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DEMOGRAPHIC AGEING AND LABOUR MARKET CHALLENGES IN SERBIA: TRENDS, REGIONAL DISPARITIES AND POLICY IMPLICATIONS

Population ageing is one of the most important long-term demographic processes affecting contemporary societies, with substantial implications for labour markets, social protection systems, and regional development. This paper analyses demographic ageing trends in Serbia and examines their implications for labour market developments. Particular attention is given to labour supply, workforce replacement, regional disparities, and age- and gender-related employment patterns. The study adopts an indicator-based, descriptive, and comparative approach using official statistical sources from the Statistical Office of the Republic of Serbia (SORS), including the 2022 Census, population estimates, Labour Force Survey (LFS) data, and official population projections for 2022–2052. These are complemented by contextual data from the United Nations (UN), the World Bank, and ILOSTAT. International comparisons are used only as contextual benchmarks, with the primary analytical focus remaining on Serbia. The findings suggest that advanced demographic ageing, depopulation, and selective migration are associated with growing labour supply pressures, uneven regional labour market dynamics, and increasing challenges for workforce renewal. The paper concludes by outlining policy implications related to productivity growth, longer working lives, gender equality, skills development, migration management, and balanced regional development.

Keywords: population ageing; labour market; Serbia; depopulation; regional disparities; gender gaps

1. INTRODUCTION

Population ageing has become one of the central structural transformations of the twenty-first century. Declining fertility, increasing life expectancy, and changing migration patterns have altered the age composition of populations worldwide. These processes have important implications for labour supply, productivity, pension systems, health expenditure, and regional development (Bloom et al., 2010; Lee & Mason, 2011).

These pressures are particularly visible in Southeast Europe, where ageing is often accompanied by depopulation, persistent emigration, and pronounced territorial inequalities (Nikitović, 2015). In such contexts, labour market challenges can be intensified, as shrinking working-age cohorts coincide with weaker economic dynamism and regional polarisation. Serbia represents a clear example of this broader pattern.

Over recent decades, Serbia has experienced sustained population decline, fertility rates consistently below replacement level, and considerable migration losses, while life expectancy has continued to improve (Statistical Office of the Republic of Serbia [SORS], 2024a). These trends have resulted in an increasingly older population, with important implications for labour market functioning.

Against this background, the aim of this paper is to analyse demographic ageing trends in Serbia and to examine their implications for labour market developments. Specifically, this paper addresses three objectives:

1. To assess labour supply and workforce replacement challenges arising from demographic ageing in Serbia;
2. To examine regional disparities in demographic structures and labour market outcomes; and
3. To assess age- and gender-related dimensions of employment in the context of population ageing.

This paper does not seek to estimate causal effects using econometric modelling. Instead, it provides an indicator-based, policy-oriented assessment of the observable linkages between demographic ageing and labour market developments in Serbia. International comparisons are used only for contextual purposes and are not intended as a systematic cross-country analysis.

The remainder of this paper is structured as follows. Section 2 outlines the data sources and methodological approach. Section 3 analyses the scale of demographic ageing and its regional disparities in Serbia. Section 4 discusses labour market outcomes in the context of ageing. Section 5 considers older workers, sectoral issues, and the silver economy. Section 6 interprets future pressures using official population projections. Section 7 summarises the main findings and policy implications.

2. DATA AND METHODOLOGY

2.1. Data Sources

This study relies primarily on official statistical sources to ensure reliability and comparability. The core national data were obtained from the Statistical Office of the Republic of Serbia (SORS):

- 2022 Population Census (SORS, 2024a)
- Population estimates for 2023 (SORS, 2024b)
- Labour Force Survey (LFS) data for 2023 and 2024 (SORS, 2024c)
- Official population projections for 2022–2052 (SORS, 2024d)

To provide appropriate international context, selected indicators were drawn from internationally recognised sources:

- United Nations World Population Prospects 2024 (United Nations, Department of Economic and Social Affairs, Population Division [UN DESA], 2024)
- World Bank World Development Indicators (World Bank, 2024a, 2024b)
- ILOSTAT (International Labour Organization [ILO], 2025)

2.2. Methodological Approach

This paper employs a descriptive, comparative, and projection-informed, indicator-based approach. This design was selected because the aim is to identify structural patterns and policy-relevant implications, rather than to establish causal relationships. Accordingly, no econometric models, hypothesis tests, or microdata decompositions were undertaken.

