Title: Knowledge flows into policy making: Tracing how FAPESP-funded research is used in policy documents nationally and globally

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Abstract: Research and scientific expertise are configured as essential elements in various policymaking arenas. Studies have been trying to identify the impact of research on public policy design, implementation, and evaluation processes, within the challenge of building methodologies and techniques capable of tracking the impact and using research/expertise in policy. Such studies generally adopt diverse theoretical and methodological approaches that follow two paths, including bibliometrics and altmetrics techniques. Considering this debate, our study aims to explore the potential of bibliometrics to identify and analyze, in an exploratory way, how policy documents have been using research funded by the São Paulo Research Foundation (FAPESP), Brazil. FAPESP is one of the most essential funding agencies for research and innovation in Brazil and Latin America, and the impact of its funding on policymaking is not yet known. Our research explores Overton Database, considered the largest and most comprehensive database that tracks how research (papers) are cited in policy documents. From searching for 99,637 DOIs related to research funded by FAPESP on Overton, the study could link the research-funded projects/scholarships to their uses in policy documents, offering some preliminary bibliometric evidence that considered the profile of the projects and the profile of the policy documents. Based on this, the study raises several questions and debates for further investigation, aiming to shed light on the potentialities and limitations of the methodological path developed and on several discussions about the use of research in policy.

Keywords: Overton; Public Policy; FAPESP-funded research; Policy documents.

1. Introduction

Faced with problems and social transformations occurring at different scales, such as climate change, poverty, inequalities, and technological changes, understanding the relationship between politics and science has never been more meaningful. There is a two-way dynamic in which politics influences science, and science influences politics (Wehrens, 2014). At the same time, there is a complex challenge mobilizing funding agencies, science and technology

institutions, and policymakers: How to identify, measure and evaluate this interaction? The literature on research impact on policy indicates several methodological and analytical ways to understand, evaluate and measure the flows between research and public policies (Newson et al., 2018). Some of these paths are still exploratory, such as using bibliometric approaches and new altimetry bases that identify, from policy documents, the use of research or scientific expertise (Haunschild & Bornmann, 2017; Yanovitzky & Weber, 2020).

Considering this debate, our study aims to explore the potential of bibliometrics to identify and analyze how policy documents have been using research funded by the São Paulo Research Foundation (FAPESP), one of Brazil and Latina America's most critical funding agencies. The São Paulo Research Foundation (FAPESP) is a prominent research funding organization in Brazil, strongly dedicated to backing research in diverse fields and nurturing scientific and technological advancement in the region (FAPESP, 2023). By exploring FAPESP's contribution to advancing research with policy implications, this study enhances our comprehension of the intricate relationship between research funding and public policy (Sampat & Lichtenberg, 2011; Smith, 2010; Oliver et al., 2014).

Thus, the research has as motivation to raise evidence on two aspects: (i) debate and explore the potentialities and limitations of the use of bibliometric tools, and especially Overton, to research the relationship between knowledge and policy; and, based on the results, (ii) debate how scientific knowledge has been incorporated into policy documents and, in this process, how it can influence public policies.

In recent years, the role of research in shaping and informing public policy has gained increasing attention (Cui & Zhang, 2018; Cairney & Oliver, 2020; Boaz et al., 2009). There is a growing debate on evidence-based policy-making, which aims at designing and implementing more effective policies. We understand that this debate is strongly connected to using scientific evidence, or the knowledge flow, in policy-making and to the interaction between experts (researchers, professors, scientists) and policymakers.

Funding agencies (FAs) play a crucial part in this process, as they are responsible for supporting research projects with the potential to address pressing societal challenges and contribute to evidence-based policy-making (McElfish et al., 2018; Lomas, 2007) and also when we consider the impact of FAs in shaping the research landscape through funding priorities and evaluation criteria (Wallace & Ràfols, 2018; Maruthappu et al., 2017; Braun, 1998; Corley et al., 2006).

By investigating FAPESP's role in promoting research with policy implications, this study contributes to the broader understanding of the dynamics between research funding and public policy development (Sampat & Lichtenberg, 2011; Smith, 2010; Oliver et al., 2014).

The significance of this study lies in its contributions to the ongoing discussion about the relationship between research and public policy, as well as the methodological approaches employed in assessing the impact of funded research, which has a clear impact on the research ecosystems. By exploring the potentialities and limitations of using Overton as a database, this study offers valuable insights for policymakers, researchers, and funding agencies such as FAPESP, as they seek to maximize the societal benefits of research investments and provide information about the use of scientific evidence in the policy-making process.

This paper is structured in six sections, including this introduction. First, we present the theoretical background, followed by a brief description of the methodology. In the following sections, the paper accounts for the results obtained from the preliminary analyses. We conclude with a discussion of the preliminary results in light of the existing literature and the limitations identified during the process. Finally, we reflect on the research agenda and next steps.

