

# Data circulation between statistics agencies and journalists.

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Submitted: 31 January 2025, Revised: 26 March 2025, Accepted: 21 April 2025, Published: 26 May 2025

**Abstract.** This study investigates how data circulate between statistics agencies and journalists, with particular attention to the role of dissemination strategies—especially press releases—in shaping news production. While much of the literature addresses data production and use, the dynamics of data circulation remain understudied. Drawing on a case study of the statistical agency of the state of São Paulo (SEADE) in Brazil, the paper analyzes all news articles published in 2024 that referenced SEADE data. Articles were categorized according to the level of influence of press releases: full reproductions (verbatim replication), value-added reproductions (with complementary analysis or context), or organically produced (independent of any press release). These were examined through the lenses of framing theory and journalistic role performance approach. Results show that 70% of the news articles were influenced by press releases, with a significant presence of the Loyal-Facilitator dimension, particularly in government-issued releases. National outlets were more likely to produce organic content, while local media—despite showing higher demand for statistical information—relied more heavily on press releases to produce their coverage. Thematic focus also varied: national journalists prioritized economic indicators, while local outlets focused more on labor statistics. The study also found that articles based on SEADE press releases more frequently incorporated added value, while those based on government releases were more likely to be reproduced verbatim. These patterns may indicate structural constraints, particularly in local newsrooms, and varying levels of data literacy among journalists. By mapping how official statistics circulate in the media ecosystem, the research highlights the importance of hybrid, user-centered dissemination strategies that combine traditional tools like press releases with open government data practices. Such approaches can broaden the reach and enhance the relevance of official statistics in journalism and public discourse. By demonstrating how a better understanding of data circulation helps statistical agencies tailor their dissemination practices, this study contributes to the Open Government Data literature and highlights how user-centered strategies can foster more meaningful and critical engagement with official data.

**Keywords.** Data circulation, official statistics, journalism, data dissemination, Open Government Data, OGD, data literacy, journalistic role performance, framing.

**Research paper, DOI:** <https://doi.org/10.59490/dgo.2025.1042>

## 1. Introduction

The rapid evolution of data production technologies, particularly within Big Data, has transformed how governments generate and disseminate official statistics (Signorelli et al., 2023). Open Government Data (OGD) initiatives have enhanced transparency and broadened data access (Attard et al., 2015). However, despite the tendency to adopt OGD in pursuit of seamless data dissemination, structural and institutional barriers often hinder the frictionless data circulation (Piattoeva et al., 2018). While research has extensively covered data production

and use, the process of data circulation—how data moves between stakeholders—remains underexplored (Porto de Albuquerque et al., 2021).

This study examines the circulation of data between statistical agencies and journalists. The research question asks: How does data circulation occur between official statistics agencies and journalists? To answer this, the study employs a case study methodology, analyzing interactions between the São Paulo State Statistics Agency (SEADE) and journalists in Brazil during 2024.

The research investigates journalists' engagement with official data, particularly the role of press releases in shaping news production. The analysis is informed by Framing theory (Entman, 1993) and the Dimensions of Journalistic Role Performance (Mellado, 2015), providing insights into how journalists frame and disseminate statistical information. The study examines news articles published in 2024 that utilized SEADE data, comparing local and national media in terms of reliance on press releases, reporting depth, data literacy, and thematic focus. It also applies the Dimensions of Journalistic Role Performance framework to assess whether journalists critically engage with government-produced data or simply reproduce it. Additionally, news articles are categorized into themes such as Economy, Labor, and Demography to understand how different types of statistics are prioritized.

By analyzing press releases, journalistic practices, and media characteristics, the study highlights challenges and opportunities in improving the dissemination and use of official statistics. This research contributes to the discussion of data circulation in the OGD context, emphasizing the importance of user-centered approaches in data dissemination to bridge the gap between producers and users.

The paper is structured as follows: Chapter 2 reviews key literature on data, data users, data circulation, and journalism's role in data dissemination. Chapter 3 details the research methodology, including the case study approach and methods for analyzing news articles and press releases. Chapter 4 presents the results, while Chapter 5 discusses their implications. Finally, Chapter 6 concludes with recommendations for improving data circulation and suggestions for future research.

## **2. Literature review**

### **2.1 Data and official statistics**

Data play a fundamental role in shaping social and economic systems, influencing everything from daily decision-making to large-scale policy development (Kitchin, 2014). However, as data are never neutral, their meaning and use depend on how they are collected, analyzed, and interpreted (Kitchin, 2014). The rise of "datafication"—the process by which various aspects of life are transformed into data (Mayer-Schonberger & Cukier, 2014)—has resulted in an unparalleled growth of digital records, produced as unintended outcomes of routine activities (Torres-Freire, 2021). This transformation has been driven by the rapid development of new technologies, increased computational power, and enhanced data storage capabilities, all of which have enabled the large-scale collection, processing, and dissemination of data. With the advent of this phenomenon, commonly referred to as Big Data (Signorelli et al., 2023), governments have increasingly adopted new methods for collecting, processing, and storing vast amounts of information, integrating these resources into policymaking (Kitchin, 2014) and into the production of official statistics (Signorelli et al., 2023).

Official statistics, produced and disseminated by government agencies, serve as essential tools for informing public policies and promoting transparency (Signorelli et al., 2023; United Nations Statistics Division, 2013). Covering areas such as economics, demography, labor markets, and environment (United Nations Statistics Division, 2013), these data provide a foundation for decision-making across multiple sectors (Attard et al., 2015; Misra, Ranjan, et al., 2021). As the demand for timely and accessible statistics grows, statistical agencies are under increasing pressure to modernize their approaches, ensuring that official statistics remain relevant in an ever-evolving data landscape (Citro, 2014). This transformation reflects a shift in how data users interact with official statistics. Audiences seek not only access to data but means for their interpretation and application. Ensuring the use of official statistics is just as important as making it available (Laaboudi et al., 2024).

