Showcasing your Research Impact using Bibliometrics

An Introduction to Bibliometrics
Ciarán Quinn
Session aims

- What are Bibliometrics?
- What are Altmetrics?
- Why are they important?
- How can you measure?
  - What are the metrics?
  - What resources are available to you?
  - Subscribed and Unsubscribed resources
- How to identify your research impact/profile
- How to improve your citations
  - Where should I publish
  - Using keywords/descriptors
  - Increasing visibility
- Using metrics to identify potential research collaborations
Session aims

- What are Bibliometrics & Altmetrics?
- Why are they important for me?
- How to identify your research impact/profile?
- How do I improve my citations?
- Using metrics to identify potential research collaborations
What are Bibliometrics?

- A range of statistical analyses related to publications and their authors.
Each measure has advantages and disadvantages, related to discipline characteristics, inclusiveness of the measures, and the accessibility of the data; and no single measure should be used in isolation.

There are different emphasis and tools for different groups
  - For example if much of your work feeds into government reports, advisory committees or the media you may not get due credit using traditional metrics alone.
A variety of metrics have been developed to help assess the output of researchers. Here are some of the most popular:

- **Total number of papers**: a simple count of the number of papers a researcher has published
- **Total number of citations**: a count of all the citations received by a researcher’s published works
- **The h-index**: has become the most popular metric for assessing the output of individuals since it was developed by Hirsch in 2005. The h-index of an individual is the number of their papers that have been cited at least $h$ times e.g. a researcher has an h-index of 25 if 25 of their papers have been cited at least 25 times.
- A number of **variations on the h-index** have emerged. These include:
  - 1) **Egghe’s g-index** which gives more weight to the highest cited papers
  - 2) **The individual h-index** which accounts for co-authorship in calculating impact by giving less weight to such papers
  - 3) **The contemporary h-index** gives less weight to older cited papers
  - 4) **The age-weighted citation rate** which also accounts for the age of papers
Examples of some Bibliometric Indicators

- **H Index** (Used by WOS Citation Indexes & Scopus Author Evaluator)
  - measures the quantity & sustainability of an individuals research output

- **Citation Analysis**
  - how many times your publications have been cited on Journal and Citation Indexes such as Scopus and Web of Science

- **Journal based metrics and Impact Factors**
  - *Journal Citation Reports* (Web of Knowledge)
  - *Journal Analyzer* (Scopus)
Why are they important?

- Use citation counts & analysis to
  - Assess your own research performance
  - Evaluate and track the impact your published research
  - Identify Journals with the greatest impact in your research area
  - Support applications for promotion, tenure and grant funding
  - Identify potential collaboration opportunities with other researchers
  - Enhance the international reputation of yourself, your department and your Institution by showcasing your citations
## Journal Citation Reports by Subject (Psychology) Sorted by Impact Factor

