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**Title:**

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**Date:**

2025-11-01

**Citation:**

Haunschild, R., Williams, K. & Bornmann, L. (2025). The influence of public policy and administration expertise on policy: an empirical study. *Evidence and Policy*, 21 (4), pp.485-506. <https://doi.org/10.1332/17442648Y2024D000000042>.

**Persistent Link:**

<https://hdl.handle.net/11343/354963>

This is a post-peer-review, pre-copy edited version (not to be cited) of an article published in Evidence & Policy. The definitive publisher-authenticated version *Haunschild, R., Williams, K., & Bornmann, L. (2025). The influence of public policy and administration expertise on policy: an empirical study. Evidence & Policy (published online ahead of print 2025)* is available online at: <https://doi.org/10.1332/17442648Y2024D000000042>

## **The influence of public policy and administration expertise on policy: An empirical study**

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### **Abstract**

Academic expertise is a key pillar of governance processes around the world. A goal of policy and public sector actors is to draw on research to improve decision making, and correspondingly, a goal of public policy and public administration researchers is to provide relevant expertise. It is not clear, however, to what extent these goals are achieved. This study uses the Overton database to analyse the influence of public policy and administration research on policy documents (broadly defined as documents published by policy and public sector organizations). It considers which research is cited by policy documents and which organizations cite research more than others to justify their decisions. The findings show that measuring the influence of academic expertise is not straightforward conceptually or methodologically. However, they emphasise the role of different organization types for achieving a greater correspondence between research and policy. Specifically, our study shows that think tanks use public policy and administration research more often than government organizations when justifying decisions. The findings provide insight into the utility of new policy databases in illuminating how academic experts can influence the ideas and actions of policy and public sector actors.

**Keywords:** academic expertise; public policy and public administration research; societal impact; policy impact

# Background

Expertise is a key part of policy and public sector processes. It comes from a range of sources, including individual academics, advisory bodies and expert bureaucracies, and is expressed in many forms, including published journal articles, policy briefs, and impact assessments. Individual experts are appointed to national roles of Chief Scientist or Chief Medical Advisor while academic associations such as the Association for Public Policy Analysis and Management and the American Society for Public Administration aim to improve public policy and management on a range of pressing issues. Accordingly, there is now a substantial literature that seeks to understand the influence of academic expertise on policy (for simplicity, we will use the word policy to mean principles of action in the government or public sector). Much of this work has focused on the dual logics of science and politics and the various ways these complement or contradict each other (Jasanoff 1990). In recent years, there has been lively academic debate about the extent to which academic experts enjoy an authoritative position in society, or whether their role has been undermined by political ideology or populism (Nichols, 2017). Yet, systematic empirical work on the extent to which decisions are based on academic expertise is lacking. This is partly due to conceptual challenges around ‘influence’ that differ across research literatures, as well as methodological difficulties around its measurement. This study seeks to address both aspects by analysing the extent to which published research is cited in documents published by policy and public sector organizations (subsequently, ‘policy documents’). We focus on an area of scholarly work that seeks to analyze governance systems and distil insights for academics, policymakers and public servants: published research in the field of Public Policy and Administration (PPA). Using the Overton database, the study examines citations to scholarly work in the PPA field within policy documents. It contributes to a burgeoning strand of empirical research on expert influence within PPA, as well as to a growing number of citation-based studies of documents published by policy and public sector organizations.

## **Understanding the influence of PPA research**

Attempts to conceptualize the influence of academic expertise on governance processes have been fragmented (Christensen, 2021). The knowledge utilisation literature, from the field of public policy, has centred on the use of information or research in policymaking. This includes evidence-based policymaking (Head, 2016), which aims to understand how evidence is taken up in policy design, as well as the strategic and symbolic use of evidence to gain political legitimacy (Boswell 2009). The field of political science, by contrast, tends to focus on the overarching ideas that arise from academic research and how they shape public policies and public institutions (Hall, 1989). Other fields, including science and technology studies and sociology, have focused on how individuals or groups of academic experts provide meaningful knowledge to relevant decision-makers, for example, considering the role of professions (Abbott, 1988), networks (Haas, 1992), or knowledge brokers (Sverrisson, 2001). Much work has illuminated the forms of expertise provided by different actors (Fischer, 1993; Schudson, 2006) and the specific types of advice relied upon by political, public sector, and policy actors (Craft & Howlett, 2013). As a whole, the literature highlights the multi-directional, relational process between research and real-world decisions. It increasingly takes into account many different configurations of actors, stakeholders, and organization types, often vying for legitimacy and credibility through the production or use of academic expertise.

In this paper, we follow several other authors in examining two wide-ranging traditions - public policy and public administration - as a broad field (Dunlop, Ongaro, & Baker, 2020; Romme & Meijer, 2020; van Buuren, Lewis, Guy Peters, & Voorberg, 2020). While “putting boundaries around PPA is notoriously difficult” (Dunlop, et al., 2020, p. 367), Romme and Meijer (2020, p. 2) describe the field as focusing “on describing and explaining how existing governance systems operate”. As such, the field of PPA encompasses a range of orientations and topics including government, public policy, public management, public administration, and political science. While we consider them together here, the two research traditions have historically diverged in topics and approaches.

Public policy scholarship has tended to focus on the central institutions and actors involved in policymaking, and their participation in implementation, evaluation, and decision-making processes

(Knill & Tosun, 2020). One major focus is investigating all aspects of the interface between knowledge and policymaking (Weiss, 1979), including how policy problems are defined, how potential solutions are generated, and the processes through which decisions are made and policies are implemented. Recent work deals with emerging concerns such as the influence of social media (Zhao & Zhu, 2023) and increasing partisanship and populism (Facchini & Melki, 2023) on the policy sector. Public administration, by contrast, has been concerned with the traditions, institutions, and legal forms of governance systems, which increasingly include a range of government and non-government actors (Lindquist, Hildreth, & Miller, 2021). The focus tends to be on distilling diverse approaches for designing and delivering public services, as well as improving understanding of key elements of budgeting, performance management, and accountability. Recently, attention has been directed to changing public sector values, from efficiency and effectiveness towards equity and diversity, as well as the influence of technological developments (McDonald III, Hall, O'Flynn, & van Thiel, 2022).

One area in which the two traditions have historically differed is the extent to which scholarship explicitly seeks to influence governance systems in practice. Public policy scholarship has largely focused on improving understandings of policymaking processes (Knill & Tosun, 2020), while public administration research aims to be “effective, applicable, useful” (Massey, 2019, p. 3). However, there is considerable overlap between the areas of focus, the goals and the influence of scholarship. For example, Harold Lasswell’s seminal work on the seven stages of policy decision-making has not only shaped the understandings of generations of academics, but also generations of public servants (Lasswell, 1956; Ronit & Porter, 2015). Taken together, the field of PPA is oriented towards improving academic understandings of policymaking and public administration as well as supplying decision makers with credible policy- and public sector-relevant knowledge about societal problems (Fischer, Miller, & Sidney, 2006).

Publishing within PPA can be split into general policy and public administration journals, which together are the focus of this article, as well as multiple multidisciplinary journals on PPA subjects like health, law, and climate change (Nelson, 1998). While the goals of individual scholars are undoubtedly varied, insight into the overarching aims of the PPA field is provided by professional associations and

journals. In the tradition of public administration, one leading association, the International Research Society for Public Management, aims to facilitate “the creation and dissemination of new knowledge and understanding across [the international research] community and into policy and practice” (IRSPM 2023). Along the same lines, *Public Administration Review*, the official publication of the American Society for Public Administration, seeks to “identify and analyse current trends, provide a factual basis for decision making, stimulate discussion, and make the leading literature in the field available in an easily accessible format” in order to serve “academics, practitioners, and students” (Public Administration Review, 2023). Many public policy journals and associations also share this aim. For example, the International Public Policy Association’s constitution includes a goal of “promot[ing] research on Public Policy and its use by policymaking organizations”. The journal *Canadian Public Policy* is “directed at a wide readership including decision makers and advisers in business organizations and governments, and policy researchers” (Canadian Public Policy, 2023). Similarly, the journal *Policy Studies* seeks to “identify ‘what works’ in improving the formation and delivery of policy through rigorous research” (Policy Studies, 2024). Thus, experts in the field seek to go beyond academic impact to have influence in the policy and public management sphere. Yet, the influence of PPA scholars has received little systematic attention. There is thus a specific question of whether and how this form of academic expertise itself makes it into policy and public sector decisions.

