

# Universal Design as a Tool for Ensuring Demographic Growth and Economic Stability of Society

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**Abstract:** The article presents an analysis of the population's demographic structure, evidencing steady processes of population ageing and depopulation. Drawing on data from the WHO, UN, U.S. Census Bureau, and Eurostat, the author demonstrates that architectural barriers in the urban environment act as a catalyst for rising depressive disorders and declining birth rates. Particular attention is paid to the problem of population ageing, specifically the necessity of implementing universal design principles to maintain the economic activity of elderly citizens. The article substantiates inclusive urban architecture and a universal approach to urban planning as essential elements for the sustainable development of modern society.

**Keywords:** *Universal Design, Barrier-Free Environment, Depression, Population Ageing, Birth Rate, Depopulation, Demographics, Urbanism, Persons with Reduced Mobility.*

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## I. INTRODUCTION

### ➤ *Urban Architecture as a Factor in Public Health*

In 2025, 57.8% of the world's 8.2 billion people lived in cities, whereas in 1950, only 29% of people led an urban lifestyle. According to expert forecasts, this figure will only increase. According to UN calculations, by 2050, this indicator will grow to 67%. The highest levels of urbanization are observed in America, Australia, and New Zealand (United Nations, 2025).

At the same time, the World Health Organization notes an increase in anxiety disorders (359 million people) and depression (332 million people). According to WHO research data, the urban environment is a catalyst for depressive and anxious states. Furthermore, according to specialist estimates, more than 10% of pregnant women and those who have just given birth experience depression (WHO, 2025a, 2025b, 2025c), which negatively affects birth rates, as the unsuccessful or painful experience of first-time motherhood often forces women to abandon the idea of having a second child. In conditions of architectural inaccessibility and the psychological hostility of urban space, this condition is exacerbated by forced social isolation and dependence on others, leading to a systemic decline in the birth rate.

Thus, the figures cited above clearly demonstrate the need to rethink the role of architecture as a tool capable of

influencing not only the functionality of the urban environment but also the psychophysiological state of the population.

### ➤ *Architectural Barriers of the Urban Environment and their Role in Declining Birth Rates*

For decades, architectural space was perceived as a given, as something necessary for the conditional vital activity of people. The primary considerations in urban architecture were the presence of houses for living, lighting, infrastructure, roads, and sidewalks. Other elements of spatial design were classified as matters of aesthetic preference rather than issues of human psycho-emotional well-being.

Modern interdisciplinary research at the intersection of urbanism, architecture, and neuropsychology proves that the visual characteristics of building facades and structures, material textures, and the configurations of city blocks have a direct impact on the psychophysiological state and mental health of an individual.

Therefore, in the 21st century, the architectural space of cities should not be limited to the intersection of streets and wide avenues, the presence of shady parks and squares, modern houses, and multifunctional shopping centers. The urban environment today is a complex, multi-level space essential for comfortable vital activity and the daily interaction of people. It must be universal in order to

become equally well-equipped, inclusive, and accessible to all social groups.

Understanding how a particular detail of architectural design affects a person, their perception, and emotional state contributes to the creation of a harmonious space that meets people's needs. Furthermore, it should be noted that the reaction to various elements of the built environment varies depending on age, physical capabilities, psycho-emotional state, and life circumstances. While the younger generation prefers brightness, dynamism, openness, and the safety of space, older individuals and people with

disabilities require infrastructure adapted to their needs and an inclusive environment (Abekeeva, 2025).

A scientific approach to the design of public spaces promotes increased human interaction, the strengthening of social ties, and higher levels of life satisfaction, consequently stimulating economic and demographic growth. This problem is becoming increasingly relevant in the 21st century due to the fact that, according to the latest statistical research data, the world's population is aging (Figure 1).

