


Design, Implementation and Community Impact of QLattes: An Open Source Browser Extension for Qualis Annotation and Visualization in the Lattes Platform

Nabor C. Mendonça   [Universidade de Fortaleza | nabor@unifor.br]

Maria Andréia Formico Rodrigues  [Universidade de Fortaleza & GIRA Lab | mafr@unifor.br]

Lucas R. Mendonça  [Uber do Brasil Tecnologia | lucas.mendonca@uber.com]

 Programa de Pós-Graduação em Informática Aplicada, Universidade de Fortaleza, Av. Washington Soares, 1321, Edson Queiroz, 60811-905 Fortaleza, CE, Brazil.

Received: 17 July 2025 • Accepted: 24 December 2025 • Published: 05 April 2026

Abstract QLattes is an open-source browser extension for Chrome and Firefox that assists researchers and administrative academic staff by automatically classifying and annotating journal publications listed on Brazil's Lattes CV platform, using CAPES' former Qualis ranking system. The tool also provides features for filtering, analyzing, and visualizing this publication data. This article presents QLattes's architecture and implementation, alongside a large-scale analysis of usage data from Google Analytics and an online survey of 1,495 anonymous participants. Usage data show QLattes reached over 27,000 weekly active users as of October 2025 across all five regions of Brazil as well as many other countries. The survey analysis moves beyond aggregate metrics—which confirm high user satisfaction—to present a detailed cross-sectional analysis. We reveal several insights, including that (1) high-frequency “power users” have a distinct behavioral profile focused on administrative and evaluative tasks, not just self-assessment, and (2) feature request priorities, such as support for conference papers, vary significantly by user occupation and geographic region. These numbers offer concrete evidence of the tool's extensive reach and impact within the Brazilian academic community during the Qualis era. QLattes's modular architecture also allows easy extension to support additional publication types and metrics beyond Qualis, ensuring its continued relevance in Brazil's evolving research evaluation landscape. The tool's source code is freely available at <https://github.com/nabormendonca/qlattes>.

Keywords: Lattes Platform, Chrome Extension, Journal Publications, Qualis Classification

1 Introduction

The Lattes platform is a database of academic CVs created by the Brazilian National Council for Scientific and Technological Development (CNPq) in 1999 [CNPq, 2022b]. The platform was developed to provide a uniform and comprehensive way for Brazilian researchers and students to showcase and share their academic and professional achievements, including publications, research projects, and awards. Over the years, the Lattes platform has become a central component of the Brazilian research ecosystem, with about nine hundred thousand registered CVs as of May 2025 [CNPq, 2022a].

While the Lattes platform has been instrumental in facilitating the evaluation of Brazilian researchers and their institutions, e.g., [Dias *et al.*, 2013; Perlin *et al.*, 2017; Dias and Moita, 2018; Cota *et al.*, 2021], providing a unified repository of academic information was an important but insufficient step towards a standardized way of assessing academic output. To that end, in 1998 the Coordination for the Improvement of Higher Education Personnel (CAPES), an agency of the Brazilian Ministry of Education, created Qualis, which for over two decades served as Brazil's official system for ranking and evaluating scientific publications [CAPES, 2020].

Qualis' main goal was to offer a more precise and transparent process to evaluate the quality of scientific publications in Brazil, as well as the scientific output of Brazilian graduate

programs [Barradas Barata, 2016]. The system classified scientific publication venues into several categories according to their academic impact and relevance. In its most recent update, introduced in 2020, the Qualis system classified scientific publication vehicles according to four A-level categories (A1–A4) and four B-level categories (B1–B4), in addition to a single C category [CAPES, 2020]. The category of a specific publication vehicle was defined based on multiple objective metrics, such as the citation percentile calculated by the Scopus database, the Journal Impact Factor (JIF) calculated by Clarivate Analytics and the Google Scholar h5-index, among other metrics [CAPES, 2023].

It should be noted that Qualis faced some criticism from Brazilian researchers since its inception, who argued that it could incentivize the publication of research in vehicles that prioritize quantity over quality and that were not necessarily aligned with the specific needs and interests of the Brazilian scientific community, e.g. [Rocha-e-Silva, 2009; Fernandes and Manchinin, 2019; Jaffé, 2020]. Another common criticism was that Qualis was often used to evaluate individual researchers, although CAPES's official recommendation that it be used solely to assess the scientific output of research programs [Barradas Barata, 2016]. Despite ongoing criticism, Qualis remained widely used and was recognized as a key component of the Brazilian research ecosystem throughout

its existence.

Due to their popularity among the Brazilian academic community, the Lattes platform and Qualis were frequently used together by researchers and institutions, e.g., to identify the Qualis classification of journals in Lattes CV pages. However, even though they were commissioned by Brazil's federal government, these systems were developed independently and were maintained by different agencies, resulting in a cumbersome and largely manual cross-referencing process. This lack of integration between the two systems was particularly challenging for research program coordinators and administrative staff who typically had to analyze the Lattes CV of tens or even hundreds of researchers within a short time frame. This situation presented a compelling opportunity for independent developers and researchers to create automated tools that integrate the Lattes platform with Qualis, directly benefiting their combined user bases.

This paper introduces **QLattes**, an open source browser extension for Chrome and Firefox that automatically classifies and annotates the Qualis category of journals in the Lattes platform. Moreover, **QLattes** facilitates the filtering, analysis, and visualization of Qualis-classified publication data extracted from Lattes CVs using multiple metrics (e.g., average, median, trend) and perspectives (e.g., tabular and graphical views). To our knowledge, **QLattes** is the first open-source tool to seamlessly integrate, filter, analyze, and graphically display publication data from both the Lattes platform and the Qualis system. By doing so, **QLattes** can expedite the task of collecting and analyzing publication data from Lattes CVs, thus providing a significant productivity boost to research students, scholars, and administrative staff.

QLattes was launched in the Chrome Web Store on January 3, 2023 — the same day it was first announced to the general public through the Brazilian Computer Society (SBC) mailing list — and was an instant success, reaching over 3,000 installations in the first four weeks. As of October, 2025, the Chrome version of the tool has been installed nearly 34,000 times, and currently maintains approximately 27,000 weekly active users from virtually all knowledge areas and academic institutions in Brazil. These numbers confirm that **QLattes** has been an effective and very popular academic tool that has already had a sizable reach onto the Brazilian scientific community.

Given **QLattes**'s widespread adoption, the primary contribution of this paper is to move beyond a simple tool description and provide a large-scale analysis of its real-world usage and user perception. This analysis, based on over two years of usage data and a survey with 1,495 participants, offers a valuable case study on the adoption of academic software and provides concrete evidence of the tool's impact within the Brazilian research community.

Although **QLattes** was originally developed to annotate journal publications with Qualis classification data, its modular design is generic and flexible enough to easily incorporate additional publication types and metrics. For instance, as we discuss later on in the paper, the tool is currently being extended to classify conferences and annotate journal publications with other widely used metrics, such as Scopus percentiles, Clarivate's JIF, and Google Scholar's h5-index. This flexibility means **QLattes** is not tightly coupled to —

and therefore can be used and evolve independently from — Qualis data sources.

This architectural independence is particularly relevant in light of the formal discontinuation of the Qualis system by CAPES. As detailed in the new Computer Science area document published in May 2025, the 2025–2028 quadrennium will replace the static Qualis list with a more dynamic, metrics-based evaluation [CAPES, 2025].

QLattes' source code is freely available at <https://github.com/nabormendonca/qlattes>. By releasing its source code, we also hope to contribute to the research community with an open browser extension infrastructure, which could be used as a stepping stone to facilitate the development and evaluation of novel Lattes-based publication analytics and visualization tools.

This paper is a revised and substantially extended version of a previous conference publication [Mendonça et al., 2023]. Compared to the earlier version, this new version presents the following novel contributions:

- A more in-depth comparison with related tools and platforms for analyzing Lattes data (Section 7).
- Updated and expanded usage statistics based on over two years of real-world adoption, including global and regional usage patterns (Section 4).
- A detailed user evaluation based on responses from 1,495 survey participants, covering user profiles, tool usage, and satisfaction metrics (Section 5).
- A discussion of the tool's future and evolution in light of CAPES's decision to discontinue the Qualis system (Section 6).

We believe that these additions provide significant new contributions beyond the scope of the original conference version, offering both a richer technical description and a deeper analysis of **QLattes**'s usage and impact.

2 Chrome Extension Platform

Chrome extensions are software programs that are designed to add or modify the functionality of Chromium-based web browsers (e.g., Chrome, Edge, Opera, and Brave) [Google, 2023]. They are written using standard web technologies like HTML, CSS, and JavaScript and can interact with web pages, browser tabs, and other Chrome APIs.

The development of Chrome extensions has evolved over the years. The most recent version of the Chrome extension platform, introduced in 2021, is manifest version 3 (v3). This version further tightened security measures, simplified the development process compared to previous versions, and is also supported by Mozilla Firefox browsers, making v3 the first cross-browser extension platform.¹

The core components of an extension include a `manifest.json` file to declare permissions, content scripts that run in the context of a web page to read or modify it (e.g., to parse the Lattes CV and inject annotations),

¹<https://blog.mozilla.org/addons/2022/05/18/manifest-v3-in-firefox-recap-next-steps/>

