



# What altmetrics can tell us about the “real world” impacts of books

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### About Altmetric

**Altmetric** was founded in 2011 and has made it a mission to track and analyze the online activity around scholarly literature. It collates what people are saying about published research outputs in sources such as the mainstream media, policy documents, social networks, blogs, and other scholarly and non-scholarly forums to provide a more robust picture of the influence and reach of scholarly work. Altmetric works with some of the biggest publishers, funders, R&D organizations and institutions around the world to deliver this data in an accessible and reliable format. Altmetric is part of the Digital Science portfolio. Find out more at [www.altmetric.com](http://www.altmetric.com)

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## Introduction

In the few short years since the concept of altmetrics has emerged, an increasing number of publishers have turned to this non-traditional data from the social web to understand how audiences are engaging with the research that they publish. Paired with traditional business analytics (“How many copies have we sold?”) and bibliometrics (“How many citations has this work received?”), altmetrics can add texture and depth to the narratives and numbers used to understand the influence of research published in a variety of formats.

Until very recently, much of the altmetrics data available on engagement with academic research focused around the journal article. But since 2016—when Altmetric released Altmetric Badges for Books—it has become clear that altmetrics for monographs is growing rapidly in terms of interest, coverage, and technology.

What is less clear is the extent to which altmetrics for books diverge from patterns we see in altmetrics for journal articles and other research formats. We know from that citation patterns for scholarly monographs differ from those of journals and journal articles (Warner & Lindholm-Romantschuk, 1996; Snyder, Cronin, & Atkins, 1997; Nederhof, 2006). Moreover, books as a research format have unique characteristics (not the least of which are length and depth of engagement with a particular topic) and are thought to be more important to advancing knowledge in the humanities than in other disciplines (Thompson, 2002; Nederhof, 2006).

In this white paper, we take a high-level look at altmetrics for books and book chapters, examining patterns in discussion across the seventeen data sources that Altmetric tracks. We investigate how characteristics like subject area and year of publication are related to citedness in public policy and patents, specifically, and the other kinds of attention that books cited in these sources tend to receive.

# Altmetrics for monographs: an overview

As of July 2018, Altmetric has tracked attention for more than 829,000 books and 80,000 book chapters across a wide range of subjects. Overall, 4,055 publishers have published books that have been discussed online.



**Figure 1.** Subject area distribution for a sample of of books with online attention (n = 14,393), based upon Altmetric data

*Library of Congress subject classifications were programmatically retrieved using the Library of Congress z39.50 interface*

Altmetric has tracked and made discoverable **81.5 million** mentions of more than **11 million** research works to date.

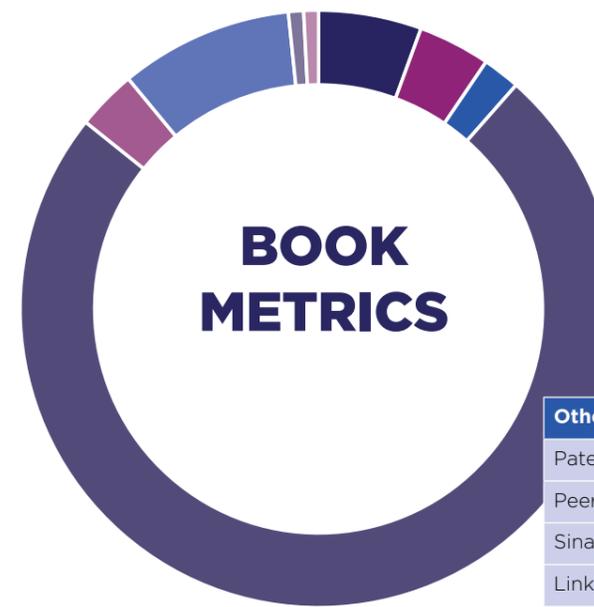
**78%** of mentions occur in social media (Twitter, Facebook, Google+, Reddit, Sina Weibo, Pinterest, and LinkedIn).

