

# The impact of Open Access: benefits for individuals, organisations, and research progress

24.2.2017 at University of Jyväskylä

Mikael Laakso

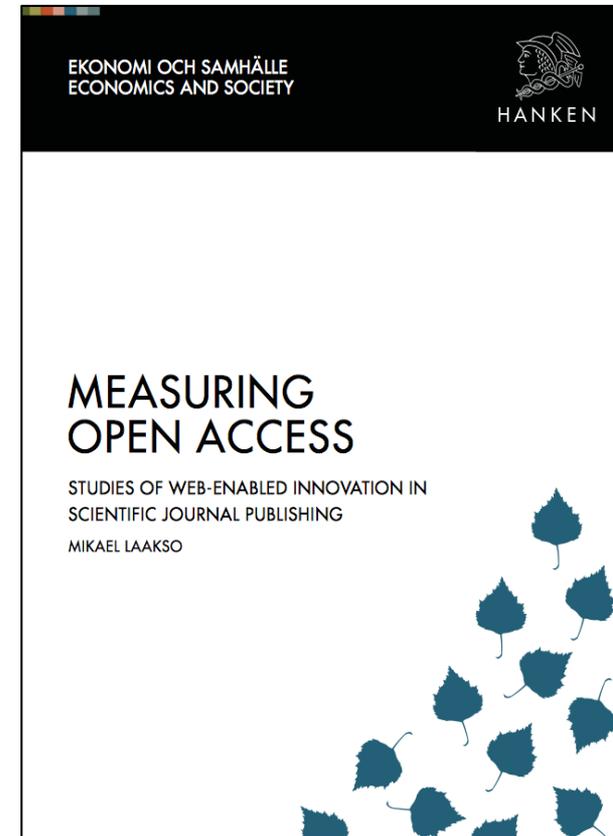
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URN:NBN:fi:ju-201703081601

# *My background and perspective*

- » Associate Professor, Information Systems Science, Hanken School of Economics.
- » Chairman for the working group on Open Access practices, National Open Science initiative in Finland.
- » Member of the strategy group for journal publisher negotiations on behalf of the Finnish university library consortium (FinElib).
- » Chairman of FinnOA, an unofficial working group for advancing open access to research publications in Finland.
- » Involved in self-archiving promotion and OA policy implementation at Hanken.





# *Agenda*

- » **Adopted perspective on Open Access (OA)**
  - » The concept of OA benefits
  - » What OA is most beneficial?
  - » What are some signs that OA is not fully leveraged currently?
  
- » **Open Access benefits for**
  - » Individuals
  - » Organisations
  - » Universities
  - » Libraries
  - » Public & private sector
  
- » **Overarching theme for the presentation**
  - How OA is beneficial to research progress



# Open Access

*“Open access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions.”*

(Peter Suber, 2012:4)

## **Gold OA**

Open Access made available by journals themselves (either in full or part). Often enabled by payment by the authors (or their organization/funder).

## **Green OA**

Open Access elsewhere on the web. Often manuscript-versions of published journal articles. Free to authors.



*OA benefits =  
just research doing what it should*

- » OA offers the “normal” way of disseminating research, without artificial barriers to access.
- » As such I argue that OA is the default mode for research – the situation we currently are in is due to legacy structures from the paper-based past.
- » It would be easier to only focus on the drawbacks and missed opportunities of closed-access instead – however, I will attempt to resist this temptation.

# *OA benefits are colourblind*

- » What matters is that the research publication is discoverable and retrievable without reader-side payment.
- » The mechanism through which this happens is not a main concern for gaining benefits.
- » However, the earlier OA is provided the better.



A world map with a dark grey background. Numerous orange circles of varying sizes are scattered across the map, representing the locations and relative volume of piracy activity. The largest circles are concentrated in North America, Europe, and parts of Asia and South America. The text is overlaid on the map.

Who's downloading pirated papers?

**EVERYONE**

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In rich and poor countries, researchers turn to the Sci-Hub website.

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“Over the 6 months leading up to March, Sci-Hub served up 28 million documents, with Iran, China, India, Russia, and the United States the leading requestors.”

Bohannon (2016)

# *OA still has a long way to go*

- » During 2016, 67 236 cancer news stories linked to 11,523 different journal articles.
- » 60% of links to reported research behind paywalls.
- » Long embargos not viable for medical publications.

**Can Your Doctor See the Cancer Research Reported in the News? Can you?**



Authors: [Lauren Maggio](#), [Juan Pablo Alperin](#), [Laura Moorhead](#), [John Willinsky](#)



