

The dynamics of sex-age structure of the population in urban and rural areas in the Republic of Kazakhstan in the years 1991-2013

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Abstract. In this article we discuss and analyse changes in the sex-age structure of both the urban and the rural population of the Republic of Kazakhstan since independence (1991) and until 2013. Spatial analysis by age and sex was carried out for the urban and rural population of the Republic of Kazakhstan. The article focuses on the population of Astana and Almaty as cities of “republican subordination”. The aim of this article is to study and analyse the sex-age structure of the total population taking the urban and rural population from 1991 to 2013 separately. For comparison and analysis of statistical data in the dynamics, the data by sex and age of the urban and rural population for 1991, 2001 and 2011 were examined. Thus changes over 10 years are considered. The age groups for which the data were collected were based on differentiation of the population by economic status: pre-working (0-14 years), working (15-64), and post-working age (over 65 years).

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1. Introduction

Kazakhstan sovereignty resulted in a number of great social, economic and cultural transformations coinciding in time with the beginning of the period of serious social crisis in the former countries of the Soviet Union. The first census of the sovereign Republic (1999) demonstrated that the crisis situation was significantly reflected also in the demographic situation.

Nowadays in Kazakhstan there are a variety of demographic problems, but social and other programmes have now been introduced and implemented with a view to solving these problems.

President Nursultan Nazarbayev's strategy 'Kazakhstan-2050' special attention is given to population issues, in particular, an increase in the birth rate and, consequently, a change in the demographic structure of Kazakhstan society (Strategy 'Kazakhstan-2050'). Construction of any long-term plans to further socio-demographic development is impossible without analysing the reasons for this situation today and as a result, in recent years, the interest in demographic problems has increased significantly.

The sex-age structure of the population is traditionally one of the main objects of research in demography. Indeed, its dynamics can drastically change the general demographic situation. This structure is transformed by the influence of two factors: migration and changes in the nature of population reproduction.

The aim of this article is to study and analyse the demographic structure of the urban and rural population from 1991 to 2013. In this article particular attention is paid to the differences between the age structures of the urban and the rural population in Kazakhstan. The birth rate in rural areas is higher than in urban areas; however, the death rate is also higher than the death rate of the urban population, which leads to sex-age difference (Nyussupova, Sarsenova, 2012).

It is known that for a long time there was a migration of the population of working and reproductive age from the rural areas to urban areas, which led to a significant distortion of the age structure of the rural population compared to the age structure of the urban population. In addition to demographic factors that influenced the formation of the age

structure of the rural population, there are a number of socio-economic factors contributing to the negative trends in the dynamics of the rural population, i.e. low income and the low level of health of the population.

In Kazakhstan, at the same time as the increasing the birth rate, the rise in average life expectancy and the adoption of socio-economic and demographic policy aimed at improving the demographic indexes, the percentage of the population aged over 65 years also increased. At this stage, the Republic of Kazakhstan is in a group of countries with a rapidly ageing population, but in the country there still remains a large gap in life expectancy by gender - 9.2 years (2013). The average life expectancy of women in Kazakhstan is 74.8 years, whereas it is 65.6 years for men. Another demographic problem continuing in the country as regard the sex structure of the population is a reduction in the share of males of working and reproductive age.

2. Data and research methods

The information base used while writing the article was the official data of the Agency of Statistics of the Republic of Kazakhstan, Department of Statistics of the cities of Almaty and Astana (<http://www.stat.gov.kz>, <http://rus.almaty.gorstat.kz>, <http://www.astana.stat.kz>).

The age formation of the data was based on the differentiation by economic status: pre-working (0-14 years), working (15-64 years), post-working age (over 65 years). It is worth noting that according to the Labour Legislation of the Republic of Kazakhstan the category of persons of working age comprises men between the ages of 16 to 63 years and women aged 16 to 58 years (inclusive) (Labour Code of the Republic Kazakhstan, special part, section 2, chapter 4, article 30, 1-3 paragraph, 2014). By the same law persons are permitted to work if they have reached the age of fourteen and have obtained the written permission of a parent, guardian or adoptive parent to work in their free time on condition that it not harmful to health and does not disrupt the learning process; persons of 15 years of age may work if they completed basic secondary ed-

ucation, or general secondary education within the organisation of secondary education.

The spatial analysis of population structure in the article is based on the sex-age structure of the total population of the country. As of 1 January 2011 in 87 cities of Kazakhstan (including Baikonur, currently leased to and administrated by the Russian Federation), of which 2 cities have republican status, 39 have district status and 45 have regional status, as well as in 35 villages, with the status of settlements with an urban population, lived a population of 8961.4 thousand (54.5% of the population of the country). The article also presents an analysis of the sex-age structure of the population of Astana and Almaty - cities of 'republican subordination'. As of 1 November 2011 in rural areas of Kazakhstan lived 7480.6 thousand people (45.5% of the population of the country).

For a comparative analysis of the data in dynamics, the data by sex and age of the urban and rural population for 1991, 2001 and 2011 were considered. Thus the changes in dynamics over 10 years are discussed. The article also presents an interim analysis of data by sex and age for the 1991-2013 period for the whole population of Kazakhstan and also for the population of the districts of the republic.

During the processing of the data use was made of software packages ArcGIS, Excel spreadsheet and Demproj.

3. Age structure of the population in the Republic of Kazakhstan

Demographic development in Kazakhstan since 1991 to 2002 was determined by a low fertility rate, increased mortality and the establishment of correlations between them, not providing expanded reproduction and replacement of generations. As the result of low fertility and increased mortality there were numerous changes in the age structure of the population: an increase in the proportion of people in older age groups, a change in the ratio between the share of men and women in the total population, a reduction in the share of children and young people, and an increase in the average age of the working population.

Over the past two decades in Kazakhstan, major shifts have taken place in the direction of the

“ageing process” of the population, especially among the rural population. This is due not only to the increase in the absolute number of the country population in older age groups (70-80 year olds and over), but mainly due to a large reduction in both absolute numbers and shares in the total population of children and adolescents (especially 5-14 years) compared with the previous two decades. Also there was a significant increase in the number and shares of the modern inhabitants of the population of middle (40-59 year old) age groups (they were born in 1950s, 1960s and 1970s during high fertility periods in Kazakhstan).

The “oldest” population by average age now lives in North Kazakhstan region (1), where the average age for the region is 36.2 years, in urban areas- 37.4 years (urban women almost 40 years), and in rural areas 35.5 years. The “youngest” average age of the urban population, along with that of the citizens of South Kazakhstan, Kyzylorda, Mangistau and Atyrau regions (27.8-29.5 years), is that of the population of the capital - Astana at 30.1 years, with the national average at 31.5 years.

Changes in the age structure of the population of modern Kazakhstan as a whole over the past two decades can be seen from the following Table 1.

The age structure of the population has changed significantly over the past 20 years. The mass migration of several million people abroad due to socio-economic crisis of the 1990s was the main reason for the sharp population decline (Zhamasultanov 2011).

In 2011 compared with 1991 the population aged 0-9 years and 10-19 years decreased to 686 thousand people and 430 2 thousand people or 19 and 14 percent respectively. This was due to economic instability after respectively 'economic shock' shook Kazakhstan in the early 1990s which caused significant drop in the living standards of the majority of the population therefore caused a deterioration in the social well-being of society. According to the Agency of Statistics of the Republic of Kazakhstan from 1991 to 2011 the population decreased by 1.5 million people. From 1991 to 2002 the population decreased and since 2003 the population has been steadily growing primarily due to natural increase. Over the 2003-2012 period the population has grew by about 2 million people (Agency of Statistics of the Republic of Kazakhstan).

Table 1. Structure of the population of the Republic of Kazakhstan in specific age groups in 1991, 2001 and 2011

	Population, thousand people								
	Total			Urban area			Rural area		
	1991	2001	2011	1991	2001	2011	1991	2001	2011
Specific age groups	16 358.2	14 865.6	16 440.1	9 366.9	8 413.4	8 973.8	6 991.3	6 452.2	7 466.4
0-9	3 580.0	2 461.3	2 894.0	1 836.8	1 202.3	1 431.6	1 743.2	1 259.0	1 462.3
10-19	2 996.8	3 040.3	2 566.6	1 600.3	1 587.9	1 255.4	1 396.5	1 452.4	1 311.2
20-29	2 698.8	2 428.2	3 070.6	1 604.2	1 396.8	1 788.9	1 094.6	1 031.4	1 281.7
30-39	2 577.7	2 224.9	2 414.8	1 603.5	1 316.4	1 368.6	974.2	908.5	1 046.2
40-49	1 449.3	1 976.8	2 160.7	909.4	1 220.1	1 210.0	539.9	756.7	950.8
50-59	1 462.7	1 080.3	1 699.8	862.6	667.5	964.3	600.1	412.8	735.5
60-69	991.7	987.9	837.9	598.7	601.2	485.3	393.0	386.7	352.6
70-79	413.2	529.7	594.8	248.9	337.8	348.3	164.3	192.0	246.5
Above 79	188.0	136.2	200.9	102.6	83.5	121.3	85.4	52.7	79.6

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

Other age groups of the current population of the country in table 1 are generation born in the Soviet period of Kazakhstan. A sharp decline in the share of the population aged 60-69 years comes to our attention. At the same time there is an increase in the proportion of people older than 70 years indicating the results of the substantial rise in the life expectancy of this generation over the past decade. In the years of independent Kazakhstan there was a decrease in life expectancy from 67.6 years in 1991 to 65.8 years in 2001 and a later increase to 69 in 2011; thus life expectancy has increased over this period by 1.4 years. In 2013 the life expectancy of the country's population was 70 years.

This progress has been achieved as a result of improvement and the adoption of national strategies aimed at improving the welfare of the population. Also the increase in life expectancy is associated with a reduction in mortality from the five main classes of diseases: blood circulation system diseases tumours external causes of morbidity and mortality respiratory diseases and infectious and parasitic diseases. Reduction in mortality of children less than one year old is another factor which had an impact on the increase in life expectancy at birth.

Analysis of the proportion of the pre-working population throughout Kazakhstan aged 0-14 years for more than 20 years shows that their share continued to decline until recently: in 1991 the proportion of children was 31.5% of the total population

but in 2001 the share of the population aged 0-14 years was 27.3% decreased by 4.2% or 1 103 987 people (Fig. 1). The process of reducing the number of children was gradual and lasted until 2008. Since 2009 there has been an increase in the proportion of the pre-working population. In 2011 the share of this cohort was 24.5% so the percentage of the proportion of children aged 0-14 years from 1991 to 2011 decreased by 7%.