**13%** of mentions occur in patents and public policy.

**7%** of mentions occur in the mainstream media and blogs.

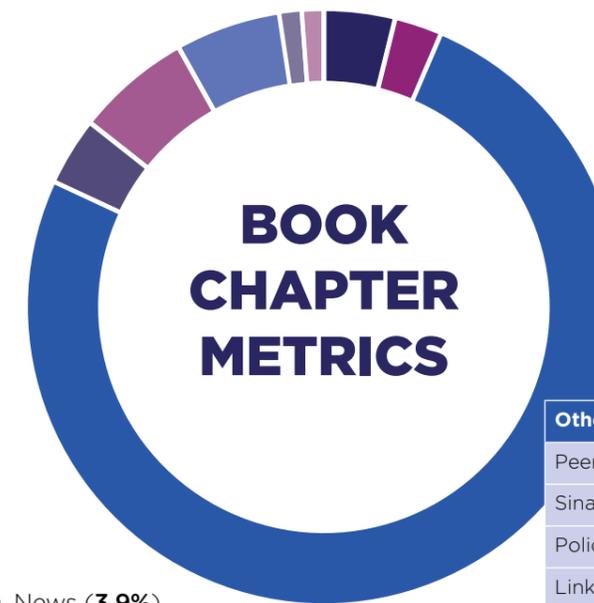
**2%** of mentions occur in Youtube, Wikipedia, and Q&A posts.

**Less than 1%** of mentions occur on scholars-only platforms, including research highlights and open peer review sites.



**Figure 2.** Number of mentions for 829,077 books in the Altmetric Explorer, by attention source (N = 2,712,479 mentions)

| Other               |             |
|---------------------|-------------|
| Patent citations    | 0.3%        |
| Peer reviews        | 0.004%      |
| Sina Weibo posts    | 0.009%      |
| LinkedIn posts      | 0.002%      |
| Reddit posts        | 0.1%        |
| Pinterest posts     | 0.009%      |
| Research highlights | 0.002%      |
| Q&A posts           | 0.2%        |
| Youtube             | 0.2%        |
| Syllabi             | 0.1%        |
| <b>TOTAL</b>        | <b>0.8%</b> |



**Figure 3.** Number of mentions for 80,764 book chapters, by attention source (N = 230,572 mentions)

| Other               |             |
|---------------------|-------------|
| Peer reviews        | 0.04%       |
| Sina Weibo posts    | 0.03%       |
| Policy citations    | 0.5%        |
| LinkedIn posts      | 0.01%       |
| Reddit posts        | 0.1%        |
| Pinterest posts     | 0.01%       |
| Research highlights | 0.04%       |
| Q&A posts           | 0.2%        |
| Youtube             | 0.2%        |
| <b>TOTAL</b>        | <b>1.2%</b> |

| Publisher                      | Books with mentions | Proportion of all books with attention |
|--------------------------------|---------------------|--|
| Oxford University Press        | 633                 | 4.05%                                  |
| Routledge                      | 590                 | 3.77%                                  |
| Springer                       | 473                 | 3.02%                                  |
| Cambridge University Press     | 251                 | 1.60%                                  |
| Springer Berlin Heidelberg     | 238                 | 1.52%                                  |
| Wiley                          | 169                 | 1.08%                                  |
| Palgrave Macmillan             | 157                 | 1.00%                                  |
| University of California Press | 144                 | 0.92%                                  |
| Princeton University Press     | 125                 | 0.80%                                  |
| University of Chicago Press    | 123                 | 0.79%                                  |

**Table 1.** Publishers with the largest number of books discussed online (N = 15646)

Books and book chapters reflect a trend similar to the larger body of research that has received attention online: more than 70% of their mentions occur on Twitter.

That is where the similarity ends. Attention patterns for books and their chapters are mostly distinct from that of research in general, based on data collected by Altmetric. Wikipedia (9.4%) and the news (5.6%) were the other top attention sources for books; Facebook (6.3%) and Wikipedia (5.7%) were for book chapters. Figures 2 and 3 illustrate other sources of online attention for books and book chapters, across the 17 sources that Altmetric tracks.

A much larger proportion of books are discussed online than are book chapters: 68.7% of tracked books have attention, compared to 1.5% of chapters.

## Measuring “real world” impact in patents and public policy

Citations to research in patents and public policy are often pointed to as signals of “real world” research impact. These citations are text-mined from patents and public policy by matching books to URLs and DOIs listed in patent and policy documents’ “References” sections, and to ISBNs listed in policy documents.

