Assessing Faculty Research Productivity at Public Research Institutions

Custom Research Brief

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# Table of Contents

I. Research Methodology ........................................................................................................... 4
   Project Challenge ..................................................................................................................... 4
   Project Sources ......................................................................................................................... 4
   Research Parameters ............................................................................................................... 5

II. Executive Overview ............................................................................................................... 6
   Key Findings............................................................................................................................... 6

III. Determining Faculty Research Productivity ......................................................................... 7
   Indicators of Research Productivity .......................................................................................... 7
   Research Productivity Review Processes ................................................................................. 7
   Tenure and Promotion Committees ....................................................................................... 9
   Considerations for Transitioning to Doctoral Programs .................................................... 12

IV. Internal and External Use of Indicators .............................................................................. 12
   Communication with External Constituencies ....................................................................... 12
I. Research Methodology

Project Challenge  Leadership at a member institution approached the Forum with the following questions:

- What methods do institutions employ to assess faculty quality? Do institutions use business intelligence tools and services (e.g., Academic Analytics) to measure faculty research productivity?
- What indicators (e.g., external reviews, citation indices, research funding, etc.) do tenure and promotion committees use to measure faculty quality? Which of these indicators do administrators cite as most objective for comparison within the institution and between institutions?
- What methodology do administrators use to select external reviewers? What does the external review process entail?
- Do institutions use an institution-wide formula to weigh indicators of productivity? How do administrators ensure that such a formula is applied at the department level?
- How much weight do tenure and promotion committees assign to each indicator of productivity? How does the weight of quality indicators vary across disciplines?
- Do institutions use a portfolio system to compile indicators of faculty quality?
- What percentage of faculty who are eligible for tenure or promotion in each review year receive tenure and/or are promoted annually?
- How do administrators determine which departments have the most productive research faculty compared to competitor programs at other institutions?
- How do administrators determine which departments should transition to doctorate degree granting programs?
- How do administrators objectively compare faculty productivity across disparate colleges?
- How do administrators convey quality to external constituencies (e.g., Board of Governors, accrediting body, etc.)?
- To what extent do administrators find indicators of faculty quality effective at measuring research productivity?

Project Sources  The Forum consulted the following sources for this report:

- Advisory Board’s internal and online research libraries (www.educationadvisoryboard.com)
- National Center for Education Statistics (NCES) (http://nces.ed.gov/)
- Institution Web sites
- Academic Analytics Web site (http://www.academicanalytics.com/)
The Forum interviewed senior academic affairs and institutional research administrators at public research institutions in the southern United States.

**A Guide to Institutions Profiled in this Brief**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
<th>Approximate Institutional Enrollment (Undergraduate/Total)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>University A</td>
<td>South</td>
<td>26,100/32,300</td>
<td>Research Universities (high research activity)</td>
</tr>
<tr>
<td>University B</td>
<td>South</td>
<td>31,800/39,800</td>
<td>Research Universities (very high research activity)</td>
</tr>
<tr>
<td>University C</td>
<td>South</td>
<td>11,800/18,900</td>
<td>Research Universities (high research activity)</td>
</tr>
<tr>
<td>University D</td>
<td>South</td>
<td>19,000/22,600</td>
<td>Research Universities (high research activity)</td>
</tr>
</tbody>
</table>

Source: NCES
II. Executive Overview

Key Findings

Third-party assessment tools offer convenient comparisons to competitor programs but lack transparency, current information, and comprehensive data to effectively support tenure and promotion decisions. Products such as Academic Analytics’ Faculty Scholarly Productivity Index and Thomson Reuters’ Journal Impact Factor document general program trends and provide raw data (e.g., number of citations and publications) for further analysis.

Tenure and promotion committees measure faculty research productivity through research awards and expenditures, publications, citations, degrees conferred, and credit hours that students complete under faculty. Several contacts cite research funding and expenditures as the most objective measures of faculty research productivity, but the average of these indicators varies widely across disciplines. Electronic portfolios enable faculty members to provide supporting evidence of their research efforts and academic affairs staff to compare faculty members’ research work among peers.

No contact institutions use institution-wide formulas to weight research productivity indicators because of the disparities between programs and subjectivity of such a composite score. Several contacts report that discipline-based differences in faculty members’ ability to publish or secure research funding limit the effectiveness of such a formula. Contacts at University B also report that a formula may be counterproductive; faculty would dispute how administrators weight the factors in the formula rather than try to improve their research productivity scores.