In response, Open Government Data initiatives have sought to make government data—including official statistics—freely available in machine-readable formats (Attard et al., 2015; Gascó-Hernández et al., 2018). These policies aim to increase transparency, improve public policymaking, and encourage civic participation (Attard et al., 2015). To be effective, OGD frameworks emphasize the need for standardized data structures, improved search mechanisms, and enhanced interoperability, making it easier for users to find and work with official data (Attard et al., 2015; Lourenço, 2015). An example is the implementation of Linked Open Data (LOD) by Eurostat, the European statistics agency, which not only provides raw datasets but also integrates metadata and employs diverse communication strategies to expand the reach and usability of official statistics (Laaboudi et al., 2024). While open data initiatives have significantly expanded access, researchers argue that availability alone does not guarantee

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effective use. Meaningful engagement with data requires well-structured dissemination strategies that account for the diverse needs of users (Attard et al., 2015; Craveiro et al., 2023; Gascó-Hernández et al., 2018; Lourenço, 2015).

However, the role of statistical agencies in the dissemination process remains a subject of debate. Should their responsibility extend beyond publishing high-quality datasets to actively guiding users in their interpretation? Eurostat raised this very question: "Is it the role of the official statistics community to guide key users [...] in their use [...], or does our responsibility stop with putting the LOD 'out there'?" (Laaboudi et al., 2024, p. 88). Scholars argue that understanding user demand is crucial to enhancing the impact of open data initiatives (Attard et al., 2015; Begany et al., 2021; Craveiro et al., 2023), as it provides insight into how data circulation fosters informed decision-making and drives social transformation (Porto de Albuquerque et al., 2021).

## **2.2 Data circulation**

Most research on data focuses on its acquisition and use processes (Porto de Albuquerque et al., 2021). While this perspective highlights the role of data in informing policies and institutional actions, it overlooks the potential for broader transformations that emerge when data flows across different stakeholders and governance levels. Some studies suggest that structural changes in public policy and governance are more effectively realized through dynamic data circulation, where data moves between actors, fostering recognition, coordination, and the opening of new channels for communication (Porto de Albuquerque et al., 2021). In this context, data circulation refers to the movement of data across different actors, enabling interactions that reshape governance arrangements and influence decision-making processes (Porto de Albuquerque et al., 2021). The way data travels within and between institutions, communities, and other stakeholders determines its accessibility, usability, and impact. Official statistical agencies often rely on seamless data flows to effectively disseminate information (Misra, Ranjan, et al., 2021). However, the ideal of frictionless data circulation is rarely achieved in practice due to contextual barriers, institutional limitations, and other structural constraints (Piattoeva et al., 2018). Ultimately, the influence of data is determined not just by its content but also by how it is applied, who uses it, and the purpose it serves (Beer, 2016).

The data circulation approach proposes mapping the circulation of stories and narratives created by users from data (Porto de Albuquerque et al., 2021). This mapping involves identifying key actors, the channels through which data is disseminated, the motivations behind its use, and its tangible impact on public policies and social dynamics. By analyzing these factors, researchers and practitioners can identify ways to enhance data circulation, ensuring broader access and more meaningful engagement with the information being shared. Strengthening these interactions can lead to more inclusive decision-making processes and a more democratized use of data for social transformation (Porto de Albuquerque et al., 2021). Beyond improving accessibility, mapping data circulation also provides valuable insights into the broader data ecosystem. It helps identify bottlenecks that restrict data flow, allowing for targeted interventions to address these issues (Porto de Albuquerque et al., 2021). Furthermore, it supports efforts to tailor data dissemination to different levels of data literacy, ensuring that diverse users—from policymakers to local communities—can effectively interpret and apply the information (Porto de Albuquerque et al., 2021). Strengthening these relationships fosters deeper engagement among stakeholders and enhances the overall impact of data on governance and civic participation. By understanding these dynamics, researchers and institutions can refine strategies for improving data circulation, maximizing its reach, and ensuring that data serves as a tool for meaningful and equitable change (Cinnamon, 2020; Pappas et al., 2018; Porto de Albuquerque et al., 2021).

## **2.3 Dimensions of journalistic role performance**

Journalism shapes power dynamics in modern societies by influencing public and private debates through the way news is framed and delivered (Cushion et al., 2017; Mellado, 2015). Understanding how journalists operate within these dynamics requires examining their relationship with power, their presence in news narratives, and the strategies they use to engage audiences. In *Dimensions of Journalistic Role Performance*, Mellado (2015) explores these dynamics by mapping the features of news content that connect journalism's normative ideals with how these roles manifest in practice. The author's analysis identifies key journalistic roles. The Intervention role highlights the journalist's voice and interpretation in news content. The Watchdog role emphasizes holding public and private institutions accountable, while the Loyal-Facilitator role aligns with elite power structures or comparison with other regions. The Service role focuses on addressing audience interests through practical and utilitarian reporting. Civic Journalism fosters public engagement by adopting a citizen-centric perspective, while Infotainment prioritizes entertainment and emotional appeal, treating audiences as spectators (Mellado, 2015).

