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ARTICLE IN THE SPECIAL SECTION

# Borrowed Infographics and Data Visualization in the Online Media of Russia's Volga Region: A Case of Functional Imbalance

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**ABSTRACT**
This article examines the functional imbalance of borrowed infographics in online media, where the informational function is often reduced to mere illustration. Borrowing content has become a routine practice in contemporary newsrooms, allowing editors to quickly fill multimedia sections with visually appealing materials. However, the reuse of infographic content carries the risk of losing informational value, especially when materials are taken out of their original context or modified without proper adaptation. The study analyzes media texts published between 2021 and 2024 using content analysis and survey methods. The empirical base includes six online outlets from Kazan, Nizhny Novgorod, and Samara in Russia's Volga region. The analysis identified several factors contributing to functional imbalance, including editing, format conversion, and image degradation. Among them, loss of image quality proved particularly significant as many materials featured blurred visuals, unreadable legends, or indistinct graphic elements. Presentation slides, however, generally retained informational value when supported by sufficient context in the accompanying text. The results reveal that the imbalance stems from a superficial approach to graphics in editorial work, where visual appeal often takes precedence over informational content. In many

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online newsrooms, borrowed infographics, photographs, and drawings are treated as interchangeable decorative elements, and the partial loss of visual or textual components is not considered critical to the publication's perceived quality or credibility.

**KEYWORDS**
infographics, routinization, functional imbalance, local media, data visualization

## Introduction

In today's media landscape, infographics and data visualization have become powerful storytelling tools. By turning complex information into compelling visuals, they not only make media content more informative but also help define an outlet's visual identity through consistent color schemes and design elements. However, not all infographics originate in-house. Many are borrowed from other sources, and among these, some reveal a subtle though important issue: *a functional imbalance.*

In Russian scholarship, borrowed infographics have mostly been examined in the context of regional media, while the broader issue of functional imbalance has received little attention. This article seeks to shed light on this phenomenon, focusing on regional online media and examining cases where the illustrative appeal of infographics overshadows their informative value.

The purpose of this study is to explore and describe the distinctive features of the functional imbalance observed in the infographics used by online media outlets in three major cities of the Volga Federal District of Russia. The research seeks to identify how these imbalances manifest in the visual and informational structure of infographics and to understand their implications for digital journalism practices.

To achieve this purpose, the article is organized as follows: (a) the research methodology, which outlines the approach, data sources, and analytical methods applied in the study; (b) a review of existing approaches to the study of infographics, highlighting key theoretical perspectives and prior findings in this area; and (c) an analysis of the empirical data, followed by a discussion of the main results and their broader significance.

## Methodology

Methodologically, the study employs comparative and content analysis of publications containing infographics. At the first stage of the comparative analysis, the proportion of publications using borrowed materials was determined relative to the total number of identified publications featuring infographics. The next stage involved identifying those publications where borrowed infographics displayed a functional imbalance, that is, a reduction in their informational value.

Within the framework of content analysis, specific cases of diminished informational value were examined and grouped according to their presumed causes. The following factors were identified as contributing to this decline:

(a) poor image quality, which prevents reading inscriptions or distinguishing visual elements;
(b) missing or incomplete legends, making the visualization difficult to interpret;
(c) lack of context, for example, in scientific visuals or in materials from oral presentations.

The findings were summarized in tables and diagrams. The empirical base of the study comprises borrowed infographics, collected from six online media outlets based in three Russian cities: *Kazanfirst*[1] and *BIZNES Online*[2] in Kazan (205 texts); *Nizhegorodskaia Pravda*[3] and *Otkrytyi Nizhnii*[4] in Nizhny Novgorod (113 texts); *Obozrenie*[5] and *Volga News*[6] in Samara (379 texts). The selection of these media outlets was guided by the citation ratings compiled by the *Medialogiia* company for Kazan (Respublika Tatarstan: Reiting SMI, 2025), Nizhny Novgorod (Nizhegorodskaia oblast': Reiting SMI, 2025), and Samara (Samarskaia oblast': Reiting SMI, 2025), as well as a preliminary review confirming the availability of sufficient empirical material. Notably, *Otkrytyi Nizhnii* was absent from the *Medialogiia* rating at the time of writing but was included due to its sufficient number of infographic publications. The study covers the period from January 1, 2021, to June 30, 2024.

## Approaches to Studying Infographics in Mass Media

The review of earlier approaches to the study of infographics presented below highlights the relevance and contribution of this work to the field. Infographics and data visualizations, produced collaboratively by journalists, analysts, programmers, and designers, or occasionally by a single individual, have been examined in considerable depth. Much of this research has focused on fully developed projects, such as award-winning examples, and has emphasized the role of interactivity and coding skills (Ojo & Heravi, 2018), which are widely recognized as key factors in the ongoing evolution of this format within UX design.

