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IMPACT OF THE COVID-19 PANDEMIC ON THE MORTALITY OF THE RA POPULATION

The paper is devoted to the study of the level and dynamics of COVID-19 pandemic-related mortality of the population in the Republic of Armenia. On the basis of the available information, the authors analyzed medical (fatality) and demographic (mortality) rates and movement trends according to age and gender composition of the population of the RA regions. In addition, the impact of the COVID-19 pandemic on fertility, marriage, divorce, and migration was briefly discussed.

Since the beginning of the pandemic, demographers predicted that the rate of COVID-19 related deaths will be higher in the countries with an aging population. In addition, the experts pointed to the negative consequences and effects of the pandemic on birth rates, reproductive behavior, life expectancy, and migration. Currently, the number of COVID-19 related deaths in Armenia has exceeded 6.500 (05.11.2021), out of which about 85% were in the 60 and older age group.

As for the pandemic related impact on birth rate, it should be noted that in comparison to a number of other countries, the birth rate in Armenia grew by 2.5% from

January to August of 2021, compared to the same period in 2020, and increased by 2.7% from January to August of 2019.

It should be stated, however, that the magnitude of pandemic-related indirect and delayed losses, as well as the depths of the socioeconomic and demographic effects, can only be more properly quantified in the mid and long run. COVID-19 still continues to invade our lives, taking many lives by its "black" existence.

Keywords: *COVID-19, fatality rate, crude death rate, migration, demographic changes, birth rate.*

JEL: J11, I10, I19

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Introduction. From the beginning of the 21st century to 2020, the world did not have a shortage of human-caused and natural disasters. They posed risks just to that country's or neighboring nations' economies, and they were not of a global nature. The COVID-19 pandemic, which began at the end of 2019 in Wuhan, China, and expanded to the global level by 2020, disturbed the whole globe, creating numerous economic, social, and demographic issues.

A condition similar to COVID-19 was recorded globally 100 years ago as a result of the Spanish flu. Needless to add, the extent of direct losses caused by coronavirus cannot be compared to that of the Spanish flu, which killed more people in 1918-1920 than in World War I. However, it should be highlighted that COVID-19-related mortality continue to climb internationally, and the virus's "end" date remains unknown.

The global outbreak of COVID-19 was a surprise, since no one expected the coronavirus to block borders, halt international travel, disrupt international economic networks, and isolate states and individuals. It has had and continues to have a huge influence on the worldwide economy as well as global demographic dynamics. It should be noted with concern that Armenia's economy and population were unable to avoid all of the aforementioned challenges.

Currently (05.11.2021), the total number of COVID-19 confirmed cases worldwide is 249.963.223, the deaths are 5.050.352 and in Armenia - 316.839 and 6.582 respectively.[1]

At the same time, studies reveal that COVID-19 is more dangerous to the elderly, with the majority of deaths occurring in those aged 60 and over. The latter refers to demographic issues, which are particularly acute in nations with an aging population, such as our country since 1993.

The purpose of this study is to examine the COVID-19 fatality and mortality rates in Armenia by gender, age, and region, as well as to look for differences in gender and age structure.

Literature review. Natural calamities such as earthquakes, floods, starvation, diseases, and pandemics have accompanied mankind throughout its history, as have conflicts, which have restrained and reduced population growth. As a result, the consequences of natural disasters, epidemics, pandemics, wars, and other

[1] Worldometer. *COVID-19, Reported Cases and Deaths by Country or Territory.* https://www.worldometers.info/coronavirus/

events on demographic, migration and socioeconomic processes have long occupied the attention of both foreign and Armenian experts. Specifically, Graunt in his work "Natural-political observations of mortality bulletins" studied all the demographic processes of the epidemic years (1593, 1603, 1625, 1636), and identified the causes and patterns of mortality.[2] William Farr, the founder of medical statistics, based on Graunt's work, analyzed the mortality rate of England's population and developed the main indicators of natural movement used in statistics, as well as classified diseases.[3]

In modern history, the deadliest disease is considered to be the Spanish flu (H1N1), which broke out in the spring of 1918 in New York. According to observed literature and various estimates about 100 million people died from the Spanish flu.[4] The general feature of H1N1 influenza was its high mortality in the relatively healthy age groups *of* 0-5 years and *20-40 years*. According to the experts, the "selectivity" of the Spanish flu was mainly explained by the fact that the elderly had already experienced this type of flu. There are some assumptions that it is the *Influenza* virus (Russian or Asian flu), which broke out in Russia in 1889-1890.[5]

Causes and issues of population mortality are discussed in the works of V. Pokrovski, A. Vishnevsky**,** A. *Landry, L. Bartillon, E. Andreev, A. Sauvy, A. Boyarskiy, and S. Novoselskiy*.

Currently, most studies on population morbidity, mortality, and other behavioral changes are mainly focused on COVID-19-related issues.