## **2.4 Journalism and data**

Data is a powerful tool for democratic inquiry, enhancing information flows and enriching public debate. However, because most people do not engage directly with raw datasets, journalists play a crucial role in discovering, translating, and interpreting data (Cushion et al., 2017; Rogers, 2013).

The fast-paced nature of modern news production places significant pressure on journalists to process and communicate complex statistical information with clarity and accuracy. Data journalism encompasses a wide range of practices, from traditional infographics to in-depth investigative reporting based on raw data analysis (Knight, 2015). Its rise has been seen as a means of democratizing information through innovative reporting techniques (Bradshaw, 2011; Cushion et al., 2017; Rogers, 2013). While often associated with investigative projects, Cushion (2017) expands the definition to include the routine use of secondary data in reporting, emphasizing that data analysis and interpretation are increasingly part of journalists' daily work.

Data literacy is fundamental to how journalists engage with and use data. This skill set goes beyond technical proficiency, encompassing the ability to critically analyze data, understand its context, and interpret the realities it represents (Carmi & Yates, 2020; Helsper, 2021; OECD, 2019; Scheerder et al., 2017; Senra, 1994; Tygel & Kirsch, 2016). Despite its growing importance, significant gaps in data literacy persist. Media organizations with strong public broadcasting systems or larger budgets tend to invest more in data journalism, providing greater statistical expertise and shaping how data is incorporated into reporting (Appelgren et al., 2019; Cushion et al., 2017). These structural conditions influence journalistic role performance, reflecting newsroom decisions shaped by internal and external pressures (Shoemaker & Vos, 2009). For example, a study on the Arab Region found that journalists lacking numerical proficiency and technical skills for data acquisition and analysis tended to adopt a passive approach to data, rather than the active engagement necessary for effective data journalism (Lewis & Nashmi, 2019).

## **2.5 Framing**

Framing shapes how journalists construct news stories, influencing public perceptions of issues (Lee & Basnyat, 2013; Scheufele & Tewksbury, 2007). At its core, framing involves selecting and emphasizing specific aspects of reality within a text to promote a particular interpretation (Entman, 1993). As one of the dominant theories in media studies (Lee & Basnyat, 2013), framing acts as a cognitive filter that simplifies complex issues into digestible narratives. This process helps audiences make sense of intricate events while also shaping their emotional and intellectual responses (Scheufele & Lewenstein, 2005).

## **2.6 The statistics agency of the state of São Paulo**

The State of São Paulo, with a large territorial area comparable to countries like the United Kingdom, is composed of 645 municipalities and has Brazil's most significant economy. The case studied is that of the State of São Paulo Statistics Agency (SEADE). It is a public institution linked to the Government of the State of São Paulo, responsible for producing and disseminating socioeconomic and demographic data that support public policies in the state. Data dissemination occurs through the publication of its outputs on its website ([www.seade.gov.br](http://www.seade.gov.br)), sending press releases to the media and sharing audiovisual content on social media. The published data are made available in various formats, including an open data repository, text-based analyses, and dashboards featuring dynamic infographics for data visualization.

# **3. Methodology**

This study conducted a case study of the State of São Paulo Statistics Agency (SEADE) in Brazil, analyzing data circulation between the agency and journalists, a key user group of official statistics (Attard et al., 2015; Misra, Ranjan, et al., 2021). It examined all news articles published in the Brazilian press in 2024 that referenced SEADE's data, comparing organically produced news to articles based on press releases issued by SEADE or the State Government. The analysis took place in January 2025.

São Paulo's economic significance and diverse media landscape provided a strong basis for the study. Newspapers in the region range from local to national coverage, and media classification was based on each outlet's self-declared reach on their websites. The year 2024 was selected to ensure accessibility to news articles and press releases, maintaining reliability and completeness of sources. To identify relevant articles, the author consulted SEADE's "Imprensa" (Press) section (<https://www.seade.gov.br/imprensa/page/2/>), used SEADE's internal news monitoring service (clipping), and conducted Google News searches with the keyword "SEADE," filtering results for Portuguese-language content from Brazil in 2024. Only written articles available online were analyzed, excluding video, audio, and print-only publications.

Press releases containing statistical data and citing SEADE were retrieved from SEADE's official website (<https://www.seade.gov.br/press-release/>) and the State Government's communication portal (<https://www.agenciasp.gov.br/?s=seade>). In some cases, press releases from both sources were identical. To link news articles with specific press releases, the study assessed whether they covered the same topics and statistics within a 20-day window of publication.

News articles were categorized based on the level of influence from press releases. "Full Reproduction" included

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articles that replicated the press release content verbatim. “Value-added Reproduction” referred to articles that incorporated press release content but added contextual elements, such as additional data or analysis. “Organic” articles were produced independently, without any influence from press releases. Each article was fully reviewed, including its title and body. Based on Framing theory (Entman, 1993), articles were classified by main theme. Themes aligned with commonly analyzed statistical areas: “Economy”, including GDP, economic projections, and investments; “Labor”, covering employment rates, informal work, and salaries; “Demography”, addressing population size, life expectancy, and fertility rates; and “Other”, for topics outside these categories (United Nations Statistics Division, 2013).

The study further applied Mellado’s (2015) Dimensions of Journalistic Role Performance, classifying articles into “Intervention”, “Watchdog”, “Loyal-Facilitator”, “Service”, “Infotainment”, and “Civic” roles, with some articles fitting multiple dimensions. Additionally, word count was measured to assess the depth of reporting. Media outlets were classified as “Local” if they primarily served a limited regional audience and “National” if they reached broader country-wide readerships.

