

SOCIO-DEMOGRAPHIC RESEARCH

DOI: 10.15838/sa.2025.3.47.3

UDC 338.001.36:004 | LBC 65.5

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ELDERLY CITIZENS: ASPECTS OF INCLUSION IN THE DIGITAL ENVIRONMENT



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The article examines the issue of involvement in the digital environment of elderly people living in cities and rural areas of the Vologda Region. A special feature of the region is the presence of two large cities: Vologda, the administrative center, and Cherepovets, the industrial center of metallurgy and the chemical industry, where 72% of the region's population lives. The aim of the research is to study various aspects of the inclusion of older people in the digital environment due to living in urban or rural areas. The analysis is based on data from the Vologda Region socio-cultural development monitoring conducted by the Vologda Research Center of RAS in 2021 and 2023. The paper presents the differences in the use of the Internet, its individual resources, in digital skills, self-assessment of the usefulness and harm of inclusion in the digital environment, protection from various risks and negative manifestations of Internet use. As a result, the conclusion is made about the mutual influence of territorial and age factors of digital inequalities. In a "younger" (relatively) Vologda, older people are more active in digital interactions, and according to self-assessments, they feel more confident and secure in them. In Cherepovets, with a higher aging index, older people are more critical of new digital technologies in their daily lives, their level of skills is somewhat lower, and they feel less protected from emerging risks. The practical significance of the research and the conclusions obtained is determined by the possibility of forming differentiated tools to improve the quality of life of the older generation from the perspective of successful use of the benefits of digitalization.

Older generation, elderly citizens, digitalization, digital environment, Internet, digital skills, Vologda Region, Vologda, Cherepovets, rural area.

Acknowledgment

The research was supported by Russian Science Foundation grant 25-28-01422 "Conceptual foundations and practices for achieving the digital well-being of the older generation in the field of consumption". Available at: <https://rscf.ru/project/25-28-01422/>

Introduction

The demographic aging process is global and irreversible. According to the study, the main trend in the dynamics of the age structure of the world's population remains an increase in the share of elderly people. According to the forecast, by 2070, the share of elderly citizens in the population of most countries will steadily increase, while the share of the population aged 0–14 years decreases. Demographic aging in Russia follows the scenario of most developed countries, and population aging has been observed and will continue being observed in all federal districts and regions of the Russian Federation, with weak inter-regional differentiation (Kolesov, Kalachikova, 2023). This determines the key strategic objectives of management, depending on specific trends and the availability of conditions for a high-quality life for older people.

The increasing processes of demographic aging have definitely generated research interest in this issue. In addition to analyzing demographic dynamics and its factors, comprehensive research on the continuation of active life by people in old age plays a significant role. Modern authors, contrary to previously established approaches to defining old age in a negative light (loneliness, longevity, decreased social ties, and opportunities), older age has begun being perceived as a special social resource with the need for active and involved aging (Belekhova et al., 2024a; Vidyasova et al., 2024). This is related to the concepts of quality of life and well-being of older people. Without going into the subtleties of these concepts, it is worth noting that they are complex, include various spheres of life and social activity of the population. At the same time, according to researchers, the level of aspirations only

increases in older age: well-being in older age is viewed more broadly and is associated with the opportunity to remain involved in all spheres of society (Kalachikova, Natsun, 2022; Belekhova et al., 2024b).

Against the background of the rapid digitalization of the economy and social sectors, the issues of integrating older people into modern processes, monitoring the dynamics and inclusion factors, and creating conditions for leveling the risks of various kinds of exclusions are acute.

The influence of age on inclusion in digital interactions and the spread of digital gaps is widely considered in foreign and Russian science (Varlamova, 2022; Volchenko, 2016; Shinyaeva, Slepova, 2019; Robinson et al., 2015; Yates et al., 2015). Such works, as (Bikkulov, Sergeeva, 2016; Darinskii, Moskvicheva, 2017; Dmitrieva, 2018; Charness, Boot, 2009; Anderson, Perrin, 2017; Mitzner et al., 2019) study various aspects of the situation of older people in the conditions of digitalization. Research indicates the presence of an age-related digital divide and the risks of exclusion of older generations who are not active beneficiaries of digitalization.

