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DEMOGRAPHIC PROCESSES IN KAZAKHSTAN: CURRENT TRENDS AND FORECASTING THE FUTURE DEVELOPMENT

Abstract

The economic development of any country depends on the nature of demographic processes. The size of the population and its composition directly affect the scale of production, demographic processes – fertility, mortality, migration – largely depend on the socio-economic situation and the living standard of the population. The research aims to assess the current state of demographic processes in Kazakhstan and forecast their development until 2050. The article gives a brief description of the demographic development over the years of independence, identifying 3 main stages different in their dynamics and background socio-economic conditions, starting with the demographic crisis of the 1990s with the threat of depopulation to stabilization and population growth in the 2000s. The impact of the COVID-19 pandemic on the development of demographic processes and related indicators of the social sphere is analyzed. It is determined that the observed demographic development radically changes the existing model of population reproduction. The analysis of trends in demographic processes, and their cause-and-effect relationships with socio-economic processes serve as the basis for the development of forecasts of the number and structure of the population in the future. The methods of extrapolation and the age shift were used for forecasting.

Key words: demography, population, growth, fertility, forecasting.

Introduction

In the politics, economy and social sphere of any state, the most important role belongs to the parameters of demographic development. Kazakhstan has a significant territory, but it is also one of the smallest countries in the world in terms of population. In this regard, demographic growth is important for Kazakhstan for the development of the country as a whole.

The purpose of the article is to assess the current state of demographic processes in Kazakhstan and forecast their development until 2050.

Since gaining sovereignty, demographic processes in Kazakhstan are very dynamic. In the early 1990s, they developed against the background of the socio-economic crisis and were of a negative nature. In the context of the demographic crisis and the growing trends of depopulation, the problem of demographic development became an important priority of the country's state policy. Due to the social maintenance of stable demographic indicators and the intensity of reproduction in subsequent years, the population reached 19 million by 2021.

However, Kazakhstan is currently facing new demographic challenges that require more effective actions from the government. Over the past 10 years, the proportion of the working-age population

has been declining in the structure of the population, while the share of the population of older age has increased. In other words, the country is at the initial stage of demographic aging. At the same time, an increase in the share of elderly people will be accompanied by a decrease in the share of children. By 2050, the proportion of the child population is expected to decrease from 29% to 23%. Already today, it is necessary to foresee changes in the trends of demographic processes that will occur as a result of the COVID-19 pandemic, which had a strong impact on demographic indicators of Kazakhstan.

In these conditions, a scientifically based forecast of the main parameters of the population movement and the future demographic situation is required. Forecasting the development of demographic processes provides grounds for identifying "bottlenecks" in the social sphere and the economy.

The practical significance of the research lies in the fact that the results and conclusions obtained in the work can be used by public authorities to develop a new concept of demographic policy and for implementing socio-economic development programs since the population is both the main producer of goods and services and the main consumer of all resources.

Literature review

Over the past two and a half centuries, many scientists have been dealing with the demographic problem. Back in the XIX-XX century, studies of the age, gender, and number of indigenous inhabitants were shown in the works of Gompertz (1825), Mcham (1867), Brillinger (1961), Wolfenden (1954), Pollard (1979) and others.

Among the topical issues being studied today, the following should be noted: the problem of population aging and the study of its factors (birth rate growth, age-related mortality, and migration patterns) [1], labor migration [2], trends in the size of multi-generational families, the lives of children from different generations, differences in race/ethnicity and education [3].

The study of the process of population reproduction in demography requires the correct choice and use of a system of certain indicators. Conti et al. in their research calculated relative and specialized indicators, that give an idea of population growth and serve to assess the demographic and social well-being of the population. To forecast demographic indicators the most important is the scientifically based prediction of the main parameters of the population movement and the future demographic situation: the number, age-sex structure, fertility, mortality, and migration [4].

Keifetz, the first who made the demographic indicators forecast, used applied mathematical methods in his research. In a later work, he developed a forecasting technique taking into account various parameters and errors and performed predictive calculations [5, 6]. This methodology was developed in the studies of Alho and Spencer for the estimation of mortality trends [7].

