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ASSESSMENT OF THE RISK OF HUMAN LIFE LOSS IN ARMENIA

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Abstract

One of the problems in the article is to evaluate the risk of human health and life-threatening risk. Of course, many studies have been conducted in this direction, but the impact of the environmental factor, as well as the impact of socioeconomic factors affecting human health on the risk of human health and the risk of loss of life are especially important.

Keywords: the risk of human life loss, the level of mortality, cancer deaths, economic indicators.

One of the problems in the article is to evaluate the risk of human health and life-threatening risk. Of course, many studies have been conducted in this direction, but the impact of the environmental factor, as well as the impact of socioeconomic factors affecting human health on the risk of human health and the risk of loss of life are especially important. For example, in Russia «National Health Program» has been operating since 2015, and the factors have been identified, based on which the risk of human life loss has been calculated. In this program, the calculation of the overall loss of human life is also based on the reforms in the health sector of the Russian Federation, which cover 2000-2006 and 2007-2015, as well as the expected reforms, 2017-2022. period¹ Accordingly, as a generalized loss indicator, the *i*-th entity is computed as follows:²

¹ Акопов В.И., Маслов Е.Н. Право в медицине. - М.: Книга-сервис, 2002.- с. 35-38

² Tikhomirova T.M., Sukiasyan A.G. Modified estimates of human potential in the Russian federation regions taking into consideration the risks of health losses and social tensions// Экономика региона.- 2017.-№ 4(40).-С.164-177.

$$I_i^{mt} = \sqrt[m]{\prod_{j=1}^m V_{ji}^t} \quad (1)$$

$$V_{ji}^t = \frac{x_{ji}^t - 0,95x_{min}}{1,05x_{max} - 0,95x_{min}} \quad (2)$$

where`

x_{ji}^t - is the level of mortality, according to j, for the i-th entity in the period t,

V_{ji}^t - the standard mortality rate, according to the j-th specification, for the i-th year,

x_{min} - is the minimum level of mortality, according to the j-th peculiarity for the i subject in the t-year

x_{max} - the highest mortality rate, according to the j-th peculiarity, in the t-year studied for i subject,

m - the number of indices, and in this case it is equal to 3, as 3 variables have been included.

Let us calculate (1) - (2) Resolutions for the general deterioration of human health in Armenia and for which it has been considered 2000-2016. Total mortality rate per 1,000 people.

As shown in Table 1, the overall mortality rate in the Republic of Armenia was 7.5 / 1000 in 2000, which started to grow in 2002, increasing by 25.33% in 2016 to 9.4% 1000. It should be noted that the mortality ratio compared to the previous year decreased in 2012-2013. respectively, making 97.8-98.9%.

Analyzing Table 1 and comparing them with formula 2, we calculate the standard mortality rate in Armenia for which we deduce average, maximum and minimum values from Table 2.

Table 2 shows the average human mortality rate in the Republic of Armenia based on which the risk of human health and loss of life was estimated (I_i^{mt})³,

$$I_i^{mt} = 0,6^{1/3} = 0.2$$

³ Тихомирова Т.М., Сукиасян А.Г. Оценка вектора развития человеческого потенциала в субъектах РФ // Вестник Российского экономического университета им. Г.В. Плеханова. 2013. № 2 (56). С.81-91.

Table 1 - Total mortality rate per 1000 population for 2000-2016 period

Year	Absolute value	Compared to the same period of the previous year (%)
2016	9.4	101.1
2015	9.3	101.1
2014	9.2	102.2
2013	9	98.9
2012	9.1	97.8
2011	9.2	100
2010	9.2	102.2
2009	9	101.1
2008	8.9	103.5
2007	8.6	98.9
2006	8.7	103.6
2005	8.4	103.7
2004	8.1	98.8
2003	8.2	102.5
2002	8	106.7
2001	7.5	100
2000	7.5	100

Table 2- The average human mortality rate in the Republic of Armenia

Indexes	Values
Average	8.7
max	9.4
min	7.5
V_{ji}^t	0.6

We will conditionally divide the period of healthcare reform in Armenia by two stages,

1. In 2000-2007, up to the Financial Crunch (T1),
2. In the years 2008-2016, The Financial Crisis outcomes and Current Reforms (T2).

Let us calculate the average human mortality rate in the Republic of Armenia for 2000-2007. and 2008-2016

Table 3 was assessed before the crisis and crisis (2000-2007), as well as after the crisis (2008-2016), the mortality rate (), which is an average of 2.0.

It dropped 6.6 times after the crisis and made an average of 0.3. It means that the mortality rate has been significantly reduced, which indicates the improvement of living standards and improvement of the socio-economic situation in Armenia.

