RESEARCH
RESULTS

SKOLKOVO
Moscow School
of Management

# Digital Life of Russian Cities

III

## Long-Term Dynamics

2025

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# Executive Summary

The issue of the digital divide, which emerged in the literature in the late 1990s, remains relevant today, especially in light of the "digital acceleration" brought about by the COVID-19 pandemic. Differences in access to digital technologies, their usage patterns, necessary skills, and resulting effects are dynamically evolving, taking on new forms and dimensions.

Research on the digital divide between Russian regions was initiated by the Moscow School of Management Skolkovo in 2014, based on the "Digital Life Index," which compares digital demand and supply across seven dimensions of urban life (transportation, finance, retail, healthcare, education, media, and public administration). The index is compiled using "hard" statistical data on technology adoption. Since 2018, the study has covered over 90 Russian cities—all regional capitals and a number of large "second-tier" cities. A new wave of measurements conducted in 2023 allows for statistically sound conclusions about the dynamics of the digital divide in Russia, which are significant both theoretically and practically.

Over the five years between the two measurement waves, substantial investments were made under the national "Digital Economy" project and regional development strategies, leading to accelerated digitalization in many regions. As a result, more than half of the top-performing cities have changed, with many making leaps of dozens of positions. Overall, large cities continue to dominate in digitalization, though medium and small cities show faster-growing demand for digital education and healthcare.

The COVID-19 pandemic significantly reshaped the structure of digital demand, while digital supply developed through incremental quantitative growth. Demand for digital services is rising across all sectors, yet their supply—particularly in retail, education, and healthcare—remains insufficient, especially in smaller cities. This has exacerbated the already noticeable mismatch between demand and supply and slightly increased regional disparities.

An analysis of the factors behind the digital divide—as in 2018—again shows that it is not linked to regional income levels; instead, regional digital policies and the quality of human capital play a key role. The report highlights digital initiatives from ten cities that demonstrated the highest growth in the Digital Life Index over five years, showing that proactive regional policies yield tangible results, particularly in digital supply. Thus, to reduce the digital divide, regional administrations should create conditions for private-sector participation in digital initiatives, leverage public-private partnerships for more efficient resource allocation, and develop and retain human capital through educational programs, awareness campaigns, and improved quality of life.

# Introduction

Digital technologies have become so deeply embedded in our daily lives that they've practically dissolved into the background. We often don't even notice how many of our routine actions—from contactless payments for public transport to reading news on smartphones to ordering groceries for home delivery—are fundamentally enabled by digital solutions. This digital everydayness is particularly visible in megacities, but to what extent has it permeated smaller cities? Can we quantitatively compare digital life in, say, Moscow and Kaluga—or Kyzyl?

Researchers at the Skolkovo School of Management first posed this question back in 2015, ultimately creating the globally unique Digital Life Index of Cities, which has since undergone four waves of measurement. The 2018 and 2023 waves covered over 90 Russian cities, including all regional capitals and several major non-capital cities[1]. Their findings provide a comprehensive picture of what global academic literature refers to as the "digital divide."

The issue of the digital divide—disparities in economic and social opportunities due to unequal access to digital technologies—was first raised in the late 1990s but remains highly relevant today. As basic internet access (the "first-level divide") gradually equalizes worldwide, attention has shifted to gaps in digital skills (the "second-level divide") and the ability to derive meaningful benefits from digital systems (the "third-level divide").

A central question, widely debated by theorists yet with immediate practical implications, is whether digital divides simply reflect broader income inequality or constitute an independent phenomenon. If the former is true, they must be accepted as inevitable until substantial progress is made in overcoming resource disparities between countries or regions. But if the latter holds, targeted interventions could reduce digital gaps well before achieving universal resource equality.

The answer extends far beyond academic interest. Governments worldwide are making deliberate efforts to narrow the digital divide. In Russia, digitalization has long been a government priority, embodied in national projects like Digital Economy (2019–2024) and Data Economy (2024–2030). Simultaneously, many regional and municipal administrations have recognized digital development as a powerful tool in competing for human capital and investments, adopting proactive digital strategies.

As this report will show, the results have been twofold: on one hand, large-scale digital acceleration across the country; on the other, a certain intensification of regional digital inequality.

The tool developed by the Skolkovo School of Management allows these complex, multidimensional processes to be described both at a given moment and dynamically, using rigorous statistical methods. In preparing this report, we also examined case studies of cities demonstrating the fastest digital acceleration to identify success drivers applicable to other Russian regions.

1 Volzhsky, Magnitogorsk, Naberezhny Chelny, N. Tagil, Novokuznetsk, Sochi, Surgut, Togliatti, Cherepovets; Balashikha was added since 2023

# The Digital Divide: Background

In 1998, the U.S. telecommunications regulator noted that some social groups had Internet access rates 20 times lower than others. The growing importance of the Internet as a source of information, an economic tool, and a means of socialization meant that maintaining the status quo risked dividing society into the "information-rich" and "information-poor." This phenomenon, termed the "digital divide," became a focus of study. Subsequent research revealed an even starker gap between OECD and non-OECD countries—nearly 100-fold in 2000, with significant disparities even within the OECD (e.g., between the U.S. and Mexico/Turkey).

The concept of the digital divide has evolved alongside Internet penetration, changing access methods, and the rapid growth of digital applications. The "first-level divide" now relates not just to Internet access (which approaches 100% in most regions) but also to connection speed, which determines the usability of modern data-intensive, audio/video-based applications.

Simultaneously, it became clear that beyond access disparities, there are significant gaps in the skills to use digital tools and the benefits derived from them—termed the second-[2] and third-level[3] digital divides, respectively. Our project at SKOLKOVO, ongoing since 2015, focuses on the second-level divide.

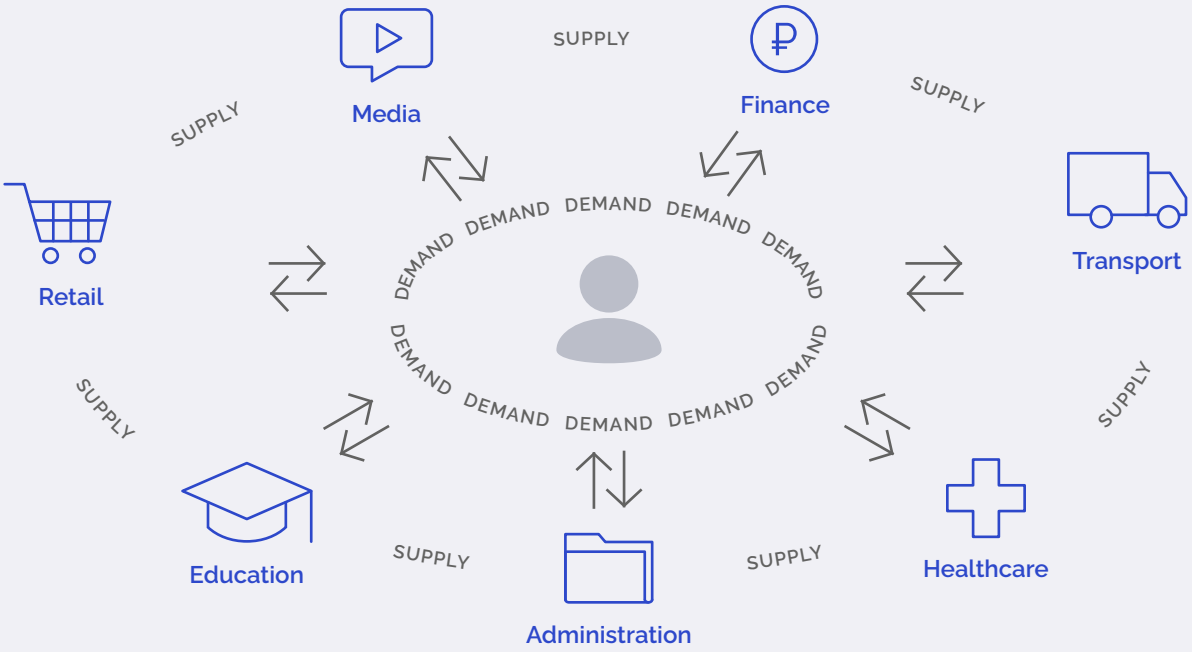
However, some researchers[4], policymakers, and business leaders[5] have been skeptical of the digital divide concept, arguing that it merely reflects broader income and education inequalities and cannot be addressed independently. Academic interest in the topic, which decreased in the late 2010s, revived in 2021 due to the COVID-19 pandemic, which accelerated the shift of business processes and personal practices into the digital realm. Yet the key question—whether targeted efforts can rapidly bridge the second- and third-level divides—remains unanswered.

2 The concept was suggested in Hargittai (2002)

3 The concept was formulated in van Deursen & Helsper (2015)

4 Cf. Warschauer (2002), (2003a) and Ragnedda (2017)

5 Cf. Fuchs & Horak (2008)




**daily life model**

# How to Measure the Digital Divide?

Early studies of the first-level divide relied on simple comparisons of Internet access statistics across countries, regions, or social groups. However, the second- and third-level divides complicated the research task, as differences in digital competencies or the impact of digital technologies are not directly observable and require more sophisticated methods. A pioneering project in this field was the "Digital Divide Index," proposed in 2006 by researchers at the University of Ljubljana (Slovenia). Since then, composite indices have become the dominant tool for studying the digital divide.

In 2014, SKOLKOVO School of Management developed a methodology to describe the second-level digital divide between cities and explore its determinants: the Digital Life Index. Each city was evaluated across seven domains of digital technology application: transport, finance, retail, healthcare, education, media, and public administration. For each domain, indicators were collected to assess the penetration of digital services into daily life, divided into two groups: those characterizing demand for digital solutions and those reflecting supply. This approach distinguished between two fundamentally different problems: a lack of technological opportunities and weak adoption due to underdeveloped digital skills. Studies in 2014, 2015, and 2018 revealed low correlation between demand and supply, indicating weakness of market forces in shaping regional digital ecosystems.

This methodology gained recognition in international research literature, was published in two academic journals[6], and was replicated in China and India. Adhering to a consistent methodological framework across four waves of data collection over eight years enables robust conclusions about the dynamics of the digital divide among Russian regions.

6 Korovkin, Kaganer, & Park (2022a), (2022b)

PART 1

# Digital Life in Russian Cities: Results of the 4th Wave

The fourth wave of data collection was conducted in early 2023. The dramatic events separating it from the previous wave (2018) are reflected in the results, which show fundamental structural changes in the digitalization of Russian regions. The five-year interval between the last two waves saw a sharp intensification of state policy on digital technology adoption.

In 2017, the Strategy for the Development of the Information Society in the Russian Federation was adopted, followed in 2019 by the national project Digital Economy, which included the federal Smart City program for urban digitalization. By the early 2020s, most federal subjects and many municipalities had adopted strategic documents on digital transformation. Significant state investments in digitalization, very high Internet penetration (87.9% of households, including 89.5% in cities)[7], a federal program to reduce digital inequality, universal adoption of Gosuslugi (public services portal), Yandex.Transport, and ubiquitous online delivery services have leveled the country's digital landscape.

In 2017, only eight regions had over 80% of households using online access to government services (Rosstat data)[8]; by 2023, this number had risen to 67[9]. As a result, the fastest growth occurred in previously lagging cities, which entered a "catch-up development" phase.

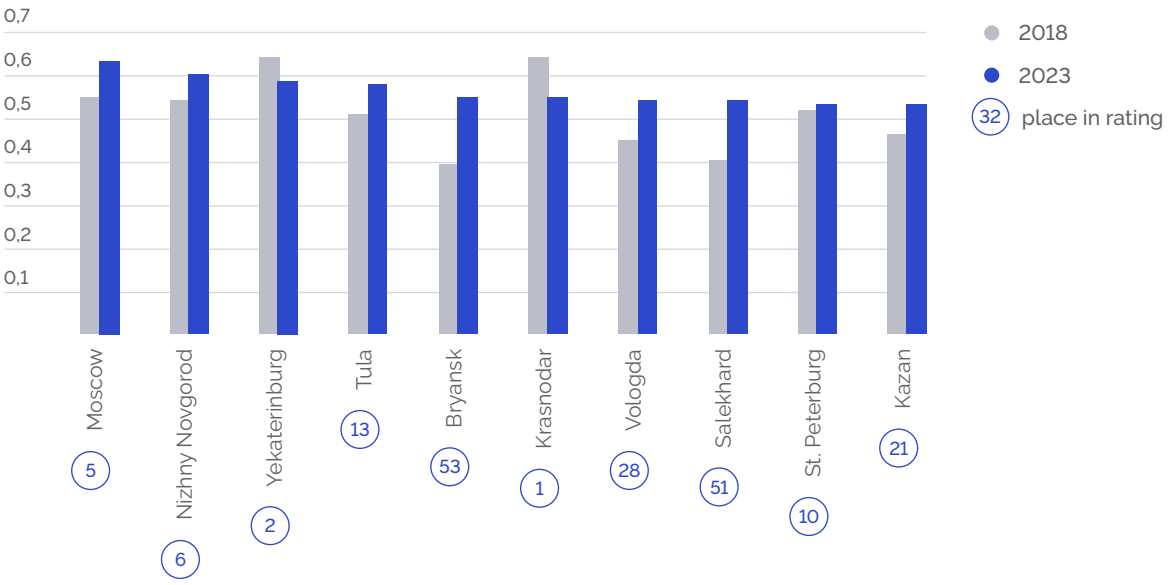
7 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/1.2_2023_%D0%98%D0%9A%D0%A2.xlsx

