Journal of Geology, Geography and Geoecology

Journal home page: geology-dnu.dp.ua

ISSN 2617-2909 (print)
ISSN 2617-2119 (online)

Journ. Geol. Geograph. Geology, 31(4), 736-748.
doi:10.15421/112269

Development of demographic processes in the Fergana region of Uzbekistan: yesterday, today, tomorrow

Zokirjon A.Temirov

Andijan State University named after Zahiriddin Muhammad Babur, Andijan, Uzbekistan, zokirjon82@mail.ru

Received 10.07.2022;
Received in revised form 05.08.2022;
Accepted 17.08.2022

Abstract. In the world, the living conditions and health of the population have a certain impact on demographic processes. High population growth rates cause demographic problems. As a positive solution to these problems, a number of international organizations, including the United Nations Population Fund, have set the main task of «improving the lifestyle of the population and ensuring sustainable development» (https://www.unfpa.org/world-population-trends). These tasks include studies aimed at identifying and evaluating the features of the development of demographic processes in densely populated areas, the factors influencing them, and developing a forecast. In the world, priority is given to research in this direction, especially to determine the territorial features of population regeneration, improve public health and life expectancy, study the impact of economic and social development of regions on demographic processes. It is also important to determine the unique geodemographic situation due to the influence of natural and economic, socio-geographical and other factors on the population of the regions, factors influencing the development of demographic processes and their territorial characteristics, to improve the scientific basis of regional demographic policy and directions of development, and develop special programs . This article highlights the territorial features of the development of demographic processes in the regions of the Fergana Valley in 1991-2020, developed forecast parameters up to 2040, and presented important conclusions.

Keywords: Population, demographic processes, repopulation, Fergana region, birth, death, marriage, divorce, correlation coefficient, prognosis.

Розвиток демографічних процесів у Ферганській області Узбекистану: вчора, сьогодні, завтра

З.А.Теміров

Андижанський державний університет імені Захіріддіна Мухаммеда Бабура, Андижан, Узбекистан, zokirjon82@mail.ru

Анотація. У світі умови життя та здоров'я населення мають певний вплив на демографічні процеси. Високі темпи зростання населення породжують демографічні проблеми. Як позитивне вирішення цих проблем низка міжнародних організацій, у тому числі Фонд народонаселення ООН, поставили головне завдання «поліпшення способу життя населення та забезпечення сталого розвитку» (https://www.unfpa.org/ світ-населення-тенденції). Ці завдання включають дослідження, спрямовані на виявлення та оцінку особливостей розвитку демографічних процесів у густонаселених районах, факторів, що на це впливають, і розробку прогнозу. У світі надається пріоритет дослідженням у цьому напрямі, особливо з метою визначення територіальних особливостей відтворення населення, підвищення рівня здоров'я та тривалості життя населення, вивчення впливу економічного та соціального розвитку регіонів на демографічні процеси. А також визначити унікальність геодемографічної ситуації, зумовлену впливом природно-економічних, суспільно-географічних та інших факторів на чисельність населення регіонів, факторів, що впливають на розвиток демографічних процесів та його територіальну характеристику, удосконалення наукових основ регіональної демографічної політики, напрямки розвитку, причому важливою є розробка спеціальних програм. У статті висвітлено територіальні особливості розвитку демографічних процесів у регіонах Ферганської долини в 1991-2020 рр., розроблено прогнозні параметри до 2040 р. та зроблено важливі висновки.

Ключові слова: Населення, демографічні процеси, репопуляція, Ферганська область, народження, смертність, шлюб, розлучення, коефіцієнт кореляції, прогноз.

Introduction

Demographic processes, fertility, mortality and their dynamics, as well as the forecast of the future situation, are of great importance in creating new jobs, developing housing construction, kindergarten, production to meet the needs of hospitals and other similar infrastructural constructions, planning and territorial organization.

In the years since independence, comprehensive measures have been implemented in Uzbekistan aimed at the human factor in the direction of demographic processes and significant positive results are achieved. The development strategy of the new Uzbekistan for 2022-2026 defines important tasks for the «Development of the main resettlement scheme» (Decree of the President of the Republic of Uzbekistan dated January 28, 2022 № PD-60 «On the development strategy of the new Uzbekistan for 2022-2026»). In this regard, among other things, research aimed at developing the processes of population reproduction, regional demographic structure and demographic forecast and improving the settlement of the regions of the Fergana Valley with limited land resources and high demographic potential are of great importance.

Demographic processes, including birth, death, natural and mechanical growth, marriage and divorce have been studied by scientists from abroad J. Graunt, A. Guiyar, D. Botero, A.Landri, V.S.Tomston, F.V.Notsteyn, D.Kirinom, from the CIS countries V.A. Borisov, D.I. Valentey, A.Ya. Kvasha, D.Veresov, B.Ts. Urlanis, A.G. Vishnevsky, V.V. Pokshishevsky and others (Temirov, 2022).

In Uzbekistan, M.K. Karakhanov, I.R. Mullajonov, X.Salimov, E.A.Akhmedov, R.A.Ubaydullaeva, O.B.Ata-Mirzaev, A.A.Qayumov, K.X.Abdurakhmonov, A.S.Soliev, L.P.Maksakova, M.R.Burieva, Z.N.Tojieva, N.K.Komilova, G.R.Asanov, I.Turdimambetov, R.B.Qodirov, G.A.Xodjaeva, N.J.Embergenov and other scientists have conducted scientific research on the issues of population studies, demographic processes, family demography, population forecast (Temirov, 2022).

The study of demographic processes and their territorial characteristics in Uzbekistan is covered in detail in the studies of Z.N. Tajiyeva (Tajiyeva, 2010, Tajiyeva, 2017, Tajiyeva, 2019). Issues of efficient use of labour resources in Andijan, Namangan and Fergana regions were investigated by R.B. Kadirov (Kadirov, 2016, Kadirov, 2021, Kadirov, Temirov, 2021). However, in the above studies, research work on the study of regional characteristics and the forecast of the development of demographic processes in the regions of the Fergana Valley has not been carried out sufficiently.

Research method. Total fertility rate. Birth is a biological process. However, it changes under the influence of the socio-economic environment. Fertility as important component in population reproduction. Demographic processes are usually determined by special indicators, i.e. coefficients. There are general, special, species and cumulative fertility rates, which are used to determine the birth rate. The total fertility rate, which means the number of births per thousand population, is determined by the following formula (Abdurakhmanov, Abduramanov, 2011):

$$n=\frac{N}{TR}*1000 \quad (1)$$

T-period under study;
R - the average number of the population during the study period;
N - the number of births in the studied period.

The total birth rate shows the average number of children per woman. This coefficient is calculated based on the primary general characteristic of population regeneration and has some disadvantages. In particular, the number of daughters that women will leave in the future when reproducing a new generation is not indicated. It also does not take into account how many of the children born may die before reaching the age of the mother (Borisov, 2003). Using the coefficients for five-year age groups, the formula for determining the total fertility rate will look like this:

$$F_{sum} = 5\sum F_x \quad (2)$$

Here, fertility by age is calculated in x-five-year groups.