The analysis consists of three distinct, but interconnected, components:

1. Descriptive demographic analysis:Used to identify long-term changes in population size, age structure, ageing intensity, and dependency ratios in Serbia.
2. Comparative analysis:Conducted at two levels: (a) an internal comparison across regions of Serbia to capture territorial disparities, and (b) a selective, illustrative international comparison to provide contextual benchmarks for Serbia.
3. Projection-informed interpretation:Used to assess likely future pressures by interpreting official population projections (SORS, 2024d; UN DESA, 2024), rather than generating independent forecasts.

This clear separation ensures that descriptive, comparative, and forecast-based elements are not conflated.

2.3. Indicators, Definitions, and Time Coverage

To ensure transparency, all key indicators used in this study are defined, sourced, and time-bound in Table 1. Where necessary, the author calculated specific indicators using official underlying data, with clear attribution provided.

Table 1. Indicators, sources, and time coverage

| Indicator | Definition/Notes | Source | Period |

| :-- | :-- | :-- | :-- |

| Median age | Median age of the population (years) | UN DESA (2024) | 1970–2024; projections to 2050 |

| Share of population aged 0–14 | Percentage of total population aged 0–14 | SORS (2024a, 2024b); World Bank (2024b) | 2002–2024 |

| Share of population aged 65+ | Percentage of total population aged 65 and over | SORS (2024a, 2024b); World Bank (2024b) | 2002–2024 |

| Ageing index | Ratio of population aged 65+ to population aged 0–14, expressed as a percentage. _(Calculated by the author using SORS data)_ | Author calculation based on SORS (2024b) | 2023 |

| Old-age dependency ratio | Number of persons aged 65+ per 100 persons aged 15–64 (%) | World Bank (2024a) | 2004–2024 |

| Total dependency ratio | Number of persons aged 0–14 and 65+ per 100 persons aged 15–64 (%) | World Bank (2024b) | 2004–2024 |

| Employment rate | Employed persons as a percentage of the population aged 15–64 | SORS (2024c) | 2023–2024 |

| Unemployment rate | Unemployed persons as a percentage of the labour force aged 15–64 | SORS (2024c) | 2023–2024 |

| Informal employment | Percentage of total employment classified as informal, including agriculture and non-agriculture breakdowns | SORS (2024c) | 2024 |

| Gender gaps in labour market participation | Activity and employment rate gaps between men and women (aged 15–64), where available | SORS (2024c) | 2023–2024 |

To ensure consistency with standard statistical practice, all labour market rates are reported for the population aged 15–64. Demographic indicators are based on official population structures and estimates. Any indicator calculated by the author is explicitly noted in Table 1.

2.4. Analytical Limitations

Several limitations should be acknowledged. First, this paper does not employ causal inference, and all observed associations should be interpreted as structural linkages and policy-relevant implications, not as causal effects. Second, the international comparison is selective and illustrative, intended only for contextualisation. Third, some areas, such as detailed age-by-sector employment, occupational-level ageing, and granular silver economy estimates, cannot be fully examined using publicly available aggregate data. Finally, some cross-tabulations at the district level are limited in availability. Despite these limitations, the combination of official demographic, labour market, and projection data provides a sufficiently robust basis for a policy-oriented analysis of Serbia.

3. DEMOGRAPHIC AGEING IN SERBIA: SCALE AND REGIONAL DISPARITIES

3.1. National Demographic Trends

Serbia has been experiencing a prolonged process of demographic ageing alongside sustained population decline. In 2023, the estimated population of Serbia was 6,623,183, with women accounting for 51.4% and men for 48.6% of the total population (SORS, 2024b). This represents a long-term downward trend.

The age structure has changed considerably over the past two decades. Between 2002 and 2020, the share of the population aged 0–14 declined from 16.1% to 14.3%, while the share aged 65 and over increased from 16.6% to 21.1% (SORS, 2024a). By 2023, persons aged 65+ accounted for 22.3% of the total population, compared to only 14.4% aged 0–14 (SORS, 2024b). This shift indicates that Serbia has reached a stage of advanced population ageing, with older cohorts substantially outnumbering younger cohorts.

These changes are driven by persistently low fertility, cohort ageing, and sustained migration losses. In 2024, the total fertility rate remained well below replacement level, at approximately 1.61 children per woman (SORS, 2024a). In combination with emigration of younger, working-age persons, these processes have narrowed the demographic base for future labour force entry (Nikitović, 2015).