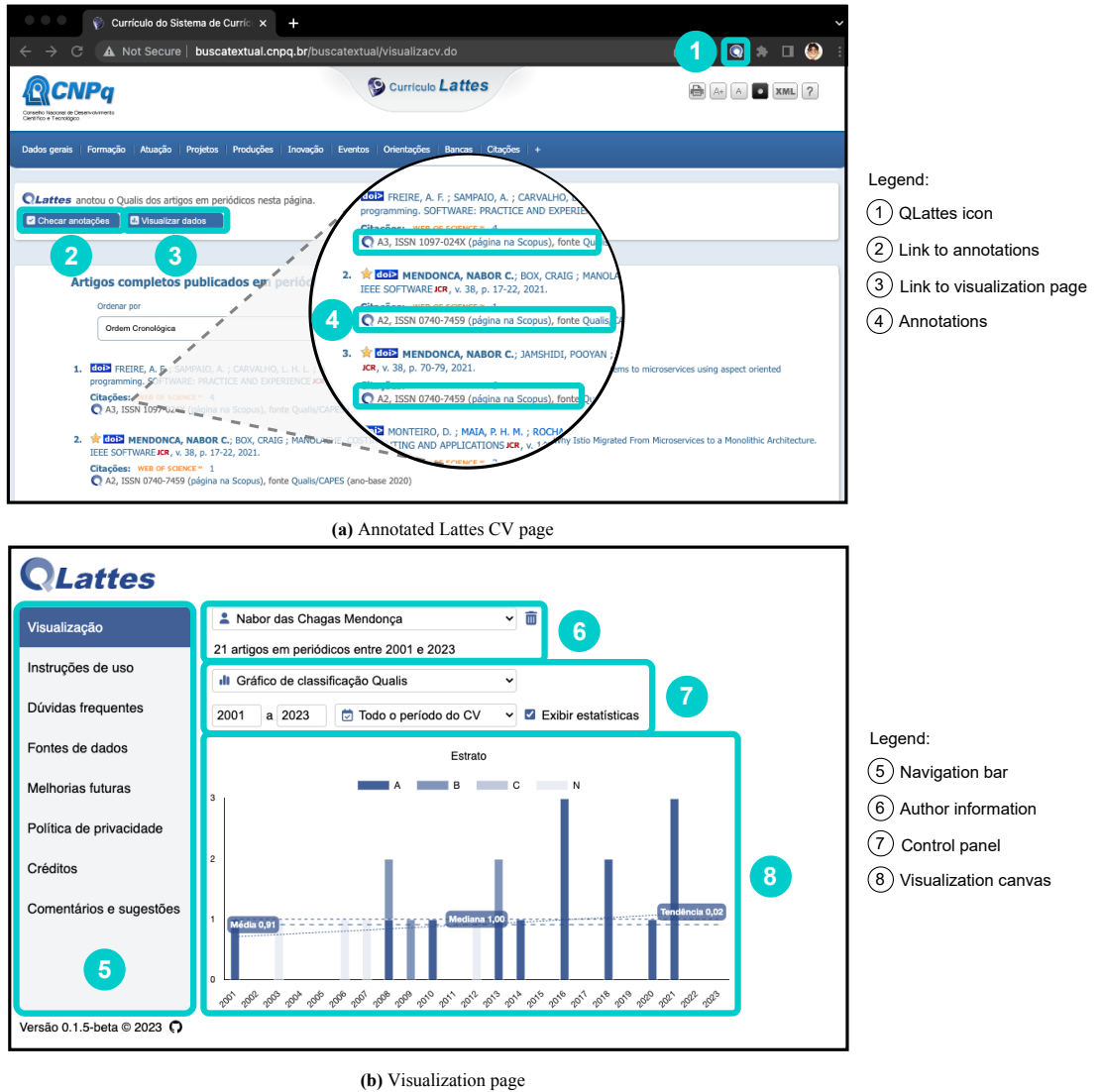


Figure 1. User interface of QLattes illustrating the journal publication annotation and visualization functionalities: (a) shows an annotated Lattes CV page where QLattes overlays Qualis information on journal articles, and (b) displays the visualization page with interactive charts summarizing Qualis classifications over time. Numbered elements highlight core features, including annotations, navigation links, filtering controls, and graphical summaries.

and HTML pages to provide a user interface (such as QLattes’ popup and visualization page). Extensions also leverage Chrome APIs to interact with browser features, such as the storage API for persisting data, and can package web resources like local data files (such as QLattes’ Qualis datasets). The next section explains how we have built upon these components to design and implement QLattes.

3 QLattes

In this section, we describe QLattes’s user interface (UI), architecture, functionalities, implementation decisions, Qualis data sources, and performance.

3.1 UI

QLattes’ UI comprises two web pages, as shown in Figure 1: an annotated Lattes CV page (Figure 1a), and a visualization page (Figure 1b). Both pages support multiple windows, enabling users to work with multiple CVs and visualizations simultaneously.

To enhance the original Lattes CV page, QLattes adds a new header with two links (items 2 and 3): one to the section containing the annotated journal publications, and another to open the tool’s visualization page.² Additionally, each journal publication is annotated with the journal’s ISSN, Qualis classification, and a link to the Scopus portal (when the journal is indexed by Scopus), among other information (item 4).

The visualization page consists of four main sections (items 5–8): a navigation bar, an author information display and removal section, a control panel, and a visualization canvas.

The navigation bar allows users to switch between the visualization page’s multiple tabs, including tabs for data visualization (the default tab), usage instructions, frequently asked questions, privacy policy, credits, and an inline user feedback form. The visualization tab contains UI elements to control and display the selected author’s publication data. The control panel includes options to select the view type (tabular, graphical, or top papers lists), the publication pe-

²The user can also open the visualization page by clicking on the tool’s icon (item 1) in the browser’s toolbar.

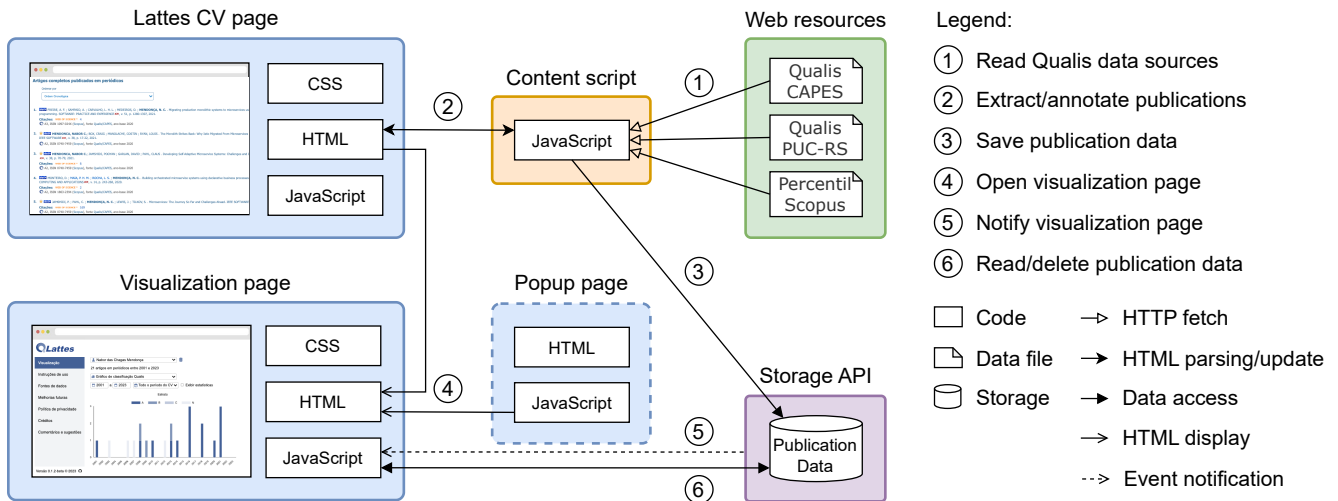


Figure 2. QLattes' architecture

riod, and whether to display publication statistics such as the average, mean, and trend of the author's number of publications per year. Both the tabular and graphical views are updated automatically in response to changes in the control panel options.

3.2 Architecture

In addition to the two HTML pages that are part of its UI, **QLattes**' architecture includes a popup page, a content script, and multiple web resources, as shown in Figure 2.

The popup page serves no useful content to the user and only functions as a means of opening the visualization page once the user clicks the extension's icon. The content script is responsible for extracting, classifying, and annotating the Qualis categories of journal publications that are registered on the targeted Lattes CV page. To achieve this, the content script initially loads three data files into memory, which contain the three Qualis data sources distributed with **QLattes** (see Section 3.4). The script also saves the classified publication data that it extracts from the Lattes CV page in an in-browser repository via Chrome's storage API.

Whenever there is a change in the data stored in the repository, the storage API notifies the visualization page. There are two occasions when this can happen: first, when the content script saves the publication data that it extracted from a new Lattes CV page into the repository, and, second, when the user removes an author's publication data from the repository using a different visualization page window. In both instances, the visualization page updates the list of available authors for selection. Once the user chooses a particular author, the visualization page retrieves that author's publication data from the repository and displays them in the visualization canvas based on the user's chosen view type and period.

QLattes also contains other types of web resources that are not shown in Figure 2, such as image icons of various sizes and a third-party chart library (Chart.js) that is utilized to generate the graphical view of the visualization page.

3.3 Implementation Decisions

During the development of **QLattes**, we made some important implementation decisions that directly affected the tool's scope and usage. In the following, we describe those decisions, explain the rationale behind them, and discuss their trade-offs.

The first decision was that **QLattes** should not call any external service or API during its execution. The rationale behind this decision was to guarantee the tool's responsiveness and resilience to possible communication delays. To enable that decision, we preemptively downloaded and included as local web resources all the data **QLattes** needs to classify the Qualis categories of journal publications (see the next subsection). One consequence of that decision is that we will have to manually update **QLattes** to include new classification data every time a new version of Qualis becomes available. Although updating **QLattes** may require a non-trivial effort on the part of the tool's developers, on the user's side no further action is needed for an update to take effect. This happens because both Chromium and Firefox browsers keep track of the version history of all installed extensions and automatically update them when a new version becomes available in their respective extension stores.

The second decision was that **QLattes** should only allow filtering and visualization of publication data of a single Lattes author at a time. This decision was meant to simplify **QLattes**' user interface and thus expedite the development and launch of its first (beta) version to the public. As **QLattes**' user base grows, the need to aggregate and visualize publication data extracted from groups of authors may lead us to revisit this decision in future versions of the tool.

The third decision was that **QLattes**' user interface should be implemented in plain HTML5 and should not rely on any external web development framework, such as JQuery or Reactive. With this decision, we avoided having to distribute **QLattes** with non-essential third-party libraries, which could further increase the tool's size and memory footprint. As **QLattes**'s user interface features grow in size and complexity, we may revisit this decision if the higher-level user interface abstractions provided by existing web development

frameworks turn out to compensate for their extra run-time cost.

The final decision was that **QLattes** should not (attempt to) classify the Qualis categories of conference and workshop publications. The rationale behind this decision is two-folded: (i) conference publications are not considered for the evaluation of research programs in many knowledge areas, and (ii) accurately identifying conferences and workshops solely based on the information available on Lattes CV pages can be challenging. In contrast to scientific journals, which can be unambiguously identified based on their ISSN, conferences and workshops have no generally accepted unique IDs. This means that any naive attempt to uniquely identify conferences and workshops on Lattes CV pages is deemed to generate many false positives and false negatives. We believe having **QLattes** misclassifying Lattes CV publications would hurt the tool’s credibility, especially in knowledge areas where conference publications are highly regarded, such as Computer Science. Again, we may revisit this decision in the future as more accurate approaches for conference identification are developed.

The final set of decisions centered on the core parsing and classification strategy. A key technical challenge is that the Lattes platform does not provide a structured data API for CVs. Therefore, **QLattes** must parse the raw HTML of the CV page to locate and extract publication entries. This process is inherently fragile: the parser depends on specific HTML tags and CSS classes that CNPq can change at any time, which could break the tool. Because of this known limitation, we intentionally restricted the scope of classification in this first version.

Specifically, **QLattes** was designed to not (attempt to) classify the Qualis categories of conference and workshop publications. The rationale behind this decision is two-folded: (i) conference publications are not considered for the evaluation of research programs in many knowledge areas, and (ii) accurately identifying conferences and workshops solely based on the information available on Lattes CV pages can be challenging. In contrast to scientific journals, which can be unambiguously identified based on their ISSN, conferences and workshops have no generally accepted unique IDs. This means that, unlike the reliable ISSN matching used for journals, identifying conferences within the client-side constraints of **QLattes** would require naive string-matching attempts against the unstructured text of the Lattes page, deemed to generate many false positives and false negatives. We believe having **QLattes** misclassifying Lattes CV publications would hurt the tool’s credibility, especially in knowledge areas where conference publications are highly regarded, such as Computer Science. Therefore, we made the deliberate decision to limit this version to journal classification.

It is worth mentioning that we have already developed an approximate yet highly efficient solution to the conference classification problem, using the support of a cloud-based backend service. This new architecture was implemented in **QLattesCC** [Mendonça, 2024], a new variant of **QLattes** we briefly introduce in Section 6. A full description of **QLattesCC**’s design and implementation is outside the scope of this paper, which focuses on the widely adopted, client-side only version of the tool.

