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Sociomedical factors affecting the birth rate in the Russian Federation

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ABSTRACT

The article considers the number of women giving birth in Russia in the context of the existing demographic problems caused by the depopulation of the country. The study evaluates the social, economic and medical factors influencing the dynamics of the number of women giving birth in the Russian Federation based on correlation and regression analysis, and also provides a short-term forecast for their further change. The implementation of the increase in the number of women giving birth in Russia is one of the current important sociodemographic tasks for the State; This will improve the demographic situation and will lay the foundations for the formation of a sufficient human resource, which will later form the country's high human capital. According to the results of forecasting the dynamics of the number of women in the work in the short term, it was determined that the downward trend in the number of women in the work will continue, since the negative impact of medical factors will remain unchanged. changes, while economic and social factors will not change.

KEYWORDS: Russian Federation; social policy; demographic situation; reproduction of the population; birth rate; number of women in work, sociomedical factors.

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Factores sociomédicos que afectan la tasa de nacimiento en la Federación Rusa

RESUMEN

El artículo considera el número de mujeres parturientas en Rusia en el contexto de los problemas demográficos existentes causados por la despoblación del país. El estudio evalúa los factores sociales, económicos y médicos que influyen en la dinámica del número de mujeres parturientas en la Federación Rusa en base a análisis de correlación y regresión, y también ofrece un pronóstico a corto plazo para su cambio adicional. La implementación del aumento en el número de mujeres parturientas en Rusia es una de las tareas sociodemográficas actuales importantes para el Estado; esto mejorará la situación demográfica y sentará las bases para la formación de un recurso humano suficiente, que posteriormente formará el alto capital humano del país. De acuerdo con los resultados de pronosticar la dinámica del número de mujeres en el trabajo a corto plazo, se determinó que continuará la tendencia a la baja en el número de mujeres en el trabajo, ya que el impacto negativo de los factores médicos se mantendrá sin cambios, mientras que los factores económicos y sociales no cambiarán.

PALABRAS CLAVE: Federación Rusa; política social; situación demográfica; reproducción de la población; tasa de natalidad; número de mujeres en trabajo, factores sociomédicos.

Introduction

Today, the demographic situation in Russia is complicated: there is a natural population decline, which has been outlined since the 90s of the 20th century (Maltseva, 2017). Despite the fact that there was a positive dynamics and population growth by 2013, a change in the political situation in 2014 led to another economic crisis that negatively affected the socio-demographic situation (Potapova, 2015). In this regard, today, as before, the problem of increasing fertility is an urgent social problem that requires drastic measures (Ignatenkov, 2017). The overall indicator characterizing the demographic situation is the birth rate of the population, but the number of women in labor as the main reproducing resource of the country's population is also important (Zyuzina, 2016). In this regard, the study of the number of women in labor in the country and the factors influencing their dynamics is an important area of socio-economic analysis.

1. Theoretical basis

Increasing the number of women in labor in Russia is one of the significant current socio-demographic tasks for the state, the implementation of which will improve the demographic situation and lay the foundation for the formation of a sufficient human resource; this will subsequently allow the formation of a high human capital of the country (Dedkov, 2018). To achieve this goal, it is necessary to identify factors and problem areas that impede the increase in the birth rate in Russia, which can conditionally be divided into social, economic and medical (Zyukin et al., 2016). Therefore, it is important to consider indicators of the development of the country's social and medical infrastructure, as well as basic economic indicators, as factors in the formation of the current demographic situation (Andreev and Andreeva, 2016; Sharma et al., 2019).

2. Methodology

The number of women in labor in Russia as an indicator of the demographic situation should be considered in conjunction with a number of socio-economic indicators characterizing the current situation in the country. During the study, 18 socio-economic indicators were selected and grouped in 3 main areas: social, economic and medical factors (Ovod et al., 2020). The choice of socio-economic indicators as factors affecting the number of women in labor in the Russian Federation was carried out on the basis of logical analysis.

The study period is 2006-2018; 2006 was chosen as the base year, since it precedes the implementation of the large-scale national project “Health”, from which the modernization of the industry began. Cost indicators are shown at a comparable price level in 2018 based on consumer price indices for research purposes.