Open Access  
**Benefits for Individuals**

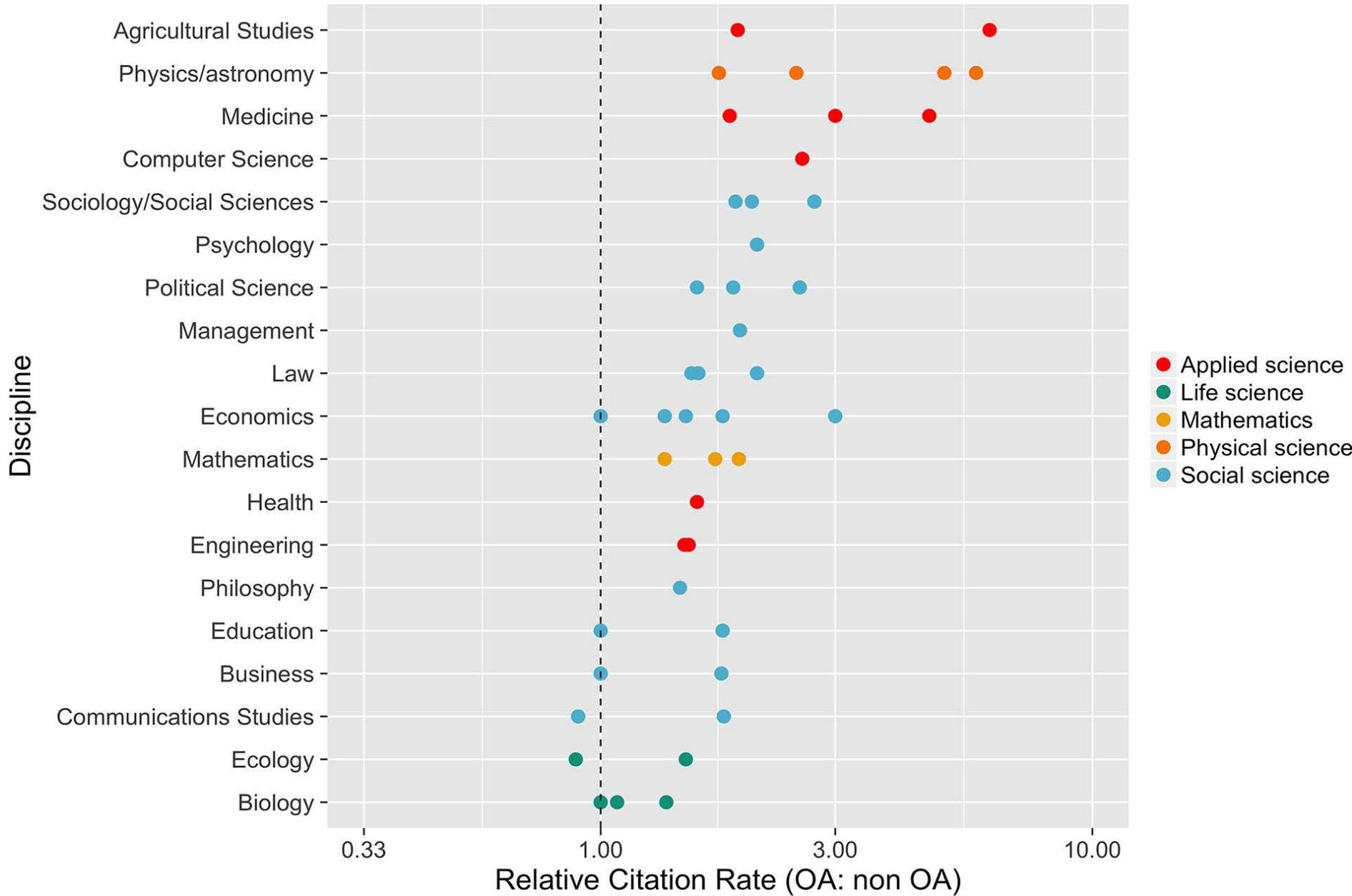
# *The basic premise*

- » “When you enlarge the audience for an article, you also enlarge the subset of the audience that will later cite it, including professionals in the same field at institutions unable to afford subscription access. OA enlarges the potential audience, including the potential professional audience, far beyond that for even the most prestigious and popular subscription journals.” (Suber 2012:16)



# *Researchers as authors*

- » Unrestricted visibility, more reads, more downloads.
- » Retain control and ownership.
- » Provide single-click access to research publications directly from web search engines.
- » **If researchers are not writing their results to be read as widely as possible, then why do research at all?**
- » Oh, and very likely also more citations.



# *The/One explanation*

- » “The most likely cause of the OA citation advantage is accordingly not author self-selection toward making more citeable articles OA, but user self-selection toward using and citing the more citeable articles – once OA self-archiving has made them accessible to all users, rather than just to those whose institutions could afford subscription access.”

(Gargouri, Hajjem, Lariviere et al 2010)

# OA & Wikipedia

» 10 year anniversary since John Willinsky's call to action.

Home > Volume 12, Number 3 — 5 March 2007 > Willinsky

f i ® s t m x ñ d @ ¥

PEER-REVIEWED JOURNAL ON THE INTERNET

What open access research can do for *Wikipedia*

by John Willinsky

*“The results suggest that much more can be done to enrich and enhance this encyclopedia’s representation of the current state of knowledge. To assist in this process, the study provides a guide to help Wikipedia contributors locate and utilize open access research and scholarship in creating and editing encyclopedia entries.”*

(Willinsky 2007)

# *OA & Wikipedia (cont.)*

- » Analysis of Wikipedia references to articles in 4,721 high-impact journals covering Scopus' 26 major subject areas.
- » “[...] the odds that an open access journal is referenced on the English Wikipedia are 47% higher compared to paywall journals.”
- » [...] the English Wikipedia, as a platform, acts as an “amplifier” for the (already freely available) OA literature by preferentially broadcasting its findings to millions.



(Teplitskiy, Lu & Duede 2016)



# *More social media interactions*

- » In a study covering over 1700 articles published in Nature Communications, OA articles received 2.5-4.4 times the interactions on Twitter and Facebook compared to closed-access articles. (Wang, Liu, Mao & Fang 2015).
- » However, the link between altmetrics and citations is complex and only a moderate positive correlation has been found so far. (Costas, Zahedi, & Wouters 2014).



# *Researchers looking for information*

## » **Ubiquitous access**

- » No logins, no proxies...
- » Easy mobile access
- » No need for publisher-specific search tools

