

TERRITORIAL DEFINITIONS OF POPULATION MORTALITY IN UZBEKISTAN

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Abstract: *The article outlines the geographical features of the mortality of the population in Uzbekistan, and identifies the regional variables of the general mortality rate of the population and maternal and infant mortality rates. One of the achievements of the country's socio-demographic development during the years of independence is the fact that the death toll has declined in all age groups. During this period, the country's healthcare system was improved, and the attention to maternal and child health was enhanced. In addition, the proportion of young people and middle age and the decline in the population have led to a reduction in maternal mortality and general mortality. In the same quarter (1991-2018), the overall death rate in the country decreased by 1.2 promille, or by 6.2 promille per thousand people – by 5.0 promille. However, there are still high mortality rates (Tashkent city, Tashkent and Andijan provinces), which can be explained by their location and industrialization. At the same time, close proximity of settlements around the industrial enterprises, diversity of national-ethnic content, low birth rates, and the increase in the elderly population's age-gender have a significant impact on the overall mortality rate and are higher than in other regions. When analyzing the mortality rates in Uzbekistan, rural and urban areas vary according to the national composition. Studying and analyzing their regional aspects is one of the important aspects of geographical research.*

Keywords: tanotogeographic criteria, transport node, perinatal mortality, neonatal death, radiology, medical geography.

It is well known that the regions of the republic have certain differences with regard to socioeconomic development, demographic situation and ecological situation. In particular, in the Republic of Karakalpakstan and Khorezm region, due to the ecological situation, due to the drying up of the Aral Sea, there is a sharp deterioration of the nozoecological condition. The emergence of a hazardous environment for the populations to have a negative impact on the lives of the population, high levels of desertification, and the changes in the structure of soil and water, have accelerated the death process. In the region, the balance of nature has changed dramatically. Also, it is possible to observe the ecological situation in big cities and industrial centers (Chirchik, Angren,

Navoiy and others). Similar discomforts and lack of access to safe drinking water can also lead to a significant increase in mortality.

During the study tanotogeographic criteria for total mortality rates within the territory of the Republic were developed. At the same time, the total mortality rates of the population of the regions were taken as the basis.

The administrative-territorial division of Uzbekistan includes 12 regions of the Republic of Karakalpakstan and Tashkent city. These, in turn, consist of 168 districts (including Tashkent city) and 25 towns. As can be seen in Table 1, there are 12 districts with low mortality rates, and one area with high mortality rates. According to the data of the State Committee on Statistics of Uzbekistan, the lowest mortality rates were observed in the Bulakbashi district of Andijan region (0.9 promille) and the highest in Yashnabad district of Tashkent (8.4 promille). The city with a low mortality rate is Zarafshan, with a population of 3.9 promille. As it can be seen, the number of districts related to the average rating scale is 139, which means that the improvement of the social situation in the regions, the improvement of the health of the population and the increase in the health of the population and the long life expectancy. As a result, it is possible to observe the decline in general mortality rates. Over the years, the share of districts with low levels has increased, and the number of regions with very high levels has been decreasing.

Analysis of dynamics of population mortality in the regions of the Republic of Uzbekistan

Dynamics of population mortality in the regions of the republic has been observed to decline during the years of independence (Table 1). Socio-economic reforms carried out in our country resulted in a decrease in the population's mortality, the formation of the medical culture of the population and the increase in the employment of women. The highest mortality rates in Tashkent, Tashkent and Andijan provinces have been observed in recent years. The mortality rate in these regions is higher than the national average due to the fact that the majority of medical facilities are located in the center, in Tashkent, on the transport node and the industrial zone around it. The situation in the Tashkent region has a significant impact on the overall mortality rate and is relatively high compared to other regions, where the proximity of populated areas around industrial enterprises, the diversity of national ethnicity, the low birth rate, and the age-related gender-based population. Andijan region is the most

populous region, with a low living standard, birth deficit, and the main source of labor – the majority of able-bodied population lives in other provinces and republics, and the older people's population is increasing in mortality. The decline of this dynamics today is the result of the longevity of people's consciousness and the formation of the medical culture, as well as the result of the government's demands for public welfare and longevity.

Table 1: The criterion for assessing the mortality rate in Uzbekistan (in the administrative unit)

Years	3.9 up to promille-low	4.0-5.9 up to promille-average	6.0-7.9 up to promille-high	8.0 promille the top-very high
1995	1/5*	15/83	22/72	12/3
2000	1/11	26/144	19/11	7/9
2005	0/18	12/124	9/20	6/8
2010	1/34	17/118	6/11	2/4
2015	0/23	19/133	5/11	1/3
2017	1/12	19/139	5/16	0/1

* Note: Number of towns and districts 1/5. The table was created by the author.

Table 2: Geographic structure of population mortality in the Republic of Uzbekistan¹

Regions	With every thousand people (promille)						Change index
	1991	1995	2000	2005	2010	2017	
Republic of Uzbekistan	6.2	6.4	5.5	5.4	4.8	5.0	0.80

¹ State Committee on Statistics of Uzbekistan. Available at: <https://stat.uz/en/open-data>.