General mortality. A number of indicators are used for statistical analysis of population mortality. The simplest of them is the crude mortality rate, which indicates the number of deaths per thousand population and is determined by the following formula (Valentey, Kvasha, 1989):

$$m=\frac{M}{TR}*1000 \quad (3)$$

T-period under study;
R - the average number of the population during the study period;
M-the number of deaths during the study period.

Marriage and divorce rate. The total marriage rate refers to the number of marriages per thousand people in a year among the population of a certain area and is determined using the following formula:

$$b=B/RT*1000 \quad (4)$$

here:
R- Average annual number of population;
T- The period during which indicators should be calculated;
B- Number of marriages (Borieva, Tojieva, *Zokirov, 2011).*

Divorce is a demographic process that occurs as a result of annulment of marriages of couples in the generation (Asanov, 1990). It is the annulment of the marriage between husband and wife for life. The separation is determined by the following formula:

$$u=\frac{D}{S_t^m} \quad (5)$$

here: u is the divorce rate, D is the number of divorced people at a certain time and S_t^m is the number of married people at a certain time (Borieva, 2001).

Correlation coefficient. If each value of the attribute of the factor corresponds to different values, and not the exact values of the resulting attribute, such links are called correlation coefficient (Abdullaev, 2000). In this study, the Spearman correlation coefficient formula was used.

$$P=1-\frac{6\sum d^2}{n(n^2-1)} \quad (6)$$

Age shifting method. Population forecasting using the age shift method, taking into account changes in demographic processes, makes it possible to draw accurate conclusions.

In this case, the prospective population is determined using the following formula:

$$L_x x P_x = L_{x+1} \quad (7)$$

here: L_x -x is the number of people who can live to age; P_x - x+1 is the probability coefficient to live up to the age ; L_{x+1} - x+1 is the population that can live to age.

Hence, the population at each age (L_x) is shifted from one age (P_x) to another age (L_x+1) using the probability ratio (P_x) that each age can survive. In most cases, forecasts are made in age groups of 5 or 10 years (Shryork, Henry, 1976).

Results and discussion

The number and composition of the population are regularly updated and changed as a result of natural and mechanical influences. As a result of the processes of birth and death, there is a change of generations, that is, there is a regeneration of the population. This ensures that the population is replenished.

During the years of independence, the country's population followed a unique demographic development path. The superiority of the natural movement can be seen in the reconstruction of the population of the republic. The importance of mechanical movement in the development of the country's population and renewal of generations is not very high.

The regions of the Fergana Valley, where irrigated agriculture has historically developed, are the regions with a high demographic potential among the country's economic regions. Fergana region is located in the eastern part of Uzbekistan. The Fergana Valley (within its natural-geographical border) is surrounded by high mountains, fertile soil, well-supplied with water resources and other factors , which encourage the development of a settled population .Farming has been conducted here from a long time ago .The area has a high demographic potential . About 1/3 of the country's population is located in the regions of the Fergana Valley, and it ranks first in terms of demographic potential (Abdullaev, 2000).

In the Fergana Valley regions, the total birth rate decreased from 36.5‰ to 25.2‰, and the total death rate decreased from 6.2‰ to 4.8‰ in 1991-2020. The rate of natural growth decreased from 30.3 ‰ to 20.4 ‰. At the beginning of the period under study, the birth rate and natural growth rate were high. In 1991-2000, the birth rate decreased as a result of changes in the economic conditions and social opinion of the population. In 2000-2007, the rate of birth and natural increase was the lowest. In the following years, the birth rate increased again. In this case, if the total birth rate is explained by the fact that the rate of birth and natural growth in 1985-1990 was high and people born in this period reached the age of marriage after 2007, while the increase in the average life expectancy of the population is an important factor in the reduction of the death rate.

The improvement of the lifestyle of the population in the regions, the change in the attitude towards having many children caused the average number of children in the family to decrease. In the following years, the average number of children in families gradually increased. This situation was reflected in the changes in the number of babies born in the valley regions and the total birth rate.

During the demographic transition observed in the years of independence, the increase in the level of employment and education of women began to be reflected in a sharp change in the attitude to the number of children born in the family.

In 1991, more than 200,000 babies were born in the Fergana Valley, which made up 27.6 percent of all babies born in the country. This indicator changed in the following years. 26.1% of babies born in the republic in 2000 and 29.6% in 2020 were born in the Fergana Valley. In 2000, 49% of the total number of third born or later children were born to mothers aged 25-29. 60% of second born children and 70% of first born mchildren in the family were born to mothers aged 20-24. In 2010, 45% of third born or later children were born to mothers aged 25-29, 48% of second born children and 67% of first born children were born to mothers aged 20-24. By 2020,

this figure was 42.7 percent, 42.3 percent, and 68.1 percent, respectively. Also, mothers aged 15-19 gave birth to 15.8% of firstborn children in 2000, 15.0% in 2010, and 12.9% in 2020. In 2000, 89.8 percent of all births in the valley regions, and 91.8 percent in 2020, occurred to mothers aged 20-35. From this, it can be observed that in the valley regions, the age of mothers having their first child increases and the difference between the period of having children, that is, the intergenetic interval increases, and the average number of children in the family decreases. Also, the number of children born in recent years is increasing even in the older generation. This indicates that the «active reproductive period» of women is increasing (Temirov, 2021).

In 1991-2020, the total fertility rate had regional differences in the cities and districts of the Fergana Valley regions (see Table 1).

Table 1. Estimation of the total fertility rate in the regions of the Fergana Valley according to the classification of B.Urlanis

Description of birth rate	Total birth rate (per 1000 people)	The number of districts and cities belonging to groups according to the total birth rate				Weight of the population, in percent			
		1991 year	2000 year	2010 year	2020 year	1991 year	2000 year	2010 year	2020 year
Extremely low	less than 10	-	-	-	-	-	-	-	-
Very low	11-15	-	2	-	-	-	3.8	-	-
Low	16-20	-	28	1	2	-	62.0	3.0	3.4
Average	21-25	2	17	43	27	4.4	34.2	91.5	53.5
Above average	26-30	4	-	2	18	14.8	-	4.5	43.1
High	31-40	39	-	1	-	77.3	-	1.0	-
Very high	41-50	2	-	-	-	3.5	-	-	-
	Total	47	47	47	47	100	100	100	100

The table was calculated by the author based on the information of the State Statistics Committee of the Republic of Uzbekistan

At the beginning of the researched period, i.e. in 1991, the total fertility rate was 20.8‰ in the cities of Fergana and 20.4‰ in Khanabad, with a complex national population structure and a high level of employment.. Kokand with a unique history had a fertility rate of 28. 6‰ and its neighbouring districts, while the fertility rate in the city of Andijan was 26.8‰ and a higher than average level was observed. This coefficient was very high in Beshariq (50.1‰) and Mingbulok (41.9‰) districts of the Fergana Valley, which are located in a reserve area and have a low population density.