Table 1. CAPES’ distribution rules for Qualis classification

Classification	Percentile Distribution
A1	percentile ≥ 87.5
A2	$75 \leq \text{percentile} < 87.5$
A3	$62.5 \leq \text{percentile} < 75$
A4	$50 \leq \text{percentile} < 62.5$
B1	$37.5 \leq \text{percentile} < 50$
B2	$25 \leq \text{percentile} < 37.5$
B3	$12.5 \leq \text{percentile} < 25$
B4	percentile < 12.5

3.4 Qualis Data Sources

QLattes includes three Qualis data sources to classify journal articles:

CAPES data source This data source was extracted from CAPES’ Sucupira Platform³ at the end of 2022 and includes the Qualis classification of 31,337 journals from all knowledge areas, as classified by CAPES in the 2017-2020 quadrennium.

PUC-RS data source This data source was extracted from the PUC-RS’s Computer Science Qualis web page⁴ in December 2022 and includes the Qualis classification of 2,190 journals (predominantly in Computer Science), as classified by PUC-RS researchers in November 2021.

Scopus data source This data source was extracted from the Scopus database⁵ in May 2021 and includes the citation percentiles of 25,990 journals from all knowledge areas, as computed by Scopus.

When **QLattes** annotates a Lattes CV page, it searches for a journal’s Qualis classification in each of the three data sources, one at a time, in the order listed above, based on the journal’s ISSN. If the journal’s ISSN is not found in the first data source, **QLattes** repeats the search in the second data source, and so on. If a journal’s ISSN is only found in the Scopus data source, **QLattes** applies the citation percentile distribution rules established by CAPES to identify the journal’s Qualis classification, e.g., A1 if the citation percentile is ≥ 87.5 , A2 if the citation percentile is < 87.5 and ≥ 75 , and so on [CAPES, 2020] (see Table 1). If a journal’s ISSN is not found in any of the three data sources, **QLattes** annotates it as *Non-Classified*.

To ensure the accuracy and efficiency of the tool, we processed each of the three data sources to filter out any redundant entries within that single source, keeping only the entries with the highest Qualis classification (in the case of the CAPES and PUC-RS data sources) or the highest citation percentile (in the case of the Scopus data source). This approach, consistent with the former journal classification policy adopted by CAPES, has significantly reduced the size of each data source compared to the original dataset extracted from the respective sites. However, since the three data sources were developed independently, many common journal entries (i.e., overlaps) across the three sources still exist. In future versions of **QLattes**, we plan to eliminate all such overlaps across the three data sources, further reducing the tool’s storage and memory requirements.

³<https://sucupira.capes.gov.br/sucupira/public/consultas/coleta/veiculoPublicacaoQualis/listaConsultaGeralPeriodicos.jsf>

⁴<https://ppgcc.github.io/discentesPPGCC/pt-BR/qualis/>

⁵<https://www.scopus.com/sources.uri>

Table 2. QLattes performance results

# Test Run	Execution Time (ms)		
	Annotation	Graphic View	Table View
1	1,793.03	98.17	4.33
2	2,082.54	58.37	7.12
3	2,197.74	97.81	4.21
4	1,339.89	149.09	8.63
5	1,706.18	86.47	5.86
6	1,913.15	99.97	8.35
7	2,157.51	138.95	4.88
8	1,300.62	111.61	6.02
9	2,437.27	91.68	5.61
10	2,016.56	163.09	5.00
Average	1,894.45	109.52	6.00
Standard Deviation	367.03	31.85	1.57

3.5 Performance

We conducted a preliminary evaluation of QLattes’ performance by annotating and visualizing the Qualis categories of all journal publications in the Lattes CV of a senior Brazilian computer science researcher. We selected this CV for its relatively high number of journal publications (over 150) spanning over a long (47-year) period. This extended publication period is particularly relevant to evaluate visualization performance since the tool displays publication data aggregated by year. While most current Brazilian researchers are expected to have a shorter publication history, and many certainly are not as prolific, we believe this CV is likely to be at the high end of QLattes’ common use cases in terms of the number of classified journal publications. We ran the performance evaluation experiment ten times on a MacBook Air with macOS Big Sur 11.7, featuring a 1.6 GHz Intel Core i5 processor and 8 GB LPDDR3 memory. We selected this relatively low-end hardware configuration because we believe it is also representative of the devices most users typically work with. Finally, we computed the average execution time and standard deviation of its content and visualization scripts across all runs.

Table 2 displays the average and standard deviation time (in ms) QLattes takes to annotate the over 150 journal publications of the selected CV as well as to render the graphic and table views for those publications. On average, the content script takes 1,894ms to annotate the target CV with a standard deviation of 367ms. As for the visualization script, it takes an average of 110ms to render the CV’s graphical view and 6ms to render the tabular view, with standard deviations of 32ms and 2ms, respectively.

These results demonstrate that QLattes can reliably classify and annotate over one hundred journal publications in just a few seconds. Interestingly, the Lattes CV page takes longer to load than the tool takes to annotate the list of journal publications. Moreover, the extension’s visualization script has negligible execution times, allowing it to render and update the CV’s graphical and tabular views in near real-time. Conducting a more systematic evaluation of the tool’s performance and scalability is outside the scope of this paper and is left for future work.

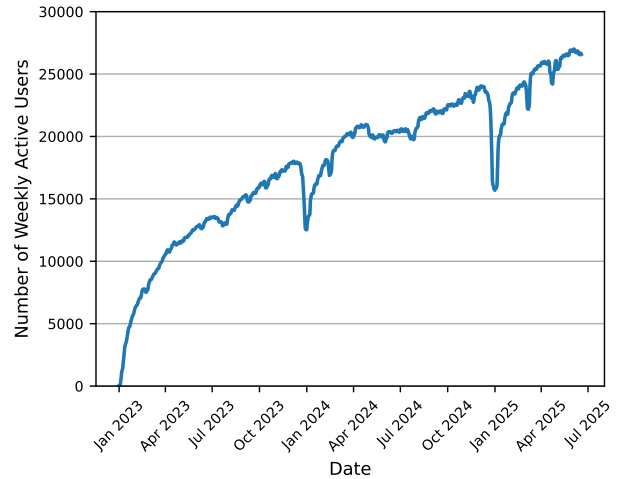


Figure 3. QLattes’ number of weekly active users over time since its launch up to June, 2025. Source: Google Analytics.

4 Usage Statistics

We analyze recent QLattes usage data provided by Google, particularly the number of active users and their geographic distribution, to assess the tool’s reach and impact within the research community.

4.1 Weekly Active Users

Since its launch on 3 January 2023, QLattes has actively been used by a growing number of academic and researchers. In this context, “weekly active users” is the standard metric from the Google Analytics dashboard for extensions, defined as the number of unique users who have interacted with the tool at least once in the preceding 7-day period. For QLattes, this interaction is triggered when a user visits a Lattes CV page, causing the extension’s content script to execute and perform its annotations. A user who simply has the extension installed but does not visit a Lattes CV in a given week is not counted as active. As show in Figure 3, this number surged from a few hundred to roughly ten thousand within the first four months, reflecting rapid adoption by early users and their immediate networks. After this initial surge, growth continued at a more moderate yet sustained pace: the weekly user count climbed to approximately 15,000 by late 2023, surpassed 20,000 during mid-2024, and exceeded 25,000 in the first half of 2025. Notably, each transient decline in activity was followed by a swift rebound to a higher plateau, indicating strong user retention and suggesting that QLattes has become embedded in the routine workflows of a large number of researchers.

The sporadic downturns in tool usage align closely with Brazil’s major holidays — Christmas and New Year’s, Carnival, and Holy Week — when academic activity traditionally slows. These declines were relatively modest in 2023, plausibly because the Brazilian population had not yet re-established their normal outdoor activities to pre-pandemic levels; by 2024 and 2025 they became more pronounced, likely reflecting the re-establishment of a more conventional academic calendar. The combination of rapid post-holiday recovery and semester-driven spikes highlights the tool’s integration into cyclical academic practices and demonstrates

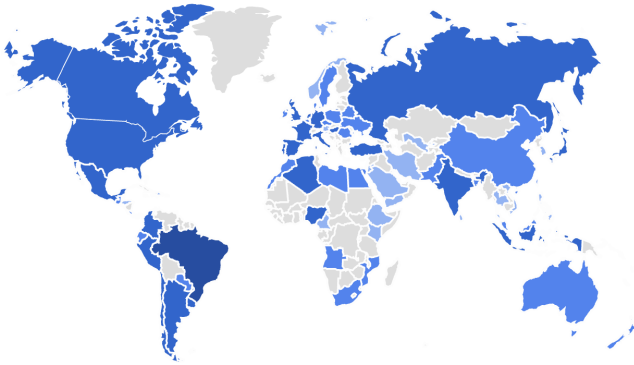


Figure 4. Geographic distribution of QLattes’s total active users around the world as of June, 2025. Each country with active users are highlighted in blue. The darker the tone of the color, the higher the number of active users. Source: Google Analytics.

Table 3. Top 20 countries by number of active QLattes users

#	Country	Users	#	Country	Users
1	Brazil	32,685	11	Russia	29
2	United States	168	12	Canada	20
3	Algeria	81	13	Argentina	18
4	Japan	66	14	Indonesia	18
5	Portugal	66	15	Italy	18
6	France	39	16	Chile	17
7	Hungary	39	17	Netherlands	12
8	Germany	36	18	Colombia	10
9	Spain	33	19	Peru	10
10	United Kingdom	31	20	Nigeria	9

its resilience in maintaining long-term user engagement.

4.2 Geographic Distribution

Figure 4 displays the global distribution of active QLattes users around the world as of June, 2025. Table 3 presents the numbers for the top 20 countries with the most active users. Of the total 33,534 active users, an overwhelming majority (approximately 97.5%) are located in Brazil. This is expected, given that the tool was specifically designed to enhance the analysis of academic data from Brazil’s national academic systems, namely Lattes and the former Qualis system.

The map in Figure 4 clearly shows that the tool’s international users are dispersed across all inhabited continents, with a strong presence in North America, Western Europe, East Asia, and parts of Latin America and Africa. These include the United States (168 active users), Algeria (81), Japan (66), Portugal (66), and France and Hungary (both with 39 active users). These numbers indicate that the extension is used by a significant number of Brazilian researchers working abroad.

Regional analysis of QLattes usage in Brazil provides further insights into how the tool is adopted across the country. As shown in Figure 5, the Southeast leads with 10,436 active users (33.2%), followed closely by the Northeast with 9,772 users (31.1%). The South also shows a high user share of 21.7% (6,816 users), indicating another region of strong adoption. Conversely, the North and Central-West lag with 8.4% (2,637 users) and 5.6% (1,753 users), respectively. These figures broadly align with the population and academic infrastructure of each region: the Southeast, being Brazil’s most populous and economically developed area, naturally concentrates many major universities and research institutions. However, the Northeast’s high number of active users —

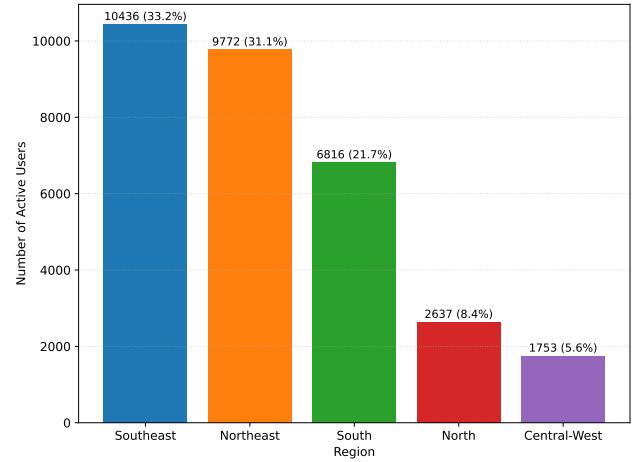


Figure 5. Distribution of active QLattes users across the five regions of Brazil as of June, 2025. Source: Google Analytics.

closely trailing the Southeast — signals the region’s growing academic presence.

