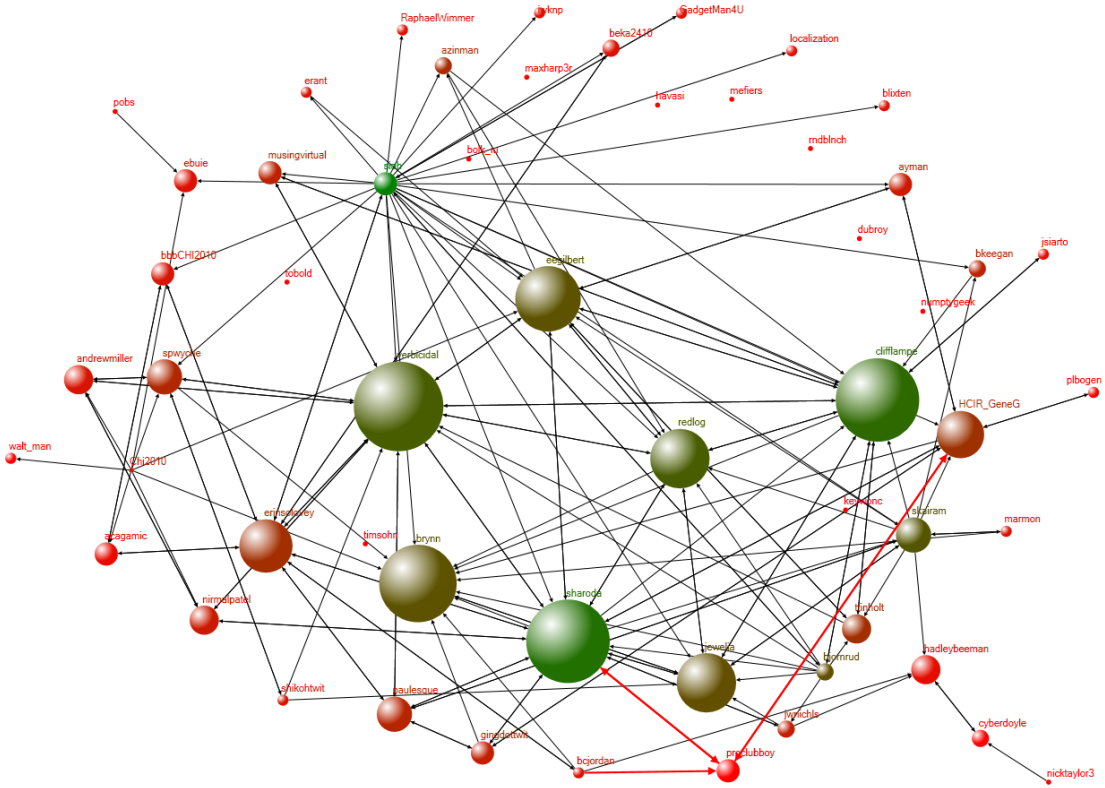
Altmetrics Applied
Fiesole 2013

Jennifer Lin
Sr Product Manager, PLOS

PLOS: Brief History

- Founded in 2003 as an open access publisher, Public Library of Science
- Seven journals today in life sciences & biomedical science
- Published 80k+ articles to date
- Mission: transform scholarly communications

Networked-enabled research is premised on the capacity for connectivity

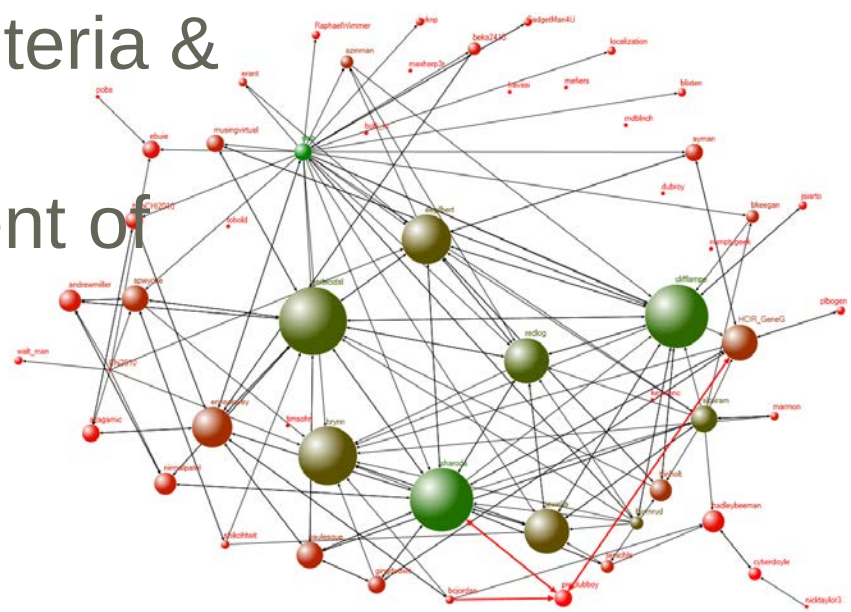


See Cameron Neylon's Feb 6, 2012 blog post on "network-enabled research": http://cameronneylon.net/blog/network-enabled-research/.

PLOS: Optimize network-enabled research by building infrastructure that supports more efficient transactions

Over the past ten years:

- Open access for all
- Re-defined publication criteria & categorization
- Tracking and measurement of dissemination