In other cities and districts of the regions of the Fergana Valley (77.3 percent of the population), a high level of the total fertility rate was observed. By 2020, 53.5 percent of the population of the lowlands had an average birth rate, and 43.1 percent had an above average birth rate. In particular, a low level of this coefficient was observed in the cities of Fergana (19.4‰) and Khanabad (19.5‰), which are the main cities of the valley regions. Only the city of Namangan (29.0‰), which has its own traditions and national mentality (early marriages, relatively few divorces), has the highest rate in the neighbouring Uychi region (27.5‰).

The total fertility rate, that is, the average number of children per woman (in the reproductive period), in the valley areas in 2000-2012 was 2.1-2.4, which was relatively lower than the national figure. In this case, the main factors are high population density, small land area and large demographic capacity in lowland areas. In recent years, the average number of children in a family has increased in the valley regions, which is observed throughout the country, and in 2020 this figure exceeded 3. An important factor in this is the improvement in the lifestyle of the population and the change in attitudes towards the birth of children in the family. Also, in most areas of the valley regions, a wide and rapidly growing form of population regeneration is observed (see Table 2).

According to the data of 2020, the average number of children in the family is 2.1 in the cities and districts of the Fergana Valley regions, in the city of Fergana alone. Also, the average number of children in a family is 2.3 in the city of Khanabad, which is distinguished by its peaceful nature, and normal population reproduction is observed. 29.7% of the population of the valley regions have an average birth rate, an extended form of population reproduction is observed, and 66.8% of the population have a wide and rapid increase in population reproduction.

Table 2. Changes in the specific and cumulative birth rate in the regions of the Fergana Valley (2000-2020)

Years		Age group of mothers							**Mothers aged 15-49**	**Number of births**	**Specific birth rate**	**Total fertility rate**
		15-19	20-24	25-29	30-34	35-39	40-44	45-49				
Andijan region	2000	16.5	190.0	147.3	78.4	24.7	4.8	0.8	586884	43897	74.8	**2.3127**
	2010	24.6	194.1	160.7	79.5	24.5	3.8	0.2	766280	59953	78.2	**2.4374**
	2012	21.4	185.5	150.3	71.2	19.7	2.6	0.1	784329	58277	74.3	**2.2545**
	2020	26.1	258.7	190.6	109.7	39.5	4.6	0.2	823998	81425	98.8	**3.1463**
Namangan region	2000	30.2	212.0	146.2	75.6	21.3	1.4	0.4	502966	40772	83.1	**2.4352**
	2010	27.2	181.7	152.0	66.0	18.9	2.6	0.2	684003	50799	74.3	**2.2428**
	2012	26.4	173.6	142.3	64.0	15.4	2.3	0.1	705439	50603	71.7	**2.1208**
	2020	32.9	250.6	190.1	106.9	36.0	3.6	0.1	756735	74720	98.7	**3.1009**
Fergana region	2000	20.0	209.6	138.4	67.2	20.4	4.0	0.2	703971	53168	75.5	2.2992
	2010	26.2	200.5	156.3	67.4	18.1	2.6	0.2	925188	70622	76.3	**2.3560**
	2012	27.7	179.4	139.8	61.1	14.7	1.9	0.1	949338	66989	70.6	**2.1232**
	2020	30.9	248.0	176.2	100.2	33.7	2.9	0.2	1000688	93037	93.0	2.9601
Fergana Valley	2000	21.8	204.0	143.5	73.2	22.1	3.5	0.5	1793821	137837	76.8	**2.3431**
	2010	26.0	192.9	156.4	70.9	20.4	3.0	0.2	2375471	181374	76.4	**2.3490**
	2012	25.3	179.6	143.9	65.2	16.5	2.3	0.1	2439106	175869	72.1	**2.1645**
	2020	30.0	252.1	184.9	105.2	36.2	3.7	0.2	2581421	249182	96.5	**3.0609**

The table was prepared by the author based on the information of the State Statistics Committee of the Republic of Uzbekistan

Table 3. The average number of children in the family in the cities and districts of the Fergana Valley regions (2020)

The value of total fertility rate	Assessment of the birth rate and population regeneration	cities and districts	population weight, (in %)
>1.8	The birth rate is very low, and population regeneration takes place in a narrow range	-	-
1.8-2.15	If the birth rate is low, and if it remains at this level for a long time, it is inevitable that the repopulation of the population will go into a narrow circle.	Fergana city	3
2.15-2.17	Normal reproduction limit of the population	-	-
2.17-2.4	At this birth rate, normal reproduction and growth of the population will continue even if the death rate is much higher.	Khanabad	0.5
2.4-3.0	An average birth rate, an extended form of population reproduction and its regular growth are observed	Buloqboshi, Korg'ontepa, Mingbuloq, Pop, Uchkurgan, Chortoq, Chust, Yangikurgan, Kokan sh, Margilon sh, Kuvasoy, Altiariq, Kuva, Rishton, Soh	29.7
3.0-4.0	Fertility is above average, population reproduction is large and growing rapidly.	Andijan, Andijan, Bo'ston, Jalakuduq, Ulug'nor, Marhamat, Oltinkol, Baliqchi, Izboskan, Asaka, Shahrikhan, Pakhtaabad, Khojaabad, Namangan, Namangan, Norin, Uychi, Kosonsoy, Torakorgan, Buvaida, Dangara, Furqat, Koshtepa, Baghdad, Beshariq, Uchkoprik, Toshloq, Uzbekistan, Fergana, Yozyovon	66.8
4.0 <	The birth rate is high, and population regeneration is widespread and growing rapidly	-	-

The table was prepared by the author based on the data of the Statistical Committee of the Republic of Uzbekistan

Marriage and divorce processes are among the socio-demographic factors that have a direct impact on the decrease or increase in the birth rate. Also, these processes are of great social importance in the life of society. Marriage is a socially supported and regulated form of relationship between a man and a woman. Divorce is a demographic process resulting from the annulment of marriages of married couples in the same generation. This is the annulment of a marriage between a husband and wife during their lifetime (Kadirov, Temirov, 2021). For a high birth rate, factors such as the marriage rate, the age of marriage, and the stability of marriage are important.

Table 4. Marriage and divorce rates in Fergana Valley regions (1991-2020)

	1991	1995	2000	2005	2010	2015	2020
Republic of Uzbekistan	12.3 12.8	12.4 7.4	11.8 6.8	8.9 7.0	6.1 10.0	10.3 9.1	8.6 9.5
Andijan	9.3 14.1	7.3 8.1	8.1 6.1	4.4 6.6	5.0 10.0	9.9 9.7	8.7 11.3
Namangan	8.5 13.2	8.2 7.5	9.4 6.6	8.0 7.1	7.1 10.0	8.5 9.5	8.7 8.4
Fergana	11.3 13.7	11.3 7.8	12.4 6.3	5.2 7.3	4.5 10.2	10.0 8.8	8.9 8.3
According to the Fergana valley regions	9.9 13.7	9.1 7.8	10.4 6.8	5.8 7.1	5.4 10.2	9.5 9.3	8.9 9.3

Note: The numerator shows the divorce rate per 100 marriages and the denominator shows the marriage rate per 1,000 population.