Senior academic affairs administrators consider peer perception of programs, ability to attract students, and potential for future research funding when determining viable doctoral programs. Several contacts report that the ability of faculty to sustain programs is the most important consideration; faculty must be able to secure research funding and remain well-regarded among peers to successfully sustain a doctoral program. Contacts report that science and engineering fields provide faculty members with more research funding opportunities and therefore higher potential for program sustenance.
III. Determining Faculty Research Productivity

Contacts Cite Research Funding and Expenditures as the Most Objective Measures of Faculty Research Productivity

Contacts at University C report that grant success (e.g., amount awarded, proportion of grant submissions funded) helps to demonstrate the scholarly productivity of a faculty member or a program. Contacts at University B warn that senior academic affairs administrators must also consider the context and timing of grant awards; faculty may have few grants awarded in a given year because of recent or previous large awards.

Common Indicators of Faculty Research Productivity across Contact Institutions

<table>
<thead>
<tr>
<th>Individual Indicators</th>
<th>Academic Program Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Grant award funding</td>
<td>• Sum of all individual indicators</td>
</tr>
<tr>
<td>• Institution and field-specific honors</td>
<td>• Number of student applications</td>
</tr>
<tr>
<td>• Total research expenditures</td>
<td>• Number of grant proposals</td>
</tr>
<tr>
<td>• Publications</td>
<td>• Number of graduate programs ranked top 50 in the nation (e.g., U.S. News &amp; World Report, Academic Analytics, etc.)</td>
</tr>
<tr>
<td>• Citations</td>
<td></td>
</tr>
<tr>
<td>• Degrees conferred</td>
<td></td>
</tr>
<tr>
<td>• Number of postdoctoral appointees</td>
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</table>

Academic affairs administrators must consider the quality and quantity of journal publications when determining faculty research productivity. Contacts at University C report that quality is more important than quantity, but senior-level administrators often lack the field-specific knowledge to judge the quality of journals. Contacts report that faculty members and external reviewers in the same field provide the most valuable insight about journal quality.

600 Grant Proposals

At University D, faculty submit over 600 grant proposals each year; 300 out of 500 tenure-track faculty submit at least one grant proposal annually.

Third-party Assessment Tools Allow Academic Affairs Administrators to Compare Faculty Internally and against Competitor Programs

Multiple institutions use Academic Analytics’ Faculty Scholarly Productivity Index to compare internal programs to competitor programs; however, contacts also warn that the product contains flaws that administrators must consider when making any decisions based upon the data. Academic affairs administrators at University B use Academic Analytics to observe general trends in research productivity but not for any internal management decisions (e.g., program closure, tenure, etc.). Deans at University A compare internal programs to aspirant institutions’ programs through Academic Analytics to ensure that the institution maintains similar research productivity levels to other research institutions. Contacts at University D reflect that Academic Analytics’ impact score of publications is useful because administrators cannot calculate the impact of publications on their own, other than through patents and
intellectual property. The impact score includes publications, citations, Federal research funding, and honorific awards.¹

### Drawbacks of Academic Analytics

Academic Analytics offers a convenient comparison of programs’ research productivity compared to competitor institutions; however, contacts listed several drawbacks of Academic Analytics:

- **Lack of transparency because the ranking method is proprietary information**
- **Only recognizes the primary investigator and not other contributors**
- **No clear determination for how programs are categorized**
- **Uses grant information from only Federal databases**

Contacts at University B report that Thomson Reuters Journal Impact Factor, which the institution purchases, maintains several advantages over Academic Analytics:

- **Transparent process**: Contacts report that Thomson Reuters’ impact score equation is more transparent than that of Academic Analytics.
- **Current data**: The most recent data that Academic Analytics uses is from 2009-2010; Thomson Reuters maintains data from the present year.
- **Avoids departmental overlap**: Academic Analytics is unable to accurately attribute research by faculty members who associate with multiple programs; Thomson Reuters uses broad disciplines rather than specific programs. For example, clinical and educational psychology would be in the same broad discipline in Thomson Reuters but would be different programs under Academic Analytics. However, neither product can accurately count research for a faculty member who associates with disparate disciplines (e.g., history and business).

Though Academic Analytics data includes book publications, Thomson Reuters does not; however, contacts at University B report that Thomson Reuters plans to add this feature. Before this addition, the usefulness of the product to assess research productivity of faculty members in book-heavy disciplines (e.g., history) remains limited.

Academic affairs administrators at University B use raw data (e.g., number of publications and citations) from Thomson Reuters to create progress cards for faculty members. The progress card includes the publications, citations, and research funding of the current year and previous years. Any data point that decreases from the previous year appears in red to encourage faculty members to increase these scores. Administrators can easily combine the results of all faculty members’ progress cards to create program or department progress cards.

