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Regional variation of fertility and its relation to the socio-economic development of Russian Regions

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Abstract: *The aim of this article is to analyze the regional variation of the total fertility rate (TFR) in Russia in 1995-2019 and to estimate the influence of socio-economic factors on its differences in 2012-2019. To evaluate the regional diversity of fertility, we calculated the coefficient of variation, the range, and the average for the TFR of the total, urban, and rural population. To find the relationship between fertility and socio-economic status, we used the value of the TFR, adjusted TFR, their absolute and relative increases and data from three integral RIA-ratings: the rating of the socio-economic status of regions, the rating of regions by the level of family welfare, and the rating of regions by housing affordability, as well as some other socio-economic indicators. To find this connection, we calculated Spearman's rank correlation. After assessing the dynamics of the coefficient of variation, it was found that regions, with rare temporary exceptions, are statistically homogeneous in terms of fertility (when assessing the indicators of the total and urban population), but for the rural population the differences in the value of the TFR increased significantly in the 2010s, which is partly explained by problems of statistical registration. While in the period from 2012 to 2015 a correlation was found between the dynamics of the TFR and socio-economic variables, with the largest growth of TFR being observed in regions with a high proportion of urban population and a high level of family well-being and socio-economic development, in 2016-2019 there occurred a decline in fertility in almost all regions, without any observed relationship with the determinants we selected.*

Keywords: *fertility, spatial fertility differentials, Russia's regions, socio-economic factors, determinants of fertility.*

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Introduction

The Russian Federation is distinguished by the heterogeneity of its demographic and socio-economic development: earlier demographers identified a “northeast gradient” of mortality (Vallin et al. 2005), and economic geographers identified 4 groups of regions according to the degree of their economic development (Zubarevich 2010). In works examining demographic trends in Russia, their territorial variation is generally neglected.

The relationship between economic status and fertility is a long-standing issue in both Russian and global demography (for example, (Fox, Klüsener, Myrskylä 2019; Campisi et al. 2020)). A comprehensive analysis of this relationship in the regional Russian context was carried out in the works (Zakharov, Ivanova 1996; Zakharov 2014). Kazenin and Raksha (2018) focused on regional differences in birth order. The focus of other studies (Arkhangelsky 2017; Elizarov, Arkhangelsky, Dzhanaeva 2017) was on individual federal districts or groups of regions.

This article aims to analyze regional variation in the total fertility rate (TFR) in Russia and assess the influence of socio-economic factors on the regional differentiation of fertility in Russia in 2012-2019. It is intended to complement the very few studies of regional variation in fertility and identify its socio-economic determinants in the 2010s. Although regional differentiation itself in one form or another is inevitable, growing differences in fertility levels can lead to increased inequality between regions (including in the level of necessary expenditures on education, healthcare, and other socio-economic indicators).

Research on differences in fertility in Russia and abroad

The literature regularly raises questions about what explains differences in fertility levels at different levels of administrative-territorial division, what the determinants of these differences are, and how the differentiation of fertility changes in time and space.

Within the framework of the economic approach, G. Becker believed that high income leads to a decrease in the number of children, since parents begin to focus on quality of children, increasing the costs of having and raising a child (Becker, Lewis 1973). Other researchers attribute this relationship between income and number of children to the increasing opportunity cost of having children for educated, high-income women (Kravdal 1992). However, over time, demographers have become less and less limited to the economic approach; researchers have begun to focus on other factors, such as religiosity (McQuillan 2004; Kazenin, Murakaev 2022) and marriage/partnership status and its characteristics (Myers 1997).

In addition to individual socio-economic and demographic characteristics, the influence of social connections and relationships within the community is often taken into account. One of the most important theoretical frameworks here is the “diffusion” of innovations: changes in fertility levels occur due to the spread of new values and new knowledge about contraceptive methods (Cleland and Wilson 1987; Lois and Arránz Becker 2014). In accordance with these claims, similar changes in fertility were explained in areas with a population of the same ethnicity, religion or language, i.e., with the same cultural characteristics, as part of The Princeton Project on the Decline of Fertility in Europe (Coale, Watlkins 1986).

Studies examining how the type of residence area affects reproductive behavior have found that, in European countries, fertility is higher in rural than in urban areas (Kulu and Washbrook 2014; Beer de and Deerenberg 2007). The decline in urban fertility began earlier and occurred much more rapidly (Sharlin 1986). There are also differences between the city and the

suburbs: fertility in the suburbs is higher because young families choose them as a more suitable environment for raising children, with the possibility of expanding living space for a growing family (Kulu, Boyle, Andersson 2009).

An important factor determining the decision to have a child may be not only the type of area of residence, but also living conditions. For example, in Italy, researchers have found a positive relationship between couples' intentions to have a child and their level of confidence in their housing situation (Vignoli, Rinesi, Mussino 2013). In other European countries, the negative impact of limited housing opportunities on fertility levels has been noted (Mulder and Billari 2010).

At the macro level, researchers look at the impact of a country's cultural, institutional, and economic conditions on fertility. Thus, it was found that, while in historical retrospect, fertility decreased with GDP growth, in recent decades the negative correlation between them has weakened, and in some regions has become positive (Fox, Klüsener, Myrskylä 2019; Myrskylä, Kohler, Billari 2009).

Within the framework of the theory of the second demographic transition, it is argued that value changes, which consist in an increase in the need for self-realization, an increase in the importance of individual autonomy, and a weakening of institutional control by society and the church, lead to a greater variety of life trajectories, to a postponing of births and a greater prevalence of childlessness (Lesthaeghe, Meekers 1987; Lesthaeghe 2014).

Proponents of institutional theory believe that the policies of countries with social democracies (Scandinavian countries, especially) or, on the contrary, with liberal market regimes (for example, the United States), contribute to higher fertility than in countries with more conservative regimes and a traditional division of household labor (countries of Southern Europe) (Esping-Andersen 1999; Neyer, Andersson 2008).

Finally, researchers have noted a U-shaped correlation between fertility and gender equality: increasing women's participation in the labor market leads to lower fertility, but when high equality is achieved, fertility can also increase, although not every developed country is proof of this (McDonald 2000; Mills et al. 2008). According to the results of other studies, the U-shaped relationship between gender equality and fertility persists when focusing on the specifics of intrafamily relationships: the most modern and the most traditional ways of dividing household responsibilities are positively associated with the likelihood of family growth (Torr and Short 2004).

Regional differences in fertility are more often studied at the cross-country level than at the intra-country level, because differences within countries are generally considered to be small (Coleman 2002). Nevertheless, in addition to such determinants of fertility as socio-economic (GDP, unemployment rate) and cultural (the ethnic structure of the population, religiosity) indicators and various indices (for example, the Human Development Index (HDI)), many studies also use a spatial determinant (Beer de, Deerenberg 2007; Campisi et al. 2020)).

There are not many articles dealing with the differentiation of fertility in Russia. An analysis of the dynamics of fertility in the regions of Russia in the late Soviet period was carried out by S.V. Zakharov in collaboration with E. I. Ivanova (1996), who also studied the connection between various socio-economic characteristics of regions and fertility rates from 1999 to 2012 (Zakharov 2014). For the dynamics of regional fertility in 2005-2015, a positive correlation was found with indicators of economic growth, the quality of social infrastructure and housing supply,

while a negative correlation was found with migration growth and environmental risks (Iwasaki, Kumo 2020). However, other works refute the conclusion that indicators of socio-economic development have had a consistently positive impact (Trynov, Kostina, Bannykh 2020). An analysis of the correlation of TFR with socio-economic indicators carried out in the works (Kazenin, Raksha 2018; Kazenin 2021) revealed that the high prevalence of large families in the late 2010s is characteristic of disadvantaged regions of Russia. In addition to individual works on the analysis of fertility in federal districts and groups of regions (Tyndik, Biryukova 2015; Sinitsa 2008; Arkhangelsky 2017; Elizarov, Arkhangelsky, Dzhanaeva 2017), there are also works that look at fertility at the municipal level: for example, A.N. Petrosyan concludes that there is a reduction in the variation in fertility both at the regional and municipal levels due to a drop in fertility in territories with a fundamentally high level (Petrosyan 2021).

Data and Methods

This work is based on several data sources. The calculation of the TFR for the regions of Russia (Tables A2.2-A2.4 of the Appendix) was carried out on the age-specific fertility rates for one-year age groups for 1995-2019, presented in The Russian Fertility and Mortality database (RusFMD) (New Economic School 2022). An assessment of the regional variation of TFR was carried out for 81 constituent entities of the Russian Federation (excluding the city of Sevastopol and the Chechen Republic, the Republics of Crimea and Ingushetia[1]) using indicators of range and coefficient of variation. When assessing the variation in TFR for the rural population, Moscow and St. Petersburg were also excluded from the analysis.

Since the use of TFR, due to its shortcomings, can lead to incorrect interpretation of the levels and trends of the current period of fertility, we also calculated the correlation with the adjusted TFR (Appendix Table A2.5), proposed by J. Bongaarts and G. Feeney, its growths and the accumulated effect of the calendar period (Sobotka, Lutz 2011). The adjusted TFR makes it possible to calculate what would have been the TFR value in the absence of changes in the birth timing of children of different order.

As indicators of socio-economic development for calculating the correlation, we used RIA rating data for 2015 and 2019 as end points in the focus of TFR measurement[2]. In 2020 and 2021, the impact of the COVID-19 pandemic on both socio-economic indicators of regional development and fertility may have been too strong. This impact will be difficult to separate from actual trends, so the time frame of the study is limited to 2019. The use of integral ratings makes it possible to comprehensively assess the socio-economic situation in the region and mitigate the shortcomings of individual statistical indicators (Zherebin, Romanov 2002). Thus, we used data

[1] The Chechen Republic has been excluded from the analysis due to the lack of data on fertility before 2004; data on Ingushetia have been available since 1995, but the quality of these data does not allow their use. The completeness and reliability of data for the other republics of the North Caucasus remain in question, but previous studies have not excluded them from the analysis (for example, (Zakharov 2016)).

[2] Rating of regions by housing affordability - 2020 [Electronic Resource]. https://riarating.ru/infografika/20200630/630173467.html (date referenced: 02.02.2023).
Ranking of regions by family well-being - 2019 [Electronic Resource]. https://riarating.ru/infografika/20190617/630127526.html (date referenced: 02.02.2023).
Rating of socio-economic situation of regions - 2019 [Electronic resource]. https://riarating.ru/infografika/20190604/630126280.html (date referenced: 02.02.2023).

from three RIA ratings: the rating of the socio-economic situation of regions, the rating of regions by level of family well-being, and the rating of regions by housing affordability (Appendix A1).

In addition to rating indicators, as possible explanatory variables we used 2010 population census data on the number of children ever born on average per woman aged 35-39 years, the share of the urban population, and the share of the population with higher education. The choice of the 2010 census as a source was made because in the 2015 microcensus the regional-territorial structure of the surveyed population was somewhat distorted (Andreev, Zakharov 2017), and in the 2020 census, the share of those who did not indicate the level of education in the country as a whole is 17% (and for the urban population aged 30-39 it reaches 23%), which makes it impossible to redistribute unknowns with any confidence. In addition to census data, we took into account the percentage of the population with incomes below the minimum living wage (Rosstat 2020).

To determine the closeness and direction of the correlation between the TFR, its relative and absolute increases (between 2012–2015 during the period of its growth and between 2016–2019 during the period of its decline) and indicators of socio-economic development, we used the Spearman rank correlation coefficient. This coefficient is used to identify the relationship between two non-parametric variables; to calculate it, the serial number of the position of each observation (rank) is used. To test the robustness of the results, Kendall's rank correlation was also assessed. The use of both relative and absolute increases in TFR also allows us to draw more confident conclusions about the relationship between the dynamics of this fertility indicator and selected variables, especially when the coefficients found are borderline statistically significant.

The methodological solutions described above (both in the choice of measures of inequality and the methods for assessing the relationship between variables) are largely determined by the goal of ensuring maximum comparability of the results with previous studies (Zakharov 2014). The choice of ratings as indicators of socio-economic development somewhat limits the possibilities of using regression analysis: in particular, difficulties could arise when eliminating multicollaterality between variables or using a rating of the socio-economic situation of regions, which is only a set of ordinal numbers.

Based on the literature studied, we can formulate the following hypotheses:

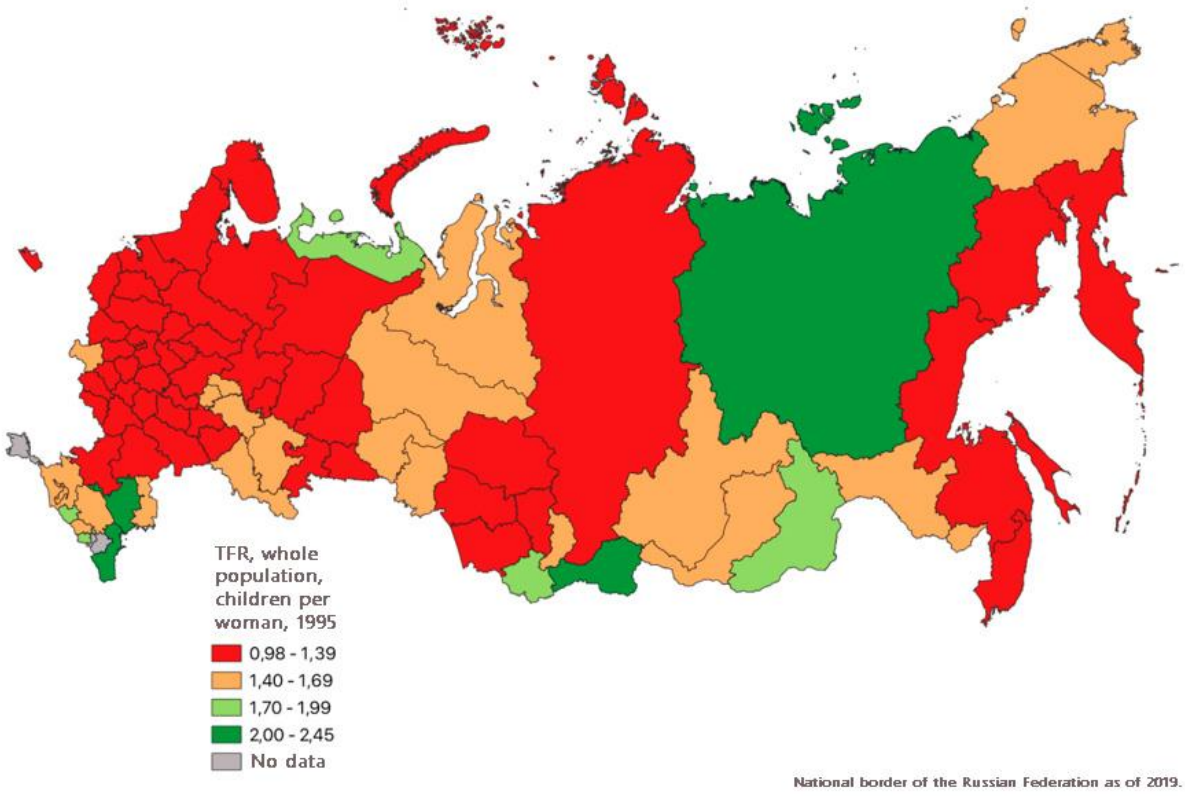
1. since the traditional inverse relationship between the level of fertility and the level of wealth remains (Becker 1960), the dynamics of the total fertility rate in the regions of Russia will negatively correlate with the level of socio-economic development;
2. increases in regional TFR will negatively correlate with the share of the urban population and the share of the population with higher education, since it is educated urban residents who are more likely to espouse the values discussed by theorists of the second demographic transition (Lesthaeghe 2014);
3. in regions with high housing affordability, a greater increase in TFR will be observed, because housing conditions limit the implementation of reproductive intentions to a lesser extent (Mulder, Billari 2010).

Results

Regional variation in the total fertility rate

Figures 1 and 2 show maps that allow one to estimate the distribution of regions by TFR level. During the time interval under consideration, there is a noticeable convergence of the regions of the Far Eastern Federal District in terms of TFR levels, while the area of low fertility in the Central Federal District and the South of Russia remains. While in 1995 the TFR of most regions did not exceed 1.4 children per woman, now the mode is slightly higher - from 1.4 to 1.69.