However, infographics and data visualization in Russian regional media have received relatively little comprehensive academic attention. Scholars have identified several contradictions in this area: limited professional competencies despite expanding technical capabilities, and the complexity and high cost of infographic production (Kachanov, 2020, p. 94) in contrast to editorial demands

[1] https://kazanfirst.ru

[2] https://www.business-gazeta.ru

[3] https://pravda-nn.ru

[4] https://www.opennov.ru

[5] https://oboz.info

[6] https://volga.news

for efficiency (Alieva, 2023). Attention to these institutional factors often results in assumptions about preferred genres and formats. Long-form multimedia texts and special projects are seen as complex and irregular forms of production, while this perspective tends to overlook infographics embedded in articles, interviews, or even short news items.

In regional media, not all editorial offices have specialists or departments dedicated to creating data visualizations and infographics, and therefore they prefer to rely on borrowing infographic materials from third-party sources. Studies of regional outlets identify the ratio of original to borrowed infographics (Belenko & Girka, 2020), providing insight into newsroom use of multimedia.

One of the key criteria in comprehensive analyses of media texts is their subject matter. In her study of the newspaper *Argumenty i Fakty* [Arguments and Facts], Simakova (2020) points out that the choice of infographic tools depends on the amount of data and the topic (p. 373). She also notes the thematic universality of infographics (Simakova, 2022, p. 112), which reflects both their wide potential for application and the difficulty of defining or classifying them. From a functional perspective, infographics enhance analytical engagement and reduce the cognitive load (Domgaard & Park, 2021); they are effective across different education levels and are particularly well suited for dissemination on social media (Lee et al., 2022), highlighting the cross-media nature of the issue (Karpenko & Sidorova, 2022). Infographics also facilitate comprehension and strengthen the persuasive dimension of media texts (Lee & Lee, 2022), which may be problematic in cases of manipulation but beneficial in contexts such as risk communication (Jacob, 2020).

The functional dimension of infographics is thus closely linked to journalistic ethics. Scholars distinguish two key ethical aspects of data visualization: representativeness and transparency. The first involves fairness in presenting issues without omission or exaggeration for dramatic effect; in risk communication, inaccurate representation can lead to discrimination (Welhausen, 2022, p. 51). Transparency concerns the openness of information processing and the clarity of infographic design, which form the ethical foundation of this format (Weber et al., 2018, p. 203). However, clarity of reading remains insufficiently explored, particularly in the case of borrowed infographics.

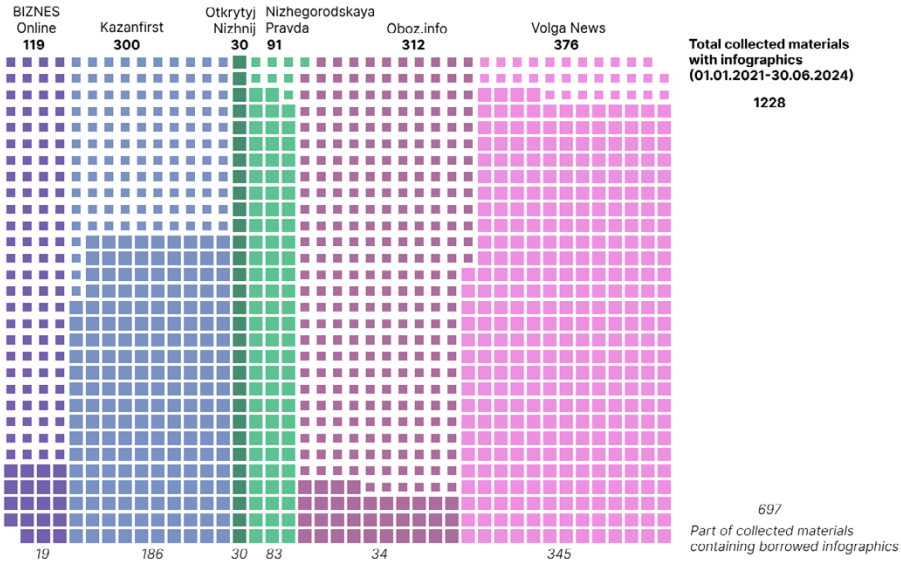
When studying infographics in the media, it is important to distinguish between the sources of information used to create original materials and the sources of ready-made visuals. The former have been studied more extensively: research shows that media often rely on open online data, primarily from governmental reports (Stalph & Heravi, 2023, p. 1659). By contrast, the practice of borrowing ready-made images has mostly escaped detailed examination and is commonly regarded as a standard editorial habit, on par with the use of stock imagery. Consequently, issues such as improper recontextualization or disregard for the visual “readability” of borrowed materials remain largely overlooked, even though these factors directly affect the quality of communication.