## 4. Results

The research identified that throughout 2024, 81 Brazilian media outlets published 237 news articles that utilized official statistical data citing SEADE, the statistics agency of the State of São Paulo. During this period, the press received 112 press releases containing statistical data produced by the agency, of which 71 (63%) were sent directly by SEADE, and 41 (37%) were issued by the Secretariat of Communication of the State Government of São Paulo.

The analysis revealed significant differences in the use of press releases as sources for news. Of the 38 news articles based on Government press releases, 26 (68%) were fully reproduced without changes. In contrast, of the 125 news articles based on SEADE press releases, 81 (65%) were reproduced with value added, incorporating additional elements such as interviews, context, or data from other sources.

The average word count of news articles from local media outlets (476.1 words) was similar to that of national media outlets (473.7 words), with a difference of only 2 words. At the local level, the average word count difference between news articles induced by press releases (533.9 words) and organic news articles (531.0 words) was marginal, at only about 3 words. However, at the national level, organic news articles were significantly longer (644.9 words) compared to those based on press releases (299.5 words), showing a substantial difference of approximately 345 words.

The demand for news articles was higher among local media outlets than among national outlets. Of the 166 analyzed news articles (excluding the 71 articles that were full reproductions of press releases), 125 (75%) were published by local media outlets, while 41 (25%) were published by national outlets. Among local media outlets, most articles used press releases with added value (79 of the 125 or 63%). On the other hand, among national media outlets, 25 (61%) of the 41 news articles were produced organically, without any influence from press releases. Table 1 presents a summary of these findings, highlighting the differences in press release usage, word count averages, and the distribution of news articles between local and national/state-level outlets.

Based on the Framing approach (Entman, 1993), the 237 news articles were classified into three main themes: Economy, with 81 articles (34%); Labor, with 73 articles (31%); and Demography, with 40 articles (17%). Additionally, there was an “Other” category, which included 43 articles (18%). All themes exhibited a higher occurrence of articles induced with added value, except for the “Other” category. The Labor theme presented a significantly higher proportion of value-added articles (55%) compared to the other themes, which averaged 32%.

Among the 54 national news articles, most (25 articles, or 46%) focused on the Economy theme. In contrast, among the 183 local news articles, the majority (63 articles, or 34%) were related to the Labor theme. Regarding article length, value-added articles averaged 494 words, with Demography, Economy, and Labor frames averaging 519, 443, and 496 words, respectively. A notable difference was observed in the average length of organic articles, which were significantly longer: 939 words for Demography, 498 words for Economy, and 301 words for Labor. Table 2 provides data about distribution of types of use of press releases, article lengths, and coverage according to the frames.

**Tab. 1** - Summary of findings.

|                                      | TOTAL OF OCURRENCES         |         |                      |       | PERCENTUAL                  |         |                      |       |
|--------------------------------------|-----------------------------|---------|----------------------|-------|-----------------------------|---------|----------------------|-------|
|                                      | Value-Added<br>Reproduction | Organic | Full<br>Reproduction | TOTAL | Value-Added<br>Reproduction | Organic | Full<br>Reproduction | TOTAL |
| <b>TOTAL</b>                         | 95                          | 71      | 71                   | 237   | 40%                         | 30%     | 30%                  | 100%  |
| <b>Source of Press Releases</b>      |                             |         |                      |       |                             |         |                      |       |
| SEADE                                |                             |         |                      | 71    |                             |         |                      | 63%   |
| Government                           |                             |         |                      | 41    |                             |         |                      | 37%   |
| <b>Source of Press Releases used</b> |                             |         |                      |       |                             |         |                      |       |
| None                                 | 0                           | 71      | 0                    | 71    | 0%                          | 100%    | 0%                   | 100%  |
| Both                                 | 2                           | 0       | 1                    | 3     | 67%                         | 0%      | 33%                  | 100%  |
| SEADE                                | 81                          | 0       | 44                   | 125   | 65%                         | 0%      | 35%                  | 100%  |
| Government                           | 12                          | 0       | 26                   | 38    | 32%                         | 0%      | 68%                  | 100%  |
| <b>Word average</b>                  |                             |         |                      |       |                             |         |                      |       |
| Local                                | 533,9                       | 531,0   | 353,8                | 476,1 |                             |         |                      |       |
| National                             | 299,5                       | 644,9   | 358,8                | 473,7 |                             |         |                      |       |
| <b>Coverage</b>                      |                             |         |                      |       |                             |         |                      |       |
| Local                                | 79                          | 46      |                      | 125   | 63%                         | 37%     |                      | 100%  |
| National                             | 16                          | 25      |                      | 41    | 39%                         | 61%     |                      | 100%  |

**Tab. 2** - News articles according to frames.

|   | Demography | Economy | Others | Labor |
|---|------------|---------|--------|-------|
| <b>Type of use of Press Release</b>     |            |         |        |       |
| Value-Added Reproduction                | 15         | 31      | 9      | 40    |
| Organic                                 | 12         | 24      | 23     | 12    |
| Full Reproduction                       | 13         | 26      | 11     | 21    |
| TOTAL                                   | 40         | 81      | 43     | 73    |
| <b>Type of use of Press Release (%)</b> |            |         |        |       |
| Value-Added Reproduction                | 38%        | 38%     | 21%    | 55%   |
| Organic                                 | 30%        | 30%     | 53%    | 16%   |
| Full Reproduction                       | 33%        | 32%     | 26%    | 29%   |
| <b>Word average</b>                     |            |         |        |       |
| Value-Added Reproduction                | 519        | 443     | 625    | 496   |
| Organic                                 | 939        | 498     | 597    | 301   |
| Full Reproduction                       | 706        | 467     | 605    | 451   |
| <b>Coverage</b>                         |            |         |        |       |
| Local                                   | 16%        | 31%     | 19%    | 34%   |
| National                                | 19%        | 46%     | 17%    | 19%   |

The 166 news articles—excluding those classified as full reproduction—were classified according to the Dimensions of Journalistic Role Performance, with a single article potentially receiving more than one classification (Mellado, 2014). The Service dimension was predominant, encompassing nearly 100% of the analyzed articles. Within the Loyal-facilitator dimension, 70 out of the 95 value-added articles (74%) were categorized under this dimension. In comparison, among the 71 organic articles, 36 (51%) received the same classification.