8 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/5.7a_2017_%D0%98%D0%9A%D0%A2.xlsx

9 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/5.7a_2023_%D0%98%D0%9A%D0%A2.xlsx

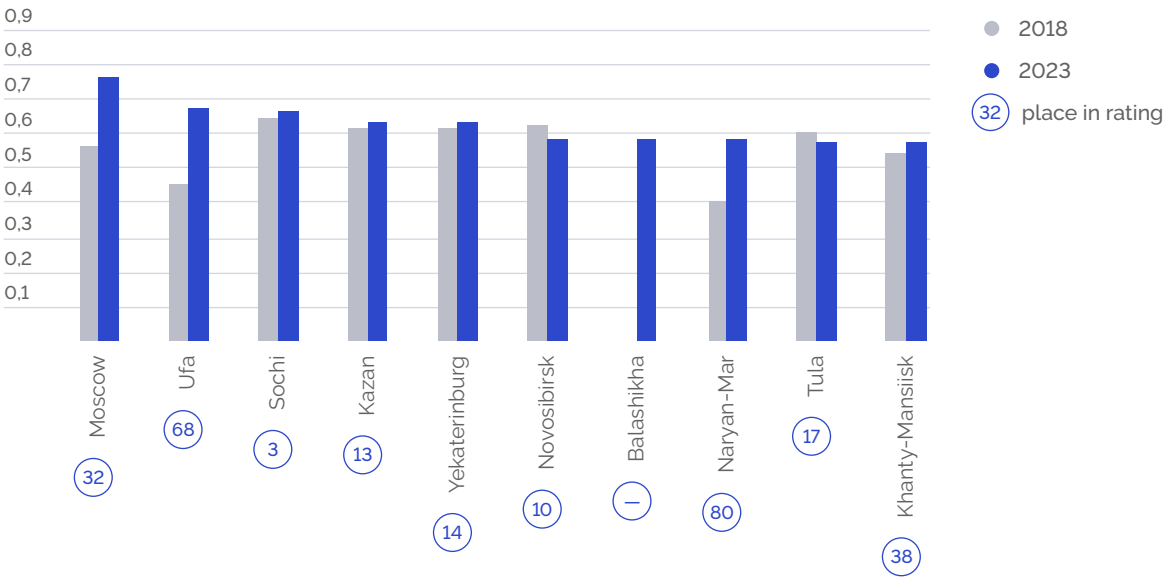
Digital acceleration has been uneven geographically, particularly among the leading group. The top 10 cities by the Digital Life Index saw half of their members replaced, with most newcomers in 2018 being mid-tier performers. Thus, Kazan rose from 21st to 10th place, Vologda from 28th to 7th, Salekhard from 51st to 8th, and Bryansk from 53rd to 5th.

**Top-10 cities by total value of Digital Life Index**

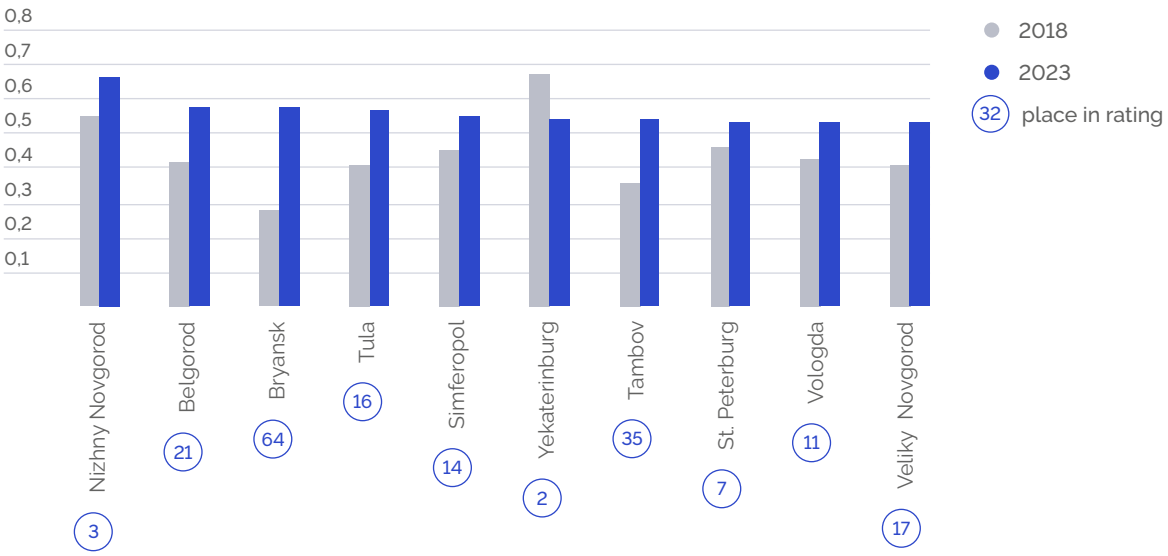



Similarly sharp changes occurred in the separate rankings for digital supply and demand leaders. In supply, leaps of Ufa (from 68th to 2nd) and Naryan-Mar (from 80th to 8th) stand out. In demand, Tambov (35th to 7th) and Bryansk (64th to 3rd) showed remarkable progress. Overall, the desynchronization between supply and demand intensified: only one city, Yekaterinburg, ranked in the top 10 for both.

**Top-10 cities in digital supply**

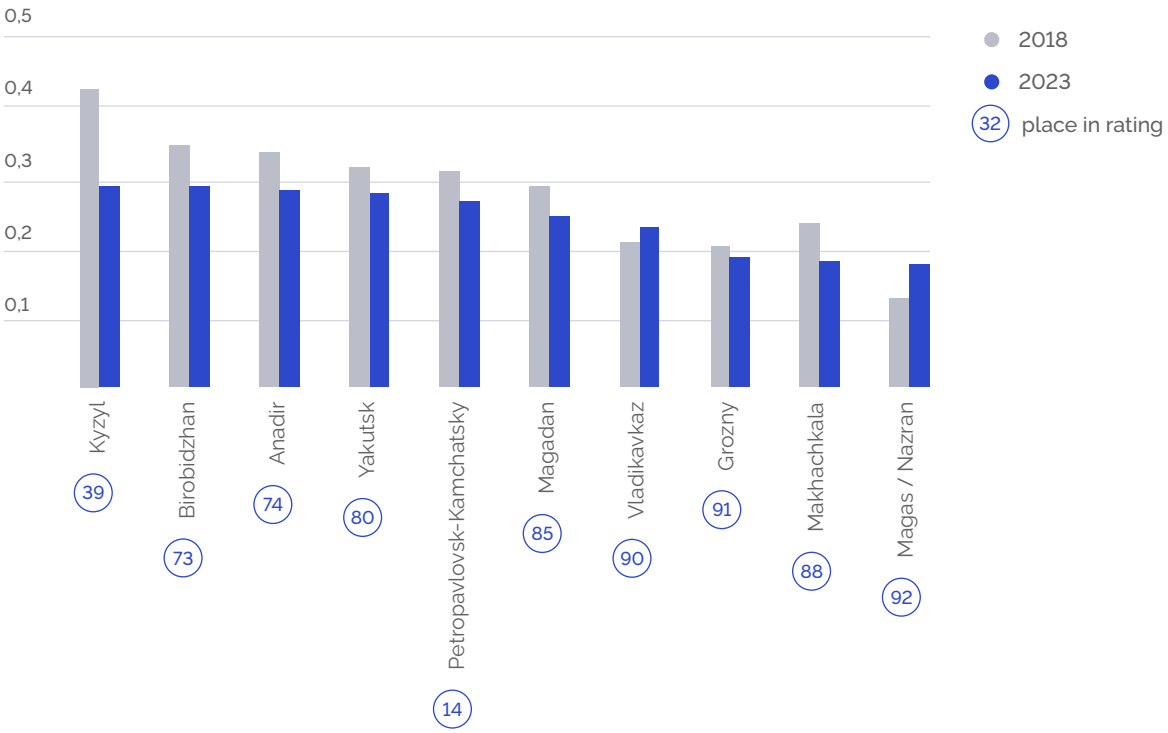


### Top-10 cities in digital demand

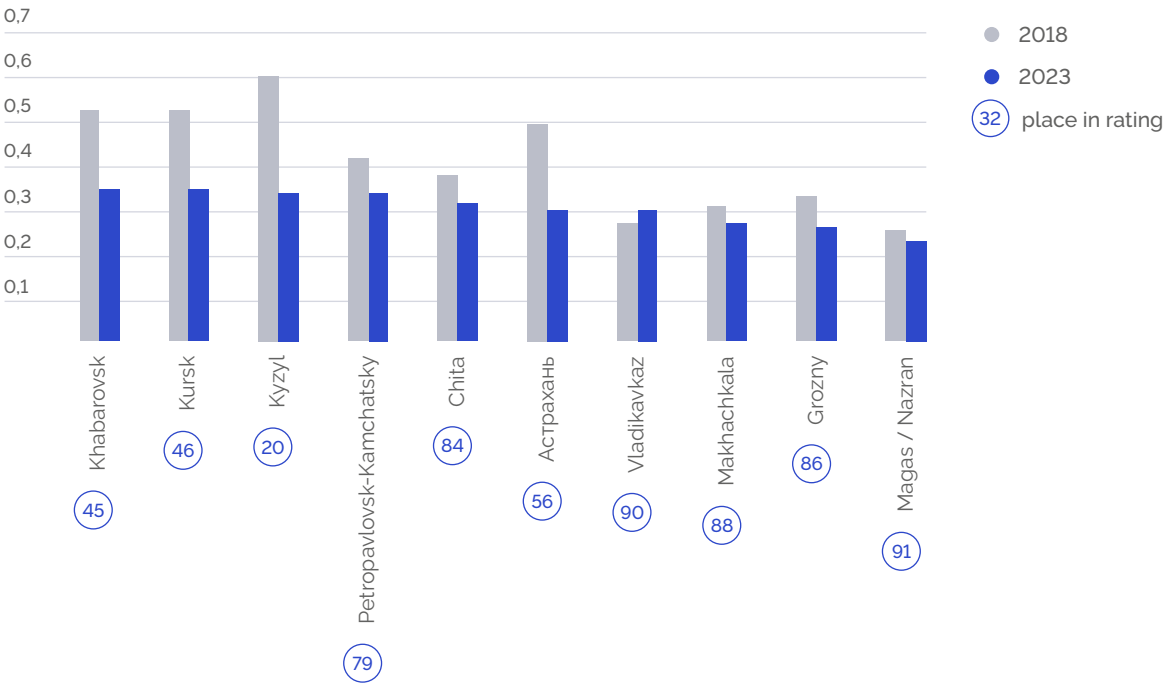



Among the bottom 10, the picture was more stable—nearly all anti-leaders in the overall ranking were in the same group or close to it in 2018. Separate analysis of demand and supply reveals greater dynamism, with some former mid-tier performers now lagging. Clearly, rapid progress by some players means decline for others if they remain stuck in inertial scenarios. As Alice Behind the Looking Glass aptly put it: in the digital world, you must run as fast as you can just to stay in place. The list of outsiders, like the one of the leaders, demonstrates low correlation between supply and demand, though some cities lag in both.

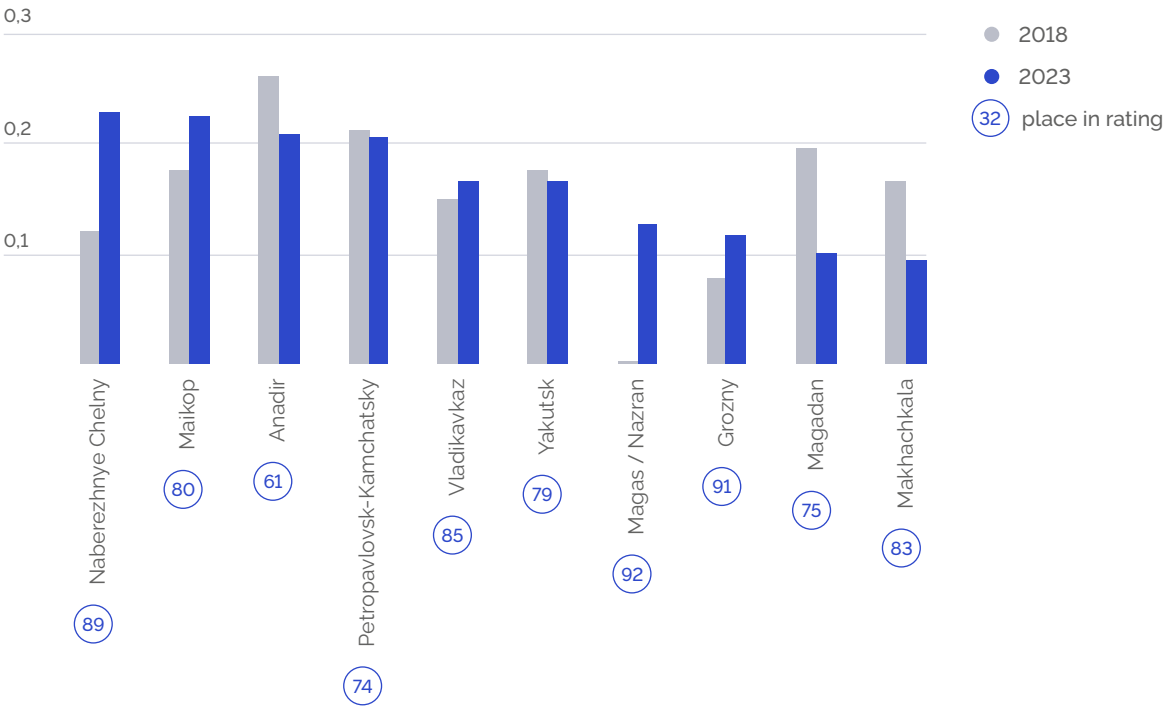
### Bottom-10 cities in overall Digital Life Index