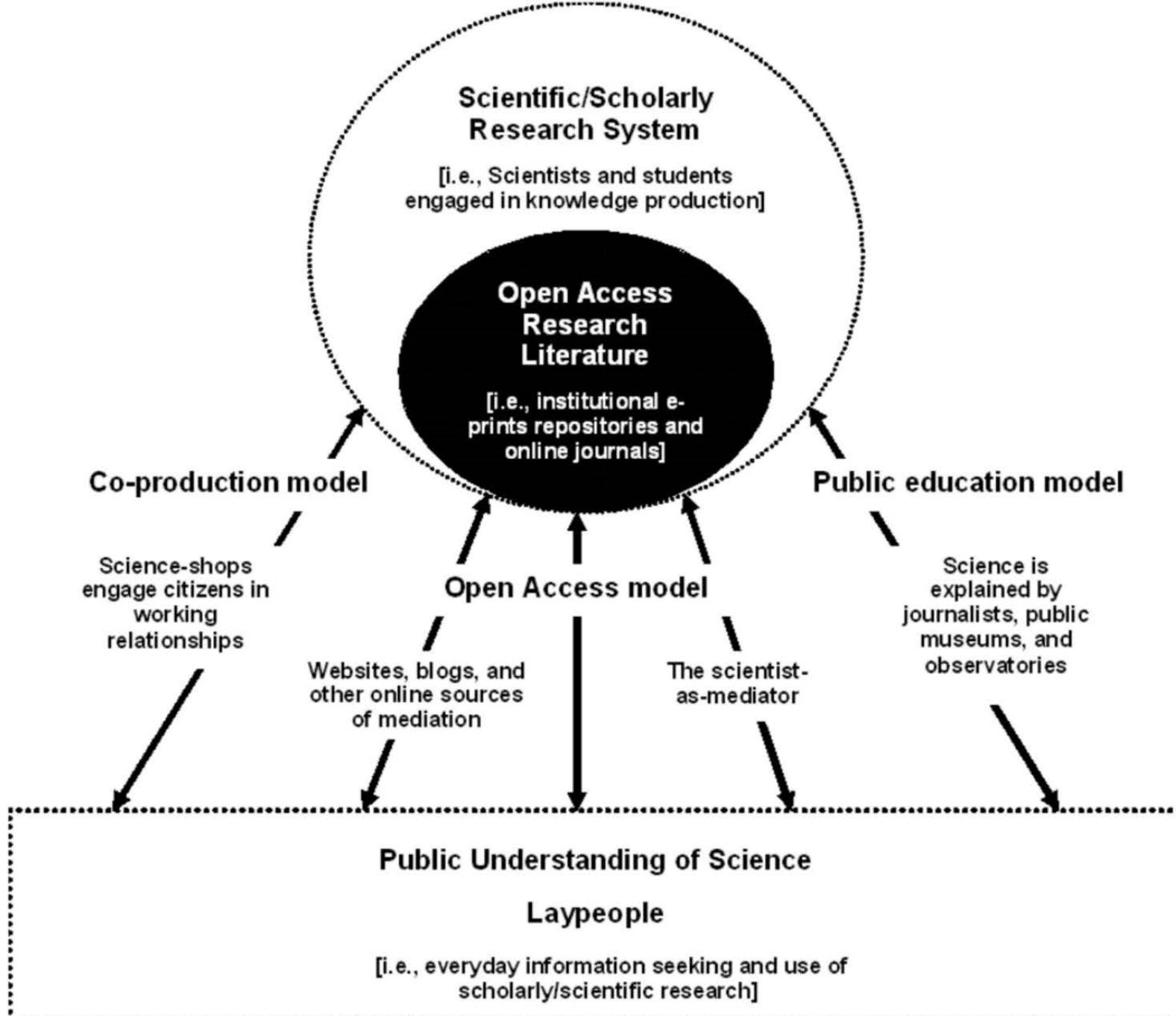
## » **All researchers in the world have access to the same scientific information**

## » **Use of unified search and discovery services**



# *Readers outside of academia*

- » **Citizens and society as a whole benefits**
- » Research is not “walled off” from the general public.
- » “Those who invest in and benefit from primary research, including the general public, have an interest in improvements to the quality of that research.” (Zuccalá 2009)
- » Increased potential for in fostering science literacy.



**Figure 8.1 Relationship between the scientific research system and the public**

(Zuccalá 2009)

# Open access benefit ranking



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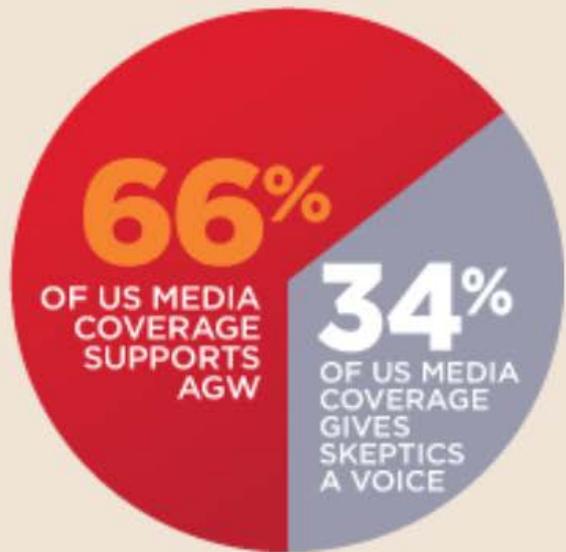
	18-35 Higher education	35+ Higher education	35+ Lower education	18-35 Lower education	Mode	Mean
Open access will empower laypeople who want to read and <b>use research literature for personal decision making and problem solving.</b>	1	1	1	1	1	1
Open access will allow people <b>to satisfy their curiosity</b> about what type of research is being done in certain fields and the latest findings.	2	3	3	2	2	2.5
Open access literature will help to <b>increase the level of understanding that people have of scientific research</b> terms (e.g., DNA; stem cells; greenhouse effect), research processes, and findings.	3	4	2	3	3	3
Open access will help people to see what scientific researchers are doing in their own country and <b>acquire sufficient levels of accurate information on which to base their assessments of government policies</b> so that their policy preferences best reflect their own interests.	4	5	4	4	4	4.3
Open access will <b>allow tax-paying citizens to see where and how money is being invested</b> to support new scientific research.	5	2	5	5	5	4.3

(Zuccalá 2010)

18-35 Higher education	35+ Higher education	35+ Lower education	18-35 Lower education
1. Health sciences and psychology	1. Health sciences and psychology	1A. Health sciences and psychology	1. Business and economics
2A. Biology and life sciences	2. Earth and environmental sciences	1B. Business and economics	2A. Earth and environmental sciences
2B. Earth and environmental sciences	3. Technology and engineering	1C. Philosophy and religion	2B. Agriculture and food sciences
3A. Philosophy and religion	4. Agriculture and food sciences	2A. Agriculture and food sciences	3A. Health sciences and psychology
3B. History and archeology	5. Philosophy and religion	2B. Technology and engineering	3B. Sociology and media studies
4. Technology and engineering	6. Business and economics	2C. Physics and astronomy	4A. Law and political science
5. Law and political science	7. Sociology and media studies	3A. Biology and life sciences	4B. Philosophy and Religion
6. Business and Economics	8. History and archeology	3B. Law and political science	5. Biology and life sciences
7. Agriculture and food sciences	9. Biology and life sciences	3C. History and archaeology	6. History and archaeology
8. Sociology and media studies	10. Arts and architecture	4A. Earth and environmental sciences	7. Arts and architecture
9. Arts and architecture	11. Law and political science	4B. Mathematics and statistics	8. Technology and engineering
10. Physics and astronomy	12. Physics and astronomy	4C. Arts and architecture	9. Physics and astronomy
11A. Chemistry	13. Chemistry	5A. Chemistry	10. Mathematics and statistics
11B. Mathematics and statistics	14. Mathematics and statistics	5B. Sociology and media studies	11. Chemistry

**“What level of interest do laypeople have in reading peer-reviewed publications produced in different scholarly or scientific research areas?” (Zuccalá 2010)**

*However, even if research is OA, it does not automatically inform the entire public*



**THE MEDIA**

AGW = Anthropogenic Global Warming



# Open Access **Benefits for Organisations**

- » **Open Access enables Universities to:**
- » Make works more visible and accessible, thus increasing the impact of all conducted research.
- » Retain control and ownership of research outputs that are produced.
- » Start collecting an organisational “memory”.
- » Facilitate a transition away from ever-increasing publisher subscription fees.
- » Increase competitiveness in University rankings.