3.2. International Benchmarks: Contextual Comparison

To situate Serbia’s demographic profile, Table 2 provides a selective, illustrative comparison with selected European countries and Japan. This comparison is intended solely for contextual purposes and does not constitute a systematic cross-country evaluation.

Table 2. Selected international benchmarks for ageing indicators (latest available years)

Country/area	Share aged 65+ (%)	Share aged 0–14 (%)	Old-age dependency ratio (%)
Serbia	23.0	14.0	36.0
EU-27	21.0	15.0	34.0
Croatia	22.0	14.0	35.0
Bulgaria	24.0	14.0	38.0
Romania	20.0	16.0	33.0
Hungary	21.0	15.0	34.0
Japan	29.0	12.0	49.0

Note. Data are approximate, based on the latest available World Development Indicators (World Bank, 2024a, 2024b).

As Table 2 shows, Serbia’s level of population ageing is comparable to many highly aged European countries. However, unlike many Western European economies, Serbia is experiencing these demographic pressures alongside lower levels of economic development and more limited fiscal capacity, which can constrain its capacity to adapt (Arandarenko, 2011).

3.3. Regional Disparities in Demographic Ageing

Demographic ageing in Serbia is spatially uneven. District-level evidence demonstrates substantial territorial differences in age structure, reflecting variations in fertility, economic opportunity, and internal and international migration. For example, districts in Southern and Eastern Serbia exhibit particularly high levels of ageing and depopulation, while more urbanised areas have comparatively younger age structures.

The Belgrade Region, as the country’s economic and administrative centre, benefits from a concentration of education, services, and employment opportunities, making it a net recipient of internal migrants, particularly younger cohorts. By contrast, many peripheral districts experience sustained out-migration of youth and working-age persons, accelerating ageing and population decline (Nikitović, 2015).

These territorial disparities are highly relevant for labour markets. Regions with stronger ageing and depopulation are more likely to experience a shrinking labour supply, recruitment difficulties, weaker local economic bases, and reduced investment attractiveness. In contrast, dynamic urban regions are better positioned to retain and attract human capital. This interaction contributes to cumulative regional divergence across Serbia.

4. LABOUR MARKET OUTCOMES IN AN AGEING SOCIETY

4.1. Current Labour Market Conditions

Recent labour market data for Serbia suggest some aggregate improvements, while underlying demographic pressures persist. According to the Labour Force Survey, for the population aged 15–64, the employment rate reached 66.3% in 2024, and the unemployment rate stood at 8.9% (SORS, 2024c). These figures represent a marked improvement compared to earlier periods of high unemployment.

However, improving headline indicators can coexist with a shrinking working-age population. In ageing and depopulating societies, labour market tightening can occur in specific occupations, sectors, and localities, even when national unemployment rates decline.

Informal employment remains an important structural feature of the Serbian labour market. In 2024, informal employment accounted for 11.9% of total employment, with a much higher rate in agriculture (48.5%; SORS, 2024c). This is particularly important in the context of ageing, as informal work is often associated with weaker social protection, limited pension accrual, and greater economic vulnerability, especially for older workers in rural areas.

4.2. Labour Supply and Workforce Replacement

Demographic ageing has clear implications for labour supply and workforce renewal in Serbia. As smaller birth cohorts enter working age and larger cohorts reach retirement age, the ratio of labour market entrants to leavers becomes increasingly unfavourable. This creates growing replacement pressures across the economy.

These pressures are not uniform. Urban centres with stronger labour demand may partially offset demographic decline through internal migration, while peripheral regions have far fewer mechanisms for replenishing their labour force. Furthermore, replacement challenges are often most acute in occupations requiring long periods of training, specialist knowledge, or extensive practical experience.

4.3. Regional Labour Market Differences

Labour market outcomes in Serbia closely reflect regional demographic structures. The Belgrade Region consistently demonstrates stronger employment performance and labour market dynamism, while regions such as Southern and Eastern Serbia experience weaker economic activity, higher out-migration, and more severe ageing (Arandarenko, 2011; Nikitović, 2015).

These patterns suggest a mutually reinforcing cycle: demographic decline and ageing reduce the local labour supply, discourage investment, and weaken service provision, while weak economic opportunities accelerate out-migration of younger persons. This cumulative process risks deepening territorial inequalities if left unaddressed.

4.4. Gender Dimensions of Ageing and Labour Market Participation

Gender is a critical dimension of both ageing and labour market participation. Women tend to live longer than men, contributing to the feminisation of older age groups (UN DESA, 2024). At the same time, structural gender inequalities persist in the Serbian labour market.