Republic of Karakalpakstan	6.8	6.5	5.6	5.8	4.6	4.7	0.69
Andijan	6.1	6.2	5.2	5.2	5.2	5.4	0.89
Bukhara	5.4	5.4	4.7	4.5	4.4	4.5	0.83
Jizzakh	5.3	5.7	4.4	4.2	4.2	4.4	0.83
Navoiy	-	6.3	5.3	5.3	4.5	4.7	0.75*
Namangan	5.9	6.1	5.1	4.9	4.7	4.9	0.83
Samarkand	6.0	6.2	5.3	5.0	4.5	4.5	0.75
Surkhandarya	5.6	5.7	4.6	4.3	4.1	4.5	0.80
Syrdarya	6.4	5.8	5.4	5.5	4.8	5.0	0.78
Tashkent	6.6	7.2	6.4	6.8	5.9	5.9	0.90
Fergana	6.4	6.2	5.3	5.2	5.0	5.0	0.78
Khorezm	5.9	6.0	5.2	4.6	4.5	4.7	0.80
Kashkadarya	5.3	5.1	4.4	4.1	4.0	4.3	0.81
City of Tashkent	8.1	9.2	8.5	8.6	6.9	6.7	0.83

According to the data of the table, the regions with the lowest mortality rate are Kashkadarya, Surkhandarya and Jizzakh regions. These zones are characterized by the good nature of the ancient ecological situation and the positive impact on human life. In this area, where the mortality rate is low, population is mainly engaged in agriculture and livestock production. The industrial sector is relatively poor. The traditions and customs of the Uzbek people have been preserved and the birth of many children is higher than some industrialized and densely populated areas, largely due to the fact that most of the working age population is migrating to large cities (Table 2).

Also, the variation in population mortality in the country is different in urban and rural areas. Figure 1(a) below shows that mortality rates are high in Tashkent, Andijan, Syrdarya and Namangan regions, while Jizzakh, Kashkadarya and Samarkand are relatively low. In the analysis of this situation, the highest mortality rate in Tashkent and Andijan regions is mentioned above, and the maternal and infant mortality rates are higher than the national average.

Jizzakh and Kashkadarya regions are largely due to the fact that the majority of the population lives in rural areas. As it can be seen from this, the mortality rate of the urban population was differentiated by 2.0 promille, while in the rural area it was 1.5 times promoted. From this we can conclude that the population lives in close contact with nature in the countryside, and the city has a high impact on the environment, science

and technology. It is desirable to analyze the age-related deaths of the population into three major age groups.

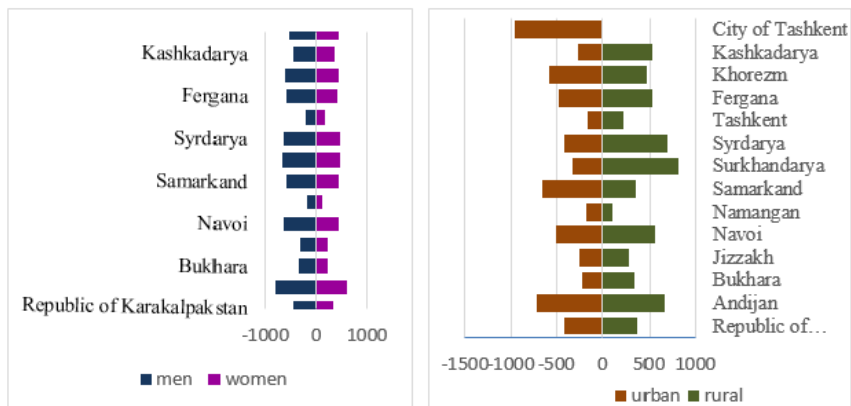


Figure 1 (a): Composition of infant mortality rates in urban and rural areas (0-14 years) in Uzbekistan (2017)²

0-14 years – children. While mortality is low in this group, the main deaths are the deaths of babies under the age of 1. The impact of the external environment on the baby born during this period is significant and occurs as a result of endogenous and exogenous factors. As it can be seen, the high proportion of male population in the deaths can be explained by the fact that birth rates are higher in boys than boys, and boys are less resistant to disease. At the same time, it is appropriate to observe the differentiation of population mortality by sex in 1(a). Children's infant mortality rates were higher in boys than boys. In Andijan, Samarkand, Surkhandarya and Fergana regions, the infant mortality rates are quite high. In these regions, the infant mortality rate also affects the remaining age groups.

Figure 1(a)-geodemographic analysis shows that child mortality rates are higher in rural areas than in urban areas, and in Samarkand and Surkhandarya provinces. This should be explained by the fact that the infrastructure of medical institutions and the accumulation of qualified specialists in urban areas. As it can be seen, infant mortality is higher in urban areas compared to urban areas, such as medical literacy, age disparity among children, and women's employment.

² State Committee on Statistics of Uzbekistan. Available at: <https://stat.uz/en/open-data>.



Figure 1 (b): Composition of age-related sexual and urban-based population censuses in Uzbekistan (2017)³

Working age men (15-59 years old men, 15-54 years old women). It is characterized by the fact that among men the highest incidence of heavy and dangerous labor has been observed, the high incidence of accidents, and the regular attendance of alcoholism and drug addiction in the age group. The situation of women is as follows: maternal mortality, accidents, infectious diseases, and disobedience to medical controls, and so on. The low mortality rate among women in the study group is explained by the fact that they are slightly labor-intensive and often as housewives (Figure 1(b)).

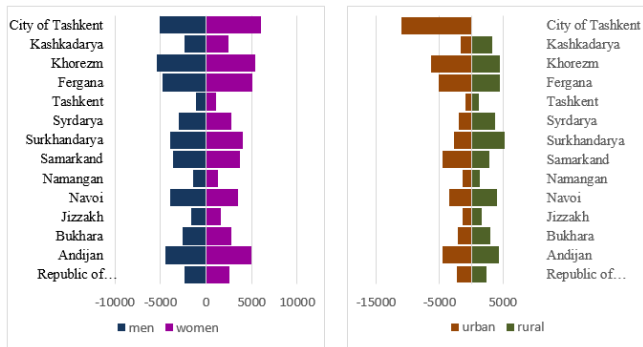


Figure 1(c): Composition of age-related deaths in urban areas and urban and rural populations in Uzbekistan (2017)⁴

³ State Committee on Statistics of Uzbekistan. Available at: <https://stat.uz/en/open-data>.

