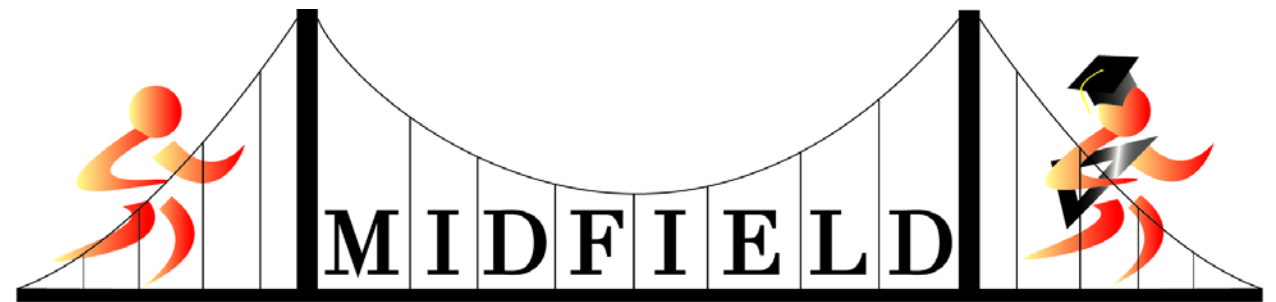


MIDFIELD Institute Introduction

MIDFIELD Institute 2019

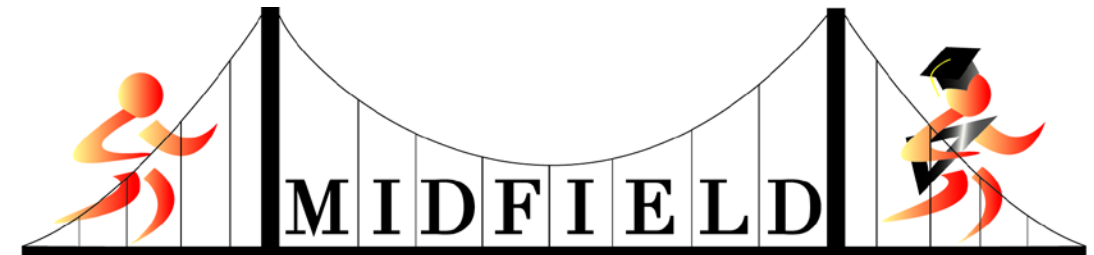


Multiple-Institution Database For Investigating Engineering Longitudinal Development

WELCOME

to the First MIDFIELD Institute!

Thanks for coming!!



Multiple-Institution Database For Investigating Engineering Longitudinal Development

Facilitators



Matthew Ohland, MIDFIELD Director/PI

Associate Head and Professor of Engineering Education, Purdue

Russell Long, MIDFIELD Managing Director

Richard Layton, MIDFIELD Data Display Specialist

Professor of ME, Rose-Hulman

Marisa Orr, MIDFIELD Associate Director

Assistant Professor of Mechanical Engr/ Engr & Science Ed, Clemson

Susan Lord, MIDFIELD Institute Director

Professor and Chair of Integrated Engineering, University of San Diego

Facilitators



Hossein Ebrahimejad, Graduate Research Assistant, Engineering Education,
Purdue

Behzad Beigpourian, Graduate Research Assistant, Engineering Education,
Purdue

Aziz Dridi, Graduate Research Assistant, Engineering Education, Purdue

Matilde Sanchez-Pena, Visiting Assistant Professor, Engineering Education,
Purdue

Workshop Objectives (qualitative)

By the end of the MIDFIELD Institute, participants should be able to

- Describe the data available in MIDFIELD
- Describe how the MIDFIELD data are organized
- Describe key principles of effective data visualization
- Identify deficiencies of common graph types

Workshop Objectives (computational)

- Use **midfieldr**, an R package specifically designed for use with MIDFIELD, to:
 - Calculate and evaluate educational metrics
 - Produce a table of data that addresses a research question
 - Explore and tell a story from MIDFIELD data

Session 1:
MIDFIELD

Introduction, History, Present
and Future

By the end of this session, you will be able to

- Describe where MIDFIELD comes from and how that affects research
- Describe different types of studies that can be done with MIDFIELD
- Efforts to expand and share MIDFIELD
- Outline process to join and access MIDFIELD

Multiple

Whole-population data for institutions and time period

Institution

Database

Current dataset

For

- 22 institutions
- 1.5 million unique students in all departments

Investigating

- 250,000 unique engineering students, approximately 1/7 US engineering enrollment