Table 3- The average standard mortality rate in the Republic of Armenia is 2000-2007. and 2008-2016⁴

Year	Value	Year	Value
2007	8.6	2016	9.4
2006	8.7	2015	9.3
2005	8.4	2014	9.2
2004	8.1	2013	9
2003	8.2	2012	9.1
2002	8	2011	9.2
2001	7.5	2010	9.2
2000	7.5	2009	9
Average	8.2	2008	8.9
max	8.7	Average	9.2
min	7.5	Max	9.4
V_{ji}^t - 2000-2007	2.0	Min	9
		V_{ji}^t - 2008-2016	0.3

Based on Table 3 and on the same logic, we should calculate the general human-life index in the Republic of Armenia for 2000-2007. and 2008-2016 for the periods, based on the following formulas:

$$\begin{cases} I_i^{T_1} = \frac{1}{T_1} \sum_{t=1}^{T_1} I_i^{mt} \\ I_i^{T_2} = \frac{1}{T_2} \sum_{t=1}^{T_2} I_i^{mt} \end{cases} \quad (3)$$

where □

T₁- is the period of 2000-2007 years

T₂- is the period of 2008-2016 years

⁴ The author has calculated.

$$\begin{cases} I_{i-1}^T = 1/8 * 0.7 = 0.07 \\ I_{i-1}^T = 1/9 * 0.1 = 0.01 \end{cases} \quad (4)$$

Thus, we have calculated the general human trafficking index and the following results have been obtained: 2000-2007 (which includes 8 years, 1/8), it was 0.07, and in 2008 - (which covers 9 years, 1/9), 0.01.

The key to economics in the general index of human loss is that it gives maternal and infant mortality rates, so-called "accumulated loss". At the same time, the minimum value of the overall loss indicator indicates the best medical and demographic situation in the given period and, at the very least, the worst situation. The minimum value of the total human loss index calculated on our side was obtained in 2008-2016. which was 0.01, which speaks about improving human health.

Of course, the results of the analysis are more than encouraging, it should be noted that the indicators characterizing the state of health in Armenia are still worrying and the upcoming trends are alarming.

Analyzing 1990-2015 the dynamics of birth births in Armenia can be summed up as follows: that the annual number of births in 2011-2013 has dropped and a significant increase was recorded in 2014. In 2015, the number of births regained again. As presented in **Figure 1**, fertility in Armenia has decreased by 1.9 times in comparison with 1990. The birth rate per 1,000 population in 2015 was reduced from 22.5‰ to 13.9‰ in 2015.

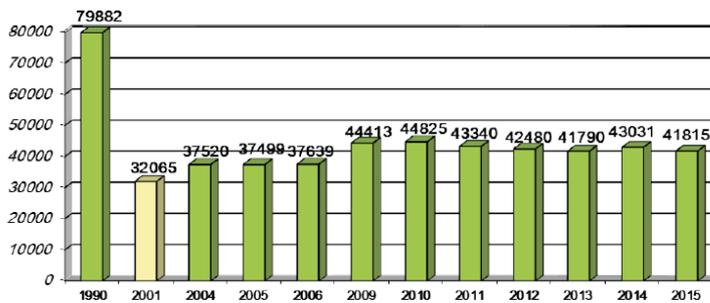


Figure 1- Actual births in Armenia for 1990-2015. ⁵

One can assume that one of the reasons for the reduction of actual births is the emergence of "dangerous abuses", and with both financial and psychological problems, there is no possibility to save lives. For example, socially significant diseases, such as malignant neoplasms, continue to occupy a

⁵ http://www.armstat.am/file/article/poverty_2016a_2.pdf

primary place in the general mortality structure, with a tendency of continuous growth throughout the year.

As shown in **Table 4**, the data for 1999-2015 The number of patients with malignant neoplasms registered in diagnostic and oncological institutions for the first time in the life of 100,000 population has gradually increased, in particular the absolute increase in 2014 was 54,48 percent compared to 1999, and the highest figure was recorded in 2014, the absolute number being 8365 man. At the end of the year, the number of patients undergoing dispensary surveillance at oncological institutions, which is again the absolute growth of 100,000 in 2014 compared to 1999 was 72.29 percent.