### Books mentioned in policy documents: an overview

Overall, 17,037 policy documents mentioned books. These policy documents were published by 48 unique policy sources in 12 countries (See Table 2 for a complete list of countries.) Books mentioned in public policy were most often published by National Academies Press (46%), RAND Corporation (9%), and Institute for Fiscal Studies (3%).

| Country        | Total policy documents | Unique policy sources |
|----------------|------------------------|-----------------------|
| United States  | 9,617 (56.4%)          | 21 (43.8%)            |
| Switzerland    | 2,591 (15.2%)          | 7 (14.6%)             |
| United Kingdom | 1,216 (7.1%)           | 8 (16.7%)             |
| Luxembourg     | 1,066 (6.3%)           | 1 (2.1%)              |
| Netherlands    | 1,028 (6%)             | 2 (4.2%)              |
| Italy          | 776 (4.6%)             | 3 (6.3%)              |
| Australia      | 517 (3%)               | 1 (2.1%)              |
| France         | 97 (0.6%)              | 1 (2.1%)              |
| Canada         | 66 (0.4%)              | 1 (2.1%)              |
| Germany        | 41 (0.2%)              | 1 (2.1%)              |
| Spain          | 21 (0.1%)              | 1 (2.1%)              |
| Finland        | 1 (0%)                 | 1 (2.1%)              |

**Table 2.** The geographical distribution of policy documents that cite books (N = 17,037)

### Books mentioned in patents: an overview

Overall, 6,023 patents mentioned books. These patents were published across all nine patent jurisdictions that Altmetric tracks, including the European Patent Office, United States Patent and Trademark Office, and the World Intellectual Property Organization. (See Table 3 for a complete list of patent jurisdictions that issued patents that cite books.) Books mentioned in patents were most often published by National Academies Press (10%) and the Springer series *Lecture Notes in Computer Science* (8%), and on the Astrophysics Data System (ADS), a popular database of physics and astronomy papers (5%).

*N.B.: Journal articles are the most common type of research object cited by patents, making the study of citations to books a unique if not limited window into knowledge diffusion from books into the economic sphere.*

| Patent Office Jurisdiction                         | Patent citations to books |
|--|---------------------------|
| United States Patent and Trademark Office          | 2294                      |
| European Patent Office                             | 1977                      |
| World Intellectual Property Organization           | 1772                      |
| National Industrial Property Institute (France)    | 150                       |
| German Patent and Trade Mark Office                | 149                       |
| Intellectual Property Office of the United Kingdom | 23                        |
| Netherlands Patent Office                          | 8                         |
| IP Australia                                       | 2                         |
| Swiss Federal Institute of Intellectual Property   | 1                         |

**Table 3.** The geographical distribution of patent  
As of July 2018, Altmetric tracked nine patent jurisdictions total

## Disciplinary and citations in public policy documents and patents

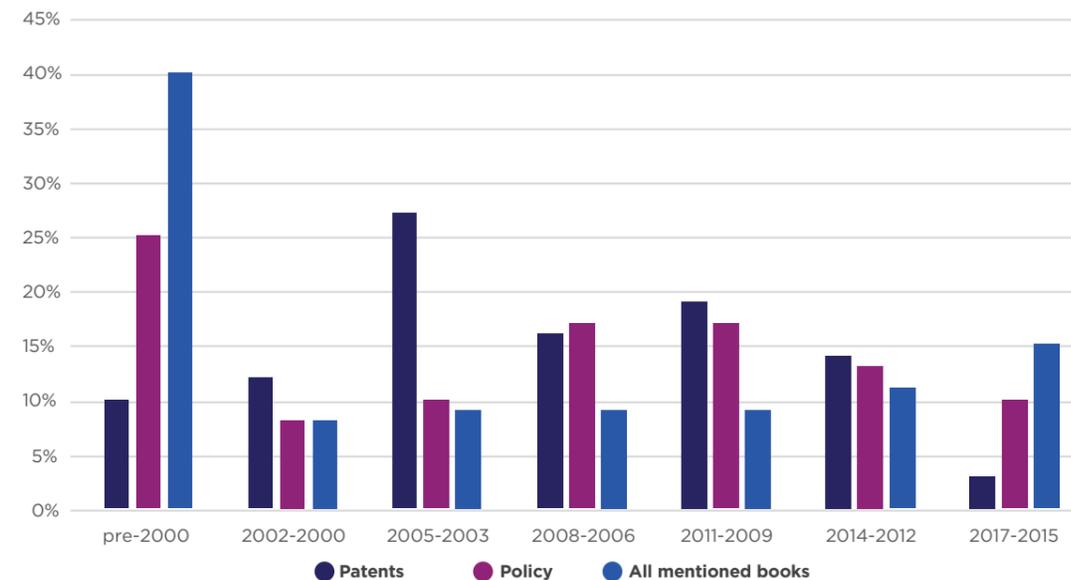
We analyzed the attention data for a sample of books (n = 25,000) and split them into groups containing titles cited by patents (n = 100) and public policy (n = 926). We used classifications from the Library of Congress to determine the subject area of each book in our sample. We found a number of important distinctions between these books' subject areas, years of publication, and correlations with other kinds of attention like mentions in social media.