The table was compiled by the author based on the data of the Statistical Committee of the Republic of Uzbekistan.

In the valley regions, the marriage rate per thousand of the population decreased from 13.7 to 8.9 in 1991-2020 (see Table 4). Also, during the research period, it was higher than the average indicator of the republic. The decrease in the marriage rate can be explained mainly by the increase in the age of marriage and changes in the age structure of the population at the age of marriage. During the years 1991-2020, as a result of a positive change in the opinions of the population, including young people, about marital relations, family strength and independence, the age of marriage has increased in the republic, as well as in the valley regions. In 2000-2020, the age of first marriage in the valley regions increased from 20.4 years to 22.1 years for women, and from 23.5 years to 25.9 years for men. During this period, the age of first marriage in women increased by 1.7 years, while in men this indicator was equal to 2.4 years. Among the regions of the Fergana Valley, the lowest rate of first marriage age corresponds to Namangan region, which has a high rate of birth and natural growth, and the highest rate corresponds to the densely populated Andijan region. The average level among valley regions corresponded to Fergana region. In the period 2000-2020, the age of marriage in the valley regions increased, while the gap between them decreased. An increase in the age of marriage, a change in the worldview and independent opinion of young people leads to the increase of healthy families in society, but also causes a demographic risk such as an increase in births out of wedlock.

It has been shown that the age of marriage of young people in the regions of the Republic of Uzbekistan, particularly in the Fergana Valley, is mainly 20-25 years. As a result of periodic changes in the birth rate, the weight of this 20-25 age group in the total population also changed. In particular, in 1991-2005, the marriage rate decreased from 13.7 per thousand to 7.1 per thousand, while the share of the population aged 20-25 in the total population was 11 percent in the valley regions. In 2006-2012, the share of the population aged 20-25 was 12 percent, in 2013 it was 13 percent, and in subsequent years it was 12 percent. Correspondingly, in 2006-2012, the marriage rate increased from 7.7 to 10.0 per thousand of the population. In 2013, the highest marriage rate was observed in the valley, equal to 10.5 per thousand. In the following years, the marriage rate decreased from 10.2 per thousand to 9.7 .As a result of the lowest number of births and the rate of natural growth in the years 2000- 2005, the marriage rate is expected to decrease in the coming years.

Changes in the marriage rate also have a significant effect on the fertility rate. Today, 37.7% of children born in the valley regions are the firstborn child in the family and 35.9% are the secondborn child. Factors such as the fact that 73.6 percent of

the children born are the first and second children in the family, and the change in the marriage rate also have an impact on the birth rate. The stability of marital relations plays an important role in the high birth rate. In the valley regions, the correlation between marriage and fertility is average, the Spearman correlation coefficient was R=0.63 in 2010, and R=0.41 in 2012, when the average number of births and children in the family was the lowest (see Table 5).

Table 5. Correlation of the marriage and birth rate and the average number of children in the family in the regions of the Fergana Valley

Years	Republic of Uzbekistan			Fergana Valley regions		
	Spearman correlation coefficient	Birth rate	Cumulative birth rate	Spearman correlation coefficient	Birth rate	Cumulative birth rate
2010	0.24	22.0	2.3	0.63	22.1	2,4
2012	0.60	21.0	2.2	0.41	20.8	2,2
2015	0.54	23.5	2.5	0.65	23.6	2,5
2020	0.72	24.6	2.9	0.49	25.6	3,1
Assessment of the degree of association by the value of the correlation coefficient						
Value		0.1-0.3	0.3-0.5	0.5-0.7	0.7-0.9	0.9 <
Binding power		Empty	Average	Perceptible	High	Very high

The table was compiled by the author based on the data of the Statistical Committee of the Republic of Uzbekistan.

According to the analysis, in 2012, when the correlation was the lowest, the correlation coefficient was R=0.41, or the average strength of the relationship, the birth rate was 20.8‰ (low) and the average number of children in the family was 2.2, which corresponds to average. In the last year of the study 2020, the correlation coefficient was R = 0.49, which corresponds to the average strength of the connection, the total fertility rate was 25.6 ‰, and the average number of children in the family was 3.1, which is above average. This situation is explained by the increase in the birth rate among older mothers in the regions of the Fergana Valley.

In 1991, 23.1% of all divorces in the country were in the regions of the Ferghana Valley, and in 2019 this figure was 29.4%. In this regard, the issue of divorce in the valley regions is of current importance.

In the regions of the Fergana Valley, the divorce rate per 100 marriages decreased from 9.9 percent to 5.4 percent in 1991-2010, and in subsequent years this rate gradually increased and reached 10.0 percent in 2020. At the same time, the highest rate among the valley regions corresponded to Andijan region, 12.2 divorces per 100 marriages, and the lowest rate was 8.9 in Namangan and 9.1 in Fergana regions.

The process of death is the second main part of population reproduction and actively participates in the change of generations. The death process depends on the population's health, social status and living conditions. With the development of socio-economic, especially medical services, the life expectancy of the population is increasing.

Due to the reforms implemented in the health of the population in Uzbekistan, the death rate decreased. In particular, the total death rate in the country in 1991-2020 decreased from 6.3 to 5.1 ‰. 27.3 percent of all deaths in the country are in Fergana Valley regions.

In the Valley Regions, the crude mortality rate in the period 1991-2020 decreased from 6.3 to 4.8 or by 1.5 per thousand people. In these years, the area under study has its own territorial characteristics, with the death rate being the same as the death rate of the population of the republic. The general indicator of death in the regions of the Fergana Valley has periodic and regional differences. In particular, in 1991-1994, the death rate in the valley regions was higher than the national rate. In that period, the difficult living conditions of the population in the Fergana Valley and the low level of medical services are considered as the main factors. As a result of reforms implemented in the field of medical services in the country, as a result of the increase in the standard of living of the population, the death rate decreased. In particular, in 1995-2007, the death rate in the regions of the Fergana Valley was lower than the country's death rate. Since 2009, it can be observed that the death rate has partially increased in the valley regions due to the increase in the elderly population. Also, in the regions of the Fergana Valley, in the period 1991-2020, the death rate in Andijan region decreased from 6.1 per thousand to 5.0 per thousand or by 1.1 per thousand, while it decreased by 1.0 per thousand in Namangan region and 1.4 per thousand in Fergana region.

In the cities and districts of the Fergana Valley regions, regional differences in the crude mortality rate are noticeable (see Table 6). The density of population and transport nodes in regional centers and large cities has been high due to the location of industrial enterprises in the city and suburbs. In 1991,

the death rate was at a «high» level in the cities of Fergana, Kokand, Margilan, Andijan, Beshariq, Furqat, and Khojaabad districts. The cities of Khanabad and Kuvasoi, which have their own social character in the valley regions, and the sparsely populated Boston, Ulug'nor, Yozyovon and Buvayda districts of central Fergana had a «low» indicator. In recent years, the death rate has decreased, and in 2020, the valley did not experience a «high» level. The average level was observed in the cities of Fergana, Kogan, Margilan, Andijan, Namangan, Dangara, Furqat, Fergana, Oltinkol, Buloqboshi, Asaka, Bo'ston, Andijan, Marhamat, Jalakuduq, Uychi, Uchkurgan districts. All other districts and cities of the Fergana Valley regions corresponded to the areas where the low death rate was observed.

