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Demographic Studies in VoIRC RAS: Formation of the Scientific School



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Abstract. The article describes main stages of the formation of the demographic studies school in the Vologda Research Center of RAS. We present the development of the system of thematic areas of employees' research historically: from its emergence until the present moment. The relevance of sociodemographic topics is related to the necessity to respond to demographic challenges of social development, such as depopulation, caused by low birth rates and relatively high mortality, population ageing, and the prevalence of poor health. Monitoring of trends and identification of determinants lead to a comprehensive understanding of the nature and causes of demographic dynamics, adding new knowledge to the demographic science. These studies help to find tools for preserving people in the country and in the region, strengthening public health, and adapting to the transformation of the population's age structure.

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The thematic topic of works covers all demographic processes: birth rate, mortality, marriage and divorce; patterns of the public health development and conditions for the formation of a healthy generation are studied, monitoring and evaluation of the demographic policy effectiveness are carried out. Due to the significance of behavioral factors of demographic development, the research of the population's demographic behavior is of special importance in the studies. VolRC RAS develops and implements the system of matrimonial, reproductive, self-preservation, and migration behavior monitoring using sociological methods. Despite depopulation, studies on the health formation, first of all, among children are still relevant. At the current stage of Russia's social development, social status of a family, the level of pedagogical competence and medical activity act as important health determinants together with external socio-economic conditions. The purpose of this work is to review socio-demographic studies which have been conducted by employees of the Vologda Research Center of RAS for the past 30 years.

Key words: demographic studies, depopulation, public health, children's health, population ageing, demographic policy.

Introduction

People began to be considered a core value and key resource of social development during humanization – the key trend of the late 20–early 21st centuries. Special focus on a number and quality features of population during this period could also be explained by the current demographic situation. A sharp decline of the birth rate with a simultaneous high mortality rate (including premature mortality) in Russia in the 1960s led to depopulation and ageing of population. These were demographic challenges that became obvious after the emergence of labor resources shortage and growing economic burden on able-bodied citizens.

At the same time, there were no systematic demographic studies after the closure of the institutions of demography in the 1930s¹, and demographic staff was not trained. In other words, there was no database with relevant information – especially about demographic process' determinants – which could be the basis for efficient demographic

policy. The “demographic thaw” happened only in the 1960s, when it was dangerous to ignore occurring changes. The Lomonosov Moscow State University was among the first institutions to start demographic research again. In 1965, it established a laboratory for the study of population; in 1967 – the Department of Population at the Faculty of Economics was established. In 1968, they were merged into the Education and Research Center for Studying Population Issues under the leadership of D.I. Valentey. Well-known Russian demographers A.Ya. Kavsha, V.V. Elizarov, V.A. Iontsev, N.V. Zvereva, V.N. Arkhangelsky, and others have worked and still work at the Center.

It is impossible to ignore L.E. Darsky's contribution to the revival of Russia's demography who began research on marriage, fertility, and family formation in 1964 at the Central Statistical Administration (RI CSA USSR), where he later headed one of the laboratories of the Demography Department². Later, other well-known structures emerged. It includes the establishment of N.M. Rimashevskaya Institute of Socio-Economic Studies of Population in 1988³ and the Center

¹ In 1934, the Institute of Demography in Leningrad was closed, and in 1939 – in Kiev. The main reason – unsatisfactory results of the 1937 population census, which showed losses during the period of collectivization and famine. For details, see, for example, an interview with A.S. Vishnevsky “Demographic studies in Russia: history, state, and prospects”. Available at: <http://www.demoscope.ru/weekly/2006/0249/analit01.php#1>

² A creative career of L.E. Darsky. Available at: <http://www.demoscope.ru/weekly/2002/085/nauka01.php>

³ Available at: <http://www.isesp-ras.ru/>

of Demography and Human Ecology of the Institute of Economic Forecasting of RAS – a predecessor of the Institute of Demography of NRU HSE (IDEM), which started work in 2007 under the leadership of A.G. Vishnevsky⁴. L.L. Rybakovsky has been heading the Department of Social Demography at the Institute of Socio-Political Research since 1974. In 2020, the Institute for Demographic Research of FCTAS RAS was created – it was the most anticipated event among the demographic research community⁵. This is, undoubtedly, the accomplishment of its director – RAS Corresponding Member, Doctor of Sciences (Economics) S.V. Ryazantsev and his colleagues, Director of FCTAS RAS, Academician M.K. Gorshkov, who understands the strategic importance of demography for Russia's socio-economic development.