2. Theoretical background

2.1. Research impact on policy-making

The literature on the social impact of research highlights a significant contemporary challenge that mainly focuses on developing methodological ways to identify, analyze and evaluate the different channels in which knowledge flows from its production spaces to society and, at times, impacts it. (Viana-Lora & Nel-lo-Andreu, 2021; Smit & Hessels, 2021; Bornmann, 2013).

The issue becomes more complex once we consider that this is not a linear process but interactive and complex. However, linear impact assessment models, such as the Payback Framework (Donovan & Hanney, 2011), are primary and valid forms of measurement and evaluation. Thus, accessing such impacts becomes somewhat slippery, given the non-linearity, temporality (short, medium, and long term), the different types of possible research use and impacts, contingency and contextual factors, and differences between areas of knowledge, among others (McCowan, 2018).

Studies have adopted diverse theoretical and methodological perspectives to assess research use in public policy, following two non-mutually exclusive paths to track the intersection between research and policy (Newson et al., 2018; Newson et al., 2021). Within these paths, one can have qualitative, quantitative, and mixed approaches, as well as an arsenal of forms of data collection, such as documentary research, interviews and questionnaires, and the use of bibliometrics and altimetry (Tahamtan & Bornmann, 2020). Forward tracking starts from research to identify its impact/use on policy, and backward tracking starts from policy to identify the impact/use of scientific research.

Using scientific knowledge in politics also overlaps with a growing interest in evidence-based policymaking. This topic mobilizes studies in both STS and Political Science, especially since the 1970s (Capano & Malandrino, 2022). At this point, an essential central dimension of analysis and evaluation refers to how such knowledge is used in political processes.

The role of scientific evidence varies among civil servants, affected by contextual elements and types of informational resources. The most considerable reliance on evidence is found in relational functions of public administration, and it also substantially depends on the analytical aptitude of individual civil servants (Koga et al., 2022). Specifically in Brazil, evidence-based public policy is a relatively recent movement originating in the 1990s, and its influence is progressively becoming apparent in the public policy landscape (Faria & Sanches, 2022).

The Brazilian government platform, Gov.br, exemplifies this trend, where policymakers integrated international networks and employed user feedback to merge political, scientific, and practical knowledge for policy creation (Filgueiras et al., 2022). Additionally, in the healthcare arena, the Brazilian Ministry of Health employs a systematic approach to assess the implications of new technologies, considering the benefits, risks, costs, and broader societal impacts. In their analysis, they give weight to the level of evidence concerning the efficacy and effectiveness of technologies, the interests of involved parties, those requesting the assessments, and the costs of the technologies (Schmidt et al., 2022).

A similar emphasis on evidence-based policy-making is observed in Science, Technology, and Innovation (ST&I), although a theoretical-conceptual gap exists. A study involving federal public servants pointed out that the source's credibility and prestige and the information's relevance and applicability significantly influence the use of evidence.

However, evidence often serves a symbolic purpose, confirming pre-existing decisions more than driving the formulation of new policies (Sandim & Machado, 2020).

The preliminary results presented here, we hope, can raise initial pieces of evidence for both the discussion on the potentialities and limits of the use of the base and, at the same time, dialogue with the debates on knowledge use and impact coming from Science and Technology Studies (STS) and with the research/practice community of policy analysis, political science, and public administration.

Carol Weiss (1979) spoke about the images of research use processes in policymaking, such as the knowledge-driven model (linear logic that goes from research, outcomes, and use), problem-solving model (direct application of knowledge in a situation of problem-solving decision), iterative model (political and academic actors in interaction, which may result in the use of knowledge and expertise), political model (research is used purely to confirm previous political interests and positions) tactical model (research is used to delay decisions and deflect criticism), and enlightenment model (influence of debates, theories, and concepts in general).

Weible (2008) also examines theories about the policy-making process and lists three types of knowledge use, instrumental, learning, and political; Similarly, Capano and Malandrino (2022) talk about components (barriers and facilitators) that influence the use of research, such as political beliefs and values, the relationship between actors, capacity, types of evidence, interests and institutional processes. In this regard, it is also essential to consider the political actors involved.

When analyzing the research perspective, it is crucial to consider the performance of stakeholders, notably experts, intellectuals (Wellstead et al., 2022; Cairney & Oliver, 2020; Bozeman & Youtie, 2017), and institutions such as universities and funding agencies (McCowan, 2018; Bleiklie & Michelsen, 2022). As stated in the article's introduction, these actors are particularly interested in how their research positively impacts policy. Moreover, since this is a complex and interactive process, ways of assessing, measuring, and analyzing such influence and impact are still being developed.