### Journal Summary List

<table>
<thead>
<tr>
<th>Mark</th>
<th>Rank</th>
<th>Abbreviated Journal Title</th>
<th>ISSN</th>
<th>Total Cites</th>
<th>Impact Factor</th>
<th>5-Year Impact Factor</th>
<th>Immediacy Index</th>
<th>Articles</th>
<th>Cited Half-Life</th>
<th>JCR Data</th>
<th>Eigenfactor® Metrics</th>
<th>Article Influence Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>ANNU REV PSYCHOL</td>
<td>0666-4308</td>
<td>9464</td>
<td>16.832</td>
<td>13.274</td>
<td>3.348</td>
<td>23</td>
<td>9.2</td>
<td>0.02575</td>
<td>11.324</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>PSYCHOLOGY BULL</td>
<td>0893-3199</td>
<td>28331</td>
<td>14.467</td>
<td>19.100</td>
<td>1.663</td>
<td>41</td>
<td>&gt;10.0</td>
<td>0.02959</td>
<td>8.096</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>ANNU REV CLIN PSYCHOSOM</td>
<td>1548-5943</td>
<td>1575</td>
<td>0.111</td>
<td>11.267</td>
<td>1.250</td>
<td>26</td>
<td>4.5</td>
<td>0.00630</td>
<td>4.815</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>PSYCHOL REV</td>
<td>0623-295X</td>
<td>19753</td>
<td>7.756</td>
<td>11.010</td>
<td>1.929</td>
<td>26</td>
<td>&gt;10.0</td>
<td>0.02293</td>
<td>5.945</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>PSYCHOLOGIA PSICOSOMATICA</td>
<td>0633-2159</td>
<td>2653</td>
<td>0.284</td>
<td>5.092</td>
<td>1.179</td>
<td>28</td>
<td>7.2</td>
<td>0.02470</td>
<td>1.501</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>PSYCHOL MED</td>
<td>0633-2917</td>
<td>15297</td>
<td>6.159</td>
<td>6.132</td>
<td>0.847</td>
<td>235</td>
<td>6.6</td>
<td>0.02887</td>
<td>2.178</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>SOC OPEN AFFECT NEUR</td>
<td>1949-8016</td>
<td>1374</td>
<td>0.132</td>
<td>0.675</td>
<td>1.042</td>
<td>71</td>
<td>3.2</td>
<td>0.09991</td>
<td>2.759</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>J CHILD PSYCHOL PSYCG</td>
<td>0621-0639</td>
<td>12642</td>
<td>4.281</td>
<td>6.164</td>
<td>1.306</td>
<td>121</td>
<td>6.4</td>
<td>0.02755</td>
<td>2.300</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>COGNITIVE PSYCHOL</td>
<td>0010-0265</td>
<td>5350</td>
<td>4.273</td>
<td>5.061</td>
<td>0.235</td>
<td>17</td>
<td>&gt;10.0</td>
<td>0.00691</td>
<td>2.850</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>DEPRES ANXIETY</td>
<td>1601-4269</td>
<td>3467</td>
<td>4.184</td>
<td>3.931</td>
<td>0.555</td>
<td>110</td>
<td>4.4</td>
<td>0.01205</td>
<td>1.288</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>PSYCHOSOM MED</td>
<td>0392-3174</td>
<td>10326</td>
<td>3.969</td>
<td>4.776</td>
<td>0.657</td>
<td>102</td>
<td>6.5</td>
<td>0.01970</td>
<td>1.669</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>HEALTH PSYCHOL</td>
<td>0278-6138</td>
<td>7288</td>
<td>3.873</td>
<td>4.706</td>
<td>0.430</td>
<td>93</td>
<td>0.0</td>
<td>0.01851</td>
<td>1.702</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>13</td>
<td>NEUROPSYCHOL</td>
<td>0694-4035</td>
<td>4115</td>
<td>3.816</td>
<td>4.063</td>
<td>0.740</td>
<td>77</td>
<td>7.5</td>
<td>0.01025</td>
<td>1.457</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>NEUROPSYCL HUMN</td>
<td>1074-7427</td>
<td>4125</td>
<td>3.419</td>
<td>3.887</td>
<td>0.543</td>
<td>129</td>
<td>5.3</td>
<td>0.01295</td>
<td>1.289</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>PSYCHO-OENCEPHOL</td>
<td>1057-0240</td>
<td>5161</td>
<td>3.590</td>
<td>3.992</td>
<td>0.500</td>
<td>156</td>
<td>5.8</td>
<td>0.01423</td>
<td>1.176</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>16</td>
<td>PSYCHO-PHYSIOLOGY</td>
<td>0046-6772</td>
<td>9123</td>
<td>3.290</td>
<td>4.049</td>
<td>0.664</td>
<td>188</td>
<td>&gt;10.0</td>
<td>0.01299</td>
<td>1.357</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>17</td>
<td>AMEL PSYCHOL</td>
<td>0551-0511</td>
<td>4723</td>
<td>3.525</td>
<td>4.065</td>
<td>0.569</td>
<td>137</td>
<td>5.7</td>
<td>0.01513</td>
<td>1.405</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>18</td>
<td>J EXP PSYCHOL HUMAN</td>
<td>0096-1523</td>
<td>10323</td>
<td>3.061</td>
<td>3.759</td>
<td>0.409</td>
<td>152</td>
<td>&gt;10.0</td>
<td>0.01616</td>
<td>1.519</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>19</td>
<td>DEV PSYCHOBIO</td>
<td>0012-1030</td>
<td>3210</td>
<td>2.977</td>
<td>2.814</td>
<td>0.973</td>
<td>74</td>
<td>9.2</td>
<td>0.01890</td>
<td>0.930</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td>INT J EAT DISORDER</td>
<td>0276-3478</td>
<td>6164</td>
<td>2.947</td>
<td>3.347</td>
<td>0.406</td>
<td>106</td>
<td>9.2</td>
<td>0.01036</td>
<td>1.027</td>
<td></td>
</tr>
</tbody>
</table>
### Journal Citation Report
(WOS) ‘Journal Cell Biology Int’

**Journal: CELL BIOLOGY INTERNATIONAL**

<table>
<thead>
<tr>
<th>Mark</th>
<th>Journal Title</th>
<th>ISSN</th>
<th>Total Cites</th>
<th>Impact Factor</th>
<th>5-Year Impact Factor</th>
<th>Immediacy Index</th>
<th>Citable Items</th>
<th>Cited Half-life</th>
<th>Citing Half-life</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CELL BIOL INT</td>
<td>1065-6995</td>
<td>2844</td>
<td>1.402</td>
<td>1.610</td>
<td>0.310</td>
<td>168</td>
<td>5.7</td>
<td>7.8</td>
</tr>
</tbody>
</table>