### Bottom-10 cities in digital supply



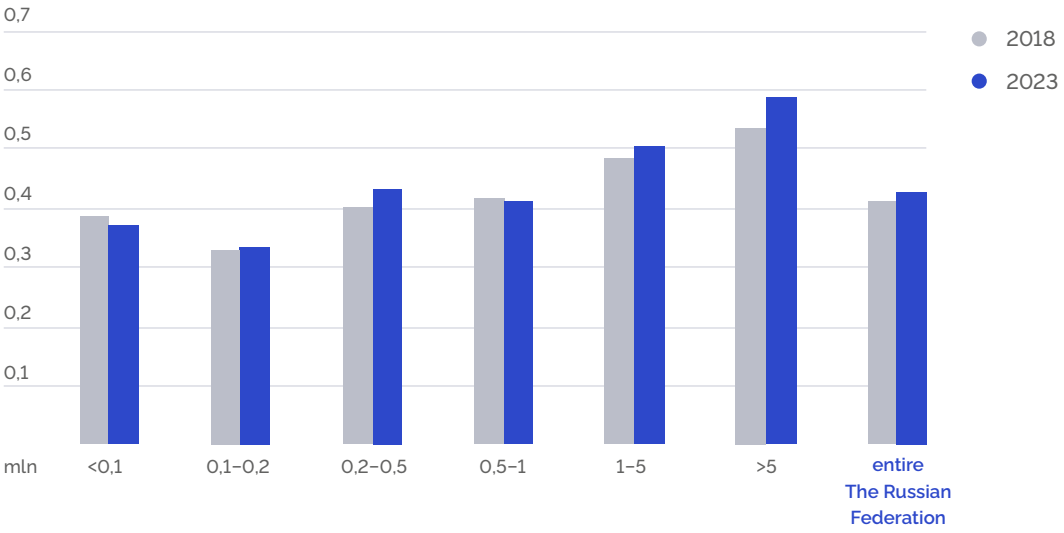

### Bottom-10 cities in digital demand



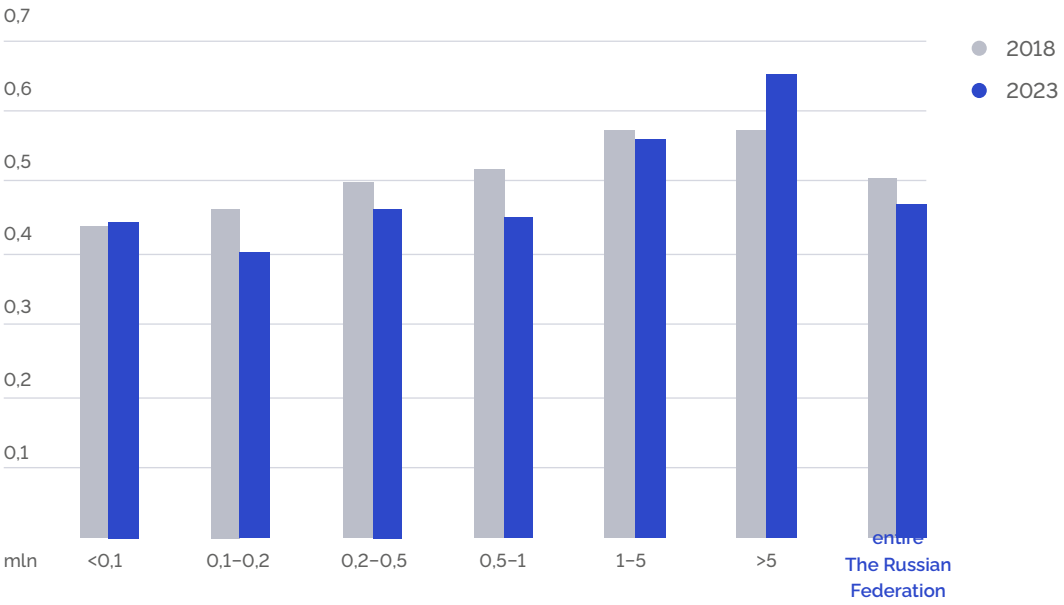

The link between digital life and city size strengthened slightly over five years. Small but wealthy northern cities (e.g., Khanty-Mansiysk, Naryan-Mar) remain exceptions, though their index values have declined, converging with cities with 100,000–200,000 population. Conversely, million-plus cities extended their lead. The gap is

still driven by supply; in demand, cities with 200,000–500,000 and 500,000–1 million residents lag only slightly. Notably, demand grew significantly in mid-sized cities, while supply there contracted.

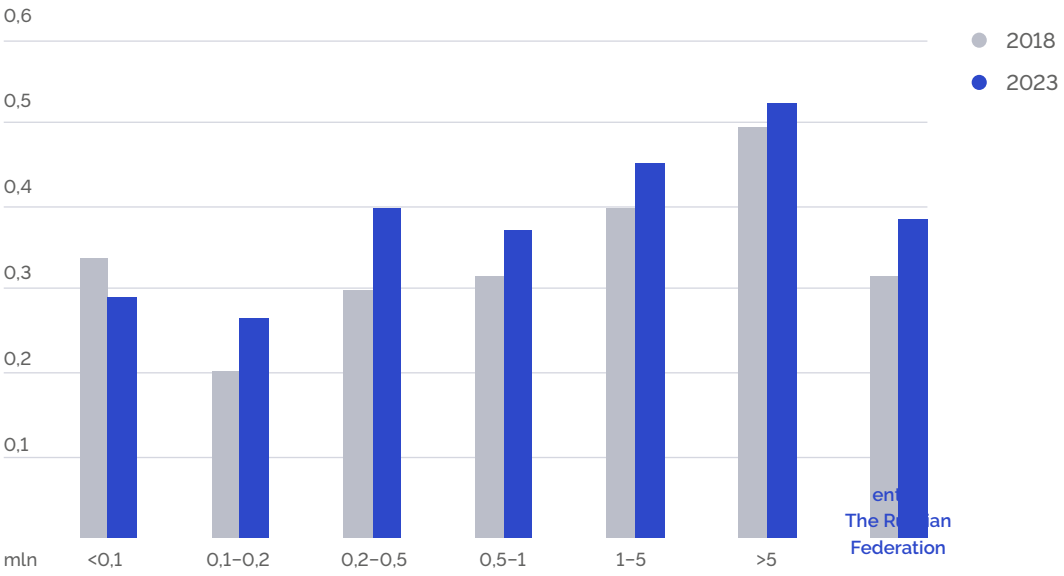
**Dependence of overall digital divide on city size**




**Dependence of digital supply on city size**



**Dependence of digital demand on city size**




A detailed analysis reveals weak supply in digital retail and media and near-absence in digital education in small and medium cities. These cities also show low demand for digital finance and healthcare. However, digitalization of public administration in small cities (under 500,000) surpasses larger ones and trails only capitals. High demand for digital education in small cities confirms earlier findings about untapped niches in Russia's digital market.

**Average value**
**of Digital Life Index by city size**

## Supply

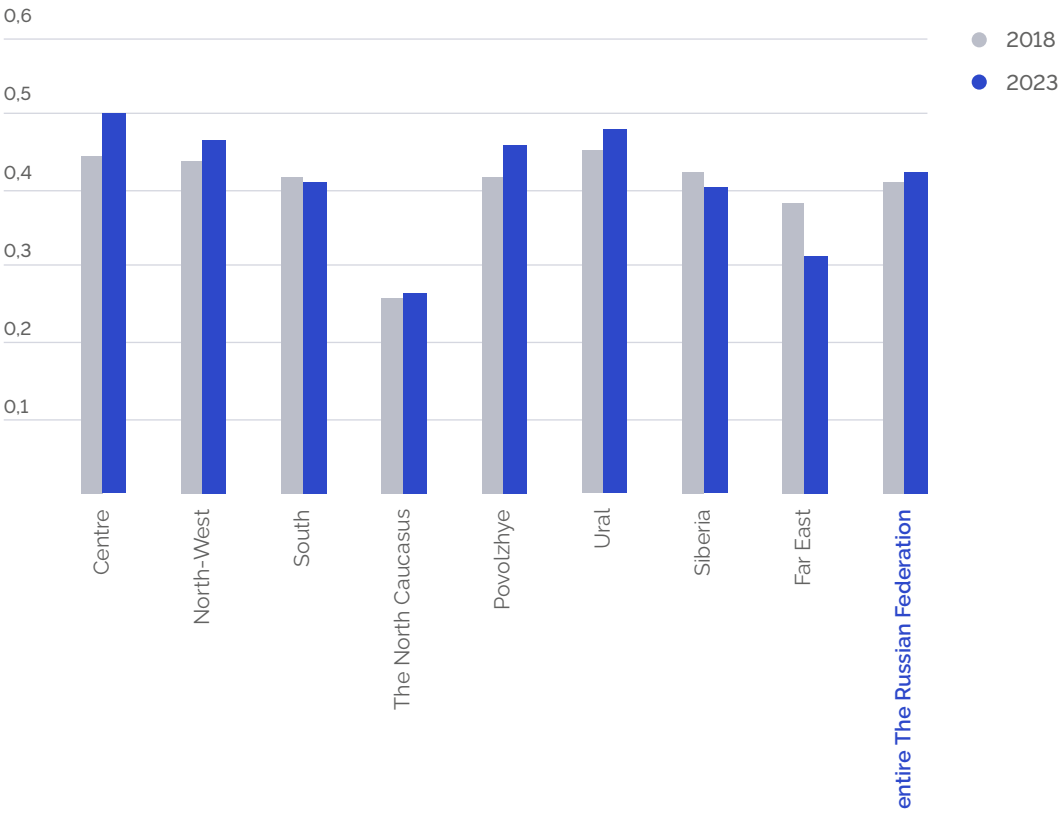
| | <0,1 | 0,1–0,2 | 0,2–0,5 | 0,5–1 | 1–5 | mln ₽ 5 + | Total |
|---|---|---|---|---|---|---|---|
| Transport | 0.42 | 0.53 | 0.59 | 0.67 | 0.86 | 0.94 | 0.64 |
| Finance | 0.50 | 0.30 | 0.37 | 0.34 | 0.41 | 0.33 | 0.37 |
| Retail | 0.13 | 0.22 | 0.39 | 0.41 | 0.54 | 0.41 | 0.39 |
| Healthcare | 0.75 | 0.75 | 0.87 | 0.87 | 0.92 | 0.75 | 0.85 |
| Education | 0.00 | 0.00 | 0.00 | 0.02 | 0.32 | 0.67 | 0.06 |
| Media | 0.56 | 0.21 | 0.22 | 0.18 | 0.21 | 0.45 | 0.24 |
| Public Administration | 0.76 | 0.80 | 0.80 | 0.66 | 0.67 | 1.00 | 0.75 |
| Total | 0.44 | 0.40 | 0.46 | 0.45 | 0.56 | 0.65 | 0.47 |

## Demand

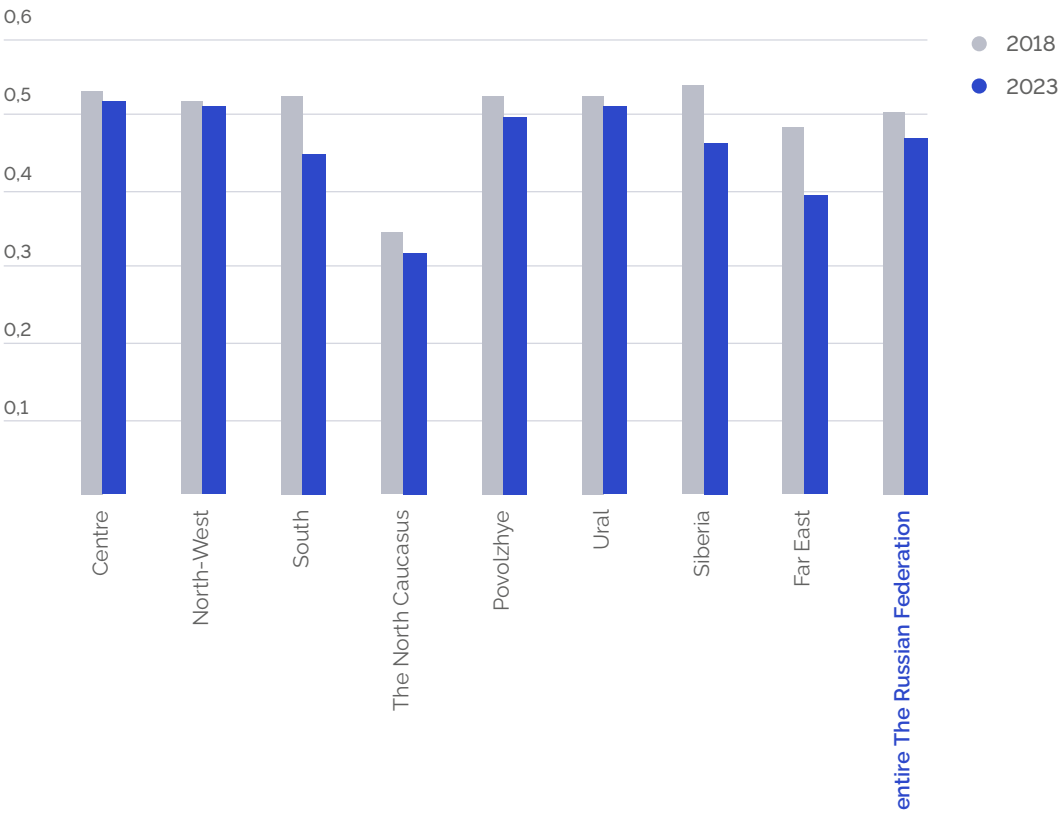
| | <0,1 | 0,1–0,2 | 0,2–0,5 | 0,5–1 | 1–5 | mln ₽ 5+ | Total |
|---|---|---|---|---|---|---|---|
| Transport | 0.28 | 0.15 | 0.33 | 0.30 | 0.36 | 0.37 | 0.31 |
| Finance | 0.16 | 0.16 | 0.26 | 0.28 | 0.37 | 0.37 | 0.27 |
| Retail | 0.27 | 0.22 | 0.47 | 0.43 | 0.57 | 0.74 | 0.45 |
| Healthcare | 0.15 | 0.10 | 0.21 | 0.22 | 0.27 | 0.48 | 0.21 |
| Education | 0.42 | 0.25 | 0.38 | 0.29 | 0.35 | 0.18 | 0.34 |
| Media | 0.39 | 0.26 | 0.55 | 0.46 | 0.54 | 0.61 | 0.49 |
| Public Administration | 0.37 | 0.71 | 0.57 | 0.63 | 0.69 | 0.90 | 0.61 |
| Total | 0.29 | 0.27 | 0.40 | 0.37 | 0.45 | 0.52 | 0.38 |