Table 6. Grouping of the population according to the mortality rate in the regions of the Fergana Valley (in the cross-section of administrative units)

	1991	2000	2010	2020
Low (up to 4.9 ‰)	Kuvasoy city, Yozyovon, Buvaida, Khanabad city, Boston, Ulug'nor	Kosonsoy, Namangan, Pop, Torakurgan, Chortoq, Chust, Yangikurgan, Kuvasoy city, Altiariq, Koshtepa, Baghdod, Beshariq, Buvaida, Kuva, Sokh, Toshloq, Uchkoprik, Fergana, Yozyovon, Khanabad, Asaka, Ulug'nor, Shahrikhan, Boston.	Namangan city, Kosonsoy, Mingbulok, Namangan, Norin, Toraqorgon, Uychi, Uchkurgon, Chortok, Chust, Yangikurgon, Altiariq, Koshtepa, Baghdod, Beshariq, Buvaida, Kuva, Rishton, Sokh, Tashloq, Uchkoprik, Fergana, Yozyovon, Khanabad etc., Asaka, Boston, Ulug'nor, Bulagboshi, Jalakuduq, Kurgantepa, Marhamat, Pakhtaabad, Shahrikhan	Kosonsoy, Mingbuloq, Namangan, Norin, Pop, Toraqorgon, Chortoq, Chust, Yangikorgon, Kuvasoy city, Altiariq, Koshtepa, Baghdod, Beshariq, Buvayda, Kuva, Rishton, Sokh, Toshloq, Uchkoprik, Yozyovon, Khanabad city, Baliqchi, Kurgantepa, Pakhtaabad, Ulughnor, Shahrikhan, Izboskan, Khojaabad
Average (5.0-6.9 per thousand)	Namangan city, Kosonsoy, Mingbuloq, Namangan, Norin, Pop, Toraqorgon, Uychi, Uchkurgon, Chortoq, Chust, Yangikurgon, Altiariq, Koshtepa, Baghdod, Dangara, Kuva, Rishton, Sokh, Toshloq, Uzbekistan, Uchkoprik, Fergana, Oltinkol, Andijan, Asaka, Baliqchi, Buloqboshi, Jalakuduq, Izboskan, Korgantepa, Marhamat, Pakhtaabad, Shahrikhan	Namangan city, Mingbulok, Norin, Uychi, Uchkurgan, Kokan district, Mapgilan district, Dangara, Rishton, Uzbekistan, Furqat, Andijan city, Oltinkol, Andijan, Baliqchi, Bulogboshi, Jalakuduq, Izboskan, Kurgontepa, Marhamat, Pakhtaabad, Khojaabad	Pop, Fergana city, Kokand city, Kuvasoy city, Margilan city, Dangara, Uzbekistan, Furqat, Andijan dcity, Oltinkol, Andijan, Baliqchi, Izboskan, Khojaabad	Fergana city, Kokand city, Margilan city, Dangara, Furqat, Uzbekistan, Fergana, Andijan city, Oltinkol, Bulagboshi, Asaka, Boston, Andijan, Marhamat, Jalakuduq, Namangan city, Uychi, Uchkurgan
High (greater than 7.0 ‰)	Fergana city, Kokand city. Margilan city, Beshariq Furqat, Andijan city. Khojaabad.	Fergana city		

The table was calculated by the author based on the information of the State Statistics Committee of the Republic of Uzbekistan

In 1991, 20.7 percent of the population of the Fergana Valley region had a «high» overall mortality rate (see Table 6). Also, it should be noted that 73% of the population of the regions with «high» indicators are urban residents. Across the valley, 73.3 percent of the population experienced the «moderate» mortality rate and only 6 percent met the «low» assessment criteria. In the following years, the «high» rate of death decreased, and the «medium» and «low» rates increased. For example, in 2000 only one city of Fergana had a «high» rate of death. 47.6 percent of the population of the valley regions corresponded to the «low» and 31.6 percent to the «average» level, while in 2010 and 2020, 68.4 and 70.9 percent were «low», while 31.6 and 29.1 percent respectively corresponded to the «average» level. At this point, it should be noted that the death rate has increased during the 2020 pandemic.

This can be explained by the high population density in the cities of Andijan, Fergana, Kokand, and Margilan, which have a high death rate over the years,

and are located at a transport hub, have a low birth rate and high proportion of elderly, as well as a violation of the ecological balance. In recent years, the death rate of the population has decreased in these cities, while it is still distinguished by a high rate compared to other districts.

In the Republic of Uzbekistan, including the regions of the Fergana Valley, the largest weight of population deaths was caused by diseases of the circulatory system (61.8 percent). In the second places, death due to tumours is 7.9%, the third respiratory diseases 6.9%, the fourth digestive diseases 4.9%, fifth accidents, poisoning and injuries 4.1%, sixth, infectious and parasitic diseases 2.3 % and 12.1 % of the population die for other reasons. There is a significant difference in the sexual composition of these diseases. In particular, death due to circulatory system diseases was 60.7% in men and 63.0% in women. Death due to accidents, poisoning and injuries is 5.8% in men and 2.2% in women. Cancer deaths are more common in women than in men.

65-70 % of those who died from diseases of the blood circulation system lived in Dangara, Fergana, Uzbekistan, Beshariq, Bagdad, Koshtepa, Asaka, Marhamat, Boston, Buloqboshi districts of the southern districts of the Fergana Valley. The rate of accidents, poisoning and injuries is relatively high in Yozhiovon, Furqat, Dangara, Uzbekistan, Buvaida, Yangikurgan, Uchkurgan, Torakurgan, Pop, Mingbulok, Ulughnor districts and Fergana city, where major highways pass. Also, many people die from respiratory diseases in Sokh, Buvayda, Mingbulok, Namangan, Kosonsoy, Norin, Pop and Torakorgan districts.

In general, in the country, in particular, in the regions of the Fergana Valley, studying the causes of death from diseases of the circulatory system and reducing the death rate of the population from this disease is one of the main problems in the field of medicine.

Demographic processes, the number and dynamics of the population, changes in its composition and territorial location determine its future state. The population forecast is important for the creation of new jobs, housing, kindergarten, schools, hospitals and other construction and material needs, production and infrastructure development, planning and territorial organization (Temirov Z.A., 2022).

In the first year of independence, 26.9 percent of the country's population lived in the regions of the Fergana Valley. In the following years, the share of the valley regions in the population of the country increased and in 2000 it was 27.7 percent, and in 2020 it was 28.6 percent.

According to the forecast, 28.3 percent of the country's population in 2030 and 28.4 percent in 2040 is expected to be living in the valley regions. During the forecast period, the valley's population will remain almost unchanged in its national share , and it will also remain the region with the largest share of the country's population.

Demographic processes such as births, deaths, marriages and divorces are important factors in population growth. As the number of births increases according to the forecast, its change is observed under the influence of demographic factors (Table 7).