**Journal Information**

- **Full Journal Title**: CELL BIOLOGY INTERNATIONAL
- **ISO Abbrev. Title**: Cell Biol. Int.
- **JCR Abbrev. Title**: CELL BIOL INT
- **ISSN**: 1065-6995
- **Issues/Year**: 12
- **Language**: ENGLISH
- **Journal Country/Territory**: ENGLAND
- **Publisher**: PORTLAND PRESS LTD
- **Publisher Address**: THIRD FLOOR, EAGLE HOUSE, 16 PROCTER STREET, LONDON WCIV 6 NX, ENGLAND

**Subject Categories**: CELL BIOLOGY

**Journal Impact Factor**

Cites in 2011 to items published in: 2010 = 153  
Number of items published in: 2010 = 155  
2009 = 332  
2008 = 169  
**Sum**: 455  
**Sum**: 324

Calculation: Cites to recent items: 495 - 1.402  
Number of recent items: 324

**5-Year Journal Impact Factor**
Journal Analyzer
(Scopus) ‘Journal of Cell Biology’
Case Study: Author Citation Report
Engler, Adam J (Bio-Engineer)

Web of Science

Citation Report
Distinct Author: Summary. Engler, AJ
Timespan: All years. Databases: SCOPUS
This report reflects citations to source items indexed within Web of Science. Perform a Cited Reference Search to include citations to items not indexed within Web of Science.

Published Items in Each Year

Citations in Each Year

Results found: 33
Sum of the Times Cited [T]: 4351
Sum of Times Cited without self-citations [T]: 4296
Citing Articles [T]: 3286
Citing Articles without self-citations [T]: 2560
Average Citations per Item [T]: 131.55
h-index [T]: 17

Use the checkboxes to remove individual items from this Citation Report or restrict items published between [1945] and [2013].

1. Title: Matrix elasticity directs stem cell lineage specification
Author(s): Engler, AJ; Sen, S; et al.
Source: JOURNAL OF CELL BIOLOGY Volume: 166 Issue: 4 Pages: 677-689 DOI: 10.1083/jcb.200505004 Published: SEP 13 2004

2. Title: Myotubes differentiate optimally on substrates with tissue-like stiffness: pathological implications for soft or stiff microenvironments
Author(s): Engler, AJ; Griffin, MA; Sen, S; et al.
Source: JOURNAL OF CELL BIOLOGY Volume: 166 Issue: 6 Pages: 877-887 DOI: 10.1083/jcb.200405004 Published: SEP 13 2004

3. Title: Substrate compliance versus ligand density in cell on gel responses
Author(s): Engler, AJ; Schasfoort, I; Newman, CJ; et al.
Source: BIOPHYSICAL JOURNAL Volume: 86 Issue: 1 Pages: 617-628 DOI: 10.1016/S0006-3495(01)71410-5 Part 1 Published: JAN 2004

4. Title: Embryonic cardiomyocytes beat best on a matrix with heart-like elasticity; scar-like rigidity inhibits beating
Author(s): Engler, Adam J; Carapelle, Christine; Johnson, Colin P; et al.
Document Overview
(Scopus)
Citation Overview
Adam J Engler on Scopus
Subscribed to Bibliometric Resources
Available via NUIM Library

- **ISI Journal Citation Reports**
  - Most frequently cited Journals in a field
  - Highest Impact in a field
  - Largest Journal in a field

- **Web of Science**
  - Article analysis (Impact) Times cited, number of citations by year,
  - average citation rate, h index and Journal Impact Factor

- **Incites**
  - InCites is a customized, citation-based research evaluation tool on the Web that enables you to analyze institutional productivity and benchmark your output against peers worldwide. Contact Subject Librarian to arrange access

- **Scopus**: View Citation overview, Journal Analyzer,

- **SciVal Strata**: is a visualization tool that helps users track team and individual research performance across a flexible spectrum of benchmarks and measures.
CALIBRATE YOUR STRATEGIC RESEARCH VISION

InCites is a customized, citation-based research evaluation tool on the Web that enables you to analyze institutional productivity and benchmark your output against peers worldwide.

Follow the links below to view and create reports.

---

**RESEARCH PERFORMANCE PROFILES**

Comprehensive Publication & Citation Reports
- Pinpoint influential and emerging researchers
- Monitor collaboration activity

Get Started

Dataset: Irish Universities Association; NUI Mammouth; Address Search Dataset

---

**GLOBAL COMPARISONS**

Output & Impact Statistics for Benchmarking
- Compare your institution to others worldwide
- Identify field strengths within countries/territories

Get Started

---
SciVal Strata
(Access by Registering with Scopus & use that Login)
Altmetrics are? Non Traditional Filters!