Given this debate, our research has adopted a specific approach to investigate the utilization of research in policy, which aligns with the bibliometrics and altimetry approach. This method focuses on identifying references to research, universities, or researchers within

political documents. By employing this backward tracking technique, we consider policy documents as the primary unit of analysis (Newson et al., 2018). The task of identifying these mentions to scientific research within policy documents is challenging due to the different characters and types of policy documents within the different phases of public policy (Bogenschneider et al., 2019; Vikings & Grant, 2017), whether in agenda-setting, policy designing, decision making, implementation or evaluation. Importantly, scientific knowledge figures as one of several inputs into policy and often goes unused (as the Brazilian context has shown). There are several factors involved in the utilization of research, such as political beliefs and values, networks between critical actors (e.g., policymakers and researchers/experts), the nature of evidence (area of knowledge, types of research), the capacity of public administration to incorporate research, the credibility/visibility of the scientist, accessibility and comprehensibility, among others (Capano & Malandrino, 2022; Isett & Hicks, 2020). Temporality and political contingencies/circumstances are also essential (Lauronen, 2020; McCowan, 2018).

In this sense, Isett and Hicks (2020) point out that the literature on public administration deals with the existence of two communities of practice, the academic and the political, considering that tensions hinder integration. Although we consider that research and policy have co-productive and non-linear interactions (Jasanoff, 2004; Abma et al., 2017), there are efforts to close the gap between policy and research. For example, think tanks can be considered frontier organizations operating with knowledge for political ends (Ruser, 2018). Other examples can be found in what Isett and Hicks (2020) named intermediary agents (or a "third community"), such as initiatives or institutions explicitly created to bring research and policymaking together - for example, the European Commission's Joint Research Center (JRC) and the Brazilian Institute of Applied Economic Research (IPEA) are governmental bodies that conduct and systematize research to inform policy. The preliminary results of our research point to policy documents - notably reports - that synthesize research for policymaking.

Identifying the use of research in politics remains a methodological challenge for all these factors. The Overton database has emerged as a resource for analyzing the use of research on public policy. So far, little research has been identified using this resource, not least because of the recent nature of the database, created in 2019.

Szomszor and Adie (2022) examined the potential of Overton as a database, concluding that there is a core set of policy documents with appropriate linkage to academic literature, especially for some research topics such as health, social care, economics, and the environment. Another research examines the policy citation coverage between Overton and Altmetric.com of Social Science papers produced in Finnish universities, concluding that both databases provide relatively significant coverage. However, they rely on different sets of policy documents, showing that both databases could be used as complementary sources (Maleki & Holmberg, 2022). Similarly, Bornmann et al. (2022) conducted a noteworthy study examining the citation of climate change research in climate change policy documents. Their findings revealed that international governmental organizations (IGOs) and think tanks have produced a more significant number of climate change policy documents than anticipated. The researchers also identified localized spikes in climate policy documents coinciding with major decisions in international climate diplomacy. De Filippo and Sastrón-Toledo (2023) analyzed the influence of open science research on public policy in Spain, using Overton to find policy documents that cite the identified open access research; Pinheiro et al. (2021) assess the relationship between cross-disciplinary research and its uptake in policy-related documents; Yin et al. (2021) examined the coevolution of policy documents and science during the COVID-19 pandemic, concluding that many policy documents substantially accessed recent, peer-reviewed, and high-impact science. Finally, Dibbern et al. (2022) analyze the use of Latin American university's knowledge in governmental documents concerning Sustainable Development Goals.

The studies draw attention to the versatility of the database use, with some reflecting on the potential and coverage provided or/and using it to test the connections between research and policy documents in particular themes or policy areas. It also shows that most of these studies work with a scientometric approach, focusing on finding connections between the dynamics of scientific publications and the policy documents related (e.g., Yin et al., 2021; Bornmann et al., 2022; Pinheiro et al., 2021). The analytical debates beyond these approaches are also diverse, such as discussions on Open Science, climate change, and the social commitment of the public university in Latin America. There still needs to be a gap in analyzing Overton data from science policy and public administration perspectives. As we previously discussed, the debate on evidenced-used policymaking is an exciting way to tackle this issue.

3. Methodology

The study's methodology is based on a search and analysis of the data obtained from Overton. Initially, the base offers three search mechanisms: by theme (keywords), by the name of the institution or researcher or by specific articles, and through DOIs. The question that motivated the use of the platform was: How to identify research financed by FAPESP in the political documents indexed in the tool?

DOIs proved to be a more exciting way forward, as the database can capture the mention of these identifiers in policy documents. For this, we rely on data from projects financed by FAPESP, registered in the agency's Virtual Library, which records the articles published from the funded individual project or grant. The research team obtained 99,637 DOI registrations from 52,425 funded/refunded projects or master's, doctoral and postdoctoral scholarships. Of these DOIs, 0.1% are from the area of Linguistics and Arts; 0.5% from Applied Social Sciences; 1% Interdisciplinary; 1.7% from Humanities; 10.5% from Engineering; 11.8% from Agricultural Sciences; 19.7% from Health Sciences, 26.1% from Exact and Earth Sciences and 28.6% from Biological Sciences. These records cover the period of projects supported by FAPESP from 1992 to March 2023, when they were extracted. From this, a search was applied with this set of DOIs at Overton, extracting the data via Application Programming Interface (API). The data were integrated into an Excel spreadsheet, which we used to compile the initial results. We consolidated the results with information from the funded projects and grants that gave rise to the papers (DOIs) researched at Overton. This allows us to determine a methodological connection between the policy paper and the project/fellowship funded by FAPESP. The following image visually demonstrates the methodological path followed.