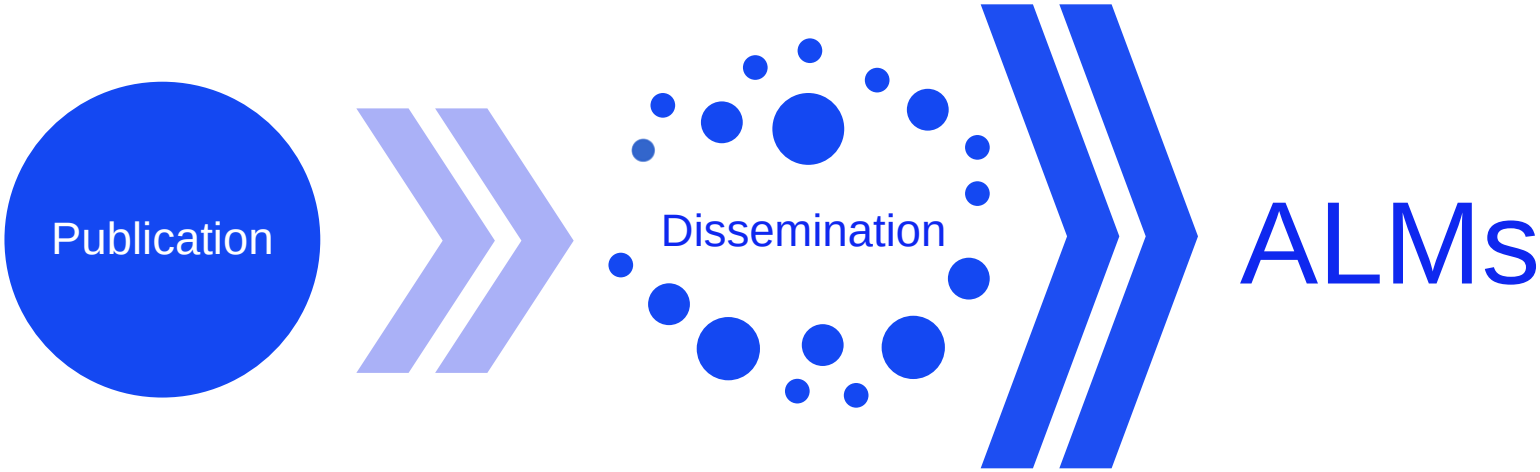
Article-Level Metrics

The Measurement Dilemma

Measurement of research

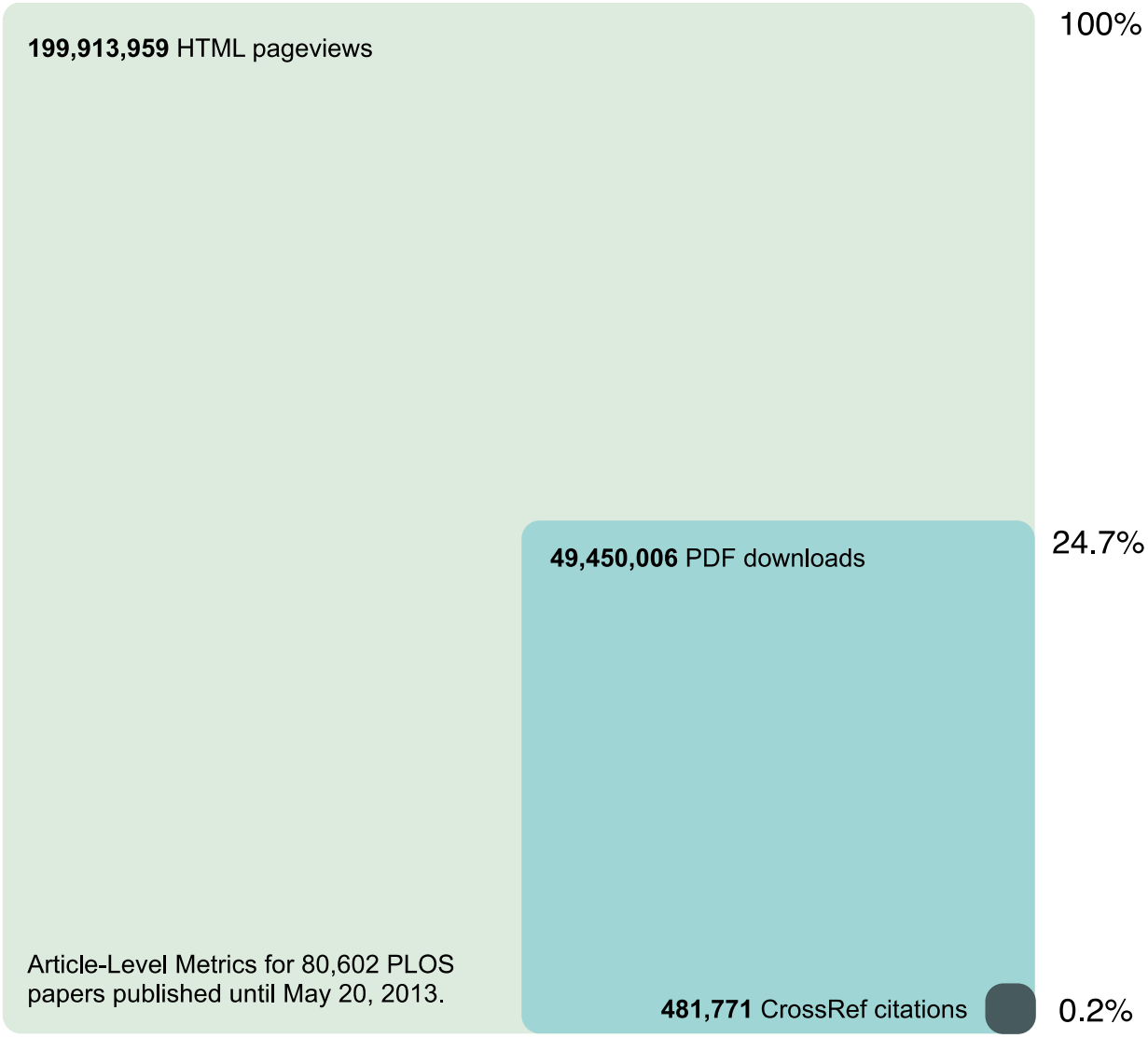
Researchers work within a diverse ecosystem of channels to share, comment, critique new research:

- article access,
- scholarly and nonscholarly citations,
- blog and news coverage,
- social network sharing
- research community conversations

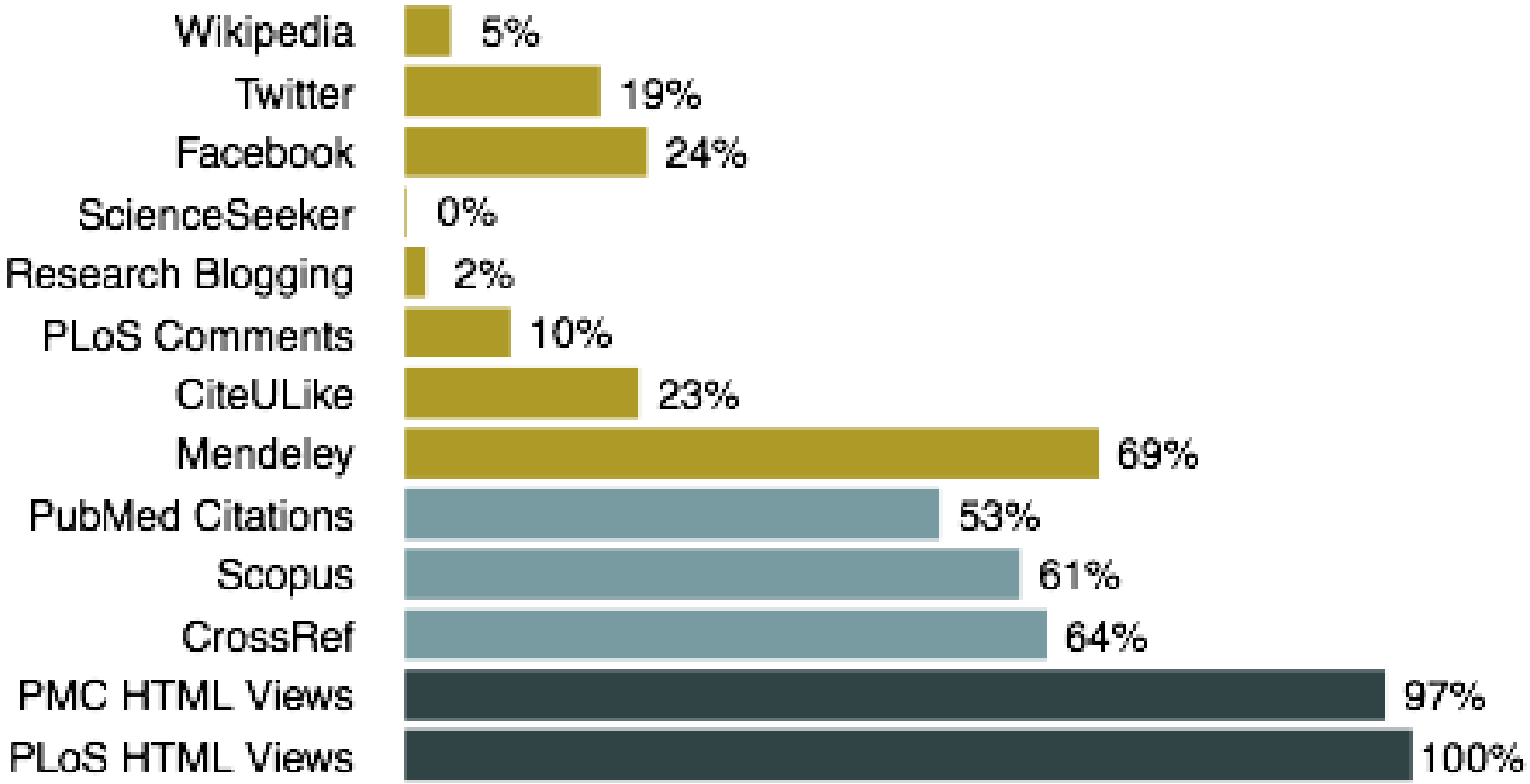


Article-Level Metrics captures this activity and measures it in a transparent and comprehensive manner.

