

THE MAIN PROBLEM OF POPULATION AGING IN THE REPUBLIC OF ARTSAKH DURING THE YEARS OF INDEPENDENCE

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Key words: life expectancy, population aging, total birth rate, demographic dependency ratio

Introduction. Throughout the establishment and development of Artsakh, the improvement of the demographic situation has been emphasized. Many state and charity programs, concepts have been developed and implemented. The dominant perception was that the warring country should ensure population growth, that the improvement of the demographic situation is closely related to the stability of the economic system, that the improvement of the sex-age structure of the population will have a positive effect on the pace of development of all spheres of public life. It should be noted that the state policy contributed to the improvement of the demographic situation in the republic in all years have brought to the natural growth, a fairly high index of population vitality, the lowest indices of maternal mortality and infant mortality in the region. However, the population was growing slowly and the benchmark index of almost all authorities - 300 thousand people had not been achieved. Ever since the last century, the aging of the world's population has been a serious challenge. It is undeniable that the qualification of an aging country is a danger, however, we should never forget that the elderly are the wealth of the state, the intellectual and spiritual potential, which should nurture and educate the generation, transfer its rich experience to it. The process of demographic aging has naturally accelerated due to long-term demographic changes, changes in birth rates, mortality and their ratio, labor migration. According to the forecasts of the United Nations Population Fund, in case of incomplete implementation or lack of appropriate measures aimed at aging, this figure will be 22-23% in 2050. The purpose of the article is to evaluate and analyze the population aging process in the Republic of Artsakh in 2010-2022. In order to achieve that goal, we studied the trend of demographic indicators, especially those related to aging, in the United States, to identify the factors affecting it, to make a comparison with the relevant indicators of other countries.

Methodology. We consider two indicators based on the concept of chronological age for the assessment of demographic aging [Barsukov, 2014, 1404]. The first group of indicators includes the weight of the elderly in the total number of the population or in a separate age group. The EU and the OECD use 65 as the cut-off age, and the UN uses both 65 and 60. According to the Gornier-Rosset scale, demographic aging begins when the proportion of the population aged 60 and over exceeds 12% of the total population, while according to the UN demographic aging scale, 7% [UN, 1956, 7]. In the article, the rate

of demographic aging, birth rate, death rate and population growth rate in the USA were studied mainly for 2010-2022. In some cases, parallels were also made with indicators of earlier stages, as well as statistical analytical methods were used.

Literature Review. According to the UN Development in an Aging World World Economic and Social Survey - 2007 publication, the process of demographic aging has been divided into three stages [World economic and social survey 2007]. In the first phase, the population was getting younger at the expense of high rates of decline in child and infant mortality, even though life expectancy was increasing. Basically, due to the decline in the birth rate, the age structure of the population shifts up, leading to a decrease in the weight of children in the population and an increase in the weight of the elderly already in the second stage. The weights of children and the working-age population decrease, and the elderly increase in the third stage, and the increase in life expectancy becomes an important factor in the aging of the population.

In his article "Demographic shocks" S. Blum observed the change in the demographic situation at the global level, identified its impact on security, economic growth, stability of state revenues and the standard of living of the population [Blum, 2016, 6-11]. C. Marois, S. Belanger and V. Lutz in the work "Population Aging, Migration and Productivity" looked at the population aging indicators of 28 EU countries. The conclusion made was that the impact of the negative consequences of population aging on the economy can be mitigated by changing the volume of migration and labor participation [Marois, et al., 2020 , 7539–7541]. J. Darek proposes to determine the "aging" of the population by the following indicators.

- a/ by the number of old people per 100 working-age population,
- b/ by the number of adults per 1 elderly person,
- c/ by the number of old people per 100 minors,
- d/ the number of children per 1 old man [Rosset, 1968, 25].