The city-level distribution of active QLattes users, shown in Figure 6 for the top 50 cities in Brazil, provides a more nuanced view. Unsurprisingly, São Paulo (SP) tops the list with 1,777 users, reflecting both the city’s size and its dense concentration of major academic institutions. Rio de Janeiro (RJ) follows closely, in third place, with 1,521 users, supported by its federal and state universities and several top-tier research centers.

However, the most striking result is the second-place position of Maceió (AL), which records 1,640 active users, more than Rio de Janeiro. This is a remarkable finding, as Maceió is neither a populous metropolis nor a traditional academic powerhouse in national rankings. Its high user count suggests a strong and engaged local academic community, likely centered around the Universidade Federal de Alagoas (UFAL), and points to a concentrated adoption of QLattes for academic visibility and analysis. Similar patterns appear in other Northeast capitals with high numbers of active users, such as São Luís (MA), Recife (PE), and Fortaleza (CE), where local universities act as critical hubs for research and graduate education in their regions.

Beyond capitals, the data reveals the vital role of non-capital academic centers. Cities such as Maringá (PR), Montes Claros (MG), Londrina (PR), Niterói (RJ), Juiz de Fora (MG), and Santa Maria (RS) also appear among the top 25 places with most active users. These cities host prominent state or federal universities that drive significant research output and attract large academic communities. Their inclusion in the top QLattes user rankings demonstrates that academic centrality in Brazil is not confined to state capitals, but rather widely distributed across interior cities with long-standing academic missions and graduate programs.

Overall, the identified QLattes usage and geographic distribution patterns align with the structure of Brazil’s higher education system, which deliberately fosters academic development across multiple regions and cities through a network of federal, state and private universities. Our data confirms that this system has succeeded in creating vibrant academic hubs outside major economic centers, and that tools like QLattes have found traction not just where population is concentrated,

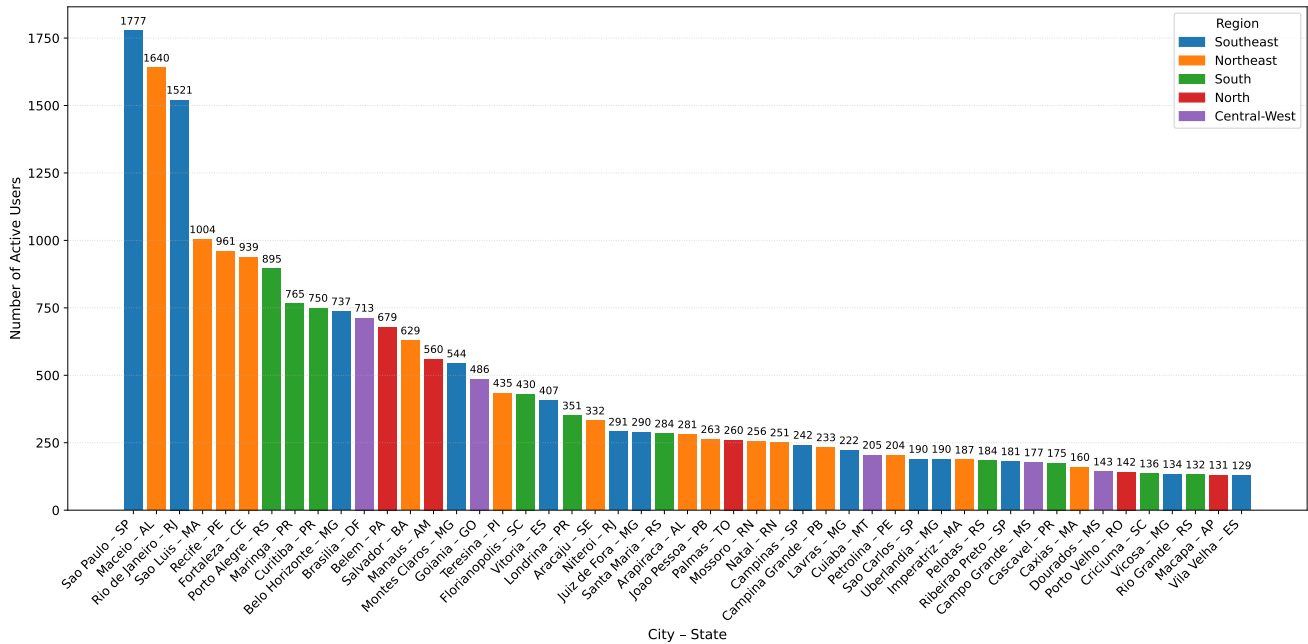


Figure 6. Distribution of active QLattes users across the top 50 cities in Brazil as of June, 2025. Source: Google Analytics.

but where research and postgraduate education are actively pursued. The strong adoption in both capital and non-capital cities clearly demonstrates the tool’s relevance and impact across Brazil’s diverse academic landscape.

5 User Evaluation

We conducted an anonymous online survey to analyze how effectively QLattes meets the needs of its user base, focusing on usability, efficiency, satisfaction, and overall adoption. The survey results offer key insights into user demographics, tool usage patterns, and primary purposes for engagement, allowing us to identify both its strengths and opportunities for improvement.

5.1 Method

To conduct the user survey, we created an online questionnaire using Google Forms containing 12 questions grouped into four sections: User Profile, Tool Knowledge and Use, Improvement Opportunities, and User Experience (see Table 4). The User Profile section (Q1–Q3) captures basic demographic and institutional information, such as occupation, organization type, and geographic region. The Tool Knowledge and Use section (Q4–Q7) explores how users learned about QLattes, how long and how frequently they use it, and for what academic purposes. The Improvement Opportunities section (Q8) gathers user suggestions for new functionalities, allowing multiple selections across a list of proposed enhancements, such as support for additional publication types, metrics, and import/export capabilities. Finally, the User Experience section (Q9–Q12) consists of Likert-scale questions that assess users’ perceptions of QLattes’ usability, efficiency, integration with external data sources, and overall satisfaction. This structure ensures a comprehensive view of the current user base and helps guide future development priorities.

A web banner containing an invitation to participate in the online survey was added to QLattes version 0.2.4 launched on April 1st, 2024. The banner would automatically be placed on the top of any Lattes CV page the user opened with the tool enabled, so that it would be clearly visible. The banner briefly explained the purpose, importance and anonymity of the survey and provided a direct link to the online questionnaire. The banner stayed visible for three weeks, after which it was removed from the tool and the online questionnaire was closed. This duration was defined based on the observed response rate, which initially grew rapidly but eventually plateaued at a very low level, indicating diminishing returns from keeping the form open longer.

Over this period, we received 1,495 anonymous responses, representing approximately 7.5% of the tool’s more than 20,000 weekly active users at that time. Given the voluntary and self-administered nature of our survey — and the fact that QLattes does not track users or require authentication — this participation rate is consistent with average figures ($\approx 6\text{--}8\%$) reported by market analysts for web-based online surveys [Delighted Blog, 2024].

5.2 Results

Table 5 shows the consolidated results for questions Q1–Q8, while Figure 7 shows a radar chart with the results for questions Q9–Q12. In the following, we analyze these results according to each section of the questionnaire.

5.2.1 User Profile

The data on *Occupation* reveals that the overwhelming majority of respondents are researchers or professors (80.3%), followed by postgraduate students (13.9%). Other academic roles, such as technical or administrative staff (3.0%), and other occupations (2.8%), appear only marginally. This concentration reflects QLattes’ primary user base: the Brazilian

Table 4. User survey questionnaire

User Profile						
Q1. Occupation: What's your current occupation?	<input type="checkbox"/> Graduate student <input type="checkbox"/> Academic staff <input type="checkbox"/> Postgraduate student <input type="checkbox"/> Other <input type="checkbox"/> Researcher/professor					
Q2. Organization Type: What's your organization type?	<input type="checkbox"/> Public university <input type="checkbox"/> Governmental organization <input type="checkbox"/> Private university <input type="checkbox"/> Research organization <input type="checkbox"/> Industry <input type="checkbox"/> Other					
Q3. Region of Residence: What's your region of residence?	<input type="checkbox"/> Central-West <input type="checkbox"/> South <input type="checkbox"/> North <input type="checkbox"/> Southeast <input type="checkbox"/> Northeast <input type="checkbox"/> Other (abroad)					
Tool Knowledge and Use						
Q4. Knowledge Source: How did you learn about QLattes?	<input type="checkbox"/> Recommended by others <input type="checkbox"/> Post in mailing lists <input type="checkbox"/> Post in message apps <input type="checkbox"/> YouTube videos <input type="checkbox"/> Post in social networks <input type="checkbox"/> Other					
Q5. Duration of Use: For how long have you been using QLattes?	<input type="checkbox"/> Less than 3 months <input type="checkbox"/> 6 months to 1 year <input type="checkbox"/> 3 to 6 months <input type="checkbox"/> More than 1 year					
Q6. Frequency of Use: How often do you use QLattes?	<input type="checkbox"/> Almost daily <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Less than once a month					
Q7. Purpose of Use: For what purpose do you use QLattes? (you may choose more than one answer)	<input type="checkbox"/> Evaluation of my own scientific output <input type="checkbox"/> Evaluation of the scientific output of others <input type="checkbox"/> Evaluation of research grant/scholarship proposals <input type="checkbox"/> Academic tasks <input type="checkbox"/> Other					
Improvement Opportunities						
Q8. Feature Requests: What new resources or functionalities would you like to see implemented in future versions of QLattes? (you may choose more than one answer)	<input type="checkbox"/> Support for other publication types (conference papers, books, book chapters, etc.) <input type="checkbox"/> Support for other quality metrics (Impact Factor, Scopus percentile, h5-index, etc.) <input type="checkbox"/> Support for aggregation and visualization of multiple CVs <input type="checkbox"/> Support for attaching files and general artifacts (links, annotations, PDFs, etc.) to publications <input type="checkbox"/> Support for exporting/importing CV data in multiple formats (spreadsheets, CSV files, etc.) <input type="checkbox"/> Other					
User Experience						
Q9. Usability: Is QLattes easy to use? (1 = strongly disagree, 5 = strongly agree)	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>	1	2	3	4	5
1	2	3	4	5		
Q10. Efficiency: Does QLattes streamline the process of classifying and visualizing scientific publications recorded in the Lattes platform? (1 = strongly disagree, 5 = strongly agree)	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>	1	2	3	4	5
1	2	3	4	5		
Q11. Integration with External Sources: Does the inclusion of links to external sources such as Scopus and Google Scholar facilitate the task of verifying the authenticity and quality of scientific publications recorded in the Lattes platform? (1 = strongly disagree, 5 = strongly agree)	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>	1	2	3	4	5
1	2	3	4	5		
Q12. Satisfaction: How would you rate your overall satisfaction with QLattes? (1 = very unsatisfied, 5 = very satisfied)	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>	1	2	3	4	5
1	2	3	4	5		

academic and scientific communities.