However, the impact of digital transformation on the lives and well-being of elderly citizens has been little studied. These are isolated works devoted to the use of digital technologies for health care practices as a driver of active longevity (Orekh, 2022; Bogomyagkova, Lomonosova, 2023; Vidyasova, 2024).

The coronavirus pandemic has activated attention to digitalization as a significant resource in such unusual situations. In this case, digital technologies are also of great importance for the elderly in solving the

problems of adaptation and reducing the risk of loneliness (Chulkov, 2021).

A comprehensive comparative analysis of the social effects of digital transformation and their impact on the lives of the elderly was conducted by Russian and Belarusian scientists using the example of Saint Petersburg and Minsk. The results of the study showed that the “detachment” of elderly people from digitalization products leads to unwillingness, distrust, and often even fear of mastering digital resources. The authors believe that for older people, familiarization with the digital should be stimulated by external sources, in particular social policy, which can transform attitudes towards people of this age group, as well as their behavioral patterns, significantly reducing the social costs of using new technologies for the elderly (Karapetyan et al., 2021).

Modern scientific literature has practically no comparisons between the elderly living in cities and rural areas in matters of integration into the digital environment, which increases the relevance of research and building up the information base, creating differentiated recommendations.

Previously, we proved that at the present stage, the age factor influences the spread of digital inequality, this trend is present both within the country and within the region. Digital inequality manifests itself depending on age at all levels of digital gaps. The activity of older people differs in comparison with both the youngest of the surveyed groups (18–30 years old) and middle-aged people, especially in terms of parameters that require special knowledge and efforts to study and master in practice. Using the “time distance” method, in 2022 it was revealed how long it would take older people to achieve the same level of Internet usage as the youth cohorts. On average in Russia, these figures are 4.2 years for young pensioners aged 55–64, 7.4 years for people aged 65–74, and an average of 11.7

years in the Vologda Region. The scenario takes into account the current dynamics without significant transformations (Gruzdeva, 2022). It is determined that digitalization carries both risks and opportunities to improve the quality of life of the older generation, which, despite the positive changes, remains more vulnerable. At the same time, the scale of accessibility of devices and the Internet for the elderly in various countries is quite high and continues to grow, and the participation of the state and civil society in bridging the age-related aspects of the digital divide has noticeable results (Fan et al., 2023). The importance of the territorial factor in the distribution of digital inequalities has also been repeatedly confirmed by researchers (Hargittai, 2001; Ragnedda, Kreitem, 2018; Dubinina, 2019; Gruzdeva, 2020). Therefore, this paper attempts to study the combination of two important factors regarding the digital divide: territorial and age, namely, the hypothesis is tested that the place of residence has a positive effect on the inclusion of the most vulnerable group in the digital space – the older generation. It is also vulnerable due to the fact that rising prices for gadgets and communication services do not always fit into the budgets of pensioners and may separate them from a full and stable access to digital goods. Inclusion in the digital space is also influenced by factors concerning education level, income, gender and other factors. They were considered in the study earlier. It was found out that the information base is insufficient for a complete analysis, and based on the available data, it was revealed that they determine not so much the inclusion in the digital environment as the differences in digital literacy and the goals pursued when accessing the Internet and online services.

The aim of the research is to study various aspects of the inclusion of older people living in cities in the digital environment.

The novelty of the work consists in using a unique database of regional sociological observations to achieve the goal, as well as in the fact that the category of elderly citizens is poorly studied in modern Russian research, in particular in the issues of digitalization of everyday life.

Materials and methods

The analysis is based on the example of the Vologda Region, a large region in the Northwest of Russia, which ranks second in terms of population after the Saint Petersburg agglomeration. There are two major cities in the region: Vologda, the regional capital, a cultural and historical center, a tourist attraction (population at the beginning of 2024 – 311,859 people), and Cherepovets, an industrial center (population at the beginning of 2024 – 298,790 people). We pay attention specifically to the large cities of the region, which are currently of the most significant interest in terms of comparative research (many observations conducted in the Vologda Region record differences in socio-economic development, as well as the behavior of Vologda and Cherepovets residents). We work with the characteristics of rural areas (rural residents of the Vologda Region municipalities included in the study) to see the contrast of urban lifestyle in the context of inclusion in the digital space.