The geographic model of digitalization largely persisted: the Central, Northwestern, and Ural Federal Districts led, strengthening their positions (joined closely by the Volga region, while Siberia lagged slightly). The North Caucasus District remained last. Divergent dynamics were driven solely by supply (which stagnated or declined relatively), while demand grew uniformly across districts except the Far East.

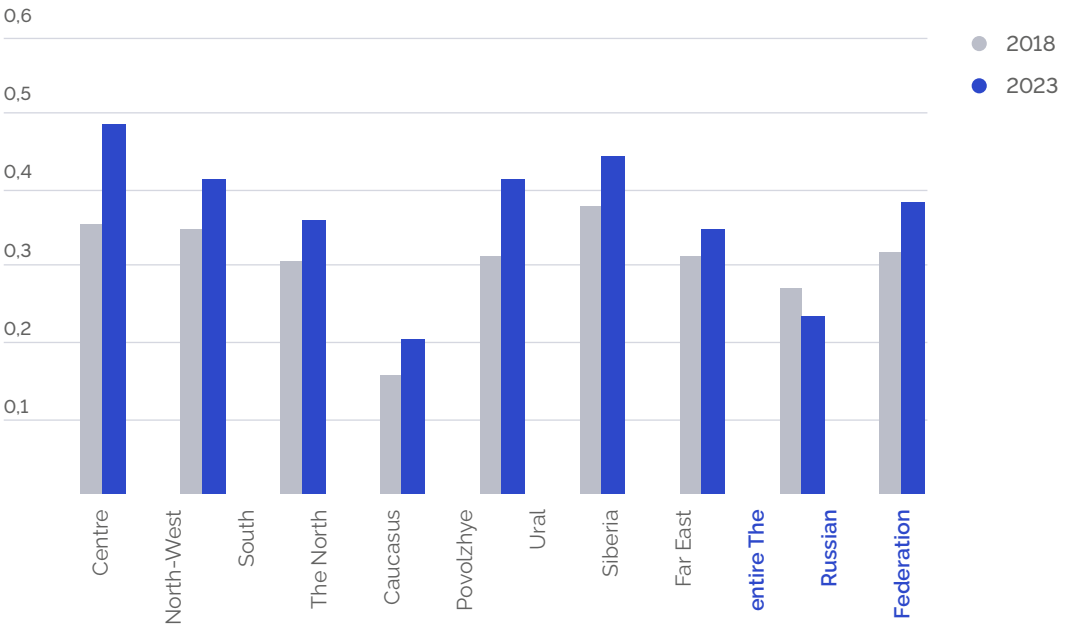
## Digital divide by federal districts (Total Index)




## Divide in digital supply by Federal districts



### Divide in digital demand by Federal districts




Regional capitals still outperform secondary cities, even where the latter are larger (e.g., Surgut, Novokuznetsk). Only Krasnodar-Sochi and Kemerovo-Novokuznetsk showed comparable index values between regional capitals and secondary cities.

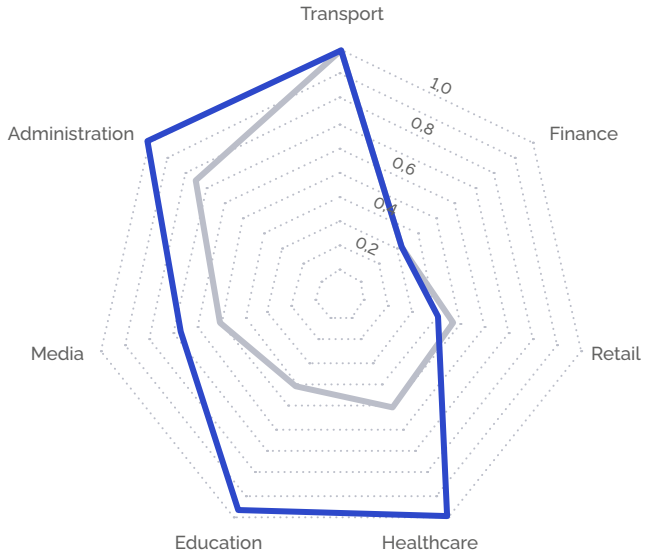
| Center | 2018 | 2023 | 2nd city | 2018 | 2023 |
|---|---|---|---|---|---|
| Volgograd | 0.40 | 0.42 | Volzhsky | 0.31 | 0.33 |
| Vologda | 0.45 | 0.54 | Cherepovets | 0.30 | 0.41 |
| Yekaterinburg | 0.64 | 0.59 | Nizhny Tagil | 0.31 | 0.43 |
| Kazan | 0.46 | 0.54 | Naberezhnye Chelny | 0.26 | 0.37 |
| Kemerovo | 0.41 | 0.39 | Novokuznetsk | 0.40 | 0.38 |
| Krasnodar | 0.64 | 0.55 | Sochi | 0.49 | 0.53 |
| Moscow | 0.55 | 0.64 | Balashikha | н.д. | 0.52 |
| Samara | 0.55 | 0.49 | Togliatti | 0.33 | 0.39 |
| Khanty-Mansiisk | 0.52 | 0.53 | Surgut | 0.41 | 0.43 |
| Chelyabinsk | 0.49 | 0.51 | Magnitogorsk | 0.37 | 0.36 |

# Correlation Between Supply and Demand

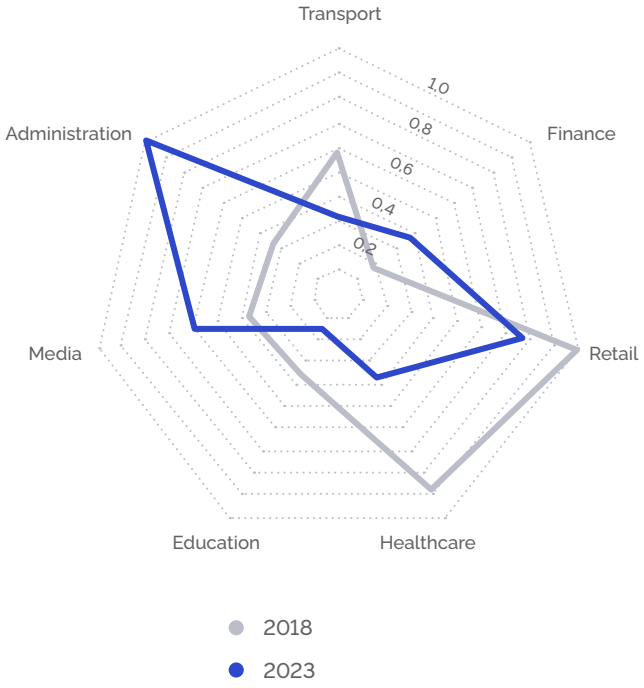
Detailed correlation analysis shows weakening links between supply and demand compared to past waves both for the general sample and for separate cities. This is especially evident among leading cities: while supply changes are quantitative and structurally stable, demand configurations shift radically—plummeting in some areas and surging in others. This volatility may reflect behavioral changes during the COVID-19 pandemic. Clearly, supply-side players—even market-driven ones like retail or finance—often lag behind shifting consumer needs.

## Moscow

### Supply

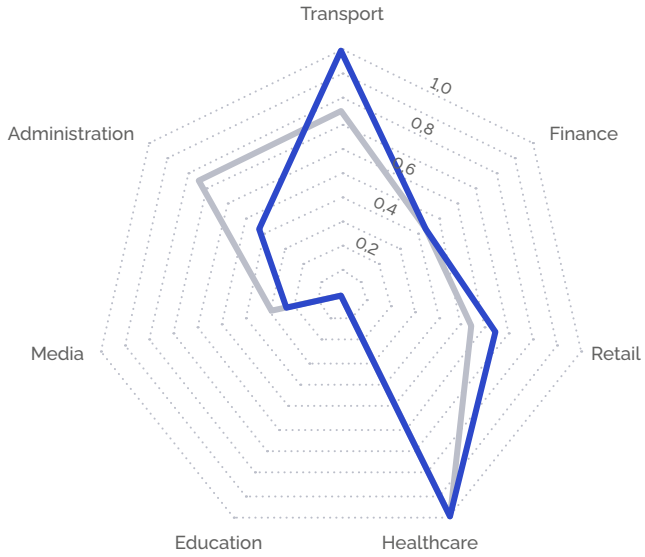



### Demand

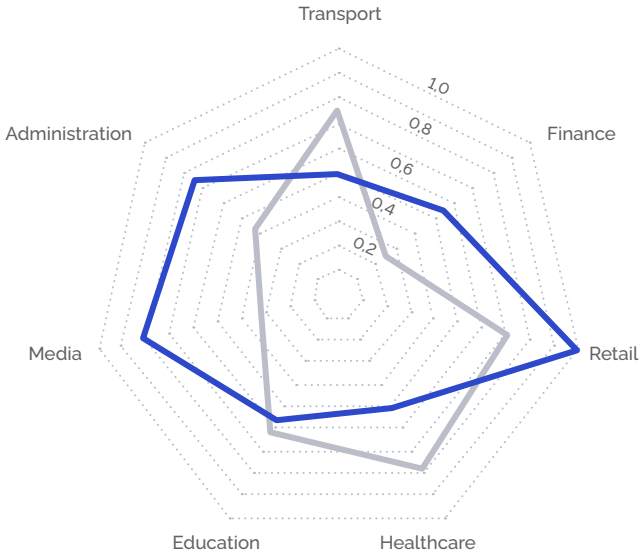


# Nyzhny Novgorod

### Supply

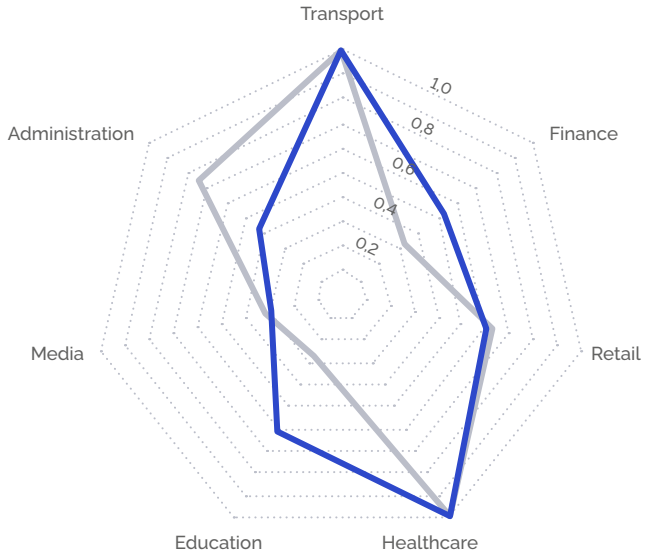



### Demand

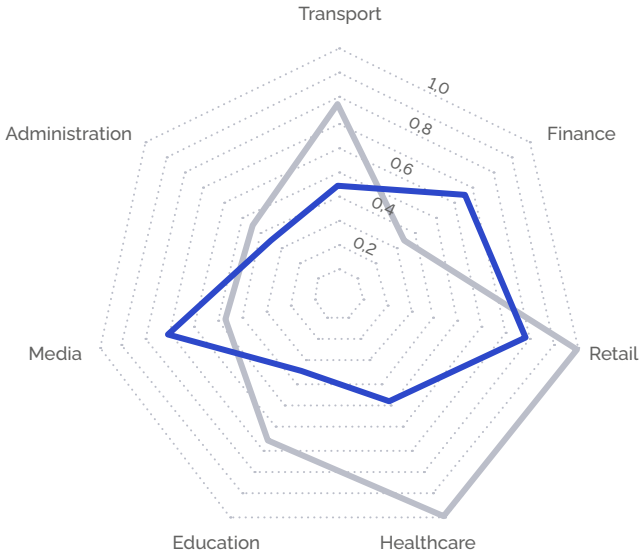



# Yekaterinburg

### Supply




### Demand




Demand metrics are generally more correlated, except for digital administration. This suggests digitally advanced consumers exhibit similar demand levels across life domains—except for e-government services, which are often used due to external circumstances.