Behavioral and social scientists Friedman and Parker have noted that the COVID-19 pandemic had a major impact on every demographic process. Most COVID-19 deaths have been among older adults, with people over ages 70 and 80. There is evidence that fertility rates could get even lower due to COVID-19. In 2020, (April 30–May 6) the Guttmacher Institute conducted a sociological survey among women aged 18-49 in the United States. Surveys show that more than a third of respondents have delayed their intention to have a child or reduced the number of expected children due to the pandemic.[6]

According to another study, implemented (March 27-April 7) in 5 European countries - Italy, France, Germany, Spain, and England- among the respondents aged 18-34, the incidence of COVID-19 has affected the intention to have children

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[2] Граунт, Дж., Галлей, Э. *Начала статистики населения, медицинской статистики и математики страхового дела*. с.1-87, http://www.sheynin.de/download/NS.pdf (09.12.2020).

[3] Centers for Desease Control and Prevention. *Introduction to Epidemiology. Historical Evolution of Epidemiology*. https://www.cdc.gov/csels/dsepd/ss1978/lesson1/section2.html, https://www.britannica.com/biography/William-Farr

[4] Galstyan, H. 100th Anniversary of World's Largest Epidemics: Myth or Reality? *Amberd Bulletin, 2020/1(2),* p.103, https://asue.am/upload/files/amberd/Amberd%202020.1.pdf

[5] Age-Specific Mortality During the 1918 Influenza Pandemic: Unravelling the Mystery of High Young Adult Mortality, pp.1-8, https://www.journals.plos.org (18.02.2021), https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0069586#:~:text=The%20atypically%20high%20mortality%20among,virologists%20and%20immunologists%20%5B1%5D.&text=This%20hypothesis%20is%20expanded%20to,around%20that%20peak%20in%201918

[6] The RAND Blog, An Early Look at the Impact of the COVID-19 Pandemic on Demographic Trends, by Esther M. Friedman and Andrew M. Parker, April 12, 2021, p. 2. https://www.rand.org/blog/2021/04/an-early-look-at-the-impact-of-the-covid-19-pandemic.html

but not in the same way. However, in countries where the previous economic and labour market situation was more favorable (i.e. Germany and France) the proportion of those abandoning the fertility plans for 2020 is much lower than in the other countries. By contrast, in Spain, and even more dramatically in Italy, people are more often abandoning and not simply postponing their pre-crisis fertility plans.[7]

According to European Parliamentary Research Service (Demographic Outlook for the European Union 2021 study), the tendency of postponing planned childbirth until later was already a fact before the outbreak of the pandemic. The pandemic only heightened this tendency, which can lead to the birth of fewer children than initially planned in the future.[8]

COVID-19 had also an impact on international and, particularly on seasonal migration. Many migrants returned home in the early days of the pandemic to avoid closing borders.

Marois, Muttarak, Scherbov in their research paper (assessments made in North America, Europe, Latin America, the Caribbean, Southeast Asia, as well as sub-Saharan Africa) have assessed that the impact of the COVID-19 pandemic on the period life expectancy of the population (various scenarios were considered). The fatality rates from COVID-19 are likely to increase with a higher prevalence rate, and the impact of the virus on life expectancy may be higher.[9]

Since the beginning of the pandemic, European demographers have emphasized that countries with an aging population will have higher rates of pandemic mortality. It should be noted that the level of mortality from COVID-19 is also affected by the socioeconomic situation of the country, the housing conditions of the population, as well as comorbidities.[10]

The UN in "World Population Ageing 2020 Highlights, Living arrangements of Older Persons 2020" has a separate section about COVID-19 mortality among the older persons, which presented the percentage of persons ages 60+ living in institutions based on national-level data from 53 countries, as well as calculated the ratio of age-standardized COVID-19 death rates (ages 60+/ages 20-59). According to the UN, the highest relative risks of COVID-19 mortality among older people (ratios above 25) were found in countries with relatively high levels of life expectancy at birth in Europe and elsewhere. By contrast, the lowest relative risks for older persons (ratios below 10) were observed mostly in the

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[7] Luppi, F., Arpino, B., Rosina, A. (2020). The impact of COVID-19 on fertility plans in Italy, Germany, France, Spain, and the United Kingdom. *Demographic Research, 43,* 1399–1412. https://www.demographic-research.org/Volumes/Vol43/47/ DOI: 10.4054/DemRes.2020.43.47.

[8] Demographic Outlook for the European Union, Study, March 2021, p. 12, EPRS. https://www.europarl.europa.eu/RegData/etudes/STUD/2021/690528/EPRS_STU(2021)690528_EN.pdf.

[9] Marois, G., Muttarak, R., Scherbov, S. (2020). Assessing the potential impact of COVID-19 on life expectancy. *PLoS ONE* 15(9). e0238678. https://doi.org/10.1371/journal.pone.0238678

[10] Demographic Outlook for the European Union, Study, March 2021, p. 11, EPRS. https://www.europarl.europa.eu/RegData/etudes/STUD/2021/690528/EPRS_STU(2021)690528_EN.pdf.

countries of Africa, Asia, and Latin America with moderate or relatively low levels of life expectancy.[11]

As for the research conducted in Armenia, as previously said, there are several studies on demographic processes and scientific works in which the detrimental impacts of COVID-19 on various sectors of the economy, population living standards, and international economic ties have been analyzed.[12] Almost no research has been conducted on the influence of COVID-19 on demographic dynamics. As a result, while the impacts of the coronavirus on demographics are not yet entirely quantifiable, a number of studies have already revealed an increase in the number of fatalities compared to prior times, as well as decreased birth rates, mostly for economic reasons.