“If faculty members know that they will have to defend themselves when any research productivity indicators decrease, they will do their best to increase each indicator every year.”

*Forum Interview*

¹ “What We Do,” accessed December 17, 2012, [http://www.academicanalytics.com/Public/WhatWeDo](http://www.academicanalytics.com/Public/WhatWeDo).
Establish an Internal Research Productivity Database to Combine the Advantages of Multiple Sources

Contacts at **University B** report that academic affairs staff may create their own database for faculty research productivity assessment. This database would include all the information from Thomson Reuters, data on books from Academic Analytics, and grant information from publicly available databases. Academic affairs staff will compile this information for faculty members and merge the data with course evaluation data for faculty review. This strategy will allow for more accurate internal assessment of research productivity but will not enable administrators to compare internal programs to competitor programs.

**Disparate Disciplines Impair Formulas that Weight Faculty Research Productivity**

Contacts at **University B** report that measuring one variable across faculty members (e.g., total citations) is more objective than any composite score. Though composite scores of all research productivity indicators offer convenient comparisons of faculty members’ productivity, no contact institutions use composite scores. Contacts at University B report that if senior academic affairs administrators created such a formula, faculty would dispute how administrators weigh the factors in the formula rather than try to improve their research productivity scores.

All contacts emphasize that each discipline should assess research productivity differently. Contacts reflect that more research funding is available for engineering and science fields than for humanities disciplines. Therefore, faculty in the arts and humanities should receive more recognition during productivity reviews for securing research grants. Also, the time between publications varies greatly across disciplines; mathematicians may consider one paper each year productive, but biologists may not.

**Digital Portfolios of Supporting Documentation Enable Convenient Document Compilation and Reviewer Access**

Contacts at **University C** recommend that portfolios should be customized by department to allow for different definitions of faculty productivity. Faculty members in science disciplines often submit curricula vitae and published works, whereas faculty in art departments submit portfolios that include artistic pieces (e.g., reproductions of visual artwork, musical compositions, etc.). Portfolio systems also enable faculty members to self-report research productivity; contacts at **University A** reflect that this minimizes faculty resistance to measuring research productivity.

Digital Measures, data management software that faculty at University A and **University D** use, allows for customization across disciplines. One staff member in the assessment office at **University D** shared: “Electronic portfolio systems eliminate paper filing and compile all faculty members’ portfolios in one source for departmental review.”
University A maintains responsibility for customizing Digital Measures to include relevant categories for various disciplines, such as performance and exhibition categories for performing and visual arts. Faculty members may also designate research as private; institution administrators may review this information for promotion and tenure decisions, but the institutions will not release the information in publicly available curricula vitae.

University B uses Sedona Software, a Web-interface, to document research productivity for faculty members in the College of Liberal Arts and Social Sciences. Contacts report that this software enables department heads and provost office staff to conveniently access all faculty members’ productivity information and determine how faculty members rank among their peers. Contacts at University D report that Academic Analytics helps tenure and promotion committees gain insight into how faculty members rank in their department or against peers at competitor institutions. However, academic affairs administrators should warn committees about overreliance on such products because of their limitations and flaws.

Enable Faculty to Assign Credit for Each Researcher’s Involvement to Promote Interdisciplinary and Collaborative Research

Faculty members at University D detail the proportion of credit that all co-primary investigators should receive for collaborative research. Faculty may review their research expenditures and credit percentages for all projects before final calculations by academic affairs staff. Contacts report that this practice ensures the fairness of the faculty research productivity review process. If faculty members disagree on their credit proportions, project leads must mediate differences among faculty to obtain a consensus.

Convenient Portfolio Compilation Encourages Complete and Accurate Portfolios

Contacts at University D report that the institution has used Digital Measures for three years and that the software can automatically retrieve electronic copies of publications for faculty members, which minimizes time faculty members spend on the portfolio compilation process. Similarly, staff at University A are collaborating with Digital Measures to automatically download citations from Scopus, an abstract and citation database. Most departments require that new faculty members input the past five years of their research into the program, rather than their whole research histories, to minimize portfolio creation time; the engineering college employs a graduate assistant to input faculty research into Digital Measures.

When University A first started using Digital Measures, academic affairs administrators trained faculty members to compile research into the software; contacts report that this process helped staff gain faculty buy-in for portfolio completion. Now, a graduate assistant trains new faculty members and faculty can view portfolio compilation training videos for further instruction.