In the 2000s, there were many regional researchers dealing with demographic issues. We would like to mention the Ural school of demographers: A.I. Kuzmin – associate of the Ural Demographic Forum, A.M. Ilyshev, A.P. Bagirova, etc.; colleagues from the Republic of Bashkortostan (Bashkir branch of FCTAS RAS) who were among the first to start preparing a regional demographic report – R.M. Valiakhmetov, F.B. Burkhanova, etc. The demographic research is conducted by specialists of the Institute of Social, Economic, and Energy Problems of the North of Komi SC UrB RAS under the leadership of L.A. Popov. Scientists of the Family and Demography Center of the Tatarstan Academy of Sciences successfully monitor the demographic situation and its determinants in the region under the guidance of Ch.I. Ildarkhanova.

The Vologda Research Center of RAS is also among regional research organizations. In it, with the assistance and full support of the scientific supervisor, RAS Corresponding Member, Doctor

of Sciences (Economics), Professor V.A. Ilyin, the scientific school of Demographer, Doctor of Sciences (Economics) A. A. Shabunova was formed. VolRC RAS has been conducting demographic and socio-demographic studies since 1995.

The article presents an overview of studies on various aspects of the demographic development, carried out by scientists of the Vologda Research Center of RAS.

There were children first...

The history of demographic research at VolRC RAS began with the implementation of a unique idea to organize a longitudinal cohort monitoring of conditions for the formation of health among children. In 1980, Natalia M. Rimashevskaya – Doctor of Economics, Professor, RAS Corresponding Member, Honored Scientist of the Russian Federation – first expressed the idea that there is the need to conduct a study similar to the children's health and development research (NCDS) started by the UK National Child Development Study Center (NCB) in 1958 and continued by the Centre for Longitudinal Studies (CLS) in 1985 [1]. Her idea was accepted for the implementation in the Vologda Oblast by **Vladimir A. Ilyin**. In May 1995, the Vologda Research Center of RAS (previously named VSCC CEMI RAS) together with the Institute of Socio-Economic Studies of Population of RAS and support of the Vologda Oblast Government started a longitudinal (long-term) panel study of socio-economic and medical factors affecting the health and development of children [1] according to a special program, which included assessment of children's health status, process of their physical and intellectual development, parents' social status, their level of education, income, living conditions, etc. [2; 3]. Scientific consulting of the monitoring on the basis of ISESP RAS was carried out by Doctor of Sciences (Economics), Professor Elena B. Breeva for a long time. She repeatedly emphasized the scientific value of the methodological approach used to analyze and predict the child population's

⁴ Available at: <https://www.hse.ru/demo/>

⁵ Available at: <https://idrras.ru/>

Cohorts participating in the study

Cohort, year of birth	Year of cohort observation completion	Number of families at the start of the observation	Number of families at the end of the observation	Exclusion, %
1995	2013	101	64	37.6
1998	2016	199	22	89.0
2001	2019	250	33	86.8
2004	2022	265	-	-
2014	2032	370	-	-
2020	2038	379	-	-

health in real time. The study is currently being conducted (*Table*) under the supervision of **Alexandra A. Shabunova**. The analysis of children's health [4; 5] revealed periods of its noticeable deterioration (critical points) – the first year of life, the period of entering school, and in the transition from primary to secondary school [6; 7] – and the determinants of children's health [8–10]. The study showed that each age period is characterized by a specific set of factors that determine health. In infancy and early childhood, influence of medical, biological, and social factors prevails (poor health of parents; low hemoglobin during pregnancy; mother's smoking during pregnancy; working conditions of an expectant mother that do not meet sanitary standards; nature of infant feeding). In preschool and early school age, environmental factors, lifestyle, and a family's living standards become more significant (a family's living standards, comfort of housing conditions, environmental conditions in an area of permanent residence, level of social and hygienic literacy, and health-preserving activity of parents) [11; 12]. The concentration of risk factors (low level of medical activity, unfavorable environmental conditions, unfavorable housing conditions, poor health of a woman during pregnancy, single-parent family) occurs in low-income families [7].

The study showed that stability of the economy, social well-being, and systematic progressive development of the social sphere are the key to family well-being and children's health. The opposite situation leads to destruction of the

institution of family, decrease of child population, and decline of its quality characteristics. The child's health is affected by parents' lifestyle, conditions of upbringing, material well-being, medical activity, diet, housing conditions, and environmental situation [13].