- 2018
- 2023

Supply-side correlations remain sporadic. Major digital players' push toward "ecosystems"[10] covering all life domains appears centralized, failing to spawn localized solutions, while local players lack resources or coordination incentives.

**Correlations between dimensions of Digital Life Index**

| Supply | Transport | Finance | Retail | Healthcare | Education | Media | Administration |
|---|---|---|---|---|---|---|---|
| Transport | 1.00 | 0.07 | 0.38 | 0.08 | 0.32 | -0.01 | -0.06 |
| Finance | 0.07 | 1.00 | 0.29 | 0.04 | 0.09 | 0.39 | 0.15 |
| Retail | 0.38 | 0.29 | 1.00 | 0.11 | 0.08 | -0.16 | 0.13 |
| Healthcare | 0.08 | 0.04 | 0.11 | 1.00 | 0.13 | 0.00 | -0.03 |
| Education | 0.32 | 0.09 | 0.08 | 0.13 | 1.00 | 0.12 | -0.04 |
| Media | -0.01 | 0.39 | -0.16 | 0.00 | 0.12 | 1.00 | -0.01 |
| Administration | -0.06 | 0.15 | 0.13 | -0.03 | -0.04 | -0.01 | 1.00 |

| Demand | Transport | Finance | Retail | Healthcare | Education | Media | Administration |
|---|---|---|---|---|---|---|---|
| Transport | 1.00 | 0.28 | 0.44 | 0.46 | 0.16 | 0.41 | -0.10 |
| Finance | 0.28 | 1.00 | 0.62 | 0.32 | 0.16 | 0.64 | 0.11 |
| Retail | 0.44 | 0.62 | 1.00 | 0.58 | 0.32 | 0.82 | 0.14 |
| Healthcare | 0.46 | 0.32 | 0.58 | 1.00 | 0.21 | 0.41 | 0.16 |
| Education | 0.16 | 0.16 | 0.32 | 0.21 | 1.00 | 0.27 | 0.03 |
| Media | 0.41 | 0.64 | 0.82 | 0.41 | 0.27 | 1.00 | 0.04 |
| Administration | -0.10 | 0.11 | 0.14 | 0.16 | 0.03 | 0.04 | 1.00 |

10 See more on this in the report by SKOLKOVO School of Management "Digital Business Ecosystems. Opportunities and Challenges for the Leaders", https://www.skolkovo.ru/researches/cifrovye-biznes-ekosistemy-vozmozhnosti-i-vyzovy-dlya-liderov/

# Is the Digital Divide Independent?

As noted earlier, the digital divide concept has been challenged by scholars and practitioners who argued that it merely reflects broader income or education inequalities. Only statistical research can confirm or refute this view.

In the 2018 report, regression analysis showed that economic metrics (gross regional product, per capita) were insignificant in explaining the Digital Life Index. Instead, human capital and regional policy quality were the key. Repeating this analysis with new data (15 variables covering economy, human capital, and policy quality—see Appendix 2) reaffirmed the primacy of the latter two factors, with income affecting only digital supply.

Notably, digital life correlated strongly with VEB.RF's Quality of Life Index[11]. Another significant factor was a regional "modernization demand"[12]. Surprisingly, a positive link emerged between median population age and regional digitalization. This result seems counterintuitive given youth's association with tech adoption confirmed by countless research. In Russia, however, many digitally lagging regions (e.g., North Caucasus republics, Tuva) are also the youngest. Thus, youth alone is not a guaranteed digital driver; while young people's tech interest creates potential, realizing it requires tools and institutions.

# How Does the Digital Divide Change Over Time?

Digital life evolves dynamically on both supply and demand sides. If the divide is indeed independent of income inequality, what are its trends? Is it growing or shrinking? Additional statistical analyses examined changes in two key indicators: the Gini coefficient (a standard inequality measure) and standard deviation (reflecting dispersion). Declines in both would suggest convergence; increases, divergence.

11 https://citylifeindex.ru/

12 Quantitatively proxied by votes for the New People party in the 2021 State Duma elections

The Gini coefficient for the Digital Life Index rose from 0.119 in 2018 to 0.124 in 2023[13], i. e. the overall digital divide was increasing. Standard deviation (relative to the mean) increased slightly from 21.7% to 22.2%, driven mainly by supply in education (and, to a lesser extent, retail), where market centralization is underway (many regions still lack offerings). Interestingly this dispersion closely mirrors VEB.RF's Quality of Life Index (23%) and far exceeds the Urban Environment Quality Index (12.8% in 2018, 9% in 2023).

The quality of environment dynamics is counter to digital life index with clear convergence trend, suggesting purely supply-side processes (e.g., urban amenities) are more responsive to targeted "leveling" than those involving consumer demand. On the other hand, comparison of dispersion of separate dimensions of Index suggests that demand has organic convergence trend. Dispersion grew only in two dimensions of demand and decreased noticeably in four.

Comparing digitalization inequality with regional wealth (GDP per capita) reveals that income inequality, high in the early 2000s, declined by the mid-2010s but began rising again around 2017. Unfortunately, post-2019 data gaps obscure the trend's extent.

**Standard deviation as % of median value by dimensions of digital life.**
The increase of indicators is highlighted in red.

| | 2018 | 2023 |
|---|---|---|
| **Transport** | | |
| Supply | 67.64% | 35.84% |
| Demand | 63.36% | 67.96% |
| **Finance** | | |
| Supply | 33.28% | 32.83% |
| Demand | 92.31% | 51.25% |
| **Retail** | | |
| Supply | 34.71% | 54.23% |
| Demand | 59.78% | 46.74% |
| **Healthcare** | | |
| Supply | 30.83% | 29.35% |
| Demand | 69.70% | 61.60% |
| **Education** | | |
| Supply | 130.35% | 337.40% |
| Demand | 55.67% | 55.29% |

13 Relatively small value of the indicator (e. g. it was 0.309 for GRP per capita in 2019) is due to normalization of primary data during the calculation of index that significantly decreases its dispersion

| | | 2018 | 2023 |
|---|---|---|---|
| Media | | | |
| | Supply | 64.58% | 59.00% |
| | Demand | 58.34% | 41.75% |
| Administration | | | |
| | Supply | 35.49% | 33.14% |
| | Demand | 34.46% | 36.22% |
| Overall Index | | 21.73% | 22.20% |

**Dynamics of Gini Index and standard deviation as % of median value for GRP per capita from 2005 to 2019[14].**

| | 2005 | 2012 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|
| GINI | 0.340 | 0.305 | 0.297 | 0.286 | 0.288 | 0.312 | 0.309 |
| STD DEV % AVE | 85.91% | 74.95% | 73.08% | 68.15% | 68.67% | 78.65% | 76.01% |

Statistical analysis indicates that the second-level digital divide has complex internal dynamics and is not yet narrowing. Demand shows an organic convergent trend (suggesting equalizing user competencies), while regional digital projects drive supply-side divergence. As cases in Part 2 show, targeted policies in some regions enabled speeding up of digital growth. The emergence of mid-sized, middle-income cities as index leaders is positive: it signals low barriers to digital progress, with modern technologies potentially becoming a key driver of regional socio-economic development.

14 Fresher data from Rosstat on GRP per capita are not available at the moment.

## PART 2. Case studies

# Cities Leading in Digital Life Index Growth (2018–2023)

How to accelerate digital development of a region? In Part 2, we collected case studies of ten cities that emerged as leaders in the growth of the Digital Life Index. However, a combined analysis leads to a key conclusion: there is no universal "recipe for success"—no set of actions by regional authorities that guarantees digital acceleration. On the contrary, we observe highly diverse initiatives that, at first glance, seem difficult to reconcile into a unified strategy. An attentive reader may also note that the initiatives we described did not always align with the areas where cities showed the most progress.

This is no coincidence. Digital life is shaped not only by supply but also by demand, which depends on the population's level of digital maturity. Even on the supply side, there is no single central actor capable of designing and effectively implementing initiatives across all dimensions simultaneously. It is important to remember that, in reality, digital life is a unified phenomenon—its segmentation into components is merely a convention necessary for research and measurement.

Regional governments seeking to accelerate digital development should focus first on creating an enabling environment—one that supports private players on the supply side while strengthening digital demand. The model we proposed in the first edition of this study remains relevant today[15]. Undoubtedly, technological platforms that

15 Digital Life of Russian Megapolices https://iems.skolkovo.ru/downloads/documents/SKOLKOVO_IEMS/Research_Reports/SKOLKOVO_IEMS_Research_2016-11-30_ru.pdf

foster digital ecosystems can serve as important catalysts[16]. It does not matter much who creates them—given budgetary constraints, public-private partnerships may be the most effective solution[17].

**Top 10 cities in growth of the Digital Life Index**

| | City | # in 2018 | # in 2023 | Change 2018/2023 |
|---|---|---|---|---|
| 1 | Cheboksary | 77 | 25 | +52 |
| 2 | Bryansk | 53 | 5 | +48 |
| 3 | Ufa | 59 | 13 | +46 |
| 4 | Salekhard | 51 | 8 | +43 |
| 5 | Ryazan | 68 | 31 | +37 |
| 6 | Nizhny Tagil | 83 | 49 | +34 |
| 7 | Ivanovo | 72 | 40 | +32 |
| 8 | Pskov | 70 | 39 | +31 |
| 9 | Lipetsk | 43 | 18 | +25 |
| 10 | Cherepovets | 84 | 59 | +25 |

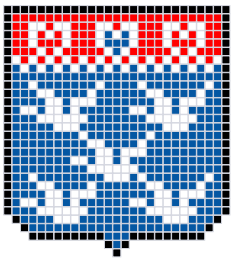
In the top-10 by the growth of the Digital Life Index are several cities that are centers of relatively less affluent regions in European Russia: Bryansk, Ivanovo, Pskov, Cheboksary, and Ryazan. This is a new and interesting phenomenon, indicating the increasing accessibility of digital system implementation and—once again—the importance of demand for digital technologies. The presence of metallurgical centers like Lipetsk and Cherepovets, as well as the "tank capital" Nizhny Tagil, in the top rankings can be explained by increased financial flows in these cities, linked to import substitution, growing domestic metal consumption, and higher investments in the defense industry. As for Salekhard, its low ranking in 2017 was primarily due to insuffi-

16 See more on this in reports by SKOLKOVO School of Management "Digital Business Ecosystems. Opportunities and Challenges for the Leaders" (https://www.skolkovo.ru/researches/cifrovye-biznes-ekosistemy-vozmozhnosti-i-vyzovy-dlya-liderov/) and «Underdogs of the Ecosystems. How Participants Earn and Lose Money" (https://www.skolkovo.ru/researches/cifrovye-biznes-ekosistemy-kak-zarabatyvayut-i-teryayut-dengi-uchastniki-ekosistem/)

17 See a collection of material on private-public partnership in IT at https://www.tadviser.ru/index.php/%D0%A1%D1%82%D0%B0%D1%82%D1%8C%D1%8F:%D0%93%D0%BE%D1%81%D1%83%D0%B4%D0%B0%D1%80%D1%81%D1%82%D0%B2%D0%B5%D0%BD%D0%BD%D0%BE-%D1%87%D0%B0%D1%81%D1%82%D0%BD%D0%BE%D0%B5_%D0%BF%D0%B0%D1%80%D1%82%D0%BD%D0%B5%D1%80%D1%81%D1%82%D0%B2%D0%BE_(%D0%93%D0%A7%D0%9F)_%D0%B2_%D1%81%D1%84%D0%B5%D1%80%D0%B5_%D0%B8%D0%BD%D1%84%D0%BE%D1%80%D0%BC%D0%B0%D1%86%D0%B8%D0%BE%D0%BD%D0%BD%D1%8B%D1%85_%D1%82%D0%B5%D1%85%D0%BD%D0%BE%D0%BB%D0%BE%D0%B3%D0%B8%D0%B9

cient digitization of public transport. It can be assumed that, at the time, there was no equipment adapted for operation in the region's extreme climatic conditions.

# 1 +52 CHEBOKSARY



**RANK**

| | |
|---|---|
| 2023 | 25 |
| 2018 | 77 |

**Biggest Growth:**

demand

education

retail

supply

administration

Chuvashia was among the first Russian regions to adopt a Digital Transformation Strategy in 2021. Under this strategy it launched 127 projects (2nd place in Russia) across 18 sectors (3rd place in Russia)[18]. A dedicated Center for Digital Transformation develops government systems, digital services, and supports local organizations in piloting innovations. Among other things the center is responsible for attracting IT specialists to the region[19].

18 Strategy of Digital Transformation of Chuvash Republic. Results of 2022 https://цифра21.рф/2022

19 Center for Digital Transformation will be Created in Chuvashia for advancement of new projects TASS, 29.07.2021 https://tass.ru/ekonomika/12018297

# Unified Digital Platform

**Project Participants**
The Administration of Cheboksary City, supported by the Head of the Chuvash Republic and the Russian Ministry of Construction

**Uniqueness**
At the time of development, the project was one of the first of its kind in Russia

**Project Launch**
2019

In 2019, the leadership of Cheboksary set an ambitious goal—to create a unified digital platform integrating all municipal information systems. To achieve this, the capital of Chuvashia joined the "Smart City" pilot project developed by the Russian Ministry of Construction for the digitalization of urban infrastructure. As part of this initiative (which includes 18 other Russian cities), Cheboksary is implementing advanced digital solutions in urban governance, utilities, transportation, communications, education, urban planning, public safety, and other sectors[20] [21].

