

**CDSSES 2020****IV International Scientific Conference "Competitiveness and the development of socio-economic systems" dedicated to the memory of Alexander Tatarkin****PENSION REFORM AND DEMOGRAPHIC PROCESSES IN THE ARCTIC REGIONS**

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**Abstract**

The research is devoted to a topical issue - the review of the impact of the pension reform initiated in 2019 in Russia on the Arctic situation, which is characterized by the peculiarities of socio-economic processes (in comparison with the national situation). The aim of the study is to establish the specifics of the impact of pension reform on demographic processes in the Russian Arctic. The study hypothesizes that the specifics of socio-economic processes in the Russian Arctic initiate demographic problems, which will be strengthened by implementing the pension reform. Methods used: extrapolative forecasting, statistical analysis of time series of data, surveys of the population on a representative sample. Obtained result: 1) it is established that increasing the retirement age will not increase the working-age population of the Arctic, and will only slow down the pace of the decline in the working-age population (while maintaining the current rate of migration); 2) population surveys have shown that pension reform has reinforced the migratory mood of the population of the Arctic; 3) it is proved that the demographic and health reserves of the Russian Arctic are lower than in Russia on average, insufficient to raise the retirement age from 2019. The results confirmed the hypothesis of the study. It is concluded that the pension reform did not fully consider the social conditions and medical and demographic specifics of the Arctic, which will negatively affect the demographic situation in the Russian Arctic.

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*Keywords:* Arctic, demographic processes, pension reform, Russia



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## 1. Introduction

The transformation of pension systems in developed and developing countries is the focus of world science. This is due to the growing urgency of solving the accumulating problems of pension systems. The reason for increasing relevance is that, despite external diversity, economic and interrelated demographic processes in different countries lead to a single consequence - a reduction in the share of the population in working age (the process differs only in the scale and speed of population aging). The primary global problem of population aging is always solved by unpopular measures – increasing pension contributions, reducing pension payments, increasing the retirement age, etc. (Peng & Mai, 2013; Vogel et al., 2017). Among these methods, the main way to solve the problem is to increase the retirement age (Barr & Diamond, 2009; Chistova, 2016; Harper, 2014). However, the specifics of the impact of population aging on the functioning of pension systems and macroeconomic parameters differ significantly between countries. This explains a lot of research on the various effects of changes in retirement age in different world countries. For Russia, such studies are relatively new and few. This is because until 2018 (when it was announced a gradual increase in the retirement age in Russia, starting in 2019), Russia's retirement age has not changed since 1932.

Research on the impact of changes in the retirement age on social, demographic, and economic processes is significant for Russian regions. Thus, our research shows that in Russia, the pension reform has a very different effect on Russia's regions, mainly the differences are manifested in the reaction of regional demographic processes (Baranov et al., 2020). The Russian Arctic is a specific region characterized by significant medical and demographic problems – a decrease in the population, low life expectancy, and an excess of morbidity of Arctic residents in a whole list of diseases in comparison with the national situation (Khoreva et al., 2018). However, the specifics of socio-economic and demographic processes in the Russian Arctic in the context of retirement age changes are not reflected in the scientific literature. This indicates the relevance of considering the relationship of pension reform in Russia with social, economic, and demographic processes in the Russian Arctic regions.

## 2. Problem Statement

The harsh climatic conditions of the Arctic, the increased need for vitamins and food, the low availability of medical services for the Arctic population, and the lower quality of life in comparison with all-Russian conditions create the specifics of demographic processes in the Arctic (Khoreva et al., 2018; Korchak et al., 2019). The pension system in Russia traditionally takes this specificity into account. So, until 2019, for residents of the North of Russia (which includes the territory of the Russian Arctic), the retirement age was 50 years for women (for other women in Russia – 55 years), 55 – for men (for other men in Russia - 60 years). Starting in 2019, the retirement age in Russia will gradually increase by 5 years. For residents of the Russian Arctic, the retirement age also increases with a difference of five years compared to residents of other regions of Russia. In other words, in the new pension system, after working for 15 years in the Arctic, women will retire at 55 and men at 60. However, the specifics of demographic processes in the Arctic allow us to expect that raising the retirement age by 5 years for the Arctic population will increase negative features (it will increase the migration mood of the Arctic