One of the first theoretically used methods for predicting the demographic situation is the extrapolation method. The main idea is that the past is the basis for predicting the future. However, the disadvantage of this method is the lack of consideration of exogenous factors (for example, changes in the economy, the development of medicine, the political situation, etc.).

For forecasting, many modeling methods are used, for example, the Heligman-Pollard mortality model for older ages [8]. The most widely used forecasting model in the extrapolation method is ARIMA. This model takes into account the laws of time series, if violated, the prediction results will be incorrect. At the same time, Lee & Carter used a linear model (GLM), taking into account the age of the indigenous population [9]. McGowan, Rogers, Little, and Booth considered the possibility of using the extrapolation method in demographic forecasting [10, 11].

Another popular forecasting method is the cohort component, with which the UN predicted the demographic situation in the 2000s [12]. Calculations using this technique (also called the age shift method) are used in the works of Thakkar et al. [13], and Rieman et al. [14]. Arkhangelsky and Elizarov propose inertial forecasting for performing calculations in several variants [15]. Yuzaeva, having determined the main trend for a decrease or increase in the population, extrapolates it in the form of an average growth /decline rate for future indicators [16]. The accuracy of the forecast depends on the accuracy of the initial information.

It is known that many factors of the demographic state act non-linearly, and change their sign depending on some conditions. An important role is played by human psychology, which is a very vague subject, although there may be dozens or hundreds of circumstances of social behavior of a person and the population. Therefore, the use of the method of factor analysis and correlation-regression modeling can provide reliable information in modeling and forecasting the demographic situation. Alai et al. refer to the factors of the socio-economic distribution of mortality and causes of death, the deterioration in the health of the lower socio-economic groups, which is due to the following limitations on their life opportunities: a) worse material living conditions (income, food, medical care); b) lower ability to cope with life's difficulties [17]. Thus, groups with low social status always have a higher risk of death, regardless of the actual causes of death. Groups with high social status have a low risk of death, as they are more resistant to psychosocial stress and have sufficient resources to overcome difficulties. The scientific direction associated with the study of the patterns of reproduction of "human capital" pays attention to the peculiarities of fertility, mortality, public health, family life cycle, and migration [18]. Placing new emphasis on the study of these processes, medical and demographic forecasting pays considerable attention to the analysis of the qualitative characteristics of the population.

An examination of various forecasting approaches shows that population projections vary considerably in geographic coverage, time horizon, types of results, and use. Spatial dimensions can range from local areas (such as counties or cities) to the entire world. Local forecasts tend to use shorter time horizons, usually less than 10 years, whereas national and global forecasts can extend decades into the future and in some cases more than a century. These long-term forecasts usually give a more limited number of output variables, primarily population by age and gender. Brian et al. note that forecasts for smaller regions, on the contrary, often include other characteristics, which may include education and labor force composition, urban residence, or household type [19].

In recent years, there have been many studies on a demographic phenomenon as the "post-pandemic population" or "corona generation". Bassett et al. studied the impact of the pandemic on further life expectancy, migration, development of cities and settlements, ethnic groups [20]. Arnault et al., Dasgupta and Emmerling deal with social inequality and poverty [21, 22]. Balbo et al. investigate educational opportunities for young people, mental health, behavior, access to healthcare. Li et al. studied medical and demographic processes in different age groups and excess mortality [23].

Thus, with all the variety of methods of demographic forecasting, it is difficult to single out which one is the most correct. Each method has its characteristics, its weaknesses and strengths. In addition, the relative variability of the forecast results allows the use of all methods. During the research, each scientist chooses a method depending on their conditions and goals.

Materials and methods

In the course of the study, statistical forecasting methods were used. At the same time, in relation to the study of population dynamics in Kazakhstan, the methods of extrapolation and age shifting were determined to be the most acceptable.