⁴ State Committee on Statistics of Uzbekistan. Available at: <https://stat.uz/en/open-data>.

The mortality rate of males in the provinces is high in Samarkand, Tashkent and Ferghana regions. Drug abuse, violence, injuries and accidents are the cause of this. Meanwhile, occupational mortality rates are frequently encountered in men between 50 and 60 years of age (including cardiac ischemic diseases). Also, the most common cause of death in women is the repatriation status of maternal mortality. These indicators are high in Samarkand, Ferghana and Tashkent regions while analyzing the regions, with a sharp decline in Navoi, Bukhara and Jizzakh regions. It is true that at the age of 45-55 years, the death rate of malignant tumors, pelionephritis, acute renal failure in women is increasing. This is also different in rural and urban areas. At the same time, the mortality rate in the city of Tashkent, Fergana and Tashkent provinces is high, and the rural population of Samarkand, Andijan and Tashkent provinces is relatively high in the working age population. In this context, the impact of population density, national composition, accidents, poisoning, injuries and alcoholism are significant.

Senior citizens (55 years and older, 60 years and older). This group is characterized by high mortality rates. During this period, death is more prevalent under the influence of endogenous factors. In fact, the high mortality rate is mainly due to the biological aging of the organism, as well as the increase in death rate during the postnatal period. This can be explained mainly by low mobility. The nutritional ration also has its effect. It is also an organism's aging process, as well as the effects of occupational diseases on the body. The low mortality rate among males in terms of mortality is due to the employment of men in such heavy and dangerous labor conditions. During this period, it is highly probable that this cycle will be delayed if it is followed by a proper diet and ration.

Also, Figure 1(c) can be seen from the elderly in terms of sexual content in Tashkent, Ferghana, Tashkent and Andijan regions with high mortality rates in men and women in Jizzakh, Syrdarya and Navoi provinces in 2017. Differences across the regions show high mortality rates in rural and urban areas in Fergana, Tashkent and Namangan provinces. In these areas, urban population is relatively high compared to rural areas, and it can be seen in Samarkand, Khorezm and Bukhara provinces.

The national composition is particularly important in studying and analyzing general mortality indicators in Uzbekistan. Our country is a multi-ethnic country, 83% of Uzbeks and 17% are representatives of other nationalities. Indeed, the proportion of ethnic Uzbeks in the national composition is very high, as can be seen in the mortality indicator Figure

2. Especially, Russian, Tajik and Kazakh nationalities are more likely to die in the 21.2% of the country's population.

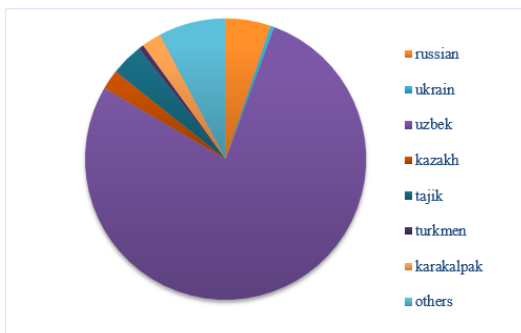


Figure 2: Mortality in national content in Uzbekistan (2017, %)⁵

According to this picture, mortality in the national composition varies considerably in the regions. For example, in the Republic of Karakalpakstan, the Karakalpak people have a higher mortality than the Uzbek one. This is explained by the high Karakalpak and Kazak ethnicities in the national structure of that country.

The features of the spread of diseases throughout the regions of Uzbekistan

Meanwhile, the mortality rates of Russian nationalities in Tashkent and Tashkent region are on the second place in the national composition. This is due to the fact that during the Soviet era Russians and other nationalities were migrated and that they were located in and around the center. After Uzbekistan gained its independence, Russian and other nationalities were deported.

Depending on the geographical location, natural conditions and climatic characteristics Republic of Uzbekistan, one region differs from the other. The location of the population in the mountains, valleys and steppes, in the seldom desert zones will vary significantly from the effects of the death to the dead, and the causes of the disease are distinct.

More than 70 percent of the country's plains, and the rest of the mountainous regions have its own tanotogeographic status. Statistical data show that mortality rates are relatively rare in mountainous areas than in other regions, in other words, most of the world's longevity lives in

⁵ State Committee on Statistics of Uzbekistan. Available at: <https://stat.uz/en/open-data>.

mountainous and mountainous areas. Specifically, these areas can be included in the mountainous regions of the Caucasus, India's Kashmir valley, the Bostanlyk and Parkent districts of Uzbekistan.

In Uzbekistan, the mortality risk assessment is based on the fact that mortality from diseases of the circulatory system is at the forefront (it should be recalled that the mortality rates associated with this group are high in the world mortality). According to Table 3, mortality from diseases of the circulatory system is high in Tashkent City, Tashkent and Andijan Provinces, where population density is high and urbanization is high. The opposite is observed in Kashkadarya region, the Republic of Karakalpakstan and Jizzakh region.