This paper is concerned with the influence of academic experts in the area of PPA. Drawing on the work of Christensen (2021), we make several assumptions. The first is that academic experts are able to develop and advance analyses and/or preferences largely autonomously, while existing within a broader milieu where multiple actors seek influence and where various pressures seek to shape or curb expert contributions. In our case, we examine experts with sufficient autonomy to publish in academic journals according to the conventions of the PPA field. The second is that academic experts have specialised knowledge and professional training provided by universities and academic research institutes. In our case, they have the knowledge, resources and motivation to participate in the journal publishing processes valued by the academic system. Taken together, while authors may hold positions on political or governance matters or may interact directly with policy and public sector actors in other

contexts, we examine their expertise as constrained by the standards of the academic field (such as quality, originality, rigor) and processes of peer review. The third is that the end result of academic expert influence is a shift in the content of some government or public sector policy, which can include symbolic or political use of knowledge in addition to technical or instrumental uses. Here, we take documents produced by policy or public sector organizations as “‘carriers’ of policies ... [that] provide a channel through which policy science researchers can study the main contents of policies, policymaking processes, and policy instruments” (Yang, Huang, & Su, 2020). We examine instances where scholarly work has been referenced within these documents as a proxy for expert influence.

### **Operationalising the influence of academic expertise**

The difficulties of analysing the influence of academic expertise in part relate to the complexity of the networks of institutions and individuals involved in the governance system, and the diversity of rules, norms, and practices at play (Rhodes & Marsh, 1992). Actors within these networks are engaged in a range of activities that do not conform to a linear or predictable cycle (Howlett & Giest, 2015), which makes identifying where academic expertise has intervened in the decision making process difficult. Shifts in government or public sector policy are typically due to multiple causes and brought about by a range of actors, including those who might identify as experts (e.g., academics, researchers, civil servants), those who might take a brokerage or mediation role (e.g., think tanks, policy entrepreneurs) and an array of other interested parties. Isolating how academic research shapes policies or influences decisions within this complex environment is not straightforward.

Much of the available work in this area relies on interview and survey data. For example, a survey by Amara, Ouimet, and Landry (2004) found differences in the use of academic evidence by government respondents. The study drew on Weiss (1980) three categories of evidence use: ‘instrumental’, which is a direct link from evidence to policy; ‘conceptual’, which shapes policy thinking; and ‘symbolic’, where evidence is marshalled to advance a political argument. For research arising from universities, respondents described it as at least moderately important for instrumental (40.4%), conceptual (59.5%), and symbolic (51.8%) purposes. Other surveys by Head, Ferguson, Cherney, and Boreham (2014) and Ritter (2009) have found that academic literature directly was among

the least common source of evidence used by policymakers, who preferred the knowledge of colleagues or direct contact with experts. This type of survey data provides valuable insights into general thinking and attitudes to use of academic research but can involve recall bias and does not illuminate the actual use of evidence.

Other approaches begin on the supply side, attempting to measure the influence of research using by tracking inputs, activities, outputs, outcomes, and impacts (Collado, Gerlach, Ticse, & Hempstead, 2017). Yet, there are methodological challenges around attributing specific policies to particular research outputs or programs (Carden, 2004). These approaches often rely on imperfect indicators, such as media mentions, page views or downloads, which can be difficult to organize and interpret in a meaningful way. Others deal with the influence of experts on policy systems more generally (Boswell & Smith, 2017; Christensen, Holst, & Molander, 2022; Williams, Berman, & Michalska, 2023), which offer rich insights into impactful expert activity but can be hard to draw specifics from.

The use of citations to determine influence within the science system has been central for many years. However, their use within the policy and public sector has suffered from a lack of good data. Recent empirical work in this area has focused on determining the rate of citations to journal articles in policy-relevant documents. For example, Bornmann, Haunschild, and Marx (2016) and Haunschild and Bornmann (2017) found very low rates of citations in policy related documents, with only 0.5% of all journal articles and 2% of climate change related articles cited. The authors suggest that while this could reflect that much of the scientific literature is irrelevant to policy, the results could also be due to citation practices that differ from those within the science system or limited coverage by the data provider Altmetric (Haunschild & Bornmann, 2017).

Other empirical studies have sought to examine the influence of academic research through analysis of the proportion of academic references in a corpus of policy documents. In their analysis of over 4500 references drawn from 80 publications (including references to 1,836 articles from journals) produced by eight Australian government departments, Vilkins and Grant (2017) found that the most common evidence source were journal articles, federal government reports, and Australian business information.

The authors concluded that evidence use reported in surveys differed from actual cited evidence in government policy documents. Christensen and Hesstvedt (2024) analyzed the influence of expert group reports in government white papers and later advisory reports in Norway. They found that the actors involved in the expert groups matter; those produced with a greater number of politicians are more likely to be cited by white papers and subsequent advisory reports. By contrast, groups with a greater number of academics are more likely to be cited by advisory reports but not white papers. Similarly, Pattyn, Gouglas, and Leeuwe (2021) conducted a bibliographic analysis of ex-ante policy appraisals on Brexit in the United Kingdom and the European Union. They found that authors tend to cite sources that correspond to their own professional groups. Academics cited a greater number of academic sources, public servants cited a greater number of government sources and think tank researchers cited a greater number of sources from think tanks. Together, these studies demonstrate that academic expertise can have a meaningful influence on policy, but that the professional milieu matters to how important this source is compared to others. These studies take citations in policy documents to be an objective measure of influence, albeit an indirect one (Christensen, 2021)).

This paper seeks to contribute to a growing strand of empirical research on expert influence within the field of PPA and to a growing number of citation-based studies of this issue. In this study, we focus on the question of how PPA research and the policy and public sector sphere are connected. Although reliable data have historically been hard to find, the introduction of the Overton database in 2019 (Szomszor & Adie, 2022) allows for exploratory analysis of documents by policy and public sector organizations that cite PPA research. We consider the influence of PPA research over time, across academic journals, and across policy sectors and sources. The analysis will shed light on how PPA research has influenced policy and public sector organizations directly as well as those in an intermediary role between PPA research and decision makers.

# Methods

## Dataset

We used the list of 49 general PPA journals categorised under the heading of ‘Public Administration’ and indexed in the Web of Science (WoS) Journal Citation Reports (Clarivate). These were downloaded from <https://mjl.clarivate.com/> on October 01, 2022. The data are from a bibliometric in-house database. We restricted the dataset to the publication years 1980-2019 (earlier documents are only fragmentarily included in the in-house database). Since most publications belong to one of the document types article, book review, editorial or review, we restricted our analysis to these four document types. Furthermore, we restricted the dataset to the journals that published at least 50% of the publications with a DOI among these four document types within the time period 1980-2019. This procedure removed six journals from our dataset (*Amme Idaresi Dergisi*, *Civil Szemle*, *Reforma y Democracia*, *Gestión y Política Pública*, *Transylvanian Review of Administrative Sciences* and *Journal of Homeland Security and Emergency Management*). We also removed two other journals (*Climate Policy* and *Environment and Planning C – Politics and Space*) that have a key focus on environmental studies (and are classified in the WoS Subject Category Environmental Studies). We expected that these two journals would distort our dataset towards the climate policy field, which has more specific goals than PPA as a whole. We kept the journal *Science and Public Policy* although it is assigned to Environmental Studies because it is also assigned to the WoS Subject Category Management, given management is a key area of overlap for public management research. This left us with a list of 41 journals that are shown in Table 1. Some DOIs (n=459) occurred multiple times. The corresponding papers (n=1,352) were removed from our dataset.