In terms of thematic frames, the Economy and Labor themes showed high levels of Loyal-facilitator classification, with 84% and 90% of articles, respectively, categorized under this dimension. In contrast, the Demography and Other themes had significantly lower levels of Loyal-facilitator classification, at 25% and 19%, respectively. Regarding the Civic dimension, the Demography (32%) and Other (35%) themes had higher occurrences, while Labor showed very low values, and Economy had no occurrences classified under this dimension.

When analyzing the overlap between the Loyal-facilitator dimension and the origin of the press releases, the study found that 57 (70%) of the 81 articles influenced by SEADE press releases and all 12 (100%) articles influenced by Government press releases were classified under this dimension. In terms of the scope of the media outlet, of the 106 articles classified under the Loyal-facilitator dimension, 83 (78%) were published in local outlets, while 23 (22%) appeared in national outlets. Table 3 provides data about the Dimensions of Journalistic Role Performance dimensions across themes, press release origins, and media outlet scopes.

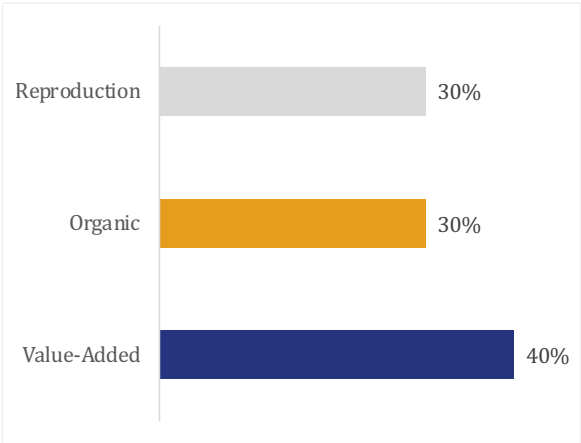
**Tab. 3** - News according to dimensions of journalistic role performance.

|                              | TOTAL | TOTAL OF OCURRENCES |               |                       |         |                   |       | PERCENTUAL        |               |                       |         |                   |       |
|------------------------------|-------|---------------------|---------------|-----------------------|---------|-------------------|-------|-------------------|---------------|-----------------------|---------|-------------------|-------|
|                              |       | Interven-<br>tion   | Watch-<br>dog | Loyal-<br>facilitator | Service | Infotain-<br>ment | Civic | Interven-<br>tion | Watch-<br>dog | Loyal-<br>facilitator | Service | Infotain-<br>ment | Civic |
| Frame                        |       |                     |               |                       |         |                   |       |                   |               |                       |         |                   |       |
| Demography                   | 28    | 0                   | 1             | 7                     | 27      | 5                 | 9     | 0%                | 4%            | 25%                   | 96%     | 18%               | 32%   |
| Economy                      | 55    | 0                   | 0             | 46                    | 54      | 1                 | 0     | 0%                | 0%            | 84%                   | 98%     | 2%                | 0%    |
| Others                       | 31    | 0                   | 2             | 6                     | 31      | 5                 | 11    | 0%                | 6%            | 19%                   | 100%    | 16%               | 35%   |
| Labor                        | 52    | 0                   | 3             | 47                    | 52      | 0                 | 1     | 0%                | 6%            | 90%                   | 100%    | 0%                | 2%    |
| Coverage                     |       |                     |               |                       |         |                   |       |                   |               |                       |         |                   |       |
| Local                        | 125   | 0                   | 3             | 83                    | 124     | 9                 | 14    | 0%                | 2%            | 66%                   | 99%     | 7%                | 11%   |
| National                     | 41    | 0                   | 3             | 23                    | 40      | 2                 | 7     | 0%                | 7%            | 56%                   | 98%     | 5%                | 17%   |
| Source of Press Releases     |       |                     |               |                       |         |                   |       |                   |               |                       |         |                   |       |
| Both                         | 2     | 0                   | 0             | 1                     | 2       | 1                 | 1     | 0%                | 0%            | 50%                   | 100%    | 50%               | 50%   |
| SEADE                        | 81    | 0                   | 3             | 57                    | 81      | 3                 | 9     | 0%                | 4%            | 70%                   | 100%    | 4%                | 11%   |
| Government                   | 12    | 0                   | 0             | 12                    | 12      | 0                 | 0     | 0%                | 0%            | 100%                  | 100%    | 0%                | 0%    |
| Ocurrences                   | 166   | 0                   | 6             | 106                   | 164     | 11                | 21    | 0%                | 4%            | 64%                   | 99%     | 7%                | 13%   |
| Type of use of Press Release |       |                     |               |                       |         |                   |       |                   |               |                       |         |                   |       |
| Value-Added                  |       |                     |               |                       |         |                   |       |                   |               |                       |         |                   |       |
| Reproduction                 | 95    | 0                   | 3             | 70                    | 95      | 4                 | 10    | 0%                | 3%            | 74%                   | 100%    | 4%                | 11%   |
| Organic                      | 71    | 0                   | 3             | 36                    | 69      | 7                 | 11    | 0%                | 4%            | 51%                   | 97%     | 10%               | 15%   |

## 5. Discussion

### 5.1 Media dependency on government inputs

Among the news articles published in 2024 that utilized government statistical data, 30% were produced organically, 30% directly reproduced press releases issued by the agency or the government, and 40% were influenced by press releases but incorporated value-added elements (Figure 1). These figures highlight two key aspects: the influence of press releases on news production and the varying ways in which data is utilized.



