.443]

Note. N = 4909. R^2 = .225, Adjusted R^2 = .224, F(8, 4900) = 178.26, p < .001. Durbin-Watson = 1.640. VIF values ranged from 1.070 to 1.202, indicating no multicollinearity.

5. Discussion

This study combined regional-level descriptive statistics and multiple linear regression analysis to examine both accessibility inequalities and their relationship to well-being.

5.1. What Does Descriptive Analysis Tell Us About Accessibility?

The results highlight inequality in terms of ageing and independent mobility. Older adults in western and more urbanized regions appear to benefit from age-friendly infrastructures more —though significant limitations remain, as discussed below—while those in the eastern parts of the country face substantial mobility barriers. It should be emphasized that Türkiye is a geographically large country, with each region shaped by distinct topographies, which gives these challenges a local character.

Starting with going outside unassisted as a main indicator of autonomous living, we see that the western regions of Türkiye support such a life better than the other regions. İstanbul, a metropolis with around 16 million residents (TURKSTAT, 2025c), experienced a major migration flow in the early 1950s as a centre of job opportunities, on top of its historical and cultural attractions. These qualities make the region an ongoing project of demographic change and urban accessibility. West Marmara is closely connected to İstanbul, while East Marmara demonstrates the best accessibility results among all 12 regions. The Aegean, another coastal region, also shows outcomes supportive of autonomous living. The overall results regarding going outside unassisted can further be interpreted through the lens of city–coast integration. The literature also shows that various design strategies are applied to improve city–coast integration by transforming coastal areas into functional, comfortable, and easily accessible public spaces usable for multiple purposes, thereby aiming to provide more liveable environments for city residents (Aköz Çevrimli, 2025).

Even though "going outside unassisted" showed a more age-friendly picture in favour of İstanbul and East Marmara, a detailed look shows the problematic areas. İstanbul, East Marmara, and Mediterranean regions demonstrated a persistent inaccessibility in terms of green spaces, sufficient seating, public toilets, safety, and overall environment, which also raises concerns about the extent to which even the more age-friendly regions provide an encouraging environment for older people. Since older adults in Türkiye are increasingly migrating to mid-sized coastal cities (Koç & Saraç, 2018), there is a need for a deeper understanding of how to create more supportive environmental conditions in these regions.

We observe a clear pattern of inaccessibility in the eastern parts of Türkiye. South-eastern Anatolia, Central Eastern Anatolia, and North-eastern Anatolia represent the regions where this inequality is most prevalent. The literature on geography and accessibility has already shown that the South-eastern Anatolia Region remains underdeveloped, with accessibility studies clearly emphasizing the necessity of improving transportation (Şen, 2019). Our study supports this by analysing pedestrian and public transport accessibility among older adults, offering a more detailed understanding of the region. In particular, South-eastern, Central Eastern, and North-eastern Anatolia face severe accessibility problems in areas that could be relatively easily improved, such as traffic light durations and the visibility of traffic signs and signals. Lastly, South-eastern Anatolia experiences disadvantages across all indicators of public transport accessibility. This is important because the literature shows that features of neighbourhood design—such as traffic calming measures, pedestrian pathways, and sidewalks—can significantly influence perceived safety and increase the likelihood of walking and other forms of active travel among older adults (Cheng et al., 2019).

Our results are also consistent with Türkiye's Active Ageing Index scores for 2024. At the NUTS-1 level, the highest score for the independent, healthy, and safe living component was observed in the Aegean Region, followed by the West Anatolia and East Marmara regions. In contrast, the lowest scores were recorded in the South-eastern Anatolia Region, followed by the North-eastern Anatolia Region and İstanbul (TURKSTAT, 2025d). These findings closely align with our descriptive results on overall accessibility.