Table 1. PPA journals that were included in our study ordered descending by the number of papers with DOI

Journal	Number of papers with DOI
<i>Public Administration Review</i>	3,926
<i>Journal of Social Policy</i>	2,872
<i>Canadian Public Policy</i>	2,480
<i>Public Administration</i>	1,974
<i>Journal of Policy Analysis and Management</i>	1,962
<i>Australian Journal of Public Administration</i>	1,813
<i>Policy Studies Journal</i>	1,670
<i>Social Policy and Administration</i>	1,659
<i>Local Government Studies</i>	1,648
<i>Public Money and Management</i>	1,643
<i>Public Administration and Development</i>	1,632
<i>Journal of European Public Policy</i>	1,564
<i>Administration and Society</i>	1,343
<i>Public Personnel Management</i>	1,332
<i>Canadian Public Administration</i>	1,220
<i>Policy and Politics</i>	1,168
<i>International Review of Administrative Sciences</i>	1,074
<i>Contemporary Economic Policy</i>	1,040
<i>Governance</i>	958
<i>The American Review of Public Administration</i>	920
<i>Science and Public Policy</i>	901
<i>Public Management Review</i>	875
<i>Policy Sciences</i>	832
<i>Journal of Public Administration Research and Theory</i>	817
<i>Journal of European Social Policy</i>	808
<i>Review of Policy Research</i>	592
<i>Journal of Accounting and Public Policy</i>	547
<i>Policy and Society</i>	453
<i>Lex Localis</i>	420
<i>Journal of Comparative Policy Analysis – Research and Practice</i>	414
<i>Policy Studies</i>	410

<i>Regulation and Governance</i>	356
<i>Public Performance and Management Review</i>	349
<i>Nonprofit Management and Leadership</i>	339
<i>International Public Management Journal</i>	335
<i>Review of Public Personnel Administration</i>	285
<i>Human Service Organizations Management, Leadership and Governance</i>	237
<i>Journal of Public Policy</i>	201
<i>Journal of Chinese Governance</i>	120
<i>Public Policy and Administration</i>	114
<i>Critical Policy Studies</i>	110

Table 2 shows the distribution of the WoS PPA publications across the document types. Overall, the relative frequency of document types is similar to the total WoS database. The only exception are book reviews with a significantly higher percentage among PPA publications than among the total WoS.

Table 2. Document types of WoS PPA publications that were included in our study ordered descending by the number of papers with DOI

Document type	Number of papers with DOI	Percentage of papers	Percentage of papers in WoS
Article	32,624	75.15	82.18
Book review	6,899	15.89	8.03
Editorial	3,193	7.35	5.81
Review	697	1.61	3.99

We used a snapshot of the Overton database (Szomszor & Adie, 2022) from 19 January 2023 to obtain information about which policy sources cited which selected PPA journals. This snapshot has been imported into a local PostgreSQL database. The Overton snapshot contains 6,448,444 unique policy documents from 1,669 unique policy sources. The policy sources are assigned to broad sectors: think tanks (892 policy sources), governmental organizations (694 policy sources), intergovernmental organizations (IGOs, 82 policy sources), and others (three policy sources). We rely on Overton's

classifications to ensure that we are not arbitrarily changing sector assignment, even where the classification may not seem intuitive (e.g., EU policy sources are classified by Overton as government sources rather than international organizations). Two policy sources are assigned to two different sectors: The Climate Change Committee (<https://www.theccc.org.uk>) and the Knesset Research and Information Center (<https://main.knesset.gov.il/en/activity/pages/mmmabout.aspx>) are assigned to both the sectors government and think tank. Thus, they are duplicated in our analyses regarding the policy sector. To find scholarly references, Overton scans for particular features in the text and then searches the CrossRef database for academic works and the Overton database itself for policy documents. The database is limited to scholarly works indexed by CrossRef, those written in English, and papers comprising a series. More information on referencing can be found at the Overton homepage <https://help.overton.io/article/how-are-scholarly-references-matched-in-policy-documents/>. In total, 13,876,636 citation links connect 796,829 policy documents to 4,599,875 scientific publications via their DOI. Both databases (WoS and Overton) were linked via the DOIs of the scientific publications. In total, 43,413 papers with DOI were published in one of the 41 journals in Table 1. Of those 43,413 papers, 12,829 were cited in 28,662 policy documents.

## **Methodology**

We used PostgreSQL and R (R Core Team, 2019) commands including the R package ‘tidyverse’ (Wickham, 2017), ‘ggplot2’ (Wickham, 2016), ‘ggthemes’ (Arnold, 2024), ‘htmlwidgets’ (Vaidyanathan et al., 2023), ‘plotly’ (Sievert, 2020), and ‘scales’ (Wickham, Pedersen, & Seidel, 2023) for data analysis.

## **Findings**

In the following, we investigate the influence of academic expertise in the field of PPA on the policy and public sector sphere. We examine three aspects of the relationship between PPA publications

and the policy documents that cite them: (i) influence over time, (ii) influence across academic journals, and (iii) influence across policy sectors and sources.

### **Influence of PPA research over time**

In terms of the number of published journal articles, the field of PPA has grown substantially in the last two decades. However, not all published research in the field comes to influence policy. Figure 1 shows the distribution of the number of PPA publications per year. Figure 2 shows the proportion of WoS PPA publications cited by policy documents and the number of citing policy documents per year. Overall, the proportion of PPA publications cited at least once by a policy document was relatively constant in the 1980s. In the 1990s, this proportion increased and reached a maximum of about 0.45 in 2005. It has been decreasing since then. One explanation could be that this reflects the increasing number of PPA publications in this period. This may imply an increasing range of aims in the field, with some research seeking to contribute to academic knowledge and other research seeking to translate scholarly work into actionable insights. An alternative explanation may be that it takes substantial time for new scientific findings make it into policy decisions. The number of policy documents that cited PPA publications was very low until 1997 but has increased seemingly exponentially since then. Taken together, these results reinforce the well-established notion of a meaningful separation between the academic and governance systems, which may reflect a lack of interest or a lack of opportunity – on both sides - in moving PPA research into practice.