In 2014, the study was supported by a grant from the Russian Science Foundation (RSF), which allowed monitoring a new cohort of newborns 10 years later. For the first time, there was no record of deterioration of newborns' health that had been previously observed from one cohort to another. Positive trends of socio-economic development during the reform of the economy and social sphere were reflected in living conditions of families with children, level of satisfaction with their health, state of newborns' health, and main indicators of the maternity care system [5; 11; 14].

Much attention is paid to the state of health and neuropsychiatric development of school-aged children. This period is very important for health preservation and formation of a healthy lifestyle among younger generation. The role of educational organizations, families, and healthcare is shown in the studies of VolRC RAS, and importance of their interaction in solving this problem is justified [15–18].

Children's health determines the country's potential in the future; it serves as an important indicator of the state policy efficiency and the nation's well-being. Due to a rapid economic, political, socio-cultural, and other transformations taking place in post-Soviet Russia, the study of children's health will be strategically relevant.

The findings and results of child health monitoring served as the basis for new research projects. Thus, the study subject was the **reproductive health** of adult population and young people – future parents. This idea was proposed by I.P. Katkova – Doctor of Sciences (Medicine), Senior Researcher at ISESP RAS – who conducted its active scientific consulting since the beginning. Under the guidance of A.A. Shabunova, *M.A. Lastochkina (Kopeikina)* carried out an assessment of reproductive health and constructed an economic and mathematical model of reproductive potential, including groups of medical, demographic, and socio-demographic indicators [19–23]. Her works proved the importance of male reproductive health in the formation of reproductive potential; it is revealed that reproductive attitudes determine a number of children in a family by 50%.

Later, an approach to an assessment of reproductive health, based on its definition by the World Health Organization, was proposed, supplemented by a set of parameters of the parental health potential (*A.A. Shabunova, O.N. Kalachikova*). The analysis shows the success of obstetric services, which provided a reduction in infant and maternal mortality, premature births, and some improvement of newborns' health. A possibility of pregnancy planning also has positive aspects: a number of abortions decreases, use of contraceptives increases, and incidence of sexually transmitted diseases declines, which increases a possibility of safe sexual relations. At the same time, there are strong negative trends: continued growth of genitourinary system diseases, gynecological morbidity, infertility, and the incidence of pregnant women. This indicates a low level of not only the health potential among the population, but also an insufficient responsibility of parents for the health of future children [24].

In the late 1990s, the Center began studying **the state and behavioral factors of public health** in the form of annual monitoring, which has been conducted in the Vologda Oblast for about 20 years

(*A.A. Shabunova, K.A. Gulin, G.V. Tikhomirova, N.A. Rybakova, N.A. Malanicheva*). According to the author's methodology, a self-assessment health index is calculated, indicating the relationship between the dynamics of health and social development. The research program includes such parameters as the self-assessment of population's health, responsibility for their own health, prevalence of bad habits, medical and physical activity, satisfaction with the quality of medical care, issues in activities of medical institutions, sources of information about health [25–28]. Health factors were systematized, a high importance of lifestyle was revealed [29], which led to the formation of its own methodology for studying self-preservation behavior of the population with the allocation of attitudes, motives, and actions implemented in relation to bad habits, physical activity, work and rest, medical activity, nutrition, sexual behavior, stressful situations (*A.A. Shabunova, O.N. Kalachikova, P.S. Korchagina*) [30; 31]. The main problem of self-preservation behavior of the population is a contradictory awareness about a healthy lifestyle and implemented behavioral practices, which are clearly harmful to health, or neglect of useful ones.

The study assesses the health of certain socio-demographic population groups (youth, urban residents, elderly people, women, etc.) [32–35]. Gradually, the methods of actual demographic analysis are being mastered, including forecasting (*M.A. Lastochkina, A.O. Bogatyrev, E.A. Rossoshanskaya (Chekmareva), N.A. Kondakova*) [36–39]. A methodology for assessing mental and social health of the population has been developed, which allows assessing social well-being, prevalence level of anxiety, depression, and neuroses [40; 41].

The accumulated base of studies on physical, reproductive, and mental health of the population, and child health became the basis for the formation of the public health concept developed by **A.A. Shabunova** [42–44]. In the context of the theory of socio-economic systems sustainability,

public health is considered a property of the population of a certain territory that ensures demographic development, a maximum possible life expectancy and labor activity, which is formed under the complex influence of biological, socio-economic, socio-cultural, and environmental factors. Public health is measured at the macro and micro levels, taking into account behavioral and subjective assessments, using statistical and sociological methods of data collection. Public health factors are grouped into biomedical, socio-economic, and lifestyle factors. The extent of ill health and its impact on the economic development are evaluated using the method of lost profits and the burden of disease [45]. The results of health research found practical application in the work of the health system – especially the assessment of functioning and development of proposals to improve efficiency of its activities, which is the subject of *K.N. Kalashnikov's* dissertation (supervisor – V.A. Ilyin) [46].

