Population health indicators under conditions of environmental risk Intermitting

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ABSTRACT

The modern stage of development of our society is characterized by close attention to the problems of demography. The relevance of information on the population and the thoroughness of its analysis has increased to develop an effective demographic policy. Analysis of the demographic situation in the constituent entities of Russia is necessary for making decisions in the economic and social spheres, for planning and forecasting the development of our society. These indicators are directly related to the growth rate of labour resources. Comparison of the birth rate among the urban and rural population of the constituent entity of the Russian Federation showed the following results. In 1991-2002, the birth rate of the rural population exceeded the birth rate of the urban population by an average of 1.8 per 1000 people. However, since 2003 the situation has changed to the opposite, with an increasing trend for both urban and rural populations. At the same time, over the past 5 years, the birth rate of the urban and rural population has begun to decline, amounting to 13.5 and 8.8 per 1000 people in 2017, respectively ($P < 0.05$). Having analyzed the relevant data in a timely manner, it is possible to influence the situation in the required direction using social, economic and political tools to influence the demographic situation in the subject of the Russian Federation.

Keywords: Demography, Birth rate, Rural area, Urban area, Population health, Environmental risk.

INTRODUCTION

The rural area will face a period of unfavourable demographic changes associated with a decline in the birth rate, a decline in the working-age population, and an aging age structure of the village (Analytical report on the results of sample observation of reproductive plans of the population in 2012, Rosstat 2013). The aim of the study is to conduct an empirical analysis of demographic indicators that in the near future will restrain the socio-economic development of rural areas (Blinova & Bylina 2014). An increase in the dependence of the socio-economic development of rural areas on the demographic situation and the characteristics of the reproduction of the rural population is noted (Demographic Yearbook of Russia 2017). In the regulation of the population size, the role of migration exchange is increasing; however, "replacement migration" has both positive and negative consequences (Akhtyamova *et al*. 2018). It is concluded that the aggravation of the demographic problems in a constituent entity of the Russian Federation actualizes the importance of additional measures of active demographic and social policy there (Preliminary results of the All-Russian agricultural census of 2016). It is discovered that the portion of the matured populace, heftiness rates, and neighborhood air contamination levels positively affect casualty rates across the diverse assessment conditions, while the portion of smokers isn't critical in many particulars (Bretschger *et al*.

2020). Individuals in Denmark appear to have dealt with the lockdown without disturbing changes in their emotional wellness. Be that as it may, it is essential to keep researching the impacts of the pandemic and different general wellbeing measures on psychological wellness over the long haul and across public settings (Clotworthy A *et al.* 220). Explicit geriatric wellbeing markers anticipate clinical results with various exactness. Exhaustive pointers (HAT, FI, WS) perform better in anticipating mortality and hospitalization. Multi-morbidity shows the best precision in the expectation of numerous contacts with suppliers (Hall *et al.* 2020).

As the science encompassing populace sodium decrease advances, checking and assessing new investigations on admission and wellbeing can help increment our comprehension of the related advantages and dangers. A deliberate survey of ongoing examinations on sodium admission and wellbeing was portrayed, the danger of inclination (ROB) of chose contemplates was analysed, and bearing for future exploration was given (Overwyk *et al.* 2020). Comparison of the birth rate among the urban and rural population of the Republic of Tatarstan showed the following results. In 1991-2002, the birth rate of the rural population exceeded the birth rate of the urban population by an average of 1.8 per 1000 people. However, since 2003, the situation has changed to the opposite, with an increasing trend for both urban and rural populations. At the same time, over the past 5 years, the birth rate of the urban and rural population begins to decline amounting to 13.5 and 8.8 per 1000 people, respectively ($P < 0.05$).