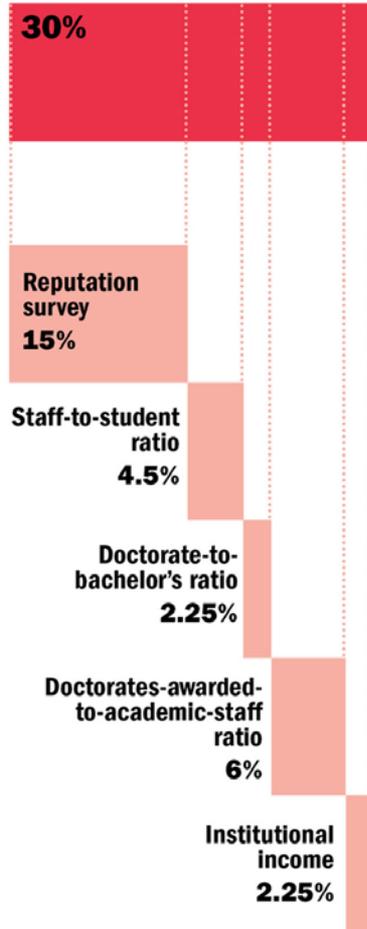
# *Citations matter at the university-level as well*

- » “[...] universities are potentially missing out on further optimising their ranking position. **There is potential scope and opportunities for individuals involved in the management and strategic planning of universities to embrace Open Access publishing with regards to citations and university rankings.**”

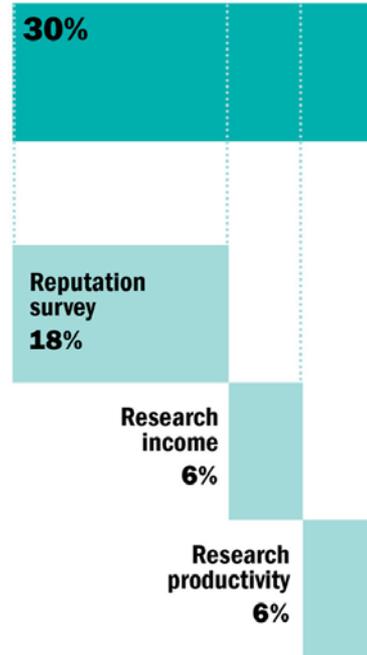


Baldock (2017)

## Teaching (the learning environment)



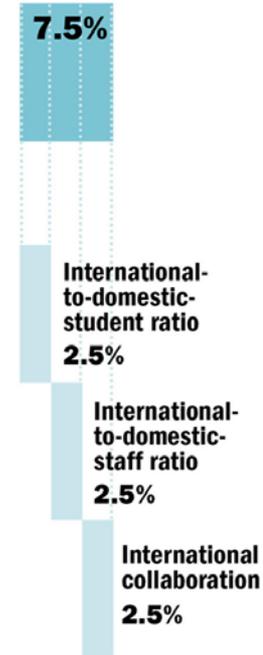
## Research (volume, income and reputation)



## Citations (research influence)



## International outlook (staff, students, research)



## Industry income (knowledge transfer)

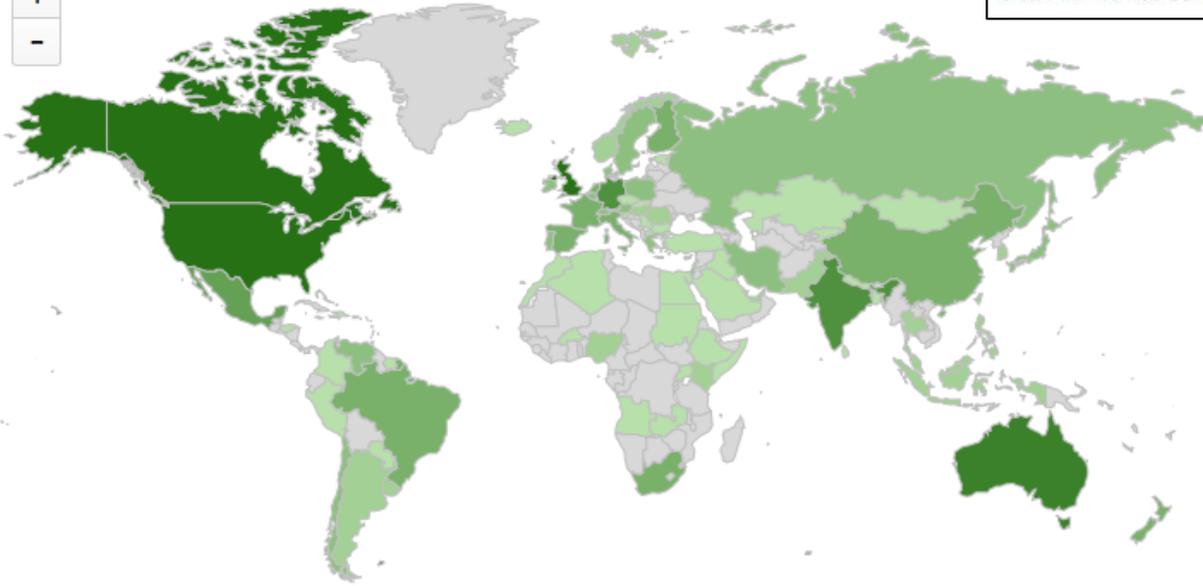




## Your Story Matters

Click to find out what readers are saying about DASH!

Finland: 11 stories



Highcharts.com © Natural Earth



Our University library subscribes [to a] limited selection of journals in my field. Open access allows me to access these material which I use both for my teaching and writing.