The dynamics of change in the proportion of children aged 0-14 years in urban and rural areas demonstrates that traditionally fewer children are born in urban areas than in rural ones. In 2013 the difference in the percentage reached 6.9%: 21.3% for the city compared with 28.2% for rural areas. In urban areas in the period 1991-2011 there was a reduction in the proportion of children aged 0-14 years from 28.1% to 21.9%. In rural areas in 1991 the figure was 36.2% and in 2011 - 27.7%. Although until 2012 there was a reduction since 2013 an increase in the proportion of children aged 0-14 years has taken place.

With the continuing tension in the labour market in the country there is an annual and significant increase in both the absolute number and proportion of the working age population which is explained as regards urban areas by the migration of the rural population to urban settlements and in general by the addition to the working-age population between 1999 and the early 2000s of those born

in the first half of the 1980s. As a result the total working-age population in 2011 is over 11 million 321 thousand (68.9% of the total population) and increased in comparison with 1991 to 6.4% (Fig. 2).

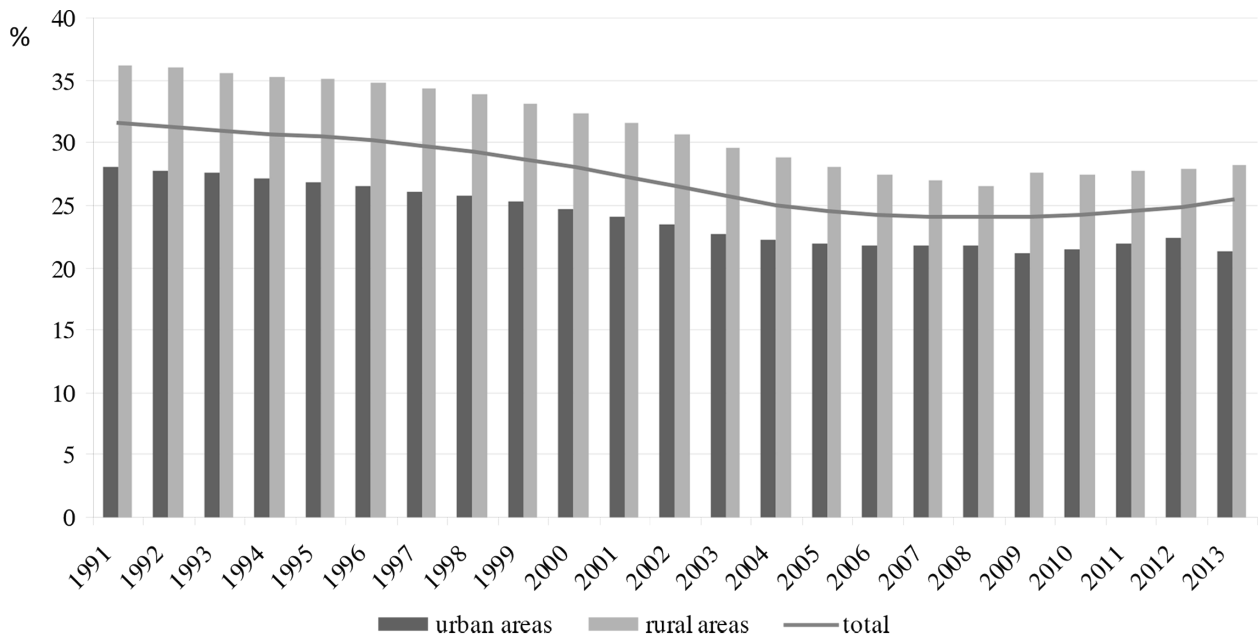


Fig. 1. Changing share of the pre-working age population in Kazakhstan urban and rural areas between 1991 and 2013

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

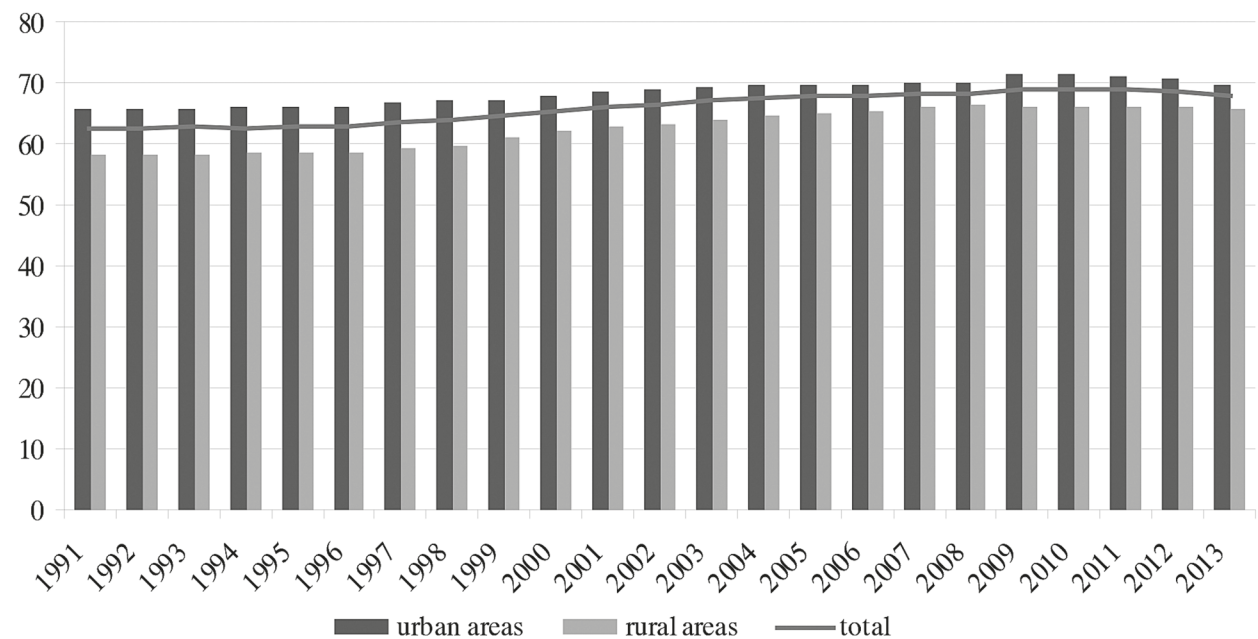


Fig. 2. Changing share of the working age population in Kazakhstan urban and rural areas between 1991 and 2013

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

The proportion of the urban population aged 15-64 years to the entire urban population as a percentage shows that in 1991 the proportion of the working population in the cities was much lower than in 2001 and 2011.

This is because the process of urbanisation at the present stage is quite dynamic. Urban settlements provide a wider choice of employment and wages are much higher than in rural settlements. Moreover agriculture in Kazakhstan which is the main employment in rural areas is mainly represented by intensive agriculture which means that labour costs cannot be fully justified. There is also a situation when men of working age in search of highly paid jobs move to cities leaving their families in the villages.

According to this indicator the leader was Astana city with the index 69.6%. The proportion of the population aged 15-64 in the entire urban population in many areas reached at least 65% which included seven regions (Fig. 3).

Four regions - West Kazakhstan Karaganda Pavlodar Kostanay and Almaty city were assigned to a group with the proportion of 67-69% and three regions - Akmola North Kazakhstan and East Kazakhstan - were in the group with an index of 65-67%. The proportion of the working age population to the entire urban population in urban areas remains quite high. In 1991 it was 65.7% in 2001 - 68.4% in 2011- 71% and in 2013 it was 69.8%. In rural areas: in 1991 - 58.1% in 2001 - 65.9% in 2011- 66.2% and in 2013 - 65.7%.

In 2001 the significant increase in proportion of the urban population aged 15-64 years to the entire urban population in many oblasts of Kazakhstan is observed. It can be seen from figure 4 where in 2001 in the North Kazakhstan and East Kazakhstan regions figures were 70.3 and 69.8% respectively. The lowest rates of the share of the working-age urban population in 2001 were observed in the South Kazakhstan (63%) and Atyrau (63.6%) regions.

The index more than 71% was registered in the Pavlodar region (71.2%) and the city of Astana (71.5%). Analysis of the correlation of different age groups in Astana shows a predominance of people of working age that has both favourable and negative effects. In the context of the positive effects we can mention meeting the demand in the labour

market of qualified personnel and personnel without qualification. Among the negative consequences we can include a "preponderance" of the supply of unskilled labour (as a result of rural-urban migration) in the labour market compared with demand. There is imbalance due to the capital requirements for highly qualified human resources while offering low-skilled labour.

Analysis of migration flows to Astana over the last few years shows several stable channels of migration. During the analysed period most of the people migrated to Astana from the Akmola region. For over ten years the second stream has comprised former residents of Almaty the majority of whom are civil servants displaced to Astana in connection with the transfer of the capital and the republican institutions and agencies. The third stream can unite the inhabitants of the northern and central regions of Kazakhstan such as the Karaganda Kostanay and North Kazakhstan regions (Zabirova 2009).

In 2011 in the cities there was a constant increase in the proportion of the working age population (Fig. 5).

The increase in the proportion of the working population in the cities occurred by reducing the proportion of children in the urban population and by the achieving of the working age population born in the 1970s and 1980s. The group with indexes of "over 71%" includes eight regions (Akmola Aktobe West Kazakhstan Karaganda Kostanay Pavlodar North Kazakhstan and East Kazakhstan) and two cities Almaty and Astana. The maximum rate is in Astana - 74.9%. The smallest value of the share of the urban population aged 15-64 years was registered in the South-Kazakhstan region (65.3%). This is due to the fact that the South Kazakhstan region is only slightly urbanised compared to others. The remaining regions were assigned to the group with the index '67-69' with the average national rate of 71%. During the period of 1991-2011 a significant increase is observed in the working age population in all regions of Kazakhstan both in urban and rural areas. But at the same time we note that the growth rate of the rural population of working age was higher than that in urban areas. This was largely due to the 'young' age structure of the villages which enabled a broader replacement of generations.

