

ACADEMIC ANALYTICS

Strategic Analysis and Planning

University of Delaware
September 29th, 2016

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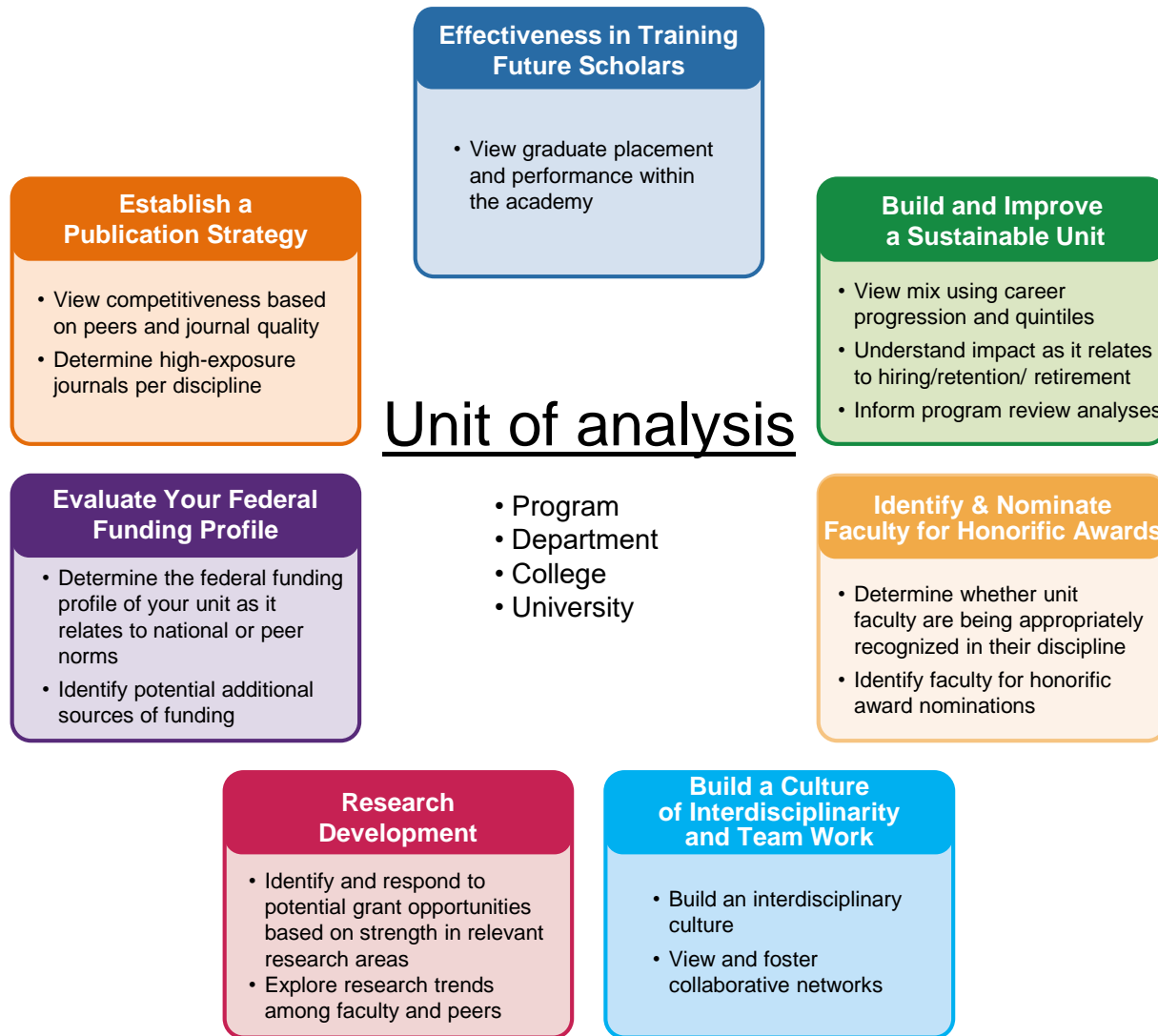
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Why Track Research Activity using Academic Analytics

- Who are we today? Who do we want to be?
 - Delaware Will Shine – Goal to be competitive with top AAU research institutions
 - Current excellent: How do we maintain and advance?
 - Aspirations of excellence: Where do we invest resources?
 - Identify niche research themes
 - Address areas in need of improvement or change
 - Identify and monitor appropriate peers
- Complacency can have dire consequences

Applications of Academic Analytics Data

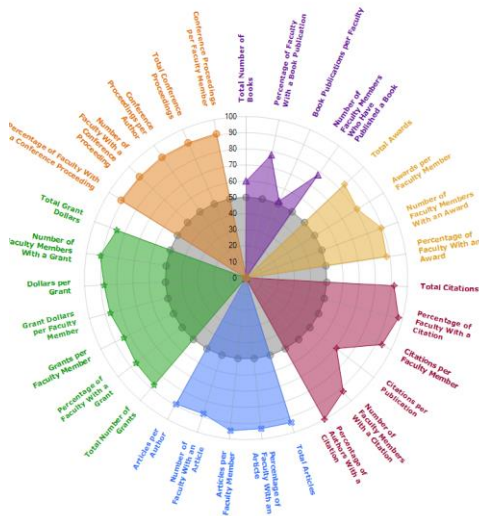


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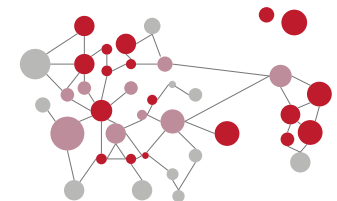
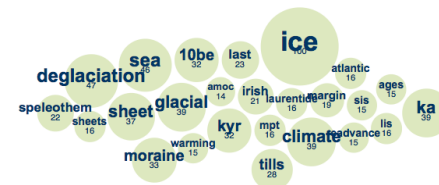
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Building on an analytical toolset to provide context for campus leaders

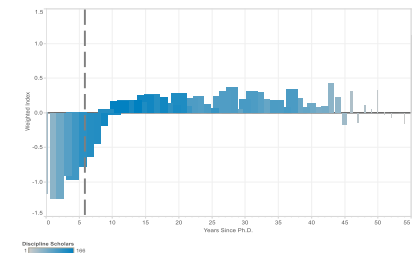
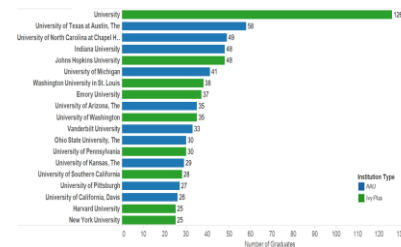
**Academic
leadership and
analysis
expertise**



Collaborative networks



Hiring and retention



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Academic Analytics Database Overview

- Ph.D. granting institutions
- Tenure/Tenure Track Faculty (others critical to research Mission)
- Faculty are aggregated into Departments and Ph.D. Programs
- Tracking refereed nationally competitive research activity in these areas:
 - Articles (27k journals)
 - Citations (Tracked using DOI's)
 - Books (Baker & Tayler, British Library)
 - Grants (Federal)
 - Awards (Honorific, 6k+)
 - Book Chapters (New, not in comparative)
 - Patents (New, not in comparative)