Research methodology. Since late 2019, the COVID-19 pandemic has been the epicenter of worldwide news reporting. The most authoritative official sources, especially the World Health Organization, monitor the situation worldwide on a live daily basis, develop and carry out anti-pandemic strategies and recommendations. Consequently, this source of information about the pandemic becomes a research base to study various aspects of its impact, including post-pandemic demographic changes. It is evident that the effect of the COVID-19 on demography must be first seen in the mortality rate. To record deaths, two types of statistical indicators are used: medical and demographic.

Demographic statistics are based on medical statistics, but there are some peculiarities that must be considered. For instance, in both medical and demographic statistics, absolute mortality indicators are used. But before demographers can use that data it needs to pass through an approved-registration process.

Therefore, in order to determine the impact of the pandemic on death, it is important to distinguish the fatality rate (medical index) and the mortality rate (demographic index). This is especially important when calculating relative indicators that characterize the risks of mortality and give an opportunity to compare the health systems of different countries and the selected approaches to overcoming the pandemic.

The fatality rate is defined as the ratio (in percentages) of the number of deaths from a particular disease over a period of time to the number of patients with that disease within the same given period.[13]

Hereby, when determining the epidemic death impact, the fatality rate becomes a statistically significant indicator of morbidity. Furthermore, the emergence of "asymptomatic" COVID-19 carriers, as well as limited research into their infectivity, complicates determining the number of true patients and, as a result, the fatality rate.

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[11] World Population Aging 2020 Highlights, Living arrangements of older persons, UN, New York 2020, 17-24.

[12] Coronavirus and the World, Amberd Bulletin 2020/1(2), Yerevan, ASUE "Tntesaget" Publishing House, 2020, 1-123, https://asue.am/upload/files/amberd/Amberd%202020.1.pdf,

[13] Большая Российская Энциклопедия. (1994). Энциклопедический словарь медицинских терминов. (1982–1984). М.: Советская энциклопедия.

The COVID-19 page of the official website of the RA Ministry of Health (www.moh.am), daily reports on new cases, the number of total and negative tests, total and new recovered and current patients, daily and total deaths from COVID-19 and other causes.

The RA Ministry of Health distinguishes COVID-19 reporting from other reasons. As of January 1, 2021, there have been a total of 2.828 and 717 deaths from COVID-19 and other causes respectively. In contrats, the National Health Information Analytical Center (www.nih.am) of the National Institute of Health after Academician S. Avdalbekyan combines the data (total of 3.545 death cases).

Differences in reported statistics have been detected between the RA Ministry of Health and the National Institute of Health after Academician S. Avdalbekyan, with the total number of infected patients recorded in 2020 being 159.738 vs. 154.632.[14]

Data published by the RA Statistical Committee also combine numbers of COVID-19 deaths and other causes, and there is a discrepancy between those numbers and the data supplied by the RA Ministry of Health.

According to the RA Statistical Committee, from January to December of 2020, the number of deaths due to COVID-19 and other causes was 3.405.[15]

In this paper, the analysis of the monthly indicators of COVID-19 (deaths due to the pandemic and other causes) was performed based on the data of the Ministry of Health of RA, and the analysis of the annual indicators based on the information from the National Institute of Health after Academician S. Avdalbekyan.

Furthermore, deaths from pandemic and non-pandemic causes were reported and studied together, which was used to calculate the fatality rate.

The statistical summarization, comparison, grouping, structural shifts, as well as time series analysis methods have been used.

Analysis. In 2020, due to COVID-19, the number of deaths increased globally. Thus, according to J. Hopkins University data, 4.800.3 thousand people or 2.0% of the total number of infected people have died of COVID-19 in the world as of October 1, 2021. In Armenia, 5.339 people have died of the pandemic, or the fatality rate was 2.0%. As a result, Armenia is ranked 145th out of 209 countries in the world (Table 1).

All countries have been affected by the coronavirus disease, but not all have fared the same. Some countries have successfully suppressed the virus at an early stage (China, Thailand, and Vietnam), some have reduced a large initial outbreak but remain at risk of flare-ups (France, Spain, and Turkey), and some have continued to experience high or rising infection rates (USA, India, and Brazil). There are many factors affecting the risk of mortality from COVID-19 faced by older peeople. The most important is the extent to which countries have been able to control the pandemic. COVID-19 death rates at older ages have been the

[14] Health and Healthcare, Statistical Yearbook, "The National Institute of Health after Academician S. Avdalbekyan" CJSC, Yerevan 2021, pp. 66-74.