[Read "The Evolution of Marathon Running: Capabilities in Humans"](#)

Professor  
Finland



Peter Suber  
@petersuber

Following

Happy to announce that Harvard's #openaccess repository just passed the milestone of 10 million downloads. [dash.harvard.edu](http://dash.harvard.edu)

RETWEETS  
78

LIKES  
117



5:32 PM - 15 Feb 2017

[dash.harvard.edu/stories?country=fi](http://dash.harvard.edu/stories?country=fi)

## Public Statistics

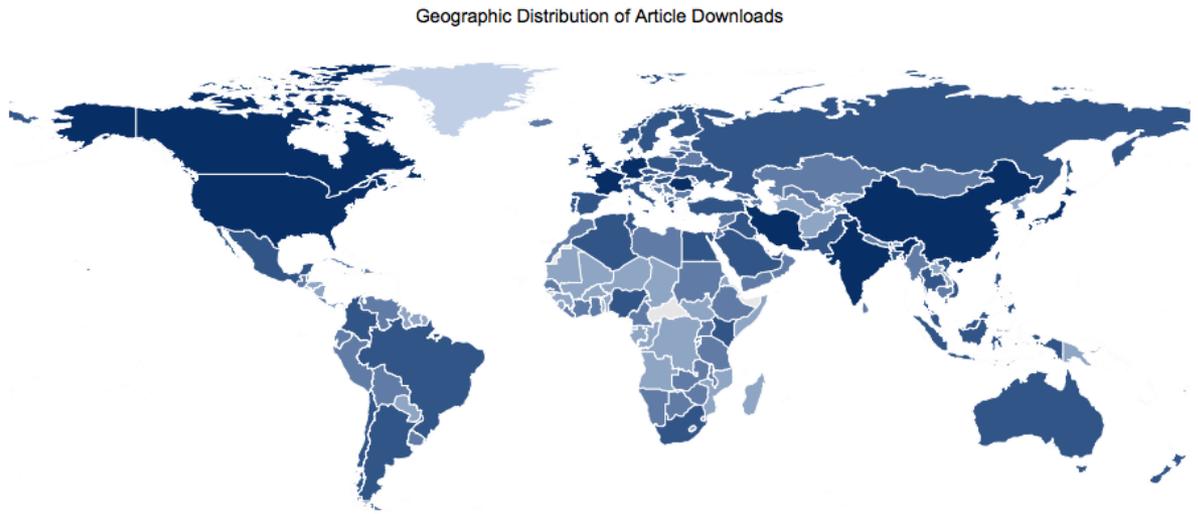
### Show only (scroll for more)

- All Departments, Labs or Centers:
  - Abdul Latif Jameel Poverty Action Lab
  - Abdul Latif Jameel Poverty Action Lab
  - Abdul Latif Jameel World Water & Food Security Lab
  - Abdul Latif Jameel World Water & Food Security Lab
  - Aeronautics and Astronautics
  - Aeronautics and Astronautics
- Apply filter

Data

Timeline

Map



0 downloads could not be placed onto a map.  
Map shows cumulative data from August, 2010.

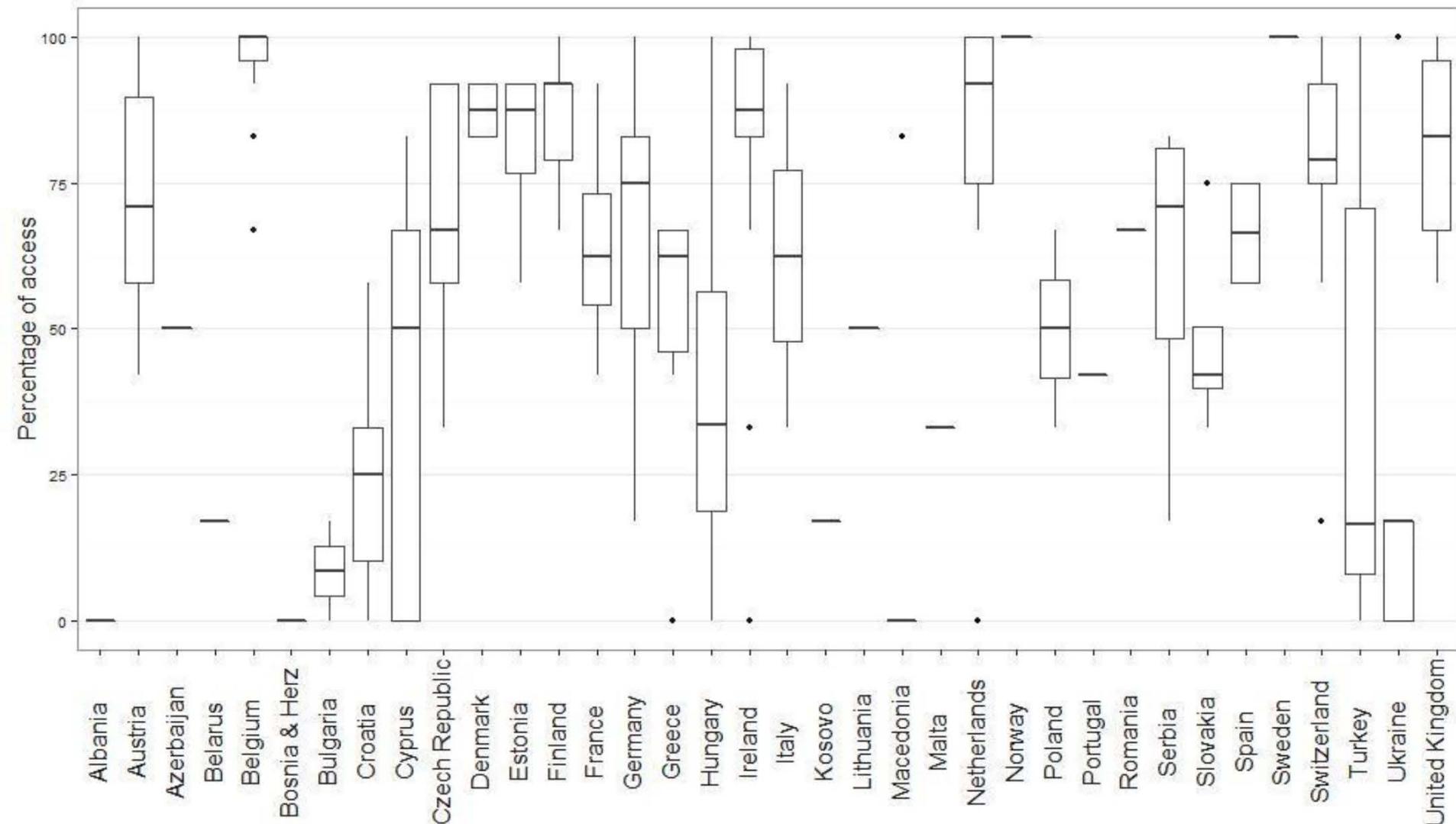
Country	Downloads
China	2246542
United States	1798414
France	380722
Germany	378943
India	360050
United Kingdom	255558
Canada	163026
Iran	159793