The logic of the research is based on a three-level model for analyzing digital inequalities. It has become widespread in modern research and is used by foreign and Russian scientists to assess the scale and factors concerning digital gaps (Arkhipova et al., 2018; Gladkova et al., 2019; Safiullin, Moiseeva, 2019).

According to the model, the digital divide can manifest itself on three main levels: 1) the level of public access to the Internet and other ICTs; 2) the level of digital competencies of users and digital literacy; 3) the level of social

benefits that users receive with the competent and full-fledged use of digital technologies in professional and private life.

The information base was compiled by the results of the monitoring of public opinion of the Vologda Region population “Socio-cultural portrait of the region” conducted by the Vologda Research Center of the Russian Academy of Sciences (VolRC RAS): 2021, n – 1,500 people; 2023, n – 1,800 people (400 of them in Vologda and Cherepovets). The representativeness of the sample is ensured by observing the following conditions: proportions between urban and rural populations; proportions between residents of various types of settlements (rural settlements, small and medium-sized cities); the age and gender structure of the adult population of the region. The sampling error does not exceed 3%. The study group consisted of people of pre-retirement and retirement age, women over 50 years old, and men over 55 years old.

We used a set of scientific methods was used to achieve this aim, in particular comparative analysis, statistical analysis, and sociological methods. Methods of system-structural analysis are used to analyze the results.

Results

When comparing the gender and age structure of the population of large cities in the Vologda Region, it is worth noting that Vologda is a younger city in terms of the aging index, with a less pronounced reduction in groups younger and older than working age. In Cherepovets, the aging index is higher, which is also dictated by a more active decline in the population (*Tab. 1*).

This raises questions about the study of the involvement of older people in digital interactions, which are an integral part of modern human life. For managers in various

Table 1. Population aging in large cities of the Vologda Region

City	Population size / aging index	2020	2021	2022	2023	2024	Dynamics, 2024 to 2020
Vologda	younger than working age, thousand people	63.129	63.076	63.917	63.410	63.077	-52
	over the working age, thousand people	71.501	71.843	71.517	72.369	69.943	-1.558
	aging index	113.3	113.9	111.9	114.1	110.9	-2.4
Cherepovets	younger than working age, thousand people	62.622	61.826	61.321	60.223	58.768	-3.854
	over the working age, thousand people	73.526	74.148	71.469	71.950	68.966	-4.560
	aging index	117.4	119.9	116.5	119.5	117.4	-0.06

Source: Demographic Yearbook: Stat. Collection. Vologda, 2024.

territories, there is a new task of integrating this group to reduce the prevalence of social insecurity, unequal access to goods and services that can be obtained in digital format (including with greater savings in money, time, or simply presented only on digital platforms), discrimination, including in the labor market, from-due to the increasing demand for digital skills. The difficulty of this task lies in the fact that the group of older people who are “digital migrants” is fundamentally different from the “digital aborigines” (Prensky, 2001).

Turning to the results, it is worth noting that older citizens are much more involved in digital interactions than older residents of rural areas: 66% of Vologda residents and 49% of Cherepovets residents say they use the Internet (*Tab. 2*), when adjusting the issue for the use of various resources, even if not regularly, the shares grow significantly: 82 and 81%, respectively, use at least one Internet resource (*Tab. 3*).

Table 2. Internet usage by older people, 2023, %

Response option	Vologda	Cherepovets	Rural area
Yes, I use the Internet	66.2	49.3	35.1
I don't use the Internet	33.8	50.7	64.9

Source: sociological survey data.

Table 3. Use of the Internet by older people, taking into account specific resources and the frequency of access to them, 2023, %

Response option	Vologda	Cherepovets	Rural area
Share of respondents who use at least one Internet resource	82.2	81.5	68.6
Share of respondents who chose the “not using” option for all types of resources	17.8	18.5	31.4

Source: sociological survey data.

The situation is different in rural areas: only 35% of the elderly self-assess Internet usage, 68% already use at least one of its resources, but there are still differences in inclusion, and they are quite significant within the current scale of digital gaps.