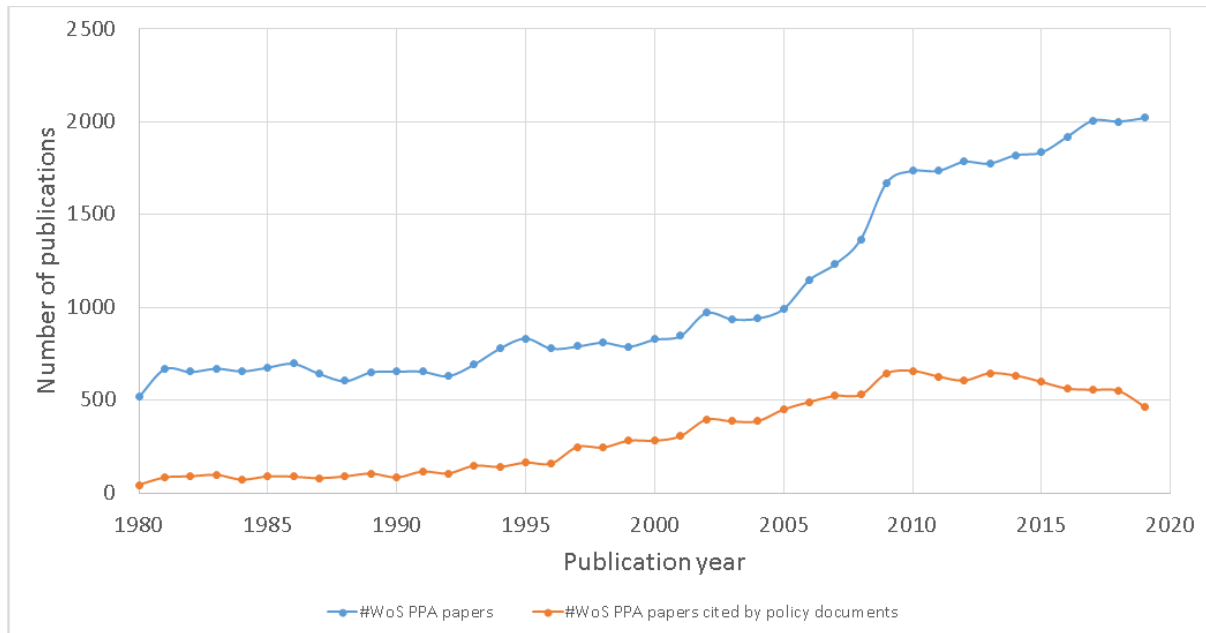


Figure 1: Number of PPA publications per year

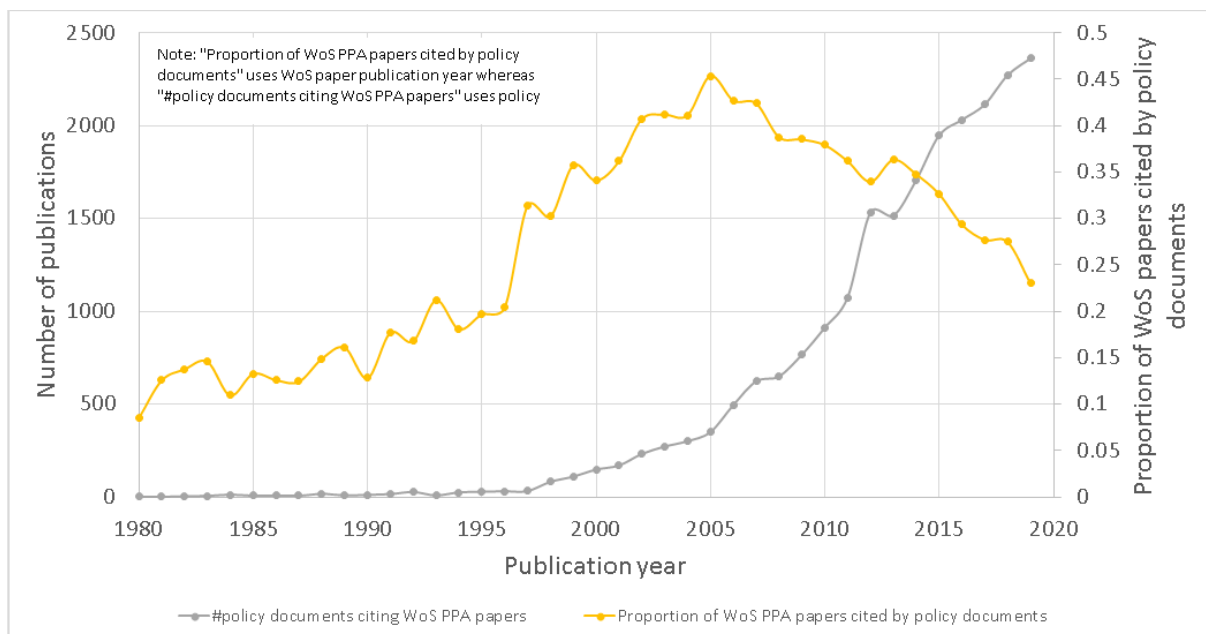


Figure 2: Proportion of WoS PPA publications cited by policy documents and number of citing policy documents per year

### Influence across academic journals

Given not all PPA research influences policy, we examine whether different journals are more or less likely to be influential. We consider whether policy documents primarily cite highly cited PPA publications. Given potentially increased visibility of high impact journals, we expect a correlation

between policy document citations and Journal Impact Factor (JIF). Figure 3 shows a scatter plot between these two quantities. Because JIF values change over time, we used the average values between 1980 and 2019 where available. Some leading journals perform well on citations in policy documents. Two of these, *Journal of Policy Analysis and Management* and *Public Administration Review*, are the flagship journals of US associations with clear mandates to reach practitioners and academics, while the *Journal of European Public Policy* is an authority on the European project. Others with strong academic profiles and less emphasis on practitioners, such as *Policy and Society* and *Journal of Public Administration Research and Theory*, perform less well on policy document citations. Overall, the Spearman rank correlation between journal reputation and policy document citations is 0.36. Since the Pearson correlation is slightly higher than the Spearman correlation with 0.38, it seems that some rank changes occur with rather small differences in JIF and/or number of policy document citations per journal papers. The medium correlation between journal reputation and policy document citations might be due to a skewed distribution of the PPA publications across JIFs. This might also be related to a less systematic method of accessing PPA research by policy actors, for example, instead of working from a favoured set of top journals, those compiling policy reports may rather be strategically accessing topical information as needed from available academic sources.

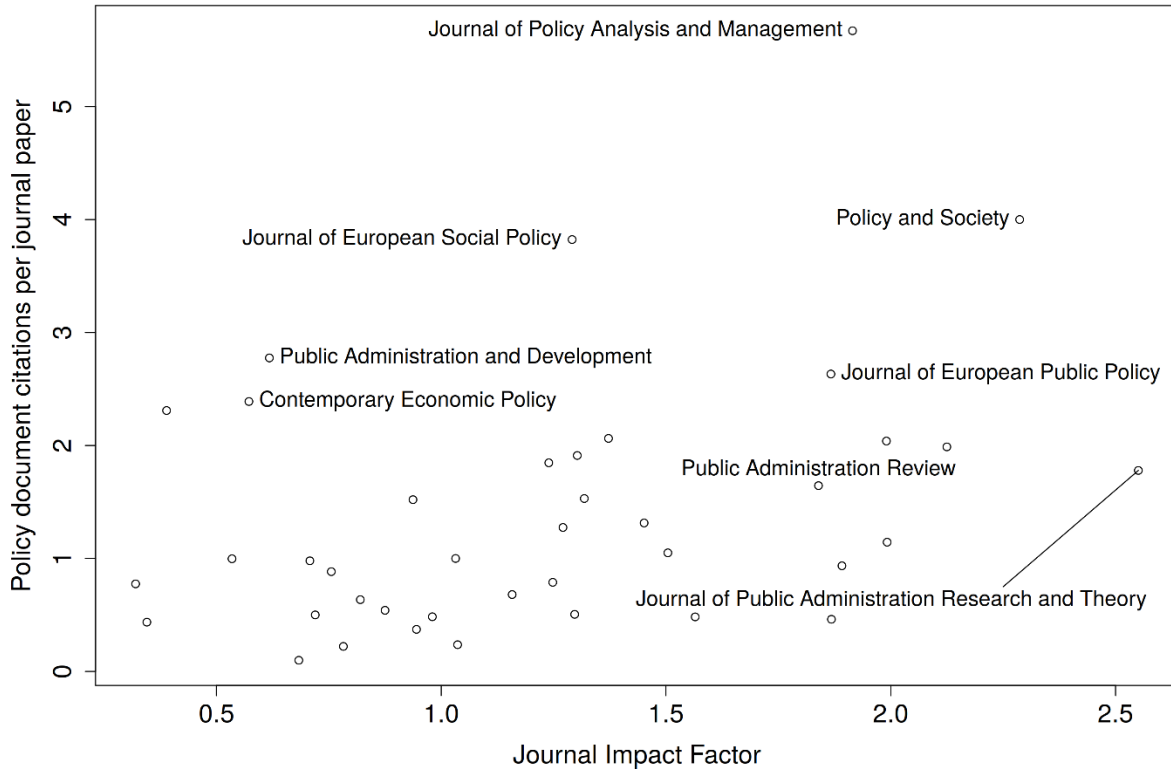


Figure 3: Number of policy document citations per journal paper and Journal Impact Factor (JIF) in a scatter plot on the journal basis. An interactive version is available at the following URL:

[https://ivs.fkf.mpg.de/public\\_policy/JIF\\_vs\\_pcit\\_np.html](https://ivs.fkf.mpg.de/public_policy/JIF_vs_pcit_np.html)

Figure 4 shows the distribution of the number and percentages of PPA publications that were cited by a policy document at least once across JIF quartiles. The distribution is only slightly skewed. We have no JIF available for about 15% (n=2,287) of the PPA publications. Figure 4 shows that PPA publications cited by policy documents are published most frequently in journals that belong to the top-JIF quartile. This suggests that there is something about the publications from leading journals that make them appealing to those outside the academic sphere (e.g., clarity of writing, timeliness or significance of topic). An alternative explanation is that there is broad top tier of available academic sources that can be used to establish credibility, which may be via journal name recognition or possibly gleaned from the number of recorded citations visible in a google scholar search.