population, and possibly initiate the problem of insufficient medical and demographic reserves of Arctic residents to raise the retirement age). Our research suggests that raising the retirement age is not the main factor in ensuring the Arctic regions (Baranov & Skufina, 2018). Thus, the problem's essence is that proponents of raising the retirement age believe that this is necessary to ensure the country's economic development in the long term, but not taking into account the specifics of the Arctic creates demographic risks for the sustainable development of this territory. All this once again underlines the relevance and practical significance of studying the impact of pension reform on demographic processes in the Russian Arctic.

### **3. Research Questions**

We are faced with the following issues to be addressed:

- to identify the influence of the factor of increasing the retirement age on the working-age population of the Russian Arctic;
- to identify the impact of the pension reform on the migration mood of the population of the Russian Arctic;
- to determine whether the medical and demographic reserves of increasing the Russian Arctic retirement age are sufficient.

### **4. Purpose of the Study**

The aim of the study is to establish the specifics of the impact of pension reform on demographic processes in the Russian Arctic.

It is known that the main social and demographic problems of the Russian Arctic are: migration losses of the population characteristic of this territory, low quality of life, infrastructure unsettled territory, high unemployment (Brucea et al., 2016; Korchak & Serova, 2019; Suopajärvi et al., 2016; Samarina et al., 2018). The same time, modern strategic goals for the development of the Russian Arctic indicate the need for economic development that requires ensuring the conditions for securing the population in the Arctic (Kolesnikova et al., 2019; Kudryashova et al., 2019; Leksin & Porfiryev, 2015). Perhaps the pension reform will strengthen this contradiction. The study hypothesizes that the specifics of socio-economic processes in the Russian Arctic initiate the pension reform's implementation to strengthen demographic problems (increased migration from the Arctic, aging of the population, low medical and demographic reserves for raising the retirement age).

### **5. Research Methods**

The impact of increasing the retirement age on the working-age population of the Russian Arctic was estimated using extrapolative forecasting.

The forecast is made for the Murmansk region – an entirely located region in the Arctic zone and is a typical region of the Russian Arctic in terms of economy, demography, and social development. This region is located in the North-West of Russia, located beyond the Arctic circle on the Kola Peninsula territory. A large industrial center has been formed on the territory of the Murmansk region. The

formation of a developed industry is due to several factors: the presence of mineral resources (ores containing phosphorus, titanium, iron, aluminum, copper, nickel, zirconium, rare metals; large reserves of hydrocarbons have been explored on the Barents sea shelf; significant deposits of mica, ceramic raw materials, semi-precious and ornamental stones); seaside location, relative proximity to the industrial centers of Russia, the possibility of year-round navigation due to ice-free pails.

To characterize the demographic situation in the Murmansk region, the dynamics of the total population, the number of women and men for the period 2000-2018 are considered, and the forecast values for 2019-2036 are given (according to the official demographic forecast of Russia). For the convenience of viewing the situation, we have given the data not only in absolute, but also in relative dimensions (we performed calculations relative to 2000).

Methods of forecasting working age population: using data from official demographic forecast of Russia till 2036 and statistics on gender and age structure of the population of Murmansk region, we have taken into account the shift in the retirement age (according to the scheme of gradual increase in the retirement age by 5 years) and calculated the working-age population to 2036.

The assessment of the impact of the pension reform on the migration mood of the Russian Arctic population was carried out using a survey of the population of the Murmansk region. The survey was conducted in all cities and districts of the Murmansk region on a representative sample, taking into account the gender and age structure of the population.

The estimation of medical and demographic reserves for increasing the Russian Arctic retirement age was found out based on statistical analysis of time series of data on indicators: life expectancy at birth (for women and men), average age of death (for women and men).