Engineering

Longitudinal

5-year expansion plan in progress

Development

- Total of 100+ diverse institutions
- 1/2 US engineering enrollment

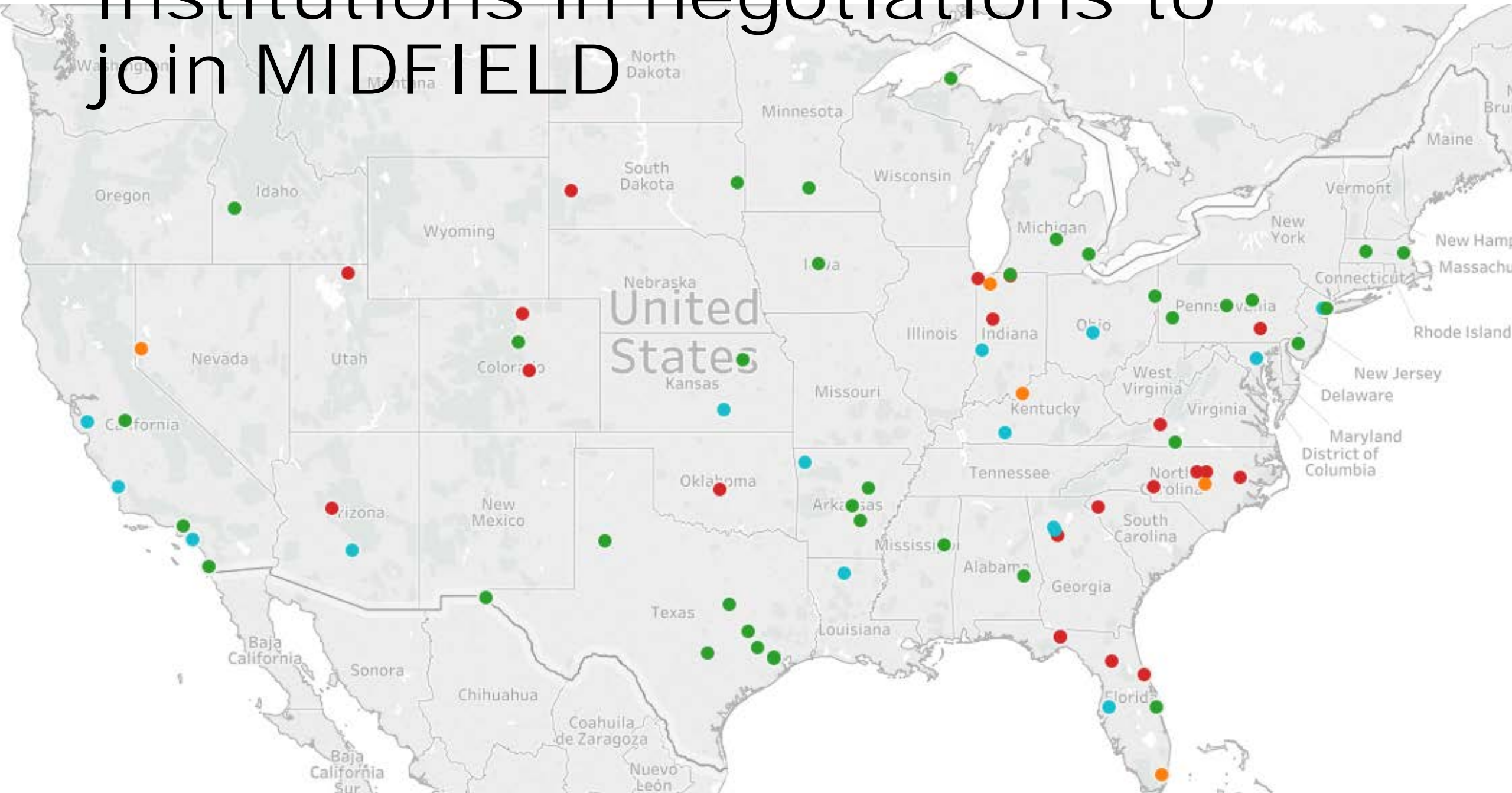
History of MIDFIELD

- Details in 2016 paper
- Initially, partners in the Southeastern University and College Coalition for Engineering Education (SUCCEED)
- Partnered with Catherine Watt – Ronnie Chrestman and Russell Long built the original database.
- Partnership expanded organically to add a few more institutions
- Now engaged in a systematic effort to expand