Studies of the dynamics and determinants of birth [47] and mortality rates [48] of the population became systematic within the research work “*Reproduction of territories' population: trends and reserves*” in 2012, and, in 2015, a laboratory for the study of problems in the social sphere was established. Socio-demographic research has become one of the key areas of its activity.

The main objective of the research activity of demographers of VolRC RAS is to monitor, forecast, and analyze information about the demographic development, taking into account the population's behavior: birth rate, reproductive and marital behavior, mortality, health and self-preservation behavior, migration and migration mobility, as well as the dynamics of the population structure – first of all, age (population ageing) – and the demographic policy assessment.

With the evolution of research area, the arsenal of methods also expanded. The index method was used to assess the contribution of structural and behavioral factors to the change in the population's

birth rate, which allowed stating the efficiency of demographic policy during the implementation of new measures after 2006. It is proved that the increase of the birth rate during the period of the demographic policy intensification (2006–2011) was mostly (by 74%) caused by an increase in the intensity of births, i.e., a reaction to the introduction of new measures [49]. In 2014, a methodology for assessing demographic security was developed (*O.N. Kalachikova, A.V. Korolenko*). To evaluate the current situation in the RF regions, the authors used an indicative method to analyze **demographic security** in four blocks of indicators: “Reproduction and reproductive attitudes of the population”, “Gender, age, marital, and family structure of the population”, “The state of health of the population and the health system”, “Mechanical movement of the population and spatial structure”. There is a pronounced polarization of the main indicators in the context of entities of the Russian Federation. The most favorable situation in terms of population reproduction, parameters of gender, age, marital and family structure has developed in the North Caucasus regions, remote regions of Siberia and the Far East. The leading demographic threats to these territories are negative characteristics of the population's health status, a low density of its location, and depopulation of the territories. In the central Russian regions, with obvious successes in the migration policy and healthcare areas, existing parameters of the population reproduction, transformation of gender, age, marriage and family structure, and traditional family values are of concern [50].

Territorial features of the demographic development are also studied in the context of individual demographic processes. The multidimensional grouping method was used to analyze the differentiation of mortality in Russian regions [51], regional differences of the family institution features were estimated using the cluster analysis [52], and a statistical analysis of children's health was carried out [10; 12].

Using mathematical methods (regression analysis of panel data), *demographic development factors* were estimated. It was revealed that the birth rate during the analyzed period was significantly affected by the population's living standards, amount of funding for healthcare, physical education and sports, as well as the state of infants' health. The greatest contribution to the population's life expectancy was made by morbidity factors for several classes and reasons, well-being level, increased prices for goods and services, mental health of society, and safety of working conditions. Factors of the population's living standards, economic development, and innovation played a significant role in determining migration processes [53].

O.N. Kalachikova's dissertation (academic supervisor – A.A. Shabunova) presents the author's approach to the study of the population's reproductive behavior and identifies modern trends of *reproductive behavior* – small number of children and the ageing of motherhood, lengthening of the protogenetic interval, ignorant contraceptive behavior, and a decrease in abortion practices. The key reasons for a small number of children are a decrease in the need for children; in case of non-implementation of reproductive plans – unfavorable financial conditions [54]. Using the objective tree method, models of reproductive [55] and self-preservation behavior of the population were constructed [56].

An increase in the share of older people in a total population remains one of the most significant trends in the development of modern society. This is an important factor of social transformations, which can impact society directly and indirectly. *Population ageing* causes radical changes in the demographic and social structure of society, systems of production, distribution, and consumption, and it ultimately affects the situation in all social groups and strata. It was the basis of *V.N. Barsukov's* dissertation research (academic supervisor – A.A. Shabunova). The analysis of demographic ageing trends in Russia and individual entities

of the Federation, based on the calculation of demographic ageing indicators (ageing coefficient, ageing index, demographic burden at the expense of elderly people, age indicators of ageing), allows concluding that most ageing indicators of Russian population get closer to those of developed countries, and the ageing process “levels” [57]. The ageing of population is typical for all entities of the Federation, and the differentiation of its indicators is relatively small (compared to fertility and mortality indicators) [58]. Factors of active longevity have also been studied [59].