The selection of indicators was carried out following the world and Russian practice of estimating reserves to raise retirement age. The analysis was performed for all Russian Arctic regions (Murmansk region, Nenets Autonomous district, Yamalo-Nenets Autonomous district, Chukotka Autonomous district). For comparison, data is provided for the whole of Russia.

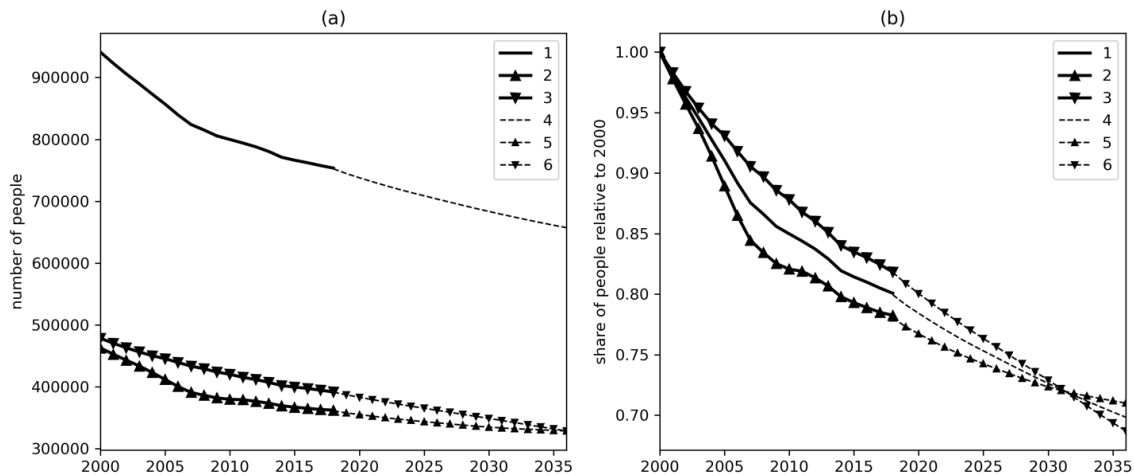
## 6. Findings

### 6.1. Influence of the factor of increasing the retirement age on the number of able-bodied population of the Russian Arctic

Figure 1 shows the dynamics of the population of the Murmansk region (actual and forecast values). Figure a) shows the dynamics in absolute values, and figure b) shows relative data (from 2000).

Attention is drawn to the steady decline in the population of the Murmansk region. The use of additional data allows us to identify two reasons for the decline in the population.

The first reason is the migration decline of the population of the Murmansk region.



**Figure 1.** Population of the Murmansk region, 2000-2036 in absolute values (number people), (a) and values relative to 2000 (b). 1-actual data on the population of the Murmansk region for 2000-2019; 2 – actual data on the number men for 2000-2018; 3 – actual data on the number women for 2000-2018; 4-forecast values for 2019-2036; 5 – forecast values for men for 2019-2036; 6 – forecast values for women for 2019-2036

Source: authors' calculations based on data from the Federal state statistics service of Russia. Date Views 5.09.2020 <http://www.gks.ru>

The second reason is the aging population which has led to an excess of deaths over births (in the structure of the population of the Murmansk oblast the population of the youngest generation is less than the number of the middle generation, the middle generation outnumbered the older generation).

In 2035, the population of the Murmansk region is projected to decrease by 30% compared to 2000. Figure 2 shows actual and forecast data on the working-age population in the Murmansk region.