Figure 1. TFR in 81 regions of Russia (without Crimea, Sevastopol, Chechnya, Ingushetia), 1995

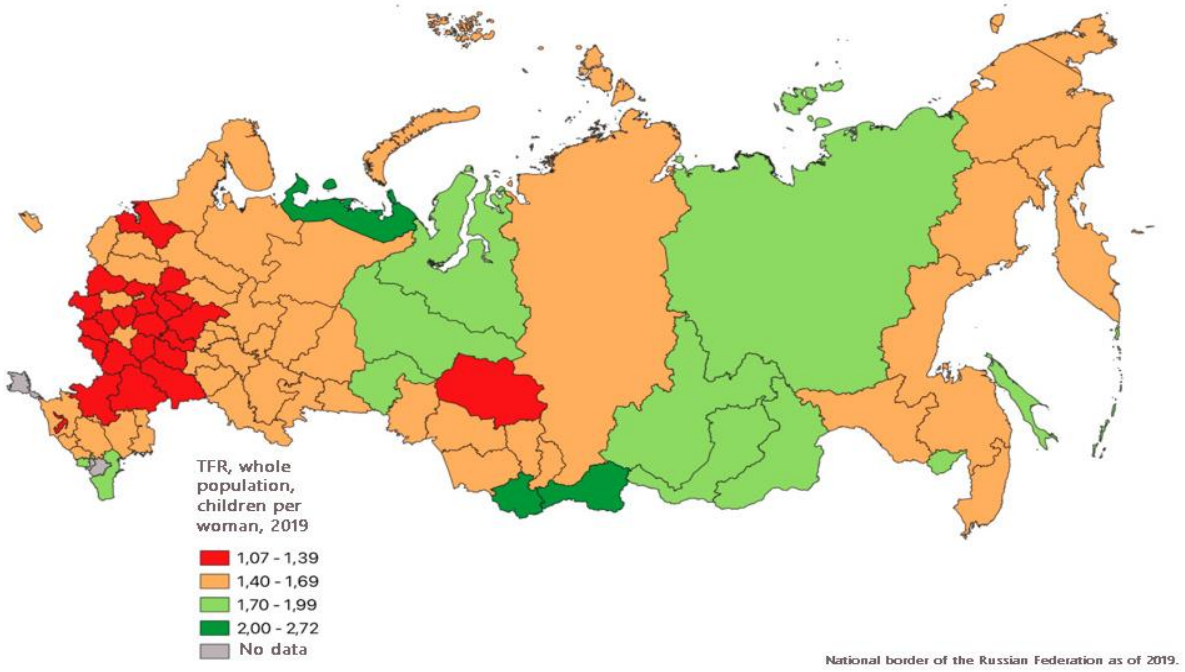


Source: Author's calculations based on RosBRiS data.

The combination of the dynamics of the coefficient of variation and the TFR can be divided into several conditional periods:

1. 1995-1999: decrease in TFR and decrease in variation;
2. 2000-2005: increase in TFR and absence of unidirectional trends of variation;
3. 2006-2011: increase in TFR and increase in variation;
4. 2012-2015: increase in TFR and decrease in variation;
5. 2016-2019: decrease in TFR and stabilization of variation.

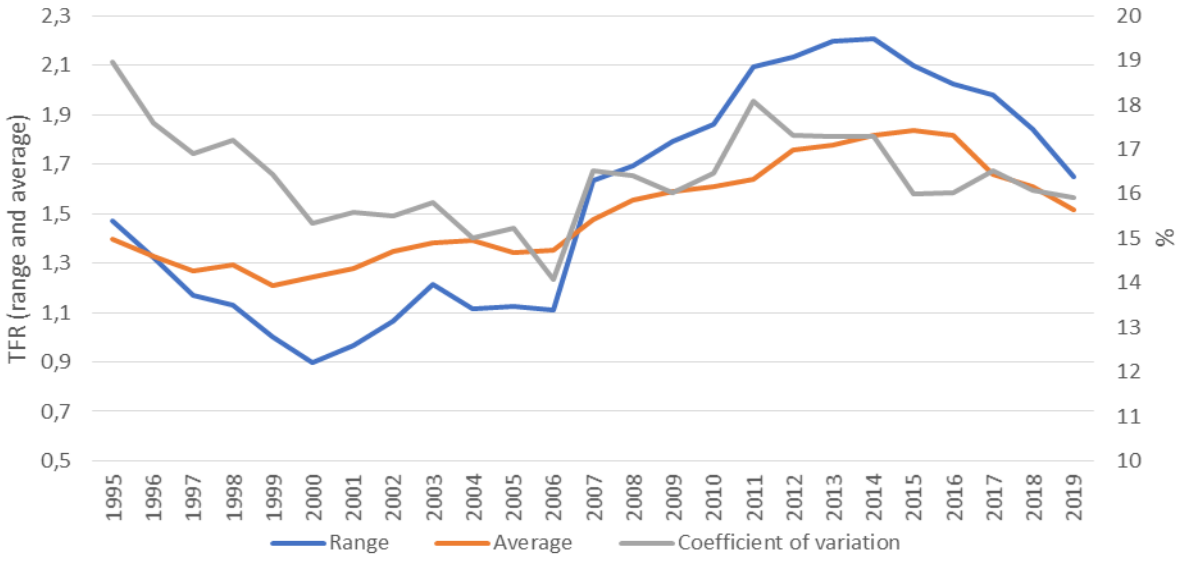
Figure 2. TFR in 81 regions of Russia (without Crimea, Sevastopol, Chechnya, Ingushetia), 2019



Source: Author's calculations based on RosBRiS data.

1. 1995-1999: until 1999, during the ongoing decline in TFR in Russia, the regional variation of this indicator showed a downward trend, with the exception of 1998 (Figure 3). While in 1995 the TFR value of 1.1-1.3 children per woman was typical for 51 regions, by 2000 it was already so for 71 regions (Table 1). A fertility level of more than 2 children per woman in 1995 was observed in only 4 of the reviewed regions, and by 2000 there were no such regions left at all. In national republics and autonomous okrugs, traditionally characterized by high fertility, the TFR was about 1.7–1.8 children per woman by 2000.

Figure 3. Range, average and coefficient of variation of TFR for 81 regions of Russia (without Crimea, Sevastopol, Chechnya, Ingushetia), 1995–2019



Source: Author's calculations based on RosBRiS data.

2. 2000-2005: against the background of a compensatory increase in TFR, the variation did not exceed the level of 17%, which indicates the absolute homogeneity of the population, with relatively stable values at the level of 15-16%. In this case, the range of TFR takes values close to 1.0-1.2 children per woman. By the end of the period, the totality of regions with a TFR of less than 1.3 children per woman decreases significantly, but the number of regions with indicators above 1.8 children per woman increases slightly.

Table 1. Distribution of regions of the Russian Federation by TFR value

TFR	1995	2000	2005	2010	2015	2017	2019
<1.2	9	40	16	1	0	0	2
1.2-1.29	24	19	23	2	1	2	10
1.3-1.39	18	12	22	11	1	7	15
1.4-1.49	14	3	8	17	1	10	18
1.5-1.59	4	2	4	15	11	17	16
1.6-1.69	3	0	3	13	12	16	6
1.7-1.79	3	2	1	9	13	14	6
1.8-1.89	0	3	1	7	13	6	4
1.9-1.99	2	0	1	3	10	3	1
2-2.09	2	0	1	0	12	3	0
2.1-2.19	0	0	1	1	3	0	2
2.2-2.29	0	0	0	0	1	0	0
>2.3	2	0	0	2	3	3	1

Source: Author's calculations based on RosBRiS data.

3. 2006-2011: until 2011, the population continues to be absolutely homogeneous (the coefficient of variation reaches a maximum of 18.1%), although the range of TFR exceeds 1.5 children per woman. In 2010, only 14 regions remained in the group with ultra-low fertility, mainly the regions of the Central and Volga Federal Districts, while the Nenets Autonomous Okrug joined the Republics of Tyva and Altai with a TFR above 2 children per woman. Most regions now have a TFR in the range of 1.4–1.6 children per woman, while the number of regions with a TFR from 1.7 to 2 has increased quite significantly (from 4 in 2005 to 19 in 2010).

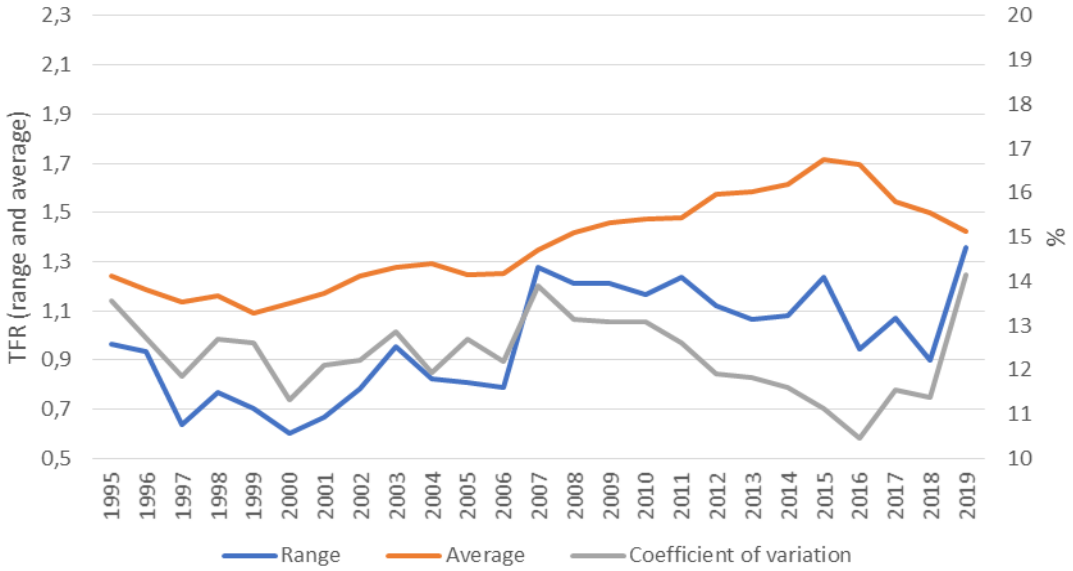
4. 2012-2015: despite the continued growth of the TFR, the coefficient of variation begins to decline and by 2015 it again falls below 17%. Although the range between the minimum and maximum values of the TFR in the regions continues to grow and amounts to slightly more than 2 births per woman, the decrease in the coefficient of variation indicates that most regions are converging in terms of the TFR value.

5. 2016-2019: the coefficient of variation does not show significant changes, remaining at the level of 16%, although the TFR begins to fall and the range is no longer so broad. This happens because the fertility in regions with a relatively high level falls and approaches the average, while the distribution mode moves from 1.7 and 1.8 in 2015 to 1.4 in 2019. While at the beginning of the period there are almost no regions left with fertility below 1.4 children per woman (only Mordovia and the Leningrad region), in 2019 fertility below 1.4 is already observed in 27 regions, most of them from the Central Federal District. The distribution mode changes from the interval 1.7-1.9 births per woman to 1.4-1.6. The group of regions with the highest fertility is significantly shrinking (in 2015, the TFR remains above 2 in only 6 regions out of 19: the Republics of Tyva, Altai, Buryatia, the Nenets and Chukotka Autonomous Okrugs, and the Sakhalin Region).

The coefficient of variation of TFR for the urban population did not exceed 17% during the entire observation period, with the highest range values being 1.2-1.4 births (Figure 4).

Particularly low variation was observed at the highest TFRs for the urban population in the mid-2010s. In 2019, the range and coefficient of variation increased sharply (due to the continued growth of the TFR in the Republic of Tyva and its decrease in the Tomsk region - the leader and anti-leader of the indicator).

Figure 4. Range, average and coefficient of variation of TFR for 81 regions of Russia (without Crimea, Sevastopol, Chechnya, Ingushetia), urban population, 1995-2019



Source: Author's calculations based on RosBRiS data.

While before 2005 the vast majority of regions had a TFR for the urban population less than 1.3 (even less than 1.1), by the beginning of the 2010s the situation had changed somewhat: now half of the regions had a TFR from 1.4 to 1.6 (with ultra-low fertility remaining in a third of the regions) (Table 2). By 2015, after the active growth of the TFR, the distribution mode was in the range of 1.7-1.9, in 19 regions the TFR was above 2. However, by 2019, after a long decline in the TFR, the distribution practically coincided with 2010.

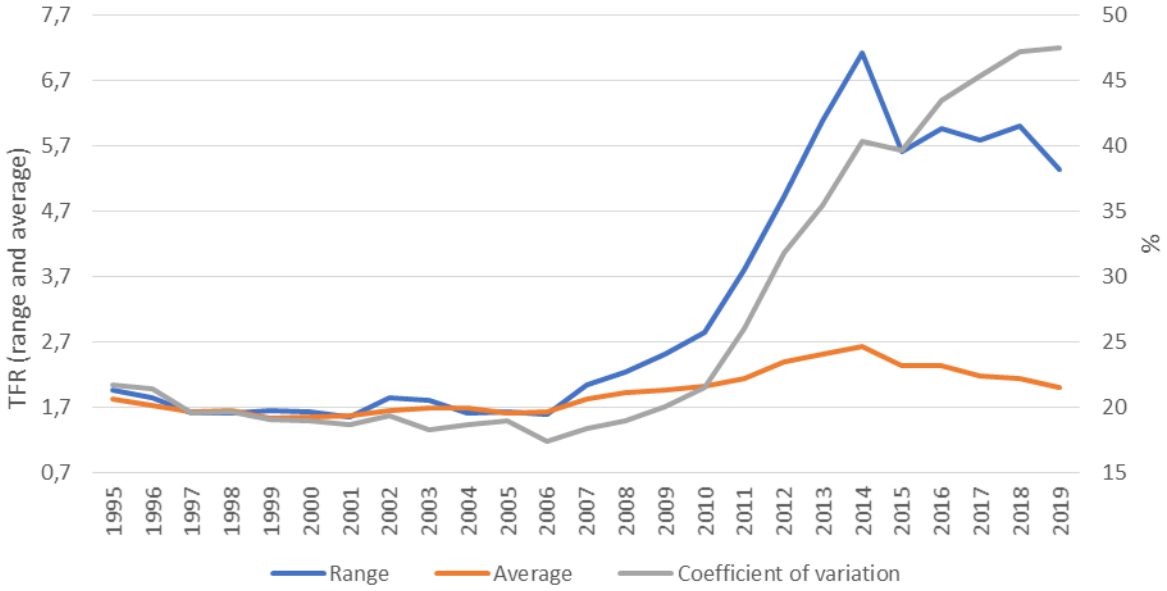
Table 2. Distribution of regions of the Russian Federation by TFR value, urban population

TFR	1995	2000	2005	2010	2015	2017	2019
<1.2	46	61	38	1	0	0	2
1.2-1.29	16	11	23	11	1	2	10
1.3-1.39	8	5	7	18	1	7	15
1.4-1.49	3	2	4	21	1	10	18
1.5-1.59	4	2	7	15	11	17	16
1.6-1.69	2	0	0	7	12	16	5
1.7-1.79	1	0	1	3	13	14	6
1.8-1.89	0	0	1	3	12	6	5
1.9-1.99	1	0	0	0	11	3	1
2-2.09	0	0	0	1	12	3	0
2.1-2.19	0	0	0	0	3	0	2
2.2-2.29	0	0	0	0	1	0	0
>2.3	0	0	0	1	3	3	1

Source: Author's calculations based on RosBRiS data.

The variation in fertility of the rural population is slightly different. While before the mid-2000s the regions were relatively homogeneous and the coefficient of variation was about 19%, but the difference between the maximum and minimum values did not exceed 2 births, after 2007 and most actively at the beginning of the 2010s the diversity of fertility in rural areas begins to increase (Figure 5). In 2013, the coefficient of variation exceeded 33%, which indicates the heterogeneity of the population. In the second half of the 2010s, the TFR ranged from 5 to 7 births per woman. This happened due to a fairly sharp increase in the TFR for the rural population in the 2010s in a number of regions: the Republics of Tyva, Komi and Altai, the Nenets and Chukotka Autonomous Okrugs, with a noticeable increase also in the Arkhangelsk and Kirov regions (Figure 6).