We did the opposite to assess the resources used and the availability of skills in older people: we compared what older people did not use in their daily lives, which skills they considered undeveloped or did not have. There is no significant difference between the older generation in terms of usage; social networks and news resources are the most popular for them, while online stores, entertainment, games, films, and educational resources are less popular (*Fig. 1*).

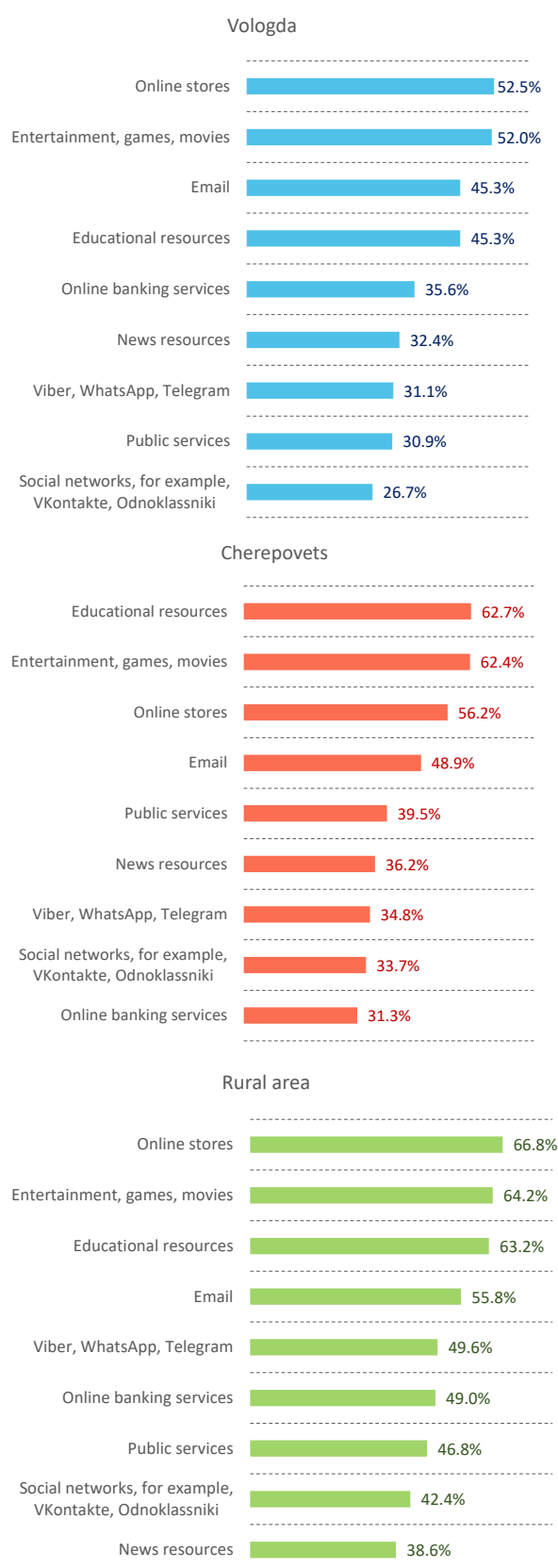


Figure 1. Distribution of answers to the question "What Internet resources and how often do you use?" (response option is "I don't use"), %

Turning to digital skills, we can note the significant advantages of urban senior citizens, their computer and Internet skills are much more developed than those of rural seniors (*Tab. 4*). At the same time, the difference is obvious even in basic skills, and two explanations may be valid here: the greatest involvement in cities, a closer access to infrastructure/services and benefits in rural areas contributes to the development of skills; The second is the nature of employment and household/leisure activities: on the periphery, physical labor in everyday life and employment in low-digitized industries such as agriculture and forestry are still of great importance. In turn, the elderly in Vologda are more literate than residents of Cherepovets, a significant proportion of

Table 4. Distribution of answers to the question "What personal computer/ tablet/phone skills do you have?" (response option is "I do not have such a skill"), %