Books categorized as *Science and Technology* comprised nearly half of all books mentioned in patents. This is unsurprising, given the bias of patent filings towards those subject areas (Callaert, Looy, Verbeek, Debackere, & Thijs, 2006). Beyond those subject areas, books published in *Medicine* and *Social Sciences* comprised 6% and 2% of all mentioned works, respectively.

Books cited in public policy reflected other disciplinary trends. Works on *Medicine* were 1.5x more likely to be cited in public policy than books published in *Science and Technology* combined.

## Publication year and citedness in public policy and patents

Overall, 40% of books mentioned in a source tracked by Altmetric were published before the year 2000. The proportions of similarly-aged books cited in policy (25%) and patents (10%) are much smaller. Instead, from 2000 through 2014, in general books cited in policy and patents made up a higher proportion of citations. The largest percentage of books cited in patents (27%) were those published in 2003-2005. Books published between 2006-2008 and 2009-2011 (17% for each two year period) comprised the largest percentages for books cited in policy.



**Figure 4.** Distribution of age of mentioned books

## Relationship to other types of altmetrics

Compared to the overall attention received by monographs, books cited in public policy had a much lower proportion of co-occurrence with tweets (13.4%) and syllabi (4.4%) (in general, 29.9% of books were mentioned in tweets, and 50.2% in syllabi). A slightly smaller proportion of policy-cited books were mentioned in blogs (5.6%) as compared to books overall (6.2%).

### Some notes on this analysis

We did not analyze the overall volume of attention (measured by the Altmetric Attention Score) received by each set of books. There are significant differences in the Altmetric Attention Scores of books mentioned in policy or patents and the whole sample, but this is likely due to the fact that policy and patent mentions are primary score drivers: a mention in public policy counts more towards the Altmetric Attention Score than does a mention in social media.

One should note the bias inherent in this dataset: the Open Syllabi Project is a source tracked by Altmetric that lists books on academic syllabi. A large number of books are listed, more than have been tracked on other sources, and in practice that means that many of the monographs we track are now older titles with few or no other mentions beyond syllabi. This in turn means that when we look at all books in the Altmetric database the set tends to have lower Altmetric Attention Scores than you might expect, as well as earlier publication dates (as books appearing in syllabi tend to be older).

## Discussion

In this white paper, we have outlined a number of issues relevant to publishers of all sizes and academic specialties.

### Books receive unique attention online

We have seen attention patterns for books and their chapters that differ from attention paid to other kinds of research outputs. Though books and chapters are mostly mentioned on Twitter, much like other research formats are, books and chapters are more often cited in Wikipedia and mentioned in the news and in Facebook posts, reflecting greater public engagement.

### The Social Web talks about books more than chapters

Overall, a much larger proportion of books are discussed online than are book chapters. This may be due to a few reasons. Books as an intellectual object may be referenced more often than their constituent chapters. Moreover, though some publishers release metadata and persistent identifiers at the chapter level—especially for edited volumes—this practice is far from common.

### Patents and policy cite science research most often

Our research found that certain kinds of altmetrics like patent and policy citations tend to cite research in the sciences most often. However, this finding does not necessarily mean that altmetrics for books overall are biased towards the sciences—instead, it merely shows that policy and patents are unique sources that may reflect disciplinary biases.

### Policy and patent citations are slow burning

Altmetrics are generally thought to be instantaneous indicators that occur in the hours and days after research is published online. However, as sources, patent and policy citations are much more “slow burning” than that, taking years to accumulate for monographs. This reinforces the fact that altmetrics are not a monolith—they are a class of data comprised of heterogeneous sources, whereupon the sharing of research happens at different speeds, in different contexts, and at different frequencies.

## Using altmetrics at your organization

These findings may be relevant as you seek to shape your own engagement and monitoring strategies to understand the impacts of the works you publish. Taken alongside citations, altmetrics overall can help tell a much more nuanced story of the influence of the work your organization publishes.

## Further reading

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