Figure 1. Methodological path followed in the study

Based on the results, the analysis focused on discussing the sources of the policy documents (political organizations) that mention research funded by FAPESP. In addition, our study sought to reflect on the potential of these methodological approaches in identifying and analyzing the use of research in politics, which is why we raised several research questions for future investigations.

Founded in 2019, Overton is the world's most extensive collection of policy documents from different sources. Universities have used Overton, think tanks and research agencies to help demonstrate the political impact of their research, explore global politics, and assess the influences between scientific and technological production and the design and implementation of public policies (Overton, 2023). The base is considered to operate from a backward tracking approach (Newson et al., 2018) to identify the use of research, i.e., it starts from policy documents as the primary unit of analysis to provide bibliometric data on both the policy documents found and the researchers identified in them. The database tracks policy documents in different languages, but as identified by Szomszor and Adie (2022), it has more excellent coverage of documents indexed in English. At the same time, in terms of language balance, many countries, such as Brazil, have a significant proportion of content in local languages, with over 80% of policy documents indexed in Portuguese.

In addition, it is worth clarifying the meaning of sources and policy documents. Sources of documents refer to political organizations, notably government and governmental bodies, think tanks, and International Governmental Organizations (such as World Bank, UN, UNESCO) responsible for drafting and publishing such pieces. For Overton, policy documents are "*documents written primarily for or by policymakers that are published by a policy-focused source*." It is a broad definition, which brings the benefit of observing a good coverage of material, but at the same time, brings a diversity that is difficult to analyze, especially qualitatively. It includes reports, parliamentary transcripts and legislation, white papers, and other publications.

4. Results

The preliminary results were divided into two parts. The first part focuses on a characterization of the FAPESP-funded research that was identified in the database. In this case, the primary unit of analysis is the funded projects or grants linked to the DOIs searched in Overton. The second part of the results seeks to characterize the policy documents found.

4.1. Profile of FAPESP funding research mentioned in policy documents

Preliminary results show that the database identified/validated 36,886 mentions of projects or scholarships linked to the searched DOIs, about 37% of the inputs. In other words, the DOIs identified in the policy documents link 36,886 times to projects/fellowships funded by FAPESP. However, this number presents repetitions, since many DOIs can be cited in several

policy documents, and a paper can contain DOIs linked to more than one funding. In any case, it is an important result, as the repetition indicates the intensity of mentions of the projects/scholarships in this case. Further analysis could identify what projects and papers have a high impact on policy documents. Below we bring an image (Figure 2) with the distribution of FAPESP projects with papers cited in Overton by knowledge area with repetitions (2a) and without repetitions (2b):