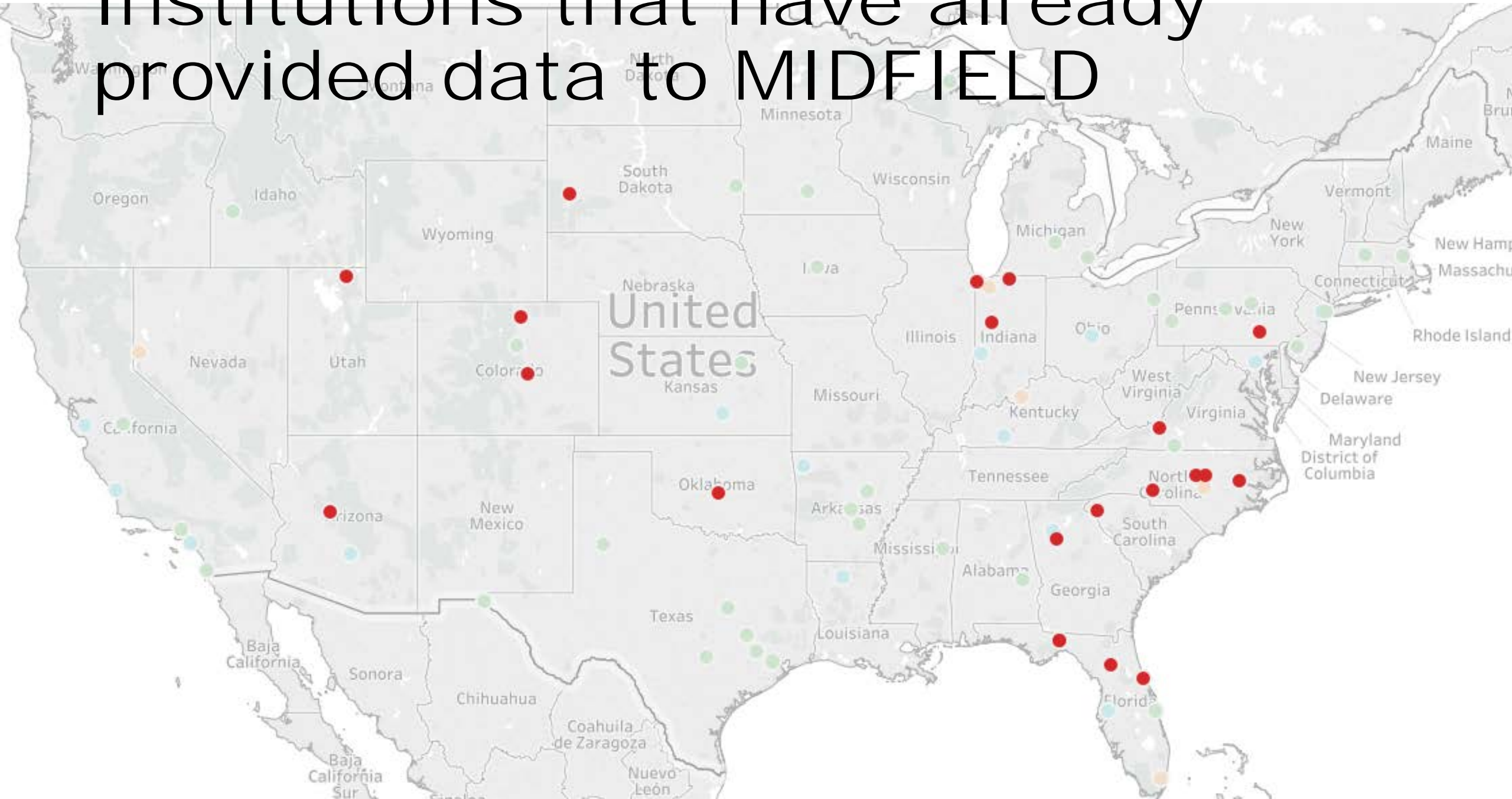
How the design of MIDFIELD affects research

- Southeastern bias – population growth / diversification
- “Large institution” bias – the experience of students at smaller institutions isn’t well-represented
- Public institution bias – the experience of students at private institutions isn’t well-represented
- Two HBCUs – can’t discuss the “typical experience”
- No HSIs or institutions with high Asian / high Native enrollment, institutions with larger populations being added