[15] Statistical Committee of the Republic of Armenia. (2021). *Socioeconomic Situation of the Republic of Armenia from January to December 2020*. Monthly Information Report.Yerevan, p. 151.

highest in the countries that experienced prolonged periods of uncontrolled transmission or delays in containing or mitigating the pandemic.[16]

Table 1

COVID-19 pandemic deaths, infections, and recurrences by several countries of the world as of October 1, 2021[17]

Country	*Infected, person*	*Recovered, person*	*Number of dead, person*	*Fatality rate, %*
USA	44 315 162	33 721 698	716 849	1.6
India	33 766 707	33 043 144	448 372	1.3
Brazil	21 427 073	20 425 139	596 800	2.8
Mexico	3 664 223	3 013 200	277 505	7.6
Peru	2 176 321	-	199 395	9.2
Russia	7 535 548	6 692 722	208 142	2.8
Italy	4 672 355	4 447 126	130 921	2.8
France	7 013 432	6 771 078	116 713	1.7
Germany	4 241 706	4 010 100	94 250	2.2
Iran	5 601 565	5 053 551	120 663	2.2
Spain	4 959 091	4 755 738	86 415	1.7
Ukraine	2 435 413	2 258 455	56 446	2.3
Turkey	7 154 070	6 615 908	64 054	0.9
Kazakhstan	886 982	823 453	11 220	1.3
Georgia	614 763	586 704	8 976	1.5
Azerbaijan	483 902	458 922	6 525	1.3
Armenia	262 631	242 569	5 339	2.0
Lithuania	333 690	304 554	5 014	1.5
Belarus	538 086	518 715	4 143	0.8
Latvia	159 418	146 449	2 721	1.7
Estonia	156 986	144 502	1 357	0.9
Uzbekistan	174 408	169 371	1 242	0.7
World	**234 700 837**	**211 487 725**	**4 800 330**	**2.0**

In the Republic of Armenia, the highest mortality rate for the period of 1950-2020 was recorded in 2020, amounting to 12.2‰ or 36.170 people, which was as a result of the pandemic and 44-day war. In 2020, during the first ten months of the year*, 1796 people died from COVID-19 and concomitant diseases (including, 1.363 death from COVID-19, and 373 - from concomitant diseases), which comprises 7.2% of the total deaths.[18] The total number of deaths increased by 3.313 people or 15.3% compared to the same period of 2019.[19]

From the beginning of the pandemic to November 1, 2021, the total number of deaths from COVID-19 and related diseases has made up 7.678 cases; in the

[16] World Population Aging 2020 Highlights, Living arrangements of older persons, UN, New York 2020, p.17.

* The number of death cases in the months from January to October 2020 does not include the death numbers from the 44-day Artsakh War.

[17] Пандемия COVID-19, Статистика заболеваний по странам и территориям. https://ru.wikipedia.org/wiki/%D0%9F%D0%B0%D0%BD%D0%B4%D0%B5%D0%BC%D0%B8%D1%8F_COVID-19#covid19-container, ст.12-16.

[18] Ampop.am, data journalism platform, the dynamics of confirmed coronavirus cases based on data provided by the Ministry of Health on a daily basis, https://ampop.am/covid19-coronavirus-dynamic-statistics-in-armenia/

[19] Statistical Committee of the Republic of Armenia. (2020). *Socio-Economic Situation of the Republic of Armenia in 2020, January-August,* p.133.

first 10 months of 2021, the total number of deaths was 4.165 (out of which 3.551 were from COVID-19 and 614 from related diseases).

In 2020, there were three COVID-related death cases in March; in April the number had already multiplied by 10 making a total of 30 death cases, and by May there had been more than 100 death cases registered in the RA. The highest number of deaths in 2020 was recorded in October, November, and December at 400, 830, and 635 respectively. From the 2021 review of death cases per month, it becomes obvious that the number of deaths has significantly increased compared to the same period of last year, with the exception of June and July when a decrease of 4 and 3 times (respectively) was recorded compared to last year. And the number of death cases in September and October of 2021 increased by 5.9 and 2.6 times compared to the same months last year (Figure 1).

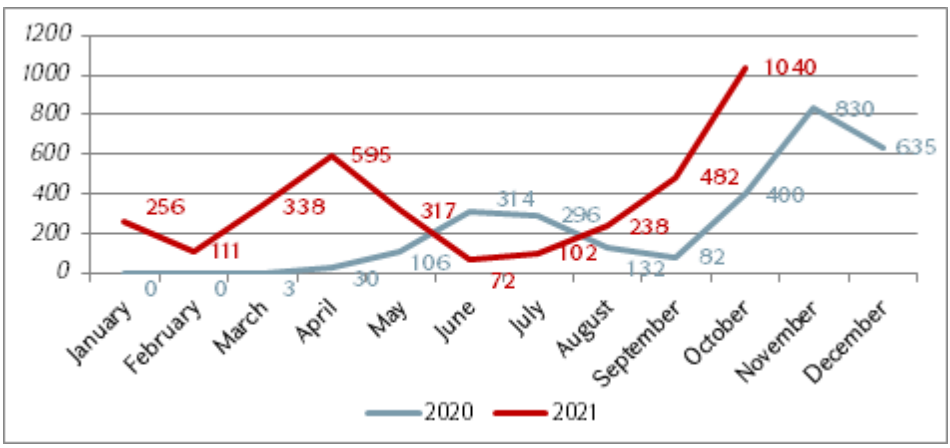

Figure 1. **The death cases from COVID-19 in the RA, 2020-2021 (monthly)**[20]

It is becoming increasingly concerning because COVID-19-related diseases and fatalities are progressively impacting the younger population, which will result in a drop in the number of younger age groups, a disproportionate gender and age composition, and lower birth rates.