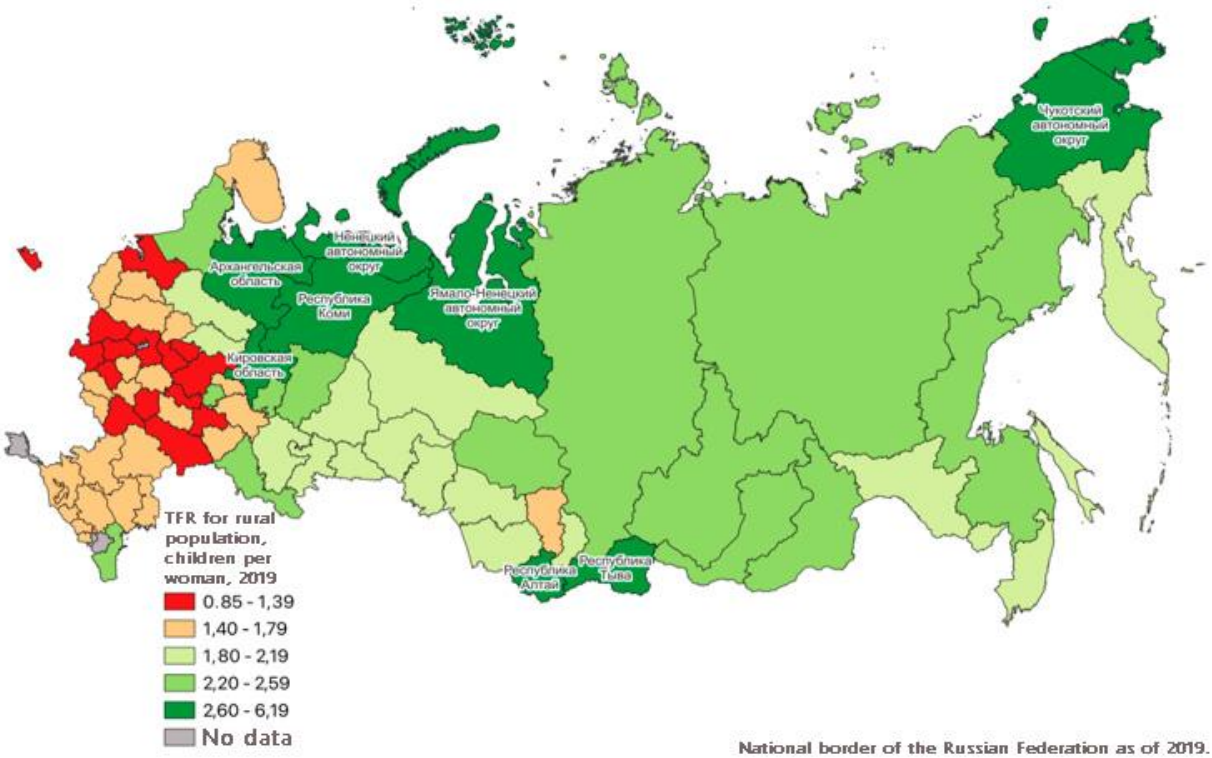
Figure 5. Range, average and coefficient of variation of TFR for 82 regions of Russia (without Crimea, Sevastopol, Chechnya), rural population, 1995-2019



Source: Author's calculations based on RosBRiS data.

But while in 2015, after growth of varying intensity in more than 40% of the regions, the TFR for the rural population was above 2.5, in 2017 this share decreased to 25%, and in 2019 to 17.5%, with the TFR now below 1.5 in about a third of the regions (Table 3). The decrease in fertility in 2016-2019 also affected almost entirely the group with the highest rates, the exceptions being the Kirov and Arkhangelsk regions.

Figure 6. TFR in 79 regions of Russia for the rural population (without Crimea, Sevastopol, Chechnya, Ingushetia, Moscow, St. Petersburg), 2019



Source: Author's calculations based on RosBRiS data.

Table 3. Distribution of regions of the Russian Federation by TFR value, rural population

TFR	1995	2000	2005	2010	2015	2017	2019
<1.4	4	23	19	3	3	6	15
1.4-1.49	3	15	11	3	2	7	12
1.5-1.59	15	17	8	2	4	10	5
1.6-1.69	11	8	17	12	5	8	8
1.7-1.79	15	1	12	6	10	5	0
1.8-1.89	7	8	3	4	9	1	2
1.9-1.99	5	0	1	11	1	3	8
2-2.09	5	1	2	9	4	4	6
2.1-2.19	4	3	2	4	3	7	1
2.2-2.29	2	0	1	11	2	3	5
2.3-2.39	0	0	0	2	3	5	3
2.4-2.49	1	2	0	6	8	4	1
2.5-2.59	1	1	2	2	5	4	5
2.6-2.69	2	0	1	1	4	0	0
2.7-2.79	0	0	0	0	1	3	1
2.8-2.89	0	0	0	1	4	1	0
>2.9	4	0	0	2	11	8	7

Source: Author's calculations based on RosBRiS data.

Determinants of fertility change in the regions

Table 4 presents Spearman's rank correlation coefficients, characterizing the relationship between fertility in the region and relative and absolute growth for 2012-2015 and 2016-2019 and some socio-economic indicators. Kendall's correlation coefficients gave similar results and allow us to judge the stability of the estimates (Table A2.1 in the Appendix).

Table 4. Results of correlation analysis

Determinant	2015		2019		Absolute growth of TFR				Relative growth of TFR			
					2012-2015		2016-2019		2012-2015		2016-2019	
	TFR	Adj. TFR	TFR	Adj. TFR	TFR	Adj. TFR	TFR	Adj. TFR	TFR	Adj. TFR	TFR	Adj. TFR
Socio-economic situation of the region	-0.1	-0.08	-0.14	-0.24*	0.31*	0.15	0.13	0.05	0.32*	0.18	0.09	-0.02
Relative growth	-0.06	-0.08	-0.14	-0.21	0.03	0.13	-0.01	0.04	0.06	0.16	-0.02	-0.01
Family well-being	0.2	0.29*	0.30*	0.14	0.27*	0.27*	0.02	-0.17	0.25*	0.26*	0.13	-0.1
Relative growth	-0.02	0.05	0.05	0.15	0.21	0.24*	-0.22*	0.1	0.23*	0.25*	-0.17	0.16
Affordable housing	0.15	0.29*	0.08	-0.02	0.17	0.21	-0.07	-0.12	0.16	0.2	-0.03	-0.11
Average number of children ever born to women aged 35-39	0.73*	0.57*	0.74*	0.74*	-0.34*	-0.02	-0.1	0.11	-0.45*	-0.08	0.18	0.29*
Share of urban population	-0.12	0.01	-0.1	-0.21	0.40*	0.16	0.05	-0.17	0.40*	0.17	0.01	-0.2
Share of population with higher education	-0.30*	-0.26*	-0.14	-0.33*	0.13	-0.11	0.47*	0.13	0.17	-0.09	0.40*	0.01
Share of population with monetary income below minimum living wage	0.21	0.22	0.25*	0.27*	-0.29*	-0.14	-0.12	0.02	-0.32*	-0.18	-0.001	0.11

Source: Author's calculations.

*Note: * – Significance at the 5% level.*

The correlation between absolute and relative growth in 2012-2015 with the position in the rating of the region's socio-economic development and family well-being turned out to be statistically significant. This positive, although weak, correlation means that the greatest increase in TFR over this period was characteristic of the most economically developed and socially prosperous regions. The relationship between the increase in TFR and the share of the urban population in the region is somewhat stronger and also positive. The identified connection with socio-economic status is also confirmed by the weak negative correlation of TFR increases with the share of the population with incomes below the minimum living wage.

But the share of the population with higher education, although classically negatively correlated with the TFR indicator itself, is insignificantly correlated with growth dynamics.

The average number of children per woman in the age group 35-39 years according to the 2010 census was taken as the basic level of fertility, and it is negatively correlated with the increase in 2012-2015. This means that in regions with above-average fertility there was limited opportunity to further increase the TFR. And in regions that had not reached a high fertility by 2010, the TFR in 2012-2015 increased more.

Verification of the link between changes in the socio-economic situation in the region and the region's position in the ranking of family well-being with changes in fertility showed that a relative increase in the cash balance after deducting minimum living wages from the sum of two average salaries for the region between 2012 and 2015 has a weak positive correlation with the increase in TFR.

The link between changes in adjusted TFR in 2012-2015 with the indicators we selected is somewhat different: we found no statistical significance other than a weak positive correlation with the position in the ranking of family well-being and changes in positions in it.

In 2016-2019 the situation changes somewhat: the region's position in the ranking of socio-economic development and family well-being no longer correlates in any way with changes in fertility. However, a positive relationship appears between the share of the population with higher education and absolute and relative increases in TFR. Since in 2016-2019 this increase was positive only in a couple of regions, it can be said that the high percentage of the educated population partly held back a sharper decline in fertility.

In contrast to the previous time period, the relationship between the increase in family well-being and the increase in TFR is now negative, although it continues to be weak: in those regions where the financial situation of families improved more, there was a larger drop in TFR.

At the end point of the intervals we are considering, there remains a strong positive relationship between the base level of fertility and the level of fertility in 2019, and there is also a weak positive relationship with the ranking of family well-being and the share of the population with incomes below the minimum living wage.

Table 5. Results of correlation analysis for the tempo effect

	Tempo effect 2012-2015	Tempo effect 2016-2019
Family well-being, relative growth	00.09	0.01
Socio-economic situation of the region, relative growth	-0.14	0.30*

Source: Author's calculations.

*Note: * – Significance at the 5% level.*

If we turn to the adjusted TFR, we should note that its dynamics in 2016-2019 are not significantly associated with any of the variables we examined, except for the average number of children ever born for women aged 35-39 years. This means that regions with fertility higher than the Russian average have experienced less of a decline than the "outsiders." But in general, the results of correlation analysis allow us to conclude that the intensity of births fell during this period, regardless of the level of economic development of the region and its dynamics.

Of the calculated accumulated effects of the calendar period (reflecting changes in the birth calendar) for the periods of time under study, only the result for 2016-2019 positively correlates with changes in the socio-economic situation of regions: an improvement in positions in the ranking of the socio-economic situation of regions was accompanied by a less dramatic postponement of births (Table 5).

Discussion and conclusions

This work has analyzed indicators of regional differentiation of fertility from 1995 to 2019. It has revealed that in the second half of the 2000s there was a slight increase in regional diversity of fertility, followed by a decrease in the 2010s, and by the end of the decade its variation was relatively stable at 16 %, which corresponds to a statistically absolutely homogeneous population.

The fertility of the urban population is generally more homogeneous: during the time interval under consideration, the coefficient of variation did not rise above 17%. This means that the increase in regional fertility diversity after 2007 across the entire population was driven solely by an increase in rural fertility heterogeneity. However, regions that experienced a strong increase in the fertility of the rural population in the 2010s, in 2016-2019 saw the start of its decline, with the range between the maximum and minimum TFR values showing a downward trend.

Let us dwell in more detail on the reasons for the increase in TFR of the rural population in some regions of the country. The 2010 census registered a significant decrease in the number of young people in general and especially in rural areas, which was associated with undercounting of migration (Mkrtchyan 2012). Since the regions we are interested in have a migration outflow, the young population decreased in them as well. The change since 2011 in the rules of migration registration to include data on persons registered at the residence place for a period of 9 months or more has led to an even greater reduction in the population (and again, the most active in migration are young people, also known as reproductive age groups), and therefore, a decrease in the denominator when calculating the TFR (Mkrtchyan 2020). As the denominator decreases, the coefficient itself increases. In addition, in the Republics of Tyva and Altai, the share of the rural population is much higher than in Russia as a whole, and the limits of its reduction have not yet been reached.

The rules for determining the place of birth of a child should not be ignored either. Until 2022, the Federal Law on Civil Status Acts established that the place of birth of a child is determined by the actual location of the event (which is very likely to be a city), and in the case of a birth in a rural area, only at the request of the parent(s) could their place of residence be indicated[3]. Such registration features may explain the very low TFR rates in the Moscow oblast and Leningrad oblast near the capital.

Regional fertility diversity in Russia shares some similarities with Canada: in both countries, regions with high fertility rates are distinguished primarily by their ethnicity (Brauner-Otto 2016). For the period 2012-2019, we are unable to confirm studies suggesting increased

[3] Federal Law number 143-FZ "Civil Status Acts" of 15 November 1997 (latest version). https://www.consultant.ru/document/cons_doc_LAW_16758/

spatial heterogeneity in fertility during economic recessions in some European countries (Burillo et al. 2020), as the coefficient of variation does not show any clear trends after 2014.

Our first hypothesis, about the negative correlation of the dynamics of the total fertility rate in the regions of Russia with the level of socio-economic development, was not confirmed: the largest increase in TFR in 2012-2015 was observed in regions with a high proportion of urban population, high levels of family well-being and socio-economic development. These results are similar to the identified trends in the growth of TFR in 1999-2006, when its growth was also positively related to socio-economic variables (Zakharov 2014). But now this is not a compensatory increase in the TFR, but rather a "catch-up" one, as evidenced by the negative correlation of increases with the base level of fertility. However, when adjusting the TFR for the period effect, the relationship between growth and all socioeconomic indicators, except family well-being, weakens and becomes insignificant. Such a pro-cyclical relationship, when an economic recession is accompanied by a decrease in fertility (caused primarily by the postponement of births), and a period of economic prosperity, on the contrary, by its growth (often compensatory), has been identified in other works, for example, on data from Spain (Puig-Barrachina et al. 2020).

The declining birth rate in 2016-2019 in almost all Russian regions is quite weakly explained by socio-economic variables: the only connection that remains is with changes in the well-being of families, although it also changes sign and becomes weaker (and when adjusted, the TFR disappears completely), as well as a positive correlation with the share of the population with higher education. That is, the intensity of births fell during this period, regardless of the level of economic development of the region and its dynamics.

Although the dynamics of TFR in 2012–2015 may indicate the above-mentioned procyclical (unidirectional) relationship with the growth of the region's well-being, also identified in developed countries (Sobotka, Skirbekk, Philipov 2011), the other period we have looked at reduces the degree of confidence in such conclusions. However, even absent and weak negative associations fit into the pan-European trend of a weakening or reversal of the "traditional" negative association between fertility and economic development at the subnational level (Fox et al. 2019). Thus, using data for 18 countries, it was revealed that the relationship between economic growth and TFR has a U-shape (Dominiak, Lechman, Okonowicz 2015). Our results may also support other evidence that the positive relationship between economic performance and fertility is fragile (Day 2012). It is also worth noting that a possible explanation for the lack of stable correlations between fertility and socio-economic indicators is that, within regions, different social groups react differently to changes in economic conditions, which is confirmed by studies using data from other countries (Kreyenfeld, Andersson 2014).

The results obtained are also consistent with previous studies emphasizing the limits of the effectiveness of measures to stimulate fertility: even regions of Russia that actively responded to the introduction of the maternity capital at the end of the 2000s are now showing a trend towards a decrease in fertility (Freika, Zakharov 2014).

The rank correlation coefficients we obtained indicate the persistence of a weak negative correlation between the share of the population with higher education and fertility. This is consistent with the provisions of the theory of the second demographic transition (Lesthaeghe 2014) and is supported by the results of studies on microdata (Zhuravleva, Gavrilova 2017), which partially confirms our second hypothesis. In 2016-2019 the share of the population with higher education and a change in family wealth were differently associated with changes in

TFR. This may be explained by the fact that: a) the family well-being rating is calculated based on data on average wages, the value of which may be influenced by existing extremes; and b) higher education in Russia is not always directly related to higher income, i.e., a region with a high share of the population with higher education is not always a region with a high average salary. Nevertheless, the positive correlation we identified between increases in TFR in 2016-2019 and the share of the population with higher education is an interesting empirical fact that requires a detailed explanation using data at the micro level.

The third hypothesis, about the positive correlation between housing affordability and the level of TFR, was not confirmed: the correlation coefficients turned out to be low and insignificant. The absence of any significant correlation or its weak values between fertility or its growth and the rating of regions in terms of housing affordability can also be explained by the shortcomings of the methodology for calculating the rating (it is calculated based on prices only on the secondary housing market, while the volume of supply, scale of housing construction, and mortgage conditions are not taken into account at all). In addition, significant intra-regional contrasts are possible in housing construction and housing affordability indicators, so the issue requires additional study using a different methodology. To verify the results, an attempt was made to find correlations between fertility rates and data on the commissioning of residential buildings per 1000 people, but no significant links were found. Nevertheless, these results raise the question to what extent the housing conditions of Russians influence fertility, if we consider dependencies at the individual rather than regional level, which seems to be an important direction for future research.

The choice of specific indicators that can serve as explanatory variables is always a controversial issue, often limited by the supply of available data; in our study we chose RIA ratings as indicators for a comprehensive description of the socio-economic situation. On the one hand, this solution simplifies the interpretation of results and smooths out the shortcomings of conventional indicators. On the other hand, we are limited by the range of availability of ratings and problems of changing the calculation methodology, so the set of fertility theories that can be tested using these indicators is quite small.