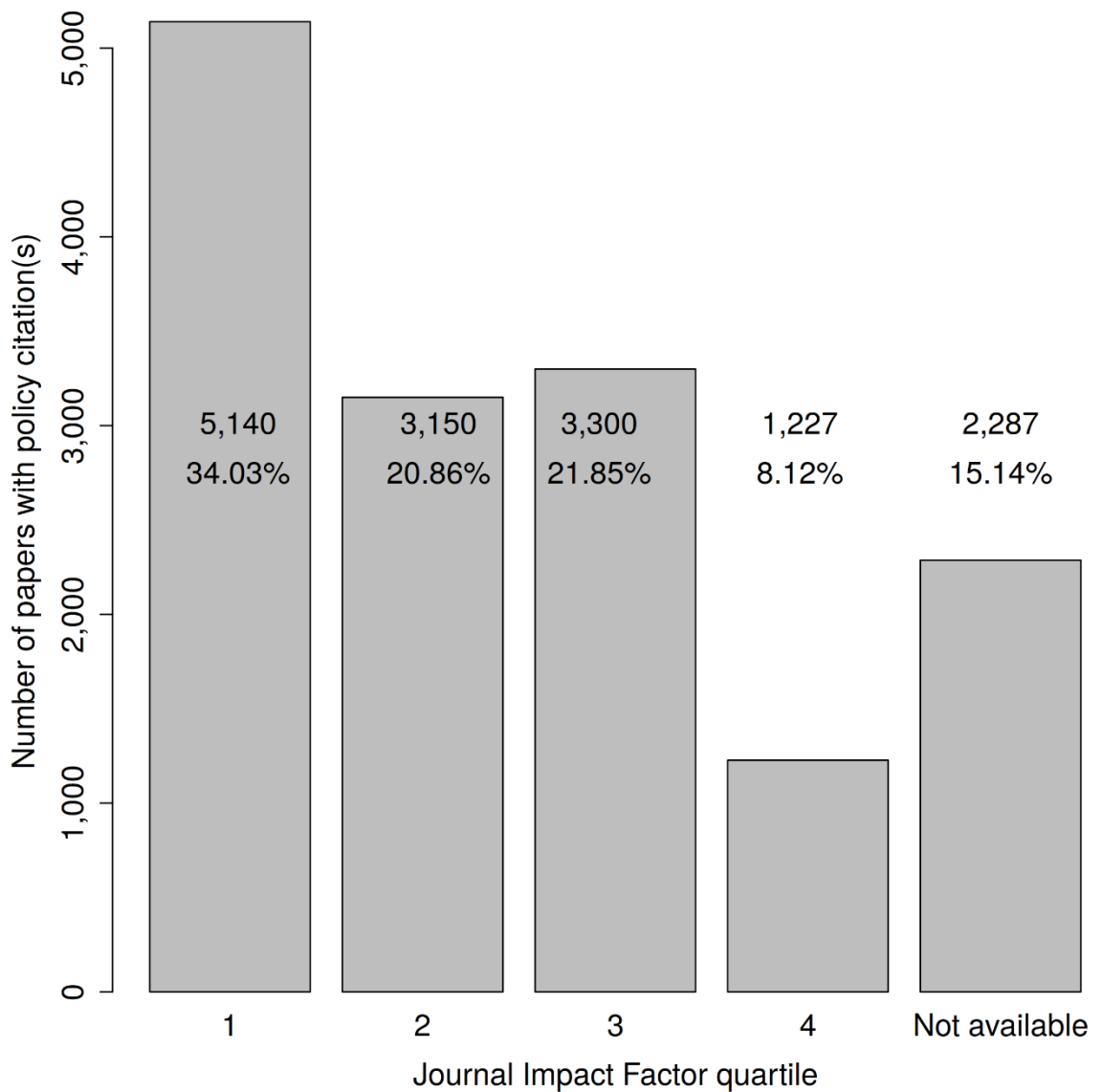


Figure 4: Number and percentages of PPA publications with at least one policy citation per JIF quartile

### **Influence across policy sectors and sources**

The analysis also illuminates whether some policy sectors are more likely to engage with PPA research. Figure 5 shows the percentage of policy documents per policy sector for all policy documents in the Overton database in the upper panel and for the policy documents that cited PPA publications in the lower panel. The proportion of policy documents that cited a PPA publication belonging to the government sector is much lower than for the full Overton database, although it might be expected that PPA publications should be of special interest for the government sector. IGOs and think tanks are much

more frequently the sources of policy papers that cited a PPA publication in comparison to the full Overton database. Many countries have freedom of information laws (e.g., are required to disclose information on policymaking to citizens), which also might explain why the vast majority of policy documents originate from the governmental sector. Many governmental policy documents seem to be published to fulfil the freedom of information laws but do not seem to be relevant for PPA research.

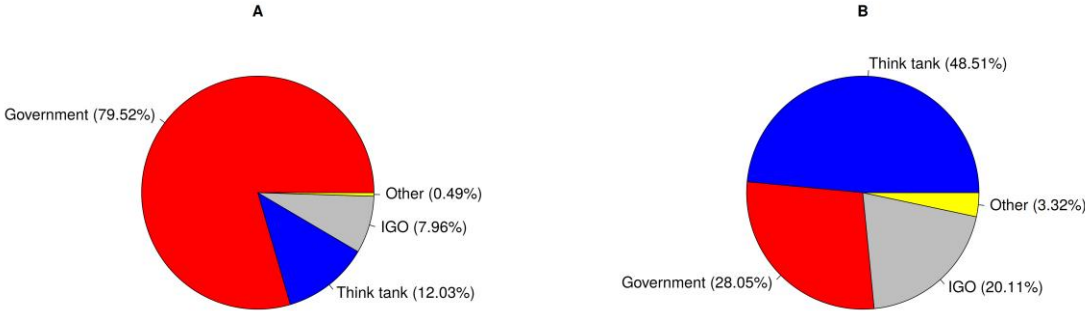


Figure 5: Percentage of all policy documents per sector (A) and percentage of policy documents citing WoS PPA papers per sector (B)

Figure 6 shows a scatter plot with the percentage of policy documents that cited PPA publications against the number of all policy documents in the Overton database for those policy sources with at least ten policy documents. The individual points are coloured by their policy sector. Amongst the organizations with high proportions of policy documents citing PPA papers, there are a variety of research areas, political orientations and proximities to policymaking. Some organizations such as the Council of Canadian Academies (<https://cca-reports.ca/>), the Institute for Research on Public Policy (<https://irpp.org/>), and MySociety (<https://www.mysociety.org/>) bring together expert research to inform public understanding and decision making on a wide range of issues.

Some organizations are university-based multi-disciplinary research centres, such as the Centre for Analysis of Social Exclusion (<https://sticerd.lse.ac.uk/case/>) and the UCL Institute for Innovation and Public Purpose (<https://www.ucl.ac.uk/bartlett/public-purpose/>). Other organizations have closer links to policy, such as the Policy Research Unit in Commissioning and the Healthcare System (PRUComm, <https://prucomm.ac.uk/>), which is funded by the UK's National Institute of Health Research (<https://www.nihr.ac.uk>) to provide evidence for the Department of Health and Social Care

(<https://www.gov.uk/government/organisations/department-of-health-and-social-care>), and the Intergovernmental Panel on Climate Change (IPCC, <https://www.ipcc.ch/>), which is the United Nations body for assessing the science related to climate change. Two of these, Science Advice for Policy by European Academies (SAPEA, <https://sapea.info/>) and the Swedish Institute for European Policy Studies (SIEPS <https://www.sieps.se/en>), are independent government agencies. SAPEA provides independent scientific advice to the European Commission to support decision-making, and SIEPS is an independent government agency for research and analysis of European policy affairs.

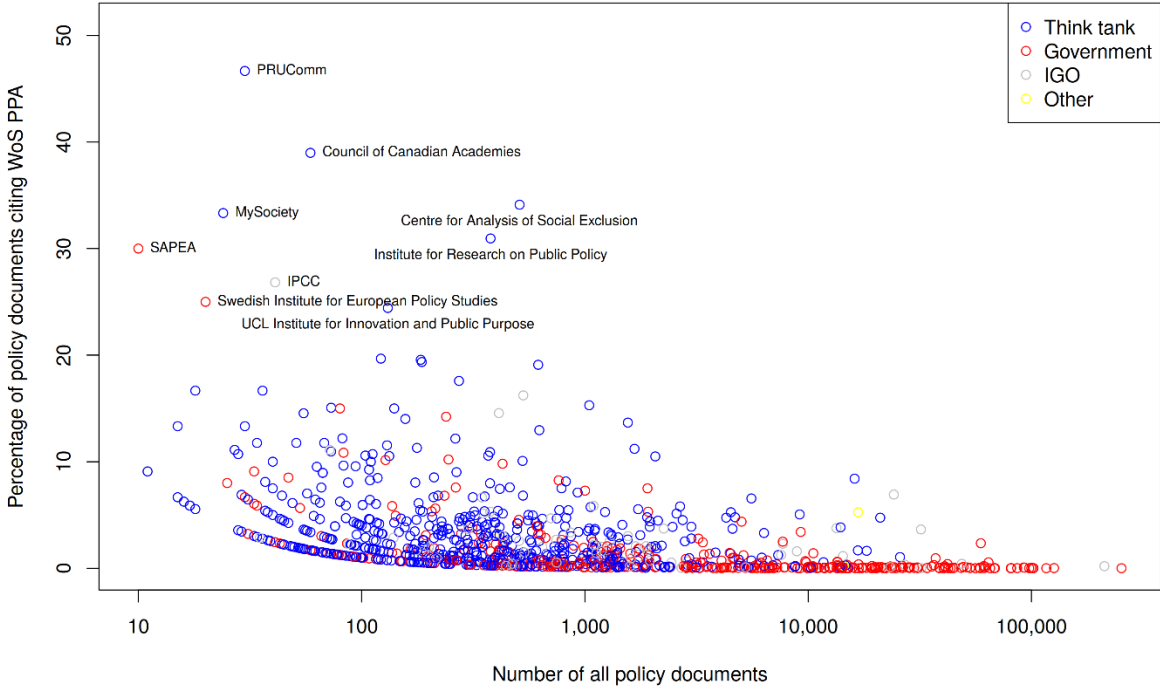


Figure 6: Percentage of policy documents that cited PPA publications versus number of all policy documents in the Overton database. An interactive version is available at the following URL:

[https://ivs.fkf.mpg.de/public\\_policy/policy\\_sources\\_per\\_sector\\_all\\_rel\\_pp\\_wos\\_interactive.html](https://ivs.fkf.mpg.de/public_policy/policy_sources_per_sector_all_rel_pp_wos_interactive.html)

Table 3 shows the most productive policy sources grouped by policy sector. National governments produce a large volume of policy documents, possibly due to freedom of information laws. Yet, national governments publish relatively few policy documents that cite PPA publications. However, there are some key exceptions, where there is both a large volume of publications and relatively high

citation rates to PPA research. These include large supranational agencies, such as the Publications Office of the European Union (<https://op.europa.eu/en/>), and IGOs including the Organisation for Economic Co-operation and Development (OECD, <https://www.oecd.org/>) and the World Bank (<https://www.worldbank.org/en/home>). These organizations tend to share the feature of being a very large policy source for multiple member states (e.g. the Publications Office of the European Union serves 27 member states and the OECD serves 38). Specific state-level organizations (e.g., each state of the USA has a separate policy office) tend to publish a large number of policy documents, but engagement with PPA research is relatively low. Think tanks generally produce fewer policy documents, but a higher proportion of these cite PPA research. For example, 8.4% of policy documents published by Germany’s Institute of Labor Economics (IZA, <https://www.iza.org/>) engage with PPA discourse. This might be explained by the fact that many think tanks are hybrid organizations, i.e., they publish policy documents and scientific publications. It is likely that think tanks cite their own scientific publications in their policy documents, but also that they include other citations to establish their credibility as sufficiently scholarly.

Table 3. Types of policy sources most productive in publishing policy documents that cited PPA publications in comparison with all policy documents (policy sectors categorised by Overton)

All policy documents		Policy documents that cited PPA papers	
Policy source	Number of policy documents	Policy source	Number of policy documents
Government			
Government of Japan	253,158	Government of Japan	253,158
State of Texas	126,302	State of Texas	126,302
State of Hawaii	116,530	State of Hawaii	116,530
State of Maryland	102,252	State of Maryland	102,252
EUR-Lex	101,597	EUR-Lex	101,597
French Government Ministries	99,898	French Government Ministries	99,898
State of Colorado	97,783	State of Colorado	97,783
State of California	93,269	State of California	93,269
State of Washington	92,403	State of Washington	92,403
City of New York	86,365	City of New York	86,365

IGO			
World Health Organization	212,326	World Health Organization	212,326
United Nations Educational, Scientific and Cultural Organization (UNESCO)	48,754	United Nations Educational, Scientific and Cultural Organization (UNESCO)	48,754
Organization for Security and Co-operation in Europe	32,143	Organization for Security and Co-operation in Europe	32,143
World Bank	31,991	World Bank	31,991
Food and Agriculture Organization of the United Nations	27,069	Food and Agriculture Organization of the United Nations	27,069
OECD	24,198	OECD	24,198
United Nations	23,361	United Nations	23,361
International Monetary Fund	14,318	International Monetary Fund	14,318
Inter-American Development Bank	13,398	Inter-American Development Bank	13,398
United Nations Economic Commission for Latin America and the Caribbean	8,900	United Nations Economic Commission for Latin America and the Caribbean	8,900
Think tank			
blogs.lse.ac.uk (UK)	25,794	blogs.lse.ac.uk (UK)	25,794
National Bureau of Economic Research (US)	21,033	National Bureau of Economic Research (US)	21,033
Brookings Institute (US)	18,283	Brookings Institute (US)	18,283
International Development Research Centre (Canada)	16,700	International Development Research Centre (Canada)	16,700
Institute of Labor Economics (IZA, Germany)	16,145	Institute of Labor Economics (IZA, Germany)	16,145
Center for Strategic and International Studies (US)	15,810	Center for Strategic and International Studies (US)	15,810
Acton Institute (US)	15,013	Acton Institute (US)	15,013
Heritage Foundation (US)	14,689	Heritage Foundation (US)	14,689
American Civil Liberties Union (US)	14,262	American Civil Liberties Union (US)	14,262
Foundation for Economic Education (US)	14,120	Foundation for Economic Education (US)	14,120
Others			
Analysis & Policy Observatory	16,733	Analysis & Policy Observatory	16,733
Guidelines in PubMed Central	14,496	Guidelines in PubMed Central	14,496
AI Regulation Special Collection	391	AI Regulation Special Collection	391

## Discussion and conclusions

This article investigates the influence of academic expertise in the field of PPA by analyzing citations to scholarly work in documents published by policy and public sector organizations via the large-scale Overton database. We examined several aspects of the connection between PPA research and policy, broadly conceived. Focusing on the connection over time reveals that while the number of PPA papers and the number of policy documents that cite them have increased in recent years, the proportion of PPA research in policy seems to have peaked in the mid-2000s. This potentially reflects the rapidly growing number of publications in the sphere or a lag between new evidence and its translation into policy. Focusing on the relationship between journal reputation and citations in policy documents suggests that those compiling policy reports may be searching by topic from a wide range of available academic sources, but that there is a broad category of top tier journals that are more likely to be drawn upon to establish credibility. Considering policy sectors and sources shows that governments and intergovernmental organizations produce a high number of policy documents but relatively infrequently cite papers from PPA research. By contrast, think tanks seem to produce fewer policy documents overall, but the documents are more closely related to PPA research.

The study suggests that while the academic field of PPA has rapidly expanded in recent decades, knowledge inscribed in journal articles does not automatically get picked up by the policy and public sector sphere. While reputable journals do seem to be more influential, there is only a weak relationship between influence within the academic field and outside of it. A key finding is that the field of PPA research appears less influential on decision makers and advisers in international organizations and governments than on policy researchers within think tanks. This is potentially due to the brokerage function of think tanks, which seek to actively move expert knowledge into the policy sphere (Abelson, 2009). This aligns with prior work that has shown that much of the work of translation from academic expertise to policy is done by ‘boundary organizations’ that provide policy advice, including think tanks,

non-governmental organizations (NGOs), universities, and the civil service (Medvetz, 2012b; Page, 2010).

However, our results show some exceptions to this pattern, suggesting that research does play a meaningful role for international organizations and governments. Indeed, some large supranational organizations, including the Publication Offices of the European Union, OECD, and World Bank, are very active in the PPA discourse. These findings align with the growing body of work that has accompanied the continuous growth in the number of organizations characterized as think tanks (Stone, 2007). Much work in this space holds that policymakers and actors depend on the expertise of these types of brokerage organizations to reduce uncertainty by bringing research and analysis to decision-makers. This highlights their role in the provision of high-quality information for a range of policy problems sought by diverse knowledge consumers (Martin, 2014). National governments in particular are much less likely to be the source of policy papers that cited a PPA publication in comparison to the full Overton database. This is reflected in the most productive government sector source of documents that cited PPA research being the inter-governmental Publications Office of the European Union by a large margin. This may point to a potential disconnect between national government decision making and PPA research, which is at odds with the goals of many PPA journals and associations. Alternatively, it may reflect complex methodological challenges around policy impact.

Using citations of scholarly work in policy documents has some general limitations. In particular, interpreting the influence of PPA research on the policy sector can only be undertaken based on an important caveat that policy sources capture two distinct types of documents: those that are authored by researchers to inform decision making and those that are authored by policymakers to inscribe policy decisions or legislation. The distinction between these types of documents explains some of the results here. For example, some organizations that seek to inform policy decisions, such as IPCC and PRUComm, will include many references to provide a robust evidence base. On the other hand, policy briefs or ministerial notes by governments or intergovernmental organizations may intentionally limit literature sources to improve accessibility or to conform to policy conventions. The analysis in this study, therefore to some extent highlights different policy document types that may be favoured by

certain organization types. Citations are only an indirect indicator of influence, which do not offer any insight into the content of either the research nor the citing document nor provide information on the strength of the relationship. Thus, citations alone cannot help distinguish between the genuine use of scholarly work in the formulation of policy and the use of research as ‘window dressing’ to lend legitimacy to policy solutions.