According to the classification of the World Health Organization, 60 to 74 years old are elderly, 75 to 89 years old are old, and those 90 and older are long-lived. V. Khojabekyan in his article "Demographic Processes in Armenia" [Xojabekyan, et al., 2002, 117] has thoroughly analyzed the views of various authors regarding the concepts of "old" and "aging" population in accordance with the "Regional Implementation Strategy of the Madrid International Action Plan on Aging Issues" adopted by the RA Government in 2012 [RA Government, 2002].

Two documents were adopted during the Second World Assembly on Aging: the Political Declaration and the Madrid International Plan of Action on Aging. The Republic of Artsakh, being an internationally unrecognized state, naturally had no international obligations. Perhaps that is why it did not adopt any strategy related to solving the consequences of population aging.

Scientific novelty. By studying the domestic and foreign literature related to demographic aging, using international indicators, the characteristics of the manifestation of the phenomenon, the cause-and-effect relationships of demographic aging in Artsakh were identified and presented, the available data were used to calculate new indicators.

Analysis. Population longevity, an indicator of life expectancy, has a significant impact on the demographic aging process. In Artsakh, the mentioned indicator is calculated starting from 2010. We have observed the trend of the indicator over 13 years. The rate of demographic aging in the Artsakh (the weight of people aged 65 and older in the total population) in 2022 compared to 2010, on average, decreased annually by 0.04% and in 2022 was 11.9%, and according to the Rosette scale by 0.01% point and was 16.3%. For comparison, we should note that according to the UN scale, the population of Armenia has been considered aging since 1993, and according to Rosset, since 1996, because the share of the population aged 65 and over 60 in the population structure was 7.4% and 12.1%, respectively. [Statistical Yearbook, 2002, 24-25], and in 1990 the life expectancy index of 71.8 years increased to 75.1 years in 2022.

Japan, Italy and Germany are in leading positions in the world by the indicator of demographic aging, where at least 20% of the population has already reached the age of 65. Today, playgrounds are opened for the elderly in Japan, dance classes are organized in Italy and in Germany, the number of pensioners is more relevant than the number of unemployed. Expert forecast suggests that in 2030 the number of "super aging" countries will reach 34. In Georgia in 2002-2023 the share of women aged 65 and older in the total number increased from 15.3% to 18.7%, among men - from 10.9% to 12.1%. Life expectancy for women was 78.4 years, for men - 69.4 years.

Table 1. Life expectancy at the time of birth, years [Demography in Artsakh, 2023, 48-49]

Years	Total	Man	Woman	City			Village		
				Total	Man	Woman	Total	Man	Woman
2010	73.9	71.2	76.5	73.1	69.7	76.3	74.7	72.6	76.7
2015	74.1	71.5	76.6	73.6	70.8	76.3	74.5	72.1	77.0
2016	74.4	71.3	77.4	74.4	71.2	77.2	74.4	71.4	77.6
2017	75.2	72.6	77.5	75.0	72.7	76.9	75.3	72.4	78.4
2018	75.8	72.5	79.0	75.2	71.6	78.5	76.6	73.7	79.6
2019	75.6	73.2	77.8	75.2	72.6	77.4	76.2	74.0	78.5
2020	68.9	61.2	78.2	68.4	60.2	77.7	69.7	62.7	78.8
2021	72.4	67.2	78.0	71.7	66.0	77.5	73.5	69.1	78.7
2022	77.7	74.5	80.8	75.6	71.5	79.4	81.0	79.1	82.9

Life expectancy in Artsakh has generally been higher than the world average and in 2022 exceeded Ukraine – the country with the lowest rate in the world by 9.7 years (2021), including 14.8 years for women, and the country with the highest rate – Japan, by 7.3 years, including 7.2 years for women (2021) [Statistic yearbook, Armenia, 2023, 627-

628]. The high degree of aging among women in Artsakh is due to their low mortality rate in individual age groups and a large proportion of older age groups (60 and over). It should be noted that the life expectancy of women is 5-6 years higher than the same indicator of men in all considered years, and due to the consequences of the war in 2020 and 2021 it is correspondingly 17 and 11 years higher [Artsakh demography yearbook, 2023, 48-49].