In 2020, 3545 people died from COVID-19 (2828 people) and other causes (717 people), making up 9.8% of the total death toll (36.170 people). 43.5% of the total deaths were women, and 56.5% were men.

Due to the pandemic, the number of deaths of people aged 60 and over has increased, as a result of which in 2020 the death rate in age groups 65-69 and 70 and over comprises 26.9% and 91.8% as compared to 2019, increasing by 6.5 and 19.2 percentage points, respectively. In 2020, 84.8% of those who died of other causes were over 60 and older people, of whom 37.0% were women and 47.8% were men (Table 2).

In 2020, deaths of people over 65 increased by 30.3% or 5812 compared to 2019, out of which more than 2.500 deaths were due to pandemic and

[20] National Center for Disease Control and Prevention of the Ministry of Health of the Republic of Armenia, https://ncdc.am/coronavirus/confirmed-cases-by-days/

concomitant diseases. At the same time, the total numb Chart er of deaths among men increased by 36.9% (3.157), and among women - by 25.0% (2.655),[21] among which deaths due to pandemic and other reasons comprised 44.3 and 43.8% for men and women, respectively (Table 2).

Table 2

COVID-19 deaths by gender and age groups in the RA, 2020[22]

Age groups	*Man*		*Woman*		*Total*	
	person	***%***	***person***	***%***	***person***	***%***
70+	*1079*	*30.4*	*858*	*24.2*	*1937*	*54.6*
60-69	*616*	*17.4*	*452*	*12.8*	*1068*	*30.2*
50-59	*229*	*6.5*	*173*	*4.9*	*402*	*11.4*
40-49	*60*	*1.7*	*43*	*1.2*	*103*	*2.9*
30-39	*14*	*0.4*	*13*	*0.4*	*27*	*0.8*
20-29	*4*	*0.1*	*3*	*0.1*	*7*	*0.2*
15-19	*0*	*0.0*	*1*	*0.0*	*1*	*0.0*
Total	*2002*	*56.5*	*1543*	*43.5*	*3545*	*100.0*

In order to determine the risk of mortality from COVID-19 among the elderly, we have calculated the standardized age-related mortality rate from COVID-19 (deaths aged 60 and over / deaths aged 20-59) based on the 2020 data, both for the whole republic (Armenia) and in all regions separately (Figure 2).

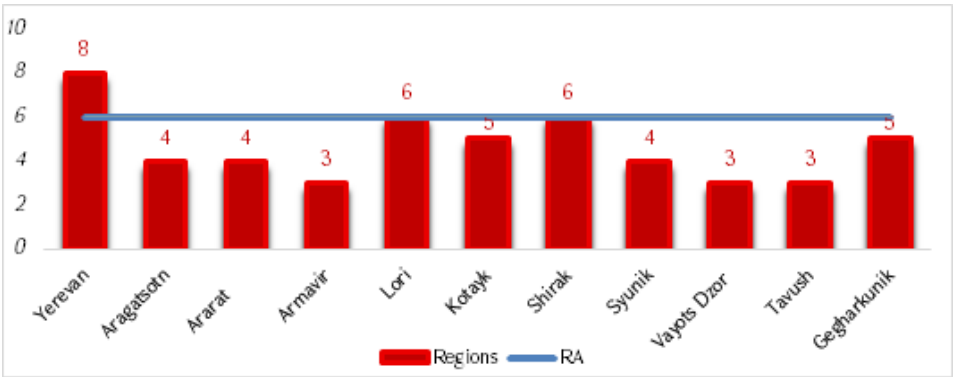

Figure 2: ***The ratio of age-standardized COVID-19 death rates in the RA and marzes (regions), 2020 (%)***[23]

Figure 2 illustrates that the highest death rate in Armenia is recorded in the city of Yerevan, whereas the risk of dying from COVID-19 is 8 times higher in the elderly group vs the younger adults. The national average is 6. In Armavir, Vayots Dzor, and Tavush the ratios of age-standardized COVID-19 death rates are twice lower than the national average, and in Lori and Shirak the above-mentioned ratios are the same as the national average.

[21]The calculation was made by the authors according to the following website data: https://www.armstat.am/file/article/sv_12_20a_520.pdf, p. 149.

[22]Ampop.am, data journalism platform, the dynamics of confirmed coronavirus cases based on data provided by the Ministry of Health on a daily basis, https://ampop.am/covid19-coronavirus-dynamic-statistics-in-armenia, https://ampop.am/covid19-coronavirus-dynamic-statistics-in-armenia/.