Conventional measures are a part of the puzzle…

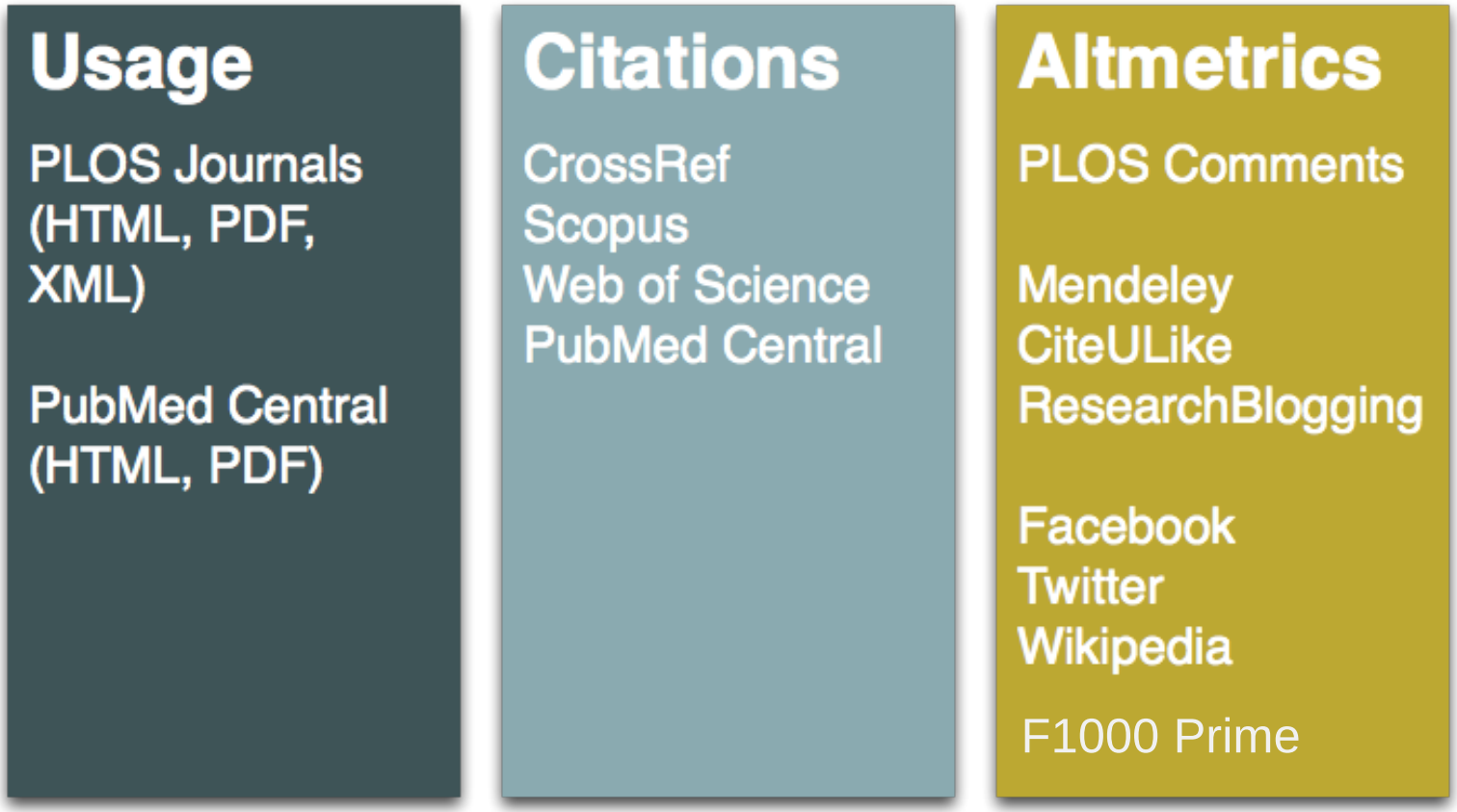


A broader view of research engagement



Proportion of articles covered by source
Metrics for 77,385 PLOS articles. Data collected April 11, 2013

Article-level metrics add granularity and more dimensions



Article-Level Metrics:

- Diverse and efficient measurement
- Increased diversity without losing traditional value
- Accelerated measurement response
- Flexibly accommodates varied uses

ALMs reveal *what* articles are used

Doris Duke Foundation funded PLOS articles

Rectangle size correlates with total views (HTML and PDF) from PLOS website. Color intensity correlates with number of Scopus citations.

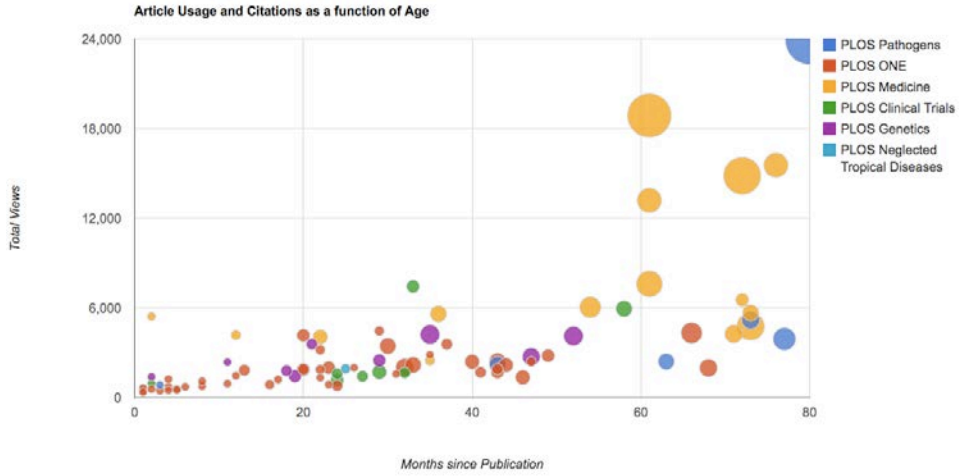
Article Usage and Citations by Subject Category

ALMs reveal *where* articles are used

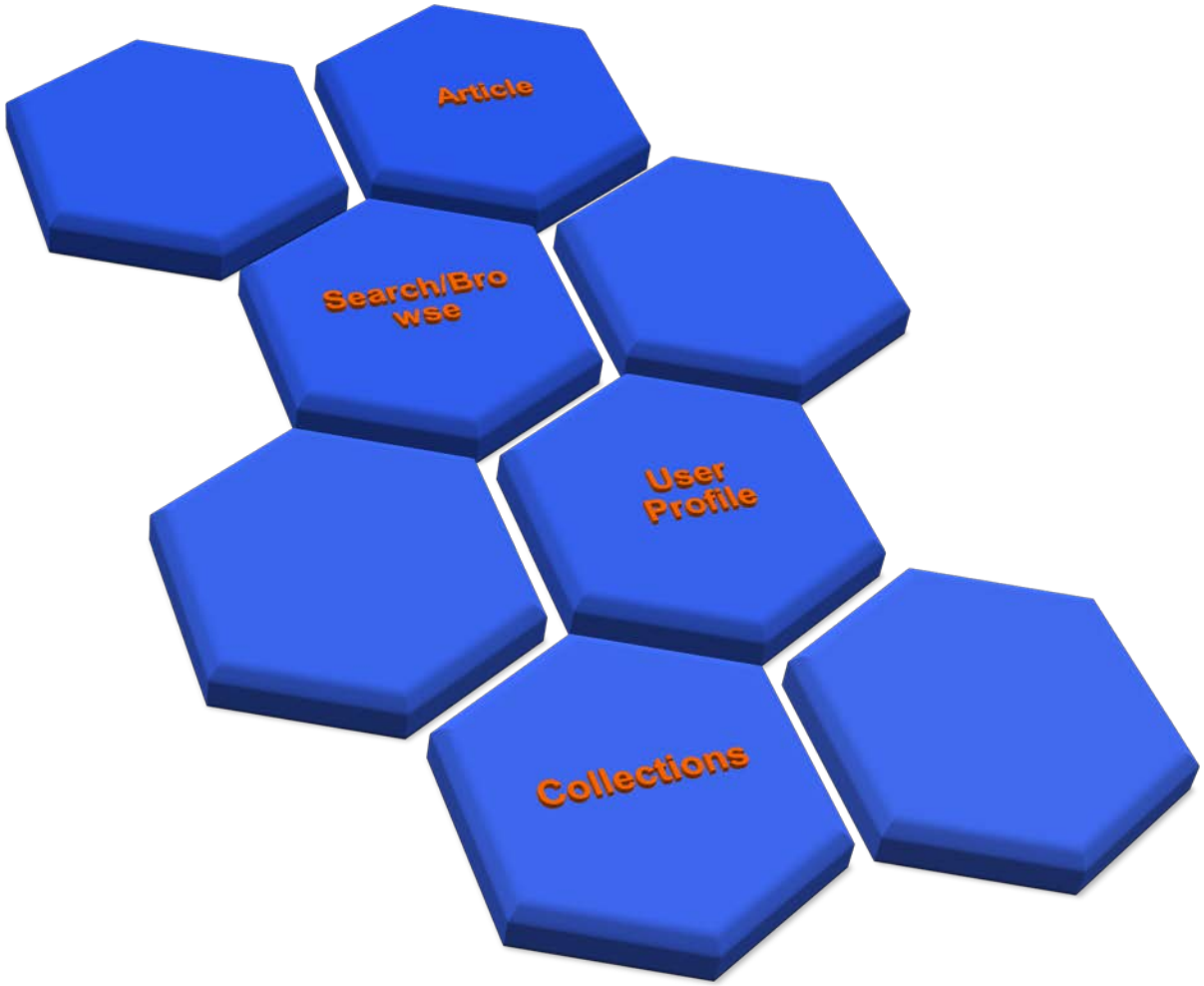
Alzheimer‘s Association funded PLOS articles