Table 4- Population Disease with Malignant Neoplasms in RA (per 100,000 population)⁶

Year	The number of patients with malignant neoplasms registered in diagnosis and oncological institutions for the first time in life		At the end of the year, the number of patients undergoing dispensary control at oncological institutions	
	absolute number	relative number	absolute number	relative number
1999	5415	142.5	22589	593.9
2000	5413	142.3	21972	577.8
2001	5666	149.1	23451	617.1
2002	5737	178.6	24384	759.6
2003	5951	185.3	25580	796.3
2004	6174	192.1	26522	824.7
2005	6396	198.8	26512	823.6
2006	7163	222.4	27963	867.6
2007	7294	226.1	28439	880.4
2008	7336	226.8	28692	886.1
2009	7657	236.1	30117	926.8
2010	7593	233.2	31550	967
2011	7858	240.4	32580	995
2012	7877	260.5	34400	1136.5
2013	7911	261.8	36660	1215.1
2014	8365	277.6	38918	1292.7

⁶ Figure 1 is compiled by the author on the basis on: http://moh.am/uploadfiles/Health_Health%20Care%20Year%20Book_2015_Arm.pdf

It can be said that cancer has become the main cause of the 21st century death, since still there is no single or absolute source of nutrition, medicine, or medicine that can finally fight and eliminate cancer cells. Perhaps increasing the incidence of these illnesses each year and even at an alarming rate indicates that there are adverse changes in the environment and the ecosystem has been violated, which causes new and still untreated diseases:

Table 5- Cases of cancer deaths in OECD countries
(100,000 people 0-69 years old), 2015

OECD countries	Cases of death from cancer (0-69 years old)
Australia	191.8
Austria	197.1
Belgium	206.6
Brazil	161.2
Chile	196.3
Costa Rica	168.3
Czech	229.8
Estonia	235
Finland	175.8
France	197.7
Hermitage	204.8
Hungary	286.3
Ireland	223.4
Israel	179.8
Japan	179
Korea	178.9
Latvia	229.5
Lithuania	221.5
Luxemburg	189.1
Mexico	113.1
The Netherlands	224.3
Norway	196.4

If we look at the 1990-2015 figures of birth rate and mortality, we will notice that mortality rates have increased, in particular, in 2015, the largest mortality rate in the last four years - 27,000. 900 number.

During the last 15 years, the deaths are quite alarming. In cases of death, deaths from cardiovascular system diseases and malignant neoplasms accounted for 68.5% of the total mortality rate. Causes of increased mortality are different due to the increase in cardiovascular, neurological and oncological diseases. As shown in Table 6 data suggest that cardiovascular disease is one of the causes of death by 24.9% in 2015 and 2393 deaths in 2014, and brain disease (stroke) decreased by 11 and 2637 cases of death in 2015. In the same period, the causes of death of the central nervous system were reduced by about 17.4%. The death rate of cancer patients is quite alarming, which is 60.9% more than in 1990, and the number of patients has increased by around 2160 as a result of this disease. It should be noted that malignant cancer has increased as a result of the mortality rate of the Armenian population; it has increased in 2014 compared to 1990, and increased by 41.9% and caused by the causes of death of about 6103 in 2015.

Table 6 - 1990-2015 Mortality of the Armenian population, according to the reasons of 100,000 inhabitants⁷

Causes of Mortality:	1990	1995	2000	2005	2009	2010	2012	2013	2014	2015
	case, man									
heart diseases, infectious	1916	2342	2719	2343	2664	2796	2600	2386	2393	2337
brain vascular diseases, stroke	2963	3515	3600	3927	3164	2969	2803	2554	2637	2428
central nervous system □infection	138	180	170	140	143	163	127	104	114	118
Rheumatism in the active phase	26	33	47	54	67	56	47	57	44	64
Cancer patients	3541	3454	3967	4679	5413	5516	5625	5608	5701	6103
including: malignant	3484	3384	3958	4665	5399	5501	5607	5589	5685	6069

In 2015, as in 2014, 51.3% of fatalities were male and 48.7% fatalities. According to official data, in 2015, 14,302 men and 13576 women died. Almost half of the deaths recorded last year were due to diseases of the blood circulatory system, and subsequent deaths from malignant neoplasms were followed by deaths from respiratory diseases.

References:

[1] Akopov V.I., Maslov E.N. Pravo v medicine. - M.: Kniga-servis, 2002.- s. 35-38

⁷ Table 6 is compiled by the author on the basis of: http://moh.am/uploadfiles/Health_Health%20Care%20Year%20Book_2015_Arm.pdf

- [2] Tikhomirova T.M., Sukiasyan A.G. Modified estimates of human potential in the Russian federation regions taking into consideration the risks of health losses and social tensions// Экономика региона.- 2017.-№ 4(40).-С.164-177.
- [3] http://www.armstat.am/file/article/poverty_2016a_2.pdf
- [4] http://moh.am/uploadfiles/Health_Health%20Care%20Year%20Book_2015_Arm.pdf