Skill	Vologda	Cherepovets	Rural area
Working with a text editor	42.0	54.7	75.7
Sending an email with an attached file(s)	46.0	58.7	74.8
Copying or moving a file/ folder	44.7	62.0	76.7
File transfer between computer and peripheral devices (digital camera, player, mobile phone)	48.0	65.3	80.7
Using a copy and paste tool to duplicate or move information in a document	50.0	66.0	83.2
Using programs for editing photo, video, and audio files	56.7	68.7	85.6
Working with spreadsheets	56.0	74.0	91.1
Connecting and installing new devices	63.3	80.0	92.6
Creating electronic presentations using special programs	66.7	78.7	94.1

Source: sociological survey data.

industrial enterprises in Cherepovets and older people have not yet had enough time to work during their digital transformation to develop their skills.

We should note that the situation in rural areas is changing, many innovations are being successfully implemented, but so far, they do not have such a strong impact on the involvement of the elderly in these processes, their adaptation is slower than in cities.

The third stage of the assessment is the benefits gained from being involved in the digital environment. Turning to the self-assessments of the elderly, it is worth concluding that residents of the regional center are more critical of the use of Internet resources, only 18% of older respondents see an unambiguous benefit in it (comparable to the estimates of rural residents), among Cherepovets there are already more than 33% (*Tab. 5*). About a fifth of the elderly in cities note, that using the Internet is not beneficial for them. In rural areas, however, uncertain assessments are more pronounced, and the lower involvement of the elderly affects the difficulties in determining benefit or harm. This is generally a negative factor for predictive assessments of the success of implementing tools for greater digitalization of life, social and economic sectors in peripheral territories. For people living on them, in particular the elderly, the prospects for alternative digital

resources and tools should be clearly justified before their active implementation and popularization.

An important indicator is the assessment of the use of state and municipal services. Older people are generally less likely to turn to all types of services and prefer the online format to a lesser extent. For them, personal contact with agencies or accepting help from other people is still a priority (Gruzdeva, 2022).

Additionally, we address the assessment of threats to the digital environment. For instance, for all the types of risks proposed by us, a significant part of older respondents consider themselves and their environment to be unprotected – from 55 to 80% (*Tab. 6*). However, if we consider the differences in feelings of security, residents of the regional capital still feel less vulnerable for most risks. Rural residents have a more pronounced self-assessment of insecurity. The information that they are more likely to become victims of online scams is confirmed – for most of them this is a significant threat.

Older people, like representatives of other age groups, are not yet so critical of various negative manifestations. This is evidenced by a high proportion of those who either find it difficult to answer, or are not included in this issue at all – they note that neither they nor their entourage have encountered anything like this (*Tab. 7*). And this is despite significant information propaganda of at least negative manifestations of the Internet addiction. Elderly citizens began noticing deterioration in their physical health as a consequence of using the Internet over the three years under study.

Table 5. Distribution of responses to the question “Do you think you and your family members benefit from using the Internet?”, %

Respond option	Vologda	Cherepovets	Rural area
Yes, I benefit	18.0	33.3	18.8
No, I don't benefit	21.3	20.9	9.9
I get both benefits and harms	30.7	19.0	13.4
Hesitate to respond	30.0	26.8	57.9
Source: sociological survey data.			

Conclusion

The study of digital practices of the older generation confirms the hypothesis of a combination of settlement (territorial) and age factors affecting digital gaps (but this does

Table 6. Distribution of answers to the question “How do you think modern people are protected from the following risks of using the Internet?”, 2021, %

Respond option	Vologda	Cherepovets	Rural area
Receiving negative information			
Not protected (absolutely not protected + rather not protected)	65.0	66.8	75.5
Protected (rather protected + absolutely protected)	19.5	6.1	4.4
Negative communication			
Not protected (absolutely not protected + rather not protected)	64.5	65.1	67.2
Protected (rather protected + absolutely protected)	21.1	6.1	5.2
Fraud			
Not protected (absolutely not protected + rather not protected)	68.4	68.0	76.3
Protected (rather protected + absolutely protected)	18.3	5.6	5.6
Consumer risks (abuse of consumer rights, purchase of low-quality goods, counterfeiting, falsification)			
Not protected (absolutely not protected + rather not protected)	64.4	68.0	71.2
Protected (rather protected + absolutely protected)	17.2	5.6	4.0
Coercion to commit illegal acts			
Not protected (absolutely not protected + rather not protected)	55.6	57.8	55.4
Protected (rather protected + absolutely protected)	25.0	6.7	6.4

Source: sociological survey data.