- » The more that is available openly on the web, the less pressure there is on library budgets to stretch, or coverage to be cut.
- » OA as a publishing model, when fully realized, is likely less expensive than the current subscription-based model.
- » Libraries are *the* key stakeholder for growing OA and realising benefits to the university
  - » The “face” of the repository
  - » Facilitate OA policy compliance
  - » Manage potential APC funds

# *Student access through university libraries is not complete or uniform*



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# Private Sector

- » **Open Access enables organisations in the private sector to:**
- » Use academic research outputs to feed into R&D and innovation processes at both startups and large companies.
- » Learn what is already known, reduce redundant work
- » **27% of the products developed or introduced during the last three years would have been delayed or abandoned without access to academic research (N=62).**

(Houghton, Swan & Brown 2011; Parsons, Willis, Holland 2011; Picarra 2015)

JISC



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## Benefits to the Private Sector of Open Access to Higher Education and Scholarly Research

Open Access to scientific information: facilitating knowledge transfer and technological innovation from the academic to the private sector

PASTEUR40A

Open Access to scientific information: facilitating knowledge transfer and technological innovation from the academic to the private sector

Author: Mafalda Picarra, Jisc

Reviewers: Victoria Tsoukala, EKT; Alma Swan, EOS

October 2015



### What is Open Access?

Open Access (OA) is the free availability on the Internet of peer-reviewed journal articles, monographs, book chapters, and other scholarly research outputs. It is a form of self-archiving, commonly referred to as preprints, where authors deposit a copy of their work in a public repository (either an institutional or a discipline-specific one) and make it available on open access: see [http://www.arxiv.org](#).

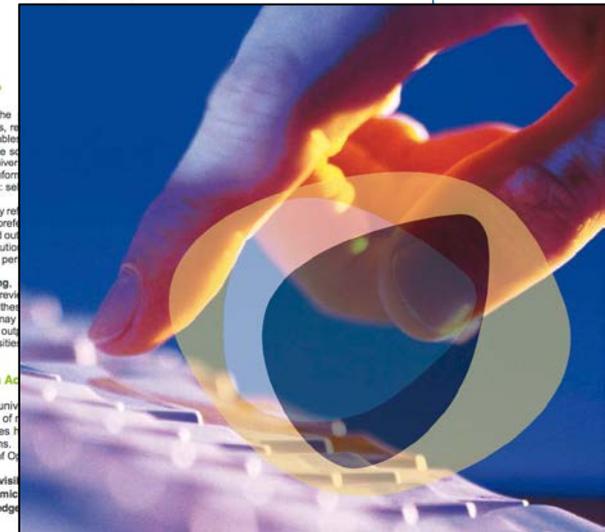
Self-archiving, commonly referred to as preprints, where authors deposit a copy of their work in a public repository (either an institutional or a discipline-specific one) and make it available on open access: see [http://www.arxiv.org](#).

Open access publishing, information such as peer-reviewed articles, their preprints, and their postprints, in an open access form may be made available to the public (APC) to make research outputs available to the private sector.

### The benefits of Open Access

National governments, universities, and research institutions are increasingly recognising the benefits of Open Access to research outputs.

- Making research visible
- Advancing academic research
- Fostering knowledge transfer to the private sector;



Access to Research and Technical Information in Denmark

Innovation: Analyse og evaluering 20/2011



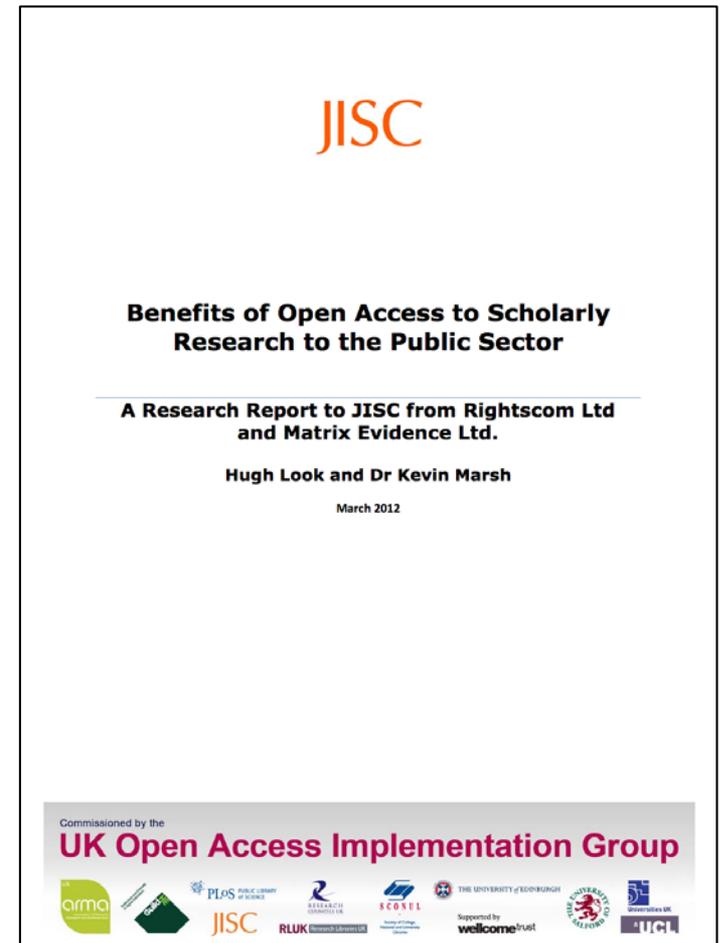
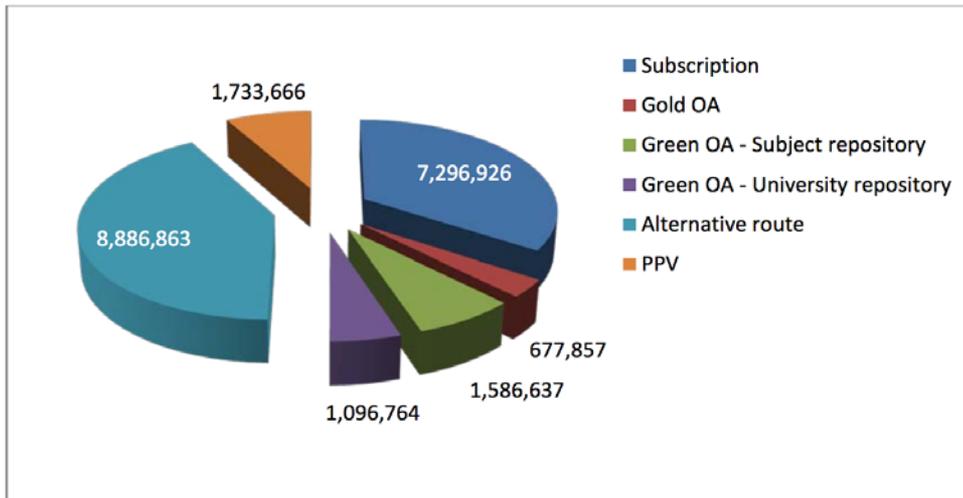
Forsknings- og Innovationsstyrelsen  
Ministeriet for Videnskab, Teknologier og Uddannelse