[23] The calculation was made by the authors according to data of National Institute of Health after Academician S. Avdalbekyan

In 2020, in the Republic of Armenia, there were 8 institutions where elderly and/or disabled people (nursing home, care center, care home) live. About 1.390 people lived in all institutions, more than 3.800 people were served at home, and about 2.000 attended daycare centers. In the RA, more than 7.400 elderly people got various social services.[24]

Thus, in 2020, the number of elderly people living in nursing homes is very small because living with parents (in most cases) and taking care of them is one of our national and cultural peculiarities. From this point of view, in contrast to a number of European countries, where the mortality rate of COVID-19 in nursing homes was high, in Armenia, it was very low.

In 2020, the highest number of coronavirus deaths was registered in Yerevan (1.717 cases) which makes 2-4% of those infected (fatality rate) or 13.8% of the total number of reported deaths. Although the proportion of people infected with COVID-19 among the population of Ararat, Lori and Armavir regions was relatively low, the chances of death were high constituting 2.9, 2.8, and 2.7% correspondingly. The fatality rate and the total number of infected people were high in the Kotayk region as well, amounting to 2.9% and 11.3%, respectively. In Syunik, Vayots Dzor, and Tavush regions, the proportion of people infected with COVID-19 was high, amounting to 7.0, 7.6, and 6.1%, respectively, but the risk of dying from the pandemic was low, comprising 1.0, 1.3, and 1.3% correspondingly (see Table 3).

Table 3

COVID-19 infected and died people by marzes and Yerevan 2020[25]

	Infected		*The dead*		*Fatality ratio (%)*
	Total person	*To the average annual population (%)*	*Total*	*To total mortality (%)*	
RA	**154632**	**5.2**	**3545**	**9.8**	**2.3**
Yerevan	**70403**	**6.5**	**1717**	**13.8**	**2.4**
Aragatsotn	**4629**	**3.7**	**108**	**7.0**	**2.3**
Ararat	**9525**	**3.7**	**272**	**9.0**	**2.9**
Armavir	**9528**	**3.6**	**258**	**8.4**	**2.7**
Gegharkunik	**7547**	**3.3**	**168**	**7.1**	**2.2**
Lori	**8275**	**3.9**	**229**	**7.2**	**2.8**
Kotayk	**13391**	**5.3**	**382**	**11.3**	**2.9**
Shirak	**10674**	**4.6**	**176**	**5.7**	**1.6**
Syunik	**9549**	**7.0**	**94**	**5.4**	**1.0**
Vayots Dzor	**3683**	**7.6**	**48**	**6.6**	**1.3**
Tavush	**7428**	**6.1**	**93**	**5.8**	**1.3**

From January to December 2020, almost half (48.4%) of coronavirus deaths occurred in Yerevan, and about 32.2% in Ararat, Armavir, Lori, and Kotayk regions (See Table 4). By gender the situation was the following: the mortality among men exceeded the number of deaths among women, in Yerevan, Aragatsotn, Ararat, Armavir, Kotayk, Shirak, and Tavush regions, and the

[24] Data of the RA Ministry of Labor and Social Affairs, https://www.mlsa.am/ and Social Situation of the Republic of Armenia in 2020, Statistical Committee of the Republic of Armenia, https://www.armstat.am/file/article/soc_vich_2020_17.pdf , p. 506.

[25] The calculation was made by the authors according to the following website data: https://ampop.am/covid19-coronavirus-dynamic-statistics-in-armenia/

significant difference recorded in Gegharkunik, Syunik, and Vayots Dzor regions, where the number of deaths among men exceeded by 60% that of women. Lori is considered to be the only region where the number of deaths among women (51.1%) exceeded the number of deaths among men (48.9%, see Table 4).

Table 4

Mortality rate from Covid-19 by the RA marzes and gender, 2020[26]

	Woman	Relative to total female mortality (%)	Man	To total mortality (%)	Total	Percent, in total
RA	1543	43.5	2002	56.5	3545	100
Yerevan	735	42.8	982	57.2	1717	48.4
Aragatsotn	48	44.4	60	55.6	108	3.0
Ararat	118	43.4	154	56.6	272	7.7
Armavir	126	48.8	132	51.2	258	7.3
Gegarkunik	63	37.5	105	62.5	168	4.7
Lori	117	51.1	112	48.9	229	6.5
Kotayk	161	42.1	221	57.9	382	10.8
Shirk	79	44.9	97	55.1	176	5.0
Syunik	37	39.4	57	60.6	94	2.7
Vayots Dzor	16	33.3	32	66.7	48	1.4
Tavush	43	46.2	50	53.8	93	2.6

In Armenia, the number of deaths from diseases of the circulatory system has increased, in 2020 by 21.2% or 3.000 cases compared to the same period of last year, and in January-August of 2021, the same indicator has increased by 4.1% or 411 cases, compared to the same period of 2020.[27] From January to August of 2021, 2.541 people died from COVID-19 and concomitant diseases (of which 2.064 from COVID-19 and 477 people from concomitant diseases), which makes 72.3% of total deaths.[28]

It was assumed that the pandemic would certainly have a negative influence on fertility by declining and changing reproductive behavior. As mentioned in the literature review, there is an opposite correlation between COVID-19 and birth rate, although in Armenia COVID-19 didn't have an impact on birth rates, as in the first 8 months of 2021 from January to August, the birth rate increased by 2.5% (582 people) compared to the same period of 2020, and by 2.7% compared to the same period of 2019. At the same time, due to certain restrictions, the marriage rate decreased by 24.1% (2.454 cases) compared to January – August of 2019. In 2021, the number of marriages makes 11.262 cases, increasing by 10.7% and 46.0%, as compared to 2019 and 2020, correspondingly.