It is known that the preponderance of boys over girls at birth will lead to a decrease in the proportion of women of reproductive age during the forecast period. In particular, the share of women of childbearing age in the valley regions is expected to decrease from 25.9 % in 2020 to 23.4 % in 2040. It is known that the age coefficient of birth is the highest among mothers in the age group of 20-24 and 25-29. In 2020, 38.0 % of children born in the 20-24 age group and 34.2 % in the 25-29 age group, i.e., 72.2 %, were born to mothers aged 20-29. Changes in the proportion of mothers in this age group affect the general and specific coefficient of birth. In particular, in 2020, mothers in the age group of 20-29 made up 32.7 % of women of reproductive age, the total fertility rate was 25.2%, and the specific fertility rate was 98.6%. According to this indicator, the proportion of mothers aged 20-29 will decrease by 26.5% in 2030, and increase by 30.5% in 2040. The total and specific fertility rates were projected to be 18.8% and 79.6% in 2030 and 20.0% and 85.7% in 2040, respectively. These indicators do not have a big difference in the valley regions.

The total fertility rate remains low in the cities of Fergana Valley regions such as Fergana, Kokand, Kuvasoi, Andijan, Khanabad, Chust and neighbouring districts, as well as Mingbuloq located in Central Fergana and Chortoq, which is considered a recreational district. On the contrary, a high coefficient is observed in the city of Namangan of Namangan region and the districts of Toraqorgan, Kosonsoy, Shahrikhan, Pakhtaabad, Khojaabad, Baliqchi, Izboskan, and Buvaida, Dangara of Andijan region and Fergana region (Table 9).

Mortality forecast is also important in the development of demographic processes. During the study period in the country and regions of the Fergana Valley, the overall mortality rate decreased and life expectancy increased. The increase in life expectancy has led to an increase in the proportion of older people in the population. According to the forecast

Table 7. Forecast of the number of births in the regions of the Fergana Valley by the age of the mother and the general and special coefficient

Years		Number of births by maternal age group							Number of mothers aged 15-49	15-49-year-old mothers in the total population салмоғи	Number of births (thousand people)	Specific birth rate	Total fertility rate
		15-19	20-24	25-29	30-34	35-39	40-44	45-49					
Andijan	2025	3220	25822	23787	14185	4386	412	11	848779	24.6	71.8	84.6	20.8
	2030	3564	32016	19754	12623	4818	486	13	894547	24.1	73.3	81.9	19.8
	2035	3972	35394	24460	10469	4282	534	15	943921	23.8	79.1	83.8	20.0
	2040	4594	39427	27027	12956	3550	474	16	999338	23.7	88.0	88.1	20.9
Namangan	2025	3165	23775	22009	13616	3907	283	6	778196	23.9	66.8	85.8	20.5
	2030	3509	27722	18533	11884	4347	341	7	816215	23.4	66.3	81.3	19.0
	2035	4122	30684	21571	9989	3787	379	9	863596	23.3	70.5	81.7	19.0
	2040	4771	36023	23869	11624	3182	330	10	914255	23.2	79.8	87.3	20.3
Fergana	2025	4625	29895	26008	16063	4501	301	8	1025965	23.9	81.4	79.3	19.0
	2030	5080	35685	21654	14102	4921	364	9	1072288	23.5	81.8	76.3	18.0
	2035	5695	39151	25819	11727	4315	397	11	1126617	23.4	87.1	77.3	18.1
	2040	6422	44055	28427	14034	3601	350	12	1176921	23.2	96.9	82.3	19.1
Valley total	2025	11010	79492	71804	43864	12794	996	25	2652940	24.1	220.0	82.9	20.0
	2030	12153	95423	59941	38609	14086	1191	29	2783050	23.7	221.4	79.6	18.8
	2035	13789	105229	71850	32185	12384	1310	35	2934134	23.5	236.8	80.7	19.0
	2040	15787	119505	79323	38614	10333	1154	38	3090514	23.4	264.8	85.7	20.0
Ўзбекистон Uzbekistan	2025	34928	268763	250442	154564	54558	5949	381	9434893	24.2	769.6	81.6	19.8
	2030	38010	309950	220488	137870	57014	7163	448	9914399	23.9	770.9	77.8	18.5
	2035	42241	337299	254277	121380	50856	7485	539	10384533	23.6	814.1	78.4	18.5
	2040	48066	374842	276714	139981	44773	6677	563	10844568	23.3	891.6	82.2	19.1

The table was compiled by the author based on the data of the Statistical Committee of the Republic of Uzbekistan

developed in the regions of the Fergana Valley, the life expectancy of the population will increase in the future and is expected to reach 77.9 years in 2030, and 80.8 years in 2040. Among the valley regions, it is projected at 78.3 years in the Andijan region with a relatively high mortality rate, 79.1 years in the Namangan region with a high natural increase, and 80.1 years in the Fergana region with a low birth rate and natural increase. It is also expected that the life expectancy of men will increase more than women, and the difference between them will decrease more and more. In particular, the difference between the life expectancy of women and men in 2020 in the valley regions is projected to decrease from 3.2 years to 1.8 years in 2030 and 0.5 years in 2040, or to be almost equal. The increase in the average life expectancy of the population in the regions of the Fergana Valley will lead to an increase in the share of the elderly in the age structure of the population in the future and, accordingly, to an increase in the overall death rate (see Table 8)

In particular, according to the developed forecast, the total death rate in the valley regions in 2025 will increase from 5.7 per thousand to 8.1 per thousand by 2040. The main factor in this is the increase in the population's life expectancy and, accordingly, the proportion of the elderly. Among the valley regions, this coefficient is expected to reach 8.3 per thousand in Fergana region, and 7.9 per thousand in Namangan region. In the overall mortality rate, male mortality continues to be higher than female mortality. Fergana city has the highest mortality rate among the valley districts and cities, with more than 9 deaths per 1,000 people predicted (Table 9).

Table 8. Forecast of mortality and overall mortality rate in Fergana Valley regions

Forecast years		2025			2030			2035			2040		
		total	male	female	total	male	female	total	male	female	total	male	female
Andijan	Total death	19.0	10.2	8.8	22.7	12.3	10.4	27.6	14.9	12.7	33.8	17.9	15.9
	Population	3447.5	17461.2	1701.3	3708.9	1878.5	1830.4	3960.2	2005.4	1954.8	4219.0	2133.5	2085.5
	OMR*	5.5	5.9	5.2	6.1	6.5	5.7	7.0	7.4	6.5	8.0	8.4	7.6
Namangan	Total death	18.4	11.2	7.4	21.9	13.1	8.8	262.4	15.5	10.9	31.0	17.7	13.5
	Population	**3258.8**	**1728.4**	**1530.4**	**3493.5**	**1840.8**	**1652.7**	**3713.9**	**1946.0**	**1767.9**	**3933.6**	**2047.4**	**1886.1**
	ЎУК*	5.6	6.5	4.8	6.2	7.1	5.3	7.1	8.0	6.2	7.9	8.7	7.2
Fergana	Total death	25.7	15.6	10.1	29.9	18.2	11.7	35.8	21.3	14.5	42.0	24.0	18.3
	Population	**4286.2**	**2248.2**	**2038.0**	**4555.1**	**2374.4**	**2180.7**	**4809.9**	**2492.9**	**2317.0**	**5068.0**	**2609.4**	**2458.6**
	OMR*	5.9	6.9	5.0	6.5	7.7	5.4	7.4	8.6	6.3	8.3	9.2	7.5
total	Total death	62.4	37.1	26.3	73.5	43.6	30.9	89.3	51.8	38.1	106.8	59.6	47.7
	Population	**10992.4**	**5722.8**	**5269.6**	**11757.6**	**6093.7**	**5663.9**	**12484**	**64442.3**	**6039.7**	**13220.5**	**6790.3**	**6430.2**
	OMR*	5.7	6.5	5.0	6.3	7.1	5.5	7.2	8.0	6.3	8.1	8.8	7.4