DEff Denmark's Electronic Research Library

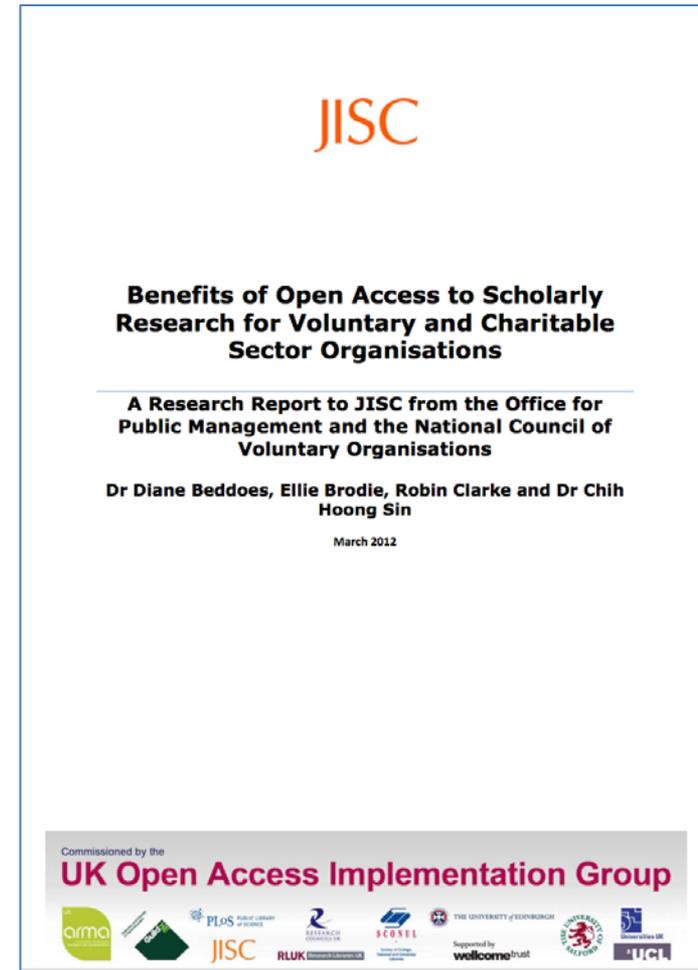
# Public sector

- » “The total cost to the public sector of accessing journal papers is around £135 million per annum. **The direct cost savings that accrue from the availability of Open Access articles amount to £28.6 million** (£26 million in access fees and £2.6 million in time savings).”

Figure 2: Total number of academic articles accessed by public sector researchers per annum, by route



- » “A majority of survey respondents use scholarly research – journal articles, scholarly conference papers/proceedings or raw data sets produced in the course of scholarly research (51%).“
- » 27% paid-for journal subscriptions and 24% said they paid for single papers.
- » 80% selected ‘it’s too expensive’ when asked what the main barriers were to using scholarly research-



# *With science growing, discovery is increasingly important*

- » [...] a typical article that is also posted to Academia.edu has 49% more citations than one that is only available elsewhere online through a non-Academia.edu venue: a personal or departmental homepage, a journal site, a repository such as ArXiv or SSRN, or any other online hosting venue.” (Niyazov, Vogel, Price et al 2016)
- » Institutional repositories can, and should not, try keep up with the technological developments of centralised commercial discovery platforms. New services leveraging repository content are developed all the time.



# *To summarize*

- » **Open access should be the default way for science to be communicated**, then there would be no benefits just optimal flow of knowledge.
- » In a subscription-based world, **OA carries benefits to researchers and their institutions.**
- » No one suffers from OA, **there are only upsides.**
- » **Not using research to its full potential is a waste** – why spend 2 years on work for an article and then not use 20 more minutes to ensure that it is read as widely as possible and permanently open?

# Three recommended reads



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## The impact of free access to the scientific literature: a review of recent research

Philip M. Davis, PhD; William H. Walters, PhD, FCLIP

See end of article for authors' affiliations.

**Objectives:** The paper reviews recent studies that evaluate the impact of free access (open access) on the behavior of scientists as authors, readers, and citers in developed and developing nations. It also examines the extent to which the biomedical literature is used by the general public.

**Method:** The paper is a critical review of the literature, with systematic description of key studies.

**Results:** Researchers report that their access to the scientific literature is generally good and improving. For authors, the access status of a journal is not an important consideration when deciding where to publish. There is clear evidence that free access

increases the number of article citations. Studies indicate that large citation counts are simply artifacts of the failure to control for confounding variables. The effect of the general public's use of the primary literature has not been thoroughly evaluated.

**Conclusions:** Recent studies provide support for the idea that there is a benefit to the scientific literature. Further research is needed to investigate whether free access is beneficial in non-research contexts and to the dissemination of scientific literature through peer networks and other information channels.

### INTRODUCTION

A principal argument in support of open access publishing rests on the belief that the subscription-based publishing model has produced a crisis of accessibility to the scientific literature [1–6]. This paper evaluates that claim, reviewing the current literature and showing the ways in which free access has (or has not) had an impact on scholars, clinicians, and the general public in developed and developing nations.