Geolocation of 410 authors for 84 articles

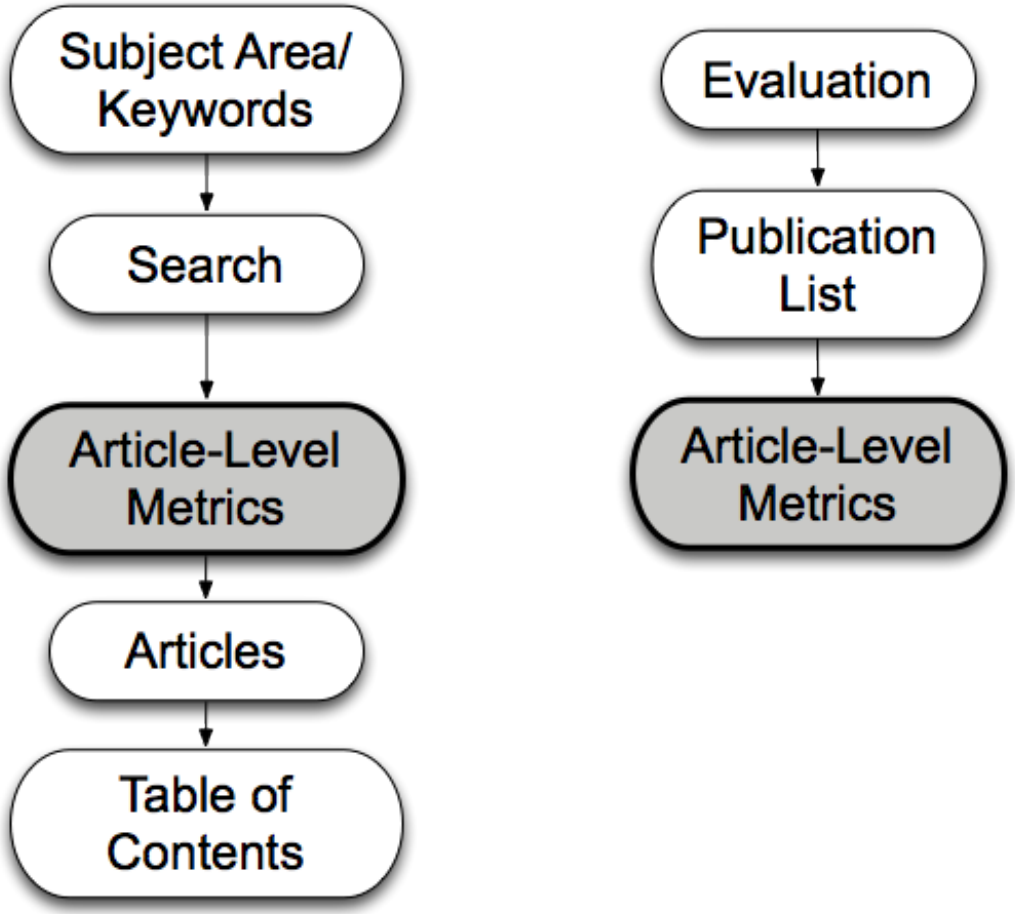
ALMs reveal *how* is used



Altmetrics Applied - PLOS Journals

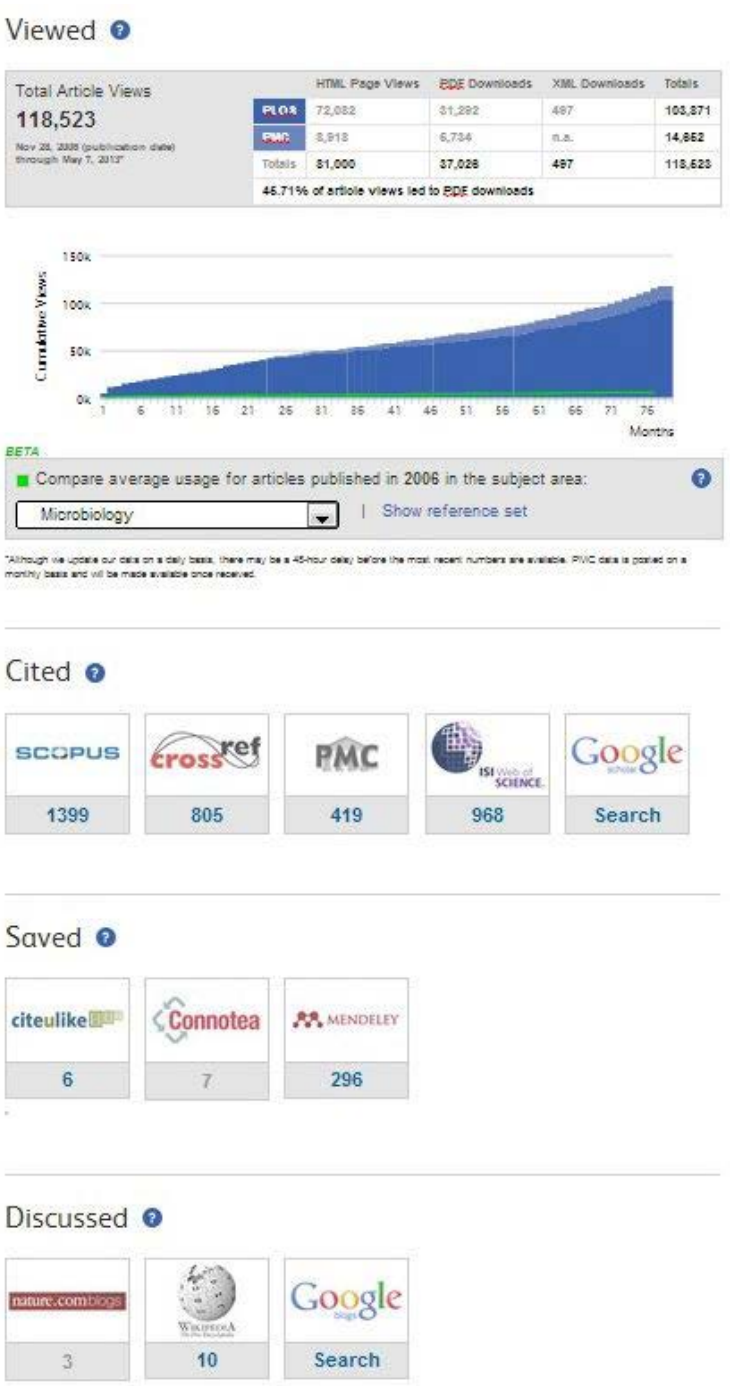


Integration of ALM into discovery and evaluation is work in progress



ALMs at work

- article signposts
- search result listings
- sorting search results
- related content author listings
- RSS feeds
- [article recommendations]
- [researcher profiles]
- [editor assignments]



University of Oklahoma

advanced

filter by + Clear all filters

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Most cited, all time

54,832 results for University of Oklahoma

View as: Figures | List

SEARCH ALERT

High-Throughput Sequencing of *Arabidopsis* microRNAs: Evidence for Frequent Birth and Death of *MIRNA* Genes

Noah Fahlgren, Miya D. Howell, Kristin D. Kasschau, Elisabeth J. Chapman, Christopher M. Sullivan, Jason S. Cumbie, Scott A. Givan, Theresa F. Law, Sarah R. Grant, Jeffery L. Dangl, James C. Carrington

Research Article | published 14 Feb 2007 | PLOS ONE

10.1371/journal.pone.0000219

Views: 21,374 • Citations: 307 • Bookmarks: 112

A High Quality Draft Consensus Sequence of the Genome of a Heterozygous Grapevine Variety

Riccardo Velasco, Andrey Zharkikh, Michela Troggio, Dustin A. Cartwright, Alessandro Cestaro, Dmitry Pruss, Massimo Pindo, Lisa M. FitzGerald, Silvia Vezzulli, Julia Reid, Giulia Malacarne, Diana Iliev, Giuseppina Coppola, Bryan Wardell, Diego Micheletti, Teresita Macalma, Marco Facci, Jeff T. Mitchell, Michele Perazzolli, Glenn Eldredge, Pamela Gatto, Rozan Oyzerski, Marco Moretto, Natalia Gutin, Marco Stefanini, Yang Chen, Cinzia Segala, Christine Davenport, Lorenzo Demattè, Amy Mraz, Juri Battilana, Keith Stormo, Fabrizio Costa, Quanzhou Tao, Azeddine Si-Ammour, Tim Harkins, Angie Lackey, Clotilde Perbost, Bruce Taillon, Alessandra Stella, Victor Solovyev, Jeffrey A. Fawcett, Lieven Sterck, Klaas Vandepoele, Stella M. Grando, Stefano Toppo, Claudio Moser, Jerry Lanchbury, Robert Bogden, Mark Skolnick, Vittorio Sgaramella, Satish K. Bhatnagar, Paolo Fontana, Alexander Gutin, Yves Van de Peer, Francesco Salamini, Roberto Viola

Research Article | published 19 Dec 2007 | PLOS ONE

10.1371/journal.pone.0001326

Views: 23,686 • Citations: 305 • Bookmarks: 140

Serum MicroRNAs Are Promising Novel Biomarkers

Shlomit Gilad, Eti Meiri, Yariv Yogev, Sima Benjamin, Danit Lebanony, Noga Yerushalmi, Hila Benjamin, Michal Kushnir, Hila Cholakh, Nir Melamed, Zvi Bentwich, Moshe Hod, Yaron Goren, Ayelet Chajut