Former Head of Cheboksary Administration, Alexey Ladykov (in 2019): "One of the objectives of the 'Smart City' project is to create a unified digital platform that consolidates all data flows from our information systems. No such project exists in any other city yet. Our task is to develop a well-structured technical plan to establish a unified urban management center by 2024."[22]

Most elements of the system have already been launched or are operating in pilot mode. For instance, since 2022, the "Digital Energy District" platform—a pilot version for managing power grids—has been deployed in Cheboksary's "New City" district. A digital twin of the electrical grid has been created, enabling real-time monitoring of its operations. Hypotheses tested in this pilot zone will later be scaled to other energy infrastructure facilities[23].

In 2024, with the support of Rostelecom, Cheboksary and Novocheboksarsk launched the pilot regional platform "Safe City"—a unified automated information system integrating: monitoring and control programs for utility emergencies, early detection of forest and landscape fires, emergency public alert systems for disasters, the intelligent transport system of the Cheboksary urban agglomeration.

**Project Participants**
Transport Ministry of Chuvash Republic, НСПК

**Uniqueness**
first of its kind in Russia

**Project Launch**
2023

20 What will the project of Smart City give to the capital? AIF Chuvashia, №13 27.03.2019. https://chv.aif.ru/gazeta/number/40271

21 On Realization of a Pilot Project of Smart City on the Territory of Cheboksary in Line with the Signed Agreement with Ministry of Construction of Russian Federation" https://gcheb.cap.ru/news/vistupleniya-dokladi/2019-god/20190325-o-realizacii-na-territorii-goroda-chebok

22 Interview with A. Ladykov, 25.03.2019. https://nta-pfo.ru/news/pfo/2019/news_598613/

23 Digital platform for electric grids introduced in Chuvashia. 27.12.2022. https://cap.ru/news/2022/12/27/cifrovaya-platforma-upravleniya-elektrosetyami-poy

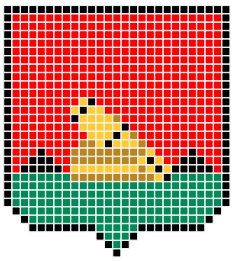
## QR-Code Transit Payments

Cheboksary became the first Russian city to introduce fare payment via the Fast Payments System (FPS) using QR codes or NFC[24]. The new system began testing in November 2023 and was expanded to all trolleybuses in the city by summer 2024. To promote the service, a special 8-ruble discount is offered for payments made through FPS.[25]

24 Fare payment through FPS is tested in Cheboksary. 28.11.2023. https://mintrans.cap.ru/news/2023/11/28/v-cheboksarah-testiruyut-sistemu-oplati-proezda-ch

25 Ride Fare with Saving. МК Чебоксары. 26.06.2024. https://cheb.mk.ru/social/2024/06/26/proezd-s-vygodoy-prostye-pravila-oplaty-cherez-sbp-v-obshhestvennom-transporte.html

# 2 +48 BRYANSK



**RANK**

| | |
|---|---|
| 2023 | 5 |
| 2018 | 53 |

**Biggest Growth:**

demand

- administration
- media
- retail
- transportation

The significant increase in demand for digital services is primarily driven by the rapid growth of internet penetration in the region (city-specific data is unavailable). According to Rosstat, in 2017, only 67.8% of households in Bryansk Oblast had internet access (ranking 16th, second to last in the Central Federal District)[26]. By 2023, this figure had risen to 83.3% (9th place)[27].

The share of the population aged 15+ using the internet to order goods and/or services grew from 28.7% (71st in Russia)[28] to 61.6% (56th place) during this period.[29]

Bryansk Oblast is a leader in healthcare digitalization: in 2022, the region ranked first in the Russian Ministry of Health's rating for digital maturity in healthcare[30]. Between 2019 and 2024, a unified medical information system was implemented, integrating all healthcare institutions into a single digital framework and equipping over 10,000 medical staff workstations with digital tools.

26 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/1.2_2017_%D0%98%D0%9A%D0%A2.xlsx

27 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/1.2_2023_%D0%98%D0%9A%D0%A2.xlsx

28 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/4.3_2017_%D0%98%D0%9A%D0%A2.xlsx

29 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/4.3_2023_%D0%98%D0%9A%D0%A2.xlsx

30 Bryansk region is in the top in digital maturity of healthcare. Desnyanskaya Pravda, 05.27.2024. https://desnyanskaya-pravda.ru/politics/region/2024/05/27/bryanshhina-v-tope-subektov-po-czifrovoj-zrelosti-otrasli-zdravoohraneniya/

# Online Transmission and Interpretation of ECG Data

**Project Participants**
Bryansk Oblast Department of Health, Aksion (Izhevsk), Sber, Medical Information and Analytical Center (MIAC)

**Innovation**
first of its kind in Russia

**Project Launch**
2021

In 2021, Bryansk became the first city in Russia to pilot a project enabling real-time transmission of ECG results from ambulance units and paramedic stations to hospitals[31]. This initiative is crucial because paramedic teams often lack the expertise to interpret ECG readings. A remote specialist can analyze the ECG and send a diagnosis back to the paramedic's tablet, significantly saving time and improving diagnostic accuracy.

Andrey Nartov, Head of the Ultrasound and Functional Diagnostics Department at Bryansk Regional Hospital No. 1: "Doctors understand the importance of the 'golden hour'—the first hour after a cardiac event. Rapid detection of pathology saves lives." Within the first two months of the system's launch, analysis of nearly 700 ECG scans identified over 40 cases of myocardial infarction.

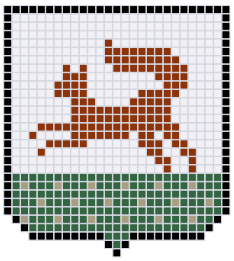
The technology is integrated with the regional information system, automatically recording ECG data in patients' unified electronic health records.

The project resulted from collaboration between the Bryansk Oblast Department of Health, MIAC, ECG manufacturer Aksion (Izhevsk), and Sber. Aksion developed an AI model for ECG data annotation, while Sber's AI lab created a neural network that automatically detects pathologies—specialists receive pre-processed scans. Plans are underway to scale the project to other Russian regions and abroad.[32]

31 https://www.depzdrav32.ru/article/pilotnyj-proekt-po-rasshifrovke-ekg/

32 Almost 700 cardiograms deciphered digitally in Bryansk. 02.12.2021 https://www.brkmed.ru/article/v-bryanskoj-oblasti-distancionno-rasshifrovano-pochti-700-elektrokardiogramm/

# 3 +46 UFA



**RANK**

| | |
|---|---|
| 2023 | 13 |
| 2018 | 59 |

**Biggest Growth:**

supply

transportation

education

The Republic of Bashkortostan and its capital, Ufa, have emerged as leaders in digital technology adoption in recent years. In 2022, Bashkortostan ranked 6th among Russian regions with the best digital management, jumping 33 positions from the previous year[33]. By 2023, it remained in the Top 10, securing 8th place[34]. That same year, Ufa entered the Top 5 in the Russian Ministry of Construction's "IQ-Cities" digitalization index in the "Major Cities" category[35].

In 2023, Ufa hosted the IV International Forum on Urban Development and Digital Transformation, attended by representatives from 78 Russian regions and 7 foreign countries.

Radiy Khabirov, Head of the Republic of Bashkortostan: "Ufa has entered the Top 5 of the IQ-Cities digitalization index in the 'Major Cities' category—alongside Moscow, St. Petersburg, Kazan, and Krasnoyarsk. It's no coincidence that we're hosting the 'Smart City — Smart Country' forum, which has drawn 1,500 participants from across Russia and abroad. We've gathered the best practices, cutting-edge ideas, and most advanced projects in this field on a single platform. Everyone is eager to learn, and we're already planning to implement some of these innovations in our republic."

33 Bashkiria is in top-10 regions by digital management. РБК, 07.03.2023. https://ufa.rbc.ru/ufa/07/03/2023/640708039a7947d1abfb6ffb

34 Bashkiria is up to 8th place in digital transformation ranking. 07.03.2024. https://bash.news/news/220123-baskiriia-podnialas-na-vosmoe-mesto-v-reitinge-cifrovoi-transformacii

35 Ufa is in top-5 cities by digital IQ. 27.07.2027 https://www.bashinform.ru/news/politics/2023-07-27/ufa-voshla-v-pyaterku-liderov-reytinga-po-indeksu-tsifrovizatsii-iq-gorodov-3360731

Since 2018, Ufa has been installing smart public transport stops equipped with digital displays, surveillance cameras, emergency call buttons, and USB charging ports. By 2024, the city had around 140 such smart pavilions[36].

## Smart Campus

**An ecosystem of digital services and solutions for educational management, integrated administration, and security in an inter-university campus.**

**Project Participants**
Sitronics Group (digital services developer), supported by a working group under the Ministry of Digital Development and Public Administration of Bashkortostan

**Innovation**
first of its kind in Russia

**Project Launch**
first phase (IQ-Park) opened in 2024

Ufa was among the first eight Russian cities selected for the federal "Science and Universities" national project to develop inter-university campuses. IQ-Park, the initial phase of the Eurasian World-Class Research and Education Center's inter-university student campus, opened in February 2024. The ceremony was attended by Radiy Khabirov and, via video link, Russian President Vladimir Putin. The full project is set for completion in 2025.

Sitronics Group is leading the digitalization efforts with its Smart Campus concept, based on a four-tier pyramid structure:

1 Secure, fault-tolerant physical infrastructure for data storage, processing, and exchange.

2 Flexible routing of information flows with secure remote access to the digital environment.

3 Logical access layer for diverse applications and systems via APIs.

4 Comprehensive services for campus management, operations, safety, and student-oriented digital solutions.

Key digital service modules include:

- Digital Campus Operations Platform — Automates real estate and facility management.
- Unified Campus Information Environment — A scalable digital education and research ecosystem that fosters synergy between academia, science, and business. Users access services like content management, academic event scheduling, and service requests.
- Interactive Campus Map — A navigation and information tool for indoor and outdoor wayfinding.

36 Smart stops are repaired daily in Ufa. http://уфагортранс.рф/ежедневный-труд-в-уфе-чинят-умные-ос/

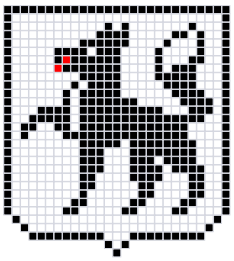
Rustem Dautov, Director of the Russian Ministry of Education's Budget Investment Department: "We have a mandate to pilot smart digital operations systems in these campuses. Moreover, this must be done using domestically developed software as part of import substitution."[37]

Experts believe the digital solutions implemented in Ufa's inter-university campus could set a nationwide standard for campus digitalization.[38]

37 https://pravitelstvorb.ru/news/21776/

38 Sitronics Group implemented digital services in the Smart Inter-University campus in Ufa. 02.02.2024. https://www.kommersant.ru/doc/6492075

# 4 +43 SALEKHARD



**RANK**

| | |
|---|---|
| 2023 | 8 |
| 2018 | 51 |

**Biggest Growth:**

supply

transportation

demand

media

Salekhard, the administrative center of the Yamalo-Nenets Autonomous Okrug—one of Russia's most financially stable regions—has long been a leader in digital transformation. In 2022, 97% of households had broadband internet (ranking 1st in Russia), and over 90% of residents were registered on the Gosuslugi portal. The region also leads in the number of services available on the platform[39].

In 2024, the Yamalo-Nenets AO claimed 1st place in Russia's regional digital transformation ranking.[40]

39 Yamal became leader in digital transformation among regions 30.06.2022. https://vesti-yamal.ru/ru/vjesti_jamal/yamal_stal_liderom_sredi_regionov_po_cifrovoi_transformacii

40 Yamal became leader in digital transformation in the country . 15.04.2024. https://yanao.ru/press-tsentr/novosti/yamal-stal-liderom-tsifrovoy-transformatsii-v-strane/

# "Moroshka" Card

**A unified resident card for the Yamalo-Nenets AO**

**Project Participants**
Government of Yamalo-Nenets AO, payment system Mir (technical partner), multiple commercial partners (goods and service providers)

**Uniqueness**
exceptionally broad functionality, including services unique among Russian resident cards

**Project Launch**
spring 2022

The "Moroshka" card is a unified resident card linked to the Mir payment system, launched in 2022 under the Digital Economy national project. Within two years, 170,000 residents used it to access over 2 million services[41]. A mobile app is also available[42].

Services (as of August 2024):

1. Social services – Simplified identification for welfare recipients, offering home care, health procedures, social taxi services, legal aid, etc.
2. Transport card – Discounted fares and special offers.
3. 20% discount on paid services at sports and fitness facilities.
4. E-vouchers for goods/services, including 32,000 RUB for newborns for second and subsequent children, baby food, special equipment for control of babies during sleep; 30,500 RUB for clothing/shoes for state-supported students; school supplies and uniforms. Yamal became Russia's first region to implement e-vouchers based on a resident card.
5. Loyalty programs, cashback, and partner discounts.
6. Yamal Airlines loyalty program.
7. Digital library card.
8. "Yamal Longevity" program (free Nordic walking, swimming, IT classes, arts/crafts for women 55+ and men 60+).
9. Cultural event listings with ticket booking/purchase.
10. Parental monitoring – Track children's attendance at extracurricular activities.
11. Corporate loyalty programs

Integration with supplementary education services and the LitRes e-book platform was planned by the end of 2024.[43]

41 Over two million services were delivered over Moroshka card. 13.08.2024 https://purmedia.ru/novosti/bolee-dvuh-millionov-uslug-poluchili-yamalcy-po-karte-moroshka

42 https://ek.yanao.ru/

43 https://ditis.yanao.ru/presscenter/news/192241/, https://ditis.yanao.ru/presscenter/news/219457/

# "Smart Books" at Bus Stops

**Bus shelters with digital services, including e-libraries**

**Project Participants**
Initiative by Salekhard's #CityEducates project team, implemented with support from Priuralye construction company

**Innovation**
"Smart Stops " with broad functionality are relatively rare in Russia. E-libraries at bus stops were introduced in Magas, Ingushetia, yet transport tracking was not available there.