Figure 2. Distribution of FAPESP projects with papers cited at Overton by area of knowledge
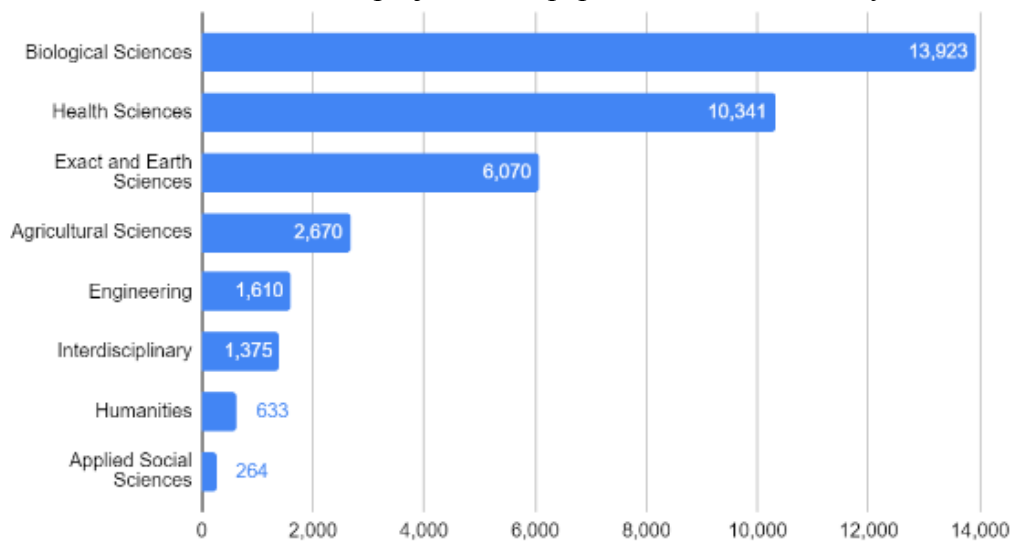
(a) Fapesp projects with repetition: 36,886
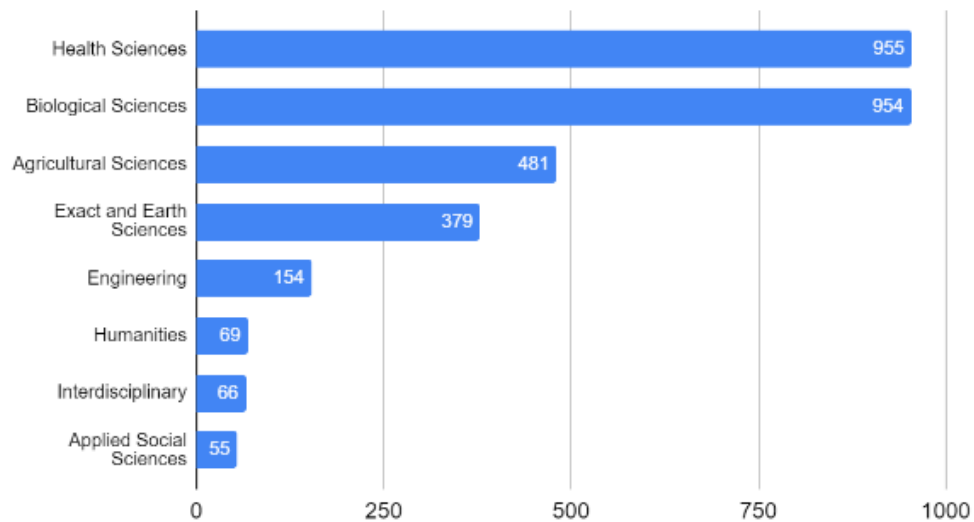
(b) Fapesp projects without repetition: 3,113

We think that this coverage is significant. The vast majority of these 36,886 mentions are distributed in the following knowledge areas: Biological Sciences (13,923 mentions), Health Sciences (10,341 mentions), and Exact and Earth Sciences (6,070 mentions). This largely

reflects the over-representation of papers from the knowledge areas of the imputed DOIs (see methodology section). Another interesting point of emphasis is that Overton has good coverage of social science and humanities research. However, FAPESP has a funding strategy that prioritises the areas of knowledge cited as most representatives, and the inputs and results found in Overton reflect this bias. When we return to the result without repetition, we can notice an inversion and, in some cases, some equivalence between the representative positions of the knowledge areas. In this paper, we do not go deep into explaining this differentiation; however, the hypotheses for this result must be investigated in future research.

Another interesting result refers to the origin of the founding scheme, either from project financing or from individual scholarships, called "support" (masters, doctoral and postdoctoral):

Figure 3. Distribution of FAPESP projects with papers cited at Overton by funding instrument
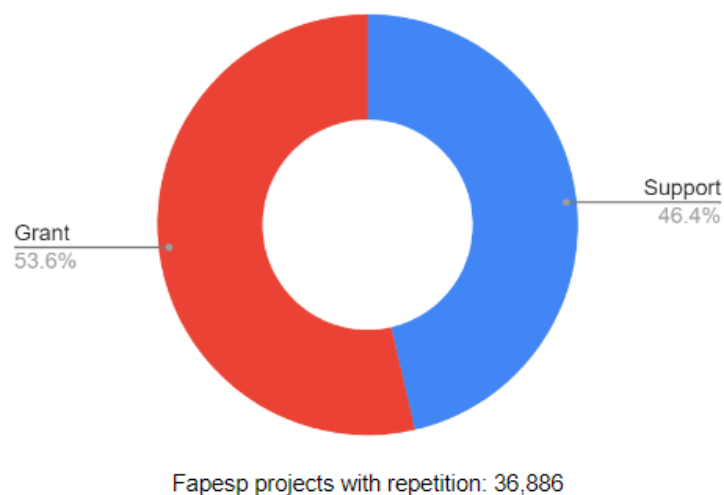
Relative symmetry was identified in the results. We had initially expected that more robust, team-based funding (grants) might be more likely to appear. Again, closer investigation is required as we do not yet have evidence of how and the intensity of mentions of the papers.