The study also has some more specific potential limitations that need to be considered. First, PPA research may not be completely covered in the WoS database. WoS is known to have a bias toward indexing publications in English. English publications might not be cited by policy documents for and from countries with another native language. Second, there may be questionable assignments by Clarivate of publications to document types (e.g., whether all documents classified as book reviews are really book reviews). For example, books might be mistaken with corresponding book reviews as they often have the same title. Third, although Overton defines policy documents as ‘documents written by or primarily for policymakers’, the process by which it selects and categorises policy sources is unclear. While the company does provide a list of sources for subscribers (<https://help.overton.io/article/what-sources-does-overton-track/>), there is no straightforward way to determine which types of document should qualify as policy documents, and which organizations should qualify as policy sources. This is illustrated in the lack of consistency between platforms that purport to cover policy documents. Murat, Noyons, and Costas (2023) reported that the overlap of policy sources (n=109) covered by Overton (n=1,476) and Altmetric (n=471) is small. Furthermore, Overton’s coverage is likely less for older years when fewer policy documents were available online. While these issues illustrate the conceptual difficulties around defining and delimiting ‘policy’ that makes up much of the PPA literature, the lack of precision obscures the true nature of the relevant content of PPA research as well as the nature of the policy document itself. Nonetheless, this analysis provides some indication that there are differences in what the sectors produce.

Our study highlights the dual challenges of creating and measuring the influence of academic expertise on governance processes. A key issue is that much of the detailed synthesis work in PPA research is not directly used in policymaking or public sector decision making. This means that academic

attempts to provide a solid evidence base through journal articles may not be taken up by decision makers as readily as more accessible formats, such as short briefings or presentations. It also produces particular challenges around measurement, whereby documents that inscribe actual policy decisions typically do not contain many citations, making policy influence difficult to capture. The findings here provide support for the idea that the PPA literature is further built upon and brokered by think tanks (and to a lesser extent, IGOs), who then help translate this knowledge into policy briefs, policy reports, briefing notes or ministerial expertise. It supports earlier work on the importance of these ‘boundary organizations’ (Medvetz, 2012a) in translating academic expertise to policy. The results indicate that PPA research may have different impact for different organizational types, which is complicated because final policy decisions made by government and public sector organizations typically do not contain any citations to academic work. Thus, it becomes increasingly challenging to measure impact the closer we get to meaningful policy decisions. This study therefore highlights the difficulties of developing good measures for the influence of expertise in policy given the complex rules, norms and practices at play across interconnected networks. It supports the general acknowledgment that establishing links between knowledge production and policy outcomes is difficult due to intricate intervening factors (Blank, 2003). However, it offers new insight into the utility of recent policy databases in illuminating the sway of these diverse organization types on the ideas and actions of policy actors.

## Research Ethics Statement

The authors of this paper have declared that research ethics approval was not required since the paper does not present or draw directly on data/findings from empirical research.

## Funding details

This work was supported by the Economic and Social Research Council under Grant ES/V004123/1.

## Contributor statement

RH and KW wrote the first and subsequent drafts of the manuscript, with comments from LB. LB, RH, and KW conceptualized the study. LB, RH, and KW designed the study. RH and KW conducted data analysis and interpretation, with contributions from LB.

## Conflict of interest statement

The Authors declare that there is no conflict of interest

## Supplemental data

Supplemental data can be found at the following URL: <https://doi.org/10.17617/3.FEHJZI>

## Acknowledgments

The bibliometric data used in this study are from a bibliometric in-house database of the Max Planck Society (MPG), developed and maintained in cooperation with the Max Planck Digital Library (MPDL, Munich), derived from the Science Citation Index Expanded (SCI-E), Social Sciences Citation Index (SSCI), and Arts and Humanities Citation Index (AHCI) prepared by Clarivate (Philadelphia, Pennsylvania, USA) via the German “Kompetenznetzwerk Bibliometrie” (see <https://bibliometrie.info/en/about-kb/>) funded by BMBF (grant 16WIK2101A). The policy document data used in this study are from an Overton snapshot provided by Euan Adie on 19 January 2023.

## References

- Abbott, A. (1988). *The system of professions: An essay on the division of expert labor*. London: University of Chicago Press.
- Abelson, D. E. (2009). *Do think tanks matter? Assessing the impact of public policy institutes introduction*. Kingston: Queen's School of Policy Studies.
- Amara, N., Ouimet, M., & Landry, R. (2004). New evidence on instrumental, conceptual, and symbolic utilization of university research in government agencies. *Science Communication*, 26(1), 75-106. doi: 10.1177/1075547004267491.
- Arnold, J. (2024). ggthemes: Extra themes, scales and geoms for 'ggplot2'. R package version 5.1.0. Retrieved 01 October 2024, from <https://CRAN.R-project.org/package=ggthemes>
- Blank, R. C. (2003). *From Thatcher to the third way: Think-tanks, intellectuals and the Blair-projekt*. Stuttgart: ibidem-Verlag.
- Bornmann, L., Haunschild, R., & Marx, W. (2016). Policy documents as sources for measuring societal impact: how often is climate change research mentioned in policy-related documents? *Scientometrics*, 109(3), 1477-1495. doi: 10.1007/s11192-016-2115-y.
- Boswell, C. (2009). *The political uses of expert knowledge*: Cambridge University Press.
- Boswell, C., & Smith, K. (2017). Rethinking policy 'impact': Four models of research-policy relations. *Palgrave Communications*, 3(1), 44. doi: 10.1057/s41599-017-0042-z.
- Canadian Public Policy. (2023). Canadian Public Policy. Retrieved March 10, 2023, from <https://www.utpjournals.press/loi/cpp>
- Carden, F. (2004). Issues in assessing the policy influence of research. *International Social Science Journal*, 56(179), 135-151. doi: 10.1111/j.0020-8701.2004.00480.x.
- Christensen, J. (2021). Expert knowledge and policymaking: A multi-disciplinary research agenda. *Policy & Politics*, 49(3), 455-471. doi: 10.1332/030557320x15898190680037.
- Christensen, J., & Hesstvedt, S. (2024). The influence of expert groups: A citation analysis. *Journal of European Public Policy*, 31(5), 1259-1294. doi: 10.1080/13501763.2023.2174168.
- Christensen, J., Holst, C., & Molander, A. (2022). Expertise in policy-making *Expertise, Policy-making and Democracy* (pp. 24-37). Oxfordshire: Routledge.
- Collado, M., Gerlach, L., Ticse, C., & Hempstead, K. (2017). Considerations for measuring the impact of policy-relevant research. *Foundation Review*, 9(4), 41-53. doi: 10.9707/1944-5660.1386.
- Craft, J., & Howlett, M. (2013). Policy capacity and the ability to adapt to climate change: Canadian and U.S. case studies. *Review of Policy Research*, 30(1), 1-18. doi: 10.1111/ropr.12000.
- Dunlop, C. A., Ongaro, E., & Baker, K. (2020). Researching COVID-19: A research agenda for public policy and administration scholars. *Public Policy and Administration*, 35(4), 365-383. doi: 10.1177/0952076720939631.
- Facchini, F., & Melki, M. (2023). Economic shocks and democratic consolidation: Historical evidence from party-level electoral volatility in France. *Electoral Studies*, 83, 102616. doi: 10.1016/j.electstud.2023.102616.
- Fischer, F. (1993). Policy discourse and the politics of Washington. In F. Fischer & J. Forester (Eds.), *The argumentative turn in policy analysis and planning* (pp. 21-42). Durham, NC: Duke University Press.
- Fischer, F., Miller, G., & Sidney, M. (2006). *Handbook of public policy analysis: Theory, politics, and methods*. Boca Raton, London, and New York: CRC Press.
- Haas, P. M. (1992). Introduction: Epistemic communities and international policy coordination. *International Organization*, 46(1), 1-35. doi: 10.1017/S0020818300001442.