Table 3: Mortality Index in Uzbekistan (2017, per 100000 population)⁶

	Regions		Republic of Uzbekistan	Republic of Karakalpakstan	Andijan
	man	woman			
Diseases of blood circulatory system	310.8	281.4	281.2	227.5	359.0
Accident, poisoning and traumas	48.8	16.7	65.1	16.9	38.6
Plants	45.0	48.8	48.2	58.8	42.6
Diseases of respiratory system	26.3	20.1	27.1	19.3	22.9
Diseases of digestive organs	32.7	24.3	20.8	18.5	34.6
Infectious and parasitic diseases	11.0	5.7	8.7	7.2	10.1
Other diseases	64.7	55.6	82.1	64.6	75.6
					65.1

⁶ State Committee on Statistics of Uzbekistan. Available at: <https://stat.uz/en/open-data>.

Fergana	Tashkent	Syrdarya	Surkhandarya	Samarqand	Namangan	Navoiy	Jizzakh	Bukhara
359.5	331.9	293.5	297.1	278.8	313.9	264.9	256.4	279.2
331.9	281.8	250.7	253.9	266.6	266.7	229.5	200.4	251.9
78.1	62.5	39.1	40.0	46.1	50.4	36.6	59.7	42.3
24.3	18.1	16.2	16.6	17.1	19.2	14.4	27.1	11.6
59.3	39.1	28.0	34.0	46.1	41.7	33.3	41.7	45.1
59.0	50.9	32.9	38.7	45.6	44.6	38.5	41.6	49.0
27.9	26.3	30.5	23.9	40.9	11.6	21.2	26.5	20.4
20.3	23.1	23.6	20.8	31.2	12.8	16.2	21.9	22.4
38.6	31.7	34.4	29.6	31.6	29.7	30.2	28.9	28.4
23.8	23.6	26.1	21.5	29.2	19.0	26.4	22.7	22.2
23.4	8.4	3.1	8.6	9.5	4.2	7.1	6.8	8.9
9.6	6.2	1.5	5.4	5.6	2.1	4.8	5.4	6.4
53.5	49.7	70.6	62.5	63.2	63.9	67.2	75.9	63.4
48.5	42.5	59.6	51.0	64.1	60.0	55.5	61.7	46.5

City of Tashkent	Kashkadarya	Khorezm
403.1	270.8	327.1
415.5	252.9	306.5
50.7	47.8	49.8
14.7	15.0	15.7
90.7	46.7	39.2
88.8	57.8	43.3
40.6	20.6	20.9
22.0	16.4	15.4
48.1	27.0	34.7
24.9	21.1	27.5
32.0	9.2	8.0
9.6	3.2	4.9
55.5	77.6	52.8
45.0	63.6	51.9

As you know, the geography of medicine explores the features of the spread of diseases throughout the regions, their causes and effects. Today, the scope of medical geographical research is considerably expanded, particularly in the oncological study of geography of tumor diseases (Greek "oncology" means edema, tumor, logica. This science teaches the theoretical, experimental and clinical study of genesis of oncological processes in humans, animals and plants, and identifies tumor diagnosis, treatment and prevention methods). In fact, this area was born in the mid-19th century and is characterized by its well-known Russian medical geographer A.V. Chaklin has published his works in a number of his works on medical geography. It contains valuable information about the features, causes and effects of oncological diseases throughout the region⁷.

By the way, oncology was formed in the 20th century on the basis of experimental medicine achievements, ie transplantation of tumor cells, and later on the outside, by the production of tumors in animals. Facts about plants are well-known to humanity, as have been mentioned by scientists such as Hippocrates and Galen. In the development of oncology, especially the work of Ibn Sino, "Theory of Medicine" is unique. The book, along with its own experimental and clinical experience, also describes "the origins of the tumors, signs of their diagnosis and treatment." Russian scientist R. Virkhov (cell pathology theory has made a sharp turn in medicine, including oncology history), M.N.Novinskiy

⁷ M.-A. Choe, K. An, "Morbidity and mortality rates in women with heart disease: Lessons in gender differences from Korea", in *Contemporary Nurse*, 2003, vol. 14, no. 2, p. 158-168.

(founder of expedical oncology, first transplant cancer cells in the world, and created experimental strains for tumors), N.N.Petrov (his monograph "General Education on Plants" (1910) became the first program of oncology and brought about the spread of knowledge about tumors), such as scientists⁸.

It should be remembered that oncological diseases have been of great concern for the last twenty years. One of the four most dangerous diseases in developed countries is cancer (Oncological diseases, such as tumors, are called cancer in the east), and one-fifth (1/5) ends with death. Today, cancer screening is being studied not only by oncologists, but also by psychologists, radiologists, and medical geographers. No matter how extensive the geography of the disease is, however, issues of its origin are still mysterious. The world's highest mortality rate has been reported in the United Kingdom on the island of Jersey, with 313 deaths per 100000 population per year (Table 4).

In the conditions of Uzbekistan, more intestinal digestion agents (stomach, colon, and colon) are commonly associated with the cancer forms associated with breast cancer. For example, if in our country the incidence of illnesses in these diseases was reduced to 76.2 per 100,000 in 1991 (by 66.7 per cent in 2016). The most commonly occurring regions are the city of Tashkent (138.6), Bukhara (78.3), Tashkent (73.3) and Navoiy (67.7) provinces. In other provinces, these figures are lower than the national level. Particularly, this is especially noticeable in large industrial and populated areas, as well as in areas specializing in mining. In 1991, this group of illnesses declined in the Republic every year. However, in some regions of the country these figures are quite high. In the analyzed years, the index of change in Andijan, Jizzakh, Khorezm and Kashkadarya regions is quite high. This is a sign that the region is experiencing a dramatic increase in this type of disease.