Available LFS data indicate persistent gender gaps in activity and employment. For example, despite recent improvements, women's labour market participation remains below that of men, reflecting ongoing barriers related to unpaid care responsibilities, occupational segregation, career interruptions, and gender pay disparities (SORS, 2024c). In an ageing society, underutilising women's labour potential represents a significant constraint on overall labour supply.

Furthermore, these inequalities have long-term consequences for income security in later life. Lower lifetime earnings, interrupted careers, and concentration in lower-paid sectors can result in weaker pension entitlements for women (Government of the Republic of Serbia, 2023). Addressing gender inequalities is therefore essential for both gender equality and for strengthening labour supply, pension adequacy, and social sustainability in an ageing population.

5. OLDER PERSONS, SECTORAL ISSUES, AND THE SILVER ECONOMY

5.1. Older Workers and Sectoral Ageing

Extending working lives is likely to become increasingly important in Serbia as labour supply constraints intensify. Older workers can help mitigate replacement pressures, provided that appropriate workplace conditions, health supports, and flexible arrangements are in place.

Sectoral patterns are particularly important. Agriculture consistently exhibits an older workforce profile, especially in rural areas affected by youth out-migration. This is compounded by high levels of informal employment in agriculture (48.5% in 2024; SORS, 2024c), which can limit pension coverage and social protection for older agricultural workers.

In other sectors, the retirement of experienced workers may create skill bottlenecks, particularly in occupations requiring tacit knowledge, technical expertise, or long-term on-the-job training. However, it should be noted that a full, granular assessment of age-by-sector and age-by-occupation distributions is not currently available from publicly accessible aggregate sources. For this reason, this discussion is necessarily indicative and highlights the need for more detailed, disaggregated labour market data.

5.2. The Silver Economy

While population ageing is often framed in terms of fiscal pressures, it also presents important economic opportunities through the silver economy. The silver economy encompasses economic activities related to the production, consumption, and services for older persons, as well as their continued contributions to the labour market (Government of the Republic of Serbia, 2023).

From a labour market perspective, age-friendly workplaces, flexible working arrangements, phased retirement, and lifelong learning can enable willing and able older workers to remain economically active for longer. Beyond labour supply, growing demand for health care, long-term care, assistive technologies, adapted housing, and leisure services for older populations can stimulate employment and entrepreneurship across multiple sectors.

Older persons also represent a valuable source of human capital, including institutional knowledge, mentoring capacity, and professional experience. Policies that recognise and mobilise these assets, rather than focusing solely on dependency, are better aligned with Serbia's long-term economic sustainability. In this regard, the *Strategy for Active and Healthy Ageing in the Republic of Serbia for the Period 2024–2030* provides an important institutional framework for integrating labour market participation, health, and social inclusion (Government of the Republic of Serbia, 2023).

6. PROJECTIONS AND FUTURE LABOUR MARKET PRESSURES

This section is based solely on the interpretation of official population projections, not on the generation of independent forecasts. The analysis draws on the official population projections of the Statistical Office of the Republic of Serbia for 2022–2052 (SORS, 2024d) and the United Nations World Population Prospects 2024 (UN DESA, 2024).

These official projections indicate that Serbia will continue to experience population decline and further demographic ageing over the coming decades. They suggest a sustained increase in median age, a declining share of the working-age population (15–64), and a continued rise in the old-age dependency ratio. Furthermore, territorial polarisation is expected to persist, with major urban centres likely to retain greater demographic resilience, while many peripheral regions are projected to experience more rapid ageing and depopulation (SORS, 2024d; UN DESA, 2024).

Based on these projections, several key labour market pressures can be anticipated:

4. **Constrained labour supply:** Smaller entry cohorts and larger retirement cohorts are likely to reduce the overall size of the labour force, absent significant increases in participation rates or changes in migration patterns.
5. **Workforce replacement bottlenecks:** Sectors and occupations with ageing workforces may face increasing difficulties replacing retiring workers, particularly in regions already experiencing labour shortages.
6. **Widening regional disparities:** More dynamic urban regions are likely to adapt more successfully, while peripheral regions may experience cumulative cycles of depopulation, labour market stagnation, and weakened service provision.
7. **Increased pressure on pension and social protection systems:** A rising old-age dependency ratio will place growing pressure on the balance between contributors and beneficiaries, with implications for fiscal sustainability and intergenerational equity (Lee & Mason, 2011).
8. **Human capital risks:** Continued emigration of younger and skilled persons would exacerbate labour supply constraints and undermine long-term human capital reproduction (Arandarenko, 2011).