In the course of the study, a hypothesis was put forward that, as each of the selected indicators has a direct impact on the effective sign, the formed groups of indicators as a whole have a certain effect on the number of women in labor. To confirm the hypothesis, a pair correlation analysis was carried out and the results were interpreted based on the Chaddock scale. Assessment of the overall influence of groups of factors was carried out on the basis of standardization of indicators for their comparability. As a result, a regression model of a standardized type was constructed, based on the values of the beta coefficients of which the nature and degree of influence of the groups of factors on the number of women in labor in the Russian Federation was determined. Based on the obtained model, a forecast was made

of the dynamics of the number of women in labor in Russia for the short term and 4 possible scenarios were generated.

The reliability and complexity of the study is determined using the materials of the statistical digest "Russia in Figures" (Russia in numbers, 2019). The use of statistical methods and correlation and regression analysis as the main tools forms an objective quantitative assessment of the impact of socio-economic indicators on the number of women in labor in Russia.

3. Results

During the study, a system of factors was formed that influenced the number of women in labor in Russia. The proposed system includes economic, social and medical factors (Figure 1).

A correlation analysis of selected factors with an effective sign showed that the closest direct relationship (0.89) is the number of women in labor in the Russian Federation with average per capita incomes. Because the factor of income and the availability of appropriate financial opportunities for its maintenance is crucial when deciding on the birth of a child. This is due to the fact that when a woman decides, she loses her previous level of earnings, and in most cases the amount of the allowance paid is small. Therefore, a qualitative increase in the level of per capita income in the country is one of the aspects to improve the demographic situation.

Also, among social factors, a close correlation between the number of women in labor in the Russian Federation is observed with the value of paid services per capita. This fact is interconnected with factor S1 and is due to the fact that the growth in per capita income of the population allows people to receive medical services on a paid basis, including pediatric ones. The desire to receive medical care in private medical centers is due to a lack of confidence in the budgetary health care system. Therefore, the presence of an appropriate level of per capita income initially determines the possibility of increased consumption of paid medical services and affects the number of women in labor in the Russian Federation. Among social factors, there is an inverse close relationship (-0.77) of the number of women in labor with a share of the population with incomes below the subsistence level, which also lends itself to the logic of socio-economic analysis and indicates the dominant position of the income factor when deciding on the birth of children.