Academic Analytics Data: Limitations

Academic Analytics is engaged in an ongoing effort to expand the content of the database to provide a more comprehensive view of research activity across all disciplines. Below is a list of areas of awareness that are currently under development for future inclusion in the database:

- Book chapters (currently beta-testing >1 million chapters)
- Co-PIs on federal grants (currently have NSF, NIH, and USDA Co-PIs)
- Citations in/to books
- Federal subawards
- Industry funding
- Foundation funding
- Patents
- Other creative works

Academic Analytics Data: Defining a Comparative Universe

Customize peer groups, data, and analyses

Begin with a group of faculty



Department Faculty



Select/build a peer group

- Entire discipline
- Unit current/aspirational/institutional peers
- Like-rank or faculty in similar career stage



Include select data elements

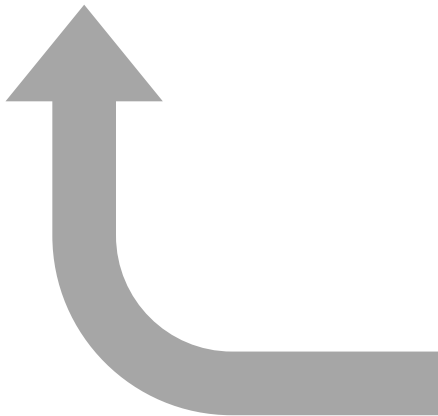
Examples:

- Selected journals/presses
- Specific granting agencies



Analyze results, develop further analyses

- Establish areas of strength/weakness
- Refine with research themes
- Identify unit- and individual-level strategies



Academic Analytics data: Strengths and Cautions

Provides reliable, comprehensive, comparative information in those scholarly areas recognized as essential for understanding scholarly productivity in universities across the nation and around the world: books, articles, citations, research funding, honors. Academic Analytics does not track undergraduate instruction outcomes.

Data starts a conversation - doesn't finish it

Complements, strengthens and acts as check on more traditional tools for reaching judgments about research productivity and quality of units and individual scholars. Does not and should not be used as replacement

- For individuals: Better, because more accurate and contextualized than h index, Google Scholar, etc.
- Complements peer review:
 - external review - reliant on viewpoints of high quality, but potentially limited perspective “experts”
 - letters - as part of reviews (anonymous) or reference processes
 - word of mouth
 - collegial knowledge
 - “reputation”
- Adds additional information
- This is especially true in establishing a strong comparative context with peers and aspirational peers whether for unit or individual (e.g., comparison to scholars in top quintile).

Note:

- Focuses on recent performance - hence downplays older works and reputation built on it
- Does not do as well for data on scholarly production from humanities and arts
- Does less well on measuring “impact”, although as we get better citation data - where cited - this can be reduced

Identifying Current Excellence and Understanding Existing Realities

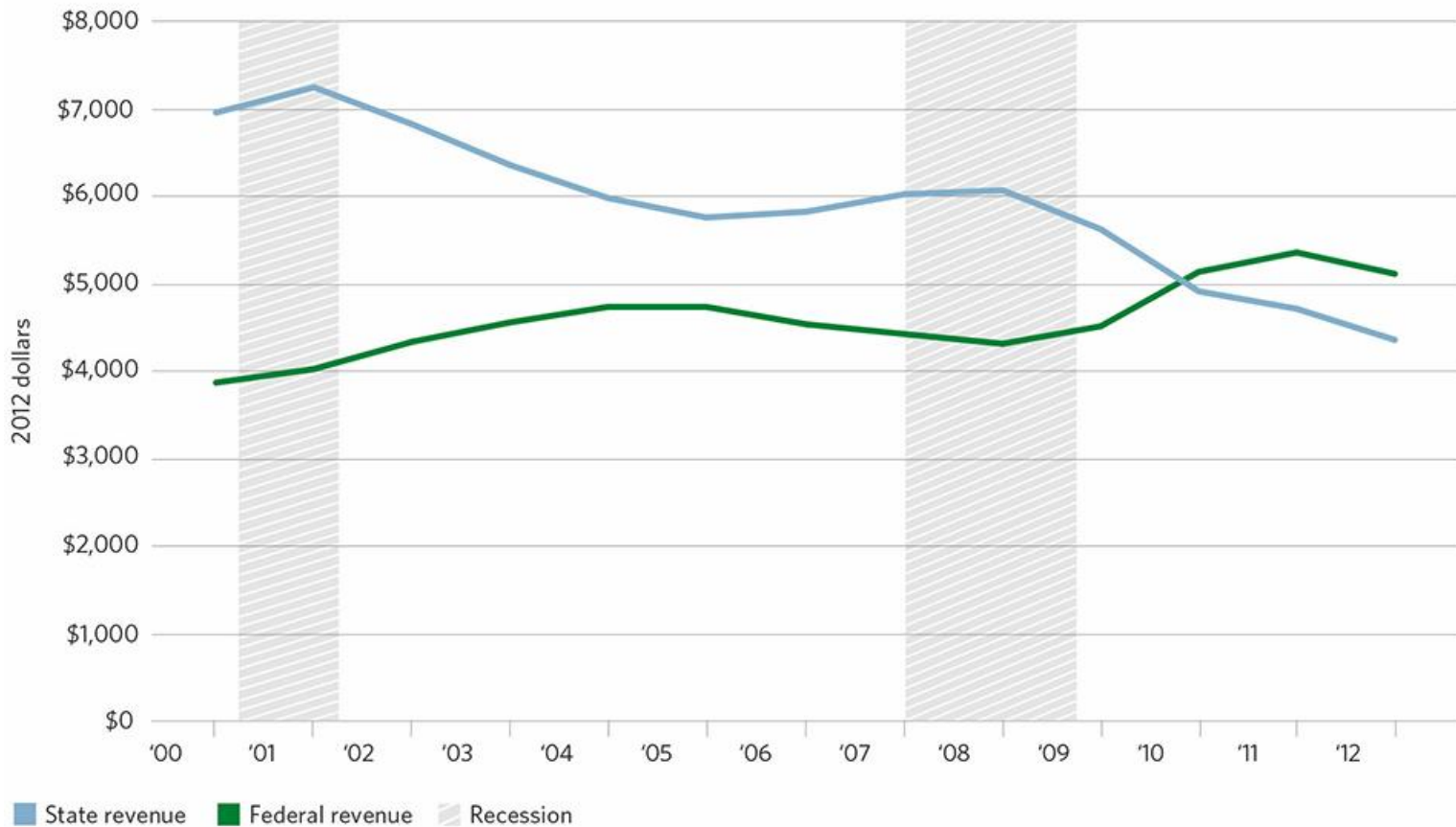
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State Funding for Higher Education Declined in Recent Years While Federal Funding Grew

Federal and state revenue per full-time equivalent student flowing to higher education institutions, fiscal years 2000-12, adjusted for inflation



Sources: Pew's analysis of data from the Delta Cost Project Database (May 2015), based on original data from U.S. Department of Education, National Center for Education Statistics' Integrated Postsecondary Education Data System