It is well known that during the demographic transition, the decline in birth rate and death rate were mainly factors that led to the aging of the population in different ways. The following types of demographic aging are present: "aging from below" related to the decline in birth rate and "aging from above" due to the increase in the share of the elderly in the population and longevity [Piroshkov, 1994, 112]. One of the main reasons for demographic aging in Artsakh is the sharp decline in the birth rate. The figures in the table indicate that the birth rate has decreased since the middle of the last century (from 40.5 per thousand to 15.1 per thousand). Death rates compared to births were relatively stable and ranged from 6.6 to 9.4 per thousand.

Table 2. Birth, death and natural growth of the population of Artsakh (NKR) in 1951-2022 (per 1000 people) [Khojabekyan, 2002, 285]

Year	Number of births	Number of deaths	Natural increase
1951	31,4	9,4	22,0
1960	38,0	7,2	30,8
1961	40,5	7,2	33,3
1965	34,6	6,6	28,0
1970	27,6	6,9	20,7
1980	25,1	7,0	18,1
1987	25,2	7,4	17,8
1997	15,1	9,4	5,7
2007	15,4	8,8	6,6
2017	15,9	8,4	7,5
2022	15,9	8,1	7,8

History suggests that the number of births increases after disasters and wars, which is called compensatory birth rate. For example, in 1988, after the devastating earthquake, the number of officially registered births in RA in 1990 was 84,000. The disaster touched all age groups of the population, families were divided, a large number of children were killed. And solving both of these problems led to an increase in the birth rate, the losses had to be restored. However, the situation was different in 2020. After the war, the majority of the victims were conscripts who had yet to marry and have children, and their mothers were mostly beyond reproductive age. The number of births registered in Artsakh in 2020 was 1659, in 2021 - 1549 and in 2022 - 1789, in the Republic of Armenia - 36.4 thousand, 36.6 thousand, 36.4 thousand, respectively. In other words, the pre-war 2016-2019 annual average birth rate in 2020-2022 decreased by 650 births or 28.1%

in Artsakh and by 2.0 thousand births or 5.3% in Armenia. And this trend will become more pronounced after some time. It is noteworthy that the age-specific birth rates have changed in Artsakh.

Table 3. Age coefficients of birth¹

Years	Live births per 1,000 women of appropriate age, per year							
	Below 20	20-24	25-29	30-34	35-39	40-44	45-49	15-49
2016	9.4	116.1	150.5	96.1	56.9	11.5	1.1	69.9
2017	20.9	135.6	133.9	84.3	39.0	6.7	-	65.6
2018	15.3	116.5	135.7	95.8	44.7	12.3	-	65.1
2019	10.0	114.2	126.2	84.8	40.5	10.7	0.5	59.0
2020	4.6	76.1	104.2	70.5	39.0	9.7	1.0	45.7
2021	5.4	73.5	96.5	64.0	37.0	7.8	1.0	42.4
2022	4.0	92.8	119.1	65.4	38.4	11.0	1.4	27.9

The observation of the birth rates by age of the settlement speaks of its deterioration, especially in rural settlements.