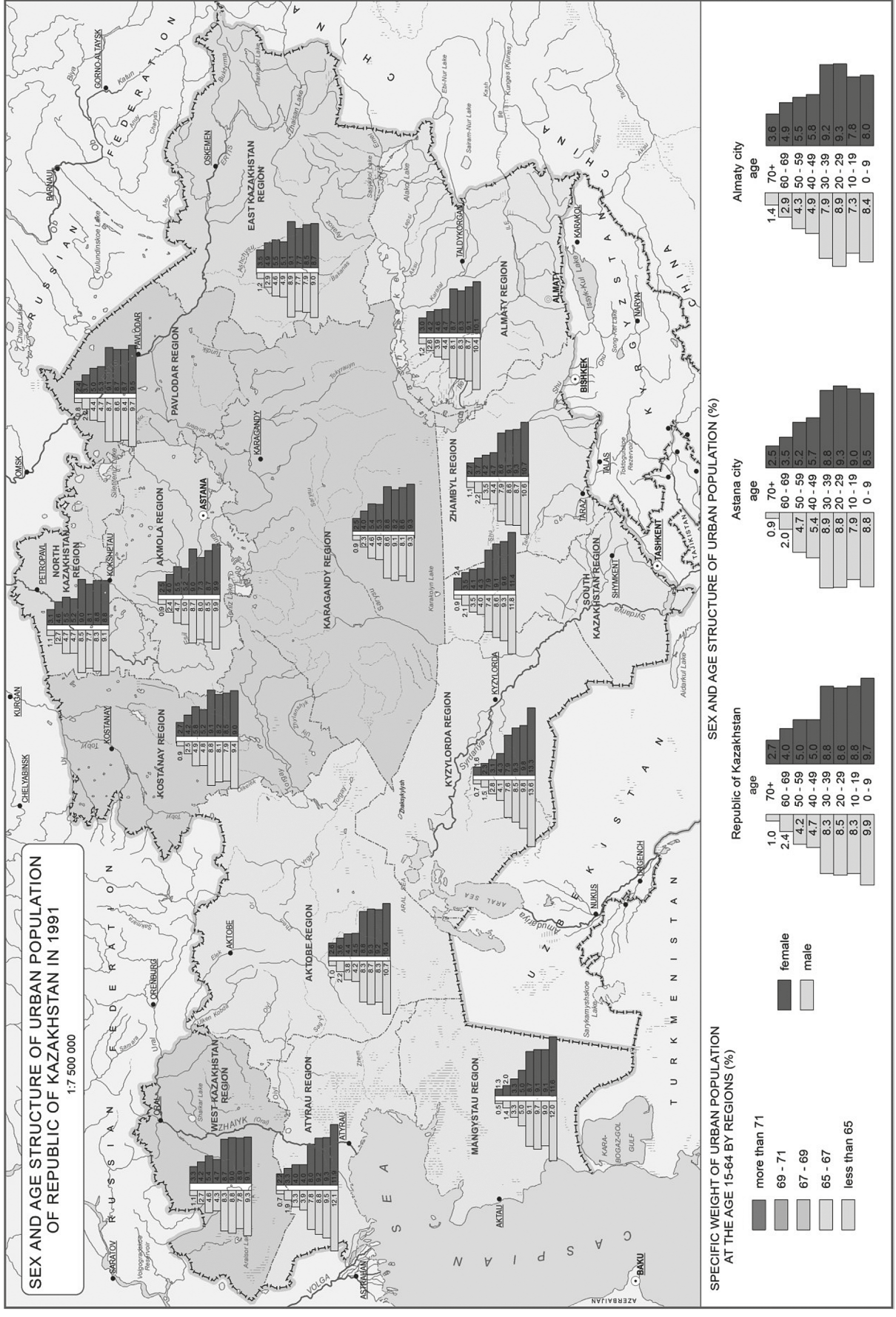


Fig. 3. Sex-age structure of the urban population of the Republic of Kazakhstan in 1991

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

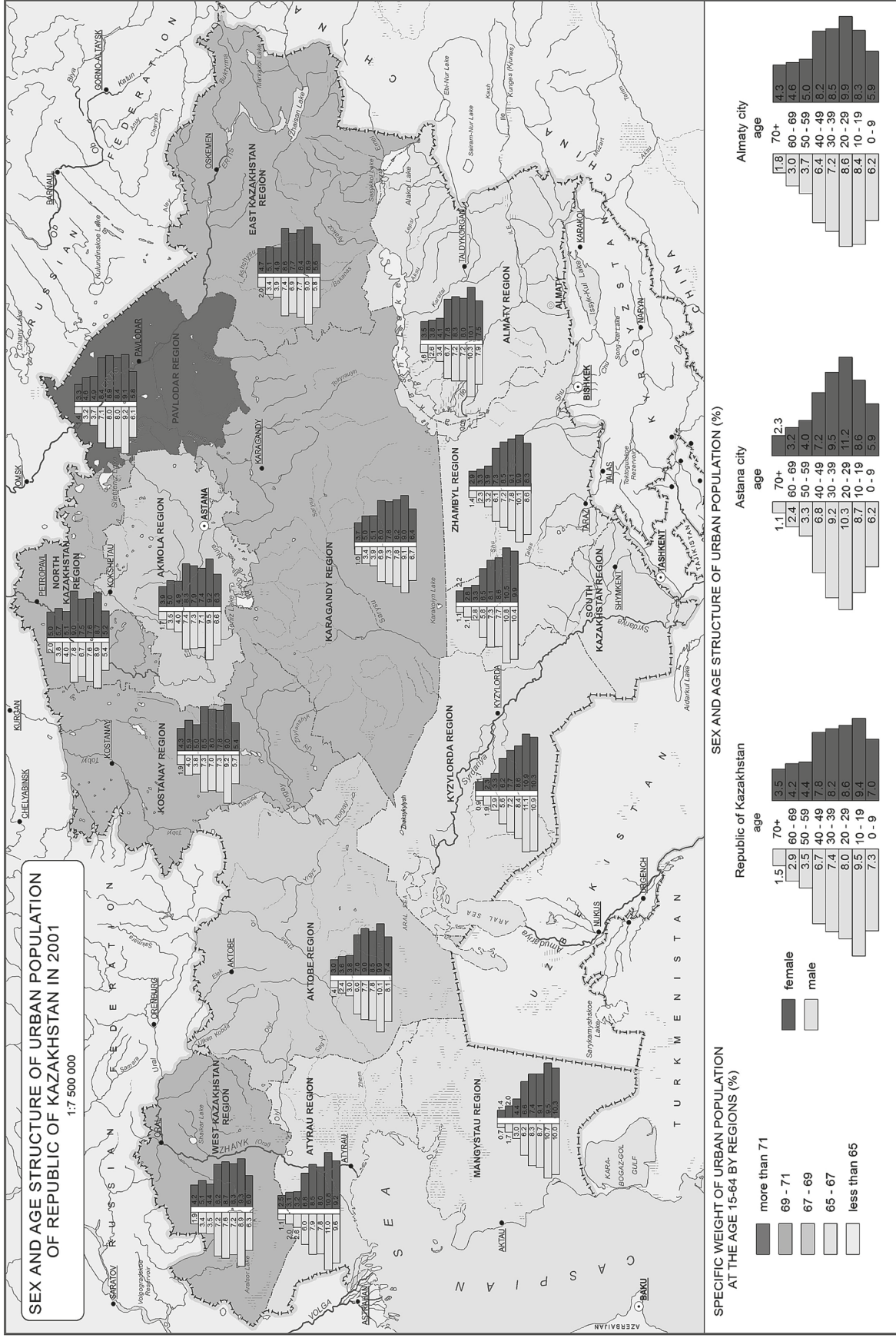


Fig. 4. Sex-age structure of the urban population of the Republic Kazakhstan in 2001

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

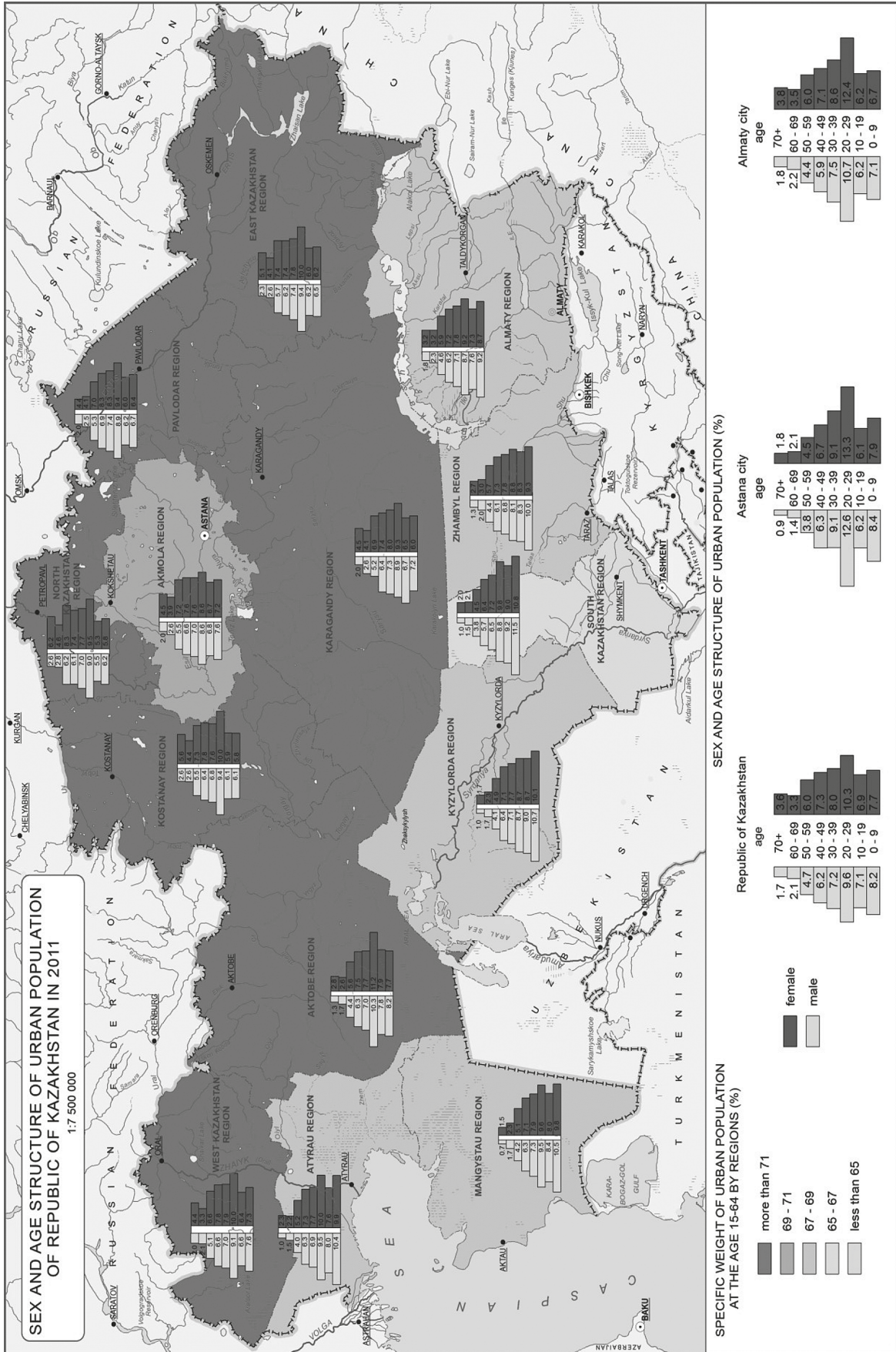


Fig. 5. Sex-age structure of the urban population of the Republic of Kazakhstan in 2011
Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