5.2. One Step Beyond: The Relationship Between Urban Accessibility and Well-Being

The regression analysis underscores the critical role of environmental and mobility-related factors in shaping the psychological well-being of older adults in Türkiye. Our findings resonate with current literature, which showed that particularly perceived access to local services is associated with fewer depressive symptoms and greater psychological resilience (Stoeckel & Litwin, 2015). While perceived health remains the most powerful predictor of lower depressive symptoms, the ability to go outside unassisted and the feeling of safety while walking alone at night also emerge as significant protective factors. These findings highlight that beyond individual health and demographic characteristics, the accessibility and safety of the built environment contribute meaningfully to emotional well-being in later life, along with the current literature (Buffel, 2017).

Difficulties in accessing healthcare services and pedestrian environments were among the strongest predictors of elevated depression scores, reinforcing the notion that infrastructural and service-based inequalities can amplify vulnerability. Interestingly, age itself did not predict depression, suggesting that it is not chronological ageing per se, but rather the socio-environmental conditions surrounding ageing that shape mental health outcomes. The literature shows that healthy habits do not solely depend on personal choices, social factors also play a significant role (Palaz, 2023). Accessing services such as recreational areas and fresh food markets can encourage healthy habits, such as exercise and nutrition. In addition to the built environment, health is also shaped by social aspects of place, such as trust and social capital (Lochner et al., 1999).

Our results align with previous findings across Europe, where neighbourhood accessibility has been linked to mental well-being among older adults. This study also resonates with evidence on the role of environmental deprivation. Feelings of insecurity tend to increase with age and are intensified in poorly maintained urban spaces (De Donder et al., 2005). Living in deprived neighbourhoods leads to cumulative disadvantage over time, constraining movement and inclusion. Conversely, walkable and safe environments foster stronger social capital and engagement (Scharlach & Lehning, 2013), which is especially important for older adults who live alone. Our findings show that one-person households face a higher risk of depression. Given the increase in the 65+ population living alone in Türkiye (TURKSTAT, 2025a), this topic warrants focused examination. In line with existing research, our findings empirically support the inclusion of social, spatial, and mobility dimensions in well-being interventions.

5.3. Limitations and Future Research

Our data source, the Türkiye Ageing Profile Survey, has strong qualities such as being nationally representative and capturing regional variation. To the best of our knowledge, the Türkiye Ageing Profile Survey has not previously been analysed in terms of urban governance and age-friendly cities. One limitation of the data source is the quality of data collected through the CATI (Computer-Assisted Telephone Interviewing) method. Another limitation is the lack of inclusiveness in survey language. Since Türkiye's older population is highly heterogeneous, it is recommended that future surveys be conducted in multiple languages, such as Kurdish and Arabic. The Türkiye Ageing Profile Survey has been conducted only once; therefore, our study uses cross-sectional data, which means the results cannot demonstrate causality or long-term effects. Using longitudinal data would allow us to observe changes over time and provide insight into generational differences. In future studies, comparable

results with other countries can be produced using longitudinal data sources, such as the SHARE, the Health and Retirement Study (HRS), and the English Longitudinal Survey of Ageing (ELSA) (Palaz, 2021a, 2021b). Research using SHARE demonstrates that while most older Europeans enjoy good accessibility, a minority do not, with urban residents reporting better access than those in rural areas (Stoeckel & Litwin, 2015). Future research in Türkiye should investigate urban–rural disparities in accessibility among older adults, thereby generating evidence to guide age-friendly city planning and the development of equitable urban policies that address regional inequalities.

6. Policy Recommendations

The findings of this study reveal clear regional differences in the accessibility of public spaces, pedestrian infrastructure, and transportation systems for Türkiye's ageing population. These structural barriers undermine older adults' autonomy, mobility, and psychological well-being. In addition, perceptual and individual-level barriers further exacerbate these vulnerabilities, as evidenced by the regression analysis.