Research Article | published 05 Sep 2008 | PLOS ONE

10.1371/journal.pone.0003148

Views: 36,566 • Citations: 301 • Bookmarks: 155

Search History

University of Oklahoma
university of oklahoma
cancer
Ionnides

Related

Authors

Wei Wang
Wei Zhang
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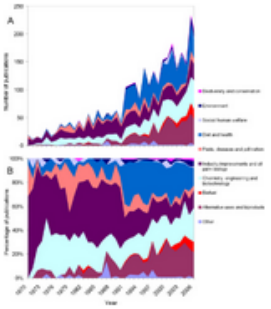
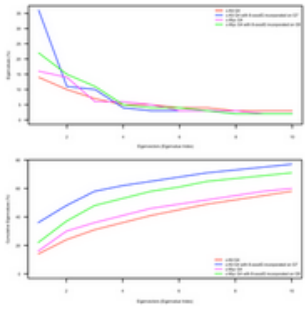


13 Feb 2008

Oil Palm Research in Context: Identifying the Need for Biodiversity Assessment

Edgar C. Turner, Jake L. Snaddon, Tom M. Fayle, William A. Foster

Views: 10,674 • Citations: 21 • Bookmarks: 1169

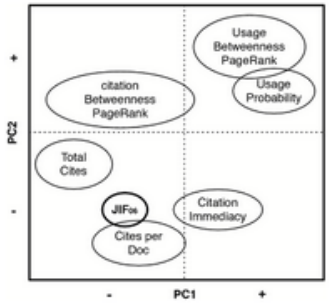


22 Aug 2012

An *In Silico* Study of the Differential Effect of Oxidation on Two Biologically Relevant G-Quadruplexes:...

William J. D. Stebbeds, Joseph Lunec, Lee D. Larcombe

Views: 676 • Citations: None • Bookmarks: 446

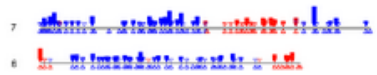


29 Jun 2009

A Principal Component Analysis of 39 Scientific Impact Measures

Johan Bollen, Herbert Van de Sompel, Aric Hagberg, Ryan Chute

Views: 30,173 • Citations: 73 • Bookmarks: 441



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ESSAY

Why Most Published Research Findings Are False

John P. A. Ioannidis

Article | About the Author | Metrics | Comments | Related Content

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- Abstract
- Modeling the Framework for False Positive Findings
- Bias
- Testing by Several Independent Teams

Abstract

Summary

There is increasing concern that most current published research findings are false. The probability that a research claim is true may depend on study power and bias, the number of

Related PLOS Articles

When Should Potentially False Research Findings Be Considered Acceptable?

Most Published Research Findings Are False—But a Little Replication Goes a Long Way

Minimizing Mistakes and Embracing Uncertainty

Comments

Open Access and the Skewness of Science: It Can't Be Cream All the Way Down

Co-Evolution of Transcriptional Silencing Proteins and the DN Elements Specifying Their Assembly

Oliver A. Zill, Devin Scannell, Leonid Teytelman, Jasper Rine

Article | About the Authors | Metrics | Comments | Related Content

Article Usage

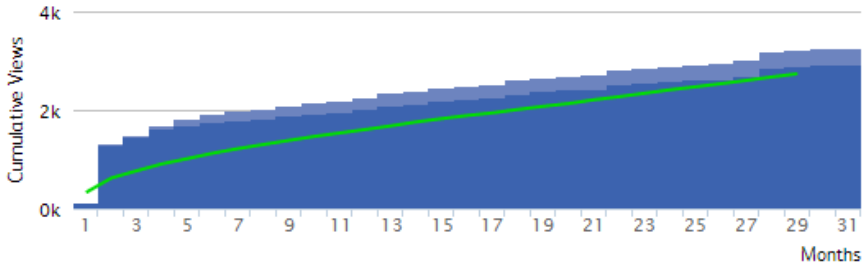
Total Article Views

3,256

Nov 30, 2010 (publication date) through May 7, 2013*

	HTML Page Views	PDF Downloads	XML Downloads	Totals
PLOS	2,255	594	64	2,913
PMC	225	118	n.a.	343
Totals	2,480	712	64	3,256

28.71% of article views led to PDF downloads



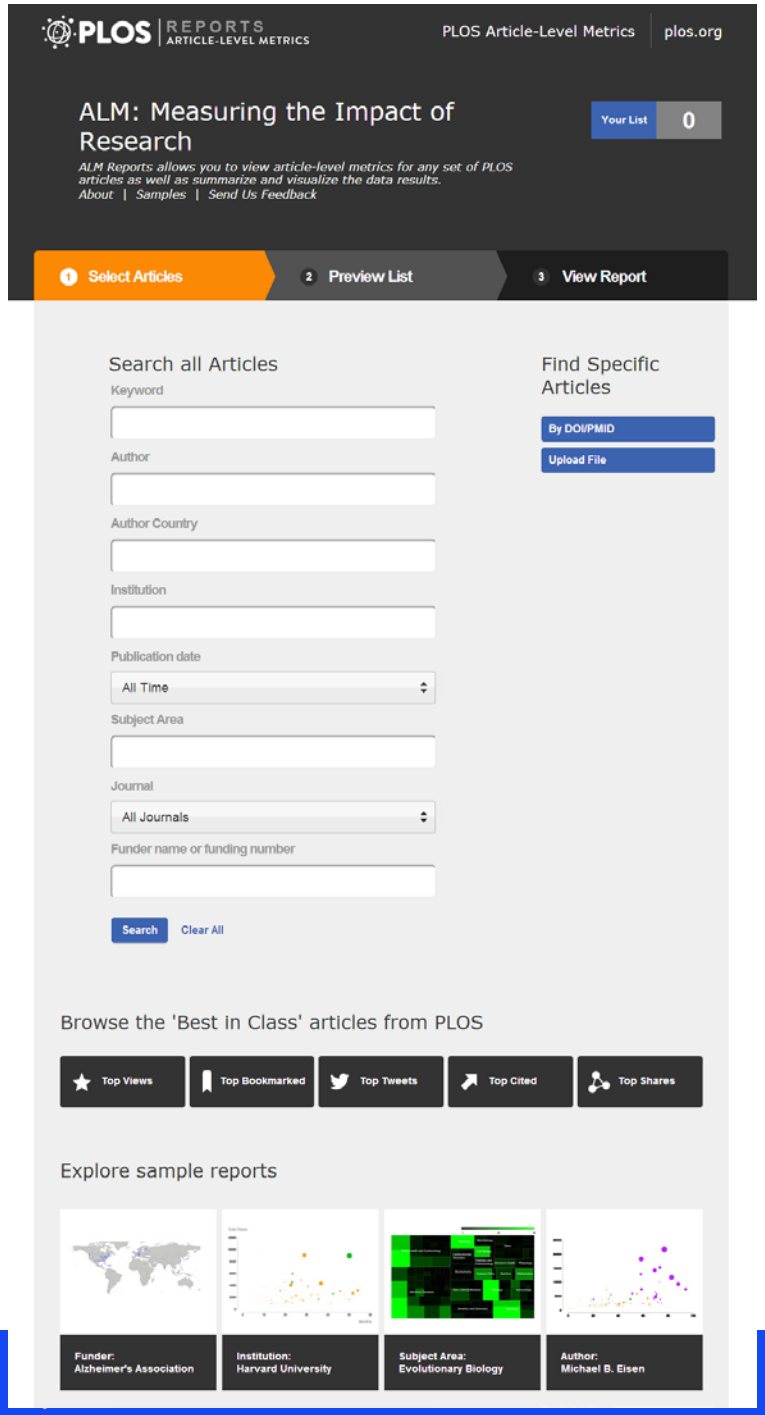
BETA

Compare average usage for articles published in **2010** in the subject area:

Evolutionary biology | Show reference set

*Although we update our data on a daily basis, there may be a 48-hour delay before the most recent numbers are available. PMC data is posted on a monthly basis and will be made available once received.

- Views-downloads ratio
- Average usage: calculation for 1st & 2nd level subject categories available
- Incorporates papers of same publication year
- Full reference set displayed (link)



ALM Reports

The ALM Reports application allows researchers, institutions & funders to:

- create a report of the ALMs for a single or set of PLOS articles
- view a summary of the metrics along with an accompanying set of data visualizations.