## Characteristics of Borrowed Infographic Content in Online Mass Media of Kazan, Nizhny Novgorod, and Samara

The use of borrowed infographics and data visualizations varied significantly across the analyzed publications (Figure 1). In *Kazanfirst,* 186 out of 300 publications (62%) contained borrowed materials. In contrast, only 16% of texts on *BIZNES Online* included borrowed content, compared to 91% in *Nizhegorodskaia Pravda*, 100% in *Otkrytyi Nizhnii*, 11% in *Obozrenie*, and 92% in *Volga News*.

**Figure 1**

*Proportion of Borrowed Infographics in the Total Number of Materials*




*Note.* Source: developed by the authors.

On the *Kazanfirst* website, the most common type of borrowed infographic was presentation slides, accounting for about 45% (83 out of 186) of all publications containing borrowed infographics. This format can be seen as a popular way to address editorial constraints such as limited time, skills, or technical resources when incorporating visual content. Among the remaining texts, 34 (18.3% of all borrowed materials on *Kazanfirst*) showed signs of functional imbalance: 12 (6.5%) due to poor image quality or lack of clarity; eight (4.3%) due to missing or incomplete legends; 11 (6%) due to insufficient contextualization; two (1.1%) due to a mismatch between visualization and data; and one (0.5%) due to improper editing. Figure 2 illustrates this kind of discrepancy. Note the mismatch between the sizes of the sections in the donut chart and the percentage values in this infographic, which depicts the dynamics of small and medium-sized businesses.

**Figure 2**

*An Example of Discrepancy Between Data and Visualization*[7]




*Note.* Source: Martynova, 2023

On the *BIZNES Online* website, violations of functional balance were identified in five out of 19 publications featuring borrowed infographics (26.3%). Among them, two had low-quality images, two lacked units of measurement, and one contained inconsistency between the data and the visualization.

In the two major online news outlets of Kazan, a total of 205 texts with borrowed infographic materials were collected. Signs of functional imbalance were found in 39 of them (19%).

In the case of *Nizhegorodskaia Pravda*, analysis revealed dominant formats and sources in both original and borrowed materials. Approximately half of all publications on road communications (47% in 2021, 45% in 2022, 69% in 2023, and 48% in 2024) featured infographics produced by the Road Traffic Management Center (RTMC). Many materials related to the spread of COVID-19 (from the start of the pandemic through 2022) included interactive infographics created with Flourish[8]. Out of 83 texts containing borrowed infographics, nine (10.8%) displayed signs of functional imbalance: five due to low image quality, two due to insufficient contextualization, one due to a missing legend, and one due to a mismatch between data and visualization.

In the same period, only 30 texts with borrowed infographics were published on the *Otkrytyi Nizhnii* website, of which 15 exhibited signs of functional imbalance.

[7] The infographic shows data on small and medium-sized enterprises in Russia. The bar chart illustrates the total value of enterprises in the first half of 2022 (191.1 billion rubles) and the first half of 2023 (224.8 billion rubles), reflecting a 17.6% increase. The donut chart shows the distribution of enterprises by sector: Trade, Industry, Transport and Communications, Construction, and Other.

[8] https://flourish.studio

Low image quality was observed in nine texts (30%), and the absence of a legend or other explanatory elements in six (20%). In total, across the two outlets of Nizhny Novgorod, 113 texts contained borrowed infographics, 24 of which (21%) showed signs of functional imbalance. Figure 3 shows an otherwise correct visualization whose informational value is reduced by low text readability.

**Figure 3**

*Example of an Image Compressed to the Point Where the Text Becomes Barely Distinguishable*[9]




*Note.* Source: Kazhdyi tretii smartfon nizhegorodtsy priobretaiut v kredit (2021).

On the website of the media outlet *Volga News* located in Samara, 345 texts containing borrowed infographics were identified for the selected period. Among them, 39 (11.3%) displayed signs of functional imbalance: 34 due to low image quality and five due to insufficient contextualization.

In another media outlet from Samara, *Obozrenie*, only 34 texts with borrowed infographics were published, seven of which (20.6%) showed violations of the functional balance. These included four cases of low image quality and three cases of insufficient context.

[9] The map shows the regional share of smartphones purchased on credit in Russia in 2021. Credit purchases are most common in the south and least common in the north, with regions categorized as less than 30%, 30%–35%, 35%–40%, and over 40%.

Overall, across the two outlets from Samara, 379 texts with borrowed infographics were collected, of which 46 (12.1%) exhibited signs of functional imbalance.

Table 1 and Figure 4 present data on the number of borrowed materials exhibiting functional imbalance. Figure 5 illustrates the factors contributing to this imbalance, showing, among other findings, that low image quality alone accounts for more than the combined effect of all other factors.