Regarding the *Organization Type*, most respondents are affiliated with public universities (82.5%), with significantly fewer responses from private universities (10.7%), research organizations (1.9%), governmental bodies (1.6%), and other

types of institutions (3.3%). This predominance of QLattes users from public institutions is consistent with the central role played by public universities in Brazil's academic research landscape. Smaller segments of users from private institutions and research centers indicate broader but secondary adoption outside the public sector.

In terms of *Region of Residence*, respondents are predominantly located in the Northeast (34.6%), followed closely by the Southeast (28.6%) and South (20.3%) regions. Participation from the Central-West (9.2%) and North (7.1%) regions is comparatively lower. Only 0.2% of users are based abroad. The strong representation from the Northeast, slightly ahead of the historically dominant Southeast, again indicates a highly engaged academic community in that region.

When comparing the geographic distribution of QLattes users in the online user survey data, collected in April 2024, with the Google Analytics data from June 2025, shown in Figure 5, we note very similar results, with the exception that the Northeast switches the top position with the Southeast. The discrepancies between the two datasets can be attributed to both temporal and methodological factors. The survey predates the analytics snapshot by over a year and may reflect regional adoption patterns at an earlier stage of tool dissemination, with the Northeast showing a strong earlier adoption rate and the Southeast catching up to it later. Additionally, the voluntary nature of the survey may have led to a slight overrepresentation of certain user groups or regions, particularly the Northeast and Central-West, which appear more prominently in the survey sample than in the broader usage data collected by Google. Conversely, the Southeast and North regions are slightly underrepresented in the survey relative to their actual user share.

Overall, both datasets consistently demonstrate strong national adoption of QLattes, with especially high engagement in the Northeast and Southeast regions. Taken together, these figures support the view that QLattes effectively reaches its target academic audience across a diverse institutional and geographic spectrum.

5.2.2 Tool Knowledge and Use

Responses on *Knowledge Source* reveals that the adoption of QLattes is driven overwhelmingly by personal recommendations. 68.6% of respondents were introduced to the tool by others. This reliance on word-of-mouth communication significantly surpasses all digital channels combined. Social media posts were the next most common source at 9.7%, while other platforms like message apps (3.2%), mailing lists (2.8%) and YouTube videos (2.6%) played a minor role. This pattern suggests that trust and peer validation are the key factors in the tool's dissemination within its target academic audience.

In terms of *Duration of Use*, a substantial 46.6% of respondents reported using QLattes for more than one year, demonstrating the tool's sustained relevance and long-term value among experienced users. Additionally, 28.7% of users have adopted QLattes for 6 months to 1 year, indicating consistent growth in its user base. Meanwhile, 12.9% reported usage between 3 to 6 months, and 11.8% were relatively new users with less than 3 months of experience. This distribution

Table 5. Consolidated results for questions Q1–Q8 of the QLattes online user survey

Section	Question	Responses	(%)
User Profile	1. Occupation	Researcher/professor	80.3
		Postgraduate student	13.9
		Academic staff	3.0
		Other	2.8
	2. Organization Type	Public university	82.5
		Private university	10.7
		Research organization	1.9
		Governmental organization	1.6
		Other	3.3
	3. Region of Residence	Northeast	34.6
		Southeast	28.6
		South	20.3
		Central-West	9.2
		North	7.1
		Other (abroad)	0.2
Tool Knowledge and Use	4. Knowledge Source	Recommended by others	68.6
		Posts in social networks	9.7
		Posts in message apps	3.2
		Posts in mailing lists	2.8
		YouTube videos	2.6
		Other	13.1
	5. Duration of Use	More than 1 year	46.6
		6–12 months	28.7
		3–6 months	12.9
		Less than 3 months	11.8
	6. Frequency of Use	Weekly	31.4
		Less than monthly	29.8
		Monthly	26.2
		Almost daily	12.6
	7. Purpose of Use	Evaluation of my own scientific output	81.9
		Evaluation of the scientific output of others	66.4
		Academic tasks	47.3
		Evaluation of research grants/scholarship proposals	41.1
		Other	4.9
	Improvement Opportunities	8. Feature Requests	Support for other quality metrics
Support for other publication types			67.9
Support for exporting/importing CV data in multiple formats			59.6
Support for aggregation and visualization of multiple CVs			41.4
Support for attaching files and general artifacts to publications			25.5
Other			3.8

provides evidence for both the tool’s established presence and its continued adoption by new users.

The figures for *Frequency of Use* show varying levels of engagement with QLattes. The largest group of respondents, 31.4%, reported engaging with the tool weekly, followed by 29.8% who described their usage as sporadic (less than once a month), indicating irregular interactions with the tool. A significant 26.2% of respondents use it on a monthly basis. Only 12.6% of respondents reported almost daily usage, representing a smaller but highly active subset of the user base. These results suggest that while many users rely on QLattes regularly, others engage with it on an as-needed basis, likely driven by specific tasks or institutional requirements.

Finally, on the *Purpose of Use*, QLattes is primarily used for the evaluation of the respondents’ own scientific output (81.9%) and the scientific output of others (66.4%). These numbers reflect the tool’s core functionality in supporting researchers and academics in tracking and assessing their scholarly productivity. Additional uses include supporting academic tasks (47.3%) and the evaluation of research grants or scholarship applications (41.1%), highlighting QLattes’s ver-

satility in supporting various academic and research-related workflows.

To better understand user behavior, we performed a cross-sectional analysis correlating *Frequency of Use* (Q6) with *Purpose of Use* (Q7). The results for the top 5 purposes, presented in Table 6, reveal distinct user personas based on engagement frequency.

The data highlights a clear “power user” cohort. For “Almost daily” users (n=189), the gap between evaluating their “own scientific output” (78.8%) and evaluating the “scientific output of others” (75.7%) is negligible. This group also reports a dramatically higher use for supporting “academic tasks” (60.8%) than any other.

This profile contrasts sharply with our largest group of sporadic users, “Less than Monthly” (n=446). This group is primarily focused on self-evaluation (“my own scientific output”, 82.3%), with a significantly lower use for evaluating “others” (53.6%) and “academic tasks” (35.0%). The “Weekly” (n=469) and “Monthly” (n=391) users represent a hybrid profile, balancing self-evaluation with the evaluation of others, but with less emphasis on academic tasks. These

Table 6. Cross-analysis of Purpose of Use by Frequency of Use

Purpose of Use	Almost daily (n=189)	Weekly (n=469)	Monthly (n=391)	Less than Monthly (n=446)
Evaluation of my own scientific output	78.8%	83.8%	80.8%	82.3%
Evaluation of the scientific output of others	75.7%	73.8%	67.8%	53.6%
Academic tasks	60.8%	49.5%	52.2%	35.0%
Evaluation of research grants / scholarship applications	45.0%	44.6%	43.2%	34.1%

findings suggest that **QLattes** successfully serves at least two predominant distinct needs: sporadic self-assessment for individual researchers and high-frequency administrative/evaluative work for users in management roles.

5.2.3 Improvement Opportunities

The responses regarding *Feature Requests* for future versions of **QLattes** provide a high-level overview of user priorities. The top feature requests identified include support for other quality metrics (79.8%) and publication types (67.9%), indicating a strong demand for enhanced scholarly analytics. Following closely are support for exporting/importing CV data in multiple formats (59.6%) and the ability to aggregate and visualize data from multiple CVs, suggesting that users seek streamlined workflows to organize, share, and process CV information more effectively. Additionally, 25.5% of respondents requested a feature to allow attaching files and other types of artifacts to CV publications, reinforcing the need to broaden Lattes’s original role of a CV database towards a more general scientific repository.

To extract deeper insights, we performed a cross-sectional analysis of the feature request results against all three demographic variables. This analysis reveals a more nuanced picture of user needs, as presented in Table 7.

First, the data shows a strong, unifying demand across all groups for supporting “other quality metrics.” This feature was the top-ranked request for nearly every demographic (e.g., 79.9% of researchers/professors, 79.3% of public university users). This finding provides clear, data-driven evidence that the Brazilian academic community is actively seeking to evolve beyond the now-discontinued Qualis system, reinforcing the timeliness of **QLattes**’ flexible architecture.

Second, the analysis by Region (Table 7, top) reveals significant and unexpected differences. The most dramatic divergence is in the request for the classification of “other publication types” (e.g., conference publications, books). This feature was the second-highest priority for users in the North (80.2%), but of much lower priority for users in the South (62.4%)—a significant gap of nearly 18 percentage points. We also confirmed the hypothesis that priorities for administrative features differ: the request for “aggregation and visualization of multiple CVs” was notably higher in the Southeast (44.5%) than in the Northeast (37.6%).

Third, the analysis by Occupation (Table 7, middle) provides relevant context. *Undergraduate Students* have the highest demand for classification of “other publication types” (86.4%), far exceeding even *Researchers/Professors* (66.3%). They also show a higher demand for “aggregation and visualization of multiple CVs” (59.1%) than the other groups. This suggests that these secondary user groups have distinct needs,

which, as we will discuss in the next section, corresponds directly with their perception of the tool’s usability.

Finally, the analysis by Organization Type (Table 7, bottom) showed no significant variations; features request priorities between users at public and private universities are remarkably similar, suggesting that needs are defined more by a user’s role (i.e., occupation) than by their affiliation.

5.2.4 User Experience

We conducted a quantitative analysis of the respondent’s experience with **QLattes** based on four core metrics measured from responses to questions Q9–Q12 of the online survey questionnaire: *Usability*, *Efficiency*, *Integration (with External Sources)*, and *Satisfaction*. Responses to each of these questions follow a Likert scale (1–5). In addition to the average score, we calculate a Net Positive Score (NPS), a simplified metric inspired by the Net Promoter Score [Reichheld, 2003], where only positive responses (e.g., “Agree” or “Strongly Agree”) are considered to derive an overall positivity percentage.

Usability Responses to the question “Is **QLattes** easy to use?” (Q9) were overwhelmingly positive: 50.2% of the respondents strongly agreed and 41.3% agreed, resulting in a NPS of 91.5%. Neutral responses accounted for 6%, while negative feedback was minimal (<2%). The average usability score was 4.38 on a 5-point Likert scale, reflecting strong perceived ease of use. These results suggest that **QLattes** is intuitive for the vast majority of users, with no significant usability concerns.

Efficiency Responses to the question “Does **QLattes** streamline the process of classifying and visualizing scientific publications recorded in the Lattes platform?” (Q10) were even more favorable: 60.3% of the respondents strongly agreed and 35.2% agreed, leading to an NPS of 95.5%. Again, neutral responses were minimal (\approx 3%), while negative feedback was negligible (<1%). The average efficiency score was **4.53**, the highest among the four metrics, indicating that users find **QLattes** highly effective in streamlining workflows related to assessing scientific output.