It is also interesting to note that most of the DOIs linked to the projects/scholarships identified in the policy documents follow the distribution below:

Figure 4. Distribution of FAPESP projects with papers cited at Overton by year of publication
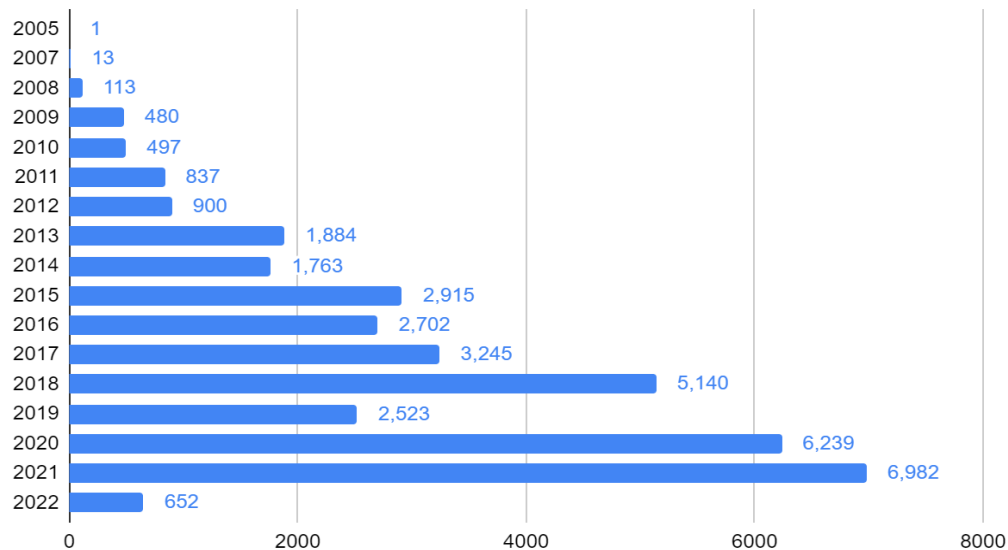
The findings indicate a notable concentration of articles published between 2015 and 2021. Surprisingly, we initially anticipated that older articles would be more likely to be referenced in policies. However, an essential factor contributing to this distribution is the recent proliferation of Open Access documents, encompassing scientific and policy papers. Consequently, the tool used may exhibit a bias toward identifying more recent documents and articles. This hypothesis gains support from the data obtained by comparing the publication years of identified DOIs with the policy documents referencing these DOIs. The analysis revealed a predominant temporal difference of 0 (11,221 DOI mentions), 1 (7,264), 2 (4,642), and 3 (4,043) years. In simpler terms, policy documents reference articles within a time frame of 0 to 3 years after their publication dates.

4.2.   Preliminary findings regarding the policy documents and sources that use FAPESP funded research

From here, we offer an overview of policy documents that cite FAPESP-funded research. A total of 3,972 policy documents were found. Regarding the sources, most of them are from governmental bodies (1,884 policy documents), followed by IGOs (958), Think Tanks (633), and Other (397), as the figure (Figure 5) below shows:

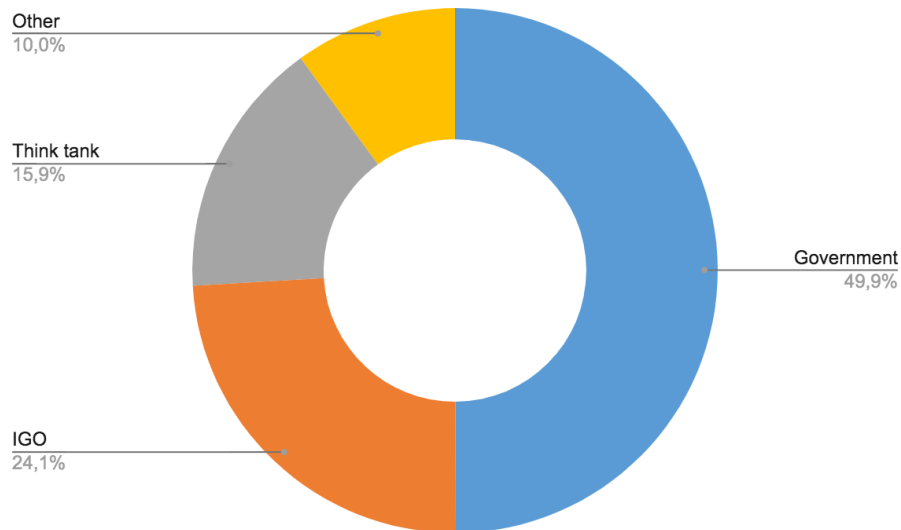**Figure 5.** Distribution of FAPESP projects with papers cited at Overton by source type

Figure 5 demonstrates the predominance of government sources (agencies, ministries, and other government bodies) and Intergovernmental Organizations (IGOs). To unpack these results, the figure (Figure 6) below shows the IGOs with more than ten policy documents citing research from FAPESP:

Figure 6. Nº of Policy Documents produced by IGOs that mention FAPESP-funded research
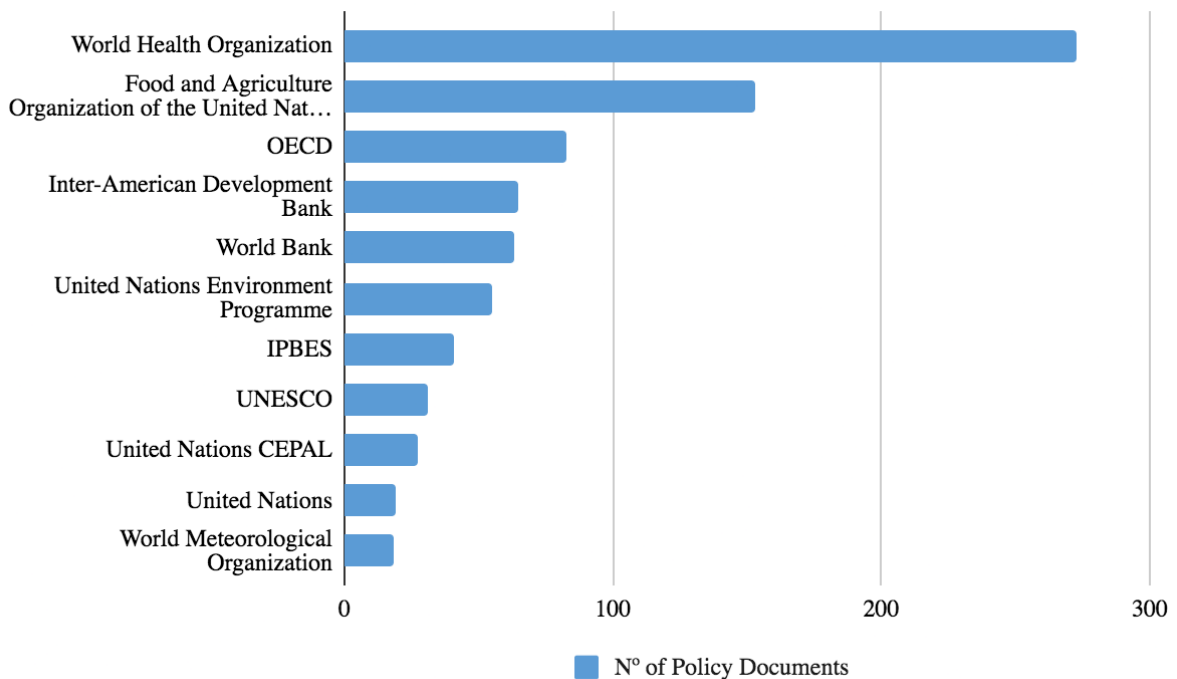
We can observe the predominance of documents produced by the World Health Organization, followed by the Food and Agriculture Organization of the United Nations. Again, this data should be discussed from the perspective of the area of knowledge of the inputs (DOIs).

Returning to Bornmann et al. (2022), the database has an extensive record of IGO-type organizations. The results could be interpreted in two ways: While the database coverage may inflate such a finding, it is interesting to note the flow of research to IGOs, indicating an "internationalized" dynamics of the mention of research within policy documents. IGOs are relevant in addressing global societal challenges, such as climate change, pollution, and public health, since they can influence norms and practices in their respective policy arenas, aiding system transformation processes necessary to tackle these challenges (Nilsson, 2017).

This interpretation is also valid when we observe more closely the geographical origin of the sources of the policy documents. Excluding IGOs (i.e., only government and think tanks), most of them are from Europe (1,584 policy documents), followed by North America (935) and South America (158). Brazil figures with 77 policy documents, all from governmental sources.

Considering only governmental sources, the following table (Table 1) shows the government's most citing FAPESP funded research (considering more than 20 occurrences):

Table 1. Governments that most cite FAPESP research

Country	Nº
USA	276
UK	185
Canada	102
France	93
Brazil	77
Serbia	75
Cuba	74
Germany	69
Sweden	57
Finland	49
Netherlands	44
Norway	42
Australia	37
Indonesia	37
Spain	37
Belgium	27
New Zealand	25
Switzerland	23
Italy	22

Again, this demonstrates an internationalization of the use of FAPESP-funded research. However, at the same time, it may demonstrate the bias of the tool, which covers more policy documents from Europe and the United States (Szomszor & Adie, 2022). Also, the database has more coverage of documents written in English, even though it captures documents from several languages. In the case of our results, 3,006 policy documents were written in English, 258 in Spanish, 155 in French, 138 in Portuguese, and 65 in German.

So far, we have seen that FAPESP-funded research is cited in policy documents from several places worldwide and has an internationalized flow. This relates to the very dynamics of production and dissemination of global scientific knowledge, with databases that index papers in English, which produces and reproduces various inequalities in science. Despite these limitations, the results are interesting to open several discussions. First, IGOs use an essential research volume, given their role in international geopolitics. Second, governments also use research produced in other countries in policy documents. It remains to be explored how this research is being mentioned. It is important to note, from the profile of the organizations (and the documents, see below), that themes related to health and agriculture stand out, which reflects that FAPESP's research on the theme is finding political organizations that produce a policy on related themes.

To investigate this question further, we have some data on the type of policy document. Overton classifies the types listed in the table (Table 2) below.