However, it should be noted that the birth rate of the rural population fits more into the law of normal distribution and is characterized by smaller fluctuations in the studied indicator, as evidenced by the values of the standard deviation (1.5 per 1000 births for the rural population and 2.3 per 1000 births for the urban population), asymmetry (0.3 versus 0.6), kurtosis (- 1.6 versus -1.1), swing (6 and 7 per 1000 births), which is also clearly shown in the normal distribution charts and a box-and-whisker plot. Consequently, the variability of the birth rate in urban areas was higher than in rural areas relative to the average level for the analyzed period from 1991 to the present.

MATERIALS AND METHODS

The study used such methods as the social, socio-hygienic and statistical ones (Preliminary estimate of the resident population as of January 1, 2018, and on average for 2017). The main strategic goal of socio-hygienic research is to study the relationship of demographic, social, economic and ecological processes in society with the development of public health, the prevalence of pathology, the life expectancy of people, which requires knowledge of the entire flow of life expressed in the alternation of human generations (Donnik *et al*. 2013).

A new paradigm of social and hygienic research is being formed, which combines the biological, social and economic values of the population into a single criterion for the development of society, i.e. human capital, which establishes the nature of generating an income stream in the form of reproducing the health of new generations (Fateeva *et al*. 2013). In this regard, it is necessary the following: determination of priorities in social and hygienic research, substantiation of the synthesizing and integrating social hygiene role in complex medical research, as well as the development of indicators and criteria of human capital (health capital) as an element of interaction with other sciences (Voronin & Fateeva 2015). Statistical analysis is based on the basic methods of analyzing time series, the rating method and cluster analysis (http://www.gks.ru; Scherbakova 2015: Arekhi & Jamshidi 2018). When analyzing cost indicators, deflators are used to bring the dynamics data to uniform prices. Deflators are developed by Rosstat (Russian Federal State Statistics Service) for each type of economic activity.

Statistical analyses

After normalizing the data, the statistical analysis of results was performed by means of analysis of variance (ANOVA), on a quantitative dependent variable and independent variables. Analysis of variance was used to test the hypothesis that several means are not the same. In our analyses, we performed several Two-Way ANOVA for different response variables. In addition to determining that differences between the means exist, several post-hoc LSD tests were considered on factor levels. All statistical analyses were performed using SPSS software (SPSS Inc., Chicago, IL). The significant level was considered as $p < 0.05$.

RESULTS AND DISCUSSION

The dynamics of the fertility of fertile age women in rural areas until 2014 exceeded the same indicator for the urban population and for the subject of the Russian Federation as a whole. Over the past 5 years, the trend has been reversed, which correlates with the birth rate in urban and rural areas, respectively. According to the results

of the last 3 years, the fertility of women of childbearing age in Tatarstan as a whole was 52.2 per 1000 women, 54.5 per 1000 women for the urban population, and 43 per 1000 women for the rural population. The age-specific fertility rates for women in urban and rural areas have changed markedly. In 1991, the largest number of births was accounted for by women aged 20-24: 247.7 per 1000 births for the rural population and 136 per 1000 births for the urban population. In 2000, the maximum number of births was also among women aged 20-24: 144 per 1000 births for the rural population and 86.8 per 1000 births for the urban population. After 2010, there has been a steady upward trend in the age-specific fertility rate. The largest number of births was accounted for by women aged 25-29: 123.9 per 1000 births for the rural population and 108.4 per 1000 births for the urban population; in 2017 it was 105.7 and 112.1 per 1000 births, respectively, and the number of births for women in rural areas of this age group is becoming less than for urban areas.

The structure of births by mother's age has also changed. Compared to 1991, there has been a significant decrease in live births among women under the age of 20: from 11.2% of the total number of live births at women in urban areas in 1991 to 1.8% in the last 3 years; from 10% to 4.1% in rural areas. Until 2007, the largest share in the structure of births fell on the age of women from 20-24 years old, which on average for the urban population for the period under review was 37.5% in the total structure of live births, and for the rural population, it was 38.1%. Since 2008, this age group of women in rural areas has continued to maintain the highest indicators in terms of the number of births; however, in urban areas, the age-specific fertility rates have increased: the age group from 25-29 years old becomes dominant, which share in the structure of live births in the period from 2008-2017 on average accounted for 37.9%. This age threshold for rural women was overcome in 2013 when the largest proportion of live births fell on the age group aged 25-29, which is on average for the period 2013-2017 was 35.9%. The proportion of live births belonging to women in urban areas aged 30-34 has increased from 17.2% in 1991 to 29.7% in the last 3 years, in rural areas it was from 14.4% to 21.9%; from 5.9% to 12.1% for urban areas and from 5.5% to 10.3% for rural areas at the age of 35-39; at the age of 40-44 it was from 1.1% to 2.6% for urban areas and from 1.1% to 2.9% for rural areas.