Integration Responses to the question: “Does the inclusion of links to external sources such as Scopus and Google Scholar facilitate the task of verifying the authenticity and quality of scientific publications recorded in the Lattes platform?” (Q11) were also positive but slightly more mixed: 46.8% of the respondents strongly agreed and 37.9% agreed, resulting in an NPS of 84.7%. Neutral responses were notably higher at 13.8%, while negative feedback remained minimal

Table 7. Top Feature Requests by Region (top), Occupation (middle) and Organization Type (bottom)

Feature Request	Region				
	Central-West (n=138)	Northeast (n=518)	North (n=106)	Southeast (n=427)	South (n=303)
Other quality metrics	82.6%	77.0%	82.1%	75.6%	83.2%
Other publication types	65.9%	66.0%	80.2%	68.6%	62.4%
Export/Import data in multiple formats	61.6%	57.5%	68.9%	57.1%	59.1%
Aggregation and visualization of multiple CVs	42.8%	37.6%	41.5%	44.5%	40.3%
Attach files and artifacts to publications	24.6%	25.7%	29.2%	27.2%	20.1%

Feature Request	Occupation			
	Researcher/Professor (n=1,208)	Postgraduate Student (n=211)	Academic Staff (n=47)	Undergraduate Student (n=22)
Other quality metrics	79.9%	75.4%	70.2%	77.3%
Other publication types	66.3%	69.2%	66.0%	86.4%
Export/Import data in multiple formats	59.4%	53.6%	70.2%	63.6%
Aggregation and visualization of multiple CVs	40.1%	43.1%	40.4%	59.1%
Attach files and artifacts to publications	25.4%	25.6%	23.4%	18.2%

Feature Request	Organization Type			
	Public University (n=1,234)	Private University (n=160)	Research Institute (n=29)	Public Organization (n=24)
Other quality metrics	79.3%	73.1%	79.3%	87.5%
Other publication types	66.5%	67.5%	65.5%	75.0%
Export/Import data in multiple formats	59.2%	56.9%	62.1%	66.7%
Aggregation and visualization of multiple CVs	40.6%	43.8%	41.4%	45.8%
Attach files and artifacts to publications	25.5%	23.8%	27.6%	20.8%

(≈1.5%). The average integration score was 4.30, reflecting generally positive perceptions but also highlighting room for improvement.

Satisfaction Finally, responses to the question “How would you rate your overall satisfaction with QLattes?” (Q12) indicate strong user satisfaction: 49.8% of the respondents are very satisfied and 43.0% are satisfied, contributing to an NPS of 92.8%. Neutral responses accounted for 4.6%, while negative feedback (unsatisfied and very unsatisfied) was minimal (≈3%). The average satisfaction score was 4.39, demonstrating a highly positive perception of QLattes’ overall performance.

The radar chart shown in Figure 7 provides a visual summary of the four metrics, showcasing the consistent and highly positive experience voluntarily and anonymously reported by a representative sample of QLattes users.

5.2.5 User Perception by Demographics and Behavior

While the overall user perception scores are high, we performed a cross-sectional analysis to determine if these perceptions vary across user groups, as shown in Table 8 (by demographics) and Table 9 (by behavior).

This analysis yielded several key findings. First, as shown in Table 8, user perception is remarkably consistent across both Region and Organization Type. Average Satisfaction scores are tightly clustered across all major regions (4.33–4.42) and between public (4.38) and private (4.42) universities. This is a strong finding, suggesting a universally

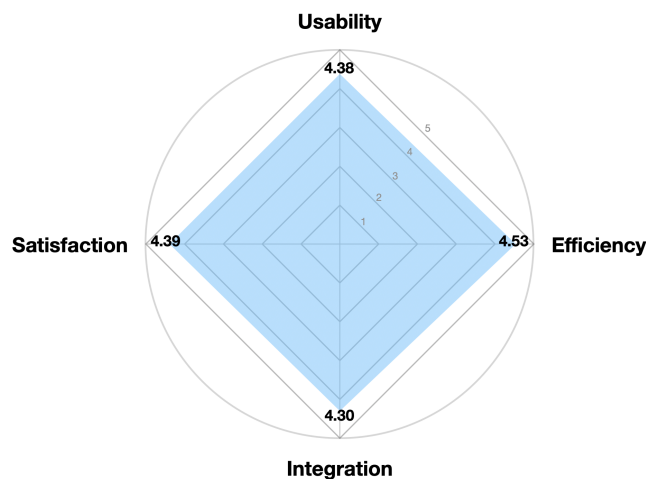


Figure 7. Visual summary of the average Likert-scale ratings (1–5) for QLattes’s efficiency (4.53), usability (4.38), integration (4.30), and satisfaction (4.39).

positive and uniform user experience, which contrasts with the significant regional variations we found in feature request priorities (Section 5.2.3).

Second, the analysis by Occupation (Table 8) revealed a notable difference. While all groups rate the tool’s Efficiency highly, Undergraduate Students (n=22) rated the tool’s Usability (3.86) and Satisfaction (4.18) significantly lower than both Researchers/Professors (4.40 and 4.40, n=1208) and Postgraduate Students (4.39 and 4.33, n=211). As discussed in Section 5.2.3, this finding corresponds directly with this group’s top feature request (support for other publication types), suggesting their lower satisfaction stems from the

Table 8. Average User Perception Scores by Demographics (Region, Occupation and Organization Type)

Demographics	Category	Usability	Efficiency	Integration	Satisfaction
Region	Northeast (n=518)	4.34	4.53	4.28	4.33
	Southeast (n=427)	4.40	4.54	4.27	4.41
	South (n=303)	4.40	4.55	4.30	4.41
	Central-West (n=138)	4.43	4.59	4.29	4.42
	North (n=106)	4.39	4.56	4.44	4.40
Occupation	Researcher/Professor (n=1,208)	4.40	4.56	4.31	4.40
	Postgraduate Student (n=211)	4.39	4.53	4.27	4.33
	Academic Staff (n=47)	4.21	4.38	4.17	4.36
	Undergraduate Student (n=22)	3.86	4.45	4.14	4.18
Organization Type	Public University (n=1,234)	4.38	4.55	4.30	4.38
	Private University (n=160)	4.47	4.61	4.27	4.42
	Research Institute (n=29)	4.38	4.41	4.41	4.31
	Public Organization (n=24)	4.38	4.38	4.00	4.29

Table 9. Average User Perception Scores by Behavior (Frequency and Duration of Use)

Behavioral Group	Behavioral Pattern	Usability	Efficiency	Integration	Satisfaction
Frequency of Use	Almost daily (n=189)	4.53	4.69	4.46	4.54
	Weekly (n=469)	4.49	4.63	4.35	4.44
	Monthly (n=391)	4.42	4.53	4.29	4.40
	Less than once a month (n=446)	4.18	4.41	4.16	4.24
Duration of Use	Less than 3 months (n=176)	4.15	4.41	4.26	4.23
	3 to 6 months (n=193)	4.32	4.56	4.30	4.38
	6 months to 1 year (n=429)	4.51	4.63	4.29	4.43
	More than 1 year (n=697)	4.39	4.52	4.31	4.40

tool’s focus on journals rather than a poor user interface.

Third, the behavioral analysis in Table 9 revealed a strong positive correlation between engagement and satisfaction. We found that the “Almost daily” users (n=189) provided the highest average scores across all four metrics, including *Usability* (4.53) and *Satisfaction* (4.54). Conversely, the “Less than monthly” users (n=446) provided the lowest (e.g., *Usability* 4.18, *Satisfaction* 4.24). This suggests that our most active users are also our most satisfied, and that usability is not a barrier for high-frequency engagement.

Finally, a similar pattern emerged when analyzing the *Duration of Use* (Table 9). New users (“Less than 3 months”, n=176) reported the lowest perception scores (e.g., *Usability* 4.15, *Satisfaction* 4.23). Scores consistently rose for users in the “6 months to 1 year” group (n=429), and remained high for long-term users (“More than 1 year”, n=697; *Usability* 4.39, *Satisfaction* 4.40), indicating a stable positive perception after an initial learning period.

5.3 Limitations and Threats to Validity

Despite the survey’s ability to capture valuable insights about QLattes users and their experience with the tool, several limitations and *threats to validity* must be acknowledged [Wohlin et al., 2012].

Internal validity may be affected by self-selection bias, as participation in the survey was entirely voluntary and anonymous. Users who chose to respond may be those more positively inclined toward the tool or more actively engaged with its features, potentially skewing the reported satisfaction and usage levels upward. Furthermore, the sample is subject to *survivor bias*; the banner was only visible to current users, so the survey does not capture the perceptions of former users who may have uninstalled or stopped using the tool — for

example, due to dissatisfaction. Moreover, as the survey relied on self-reported data, responses are subject to personal interpretation and recall inaccuracies, especially for questions regarding frequency and duration of use.

Construct validity could be limited by the wording and fixed options provided in the questionnaire. While the survey design aimed for clarity and coverage across core dimensions of user experience (e.g., usability, efficiency, satisfaction), it may not have captured all relevant aspects of user expectations or challenges, particularly for more advanced or infrequent users. Additionally, the use of Likert-scale questions for subjective metrics, although common, may suffer from central tendency or acquiescence bias.

External validity is constrained by the sampling method. The user survey was distributed exclusively through a banner embedded in the QLattes interface during a three-week window in April 2024. Although the 1,495 responses represent a meaningful sample (approximately 7.5% of the tool’s weekly active users at that time), the geographic and institutional distribution of respondents differs slightly from that of the broader user base as measured by Google Analytics (cf. Section 4). Notably, the survey overrepresents users from the Northeast and Central-West regions and underrepresents users from the Southeast and North. These regional differences likely reflect early adoption patterns and engagement levels during the survey period, which may no longer fully represent current usage trends.

Temporal validity must also be considered. The survey was conducted in early 2024, over a year prior to the usage statistics reported in Section 4. During this interval, the user base of QLattes grew significantly, and the profile of active users may have evolved. As a result, the survey data should be interpreted as a snapshot of user experience and demographics

at a specific point in time rather than as a fully up-to-date characterization of the current user population.

Finally, the user survey did not capture the respondent's specific knowledge area (e.g., Computer Science, Humanities, etc.), which was a significant oversight. This data would have provided invaluable insights into how needs and perceptions differ across academic disciplines — for instance, in fields where conference publications are more or less prevalent than journals. This represents a key priority for future, more detailed user studies.

Despite these limitations, the consistency between the survey responses and independent usage metrics (e.g., geographic distribution, adoption levels) strengthens the credibility of the findings. Nonetheless, future evaluation efforts should consider complementary strategies such as follow-up surveys, interviews, or usage instrumentation to mitigate bias and improve coverage.

6 QLattes Past, Present, and Future

QLattes was conceived in response to a specific and pressing need: the lack of integration between the Lattes platform and Brazil's official journal classification system, Qualis. At the time of its development, Qualis was widely used by graduate programs and academic evaluators to assess the quality of scholarly output, yet identifying the Qualis rankings of journal publications listed on Lattes CVs remained a cumbersome and error-prone task. By automating this process and embedding it directly into the CV Lattes web interface, **QLattes** offered immediate, actionable insights for thousands of researchers, students, and administrators across the country.

As shown in Sections 4 and 5, the tool has achieved substantial adoption and user satisfaction. With over 27,000 weekly active users as of June 2025, and highly positive ratings across usability, efficiency, and overall satisfaction metrics, **QLattes** has become an integral part of the research evaluation workflow for many Brazilian academics. The tool's strong uptake in traditionally underrepresented regions — particularly the Northeast — further demonstrates its role in democratizing access to research evaluation tools.