**Fig. 1** - Press release use in statistical data-based news production.

Regarding the influence of press releases, 70% of the analyzed articles were impacted by these documents. This finding demonstrates that, despite advancements in the Big Data era within public statistics—such as new technologies for data collection and analysis (Citro, 2014; Signorelli et al., 2023)—there have been slow changes in the dissemination stage. The research suggests that data dissemination remains dependent on traditional practices, such as press office and public relations. Despite a tendency to rely on seamless data flows to disseminate information (Misra, Ranjan, et al., 2021), the frictionless circulation of data between statistical producers and journalists faces barriers, possibly related to resource limitations, time constraints, or editorial pressures (Cushion et al., 2017; Piattoeva et al., 2018).

On the other hand, the study indicates that frictionless data circulation is partially achieved. The analysis of data usage revealed that in 70% of the articles, journalists actively sought statistical data—30% independently and 40% by adding value to press release content. This value addition involved incorporating complementary information from other sources or directly from the statistical agency, adapting the data to better serve their audiences. These findings highlight the need to integrate both traditional and modern approaches to statistical data dissemination.

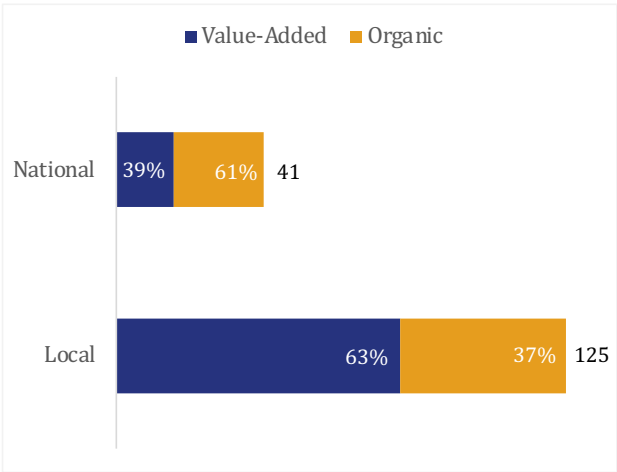
The literature emphasizes that Open Government Data producers must go beyond merely making data available (Attard et al., 2015; Craveiro et al., 2023; Gascó-Hernández et al., 2018; Lourenço, 2015). Studies suggest that statistical agencies, such as Eurostat, should not only provide data but also offer well-structured metadata to support data redistributors (Laaboudi et al., 2024). Well-designed metadata facilitates the integration of new data by redistributors, ultimately increasing the value of official statistics (Laaboudi et al., 2024).

However, in contexts such as the Brazilian, traditional dissemination methods—particularly press releases—continue to play a key role, especially in promoting the circulation of locally relevant statistics. In the studied case, journalists accessed official data through a hybrid model, combining traditional tools like press releases with modern approaches aligned with OGD principles (Attard et al., 2015; Gascó-Hernández et al., 2018; Lourenço, 2015; Misra, Ranjan, et al., 2021). This combination underscores the need for complementary strategies that enhance the accessibility and usability of official statistics for different audiences.

**5.2 Capacity of local and national media**

To understand local realities, the study analyzed the characteristics of news articles published by local media compared to those from national outlets, excluding articles that fully reproduced press releases. Among national outlets, organic articles were, on average, 345 words longer than those based on press releases, indicating a significant difference in terms of depth. Conversely, in the local context, the difference in length between organic articles and those influenced by press releases was minimal, with only a three-word variation. Previous studies have highlighted that well-structured media organizations with greater resources are better equipped to utilize data in their reporting (Appelgren et al., 2019; Cushion et al., 2017; Shoemaker & Vos, 2009). This disparity between the capacities of local and national media was also observed in the present study. Local outlets often face structural and financial limitations, while national outlets typically have greater resources, better-trained journalists, and access to advanced tools for investigation, enabling the production of more in-depth reporting with data (Lewis & Nashmi, 2019).

Despite these limitations, this study adds a new dimension to the discussion by identifying that the local demand for data is significantly greater than at the national level. In 2024, 75% of news articles utilizing São Paulo’s state-level official statistics were published by local outlets, with most of these articles (63%) influenced by value-added press releases. In contrast, only 25% of such articles were published by national media, and among them, the majority (61%) utilized SEADE data obtained organically (Figure 2). Even with more limited resources, local media play a crucial role in covering the territory of São Paulo, surpassing national outlets in terms of the volume of published news. Although they may exhibit lower technical proficiency, local outlets demand more data, particularly those that address specific local realities across various themes. This underscores the importance of adopting different strategies to promote data access for local and national media.



**Fig. 2 - Media scope and press release use in statistical data-based news production.**

**5.3 Relationship between the press and the government**

When producing news articles based on press releases, journalists added value to most of the releases originating from SEADE by including analyses and additional information. In contrast, most press releases issued by the State Government were reproduced verbatim, without significant modifications or additions. This practice of full reproduction can be attributed to structural limitations in newsrooms, such as lack of time, resources, or editorial capacity (Cushion et al., 2017). However, the data suggest that this tendency is more prevalent when press releases are directly linked to the government.