The structure of births by their birth order changed as follows. In 1991, in the structure of those born in urban areas, 55.9% accounted for the first child, 44.3% in rural areas; 35.1% and 34.2% for the second child, respectively; 9% and 21.5% for the third and more children. Attention is drawn to the fact that in the last 3 years, with a decrease of the first child in the proportion in the structure of live births, the proportion of the second, third and more newborns increased, while this trend was more pronounced for the urban population than for the rural population. Thus, the first child accounted for 40.8%, the second - 42.9%, the third and more children - 16.2%; for rural areas - 36.6%, 37.5% and 25.9% in the last 3 years, in the structure of live births in urban areas, respectively. Age-specific fertility rates are directly related to the average age of the population. A comparative analysis of the long-term dynamics of indicators for Tatarstan as for the separate constituent entity of the Russian Federation showed that the urban population of both men and women was younger than the average for the Russian Federation. So, in 1991, the average age of women in the urban population in the Russian Federation was 37 years; it was 35 years in the constituent entity of the Russian Federation, and 32.2 and 30.6 years for men, respectively. For the rural population, the opposite trend was characteristic: the average age of women and men in the constituent entity of the Russian Federation exceeded the same indicator for the Russian Federation: for men the ratio was 34.2 versus 32.5 years, for women it was 42.3 versus 38.9 years. By 2017-2018, this pattern has not changed: the average age of urban men in the constituent entity of the Russian Federation was 35.7 years (36.8 years in the Russian Federation as a whole), and 40.8 years for women (42.1 years in the Russian Federation as a whole); the average age of men in the rural population in the constituent entity of the Russian Federation is 39.3 years (in the Russian Federation - 37.2 years), and 44.4 years for women (in the Russian Federation - 42 years).

Average age of the population from 1991 to 2020 had a steady upward trend, with the average age of women in both urban and rural areas exceeding the average age of men. If in 1991 the age gap between women and men in urban areas was 4.4 years, then by 2020 it was 5.1 years; in rural areas, on the contrary, the age gap narrowed from 8.1 years in 1991 to 5.1 years by 2020. On average, over 1991-2018, the age gap between men and women in urban areas was 4.4 years, and in rural areas it was 6.2 years. The average age of women who gave birth to a child for the analyzed period of 1991-2018 in Tatarstan as the subject of the Russian Federation was also slightly higher than the average value for the Russian Federation.

So, in 1991, the average age of women in the urban population of a constituent entity of the Russian Federation who gave birth to a child was 25.6 years (in the Russian Federation - 25.1 years), women in the rural population - 25.5 years (in the Russian Federation - 24.8 years); in 2020 the average age of women in the urban population of the constituent entity of the Russian Federation who gave birth to a child was 29 years (in the Russian Federation in 2019 - 28.9 years), women in the rural population - 28.4 years (in the Russian Federation in 2018 – 27.3 years). In Tatarstan as the subject of the Russian Federation, in 1991-2018 the average age of women who gave birth in urban areas exceeded the average age of women who gave birth to a child in rural areas by an average of 0.4 years (the exception was the period 1994-1997, when the average age of women who gave birth to a child in rural areas was 0.175 years higher than the same indicator in cities).