Table 4: The disease of the population with tumor diseases (relative to each 100000 population)

Regions	1991	2000	2006	2010	2016	Change index
Republic of Uzbekistan	76.2	70.8	68.5	67.7	66.7	0.87
Republic of Karakalpakstan	79.0	65.1	66.9	67.3	67.3	0.85

⁸ R.P. Upadhyay, A. Krishnan, S. K. Rai, P. Chinnakali, O. Odukoya, "Need to Focus Beyond the Medical Causes: A Systematic Review of the Social Factors Affecting Neonatal Deaths", in *Paediatric and Perinatal Epidemiology*, 2013, vol. 28, no. 2, p. 127-137.

Andijan	50.9	72.4	72.6	72.4	61.0	1.19
Bukhara	106.3	61.8	65.2	70.8	78.3	0.73
Jizzakh	50.1	50.7	58.0	57.3	62.1	1.23
Navoi	76.5	85.1	82.3	59.9	67.7	0.88
Namangan	61.5	69.8	75.8	67.8	63.8	1.03
Samarkand	62.5	59.0	55.5	50.9	47.9	0.76
Surkhandarya	70.0	57.4	55.1	47.9	33.8	0.48
Syrdarya	44.1	56.7	57.6	52.6	41.3	0.93
Tashkent	96.7	72.1	70.5	72.2	73.3	0.75
Fergana	67.3	88.1	64.1	67.5	60.8	0.90
Khorezm	57.4	57.2	60.2	58.1	67.1	1.16
Kashkadarya	37.3	50.3	53.2	57.5	60.6	1.62
City of Tashkent	190.1	121.0	124.0	126.2	138.6	0.72

It should be borne in mind that oncological diseases are directly related to our daily life. It is unique not only in industrial centers, areas where traffic intensity or radio frequency is high, but also for areas where the population is not normally in the social conditions. The main cause of any illness is the lack of self-defense (immunity) in the human body and the weakness of the resistance to external and internal resistance. These cases are most frequently found in environmental flood disaster areas and regions with high urbanization rates⁹. While studying the mortality rate in the country, there is a high mortality rate among men for any reason. Mortality caused by circulatory disorders does not differ significantly in males and females.

The analysis shows that deaths are high in men compared to women due to accidents, poisoning and traumas. This is higher than the national average in the Republic of Karakalpakstan and the Syrdarya region. In women, in Tashkent, Navoi, and Syrdarya provinces, it can be seen that there are three times less in men than in men. In particular, men's hard work and hazardous training lead to high mortality rates, accidents and injuries.

In general, the impact of natural, ecological, socio-economic and demographic factors on the mortality of the population has been

⁹ A.E. Zhatkanbayeva, N.S. Tuyakbayeva, A.K. Jangabulova, S.T. Alibekov, E.V. Kasatkina, E.A. Maslihova, "International regulation of environmental auditing in the countries of the European Union", in *Journal of Environmental Management and Tourism*, 2018, vol. 9, no. 5, 1030-1043; N. Poshanov, Z. Kosanov, S.T. Alibekov, M. Dossymbekova, A. Begzhan, "Comparative analysis of existing environmental control in the Republic of Kazakhstan and foreign countries", in *Journal of Legal, Ethical and Regulatory Issues*, 2018, vol. 21, no. 1, p. 1-7.

explained. In particular, natural and ecological factors such as climate conditions, drinking water and soil composition are the result of a shorter life expectancy and a relatively early rise in biodiversity due to digestive disorders (Karakalpakstan, Khorezm region).

Economic and Social Factors: The relative increase in mortality rates in populated and urban areas, including Tashkent city, Tashkent and Andijan regions, is due to the combination of industrial enterprises, the density of traffic congestion in the atmosphere exceeds the normal requirements for the most vulnerable population, as well as a substantial increase in maternal and infant mortality rates. This means that the improvement of the population's settlement system and prevention of premature death of the population, the need to develop measures to improve the natural and socio-economic condition of the regions to extend the life expectancy of the population.

Broad reforms in the health care system of the country have been introduced, and special attention is paid to medical care. Centers for centralized polyclinics, rural health clinics, family polyclinics and mother and child health have been established in the regions as perinatal screening centers. As a result, maternal mortality decreased from 65.3 in 1990 to 21.0 in 2017, while infant mortality decreased from 34.6 to 11.3 pro mil in the period of independence.

The death of mothers is the death of a woman during pregnancy or during her pregnancy 42 days after she was pregnant, due to this or that aggravation, but not related to the cause of an accident or accident¹⁰. The maternal mortality rate is estimated to be 100000 births.

As you know, the overall mortality rate is different in different age groups and populations. In particular, this is most common in mothers and infants. Therefore, the HDI is usually based on the maternal and infant mortality rates. It is also important to examine maternal mortality in the study of mortality rates. Maternal mortality is high in countries with relatively high birth rates and in countries with relatively low socio-economic development, with direct impacts on mortality rates.

During the years of independence, special attention was paid to the healthcare system of Uzbekistan, including the health of mothers and children. The announcement of 2016 as the Year of a Healthy Mother and Child serves as an important basis for the younger generation to grow up healthy. As a result of the measures taken in this area, the maternal mortality rate per 100000 live births in Uzbekistan in 1992-2016 increased

¹⁰ T.G. Tulchinskiy, E.A. Varavikova, *Public healthcare. Fundamentals of New Science*, SHARQ, Tashkent, 2003.

from 51.0 to 17.4, infant mortality – from 14.8 to 13.9, infant mortality – decreased by 10.8. Among the above indicators, positive changes in the maternal mortality rates are evident. As you know, pregnancy and childbirth reasons play a key role in maternal mortality. The main causes of maternal mortality are bleeding, late toxicosis, septic complications, and extragenital diseases, which requires prophylactic measures in the area.