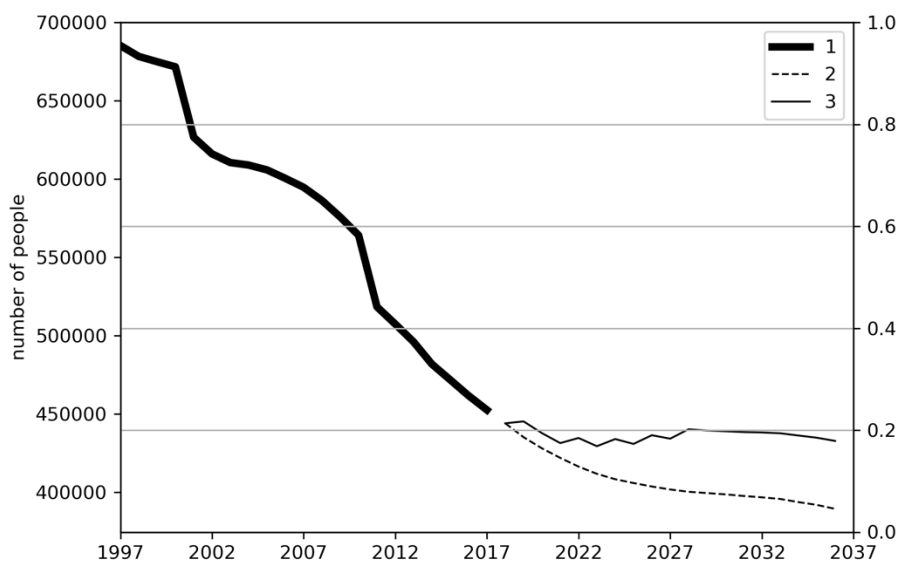
Analysis of the forecast results shows that raising the retirement age will only slow down the rate of decline in the working-age population in the Murmansk region.

Note that this differs from the situation in Russia as a whole. Thus, our research shows that increasing the retirement age in Russia will break the trend of reducing the working-age population in this country (Baranov et al., 2020).

The reason for the continued decline in the number of working – age population in the Murmansk region is the migration of the population from this territory. Note that the demographic situation (including migration) in the Murmansk region is typical for the Russian Arctic, as noted in many studies (Khoreva et al., 2018).

The forecast of the working-age population (figure 2) is based on the current rate of migration outflow.

However, there are concerns that raising the retirement age may increase the migration mood of the Arctic population and, consequently, increase migration. Let's see what the Arctic population will tell us about their migration moods.



**Figure 2.** The working-age population (number of people) in 2000-2036 in the Murmansk region. 1 – actual data for 2000-2018; 2 – data for 2019-2036 while maintaining the previous retirement age (forecast); 3 – data for 2019-2036 in the new conditions of increasing the retirement age (forecast)

Source: authors' calculations based on data from the Federal state statistics service of Russia. Date Views 5.09.2020 <http://www.gks.ru>

## 6.2. The impact of pension reform on the migration intentions of the population of the Russian Arctic

The survey was conducted in all cities and districts of the Murmansk region. The sample is representative, the error is less than 4 %.

Note that in this paper we present only a small part of our large-scale three-year study (2019-2021), funded by the RFBR, project №19-010-00022 (Baranov et al., 2020).

We have established a sharply negative attitude of the population to increasing the retirement age. This reaction is expected. In no country in the world does the population welcome an increase in the retirement age.

Of considerable interest are the answers to another question – can these negative moods provoke departure from the Arctic?

Table 1 shows the results of responses from residents of the Murmansk region to the question "have Your plans for living in the Murmansk region Changed due to the increase in the retirement age?". The data is distributed by gender and age of the surveyed residents. This made it possible not only to see a significant increase in the migration mood of residents, but also to identify an increase in the migration mood of the working-age population.

Among young people (18-29 years old), 21.2% men and 30.6% women changed their living plans in the Murmansk region and considered moving, while among the group of residents aged 30-49 years – 27.8% men and 30.6% women.

**Table 1.** Distribution of responses of residents of the Murmansk region to the question "Have Your plans for further residence in the Murmansk region changed due to the increase in the retirement age?", in % of the total respondents

Answer unit	Men				Women			
	18-29	30-49	50-64	65 and older	18-29	30-49	50-64	65 and older
Have not changed, I will live and work in the Murmansk region	46.6%	50.7%	54.9%	71.0%	41.8%	40.0%	58.0%	67.0%
Rather, they have changed, I'm thinking about moving to comfortable climate	21.2%	27.8%	18.8%	9.7%	30.6%	40.8%	20.2%	12.5%
Changed, already found another place of residence and work	15.3%	9.5%	4.9%	0.0%	11.2%	6.5%	5.2%	4.5%
I can't answer	16.9%	12.0%	21.5%	19.4%	16.3%	12.7%	16.6%	16.1%

Obviously, thinking about check-out and leave – this is a different situation. However, the survey results show that a significant proportion of youth already found another place of residence age 18-29 – 16.9% men and 16.3% women, aged 30-49 – 9.5% men and 6.5% women.