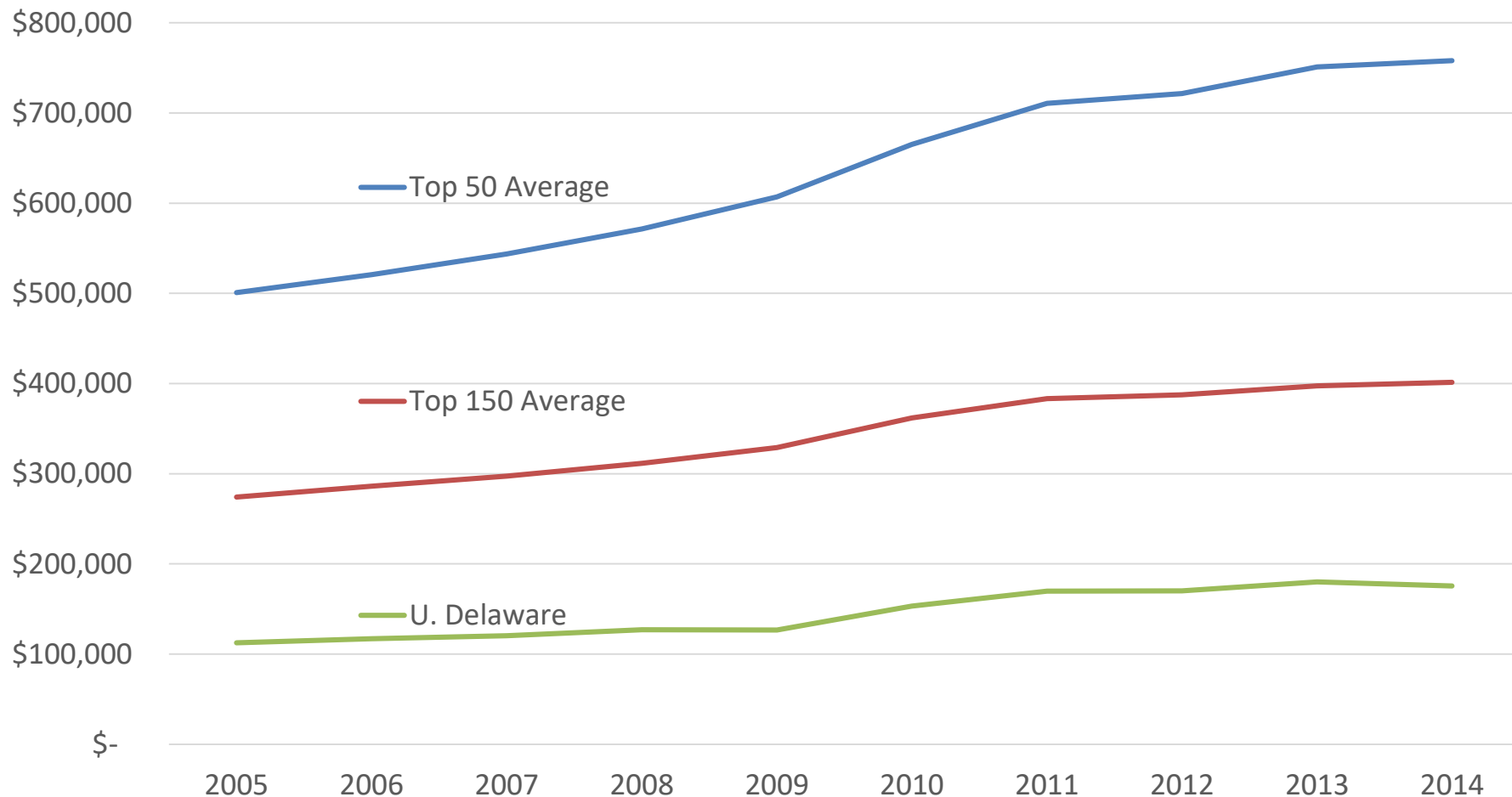
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Research and Development Expenditures Total in Thousands

Source: NSF HERD FY 2014 Report, Table 17



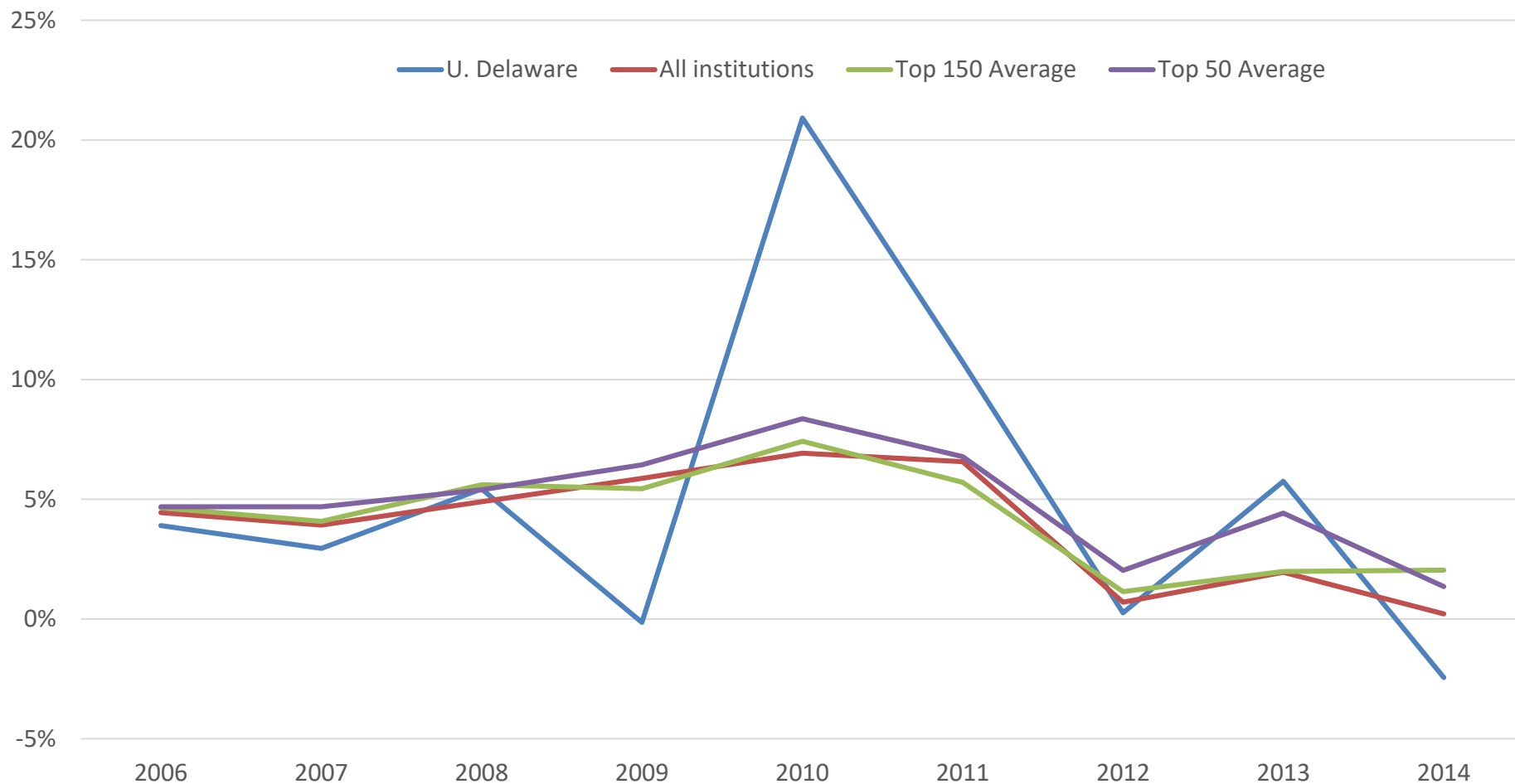
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Percent Change in Research and Development Expenditures