When considered alongside the United Nations Sustainable Development Goals (SDGs), particularly Goal 11, these regional disparities in Türkiye form the basis for targeted policy recommendations aimed at achieving more sustainable cities and communities. By 2030, it is essential to ensure universal access to adequate, safe, and affordable housing and basic services; expand accessible and reliable public transport systems, with special attention to the needs of older persons and other vulnerable groups; promote participatory and integrated approaches to urban planning; and invest in inclusive, green, and age-friendly public spaces. These targets offer a normative and operational framework through which local and national governments can design policies that reflect both demographic realities and the principles of social justice. To this end, we offer the following policy recommendations based on our findings:

1. Regionally tailored evidence-based interventions: In İstanbul (TR1), immediate infrastructure improvements in stair accessibility, public lighting, green spaces, seating areas, toilets, transportation, and security are required. For East Marmara (TR4), improvements should focus on enhancing public spaces, particularly seating and toilet infrastructure, environmental quality, and security, while preserving existing advantages in transportation accessibility. Mediterranean (TR6) and Southeast Anatolia (TRC) require targeted investments in public transportation to improve mobility. For regions reporting relatively fewer issues—such as West Marmara, Aegean, and Black Sea regions—policies should concentrate on maintaining current favourable conditions

through ongoing infrastructure monitoring and improvements. Additionally, special attention must be paid to mobility challenges identified in TRA and TRB, ensuring targeted accessibility enhancements. Ultimately, these targeted actions can significantly reduce inequalities and improve the overall well-being of older adults across Türkiye.

2. Enhancing Pedestrian Environments: Priority should be given to Northeast Anatolia (TRA), with investments in improved pedestrian infrastructure—particularly pedestrian priority roads, sidewalk quality, clear and visible traffic signage, and extended traffic light durations—to enhance safety and mobility. For Southeast Anatolia (TRC) and Central East Anatolia (TRB), policies should specifically focus on improving pedestrian-priority roads and enhancing visibility conditions through better signage and lighting. Metropolitan areas, especially İstanbul (TR1), require targeted interventions addressing pedestrian infrastructure quality and the usability of pedestrian-priority pathways. Conversely, regions like West Marmara (TR2) and West Black Sea (TR8), which reported fewer difficulties, should aim to maintain and reinforce their favourable pedestrian conditions through continuous monitoring, infrastructure upgrades, and adherence to age-friendly urban planning standards. These targeted policy actions are essential to ensuring equitable and inclusive pedestrian environments for older adults across all regions of Türkiye.

3. Ensuring Equitable Public Transport: Immediate infrastructure investments should prioritize Central East Anatolia (TRB), Southeast Anatolia (TRC), and Northeast Anatolia (TRA), where significant improvements in transport stop accessibility, conditions at waiting areas, ease of boarding and alighting, and onboard seating provisions are urgently needed. For metropolitan regions such as İstanbul (TR1), specific measures should aim at enhancing comfort and safety at transport stops and reducing waiting-related difficulties through improved shelters, seating, and clear signage. Conversely, in regions demonstrating favourable conditions—West Marmara (TR2), Aegean (TR3), East Marmara (TR4), and East Black Sea (TR9)—maintenance and further enhancement of existing infrastructure should continue, ensuring that current advantages are sustained through regular monitoring and incremental upgrades. Such geographically targeted policies will play a crucial role in fostering inclusive, age-friendly public transport environments throughout Türkiye.

4. Addressing Well-being and Social Risk Factors: Interventions should prioritize improving access to healthcare services, especially in underserved or remote areas, given their strong association with depressive symptoms. Ensuring that older adults can move around their neighbourhoods unassisted and feel secure while doing so requires investments in barrier-free infrastructure, well-

lit streets, and pedestrian safety measures. Moreover, attention must be paid to the emotional toll of living alone, which, although a weaker predictor, remains statistically significant. Urban planning, transport, and health sectors must collaborate to develop integrated, age-friendly environments that proactively support autonomy and well-being. Such multisectoral strategies will be essential for advancing both active ageing and social equity across Türkiye's diverse regional contexts.

