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Determinants of quality of life: A multidimensional empirical study based on Armenian and cross-country data

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ABSTRACT

This article presents the results of a multidimensional statistical assessment of population quality of life in the Republic of Armenia within a comparative international context. To examine long-term dynamics across key domains of public life healthcare, housing conditions, education, culture, and crime a time-series analysis was conducted for Armenia over the period 1995–2023. The findings reveal a decline in access to healthcare services alongside a marked improvement in housing conditions. The education sector demonstrated mixed trends, reflecting both positive and negative developments. Cultural indicators exhibited the greatest variability among all quality-of-life components, while crime-related indicators pointed to a deterioration in population safety and security over the study period. In addition, a cross-country comparative analysis of quality of life was performed using data from 52 countries. Multidimensional statistical methods, including factor analysis and correlation and regression analysis, were applied. The factor analysis identified five dominant determinants of quality of life: economic security, education and health levels, social system efficiency, and the institutional environment. To evaluate the quantitative impact of these determinants, a correlation–regression model was estimated. The results indicate that only economic and social factors were statistically significant and were therefore retained in the final model. These factors exerted a stronger influence on quality of life than demographic, environmental, and health-related variables. The findings highlight the critical role of economic stability and effective social policy in enhancing population well-being and provide empirical evidence to inform policy design in Armenia and comparable countries.

Contribution/ Originality: This study contributes to the existing literature by providing the first comprehensive multidimensional assessment of quality of life in Armenia, combining time-series and cross-country analysis, and demonstrating that economic and social factors exert a stronger influence than demographic, environmental, and health-related factors.

1. INTRODUCTION

Within the human development framework, the concepts of quality of life and human potential occupy a central position, reflecting both the level of socio-economic progress and the capacity for sustainable development (Gomonov, Ratner, Lazanyuk, & Revinova, 2021; Vogt, Andereck, & Pham, 2020). Although these concepts have been discussed for centuries, their importance has grown substantially in recent decades, as countries increasingly

rely on multidimensional well-being indicators to monitor development, evaluate public policy outcomes, and formulate long-term strategic priorities (Grum & Kobal Grum, 2020; Sergi, Balashova, & Ratner, 2023).

Assessing a population's quality of life is a complex, multidimensional task that requires integrating a wide range of objective and subjective indicators. From a statistical standpoint, three major methodological challenges arise.

- Selecting the components that adequately characterize quality of life.
- Developing a data collection system that ensures comparability across countries and regions.
- Constructing composite indicators that provide an integrated and reliable assessment of well-being.

Given these challenges, modern research increasingly applies multidimensional statistical methods to capture the relationships among economic, social, demographic, health-related, and environmental factors. A comprehensive examination of these interdependencies is essential for identifying latent structures, revealing long-term trends, and informing evidence-based policy solutions (Ditlevsen, 2004; Geigl, Loss, Leitzmann, & Janssen, 2023; Ratner, Balashova, & Lychev, 2022).

The aim of this research is to analyze the quality of life of the population in the Republic of Armenia and across selected countries worldwide using statistical evaluation methods. The study focuses not only on identifying the main factors influencing the quality of life but also on assessing them at an international comparative level. Based on these results, the paper formulates recommendations and a unified policy message regarding key directions for improving the quality of life in Armenia. The findings contribute to a deeper understanding of the multidimensional nature of well-being and provide a methodological foundation for enhancing national and regional socio-economic policy.

2. LITERATURE REVIEW

Improving the quality of life of the population is one of the most pressing challenges facing societies worldwide and remains a core priority of social policy. The growing scholarly and policy interest in quality of life reflects the fact that modern societies are concerned not only with survival and basic needs but also with social development, self-realization, and the ability of individuals and communities to achieve their full potential. This increasing attention is also driven by globalization, which intensifies international comparisons and compels states to ensure decent living conditions for both present and future generations.

Whereas economic growth was previously assumed at least to some extent to lead to improved societal well-being, contemporary research emphasizes that increased production and GDP growth do not automatically translate into a higher quality of life. Consequently, quality of life is now widely regarded as a complex and multidimensional concept that reflects the combined influence of social, political, cultural, economic, and environmental factors. It incorporates a broad range of aspects related to meeting population needs, including environmental protection, working conditions, access to services, social safety, and opportunities for education and personal development.

Reeves, Baker, Casanova, Cheatham, and Pickering (2020) examined differences in quality of life across sociodemographic characteristics, including gender, marital status, age, income, education, employment, and housing conditions. Using data from 689 respondents, the authors demonstrate that quality of life is a multidimensional construct encompassing family relationships, physical health, safety, social environment, etc. Their findings indicate that these factors significantly shape variations in quality-of-life indicators and highlight the importance of socioeconomic conditions and individual living circumstances in determining well-being.

Kireenko and Nevzorova (2015) investigated the relationship between the shadow economy and quality of life using data from 150 countries. Their results indicate that although the shadow economy may increase household incomes and thereby improve living standards in the short term, it simultaneously reduces key dimensions of quality of life, including life expectancy and educational attainment. Using regression analysis across country clusters, the study shows that as the shadow economy expands, its negative effects on health and education become stronger. Thus, the shadow economy creates a trade-off between raising household income and undermining the long-term sustainability of quality of life.

Another article explores how social determinants such as income, education, and social support are associated with the quality of life of individuals living with chronic diseases (Kangas, Milis, Vanthomme, & Vandenheede, 2025). The authors find that health-related quality of life tends to be higher among younger individuals, men, urban residents, married people, and those with stronger social support, higher education, and higher incomes. Among these determinants, education and income show the strongest association. Accordingly, the authors argue that health policy should prioritize support for individuals with low educational attainment and low income. They also suggest that future research should investigate these relationships in a longitudinal perspective to strengthen the design of targeted interventions.

Health-related quality of life is also strongly influenced by a combination of socioeconomic and health factors, particularly among older adults (Bally et al., 2024). The aim of this study was to identify key determinants of health-related quality of life in adulthood. Physical and mental quality of life were assessed using a 12-item health questionnaire administered to 661 participants (mean age 77.4 years). Linear regression models were used to examine associations between sociodemographic characteristics, health status, lifestyle behaviors, and quality of life. The results show that physical quality of life was lower among participants with limitations in daily activities, while mental quality of life was lower among single older adults. In addition, age, gender, depression, cognitive impairment, and physical activity were found to play an important role in shaping quality-of-life outcomes among the elderly.

