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СОЦИО-ДЕМОГРАФИЧЕСКИЙ АНАЛИЗ ОТНОШЕНИЯ КАЧЕСТВА ЖИЗНИ И УРОВНЯ РЕПРОДУКЦИИ ПОПУЛЯЦИИ В РОССИИ И ЗА РУБЕЖОМ НА ОСНОВЕ ОЦЕНКИ РАТОВ

Социо-демографический анализ отношений качества жизни и уровня рождаемости в России и за рубежом на основе оценки рейтингов

При исследовании завершения второго демографического перехода в странах с относительно высоким уровнем социально-экономического развития, тенденции роста в общем коэффициенте рождаемости и изменения календаря рождений были обнаружены. В то же время, процесс откладывания замужества обеих полов и увеличения числа одиноких семей продолжался. Развитие тенденции роста рождаемости требовало дополнительного анализа причин этого явления, особенно в связи с ростом коэффициента рождаемости в период после столетия. Попытка анализировать новые тенденции влияния качества жизни на различное рождение в безопасных регионах мира, чтобы сравнить про-
cesses of socio-economic, sociocultural, and reproductive differentiation of indexes of population movement on Russian territories with rating evaluations were made in the article.

The hypothesis of the research is related to the assumption that the global changes in life quality in a number of the world’s regions stimulated the renewal of the tendency to alternation of generations in demographic processes. The authors of the research draw a conclusion that this process in Russia was just started and developing. It gives a chance to develop the tendency of alternation of generations in the future and reduce the treats of depopulation and the need of superfluous recruiting of foreign labor force.

Keywords: quality of life, demographic transition, alternation of generations, safe region

The first decade of the XXI century is marked by a dynamic formation of a new structural fertility model in most developed countries. In Europe, in particular, there is a widespread growth in the average number of children born by women of the hypothetical generation and, more importantly, this is noted in those countries which previously showed clear evidence of depopulation in contrast to the catching up countries. This new fertility model, at the same time, is observed to be only partially affected by the active governmental pronatalist policy measures and migration trends. We should agree that it took a while for the shift in the births calendar caused by transformation of marriage to come from Europe to Russia.

Several observations can be made in this regard. Firstly, the growing trends in total fertility rate after 2000 in Central, Southern and Eastern Europe in general are evidently clear. This fact is noted by J. Bongaarts and T. Sobotka [9, p. 220, 10, p. 272-273]. In their review of the total fertility trend the researchers noted that European countries (including those of Eastern Europe and Russia) have experienced an increase in the total fertility (TFR). Having discussed the problem related to the period of dynamic growth in fertility and contributions made thereto by different groups of women, J. Bongaarts and G. Fini accentuated the usefulness of a new index, namely the correction for rate and parity with correction for total fertility rate (TFRp*) or $TFR = TFR^* (1 - c)$ [5, p. 274-275]. The second observation was made later and it was a severer one. The point is that the total fertility continued to grow also during the protracted global economic recession [7, p. 270-271]. Thirdly, the second demographic transition in post-communist countries was of a more depressed nature due to a decline in fertility (Ukraine, for example, reached an average of 1.1 births per woman of hypothetical generation). The exceptions to these are countries such as Albania and Serbia & Montenegro where the TFR index stayed at 2.00–1.75 [8, p. 221]. Anyhow, the activities of the golden billion countries population have changed its quality during the first decade of the new century in science, technology and many other realms, as well as in terms of social and professional mobility of the population. The concepts of the third demographic transition and of migration as a determining factor influencing the population reproduction trends set forth by Van de Kaa, Ron Lesthaeghe and David Coleman can not provide an irrefragable answer to how the quality of life affects the reproductive behavior of family and individual [9, 132]. Being highly multidimensional and complex, this relationship does not fit into the framework of the demographic transition concept. In this we can agree with M. Klupta, who believes that proper consideration of the effects that factors of socio-economic development of modern countries have on their fertility trends requires at least the methods of cluster and historical analysis [10].