Population ageing is a major concern in the world. The problem of population ageing has drawn attention not only from demographers and geographers but also from biologists physicians educationists physiologists and anthropologists (Szymańska et al. 2009: 91). Different countries have varying degrees of the demographic aging process defined as the share of the population aged 60-65 years and older. In accordance with the scale of demographic aging of the United Nations: a) if the share of the population aged 65 years and older is 7% or more the population is considered to be old; b) if the share of the population aged 65 years and older is 7.4% the population is on the threshold of old age; c) if the share of the population is less than 4% the population is considered to be young (Glushkova and Simagin, 2011). According to the scale of demographic aging of the UN Ka-

zakhstan belongs to the group of countries “with the population on the threshold of old age.” For comparison in the whole European Union the rate of people over 65 years of age increased by 1.6% (from 15.6% in 2000 to 17.2% in 2009). The largest changes were reported in Germany where the growth by even 4.2% was observed (Sojka, 2014: 136).

Change in the share of the post-working age population between 1991 and 2013 is observed both in the whole country and urban and rural areas. In 1991 the proportion of elderly people in Kazakhstan was 5.9% and in 2011- 6.6%. In urban areas of Kazakhstan the share of the elderly increased in 2011 compared to 2001 to almost 1% or 116 thousand people. In rural areas of Kazakhstan the share of the post-working population was in 1991 - 5.7% and in 2011- 6.1%. (Fig. 6).

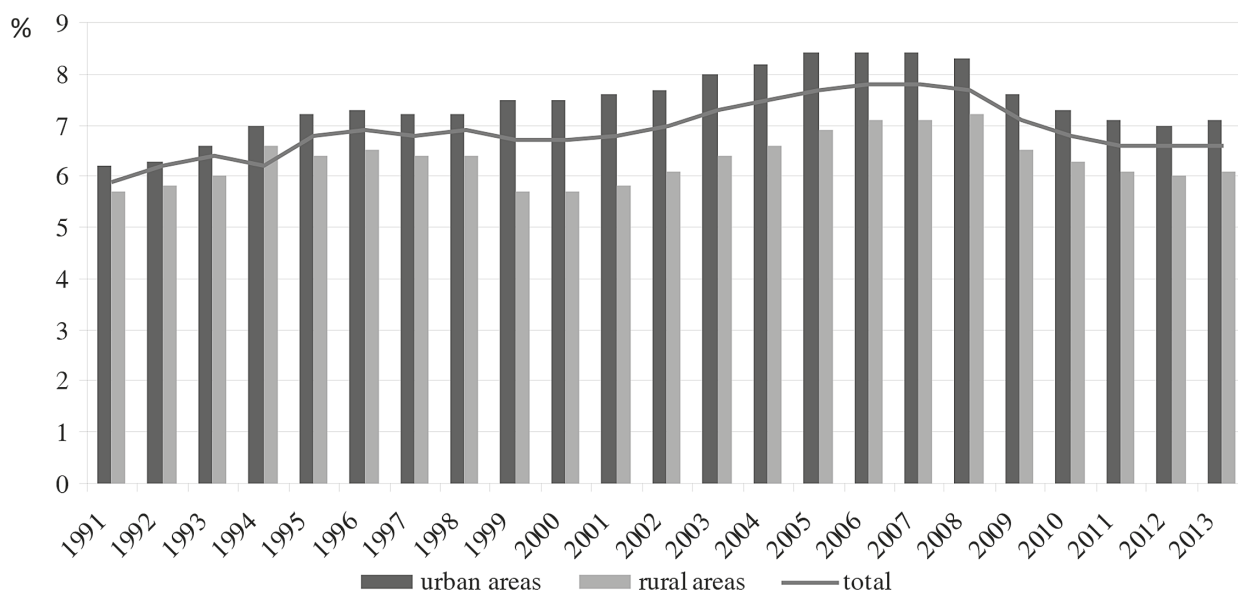


Fig. 6. Changing share of the post -working age population in Kazakhstan urban and rural areas between 1991 and 2013

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

The highest share of persons aged 65 years and above (at 6.6% on average in the country) is accounted for by the North Kazakhstan (10.4%) Kostanay (9.7%) East Kazakhstan (9.4%) Pavlodar (8.8%) Karaganda (8.6%) Akmola (8.4%) and Western Kazakhstan (7.7%) regions. The population ageing process also raises a number of economic social hygienic moral and ethical implications which are

differently considered and decided in individual countries. According to some demographers and sociologists the ageing process increases the ‘burden’ on the working population. However it should be kept in mind that the material and cultural benefits which the young generation possess and multiply with their own efforts is to some extent the result of the labour of their predecessors today’s pensioners.

However in 2000 the Republic of Kazakhstan was in demographic transition from the third stage (with a relatively high birth rate and low mortality) to the fourth stage – depopulation. The difference in Kazakhstan's transition is in the high mortality rate as a result of which with a relatively high birth rate natural growth rate is much lower. Due to the younger age structure of the population and the entry into reproductive age of many women born between 1981 and 1985 birth rates varied between 14.8 and 15.3 promille in the country in the late 1990s. This is also explained by the fact that traditionally indigenous people of Kazakhstan and some other ethnic groups such as Uzbeks Uyghurs and Tatars have many children. In general the birth rate among the rural population was 1.2 times higher than the urban population (Serikbayeva 2005). In 2013 Kazakhstan was also in transition from stage 3 to 4 the demographic transition or the stabilisation of population growth as for the transition to the next stage a large amount of time is required. According to the well-known Kazakh demographer M. Tatimov by the end of the century- 2090 or 2100 - it will be at stage IV in the demographic transition: declining population or depopulation (Tatimov, 2010: 163).

In Astana the capital of the Republic of Kazakhstan which in December 10 1997 was officially declared as the new capital of Kazakhstan rapid

socio-economic development and the relocation of national and public institutions in the capital led to an increase in its population. For example in 1991 the population of Astana was 281.2 thousand people in 2011 697.1 thousand people in 2001 446.2 people and in 2013 778.1 thousand people (Department of Statistics of Astana). Significant changes over 22 years (1991-2013) occurred in the age structure of the population of the capital. In the total population a decrease was observed in the share of children under the age of 15 years until 2006 and then there was observed it was increased till 2013 as well as a reduction in the cohort of 65 years and older. Such an age structure in the capital has developed mainly due to migration. Growth in the working age population was due to the migrants who arrived in the capital for the purpose of employment and education. In 2011 the pre-working age population was 23.1% of the total population the population of working age was 74.9% and the post-working age population was 3.8% of the total population while in 2001 this age group was as follows: pre-working age – 19.4%; working age – 75.5%; and post-working – 5.1%. In 1991 there was a slightly different picture. The percentage of the pre-working population was 24.9% – the maximum rate for the 1991-2013 period; the percentage of the working-age population was 69.6%; and that of the post-working age population was 5.6% (Fig. 7).

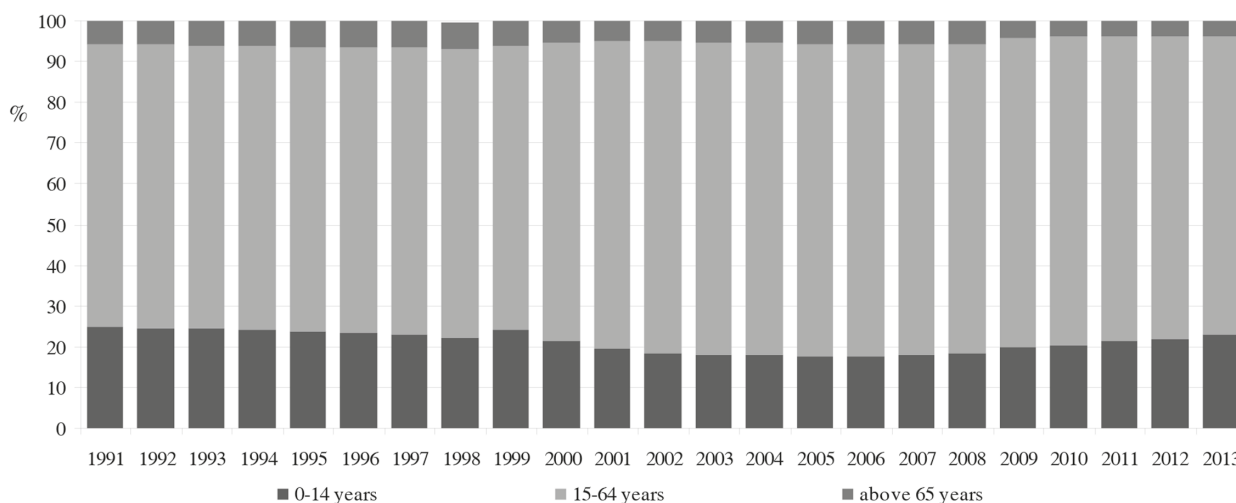


Fig. 7. Age structure of the population of Astana city in 1991-2013

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

In the former capital of Kazakhstan – Almaty located in the south-east of Kazakhstan – there are 1 million 485 thousand inhabitants or about 9% of the total population of the republic (2013) (Department of Statistics of Almaty). In the city there was a steady increase in population. In general over the last decade the number of Almaty residents increased to 24.4%. Analysis of the popula-

tion change factors shows that its growth was as a result of natural movement and due to a positive migration balance. Changes in the dynamics of the age structure of the population shows that the percent of the working population increased; whereas in 1991 the figure was 68.5% or 766.2 thousand persons in 2001 it was 70.8% or 799.3 thousand people (Fig. 8).