In January-August 2021, the number of divorces increased by 400 and 769 cases, correspondingly, compared to the indicated periods in 2019 and 2020

[26] The calculation was made by the authors according to the following source: Health and Healthcare, Statistical Yearbook, "The National Institute of Health after Academician S. Avdalbekyan" CJSC, Yerevan 2021, p. 34.

[27] Statistical Committee of the Republic of Armenia. *Socio-Economic Situation of the Republic of Armenia in 2021, January-June.* https://www.armstat.am/file/article/sv_06_21a_520.pdf, p. 164.

[28] National Center for Disease Control and Prevention of the Ministry of Health of the Republic of Armenia, https://ncdc.am/coronavirus/confirmed-cases-by-days/ .

making up 2.892 cases. Nevertheless, it cannot be argued that the increase in the number of divorces was affected by the pandemic.

The measures taken by the countries of the world to prevent the spread of COVID-19 provoked an economic crisis, affecting all spheres of people's daily lives, regardless of their social status, though it led to significant changes in migration processes.

During the pandemic, the migration between countries nearly stopped as almost all countries closed their borders to both migrants and tourists. In Armenia, from January to December of 2020, the transportation of goods by land and air decreased more than 3.5 times compared to 2019. The money transfers from individuals from Russia to Armenia decreased by more than 231.0 million dollars.

The pandemic had a serious impact on the labor market as well. Many fields of services, such as transportation within the nation, long-distance travel, building and trade, public catering, and so on, had to be restricted by the government, resulting in increased unemployment. In the second and third quarters of 2020, compared to the same periods of 2019, the number of unemployed increased by 10.7 and 8.2 thousand people, respectively, making up 218.1 and 226.9 thousand people. Meanwhile, the number of employed decreased by 2.4% in the second quarter, by 3.8% - in the third quarters, correspondingly.[29]

However, as the pandemic continues, the magnitude of COVID-19-related losses, as well as the depths of the socioeconomic and demographic effects, can only be more properly evaluated in the mid and long term.

Conclusions. In Armenia, the demographic consequences of COVID-19 require not only additional research but also the development of a sustainable and scientifically based monitoring system. The monitoring data can help the state coordinate its measures in response to the problems posed by the COVID-19 pandemic in the demographic and migratory processes.

Monitoring the demographic consequences of the COVID-19 involves the following steps:

- Validation of approaches in the statistical recording of demographic processes (basically in mortality and migration processes) as well as highlighting actual and potential sociodemographic effects of COVID-19 (high mortality, reduced migration mobility, increase in divorce, etc.), considering international standards and approaches of various countries;
- Calculation of the impact of COVID-19 on depopulation and its tendencies. In Armenia, the new wave of depopulation takes place in two directions.

First and foremost, they are shifts in demographic patterns caused by conventional forces. In particular, the number of fatalities from circulatory system disorders has grown significantly in 2021 when compared to 2020 and 2019 (In January-August of 2020 the number of deaths from diseases of the circulatory

[29] Statistical Committee of the Republic of Armenia. *Socio-economic Situation of the Republic of Armenia In 2021, January-February*. p. 44, https://www.armstat.am/file/article/sv_02_21a_141.pdf?fbclid=IwAR0SRk8AGRXTPh0acJbV7p6W5CZBJP50jRluLAKIFNK9teFjM77TISasY88

system increased by 21.2% as compared to the same period of last year, and in January-August of 2021 the same indicator has increased by 4.1% when compared to the same period of last year). On the other hand, the pandemic "behavior" has worsened. In January-August of 2021 (as of September 3), 2.541 people died from COVID-19 and concomitant diseases, which makes 72.3% of total deaths. Taking into consideration the above-mentioned factors (increase in mortality as a result of pandemic and circulatory system diseases), as well as low birth rates, the depopulation processes will appear in 2021.