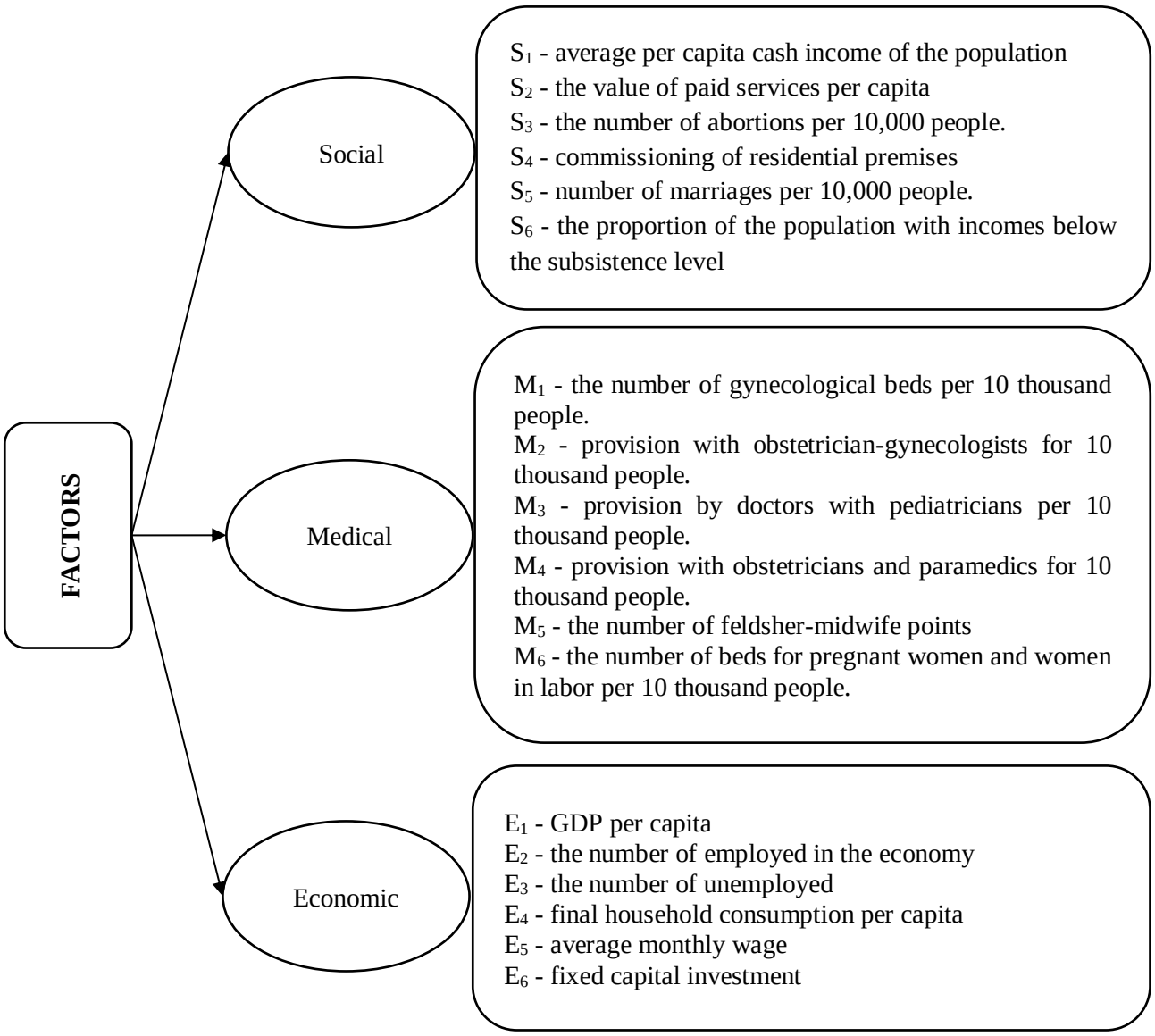

Figure 1. System of factors affecting the number of women in labor in Russia

Compiled by the authors

In addition, an inverse moderate correlation was found (-0.58) in the number of women in labor with the number of abortions per 10 thousand, which indicates that a decrease in the number of abortions contributes to an increase in the number of completed pregnancies, resulting in an increase in the number of women in labor. However, a decrease in the frequency of abortion occurs under the influence of a number of socio-economic factors. The remaining social factors, namely the commissioning of living space and the number of marriages per 10 thousand people, do not have a significant impact on the increase or decrease in the number of women in labor in the country. This is due to the fact that today the housing market in the Russian Federation is quite large; and the fact of introducing

additional areas has practically no effect on childbirth. This is also due to the fact that housing in new buildings is expensive and often inaccessible to certain segments of the population, especially large families, and therefore the purchase of secondary housing is more affordable. As the study showed, the factor of family and marriage also does not significantly affect the number of women in labour in the Russian Federation, which is due to a decrease in the importance of the institution of the family in modern society and also due to the fact that, according to statistics, about a third of women give birth outside the marriage and without a partner, becoming mothers alone (Figure 2).