The rapid worldwide development of expert and evaluation technologies has made it possible to compare well-being ratings of various countries as aggregate estimates of quality of life with total fertility rates differentiation. Such total fertility rates are fully comparable from territorial and historical aspects. We acquired the most recent quality of life indexes of the so-called good countries («The Good Country Index», 2014) [11]. The total fertility rate (TFR) and the «Aggregated rating» proved to be interdependent, which allows to formulate a working hypothesis of a positive relationship possibly existing between the reproduction levels in the group of countries having a high level of general well-being. This implies not only the characteristics and indexes of socio-economic development, but a social and cultural context of the problem as well. The regional demographics in the good countries turned out to be quite good (Fig. 1).

The aggregated index «The Good Country Index, 2014» revealed Russia’s generally outlying position in respect to the groups of countries with favorable quality of life levels and modes of generations replacement.

Decomposition of the index into its constituent elements revealed a vast heterogeneity in the relationship between index components within the group of high ranking «good countries» and total fertility (Table 1).
Decomposition of the index into its constituent elements revealed a vast heterogeneity in the relationship between index components within the region of high ranking good countries and total fertility.

The countries rating 1st through 20th were found to be within the total fertility rates of averagely 1.7–2 children per woman of hypothetical generation. Thus, almost half of the good countries remains threatened by a prospect of depopulation processes capable of destroying the conservative ethnic basis of statehood. The other half of the most well-off countries of the first twenty has moved towards maintaining the ordinary mode of generations replacement. The key position in determination of the narrowed mode of generations replacement is held by culture, which is the strongest component of the rating. Similar positions belong to science and technology components. The latter correlates directly with low total fertility and population reproduction rates. The combination of these depopulation factors determines the lion’s share (43% total) of fertility in the most well-off countries. The opposing group of factors includes prosperity, stability and health. But their total contribution to demographic processes development amounts to only one third. The climate factors effect is generally positive but at the same time paradoxical, since it is the countries with extreme temperatures that display higher fertility than that of the countries with moderate climates. Statistically the relationship turned out to be significant enough.

Extended reproduction and generations replacement is maintained due to the following components: prosperity and equality (gross rate = 1.031), global stability (1.029), health and well-being (1.021) and planet and climate (1.014).

Let us make this supposition more precise. The following is the recalculation of the gross rate, as applied to the most well-off countries, into net rate. Thus the net generation replacement value will exceed 1 only for the following components: prosperity and equality, global stability, health, peace and safety.

![Image of a graph showing total fertility rate and the «Aggregated rating» relationship]

**Table 1**

| Good countries component rating by relationship closeness to TFR | Component denomination | Correlation index value (R²) | TFR value to gross rate | Net coefficient of reproduction | Share of countries with TFR >2 per woman of hypothetical generation |
|---------------------------------------------------------------|------------------------|------------------------------|-------------------------|-------------------------------|---------------------------------------------------------------|
| 1 Culture                                                     | 0.263                  | 1.900 / 0.927               | 0.909                   | 0.462                         |
| 2 Science and technology                                     | 0.187                  | 1.885 / 0.920               | 0.902                   | 0.384                         |
| 3 Prosperity and equality                                    | 0.181                  | 2.115 / 1.031               | 1.010                   | 0.384                         |
| 4 Global stability                                           | 0.159                  | 2.108 / 1.029               | 1.008                   | 0.384                         |
| 5 Health and well-being                                      | 0.120                  | 2.092 / 1.021               | 1.001                   | 0.384                         |
| 6 Planet and climate                                         | 0.082                  | 2.077 / 1.014               | 0.994                   | 0.384                         |
| 7 Peace and safety                                            | 0.065                  | 1.992 / 0.972               | 0.953                   | 0.538                         |
and well-being. The overall picture of the components structure by demographic criteria is shown in bar chart in Fig. 2. Recalculation showed the most significant share in The Good Country Index belongs to the components of culture, science and technology, prosperity of the territory.

It is worth noting that the least share belongs to peace and safety component. This is quite surprising considering the current military and political situation in the world. Component specific fields in the index do not overlap. The requirements of safety, stability, prosperity and well-being are applied primarily to the developing countries, not just those rated as well-off. Oddly enough, the value of health is within the fields of the most well-off countries and corresponds to the fields of science, culture, stability and prosperity of the countries considered good by its quality of life (Table 2).