Extending this focus on older populations, Rony, Parvin, Wahiduzzaman, Akter, and Ullah (Rony, Parvin, Wahiduzzaman, Akter, & Ullah, 2024) examined health-related quality of life in older adults and its trends over 2018–2023. The authors conclude that longer periods spent living with physical limitations significantly reduce overall quality of life. The study emphasizes the importance of global initiatives addressing aging-related needs, including improving health systems, promoting active aging policies, and preventing elder abuse. It also highlights the growing role of social connections and digital health technologies in supporting healthy aging and improving quality of life in older populations.

The studies reviewed above highlight the multidimensional nature of health-related quality of life and confirm that it is shaped by multiple interconnected factors. Social determinants (education, income, and support networks), physical health (chronic diseases and frailty), and mental health (depression and loneliness) play particularly important roles, especially for older and vulnerable groups. Overall, the literature emphasizes the need for integrated and individualized approaches that account for both medical and social determinants of well-being.

Regional economic development can also exert a significant influence on quality of life (Li, Zheng, Wang, & Zhang, 2024). This study examines the relationship between quality of life and regional economic development in China, focusing on population well-being. The results show that higher quality of life, a favorable environment, cultural atmosphere, and developed infrastructure are key drivers of regional economic development and employment creation. The authors argue that improving quality of life is essential for China's transition from rapid growth to high-quality development and propose policy measures aimed at simultaneously improving well-being and supporting sustainable economic expansion.

Socioeconomic status affects quality of life both directly and indirectly through social capital (Nutakor, Zhou, Larnyo, Addai-Danso, & Tripura, 2023). This study demonstrates that social relationships with family members, friends, and community groups play a crucial role in improving quality of life. Social capital can serve as a protective mechanism that mitigates the adverse effects of socioeconomic inequality and strengthens resilience to economic hardship.

Skevington, Schick-Makaroff, Rowland, Molzahn, and the WHOQOL Group (2024), using global WHO data, emphasize that environmental quality plays a major role in maintaining women's health and overall quality of life. Their study finds that access to financial resources, housing quality, and the physical environment, including pollution exposure significantly affects women's well-being.

Green spaces also contribute to the quality of life and sustainable development in urban environments (Mostafa & Alshahrani, 2024). Drawing on the City Prosperity Index (CPI), the authors examine the role of green spaces in supporting sustainable urban development, with a focus on Saudi cities, including desert urban areas. The study highlights the importance of developing green infrastructure as a pathway for improving urban quality of life and environmental sustainability.

Overall, the reviewed literature indicates that quality of life is shaped by the combined influence of economic, social, and environmental factors. Economic development, social ties, trust, and community participation, environmental quality (including access to green spaces), housing conditions, and the effectiveness of healthcare systems all significantly affect both physical and psychological well-being, particularly for vulnerable groups. At the same time, many existing studies focus on specific population segments (e.g., by gender, age, social status, or place of residence), which underscores the need for an integrated approach that simultaneously evaluates the impact of economic, social, environmental, and health-related factors on overall population quality of life.

Based on these considerations, the application of factor analysis and correlation–regression analysis is methodologically justified. Given the multidimensional nature of quality of life, such methods allow multiple interrelated variables, including health, education, income, social ties, and demographic characteristics to be analyzed within an integrated framework. Finally, identifying causal and statistically significant relationships provides both theoretical insights and practical guidance for designing policies aimed at improving well-being, especially in the absence of a universally accepted and empirically substantiated indicator system for measuring quality of life.

3. METHODS AND DATA

The methodological framework of this study integrates quantitative and qualitative statistical techniques to provide a comprehensive evaluation of population quality of life in the Republic of Armenia and in a cross-country context. The applied methods enable the assessment of both long-term national trends and cross-country variations, as well as the identification of the determinants that exert the strongest influence on overall well-being.

3.1. Descriptive Statistics

Descriptive statistical methods were used to summarize and interpret the dynamics of key quality-of-life components: healthcare, housing, education, culture, and safety over the period 1995–2023. The analysis included the calculation of average annual growth rates, percentage changes across key intervals, and long-term trends for each indicator group.

These indicators provide the empirical basis for assessing changes in public health capacity, educational participation, cultural engagement, housing conditions, and crime rates. The descriptive analysis reveals, for example, a decline in healthcare infrastructure (fewer hospital beds and reduced availability of medical staff), substantial growth in housing provision, and pronounced fluctuations in cultural and educational indicators.

3.2. Index-Based Analysis

To capture the multidimensional nature of quality of life, composite indicators were constructed across several domains using available national statistical data. These included indices representing:

- Healthcare accessibility and outcomes.
- Educational attainment and participation.
- Housing availability.
- Cultural engagement.
- Public safety and crime levels.

The construction of such indicators enabled the integration of heterogeneous variables into domain-specific measures, facilitating cross-temporal comparability. This step made it possible to identify domains with improving trends (e.g., housing, education) as well as those that deteriorated (e.g., healthcare infrastructure, public safety).

3.3. Time-Series Analysis

Long-term dynamics of quality-of-life indicators were analyzed through time series methods, covering nearly three decades (1995–2023). The analysis focused on identifying linear and nonlinear trends, potential structural shifts across subperiods, and persistent patterns of change.

The results indicate pronounced improvements in housing conditions and certain cultural participation indicators, while negative trends were observed for library resources, hospital bed availability, and crime-related indicators. Time-series evidence is essential for contextualizing domain behavior prior to applying multivariate statistical modeling.

3.4. Correlation and Regression Analysis

The use of the correlation-regression method allowed us to assess the impact of various factors on quality of life.

4. RESULTS AND DISCUSSION

The construction of a time series of the indicators of the quality of life allows evaluating the modern tendencies of its development in the Republic of Armenia. The study of the dynamics is conducted for the period 1995-2023 according to the characteristic indicators of the quality of life, which can be combined into the following groups.

1. Healthcare.
2. Housing conditions.
3. Education.
4. Culture.
5. Crimes.

The quality of life of the population according to the «Healthcare» component is characterized by the number of diseases registered with a first-time diagnosis, with an average annual growth rate of 0.9822 during 1995-2023. This indicates that from 2010-2023, the overall indicator of population morbidity in the Republic of Armenia, the number of diseases registered with a first-time diagnosis, decreased by 1.78%.

Table 1. The dynamics of development of the quality of life of the population according to «Healthcare» component during 1995-2023.