These data indicate an increase in the risks of migration losses for the territory of the Russian Arctic.

### 6.3. Assessment of medical and demographic reserves for raising the retirement age for the Russian Arctic

The analysis of data on life expectancy at birth for the regions of the Russian Arctic and for Russia as a whole (table 2) allowed us to draw important conclusions.

Thus, before the pension reform in the regions of the Russian Arctic, the average life expectancy after retirement age was 25.8 years for women and 10.4 years for men. Comparison with the average life expectancy in retirement in Europe (19.0 years for women; 12.5 years for men) indicates that the situation in the Russian Arctic regions corresponds to the situation in Europe. In the Murmansk region, the estimated life expectancy after retirement age was 11.5 years for men and 26.3 years for women; in the Nenets Autonomous district, 10.9 and 27.2 years, respectively; in the Yamalo-Nenets Autonomous district, 14.0 years for men and 27.9 years for women; and in the Chukotka Autonomous district, 21.7 years for women. The exception is the Chukotka Autonomous district, where men's average retirement life expectancy was only 5.3 years.

After increasing the age of eligibility for an old-age insurance pension and a state pension by 5 years, life expectancy after retirement (while maintaining the existing level of life expectancy) will decrease, and for the regions of the Arctic zone it will average 5.4 years for men and 20.7 years for women (with the minimum value in the Chukotka Autonomous district +0.3 years for men) (table 2).

For Russia, the deviation of the life expectancy indicator (which is a forecast indicator) from the average age of death (which is an actual indicator) in the period 2008-2016 was insignificant – within the limits of exceeding the forecast indicator over the actual one by 0.1-0.2 years.

**Table 2.** Life expectancy at birth by regions of the Russian Arctic

<b>Regions of the Russian Arctic</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Life expectancy of men, years</b>										
Murmansk region	60.7	61.2	62.7	63.0	63.9	65.1	64.0	64.5	65.7	66.5
Nenets Autonomous district	56.1	59.3	59.1	60.6	62.0	60.2	64.7	65.2	63.9	65.9
Yamalo-Nenets Autonomous district	66.0	67.8	65.6	65.6	66.3	66.5	67.0	66.9	67.1	69.0
Chukotka Autonomous district	56.3	53.7	52.7	57.5	56.6	58.6	58.8	59.3	59.7	60.3
Russia	61.8	62.8	63.1	64.0	64.6	65.1	65.3	65.9	66.5	67.5
<b>Life expectancy of women, years</b>										
Murmansk region	72.7	73.0	73.9	74.6	75.3	75.3	75.7	75.7	75.6	76.3
Nenets Autonomous district	71.9	71.3	71.4	73.5	75.9	75.2	76.2	76.9	78.4	77.2
Yamalo-Nenets Autonomous district	74.7	75.5	74.6	74.9	75.1	75.9	76.9	76.4	77.0	77.9
Chukotka Autonomous district	64.2	64.6	63.6	66.3	64.9	66.4	66.6	69.7	69.6	71.7
Russia	74.2	74.7	74.9	75.6	75.9	76.3	76.5	76.7	77.1	77.6

Source: Date of the Federal State Statistics: Regions of Russia. Socio-economic indicators. 2018; Regions of Russia. Socio-economic indicators. 2010; Regions of Russia. Socio-economic indicators. 2009. Date Views 5.09.2020 <http://www.gks.ru>

Data on the average age of death for the Arctic population show a qualitative difference between the situation in the Arctic regions and the national situation and the situation in Europe (table 3).