**Project Launch**
2023

In 2023, 10 bus stops in Salekhard were equipped with e-libraries as part of the #CityEducates project, timed to the Year of Knowledge, Teachers, and Mentors. The libraries feature Russian classics, poetry, works by Yamal authors, and local news. Books are downloadable via QR codes[44].

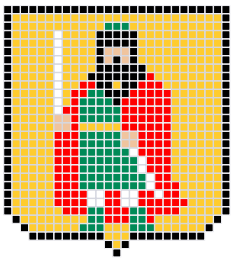
Salekhard's smart stops debuted in 2018 with displays showing bus arrival times and real-time temperature (critical in the Arctic). By 2020, most stops had these boards. Since 2021, heated "smart stops" with Wi-Fi, Bluetooth, charging ports, interactive panels with event ads, surveillance cameras, infrared heaters, and autonomous ventilation have been installed[45]. All stops are slated to be heated by 2026.[46]

44 City educates. E-libraries installed in Salekhard bus stops. 01.09.2023. https://yamal-media.ru/news/gorod-obrazovyvaet-v-saleharde-na-ostanovkah-ustanovili-elektronnye-biblioteki

45 Heated smart stop installed in Salekhard. 18.11.2021 https://sever-press.ru/news/sever-press/v-saleharde-jenergetiki-ustanovili-umnuju-tepluju-ostanovku/

46 In Salekhard contractor did not bring warm stops. 25.12.2023. https://www.mk-yamal.ru/social/2023/12/25/v-salekharde-podryadchik-obmanul-yamalcev-i-ne-privez-novye-teplye-ostanovki.html

# 5 +37 RYAZAN



**RANK**

| | |
|---|---|
| 2023 | 31 |
| 2018 | 68 |

**Biggest Growth:**

supply

healthcare

demand

retail

media

According to Rosstat, between 2017 and 2023, the Ryazan Oblast rose from 75th to 36th in Russia for internet penetration, driving demand for digital services. By 2023, 88.9% of households in the region had internet access[47] (up from 68.9% in 2017[48]).

In February 2023, a new Medical Information System (MIS) was launched, covering all healthcare facilities in the city and region. The MIS enables online doctor appointments and electronic medical records[49].

Mikhail Tropynin, First Deputy Minister of Health, Ryazan Oblast: "The system includes over 70 modules, being rolled out in phases. Some features are still in testing, while others are fully operational, with trained staff. We already see the MIS's efficiency—no queues, and appointments can be made via terminals or the Gosuslugi portal."[50]

Since January 2024, residents have used a Unified Digital Card to access social benefits, make payments, use public transport, receive cashback/discounts, and even as a digital library card[51].

47 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/1.2_2023_%D0%98%D0%9A%D0%A2.xlsx

48 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/1.2_2017_%D0%98%D0%9A%D0%A2.xlsx

49 Medical information system will be launched in Ryazan region by February 1st. Ryazan news, 27.01.2023. https://ryazannews.ru/fn_1285066.html

50 First results of introduction of MIS were discussed in Ryazan. 12.10.2023. https://m.rzn.info/news/2023/10/12/v-ryazani-obsudili-promezhutochnye-rezultaty-vnedreniya-mis-277616.html

51 Over 1000 Ryazan residents applied for Unified digital card. 03.11.2023. https://tkr-info.ru/novosti/:11506-bolee-1000-ryazantsev-podali-zayavleniya-na-oformlenie-edinoj-tsifrovoj-karty

## Digital Waste Management and Logistics System

**Project Participants**
Rostelecom

**Innovation**
Pilot project in 9 Russian cities

**Project Launch**
2020

The system, built on Rostelecom's cloud-based video surveillance platform and AI-powered computer vision, analyzes: waste collection sites (fullness, cleanliness), road conditions near dumpsters, garbage truck routes/license plates (tracking separate waste collection), sanitary conditions around waste collection points, etc. IP cameras monitor container integrity, sanitary compliance, illegal ads/graffiti, quality of cleaning. Detected violations are logged with timestamped screenshots in user accounts. By analyzing fill rates, the system optimizes garbage truck routes and schedules.

Piloted in Ryazan and 8 other Central Federal District cities[52].

## Investment Marketplace

**A loan opportunities aggregator for investors**

**Project Participants**
Ryazan Oblast Development Corporation, Central Bank of Russia (Ryazan branch)

**Uniqueness**
Recognized as a best practice by the Russian Ministry of Economic Development

**Project Launch**
2022

A digital service for potential investors – an opportunity to choose the optimal credit product. The investor submits their documents through a "single window," and all banks participating in the project provide their offers, from which the investor can select the best option in terms of cost and timing. One of the most important advantages of the project is a significant reduction in the time required to make a decision on launching an investment project.

The service is hosted on the investment portal of the Ryazan region. Six major Russian credit institutions with branches in the Ryazan region are connected to the project: Promsvyazbank, Gazprombank, Sberbank, Prio-Vneshtorgbank, Rosselkhozbank, and VTB Bank. In the future, the digital platform will expand and evolve based on the needs of market participants.

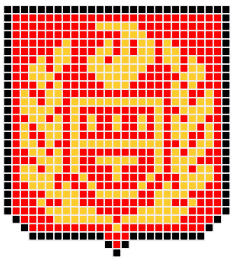
Artem Babinkov, Consultant of the Department for Admission and Cessation of Activities of Financial Institutions at the Bank of Russia: "At its core, this service is a unique technological startup for legal entities. The Bank of Russia certainly considers recognizing this project as a best practice and, of course, will facilitate its expansion to other Russian regions."[53]

52 Rostelecom developed a digital solution to control collection of garbage. 27.07.2020. https://gov.cnews.ru/news/line/2020-07-27_rostelekom_razrabotal

53 Digital service for investors launched in Ryazan. 16.12.2022. https://www.rzn.info/news/2022/12/16/v-ryazanskoj-oblasti-zapustili-novyj-cifrovoj-servis-dlya-investorov-investicionnyj-marketplejs-261874.html

6 +34

# NIZHNY TAGIL



**RANK**

| | |
|---|---|
| 2023 | 49 |
| 2018 | 83 |

**Biggest Growth:**

supply

transportation

demand

transportation

media

Since 2020, Nizhny Tagil has been developing an intelligent transport system as part of the national project "Safe and High-Quality Roads." The digital platform RITM$^3$ has been deployed, enabling analysis of current traffic conditions, short-term traffic forecasting, and rapid response to road incidents. The platform's modules analyze events on the road network (repairs, closures, accidents, etc.) and process them as part of traffic dispatching.

Twenty-seven traffic lights equipped with specialized software have been integrated into the automatic traffic control system, allowing remote management and adjustment of their operation via the RITM$^3$ digital platform interface. The city has also installed "smart" bus stops with electronic displays showing real-time public transport arrival information—these are also connected to the RITM$^3$ platform[54].

54 https://ritm3.ru/projects/nizhni-tagil/

# "Tagil 300"

**An educational online project dedicated to the 300th anniversary of Nizhny Tagil**

**Project Participants**
Mezhdu Strok News Agency, EVRAZ company

**Uniqueness**
original format

**Project Launch**
2022

Launched in August 2022 by EVRAZ and Mezhdu Strok News Agency, the "Tagil 300" project was timed to coincide with Nizhny Tagil's 300th anniversary. The project's concept revolves around presenting 300 rare, little-known, and intriguing facts to engage residents with their city's history and culture. Among the highlights are stories about one of Russia's first meteorological observatories, the country's first soft toy museum, and several attempts to rename Nizhny Tagil—in the 1860s to Alexandrov (in honor of Alexander II), and during the Soviet era to Oktyabrsky and Ordzhonikidzevsk. The latter proposal came from Shalva Stepanovich Okudzhava, the First Secretary of the Nizhny Tagil Regional Committee of the Communist Party and father of the famous writer and bard Bulat Okudzhava[55].

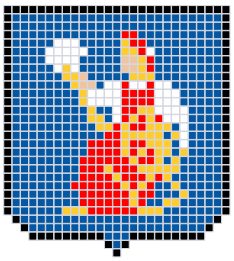
Evgenia Polyugova, one of the project's authors: "The concept and uniqueness of 'Tagil 300' lie in the fact that over 100 facts about the city were shared on video by well-known Tagil residents—metallurgists, entrepreneurs, teachers, theater actors, museum and cultural center staff, editors-in-chief, photographers, artists, singers, athletes, doctors, archivists, librarians, hosts, and many others."

Given the project's success and the abundance of unused interesting material, the authors do not rule out further development—potentially as "Tagil 300: Volume Two."[56]

55 https://tagil300.ru/

56 Real digital museum of Tagil history. 12.12.2022 https://mstrok.ru/news/nastoyashchiy-elektronnyy-muzey-istorii-nizhnego-tagila-evraz-i-mezhdu-strok-podveli-itogi

# 7 +32 IVANOVO



**RANK**

| | |
|---|---|
| 2023 | 40 |
| 2018 | 72 |

**Biggest Growth:**

supply

transportation

demand

administration

media

retail

Between 2017 and 2023, the Ivanovo region rose from last (18th place with 66.9% household penetration)[57] to 5th place (87.4%)[58] in the Central Federal District for internet adoption, driving significant growth in demand for digital services. The share of residents using the internet for government services increased from 66.1%[59] to 92.9%[60], moving the region from 13th to 6th place in the district.

Growth in public transport supply is linked to the 2019 introduction of contactless fare payment[61]. However, the lack of real-time information displays at stops remains unresolved. Ivanovo's first "smart" bus stops appeared in 2012, but due to malfunctions and vandalism, all were removed by 2020, with no replacements installed by 2024.

57 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/1.2_2017_%D0%98%D0%9A%D0%A2.xlsx

58 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/1.2_2023_%D0%98%D0%9A%D0%A2.xlsx

59 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/5.7a_2017_%D0%98%D0%9A%D0%A2.xlsx

60 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/5.7a_2023_%D0%98%D0%9A%D0%A2.xlsx

61 https://ivgoradm.ru/news?nid=52078

# Telemedicine Center

**Project Participants**
VEB Ventures (VEB Group), "Doctor Nearby" service, Ivanovo Regional Health Department

**Uniqueness**
first of its kind in Russia

**Project Launch**
2021

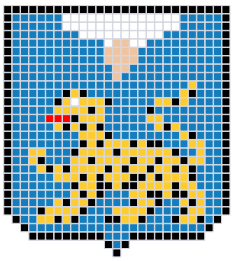
Ivanovo launched Russia's first telemedicine center where general practitioners conduct remote primary consultations. Available 24/7 free of charge under compulsory health insurance via mobile app, doctors can issue lab referrals and schedule specialist appointments digitally.

The project proved vital during COVID-19. Denis Shvetsov, CEO of "Doctor Nearby": "Remote primary care solves multiple challenges: addresses physician shortages, reduces clinic workloads, and serves those unable to visit in-person due to infection risks or quarantine."[62]

62 First telemedicine center opened in Ivanovo. TASS , 11.10.2021. https://tass.ru/obschestvo/12626151

8

# +31 PSKOV



**RANK**

| | |
|---|---|
| 2023 | 39 |
| 2018 | 70 |

**Biggest Growth:**

supply

healthcare

demand

media

Pskov region, one of the poorest in the European Russia, used to be also among Russia's least digitally developed regions. In 2017 it ranked 76th for internet access (68.6% households)[63] and 79th in the share of urban population using online state services (45,2%)[64]. By 2023 the region jumped to 51st (85.9%)[65] for internet penetration and 46th (87.7%) for e-government usage[66].

In 2019, Pskov Oblast became one of Russia's first regions to launch the "Digital Region" project in partnership with MegaFon, implementing digital technologies across multiple urban and regional sectors[67]. However, given the lack of information about project outcomes and the fact the federal "Digital Region" program never fully launched, it's safe to assume implementation in Pskov was only partial.

The 2021 Digital Transformation Strategy for Pskov Oblast's economy, social sphere and public administration includes 9 key areas: education, healthcare, transport and logistics, urban development, construction, social services, public administration, digital economy workforce development, and industry. The plan outlines 41 specific measures, including digitizing mass social services, implementing

63 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/5.7a_2017_%D0%98%D0%9A%D0%A2.xlsx

64 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/5.7a_2017_%D0%98%D0%9A%D0%A2.xlsx

65 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/1.2_2023_%D0%98%D0%9A%D0%A2.xlsx

66 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/5.7a_2023_%D0%98%D0%9A%D0%A2.xlsx

67 Digital region project to be launched in Pskov by the end of Summer. TASS , 21.08.2018. https://tass.ru/ekonomika/5477270

digital education tools, developing telemedicine, introducing digital public transport services, digitizing housing infrastructure services, etc.[68]

## "Digital Education of Pskov Oblast"

**Regional information-service platform for preschool, general, vocational and supplementary education**

**Project Participants**
Pskov Oblast Regional Center for Information Technologies (GBU PO RCIT), "Bazalt SPO"

**Innovation**
many system functions implemented for the first time

**Project Launch**
2022

The project's main goal is creating a digital education environment compliant with Russia's Federal Law "On Education," which mandates Russian software for processing student personal data, including digital gradebooks, e-learning systems, vocational education automation systems, and Advanced Vocational Training Centers.