Health indicators	Growth rate in 2000 compared to 1995, %	Growth rate in 2005 compared to 2000, %	Growth rate in 2010 compared to 2005, %	Growth rate in 2015 compared to 2010, %	Growth rate in 2020 compared to 2015, %	Growth rate in 2023 compared to 2010, %	Average annual growth rate during 1995-2023, %
The number of diseases registered with a first-time diagnosis	79.807	107.323	100.249	102.053	111.5	91.9	-1.78
Number of hospital beds per 10,000 population	71.785	81.536	142.918	112.064	103.8	96.1	-1.11
Number of doctors of all specialties per 10,000 population	95.846	118.266	98.934	104.796	111.2	95.9	3.83
Average number of medical personnel per 10,000 population	71.4286	95.7983	109.1623	102.797	96.1	95.4	-5.68

Table 1 presents changes in healthcare resource availability over the period 1995–2023. The availability of public hospital beds declines by 1.11% compared to 1995 and by 3.9% relative to 2020. Doctor availability increases by 3.83% over the full period but decreases by 4.1% compared to 2020. The provision of average medical personnel declines by 5.68%.

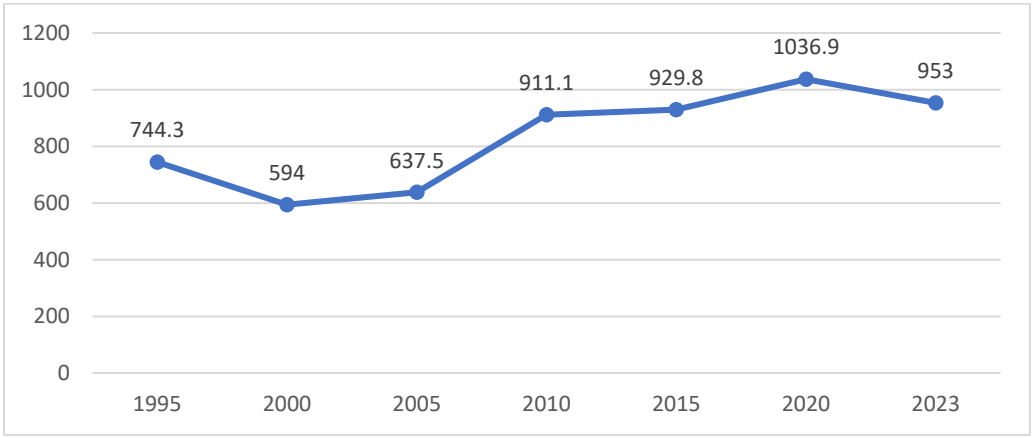

Figure 1. The dynamics of the diseases registered with a first-time diagnosis in the Republic of Armenia during 1995-2023.
Source: Statistical Committee of the Republic of Armenia (2024d).

Figure 1 presents the dynamics of diseases registered with a first-time diagnosis in the Republic of Armenia during 1995–2023. The figure indicates a decline in the late 1990s, followed by a steady increase throughout the 2000s and 2010s, reaching a peak around 2020. In the subsequent period, a moderate decrease is observed, suggesting a partial reduction in newly registered disease cases in recent years.

Analyzing the level of provision of healthcare services to the population, it can be noted that it is important to take measures in order to fix the existing defaults in the field of healthcare, which is clearly evidenced by the decrease in the aforementioned indicators.

The quality of life of the population according to «*Housing conditions*» component is characterized by housing availability and the housing stock of the population per capita.

From the study of the dynamics of the levels of these two indicators during 1995-2023, it becomes evident that the quality of life according to that indicator improved. The average annual growth of housing availability in the Republic of Armenia per capita during the specified period was 115.67%, and the entire housing stock increased by 11.38%.

Table 2. The dynamics of the development of the quality of life of the population according to «housing conditions» components, 1995–2023.

Housing conditions indicators	Growth rate in 2000 compared to 1995, %	Growth rate in 2005 compared to 2000, %	Growth rate in 2010 compared to 2005, %	Growth rate in 2015 compared to 2010, %	Growth rate in 2020 compared to 2015, %	Growth rate in 2023 compared to 2010, %	Average annual growth rate during 1995-2023, %
The average housing provision of the population per capita in sq. m, including:	115.033	134.659	123.207	108.219	106.1	109.3	15.67
Total housing stock, thousand sq. m, including:	116.290	110.801	119.196	107.210	105.2	110.2	11.38

Table 2 illustrates the dynamics of housing conditions as an indicator of population quality of life over the period 1995–2023, reflecting changes in average housing provision per capita and total housing stock. The data reveal a steady upward trend in both indicators, with average housing provision per capita and total housing stock reaching 109.3% and 110.2%, respectively, in 2023 compared to 2010. Overall, these trends indicate sustained improvement in housing availability and living conditions throughout the observed period.

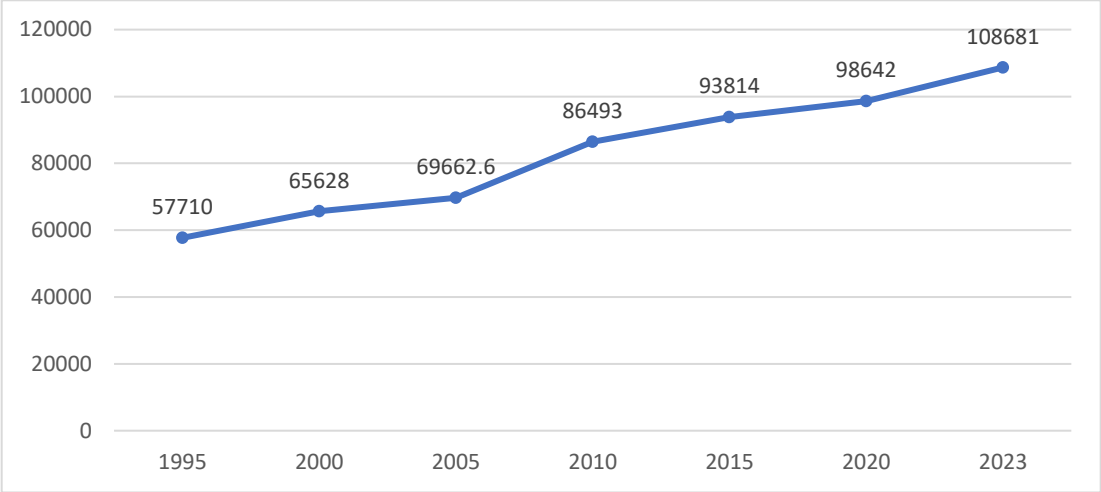

Figure 2. The dynamics of the housing stock of the Republic of Armenia during 1995-2023.

Source: Statistical Committee of the Republic of Armenia (2024b).