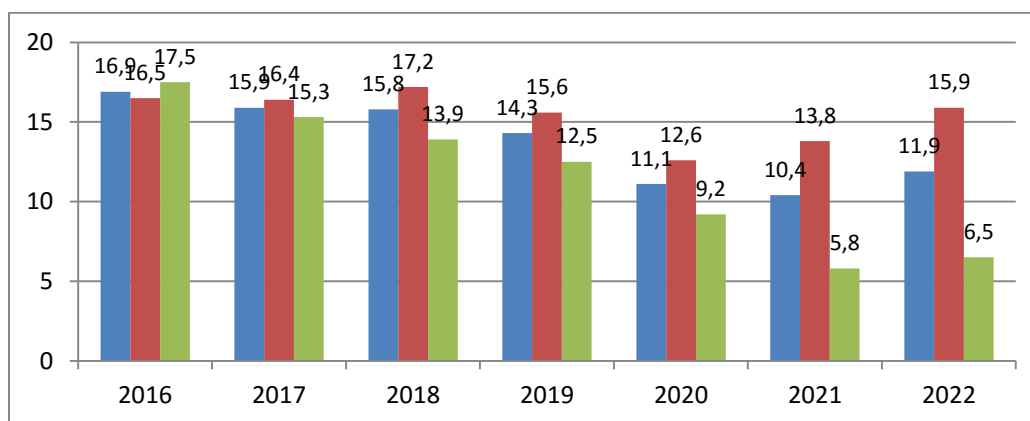


Figure 1. Total birth ratios in towns and villages (number of births per 1000 inhabitants)²

2022 the total birth rate in Artsakh was 1.66 children, compared to the 2.15 children needed for simple reproduction of the population. Moreover, the total birth rate of the urban population was 2.113 children, and the rural population was 0.974 children. In the post-war period, this index significantly worsened at the expense of the index of rural settlements. In 2010 the total birth rate was 2.4 children, including 2.1 children for the urban population and 2.9 children for the rural population. During the period of independence – 1997-2022, the overall mortality rate decreased by 1.3 per thousand points and was mainly due to an increase in deaths of people aged 75 and over, and deaths of people in the 0-59 (according to Rosset) and 0-64 (according to the United Nations) age groups.

¹ Artsakh statistic yearbooks for 2016-2022.

² Ibid

decreased or remained unchanged¹: Thus, the results of the study of age-specific mortality rates also prove that one of the main reasons for the aging of the population in Artsakh is the decline in the birth rate. As a result of Azerbaijan's policy, population emigration from Nagorno-Karabakh reached large proportions even in the Soviet years, 9 out of 10 young people left their homeland hoping to study or get a good job [NKAO 50 years, 126]. During the 30 years of independence, also due to migration (in some years it had a negative balance), there was no significant increase in the population of the Republic of Azerbaijan. Citizens of reproductive working age (age group 20-49) made up the main part of emigrants, which significantly affected not only demographic aging, but also changes in the sex-age structure of the population and a decrease in the birth rate. Migration had the most severe consequences in Armenia. In 1992, 70 thousand children were born in Armenia, 10 years later, in 2002, there were 32.4 thousand children, there was a decrease of about 54%.

Table 4. The average age of the population in 2010-2100: facts and forecast²

	2010	2015	2020	2025	2030	2050	2100
World	28,5	29,6	31,0	32,2	33,2	36,1	41,2
China	34,6	36,0	37,7	39,6	42,1	46,3	46,9
Japan	44,9	46,5	48,3	50,2	51,6	53,4	51,8
India	25,5	26,9	28,4	29,9	31,3	36,7	44,3
Indonesia	26,9	28,4	29,7	31,0	32,5	38,4	45,3
Russia	38,0	38,5	39,4	40,8	42,4	41,6	42,4
Italy	43,3	45,0	46,7	48,3	49,4	49,9	49,6
France	40,0	41,0	41,3	41,8	42,3	43,4	46,7
Germany	44,3	46,3	47,6	48,4	49,1	51,5	51,1
Mexico	25,9	27,7	29,5	31,5	33,6	41,9	50,5
Brazil	29,0	31,2	33,3	35,3	37,1	44,4	49,8
USA	37,1	37,7	38,2	38,9	39,5	40,6	44,4
Armenia	31,6	33,4	35,5	37,9	40,4	45,6	47,1
Artsakh	32,4	33,4	34,2	38,3	*	*	*

According to UN data, the median age of the world's population has increased over the last decades (increased by about 1 year every 5 years). If in 1970 half of the world's population was under 22 years old, then in 2020 the median age had reached 31. According to UN forecasts, this trend will continue in the next 50 years, and already in the second half of the 21st century, 50% of the world's population will be over 40 years old (see the UN population's median age database). The median age of the population in Artsakh in 2023 was 34.9 years at the beginning of the year, including 36.4 years for women, 33.3 years for men [Demography of Artsakh yearbook, 2023, 6].

