

РОЛЬ И ЭФФЕКТИВНОСТЬ ВИЗУАЛИЗАЦИИ В ЖУРНАЛИСТИКЕ ДАННЫХ

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В современном информационном обществе быстрая и понятная презентация больших объемов информации является одним из главных приоритетов журналистики данных. В этом контексте инструменты визуализации играют важную роль в трансформации журналистики. В статье анализируются функции визуализации в журналистике данных, их основные типы, ее влияние на аудиторию и эффективные механизмы применения.

Ключевые слова: журналистика данных, визуализация, информационный дизайн, инфографика, интерактивные медиа

From a communication theory perspective, visualization operates as both a semiotic and rhetorical instrument, shaping how information is framed, perceived, and trusted within digital journalism ecosystems. The visual encoding of data can significantly reduce cognitive overload, allowing readers to process multidimensional information more rapidly than through conventional prose. Furthermore, interactive visualizations foster participatory journalism by encouraging user exploration, personalization, and deeper engagement with datasets, thereby expanding the audience's role from passive consumer to active interpreter [1]. Data visualization is used not only in journalism and digital media. Data visualization is a field that draws on many disciplines. Psychology studies information perception or the influence of certain elements, such as colors and shapes, on perception. Computer science and statistics have also developed several new fields, such as machine learning and data mining methods [2, p. 8]. However, data visualization has become more widespread in the modern media sphere.

Data journalism has become a new direction in journalism in the digital age. The main goal of this field is to analyze complex data and present it to the audience in a clear and understandable form. Visualization is a key component of this process. Information comprehension is made even easier by graphs, maps, infographics, and interactive dashboards. Contemporary academic debates increasingly interrogate the aesthetics of authority embedded in visualization. Highly polished graphics may create an illusion of scientific certainty even when datasets are incomplete, contested, or probabilistic. Therefore, scholars argue that transparency about uncertainty, margin of error, and methodological limitations should be integral to responsible visual journalism. This perspective reframes effectiveness not simply as clarity or engagement but as ethical intelligibility—the capacity to communicate complexity honestly without sacrificing audience understanding.

Advanced scholarship suggests that visual forms operate as discursive technologies that organize public perception by privileging certain interpretive pathways while marginalizing others, making visualization a powerful epistemological filter within mediated communication. Consequently, the design logic of visual journalism directly influences how audiences construct knowledge, assign causality, and perceive institutional legitimacy [3].

Visualization is the process of presenting information using graphical elements. This approach is based on the principle of cognitive psychology that the human brain processes visual information more quickly. In data journalism, visualization serves not only an aesthetic function but also an analytical and explanatory role. From a multidisciplinary perspective, the effectiveness of visualization in data journalism is grounded in cognitive science, which demonstrates that visual encoding significantly accelerates information processing, minimizes cognitive overload, and improves long-term retention compared to text-dominant communication models [4, 19]. Ultimately, the role of visualization in data journalism extends beyond simplification; it fundamentally restructures how knowledge is produced, validated, and consumed within contemporary media systems. As digital journalism evolves, visualization remains central to the capacity of journalism to inform publics, sustain accountability, and reinforce evidence-based discourse in increasingly complex informational environments [5].

Research shows that visual information is remembered more quickly than text. Visualization attracts audience attention, facilitates information interpretation, and has a positive impact on decision-making. However, incorrect or manipulative visualization can lead to misinformation. To achieve this, knowledge and skills in data and media literacy are essential. As is well known, data journalism involves five main stages: data collection, filtering, analyzing cleaned data, visualization, and storytelling. Although data visualization is the fourth stage, it is particularly important for producing a high-quality data product.

Data visualization refers to the process of preparing the data obtained through analysis in a form that is understandable to everyone using various visualization techniques, such as graphs, tables, and maps. Data visualization in data journalism facilitates easy communication and allows information to be presented in an engaging structure [5, p. 166]. The role of visualization in data journalism extends beyond simplification; it fundamentally restructures how knowledge is produced, validated, and consumed within contemporary media systems. As digital journalism evolves, visualization remains central to the capacity of journalism to inform publics, sustain accountability, and reinforce evidence-based discourse in increasingly complex informational environments [6].