Source: NSF HERD FY 2014 Report, Table 17



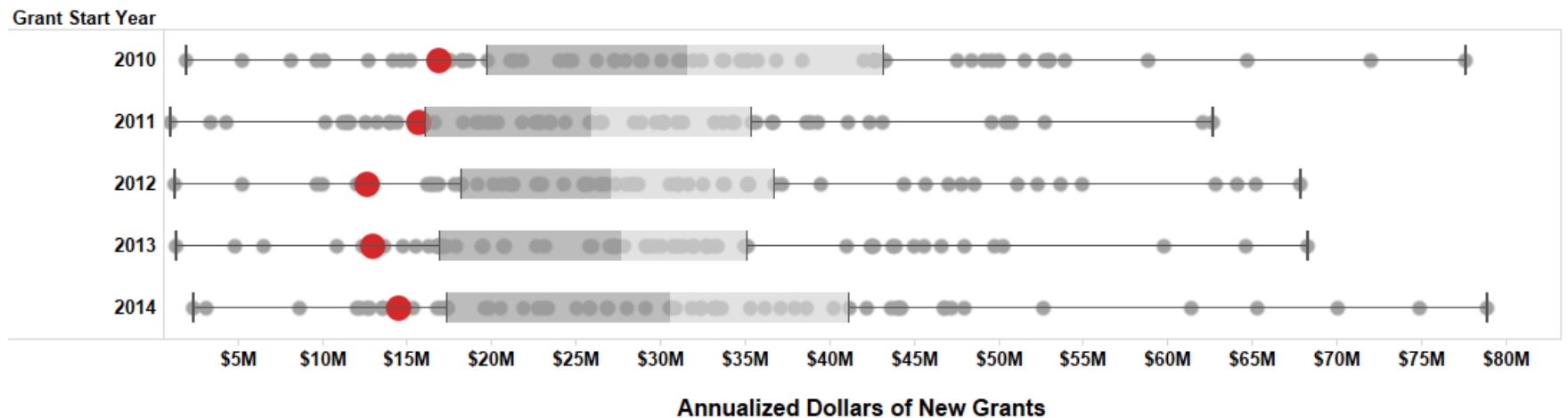
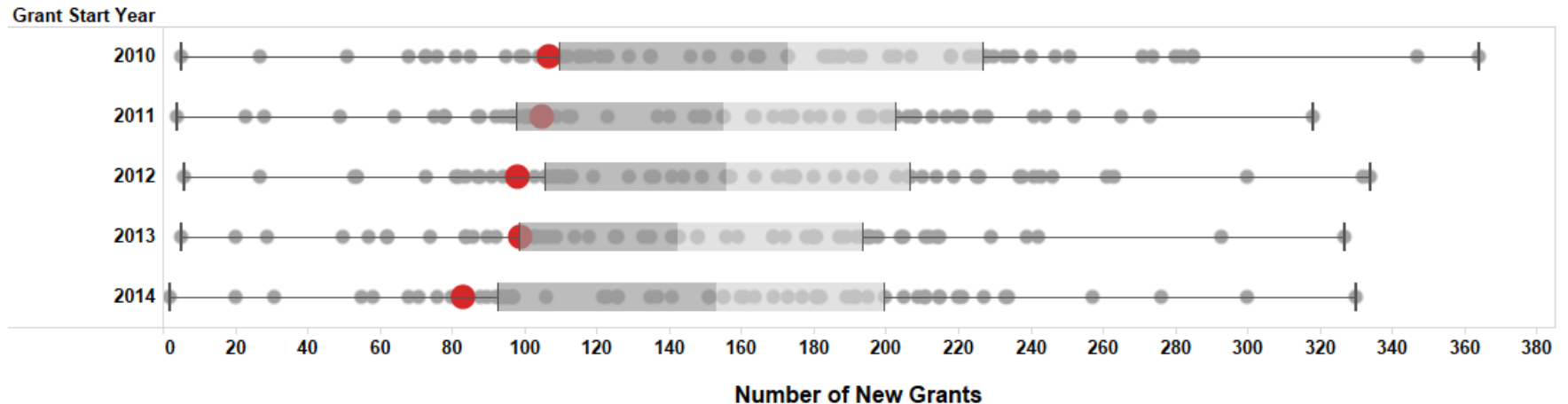
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Delaware – Trending New Dollars and Grants AAU

Source: Academic Analytics 2014 data (Federal \$ for a 5 year window)