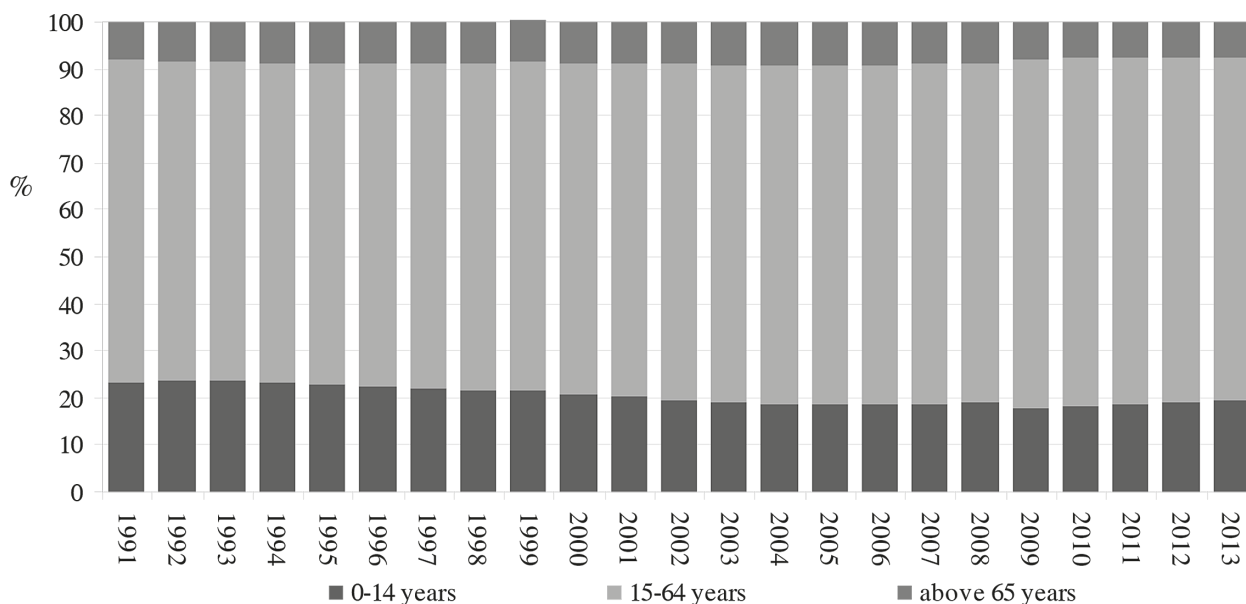


Fig. 8. Age structure of the population of Almaty city in 1991-2013

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

The share of the elderly population in Almaty in 2011 was 7.5%. However the life expectancy of the population of Almaty for 2013 was 73.6 years which exceeds the threshold of the planned life expectancy - 72 according to the 'Development programme of Almaty for 2011-2015' (Development programme for Almaty on 2011 -2015).

Studying the age structure of the population of any country is critically important for understanding the dynamic tendencies of the population predicting its number and composition for the future as well as in planning the production of goods and services the development of the network of children's and educational institutions healthcare facilities determining the number of the working population providing market labour labour contingent of recruits etc.

4. Sex structure of the population in the Republic of Kazakhstan

The sex structure of the population is the ratio of the sexes which is influenced by three main factors: (a) biological constants: the sex ratio among newborns – the predominance of boys; (b) sex differences in mortality: there is a higher sex-age mortality among men; (c) sex differences in the intensity of migrations: male migration mobility is higher than that of women; as a result in areas of population influx an increased share of men is usually observed and in areas of outflow the share of woman is greater (Glushkova Simagin 2011: 50).

In 2011 the total number of males in the country was 7,926.0 thousand or 48.2% of the total

number of its inhabitants while the number of women was- 8516.0 thousand or 51.8%; the number of men and women in 1991 was 48.3% and 51.7%. In 2001 it was 48.2% and 51.8% respectively. Among the urban population in 2011 the share of men and women was as follows: 52.9%

men and 56.0% women whereas in 2001 46.8% of men and 53.2% of women. Among the rural population in 2011 the share of men and women was as follows: 47.1% men and 44.0% women whereas in 2001 50.9 % of men 48.5% of women (Table 2).

Table 2. Resettlement of men and women of the Republic of Kazakhstan in urban and rural areas in 2001 and 2010

	2001		2011		Population growth for 2001-2011	
	Thousand people	Specific weight (%) from total population	Thousand people	Specific weight (%) from total population	Thousand people	%
All population including	14,865.6	100.0	16,442.0	100.0	1,576.4	110.6
Male total	7,159.7	100.0	7,926.0	100.0	766.3	110.7
Male in urban areas	3,514.2	49.1	4,195.8	52.9	681.6	119.4
Male in rural areas	3,645.5	50.9	3,730.2	47.1	84.7	102.3
Female total	7,705.9	100.0	8,516.0	100.0	810.1	110.5
Female in urban areas	3,968.6	51.5	4,765.6	56.0	797.0	120.1
Female in rural areas	3,737.3	48.5	3,750.4	44.0	13.1	100.4

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

The sex gender structure of the population of the whole country and in urban and rural areas has not changed significantly. As can be seen along with an increase in the absolute number of both men and women who have moved in the last 10 years from rural areas to urban areas the share of men and women in urban areas due to the reduction in rural areas has also changed a great deal. The female population living in urban areas in 2001 was greater than female population in the countryside – 231.3 thousand (6.2%) – while in 2011 this superiority exceeded 1 million people (27.1%). At the same time 115 thousand (16.9%) (more women than men) moved to urban areas. All this testifies to the concentration of a large part of the modern population especially women in urban areas.

In Kazakhstan there is still (as opposed to the former Soviet Central Asian republics) a significant excess of the total number of women above the number of men a situation which emerged after the 1940s (due to historical and demographic factors) So according to the general census of the population in 1926 on the territory of Kazakhstan the share of the male population reached 51.2%

and women 48.8%; in 1939 respectively 52.0% and 48.0%; in 1959 the ratio had changed dramatically and made up 47.5% and 52.5%. Since the end of 1987 slight tendency started in male population growth (the share of men then was 48.5% against 51.5% of women). However since 1991 due to negative demographic and social processes taking place in the country (including a sharp rise in the emigration of the Slavo-language population in the 1990s which has developed over the past two decades and a high mortality rate among young and middle ages not only because of illness) this tendency has stopped. As a result the share of men in the total population decreased to 48.3% in 1992 to 48.2% in 1996 and to 48.1% in 2004 (Zhamasultanov, 2011).

This imbalance in the country can be explained by the fact that male mortality exceeds female mortality and this predominance begins at a young age. In older age groups the share of women is far ahead of that of men. This peculiarity in the highest levels of age-specific mortality in men is due to increased risk of death mostly because of injuries poisoning diseases of the circulatory system neo-

plasms respiratory diseases infectious and parasitic diseases diseases of the digestive system. For the analysis of the sex-age structure of the population one of the graphical methods - called the sex-age pyramid is widely used. Using the method of sex-age pyramids enables us to visualise not

only the structure of the population by sex and age but also the different structure of the population including the structure of social phenomena and processes. The sex-age pyramid of the Republic of Kazakhstan for 1991 2001 and 2011 is presented in Fig. 9-11.