Since the correlations of the classic and adjusted TFR with the variables characterizing the level of socio-economic development are different, this made it possible to verify that the dynamics of the adjusted TFR (i.e., changes not caused by calendar shifts) are, unlike those of the usual indicator, poorly explained by any socio-economic conditions. Therefore, to understand the actual trends in the growth or decline in the intensity of childbearing, it is necessary to look for other determinants (including cultural, value-based ones)).

Among the main limitations of the study, it is worth noting the consideration of the problem only from a macro perspective (researchers previously found in Russian data discrepancies in the influence of economic conditions on fertility when changing focus from the macro to the micro level (Kohler, Kohler 2002)) and the narrow explanatory capabilities of the chosen method (correlation analysis), Because of this, we cannot draw conclusions about cause-and-effect relationships between variables. Therefore, the horizons for the development of the topic lie at the intersection of these two restrictions: using the multilevel regression method, it is possible to control variables containing both individual characteristics and characteristics of a region or country.

Based on the results of our work, we can affirm that by the beginning of the 2020s the majority of Russian regions had arrived at (or were striving for) a TFR of about 1.5 children per

woman, while the differences between them and in the dynamics of the TFR are less and less explained by socio-economic variables. The strong differentiation of fertility revealed in rural areas also raises important methodological questions for the statistical observation of demographic processes and emphasizes the critical importance of understanding the changing rules of birth registration and statistical population registration for an adequate interpretation of trends in fertility rates at the regional level.

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Appendix

Table A1. Methodology for calculating the ratings used

1. The rating of the socio-economic situation of the regions is based on the indicators collected by the Ministry of Finance, the Federal Treasury and the Federal State Statistics Service after the aggregation of rating points. Indicators are divided into 4 groups: Indicators of the scale of the economy (volumes of production, number of employed in the economy, income of the consolidated budget, turnover of retail trade), efficiency of the economy (per capita production of goods and services, investment in fixed capital per capita, share of profitable enterprises, level of tax collection), budget (income of the consolidated budget per capita, share of income in the budget, ratio of public debt to tax and non-tax revenues of the consolidated budget, ratio of tax and non-tax revenues of the consolidated budget to expenditures), the social sphere (the ratio of population income to the cost of a fixed set of consumer goods and services, unemployment rate, life expectancy at birth, infant mortality rate, mortality of the working age population, percentage of the population with incomes below the poverty line). The use of the results of this rating will make it possible to assess the relationship of the level of economic development of the region with the dynamics of fertility at the macro level.
2. The rating of regions in terms of family well-being is based on the results of calculating the potential cash balance after deducting the minimum expenses from the sum of two average salaries for the region (living wages for 2 people of working age and 2 children), adjusted for the value of the region's consumer basket. This rating is used as an alternative to the socio-economic situation of the region.
3. The methodology for constructing a rating of regions by housing affordability is a calculation of the minimum number of years a family (2 adults and 1 child) will need to purchase a typical apartment with an area of 60 square meters on the secondary market (the average wage and average deposit per inhabitant for the region were used as income, and as expenditures, the corresponding minimum living wage.).

Table A2.1. Results of correlation analysis (Kendall rank correlation)

Determinant	2015		2019		Absolute growth of TFR				Relative growth of TFR			
					in 2012-2015		in 2016-2019		in 2012-2015		in 2016-2019	
	TFR	Adjusted TFR	TFR	Adjusted TFR	TFR	Adjusted TFR	TFR	Adjusted TFR	TFR	Adjusted TFR	TFR	Adjusted TFR
Socio-economic situation of the region	-0.07	-0.06	-0.09	-0.16*	0.22*	0.11	0.11	0.04	0.22*	0.12	0.07	-0.01
Socio-economic situation of the region, relative growth	-0.04	-0.06	-0.08	-0.14	0.01	0.09	0.01	0.03	0.04	0.11	0.02	-0.01
Family well-being	0.15	0.20*	0.21*	0.11	0.19*	0.19*	0.01	-0.11	0.17*	0.17*	0.10	-0.05
Family well-being, relative growth	-0.02	0.03	0.05	0.12	0.14	0.18*	-0.17*	0.07	0.15*	0.19*	-0.13	0.13
Housing affordability	0.11	0.20*	0.06	-0.01	0.11	0.16*	-0.05	-0.10	0.10	0.15	-0.02	-0.08
Average number of children ever born to women aged 35-39	0.55*	0.42*	0.55*	0.56*	-0.24*	-0.01	-0.07	0.09	-0.32*	-0.06	0.13	0.22*
Share of urban population	-0.09	0.00	-0.06	-0.14	0.29*	0.11	0.04	-0.12	0.29*	0.11	0.00	-0.13
Share of population with higher education	-0.21*	-0.18*	-0.09	-0.23*	0.08	-0.08	0.34*	0.10	0.11	-0.07	0.29*	0.01
Share of population with monetary income below minimum living wage	0.15	0.16*	0.18*	0.20*	-0.20*	-0.10	-0.08	0.02	-0.22*	-0.13	0.00	0.08

Source: Author's calculations.

*Note: * - 5% significance.*

Table A2.2. TFR in Russian regions, total population, children per woman, 1995–2019

Region	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Altai region	1.22	1.18	1.16	1.20	1.18	1.23	1.25	1.31	1.36	1.35	1.30	1.27
Amur region	1.43	1.38	1.30	1.35	1.27	1.29	1.36	1.42	1.51	1.50	1.46	1.44
Arhangelsk region	1.32	1.28	1.24	1.28	1.17	1.21	1.29	1.37	1.40	1.41	1.36	1.37
Astrakhan region	1.45	1.37	1.36	1.33	1.30	1.34	1.38	1.51	1.55	1.56	1.53	1.55
Belgorod region	1.39	1.30	1.19	1.17	1.10	1.15	1.15	1.19	1.24	1.22	1.18	1.24
Bryansk region	1.44	1.34	1.22	1.23	1.15	1.15	1.14	1.22	1.27	1.27	1.22	1.22
Vladimir region	1.18	1.15	1.10	1.12	1.07	1.12	1.17	1.22	1.30	1.29	1.25	1.27
Volgograd region	1.32	1.23	1.16	1.17	1.09	1.13	1.15	1.22	1.23	1.25	1.21	1.26
Vologda Region	1.34	1.28	1.25	1.23	1.16	1.25	1.31	1.38	1.40	1.41	1.36	1.39
Voronezh region	1.30	1.24	1.15	1.15	1.09	1.14	1.14	1.16	1.19	1.20	1.13	1.11
Jewish Autonomous Region	1.51	1.40	1.32	1.32	1.22	1.23	1.36	1.38	1.46	1.45	1.39	1.47
Transbaikal region	1.76	1.60	1.54	1.62	1.50	1.50	1.57	1.61	1.64	1.65	1.59	1.60
Ivanovo region	1.10	1.06	1.01	1.06	0.99	1.04	1.11	1.17	1.22	1.23	1.18	1.21
Irkutsk region	1.48	1.45	1.37	1.38	1.30	1.36	1.41	1.45	1.50	1.50	1.44	1.48
Kabardino-Balkarian Republic	1.66	1.55	1.47	1.43	1.29	1.26	1.19	1.19	1.20	1.24	1.20	1.25
Kaliningrad region	1.23	1.14	1.08	1.14	1.04	1.10	1.10	1.20	1.24	1.20	1.16	1.20
Kaluga region	1.23	1.12	1.11	1.13	1.05	1.09	1.16	1.20	1.23	1.28	1.21	1.23
Kamchatka Krai	1.24	1.23	1.22	1.26	1.21	1.19	1.22	1.37	1.37	1.42	1.41	1.42
Karachay-Cherkess Republic	1.73	1.61	1.52	1.51	1.36	1.39	1.41	1.43	1.45	1.43	1.39	1.30
Kemerovo region	1.30	1.22	1.19	1.21	1.15	1.20	1.24	1.29	1.32	1.32	1.33	1.38
Kirov region	1.28	1.20	1.19	1.23	1.16	1.19	1.18	1.27	1.26	1.32	1.27	1.32
Kostroma region	1.25	1.24	1.20	1.22	1.19	1.21	1.27	1.34	1.33	1.38	1.33	1.37
Krasnodar region	1.49	1.38	1.29	1.27	1.20	1.26	1.30	1.35	1.39	1.41	1.33	1.34
Krasnoyarsk region	1.36	1.29	1.22	1.26	1.17	1.20	1.25	1.32	1.35	1.35	1.30	1.32
Kurgan region	1.37	1.31	1.25	1.37	1.35	1.38	1.34	1.44	1.40	1.46	1.40	1.43
Kursk region	1.33	1.31	1.23	1.24	1.18	1.22	1.21	1.23	1.26	1.28	1.21	1.26
Leningrad region	1.13	1.06	1.06	1.04	0.97	1.00	1.05	1.11	1.12	1.11	1.02	1.01
Lipetsk region	1.29	1.21	1.16	1.17	1.09	1.16	1.17	1.25	1.24	1.27	1.27	1.28
Magadan Region	1.21	1.22	1.24	1.29	1.21	1.25	1.28	1.37	1.40	1.43	1.36	1.32
Moscow	1.06	1.03	0.98	0.95	0.92	0.98	0.98	1.03	1.07	1.10	1.06	1.05
Moscow region	1.06	1.03	0.98	1.01	0.97	1.04	1.10	1.14	1.20	1.21	1.17	1.16
Murmansk region	1.17	1.18	1.10	1.13	1.06	1.14	1.19	1.27	1.27	1.30	1.25	1.26
Nenets Autonomous Okrug	1.95	1.76	1.77	1.87	1.68	1.76	1.94	1.98	2.11	1.81	1.81	1.71
Nizhny Novgorod Region	1.23	1.17	1.14	1.16	1.09	1.12	1.13	1.14	1.25	1.24	1.20	1.21
Novgorod region	1.25	1.18	1.15	1.22	1.10	1.12	1.20	1.29	1.31	1.32	1.28	1.33
Novosibirsk region	1.22	1.17	1.15	1.12	1.07	1.12	1.19	1.27	1.32	1.34	1.30	1.28
Omsk region	1.42	1.36	1.25	1.24	1.09	1.12	1.11	1.23	1.34	1.31	1.27	1.28
Orenburg region	1.49	1.38	1.33	1.38	1.25	1.32	1.33	1.42	1.41	1.42	1.35	1.41
Oryol Region	1.33	1.26	1.15	1.16	1.09	1.15	1.16	1.22	1.24	1.27	1.20	1.26
Penza region	1.27	1.19	1.14	1.15	1.09	1.11	1.10	1.15	1.20	1.20	1.15	1.17
Perm region	1.32	1.31	1.27	1.34	1.27	1.30	1.35	1.44	1.45	1.44	1.37	1.39
Primorsky Krai	1.31	1.20	1.14	1.13	1.08	1.13	1.22	1.29	1.33	1.33	1.31	1.30
Pskov region	1.23	1.22	1.19	1.18	1.10	1.15	1.24	1.30	1.35	1.34	1.28	1.30
Republic of Adygea	1.55	1.49	1.42	1.38	1.22	1.27	1.31	1.39	1.40	1.39	1.36	1.38
Altai Republic	1.92	1.79	1.76	1.89	1.74	1.82	1.87	1.97	2.04	2.09	2.04	1.96
Republic of Bashkortostan	1.59	1.57	1.51	1.53	1.41	1.41	1.44	1.52	1.51	1.49	1.42	1.43
The Republic of Buryatia	1.61	1.57	1.48	1.50	1.46	1.48	1.47	1.60	1.63	1.63	1.63	1.69
The Republic of Dagestan	2.41	2.19	2.09	2.05	1.87	1.82	1.78	1.85	1.81	1.76	1.70	1.65
Republic of Kalmykia-Khalmg Tangch	2.03	1.82	1.77	1.75	1.62	1.54	1.57	1.70	1.76	1.74	1.64	1.62
Republic of Karelia	1.24	1.19	1.15	1.18	1.12	1.18	1.25	1.33	1.33	1.35	1.30	1.32
Komi Republic	1.32	1.30	1.24	1.30	1.18	1.22	1.27	1.37	1.41	1.41	1.36	1.37
Mari El Republic	1.43	1.35	1.32	1.29	1.28	1.30	1.30	1.38	1.39	1.40	1.34	1.34
The Republic of Mordovia	1.32	1.22	1.16	1.16	1.09	1.12	1.11	1.12	1.16	1.19	1.14	1.13
The Republic of Sakha (Yakutia)	2.01	1.88	1.81	1.80	1.70	1.77	1.77	1.84	1.86	1.90	1.73	1.72
Republic of North Ossetia	1.77	1.61	1.55	1.55	1.41	1.38	1.38	1.46	1.47	1.44	1.43	1.49
Republic of Tatarstan	1.47	1.43	1.38	1.37	1.29	1.29	1.30	1.36	1.36	1.35	1.28	1.27
Tyva Republic	2.46	2.24	1.91	2.02	1.85	1.83	1.85	2.10	2.29	2.21	2.15	2.12
The Republic of Khakassia	1.43	1.40	1.28	1.34	1.25	1.32	1.28	1.39	1.44	1.44	1.38	1.43
Rostov region	1.33	1.26	1.18	1.15	1.05	1.11	1.12	1.17	1.20	1.22	1.17	1.20
Ryazan Oblast	1.23	1.19	1.11	1.15	1.09	1.08	1.12	1.17	1.24	1.24	1.22	1.21
Samara Region	1.21	1.11	1.06	1.07	1.02	1.06	1.08	1.21	1.26	1.28	1.22	1.25

Region	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Saint Petersburg	0.99	0.92	0.93	0.92	0.86	0.93	0.97	1.06	1.13	1.14	1.08	1.07
Saratov region	1.30	1.19	1.14	1.15	1.10	1.12	1.11	1.15	1.18	1.21	1.16	1.18
Sakhalin region	1.24	1.24	1.16	1.23	1.13	1.21	1.24	1.31	1.39	1.45	1.43	1.40
Sverdlovsk region	1.23	1.18	1.14	1.17	1.09	1.12	1.19	1.27	1.31	1.34	1.30	1.34
Smolensk region	1.25	1.18	1.09	1.08	0.99	1.02	1.09	1.15	1.20	1.19	1.14	1.15
Stavropol region	1.53	1.39	1.34	1.32	1.22	1.24	1.21	1.26	1.29	1.28	1.23	1.23
Tambov Region	1.36	1.29	1.20	1.21	1.15	1.22	1.18	1.22	1.26	1.26	1.21	1.16
Tver region	1.22	1.18	1.16	1.20	1.13	1.15	1.20	1.30	1.35	1.37	1.31	1.33
Tomsk region	1.22	1.20	1.17	1.23	1.16	1.19	1.18	1.23	1.22	1.27	1.23	1.28
Tula region	1.19	1.11	1.07	1.09	1.00	1.04	1.08	1.09	1.15	1.13	1.10	1.10
Tyumen region	1.41	1.35	1.32	1.37	1.28	1.30	1.38	1.47	1.50	1.53	1.49	1.50
Udmurt republic	1.32	1.26	1.30	1.36	1.32	1.36	1.38	1.46	1.46	1.47	1.38	1.39
Ulyanovsk region	1.31	1.23	1.13	1.17	1.14	1.17	1.16	1.23	1.24	1.23	1.17	1.17
Khabarovsk region	1.27	1.16	1.12	1.17	1.04	1.08	1.18	1.24	1.32	1.38	1.33	1.36
Khanty-Mansiysk Autonomous Okrug	1.45	1.39	1.34	1.38	1.29	1.34	1.43	1.54	1.57	1.57	1.51	1.51
Chelyabinsk region	1.29	1.23	1.19	1.23	1.15	1.19	1.23	1.31	1.33	1.34	1.30	1.33
Chuvash Republic	1.41	1.37	1.30	1.34	1.22	1.24	1.20	1.30	1.32	1.38	1.32	1.34
Chukotka Autonomous Okrug	1.49	1.59	1.48	1.65	1.40	1.58	1.78	1.70	1.78	1.99	1.91	1.78
Yamalo-Nenets Autonomous Okrug	1.66	1.54	1.49	1.51	1.44	1.38	1.51	1.55	1.66	1.65	1.57	1.50
Yaroslavl region	1.15	1.09	1.06	1.08	1.00	1.05	1.15	1.19	1.24	1.29	1.25	1.28