Figure 2 exhibits the dynamics of the housing stock in the Republic of Armenia during 1995–2023, demonstrating a steady upward trend over the entire period, with particularly pronounced growth after the mid-2000s, indicating a substantial expansion of housing capacity.

Thus, summarizing the abovementioned indicators, it can be concluded that the quality of life according to the «Housing conditions» component improved during 1995-2023.

The quality of life of the population during 1995-2023, according to the «*Education*» component, is characterized by a decrease in the number of students in public schools, averaging 4.83% per year, due to an increase in students in state secondary vocational schools by 8.43%, and in higher education institutions by 10.59%. During 1995-2023, the number of admitted students to higher education institutions increased on average by 15.11% per year.

Table 3. The dynamics of the development of the quality of life of the population according to «Education» component during 1995-2023.

Education indicators	Growth rate in 2000 compared to 1995, %	Growth rate in 2005 compared to 2000, %	Growth rate in 2010 compared to 2005, %	Growth rate in 2015 compared to 2010, %	Growth rate in 2020 compared to 2015, %	Growth rate in 2023 compared to 2010, %	Average annual growth rate during 1995-2023, %
Enrolment of children studying in state preschool institutions	104.094	122.472	111.927	117.213	84.9	148.97	13.3
Number of children studying in general education schools	98.706	84.644	77.610	98.248	109.58	106.41	-4.83
Number of children studying in state secondary vocational educational institutions	136.019	107.317	96.104	82.095	116.87	120.77	8.43
Students admitted to state secondary vocational educational institutions	107.143	110.476	100.862	53.846	166.67	107.62	2.40
Number of students in higher education institutions	110.660	224.312	113.497	76.216	81.560	104.493	10.59
Students admitted to higher education institutions	224.638	159.355	106.883	68.561	93.923	94.412	15.11
Number of state preschool institutions	70.675	84.424	99.070	112.207	126.918	106.813	-1.75
Number of secondary schools	137.392	102.373	98.841	99.172	97.497	99.786	5.02
Number of state vocational education institutions	104.167	148.000	90.991	96.040	97.938	102.105	5.09
Number of higher education institutions	105.882	98.889	83.146	81.081	91.667	96.364	-7.57

Table 3 presents the dynamics of key education indicators by showing the growth rates of enrollment, student numbers, and the number of educational institutions across different levels of the education system over successive periods. The data indicate uneven but generally positive trends, with notable growth in preschool and higher education enrollment, alongside fluctuations and declines in the number of institutions in certain periods. Overall, the table reflects structural changes in the education sector, highlighting shifts in demand, institutional consolidation, and long-term transformation of the education system.

The enrolment rate of children studying in preschool institutions during 2020-2023 increased by 48.97%. From 1995-2023, this rate has increased by an average of 13.3% per year, which proves that the number of children in preschool institutions grows annually, while the number of preschool institutions decreased by 1.75%.

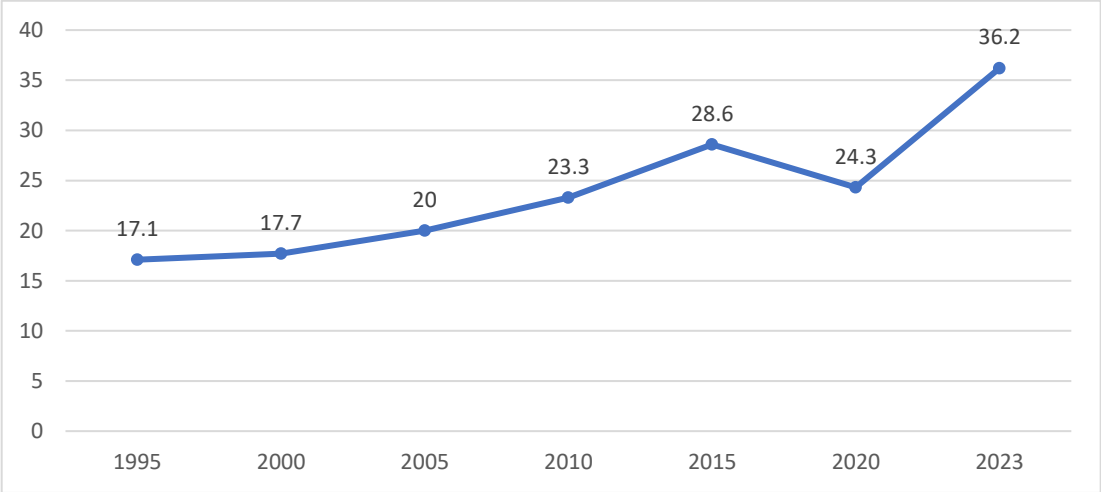

Figure 3. The dynamics of the enrolment of children studying in the state preschool institutions during 1995-2023.

Source: Statistical Committee of the Republic of Armenia (2024a).

Figure 3 presents the dynamics of the number of educational institutions during 2020–2023: the number of public schools and higher education institutions decreased by 0.2% and 3.6%, respectively, whereas the number of state secondary vocational educational institutions and preschool institutions increased by 2.1% and 6.8%.

During the period of 1995-2023, «*Culture*» is one of the components of the quality of life that has undergone the most changes. The indicators of the number of museum visitors and the number of visitors per museum have undergone significant changes, which have shown fairly high results on an annual basis. Those indicators accordingly made 44.83% and 55.32%.

Table 4. The dynamics of the development of the quality of life of the population according to «Culture» component during 1995-2023.

Cultural indicators	Growth rate in 2000 compared to 1995, %	Growth rate in 2005 compared to 2000, %	Growth rate in 2010 compared to 2005, %	Growth rate in 2015 compared to 2010, %	Growth rate in 2020 compared to 2015, %	Growth rate in 2023 compared to 2010, %	Average annual growth rate during 1995-2023, %
Number of libraries, units	88.003	92.436	91.342	100.249	80.0	90.7	-9.68
Number of readers, thousand people	-	84.907	91.189	86.458	59.8	131.1	-12.1
Library stock, million copies	95.215	96.985	99.489	85.498	93.2	97.2	-5.51
Number of museums, units	83.036	104.301	102.062	99.479	94.3	100	-3.07
Number of museum visitors, thousand people	304.352	110.308	170.597	107.070	31.1	483.9	44.83
Number of visitors per museum, thousand people	361.538	105.319	167.677	137.473	33.3	480.3	55.32
Number of theatres, units	105.0	119.048	112.000	128.313	92.9	96.2	8.21
Number of spectators, thousand people	58.443	111.417	99.396	100.0	38.3	314.5	-4.06

Table 4 presents the dynamics of key cultural indicators by reflecting the growth rates of cultural infrastructure and participation, including libraries, museums, theatres, and audience engagement over the period 1995–2023. The data indicate a general decline in the number of libraries, readers, and library collections, alongside relatively stable museum numbers and a significant increase in museum visitors and visitors per museum in the later years. Overall, the table demonstrates structural changes in the cultural sector, characterized by the consolidation of institutions and a sharp rise in cultural participation intensity despite a reduction in the number of facilities.