According to the analysis of maternal mortality dynamics in the republic, it can be seen that several times changed from 1992 to 2017. This situation was a sharp decline in 1996, 20.7 per 100000 live births, while the figures rose to 2009. In recent years, the decline in indicators has been observed. According to statistical data, in 2017 the figure was 21.0.

The sharp change in the dynamics of maternal mortality is mostly associated with birth and marriage processes. It should be noted that the number of matrimonial sex workers is likely to change dramatically in the post-natal period (Figure 3).

Special attention is paid to women in Uzbekistan, women's counseling and examination of women of reproductive age are always under control. Under such circumstances, the monitoring of maternal and infant mortality faces issues related to hereditary and ecological situations¹¹.

In 2017, the maternal mortality rate in the republic was 21.0 per 100000 live births, with the highest rates being in Navoiy, Tashkent and Jizzakh. When analyzing the causes of maternal mortality, hereditary morbidity rates are mainly observed in Tashkent and Jizzakh regions, where most families are based on kinship ties. In Navoiy, the ecological situation is much more severe, with chronic anemia, gestosis, acute cardiac failure, and renal failure.

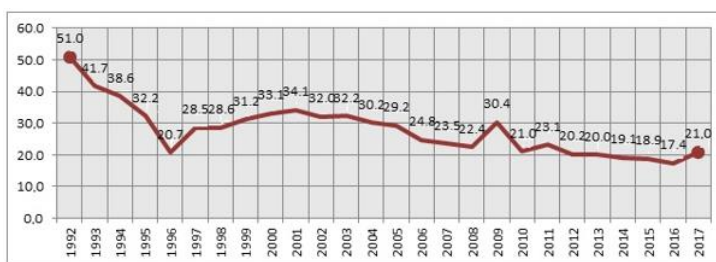


Figure 3: Dynamics of maternal mortality index in the Republic of Uzbekistan (compared to 100000 live births)

¹¹ P. Sidebotham, P. Fleming, *Unexpected Death in Childhood: A Handbook for Practitioners*, John Wiley & Sons Ltd, New York, 2007.

Table 5: Dynamics of maternal mortality index in the Republic of Uzbekistan

Regions	compared to 100,000 live births							Change index
	1992	1995	2000	2005	2010	2015	2017	
Republic of Uzbekistan	51.0	32.2	33.1	29.2	21.0	18.9	21.0	0.41
Republic of Karakalpakstan	98.6	50.5	38.8	15.4	26.4	29.0	13.2	0.14
Andijan	42.3	32.0	20.2	21.0	18.3	12.9	11.9	0.28
Bukhara	47.8	27.3	49.0	29.9	23.1	7.6	8.1	0.17
Jizzakh	69.2	30.0	29.4	24.8	27.0	25.1	42.0	0.60
Navoi	51.1	28.3	39.9	24.4	14.1	15.3	26.1	0.51
Namangan	52.1	25.2	91.6	49.3	27.2	24.7	29.2	0.56
Samarkand	32.4	18.9	27.0	30.7	21.7	8.1	21.2	0.65
Surkhandarya	35.8	38.4	26.4	17.4	16.0	21.4	22.2	0.62
Syrdarya	67.3	39.8	24.6	23.9	13.7	18.6	20.0	0.30
Tashkent	50.6	29.7	21.0	34.8	12.3	5.6	17.0	0.34
Fergana	31.0	46.9	27.5	43.2	32.8	44.3	32.9	1.06
Khorezm	38.6	11.7	22.5	31.7	17.0	12.6	21.2	0.55
Kashkadarya	44.3	25.4	24.9	41.5	30.6	15.2	10.6	0.24
City of Tashkent	94.7	55.6	63.9	44.6	25.4	25.7	18.5	0.20

Table 5 shows that the regions of the Republic are characterized by geographical characteristics, geomorphological structure, and demographic indicators. In ancient times, populations in the populace are traditionally rebuilt and newly built (after the 50s of the 20th century), the population lives in the region in part. This is reflected in demographic indicators. Thus, the mortality rate of maternal mortality is low in Bukhara

region. This has been reflected in recent years in the region as a result of studying and applying effective methods of treatment in newer medical technologies (Table 6).

Table 6: Dynamics and geography of infant mortality in Uzbekistan

Regions	1000 live births							Change index
	1991	1995	2000	2005	2010	2015	2017	
Republic of Uzbekistan	35.5	26.0	18.9	14.9	11.0	11.4	11.3	0.31
Republic of Karakalpakstan	51.2	31.5	20.5	17.4	11.8	11.6	16.3	0.32
Andijan	30.1	23.5	15.2	12.3	9.4	14.2	15.4	0.52
Bukhara	28.5	21.0	19.0	12.0	11.3	10.0	9.3	0.33
Jizzakh	37.4	25.1	16.2	12.3	8.8	9.9	13.4	0.36
Navoiy		28.1	18.4	10.9	6.6	9.8	9.5	0.34*
Namangan	37.4	26.8	18.8	15.1	12.5	12.2	14.4	0.39
Samarkand	34.5	24.2	16.0	12.7	9.4	10.1	7.4	0.22
Surkhandarya	41.2	29.5	20.7	11.6	7.8	9.9	9.3	0.23
Syrdarya	48.3	23.1	20.4	16.7	10.2	12.9	12.8	0.27
Tashkent	29.4	24.6	19.6	15.4	11.0	10.9	10.5	0.36
Fergana	36.5	27.3	19.3	19.3	14.1	9.1	7.3	0.20
Khorezm	38.9	25.9	24.6	16.3	12.0	14.2	15.9	0.41
Kashkadarya	35.3	24.0	19.0	13.8	10.1	8.6	8.4	0.24
City of Tashkent	25.1	31.3	19.5	22.3	17.1	19.9	17.0	0.68

A comprehensive program for the reproductive health of women and children, the introduction of special preventive and treatment centers for children in hospitals, the expansion of access to modern

contraceptives, as well as the importance attached to the era in childhood play an important role in improving maternal and child health¹².

