Researcher of the Future: Understanding Discovery

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4th May 2016
Survey on Reader Navigation

- Mission: Gain a measure of the relative importance of all of these channels to inform publishers and information buyers
- Survey of Readers following on from 2005, 2008, 2012 studies
- Over 40,000 respondents globally
- 18 months planning, execution, analysis
Limitations

- It’s a survey
- Survey was only in English
- Survey used invitations from our supporters – not necessarily completely representative sample
- Due to data privacy/data protection rules, all those invited to the survey via email will be quite highly engaged with the supporter (“opted in”)
Headlines – lots more in the report

- A&Is show decline in search importance, but still #1 in aggregate in STEM across all sectors
- Academic researchers rate library discovery as high as A&Is (in high-income countries)
- Academic researchers rate Google Scholar #1
- Over half of article downloads are free versions – PubMed Central a major factor
- ToC alerts in decline
- Increased role for social media in discovery
Academic researchers rate academic search engines #1

When you need to do a search for articles on a specific subject, where on the web do you start that search? 2015 vs 2012 comparison. Academic sector in high income areas for Academic Researcher

<table>
<thead>
<tr>
<th>Service</th>
<th>2012 Score</th>
<th>2015 Score</th>
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<tbody>
<tr>
<td>Bibliographic database (A&amp;I)</td>
<td>4.0</td>
<td>4.5</td>
</tr>
<tr>
<td>Library web pages</td>
<td>3.5</td>
<td>3.8</td>
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<tr>
<td>Journal aggregation</td>
<td>3.0</td>
<td>3.3</td>
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<tr>
<td>Social or professional networking site</td>
<td>2.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Publisher’s web site</td>
<td>4.0</td>
<td>4.5</td>
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<td>By searching journal alerts</td>
<td>3.5</td>
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<td>The journal’s homepage</td>
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<td>A general web search engine</td>
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<td>An academic search engine</td>
<td>5.0</td>
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<td>Society web page</td>
<td>2.0</td>
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2012 data, n=3201, ±0.07 at 95% confidence
2015 data, n=1812, ±0.11 at 95% confidence
Every publisher tells you that they get way more referrals from Google than Google Scholar!

- Analytics typically measure last referrer, and have not tracked where navigation started.
But not everywhere in the world

If you use search engines to find journal articles, how often do you use each of the following? Variations by country in academic sector.
Librarians are different

When you need to do a search for articles on a specific subject, where on the web do you start that search? Variations by job role in high income countries

- Bibliographic database (A&I)
- Library web pages
- Journal aggregation
- Social or professional networking site
- Publisher’s web site
- By searching journal alerts
- The journal’s homepage
- A general web search engine
- An academic search engine
- Society web page

- Educator, Teacher, n=2534, ±0.08 at 95% confidence
- Lecturer, n=1193, ±0.13 at 95% confidence
- Librarian, Information Manager, n=780, ±0.17 at 95% confidence
- Researcher, n=1345, ±0.13 at 95% confidence
- Masters Student, n=1251, ±0.12 at 95% confidence
Largest sector difference is medical
Country differences are significant

When you need to do a search for articles on a specific subject, where on the web do you start that search? Variations by country in academia.

- United States, n=2614, ±0.08 at 95% confidence
- United Kingdom, n=900, ±0.14 at 95% confidence
- Brazil, n=504, ±0.21 at 95% confidence
- China, n=452, ±0.22 at 95% confidence
- Russia, n=235, ±0.26 at 95% confidence
Subject variations

When you need to do a search for articles on a specific subject, where on the web do you start that search? Variations by subject in high income countries

<table>
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<tr>
<th>Subject</th>
<th>Score</th>
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- Humanities, n=1571, ±0.10 at 95% confidence
- Social and Political Science, n=1584, ±0.11 at 95% confidence
- Medical Subjects, n=2401, ±0.10 at 95% confidence
- Life Sciences, n=1131, ±0.13 at 95% confidence
- Engineering and Technology, n=784, ±0.15 at 95% confidence

9 May, 2016

http://sic.pub/discover
Over half of downloads are free!

What proportion of the journal articles that you read do you access from each of the following resources? Variations by country in medical subjects.