**Table 1**

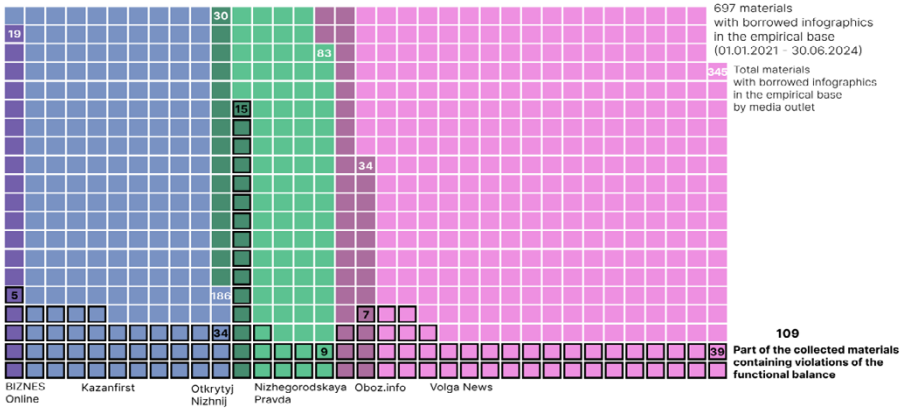
*Share of Materials With Functional Imbalance in the Total Number of Borrowed Infographic Materials*

| Media outlet | Total number of borrowed materials | Materials with functional imbalances | Percentage, % |
|---|---|---|---|
| Kazanfirst | 186 | 34 | 18.3 |
| BIZNES Online | 19 | 5 | 26.3 |
| Nizhegorodskaia Pravda | 83 | 9 | 10.8 |
| Otkrytyi Nizhnii | 30 | 15 | 50.0 |
| Volga News | 345 | 39 | 11.3 |
| Obozrenie | 34 | 7 | 20.6 |

*Note.* Source: developed by the authors.

**Figure 4**

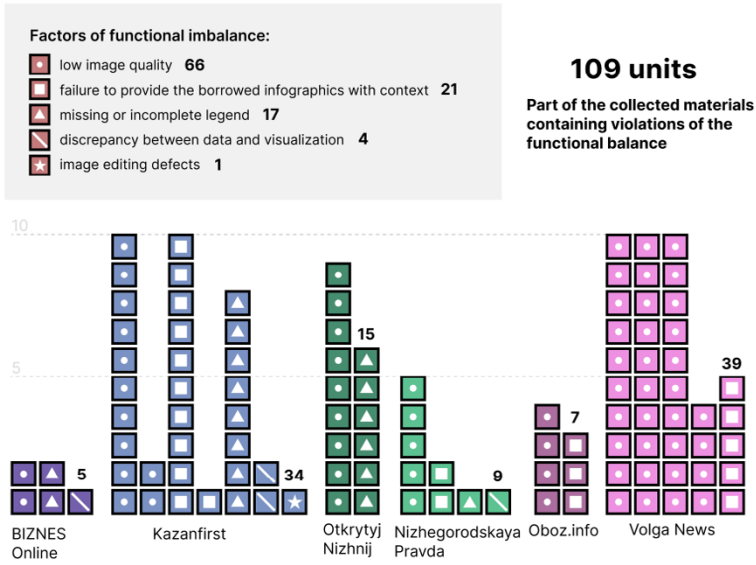
*Share of Materials With Functional Imbalances in the Total Number of Borrowed Materials*




*Note.* Source: developed by the authors.

**Figure 5**

*Distribution of Materials With Functional Imbalances Across Factors*




*Note.* Source: developed by the authors.

## Conclusion

The analysis revealed that functional imbalance in the reviewed materials is a multifaceted issue stemming from both competence- and technology-related limitations. Despite the widely recognized advantages of infographics (Domgaard & Park, 2021; Lee et al., 2022), the loss of informational value neutralizes these strengths, reducing infographics to mere illustrations.

The share of infographics exhibiting functional imbalance ranged from 14% to 21% of all borrowed materials. Notably, media outlets with larger samples of borrowed infographics showed a lower proportion of flawed examples. In addition to the initially identified categories of imbalance, such as poor image quality, missing or incomplete legends, and lack of context, other factors were observed, for example, inconsistencies between data and visualization and the absence of measurement units. Editing defects were less frequent but still contributed to diminished informational value.

Instances of poor image quality outnumbered all other causes of reduced information value combined. This finding complements earlier discussions of infographic readability (Weber et al., 2018, p. 203) and unintentional information distortion due to production limitations.

The study highlights a previously overlooked issue in the use of borrowed infographics. While borrowing serves as a practical response to competence and

technical constraints, it often results in information loss due to an initially flawed understanding of the infographic format. Knowledge of data visualization principles, therefore, is essential not only for creating original infographics but also for their appropriate adaptation and reuse.

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