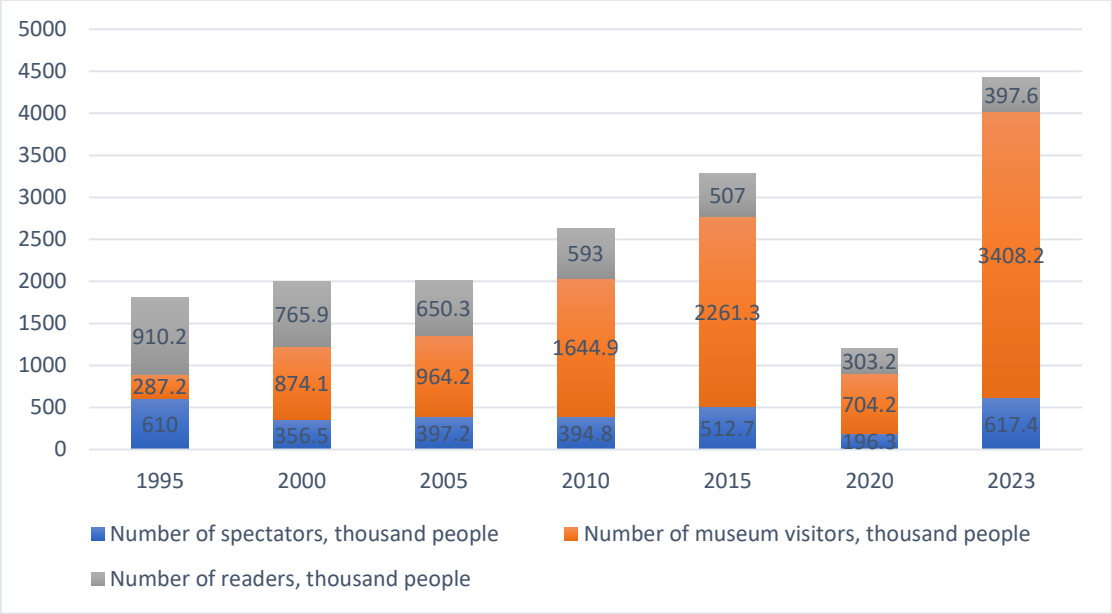

Figure 4. The dynamics of the visitors of the museums, theatres and libraries during 1995-2023.

Source: Statistical Committee of the Republic of Armenia (2024c).

Figure 4 illustrates trends in museum, theatre, and library visitation during 1995–2023. Museum attendance increases markedly, with growth of 304.3% in 2000 compared to 1995 and 483.9% in 2023 relative to 2020.

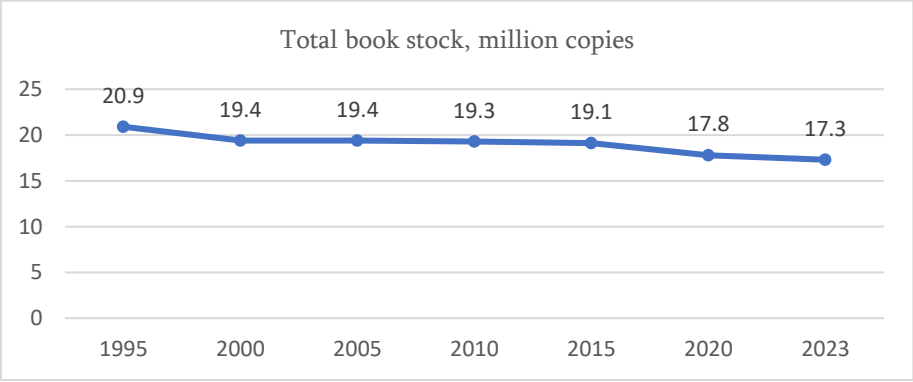

Figure 5. The dynamics of library stock during 1995-2023.

Source: Statistical Committee of the Republic of Armenia (2024d).

Figure 5 illustrates the overall downward trend in library stock, characterized by an average annual decline of 5.51%, a sharp reduction during 1997–1998, relative stability in the period 1999–2015, and a further decrease of 2.8% in 2023 compared to 2020.

On par with the quality of life, *«Crimes»* is an equally important component that characterizes the security conditions of the population. During the period of 1995-2023, the conditions of security and assurance of the population have deteriorated, which is associated with an increase in the level of recorded crimes.

Table 5. The dynamics of the development of the quality of life of the population according to «Crimes» component during 1995-2023.

Crime rates	Growth rate in 2000 compared to 1995, %	Growth rate in 2005 compared to 2000, %	Growth rate in 2010 compared to 2005, %	Growth rate in 2015 compared to 2010, %	Growth rate in 2020 compared to 2015, %	Growth rate in 2023 compared to 2010, %	Average annual growth rate during 1995-2023, %
Total recorded crimes	118.82	77.29	158.62	102.84	155.3	153.6	23.65
The number of convicted persons, of which:	108.31	69.83	135.95	72.18	68.7	130.4	-6.58
Of the age of 14-17	88.55	76.49	104.76	72.73	66.25	26.4	-33.03
Of the age of 18-29	103.73	66.26	131.11	72.23	59.95	94.32	-15.35
Of the age of 30-49	112.92	62.35	129.89	69.87	74.79	77.86	-15.19
Of the age of 50 and over	118.00	115.10	226.75	80.37	83.43	113.24	15.21

Table 5 presents the dynamics of crime rates by illustrating changes in total recorded crimes and the number of convicted persons across different age groups over the period 1995–2023. The data show a substantial overall increase in recorded crimes, while the number of convicted persons generally declines, particularly among younger age groups, with the most pronounced decrease observed among individuals aged 14–17. At the same time, convictions among persons aged 50 and over exhibit a long-term upward trend, indicating a notable shift in the age structure of criminal activity.

Despite the fact that during the period of 1995-2023, the number of registered crimes per year increased by 23.65%, during the same period, the number of convicted people decreased by 6.58%. Moreover, the number of convicts in the 14-17 age group has clearly decreased, but the number of convicts in the 50 and over age group increased by 15.21%.