Annual and Cycle-based Reviews Ensure that Faculty Members Continue to Participate in Research, Teaching, and Service

University C requires faculty to document their teaching, public service, and publication statuses (i.e., submitted, accepted, pending review) annually for merit raise considerations. Academic affairs administrators also conduct reviews every five years to assess the contributions (i.e., teaching, service, research) of the faculty members to the institution. The provost’s office conducts departmental reviews every five or six years to assess each
department’s productivity. Contacts recommend that administrators contact leaders in the respective fields to determine the average research productivity of a program in addition to reviewing national rankings (e.g., National Science Foundation research and development expenditure rankings).

**Three-Year and Six-Year Review Process at University C**  
**Assessing Tenure Potential and Tenure Determinations**

<table>
<thead>
<tr>
<th>Department Committee Review</th>
<th>Committee of Qualifications Oversight</th>
<th>Department Dean Assessment</th>
<th>Provost Office Determination</th>
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<tbody>
<tr>
<td>Five faculty members in the same or similar discipline of the reviewed faculty member and an external reviewer assess the quality and quantity of research.</td>
<td>Twelve tenured faculty members across the institution evaluate the department committee’s review to ensure that the review reflects the faculty member’s portfolio of research.</td>
<td>The department dean reviews the recommendations made by both committees and recommends whether faculty members should continue on a tenure track or receive tenure.</td>
<td>The provost office assigns the faculty member a grade of pass, pass with suggestions to develop professionally, or fail. The provost office rarely assigns a failing grade to faculty members.</td>
</tr>
</tbody>
</table>

Contacts at **University C** report that 90 percent of faculty members continue on tenure tracks following the three-year review and 80 percent of faculty members achieve tenure at the six-year review; the review processes are the same but reviewers expect increased service and research in the six-year review.

**Selecting an External Reviewer**  
At **University C**, faculty members suggest external reviewers for the promotion and tenure processes. Committees may choose to accept faculty members’ suggestions or use knowledge of the discipline to choose reviewers not included on faculty members’ lists. Contacts reflect that external reviewers provide less biased assessments of faculty members’ research productivity than internal reviewers.
IV. Internal and External Use of Indicators

Peer Perception and Ability to Attract Students Supports Transition to Doctoral Degree-granting Programs

Several contacts report that state higher education coordinating boards are encouraging the closure of more doctoral degree-granting programs than the initiation of programs. Contacts at University B recommend that senior academic affairs administrators consider the following questions when appraising the judgment of a higher education coordinating board:

- How many degrees will the program likely produce annually?
- Are current students interested in such a program, and are these students likely to succeed in a doctoral program?
- Are the faculty members able to secure research funding to sustain a doctoral program?

Contacts at University B report that peer reviews are equally important as research productivity in determining whether faculty would succeed in a doctoral program. Contacts at University D state that faculty ability to secure research funding is the best indicator of a program’s viability; otherwise, an institution would struggle to financially support doctoral students. However, only considering the ability to secure research funding favors technical and scientific disciplines over humanities programs.

Establish Broadly Titled Doctoral Programs to Attract a Variety of Students and Minimize Program Closures

Student interest is a primary factor in the determination of whether a doctoral program should close. University C maintains broadly titled doctoral programs (e.g., Humanities) to allow for flexibility in course offerings; students focus courses in disciplines to customize the degree. The business school only offers two doctoral programs in management to prevent program closure. Students may concentrate in a variety of topics (e.g., finance, organizational behavior, etc.) within these programs. Contacts report that comparing these doctoral programs to competing programs is difficult because of the breadth of the programs.

Communication with External Constituencies

Senior Academic Affairs Administrators Present Plans to Increase Research Productivity to Governing Boards

Contacts at University B report that academic affairs administrators use charts and graphics from Academic Analytics to present research trends to external constituencies (e.g., Board of Directors) about internal and competitor programs. Administrators also report which programs Academic Analytics identifies as successful or lacking among competitor programs. Administrators then present plans to improve research productivity in programs that Academic Analytics identified as weaker than competitors.

University D must report faculty productivity annually to the state system. In these submissions, administrators include (in addition to the indicators listed in Section III): faculty member salaries, the student credit hours that faculty members teach, and the level of courses faculty members teach. Portfolio systems such as Digital Measures enable administrators to conveniently demonstrate a faculty member’s research productivity to external constituencies; administrators can combine faculty members’ reports to demonstrate an academic program’s productivity.
Encourage Faculty Members to Apply to Professional Development Programs to Enhance Research Productivity

Several biomedical sciences faculty members at University D receive professional development training through Support of Continuous Research Excellence, a National Institutes of Health program. The program aims to improve research excellence of minority-serving institutions. Academic affairs administrators may include such programs and internal centers for faculty development in plans to improve faculty research productivity that administrators present to governing boards.