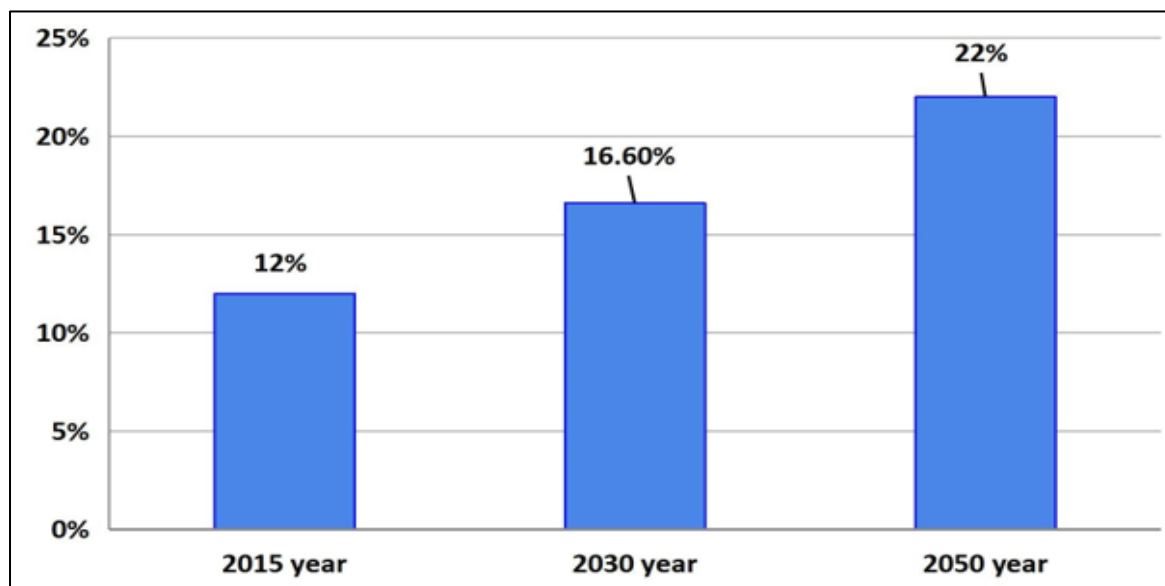


Fig 1 Proportion of the Global Population Aged 60 and Over

Source: World Health Organization Data.

In 2015, the proportion of the population over 60 years of age was 12%; this figure is projected to nearly double to 22% (2.1 billion people) by 2050. In 2030, people aged 60 and over will constitute 16.6% of the global population. Moreover, in 2020, the population aged 60 and over exceeded the number of children under the age of 5 (WHO, 2025d). Predicted life expectancy has also increased. In 2022, it was 72 years, whereas in 1913, it was 34 years. This trend is expected to continue rising. Simultaneously, a persistent decline in birth rates is observed in all countries worldwide (Bloom, 2020a).

In connection with the above statistical data, two distinct problems can be identified that will acutely face humanity in the coming decade. The first is related to improving the health and quality of life of the elderly population, as most of these people will have to work, given that the number of young workers is decreasing every year. The second is due to declining birth rates and depopulation (Shemyakina, 2019).

Thus, both identified demographic problems share a common intersection point - the quality of the architectural environment in terms of the absence of universal design. Indeed, the inaccessibility or partial unsuitability of urban space creates a double barrier. On the one hand, it isolates

elderly people, limiting their social and labor activity, and prevents them from being full subjects of the economy. On the other hand, even in developed megacities, a barrier-free environment is often only focal in nature. Such fragmentation of architectural accessibility and universality of the urban environment infringes upon the basic right of a 21st-century woman - the right to independence.

The problem lies not so much in the lack of accessibility as in a formal approach to inclusivity and the mismatch of urban space parameters with real-life situations. When the environment does not provide opportunities for autonomous and safe movement, a woman is deprived of her agency and falls into forced dependence on the help of others or relatives. The need to constantly rely on outside help or adapt one's basic needs to the imperfections of urban infrastructure leads to a loss of personal autonomy. Therefore, when daily activity turns into a daily struggle with the imperfections of the architectural space, a decision arises either not to have children at all or to stop at one child.

Consequently, the implementation of universal design principles and the creation of a fully inclusive, psychologically comfortable environment for all persons with limited mobility ceases to be a matter of comfort and

personal preference. It becomes a strategic tool for influencing the demographic security and economic stability of the state as a whole.

However, the problem of ensuring inclusion and creating universal design for persons with limited mobility in recent years, despite the efforts made by both the international community and the state municipal institutions of developed countries, is not only not being minimized but is rapidly intensifying.

➤ *Demographic Determinants of Forming a Barrier-Free Urban Space Based on the Principle of Environmental Universality*

To understand the real scale of the demand for inclusive solutions, it is necessary to analyze the demographic structure of population groups whose level and quality of life directly depend on the accessibility of city infrastructure. A clear confirmation that universal design has ceased to be a narrow field is provided by statistical indicators for the two largest economic regions - the USA and the European Union. The diagram of the demographic structure of persons with limited mobility presented below demonstrates that the total share of citizens in need of a barrier-free space reaches critical values for modern urban planning.