Forecasting demographic development is preceded by a comprehensive in-depth statistical analysis of the demographic situation. In the process of analyzing the demographic situation, we considered the natural and mechanical movement of the population, including fertility rate, mortality, natural, absolute, average growth, and migration during the time of independence of Kazakhstan.

The result was the solution of the following tasks: identification of trends in the main demographic indicators by region; assessment of possible reserves for increasing fertility and reducing mortality; determination of demographic characteristics during the period under consideration. We also took into account the demographic and humanitarian damage caused by the COVID-19 pandemic. The analysis shows that the pandemic has affected many aspects of the life of the population of Kazakhstan – lifestyle, behavior in society, life values, the idea of a safe living space. To analyze demographic processes over the years of independence data from the Bureau of National Statistics were used.

The study of various forecasting methods allowed us to choose the most suitable ones, based on which the forecast of the population of Kazakhstan until 2050 was carried out. The overall estimate of

the future population was obtained by extrapolation method using generalizing dynamics indicators (average absolute growth, average growth rate). The population forecast was made using the following formula:

$$P_f = P_b + T_{ab} * t \pm e \quad (1)$$

where:

P_f – projected population, people;

P_b – the population at the beginning of the planned period, people;

T_{ab} – the average absolute increase, people;

t – the number of years for which the calculation is forecasted;

e – the forecast error of each year (1%).

To forecast the population distribution by gender and age we used the method of age shifting, which allowed us to obtain not only the total population but also predict the age structure of the population depending on the age indicators of fertility, mortality, migration, as well, as administrative-territorial transformations of rural settlements into urban and vice versa.

The age shift model has the form:

$$P_{x+n} = P_x \text{ x} \frac{Lx + n}{Lx} + MCx \quad (2)$$

where:

$Px+n$ – projected population size at the age of x+n years;

Px – the initial population at the age of x years;

Lx and $Lx+n$ – living numbers from mortality tables for two adjacent age groups;

n – the length of the age interval (and at the same time the length of the forecast step);

NCx – migration balance

As a result of the forecast, the prospective total population, population in urban and rural areas, the population by gender and age are determined.

Results and discussinon

Demographic situation in Kazakhstan during the years of independence

Over the 30 years of independence, Kazakhstan passed several stages of demographic development. The beginning of independence is associated with the emergence of economic and social problems: a difficult economic situation in the transition to a market economy, a decline in the standard of living of the population, and their social protection by the state, etc. Based on the data of the Bureau of National Statistics, the demographic development of Kazakhstan can be represented in three periods (Figure 1).

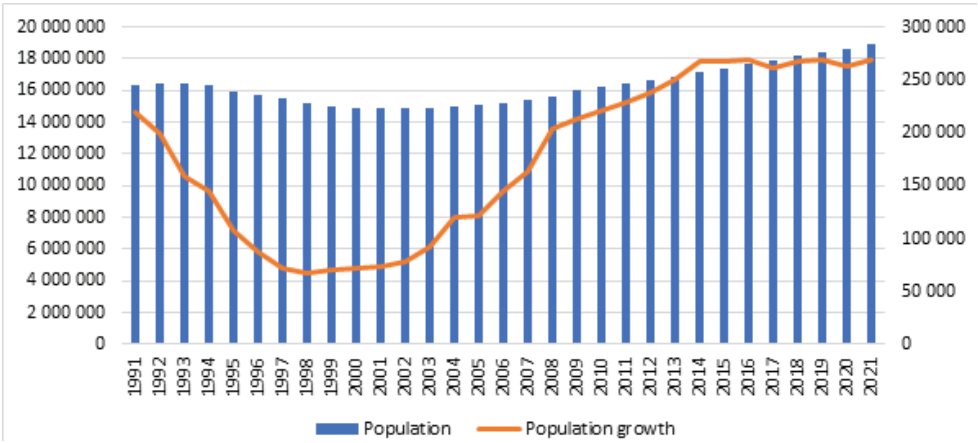

Figure 1 – Population number and population growth in Kazakhstan during independence time

Note: Compiled according to source [24].