Positive dynamics is noted for perinatal mortality, but with significant differentiation for the urban and rural population. In urban areas, the downward trend in this indicator was more pronounced than in rural areas. The number of deaths during the perinatal period in cities decreased by 60.6% from 23.1 per 1000 live births and deaths in 1991 to 9.1 in the last 3 years. For the entire period under consideration, the minimum value of this indicator was noted in 2011: 6.4 per 1000 live and dead births. The number of stillbirths decreased by 41.4% from 11.6 per 1000 live and dead births in 1991 to 6.8 in the last 3 years, including those who died before the age of 7 days by 80%, from 11.5 up to 2.3 per 1000 live and dead births.

The dynamics of perinatal mortality in rural areas is characterized by ambiguous trends. The number of deaths in the perinatal period of the last 3 years compared with 1991 decreased by 10.6% from 16 per 1000 live and dead births to 14.3, while the maximum value of the indicator was recorded in 1993-1955- from 21.1 to 20.5 per 1000 live and dead births. The increase in stillbirths in 2017 compared to 1991 will cause anxiety by 20% from 9 to 10.8 per 1000 live and dead births. Over the entire analyzed period, the value of this indicator did not fall below 6.2 per 1000 born alive and dead, which was noted in 1999. The number of deaths under the age of 7 days decreased by 50% from 7 per 1000 born alive and dead in 1991 up to 3.5 in 2020. The minimum value of this indicator was recorded in 2010: 2.1 per 1000 live and dead births. The indicators of population reproduction are directly related to the age composition of future mothers as the ability of the socio-demographic system to provide the potential for the birth of the next generation. However, in the period from 1991-2018 in Tatarstan as the constituent entity of the Russian Federation, the number of younger girls and girls aged 10-19 years decreased: the number of urban girls aged 10-14 years decreased as of January 1, 2018, compared with the data as of January 1, 1991, by 25.4% (rural girls - by 36.7%), and girls aged 15-19 years by 30.3% (20.8%). In relative terms, the share of 10-14 years old girls among urban women decreased from 6.8% of the total number as of January 1, 1991, to 4.5% as of January 1, 2020 (among rural women - from 6.6% to 4 , 7%); the proportion of girls aged 15-19 among urban women decreased from 6.7% of the total number as of January 1, 1991, to 4.2% as of January 1, 2018 (from 5.5% to 5% among rural women).

In urban areas, from January 1, 1991, to January 1, 2000, the number of girls aged 10-14 years in the total population exceeded the number of girls aged 15-19 years by an average of 0.5 percentage points. Then since January 1, 2001, the situation changed to the opposite; however, since January 1, 2015, due to the increase in the proportion of girls in the total number of women in the urban population, their proportion exceeded the relative number of girls in the older age group. The share of rural girls aged 10-14 years in the total number of rural women exceeded the number of girls aged 15-19 years from January 1, 1991, to January 1, by an average of 1.4 percentage points; after this period, the situation has changed in the structure of the number in rural women, the proportion of girls aged 15-19 was higher than the share of girls aged 10-14 by an average of 0.6 percentage points.

According to the Ministry of Health of the Republic of Tatarstan, in the period from 1991-2017, the incidence of children and adults has increased in the republic, which may be associated not only with an increase in the number of cases but also with the development of the level of diagnostics of diseases in the healthcare sector, as well as with the spread of a culture of a healthy lifestyle, which involves regular medical examinations and medical examinations of various categories of the population. In 2018, compared to 1991, the number of cases increased by 130.8% at the age of 0-14 years, amounting to 1237.8 thousand people. In relative terms, the increase was 162.2% from 1,076.6 per 1,000 children in 1991 to 1,746.5 per 1,000 children in 2018. The number of sick adolescents aged 15-17 years increased at a faster rate by 95.1 compared to 1991, amounting to 160.5 thousand people in 2018. In relative terms, the number of cases in this age group increased 2.8 times from 517.9 per 1000 children in 1991 to 1435.8 per 1000 children in 2018.

SUMMARY

Thus, the study of demographic processes in the Republic of Tatarstan in the period from 1991-2018 allows us to draw the following conclusions.