However, **QLattes** now faces a pivotal challenge: the discontinuation of the Qualis system recently announced by CAPES [Revista Pesquisa FAPESP, 2024]. Although this decision may render the original motivation behind **QLattes** obsolete, it does not compromise the tool's long-term viability. From the outset, **QLattes** was designed with a modular and extensible architecture, capable of supporting multiple data sources and classification schemes. Indeed, the tool already includes links to external metric sources such as the Scopus database and can be readily extended to include other publication metrics, e.g., Clarivate's Impact Factor and Google Scholar's h5-index.

Looking ahead, this flexibility opens promising new directions. A new variant of the tool, called **QLattesCC**, tailored specifically for the computer science community, is already available in early testing stage [Mendonça, 2024]. As shown in Figure 8, **QLattesCC** extends **QLattes'** classification model to include conferences, drawing from CAPES's Qualis Eventos database and incorporating multiple heuris-

tics to uniquely identify conference names. Additionally, it integrates citation-based metrics such as Scopus percentiles and JCR Impact Factor to estimate the quality of journals regardless of their official Qualis classification. These enhancements provide a richer and more context-aware representation of publication impact, especially in fields where journal-based metrics are insufficient. **QLattesCC** demonstrates how the architecture of **QLattes** can be adapted to support discipline-specific needs and alternate research assessment mechanisms.

An additional and highly promising direction for the evolution of the Lattes tool ecosystem is the integration of modern large language models (LLMs) [Zhao et al., 2023]. This trend is already materializing, as exemplified by the recent **Lattes-Rex** tool [Darcio et al., 2025], discussed in Section 7, which enables natural language querying of CV data. Future versions of **QLattes** could leverage this same technology to support advanced features such as automatic summarization of research contributions, contextual analysis of publication relevance, and semantic classification of venues or publication quality. LLMs could also enable more intelligent aggregation and comparison of academic output across CVs, unlocking new forms of insight beyond traditional bibliometric indicators. These capabilities would significantly extend the reach and value of **QLattes**, positioning it not only as a publication classifier, but as a foundation for next-generation academic analytics powered by generative AI [Thelwall, 2025a,b].

In short, the discontinuation of Qualis is not an endpoint but rather an opportunity for **QLattes** to evolve. As new evaluation frameworks and quality indicators emerge, both nationally and internationally, and as AI technologies continue to mature, the architecture and growing user base of **QLattes** position it as a promising foundation for developing future tools in academic analytics and research assessment.

7 Related Work

This section provides a critical overview of multiple tools and systems developed to support the extraction, analysis, and visualization of academic data from the Lattes platform, highlighting their different goals, audiences, and interaction models.

We first note the official platforms provided by the Brazilian agencies themselves. The **Plataforma Sucupira** is the official online platform from CAPES, used to collect, manage, and evaluate all data regarding Brazil's graduate programs [CAPES, 2022]. While it is the definitive source of data, it is a large-scale administrative system, not an analysis tool for individual researchers. CNPq's own **Painel Lattes** offers a suite of data visualization tools to help researchers and institutions comprehend research trends from Lattes CVs [CNPq, 2022c]. It allows users to filter data by region, institution, and gender/age, but it does not support cross-referencing of Lattes publication data with external sources, such as the Qualis journal classification.

A second category includes tools focused on large-scale data retrieval, batch processing, and institutional reporting, often building on data from the official platforms. The **script-Lattes** tool, for instance, is an early open-source system de-

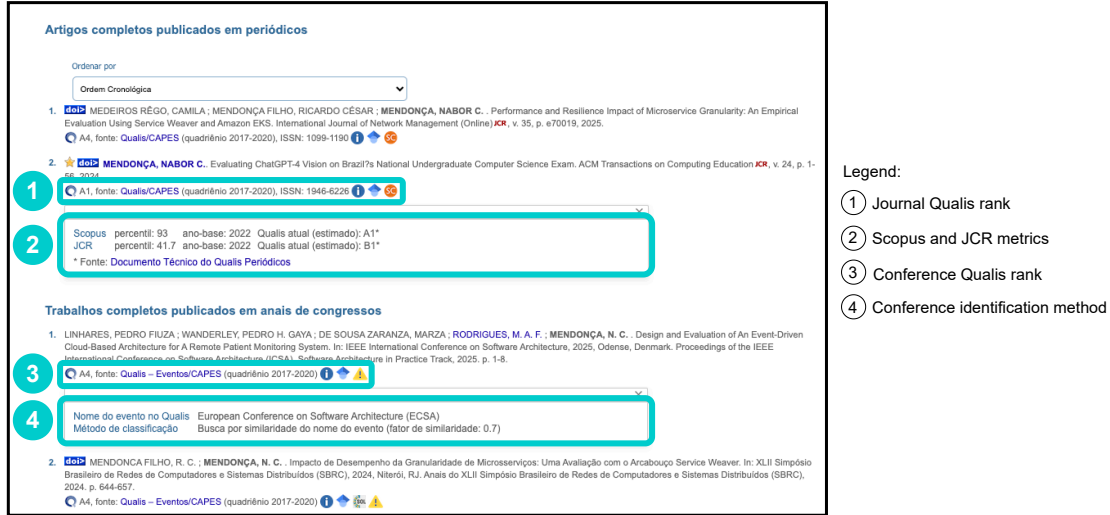


Figure 8. Example of a Lattes CV page annotated by the QLattesCC prototype, a new variant of QLattes tailored for computer science researchers. The tool annotates both journal articles and conference papers with relevant classification and citation metrics. The callouts highlight the key enhancements: 1. Journal Qualis rank based on CAPES classification; 2. Estimated Qualis rank inferred from Scopus and JCR metrics; 3. Conference Qualis rank from the CAPES Qualis Eventos database; and 4. Conference identification method based on string similarity to known venues.

Table 10. Feature Comparison of Lattes/Qualis Ecosystem Tools

Tool	Main Goal / Interaction Model	Primary User	Qualis Integration	Multi-CV Aggregation	Graphical Visualization
<i>Batch, Institutional & Data Extraction Tools</i>					
scriptLattes	Batch reporting (Script)	Admin / Researcher	✗	✓	✓ (Graphs)
LattesMiner	Data extraction (Library/API)	Developer	✗	✓ (via code)	✗
SUCUPIRA	Institutional reporting (Web App)	Administrator	✗ (for annotation)	✓	✗
Apoema	Institutional reporting (Web App)	Administrator	✗ (for annotation)	✓	✓
StelaExperta	Institutional management (Web App)	Administrator	✓ (backend)	✓	✓
<i>Interactive & Exploration Tools</i>					
Science Tree	Academic genealogy (Web App)	Researcher	✗	✓	✓ (Trees)
AnyLattes	Group-level dashboard (Web App)	Admin / Researcher	✗	✓	✓ (Charts)
LattesRex	Natural language query (Chatbot)	Researcher	✗	✗	✗
<i>Qualis-centric Browser Extensions</i>					
ChromeQualis	Manual Qualis lookup	Researcher	✓	✗	✗
Qualis Capes	Qualis lookup on Scopus	Researcher	✓	N/A	✗
Qualis no Lattes	Qualis annotation	Researcher	✓	✗	✓ (Table)
QLattes	Qualis annotation & Visualization	Admin / Researcher	✓	✗	✓ (Tables & Charts)

signed to automate the extraction and analysis of academic production data [Mena-Chalco and Cesar Junior, 2009]. It processes HTML versions of CVs to generate consolidated reports for research groups, including collaboration graphs and geographic maps. **LattesMiner** is a Java-based domain-specific language (DSL) designed to facilitate the automatic extraction of structured data from Lattes CVs [Alves et al., 2011a]. It provides a fluent API for programmatic access to CV elements and is geared towards developers building large-scale data pipelines. **SUCUPIRA** is a semi-automatic information extraction system—distinct from the official CAPES platform—designed to support the evaluation of Brazilian graduate programs [Alves et al., 2011b]. It focuses on capturing data relevant to CAPES’s evaluation process, transforming unstructured CV data into normalized XML for institutional use.

Similarly, platforms such as **Apoema** and **StelaExperta**

are adopted at the institutional level to support strategic management. **Apoema** is a system used at the University of São Paulo to analyze graduate programs using public data from Plataforma Sucupira [Simão, 2025]. **StelaExperta**, from the same group that developed the Lattes platform, is a comprehensive commercial management platform that integrates Lattes, Sucupira, and international metrics for university leadership and program coordinators [Instituto Stela, 2025].

Other tools provide more dynamic, interactive exploration. **Science Tree** is an open-source platform focused on the interactive visualization of academic genealogy and collaboration networks derived from Lattes CV data [Cota et al., 2021]. It builds tree-based visualizations of advisor–advisee relationships but does not focus on publication quality metrics. **AnyLattes** is a web-based system designed to simplify the search, retrieval, and visualization of information from multiple Lattes CVs [Cirilo et al., 2025]. It features an interactive

dashboard for comparing aggregated statistics across research groups or institutions. More recently, the advent of Large Language Models (LLMs) has introduced conversational agents that can provide a more natural interface for interacting with Lattes data. **LattesRex**, for example, is a question-answering system that uses a RAG-inspired architecture to support natural language queries against Lattes CVs [Darcio et al., 2025]. It leverages the document’s XML metadata to classify the query, retrieve relevant sections, and generate a synthesized answer using an LLM.

Finally, a set of Qualis-centric Chrome extensions offer more directly related functionalities. **ChromeQualis** provides a simple popup interface to manually search for a journal’s Qualis rank [Batista, 2023]. **Qualis Capes** operates within the Scopus database, annotating journal pages with their Qualis stratum [Enders Neto, 2022]. **Qualis no Lattes**, released shortly after **QLattes**, also automatically annotates journal entries directly on the Lattes CV page, using color-coded tags and displaying a floating summary box [Marcel, 2023].

As this overview shows, the Lattes ecosystem tools differ significantly in their goals, audiences, and interaction models. Table 10 provides a consolidated summary of these differences. Systems like **scriptLattes**, **LattesMiner**, **SUCUPIRA**, **Apoema**, and **StelaExperta** emphasize batch processing and high-level management for administrators, but lack real-time, individual-level analysis. Interactive platforms like **Science Tree** and **AnyLattes** focus on broader academic patterns (like genealogy or group-level production), while **LattesRex** provides natural language querying of CV content. Finally, while other extensions like **ChromeQualis**, **Qualis Capes**, and **Qualis no Lattes** do focus on Qualis data, they are more limited in scope, interface integration, or data exploration support. **QLattes** bridges these gaps by combining automatic, client-side Qualis annotation directly within the Lattes CV with a dedicated, interactive visualization interface that supports filtering and exploration by year and Qualis stratum. It offers a unique and lightweight solution for researchers, students, and administrative staff seeking immediate, context-aware insights into the publication quality of a specific Lattes CV.

8 Conclusion and Future Work

This paper introduced **QLattes**, an open-source browser extension that enhances the Lattes platform by automatically annotating journal publications with their Qualis classifications and enabling dynamic filtering, visualization, and analysis of academic output. Through a combination of architectural simplicity, client-side efficiency, and a strong user-centered design, **QLattes** has achieved wide adoption within the Brazilian academic community, with tens of thousands of weekly active users. The paper also presented a large-scale analysis of its adoption and usage patterns based on Google Analytics data and a detailed user survey (n=1,495). This new analysis revealed not only high aggregate user satisfaction, but also nuanced, non-obvious insights, such as the distinct behavioral profiles of frequent “power” users and significant regional differences in feature request priorities.