Users will be able to search based on:

- keyword
- author name & country
- institution
- publication date
- subject areas
- funder

almreports.plos.org

ALM Reports

Metrics

Visualizations

1 Select Articles | 2 Preview List | 3 View Report

Metrics Data | Visualizations

Edit List

Start Over

21-25 of 25 articles

21 A Prospective Study of Red and Processed Meat Intake in Relation to Cancer Risk

Amanda J Cross, Michael F Leitzmann, Mitchell H Gail, Albert R Hollenbeck, Arthur Schatzkin, Rashmi Sinha

Research Article | published 11 Dec 2007 | PLOS Medicine
10.1371/journal.pmed.0040325

Show all ALMs

Usage

PLOS views	28,895
PLOS PDF downloads	3,828
PLOS XML downloads	150
PMC views	4,219
PMC PDF downloads	1,828
Total usage	38,920

Social Network

CiteULike	1
Mendeley	44
Facebook	51

Citation

PubMed Central	34
CrossRef	72
Scopus	105

Blogs & Media

Nature Blogs	1
Wikipedia	6

Downloads

Metrics Data
1.2MB - CSV file

Visualizations
5.7MB - PNGS in ZIP file

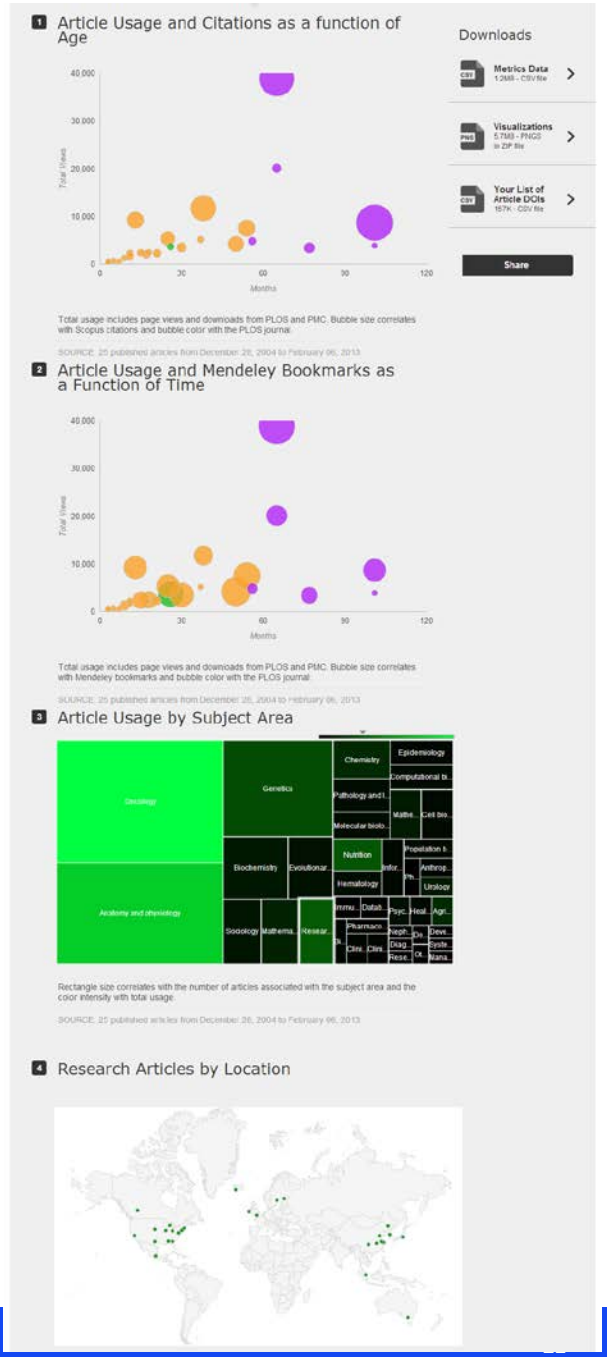
Your List of Article DOIs
157K - CSV file

Share

22 Meat Consumption and Cancer Risk

Jeanine M Genkinger, Anita Koushik

Research Article | published 11 Dec 2007 | PLOS Medicine



Expanding utilization outside PLOS

Researchers use ALMs in various ways to track and communicate the progress of their work*:

With Whom?

** Author survey, July 2012*

University administrators, funding organizations (program managers), research collaborators, public relations departments & other promotion outlets

How?

Formally:

- Curriculum Vitae
- grant & funding applications
- research assessments
- progress & merit report
- research reports

Informally:

- blogs,
- presentations,
- twitter
- web postings, conversations
- personal article management tools

Expanding utilization within PLOS

Improve Business Intelligence

- Strategically invest in trending areas and break into nearby market segments
- Optimize publicity efforts with more targeted campaigns (Call For Papers, conference presence, etc.)
- Increase revenue stream by launching new collections of papers in areas of interest
- Find new fields growing at the intersections between communities of interest
- Expand advertising revenue with customized paid advertising
- Improve marketing messages to communities of interest with data-driven decisions on everything from cover design to marketing text
- Enhance direct marketing efforts for improved circulation and paid subscription rates (as applicable)

Deepen Editorial Capacities

- Conduct cross journal analysis: identify what to focus on and what is lacking across published content
- Manage and negotiate journal relationships and workflows when dealing with overlapping content areas
- Assess the strength and validity of previous editorial decisions re: publication using a data-driven approach
- Strategically direct invest editorial resources to promote new research of interest in growing fields
- Identify promotion opportunities for papers and authors (writing press releases, front matter content, editorial overviews, etc.)
- Uncover potential new authors

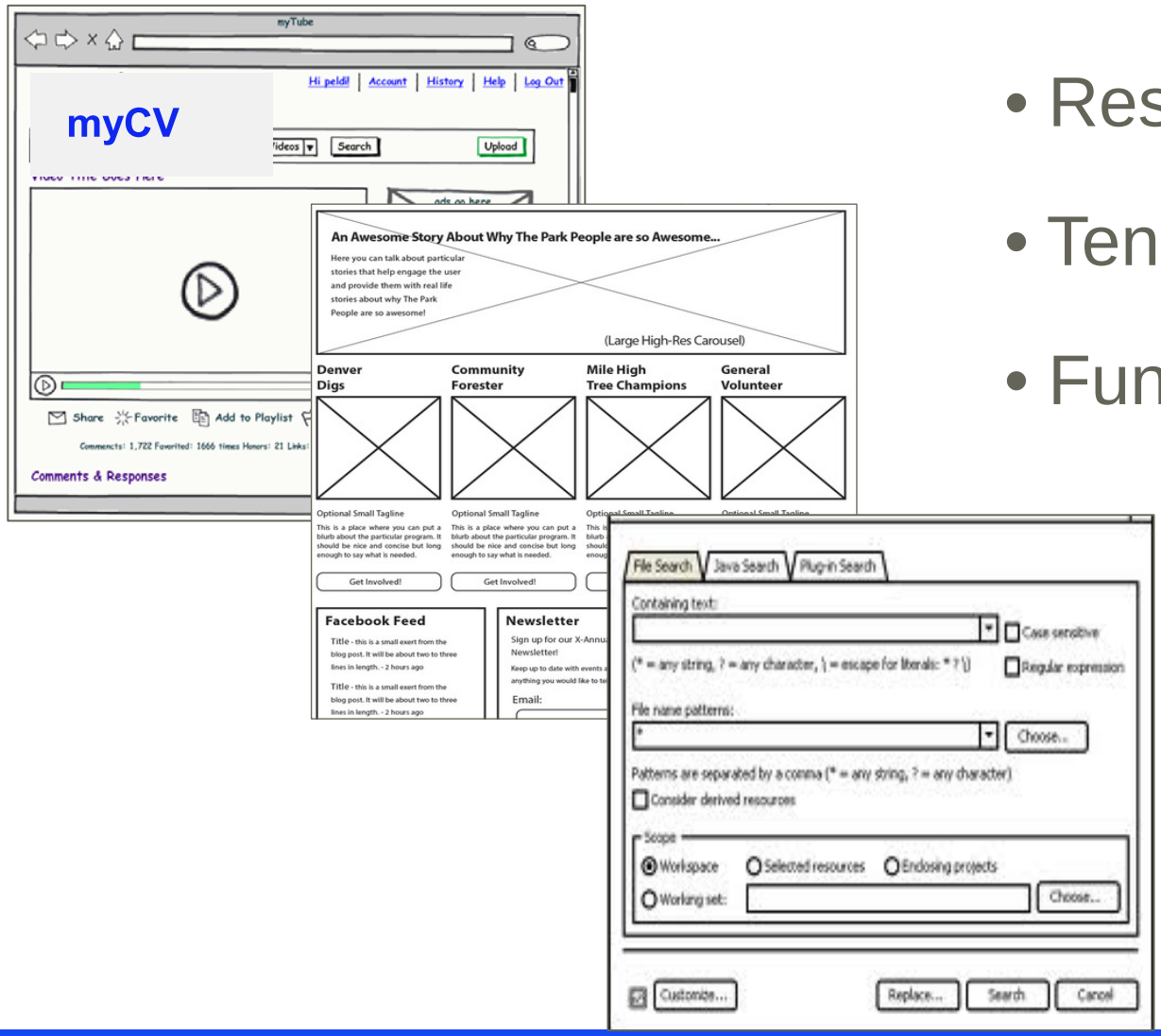
Deliver a Richer Product

- Maximize front matter visibility with more valuable content
- Create more targeted editorial overviews
- Enhance press reviews and promotional content for high-impact papers