Region	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Altai region	1,43	1,58	1,60	1,62	1,65	1,81	1,83	1,84	1,81	1,78	1,64	1,57	1,46
Amur region	1,54	1,59	1,64	1,69	1,70	1,83	1,84	1,85	1,84	1,82	1,71	1,65	1,53
Arhangelsk region	1,50	1,53	1,59	1,63	1,63	1,76	1,80	1,83	1,85	1,83	1,68	1,58	1,49
Astrakhan region	1,67	1,74	1,74	1,75	1,78	1,93	1,91	1,97	1,97	1,94	1,73	1,71	1,67
Belgorod region	1,34	1,42	1,41	1,39	1,43	1,52	1,53	1,54	1,56	1,55	1,39	1,36	1,29
Bryansk region	1,36	1,45	1,47	1,42	1,46	1,56	1,53	1,56	1,65	1,61	1,43	1,43	1,32
Vladimir region	1,35	1,43	1,44	1,46	1,50	1,62	1,59	1,64	1,73	1,71	1,52	1,49	1,35
Volgograd region	1,37	1,44	1,44	1,45	1,44	1,54	1,53	1,57	1,59	1,57	1,44	1,39	1,29
Vologda Region	1,47	1,52	1,58	1,60	1,68	1,84	1,85	1,86	1,92	1,90	1,70	1,62	1,53
Voronezh region	1.19	1.29	1.35	1.36	1.36	1.45	1.44	1.47	1.52	1.48	1.36	1.34	1.27
Jewish Autonomous Region	1.59	1.72	1.64	1.66	1.79	1.84	1.86	1.95	2.02	1.99	1.81	1.85	1.73
Transbaikal region	1.72	1.84	1.86	1.87	1.87	2.00	2.01	2.08	2.05	1.98	1.87	1.82	1.74
Ivanovo region	1.33	1.39	1.43	1.39	1.41	1.51	1.55	1.57	1.63	1.60	1.46	1.40	1.27
Irkutsk region	1.67	1.81	1.85	1.82	1.86	1.97	1.97	1.96	2.01	1.99	1.86	1.82	1.72
Kabardino-Balkarian Republic	1.54	1.61	1.61	1.66	1.70	1.83	1.80	1.83	1.75	1.72	1.61	1.61	1.51
Kaliningrad region	1.40	1.45	1.48	1.46	1.52	1.63	1.64	1.70	1.74	1.73	1.57	1.51	1.39
Kaluga region	1.34	1.39	1.39	1.47	1.49	1.62	1.64	1.69	1.84	1.78	1.64	1.60	1.43
Kamchatka Krai	1.46	1.52	1.56	1.51	1.61	1.72	1.77	1.85	1.89	1.89	1.78	1.64	1.64
Karachay-Cherkess Republic	1.55	1.60	1.54	1.51	1.54	1.63	1.67	1.65	1.54	1.52	1.43	1.43	1.48
Kemerovo region	1.48	1.59	1.65	1.61	1.59	1.76	1.78	1.78	1.72	1.71	1.54	1.49	1.40
Kirov region	1.45	1.55	1.57	1.59	1.64	1.81	1.87	1.88	1.91	1.94	1.70	1.61	1.49
Kostroma region	1.46	1.55	1.63	1.65	1.71	1.83	1.85	1.87	1.89	1.88	1.70	1.61	1.54
Krasnodar region	1.45	1.55	1.57	1.57	1.58	1.70	1.72	1.80	1.84	1.83	1.71	1.67	1.62
Krasnoyarsk region	1.42	1.53	1.59	1.61	1.61	1.76	1.77	1.81	1.84	1.81	1.67	1.61	1.51
Kurgan region	1.59	1.72	1.77	1.79	1.82	2.03	2.11	2.10	2.12	2.03	1.88	1.78	1.64
Kursk region	1.41	1.50	1.51	1.54	1.61	1.70	1.67	1.70	1.72	1.64	1.46	1.44	1.34
Leningrad region	1.06	1.10	1.16	1.16	1.15	1.22	1.23	1.28	1.29	1.32	1.21	1.12	1.07
Lipetsk region	1.36	1.43	1.44	1.47	1.47	1.63	1.60	1.66	1.70	1.69	1.54	1.49	1.39
Magadan Region	1.35	1.35	1.52	1.43	1.48	1.65	1.69	1.66	1.66	1.60	1.60	1.50	1.42
Moscow	1.10	1.15	1.21	1.25	1.25	1.32	1.33	1.34	1.40	1.46	1.38	1.41	1.50
Moscow region	1.19	1.29	1.34	1.37	1.38	1.49	1.52	1.60	1.67	1.73	1.61	1.53	1.37
Murmansk region	1.32	1.39	1.41	1.48	1.49	1.57	1.62	1.65	1.71	1.65	1.56	1.52	1.44
Nenets Autonomous Okrug	1.88	2.02	2.05	2.11	2.01	2.23	2.31	2.42	2.58	2.77	2.35	2.24	2.17
Nizhny Novgorod Region	1.30	1.38	1.41	1.42	1.44	1.55	1.56	1.59	1.67	1.65	1.50	1.46	1.35
Novgorod region	1.45	1.44	1.51	1.54	1.56	1.70	1.70	1.75	1.77	1.78	1.61	1.56	1.44
Novosibirsk region	1.39	1.52	1.57	1.59	1.59	1.71	1.75	1.76	1.82	1.80	1.66	1.63	1.55
Omsk region	1.43	1.51	1.55	1.60	1.66	1.85	1.86	1.95	1.91	1.81	1.61	1.58	1.48
Orenburg region	1.58	1.66	1.74	1.79	1.80	1.95	2.00	2.03	2.01	1.94	1.73	1.70	1.58
Oryol Region	1.34	1.42	1.44	1.49	1.43	1.54	1.53	1.55	1.60	1.59	1.42	1.38	1.27

Region	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Penza region	1.30	1.36	1.37	1.37	1.36	1.48	1.48	1.53	1.55	1.50	1.36	1.35	1.26
Perm region	1.52	1.63	1.69	1.77	1.78	1.91	1.93	1.98	2.02	1.98	1.75	1.67	1.56
Primorsky Krai	1.40	1.42	1.49	1.49	1.53	1.65	1.68	1.73	1.76	1.73	1.60	1.58	1.49
Pskov region	1.40	1.45	1.50	1.51	1.54	1.66	1.68	1.69	1.74	1.80	1.57	1.57	1.47
Republic of Adygea	1.57	1.68	1.65	1.70	1.66	1.70	1.68	1.73	1.72	1.68	1.52	1.46	1.37
Altai Republic	2.34	2.55	2.46	2.48	2.84	2.91	2.81	2.88	2.68	2.63	2.36	2.34	2.11
Republic of Bashkortostan	1.63	1.71	1.73	1.77	1.74	1.86	1.89	1.95	1.94	1.86	1.70	1.65	1.51
The Republic of Buryatia	1.83	1.94	1.99	1.99	2.03	2.14	2.20	2.26	2.28	2.24	2.06	2.04	1.89
The Republic of Dagestan	1.81	1.92	1.91	1.92	1.98	2.03	2.01	2.08	2.02	1.98	1.91	1.86	1.80
Republic of Kalmykia-Khalmg Tangch	1.74	1.84	1.80	1.88	1.81	1.89	1.88	1.85	1.83	1.71	1.54	1.60	1.53
Republic of Karelia	1.41	1.50	1.56	1.58	1.60	1.71	1.65	1.74	1.76	1.76	1.56	1.52	1.42
Komi Republic	1.48	1.54	1.60	1.62	1.70	1.88	1.96	2.01	2.00	1.97	1.78	1.63	1.57
Mari El Republic	1.47	1.53	1.58	1.59	1.66	1.83	1.93	1.98	1.99	1.98	1.75	1.63	1.52
The Republic of Mordovia	1.18	1.26	1.25	1.24	1.25	1.32	1.37	1.37	1.36	1.40	1.26	1.25	1.17
The Republic of Sakha (Yakutia)	1.91	1.90	1.97	2.00	2.06	2.17	2.17	2.25	2.19	2.09	1.93	1.85	1.82
Republic of North Ossetia	1.70	1.77	1.78	1.83	1.86	1.95	1.98	2.01	1.93	1.89	1.75	1.83	1.75
Republic of Tatarstan	1.38	1.48	1.54	1.60	1.65	1.80	1.83	1.84	1.86	1.85	1.65	1.62	1.54
Tyva Republic	2.69	2.80	2.96	3.03	3.25	3.35	3.42	3.49	3.39	3.34	3.19	2.97	2.72
The Republic of Khakassia	1.64	1.76	1.79	1.80	1.83	2.00	2.01	2.01	1.99	1.97	1.78	1.71	1.59
Rostov region	1.29	1.36	1.36	1.38	1.39	1.51	1.52	1.60	1.63	1.59	1.46	1.42	1.35
Ryazan Oblast	1.33	1.41	1.40	1.43	1.44	1.54	1.55	1.59	1.64	1.70	1.51	1.45	1.34
Samara Region	1.32	1.41	1.41	1.44	1.44	1.54	1.59	1.65	1.71	1.71	1.53	1.51	1.41
Saint Petersburg	1.14	1.23	1.33	1.38	1.38	1.48	1.48	1.52	1.59	1.63	1.50	1.46	1.39
Saratov region	1.32	1.38	1.39	1.39	1.39	1.50	1.53	1.57	1.60	1.55	1.39	1.36	1.28
Sakhalin region	1.48	1.56	1.56	1.56	1.56	1.71	1.81	1.96	2.02	2.15	2.03	1.94	1.95
Sverdlovsk region	1.44	1.55	1.62	1.67	1.70	1.83	1.87	1.92	1.94	1.91	1.76	1.70	1.62
Smolensk region	1.23	1.30	1.38	1.38	1.40	1.43	1.48	1.53	1.52	1.51	1.37	1.28	1.21
Stavropol region	1.38	1.47	1.44	1.44	1.43	1.52	1.55	1.62	1.64	1.68	1.54	1.51	1.42
Tambov Region	1.25	1.29	1.30	1.34	1.33	1.42	1.42	1.49	1.51	1.50	1.38	1.33	1.30
Tver region	1.42	1.48	1.53	1.52	1.54	1.65	1.64	1.66	1.69	1.71	1.56	1.47	1.40
Tomsk region	1.39	1.48	1.51	1.49	1.48	1.55	1.59	1.59	1.60	1.58	1.46	1.39	1.30
Tula region	1.15	1.23	1.30	1.31	1.32	1.43	1.42	1.47	1.57	1.55	1.40	1.35	1.26
Tyumen region	1.61	1.70	1.76	1.81	1.83	1.99	2.00	2.07	2.07	2.01	1.88	1.85	1.76
Udmurt republic	1.57	1.64	1.71	1.78	1.83	1.98	1.92	1.96	2.01	1.96	1.72	1.63	1.50
Ulyanovsk region	1.24	1.36	1.38	1.41	1.45	1.57	1.61	1.67	1.71	1.70	1.52	1.50	1.42
Khabarovsk region	1.44	1.51	1.56	1.56	1.57	1.70	1.74	1.79	1.85	1.78	1.64	1.60	1.59
Khanty-Mansiysk Autonomous Okrug	1.61	1.68	1.72	1.81	1.82	2.01	2.05	2.09	2.07	2.02	1.88	1.87	1.76
Chelyabinsk region	1.46	1.58	1.61	1.65	1.69	1.81	1.80	1.85	1.84	1.81	1.61	1.57	1.48
Chuvash Republic	1.50	1.51	1.63	1.65	1.66	1.83	1.85	1.88	1.91	1.87	1.65	1.59	1.47
Chukotka Autonomous Okrug	1.83	1.75	1.67	1.89	1.81	1.96	1.90	2.04	2.10	2.11	2.08	2.03	1.68
Yamalo-Nenets Autonomous Okrug	1.61	1.65	1.74	1.78	1.81	2.02	2.09	2.19	2.19	2.08	1.95	1.90	1.82
Yaroslavl region	1.34	1.40	1.47	1.49	1.48	1.60	1.63	1.64	1.69	1.71	1.53	1.46	1.37

Source: Author's calculations based on RosBRiS data.

Table A2.3. TFR in Russian regions, urban population, children per woman, 1995-2019

Region	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Altai region	1.01	0.99	0.96	1.00	0.99	1.04	1.06	1.12	1.16	1.18	1.15	1.13
Amur region	1.29	1.24	1.17	1.20	1.10	1.14	1.20	1.27	1.33	1.32	1.32	1.26
Arhangelsk region	1.21	1.19	1.14	1.18	1.07	1.10	1.20	1.27	1.30	1.30	1.26	1.24
Astrakhan region	1.28	1.23	1.23	1.19	1.17	1.25	1.29	1.42	1.47	1.49	1.47	1.47
Belgorod region	1.24	1.17	1.08	1.04	0.99	1.05	1.05	1.11	1.15	1.13	1.09	1.15
Bryansk region	1.29	1.22	1.10	1.12	1.04	1.05	1.08	1.16	1.20	1.21	1.18	1.17
Vladimir region	1.13	1.10	1.06	1.07	1.02	1.08	1.14	1.19	1.26	1.25	1.23	1.21
Volgograd region	1.17	1.10	1.04	1.05	0.97	1.02	1.05	1.12	1.13	1.15	1.12	1.14
Vologda Region	1.20	1.15	1.13	1.12	1.07	1.17	1.24	1.26	1.30	1.29	1.23	1.28
Voronezh region	1.17	1.12	1.04	1.05	1.00	1.07	1.07	1.10	1.13	1.15	1.09	1.09
Jewish Autonomous Region	1.26	1.15	1.15	1.16	1.08	1.11	1.29	1.30	1.39	1.38	1.29	1.38
Transbaikal region	1.53	1.42	1.35	1.41	1.32	1.35	1.43	1.52	1.51	1.54	1.52	1.52
Ivanovo region	1.05	1.02	0.97	1.01	0.94	0.99	1.08	1.13	1.18	1.20	1.15	1.18
Irkutsk region	1.36	1.33	1.26	1.27	1.18	1.26	1.31	1.36	1.39	1.41	1.34	1.37
Kabardino-Balkarian Republic	1.32	1.22	1.15	1.14	1.05	1.06	0.97	0.99	1.01	1.06	1.06	1.09
Kaliningrad region	1.14	1.05	0.97	1.04	0.97	1.03	1.02	1.11	1.17	1.12	1.09	1.10
Kaluga region	1.15	1.04	1.03	1.06	0.98	1.04	1.09	1.15	1.18	1.20	1.16	1.18
Kamchatka Krai	1.18	1.18	1.16	1.19	1.15	1.19	1.21	1.38	1.35	1.41	1.38	1.41
Karachay-Cherkess Republic	1.37	1.36	1.26	1.33	1.22	1.28	1.29	1.32	1.34	1.28	1.27	1.15
Kemerovo region	1.25	1.18	1.14	1.16	1.09	1.16	1.18	1.24	1.27	1.28	1.29	1.34
Kirov region	1.16	1.09	1.07	1.11	1.04	1.08	1.09	1.17	1.16	1.21	1.18	1.21
Kostroma region	1.14	1.15	1.13	1.15	1.10	1.13	1.21	1.28	1.27	1.30	1.32	1.30
Krasnodar region	1.36	1.26	1.19	1.15	1.10	1.15	1.19	1.22	1.26	1.32	1.26	1.27
Krasnoyarsk region	1.23	1.15	1.09	1.12	1.05	1.07	1.14	1.22	1.24	1.23	1.19	1.21
Kurgan region	1.17	1.12	1.05	1.13	1.11	1.19	1.19	1.30	1.30	1.33	1.26	1.26
Kursk region	1.16	1.17	1.11	1.13	1.08	1.14	1.13	1.17	1.19	1.22	1.20	1.23
Leningrad region	1.14	1.05	1.03	1.04	0.95	1.01	1.04	1.10	1.11	1.11	1.02	1.00
Lipetsk region	1.17	1.10	1.09	1.08	1.00	1.08	1.06	1.17	1.13	1.18	1.18	1.18
Magadan Region	1.12	1.15	1.19	1.26	1.20	1.23	1.26	1.36	1.39	1.41	1.34	1.31
Moscow	1.06	1.03	0.98	0.95	0.92	0.98	0.98	1.03	1.07	1.10	1.06	1.05
Moscow region	1.04	1.01	0.97	1.00	0.97	1.04	1.11	1.15	1.21	1.22	1.17	1.17
Murmansk region	1.16	1.16	1.08	1.12	1.05	1.14	1.17	1.26	1.25	1.29	1.23	1.23
Nenets Autonomous Okrug	1.57	1.28	1.38	1.50	1.25	1.39	1.64	1.60	1.77	1.55	1.44	1.34
Nizhny Novgorod Region	1.15	1.12	1.09	1.11	1.04	1.07	1.08	1.10	1.19	1.20	1.16	1.16
Novgorod region	1.14	1.12	1.08	1.13	1.03	1.07	1.15	1.26	1.26	1.25	1.20	1.25
Novosibirsk region	1.09	1.04	1.02	0.98	0.95	1.00	1.07	1.14	1.19	1.23	1.19	1.17
Omsk region	1.19	1.14	1.06	1.06	0.94	0.97	0.98	1.09	1.19	1.16	1.13	1.12
Orenburg region	1.25	1.20	1.14	1.19	1.15	1.15	1.16	1.24	1.24	1.25	1.18	1.23
Oryol Region	1.17	1.12	1.03	1.03	0.98	1.06	1.07	1.13	1.14	1.19	1.11	1.14
Penza region	1.12	1.07	1.03	1.05	0.99	1.00	0.99	1.05	1.10	1.10	1.07	1.09
Perm region	1.18	1.17	1.14	1.20	1.13	1.16	1.24	1.32	1.34	1.33	1.26	1.26
Primorsky Krai	1.20	1.11	1.05	1.04	0.99	1.05	1.13	1.19	1.23	1.25	1.21	1.20
Pskov region	1.13	1.14	1.13	1.14	1.07	1.11	1.19	1.25	1.30	1.24	1.17	1.18
Republic of Adygea	1.36	1.26	1.16	1.15	1.06	1.10	1.17	1.23	1.24	1.22	1.17	1.27
Altai Republic	1.45	1.42	1.35	1.43	1.33	1.34	1.41	1.50	1.64	1.61	1.78	1.65
Republic of Bashkortostan	1.32	1.29	1.25	1.30	1.20	1.21	1.24	1.34	1.33	1.37	1.28	1.28
The Republic of Buryatia	1.43	1.37	1.32	1.29	1.25	1.26	1.31	1.43	1.49	1.51	1.50	1.49
The Republic of Dagestan	1.77	1.62	1.50	1.50	1.39	1.40	1.39	1.47	1.39	1.37	1.31	1.29
Republic of Kalmykia-Khalmg Tangch	1.61	1.55	1.52	1.54	1.53	1.50	1.38	1.51	1.54	1.52	1.52	1.59
Republic of Karelia	1.17	1.12	1.09	1.13	1.04	1.08	1.15	1.22	1.23	1.26	1.19	1.22
Komi Republic	1.21	1.22	1.16	1.22	1.09	1.15	1.20	1.30	1.34	1.35	1.28	1.24
Mari El Republic	1.21	1.10	1.12	1.10	1.10	1.13	1.13	1.19	1.28	1.29	1.27	1.28
The Republic of Mordovia	1.16	1.08	1.05	1.04	0.99	1.00	1.03	1.05	1.10	1.16	1.10	1.11
The Republic of Sakha (Yakutia)	1.58	1.46	1.44	1.48	1.41	1.47	1.53	1.60	1.65	1.71	1.58	1.61