- Italy, n=148, ±2.8% at 95% confidence
- Germany, n=49, ±4.5% at 95% confidence
- France, n=125, ±2.9% at 95% confidence
- United Kingdom, n=293, ±2.0% at 95% confidence
- United States, n=912, ±1.3% at 95% confidence

- Free Resources
- Publisher or Aggregator
With some variation by country

What proportion of the journal articles that you read do you access from each of the following resources? Variations by country in medical subjects.

- Nigeria, n=51, ±4.4% at 95% confidence
- Indonesia, n=78, ±3.4% at 95% confidence
- Iran, n=93, ±3.1% at 95% confidence
- India, n=227, ±2.1% at 95% confidence
- United States, n=912, ±1.3% at 95% confidence

[Bar chart showing the proportion of access from free resources and publisher or aggregator for each country.]
What proportion of the journal articles that you read do you access from each of the following resources? Variations by sector in high income countries

- The publisher website, journal website, full-text aggregation or journal collection
- A free subject repository
- A university's institutional repository
- Researchgate, Mendeley, or other scientific social networking site
- A copy emailed by the author or colleague

Academic, n=8248, ±0.4% at 95% confidence
Corporate, n=1149, ±1.2% at 95% confidence
Government, n=1206, ±1.1% at 95% confidence
Medical, n=2100, ±0.8% at 95% confidence
International_Organisation, n=325, ±2.1% at 95% confidence
MicroRNA expression in *zebrafish* embryonic development
E Wienholds, WP Kloosterman, E Miege, ... - ..., 2005 - science.sciencemag.org
Abstract MicroRNAs (miRNAs) are small noncoding RNAs, about 21 nucleotides in length, that can regulate gene expression by base-pairing to partially complementary mRNAs. Regulation by miRNAs can play essential roles in embryonic development. We ...
Cited by 1234 Related articles All 17 versions Cite Save

Modulatory neurotransmitter systems and behavior: towards *zebrafish* models of neurodegenerative diseases
P Panula, V Sallinen, M Sundvik, J Kolehmainen... - ..., 2006 - online.liebertpub.com
The modulatory amnergic neurotransmitters are involved in practically all important physiological systems in the brain, and many of them are also involved in human central nervous system diseases, including Parkinson's disease, schizophrenia, Alzheimer's ...
Cited by 128 Related articles All 5 versions Cite Save

The *zebrafish* book: a guide for the laboratory use of *zebrafish* (Brachydanio rerio)
M Westerfield - 1995 - University of Oregon press
Cited by 1703 Related articles Cite Save

*The zebrafish* as a model for behavioral studies
Á Miklosi, RJ Andrew - *Zebrafish*, 2006 - online.liebertpub.com
Zebrafish genetics is developing at a rapid pace, and this opens up new approaches to understanding genetic control. This short review discusses recent results obtained in behavioral studies in this species, and also shows some promising ways of combining ...
Cited by 108 Related articles All 3 versions Cite Save

Positional cloning of *zebrafish* ferroportin1 identifies a conserved vertebrate iron exporter
A Donovan, A Brownie, Y Zhou, J Shepard, SJ Pratt... - Nature, 2000 - nature.com
Abstract Defects in iron absorption and utilization lead to iron deficiency and overload disorders. Adult mammals absorb iron through the duodenum, whereas embryos obtain iron through placental transport. Iron uptake from the intestinal lumen through the apical ...
Cited by 1340 Related articles All 12 versions Cite Save

Gal4/UAS transgenic tools and their application to *zebrafish*
ME Halber, J Rhee, MG Goll, CM Aktake... - ..., 2008 - online.liebertpub.com
The ability to regulate gene expression in a cell-specific and temporally restricted manner provides a powerful means to test gene function, bypass the action of lethal genes, label subsets of cells for developmental studies, monitor subcellular structures, and target ...
Cited by 101 Related articles All 4 versions Cite Save

Zinc finger-based knockout punches for *zebrafish* genes
SC Ekker - *Zebrafish*, 2008 - online.liebertpub.com
Zinc finger-based knockout strategies provide a powerful tool for generating specific loss-of-function alleles in the model organism, *Danio rerio*.
Cited by 120 Related articles All 2 versions Cite Save
Concluding observations

- Many free discovery resources, like PubMed and Google Scholar, are used less in poorer countries – awareness?
- The changing nature of Google Scholar will have dramatic impact on free/paid
- Librarians aren’t convincing their patrons about search methodology
Thank you

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