Cultural component (Fig. 3) proved to be the strongest due to the systemic nature inherent to the formation of public and individual views on the acceptable number of children in the family or reproductive attitudes and ideas about normal number of children existing on society and eth-

### Table 2

| Country name                | Component Rating | Science | Culture | Peace and safety | Stability | Climate | Prosperity | Health |
|-----------------------------|-------------------|---------|---------|------------------|-----------|---------|------------|--------|
| USA                         | +                 | -       | +       | -                | -         | -       | +          | +      |
| Finland                     | +                 | -       | +       | -                | +         | +       | +          | +      |
| Iceland                     | +                 | +       | -       | +                | +         | -       | -          | +      |
| Ireland                     | +                 | +       | -       | +                | -         | +       | +          | +      |
| Norway                      | +                 | +       | -       | +                | +         | +       | +          | +      |
| Sweden                      | +                 | +       | +       | +                | +         | +       | +          | +      |
| Greenland                   | +                 | +       | +       | +                | -         | +       | +          | +      |
| Belgium                     | +                 | +       | +       | +                | -         | +       | +          | +      |
| France                      | +                 | +       | +       | +                | +         | +       | +          | +      |
| Australia                   | +                 | +       | +       | -                | +         | -       | +          | +      |
| New Zealand                 | +                 | +       | -       | +                | +         | -       | +          | +      |
| The Netherlands             | +                 | +       | +       | +                | +         | +       | +          | +      |
| Denmark                     | +                 | +       | -       | +                | -         | -       | +          | +      |
| Malaysia                    | -                 | +       | +       | -                | -         | -       | +          | -      |
| Mexico                      | -                 | -       | +       | -                | -         | -       | -          | -      |
| Dominica                    | -                 | -       | +       | -                | -         | -       | -          | -      |
| Azerbaijan                  | -                 | -       | +       | -                | -         | -       | -          | -      |
| Turkey                      | -                 | -       | +       | -                | -         | -       | -          | +      |
| Vietnam                     | -                 | -       | +       | -                | -         | -       | -          | -      |
| Albania                     | -                 | -       | +       | -                | -         | +       | -          | -      |
| Costa Rica                  | -                 | -       | +       | -                | -         | -       | -          | -      |
| Brazil                      | -                 | -       | -       | -                | -         | +       | -          | -      |
| Chile                       | -                 | -       | -       | -                | -         | -       | -          | -      |
| Colombia                    | -                 | -       | -       | -                | -         | -       | -          | -      |
| Uruguay                     | -                 | -       | -       | -                | -         | -       | -          | -      |
| Trinidad and Tobago         | -                 | -       | -       | -                | -         | -       | -          | -      |
| Sri Lanka                   | -                 | -       | -       | -                | -         | -       | -          | -      |
| Georgia                     | -                 | -       | -       | -                | -         | -       | -          | -      |
nical levels. The only component which is more powerful than that of culture is the religious affiliation.

Statistically, the relationship between culture and fertility is significant, but, unfortunately, it is of an inverse type. It is clearly evident that the most culturally developed countries are found on the left side of the chart and represent the cluster of the top twenty countries. Moreover, the United States, let alone Brazil and Russia, are found close to the periphery of the cluster, among the countries rated 40 through 60. The relationship between general vector of rating and total fertility is shaped in a clearly negative manner.
A similar pattern is observed in Fig. 4 presenting the relationship between the level of scientific and technological development and the total fertility rate. However, the boundaries of the first cluster (Great Britain, Denmark, USA, etc.) are better outlined. The intermediate cluster of the catching up countries (Turkey, Chile, Russia, etc.) and that of the least well-off countries (Dominica, Bangladesh, Venezuela, etc.) are clearly identifiable.

The distribution of countries by prosperity and equality component relationship to the total fertility rate is entirely different (Fig. 5). Almost all of the countries are densely grouped in the proximity of the ordinary generations replacement axis. Statistically the relationship between prosperity component and the total fertility rate is worth considering.

However, the relationship as a whole is inverse, the highly rated good countries are grouped closer to the axis of values obtained for the top twenty. Those with a low rating tend to have higher rates of total fertility which «pulls up» the axis. The overall picture is presented in composition table 3. Russia has been included for value comparison. Generally, Russia’s position is in the intermediate group, outside the boundaries of the good countries cluster. The demographic status of the country, however, looks quite good thanks to its total fertility rates and generations replacement level (such an evaluation can not yet be given referring to life span criterion).

