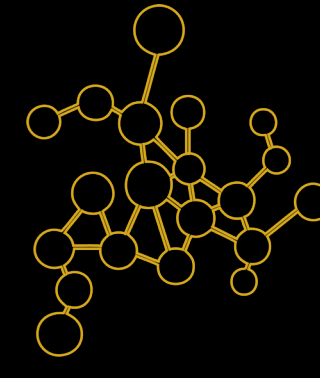




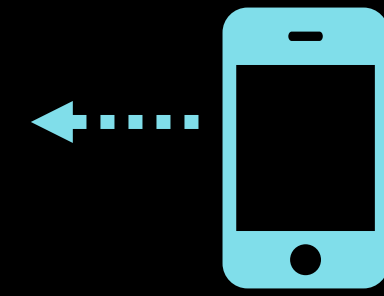
# The Information Frontiers Program

Expanding Student Capacity for Crossing Domain and Institutional Boundaries

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An engaged learning model leveraging the creative wisdom of diverse student cohorts working in **interdisciplinary, multi-institutional** research teams that progress to co-producing results shared at conferences and in journal publications.



Scan the QR code to view the program webpage

### Broader Impacts Training Goal

Train the next generation of science of information scholars:

- Develop annual training introducing data science techniques to a broad spectrum of students
- Foster interdisciplinary team science across multiple institutions and domains

### Student Population

- 174 Students (seven annual workshops)
- 28 Universities, 23 distinct departments
- Strive for gender balance
- Mix of grad, undergrad, postdoc
- No pre-reqs required

### Team Science Training

- Interdisciplinary
- Multi-institutional
- Mix of grad, undergrad, postdoc
- Best practices from Science of Team Science
- Grant writing – Professional development
- Post workshop funding – NSF style grants
- 1-2 Year team projects
- Teams co-present results at conferences and in journal publications

### Data Science Training

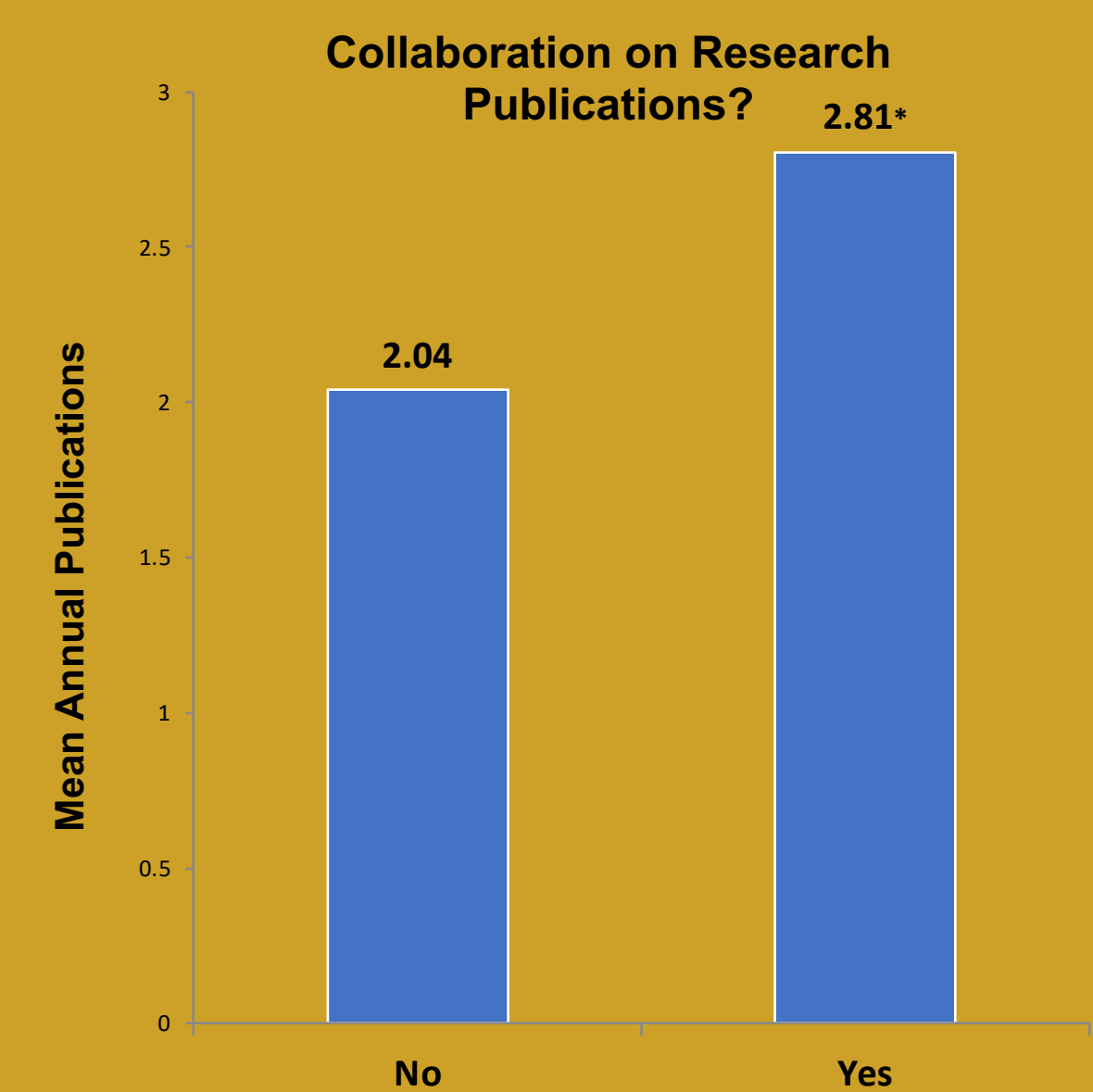
- Introduction to R (4-wk online course)
- Hands-on with R (1-wk in person workshop)
- First principles and concepts from data analysis
- Data scraping, parsing, cleaning, analysis
- Big data
- SQL databases
- Data visualization
- LaTeX