Region	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Republic of North Ossetia	1.68	1.51	1.44	1.43	1.35	1.33	1.34	1.45	1.44	1.49	1.51	1.59
Republic of Tatarstan	1.29	1.25	1.22	1.22	1.15	1.15	1.18	1.27	1.26	1.25	1.20	1.19
Tyva Republic	1.95	1.86	1.56	1.68	1.56	1.53	1.58	1.77	1.96	1.89	1.83	1.79
The Republic of Khakassia	1.27	1.24	1.13	1.15	1.09	1.16	1.16	1.25	1.30	1.32	1.25	1.31
Rostov region	1.18	1.12	1.05	1.03	0.92	0.98	0.99	1.05	1.08	1.11	1.06	1.09
Ryazan Oblast	1.13	1.11	1.06	1.07	1.00	0.99	1.05	1.09	1.14	1.15	1.12	1.12
Samara Region	1.12	1.04	1.00	1.01	0.95	1.00	1.03	1.15	1.21	1.23	1.17	1.20
Saint Petersburg	0.99	0.92	0.93	0.92	0.86	0.93	0.97	1.06	1.13	1.14	1.08	1.07
Saratov region	1.15	1.08	1.01	1.03	1.01	1.03	1.01	1.06	1.09	1.13	1.07	1.08
Sakhalin region	1.21	1.23	1.14	1.24	1.16	1.22	1.25	1.32	1.36	1.50	1.34	1.30
Sverdlovsk region	1.18	1.13	1.09	1.12	1.03	1.07	1.15	1.23	1.26	1.32	1.24	1.27
Smolensk region	1.14	1.09	1.01	1.00	0.92	0.97	1.04	1.09	1.14	1.12	1.06	1.07
Stavropol region	1.33	1.20	1.16	1.14	1.08	1.10	1.11	1.14	1.17	1.18	1.15	1.16
Tambov Region	1.22	1.17	1.10	1.10	1.04	1.10	1.07	1.12	1.16	1.18	1.15	1.10
Tver region	1.14	1.10	1.07	1.11	1.05	1.07	1.13	1.23	1.27	1.28	1.23	1.25
Tomsk region	1.11	1.08	1.06	1.12	1.05	1.09	1.11	1.15	1.15	1.21	1.18	1.24
Tula region	1.12	1.06	1.01	1.03	0.94	1.00	1.05	1.06	1.12	1.10	1.07	1.06
Tyumen region	1.33	1.29	1.27	1.32	1.22	1.25	1.33	1.42	1.46	1.47	1.44	1.43
Udmurt republic	1.16	1.11	1.16	1.20	1.16	1.20	1.23	1.32	1.33	1.33	1.24	1.23
Ulyanovsk region	1.21	1.12	1.04	1.07	1.05	1.10	1.09	1.17	1.18	1.19	1.12	1.11
Khabarovsk region	1.18	1.06	1.04	1.09	0.98	1.01	1.10	1.16	1.23	1.30	1.26	1.28
Khanty-Mansiysk Autonomous Okrug	1.41	1.36	1.32	1.37	1.27	1.32	1.41	1.52	1.56	1.56	1.50	1.50
Chelyabinsk region	1.20	1.14	1.12	1.15	1.07	1.11	1.16	1.24	1.25	1.27	1.23	1.25
Chuvash Republic	1.14	1.12	1.06	1.09	1.01	1.06	1.03	1.13	1.16	1.22	1.16	1.19
Chukotka Autonomous Okrug	1.16	1.25	1.15	1.28	1.13	1.23	1.38	1.29	1.43	1.57	1.52	1.54
Yamalo-Nenets Autonomous Okrug	1.50	1.40	1.37	1.38	1.32	1.25	1.38	1.44	1.56	1.52	1.47	1.37
Yaroslavl region	1.09	1.04	1.02	1.02	0.94	1.00	1.10	1.14	1.18	1.23	1.20	1.21

Region	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Altai region	1.23	1.36	1.37	1.38	1.38	1.51	1.53	1.52	1.57	1.53	1.39	1.32	1.25
Amur region	1.35	1.41	1.45	1.48	1.48	1.60	1.55	1.53	1.64	1.64	1.58	1.52	1.41
Arhangelsk region	1.34	1.36	1.41	1.45	1.42	1.51	1.55	1.54	1.64	1.60	1.44	1.36	1.27
Astrakhan region	1.52	1.65	1.65	1.67	1.63	1.78	1.76	1.82	1.92	1.91	1.71	1.67	1.65
Belgorod region	1.25	1.32	1.32	1.30	1.34	1.42	1.40	1.41	1.48	1.50	1.34	1.30	1.24
Bryansk region	1.28	1.34	1.38	1.31	1.35	1.41	1.39	1.41	1.68	1.65	1.47	1.48	1.37
Vladimir region	1.29	1.36	1.38	1.40	1.44	1.56	1.52	1.59	1.74	1.73	1.52	1.50	1.35
Volgograd region	1.22	1.31	1.31	1.31	1.30	1.39	1.37	1.42	1.51	1.50	1.36	1.32	1.22
Vologda Region	1.32	1.36	1.43	1.46	1.50	1.64	1.63	1.64	1.85	1.82	1.62	1.55	1.47
Voronezh region	1.17	1.28	1.34	1.32	1.28	1.35	1.33	1.37	1.51	1.46	1.33	1.32	1.24
Jewish Autonomous Region	1.45	1.58	1.54	1.56	1.66	1.68	1.68	1.72	1.94	1.84	1.76	1.70	1.69
Transbaikal region	1.63	1.72	1.75	1.74	1.67	1.73	1.73	1.75	1.81	1.73	1.63	1.58	1.51
Ivanovo region	1.29	1.35	1.40	1.38	1.37	1.48	1.52	1.52	1.63	1.60	1.46	1.40	1.26
Irkutsk region	1.54	1.65	1.68	1.65	1.70	1.76	1.78	1.76	1.86	1.84	1.70	1.68	1.54
Kabardino-Balkarian Republic	1.31	1.46	1.46	1.52	1.53	1.71	1.70	1.65	1.71	1.66	1.54	1.55	1.47
Kaliningrad region	1.27	1.32	1.36	1.35	1.42	1.51	1.53	1.58	1.67	1.66	1.51	1.48	1.40
Kaluga region	1.29	1.34	1.32	1.42	1.44	1.56	1.58	1.62	1.87	1.82	1.68	1.63	1.47
Kamchatka Krai	1.43	1.49	1.54	1.52	1.52	1.69	1.69	1.75	1.82	1.82	1.73	1.56	1.57
Karachay-Cherkess Republic	1.31	1.33	1.38	1.31	1.36	1.43	1.48	1.48	1.48	1.54	1.40	1.45	1.52
Kemerovo region	1.42	1.53	1.58	1.55	1.52	1.68	1.70	1.68	1.67	1.66	1.49	1.45	1.36
Kirov region	1.30	1.40	1.41	1.42	1.45	1.57	1.61	1.61	1.74	1.76	1.53	1.45	1.33
Kostroma region	1.36	1.41	1.48	1.51	1.55	1.64	1.66	1.64	1.83	1.78	1.63	1.54	1.47
Krasnodar region	1.35	1.45	1.46	1.46	1.55	1.68	1.74	1.82	1.90	1.92	1.80	1.74	1.70
Krasnoyarsk region	1.28	1.40	1.44	1.46	1.45	1.57	1.58	1.61	1.70	1.67	1.51	1.47	1.37
Kurgan region	1.39	1.47	1.54	1.55	1.57	1.75	1.81	1.78	1.94	1.87	1.71	1.66	1.53
Kursk region	1.37	1.46	1.45	1.51	1.45	1.49	1.48	1.51	1.61	1.55	1.36	1.34	1.25
Leningrad region	1.05	1.09	1.18	1.17	1.19	1.26	1.28	1.33	1.43	1.49	1.37	1.28	1.21
Lipetsk region	1.25	1.31	1.34	1.36	1.32	1.50	1.45	1.52	1.66	1.66	1.50	1.45	1.35

Region	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Magadan Region	1.31	1.33	1.48	1.41	1.45	1.62	1.65	1.62	1.65	1.58	1.58	1.49	1.41
Moscow	1.10	1.15	1.21	1.25	1.25	1.33	1.33	1.34	1.40	1.45	1.37	1.39	1.48
Moscow region	1.22	1.31	1.37	1.41	1.42	1.53	1.54	1.63	1.75	1.81	1.69	1.61	1.48
Murmansk region	1.29	1.35	1.38	1.46	1.46	1.55	1.60	1.62	1.72	1.67	1.56	1.53	1.43
Nenets Autonomous Okrug	1.56	1.65	1.71	1.69	1.63	1.69	1.84	1.83	2.06	2.24	1.93	1.84	1.78
Nizhny Novgorod Region	1.23	1.31	1.35	1.36	1.36	1.47	1.48	1.52	1.67	1.65	1.50	1.44	1.35
Novgorod region	1.31	1.34	1.43	1.45	1.48	1.57	1.58	1.61	1.78	1.79	1.61	1.57	1.44
Novosibirsk region	1.25	1.37	1.42	1.45	1.44	1.56	1.58	1.59	1.71	1.69	1.55	1.53	1.46
Omsk region	1.25	1.31	1.35	1.40	1.44	1.60	1.61	1.67	1.72	1.64	1.45	1.42	1.34
Orenburg region	1.31	1.38	1.44	1.48	1.47	1.55	1.60	1.59	1.67	1.60	1.42	1.41	1.33
Oryol Region	1.18	1.28	1.30	1.25	1.14	1.19	1.23	1.25	1.42	1.39	1.23	1.23	1.12
Penza region	1.20	1.25	1.28	1.29	1.27	1.38	1.36	1.41	1.50	1.45	1.29	1.26	1.20
Perm region	1.36	1.45	1.51	1.57	1.58	1.68	1.69	1.72	1.82	1.81	1.58	1.52	1.41
Primorsky Krai	1.30	1.30	1.37	1.35	1.39	1.48	1.50	1.54	1.63	1.61	1.48	1.46	1.37
Pskov region	1.27	1.30	1.38	1.37	1.38	1.49	1.49	1.52	1.71	1.79	1.56	1.55	1.47
Republic of Adygea	1.40	1.52	1.48	1.54	1.60	1.47	1.43	1.55	1.61	1.63	1.45	1.49	1.34
Altai Republic	1.88	2.00	2.10	2.08	1.86	1.84	1.80	1.70	1.76	1.68	1.58	1.50	1.38
Republic of Bashkortostan	1.42	1.50	1.53	1.59	1.57	1.68	1.70	1.74	1.77	1.73	1.43	1.39	1.25
The Republic of Buryatia	1.62	1.66	1.68	1.69	1.71	1.77	1.80	1.87	1.99	1.92	1.74	1.71	1.57
The Republic of Dagestan	1.41	1.52	1.52	1.51	1.39	1.44	1.40	1.49	1.51	1.46	1.42	1.39	1.34
Republic of Kalmykia-Khalmg Tangch	1.62	1.73	1.76	1.83	1.70	1.84	1.81	1.85	1.91	1.80	1.63	1.69	1.65
Republic of Karelia	1.26	1.33	1.42	1.42	1.43	1.50	1.45	1.52	1.64	1.64	1.44	1.43	1.33
Komi Republic	1.35	1.35	1.41	1.45	1.46	1.56	1.63	1.67	1.72	1.69	1.52	1.39	1.34
Mari El Republic	1.40	1.43	1.45	1.48	1.54	1.66	1.71	1.74	1.83	1.82	1.60	1.53	1.46
The Republic of Mordovia	1.14	1.25	1.24	1.21	1.23	1.27	1.34	1.31	1.37	1.41	1.23	1.20	1.15
The Republic of Sakha (Yakutia)	1.71	1.81	1.88	1.86	1.77	1.89	1.78	1.78	1.85	1.82	1.67	1.58	1.58
Republic of North Ossetia	1.68	1.74	1.78	1.82	1.87	1.94	1.96	2.02	2.00	1.97	1.83	1.94	1.81
Republic of Tatarstan	1.29	1.38	1.46	1.53	1.59	1.72	1.74	1.75	1.85	1.87	1.67	1.63	1.52
Tyva Republic	2.33	2.31	2.39	2.34	2.37	2.31	2.30	2.34	2.61	2.33	2.30	2.09	2.45
The Republic of Khakassia	1.44	1.53	1.61	1.61	1.60	1.70	1.75	1.72	1.78	1.72	1.60	1.56	1.47
Rostov region	1.15	1.23	1.23	1.26	1.26	1.37	1.37	1.44	1.54	1.52	1.38	1.34	1.28
Ryazan Oblast	1.21	1.29	1.27	1.28	1.28	1.32	1.34	1.37	1.43	1.52	1.37	1.32	1.30
Samara Region	1.25	1.33	1.33	1.38	1.37	1.46	1.50	1.55	1.67	1.68	1.49	1.46	1.38
Saint Petersburg	1.14	1.23	1.33	1.38	1.38	1.48	1.48	1.52	1.59	1.63	1.50	1.46	1.39
Saratov region	1.20	1.25	1.25	1.27	1.27	1.37	1.38	1.42	1.53	1.49	1.34	1.31	1.25
Sakhalin region	1.38	1.48	1.47	1.48	1.49	1.61	1.66	1.82	1.95	2.10	1.98	1.89	1.94
Sverdlovsk region	1.35	1.45	1.52	1.57	1.60	1.74	1.77	1.80	1.88	1.85	1.70	1.65	1.57
Smolensk region	1.13	1.22	1.27	1.28	1.32	1.33	1.39	1.43	1.55	1.55	1.40	1.32	1.23
Stavropol region	1.25	1.33	1.32	1.32	1.24	1.33	1.35	1.42	1.55	1.60	1.44	1.43	1.33
Tambov Region	1.18	1.20	1.22	1.24	1.23	1.34	1.34	1.40	1.50	1.49	1.35	1.28	1.27
Tver region	1.31	1.37	1.41	1.40	1.44	1.53	1.51	1.54	1.66	1.68	1.52	1.42	1.34
Tomsk region	1.34	1.43	1.48	1.34	1.31	1.33	1.36	1.37	1.41	1.39	1.26	1.19	1.09
Tula region	1.08	1.16	1.21	1.22	1.22	1.31	1.34	1.41	1.59	1.58	1.41	1.32	1.26
Tyumen region	1.53	1.60	1.67	1.70	1.72	1.86	1.86	1.94	1.95	1.90	1.82	1.79	1.71
Udmurt republic	1.35	1.40	1.47	1.51	1.54	1.70	1.58	1.58	1.72	1.66	1.47	1.38	1.26
Ulyanovsk region	1.17	1.26	1.30	1.33	1.35	1.50	1.52	1.58	1.72	1.71	1.53	1.51	1.42
Khabarovsk region	1.34	1.41	1.46	1.45	1.47	1.59	1.61	1.65	1.74	1.66	1.53	1.50	1.46
Khanty-Mansiysk Autonomous Okrug	1.59	1.67	1.71	1.79	1.80	1.98	2.02	2.06	2.05	1.99	1.86	1.85	1.75
Chelyabinsk region	1.35	1.45	1.48	1.53	1.57	1.67	1.65	1.70	1.75	1.72	1.53	1.47	1.40
Chuvash Republic	1.22	1.35	1.43	1.42	1.43	1.54	1.54	1.54	1.69	1.65	1.43	1.37	1.26
Chukotka Autonomous Okrug	1.59	1.46	1.49	1.70	1.52	1.64	1.55	1.59	1.64	1.62	1.62	1.50	1.16
Yamalo-Nenets Autonomous Okrug	1.47	1.49	1.57	1.64	1.67	1.87	1.89	2.00	1.99	1.91	1.77	1.73	1.64
Yaroslavl region	1.27	1.33	1.40	1.41	1.40	1.51	1.55	1.54	1.69	1.70	1.52	1.45	1.36

Source: Author's calculations based on RosBRiS data.