The first period (1991–1999) was characterized by a protracted socio-economic crisis, subsequent modernization, and reforms. At this stage, the country's population decreased by 1.3 million people, more than 2.6 million people emigrated from the country (the total migration balance was 1.8 million people), the birth rate decreased by 38.5%, the mortality rate increased by 9.75%, the natural population growth decreased from 218.8 thousand in 1991 to 72 thousand people in 1999 or 3 times.

The life expectancy of the population in 1999 was 65.7 years, having decreased by 3 years compared to 1990 (68.7 years), while for men – by 3.3 years, for women – by 2.2 years. The gap in life expectancy between women and men has increased from 9.2 years to 10.3 years.

As the economic and social reforms of the 1990s were carried out, demographic and migration trends changed. The growth of well-being and positive changes in health care have had a positive impact on the birth rate and population growth.

The second period (2000-2013) is characterized by a gradual turning point. Thus, the population growth was 13.5% (or more than 2 million people), the population was 16.9 million people. By the end of this period, the birth rate exceeded the 1990 level and amounted to 387 thousand people; the mortality rate decreased by 9%; life expectancy increased by 5.17 years and amounted to 70.62 years (men – 65.9; women – 75.2).

There have also been changes in migration processes. In 2004, a positive migration balance was recorded for the first time. The trend observed in the period from 2004-2011 with the maximum value of the net migration made 33.1 thousand people in 2006.

The third period (2014 – to date). By 2021, the population of Kazakhstan has reached 19 million people. Over the past 10 years, there has been a decrease in the proportion of the working-age population in the population structure and an increase in the proportion of the population older and especially younger than the working age. Today we can say that the country is at the initial stage of demographic aging.

The COVID-19 pandemic has led to an increase in mortality in Kazakhstan. According to the Bureau of National Statistics, 162613 people died in Kazakhstan in 2020, which is 22% or 29124 more people than in 2019.

The pandemic has had a strong impact on other demographic indicators of Kazakhstan. The natural growth rate of the population, and the marriage rate decreased, while child mortality (7%), and divorce rate (63%) decreased. The pandemic has become a factor in reducing the intensity of migration flows in Kazakhstan, the balance of external migration has decreased (due to quarantine measures). Due to the forced decrease in the intensity of internal migration, the pace of urbanization slowed down in 2020.

The observed demographic development fundamentally changes the model of population reproduction. The model that assumes a high birth rate, high mortality and on this basis the reproduction of the population is replaced by another model: low birth rate, increased life expectancy, low mortality. And further demographic development will depend on how the balance of these three processes develops.

Forecast

The reliability of forecasting depends on hypotheses about the future trends of the main indicators of demographic processes, which in turn depends on a reliable representation of the situation and the initial statistical material.

The general estimates of the future population using the extrapolation method (Table 1, p. 65) can be obtained by generalizing dynamics indicators.

By the extrapolation method, population estimates were made for the future in urban and rural areas. The results are given in Table 2 (p. 65). Data for 2018, 2019, and 2020 are used as the initial data. The forecast scenario of the population of Kazakhstan for 2025: population growth is 11.04% and the population will be 20688846 people. In 2030, the population growth will be 9.23% and the population will increase to 22598690. By 2050, the population growth will be 11.51% and the total population of Kazakhstan will be 30287421. However, the forecast should take into account errors and drawbacks in the calculation. The population can also be affected by internal and external political decisions, socio-economic situations, etc., which can increase or decrease the population of Kazakhstan.

Table 1 – Forecast scenario of the population of Kazakhstan for the period up to 2050

Year	Population	Population growth
2020	18631779	n/a
2025	20688846	11.04%
2030	22598690	9.23%
2035	24150340	6.87%
2040	25434411	5.32%
2045	27161479	6.79%
2050	30287421	11.51%
Note: Calculated by authors.		