Data journalism employs a variety of visualization tools implemented using computer software. These include platforms such as Tableau, Datawrapper, and Flourish. Canva and infographic creation tools are also considered effective. These tools allow journalists to present data interactively and dynamically. Interactive visualizations, in particular, allow users to actively engage with the data. Data visualization types used in the media include bar charts, line graphs, scatter plots, maps, and infographics [7].

Bar charts: Bar charts are useful for comparing values across categories. They are used to show trends over time or to compare different groups.

Line graphs: Line graphs are used to show trends over time. They are useful for showing how a specific data point has changed over time.

Scatterplots: Scatterplots are used to show the relationship between two variables. They are useful for identifying correlations between different data sets.

Maps: Maps are useful for displaying data geographically. They are used to show population density, election results, and other location-specific data.

Infographics: Infographics combine various data visualizations, text, and images to present complex data in an engaging and easy-to-understand form [8].

There are some ethical challenges and limitations in this issue. For instance, risk of misrepresentation. Actually poorly designed charts can distort reality through:

- Truncated axes
- Misleading scales
- Selective data omission
- Excessive simplification

Also, there could be accessibility issues as well as data bias and interpretation. Not all visualizations are equally accessible to audiences with disabilities or low digital literacy. Visualization may create false objectivity. The selection, framing, and design choices made by journalists influence interpretation, raising concerns about neutrality.

There are also a number of challenges when applying visualization to data journalism. The results of a three-month monitoring of Azerbaijani state media, primarily Azerbaijan Television, Public Television, Khazar Television, ATV, and ARB 24, show that local television channels and official websites devote little attention to data visualization. Among television channels, data visualization elements are most frequently found in ARB 24 and ATV's economic programming. The primary reason for this is the lack of an adequate team capable of working with data content. There are other shortcomings in this area as well. These include insufficient information selection, simple and understandable design, and adherence to ethical principles. Furthermore, a lack of technical expertise hinders the effective work of journalists in this field. Therefore, given the specialized nature of this field, it is important to have professional staff trained in data journalism.

To maximize journalistic integrity and audience understanding:

- Prioritize accuracy over aesthetics
- Use clear labels and scales
- Ensure contextual explanation
- Maintain transparency about data sources
- Design for accessibility
- Avoid sensationalism

However, the scientific evaluation of visualization in journalism also highlights methodological and ethical concerns. Misleading scales, selective data representation, or algorithmic bias may distort public understanding, raising critical questions about objectivity and visual literacy. Consequently, the effectiveness of visualization depends not only on aesthetic clarity but also on statistical integrity, contextual transparency, and ethical design principles. In contemporary media studies, visualization is increasingly recognized as a central methodological pillar of data journalism, shaping both narrative authority and the social construction of evidence in the digital public sphere [9].

Finally, the globalization of data journalism underscores the strategic importance of culturally adaptive visualization practices. Visual conventions are not universally interpreted in identical ways; colour symbolism, iconography, geographic framing, and narrative emphasis may vary across sociocultural contexts. Consequently, effective visualization in international journalism requires contextual sensitivity to avoid ethnocentric framing and enhance transnational accessibility. In this broader framework, visualization is increasingly understood as both a technical instrument and a cross-cultural communicative practice that shapes how global publics interpret shared realities.

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THE ROLE AND EFFECTIVENESS OF VISUALIZATION IN DATA JOURNALISM

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In the modern information society, the rapid and understandable presentation of large volumes of information is one of the main priorities of data journalism. In this regard, visualization tools play an important role in the transformation of journalism. The article analyses the functions of visualization in data journalism, their main types and its impact on the audience and effective application mechanisms.

Keywords: data journalism, visualization, information design, infographics, interactive media