An analysis of the demographic structure of persons with limited mobility in the USA (according to U.S. Census Bureau data) indicates that the need for universal design encompasses a large part of the country's population (Figure 2). The presented diagram clearly demonstrates the percentage of people in need of a barrier-free environment. However, these figures reflect only the visible part of the problem. Beyond the scope of official statistical data, i.e., "dry" statistics, remain individuals whose mobility is limited only indirectly or temporarily (U.S. Census Bureau, 2024).

In addition to those mentioned above, the category of persons with limited mobility should also include families with children under the age of 5, which accounts for approximately 3-4%, people with temporary injuries (5-6%), and depression. According to statistical data, in the USA, adolescents aged 12-17 who have experienced a major depressive episode during the year account for 18.8%, and adults aged 18 and older account for 8.6% (KFF, 2024). For individuals with depression and other psycho-emotional disorders, an inclusive urban space - with intuitively understandable navigation, safe recreation areas, and an absence of visual noise - is a critically important factor for social adaptation.

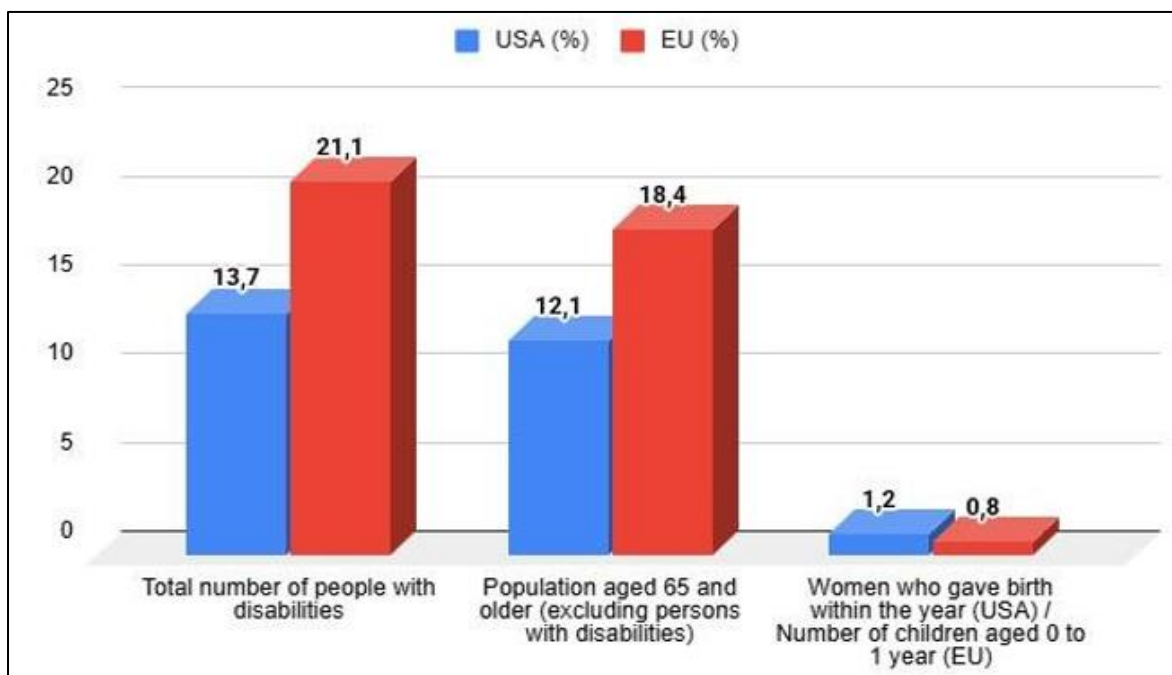


Fig 2 Demographic Structure of Persons with Limited Mobility  
 Source: Census and Eurostat data (Eurostat, 2024c, 2024d, 2024e, 2024f, 2024g).

The difference in data on the total number of people with disabilities in the European Union (21.1%) and the USA (13.7%) may be due to differences in statistical accounting methodology and criteria for defining functional limitations. Within the framework of the American Community Survey (ACS), information is collected on problems with vision, hearing, movement, self-care, and cognitive abilities in persons aged 5 to 14 and 15 and older. The ACS also asks about difficulties in independent living

for persons aged 15 and restricts questions regarding persons under age 5 to vision and hearing problems.

In the European Union, the degree of disability is assessed in accordance with the Global Activity Limitation Instrument (GALI) concept, based on self-assessment of the level of limitation due to health problems in performing daily activities over a period of 6 months.