Table 7. Distribution of responses to the question “Have you or your relatives/friends experienced the following negative consequences of using the Internet?” (percentage of affirmative responses)? %

Consequences of using the Internet, which the respondents personally encountered, whether their close environment	Vologda		Cherepovets		Rural area	
	2021	2023	2021	2023	2021	2023
Deterioration of psychological well-being (apathy, fear, longing, resentment)	9.9	10.6	3.3	4.5	10.7	3.9
Deterioration of physical health (from the organs of vision, spine, blood vessels, etc.)	11.9	20.0	11.8	16.3	15.1	14.1
Emergence of dependence on the use of Internet resources	13.2	12.2	7.9	10.7	6.8	6.3
Conflicts, quarrels in the family	7.9	6.1	6.6	9.6	9.8	5.1
Difficulties, problems at work / school	7.3	3.3	3.3	2.2	2.4	3.1
I and my entourage have not experienced such consequences	35.1	27.2	31.6	38.2	29.8	40.0
Hesitate to respond	35.8	32.8	45.4	28.7	48.8	34.1
Other	0.0	0.0	0.0	0.6	0.0	0.8

Source: sociological survey data.

not detract from the influence of other factors determining the prevalence and scale of digital inequalities between socio-demographic groups). A “younger” population in Vologda, older people are more active in digital interactions, and they feel more confident and secure in their self-assessments. In Cherepovets, with a higher aging index than in Vologda, older people are more critical of new digital technologies in their daily lives, assess

the availability of even basic digital skills lower, and feel less protected from emerging risks. One of the conclusions of the study is that the elderly living in rural peripheral territories are less involved in the digital environment, against the background of the general relatively higher vulnerability of the older generation. Elderly rural residents have significant differences from urban residents of the same age group. Nevertheless, urban lifestyle, household

management and employment types determine a higher success rate of digital transformation for a wide variety of age groups. According to the researchers, regular practices of using digital technologies in everyday life contribute to a better assimilation of introduced innovations in the labor sphere (Karapetyan et al., 2021). Our research, in turn, confirms that the use of digital technologies in work can determine the success of their application in everyday life and leisure.

This indicates the need for a differentiated approach to the formation of tools for leveling

exclusion from the digital environment for people of different ages living in different territories. Currently, a number of measures are being implemented aimed at ensuring the physical accessibility of the Internet and improving the digital literacy of the older generation. At the same time, it is worth moving on to a new stage of rethinking the effects of digitalization, focusing on a reasonable balance of benefits and potential risks that will ensure the digital well-being of all generations of Russians, regardless of the territory of residence.