5. Building Inclusive Urban Governance: The built environment can facilitate social interaction and engagement in later life by enabling opportunities to meet others. Community building, in this context, involves promoting a sense of belonging and strengthening intergenerational connections, thereby enhancing social cohesion among older people and across age groups (Van Hoof et al., 2018). Understanding sustainable development and the governance of urban areas requires moving beyond a framework that treats the urban solely as a discrete scale of political authority (Bulkeley & Betsill, 2005). Instead, a multilevel governance perspective allows us to explore how sustainability is shaped through interactions across different institutional levels. Within this framework, the civic engagement of older adults emerges as a critical mechanism through which local sustainability agendas are both constructed and challenged. Older individuals, particularly when engaged in neighbourhood initiatives or participatory planning, contribute to a more inclusive and responsive model of urban governance. Their involvement not only enhances the legitimacy of local decision-making processes but also brings attention to age-specific needs—such as accessibility, safety, and equitable service provision—thereby aligning with broader goals of socially sustainable cities. Recent findings by Bui et al. (2020) have shown that encouraging advocacy and civic engagement among older people through age-friendly community programs is essential to incorporate their voices into local policy, which remains a key agenda point for policy-makers in Türkiye.

References

Akkan, B., & Canbazer Şanlı, C. (2023). Aging and social protection in a familialist welfare regime: Elderly poverty and social pensions in Turkey. In S. I. Rajan (Ed.), *Handbook of aging, health and public policy: Perspectives from Asia* (pp. 1–17). Springer. https://doi.org/10.1007/978-981-16-1914-4_209-1

Aköz Çevrimli, B. (2025). Accessibility in urban coastal areas: Antalya-Konyaaltı case. *PLANARCH- Design and Planning Research, 9*(1), 67–78. https://doi.org/10.54864/planarch.1583093

Buffel, T. (2017). Ageing migrants and the creation of home: Mobility and the maintenance of transnational ties. *Population, Space and Place, 23*(5), Article e1994. https://doi.org/10.1002/psp.1994

Bui, C. N., Coyle, C. E., & Freeman, A. (2020). Promoting self-advocacy among older adults: Lessons from Boston's Senior Civic *Academy. Journal of Applied Gerontology, 40*(4), 452–458. https://doi.org/10.1177/0733464820902628

Bulkeley, H., & Betsill, M. (2005). Rethinking sustainable cities: Multilevel governance and the 'urban' politics of climate change. *Environmental Politics*, *14*(1), 42–63. https://doi.org/10.1080/0964401042000310178

Cheng, L., Chen, X., Yang, S., Cao, Z., De Vos, J., & Witlox, F. (2019). Active travel for active ageing in China: The role of built environment. *Journal of Transport Geography*, *76*, 142–152. https://doi.org/10.1016/j.jtrangeo.2019.03.010

De Donder, L., Verté, D., & Messelis, E. (2005). Fear of crime and elderly people: Key factors that determine fear of crime among elderly people in West Flanders. *Ageing International*, *30*(4), 363–376.

Emlet, C. A., & Moceri, J. T. (2012). The importance of social connectedness in building age-friendly communities. *Journal of Aging Research*, *2012*(1), 173247. https://doi.org/10.1155/2012/173247

Eryurt, M. A. (2023). Yaşlanma ve demografi [Aging and demographics]. In K. Canatan & M. Küçük (Eds.), *Yaşlanma sosyolojisi.* (pp. 91-120). DBY Publishing.

European Commission & United Nations Economic Commission for Europe. (2019). *2018 Active Ageing Index: Analytical report.* Publications Office of the European Union. https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8270&type=2&furtherPubs=yes

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). SAGE Publications.

Gitlin, L. N. (2003). Conducting research on home environments: Lessons learned and new directions. *The Gerontologist*, *43*(5), 628 –637.

Gray, A. (2015). Social capital and neighbourhood in older people's housing. In F. Nyqvist & A. K. Forsman (Eds.), *Social capital as a health resource in later life: The relevance of context* (pp. 65–88). Springer.