### Ripple Effect in our Community

GLMM analysis comparing our students who collaborated with others in our community vs. those that did not collaborate\* reveals that our collaborating graduate students are significantly more productive in publishing journal papers (2.81 vs. 2.04,  $p < .001$ ,  $n=256$ ,  $F=11.89$ ) as well as producing more conference posters/presentations (3.06 vs. 2.59,  $p=.07$ ), with these results due primarily to the act of collaboration.

\*only students with at least one publication in a sample year are included for that year in the analysis



Student teams co-present their results at conferences and in journal publications

### Interdisciplinary Student Teams

- 19 multi-institutional teams funded for year-round collaborative research
  - 28 Institutions
  - 23 departments
- 25 co-authored papers
- 51 co-presented conference posters

### Disciplinary and Institutional Breadth of Student Research Team Members

- |  |  |
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| <p><b>Disciplines Represented = 23</b></p> <ul style="list-style-type: none"> <li>• Agronomy</li> <li>• Anthropology</li> <li>• Behavior and Brain Science</li> <li>• BioEngineering</li> <li>• Biology</li> <li>• Chemical Engineering</li> <li>• Civil Engineering</li> <li>• Computational Biology</li> <li>• Computer Engineering</li> <li>• Computer Science</li> <li>• Ecological Science and Engineering</li> <li>• Educational Psychology</li> <li>• Electrical and Computer Engineering</li> <li>• Electrical Engineering</li> <li>• Environmental Engineering</li> <li>• Forestry and Natural Resources</li> <li>• Geology</li> <li>• Languages</li> <li>• Math</li> <li>• Medical Sciences</li> <li>• Physics</li> <li>• Sociology</li> <li>• Statistics</li> </ul> | <p><b>Universities Represented = 28</b></p> <ul style="list-style-type: none"> <li>• Boston University</li> <li>• Bryn Mawr College</li> <li>• Carnegie Mellon University</li> <li>• City University of New York</li> <li>• Eastern Kentucky University</li> <li>• Howard University</li> <li>• Johns Hopkins University</li> <li>• MIT</li> <li>• Notre Dame University</li> <li>• Oak Ridge National Labs</li> <li>• Princeton University</li> <li>• Purdue University</li> <li>• Rutgers University</li> <li>• Southern Illinois University</li> <li>• Stanford University</li> <li>• Texas A&amp;M</li> <li>• UC, Berkeley</li> <li>• UC, San Diego</li> <li>• University of Alaska - Fairbanks</li> <li>• University of Arizona</li> <li>• University of Birmingham (UK)</li> <li>• University of Florida</li> <li>• University of Hawaii</li> <li>• University of Illinois-Urbana-Champaign</li> <li>• University of North Texas</li> <li>• University of Pennsylvania</li> <li>• University of Pittsburgh</li> <li>• University of Texas at Dallas</li> </ul> |
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