Streamline Publishing Operations

- Effectively source papers in editorial board selection and reviewer assignments

Altmetrics on the horizon



- Researcher CV
- Tenure Portfolio
- Funding Application

No simple solution…

Next steps

- Coordination & standardization between data aggregators
- Breakthrough technologies to measure the current “unmeasurables” (downstream impact)
- Data validation and anti-gaming mechanisms
- New services & tools
- More bibliometric research to understand the new metrics

Access is Critical
Keep it Open

Thank You

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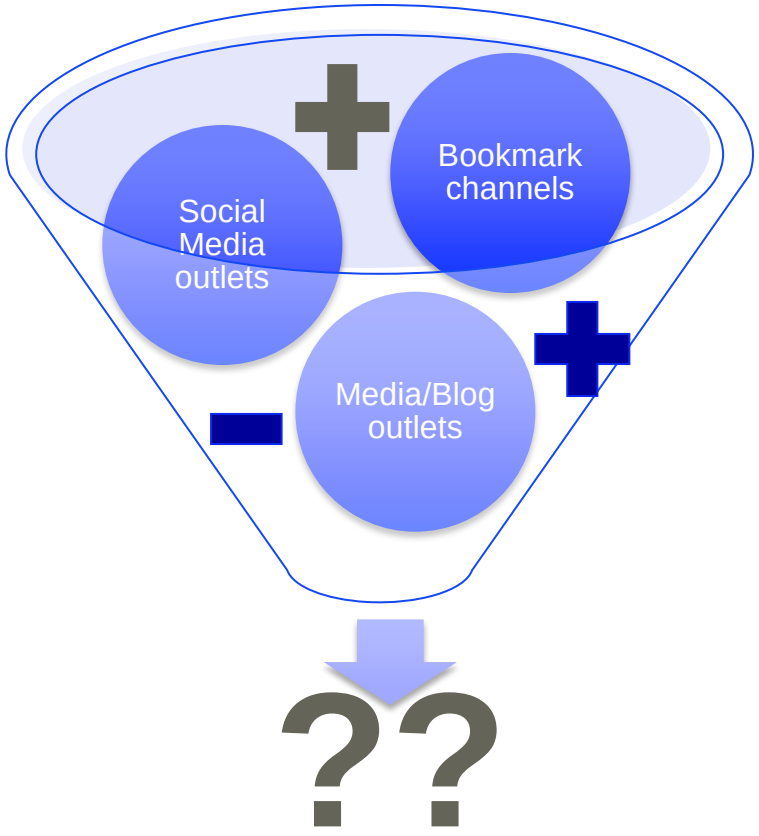
@plosalm

Miscellany

Nature of ALM data types - Issues to be aware of…

A. Landscape of data channels is constantly shifting



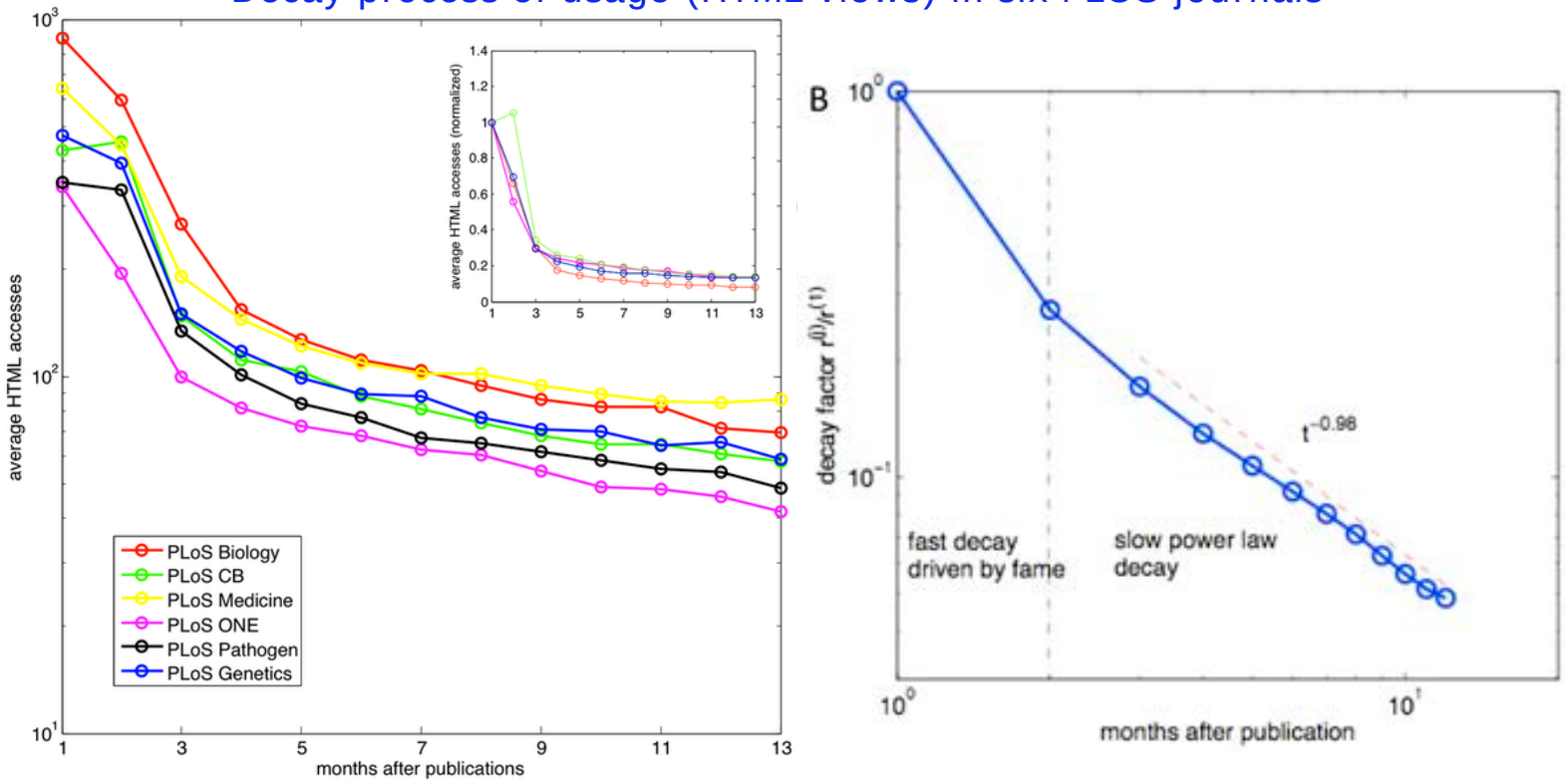
A. New data sources emerge and old ones disappear

B. Significance of each data channel constantly in flux (both waxes and wanes)

B. Metric activity depends on age of article

- New papers – high rates of metric activity which decrease quickly
- Old papers – little activity with slower decline

Decay process of usage (HTML views) in six PLOS journals

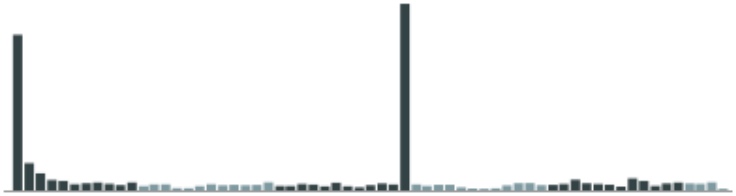


Yan K-K, Gerstein M, 2011 The Spread of Scientific Information: Insights from the Web Usage Statistics in PLoS Article-Level Metrics. PLoS ONE 6(5): e19917. doi:10.1371/journal.pone.0019917

Articles differ in usage over time

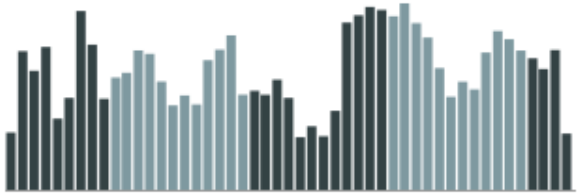
Initial Severity and Antidepressant Benefits: A Meta-Analysis of Data Submitted to the Food and Drug Administration

10.1371/journal.pmed.0050045



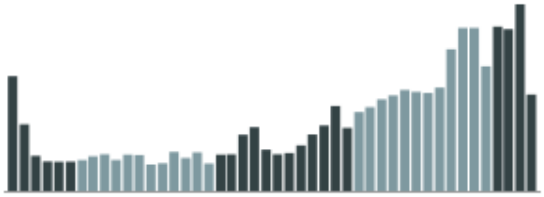
Lifetime Medical Costs of Obesity: Prevention No Cure for Increasing Health Expenditure