¹ Calculations are made by the author based on Statistic yearbook data, Republic of Artsakh.

² UNESA. <http://esa.un.org/unpd/wpp/unpp/penal-indicator.htm>

It should be noted that the process of demographic aging is related to various aspects of social life. The increase in life expectancy leads to an increase in the share of the elderly in the population, which results in an increase in the burden on the (economic) working-age population, health and social protection systems. Tax rates levied on the working-age population are rising, inevitably intensifying social tensions. Thus, as of 01.01.2023 in Artsakh, there were 639 children and pensioners per 1,000 able-bodied residents, or the demographic dependency ratio was 63.9, including 64.1 in cities and 63.6 in villages [Demography of Artsakh yearbook, 2023, 6]. It is interesting that the consumption behavior of households is also changing, which leads to a decrease in aggregate demand and a slowdown in economic growth. The mentioned circumstances influence the increase in the number of children in the family and the average age of the parents. In the end, the burden on the state budget is increasing, the policy towards the elderly is changing. As a rule, the elderly do not work, so as their workload increases, there is a predominance of consumption over accumulation. Social security has never been radically reduced in any country, so the non-productive costs of the working population will increase in a country with more pensioners on social care, reducing labor productivity. This suggests that demographic aging is one of the significant factors behind the global savings gap. As a justification of what has been said, the indicators of poverty for the elderly can be presented, which do not deviate significantly from the average, moreover, in two of the three years we observed, they were lower than the average indicators. Based on World Bank methodology, the aggregate consumption index is used to assess the level of well-being in Artsakh, because international experience proves that consumption presents more accurate information and is less sensitive to short-term fluctuations than the income index, especially in countries with a transitional economy like Artsakh.

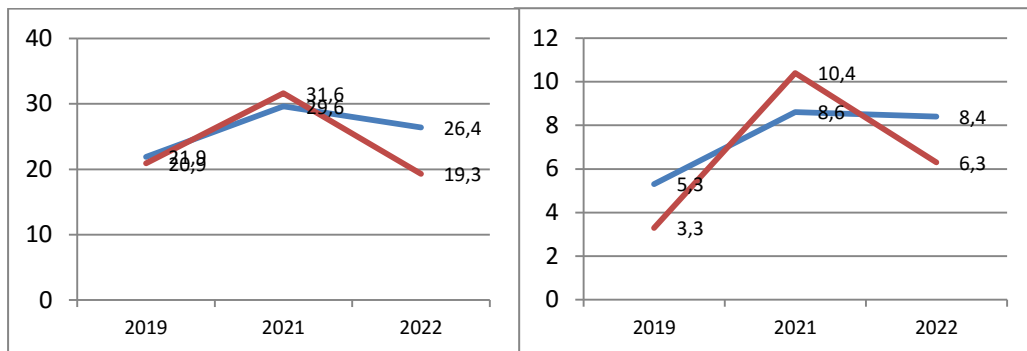


Figure 2. Elderly poverty rates in the United States 2019-2022
 Source: Poverty and social conditions in Artsakh, Statistic-analytical report.

Thus, the consequences of population aging can be represented by the three main groups given in diagram 3: economic, demographic, social.

Economic	Demographic	Social
- generation of tension caused by reduction of resources in the labor market, - increase in the average age of the employed, - as a result of the increase in the weight of the elderly, an increase in the falling load of an employee, - predominance of consumption over accumulation, reduction of savings.	- decrease in the number of the population, worsening of the sex-age composition, - narrowing of the population's birth rate and widening of the mortality rate, -modification of population reproduction.	- increase in budget expenses, social orientation, - increase in the burden of the healthcare system, -increase in the burden of other social sub-structures.