The comparison of statistical data from the USA and the European Union is provided not for a comparative analysis of indicators, but for the purpose of demonstrating the real scale of the problem. These indicators confirm the objective necessity of implementing universal design principles into the urban environment. In the 21st century, creating an inclusive space is not a formal element of improvement, but a fundamental standard of the quality of life that determines the level of societal development.

A similar situation is observed across the European Union, where the need for a barrier-free environment is even more acute. Between 2001 and 2024, the total population of the European Union grew by 4.7%, while the number of people aged 65 and older grew by 43.1%. At the same time, the number of children under the age of 15 has been declining since 2021. As a result, in 2024, it turned out to be 8.7% less than in the 2000s (Eurostat, 2025). Furthermore, demographic analysis clearly demonstrates a steady growth of the elderly population against the background of a declining birth rate. Thus, the annual transition of the population into the 65-plus age group is 1.3% and significantly exceeds birth rate indicators (0.8%), which confirms the need for investment in an accessible universal environment (Eurostat, 2024a, 2024b).

➤ *Universal Design as a Fundamental Factor for the Psycho-Emotional Well-being of the Population*

Thus, summarizing the figures above, it can be concluded that every third resident of the US or the European Union needs an architecturally accessible urban space. At the same time, it should be considered that the problem is much broader and goes beyond formal statistics, as the issue of inclusivity affects every member of society, regardless of whether they belong to the category of persons with limited mobility or not. Indeed, practically every family has had or currently has children under the age of 5, elderly relatives, or loved ones who have temporarily become mobility-impaired, for example, due to a broken leg, sprained ligaments, or undergoing abdominal surgery.

Special attention should be paid to the factor of mental health. If an average indicator for the European Union and the USA is derived, it becomes obvious that more than 20% of the population suffers from depression annually. At the same time, the statistics of a single case of a depressive state do not reflect the full real scale of the problem. According to WHO data, suicide remains the third leading cause of death among young people aged 15-29 (WHO, 2025b).

It must be taken into account that practically every person suffering from depression has close relatives, friends, or colleagues involved in the process of accompaniment and support. Therefore, the coverage figure can be doubled or even tripled. From this, it follows that 40-60% of the population directly or indirectly encounters the consequences of depressive states. At the same time, most citizens do not link the depressive or oppressed psycho-emotional state of their loved ones with the quality of architectural planning of the urban environment. However, it

is precisely the absence of barriers, predictability, and intuitiveness of space that are key factors for reducing the cognitive load on a person.

This makes the issue of universal city design not a private problem but a basic requirement for the comfortable vital activity of people. It must be understood that universal design is not limited to ramps, equipped restrooms, tactile paving, Braille signs, etc. A barrier-free architectural space should be formed based on the dynamic interaction of the environment, principles of equitable use, comfort, flexibility, and hazard minimization, as well as concepts of sustainability, simplicity, and intuitiveness of design. This is precisely what constitutes universal design or inclusive design, which today is a modern approach to creating the architectural accessibility of the entire public environment (Yarovenko, 2019).

Since the concept of architectural accessibility covers all spheres of human activity, this entails the need for the transformation of public spaces, buildings and structures, infrastructure objects, as well as the search for new architectural and urban planning solutions and tools for developing a universal urban environment (Kyrychkov, 2019).

## II. CONCLUSION

➤ *Inclusive Urban Environment as a Strategy for the Future*

Thus, the problem of ensuring the accessibility of architectural objects for persons with limited mobility should be considered not only from a scientific approach but also from a social one, as its roots lie in the moral and ethical interaction between people. Without fostering an attentive and respectful attitude from public authorities, architects, and urban planners toward society as a whole, without dividing it into those with limited mobility and those without, it is impossible to solve such a serious problem.

The implementation of universal design standards and barrier-free infrastructure is not just a solution to the specific tasks of persons with limited mobility, but a strategic contribution to improving the quality of life of society and the economic development of the state as a whole. Architecturally accessible space today acts as an unconditional public good, ensuring basic standards of safety, comfort, and social stability.

It is obvious that the practice of using primitive technical solutions without proper universality and functional-aesthetic development must remain in the past. The modern approach requires the creation of an adaptive environment where inclusivity requirements are organically combined with leading technologies in design, construction, and operation. The development of accessible public spaces not only favorably affects demographic dynamics but also promotes economic activity, involving citizens and businesses in the processes of high-quality transformation of the urban environment. The creation of public spaces and accessible infrastructure is a necessary condition for

forming a modern and universal space that meets the challenges of the 21st century.

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