REFERENCES

- Anderson M., Perrin A. (2017). *Tech Adoption Climbs Among Older Adults: Technology Use Among Seniors*. Pew Research Center. Available at: http://assets.pewresearch.org/wpcontent/uploads/sites/14/2017/05/16170850/PI_2017.05.17_OlderAmericans-Tech_FINAL.pdf
- Arkhipova M.Yu., Sirotin V.P., Sukhareva N.A. (2018). Development of a composite indicator for measuring the value and dynamics of digital inequality in Russia. *Voprosy statistiki*, 25(4), 75–87 (in Russian).
- Belekhova G.V., Natsun L.N., Solov'eva T.S. (2024a). Prosperous old age: From scientific theories to the fundamentals of its programming. *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz=Economic and Social Changes: Facts, Trends, Forecast*, 2, 220–238. DOI: 10.15838/esc.2024.2.92.12 (in Russian).
- Belekhova G.V., Shmatova Yu.E., Natsun L.N., Solov'eva T.S. (2024b). Well-being of the older generation in the context of regional social policy. *Narodonaselenie=Population*, 27(3), 180–192. DOI: 10.24412/1561-7785-2024-3-180-192 (in Russian).
- Bikkulov A.S., Sergeeva O.V. (2016). “A computer is not a luxury, but a means...”: Inclusion in the digital world of older age groups according to the results of an empirical study. *Vestnik Nizhegorodskogo universiteta im. N.I. Lobachevskogo. Seriya: Sotsial'nye nauki*, 2(42), 95–103 (in Russian).
- Bogomiagkova E.S., Lomonosova M.V. (2023). Digital healthcare practice among residents of Russian megalopolis: On the issue of age differences. *Sotsiologiya nauki i tekhnologii=Sociology of Science and Technology*, 1, 152–165 (in Russian).
- Charness N., Boot W.R. (2009). Aging and information technology use: Potential and barriers. *Current Directions in Psychological Science*, 18(5), 253–258.
- Chulkov S.S. (2021). The impact of digital inequality on the problem of loneliness among the elderly during the period of self-isolation. In: *Sovremennoe obshchestvo v usloviyakh sotsial'no-ekonomicheskoi neopredelennosti: XV Mezhdunarodnaya nauchnaya konferentsiya “Sorokinskie chteniya – 2021”, Moskva, 04 marta 2021 goda* [Modern Society in Conditions of Socio-Economic Uncertainty: 15th International Scientific Conference “Sorokin Readings – 2021”, Moscow, March 04, 2021]. Moscow: OOO “MAKS Press” (in Russian).
- Darinskaya L.A., Moskvicheva N.L. (2017). The potential of intergenerational interaction in involving older people in the digital space. *Peterburgskii psikhologicheskii zhurnal*, 20, 43–65 (in Russian).
- Dmitrieva A.V. (2018). Achieving the social inclusion of elderly people: A continuation of employment or “advanced” leisure? *Zhurnal issledovaniy sotsial'noi politiki*, 1, 37–50 (in Russian).
- Dubinina M.G. (2019). Unequal development of the digital economy in the federal districts of Russia. *Upravlenie naukoj i naukometriya=Science Governance and Scientometrics*, 14(3), 368–399. DOI: 10.33873/2686-6706.2019.14-3.368-399 (in Russian).