Figure 3. Effects of demographic aging

Perhaps, for now, the demographic policy is perceived as a tool of social support, it is necessary to conduct a complex policy. Although the state had taken certain steps aimed at improving the demographic picture (housing provision program, increasing the amount of one-time cash benefit for first and second children, providing benefits to non-working parents, a big wedding, etc.), there is a need for a comprehensive solution to the problem. In recent years, the birth rate in the regions of Azerbaijan is lower than the Stepanakert index, which is incomprehensible even for European countries. The reason is aging villages that are not attractive to young people, including infrastructure, quality of education and health services, income levels, entertainment opportunities, etc. If we also add labor migration, the picture will be complete. It is clear from Figure 1 that the decrease of the rural population also contributed to the decline of the fertility rates in rural areas compared to urban areas.

Throughout the period of independence, the government of Artsakh never considered repatriation as a priority of state policy, as a result several opportunities were missed, it did not follow, say, the example of Canada, which through the "Syrian Refugees" operation in 2015-2016, resettled 25 thousand Syrian refugees in his country. Israel also has a successful experience. In 1970 by adopting the "Return" law, 3.3 million people from the diaspora were repatriated. For the sake of truth, it should be admitted that some work was done in the Kashatagh region in this direction, but after the review of social and tax benefits, the population decreased noticeably. As for the other resettled regions of Shushi and Shahumyan, the resettlement was carried out mainly from the nearby regions of Artsakh, the potential of the Armenian diaspora was not used.

Conclusion. As a generalization, the characteristics of demographic aging are:

1. population aging is characteristic of the whole world,
2. the increase in life expectancy and the decline in fertility in all countries leads to an aging population,

3. Demographic aging is a systemic phenomenon that affects all spheres of life at the level of the individual, the household and the entire society.

Naturally, while accepting the realities, steps should be taken to counter its negative effects and reduce them in the future, namely:

- Put the demographic, economic and social components in the basis of programs aimed at mitigating the consequences of demographic aging, as a result, the elderly should become active participants and implementers of the economic and social development process.

- To maintain the health of the elderly and ensure well-being. as the number of elderly people tends to increase, there is a need to expand social services and infrastructure,

- To create an encouraging and favorable environment for the elderly. housing conditions, implement health, environmental and other programs.

- It is necessary to encourage multigenerational families, to emphasize intergenerational solidarity. Take steps to actively involve people aged 50+ in voluntary aged care groups.

- In order to overcome the negative attitude related to the employment of the elderly, it is worthy to provide tax benefits incentives to employers. The social insurance system should be regularly adapted to the problems of aging.

- Since the aging of the population is inevitable in the coming years, it is necessary to develop programs aimed at turning the experience and knowledge of the elderly into an economic result.

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The main problem of population aging in the Republic of Artsakh during the years of independence

Key words: life expectancy, population aging, total birth rate, demographic dependency ratio

Population aging is visible worldwide. It is a systemic phenomenon that touches all spheres of life at the level of the individual, the household and the entire society. Observations show that the process of demographic aging is a consequence of long-term demographic changes, changes in birth rates, deaths and their ratios, acceleration of labor migration. The purpose of the article is to evaluate and analyze the population aging process in the Republic of Artsakh in 2010-2022. In order to achieve that goal, we have asked to study the trend of demographic indicators, especially those related to aging, to identify the factors affecting it, to make a comparison with the relevant indicators of other countries. Statistical analytical methods were used. The rate of demographic aging in the USA (the weight of people aged 65 and older in the total population) in 2022. 2010 compared to, on average, it decreased annually by 0.04-% point and in 2022 made 11.9%, and according to the Rosette scale by 0.01% point, making 16.3%. During the 30 years of independence, due to the insufficient birth rate and migration (in some years it had a negative balance), there was no significant increase in the population of the Republic of Azerbaijan. Citizens of reproductive working age (age group 20-49) made up the main part of emigrants, which significantly affected not only demographic aging, but also changes in the sex-age structure of the population and a decrease in the birth rate.