1. Since 1991-2002, the birth rate of the rural population exceeded the birth rate of the urban population by an average of 1.8 per 1000 people. However, since 2003, the situation has changed to the opposite, with an increasing trend for both urban and rural populations. Starting from 2015, the birth rate of the urban and rural population begins to decline, amounting to 13.5 and 8.8 per 1000 people in 2018, respectively. Consequently, the rate of decline in the number of births in rural areas is much faster than the rate of decline in the number of born children in urban areas.

2. There is an increase in age-specific fertility rates. So, in 1991, the largest number of births fell on women aged 20-24 years: 247.7 per 1000 births for the rural population and 136 per 1000 births for the urban population. However, after 2010, there has been a steady upward trend in the age-specific fertility rate. The largest number of births fell on women aged 25-29: 123.9 per 1000 births for the rural population and 108.4 per 1000 births for the urban population; in 2018 - 105.7 and 112.1 per 1000 births.

3. There is a change in the structure of births by birth order. In 1991, 55.9% accounted for the first child in the structure of those born in urban areas, and 44.3% in rural areas; for the second child, it was 35.1% and 34.2%, respectively; for the third and more children, it was 9% and 21.5%. At the same time, in 2017, in the structure of live births in urban areas, the first child accounted for 40.8%, the second - 42.9%, the third and more children - 16.2%; for rural areas it was 36.6%, 37.5% and 25.9%, respectively.

4. Average age of the population in 1991-2018 had a steady upward trend, with the average age of women in both urban and rural areas exceeding the average age of men. On average for 1991-2018, the age gap between men and women in urban areas was 4.4 years, and in rural areas, it was 6.2 years.

5. In 1991, the average age of women in the urban population of Tatarstan who gave birth to a child was 25.6 years, for women in the rural population - 25.5 years; in 2018 it was 29 and 28.4 years, respectively.

CONCLUSIONS

A demographic study was carried out over time from 2001-2018 on the territory of the subject of the Russian Federation. We studied the birth rate of the population. Since 1991-2002 the birth rate of the rural population exceeded the birth rate of the urban population by an average of 1.8 per 1000 people. However, since 2003 the situation has changed to the opposite, with an increasing trend for both urban and rural populations. At the same time, over the past 5 years, the birth rate of the urban and rural population begins to decline significantly amounting to 13.5 and 8.8 per 1000 people in 2018, respectively. Using the results of the analysis obtained, it is possible to develop mechanisms for making a management decision for the processes of the birth rate of the population.

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REFERENCES

Akhtyamova, LA, Sitdikova, ID, Meshkov, AV, Imamov, AA, Ivanova, MK, Fadeeva, SA 2018, Comprehensive assessment of public health risk in the area affected by emissions from chemical production. *Public Health and Habitat.,Moscow,* 9: 43-67.

Analytical report on the results of sample observation of reproductive plans of the population in 2012. Rosstat, 2013.

Blinova, TV, Bylina, SG 2014, Scenario forecast of the rural population of Russia for the medium term. *Economy of the Region,* 4: 298-308.

Bretschger, L, Grieg, E, Welfens, PJ & Xiong, T 2020, Corona fatality development, health indicators and the environment: Empirical evidence for OECD countries (No. disbei274). Universitätsbibliothek Wuppertal, University Library.

Clotworthy, A, Dissing, AS, Nguyen, TL, Jensen, AK, Andersen, TO, Bilsteen, JF, Elsenburg, LK, Keller, A, Kusumastuti, S, Mathisen, J & Mehta, A 2020, 'Standing together–at a distance': Documenting changes in

mental-health indicators in Denmark during the COVID-19 pandemic. *Scandinavian Journal of Public Health*, p.1403494820956445.

Arekhi, M & Jamshidi, M 2018, Influences of inorganic binder on photocatalytic oxidation (PCO) and degradation of nano/micro TiO_2 containing acrylic composites. *Progress in Organic Coatings*, 115: 1-8.