For the Arctic, this deviation was significant. For example, in the Murmansk region, the real age of death for men in 2011, 2014, and 2016 was on average 7.1 years lower than life expectancy; in the Nenets Autonomous district, in 2011-2016, it was 9.5 years (men) and 19.5 years (women); in the Chukotka Autonomous Okrug, the real age of death for men in the period 2008-2014 was on average 4.9 years lower than life expectancy, for women – 10.9 years in the period 2011-2016.

For example, real data on the average age of death of residents of the Russian Arctic regions in 2016 show that after retirement age (without increasing the retirement age), men live in the Nenets Autonomous district for 2.1 years, in the Murmansk region for 2.6 years, in the Chukotka Autonomous district for 4.7 years, and in the Yamalo-Nenets Autonomous district for 11.9 years. Thus, only in the Yamalo-Nenets Autonomous district, the indicator for men corresponds to the average Russian and average European values. Women after the retirement age in 2016 (excluding the increase in the retirement age) live in the Chukotka Autonomous district – 6.4 years, in the Yamalo-Nenets – 26.7 years. Please note that according to 2016 data, women do not live up to retirement in the Murmansk region for 1,0 years, and in the Nenets Autonomous district they do not live up to retirement for 8.7 years.

Thus, increasing the retirement age by 5 years will allow only the average man and the average woman in the Yamalo-Nenets Autonomous district to live up to retirement.

**Table 3.** Mean age of death. by regions of the Russian Arctic

<b>Regions of the Russian Arctic</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Average age of death for men. years</b>									
Murmansk region	60.7	61.2	62.7	56.9	63.9	65.1	56.8	57.6	60.7
Nenets Autonomous district	56.0	59.3	59.0	51.0	47.1	54.4	54.6	57.1	56.0
Yamalo-Nenets Autonomous district	66.0	67.8	65.5	65.9	66.1	66.3	64.5	66.9	66.0
Chukotka Autonomous district	51.1	48.2	52.7	51.5	52.8	53.9	54.8	59.7	51.1
Russia	61.8	62.7	63.1	64.0	64.5	65.1	65.2	66.4	61.8
<b>Average age of death for women. years</b>									
Murmansk region	72.6	73.0	73.9	74.6	75.3	75.2	75.7	49.0	72.6
Nenets Autonomous district	71.6	70.8	71.1	72.9	47.6	74.6	45.2	41.3	71.6

Yamalo- Nenets Autonomous district	74.5	75.2	74.5	75.0	51.7	75.6	76.4	76.7	74.5
Chukotka Autonomous district	64.2	64.6	63.5	55.4	57.2	54.3	56.2	56.4	64.2
Russia	74.1	74.6	74.8	75.5	75.7	76.2	76.4	76.9	74.1

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Source: Federal State Statistics, 2017

## 7. Conclusion

It is established that the specifics of socio-economic processes in the Russian Arctic initiate demographic problems (increased migration from the Arctic, aging of the population, low medical and demographic reserves for raising the retirement age), which will be strengthened by the implementation of the pension reform.

Thus, extrapolative forecasting has shown that increasing the retirement age will not increase the number of working-age people in the Arctic, but only slow down the rate of decline in the number of working-age people (while maintaining the current rate of migration). However, surveys of the Murmansk region population indicated an increase in the risks of increased migration of the working-age population as a reaction to the increase in the retirement age. This shows that the positive effect of slowing the rate of decline in the working-age population due to an increase in the retirement age can be offset by the migration outflow of the population from the Russian Arctic territory. It is proved that the Russian Arctic's medical and demographic reserves are lower than the average for Russia and Europe and are insufficient to raise the retirement age from 2019.

Thus, the hypothesis of our study is fully confirmed. The main conclusion is that, unfortunately, the pension reform did not consider the specifics of the processes in the Russian Arctic, which will negatively affect the demographic situation of this territory. Further research development is the search for opportunities and development of differentiated mechanisms of state social policy in the Russian Arctic, including context-taking into account the specifics of economic development in these territories. We consider it particularly relevant to identify the conditions for healthcare development in various types of Arctic settlements in Russia.

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