Table 2 – Population forecast by the extrapolation method

Year	Total population	Urban population	Rural population
2022	18962828±189628	11211073±112111	7751756±77518
2023	19046105±380922	11270769±225415	7775336±155507
2024	19129381±573881	11330466±339914	7798915±233967
2025	19212658±768506	11390163±455607	7822495±312900
2026	19295934±964797	11449859±572493	7846075±392304
2027	19379211±1162753	11509556±690573	7869655±472179
2028	19462487±1362374	11569253±809848	7893235±552526
2029	19545764±1563661	11628949±930316	7916814±633345
2030	19629040±1766614	11688646±1051978	7940394±714635
2031	19712317±1971232	11748343±1174834	7963974±796397
2032	19795593±2177515	11808039±1298884	7987554±878631
2033	19878870±2385464	11867736±1424128	8011134±961336
2034	19962146±2595079	11927433±1550566	8034713±1044513
2035	20045423±2806359	11987129±1678198	8058293±1128161
2036	20128699±3019305	12046826±1807024	8081873±1212281
2037	20211976±3233916	12106523±1937044	8105453±1296872
2038	20295252±3450193	12166220±2068257	8129033±1381936
2039	20378529±3668135	12225916±2200665	8152613±1467470
2040	20461805±3887743	12285613±2334266	8176192±1553477
2041	20545082±4109016	12345310±2469062	8199772±1639954
2042	20628358±4331955	12405006±2605051	8223352±1726904
2043	20711635±4556560	12464703±2742235	8246932±1814325
2044	20794911±4782830	12524400±2880612	8270512±1902218
2045	20878188±5010765	12584096±3020183	8294091±1990582
2046	20961464±5240366	12643793±3160948	8317671±2079418
2047	21044741±5471633	12703490±3302907	8341251±2168725
2048	21128017±5704565	12763186±3446060	8364831±2258504
2049	21211294±5939162	12822883±3590407	8388411±2348755
2050	21294570±6175425	12882580±3735948	8411990±2439477
Note: Calculated by authors.			

Tables 3 and 4 show the results of the forecast of the number and age-sex composition of the population of Kazakhstan until 2050. The cohort-component method was used for calculations. Unlike extrapolation and analytical methods, it allows us to get not only the total population but also its distribution by gender and age.

Table 3 – Prospective calculations of the number of women

Age	Total	Survival rate	2025	2030	2040	2050
0-4	1965686	0,947750048	1931806	1912722	1950836	2697169
5-9	1862979	0,82887193	901815	1830869	1800656	2057446
10-14	1544171	0,76396267	750595	747490	1502564	1532505
15-19	1179689	0,982699678	573471	573427	1159356	1140224
20-24	1159280	1,279194845	565302	563550	561175	1128044
25-29	1482945	1,077474889	726274	723131	720834	1457385
30-34	1597836	0,83483161	794352	782542	776741	773467
35-39	1333924	0,881532981	676522	663150	650464	648397
40-44	1175898	0,929563619	595419	596376	575898	571628
45-49	1093072	0,90983851	562105	553480	543413	533017
50-54	994519	1,014351661	519369	511425	504387	487067
55-59	1008792	0,790262016	535296	526822	510805	501513
60-64	797210	0,729696065	432599	423024	409960	404318
65-69	581721	0,612216165	330417	315666	303793	294556
70-74	356139	0,60936039	214142	202286	188978	183142
75-79	217017	0,904339291	137337	130490	117762	113333
80-84	196257	0,299230091	132016	124199	111474	104140
85-89	58726	0,343187004	41366	39503	35311	31867
90-94	20154	0,2237273	14689	14196	12754	11447
95-99	4509	0,278332224	3313	3286	3033	2711
100+	1255	14846,03904	782	922	884	794
Total	18631779		10438988	11238557	12441077	14674173
Note: Calculated by authors.						