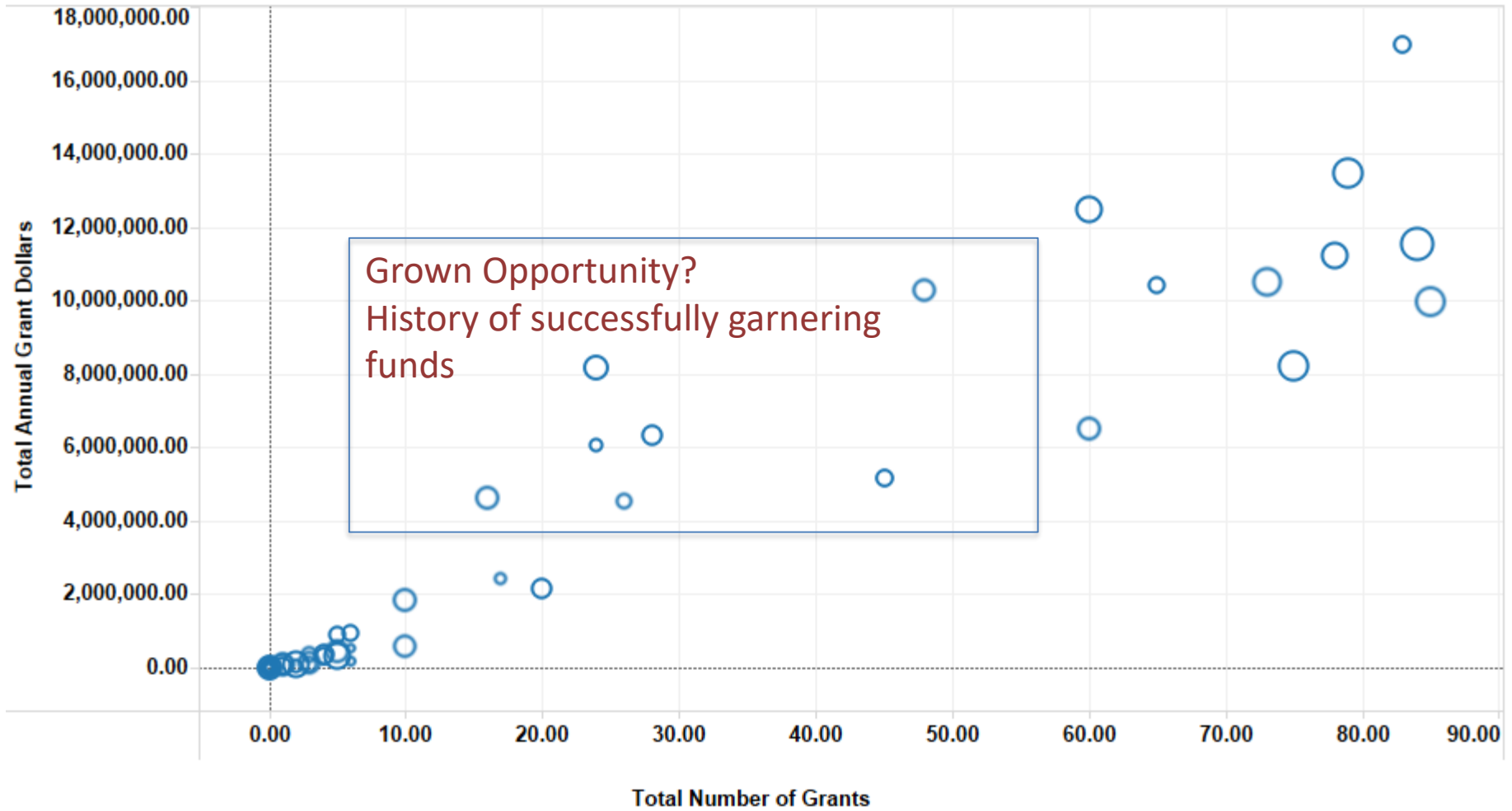


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Delaware – Department Total Grants by Total Dollars

Source: Academic Analytics 2014 data (Federal \$ for a 5 year window)



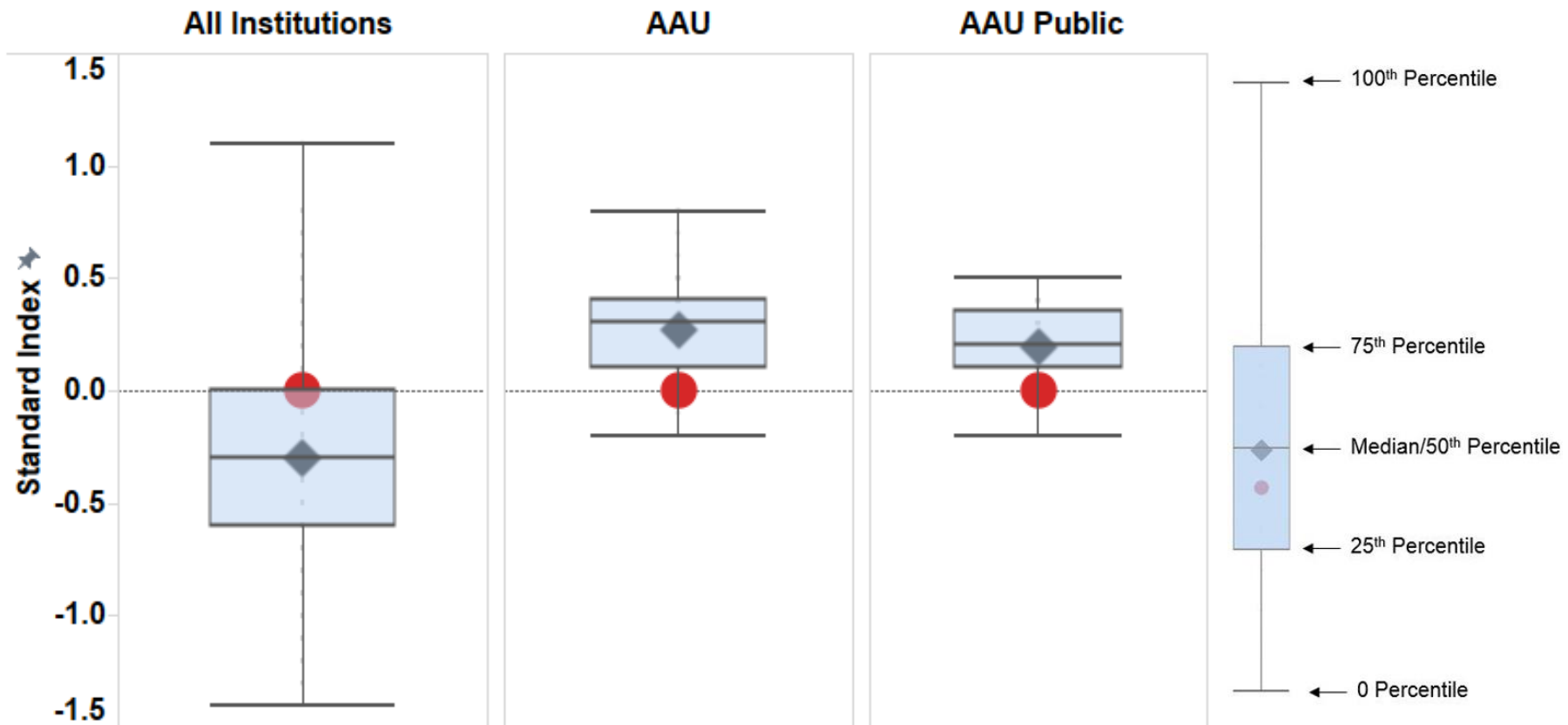
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Delaware – Institutional Comparisons

Based on institution level index



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Emerging Set of Peers (19 out of 24 in AAU)