Although **QLattes** was originally conceived to address the lack of interoperability between the Lattes and Qualis systems, its design has proven robust in the face of the recent decision by CAPES to discontinue Qualis. This is due to the tool’s modular architecture, which supports integration with alternative metrics such as Scopus percentiles, Impact Factor, and h5-index.

Looking forward, **QLattes** will continue to evolve to meet the needs of its user base. A new version of the tool, **QLattesCC**, is already available in beta stage to support classification and visualization of computer science conference proceedings, a critical need in a field where journal-based metrics are often insufficient. Future work also includes expanding support for new publication types, enabling multi-CV aggregation, integrating richer analytics and export capabilities, and conducting task-based testing to quantitatively assess user-centric metrics such as task completion time and error rates.

In addition, we foresee the integration of large language models (LLMs) as a transformative step for the Lattes tool ecosystem. This trend is already emerging, as seen in related tools cited in this paper. LLMs could enhance **QLattes**’s ability to semantically interpret publication content, generate contextual summaries, and provide AI-assisted evaluation of research impact. Such capabilities would not only enrich the user experience but also align the tool with emerging practices in AI-assisted research assessment.

In doing so, we aim to reinforce **QLattes**’s role as a lightweight yet powerful companion to the Lattes platform, adaptable to the changing landscape of academic evaluation and well-positioned to support the next generation of research intelligence tools.

Declarations

Acknowledgements

The authors gratefully acknowledge the feedback received from nearly 1,500 anonymous respondents who kindly and voluntarily answered our online survey. We are also grateful to the over 170 users who reached out to us via the tool’s online contact form to report bugs, request new features, or simply share their experiences. We sincerely thank the anonymous reviewers for their thoughtful comments and suggestions, which helped improve the quality and clarity of this manuscript. The generative AI tools ChatGPT-4o, o3, ChatGPT-5, GitHub Copilot, and Gemini 2.5 Pro were used to assist in structuring and revising this manuscript, as well as generating code to perform the user survey data analysis.

Funding

NCM and MAFR are supported by CNPq’s grants 313558/2023-0 and 314776/2023-0, respectively.

Authors’ Contributions

NCM conceived and implemented the **QLattes** tool. MAFR contributed to the tool design and performed extensive testing of its main functionalities. LRM provided technical support during the

early phases of implementation. NCM and MAFR are the main contributors and writers of this manuscript. All authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests regarding this work.

Availability of data and materials

QLattes' source code is freely available at <https://github.com/nabormendonca/qlattes>.

References

- Alves, A. D., Yanasse, H. H., and Soma, N. Y. (2011a). Lat-tesMiner: a Multilingual DSL for Information Extraction from Lattes Platform. In *Proc. of the compilation of the co-located workshops on DSM'11, TMC'11, AGERE! 2011, AOOPEs'11, NEAT'11, & VMIL'11*, pages 85–92. DOI: 10.1145/2095050.2095065.
- Alves, A. D., Yanasse, H. H., and Soma, N. Y. (2011b). SUCUPIRA: a System for Information Extraction of the Lattes Platform to Identify Academic Social Networks. In *6th Iberian Conf. on Information Systems and Technologies (CISTI 2011)*, pages 1–6. Available at: <https://ieeexplore.ieee.org/document/5974195>.
- Barradas Barata, R. C. (2016). Dez coisas que você deveria saber sobre o Qualis. *Revista Brasileira de Pós-Graduação*, 13(30):13–40. DOI: 10.21713/2358-2332.2016.v13.947.
- Batista, A. L. F. (2023). ChromeQualis. Available at: <https://chrome.google.com/webstore/detail/chrome-qualis/cmphlehdnbaffijjbakolbmdmicdifoeo>.
- CAPES (2020). Metodologia do Qualis Referência. Available at: <https://www.gov.br/capes/pt-br/centrais-de-conteudo/documentos/conselho-tecnico-cientifico-da-educacao-superior/anexos-ctc-es/DocumentobaseQualisCTC198SEI1606400.pdf>.
- CAPES (2022). Plataforma Sucupira: Qualis Periódicos. Available at: <https://sucupira.capes.gov.br/sucupira/public/consultas/coleta/veiculoPublicacaoQualis/listaConsultaGeralPeriodicos.jsf>.
- CAPES (2023). Documento Técnico do Qualis Periódicos. Available at: <https://www.gov.br/capes/pt-br/centrais-de-conteudo/documentos/avaliacao/avaliacao-quadrinial-2017/DocumentotecnicoQualisPeridicosfinal.pdf>.
- CAPES (2025). Documento de Área – Computação – Área 02. Available at: https://www.gov.br/capes/pt-br/aceso-a-informacao/acoes-e-programas/avaliacao/sobre-a-avaliacao/areas-avaliacao/sobre-as-areas-de-avaliacao/colegio-de-ciencias-exatas-tecnologicas-e-multidisciplinar/ciencias-exatas-e-da-terra/COMPUTACAO_DOCARE_A_2025_2028.pdf.
- Cirilo, A. C. S., dos Santos, I. M., and Mota, M. P. (2025). AnyLattes: An Application for Continuous Assessment of Lattes Curriculum Information. In *Simpósio Brasileiro de Sistemas de Informação (SBSI)*, pages 439–448. SBC. DOI: 10.5753/sbsi.2025.246529.
- CNPq (2022a). Dados e estatísticas da Plataforma Lattes. Available at: <https://memoria.cnpq.br/web/portal-lattes/dados-e-estatisticas>.
- CNPq (2022b). História do surgimento da Plataforma Lattes. Available at: <https://memoria.cnpq.br/web/portal-lattes/historico>.
- CNPq (2022c). Painel Lattes. Available at: <https://painel-lattes.cnpq.br/>.
- Cota, J. M. M. C., Laender, A. H. F., and Prates, R. O. (2021). Science Tree: a platform for exploring the brazilian academic genealogy. *Journal of the Brazilian Computer Society*, 27(1):1–20. DOI: 10.1186/s13173-021-00118-6.
- Darcio, L., Santos, K., Spellen, A., Soares, E., Real, L., and Silva, A. (2025). LattesRex: Building ChatBots for Semi-Structured Documents. In *Anais do XVI Simpósio Brasileiro de Tecnologia da Informação e da Linguagem Humana (STIL)*, pages 125–136. SBC. DOI: 10.5753/stil.2025.37819.
- Delighted Blog (2024). What is a good survey response rate for online customer surveys? Available at: <https://delighted.com/blog/average-survey-response-rate>.
- Dias, T. M. R. and Moita, G. F. (2018). Um retrato da produção científica brasileira baseado em dados da Plataforma Lattes. *Brazilian Journal of Information Science: research trends*, 12(4):62–74. DOI: 10.36311/1981-1640.2018.v12n4.08.p62.
- Dias, T. M. R. et al. (2013). Modelagem e caracterização de redes científicas: um estudo sobre a Plataforma Lattes. In *Anais do II Brazilian Workshop on Social Network Analysis and Mining*, pages 116–121. SBC. Available at: <https://sol.sbc.org.br/index.php/brasnam/article/view/6851>.
- Enders Neto, B. G. (2022). Qualis Capes. Available at: <https://chrome.google.com/webstore/detail/qualis-capes/imnndpplkogiebimpkljdanjcbfepdam>.
- Fernandes, G. A. A. L. and Manchinin, L. O. (2019). How QUALIS CAPES influences Brazilian academic production? A stimulus or a barrier for advancement? *Brazilian Journal of Political Economy*, 39:285–305. DOI: 10.1590/0101-31572019-3006.
- Google (2023). Extensions: Architecture overview. Available at: <https://developer.chrome.com/docs/extensions/mv3/architecture-overview/>.
- Instituto Stela (2025). Stela Experta PG: Gestão Estratégica de Programas Pós-Graduação. Available at: <https://stela.org.br/experta/>.
- Jaffé, R. (2020). QUALIS: The journal ranking system undermining the impact of Brazilian science. *Anais da Academia Brasileira de Ciências*, 92. DOI: 10.1590/0001-3765202020201116.
- Marcel, A. (2023). Qualis no Lattes. Available at: <https://chrome.google.com/webstore/detail/qualis-no-lattes/mgodlakccbhnkjdgjeonpdgdaindpkbk>.
- Mena-Chalco, J. P. and Cesar Junior, R. M. (2009). Script-Lattes: an open-source knowledge extraction system from the Lattes platform. *Journal of the Brazilian Computer Society*, 15:31–39. DOI: 10.1007/BF03194511.

- Mendonça, N. C., Rodrigues, M. A. F., and Mendonça, L. R. (2023). QLattes: An Open-Source Tool for Qualis Annotation and Visualization in the Lattes Platform. In *Seminário Integrado de Software e Hardware (SEMISH)*, pages 83–94. SBC. DOI: 10.5753/semish.2023.229845.
- Mendonça, N. C. (2024). QLattesCC BETA. Available at: <https://chromewebstore.google.com/detail/qlattescc-beta/kndnmfdjlfabjnfjgalidcfpdmkhjla>.
- Perlin, M. S. et al. (2017). The Brazilian scientific output published in journals: A study based on a large CV database. *Journal of Informetrics*, 11(1):18–31. DOI: 10.1016/j.joi.2016.10.008.
- Reichheld, F. F. (2003). The One Number You Need to Grow. *Harvard Business Review*, 81(12):46–54. Available at: <https://hbr.org/2003/12/the-one-number-you-need-to-grow>.
- Revista Pesquisa FAPESP (2024). Qualis-periódicos será substituído por classificação com foco nos artigos. Available at: <https://revistapesquisa.fapesp.br/qualis-periodicos-sera-substituido-por-classificacao-com-foco-nos-artigos/>.
- Rocha-e-Silva, M. (2009). O novo Qualis, ou a tragédia anunciada. *Clinics*, 64:1–4. DOI: 10.1590/S1807-59322009000100001.
- Simão, A. (2025). APOEMA-PG - Sistema de Apoio Estratégico à Medição e Análise da Pós-Graduação. Available at: <https://sistemas.prpg.usp.br/apoema-pg/>.
- Thelwall, M. (2025a). Evaluating research quality with Large Language Models: An analysis of ChatGPT’s effectiveness with different settings and inputs. *J. Data Inf. Sci.*, 10(1):7–25. DOI: 10.2478/jdis-2025-0011.
- Thelwall, M. (2025b). Research quality evaluation by AI in the era of Large Language Models: Advantages, disadvantages, and systemic effects. *arXiv preprint arXiv:2506.07748*. DOI: 10.48550/arXiv.2506.07748.
- Wohlin, C., Runeson, P., Höst, M., Ohlsson, M. C., Regnell, B., Wesslén, A., et al. (2012). *Experimentation in Software Engineering*, volume 236. Springer. Book.
- Zhao, W. X., Zhou, K., Li, J., Tang, T., Wang, X., Hou, Y., Min, Y., Zhang, B., Zhang, J., Dong, Z., et al. (2023). A Survey of Large Language Models. *arXiv preprint arXiv:2303.18223*, 1(2). DOI: 10.48550/arXiv.2303.18223.