Given the impressive life span in the most well-off countries and practically negligible probability of mortality among mothers in reproductive period, it is quite easy to recalculate the total fertility rate into the generations replacement coefficient. TFR value is multiplied by the biological constant of probability of a female baby being born to a mother (0.488). This allows to accurately determine the probability threshold of ordinary generations replacement in the country not requiring engagement of migrants (gross reproduction rate, Table 4). Conversely, if the generation replacement goes below 1, a deficit of reproduced stationary population with respective need for further engagement of human capital from outside the country will be observed.

Let’s assume the aspirations for material and spiritual well-being are a quality of life indicator of the Russian population everyday life. It is clear that less well-off countries are marked by generally higher fertility rates. This is proved by the law of well-being and fertility inverse relationship, commonly known since J. Bertillon’s times. However, the group of most well-off countries demonstrates total fertility rates allowing to come tightly close to the ordinary generations replacement level.

As examples we can mention Ireland (where abortions are prohibited), New Zealand, France, Spain and Great Britain. However, practically all of these countries are actively engaging borrowed foreign man power. Russia’s position in the rating just by culture component turned out to be higher than that obtained w a combination of all components (technology, safety, etc.).

Component method has been used for a long time in Russia for quality of life rating evaluation. The number of components is still seven, but the nominations are different. An aggregated rating of regions by differentiated quality of life rates (including factors as life span, income rates, living conditions, infrastructure, ecological conditions and safety) has been prepared by RIA rating agency (RIA Novosti group) experts under a project shared with Moscow News newspaper [11].

Based on the RIA group rating, we have identified a group of the best areas of Russia for well-be-
The following table shows the relationship between rating indicators, both by number and total score, and total fertility rate value in the best well-off regions of Russia (Table 5).