Koç, İ., & Saraç, M. (2018). Türkiye'de yaşlı göçünün büyüklüğünün ve yönünün değişimi [The change in the size and direction of older adults migration in Turkey]. *Senex: Yaşlılık Çalışmaları Dergisi,* 2(2), 19 –37. https://doi.org/10.24876/senex.2018.11

Landorf, C., Brewer, G., & Sheppard, L. A. (2008). The urban environment and sustainable ageing: Critical issues and assessment indicators. *Local Environment,* 13(6), 497-514. https://doi.org/10.1080/13549830802259896

Lawler, K. (2001). *Aging in place: Coordinating housing and health care provision for America's growing elderly population.* Joint Center for Housing Studies, Harvard University.

Lawton, M. P., & Nahemow, L. E. (1973). Ecology and the aging process. In C. Eisdorfer & M. P. Lawton (Eds.), *The psychology of adult development and aging* (pp. 619–674). American Psychological Association.

Lochner, K., Kawachi, I., & Kennedy, B. P. (1999). Social capital: A guide to its measurement. *Health & Place*, *5*(4), 259–270. https://doi.org/10.1016/s1353-8292(99)00016-7

Mehrbrodt, T., Gruber, S., & Wagner, M. (2019). *Scales and multi-item indicators.* SHARE Survey of Health, Ageing and Retirement in Europe.

Özmete, E. (2016). *Türkiye aktif ve sağlıklı yaşlanma araştırması* [Research on active and healthy aging in Türkiye]. T.C. Sağlık Bakanlığı Sağlığın Geliştirilmesi Genel Müdürlüğü.

Palaz, F. S. (2021a). Sağlık ve emeklilik araştırması [Health and Retirement Survey (HRS)]. In M. Şentürk (Ed.), *Dünyada yaşlanma araştırmaları* (pp. 17 –38). Nobel.

Palaz, F. S. (2021b). Avrupa sağlık, yaşlanma ve emeklilik araştırması [European health, aging and retirement survey (SHARE)]. In M. Şentürk (Ed.), *Dünyada yaşlanma araştırmaları* (pp. 123 –140). Nobel.

Palaz, F. S. (2023). İyi sağlık algısına etki eden faktörlerin yaşam seyri yaklaşımı ile incelenmesi [A longitudinal analysis of factors influencing perceived health status using a life course approach]. *Turkish Journal of Public Health, 21*(1), 71-86. https://doi.org/10.20518/tjph.1106798

Pallant, J. (2020). *SPSS kullanma kılavuzu* [SPSS user manual]. (S. Balcı, Trans.). Anı Publishing.

Plouffe, L., & Kalache, A. (2010). Towards global age-friendly cities: Determining urban features that promote active aging. *Journal of Urban Health*, *87*(5), 733 –739. https://doi.org/10.1007/s11524-010-9466-0

Poulsen, T., Christensen, U., Lund, R., & Avlund, K. (2011). Measuring aspects of social capital in a gerontological perspective. *European Journal of Ageing, 8*(4), 221–232. https://doi.org/10.1007/s10433-011-0205-5

Ravensbergen, L., Van Liefferinge, M., Isabella, J., Merrina, Z., & El-Geneidy, A. (2022). Accessibility by public transport for older adults: A systematic review. *Journal of Transport Geography*, *103*, 103408. https://doi.org/10.1016/j.jtrangeo.2022.103408

Rea, L. M., & Parker, R. A. (1992). *Designing and conducting survey research: A comprehensive guide.* Jossey-Bass Publishers.

Republic of Türkiye Ministry of Development [Türkiye Cumhuriyeti Kalkınma Bakanlığı]. (2014). *Onuncu kalkınma planı: Yaşlanma özel ihtisas komisyonu raporu* [Tenth development plan: Report of the special commission on aging]. T.C. Kalkınma Bakanlığı.

Republic of Türkiye State Planning Organization [Türkiye Cumhuriyeti Devlet Planlama Teşkilatı]. (2007). *Türkiye'de yaşlıların durumu ve yaşlanma ulusal eylem planı (2007-2012)* [The situation of the elderly in Türkiye and the national action plan (2007-2012)]. T.C. Başbakanlık Devlet Planlama Teşkilatı. https://www.aile.gov.tr/media/33628/turkiyede-yaslilarin-durumu-ve-yaslanma-ulusal-eylem-plani.pdf

Scharlach, A. E., & Lehning, A. J. (2013). Ageing-friendly communities and social inclusion in the United States of America. *Ageing & Society*, *33*(1), 110 –136.