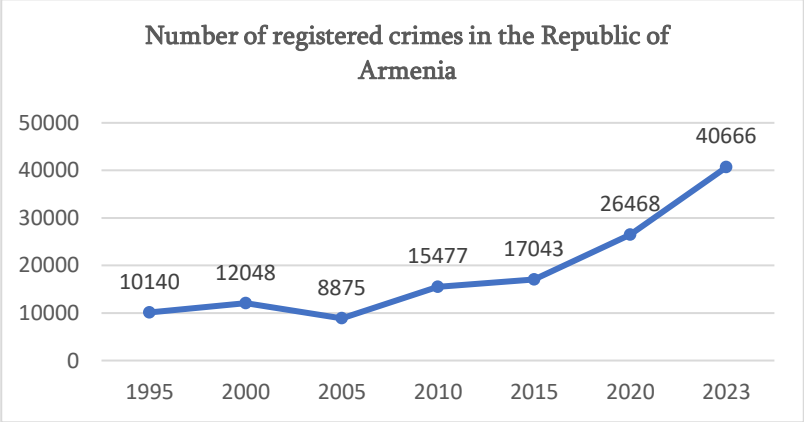

Figure 6. The dynamics of the number of crimes registered in the Republic of Armenia.
Note: During 1995-2023.
Source: Statistical Committee of the Republic of Armenia (2024b).

Figure 6 illustrates the dynamics of registered crimes and convicted persons in the Republic of Armenia. The number of registered crimes increases substantially during 2005-2023, while the total number of convicted persons declines over 1995–2023 across most age groups, except for the population aged 50 and over, which records a 15.21% increase. The most pronounced decrease is observed in the 14–17 age group (−33.07%).

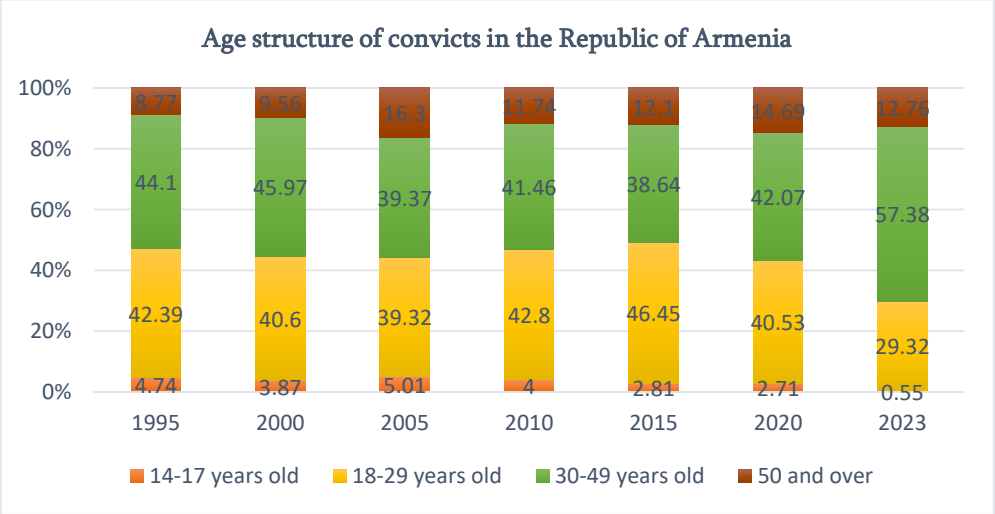

Figure 7. Number of convicts in the Republic of Armenia by age group during 1995-2023.
Source: Statistical Committee of the Republic of Armenia (2024a).

Figure 7 illustrates the age structure of convicted persons in the Republic of Armenia from 1995 to 2023. The distribution shows a declining share of younger age groups, particularly those aged 14–17 and 18–29, alongside a growing proportion of individuals aged 50 and over in recent years.

A comparative assessment of countries based on the Quality-of-Life Index shows substantial variation in global well-being levels. In 2025, the highest-ranking countries are Luxembourg (218.2), the Netherlands (216.5), and Denmark (215.1), all of which have consistently maintained leading positions with minor fluctuations since 2020. Switzerland also demonstrates strong performance, occupying 5th place. High-quality-of-life indicators are further characteristic of Scandinavian countries, including Finland (6th), Norway (8th), and Sweden (10th), as well as Austria (11th) and the United States (15th). In contrast, some of the lowest scores among the observed countries are recorded in Venezuela, Bangladesh, and Nigeria.

According to 2025 data, Armenia ranks 63rd out of 88 countries, with a Quality-of-Life Index value of 119.7.

A regional comparison (Armenia, Georgia, Azerbaijan, Iran, and Turkey) shows that Turkey leads in 2025, holding 51st place globally. Georgia follows, although its ranking declined from 51st in 2022 to 57th in 2025. Armenia occupies 63rd place, positioning it third in the region, followed by Azerbaijan in 69th place (113.5 points). Iran ranks lowest among the regional countries, taking 83rd place in 2025; however, it has improved its position by three places compared to 2022.

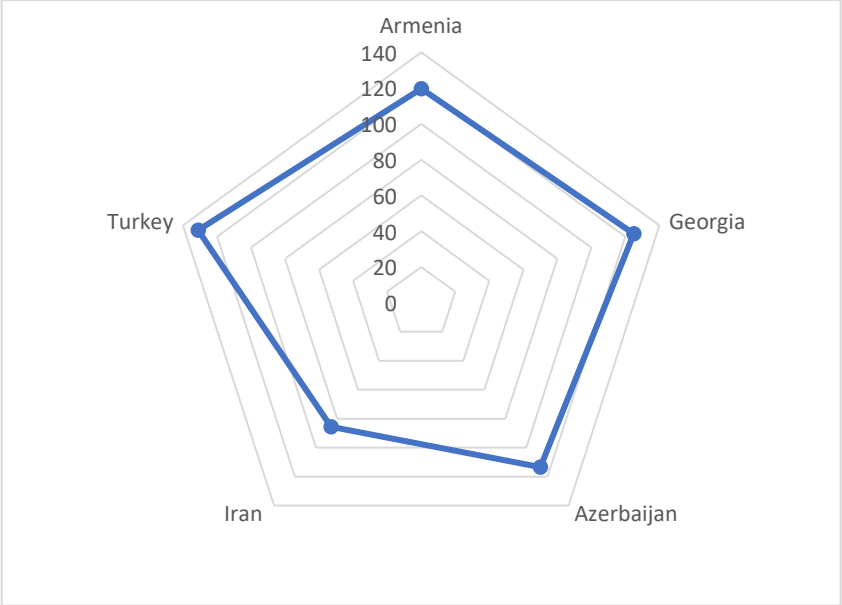

Figure 8. Quality of life index in region, 2025.