Boston University

Case Western University

Georgia Institute of Technology

Indiana University

Iowa State University

Michigan State University

NC State University

Ohio State University

Penn State University

Purdue University

Rutgers University

Stony Brook University

Texas A&M University

University of Arizona

University of Connecticut

University Illinois Urbana-Champaign

University of Maryland

University of Massachusetts Amherst

University of Michigan

University of Minnesota

University of North Carolina at Chapel Hill

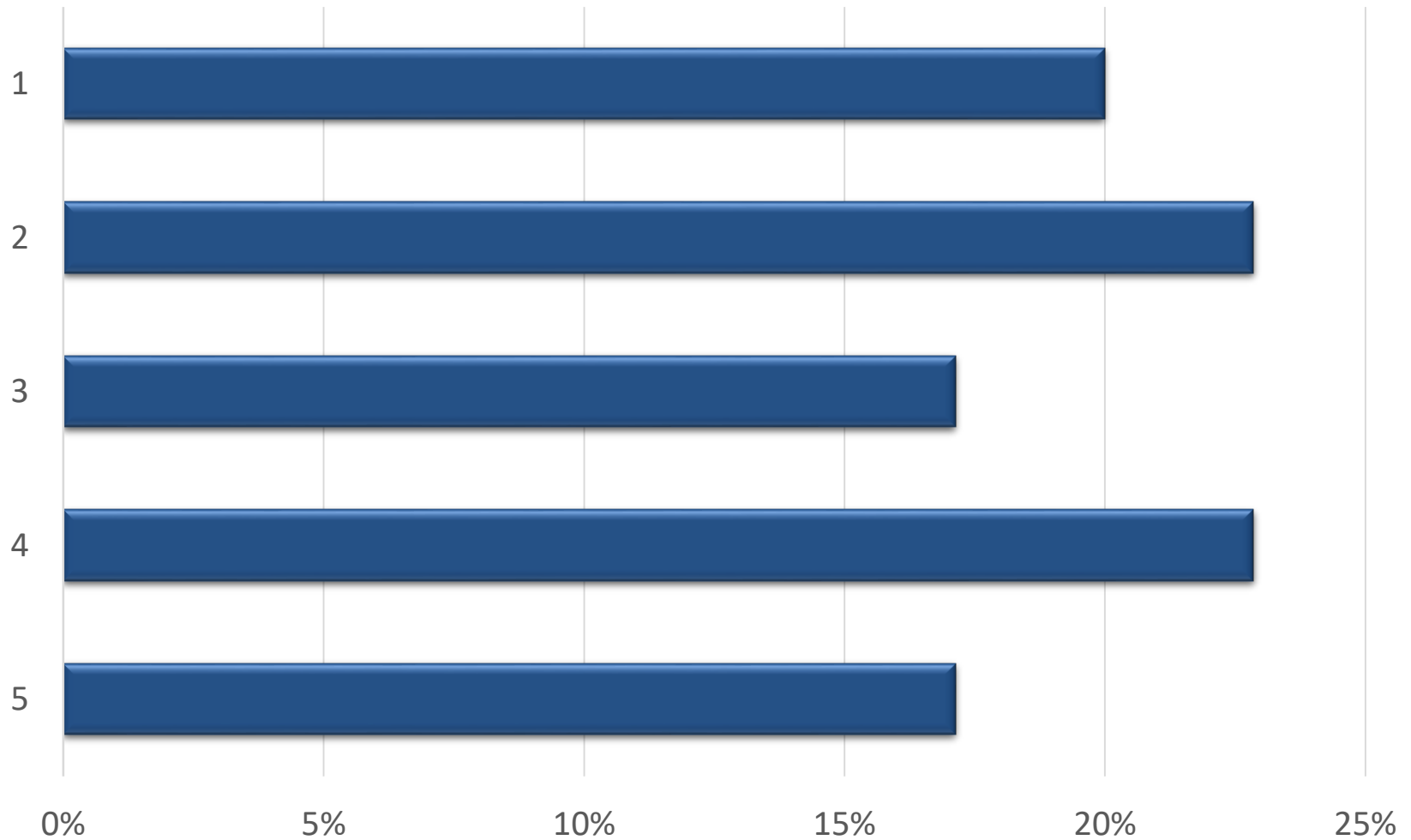
University of Virginia

University of Utah

Virginia Tech

AAU Institution , Non-AAU Peer

Delaware - Department Quintile Placement Among Peers



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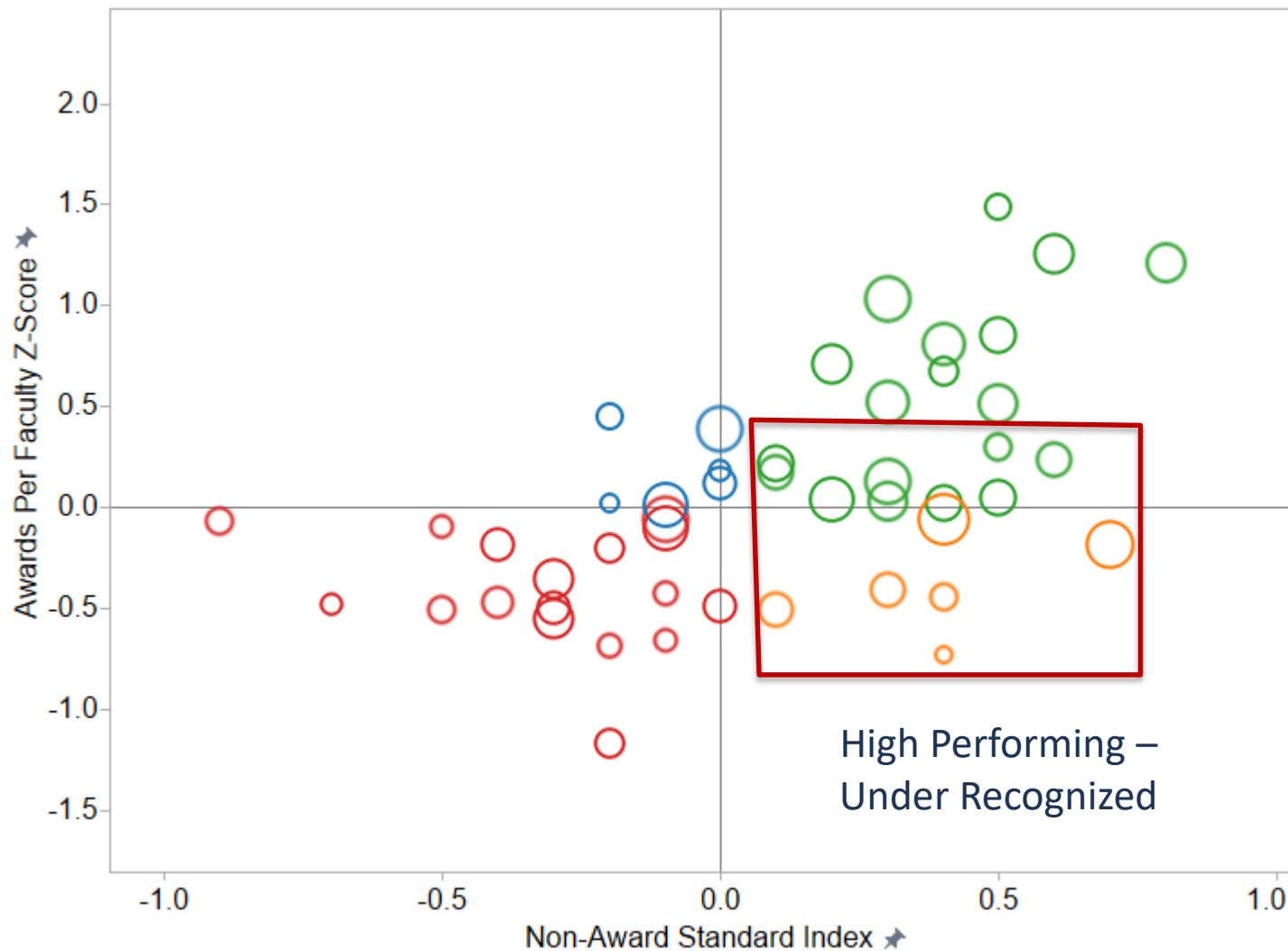
Inform the Honorific Nomination Process