10.1371/journal.pmed.0050029



The Preventable Causes of Death in the United States: Comparative Risk Assessment of Dietary, Lifestyle, and Metabolic Risk Factors

10.1371/journal.pmed.1000058



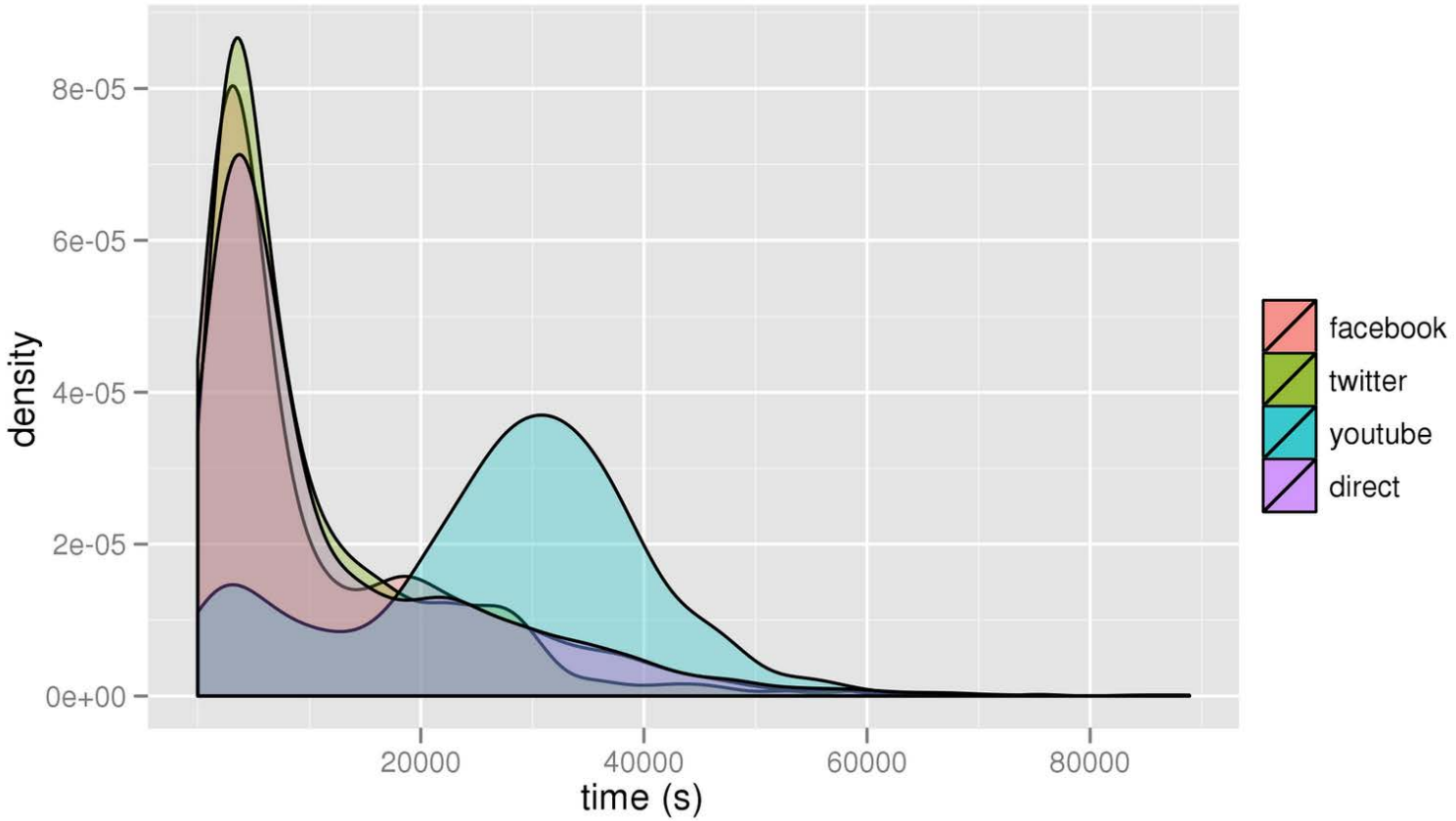
Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement

10.1371/journal.pmed.1000097

HTML views per month from PLOS website (April 18, 2013)

Dissemination activity also changes over time across data channels.

Ex: Social Media Channels



Bit.ly study of 1000 bitly links.

C. Data channels have disparate degrees of significance

Between channels

Ex: 1 blog reference ?= 1 Wikipedia reference

1 Tweet ?= 1 Mendeley bookmark

1 Facebook Like ?= 1 citation manager download

1 Facebook comment ?= 1 PLoS article comment

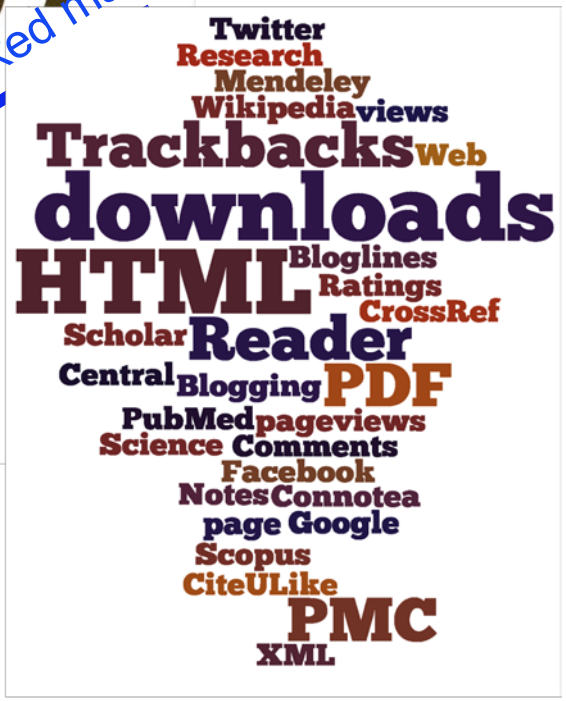
1 NYTimes citation ?= 1 New Scientist mention

Within channels

Ex: 1 blog reference ?=? 1 blog reference

D. Wide variance exists in modes of engagement with papers:

No direct, fixed mapping



- Diverse set of signals
- Diverse notions of “impact”
- Diverse communities of practice

Employ the most suitable set of metrics for each community & use

E. Gaming and Spam

- Data integrity functionality
- Community norms and policing

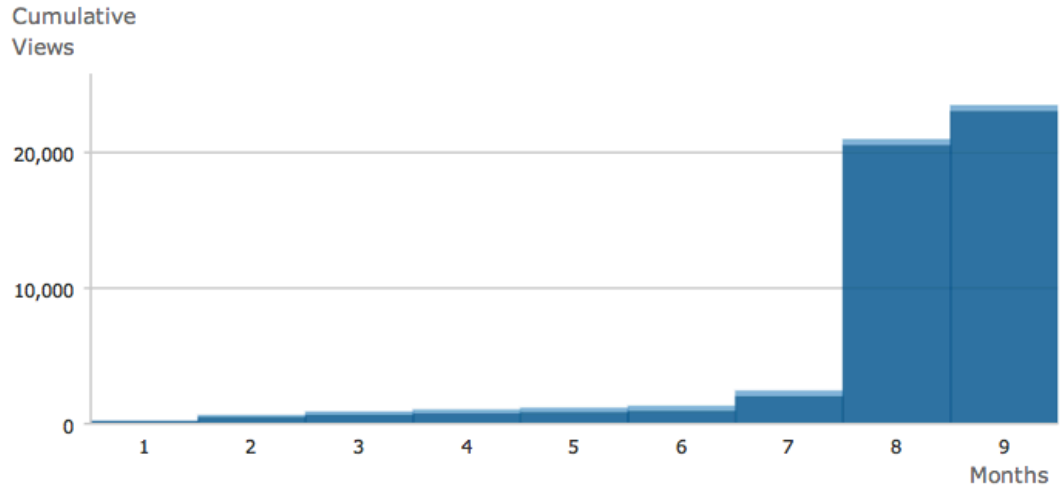
Article Usage

Total Article Views

23,475

Jan 26, 2012 (publication date) through undefined NaN, NaN*

	HTML Page Views	PDF Downloads	XML Downloads	Totals
PLoS	22,683	283	60	23,026
PMC	276	173	n.a.	449
Totals	22,959	456	60	23,475



*Although we update our data on a daily basis, there may be a 48-hour delay before the most recent numbers are available. PMC data is posted on a monthly basis and will be made available once received.