Visualizing the Intersections of Impact and BTAA Libraries’ Investments in the Research Enterprise Using Government Data
Project Objectives

Model open data on government spending and federally funded research outputs to:

• Visually demonstrate how libraries contribute to the research enterprise by providing information scholars need to both develop and sustain their research agendas, and

• Allow libraries to visualize and utilize this same data to inform the development of library collections and services.
Data Sources
# Summary of Data Gathered

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of NIH grants 2010-2018</td>
<td>18,845</td>
</tr>
<tr>
<td>Average annual value of NIH funding for each school</td>
<td>$193M</td>
</tr>
<tr>
<td>Range NIH funding across BTAA schools</td>
<td>$15M-$616M</td>
</tr>
<tr>
<td>Number of publications</td>
<td>284,822</td>
</tr>
<tr>
<td>Number of references</td>
<td>5,403,273</td>
</tr>
<tr>
<td>Number of citations</td>
<td>4,720,449</td>
</tr>
</tbody>
</table>
Return on Investment

• Kaufman (2008) and Tenopir et al. (2010) relied on researchers to self-report use of library resources to develop successfully funded research proposals (ie. References, citations ...).

• Both combined survey data with other publicly available financial data to calculate a high-level aggregate ROI quantifying the library’s contribution to the research enterprise.
## Calculations Required for ROI & Visualizations

<table>
<thead>
<tr>
<th>Field</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of grants</td>
<td><code>countd([Core Project Number])</code></td>
</tr>
<tr>
<td>Total grant value</td>
<td><code>sum([Total Cost])</code></td>
</tr>
<tr>
<td>Total indirect cost value</td>
<td><code>sum([InDirect Cost IC])</code></td>
</tr>
<tr>
<td>Number of articles published by grant 2010-</td>
<td><code>{fixed [Core Project Number]: countd([Pmid])}</code></td>
</tr>
<tr>
<td>Number of grant articles published in this journal 2010-</td>
<td><code>countd([Pmid])</code></td>
</tr>
</tbody>
</table>
## Calculations Required for ROI & Visualizations

<table>
<thead>
<tr>
<th>Field</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated journal price</td>
<td><code>sum([Average Cost Per Title 2018])</code></td>
</tr>
<tr>
<td>Adjusted library institutional cost</td>
<td><code>((countd([Pmid]))/sum([annual number articles published by grant]))*.017</code></td>
</tr>
<tr>
<td>Library institutional cost</td>
<td><code>sum([Indirect Cost IC])*[adjusted library ic]</code></td>
</tr>
<tr>
<td>ROI</td>
<td><code>([Library IC]-sum([Average Cost Per Title 2018])/sum([Average Cost Per Title 2018]))</code></td>
</tr>
<tr>
<td>Cost per use</td>
<td><code>min([Average Cost Per Title 2018])/sum([Downloads])</code></td>
</tr>
</tbody>
</table>
Relative Citation Ratio

• Bibliometric used to evaluate influence of federally funded research
• Measures influence of an article in relation to other articles in its field by examining its co-citation network
• Benchmarks article to other articles in its field to the median value 1.0
• As calculated, this measure is field- and time-normalized
Journal of the National Cancer Institute
Relative Citation Ratio (RCR) for each PMED

Click on a circle to learn more about each article

RCR Value = 1.520

15,973 downloads
2015-2017

NCI-RTOG translational program strategic guidelines for the early-stage development of radiosensitizers.
1/1/2013, 105: 11-24
Authors = Lawrence, Yaacov Richard; Vikram, Bhadrasain; Dignam, James J.; Chakravarti, Arnab; Machlai, Mitchell; Freidlin, Boris; Takebe, Naoko; Curran Jr, Walter J.; Bentzen, Soren M.; Okunieff, Paul; Coleman, C. Norman; Dicker, Adam P.

Estimated journal price $5,722
Adjusted library institutional cost 0.0150%
Library institutional cost $7,808
ROI 30%

34 articles published 2010-

articles published 2015-2017 34
downloads 2015-2017 15,973
Cost per use $0.36
References


Hutchins, B. Ian, Xin Yuan, James M. Anderson, and George M. Santangelo. 2016. “Relative Citation Ratio (RCR): A New Metric That Uses Citation Rates to Measure Influence at the Article Level.” PLoS 14 (9). e1002541. doi:10.1371/journal.pbio.1002541.


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