Steels, S. (2015). Key characteristics of age-friendly cities and communities: A review. *Cities*, *47*, 45–52. https://doi.org/10.1016/j.cities.2015.02.004

Stoeckel, K. J., & Litwin, H. (2015). Accessibility to neighbourhood services and well-being among older Europeans. In A. Börsch-Supan et al. (Eds.), *Ageing in Europe – Supporting policies for an inclusive society* (pp. 39-48).

Şen, Ö. (2019). Güneydoğu Anadolu Bölgesi ilçelerinin coğrafi ve potansiyel erişilebilirlik analizi [The analysis of geographic and potential accessibility of Southeastern Anatolia Region Districts]. *Türk Coğrafya Dergisi, (73),* 61–66. https://doi.org/10.17211/tcd.544288

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

Turkish Statistical Institute. (2023, May 11). *Kent-kır nüfus istatistikleri, 2022* [Urban-rural population statistics, 2022]. https://veriportali.tuik.gov.tr/tr/press/49755

Turkish Statistical Institute. (2024, March 22). *Türkiye yaşlı profili araştırması, 2023* [Turkey elderly profile research, 2023]. https://data.tuik.gov.tr/Bulten/Index?p=Turkiye-Yasli-Profili-Arastirmasi-2023-53809

Turkish Statistical Institute. (2025a, March 13). *İstatistiklerle yaşlılar 2024* [Statistics on the elderly 2024]. https://data.tuik.gov.tr/Bulten/Index?p=Istatistiklerle-Yaslilar-2024-54079

Turkish Statistical Institute. (2025b, May 13). *Doğum istatistikleri 2024* [Birth statistics 2024]. https://data.tuik.gov.tr/Bulten/Index?p=Dogum-Istatistikleri-2024-54196

Turkish Statistical Institute. (2025c, February 6). *Adrese dayalı nüfus kayıt sistemi sonuçları, 2024* [Address-based population registration system results, 2024]. https://data.tuik.gov.tr/Bulten/Index?p=Adrese-Dayali-Nufus-Kayit-Sistemi-Sonuclari-2024-53783

Turkish Statistical Institute. (2025d, April 25). *Aktif yaşlanma endeksi, 2024* [Active aging index, 2024]. https://data.tuik.gov.tr/Bulten/Index?p=Aktif-Yaslanma-Endeksi-2024-57937

United Nations. (1982). *Report of the World Assembly on Ageing: Vienna, 26 July–6 August 1982 (A/CONF.113/43).* United Nations. https://www.un.org/en/conferences/ageing/vienna1982

United Nations. (2002). *Follow-up to the International Year of older persons: Second World Assembly on ageing (A/RES/57/167).* United Nations. https://undocs.org/A/RES/57/167

United Nations Economic Commission for Europe & European Commission. (2015). *Active Ageing Index 2014: Analytical report.* United Nations Economic Commission for Europe.

United Nations Economic Commission for Europe. (2015). *Active ageing index 2014: Analytical report* (Prepared by A. Zaidi & D. Stanton). European Commission's Directorate General for Employment, Social Affairs and Inclusion.

Van Hoof, J., Kazak, J. K., Perek-Białas, J. M., & Peek, S. T. (2018). The challenges of urban ageing: Making cities age-friendly in Europe. *International Journal of Environmental Research and Public Health*, *15*(11), 2473. https://doi.org/10.3390/ijerph15112473

Wiles, J. L., Leibing, A., Guberman, N., Reeve, J., & Allen, R. E. S. (2012). The meaning of "Aging in place" to older people. *The Gerontologist*, *52*(3), 357–366. https://doi.org/10.1093/geront/gnr098

World Health Organization. (2007). *Global age-friendly cities: A guide.* WHO Press. https://www.who.int/publications/i/item/9789241547307