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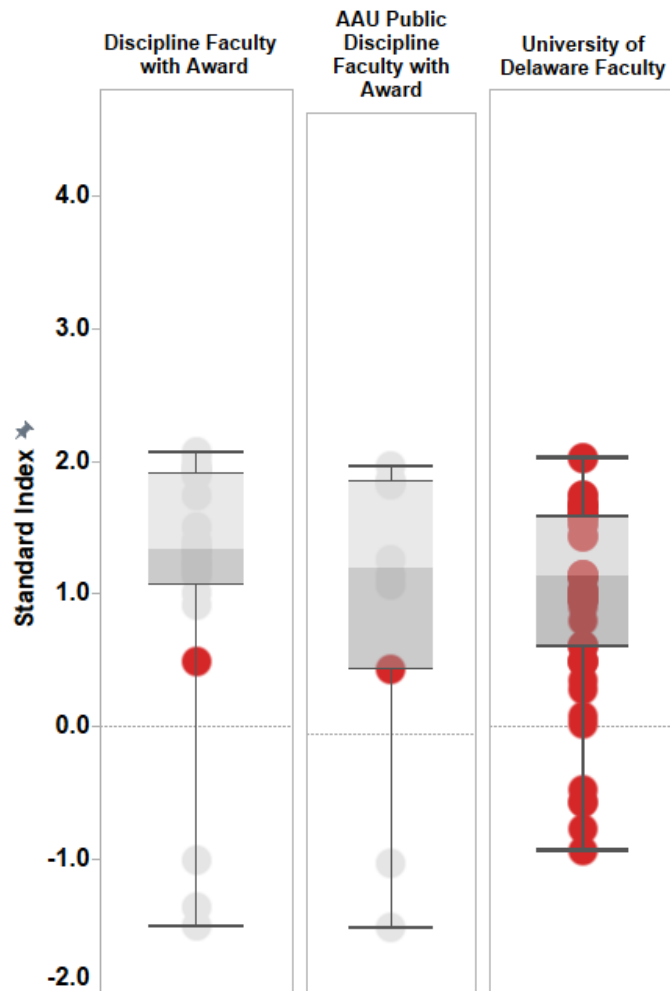


Delaware- Informing Award Nomination Efforts



High Performing –
Under Recognized

Identify Faculty to Nominate



Select Awards Time Frame

Awards Received 2010-2014

Select Years Since Terminal Degree

(All)

Select Academic Rank

(All)

Select Discipline

Chemical Engineering

Select Award Governing Society

National Academy of Engineering

Select Award Name(s)

Membership

AAD2014 Faculty Counts Sorted by Standard Index

Faculty Name	Department Name	Standard Index	Total Number of Articles	Total Number of Citations	Mean Number of Citations per Article	Total Number of Grants	Annual Grant Dollars	Mean Dollars per Grant	Total Number of Awards	Total Number of Books
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Tracking Ph.D. Graduates in Faculty Careers

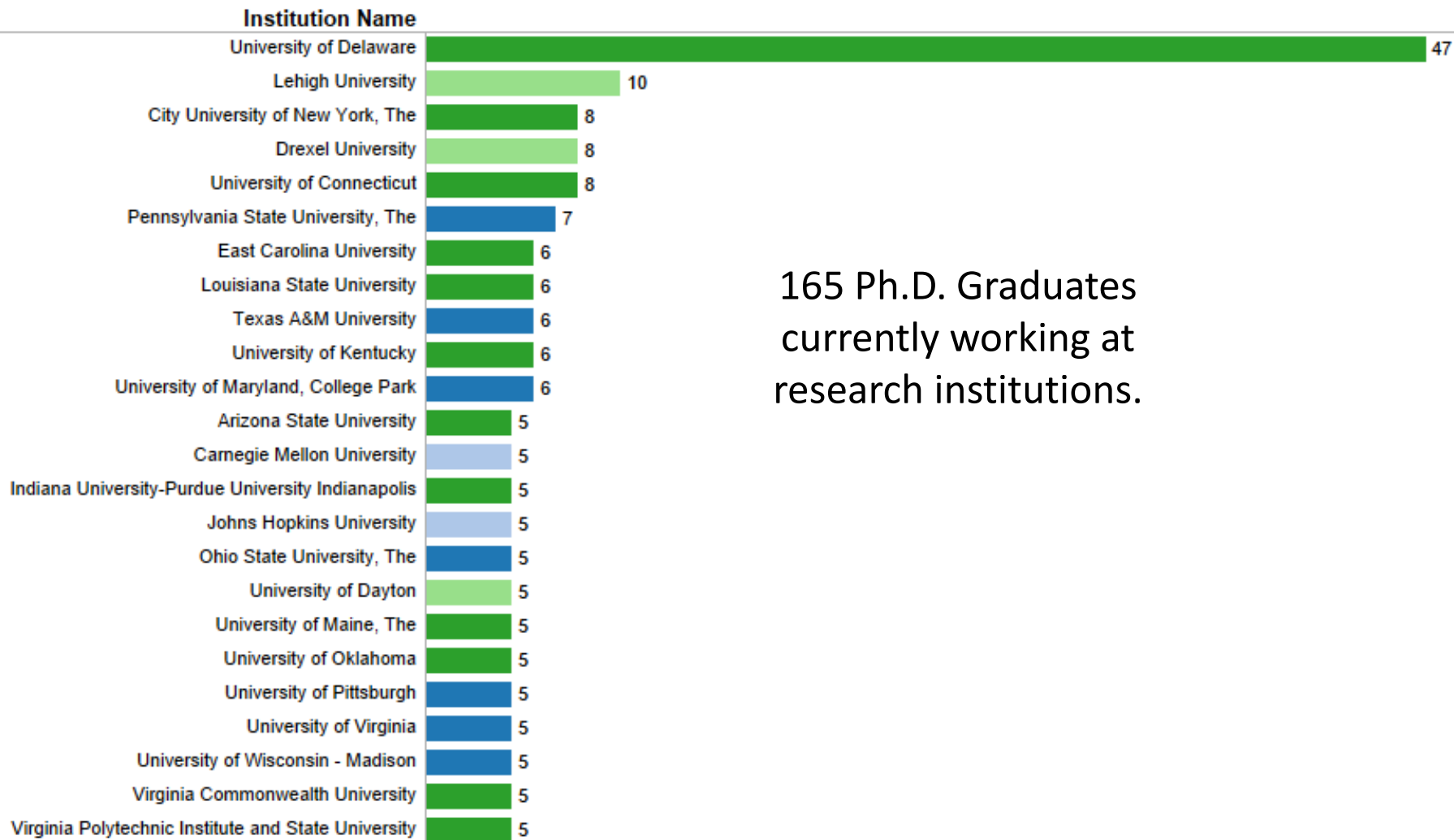
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Delaware – Institutions With at Least 5 Graduates

Includes only those graduates at Ph.D. granting institutions in T/TT positions



165 Ph.D. Graduates
currently working at
research institutions.

Understanding Department Profile and Identifying Opportunities

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Department of Chemical and Biomolecular Engineering

Letting the Data Indicate Peers: Citations per Faculty

InstitutionName	DepartmentName	No. Fac	Citations per Faculty Member
University of California, Berkeley	Chemical and Biomedical Engineering, Department of	21	996.86
California Institute of Technology	Chemistry and Chemical Engineering, Division of	44	950.77
University of California, Los Angeles	Chemical and Biomolecular Engineering, Department of	18	780.06
Princeton University	Chemical and Biological Engineering, Department of	16	771.50
University of Texas at Austin, The	Chemical Engineering, Department of	27	720.11
University of Wisconsin - Madison	Chemical and Biological Engineering, Department of	19	712.11
University of California, Santa Barbara	Chemical Engineering, Department of	20	664.65
University of Illinois at Urbana-Champaign	Chemical and Biomolecular Engineering, Department of	19	625.32
Yale University	Chemical and Environmental Engineering, Department of	15	620.33
University of California, Riverside	Chemical and Environmental Engineering, Department of	17	596.71
University of Delaware	Chemical and Biomolecular Engineering, Department of	27	547.48
Johns Hopkins University	Chemical and Biomolecular Engineering, Department of	14	526.29
University of Michigan	Chemical Engineering, Department of	23	517.00
University of Washington	Chemical Engineering, Department of	21	513.57
University of Colorado Boulder	Chemical and Biological Engineering, Department of	24	505.29
University of Minnesota, Twin Cities	Chemical Engineering and Materials Science, Department of	37	501.86