Table 3

| Continent, Territory, Country | Total fertility rate (average number of children per woman) | №1 | №2 | №3 | №4 | №5 | №6 | №7 | Rating |
|-------------------------------|----------------------------------------------------------|----|----|----|----|----|----|----|--------|
| **Most well-off**             |                                                          |    |    |    |    |    |    |    |        |
| Great Britain                 | 2                                                        | 1  | 12 | 94 | 9  | 30 | 9  | 6  | 7      |
| Ireland                       | 2                                                        | 20 | 7  | 33 | 4  | 15 | 1  | 101| 17     |
| Iceland                       | 2                                                        | 24 | 37 | 27 | 15 | 1  | 101| 44 | 17     |
| New Zealand                   | 2                                                        | 10 | 25 | 37 | 17 | 7  | 41 | 17 | 5      |
| France                        | 2                                                        | 12 | 26 | 92 | 18 | 10 | 28 | 15 | 11     |
| Denmark                       | 1.7                                                      | 14 | 9  | 88 | 5  | 26 | 35 | 5  | 9      |
| The Netherlands               | 1.7                                                      | 18 | 2  | 97 | 3  | 23 | 8  | 2  | 4      |
| Belgium                       | 1.8                                                      | 15 | 1  | 100| 16 | 56 | 5  | 3  | 10     |
| Norway                        | 1.8                                                      | 40 | 24 | 58 | 7  | 4  | 14 | 16 | 8      |
| Finland                       | 1.8                                                      | 7  | 18 | 53 | 12 | 14 | 3  | 12 | 2      |
| Australia                     | 1.9                                                      | 16 | 38 | 89 | 13 | 6  | 36 | 14 | 15     |
| USA                           | 1.9                                                      | 26 | 41 | 114| 28 | 39 | 53 | 7  | 21     |
| Sweden                        | 1.9                                                      | 8  | 14 | 111| 8  | 3  | 4  | 8  | 6      |
| **Less well-off countries**   |                                                          |    |    |    |    |    |    |    |        |
| Tunisia                       | 2.2                                                      | 58 | 86 | 31 | 82 | 59 | 54 | 68 | 56     |
| Costa Rica                    | 1.9                                                      | 61 | 64 | 35 | 25 | 19 | 42 | 76 | 22     |
| Mexico                        | 2.2                                                      | 70 | 73 | 91 | 69 | 84 | 47 | 30 | 66     |
| Jamaica                       | 2.1                                                      | 65 | 59 | 23 | 62 | 87 | 51 | 72 | 45     |
| Trinidad and Tobago           | 1.8                                                      | 76 | 42 | 25 | 64 | 110| 22 | 86 | 51     |
| Argentina                     | 2.4                                                      | 67 | 46 | 55 | 29 | 25 | 105| 112| 57     |
| Brazil                        | 1.8                                                      | 75 | 49 | 83 | 37 | 5  | 123| 52 | 49     |
| Chile                         | 1.9                                                      | 52 | 47 | 42 | 27 | 18 | 31 | 114| 24     |
| Colombia                      | 2.3                                                      | 57 | 83 | 43 | 107| 15 | 29 | 29 | 31     |
| Uruguay                       | 2                                                        | 104| 58 | 5  | 35 | 13 | 94 | 95 | 41     |
| Malaysia                      | 2.1                                                      | 49 | 28 | 113| 87 | 73 | 10 | 91 | 58     |
| Albania                       | 1.8                                                      | 101| 54 | 95 | 65 | 50 | 18 | 99 | 73     |
| Georgia                       | 1.7                                                      | 63 | 77 | 51 | 102| 105| 13 | 87 | 77     |
| **Least well-off countries**  |                                                          |    |    |    |    |    |    |    |        |
| Dominica                      | 2                                                        | 108| 69 | 99 | 46 | 89 | 113| 35 | 101    |
| Venezuela                     | 2.4                                                      | 117| 117| 34 | 77 | 33 | 124| 118| 117    |
| Azerbaijan                    | 2.3                                                      | 95 | 107| 122| 74 | 94 | 86 | 100| 122    |
| Kuwait                        | 2.4                                                      | 85 | 70 | 18 | 108| 104| 72 | 83 | 93     |
| Qatar                         | 2.2                                                      | 112| 95 | 50 | 118| 81 | 68 | 78 | 110    |
| Turkey                        | 2.1                                                      | 51 | 50 | 112| 111| 60 | 97 | 20 | 79     |
| United Arab Emirates          | 1.9                                                      | 82 | 45 | 74 | 122| 61 | 76 | 53 | 87     |
| Bangladesh                    | 2.3                                                      | 100| 94 | 52 | 67 | 117| 55 | 34 | 91     |
| India                         | 2.4                                                      | 56 | 53 | 44 | 91 | 107| 117| 37 | 81     |
| Iran                          | 1.9                                                      | 93 | 119| 72 | 97 | 103| 56 | 73 | 115    |
| Sri Lanka                     | 2.1                                                      | 87 | 97 | 54 | 55 | 90 | 23 | 94 | 78     |
| Vietnam                       | 2.1                                                      | 89 | 76 | 103| 123| 123| 79 | 111| 124    |
| Russia                        | 1.7                                                      | 41 | 68 | 90 | 106| 88 | 112| 42 | 95     |
Table 4

Reproduction rates by culture component for groups of countries

| Most well-off countries | Gross reproduction rate | Culture component rating | Country’s overall rating |
|-------------------------|-------------------------|--------------------------|--------------------------|
| Belgium                 | 0.878                   | 1                        | 10                       |
| The Netherlands         | 0.830                   | 2                        | 4                        |
| Ireland                 | 0.976                   | 7                        | 1                        |
| Denmark                 | 0.830                   | 9                        | 9                        |
| Great Britain           | 0.976                   | 12                       | 7                        |
| Sweden                  | 0.927                   | 14                       | 6                        |
| Finland                 | 0.878                   | 18                       | 2                        |
| Norway                  | 0.878                   | 24                       | 8                        |
| New Zealand             | 0.976                   | 25                       | 5                        |
| France                  | 0.976                   | 26                       | 11                       |
| Malaysia                | 1.025                   | 28                       | 58                       |
| Iceland                 | 0.976                   | 37                       | 17                       |
| Australia               | 0.927                   | 38                       | 15                       |