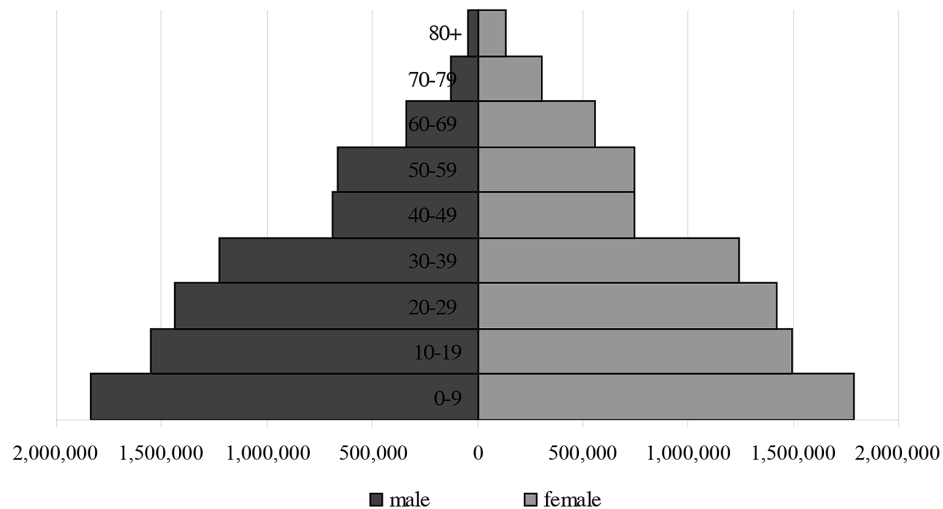


Fig. 9. Sex-age pyramid of the population of the Republic of Kazakhstan in 1991

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

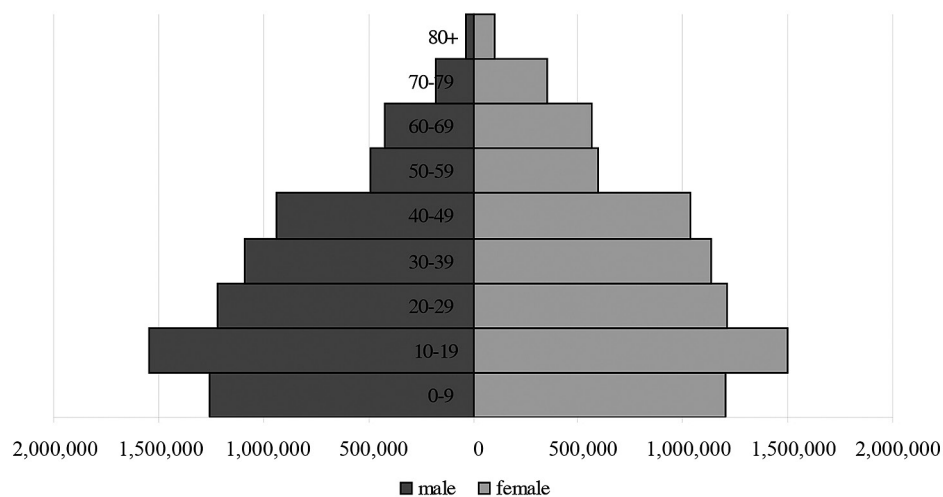


Fig. 10. Sex-age pyramid of population of the Republic of Kazakhstan in 2001

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

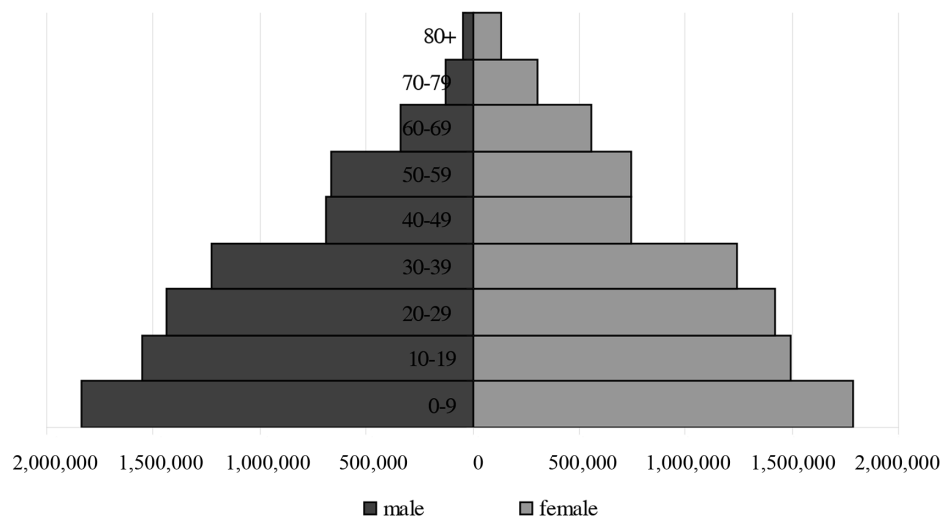


Fig. 11. Sex-age pyramid of the population of the Republic of Kazakhstan in 2011

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

Comparative analysis of the sex-age pyramids of Kazakhstan's population in 1991, 2001 and 2011 clearly showed the dynamics of the distribution of the population by age groups: in 1991 the maximum number of both men and women was for the age group 0-9 years in 2001 - for the age group 10-19 years old and in 2011-for the age intervals 20-29. The sex-age pyramid of the republic in 1991 is fully consistent with the shape of a pyramid with a population of progressive or primitive type with a broad base (high fertility) and a narrow top (high mortality) at older ages. The high birth rate was due to the population policy which used in the last years fairly effective measures to help families with children and in particular financing for working women. In the age categories of 30-39 years the number of men is higher than the number of women and from the age group 40-49 years the prevalence of women is steady and reaches a maximum in the age group of 50-59 years (about 224.0 thousand persons). The sex-age pyramid in the country in 2001 had slightly changed. It matched the shape of the pyramid of the population of standard type but with a wide base and a wide area in the middle age groups. In the

2020s the largest age group of 10-19 years will be largely defined by fertility processes in Kazakhstan. At the same time beyond reproductive age will be a high number of representatives in the group aged 40 years and older. The maximum predominance of women is observed in the age group of 70-79 years and is equal to 174.0 thousand persons. The sex-age pyramid for the year 2011 showed that the number of women has exceeded the number of men in the age group of 30-39 years. The maximum disparity was observed in the age group of 70-79 years when the excess was 165.0 thousand persons. As already mentioned above the high extra mortality of men in the country is associated with chronic diseases as a result of alcohol consumption smoking and unhealthy lifestyle and the high rate of injuries.

It is regrettable to note that there is no focused programme or policies for the conservation of men's health in Kazakhstan. The health care system has not set up the infrastructure for men and there is a low prevention system to preserve their health. In the sex-age pyramid of the republic for 1991 and 2001 there was a significant decrease in the share of men in the age group of 50-59 years. However

there has been a significant increase in the last decade in the absolute number and also the share of the older age group and advanced age group (above 70 years). The sex-age pyramid of the urban regions of Kazakhstan in various age categories as a percentage for 1991 2001 and 2011 are presented in Fig. 3-5 respectively.

In 1991 the birth rate as has been noted was at a high level and the percentage of children aged 0-9 years among the urban population was maximal in all regions of Kazakhstan. Starting from the age interval from 30-39 years and to 70 years and older in each and every region of Kazakhstan in the urban areas the female population prevailed over the male. An exception was the Mangystau region where the percentage of men and women in all age ranges was about the same. The percentage of the urban population aged 0-9 years in 1991 was higher than in 2001 and 2011. Then in those areas no outflow of population was registered from Kazakhstan and fertility rates were relatively high. In the same year the percentage of the urban population aged 70 and older was the highest in Almaty – 5%; the lowest figure was in the Mangystau – 1.8%. In 2001 starting with the age range of 40-49 years all the regions of Kazakhstan in the female population prevailed over the male in the urban areas. The percentage of both men and women in the age range of 10-19 years in the cities of each region was the

maximum compared with other age groups while in the cities of Almaty and Astana another age group dominated – 20-29 years. This was due to the influx of population in the cities and the large number of students who come to study in the largest and most advanced universities in the country. In the Mangystau and South Kazakhstan Kyzylorda and Atyrau regions the percentage of children aged 0-9 years among the urban population is much higher compared to other areas; this is due to “traditionally” high birth rates in these areas. In 2011 the maximum rate of both sexes in the urban population was in the category of 20-29 years in all regions of Kazakhstan with the exception of the South Kazakhstan Zhambyl Kyzylorda and Mangystau regions where the birth rate is the highest and the percentage of both boys and girls aged 0-9 years is higher than in other age groups. In general throughout the country in the last decade the structure of male and female population in most age groups remained the same as in the end of 1990s in both urban and rural areas.

Another demographic problem still continuing in the country is in the field of the sex structure of the population: it is the reduction in the share of the male population in the total number of urban and rural residents as well as in working-age and reproductive age groups (Table 3).

Table 3. The sex ratio of the Republic of Kazakhstan in 1991 2001 and 2011

	Number of males for every 1000 females								
	Total			Urban area			Rural area		
	1991	2001	2011	1991	2001	2011	1991	2001	2011
	937	929	931	907	886	880	984	975	995
Age groups									
0-9	1,025	1,045	1,056	1,027	1,047	1,061	1,028	1,043	1,051
10-19	1,040	1,032	1,038	988	1,018	1,021	1,104	1,047	1,055
20-29	1,009	1,002	986	962	920	926	1,085	1,123	1,075
30-39	982	960	962	962	898	906	1,028	1,058	1,042
40-49	930	903	921	923	858	856	945	980	1,009
50-59	888	821	834	860	787	776	936	881	914
60-69	599	736	700	576	686	648	637	820	880
70-79	416	506	566	406	476	517	432	562	639
Above 79	336	295	367	303	302	345	382	289	405

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

The information given in Table 3 on the demographic development of the country shows that in the middle of the 20-year period there was a great reduction in the coefficient of masculinity. In the last decade there has been a new but still weak tendency indicating an increase in this ratio in favor of men in the whole country. Regionally the country's highest ratio between the male and female population has developed in West Kazakhstan and South Kazakhstan (947 and 946 men for every 1 000 women). The lowest gender relations are also found in the cities of the North Kazakhstan (825) Kostanay (839) Pavlodar (851) and West Kazakhstan (864) regions as well as in Almaty (844). In Astana for every 1 000 women there are 945 men.

Thus the absolute number of both men and women in the country has now become more than just their numbers which existed 20 years ago. Over the past two decades in the country there has been slight change in the sex ratio in favour of women which has developed in the years in which there was a reduction in their total number. At the same time along with a noticeable increase in the absolute number of both men (19.4%) and women (20.1%) in urban areas but a small (only 2.3% of men and 0.4% of women) growth in the rural areas shares in both among urban and rural populations have significantly changed. Thus the share of men among the inhabitants of the cities over the past decade fell to 46.8% while the share of women respectively increased to 53.2%.

5. Forecasts and recommendation

Of great importance especially for economic and social planning is prediction of the future composition of the population primarily by sex and age. Prediction of the dynamics of the demographic structure and the nature of the changes in it is needed in almost all spheres of life.

The forecast results of the size and sex-age structure of the population of Kazakhstan until 2030 conducted by a group of scientists commissioned by the Development Programme of the UN in Kazakhstan indicate the following: population will increase by more than 1 million people every five years and will be 20.9 million people by the begin-

ning of 2030. Due to the reduction in male mortality there will be 945 men per 1000 women in 2030 (Table 4).

Table 4. Population forecast in 2020, 2025 and 2030

Indicator	2020	2025	2030
Population thousand people including	18,571.1	19,715.7	20,856.1
Male	8,970.7	9,547.7	10,130.5
Female	9,600.4	10,168.0	10,725.5
coefficient of masculinity	934.0	939.0	945.0

Source: National Human Development Report 2005 prepared by the authors commissioned by the United Nations Organizations Development in Kazakhstan with the participation of UNFPA

The total fertility rate will be 16.0 ‰ in 2030. The number of deaths will decrease dropping to a value of 147.2 thousand people in 2020. Later the number of deaths will rise again (up to 160.6 thousand people in 2030) due to the ageing of the population. Further strong ageing of the population is expected and as a result the proportion of older people will increase to 11.5% by 2030. The proportion of children under 15 will increase to 28.9% in 2020 and then will gradually decrease to a value of 24.4% in 2030 (Elderly people in Kazakhstan: prospects. National human development report 2005) (Table 5).