The more analytical use of press releases from the statistical agency may partially reflect the technical nature and credibility attributed to the agency, encouraging journalists to produce more customized articles. By complementing the data provided with additional information, journalists enhanced the value and relevance of these articles for their audiences. On the other hand, as data are not inherently neutral (Kitchin, 2014), press releases issued by the government containing statistical data may exhibit a bias toward highlighting positive results of government actions. The full reproduction of these releases might indicate a relationship of alignment between newsrooms and government power structures.

5.4 Journalists role performance

The analysis of the Dimensions of the Journalistic Role Performance, as proposed by Mellado (2015), enabled the exploration of the relationship between news articles and the roles performed by journalists. According to this approach, the study classified the news articles into different dimensions, allowing a single article to fit into more than one category (Mellado, 2015). To ensure greater analytical precision, the classification process excluded press releases that were fully reproduced.

The results showed that news influenced by value-added press releases had a higher incidence of the Loyal-Facilitator dimension, accounting for 64% of occurrences (Figure 3). This dimension was identified in 70% of news articles based on SEADE press releases and in 100% of those associated with press releases issued by the Government. In the case of news articles based on Government press releases, even when published with added value, they often exalted the region or supported power groups. On the other hand, news articles based on SEADE press releases also displayed these characteristics but to a lesser extent. Among the other dimensions, Service appeared in nearly all news articles (99%), reflecting the technical approach inherent in official statistics. The dimensions Civic, Infotainment, and Watchdog showed low incidence, with 13%, 7%, and 4%, respectively. Furthermore, no article was classified under the Intervention dimension.

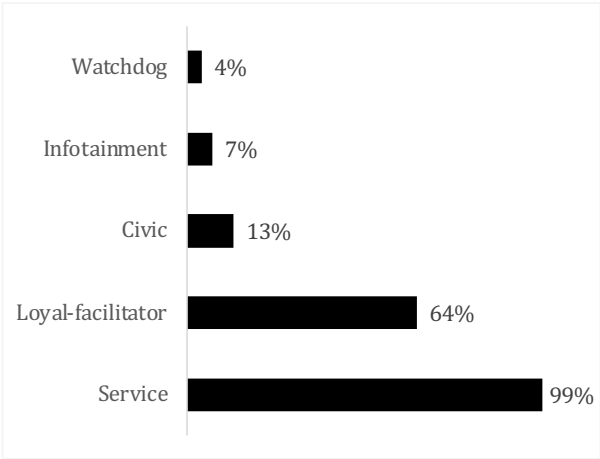


Fig. 3 - Role performance dimensions in statistical data-based news production.

The high number of news articles classified under the Loyal-Facilitator category, particularly those based on Government press releases, may suggest political alignment with power groups. Another explanation for the high prevalence of Loyal-Facilitator articles, alongside the low incidence of Civic, Infotainment, Watchdog, and Intervention dimensions, could be the low level of data literacy among journalists. These limitations may include difficulties navigating data repositories, using specialized software, mastering mathematical and statistical skills, and critically analyzing data (Carmi & Yates, 2020; Helsper, 2021; Misra, Jütting, et al., 2021; OECD, 2019; Porto de Albuquerque et al., 2023; Scheerder et al., 2017; Senra, 1994; Tygel & Kirsch, 2016). Although many journalists strive to complement press releases with information, they may face barriers to conducting more in-depth analyses, as the lack of technical skills may contribute to a more passive professional approach (Lewis & Nashmi, 2019). Journalists seeking statistical data independently may have chosen to conduct more accessible and easier-to-communicate analyses, such as comparisons between local and regional indicators, characteristic of the Loyal-Facilitator dimension. While practical, these choices can limit the complexity and depth of their analyses.

The dimensions of journalistic roles may reflect cultural aspects that vary by context (Mellado, 2015). In this sense, another possible explanation for the high incidence of the Loyal-Facilitator dimension is that Brazilian journalists may culturally lean toward comparing local indicators with other regions—a characteristic that, according to the author, defines the Loyal-Facilitator dimension. This hypothesis allows for a distinction between journalistic practices aimed at highlighting local progress and potential alignments with elites or power structures.

## **5.5 Frames**

The relationship between public statistics agencies and journalists becomes clearer through the lens of framing theory. By framing statistical data in news coverage, journalists influence how the public interprets and engages with official statistics. The way they present, contextualize, and emphasize certain aspects of data can shape societal debates and public understanding of policy issues. To understand the themes analyzed through the perspective of framing (Entman, 1993), the news articles were classified into the frames of Economy, Demography, and Labor, as well as an “Other” dimension that was excluded from the analysis due to its broad scope of unrelated topics. Based on this classification, it was observed that journalists from national media outlets showed greater interest in Economy-related news (46%), while local media focused more on the Labor theme (34%). Demography had a lower incidence in both local and national media, accounting for 16% and 19% of articles, respectively.

The analysis of dimensions based on the total occurrences within each frame revealed significant differences. The frames of Labor and Economy showed the highest incidence of articles classified as Loyal-Facilitator, whereas Demography had a considerably lower occurrence. The observed percentages for Labor, Economy and Demography were 90%, 84%, and 25%, respectively. The average word count for articles using data obtained organically also differed significantly across the frames, with averages of 301, 498 words and 939 words, respectively.