- Fang F., Gruzdeva M.A., Tan R., Zhang X. (2023). The experience of Russia and China in addressing the age aspect of the digital divide. *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz=Economic and Social Changes: Facts, Trends, Forecast*, 16(5), 247–261. DOI: 10.15838/esc.2023.5.89.14 (in Russian).
- Gladkova A.A., Garifullin V.Z., Ragnedda M. (2019). Model of three levels of the digital divide: Current advantages and limitations (as exemplified by the Republic of Tatarstan). *Vestnik Moskovskogo universiteta. Seriya 10 Zhurnalistsika*, 4, 41–72. DOI: 10.30547/vestnik.journ.4.2019.4172 (in Russian).
- Gruzdeva M.A. (2020). Inclusion of population in digital space: Global trends and inequality of Russian regions. *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz=Economic and Social Changes: Facts, Trends, Forecast*, 13(5), 90–104. DOI: 10.15838/esc.2020.5.71.5 (in Russian).
- Gruzdeva M.A. (2022). The age factor in the digital divide: The edges of inequality. *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz=Economic and Social Changes: Facts, Trends, Forecast*, 15(4), 228–241. DOI: 10.15838/esc.2022.4.82.14 (in Russian).
- Hargittai E. (2001). *Second-Level Digital Divide: Mapping Differences in People's Online Skills*. Available at: <https://arxiv.org/abs/cs/0109068>
- Kalachikova O.N., Natsun L.N. (2022). Perception of aging in demographic groups of the population as a social for the implementation of the active longevity concept. *Vestnik Nizhegorodskogo universiteta imeni N. I. Lobachevskogo. Seriya: Sotsial'nye nauki*, 2(66), 112–125 (in Russian).
- Karapetyan R.V., Lebedeva E.V., Titarenko L.G. (2021). Techno-Ageism and techno-behavior of elderly citizens: Results of Russian and Belarusian research. *Uspekhi gerontologii*, 34(2), 311–318. DOI: 10.34922/AE.2021.34.2.019 (in Russian).
- Kolesov A.A., Kalachikova O.N. (2023). Demographic aging: Prerequisites and forecast. *Voprosy territorial'nogo razvitiya=Territorial Development Issues*, 11(1). DOI: 10.15838/tdi.2023.1.63.2. Available at: <http://vtr.isert-ran.ru/article/29671> (in Russian).
- Mitzner T., Savla J., Boot W. et al. (2019). Technology adoption by older adults: Findings from the PRISM trial. *Gerontologist*, 59(1), 34–44. DOI: 10.1093/geront/gny113
- Orekh E.A. (2022). Between age and digitalisation: Health care practices of elderly people in St. Petersburg. *Logos et Praxis*, 21(3), 120–132. DOI: <https://doi.org/10.15688/lp.jvolsu.2022.3.13> (in Russian).
- Prensky M. (2001). Digital natives, digital immigrants. On the horizon. *MCB University Press*, 9(5).
- Ragnedda M., Kreitem H. (2018). The three levels of digital divide in East EU countries. *World of media. Journal of Russian Media and Journalism Studies*, 4, 5–27. DOI: 10.30547/worldofmedia.4.2018.1
- Robinson L., Cotten S.R., Ono H. et al. (2015). Digital inequalities and why they matter. *Information, Communication & Society*, 18(5), 569–582. DOI: 10.1080/1369118X.2015.1012532
- Safiullin A.R., Moiseeva O.A. (2019). Digital inequality: Russia and other countries in the Fourth Industrial Revolution. *Nauchno-tehnicheskie vedomosti SPbGPU. Ekonomicheskie nauki=St. Petersburg State Polytechnical University Journal. Economics*, 12(6), 26–37. DOI: 10.18721/JE.12602 (in Russian).
- Shinyaeva O.V., Slepova O.M. (2019). Information digital inequality of population: Risk and anti-risk factors. *Izvestiya Saratovskogo universiteta. Novaya seriya. Seriya: Sotsiologiya. Politologiya*, 19(1), 53–61. DOI: <https://doi.org/10.18500/1818-9601-2019-19-1-53-61> (in Russian).
- Varlamova Yu.A. (2022). The intergenerational digital divide in Russia. *Mir Rossii*, 31(2), 51–74. Available at: <https://doi.org/10.17323/1811-038X-2022-31-2-51-74> (in Russian).
- Vidyasova L.A. (2024). Inclusion in the digital environment as a factor of active longevity: based on the materials of a study of elderly Petersburgers. In: *Gosudarstvo i grazhdane v elektronnoi srede: sbornik nauchnykh statei. Vypusk 8 (Trudy XXVII Mezhdunarodnoi ob"edinennoi nauchnoi konferentsii "Internet i sovremennoe obshchestvo", IMS-2024, Sankt-Peterburg, 24–26 iyunya 2024 g.)* [The State and Citizens in the Electronic Environment: Collection of Scientific Articles. Issue 8 (Proceedings of the XXVII International Joint Scientific Conference "The Internet and Modern Society", IMS-2024, Saint Petersburg, June 24–26, 2024)]. Saint Petersburg: Universitet ITMO. DOI: 10.17586/2541-979X-2024-8-61-68 (in Russian).
- Vidyasova L.A., Grigor'eva I.A., Krivoschapkina A.S. (2024). Career expectations of the elderly in Russia: based on the analysis of the resume database from the Rostrud portal "Work of Russia". *Monitoring obshchest-*

vennogo mneniya: sotsial'nye i ekonomicheskie peremeny=Monitoring of Public Opinion: Economic and Social Changes, 1, 26–47. DOI: 10.14515/monitoring.2024.1.2430 (in Russian).

Volchenko O.V. (2016). The dynamics of digital inequality in Russia. *Monitoring obshchestvennogo mneniya: sotsial'nye i ekonomicheskie peremeny=Monitoring of Public Opinion: Economic and Social Changes*, 5, 163–182. DOI: 10.14515/monitoring.2016.5.10 (in Russian).

Yates S., Kirby J., Lockley E. (2015). Digital media use: Differences and inequalities in relation to class and age. *Sociological Research Online*, 20(4), 1–21. DOI: 10.5153/sro.3751

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