Table 5. Age structure forecast for 2020, 2025 and 2030 (in %)

Age	2020	2025	2030
0-14	28.9	27.2	24.4
14-34	28.6	27.7	28.8
35-39	29.9	30.7	31.2
60-64	4.4	4.7	4.2
65 and older	8.2	9.7	11.4

Source: National Human Development Report 2005, prepared by the authors commissioned by the United Nations Organizations Development in Kazakhstan with the participation of UNFPA

This forecast leads to a conclusion about the relevance of continuing the policy of state support of motherhood and childhood as well as the creation of a social system that guarantees to provide a decent old age. It should be noted that the national

report was prepared by the method of year-to-year shift of the population based on the age-sex pyramid of the population in 2003. According to the forecast of Kazakhstani demographer Zhamasultanov in the short term the population of working ages will continue to grow in almost all regions especially in the South and West of the country (Zhamasultanov, 2011). The excess of women over men will remain due to their mortality; however the coordination ratio will decline slightly: 1025 women per 1000 men in 2020 and up to 1032 in 2030.

Another Kazakhstani researcher on the demographic structure of the population Serikbayeva gives the following forecast for the next 15 years: the development of the process of 'ageing' of the population will occur. The proportion of persons aged 60 and older will be 13.9% and that of those aged 65 years and older 9.7%. In both cases under certain classifiers the Republic's population is becoming a demographically 'old' society. Differentiation in the dynamics of this process will also continue in the context of gender: the percentage of persons aged 60 and older in the total population will be 10.4% in men and 17% in women; for those

aged 65 and older it will be 6.8% and 12.3% respectively (Serikbayeva, 2005).

The authors also tried to give a short-term forecast of the number and sex-age structure of the population of Kazakhstan. It is worth noticing that the length of the forecast distinguishes short-term (5-10 years) medium-term (15-20 years) long-term (25-50 years) and ultra long (over 50 years) population forecasts. The first version of the forecast was created in the 'DemProj' program. 'DemProj' projects the population for an entire country or region by age and sex based on assumptions about fertility mortality and migration. A full set of demographic indicators can be displayed for up to 50 years into the future. In the program the initial (2012) and final (2030) years of forecast were given. All demographic assumptions are derived from the No AIDS estimates and projections of the United Nations. World Population Prospects. In the country/region column Kazakhstan was selected. The program automatically generated the forecast up to 2030; however the predict step was chosen to be five because it is impossible to fit every year in the figure and in fig. 12 the final forecast is presented for 2027.

	2012	2017	2022	2027
Population				
Total	16 557 800	17 320 829	18 027 197	18 618 121
Male	7 901 620	8 304 384	8 672 080	8 974 689
Female	8 656 180	9 016 445	9 355 116	9 643 432
Percent 0-4	9,94	9,36	8,59	7,76
Percent 5-14	15,06	17,24	17,92	16,86
Percent 15-24	16,83	13,76	13,63	15,84
Percent 15-49	52,75	50,18	49,44	50,14
Percent 15-64	67,11	65,57	64,79	65,41
Percent 65 and over	7,89	7,84	8,69	9,97
Percent females 15-49	50,91	48,39	47,59	48,11
Sex ratio	91,28	92,10	92,70	93,07
Dependency ratio	0,49	0,53	0,54	0,53

Fig. 12. Result of the demographic projection of the population in Kazakhstan on Demproj software

Source: Developed by the authors on Demproj software - http://futuresgroup.com/resources/software_models/spectrum

The forecasted total population will be 18 903 789 people by 2030 while the population will continue to grow. According to the forecast we can see from the table that the male population will gradually level off due to a reduction in male mortality and increase in life expectancy. If we compare the population on economic grounds (pre-working working and post-working) the pre-working population aged 0-14 years will gradually decrease reaching 23.5% in 2030. The percentage of the working population will be about 66% by 2030 and the post-working population will increase up to 10%. In such a scenario the demographic burden on the working population will increase. All this may happen due to economic medical cultural and other progressive social de-

velopments in our country. In medical terms first of all this should be realised by reducing infant mortality and mortality in men. Fig. 13 compares the sex-age pyramid in 2012 and in 2030 in 5-year age groups. The male population in 2030 will gradually level off; this will be especially noticeable in the older ages but the female population will prevail. Fertility and life expectancy will increase whereby the number of epy male and female population aged up to 50 years will be about the same. The female population aged 50 and over will be greater; however the gap compared with 2012 will not be as noticeable. It is expected that by 2030 men aged 70-79 years will be 1-7 times more numerous than in 2012.

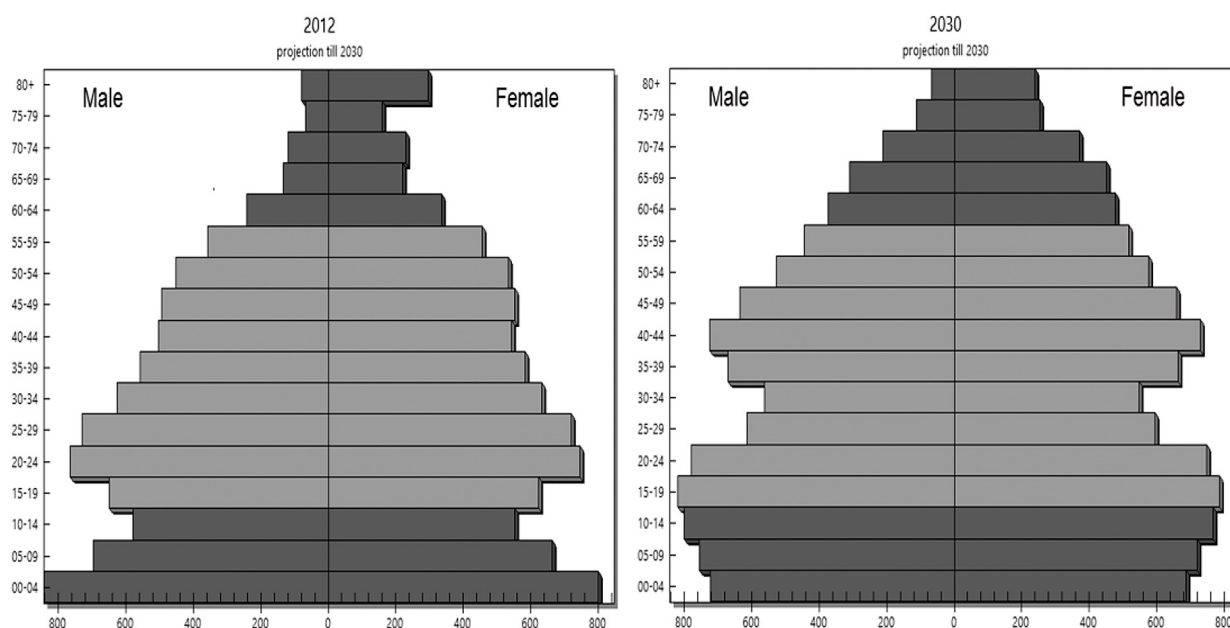


Fig. 13. Result of demographic projection of population by age and sex in Kazakhstan on Demproj software

Source: Developed by the authors on Demproj software - http://futuresgroup.com/resources/software_models/spectrum

The second scenario was designed using the components method. The essence of the method is as follows: the initial population “moves” in the future decreasing at the expense of the dead (and those who leave) and replenished by births (and those who arrive). Therefore to predict by the component method we must use the base population and its structure based on existing hypotheses on the development trends of the natural and migratory movements in the period of pre-emption.

The displacement is carried out in time steps equal to the length of the age group. For this

the number of age groups in the early period of pre-emption is multiplied by the ratio of advancing age. The ratio of survival was taken from mortality tables. We should take into account the balance of migration.

The model of advancing age is:

$$S_{x+1} = S_{x^*} * \frac{Lx+1}{Lx} + MB + MB$$

where - S_{x+1} - population «x+1» age group; S_x - population «x» age group; $-\frac{Lx+1}{Lx}$ - ratio of survival (prob-

ability of living at the age of «x+1»); MC – migration balance. The procedure is repeated for each year of the forecast period. Thus we determine the population for each age and sex and the total population. Predictive calculations can be made for one-year age intervals and for different age groups (5-year or 10-year). The technique of perspective calculations in both cases is exactly the same. In our version we restrict the choice of prediction with the hypothesis of a constant mode of reproduction of the population when the survival rates and birth rates remain unchanged for the entire forecast period. The purpose of such a scenario is to assess the possible effects of the long-term preservation of the present demographic situation rather than make an approximate forecast of the size and composition of the population (because demographic processes are changing continuously). The initial population size age and sex structure of the population survival rates the number of immigrants and emigrants were taken for the year 2012 because the latest data from the mortality tables were given for this year. The forecast is made in five-year groups not 10-years because in

a practical forecast such age group coarsening would be unacceptable. Accordingly the forecast is made for 2017 for the entire population of the Republic of Kazakhstan for the urban and rural population by sex. All data were taken from the Agency of Statistics of the Republic of Kazakhstan (www.stat.gov.kz).

According to the forecast for 2017 the entire population of the Republic of Kazakhstan compared with 2012 will increase by 1 109 125 people or 6%; the increase in population will occur in almost all ages and will be especially noticeable in the older age groups ranging from 55 years and older. There will be further ageing of the population: the numbers of the male and female population in middle and older age groups will increase. Kazakhstan will not face the problem of an ageing population for the first time. The Republic experienced it in the first half of the 1990s when the economy was falling rapidly due to the collapse of the Soviet Union. At that time the country carried the pension reform and the logical way out was to increase the retirement age. This helped to reduce the proportion of pensioners to 10% (Table 6).

Table 6. Population in 2012 and population forecast in 2017

Specific age groups	Total		Male		Female	
	2012	2017	2012	2017	2012	2017
Total	16,673,077	17,782,202	8,041,345	8,570,341	8,631,732	9,211,864
0-4	1,733,481	1,831,320	890,922	924,823	842,559	906,497
5-9	1,305,798	1,728,830	670,492	888,285	635,306	840,559
10-14	1,115,109	1,303,363	570,412	669,110	544,697	634,254
15-19	1,363,736	1,112,067	695,338	568,450	668,398	543,617
20-24	1,635,594	13,572,826	811,433	690,513	824,161	666,713
25-29	1,481,697	1,623,472	735,978	802,064	745,719	821,408
30-34	1,267,786	1,463,764	627,491	722,528	640,295	741,237
35-39	1,173,930	1,245,101	570,969	610,861	602,961	634,240
40-44	1,083,222	1,146,641	524,530	551,405	558,692	595,236
45-49	1,073,690	1,051,851	509,848	502,118	563,842	549,731
50-54	1,008,915	1,030,255	468,852	479,412	540,263	550,844
55-59	754,040	947,773	334,483	427,117	419,557	520,656
60-64	581,760	686,764	244,333	290,752	337,427	396,011
65-69	286,387	509,430	114,190	199,943	172,197	309,488
70-74	403,045	237,215	147,666	86,925	255,379	150,291
75-79	208,417	299,044	71,118	97,636	137,299	201,408
80-84	128,189	129,106	37,203	38,560	90,986	90,547
85-89	53,485	60,129	12,881	15,343	40,604	44,787
90-94	11,280	16,737	2,520	3,936	8,760	12,801
95-99	2,658	1,994	659	523	1,999	1,470
100 &+	858	120	227	37	631	83

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

Kazakhstan will attain such results by state propaganda of family values and by improving the quality of life and health.