Source: Numbeo (2025).

Figure 8 illustrates the comparative Quality of Life Index across selected countries in the region in 2025. Armenia and Turkey record the highest index values, while Iran demonstrates the lowest level among the countries considered.

In order to evaluate the quality of life of the population, a factor analysis was conducted, for which the following indicators affecting the quality of life in a number of countries were identified.

1. GNP per capita, thousand dollars (X1).
2. Consumer Price Index (CPI), % (X2).
3. Unemployment rate, % (X3).
4. Education spending relative to GDP, % (X4).
5. Healthcare spending relative to GDP, % (X5).
6. The average monthly salary, USD dollars (X6).

7. Total fertility rate (X7).
8. Overall mortality rate, ‰ (X8).
9. Average life expectancy, year (X9).
10. Crimes index (0-100) (X10).
11. Living space per capita, sq.m. (X11).
12. Number of marriages per 1000 population ‰ (X12).
13. Number of doctors per 10,000 population, people (X13).
14. Number of hospital beds per 10,000 population, units (X14).
15. Atmospheric emissions per capita, tons (X15).

Taking into consideration the available statistical information a factor analysis with the use of the corresponding data for 2023 from 52 countries was conducted.

In Table 6, the general indicators of factor analysis are summarized, which demonstrate what part of the dispersion of each indicator explains the model. According to the results, selected factors are mostly significant; only the consumer prices index, the crime index, the total fertility rate, and the marriage rate are slightly less significant compared to other factors. Moreover, these variables respectively explain the model by changes of 52.3%, 53.7%, 55.5%, and 57.5%.

Table 6. Communalities.

Variable	Initial	Extraction
GDP per capita, thousand dollars	1.000	0.917
SPI, %	1.000	0.523
Unemployment rate, %	1.000	0.812
Education spending relative to GDP, %	1.000	0.776
Healthcare spending relative to GDP, %	1.000	0.647
Average monthly salary, US dollars	1.000	0.929
Total fertility rate	1.000	0.555
Overall mortality rate, ‰	1.000	0.787
Average life expectancy, years	1.000	0.723
Crime index (0-100)	1.000	0.537
Living space, sq. m. Per capita	1.000	0.778
Number of marriages per 1000 population, ‰	1.000	0.575
Number of doctors per 10,000 population, people	1.000	0.662
Number of hospital beds per 10,000 population, units	1.000	0.696
Atmospheric emissions per capita, tons	1.000	0.788
Extraction Method: Principal Component Analysis.		

Note: * Tables of the factorial and regression analysis were compiled based on the calculations of the author with the use of the SPSS software package.
Source: Centre for Humanities Technologies (2025) and World Health Organization (2025).

Table 6 presents the communalities obtained from the principal component analysis, showing the proportion of variance in each socio-economic and demographic indicator explained by the extracted components. The results indicate that most variables have high extraction values (generally above 0.5), confirming their strong contribution to the factor structure and the overall adequacy of the model.

One of the most important results of factor analysis is the table of explained variation, which presents its own cumulative variation and common values of each indicator, allowing to determine the number of principal components.

Table 7. Total variance explained.

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3.973	26.489	26.489	3.973	26.489	26.489	3.225	21.501	21.501
2	2.236	14.909	41.398	2.236	14.909	41.398	2.632	17.548	39.049
3	1.739	11.595	52.994	1.739	11.595	52.994	1.728	11.523	50.572
4	1.408	9.390	62.383	1.408	9.390	62.383	1.598	10.655	61.227
5	1.347	8.977	71.361	1.347	8.977	71.361	1.520	10.133	71.361
6	0.991	6.607	77.967						
7	0.816	5.440	83.407						
8	0.577	3.846	87.253						
9	0.550	3.666	90.919						
10	0.461	3.073	93.992						
11	0.319	2.124	96.116						
12	0.260	1.735	97.851						
13	0.162	1.082	98.932						
14	0.133	0.887	99.819						
15	0.027	0.181	100.000						

Note: Extraction Method: Principal Component Analysis.

Table 7 shows that in the case of five components, the own values are higher than 1, and approximately 71.4% of the total variation of all 15 indicators can be explained by these components. Additionally, the first three components explain more than 50% of the total variation.

The next important result of factor analysis is the table of the inverted matrix of factor coefficients, which demonstrates that among the 15 variables under study, factor 6 has a strong association with factor 1 relative to GDP per capita, the unemployment rate, education spending in GDP, healthcare spending in GDP, the average monthly salary, and the SPI, with factor 2 the crime index and the living space per inhabitant. The cumulative fertility rate, mortality rate, life expectancy, and marriage rate are strongly associated with factor 3. Only atmospheric emissions are strongly associated with factor 4, and the correlation between the number of doctors and hospital beds is associated with factor 5.

Table 8. Rotated component matrix.

Variables	Component				
	1	2	3	4	5
GDP per capita, thousand dollars	0.951	0.073	-0.023	-0.069	-0.047
CPI, %;	-0.669	-0.596	0.066	-0.127	-0.309
Unemployment rate, %;	-0.574	0.075	0.389	0.207	-0.122
Education spending relative to GDP, %	0.839	0.148	-0.063	-0.153	0.418
Healthcare spending relative to GDP, %	0.666	0.371	0.200	0.112	0.112
Average monthly salary, US dollars	0.956	0.080	-0.085	-0.012	-0.006
Total fertility rate	0.298	0.162	0.327	0.038	0.047
Overall mortality rate ‰	-0.188	0.217	-0.468	-0.234	-0.041
Average life expectancy, years;	0.354	0.229	0.733	0.526	0.082
Crime index (0-100)	-0.140	-0.660	0.051	0.221	-0.380
Living space, sq. m. per capita	0.451	0.550	0.292	0.090	0.018
Number of marriages per 1000 people ‰;	0.237	0.465	0.566	0.068	0.039
Number of doctors per 10,000 population, people	0.195	0.785	0.066	0.019	0.851
Number of hospital beds per 10,000 population, units	0.398	0.544	0.083	0.162	0.795
Atmospheric emissions per capita, tons	0.244	0.078	-0.843	-0.917	-0.110

Note: Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 8 presents the component matrix obtained from principal component analysis, illustrating the factor loadings of socio-economic, demographic, and environmental variables across five extracted components. The results show that the first component is strongly associated with economic well-being indicators (GDP per capita, salary, education, and healthcare spending), while the remaining components reflect distinct dimensions related to social conditions, healthcare capacity, demographic behavior, and environmental pressure.