Institutions in negotiations to join MIDFIELD



Institutions that have already provided data to MIDFIELD

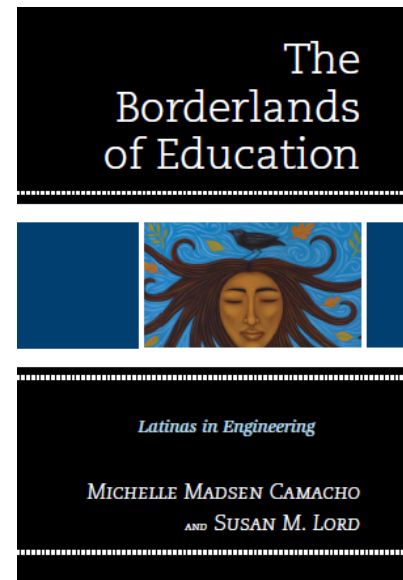


Different uses of MIDFIELD

- Demographic data:
 - Who enrolls? Where are they coming from?
- Graduation data:
 - Who graduates? How long does it take?
- Term data:
 - When do students leave? How do students move among majors? Why do students change majors and what happens?
- Course data:
 - How do grade distributions vary by section? To what extent do students intentionally co-enroll in classes?

What have MIDFIELD researchers accomplished?

- Many publications in journals and conference proceedings, conference presentations, multiple book chapters, and one entire book.
- 4 journal best paper awards, two conference best paper awards, and other recognitions (e.g. WEPAN, ECEDHA).
- Panel discussions, invited workshops and talks, keynote addresses, publicity in various media outlets.



Accessing MIDFIELD

- Proportionately sampled dataset *midfielddata* on github
- *midfieldr* package available for R to support analysis
 - <https://midfieldr.github.io/midfieldr/>
 - Getting Started tutorial, vignettes demonstrating special techniques/functions, data schema
- Full MIDFIELD database available from Russell Long, confidentiality agreement required (protecting institutional identity)

Joining MIDFIELD

- University-level administrators (Provost, Institutional Research, Registrar) sign MOU consenting to release de-identified student data
- Institutional Research, Registrar, or data analysts working for the College of Engineering provide data in native format
- Sign agreement to archive the data for research access
- Submit undergraduate catalogs (pref. in electronic form).
- Acquire IRB approval at your institution for your own research.

Find Out More

Email: midfield@purdue.edu

Phone: (765) 496-9521

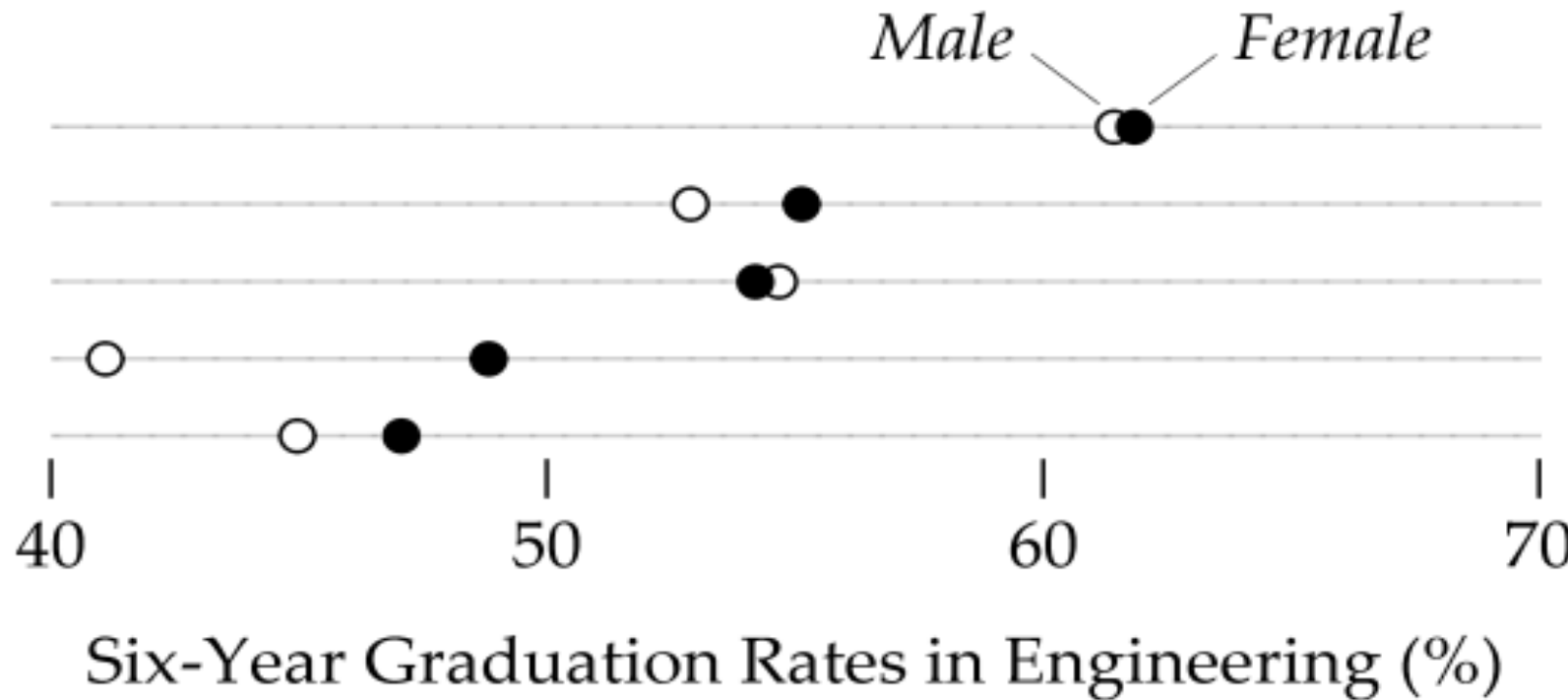
Web: <https://engineering.purdue.edu/MIDFIELD>