OMR*-Overall mortality rate

The table was compiled by the author based on the data of the Statistical Committee of the Republic of Uzbekistan

Table 9. Forecast of the total coefficient of birth, death and natural growth in the regions of the Fergana Valley (2025-2040)

Districts and cities		2025			2030			2035			2040		
		TFR	OMR	NG	TFR	OMR	NG	TFR	OMR	NG	TFR	OMR	NG
Andijan region	Andijan region	20.8	5.5	15.3	19.7	6.1	13.6	19.9	7.0	12.9	20.8	8.0	12.8
	Andijan city	20.1	6.0	14.1	17.9	6.6	11.3	18.1	7.5	10.6	18.9	8.6	10.3
	Khanabad city	16.6	4.8	11.8	15.9	5.3	10.6	16.0	6.1	9.9	16.8	7.0	9.8
	Oltinkul	21.3	5.3	16.0	21.4	5.9	15.5	21.0	6.7	14.3	21.6	7.7	13.9
	Andijan	19.9	5.6	14.3	19.2	6.2	13.0	19.2	7.1	12.1	20.0	8.2	11.8
	Baliqchi	20.8	5.4	15.4	20.6	5.9	14.7	21.0	6.8	14.2	21.7	7.8	13.9
	Boston	20.5	5.4	15.1	19.1	5.9	13.2	19.3	6.8	12.5	20.1	7.8	12.3
	Buloqboshi	20.4	5.3	15.1	19.1	5.9	13.2	19.0	6.7	12.3	19.9	7.7	12.2
	Jalaqudiq	20.0	5.6	14.4	19.4	6.2	13.2	19.6	7.1	12.5	20.3	8.1	12.2
	Izboskan	21.1	5.8	15.3	20.2	6.5	13.7	20.8	7.4	13.4	21.8	8.5	13.3
	Ulugnor	20.2	4.8	15.4	19.0	5.3	13.7	18.8	6.1	12.7	19.2	6.9	12.3
	Kurgantepa	19.4	5.3	14.1	18.7	5.8	12.9	18.8	6.7	12.1	19.3	7.6	11.7
	Asaka	20.9	5.6	15.3	19.7	6.2	13.5	20.4	7.0	13.4	21.9	8.1	13.8
	Markhamat	21.7	5.6	16.1	19.8	6.2	13.6	19.6	7.1	12.5	20.6	8.1	12.5
	Shakhrixon	23.3	5.1	18.2	22.3	5.7	16.6	22.6	6.5	16.1	23.7	7.5	16.2
	Paxtaobod	21.4	5.4	16.0	20.7	5.9	14.8	21.4	6.8	14.6	22.4	7.8	14.6
	Khujaobod	22.3	6.1	16.2	20.6	6.7	13.9	21.0	7.7	13.3	22.0	8.8	13.2
Namangan region	Namangan region	20.4	5.6	14.8	18.9	6.2	12.7	18.8	7.1	11.7	20.1	7.9	12.2
	Namangan city	23.1	6.0	17.1	22.4	6.6	15.8	22.8	7.5	15.3	24.4	8.4	16.0
	Mingbulok	21.1	5.1	16.0	18.6	5.6	13.0	17.4	6.4	11.0	17.9	7.1	10.8
	Kosonsoy	20.7	5.0	15.7	20.0	5.5	14.5	20.5	6.2	14.3	21.5	6.9	14.6
	Namangan dis	19.7	5.6	14.1	18.4	6.2	12.2	18.3	7.0	11.3	19.7	7.9	11.8
	Norin	18.6	6.1	12.5	17.8	6.8	11.0	18.3	7.7	10.6	19.6	8.6	11.0
	Pop	17.7	5.5	12.2	16.1	6.1	10.0	16.2	6.9	9.3	17.1	7.7	9.4
	Turaqurgon	20.8	5.5	15.3	18.2	6.0	12.2	18.5	6.8	11.7	21.0	7.6	13.4
	Uychi	22.1	6.2	15.9	20.2	6.8	13.4	19.7	7.8	11.9	20.6	8.7	11.9
	Uchqurgon	19.7	6.1	13.6	18.1	6.7	11.4	18.1	7.6	10.5	19.1	8.5	10.6
	Chortoq	18.3	5.3	13.0	17.2	5.8	11.4	17.6	6.6	11.0	18.3	7.4	10.9
	Chust	18.7	5.2	13.5	15.9	5.8	10.1	15.4	6.5	8.9	16.9	7.3	9.6
	Yangiqurgon	20.0	5.5	14.5	17.9	6.1	11.8	17.4	6.9	10.5	17.4	7.7	9.7

Fergana region	Fergana region	18.9	5.9	13	17.8	6.5	11.3	18.0	7.4	10.6	18.9	8.3	10.6
	Oltiariq	19.2	5.8	13.4	17.3	6.3	11.0	17.0	7.2	9.8	17.8	8.1	9.7
	Qushtepa	19.9	5.7	14.2	17.6	6.2	11.4	17.9	7.1	10.8	19.6	8.0	11.6
	Bogdod	19.9	5.6	14.3	18.6	6.1	12.5	19.0	7.0	12.0	20.7	7.9	12.8
	Buvayda	20.7	5.0	15.7	19.8	5.5	14.3	20.0	6.2	13.8	21.1	7.0	14.1
	Beshariq	19.7	5.6	14.1	20.3	6.1	14.2	20.1	7.0	13.1	20.4	7.9	12.5
	Quva	18.5	5.6	12.9	17.1	6.1	11.0	17.2	7.0	10.2	18.1	7.9	10.2
	Uchkuprik	20.3	5.6	14.7	19.1	6.1	13.0	19.0	7.0	12.0	20.4	7.9	12.5
	Rishton	18.7	5.7	13.0	16.7	6.2	10.5	16.8	7.1	9.7	17.9	8.0	9.9
	Sokh	19.7	4.8	14.9	19.4	5.3	14.1	20.8	6.0	14.8	20.4	6.8	13.6
	Toshloq	19.3	5.6	13.7	17.8	6.1	11.7	17.8	7.0	10.8	19.5	7.9	11.6
	Uzbekistan	18.9	5.9	13.0	18.7	6.5	12.2	19.4	7.4	12.0	20.6	8.4	12.2
	Fergana	19.4	5.9	13.5	18.2	6.4	11.8	18.4	7.3	11.1	19.5	8.3	11.2
	Dangara	20.3	6.6	13.7	19.7	7.2	12.5	20.7	8.2	12.5	23.1	9.2	13.9
	Furqat	20.0	6.6	13.4	17.9	7.3	10.6	18.6	8.3	10.3	20.7	9.3	11.4
	Yozyovon	19.2	4.8	14.4	18.4	5.3	13.1	19.1	6.0	13.1	20.0	6.8	13.2
	Fergana city	14.7	7.2	7.5	13.4	7.9	5.5	12.8	9.0	3.8	12.6	10.1	2.5
	Kokand city	18.1	6.7	11.4	18.0	7.4	10.6	17.7	8.4	9.3	17.6	9.4	8.2
	Quvasoy city	16.0	5.8	10.2	14.8	6.4	8.4	14.7	7.3	7.4	15.5	8.2	7.3
	Margilan city	19.2	6.4	12.8	18.7	7.0	11.7	18.5	8.0	10.5	19.0	9.0	10.0