Under the leadership of A.A. Shabunova, monitoring of the conditions for the formation of the children's generation constantly develop. Studies of school children's health [60], children's neuropsychiatric health [61; 62], and identification and development of gifted children [63] are updated (*I.N. Razvarina, L.N. Natsun (Fakhradova)*). It was revealed that most parents do not have adequate knowledge about children's health and development, which poses the question of improving the efficiency of health and hygiene counseling, as well as education in general. The necessity of effective interdepartmental interaction between a family, healthcare, and education is established.

In order to deepen research on extreme manifestations of ill health and assess the potential of the group, *L.N. Natsun* studies disability among population, extent of disability, and its consequences (academic supervisor – A.A. Shabunova). In a number of scientific papers, the author's tools for assessing the quality of life of disabled people are proposed and tested. It is proved that employment of unemployed people with disabilities is an option to improve their quality of life, and the economic effect, which can be obtained by creating jobs for these people, exceeds the costs. The key barriers to social participation of disabled people were identified, conceptual foundations of social policy in relation to these people were analyzed, and management tools for improving their quality of life were proposed [64–68].

The researcher also studied current urgent challenges of public health – spread of HIV infections [69], malignant tumors [70], mortality of children in the perinatal period [71], bad habits [72; 73].

Negative manifestations of demographic development are explored considering their impact on the economic development. Reproductive losses [74], premature mortality [75; 76], infant mortality [77], disease burden [78], and disability [79] were assessed.

A methodology for assessing migration was developed in accordance with the concept of L.L. Rybakovsky's three-stage migration process (*A.P. Budilov, academic supervisor – O.N. Kalachikova*). The proposed approach includes a set of parameters and their indicators at the stage of the formation of migration attitudes – an actual movement and adaptation of migrants [80]. The analysis of internal migration flows [81] and the migration policy in Russia [82] is carried out.

Studies on the state of the institute of family and marriage, parenthood are presented in the works of *O.N. Kalachikova, M.A. Gruzdeva, V.N. Barsukov* [83–87]. At the current development stage, the family institution is characterized by a nearly accomplished legitimation of cohabitation, a few children in a family, nuclearization, changes of the age model in marriage and fertility [88], and increasing “fashion” for responsible parenthood – most of all, active involved fatherhood.

A separate block of independent studies is devoted to the analysis and evaluation of the demographic policy effectiveness in the area of birth control [89–91] and the formation of public and children's health [92–95]. According to V.A. Borisov's method, the index of a hypothetical minimum natural birth rate was calculated and a degree of its implementation was determined. Calculations showed that there is a potential for increasing the birth rate, the population is labile to the demographic policy, and the need to use

information and propaganda tools along with material and institutional measures to stimulate the birth rate is justified [96–98].

Currently, a methodology has been developed, and demographic processes with their determinants are being monitored at the level of the country, macro-regions, and Russian regions. There is a database of statistical information on demographic development and an array of sociological data on the demographic behavior of the population of the Vologda Oblast, and proposals to improve the effectiveness of the demographic policy were developed [99]. In 2020, the first regional demographic report of the Vologda Oblast was prepared under the leadership of A.A. Shabunova with the assistance of the VolRC RAS Scientific Director, RAS Corresponding Member, Doctor of Sciences (Economics) V.A. Ilyin. The region is a territory with downward demographic dynamics, natural and migration decline. The key areas of the population stabilization are the reduction of mortality, especially preventable one, and stimulation of the birth rate, the intensity of which can be achieved by increasing a number of children in families. A wide range of measures to support families with children is being implemented in the region, but their nature allows attributing most of them to social policies aimed at reducing inequality (monetary and non-monetary) – not to demographic objectives [100].

There are active collaborative studies with scientists from different Russian regions. A.A. Shabu-nova and O.N. Kalachikova are active members of the Academic Council “Demographic and Migration Issues in Russia” at the Department for Social Sciences of RAS, which provides methodological support for the national project “Demography”.

On prospects of the scientific development

The demographic agenda is becoming more relevant: especially for Russia with its vast territory and unpopulated space. A science-based approach

is increasingly needed to address emerging issues. Understanding of causes and consequences of demographic changes is the key to efficient demographic and social policy: it is indicated by international and Russian studies.

How to build a policy? How to maintain a balance between a natural movement of the population and migration? What to do with centripetal migration, which leads to the depopulation of territories? How to form a health-preserving

behavior? To answer these questions, an in-depth research, new methodological approaches, and an analysis at the regional, and even municipal, level are required. In this regard, the promising areas are development and deepening of current research, development of new methods of the demographic analysis, forecasting and modeling, interdisciplinary search for conceptual foundations that explain current trends in demographic development, and regular monitoring of the demographic development.

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