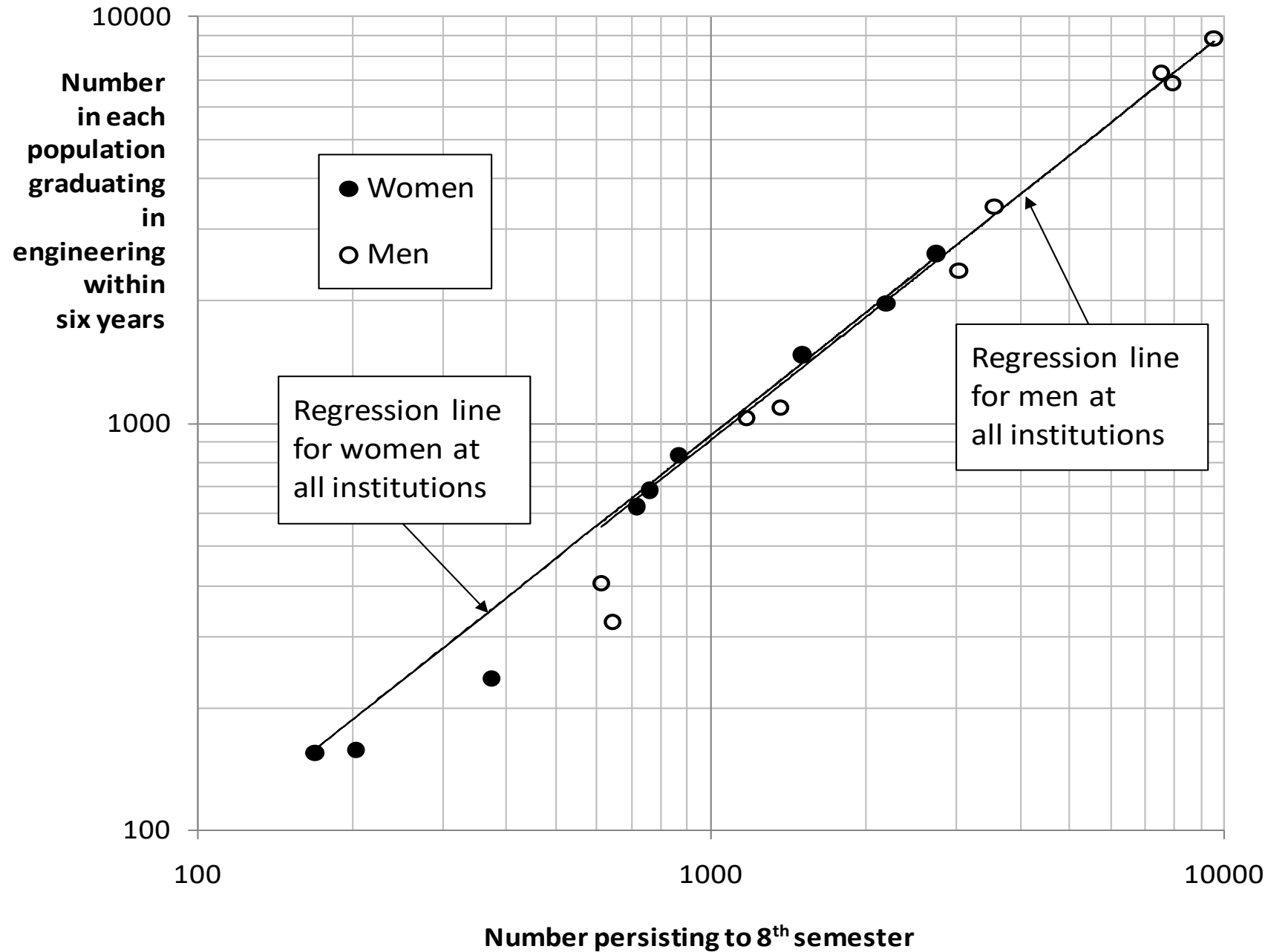
Women in graduate at the same rates as men.