Table 7 shows the forecast of the urban population for the year 2017 when there will also be

an increase in the total population of 6%. The authors suggest that Astana and Almaty will be centres of development of Kazakhstan and more than 2 million people will be living in each of them.

Table 7. Urban population in 2012 and urban population forecast in 2017

Specific age groups	Total		Male		Female	
	2012	2017	2012	2017	2012	2017
Total	9,127,105	9,717,816	4,273,804	4,563,287	4,853,301	5,154,529
0-4	893,492	1,016,413	460,154	517,840	433,338	498,573
5-9	630,570	890,733	324,093	458,625	306,477	432,108
10-14	522,118	628,889	267,818	323,182	254,300	305,707
15-19	676,029	520,439	340,130	266,810	335,899	253,629
20-24	971,487	672,915	461,802	337,913	509,685	335,002
25-29	855,572	964,237	414,022	456,585	441,550	507,652
30-34	727,520	844,052	351,002	405,674	376,518	438,379
35-39	662,222	712,931	310,212	340,536	352,010	372,395
40-44	609,103	645,416	284,100	298,405	325,003	347,011
45-49	598,625	590,316	273,234	270,847	325,391	319,468
50-54	570,334	573,319	255,011	255,644	315,323	317,675
55-59	428,217	534,291	182,085	230,691	246,132	303,600
60-64	340,843	389,278	136,389	156,951	204,454	232,326
65-69	163,664	298,625	62,168	110,769	101,496	187,856
70-74	234,647	135,899	81,004	46,914	153,643	88,986
75-79	122,954	175,285	39,621	53,179	83,333	122,106
80-84	78,794	76,974	21,611	21,481	57,183	55,494
85-89	32,707	36,849	7,439	8,708	25,268	28,142
90-94	6,474	9,902	1,456	2,220	5,018	7,682
95-99	1,330	1,004	324	294	1,006	709
100 &+	403	48	129	19	274	29

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

In the South the North and centre of the country there will be continued concentration of the population in major urban centre. Most likely the Almaty region will lead in the urban population (about 2.5 million people). In the East and South of the country in traditional “rural areas” the rural population will remain on a significant scale. The increase in the rural population in 2017 compared with 2012 will occur at the same 6% (Table 8).

Basically it will be due to the positive natural increase. For many years there has been an increase in the birth rate in Kazakhstan and it is necessary

to link it with long-term forecasts regarding the growth of the population. Migration which is also considered as a tool for increasing the number of the population is a changeable phenomenon and relatively stable in our country and to connect any expectations with it is not quite correct.

According to the authors a significant improvement in indicators of natural movement of the population depends on the following points:

1. The age structure of the population of Kazakhstan continues to have a positive impact on the processes of reproduction;

Table 8. Rural population in 2012 and rural population forecast in 2017

Specific age groups	Total		Male		Female	
	2012	2017	2012	2017	2012	2017
Total	7,545,972	8,064,387	3,767,541	4,007,054	3,778,431	4,057,335
0-4	839,989	814,907	430,768	406,983	409,221	407,924
5-9	675,228	838,097	346,399	429,660	328,829	408,437
10-14	592,991	674,474	302,594	345,928	290,397	328,547
15-19	687,707	591,628	355,208	301,640	332,499	289,988
20-24	664,107	684,311	349,631	352,600	314,476	331,711
25-29	626,125	659,235	321,956	345,479	304,169	313,756
30-34	540,266	619,712	276,489	316,854	263,777	302,858
35-39	511,708	532,170	260,757	270,325	250,951	261,845
40-44	474,119	501,225	240,430	253,000	233,689	248,225
45-49	475,065	461,535	236,614	231,271	238,451	230,263
50-54	438,581	456,936	213,641	223,768	224,940	233,169
55-59	325,823	413,482	152,398	196,426	173,425	217,056
60-64	240,917	297,486	107,944	133,801	132,973	163,685
65-69	122,723	210,805	52,022	89,174	70,701	121,632
70-74	168,398	101,316	66,662	40,011	101,736	61,305
75-79	85,463	123,759	31,497	44,457	53,966	79,302
80-84	49,395	52,132	15,592	17,079	33,803	35,053
85-89	20,778	23,280	5,442	6,635	15,336	16,645
90-94	4,806	6,835	1,064	1,716	3,742	5,119
95-99	1,328	990	335	229	993	761
100 &+	455	72	98	18	357	54

Source: Developed by the authors on the basis of data derived from the Agency of Statistics of the Republic of Kazakhstan - www.stat.gov.kz

2. Doubtless the evolution of the ethnic composition of the population has an influence. Kazakhs who are which is now characterised by a higher birth rate than the Slavic ethnic groups are taking a larger proportion in the population. And their quantitative advantage in young age groups active in reproductive terms are expressed most clearly;
3. The immigration policy of the state is beginning to pay off. Among the ethnic immigrants (so-called repatriates) traditional reproductive attitudes are much more common meaning large families.
4. Gradually increasing the number of social programmes to support families with many children provide social benefits for the birth of a child etc. has an important place;

Overall the rate of urban population growth will be higher than the rate of growth of the rural pop-

ulation and it is the urban population that determines the overall dynamics of the population.

Analysing the modern sex-age structure of the population and forecasted development options that were presented above it is necessary to give some recommendations on areas and activities that are designed to improve the demographic structure and in particular the sex and age structure of the population.

The ageing of the population and reduction in the number of the working population can exert pressure on the labour market of developing countries including Kazakhstan. A negative consequence of global demographic processes can be a 'brain drain' from Kazakhstan. Manpower requirements of developed countries will be met by attraction of foreign workers who will be offered highly-paid jobs and comfortable living conditions. At the same time in Kazakhstan there will be an increased demographic burden on the working population whose share

will decline mainly due to the increase in the proportion of people of retirement age. However one of the recommendations to reduce the burden of pensioners on the working-age population is attracting retirees to work. For example legislatively provide them with the opportunity to work in retirement or to arrange a flexible form of employment legislation.

An important role is played by the inequality of pensions of men and women. Considering that women live longer retirement savings are not enough to live on for them. It is necessary to reconsider this issue in the pension system.

In order to increase the birth rate it is necessary to pay special attention to the large Kazakh families (there is also a large percentage of families with many children among repatriates) and their problems to stop the trend of declining family size in Kazakhstan. We must try to change the image of a large family as poor in the public mind. We need to encourage young families to give birth to three or more children through the issuance of apartments provision of maternity leave for one year with preservation of the average salary which would be government-funded and the construction of nursery schools and schools in general to improve social policy in this direction.

In Kazakhstan a large gap remains in the life expectancy of men and women. In order to increase the life expectancy of men it is necessary to continue the initiative to ban public advertising of alcohol and tobacco and promote healthy lifestyles. Awareness-raising campaigns focused on men require special study approaches and more effective ways of its implementation.

6. Conclusion

Results of a comprehensive geographical study of the contemporary demographic structure of the population of the Republic of Kazakhstan showed the following:

- in 2011 in comparison with 1991 the share of the post-working population in the cities of the Republic of Kazakhstan decreased by 6.2%;
- in 2011 in comparison with 1991 the share of the post-working population in rural areas of the Republic of Kazakhstan decreased by 3.1%;

- the proportion of the the working-age population in the urban population of Kazakhstan is constantly increasing. In comparison with 1991 in 2011 their number increased to 5.3%;
- the proportion of the working-age population in the rural population of Kazakhstan is constantly increasing. In comparison with 1991 in 2011 their number increased to 9.0%;
- one of the features of the demographic structure of the population of Kazakhstan is its “ageing process”: according to the coefficients scale of the “ageing process” proposed by UN experts Kazakhstan is at the stage “with the population on the threshold of old age” while the share of the population of 65 years and over in urban areas in 2011 was 6.6%;
- in accordance with standard development schemes of the population the population of Kazakhstan is gradually undergoing a period of demographic transition from the third stage to the fourth stage;
- the absolute number of both men and women in urban areas is more than their numbers in the rural areas but there is a significant differentiation of the population by sex in different age groups;
- comparison of sex-age pyramids of the population of Kazakhstan in 1991 2001 and 2011 clearly showed the dynamics of the distribution of the population by age groups: in 1991 the maximum number of both men and women was in the age group of 0-9 years; in 2001 in the age group of 10-19 years; in 2011 in the age intervals of 0-29 years;
- analysis of the sex-age pyramids of the urban population of Kazakhstan in 1991 2001 and 2011 showed that over the twenty years (1991-2011) gender structure is changing; we have an equalisation of the sexes but still have a high percentage of women in the older age groups;
- the most favourable ratio between men and women of the most active age population i.e. the number of men exceeding the number of women at ages 20-44 years contributing to the satisfaction of physiological marriage and family relations between them has now developed in the rural areas of the country (rather than in urban areas) in almost all regions of Kazakhstan. This fact is important to promote family-marital relations and increase the birth rate;

- according to the forecast of different scientists of Kazakhstan the Republic's population will increase and there will be ageing of the population;
- by the short-term forecast of the authors the population of the country will have increased by 2017; the increase in population will occur in almost all ages and will be especially noticeable in the older age groups ranging from 55 years and older;
- there will be further ageing of the population; the numbers of the male and female population will increase in the middle and older age groups;
- one of the recommendations to reduce the burden of pensioners on the working-age population is the attraction of retirees to the labour market;
- we need to encourage young families to give birth to three or more children through the issuance of apartments provision of maternity leave for one year with preservation of the average salary which would be government-funded and the construction of nursery schools and schools in general to improve social policy in this direction;
- in order to increase the life expectancy of men it is necessary to continue the initiative to ban public advertising of alcohol and tobacco and promote healthy lifestyles.

Notes

Region – administrative unit of the 1st order.

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