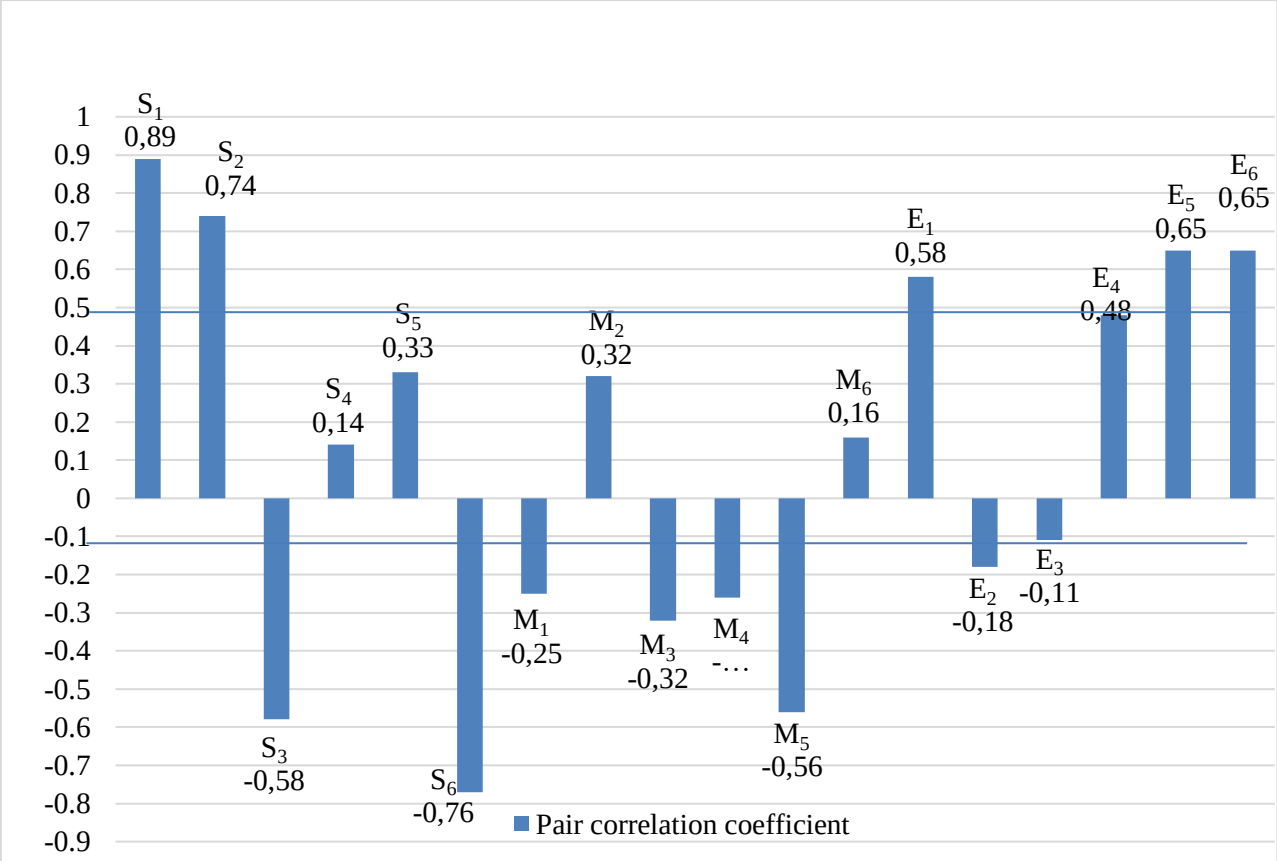

Figure 2. The values of the coefficients of pairwise correlation of the number of women in labor with factors

Calculated by the author based on data from the statistical digest "Russia in numbers" (Russia in numbers, 2019)

A correlation analysis of the influence of medical factors on the number of women in labor in Russia showed the absence of a close and stable relationship between the effective sign and the selected factors. Moderate feedback (-0.56) was identified only with the number

of feldsher-midwife points. The direct nature of the relationship was determined with such a factor as the availability of doctors per 10 thousand people; this is natural, since the need for doctors in the healthcare system is determined on the basis of the population. The increase in the number of women in labor and, accordingly, the number of children born determines the increasing need for doctors. However, the tightness of communication is weak (0.32), which indicates that this factor does not significantly affect the number of women in labor in Russia. Similar trends were identified for the factor of the number of beds for pregnant women and women in labor per 10 thousand people, the relationship of the effective sign with which is very weak (0.16). A weak and inverse correlation in nature was revealed with such factors as the number of gynecological beds, the provision of doctors with pediatricians, obstetricians and paramedics per 10 thousand people; this is explained by modernization processes in healthcare, which results in a reduction in capacity in the industry, recognized as ineffective. At the same time, it must be understood that a further reduction in available capacities can lead to a shortage, as a result of which the availability and quality of medical care will decrease.

Also important for assessing factors affecting the number of women in labor in Russia is the economic component, which in turn determines the development of social and medical factors. The significant influence of economic factors is confirmed by the results of a correlation analysis, which shows that the number of women in labor in Russia has a direct and moderate relationship with the size of GDP per capita, average monthly wages and investments in fixed assets. In turn, the number of people employed in the economy and the number of unemployed has practically no effect on the number of workers in labor in Russia, which is associated with the development of self-employment as a separate phenomenon on the labor market, as a result of which people are between the employed and the unemployed without entering these groups. Consequently, the level of remuneration and the volume of investment in fixed assets among the largest impacts of economic factors on the number of women in labor in the country.