- Google Scholar Citations
- Google Scholar Metrics (includes Books)
- Altmetric & Impact Story
- PLoS (Public Library of Science) Open Access
- PMC Citation Search: (uses PubMed ID’s)
- Reader Meter: Researcher-level metrics based on readership. Currently from Mendeley
There may be specialist databases for your field that offer citation tools and a good coverage of the literature, here are some examples:

- **Medline** - free resource indexing life science and biomedical publications. Includes citation data. [http://medline.cos.com/](http://medline.cos.com/)
- **CiteSeer** - free resource for computer and information science publications. Includes citation data. [http://citeseer.ist.psu.edu/citeseer.html](http://citeseer.ist.psu.edu/citeseer.html)
Google Scholar Metrics with Publish or Perish
http://www.harzing.com/pop.htm
Scholarly peer networks

- Academia.edu
- Mendeley
- Social Science Research Network (SSRN)
- VIVO: International Researcher Network
- Microsoft Academic Search
Does where I publish matter?

- Citation databases such as Web of Science and Scopus index International, high Impact, Peer Reviewed Journal Titles
  - Exclude many books/conference proceedings/non English language
- Are you publishing in those Journals?
- Do you publish mainly in Books?
- Are there opportunities to publish in Journals?
- Is your research in a field not prioritised by the bibliographic data providers?
  - If not notify us and we’ll supply details to the database provider if the journal has a international audience
Improve your citations: make yourself visible!

- Use Researcher Profile Directory: expert database of all researchers at NUI Maynooth.
- Use NUI Maynooths Institutional Repository ‘Eprints’
  - Open Access policy
  - Deposit publications to RIS & automatically sent to eprints
- Avoid using different versions of your name and Institutional name variants (National University of Ireland Maynooth,)
  - Beware collaborative articles as it can affect the name variants!
- Use Research ID (Web of Knowledge)
  - Check your name variants & align with your publications
- Use Author Identifier (Scopus)
  - Merge your Author identities (disambiguation) and align with your articles
Encourage the Citation of your Work

- Help the Literature Reviewer!
  - Don’t be obscure use commonly used descriptors
  - Use informative titles
  - Be clear and informative in writing abstracts and book descriptions. Include the key points of the research.
  - Collaborative works attract more citations due to networking across researchers
  - Self cite but keep it in line with other academics

- Use social media and traditional media to get your work noticed
Finding Potential Research Collaborators

- Increase your profile
- Promote your research
- **SciVal ® Strata** (Elsevier): is a visualization tool that helps users track team and individual research performance across a flexible spectrum of benchmarks and measures.
- **Incites** (Thomson Reuters): is a customized, citation-based research evaluation tool on the Web that enables you to analyze institutional productivity and benchmark your output against peers worldwide.
Bibliometrics & citation analysis is only one quantitative indicator of research. There are other quantitative indicators and qualitative approaches of which peer-review a key indicator.

**Bibliometric Measures:**
- Patterns of authorship, publication & the use of literature

**Benefits**
- Quantitative approaches could be argued to be fairer than qualitative methods e.g. peer-review
- Cost effective
- Efficiency advantage & constancy

**Application & importance varies from field to field**
- Tremendous controversy surrounds any assessment of the intellectual output of academics & researchers

**Examples Times Higher & QS Ranking to assess University Performance. Whole range in indices.**
- Measuring impact of literature
- Just one of many measures
Research Skill Tutorials

http://library.nuim.ie/training/postgraduate

Research Skills Tutorials:

- Moodle Library Area (EBooks, Research Skills, Plagiarism, Referencing),
- Graduate School Generic Skills Training,
- VTS Tutorials
- Emerald Research Zone
- Net Skills
- Measuring your Research Impact (MyRI) online tutorial
- EndNote Web Help
- EndNote Web Training
- eTheses Information briefing sessions: PostGrad Forum
MyRI (Measuring your Research Impact)

- A collaborative project of four Irish academic libraries producing a set of materials to support bibliometrics training.
- [http://www.ndlr.ie/myri/](http://www.ndlr.ie/myri/)
- Contains:
  - An online tutorial
    - This is in 3 modules: introductory overview; journal ranking; bibliometrics to support your career and research strategy. Includes videos and other interactive elements.
  - Product Profiles
  - Datasheets
Other Bibliometric Sources:

- Useful Links at:
  - Science & Engineering Subject Librarian Blog
  - http://ciarnthelibrarian.blogspot.ie/