Launched in 2022, the system is being implemented across educational institutions in Pskov and the region. It became Russia's first platform integrated with the "My Education" section on the Government Services portal and the centralized digital queue for preschool enrollment.

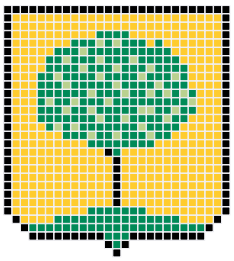
The low-code platform accommodates ideas and needs from different regions through comprehensive solutions that can be used either whole or as individual components. Specific subsystems are already used in over 30 Russian regions - the most popular being the subsystem for registering for state final exams (GIA), receiving results, and filing online appeals[69].

68 Digitalization of Pskov region: how?. 18.10.2023. https://telesputnik.ru/materials/gov/news/kak-prohodit-cifrovizaciya-v-pskovskoy-oblasti

69 Pskov region implements the digital transformation of education system. 26.12.2023. https://www.basealt.ru/about/news/archive/view/pskovskaja-oblast-vmeste-s-bazalt-spo-provodit-cifrovuju-transformaciju-regionalnoi-sistemy-obrazovanija

9

# +25 LIPETSK



**RANK**

| | |
|---|---|
| 2023 | 18 |
| 2018 | 43 |

**Biggest Growth:**

demand

retail

media

Growing demand for digital services correlates with significantly increased internet adoption. In 2017, 69.3% of Lipetsk Oblast households used internet (14th in Central Federal District)[70], by 2023 the figure rose to 87.6% (6th place)[71].

Lipetsk Oblast's digital transformation strategy includes over 60 projects across 9 sectors: education, healthcare, urban environment, transport, social services, public administration, industry, construction, and ecology[72]. In the 2020s the region consistently ranks high in Russia's regional digital maturity ratings — #1 in fall 2021, and in Top-10 in 2022-2023[73]. It also ranks among Russia's Top 15 regions by digital IQ[74].

70 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/1.2_2017_%D0%98%D0%9A%D0%A2.xlsx

71 https://rosstat.gov.ru/free_doc/new_site/business/it/ikt23/files/1.2_2023_%D0%98%D0%9A%D0%A2.xlsx

72 Digitize this. 15.02.2022. https://www.kommersant.ru/doc/5216507

73 Lipetsk region occupies leading positions in the ranking of digital transformation. 16.04.2024. https://lipetsktime.ru/news/society/lipetskaya_oblast_zanimaet_lidiruyushchie_pozitsii_reytinga_tsifrovoy_transformatsii/

74 Lipetsk region is in top-15 regions by digital IQ. 03.07.2024. https://липецкаяобласть.рф/news/14386

# Automated System for Detection of Violations

**System for identifying parking/urban maintenance violations while monitoring traffic and pedestrian flows**

**Project Participants**
"Rosatom Infrastructure Solutions"

**Innovation**
pilot implementation, first in Russia

**Project Launch**
2023

Since 2023, Lipetsk has installed unique equipment at 109 parking spaces featuring rotating cameras, control modules, data storage/processing units, and infrared projectors for nighttime vehicle recognition. The neural network-based software adapts to new license plate formats and helps identify violations.

The system's key advantage is versatility - it detects all types of parking, urban maintenance and payment violations while also functioning as a vehicle detector for intelligent transport systems, monitoring, and search operations. Collected data supports investigations and traffic management.

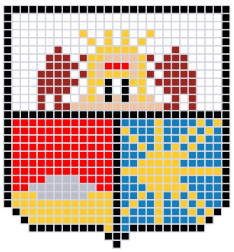
Unlike standard parking systems that scan vehicles every 5 minutes, this equipment continuously monitors real-time traffic flows and transmits data to relevant systems. Most hardware components are Russian-made, with software developed by Rosatom Infrastructure Solutions specialists[75] [76].

75 Rosatom implements in Lipetsk an innovative digital complex for city safety. 06.12.2023. https://www.rusatom-utilities.ru/media-center/news/rosatom-vnedryaet-v-lipetske-innovatsionnyy-tsifrovoy-kompleks-dlya-gorodskoy-bezopasnosti/

76 Rosatom presented a new digital complex for city safety. 14.02.2024. https://www.atomic-energy.ru/news/2024/02/14/137519

10 +25

# CHEREPOVETS



**RANK**

| | |
|---|---|
| 2023 | 59 |
| 2018 | 84 |

**Biggest Growth:**

supply

administration

transportation

Since 2021, Cherepovets has been installing information displays at bus stops. By 2024, 50 of 220 stops feature displays, while the rest feature QR codes that lead to information on the carrier web-site[77].

In 2019, Cherepovets joined the Russian Ministry of Construction's "Smart City" program, implementing digital solutions across 28 areas including urban management, smart utilities, intelligent transport, public/ecological safety systems, education, healthcare, culture and tourism. Progress is measured by the "City IQ" digitalization index from Ministry of Construction[78]. While ranking 52nd among large Russian cities in 2020[79], Cherepovets rose to 6th in 2021[80] and 12th in 2022 (of 63 participating cities)[81].

77 50 displays are already installed at Cherepovets transport stops.. 13.07.2023. https://vologda.aif.ru/auto/details/50_elektronnyh_tablo_uzhe_ustanovili_na_ostanovkah_cherepovca

78 When Cherepovets will become “Smart”? 5.10.2020. https://samolet.media/posts/5317

79 Minstroy of Russia published an IQ-index of cities https://minstroyrf.gov.ru/upload/iblock/501/List-s-gorodami-IQ-Final.pdf

80 https://www.minstroyrf.gov.ru/upload/iblock/672/REZULTATY-OTSENKI-KHODA-I-EFFEKTIVNOSTI.pdf

81 https://www.minstroyrf.gov.ru/upload/iblock/183/2jpwh2e8xiqo0qc2mcteb4x0pnit36i9/Rezultaty-IQ-2022.pdf

# "MegaFon Ecology"

**Digital environmental monitoring platform**

**Project Participants**
MegaFon, Severstal

**Innovation**
among Russia's first

**Project Launch**
2024

The "MegaFon Ecology" platform has been implemented at the Cherepovets Steel Mill (PJSC Severstal) and throughout the city. Nine monitoring stations - equipped with dust sensors, gas analyzers and weather stations - cover all city districts, tracking suspended particulates, nitrogen/sulfur dioxide and meteorological data.

Real-time monitoring transmits readings to the steel mill's servers every 20 minutes, where the service compares data against permissible levels, immediately identifying exceedances and alerting plant specialists[82].

Mikhail Belov, Chief Ecologist of Severstal Russian Steel Division: "Using MegaFon's software, we plan to verify the effectiveness of our air protection measures. Under the 'Clean Air' project, we aim to reduce atmospheric pollutant emissions in Cherepovets by at least 20% in 2024. We've already made significant progress - actual emission reductions reached 15.9% by end of 2023."[83]

82 MegaFon adds innovations to Cherepovets' eco-monitoring system" - RBC, 05/28/2024

83 https://www.rbc.ru/industries/news/6655c9eb9a7947083dcdd510

APPENDIX 1

# Digital Life Index Metrics

To analyze demand, we used data reflecting internet users' activity and interest in existing digital infrastructure. Primarily, we evaluated the number of search queries in Yandex related to digital services that interest city residents. We considered the average monthly queries over the year preceding the data collection period, accounting for audience distribution across specific cities. Additionally, we used official statistics on the percentage of the population using electronic government and municipal services.

To analyze supply, we used indicators showing the availability and development level of digital services in the studied cities. Specifically, we evaluated:

- **Transport**: Availability of transport monitoring apps, electronic displays, cashless payments, car-sharing
- **Finance**: Number of bank branches with the best digital offerings (based on Markswebb Mobile Banking Rank 2022 and Internet Banking Rank 2022 for small businesses and individual entrepreneurs)
- **Retail**: Number of pickup points for the top 5 largest online marketplaces and top 5 parcel locker networks
- **Healthcare**: Availability of online clinic registration and doctor appointment services through Gosuslugi portal
- **Education**: Number of universities offering distance learning
- **Media**: Number of online media outlets
- **Administration**: Functionality of official city administration portals

**Primary Indicators Used in the Digital Life Index**

| | SUPPLY | DEMAND |
|---|---|---|
| **Transport** | 1. Public transport monitoring apps<br>2. Electronic schedules at stops<br>3. Cashless fare payment<br>4. Car-sharing | Search queries for transport schedules, routes, and tracking apps per 1000 population |
| **Finance** | Number of top-rated bank branches per 1M population | Search queries for online banking, loans, and credit per 1000 population |
| **Retail** | Number of pickup points for top online retailers | Search queries for online stores and 10 biggest marketplaces, minus requests “to open”, “to create”<br><br>Per 1000 population |

| | SUPPLY | DEMAND |
|---|---|---|
| **Healthcare** | 1. Online clinic registration<br>2. Online home doctor requests | 1. Search queries for doctor appointments<br>2. Search queries for online pharmacies<br>Per 1000 population |
| **Education** | Number of universities with distance learning in http://vuz.edunetwork.ru/dist/?spec=0 /<br>Number of universities in http://vuz.edunetwork.ru/ | Search queries for online education platforms in 5.03.2023 - 4.04.2023 per 1000 population |
| **Media** | Number of online media outlets from PR PREX database (www.prex.ru) per 1M population | Search queries for news in 24.03.2023 – 23.04.2023 per 1000 of population |
| **Administration** | Functionality of city administration portals according to check-list | Percentage of citizens using e-government services |

The results were normalized according to each city's population. The final score was determined by the average ranking across all dimensions (1st place = 1, last place = 0).

APPENDIX 2

# Factors of Digital Divide

The study of factors affecting secondary digitalization levels and determining the digital divide was based on Dasgupta's[84] model: (1) income level, (2) human capital, (3) regional digitalization policies. The description of the first factor does not present particular difficulty, as it can be adequately characterized by objective indicators such as gross regional product (GRP) per capita and its rate of change[85]. The human capital factor can be decomposed into three aspects: general demographic dynamics (regional population size and its rate of change), age composition of the population (median age), and education quality (number of universities in the region - both absolute and per 1,000 residents - along with the overall ranking of regional universities and average university ranking). The most challenging aspect involved identifying metrics to describe the quality of regional digital policy. Currently, no direct quantitative comparisons exist in this domain, which necessitated the examination of several proxy metrics reflecting the general political situation: quality of life in the region, urban environment quality, the governor's position in national rankings, as well as the electoral performance of the "United Russia" party (the "party of power") and the "New People" party (the largest "modernization-oriented" political force) in the region during the 2021 State Duma elections[86].

The relative weight of factors was determined using hierarchical linear regression, identifying statistically significant contributors. The resulting equations were:

**Overall Index:**

$$\hat{Y} = -0.488798 + 0.00174729\ X_5 + 0.00608557\ X_7 + 0.0206967\ X_8 - 0.000996673\ X_{10}$$

Determination coefficient $R^2$=0,593

**Overall Index Change:**

$$\hat{Y} = -1.204772 - 0.00326962\ X_3 + 0.00545175\ X_4 - 0.0173894\ X_7 + 0.0185859\ X_8$$

Determination coefficient $R^2$=0,303

**Demand:**

$$\hat{Y} = -0.858517 + 0.00119338\ X_4 + 0.0262901\ X_8 - 0.0797861\ X_9$$

Determination coefficient $R^2$=0,541

**Supply:**

$$\hat{Y} = -0.153882 - 0.80032\ X_2 + 0.00149586\ X_5 + 0.00904969\ X_7 + 0.0136723\ X_8 - 0.00115867\ X_{10}$$

Determination coefficient $R^2$=0,456

**Significant Variables:**

- $X_2$ GRP per capita growth rate 2012–2019, CAGR %
- $X_3$ Urban Environment Quality Index 2018[87]
- $X_4$ Urban Environment Quality Index 2023[88]
- $X_5$ "Urban improvement" indicator in VEB.RF's Quality of Life Index
- $X_7$ New People party's 2021 election results
- $X_8$ Regional median age[89]
- $X_{10}$ Governor's national ranking position 2021[90]

The economic factor (regional income growth) proved significant for digital supply but irrelevant for demand. Human capital and policy quality factors played key roles. Notably, the New People party's vote share emerged as significant, potentially reflecting a regional "modernization demand."

The 2023 results fully align with the 2018 analysis, indirectly validating the Digital Life Index model's quality.

84 Dasgupta, Lall, & Wheeler (2001)

85 In all cases Rosstat data was used if not indicated otherwise

86 When analyzing the 2018 data, the election results of the "Yabloko" party were used. However, since the party received an insignificant number of votes in many regions during the 2021 elections, for greater statistical reliability, the results of the "New People" party were utilized instead, as they surpassed the 5% threshold and gained representation in the State Duma.

87 www.индекс-городов.рф

88 www.индекс-городов.рф

89 https://rosstat.gov.ru/storage/mediabank/Bul_chislen_nasel-pv_01-01-2022.pdf

90 https://russia-rating.ru/info/21217.html

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