According to the results of the study, the model $y=1{,}5238*F_1+0{,}2981*F_2+1{,}1237*F_3$ was obtained, the adequacy of which is confirmed by the F-criterion, and the degree of description of the effective attribute is 69.9%. As a result, it was found that social and economic factors contribute to an increase in the number of women in labor in the Russian Federation, with social factors increasing by 127.6% and economic factors by 26.7%. In turn,

medical factors have a negative effect on the effective sign, contributing to its reduction by 28.1%, which is due to problems of the domestic health care system. Consequently, the change in the number of women in labor in Russia is most affected by socio-economic factors, the most significant of which are the average per capita income and poverty level in the country.

In accordance with the existing trends, a negative change in the number of women in labor in Russia should be expected in the short term, which will reach 1,448 thousand people by 2021 according to the forecast. It is predicted that the following emerging trends will continue in the short term: stagnation in changes in economic and social factors, increased negative impact of the medical component in accordance with the obtained linear regression model. The operability of the forecasting model can be verified when statistics for 2019 are generated.

At the same time, under the influence of various social, economic, and political factors, it is possible to develop one of the proposed scenarios for changing the number of women in labor in Russia, which were compiled using the standard error tool. Moreover, it is assumed that the deviation of the simulated value in both directions does not exceed two standard errors of the regression equation, which determine the probability at the level of 95%.

In accordance with the optimistic scenario, the number of women in labor in Russia will reach 1,686 thousand people in 2019 and will decrease by 3.9% and amount to 1,448 thousand people by 2021. It is assumed that such a development of events is possible with a change in the current situation and the emergence of a positive influence of social, economic and medical factors determining the number of women in labor in Russia.

We believe that the number of women in labour will increase to 1600 thousand people with a moderately optimistic scenario by 2019; but the reduction in the number of women in labor in the country to 1534 thousand people, which is 4.1%, will happen by 2021 under the influence of socio-economic problems. Such a scenario is possible if social and economic factors have a positive impact on the number of women in labour in Russia, stimulating an improvement in the demographic situation, including due to the growth of population incomes and the emergence of additional social guarantees, and the factors of the medical component will retain the current negative impact, contributing to their reduction (table 1).

Table 1. Scenarios of changes in the number of women in labour in the Russian Federation in 2019-2021

Scenario	Projected number of women in labour, thousand people			Change in 2021 to 2019
	2019	2020	2021	
Simulated value	1513	1507	1448	-4,3
Optimistic	1686	1679	1620	-3,9
Moderately optimistic	1600	1593	1534	-4,1
Conservative	1427	1420	1361	-4,6
Negative	1340	1334	1275	-4,9

Compiled by the authors

According to the conservative development scenario, the number of women in labor in the country will reach 1,427 thousand people by 2019, and will decrease by 4.6% and amount to 1,361 thousand people by 2021. We believe that such a development is possible if the factors of the social component have a positive impact on the increase in the number of women in labor in the country, which is possible due to an increase in the amount of social benefits and other guarantees. At the same time, it is predicted that factors of the economic component will have a negative effect on the number of women in labor, including due to a decrease in real incomes of the population, depreciation of the ruble and other economic problems. Global changes in the work of the health system are also not expected, as a result of which medical factors will retain their negative impact.

The negative scenario implies a reduction in the number of women in labor by almost 5% over 3 years, as a result of which this indicator will amount to 1275 thousand people by 2021 compared to 1340 thousand people in 2019. Such a development of events, in our opinion, is possible in the case of a negative development vector of the influence of all social, economic and medical factors, which is possible in case of further deterioration of the economic situation in the country and the emergence of another economic crisis.