Demographic Yearbook of Russia. 2017: Statistical collection / Rosstat, Moscow, 513 p.

Demography Federal State Statistics Service. URL: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ ru/statistics/population/demography/#, 5 p.

Donnik, IM, Voronin, BA, Treskova, EA 2013, Socio-economic development of rural areas: tutorial. Ekaterinburg: Ural Agricultural Publishing house, pp. 23-25.

Fateeva, NB, Petryakova, SV, Rodionova, SV 2013, analysis of training qualified personnel for agricultural enterprises of the Sverdlovsk region. *Agrarian Bulletin of the Urals,* 10.

Hall, AL, Sweet, J, Tweel, M & MacLean, MB 2020, Comparing negative health indicators in male and female veterans with the Canadian general population. *BMJ Mil Health*, 0: 1-6, http://dx.doi.org/10.1136/bmjmilitary-2020-001526

Overwyk, KJ, Quader, ZS, Maalouf, J, Bates, M, Webster, J, George, MG, Merritt, RK & Cogswell, ME 2020, Dietary Sodium Intake and Health Indicators: A Systematic Review of Published Literature between January 2015 and December 2019. *Advances in Nutrition,* 11: 1174-1200,

Preliminary estimate of the resident population as of January 1, 2018 and on average for 2017. URL: http://gks.ru/wps/wcm/ connect/rosstat_main/rosstat/ru/statistics/ population/ demography/#, 513 p.

Preliminary Results of the All-Russian Agricultural Census 2016, in 2 Vol., Federal State Statistics Service. Moscow Research Centre "Statistics of Russia", 2017. Vol. 2: Preliminary Results of the All-Russian Agricultural Census of 2016 for the Subjects of the Russian Federation, 25 p.

Scherbakova, E 2015, Russia: preliminary demographic results of 2015 (part I). *Demoscope Weekly, 633634,* 4: 86-91, URL: http://demoscope.ru/weekly/2015/0631/barom01.php., [In Russian].

Voronin, BA, Fateeva, NB 2015, On training personal with higher education for agroindustrial complex. *Agrarian Bulletin of the Urals,* 2.

شاخص‌های سلامت جمعیت در شرایط تناوب مخاطرات زیست‌محیطی

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چکیده

در مرحله‌ی توسعه‌ی مدرن جامعه‌ی ما، توجه ویژه‌ای به مسائل جمعیت شناختی شده است. اهمیت اطلاعات مربوط به جمعیت و جامعیت تحلیل آن، برای توسعه‌ی سیاست جمعیت شناختی مؤثر افزایش یافته است. تحلیل وضعیت جمعیت شناختی در سازمان‌های روسیه، برای تصمیم گیری در زمینه‌های اقتصادی و اجتماعی، برنامه‌ریزی و پیش‌بینی توسعه‌ی جامعه، لازم است. این شاخص‌ها ارتباط مستقیمی با سرعت رشد منابع و نیروی کار دارد. مقایسه‌ی نرخ موالید میان جمعیت روستایی و شهری روسیه، نتایج زیر را نشان داد. در ۲۰۰۲-۱۹۹۱، نرخ موالید جمعیت روستایی، بیشتر از جمعیت شهری با میانگین ۱/۸ نفر از هر ۱۰۰۰ نفر بوده است. ولی از ۲۰۰۳ به بعد، این وضعیت برعکس شده است و روند افزایشی برای هر دو جمعیت روستایی و شهری دیده می‌شود. درعین‌حال در طی ۵ سال گذشته، نرخ موالید جمعیت شهری و روستایی، کاهش یافته و به ۱۳/۵ و ۸/۸ در هر ۱۰۰۰ نفر جمعیت در ۲۰۱۷ رسیده است ($P < 0.05$). پس از تحلیل داده‌ها در یک روند زمانی مطلوب، امکان درک اثر وضعیت با استفاده از ابزارهای اقتصادی، سیاسی و اجتماعی در فدراسیون روسیه وجود خواهد داشت.

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