TFR- Total fertility rate, OMR-Overall mortality rate, NG- Natural growth

The table was compiled by the author based on the data of the Statistical Committee of the Republic of Uzbekistan

Also, the death rate is expected to be high in the cities of Kookand, Margilan, Andijan, Namangan and Furqat, Dangara districts, Khojaabad, Norin and Uchkurgan districts located at the gate of Khojand. The lowest indicator was predicted to correspond to the cities of Yozyovon, Ulugnor, Sokh in the south of the valley and Khanabad in the east of Central Ferghana.

In the regions of the Fergana valley, the cities of Fergana, Kokand, Andijan, the demographic processes, in particular, the low birth rate and high death rate, and the low rate of natural growth will continue in the future. Also, the more distant from these cities, the higher the birth rate, the lower the death rate, and the higher the natural increase in the remote districts.

Conclusion

- According to the data on the dynamics of the correlation between the marriage and birth rate of the population in the regions of the Fergana Valley, until 2012, the intergenetic interval between the age of the first childbearing of mothers and the overall period of having children increased, and the average number of children in the family decreased, the number of children born in recent years increased from the younger generation to the older generation. and the average number of children increased. This led to an increase in the «active reproductive period» of women;
- A decrease in the average indicator of population growth was observed in the cities and districts of the valley regions. The decrease of such indicators of the natural movement of the population from the regional point of view gradually changes from the regional centers to the remote districts, that is, creates «geodemographic waves»;
- In Andijan, Namangan and Fergana regions, the overall death rate is high in the regional centers and large cities, and on the contrary, it is low in the sparsely populated desert, foothills and mountainous regions, due to geographical and environmental factors.
- In the regions of the Fergana Valley, the relatively high death rate occurs in the cities of Andijan, Namangan and Fergana and neighbouring districts. Therefore, in these districts, it is necessary to carry out preventive work on improving the comprehensiveness of medical associations, attracting specialized specialists, improving the medical culture of the population;
- According to the developed forecast of birth, death and natural growth rate of the population in the regions of Fergana Valley, the demographic processes of regional centers and large cities, in particular, low birth rate and high death rate, low rate of natural growth will continue during the forecast period. Also, the more distant a location from these cities, the higher the birth rate, the lower the death rate, and the higher the natural increase in the remote districts.

References

Decree of the President of the Republic of Uzbekistan dated January 28, 2022 № PD-60. (2022). «On the development strategy of the new Uzbekistan for 2022-2026». Retrieved from: https://lex.uz/uz/docs/5841063

Abdullaev, Yo. (2000). Statistika nazariyasi [Statistical theory]. Labor (In Uzbek)

Abdullaev, O. (2000). Farg'ona vodiysi: ijtimoiy-iqtisodiy rivojlanish jarayonlari [Fergana Valley: socio-economic development processes]. Namangan (In Uzbek)

Abdurakhmanov, Q., Abduramanov, Kh. (2011). Demografiya [Demography]. Noshir (In Uzbek)

Asanov, G., 1990. Sotsial iqtisodiy geografiya // termin va tushunchalar izohli lug'ati [Social economic geography // explanatory dictionary of terms and concepts]. O'qituvchi (In Uzbek)

Borisov, V.A. (2003). Demografiya [Demography]. NOTA BENE (In Russian)

Borieva, M.R. (2001). Demografiya asoslari [Fundamentals of demography]. Tashkent (In Uzbek)

Borieva, M.R., Tojieva, Z.N., Zokirov, S.S. (2011). Aholi geografiyasi va demografiya asoslari [Basics of population geography and demography]. Tafakkur (In Uzbek)

Kadirov, R.B. (2016). Farg'ona mintaqasi aholisi va mehnat resurslari [Population and labor resources of Fergana region]. Navroz (In Uzbek)

Kadirov, R.B. (2021). O'zbekiston Respublikasi Farg'ona vodiysi viloyatlarida mehnat resurslaridan samarali foydalanish yo'llari [Ways of effective use of labor resources in Fergana Valley regions of the Republic of Uzbekistan]. Doctor of Geography (DSc) thesis abstract. (In Uzbek)

Kadirov, R.B., Temirov, Z.A. (2021). Forecasts and demographic development of the population of Fergana Valley regions of Uzbekistan until 2040. Journal of Geology, Geography and Geoecology 3 (30), 491-499. doi: 10.15421/112145

Shryock, Henry, S. (1976). The methods and materials of demography [The methods and materials of demography]. Academic Press, INK. San Diego, California. 577 p. https://www.unfpa.org/world-population-trends

Temirov, Z.A. (2021). Reconstruction of the population in the Fergana valley regions and its territorial characteristics [Reconstruction of the population in the Fergana valley regions and its territorial characteristics] New York Science Journal. 2021;14(1) –P. 26-31. Retrieved from: http://www.sciencepub.net/newyork/nys140121/05_37093nys140121_26_31.pdf

Temirov, Z.A. (2022). Farg'ona vodiysi viloyatlarida demografik jarayonlar rivojlanishining hududiy xususiyatlari [Territorial characteristics of the development of demographic processes in the regions of the Fergana Valley]. Doctor of Philosophy (PhD) Dissertation in Geography. (In Uzbek)

Tajiyeva, Z.N. (2010). O'zbekiston aholisi: o'sishi va joylashuvi [Population of Uzbekistan: growth and location]. Toshkent (In Uzbek)

Tajiyeva, Z.N. (2017). O'zbekiston Respublikasida demografik jarayonlar va ularning hududiy xususiyatlari [Demographic processes and their territorial characteristics in the Republic of Uzbekistan]. Doctor of Geography (DSc) thesis abstract. (In Uzbek)

Tajiyeva, Z.N. (2019). Aholi geografiyasi [Population geography]. Nodirabegim (In Uzbek)

Valentey, D.I., Kvasha, A.Ya. (1989). Osnovy demografii [Basics of demography]. Mysl (In Russian)