Table 2. Types of policy document and source

Nº of Policy Documents	Type of policy Document and source
3972	All documents
2926	**Policy Document type: Publications**
1459	Government
906	IGO
510	Think Tank
51	Other
747	**Policy Document type: Clinical Guidance**
390	Government
13	Think Tank
344	Other (Guidelines in PubMed Central)
147	**Policy Document type: Working Paper**
131	**Policy Document type: Scholarly Articles**
15	**Policy Document type: Blog Posts**
6	**Policy Document type: Legal documents**

A large proportion of policy documents are classified as "publications". This classification is broad, and the next step is to investigate further the sub-types of documents within this category. A preliminary analysis of "publications" shows that they range from reports that discuss or synthesize information on particular issues, guidelines, discussion papers, and others. Considering the incipient literature exploring this research path, having a more in-depth view of these policy documents is crucial to analyzing the impact and use of policy research (Murat et al., 2023). As an initial effort, based on a preliminary analysis of the title of the documents, we looked for the occurrence of some keywords in these titles. The keywords "report" (327 occurrences in the title), "assessment" (202), "review" (185), "plan" (91), "study" (71), "evaluation" (67), and "analysis" (56) can be highlighted. Based on this initial evidence, we can take up Isett and Hicks's (2020) discussion of intermediate spaces between academia and politics. Such documents, as early evidence indicates, constitute efforts to report, inform or guide debates based on the synthesis of scientific literature on specific themes or policy areas.

Going forward, Clinical Guidance stands out. These documents serve as decision-making tools for healthcare providers and patients, guiding them toward appropriate healthcare services for specific clinical situations. They offer succinct directions on aspects such as ordering diagnostic or screening tests, delivering medical or surgical services, and determining patient hospital stay duration, among other specifics of clinical practice (Woolf et al., 1999). The impact of research in clinical guidance documents is significant for research funders since these guidelines combine critical and influential research to form evidence-based instructions; they represent a valuable measure of a research's impact. When research supported by funders gets referenced in national or international clinical guidelines, it strongly indicates the research's potential to shape policy and practice (Kryl et al., 2012).

Working papers and laws are also important for policy and deserve further investigation. A deficient number was identified in the latter, which we had already expected since legislative documents do not cite research (although the previous policymaking process tends to do so to some extent). Of the rest, it should be noticed that "scholarly articles" also figure as results since governmental sources produce them.

5. Discussion and conclusions

The current results represent a preliminary effort from research in progress. They highlight key questions and fulfill their role by pointing us to future research paths and deeper investigation.

First, it is necessary to look at the policy documents themselves. This becomes important, considering the reflections of Bornmann et al. (2022), Isett and Hicks (2020) and, on the place of these documents in policymaking processes, as Overton covers a wide range of sources, ranging from reports and working papers to legislation. Moreover, a thematic classification of these documents themselves, compared to the knowledge areas of the identified papers, are interesting points of future analysis. In this respect, the following questions can be asked: How can we (re)classify the policy documents to get a deeper insight into using FAPESP-funded research? Can the results found be compared to the data on funding? How can causal relationships be established in this sense?

Other points for further inquiry refer to the questions regarding the origin of the policy documents (e.g., why is there a significant predominance of governmental sources outside Brazil?), as well as to understanding in more depth the similarities found between papers from projects and scholarships. Furthermore, it would be possible to deepen the study of the papers, comparing them in their thematic aspect to the policy documents. Ultimately, deepening this research is expected to answer the following question: Is it possible to determine behavioral patterns for using scientific evidence in Brazil's policymaking?

This study explored the interplay between scientific research and public policy, focusing on the role of one of Brazil's leading funding agencies, FAPESP. Preliminary findings indicate the substantial presence of FAPESP-funded research in policy documents, demonstrating the considerable influence of research in policy design and its impact on various knowledge areas, but mainly on Biological Sciences and Health Sciences. Furthermore, the analysis demonstrated an internationalization of FAPESP-funded research, especially among government sources and IGOs.

Despite a potential bias toward newer research and policy documents, mainly those available in Open Access, the study lays a foundation for understanding the relationship between research and public policy. It is essential to notice that these results are limited to the FAPESP context, and it will be interesting as a further step of our investigation to compare FAPESP's results with other Brazilian funding agencies.

Moreover, considering the next steps of our research, an important step concerns the deepening of analyzes on the profile of FAPESP projects that receive more mentions in policy documents. Another point is to explore the use of keywords (or topics, as indicated by the Overton platform), allowing the identification of outstanding subjects and themes in the universe of mentions of papers funded by FAPESP. Moreover, developing categories for a more detailed analysis of the types and subtypes of policy documents that cite the scientific production associated with FAPESP projects will allow us to characterize the nature of their contribution.

Author contributions
Evandro Coggo Cristofoletti: conceptualization, investigation, formal analysis, methodology, writing original draft, writing review and editing
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