Table A2.4. TFR in Russian regions, rural population, children per woman, 1995-2019

Region	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Altai region	1.52	1.45	1.46	1.50	1.45	1.53	1.55	1.66	1.72	1.64	1.53	1.49
Amur region	1.83	1.76	1.66	1.76	1.74	1.70	1.82	1.91	2.09	2.09	1.87	1.88
Arhangelsk region	1.72	1.63	1.62	1.68	1.59	1.65	1.73	1.89	1.88	1.90	1.75	1.89
Astrakhan region	1.88	1.74	1.71	1.69	1.61	1.55	1.61	1.71	1.74	1.72	1.63	1.71
Belgorod region	1.77	1.66	1.49	1.51	1.41	1.45	1.44	1.46	1.52	1.45	1.40	1.46
Bryansk region	1.88	1.73	1.57	1.55	1.47	1.44	1.34	1.40	1.44	1.42	1.33	1.37
Vladimir region	1.43	1.42	1.29	1.35	1.29	1.28	1.32	1.39	1.46	1.44	1.35	1.49
Volgograd region	1.84	1.69	1.58	1.61	1.52	1.54	1.54	1.62	1.60	1.62	1.55	1.66
Vologda Region	1.78	1.74	1.67	1.61	1.49	1.52	1.58	1.81	1.78	1.80	1.74	1.72
Voronezh region	1.57	1.50	1.39	1.37	1.27	1.31	1.28	1.32	1.33	1.33	1.24	1.16
Jewish Autonomous Region	2.14	2.01	1.72	1.74	1.56	1.52	1.53	1.58	1.65	1.60	1.61	1.64
Transbaikal region	2.25	1.98	1.93	2.05	1.86	1.81	1.85	1.82	1.95	1.91	1.74	1.77
Ivanovo region	1.40	1.28	1.26	1.39	1.27	1.35	1.35	1.40	1.47	1.37	1.32	1.37
Irkutsk region	2.06	2.02	1.89	1.95	1.89	1.81	1.87	1.90	2.01	1.96	1.91	1.95
Kabardino-Balkarian Republic	2.19	2.05	1.95	1.86	1.65	1.58	1.51	1.49	1.52	1.52	1.41	1.49
Kaliningrad region	1.60	1.48	1.51	1.53	1.31	1.38	1.36	1.51	1.44	1.48	1.40	1.54
Kaluga region	1.51	1.42	1.40	1.39	1.31	1.27	1.42	1.38	1.45	1.54	1.37	1.38
Kamchatka Krai	1.53	1.46	1.47	1.60	1.50	1.19	1.23	1.33	1.49	1.48	1.55	1.44
Karachay-Cherkess Republic	2.06	1.83	1.73	1.66	1.48	1.49	1.51	1.54	1.54	1.57	1.49	1.44
Kemerovo region	1.71	1.60	1.57	1.60	1.58	1.55	1.62	1.63	1.72	1.57	1.60	1.64
Kirov region	1.65	1.58	1.58	1.64	1.56	1.58	1.55	1.64	1.63	1.71	1.62	1.69
Kostroma region	1.52	1.48	1.39	1.39	1.42	1.41	1.44	1.50	1.53	1.62	1.37	1.56
Krasnodar region	1.66	1.54	1.42	1.42	1.33	1.39	1.46	1.52	1.57	1.53	1.43	1.43
Krasnoyarsk region	1.86	1.82	1.74	1.83	1.66	1.74	1.78	1.80	1.87	1.90	1.79	1.76
Kurgan region	1.69	1.61	1.59	1.77	1.75	1.69	1.62	1.70	1.58	1.68	1.65	1.75
Kursk region	1.73	1.63	1.50	1.49	1.43	1.41	1.43	1.39	1.45	1.43	1.25	1.33
Leningrad region	1.12	1.09	1.12	1.03	1.02	0.97	1.06	1.12	1.12	1.12	1.04	1.03
Lipetsk region	1.55	1.45	1.32	1.38	1.32	1.32	1.43	1.45	1.51	1.49	1.45	1.50
Magadan Region	3.07	2.94	2.08	1.91	1.38	1.55	1.62	1.54	1.65	2.10	2.23	1.86
Moscow region	1.16	1.13	1.01	1.06	0.98	1.01	1.07	1.11	1.14	1.18	1.13	1.08
Murmansk region	1.34	1.40	1.28	1.30	1.18	1.20	1.38	1.40	1.57	1.54	1.60	1.57
Nenets Autonomous Okrug	2.70	2.71	2.57	2.63	2.57	2.60	2.61	2.96	2.94	2.46	2.67	2.62
Nizhny Novgorod Region	1.57	1.44	1.38	1.40	1.34	1.35	1.37	1.33	1.51	1.47	1.40	1.42
Novgorod region	1.60	1.38	1.39	1.49	1.31	1.28	1.36	1.39	1.48	1.57	1.52	1.60
Novosibirsk region	1.70	1.66	1.62	1.66	1.52	1.60	1.67	1.84	1.87	1.82	1.73	1.73
Omsk region	2.02	1.93	1.74	1.71	1.50	1.53	1.46	1.63	1.76	1.73	1.66	1.71
Orenburg region	2.01	1.79	1.75	1.81	1.45	1.63	1.66	1.77	1.77	1.77	1.69	1.76
Oryol Region	1.71	1.59	1.44	1.46	1.36	1.36	1.37	1.47	1.53	1.50	1.44	1.54
Penza region	1.62	1.46	1.40	1.38	1.35	1.36	1.36	1.41	1.45	1.44	1.33	1.36
Perm region	1.86	1.85	1.83	1.90	1.82	1.80	1.78	1.88	1.87	1.85	1.78	1.82
Primorsky Krai	1.76	1.57	1.49	1.47	1.44	1.48	1.58	1.73	1.77	1.64	1.67	1.64
Pskov region	1.51	1.42	1.39	1.33	1.21	1.26	1.40	1.44	1.52	1.64	1.64	1.66
Republic of Adygea	1.79	1.80	1.77	1.69	1.43	1.51	1.51	1.63	1.65	1.63	1.61	1.51
Altai Republic	2.14	1.98	1.93	2.08	1.92	2.03	2.11	2.26	2.30	2.35	2.17	2.10
Republic of Bashkortostan	2.21	2.18	2.08	2.04	1.91	1.88	1.92	1.94	1.93	1.76	1.71	1.73
The Republic of Buryatia	1.97	1.96	1.78	1.88	1.85	1.88	1.78	1.94	1.90	1.87	1.85	1.98
The Republic of Dagestan	2.92	2.66	2.58	2.49	2.25	2.16	2.12	2.19	2.19	2.14	2.06	1.98
Republic of Kalmykia-Khalmg Tangch	2.44	2.07	2.01	1.96	1.71	1.59	1.78	1.90	2.00	1.97	1.76	1.64
Republic of Karelia	1.53	1.50	1.42	1.42	1.44	1.57	1.70	1.81	1.83	1.80	1.85	1.81
Komi Republic	1.78	1.65	1.61	1.70	1.58	1.52	1.61	1.71	1.71	1.67	1.68	1.88
Mari El Republic	1.91	1.87	1.75	1.70	1.66	1.69	1.69	1.79	1.67	1.67	1.49	1.43
The Republic of Mordovia	1.65	1.51	1.40	1.42	1.31	1.37	1.29	1.29	1.33	1.27	1.20	1.15
The Republic of Sakha (Yakutia)	2.96	2.79	2.62	2.52	2.35	2.43	2.31	2.39	2.35	2.36	2.08	1.97
Republic of North Ossetia	1.99	1.85	1.82	1.82	1.53	1.48	1.46	1.49	1.53	1.36	1.28	1.31
Republic of Tatarstan	2.12	2.05	1.95	1.92	1.79	1.82	1.74	1.79	1.79	1.79	1.62	1.61

Region	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Tyva Republic	3.09	2.72	2.30	2.39	2.17	2.17	2.17	2.51	2.73	2.65	2.57	2.52
The Republic of Khakassia	1.94	1.89	1.74	1.93	1.76	1.81	1.68	1.84	1.89	1.80	1.74	1.77
Rostov region	1.71	1.61	1.50	1.45	1.38	1.45	1.44	1.50	1.54	1.48	1.41	1.47
Ryazan Oblast	1.52	1.43	1.28	1.38	1.35	1.35	1.38	1.47	1.57	1.56	1.53	1.50
Samara Region	1.63	1.47	1.38	1.41	1.34	1.37	1.38	1.51	1.55	1.54	1.46	1.48
Saratov region	1.78	1.55	1.53	1.51	1.40	1.43	1.42	1.46	1.51	1.50	1.46	1.49
Sakhalin region	1.46	1.37	1.27	1.16	0.91	1.12	1.19	1.25	1.64	1.18	1.77	1.80
Sverdlovsk region	1.72	1.65	1.52	1.65	1.60	1.58	1.54	1.71	1.75	1.50	1.64	1.73
Smolensk region	1.63	1.50	1.38	1.35	1.22	1.23	1.27	1.38	1.41	1.44	1.37	1.39
Stavropol region	1.79	1.64	1.59	1.58	1.42	1.44	1.37	1.45	1.49	1.43	1.35	1.34
Tambov Region	1.58	1.50	1.37	1.40	1.33	1.42	1.38	1.41	1.44	1.40	1.32	1.25
Tver region	1.52	1.45	1.49	1.52	1.44	1.46	1.49	1.58	1.64	1.71	1.59	1.62
Tomsk region	1.51	1.51	1.46	1.52	1.47	1.48	1.43	1.51	1.48	1.52	1.39	1.39
Tula region	1.55	1.39	1.38	1.40	1.30	1.28	1.27	1.26	1.35	1.27	1.21	1.29
Tyumen region	1.70	1.59	1.53	1.58	1.52	1.51	1.61	1.70	1.69	1.80	1.70	1.75
Udmurt republic	1.81	1.71	1.73	1.84	1.80	1.82	1.82	1.90	1.91	1.94	1.79	1.88
Ulyanovsk region	1.69	1.62	1.45	1.53	1.47	1.46	1.41	1.50	1.49	1.43	1.35	1.37
Khabarovsk region	1.72	1.64	1.47	1.53	1.33	1.40	1.53	1.63	1.75	1.77	1.68	1.72
Khanty-Mansiysk Autonomous Okrug	1.95	1.65	1.56	1.58	1.53	1.58	1.71	1.77	1.73	1.77	1.65	1.68
Chelyabinsk region	1.75	1.66	1.58	1.68	1.59	1.63	1.62	1.73	1.75	1.75	1.65	1.75
Chuvash Republic	2.03	1.95	1.83	1.90	1.70	1.67	1.61	1.71	1.72	1.81	1.74	1.68
Chukotka Autonomous Okrug	2.64	2.61	2.38	2.64	2.05	2.36	2.62	2.51	2.43	2.74	2.56	2.23
Yamalo-Nenets Autonomous Okrug	2.54	2.32	2.20	2.26	2.13	2.11	2.24	2.20	2.26	2.36	2.18	2.24
Yaroslavl region	1.47	1.39	1.28	1.40	1.31	1.31	1.46	1.49	1.62	1.62	1.53	1.63

Region	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Altai region	1.75	1.92	2.00	2.10	2.26	2.56	2.61	2.66	2.42	2.38	2.24	2.14	1.98
Amur region	1.99	2.05	2.14	2.26	2.38	2.62	2.83	2.94	2.50	2.38	2.16	2.07	1.95
Arhangelsk region	2.14	2.21	2.34	2.45	2.83	3.48	3.81	4.26	3.96	4.48	4.39	4.81	6.19
Astrakhan region	1.98	1.95	1.93	1.93	2.09	2.21	2.22	2.27	2.06	1.98	1.75	1.79	1.69
Belgorod region	1.58	1.67	1.64	1.64	1.66	1.77	1.86	1.91	1.76	1.66	1.50	1.49	1.40
Bryansk region	1.55	1.74	1.71	1.70	1.73	1.92	1.89	1.91	1.57	1.50	1.33	1.32	1.20
Vladimir region	1.60	1.72	1.68	1.68	1.72	1.85	1.88	1.87	1.71	1.66	1.52	1.47	1.38
Volgograd region	1.85	1.90	1.90	1.94	1.97	2.07	2.11	2.11	1.85	1.81	1.72	1.64	1.51
Vologda Region	1.91	1.99	2.02	2.04	2.29	2.60	2.73	2.77	2.24	2.22	2.07	1.93	1.86
Voronezh region	1.22	1.30	1.36	1.45	1.59	1.75	1.77	1.80	1.58	1.58	1.47	1.40	1.33
Jewish Autonomous Region	1.87	1.98	1.83	1.90	2.17	2.32	2.34	2.60	2.28	2.39	2.00	2.27	1.88
Transbaikal region	1.90	2.08	2.11	2.17	2.41	2.78	2.89	3.13	2.88	2.86	2.72	2.70	2.56
Ivanovo region	1.49	1.56	1.55	1.48	1.61	1.69	1.75	1.87	1.63	1.58	1.48	1.44	1.31
Irkutsk region	2.22	2.51	2.61	2.57	2.63	2.98	2.97	2.99	2.72	2.69	2.58	2.51	2.57
Kabardino-Balkarian Republic	1.86	1.81	1.79	1.82	1.90	1.96	1.91	2.01	1.79	1.77	1.68	1.67	1.55
Kaliningrad region	1.80	1.86	1.86	1.82	1.86	2.01	2.03	2.08	2.00	1.95	1.77	1.61	1.34
Kaluga region	1.49	1.51	1.60	1.66	1.65	1.85	1.87	1.94	1.72	1.64	1.49	1.48	1.31
Kamchatka Krai	1.59	1.61	1.60	1.44	1.99	1.85	2.16	2.29	2.16	2.19	2.05	2.02	2.02
Karachay-Cherkess Republic	1.75	1.82	1.67	1.67	1.68	1.78	1.82	1.78	1.58	1.50	1.45	1.41	1.44
Kemerovo region	1.87	2.00	2.10	2.05	2.06	2.32	2.41	2.43	2.09	2.05	1.85	1.79	1.64
Kirov region	1.96	2.12	2.20	2.32	2.59	3.21	3.50	3.61	3.10	3.17	2.98	3.13	3.51
Kostroma region	1.73	1.94	2.05	2.07	2.19	2.46	2.53	2.67	2.13	2.28	2.03	1.93	1.91
Krasnodar region	1.57	1.67	1.71	1.70	1.62	1.73	1.70	1.77	1.74	1.68	1.58	1.56	1.49
Krasnoyarsk region	1.97	2.08	2.20	2.28	2.40	2.73	2.82	2.91	2.60	2.60	2.50	2.40	2.25
Kurgan region	1.96	2.16	2.18	2.24	2.31	2.63	2.81	2.87	2.55	2.42	2.28	2.08	1.94
Kursk region	1.49	1.58	1.65	1.64	2.09	2.35	2.31	2.30	2.06	1.97	1.79	1.78	1.63
Leningrad region	1.06	1.12	1.14	1.14	1.09	1.15	1.13	1.19	1.03	1.03	0.96	0.89	0.85
Lipetsk region	1.59	1.66	1.64	1.70	1.77	1.90	1.92	1.95	1.76	1.72	1.60	1.57	1.46
Magadan Region	2.26	2.01	2.44	2.04	2.31	2.76	3.43	2.85	2.07	2.17	3.19	3.03	2.53
Moscow region	1.08	1.22	1.19	1.19	1.23	1.34	1.42	1.47	1.29	1.32	1.22	1.12	0.89
Murmansk region	1.74	1.89	1.93	1.91	2.06	1.96	1.95	2.03	1.61	1.48	1.58	1.37	1.50
Nenets Autonomous Okrug	2.63	2.91	2.93	3.27	3.24	4.33	4.81	6.62	6.20	6.16	5.11	5.15	5.28
Nizhny Novgorod Region	1.57	1.68	1.69	1.66	1.76	1.91	1.94	1.96	1.67	1.63	1.50	1.49	1.35
Novgorod region	1.88	1.72	1.77	1.80	1.79	2.12	2.09	2.20	1.77	1.73	1.62	1.53	1.45