| Less well-off countries |
|---|---|---|
| USA | 0.927 | 41 | 21 |
| Trinidad and Tobago     | 0.878 | 42 | 51 |
| United Arab Emirates    | 0.927 | 45 | 87 |
| Argentina               | 1.171 | 46 | 57 |
| Chile                   | 0.927 | 47 | 24 |
| Brazil                  | 0.878 | 49 | 49 |
| Turkey                  | 1.025 | 50 | 79 |
| India                   | 1.1712| 53 | 81 |
| Albania                 | 0.878 | 54 | 73 |
| Uruguay                 | 0.976 | 58 | 41 |
| Jamaica                 | 1.025 | 59 | 45 |
| Costa Rica              | 0.927 | 64 | 22 |
| Russia                  | 0.830 | 68 | 95 |

| Least well-off countries |
|---|---|---|
| Dominica                | 0.976 | 69 | 101 |
| Kuwait                  | 1.171 | 70 | 93 |
| Mexico                  | 1.074 | 73 | 66 |
| Vietnam                 | 1.025 | 76 | 124 |
| Georgia                 | 0.830 | 77 | 77 |
| Colombia                | 1.122 | 83 | 31 |
| Tunis                   | 1.074 | 86 | 56 |
| Bangladesh              | 1.122 | 94 | 91 |
| Qatar                   | 1.074 | 95 | 110 |
| Sri Lanka               | 1.025 | 97 | 78 |
| Azerbaijan              | 1.122 | 107 | 122 |
| Venezuela               | 1.171 | 117 | 117 |
| Iran                    | 0.927 | 119 | 115 |

«best well-off areas» (regions) turned out to be located in the field of clearly depopulation type with total fertility rates less than 1.5–1.7. However, statistically the relationship between indicators of total fertility rating is not sufficient enough for formulation of working hypotheses.

A thorough examination of how the regions of the most well-off group are distributed by total fertility rate revealed no significant relationship, but showed there are big differences between central regions of Russia and other regions. More importantly, the relationship between reproduction rate and rating score (which already includes life span and health along with other components) is positive (Fig. 7).
Quality of life index of Russia’s regions included the following: income level, housing conditions, social infrastructure availability, environment and climate, safety, population satisfaction, demographics, health and education, industrial and economic development of the area, transportation infrastructure, business activities.

The current total fertility rate in the Urals Federal District was to some extent predicted by the authors of demographic adversity index of Russia’s regions (A. G. Grishanova, N. I. Kozhevnikova, L. L. Rybakovskiy), which based on the method of comparing standard total fertility and mortality rates to indices of mechanical movement of Russian areas in 2006–2007 came to the conclusion that the Urals and the Southern districts are the demographically best regions [3, p. 36], [4, p. 34-35]. The authors of the method noted that the total fertility rate grew up significantly in the Middle and the Southern Urals in 2005–2008. The most demographically adverse regions of the Urals Federal District were then the Sverdlovsk and the Chelyabinsk region (1.031 and 1.034 respectively). Tyumen region areas looked less adverse (0.878), [4, p. 220].

In general, the total rate dynamics in the Urals Federal District of Russia is in line with the nationwide Russian trend. But the clearly marked increase in the trend of years 2001 through 2012–2013 confirms the total fertility rate has almost fully recovered to the 1990 rate. The urban trend is especially remarkable. This is to partly confirm the hypothesis of an ongoing formation of a new fertility model. This model is influenced by an in-