Article 65 of the Constitution of the Republic of Uzbekistan stipulates that "motherhood and childhood are protected by the State". One of the socio-economic benefits of motherhood and childhood protection is that more than half of workers in the national economy and 61.5% of the country's population are children and adolescents.

Particular attention is paid to the maternal and child health care in the Republic, and the formation of a healthy boy under the supervision of pregnant women with anemia. In this case, 49.2 percent of women were registered in 2013 and 38.2 percent in 2016. Maternal mortality, childbearing, low birth weight loss and child mortality are due to the fact that our region pays special attention to the health of our people on the basis of the welfare program.

Death rates and death factors are analyzed by age group coefficient. Studying the mortality of the population, it is very important to examine and investigate the death of infants, ie infants under one year (0-12 months). In many cases infant mortality rates are more than one, leading to a high mortality rate. Therefore, infant mortality is a separate issue¹³.

Particular attention is paid to the perinatal, neonatal and postneonatal deaths in the study of the components of infant mortality. These periods differ in size and include a specific period of time.

In the perinatal period, starting at the 28th week of the fetus, it covers the period from birth to 7 days¹⁴. The mortality rate is mainly high in the infant mortality rate and the mortality rate is high due to the complications associated with complications. Infant mortality in neonatal mortality is a deadly episode of 7 days from birth to 28 days, with infant deaths partly diminished and some diseases occur. The post-postnatal period is followed by a 28-day-up to one year of age. During this time, it was learned that infant mortality causes death from various infectious diseases and accidents.

One of the most important achievements in the demographical situation of the republic in recent years is the decline in infant mortality

¹² J. Man, J. C. Hutchinson, A. E. Heazell, M. Ashworth, S. Levine, N. J. Sebire, "Stillbirth and intrauterine fetal death: factors affecting determination of cause of death at autopsy", in *ULTRASOUND in Obstetrics & Gynecology*, 2016, vol. 48, no. 5, p. 566-573.

¹³ S. Kinoshita, Y. Wagatsuma, M. Okada, "Geographical distribution for malignant neoplasm of the pancreas in relation to selected climatic factors in Japan", in *International Journal of Health Geographics*, 2007, vol. 6, p. 34.

¹⁴ N.Q. Komilova, *Theoretical and practical issues medical of geography*, SHARQ, Tashkent, 2016.

rates. If in 1991 the infant mortality rate was 34.6 per 1000 live births, then in 2000 this figure had fallen to 20.2 per 100000, and to 11.3 in 2017. According to the results of 2017, infant mortality decreased in comparison with the first quarter of independence, but Tashkent city (17.8), the Republic of Karakalpakstan (15.1) and Khorezm region (14.6).

The situation in Navoi (9.5) and Surkhandarya (9.3) regions slightly improved compared to previous years. Improving health care and family planning in these areas stimulates the younger generation to enter a healthier world. It should be noted that in some regions the infant mortality rate decreased compared to 1991, whereas in contrast to others, In the Aral Sea region, the Republic of Karakalpakstan, Khorezm and Andijan regions are still in a negative state.

As it is known, in the past, when many children died from infectious and other diseases, according to experts, in 1914, 300 out of 1000 live births in Turkistan region, and some 600-700 children died in some years¹⁵.

It can be seen that Uzbekistan is experiencing a decline in the widely spread of propagandistic activities aimed at reducing child mortality. In some regions there is a high mortality rate due to the difficult environmental situation, inadequate drinking water and the problem of proper care.

Implementation of profilaktik measures has a positive impact on the quality of population development. As a result of the work needed to bring up the child healthy, there are fewer causes of infant mortality. However, this indicator is lower among the Central Asian countries, though it is higher than the developed ones. The main causes of infant deaths are respiratory diseases, perinatal pathology, congenital abnormalities and infectious diseases. Causes of death are related to all age groups of children and it is most common in children aged 0-1 years, ie in infants.

It should be noted that in our Republic, children under the age of 1 year are the majority of infant deaths perinatal period. In 2014, the incidence of perinatal mortality is 59.0 per 100000 live births, with a high prevalence in some regions (Tashkent City and Tashkent Region). It is reported that in 2016 this situation will be further enhanced.

The main reason for this is primarily related to extreme illnesses in mothers, as well as genetic factors, including the industrialization of the regions, the density of the transport system and the high demographic capacity. At the same time, mortality rates for respiratory diseases, acute

¹⁵ M.K. Karakhanov, *Non-capitalist way of development and population problems (socio-economic analysis of the experience of the republics of Central Asia in solving population problems)*, Fan, Tashkent, 1983.

pneumonia, uterine hypoxia and asphyxia during childbirth have been somewhat reduced in recent years (27.0 per 100000 live births). However, the increasing number of environmental disasters leads to increased birth defects (10.3). Birth loss related deaths are particularly high in Tashkent, Fergana and Bukhara provinces, with the majority of infant deaths.