The review assesses impact in terms of reading, citation, and related forms of use. It does not evaluate the extent to which the freely available scientific literature is technically accessible, indexed, cataloged, or available for potential use. The discussion deals only with the scholarly literature, thereby excluding studies of online newspapers, magazines, and trade publications. It also focuses on the natural sciences, since most of the research on free access has dealt with fields such as the biomedical, physical, and computer sciences. Although "open access" is the usual term for scholarly work that is freely accessible online, the term "free access" is used here, since open access is often understood to include issues of copyright, archiving, funding, and social justice that are not addressed in this discussion.

The paper first reviews the impact of free access on the research practices of scholars in developed and developing nations, then examines the use of freely available biomedical literature by health professionals and the lay public. It concludes with a discussion of avenues for further research.

Supplemental Tables 1 and 2 are available with the online version of this journal.

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DOI: 10.7554/eLife.16800

### POINT OF VIEW

## How open science helps researchers succeed

**Abstract** Open access, open data, open source and other open scholarship practices are growing in popularity and necessity. However, widespread adoption of these practices has not yet been achieved. One reason is that researchers are uncertain about how sharing their work will affect their careers. We review literature demonstrating that open research is associated with increases in citations, media attention, potential collaborators, job opportunities and funding opportunities. These findings are evidence that open research practices bring significant benefits to research relative to more traditional closed practices.

DOI: 10.7554/eLife.16800.001

ERIN C. MCKIERNAN<sup>1</sup>, PHILIP E. BOURNE, C. TITUS BROWN, STUART BUCK, AMYE KENALL, JENNIFER LIN, DAMON MCDOUGALL, BRIAN A. NOSEK, KARTHIK RAM, COURTNEY K. SODERBERG, JEFFREY R. SPIES, KAITLIN THAI, ANDREW UPDEGROVE, KARAH W. WOO AND TAL YARKONI

### Introduction

Recognition and adoption of open research practices is growing, including new policies that increase public access to the academic literature (open access; Björk et al., 2014; Swan et al., 2015) and encourage sharing of data (open data; Heilmann et al., 2014; Michener, 2015; Stodden et al., 2013), and code (open source; Stodden et al., 2013; Shamir et al., 2013). Such policies are often motivated by ethical, moral or utilitarian arguments (Suber, 2012; Willinsky, 2006), such as the right of taxpayers to access literature arising from publicly-funded research (Suber, 2003), or the importance of public software and data deposition for reproducibility (Pollán et al., 2012; Stodden, 2011; Ince et al., 2012). Meritocratic arguments may be, however, they do not address the practical barriers involved in changing researchers' behavior, such as the common perception that open practices could present a risk to career advancement. In the present article, we address such concerns and suggest that the benefits of open practices outweigh the potential costs.

We take a researcher-centric approach in outlining the benefits of open research practices. Researchers can use open practices to their

advantage to gain more citations, media attention, potential collaborators, job opportunities and funding opportunities. We address common myths about open research, such as that about the rigor of peer review at open journals, risks to funding and career advancement, and forfeiture of author rights. We review the current pressures on researchers to offer advice on how to practice open within the existing framework of academic norms and incentives. We discuss these issues with regard to four areas – publishing, resource management and sharing, and advancement – and conclude with a list of open questions.

### Publishing

Open publications get more citations. There is evidence that publishing openly is associated with higher citation rates (Suber, 2003). For example, Eysenbach et al. (2006) found that articles published in the *Proceedings of the National Academy of Sciences* (PNAS) that opted for open access (OA) were cited within 4–10 months an average of three times as likely to be cited 10–16 months after publication than non-OA articles published in the same journal.

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Reviewing editor: Peter Rodgers, eLife, United Kingdom

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FEATURE ARTICLE



F1000Research

F1000Research 2016, 5:632 Last updated: 28 SEP 2016



REVIEW

**REVISED** The academic, economic and societal impacts of Open Access: an evidence-based review [version 3; referees: 3 approved, 2 approved with reservations]

Jonathan P. Tennant<sup>1</sup>, François Waldner<sup>2</sup>, Damien C. Jacques<sup>2</sup>, Paola Masuzzo<sup>3,4</sup>, Lauren B. Collier<sup>5</sup>, Chris. H. J. Hartgerink<sup>6</sup>

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**V3** First published: 11 Apr 2016, 5:632 (doi: 10.12688/f1000research.8460.1)  
Second version: 09 Jun 2016, 5:632 (doi: 10.12688/f1000research.8460.2)  
Latest published: 21 Sep 2016, 5:632 (doi: 10.12688/f1000research.8460.3)

### Open Peer Review

Referee Status:

Invited Referees

### Abstract

Ongoing debates surrounding Open Access to the scholarly literature are multifaceted and complicated by disparate and often polarised viewpoints from engaged stakeholders. At the current stage, Open Access has become such a global issue that it is critical for all involved in scholarly publishing, including policymakers, publishers, research funders, governments, learned societies, librarians, and academic communities, to be well-informed on the history, benefits, and pitfalls of Open Access. In spite of this, there is a general lack of consensus regarding the potential pros and cons of Open Access at multiple levels. This review aims to be a resource for current knowledge on the impacts of Open Access by synthesizing important research in three major areas: academic, economic and societal. While there is clearly much scope for additional research, several key trends are identified, including a broad citation advantage for researchers who publish openly, as well as additional benefits to the non-academic dissemination of their work. The economic impact of Open Access is less well-understood, although it is clear that access to the research literature is key for innovative enterprises, and a range of governmental and non-governmental services. Furthermore, Open Access has the potential to save both publishers and research funders considerable amounts of financial resources, and can provide some economic benefits to traditionally subscription-based journals. The societal impact of Open Access is strong, in particular for advancing citizen science initiatives, and leveling the playing field for researchers in developing countries. Open Access supersedes all potential alternative modes of access to the scholarly literature through enabling unrestricted re-use, and long-term stability independent of financial constraints of traditional publishers that impede knowledge sharing. However, Open Access has the potential to become unsustainable for research communities if high-cost options are allowed to continue to prevail in a widely unregulated scholarly publishing market. Open Access remains only one of the multiple challenges that the scholarly publishing system is currently facing. Yet, it

Davis & Walters (2011)

McKiernan et al (2016)

Tennant et al (2016)



**Thank You!**

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## Some additional resources:

<http://sparceurope.org/open-access/benefits-of-open-access/>

<http://www.oastories.org>

[https://works.bepress.com/jean\\_gabriel\\_bankier/27/](https://works.bepress.com/jean_gabriel_bankier/27/)

<https://whoneedsaccess.org/>