Table 4 – Prospective calculations of the number of men

Age	Total	Survival rate	2025	2030	2040	2050
0-4	1965686	0,947750048	2090947	2070290	2111544	2919359
5-9	1862979	0,82887193	961164	1981695	1948993	2226937
10-14	1544171	0,76396267	793576	796681	1626344	1658752
15-19	1179689	0,982699678	606218	606262	1254863	1234155
20-24	1159280	1,279194845	593978	595730	598105	1220971
25-29	1482945	1,077474889	756671	759814	762111	1577444
30-34	1597836	0,83483161	803484	815294	821095	824369
35-39	1333924	0,881532981	657402	670774	683460	685527
40-44	1175898	0,929563619	580479	579522	600000	604270
45-49	1093072	0,90983851	530967	539592	549659	560055
50-54	994519	1,014351661	475150	483094	490132	507452
55-59	1008792	0,790262016	473496	481970	497987	507279
60-64	797210	0,729696065	364611	374186	387250	392892
65-69	581721	0,612216165	251304	266055	277928	287165

Table 4 continued

70-74	356139	0,60936039	141997	153853	167161	172997
75-79	217017	0,904339291	79680	86527	99255	103684
80-84	196257	0,299230091	64241	72058	84783	92117
85-89	58726	0,343187004	17360	19223	23415	26859
90-94	20154	0,2237273	5465	5958	7400	8707
95-99	4509	0,278332224	1196	1223	1476	1798
100+	1255	14846,03904	473	333	371	461
Total	18631779		10249858	11360133	12993334	15613248
Note: Calculated by authors.						

The calculation of the population by the method of age shifting consists in predicting the age structure of the population depending on the age indicators of fertility, mortality and migration, as well as administrative-territorial transformations of rural settlements into urban and vice versa. One of the characteristics of fertility is its age model. The age-sex structure of the population, reflecting the demographic history, largely determines the future demographic dynamics. In the country in 2020, the number of 15–19-year-old women was less than 20–24-year-olds, and they, in turn, are less than 25–29-year-olds. Accordingly, the number of women in the age group of 15-19 years is less than in the group of 25–29-year-olds. Such an impending reduction in the number of women of active reproductive age will almost inevitably cause a reduction in the absolute number of births and the total fertility rate.

Thus, based on the results of comparing the predicted values obtained using the methods extrapolation and age shift, it can be concluded that both methods showed a certain accuracy. The age shift forecasting method is simple and undemanding to the amount of data, while it is very sensitive to a sharp change in the predicted indicators. The extrapolation method is demanding for the homogeneity and comparability of the predicted data.

Conclusion

The conducted research allowed us to draw the following conclusion.

The dynamics of the decline in demographic indicators in the first decade of independence are caused by the instability of the socio-economic situation in the country. Later, in the next decade 2003–2014, the improvement of these conditions led to an increase in the birth rate and a decrease in mortality in general. The main reason for the decline and then increase in demographic indicators is due to the well-being of the population. And by the third decade in the country, the birth and death rates have stabilized with slight deviations in growth.

Over the past decade, there has been a trend that alarms specialists in terms of slowing down the birth rate, the cause of which is the following factors. Firstly, the decline in the birth rate in the country from 1991-to 2003, including due to a decrease in the number of women of childbearing age (15-49 years). This trend may continue until the 2050s.

Secondly, the influence of the current ethnodemographic situation is associated with the uneven settlement of ethnic groups. In the southwestern and central regions of the country, where demographic growth is observed, mainly Turkic-speaking ethnic groups are located, and in the northern regions, where the birth rate is lower and depopulation is observed, mainly European nationalities live. Such an imbalance creates a demographic situation in the country as a whole and exacerbates the socio-economic problem. Normalization of the imbalance of the settlement of ethnic groups in the regions should be carried out by the state, which requires a further comprehensive study of the effectiveness of the measures taken.

Thirdly, throughout the independence of the state, internal migration from all regions to two large cities continues, that is, village-city migration. As a result, the number of women of fertile age has decreased in villages, although the demand for large families in the village is higher than in the city, so the difference in demand from 2014-to 2020 was two times.

As a result of studying demographic processes in Kazakhstan as a whole, we found that in the future demographic growth is possible only due to 4 or more children born in order. Therefore, since the trend of demographic growth can be achieved only at the expense of the rural population, it is necessary to study in more detail the causes of migration from rural to urban areas and the current social situation in rural areas in the context of the demographic trend.