- Hall, P. A. (1989). Introduction. In P. A. Hall (Ed.), *The political power of economic ideas* (pp. 1-26). Princeton: Princeton University Press.
- Haunschild, R., & Bornmann, L. (2017). How many scientific papers are mentioned in policy-related documents? An empirical investigation using Web of Science and Altmetric data. *Scientometrics*, *110*(3), 1209-1216. doi: 10.1007/s11192-016-2237-2.
- Head, B., Ferguson, M., Cherney, A., & Boreham, P. (2014). Are policy-makers interested in social research? Exploring the sources and uses of valued information among public servants in Australia. *Policy and Society*, *33*(2), 89-101. doi: 10.1016/j.polsoc.2014.04.004.
- Head, B. W. (2016). Toward more “evidence-informed” policy making? *Public Administration Review*, *76*(3), 472-484. doi: 10.1111/puar.12475.
- Howlett, M., & Giest, S. (2015). Policy Cycle. In J. D. Wright (Ed.), *International encyclopedia of the social & behavioral sciences (Second Edition)* (pp. 288-292). Oxford: Elsevier.
- IRSPM (2023). International Research Society for Public Management. Retrieved March 10, 2023, from <https://www.irspm.org/>
- Jasanoff, S. (1990). *The fifth branch. Science advisers as policymakers*. Cambridge, MA: Harvard University Press.
- Knill, C., & Tosun, J. (2020). *Public policy: A new introduction*. London: Bloomsbury Publishing.
- Lasswell, H. D. (1956). *The decision process : Seven categories of functional analysis*. College Park, Md.: Bureau of Governmental Research, College of Business and Public Administration, University of Maryland.
- Lindquist, E. A., Hildreth, W. B., & Miller, G. (2021). Introduction to the fourth handbook of public administration. In G. M. W. B. Hildreth, & J. Rabin (Ed.), *Handbook of public administration*. New York: Routledge.
- Martin, P. (2014). How do policy actors assess southern think tanks? Insight into factors affecting perceptions of performance in policy communities. Retrieved from [https://tti.idrc.ca/sites/default/files/How%20do%20policy%20actors%20assess%20Southern%20think%20tanks\\_PMartin\\_0.pdf](https://tti.idrc.ca/sites/default/files/How%20do%20policy%20actors%20assess%20Southern%20think%20tanks_PMartin_0.pdf). Accessed on 19 March 2024
- Massey, A. (2019). Chapter 1: After public administration scholarship *A Research Agenda for Public Administration*. Cheltenham, UK: Edward Elgar Publishing.
- McDonald III, B. D., Hall, J. L., O'Flynn, J., & van Thiel, S. (2022). The future of public administration research: An editor's perspective. *Public Administration*, *100*(1), 59-71. doi: <https://doi.org/10.1111/padm.12829>.
- Medvetz, T. (2012a). Murky power: “Think tanks” as boundary organizations. In D. Courpasson, D. Golsorkhi & J. J. Sallaz (Eds.), *Rethinking power in organizations, institutions, and markets* (Vol. 34, pp. 113-133). Leeds: Emerald Group Publishing Limited.
- Medvetz, T. (2012b). *Think tanks in America*. Chicago: University of Chicago Press.
- Murat, B., Noyons, E., & Costas, R. (2023). *Exploratory analysis of policy document sources in Altmetric.com and Overton*. Paper presented at the 27th International Conference on Science, Technology and Innovation Indicators (STI 2023). Leiden, The Netherlands.
- Nelson, B. J. (1998). Public policy and administration: An overview. In R. E. Goodin & H.-D. Klingemann (Eds.), *A new handbook of political science*. Oxford: Oxford University Press.
- Nichols, T. (2017). *The death of expertise: The campaign against established knowledge and why it matters*. Oxford: Oxford University Press.
- Page, E. C. (2010). Bureaucrats and expertise: Elucidating a problematic relationship in three tableaux and six jurisdictions. *Sociologie du Travail*, *52*(2), 255-273. doi: 10.1016/j.socotra.2010.03.021.

- Pattyn, V., Gouglas, A., & Leeuwe, J. (2021). The knowledge behind Brexit. A bibliographic analysis of ex-ante policy appraisals on Brexit in the United Kingdom and the European Union. *Journal of European Public Policy*, 28, 821-839. doi: 10.1080/13501763.2020.1772345.
- Policy Studies. (2024). Web page of the journal Policy Studies. Retrieved 24 September 2024, from <https://www.tandfonline.com/journals/cpos20>
- Public Administration Review. (2023). Public Administration Review - Wiley Online Library. Retrieved March 10, 2023, from <https://onlinelibrary.wiley.com/journal/15406210>
- R Core Team. (2019). R: A language and environment for statistical computing (Version 3.6.0). Vienna, Austria: R Foundation for Statistical Computing. Retrieved from <https://www.r-project.org/> (on 02 October 2024)
- Rhodes, R. A. W., & Marsh, D. (1992). New directions in the study of policy networks. *European Journal of Political Research*, 21(1-2), 181-205. doi: 10.1111/j.1475-6765.1992.tb00294.x.
- Ritter, A. (2009). How do drug policy makers access research evidence? *International Journal of Drug Policy*, 20(1), 70-75. doi: 10.1016/j.drugpo.2007.11.017.
- Romme, A. G. L., & Meijer, A. (2020). Applying design science in public policy and administration research. *Policy & Politics*, 48(1), 149-165. doi: 10.1332/030557319x15613699981234.
- Ronit, K., & Porter, T. (2015). Harold D. Lasswell, the decision process: Seven categories of functional analysis. In M. Lodge, E. C. Page & S. J. Balla (Eds.), *The Oxford handbook of classics in public policy and administration*. Oxford: Oxford University Press.
- Schudson, M. (2006). The science of fake news the trouble with experts - and why democracies need them. *Theory and Society*, 35(5), 491-506.
- Sievert, C. (2020). *Interactive web-based data visualization with R, plotly, and shiny*. Florida: Chapman and Hall/CRC.
- Stone, D. (2007). Recycling bins, garbage cans or think tanks? Three myths regarding policy analysis institutes. *Public Administration*, 85(2), 259-278. doi: 10.1111/j.1467-9299.2007.00649.x.
- Sverrisson, Á. (2001). Translation networks, knowledge brokers and novelty construction: Pragmatic environmentalism in Sweden. *Acta Sociologica*, 44(4), 313-327.
- Szomszor, M., & Adie, E. (2022). Overton: A bibliometric database of policy document citations. *Quantitative Science Studies*, 3(3), 624-650. doi: 10.1162/qss\_a\_00204.
- Vaidyanathan, R., Xie, Y., Allaire, J., Cheng, J., Sievert, C., & Russell, K. (2023). htmlwidgets: HTML widgets for R. R package version 1.6.4. Retrieved 01 October 2024, from <https://CRAN.R-project.org/package=htmlwidgets>
- van Buuren, A., Lewis, J. M., Guy Peters, B., & Voorberg, W. (2020). Improving public policy and administration: Exploring the potential of design. *Policy & Politics*, 48(1), 3-19. doi: 10.1332/030557319x15579230420063.
- Vilkins, S., & Grant, W. J. (2017). Types of evidence cited in Australian government publications. *Scientometrics*, 113(3), 1681-1695. doi: 10.1007/s11192-017-2544-2.
- Weiss, C. H. (1979). The many meanings of research utilization. *Public Administration Review*, 39(5), 426-431. doi: 10.2307/3109916.
- Weiss, C. H. (1980). Knowledge creep and decision accretion. *Knowledge*, 1(3), 381-404. doi: 10.1177/107554708000100303.
- Wickham, H. (2016). *Ggplot2: Elegant graphics for data analysis*. New York: Springer-Verlag.
- Wickham, H. (2017). Tidyverse: Easily install and load the 'Tidyverse'. R package version 1.2.1. Retrieved 22 June 2020, from <https://CRAN.R-project.org/package=tidyverse>
- Wickham, H., Pedersen, T., & Seidel, D. (2023). scales: Scale functions for visualization. R package version 1.3.0, from <https://CRAN.R-project.org/package=scales>

- Williams, K., Berman, G., & Michalska, S. (2023). Investigating hybridity in artificial intelligence research. *Big Data & Society*, 10(2), 20539517231180577. doi: 10.1177/20539517231180577.
- Yang, C., Huang, C., & Su, J. (2020). A bibliometrics-based research framework for exploring policy evolution: A case study of China's information technology policies. *Technological Forecasting and Social Change*, 157, 120116. doi: 10.1016/j.techfore.2020.120116.
- Zhao, J., & Zhu, X. (2023). Spreading expertise: Think tanks as digital advocates in the social media era. *Policy and Society*, 42(3), 359-377. doi: 10.1093/polsoc/puad025.