One of the most important diseases that causes infant deaths is infectious and parasitic (3.5) per 10000 live births. Although in recent years the mortality rate among these infants has dropped slightly, however, in some regions of the country such as Bukhara and Tashkent, the indicators are slightly higher.

In general, the infant mortality rate in the regions of the republic has been decreasing every year, but some regions, such as Tashkent City (17.0), Khorezm (15.9), Andijan (15.7) and the Republic of Karakalpakstan (16.6) and is characterized by the fact that the The fact that Tashkent and Andijan are a major industrial and transport hub of the country are also estimated by the fact that some of these regions are located in the Aral Sea area, where the vulnerability is in a negative state.

In Uzbekistan, 57% of children under five die in neonatal period, i.e. in the first 28 days of their life. Statistical analyzes show that among the causes of death are three major causes, such as premature birth, asphyxia, and infections. Also, early childhood respiratory diseases, gastrointestinal tract, cardiovascular system diseases, chronic liver diseases, diseases of ENT organs, and infectious mortality rates are frequent.

In the study, the following main conclusions on geographical disparities in the mortality of the population of our Republic have been provided:

1. From the point of view of medical geographical conditions of Uzbekistan, it is necessary to develop measures to improve the population's settlement system and to prevent the early death of population, to improve the natural and socio-economic conditions of the regions to increase the average life expectancy. This leads to a reduction in mortality among infants, mothers and working age men.

2. The seasonal changes associated with the deaths of the population have been identified: it is well known that statistical indicators show a relative increase in mortality rates in February-March, June-July and November-December. This is closely related to the changes in the nosocomial factors in the development of cardiovascular, mental and mental illness, such as very hot and very cold atmospheric air temperature, sharp fluctuations in relative humidity, specific fascial properties and

atmospheric pressure in atmospheric circulation. Based on the findings of the survey, mortality rates for these causes are clearly seen among the elderly and the elderly, especially among the elderly and the elderly. That is why it is necessary to carry out the work on further improvement of medical preventive measures in the current season.

3. As a result of tanatogeographical zoning, the mortality rates of cardiovascular diseases, which is one of the main causes of the deaths of the population of Uzbekistan, differ in the regions, and their basalogeographic status, tanatogeographic ovens and vicinity have been analyzed. At the same time, deaths from cardiovascular diseases are characterized by Tashkent (342.3 per 100,000 population), Andijan (327.5) and Fergana (319.8) regions as Tashkent region as a tanatogeographic ovary the city (415.3). The high mortality rates in the above administrative and territorial units are estimated by the population density in these regions, the diversity of the ethnic composition of the population, and the inadequacy of medical care.

4. Recommendations and recommendations for improvement of reproductive health in the regions of Uzbekistan have been developed: maternal mortality is high in the Republic of Karakalpakstan, Navoi and Jizzakh regions, where there is a lack of narrow specialization specialists (neonatologist, anthropologist, mumologist, venerologist), socio-economic some discrepancies in the condition of availability, the need to pay serious attention to the elimination of environmental and environmental conditions.

5. In major industrial cities of Uzbekistan the general mortality rates, especially maternal and infant mortality, as well as congenital malformations, chromosomal fluctuations and disability have been identified. Research has shown that maternal and infant mortality rates (such as malignant tumors, heart attacks, vascular, nervous, mental disorders, diseases of the respiratory tract disorders) in industrial centers of Tashkent city and Tashkent region (Almalyk, Chirchiq, Angren, Ahangaran etc.) the morbidity rates are several times higher than the national level. Therefore, in the above-mentioned cities, it is necessary to radically improve the uro-ecological situation, to pay close attention to the proper territorial organization of industrial enterprises, transport and other infrastructure.

6. The analysis shows that mortality rates in the country and almost all regions of the country are expected to rise slightly. This is a natural phenomenon. Because our country has suffered a minimum level of mortality and it is a world experience. For example, in developed countries

the average life expectancy at the age of 80 is estimated to be 10-12 promil in deaths. The reason for the increase in population mortality is the increase in the proportion of elderly people in their age structure. The results of the research show that different socioeconomic factors can affect the mortality forecast. This leads to a decline in the accuracy of the population mortality forecast. Therefore, the development of many options for forecasting, short-term forecasting and in-depth analysis of the socio-economic conditions of the population provide more accurate results for the mortality forecast.

7. Extrapolation methodology predicts the prevalence of population mortality up to 2031, including the average mortality rates for the last 10 years in the provinces, with a short (5 years), medium (10 years), and long (15 years) long-term business trends. At the same time, since 2016 (4.9) in the period of 2031 (5.2), there has been a significant increase in mortality. Also, as a result of urban, rural, and urban populations' forecasts, the proportion of male populations in rural areas and sex-related mortality rates are rising.

8. 57% of children under 0-5 years old in Uzbekistan are in the neonatal period, ie the first 28 days of their lives. Statistical analyzes show that among the causes of death are three major causes, such as premature birth, asphyxia, and infections. Also, early childhood respiratory diseases, gastrointestinal tract, cardiovascular system diseases, chronic liver diseases, diseases of ENT organs, and infectious mortality rates are frequent. The efforts of the government to protect children's lives are praiseworthy. However, infant mortality rates are still high in Uzbekistan, which in turn requires further improvement of health services for newborns and mothers. In particular, it is planned to develop a comprehensive plan for maternal and child health care, including improving perinatal care for pregnant women, reducing maternal, infant and child mortality, prevention of congenital and nasopharynx and maternity complexes, and material and technical strengthening of its base, equipping with modern equipment is one of the most pressing issues of today.