7. CONCLUSION AND POLICY IMPLICATIONS

This paper has analysed demographic ageing trends in Serbia and their implications for labour market developments. The evidence indicates that advanced population ageing, combined with depopulation, low fertility, and selective migration, is associated with structural labour market challenges. These include a narrowing labour supply base, increasing workforce replacement needs, pronounced regional disparities, and persistent gender inequalities.

Although aggregate labour market indicators have improved in recent years, these short-term improvements should not obscure the long-term structural pressures arising from demographic change. Furthermore, the spatially uneven nature of ageing means that national-level averages mask significant territorial divergence between urban centres and peripheral regions.

To address these challenges, a coordinated, multidimensional policy response is required. Key policy implications include:

Productivity-led growth: Prioritise investments in technology, innovation, and organisational improvements to reduce over-reliance on labour quantity.

Extending working lives: Promote healthy, active ageing and age-friendly workplaces, supported by flexible working arrangements, phased retirement, and occupational health measures.

Gender equality in the labour market: Expand affordable childcare, parental leave policies, and measures to close gender pay gaps, reduce occupational segregation, and support career continuity for women.

Lifelong learning and skills development: Invest in upskilling, reskilling, and knowledge transfer programmes to address skill bottlenecks and retain institutional knowledge.

Migration management and human capital retention: Develop targeted policies to retain skilled younger workers and to attract talent to regions facing acute shortages, while ensuring effective integration.

Balanced regional development: Implement place-based strategies to strengthen economic diversification, infrastructure, education, and public services in ageing and depopulating peripheral regions.

Strengthen the silver economy: Support the development of goods, services, and employment opportunities linked to older populations, while recognising the productive contributions of older workers.

Ultimately, the success of Serbia's response to demographic ageing will depend on integrating these measures across employment, education, health, migration, gender, and regional development policies. Such an integrated approach is essential for ensuring long-term labour market resilience, social cohesion, and economic sustainability.

REFERENCES

- Arandarenko, M. (2011). *Tržište rada u Srbiji: Trendovi, institucije, politike* [Labour market in Serbia: Trends, institutions, policies]. Faculty of Economics, University of Belgrade.
- Bloom, D. E., Canning, D., & Fink, G. (2010). Implications of population ageing for economic growth. *Oxford Review of Economic Policy*, 26*(4), 583–612. <https://doi.org/10.1093/oxrep/grq038>
- Government of the Republic of Serbia. (2023). *Strategija aktivnog i zdravog starenja u Republici Srbiji za period od 2024. do 2030. godine* [Strategy for active and healthy ageing in the Republic of Serbia for the period 2024–2030]. Službeni glasnik Republike Srbije, 84.
- International Labour Organization. (2025). *ILOSTAT country profile: Serbia*. <https://ilostat.ilo.org/>
- Lee, R., & Mason, A. (Eds.). (2011). *Population ageing and the generational economy: A global perspective*. Edward Elgar.
- Nikitović, V. (2015). Population ageing trends in Serbia from the beginning of the 21st century and prospects until 2061: Regional aspect. *Zbornik Matice srpske za društvene nauke*, 151*, 185–200.
- Statistical Office of the Republic of Serbia. (2024a). *Demographic yearbook of the Republic of Serbia 2024*. <https://www.stat.gov.rs/>
- Statistical Office of the Republic of Serbia. (2024b). *Estimated population, 2023* (Communication No. 179). <https://www.stat.gov.rs/>
- Statistical Office of the Republic of Serbia. (2024c). *Labour Force Survey, 2023–2024*. <https://www.stat.gov.rs/>
- Statistical Office of the Republic of Serbia. (2024d). *Population projections of the Republic of Serbia, 2022–2052*. <https://www.stat.gov.rs/>
- United Nations, Department of Economic and Social Affairs, Population Division. (2024). *World population prospects 2024: The 2024 revision*. <https://population.un.org/wpp/>
- World Bank. (2024a). Age dependency ratio, old (% of working-age population) – Serbia. *World Development Indicators*. <https://data.worldbank.org/indicator/SP.POP.DPND.OL?locations=RS>
- World Bank. (2024b). *World development indicators: Population structure and demographic indicators*. <https://wdi.worldbank.org/>