Based on the characteristics of the factors described above, factor 1 was named "economic," factor 2 "social," factor 3 "demographic," factor 4 "ecological," and factor 5 "healthcare."

Based on the five factors created from these results, a regression analysis was performed considering the quality-of-life index as the outcome feature. To study the interdependence of the mentioned indicators, a null hypothesis was formulated, stating there is no linear relationship between the factorial and productive variables. An alternative hypothesis was also accepted, suggesting that at least one factor variable is linearly related to the outcome variable.

$H_0: \beta_1 = \beta_2 = \beta_3 = 0$

$H_1: \beta_1 = \beta_2 = \beta_3 \neq 0$

Table 9. Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.839[a]	0.704	0.669	19.1468

Note: [a] Dependent Variable: Y the Quality of life index.

Table 9 presents the summary of the regression model, indicating a strong relationship between the dependent and independent variables (R = 0.839). The results show that the model explains 70.4% of the variance in the dependent variable, confirming its high explanatory power and overall adequacy.

The values of correlation and determination coefficients demonstrate that factors included in the model significantly affect the outcome variable, which means that 70.4% of the quality-of-life variation is due to these factors, and 29.6% is due to other factors.

Table 10. ANOVA.

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37455.125	5	7491.025	20.434	0.000[b]
	Residual	15763.771	43	366.599		
	Total	53218.896	48			

Note: a. Dependent Variable: Y, the Quality of Life Index
b. Predictors: (Constant), REGR factor score 5 for analysis 3, REGR factor score 4 for analysis 3, REGR factor score 3 for analysis 3, REGR factor score 2 for analysis 3, REGR factor score 1 for analysis 3

Table 10 presents the results of the model significance test. At a significance level of 0.05, the observed p-value (Sig. = 0.000) is less than 0.05, indicating that the model is statistically significant.

Table 11. Coefficients.

Model [a]		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	140.661	2.735		51.425	0.000
	REGR factor score 1	22.983	2.764	0.690	8.316	0.000
	REGR factor score 2	15.716	2.764	0.472	5.687	0.000
	REGR factor score 3	1.915	2.764	-0.058	-0.693	0.492
	REGR factor score 4	0.305	2.764	0.009	0.110	0.913
	REGR factor score 5	1.158	2.764	-0.035	-0.419	0.677

Note: a. Dependent Variable: Y, the Quality of Life Index

Table 11 presents the regression coefficients for the model predicting the Quality of Life Index (Y). At a significance level of 0.05, REGR factor scores 1 and 2 are significant predictors, with unstandardized coefficients of 22.983 (t = 8.316, p < 0.001) and 15.716 (t = 5.687, p < 0.001), respectively. Factor scores 3, 4, and 5 do not significantly contribute to the model (p > 0.05), with coefficients of 1.915, 0.305, and 1.158, respectively. Overall, the model is statistically significant and explains the Quality of Life Index, although only selected predictors make meaningful contributions. This indicates that while demographic, ecological, and healthcare factors have a strong individual relationship with the quality of life index, their effects are more pronounced over the long term, which explains why they do not appear significant within the current model.

Thus, the regression model is expressed as:

$$\hat{Y} = 140.661 + 22.983\, x_{economic} + 15.716\, x_{social} \quad (1)$$

$$R^2 = 0.704 \quad (2)$$

The results of the regression model indicate that, in the observed 52 countries, the most significant impact on the quality of life of the population was from economic and social factors. However, demographic, ecological, and healthcare factors, as mentioned above, were not significant. The impact of these factors is mainly cumulative and becomes visible over a long period. The exclusion of these factors from the model is because they do not act independently, and the impact of some is accompanied by socio-economic factors. Therefore, when developing policies to improve quality of life, both short-term effective measures and long-term strategic approaches should be implemented.

Thus, based on the obtained coefficient values, it can be confidently assumed with 95% confidence that the proposed null hypothesis of no relationship between the observed indicators is rejected.

5. CONCLUSION

The application of multidimensional statistical methods has enabled a comprehensive assessment of the factors influencing the quality of life in the Republic of Armenia over the period 1995–2023, as well as across 52 countries in 2023. The results demonstrate that the components shaping quality of life in Armenia have evolved unevenly. While certain domains, particularly housing conditions, preschool and higher education enrollment, and cultural participation, showed notable improvements, other areas face persistent challenges. Healthcare infrastructure has weakened due to declining numbers of hospital beds and mid-level medical staff, and public safety has deteriorated amid rising crime rates. These mixed dynamics highlight the need for targeted and sector-specific policy interventions.

The factor analysis revealed five latent dimensions: economic, social, demographic, ecological, and healthcare factors that collectively explain a substantial proportion of cross-country variation in quality-of-life indicators. Regression modeling further showed that economic and social factors exert the strongest and most statistically significant influence on the Quality-of-Life Index, whereas demographic, ecological, and healthcare factors, despite their theoretical importance, play a more indirect or long-term role. These findings underscore the centrality of economic performance, labor market conditions, income levels, and social stability in shaping population well-being across countries.

Based on the empirical results, several policy directions emerge. Strengthening healthcare staffing and infrastructure, expanding and diversifying housing programs, improving access to high-quality preschool and general education, and promoting cultural engagement, especially through digital modernization are essential for enhancing well-being. Efforts to reduce crime, address social inequality, and support labor market development should also be prioritized, given their strong association with quality-of-life outcomes.

Overall, the study demonstrates that while Armenia has made progress in several dimensions of quality of life, significant gaps remain, particularly in health and safety. The predominance of economic and social factors as drivers of well-being highlights the need for integrated socio-economic strategies that combine income growth, employment opportunities, and social protection with long-term investments in healthcare and education. These insights contribute to the broader literature by providing empirically grounded evidence on the multidimensional determinants of quality of life and by illustrating the value of factor and regression analysis in comparative well-being research. Comparing Armenia's results with international data, it was noted that to maintain and improve the quality of life, it is more important not only to ensure economic growth but also to direct it socially, through curbing inequalities, protecting vulnerable groups, and developing human capital. The analysis showed that in countries with a systemic approach to social policy, quality of life indicators are significantly higher.

The results obtained allowed us to formulate a common message: quality of life is a multifactorial phenomenon, and effective policies to improve it should be aimed at the synchronized development of the economy, social protection, education, and healthcare systems. This approach is especially important for Armenia, where political steps should be targeted, prioritized, and focused on truly influential factors.

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