Economic indicators, such as GDP and investments, and labor indicators, such as employment and wages, are directly related to government actions with immediate impacts on society. The relevance of São Paulo to Brazil's economy may explain the national media's heightened interest in economic indicators, as economic events in São Paulo often have nationwide repercussions. In contrast, local media's emphasis on Labor may reflect the perception that news about employment opportunities and wages has a more immediate impact on readers' daily lives, meeting the urgent needs of their communities.

News related to demographic indicators, such as life expectancy and population size, were less common, likely due to journalists perceiving them as having a more indirect impact on daily life, despite their societal and public policy relevance. These articles had the lowest incidence of the Loyal-Facilitator classification. In local media, demographic indicators were less frequently used for regional or state comparisons, which often characterize the Loyal-Facilitator frame. By contrast, the Economy and Labor frames frequently related local data to broader contexts. While demographic outcomes are also influenced by government actions, they often stem from long-term investments, such as in public health, and are less associated with specific power groups.

## **5.6 Data circulation**

The study revealed a range of variables that help characterize journalists, one of the user groups of public statistics. Factors such as the scope of the media outlet, the type of relationship with power groups, the level of data literacy, the journalist's role, and the chosen frame theme influence how statistical data is used.

Once the impact of data depends not only on what it represents but also on how it is utilized and by whom (Beer, 2016), from the perspective of user characteristics and needs, as highlighted by Porto de Albuquerque (2021), the study identified significant differences in the circulation of statistical data. Considering specific characteristics of users allows data-producing institutions, such as statistics agencies, to properly segment user groups and meet their needs. In the studied case, it was observed that cohesive groups, such as journalists from national outlets with higher data literacy covering themes like Demography, have different demands compared to, for example, journalists from local outlets with lower data literacy, who often focus on topics related to the labor market. For each group, data producers can adopt tailored dissemination strategies that maximize the impact and accessibility of statistics.

As suggested by Porto de Albuquerque (2023), mapping data circulation helps identify bottlenecks and propose improvements. For example, given that local media tend to cover labor-related topics and often demonstrate low data literacy, the statistical agency could adopt targeted strategies, such as sending press releases with data on local labor markets. This approach facilitates access to relevant information and helps contextualize the data to meet local audiences' needs. Segmenting user groups and adapting dissemination strategies based on data circulation enables data to reach users more effectively.

## **5.7 Limitations and opportunities**

This study has limitations that should be considered. The exclusive focus on São Paulo and its state statistical agency means that the findings reflect a specific regional context and may not be directly applicable to other settings. The study did not include direct engagement with journalists or their audiences, which could have provided additional insights into their motivations, challenges, and perceptions regarding data usage. Future research on detailing journalists' data literacy could complement the analysis of data circulation, contributing to a

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more comprehensive understanding of their role as data users. Similarly, examining how data circulate between newspapers and their audiences could offer valuable perspectives on the broader impact of statistical information in journalism. The paper did not assess specific aspects of reporting quality, such as accuracy, contextualization, and source diversity. Including these elements in future research could provide a deeper understanding of how statistical data are integrated into journalistic narratives and how they contribute to public discourse.

## 6. Conclusion

This study examined data circulation between official statistics agencies and journalists, focusing on the role of press releases and news production in shaping how journalists use official statistics. By analyzing journalistic coverage of the data of the statistical agency of the state of São Paulo in 2024, the research identified key factors influencing the dissemination and use of official statistics.

The findings indicate that press releases play a significant role in shaping journalistic narratives, with a substantial portion of news articles either reproducing or adding value to the data provided by the agency. While this suggests that official statistics reach the media through Open Government Data practices, it also underscores the reliance on traditional dissemination strategies. Despite advancements in OGD initiatives, press releases remain an essential tool for facilitating data circulation. The study highlights the need for a hybrid dissemination strategy that combines traditional approaches, such as press releases and direct media engagement, with open data practices. By integrating OGD practices alongside conventional press materials, statistical agencies can enhance the reach and usability of their data, ensuring broader and more effective engagement with journalists and other stakeholders.

The study also found notable differences between local and national media outlets. Local journalists relied more heavily on press releases, while national media demonstrated greater independence in sourcing and analyzing data. These disparities might reflect variations in newsroom resources and data literacy, emphasizing the need for tailored strategies to enhance data accessibility across different media environments. The analysis of journalistic role performance revealed a predominance of the Loyal-Facilitator and Service roles, suggesting that most reporting on official statistics focuses on providing information rather than engaging in critical oversight. While this approach helps disseminate statistical data effectively, it raises questions about the extent to which journalists critically engage with government-produced statistics.

From a broader perspective, this study contributes to the research on Open Government Data by demonstrating how official statistical data move through different stages of the media ecosystem. It reinforces the idea that making data available is not enough—in the Brazilian context, a user-centered hybrid approach of proactive dissemination practices combined with OGD practices, like an open data repository portal are crucial for ensuring that official statistics serve their intended purpose within the journalists.

By understanding the nuances of data circulation, statistics agencies can refine their dissemination practices, fostering an environment where official statistics are not only accessible but also critically examined and used by the public. Future research could build on these findings by exploring the motivations and constraints faced by journalists when using statistical data, as well as examining how audiences engage with news articles that incorporate official statistics. Additionally, further investigation into the impact of data literacy initiatives for journalists could provide valuable insights into improving data-driven journalism.

## Acknowledgements

**Use of AI:** During the preparation of this work, the author used ChatGPT 4o and DeepSeek as assistants to structure, translate and review the text. After using these tools, the author reviewed, edited, made the content his own and validated the outcome as needed, and takes full responsibility for the content of the publication.

**Conflict Of Interest (COI):** The author currently is an employee of SEADE.

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