Region	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Novosibirsk region	1.93	2.10	2.17	2.25	2.34	2.56	2.66	2.74	2.40	2.42	2.29	2.12	2.03
Omsk region	1.93	2.12	2.17	2.24	2.39	2.76	2.78	2.92	2.58	2.41	2.16	2.14	1.97
Orenburg region	2.07	2.18	2.33	2.45	2.58	2.98	3.04	3.16	2.93	2.89	2.60	2.52	2.39
Oryol Region	1.70	1.75	1.78	2.08	2.14	2.44	2.31	2.35	2.10	2.14	1.92	1.79	1.66
Penza region	1.53	1.63	1.58	1.59	1.62	1.77	1.85	1.86	1.69	1.66	1.55	1.59	1.45
Perm region	2.10	2.30	2.32	2.47	2.56	2.90	3.02	3.16	2.90	2.71	2.47	2.36	2.23
Primorsky Krai	1.77	1.87	1.95	2.02	2.17	2.43	2.52	2.61	2.36	2.32	2.13	2.12	2.01
Pskov region	1.83	1.91	1.87	1.97	2.10	2.29	2.41	2.36	1.85	1.82	1.62	1.65	1.49
Republic of Adygea	1.77	1.88	1.86	1.91	1.76	1.97	1.97	1.93	1.84	1.74	1.59	1.44	1.40
Altai Republic	2.55	2.81	2.71	2.82	3.99	5.23	5.20	5.39	4.45	4.16	3.55	3.58	3.27
Republic of Bashkortostan	2.04	2.11	2.11	2.14	2.14	2.30	2.39	2.53	2.41	2.22	2.37	2.34	2.19
The Republic of Buryatia	2.15	2.33	2.47	2.49	2.63	2.88	3.05	3.12	2.92	2.92	2.73	2.76	2.60
The Republic of Dagestan	2.17	2.30	2.28	2.31	2.57	2.63	2.65	2.68	2.55	2.50	2.40	2.32	2.26
Republic of Kalmykia-Khalmg Tangch	1.85	1.93	1.83	1.92	1.89	1.93	1.94	1.85	1.76	1.62	1.46	1.51	1.41
Republic of Karelia	2.16	2.35	2.38	2.46	2.70	3.22	3.34	3.71	2.87	2.82	2.71	2.48	2.52
Komi Republic	1.99	2.32	2.44	2.49	3.16	4.16	4.60	4.74	4.24	4.23	4.02	4.00	3.84
Mari El Republic	1.61	1.70	1.82	1.78	1.94	2.26	2.51	2.65	2.40	2.37	2.11	1.87	1.69
The Republic of Mordovia	1.25	1.28	1.27	1.30	1.29	1.42	1.44	1.54	1.37	1.43	1.35	1.44	1.27
The Republic of Sakha (Yakutia)	2.31	2.08	2.18	2.30	2.68	2.81	3.15	3.46	3.06	2.78	2.59	2.57	2.47
Republic of North Ossetia	1.74	1.82	1.78	1.86	1.83	1.98	1.99	1.98	1.80	1.74	1.61	1.62	1.63
Republic of Tatarstan	1.77	1.87	1.87	1.89	1.91	2.09	2.20	2.22	1.88	1.75	1.53	1.59	1.61
Tyva Republic	3.11	3.37	3.65	3.99	4.90	6.08	7.22	8.32	6.65	7.00	6.15	6.00	4.32
The Republic of Khakassia	2.15	2.34	2.22	2.24	2.37	2.75	2.70	2.82	2.58	2.68	2.32	2.17	2.01
Rostov region	1.60	1.64	1.67	1.66	1.71	1.88	1.91	2.03	1.83	1.77	1.64	1.57	1.49
Ryazan Oblast	1.69	1.78	1.82	1.94	1.99	2.29	2.28	2.37	2.36	2.35	1.98	1.90	1.51
Samara Region	1.64	1.74	1.73	1.73	1.75	1.91	2.03	2.13	1.88	1.85	1.68	1.70	1.50
Saratov region	1.67	1.78	1.81	1.79	1.83	2.00	2.10	2.14	1.84	1.74	1.57	1.55	1.38
Sakhalin region	1.92	1.97	2.00	1.93	1.98	2.33	2.73	2.85	2.44	2.53	2.35	2.34	2.06
Sverdlovsk region	1.98	2.14	2.20	2.27	2.34	2.44	2.62	2.77	2.40	2.32	2.16	2.08	1.97
Smolensk region	1.55	1.55	1.74	1.66	1.66	1.75	1.80	1.89	1.45	1.41	1.31	1.19	1.18
Stavropol region	1.55	1.67	1.62	1.63	1.74	1.86	1.90	1.96	1.81	1.80	1.69	1.62	1.55
Tambov Region	1.37	1.44	1.43	1.50	1.50	1.53	1.56	1.64	1.53	1.52	1.40	1.41	1.34
Tver region	1.77	1.85	1.91	1.92	1.91	2.11	2.16	2.17	1.85	1.81	1.72	1.67	1.64
Tomsk region	1.53	1.62	1.65	2.03	2.18	2.49	2.65	2.68	2.53	2.50	2.43	2.30	2.26
Tula region	1.43	1.55	1.64	1.65	1.71	1.91	1.71	1.65	1.48	1.44	1.38	1.41	1.27
Tyumen region	1.99	2.15	2.15	2.24	2.33	2.58	2.71	2.70	2.64	2.53	2.14	2.15	2.00
Udmurt republic	2.24	2.37	2.42	2.57	2.74	2.86	2.92	3.12	2.88	2.85	2.47	2.40	2.26
Ulyanovsk region	1.47	1.71	1.67	1.70	1.77	1.82	1.90	2.00	1.64	1.63	1.49	1.46	1.38
Khabarovsk region	1.89	2.00	2.11	2.21	2.16	2.40	2.62	2.72	2.64	2.58	2.36	2.19	2.38
Khanty-Mansiysk Autonomous Okrug	1.79	1.76	1.86	2.03	2.16	2.40	2.40	2.41	2.44	2.37	2.10	2.15	1.94
Chelyabinsk region	2.00	2.22	2.22	2.26	2.38	2.61	2.70	2.78	2.40	2.34	2.12	2.10	1.93
Chuvash Republic	2.10	1.86	2.03	2.14	2.22	2.58	2.72	2.89	2.60	2.59	2.43	2.46	2.39
Chukotka Autonomous Okrug	2.22	2.22	1.90	2.19	2.26	2.51	2.58	3.15	3.92	5.64	6.76	6.89	5.55
Yamalo-Nenets Autonomous Okrug	2.45	2.60	2.75	2.63	2.63	2.87	3.19	3.19	3.20	2.93	2.83	2.71	2.78
Yaroslavl region	1.73	1.79	1.89	1.90	1.97	2.13	2.14	2.19	1.72	1.75	1.56	1.53	1.43

Source: Author's calculations based on RosBRiS data.

Table A2.5. Adjusted TFR in the regions of Russia, whole population, children per woman, 2012-2019

Region	2012	2013	2014	2015	2016	2017	2018	2019
Altai region	-	-	1.87	2.07	2.01	1.69	1.60	1.55
Amur region	2.10	1.97	2.04	2.19	2.13	1.99	1.83	1.72
Arhangelsk region	2.20	2.03	2.00	2.26	2.21	1.95	1.88	1.69
Astrakhan region	1.89	2.12	2.02	2.09	2.11	1.83	1.66	1.55
Belgorod region	1.67	1.75	1.76	1.68	1.58	1.50	1.56	1.42
Bryansk region	1.77	1.73	1.62	1.78	1.84	1.60	1.75	1.42
Vladimir region	1.67	1.71	1.73	1.98	1.96	1.65	1.56	1.40
Volgograd region	1.66	1.69	1.69	1.79	1.65	1.46	1.56	1.30
Vologda Region	-	-	2.20	2.28	1.97	1.69	1.76	1.65
Voronezh region	1.61	1.62	1.67	1.69	1.65	1.50	1.40	1.31
Jewish Autonomous Region	1.95	2.04	2.36	2.15	2.10	2.12	2.24	2.33
Transbaikal region	2.11	2.13	2.01	2.37	2.28	1.91	1.87	1.87
Ivanovo region	1.70	1.68	1.70	1.70	1.80	1.64	1.50	1.33
Irkutsk region	2.08	2.04	2.00	2.23	2.19	1.96	1.97	1.76
Kabardino-Balkarian Republic	1.96	1.84	1.75	1.79	1.79	1.61	1.71	1.62
Kaliningrad region	1.77	1.86	1.81	2.07	1.99	1.69	1.59	1.49
Kaluga region	1.84	1.82	1.76	2.05	1.98	1.67	1.53	1.43
Kamchatka Krai	1.83	1.85	1.92	2.60	2.79	2.21	1.69	1.41
Karachay-Cherkess Republic	1.68	1.61	1.47	1.60	1.71	1.44	1.58	1.76
Kemerovo region	1.82	1.87	1.85	1.88	1.90	1.66	1.62	1.48
Kirov region	1.81	2.25	2.13	2.06	2.22	2.05	1.82	1.62
Kostroma region	1.99	2.07	2.18	2.05	2.15	2.04	1.66	1.88
Krasnodar region	1.81	1.92	1.92	2.03	2.05	1.89	1.86	1.74
Krasnoyarsk region	1.98	2.03	2.02	2.00	1.87	1.77	1.67	1.48
Kurgan region	2.02	2.15	2.29	2.36	2.11	2.04	1.94	1.84
Kursk region	1.84	1.91	1.93	1.98	1.89	1.61	1.58	1.38
Leningrad region	1.24	1.31	1.45	1.50	1.64	1.45	1.29	1.15
Lipetsk region	1.80	1.75	1.85	2.02	1.95	1.66	1.60	1.42
Magadan Region	-	-	-	-	-	1.82	1.63	1.37
Moscow	-	-	1.41	1.42	1.50	1.40	1.39	1.37
Moscow region	1.64	1.66	1.69	1.80	1.86	1.67	1.40	1.26
Murmansk region	1.83	1.84	1.79	2.05	1.81	1.80	1.79	1.52
Nenets Autonomous Okrug	3.07	2.90	2.57	2.53	3.68	3.05	3.18	2.36
Nizhny Novgorod Region	1.67	1.79	1.72	1.82	1.89	1.63	1.57	1.43
Novgorod region	1.66	1.98	2.04	2.15	2.05	1.70	1.71	1.53
Novosibirsk region	1.98	1.98	1.91	1.96	1.86	1.70	1.55	1.47
Omsk region	1.99	1.92	2.00	2.01	2.05	1.65	1.56	1.62
Orenburg region	2.08	2.13	2.17	2.27	2.14	1.92	1.93	1.69
Oryol Region	1.85	1.76	1.71	1.90	1.62	1.50	1.64	1.37
Penza region	1.42	1.64	1.68	1.66	1.68	1.43	1.50	1.34
Perm region	1.73	1.99	2.15	2.32	2.28	1.84	1.77	1.65
Primorsky Krai	1.89	1.85	1.83	2.06	1.98	1.64	1.60	1.45
Pskov region	1.78	1.94	1.99	1.97	2.16	1.77	1.68	1.38
Republic of Adygea	1.73	1.88	1.88	1.79	1.86	1.60	1.50	1.42
Altai Republic	-	-	2.74	3.22	3.72	2.94	2.62	2.29
Republic of Bashkortostan	1.99	2.01	1.96	2.07	2.08	1.88	1.82	1.54
The Republic of Buryatia	2.17	2.20	2.28	2.37	2.25	2.37	2.21	1.88
The Republic of Dagestan	1.74	1.77	1.76	1.76	1.82	1.85	1.85	1.79
Republic of Kalmykia-Khalmg Tangch	2.11	2.21	2.01	2.03	1.91	1.80	1.77	1.53
Republic of Karelia	1.82	1.84	1.99	2.06	2.32	1.91	1.80	1.59
Komi Republic	1.97	2.17	2.22	2.35	2.53	2.18	1.85	1.65
Mari El Republic	1.87	1.98	2.12	2.11	2.09	1.95	1.80	1.56
The Republic of Mordovia	1.51	1.61	1.41	1.49	1.60	1.46	1.31	1.25
The Republic of Sakha (Yakutia)	1.99	2.25	2.52	2.43	2.30	2.15	2.06	1.92
Republic of North Ossetia	-	-	-	2.19	2.00	1.72	1.94	1.87
Republic of Tatarstan	1.94	1.92	1.92	1.96	1.97	1.72	1.66	1.50
Tyva Republic	3.23	3.41	3.23	3.41	4.11	3.79	3.68	3.23
The Republic of Khakassia	2.24	2.08	1.99	2.23	2.23	1.95	1.91	1.66
Rostov region	1.74	1.67	1.62	1.75	1.80	1.57	1.47	1.33
Ryazan Oblast	1.77	1.88	1.74	1.76	1.88	1.63	1.60	1.32
Samara Region	1.75	1.71	1.68	1.84	1.87	1.62	1.60	1.40
Saint Petersburg	1.75	1.74	1.67	1.76	1.90	1.59	1.39	1.29
Saratov region	1.64	1.69	1.63	1.72	1.79	1.47	1.42	1.28
Sakhalin region	1.74	1.86	2.46	2.41	2.19	2.28	2.31	1.89
Sverdlovsk region	1.95	2.06	2.07	2.14	2.05	1.94	1.82	1.56
Smolensk region	-	-	1.62	1.78	2.00	1.73	1.35	1.26

Region	2012	2013	2014	2015	2016	2017	2018	2019
Stavropol region	1.59	1.74	1.95	1.78	1.69	1.43	1.28	1.31
Tambov Region	1.28	1.57	1.77	1.69	1.66	1.43	1.37	1.45
Tver region	-	-	1.71	1.84	2.00	1.67	1.67	1.56
Tomsk region	1.86	1.64	1.78	1.79	1.68	1.52	1.34	1.25
Tula region	1.47	1.52	1.55	1.71	1.72	1.33	1.42	1.47
Tyumen region	2.05	1.80	1.90	2.28	2.24	2.06	2.04	1.87
Udmurt republic	2.11	2.19	2.21	2.29	2.20	1.86	1.77	1.67
Ulyanovsk region	1.60	1.74	1.86	1.76	1.77	1.64	1.56	1.42
Khabarovsk region	1.89	1.96	1.96	2.02	2.02	1.76	1.47	1.51
Khanty-Mansiysk Autonomous Okrug	1.98	1.64	1.80	2.25	2.34	2.25	2.01	1.93
Chelyabinsk region	1.90	1.97	2.04	2.05	1.92	1.66	1.63	1.45
Chuvash Republic	1.99	1.99	1.86	1.95	1.92	1.68	1.77	1.55
Chukotka Autonomous Okrug	1.66	2.34	2.83	2.09	4.95	4.63	2.31	1.85
Yamalo-Nenets Autonomous Okrug	2.07	2.20	2.34	2.52	2.49	2.28	2.39	2.23
Yaroslavl region	1.86	1.84	1.80	1.91	1.94	1.68	1.48	1.38

Source: Author's calculations based on RosBRiS data.