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ԴԻԱՆԱ ԳԱԼՈՅԱՆ
Հայաստանի պետական տնտեսագիտական համալսարանի ռեկտոր, տնտեսագիտության դոկտոր, պրոֆեսոր

ԴԱՎԻԹ ՀԱԽՎԵՐԴՅԱՆ
Հայաստանի պետական տնտեսագիտական համալսարանի «Ամբերդ» հետազոտական կենտրոնի տնօրեն, տնտեսագիտության դոկտոր, պրոֆեսոր

ՄԱՆՈՒԿ ՄՈՎՍԻՍՅԱՆ
Հայաստանի պետական տնտեսագիտական համալսարանի կառավարման ֆակուլտետի դեկան, տնտեսագիտության թեկնածու, դոցենտ

ԼՈՒՍԻՆԵ ԿԱՐԱՊԵՏՅԱՆ
Հայաստանի պետական տնտեսագիտական համալսարանի բիզնես վարչարարության ամբիոնի դոցենտ, տնտեսագիտության թեկնածու

COVID-19 համավարակի ազդեցությունը ՀՀ բնակչության մահացության վրա.– Հոդվածը նվիրված է ՀՀ-ում COVID-19 համավարկի հետևանքով ՀՀ բնակչության մահացության մակարդակի և շարժընթացի ուսումնասիրությանը: Հասանելի տեղեկատվության հիման վրա հեղինակներն իրականացրել են բժշկական (մահաբերություն) և ժողովրդագրական (մահացություն) ցուցանիշների մակարդակների ու շարժընթացների վիճակագրական վերլուծություն՝ ըստ ՀՀ մարզերի բնակչության սեռատարիքային կազմի: Բացի այդ, հակիրճ կերպով անդրադարձ է կատարվել նաև ծնելիության, ամուսնության, ամուսնալուծության և միգրացիայի վրա համավարկի ազդեցությանը:

Համավարակի սկզբից ի վեր ժողովրդագրագետները կանխատեսել են, որ COVID-19-ից մահվան ելքերի ցուցանիշներն ավելի բարձր կլինեն բնակչության ծերացման հիմնախնդիրներ ունեցող երկրներում: Փորձագետները մատնանշել են նաև ծնելիության, վերարտադրողական վարքագծի, կյանքի սպասվող տևողության, միջպետական միգրացիայի վրա համավարակի բացասական հետևանքներն ու ազդեցությունները:

Ներկայումս Հայաստանում COVID-19 համավարակի պատճառով մահվան դեպքերը գերազանցել են 6.500-ը *(05.11.2021)*, ընդ որում՝ մահացածների շուրջ 85%-ը 60 և բարձր տարիքային խմբի անձինք են: Ինչ վերաբերում է ծնելիության մակարդակի վրա համավարակի թողած ազդեցությանը, ապա, ի տարբերություն արտասահմանյան մի շարք երկրների, ՀՀ-ում 2021 թ. հունվար-օգոստոս ամիսներին, նախորդ տարվա նույն ժամանակահատվածի համեմատությամբ, ծնելիության ցուցանիշն աճել է 2.5%-ով, իսկ 2019 թ. նույն ժամանակահատվածի համեմատությամբ՝ 2.7%-ով:

Սակայն պետք է նշել, որ համավարակով պայմանավորված անուղղակի և հետաձգված կորուստների ծավալների, ինչպես նաև դրա սոցիալ-տնտեսական ու ժողովրդագրական հետևանքների խորության մասին առավել ճշգրիտ գնահատականներ կարելի է տալ միայն միջնաժամկետ ու երկարաժամկետ հեռանկարում:

COVID-19-ը դեռ շարունակում է իր «սև» գոյությամբ խլել բազմաթիվ կյանքեր:

Հիմնաբառեր. *COVID-19 համավարակ, մահաբերություն, մահացության ընդհանուր գործակից, միգրացիա, ժողովրդագրական փոփոխություններ, ծնելիության մակարդակ:*
JEL: J11, I10, I19
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Влияние пандемии COVID-19 на смертность населения РА.– Статья посвящена изучению уровня и динамики смертности населения в результате пандемии COVID-19 в Республике Армения. На основе доступной информации в статье проведен статистический анализ медицинских (летальность) и демографических (смертность) показателей и тенденций динамики по половозрастному составу населения регионов РА. Кроме того, вкратце рассмотрено влияние пандемии COVID-19 на рождаемость, брачность, разводимость и миграцию.

С самого начала пандемии демографы предсказывали, что смертность от COVID-19 будет выше в странах со стареющим населением. Кроме того, эксперты отмечали, что пандемия будет негативно влиять на уровень рождаемости, репродуктивное поведение, продолжительность жизни и межгосударственную миграцию.

В настоящее время число смертей в результате коронавируса в Армении превысило 6.500 человек *(05.11.2021 г.)*, из которых около 85% приходятся на группу старше 60 лет. Что касается влияния пандемии на рождаемость, то в отличие от ряда зарубежных стран (в основном снижение уровня рождаемости наблюдалось в европейских странах), в Армении в январе-августе 2021 года по сравнению с аналогичным периодом прошлого года уровень рождаемости повысился на 2.5%, а по сравнению с 2019 годом – на 2.7%.

Однако следует отметить, что более точная оценка масштабов косвенных, отсроченных потерь из-за пандемии, а также глубины социально-экономических и демографических последствий могут быть даны только в среднесрочной и долгосрочной перспективе.

COVID-19 все еще продолжает вторгаться в нашу жизнь, унося жизни своим «черным» существованием.

Ключевые слова: *пандемия COVID-19, летальность, общий коэффициент смертности, миграция, демографические изменения, уровень рождаемости.*
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