4. Discussions

The reproduction of the Russian population is significantly influenced by the socioeconomic problems that have developed in the country and require solutions (Fedorov, 2014). So, one of the key factors preventing active natural population growth is economic growth, due to the relatively low standard of living of the population and average per capita income. Studies of European values and macro-level indicators of economic growth and income inequality for 46 countries observed from 1981 to 2012 show that economic growth improves the subjective well-being of families and increases their social trust in the state in the long run (Mikucka et al., 2017). The recession of the Russian economy while maintaining high inflation rates leads to a decrease in real incomes of the population, which reduces the financial ability of families to have a baby (Akhmeduev, 2020).

The economic reforms carried out in recent years of the country also negatively affect fertility and the desire to give birth. For example, an increase in retirement may deprive young families of the physical assistance for caring for young children that they receive from grandmothers who will be forced to work until they are 60 years old (Zyukin et al., 2018).

Together with the economic factor, it is worth highlighting the lack of appropriate housing conditions and means for their significant improvement (Kostenko and Ryabova, 2018). The Maternity Capital program began to play a significant role, through which many families were able to improve their living conditions, which became an incentive for having a baby. Despite the positive impact of this program on existing demographic problems, it has not been possible to achieve a steady increase in the birth rate, and the number of women in labor in recent years has tended to decrease (Markov and Alekseeva, 2019).

In addition, the imperfection of social policy is recognized as one of the negative aspects: the social guarantees existing today are only nominal and there is no significant social support for the population (Zyukin et al., 2018). Economic instability, the lack of proper support from the state in conjunction with insecurity in their own forces leads to the fact that the population does not decide on the birth of a child (Chernyavskaya, 2014). Therefore, one of the significant directions for improving the demographic situation should be to increase social guarantees, which will become real support for Russian families (Ovod et al., 2020). One of the principal directions of increasing the number of women in labour is the expansion of their social and economic preferences (Baird, 2004). Russia is a

multinational country, therefore there are problems of social inequality in relation to pregnant women and mothers with young children in various socio-cultural clusters. This problem is relevant and is more substantively considered in the scientific literature of European studies, where the observance of social rights of citizens at a very high level (Binelli et al., 2015).

Preservation of current trends is predicted to lead to aggravation of demographic problems: the number of women in labor will continue to decline, the natural population decline will increase (Tikhomirova and Tikhomirov, 2018). In addition to internal socio-economic problems, foreign policy contradictions that have escalated in recent years have a significant negative impact on the situation, which helps to divert not only the attention of the country's government from internal problems, but also leads to an outflow of financial resources to foreign policy issues to the detriment of the social sphere (Temiryaev, 2019).

Separately, it is worth highlighting the existing problems in the healthcare industry, caused not only by a shortage of necessary resources, but also by the low availability of services provided, including in terms of obstetric care (Bakai, 2017). The modernization and optimization carried out in the industry, as practice has shown, only aggravated the situation as a result of a reduction in capacities, which in the future can lead to a limitation of the increase in the number of women in labor, since the healthcare system will not be able to serve a large number of patients at one time (Alpeeva et al., 2017). In addition, the quality of the services provided, which is not high today, continues to decline, which is unacceptable for obstetric care, since not only the health of the mother and child, but also their life may depend on it (Tikhomirov and Tikhomirova, 2019).

Conclusion

The study showed that the number of women in labour in Russia is most affected by the income factor, which is confirmed by the presence of a direct and close relationship with the size of average per capita incomes and feedback with the poverty level. The identified trend indicates that the level of financial well-being is crucial when deciding on the birth of a child. At the same time, the continuing trend of population depopulation is due to economic instability and a decrease in real incomes of the population. Therefore, it can be noted that

the internal socio-economic situation does not contribute to increasing the birth rate in the country.

An assessment of the group-wide results revealed that the largest positive contribution to the increase in the number of women in labor in Russia was made by social factors (127.6%). The economic component also positively affects the increase in the number of women in labor in the country, and the medical component contributes to their reduction, which, in our opinion, is associated with domestic health problems due to the low quality and accessibility of the services provided. In addition, insufficiently effective work of healthcare in conjunction with environmental problems leads to a decrease in the physical ability of the population to bear children, especially at a more mature age.

Based on the results of forecasting the dynamics of the number of women in labor in the short term, it was determined that the downward trend in the number of women in labor will continue, since the negative impact of medical factors will remain unchanged, and economic and social factors will not change.

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