| Rating | Russian region                        | Total rating score | TFR   |
|--------|--------------------------------------|--------------------|-------|
| 1      | city of Moscow                       | 72.9               | 1.323 |
| 2      | city of St. Petersburg               | 68.6               | 1.483 |
| 4      | Moscow region                        | 60.6               | 1.493 |
| 5      | The Republic of Tatarstan            | 58.4               | 1.796 |
| 6      | Krasnodarskiy kray                   | 54.3               | 1.699 |
| 7      | Belgorodskaya region                 | 53.4               | 1.515 |
| 8      | The Khanty-Mansiysk-Ugra autonomous district | 53.1          | 2.023 |
| 9      | Tyumenskaya region                   | 52.4               | 1.988 |
| 10     | Voronezhskaya region                 | 49.1               | 1.449 |
| 11     | Nizhegorodskaya region               | 48.3               | 1.547 |
| 12     | Kaluzhskaya region                   | 48.0               | 1.623 |
| 13     | Rostovskaya region                   | 47.9               | 1.510 |
| 14     | Yaroslavskaya region                 | 47.8               | 1.604 |
| 15     | Lipetskaya region                    | 47.5               | 1.626 |
| 16     | The Republic of Bashkortostan         | 47.5               | 1.859 |
| 17     | Novosibirskaya region                | 46.9               | 1.711 |
| 18     | Kalinigradskaya region                | 46.8               | 1.625 |
| 19     | Leningradskaya region                 | 46.7               | 1.220 |
| 20     | Sverdlovskaya region                 | 46.2               | 1.827 |
| 21     | Omskaya region                       | 46.0               |       |
| 22     | The Yamalo-Nenetskiy autonomous district | 46.0            | 2.053 |
| 23     | Kurskaya region                      | 44.8               | 1.695 |
| 24     | Samarskaya region                    | 44.6               | 1.539 |
| 25     | Tomskaya region                      | 44.4               | 1.549 |
| 26     | Chelyabinskaya region                 | 44.1               |       |
| 27     | Vladimirskaya region                  | 43.6               | 1.619 |
| 28     | Sakhalinskaya region                  | 43.4               | 1.713 |
| 29     | Tul’skaya region                     | 43.0               | 1.432 |
| 30     | Permiskiy kray                        | 42.9               | 1.907 |
crease in the age of marriage and a shift towards the older age groups. The selective sociological study of population that we conducted in 2013–2014 in the neighboring regions of the Urals Federal District revealed a significant relationship between the respondents’ views of quality of life and material and spiritual well-being of family.

During the selective study of Ural Federal District population several attempts were made to «semiotize the dimensions of human life, providing an axiological significance to all of their elements» [1]. In our study «material» and «spiritual» well-being are understood as a combination, as most studies do not separate the categories one from another and note how much harmony there is in such a combination.

We used the Cramer coefficient of VORTEX statistical system to identify the statistical relationships between variables, that is when the value of one variable is completely determined by the value of the second variable that resembles the material and spiritual well-being of the population (Fig. 8).

According to Cramer coefficient, the value of the «material and spiritual well-being» variable is completely determined by variables with values equal to or exceeding 0.3. The healthy environment is at the first place among the most important factors (0.465). Personal interests aimed at «achieving success in life» hold the second place with 0.384, and to complete the list of the most important factors are the following respondents’ wishes: to «consume quality goods and services» (0.376), to take full advantage of free time (0.329), to «live where one wants and to freely change the place of residence» (0.308).

In general, the significant factors shown in italics in the table define the population’s possibilities to achieve material and spiritual well-being. Most interestingly, healthy environment is at the top of the list, as it represents a set of favorable conditions understood as characterizing the quality of human environment and human life; integrally it is represented by the average life span and indicators of population’s health.

Thus, the results of the study contribute to a deeper understanding of the respondents wishes and aspirations, as well as to identification of important functional elements needed to achieve well-being.

In conclusion it should be noted that the group of the most «good» countries and regions, both in cultural and socio-economic terms, the relationship between population reproduction rates and well-being turned out to be inverse. However, after 2000 high ratings of area’s (region’s) development tend to correlate with rates approaching those of ordinary reproduction of population. Ever more «good» countries and regions can demonstrate the ordinary generations replacement model which does not require vast engagement of foreign labor from outside the country or region. The structural changes in total fertility rate, in their turn, have somewhat acquired an inner impulse for a
new kind of development. This trend is starting to show also in the post-industrial areas of Russia. In the long run the positive relationship between quality of life indicators may occur in the regions of the Urals and Siberia that have the most advantageous combination of components of scientific and technological development, culture, stability, prosperity and health.

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MULTIDIMENSIONAL AND FUZZY MEASURES OF POVERTY AT REGIONAL LEVEL IN MOZAMBIQUE

This study provides a step-by-step account of how fuzzy measures of non-monetary deprivation and also monetary poverty may be constructed at the regional level, based on the Mozambican Household Budget Survey 2008-09 (JOF08). To our knowledge, this is the first attempt to apply Fuzzy Set Theory to poverty measurement in Mozambique.