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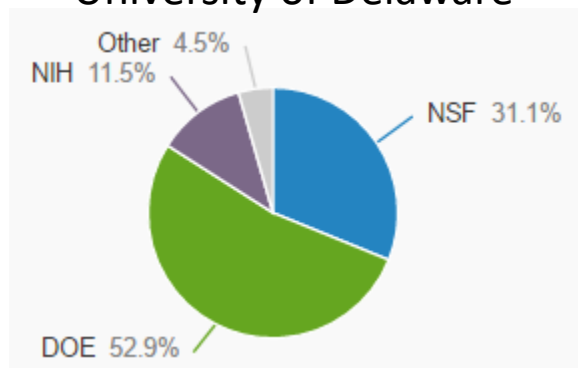
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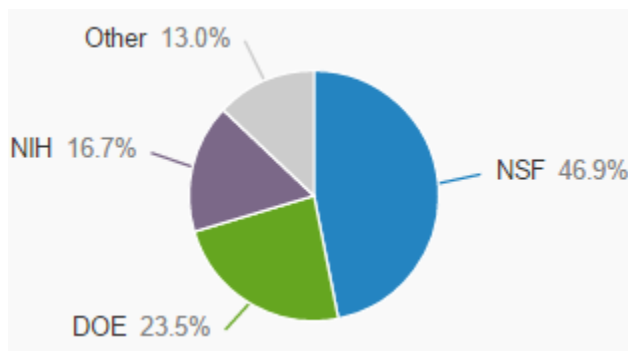
Department of Chemical and Biomolecular Engineering

Review Current Funding Profile and Opportunities

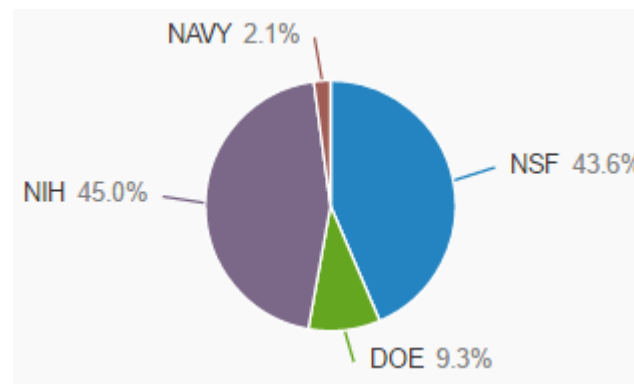
University of Delaware



Emerging Set of Peers

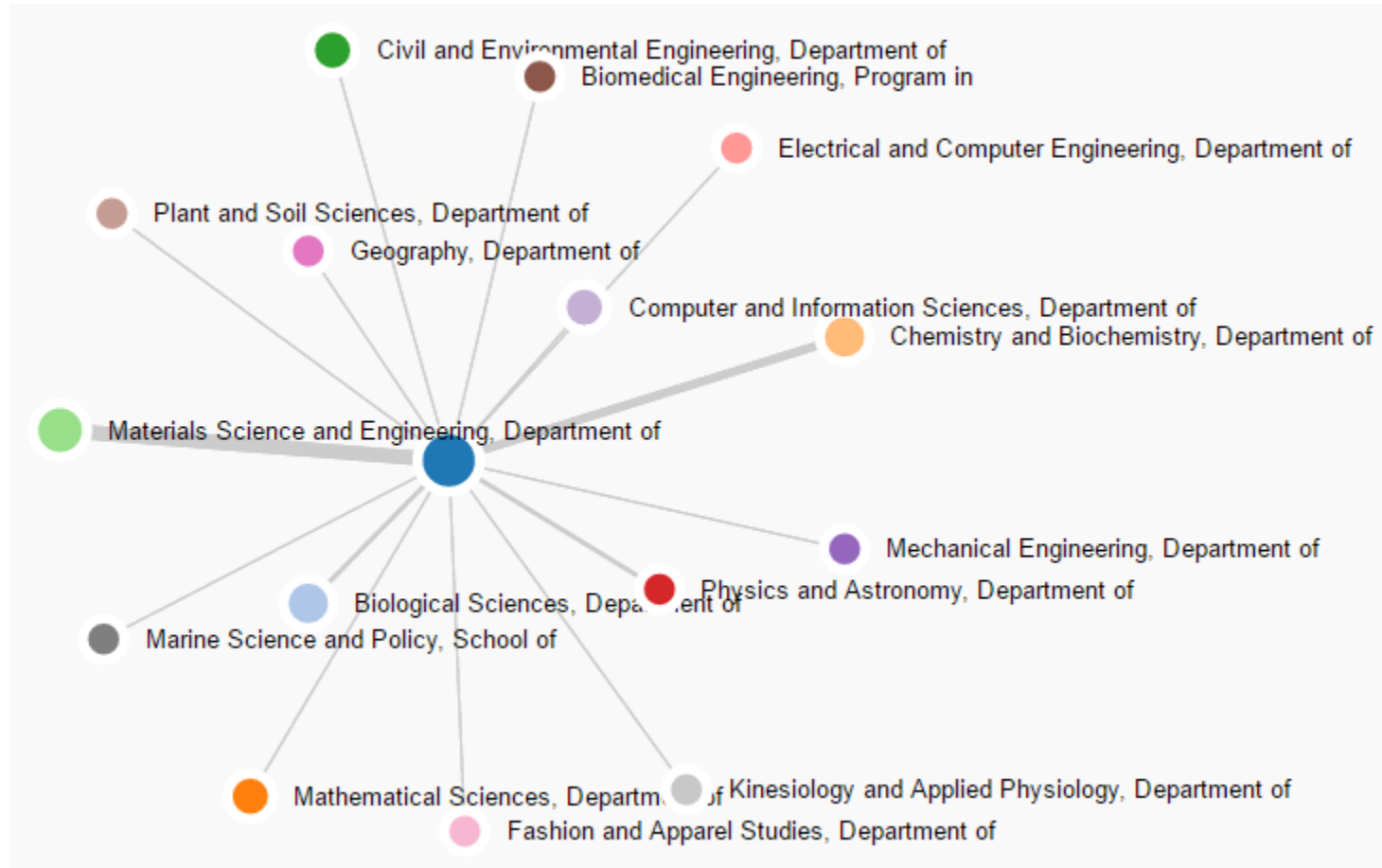


University of Illinois at Urbana - Champaign



Understanding the Level of Interdisciplinarity Collaborations

Inter-Institutional Collaborations for Department – Article Coauthors



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Questions and Discussion

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