Taking into account the average age of citizens, Kazakhstan is a young nation, which gives us huge opportunities to preserve human potential, develop and invest in young people, building the right demographic policy.

Thus, to effectively manage demographic and migration processes, state institutions need to pay special attention to solving issues to improve the socio-economic climate in the country, invest in human capital, and create infrastructure appropriate to modern times in cities and villages. The demographic policy of Kazakhstan should be aimed at achieving the demographic optimum, which includes the optimal intensity of the processes of fertility and mortality, as well as the reproduction of demographic structures and migration of the population.

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ҚАЗАҚСТАНДАҒЫ ДЕМОГРАФИЯЛЫҚ ПРОЦЕСТЕР: ҚАЗІРГІ ТЕНДЕНЦИЯЛАР ЖӘНЕ БОЛАШАҚ ДАМУДЫ БОЛЖАУ

Аңдатпа

Кез келген елдің экономикалық дамуы демографиялық үрдістердің сипатына байланысты. Халық саны және оның құрамы өндіріс ауқымына әсер етеді, демографилық үрдістер – туу, өлім, көші-қоны әлеуметтік-экономикалық жағдайға және халықтың өмір сүру деңгейіне байланысты. Зерттеудің мақсаты Қазақстандағы демографиялық процестердің қазіргі жағдайына баға беру және оның 2050 жылға дейінгі дамуын болжау болып табылады. Мақалада тәуелсіздік жылдарындағы демографиялық даму үрдісіне динамикасы бойынша өзгеше және әлеуметтік экономикалық шарт фонында демографиялық кризистен бастап 1990 жылдардағы депопуляциялық қатерден, 2000 жылдардағы халық санының өсу тұрақтылығына дейінгі кезеңді 3 негізгі этапқа бөлу арқылы қысқаша сипаттама беріледі. Covid-19 пандемиясының демографиялық процестердің дамуына және онымен байланысты әлеуметтік саланың көрсеткіштеріне әсері талданады. Байқалған демографиялық даму халықтың көбеюінің қолданыстағы моделін түбегейлі өзгертетіні анықталды. Демографиялық процестердің тенденцияларын және олардың әлеуметтік-экономикалық процестермен себептік байланысын талдау болашақта халықтың саны мен құрылымын болжауға негіз болады. Болжау үшін экстраполяция және жас бойынша ығыстыру әдістері қолданылды.

Тірек сөздер: демография, халық саны, өсу, туу, болжау.

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ДЕМОГРАФИЧЕСКИЕ ПРОЦЕССЫ В КАЗАХСТАНЕ: СОВРЕМЕННЫЕ ТЕНДЕНЦИИ И ПРОГНОЗИРОВАНИЕ БУДУЩЕГО РАЗВИТИЯ

Аннотация

Экономическое развитие любой страны зависит от характера демографических процессов. Численность населения и его состав напрямую влияют на масштабы производства, демографические процессы – рождаемость, смертность, миграция – во многом зависят от социально-экономической ситуации и уровня жизни населения. Целью исследования является оценка текущего состояния демографических процессов в Казахстане и прогноз их развития до 2050 года. В статье дается краткая характеристика демографического развития за годы независимости с выделением 3 основных этапов, различных по своей динамике и фоновым социально-экономическим условиям, начиная с демографического кризиса 1990-х годов с угрозой депопуляции до стабилизации и роста численности населения в 2000-х годах. Анализируется влияние пандемии COVID-19 на развитие демографических процессов и связанных с ними показателей социальной сферы. Определено, что наблюдаемое демографическое развитие радикально меняет существующую модель воспроизводства населения. Анализ тенденций демографических процессов и их причинно-следственных связей с социально-экономическими процессами служит основой для разработки прогнозов численности и структуры населения в будущем. Для прогнозирования использовались методы экстраполяции и возрастного сдвига.

Ключевые слова: демография, население, рост, рождаемость, прогнозирование.