All Engineering Matriculants

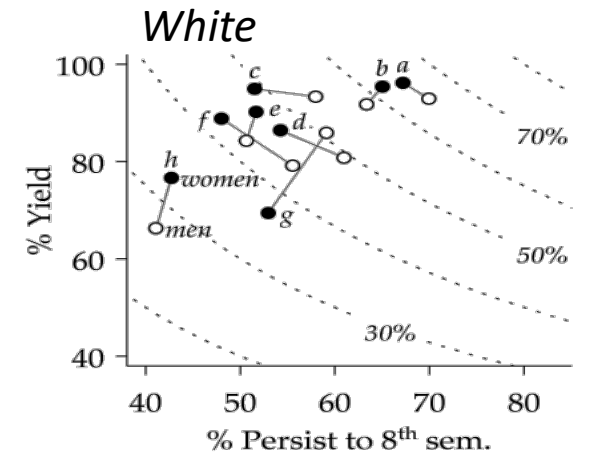
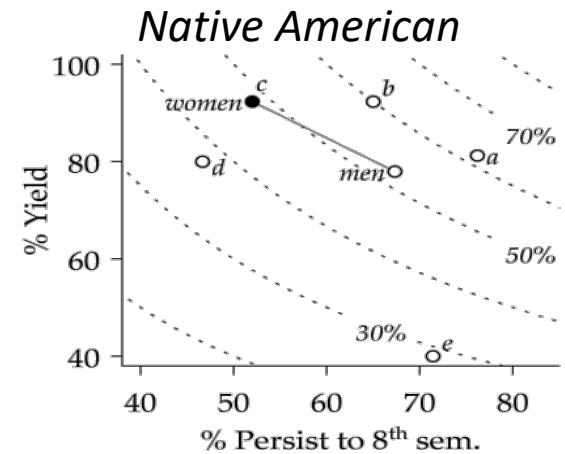
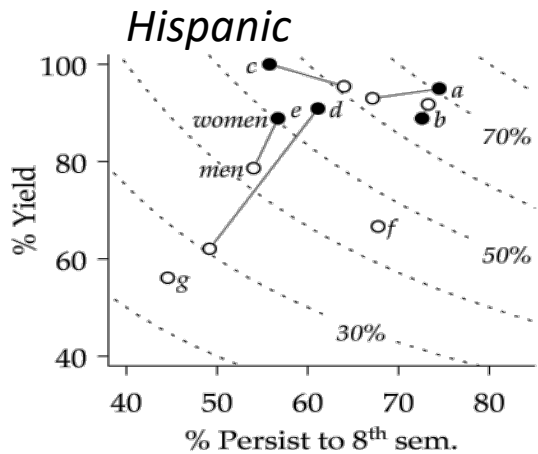
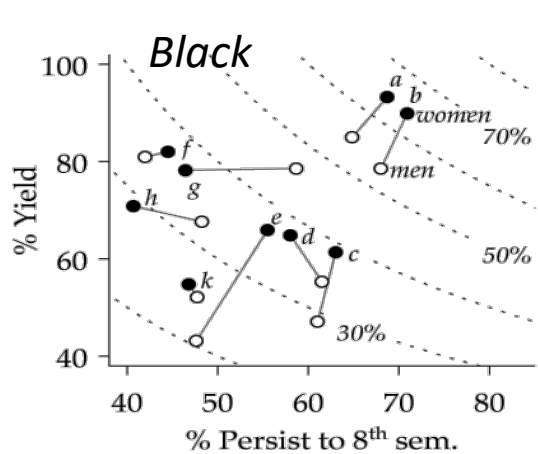
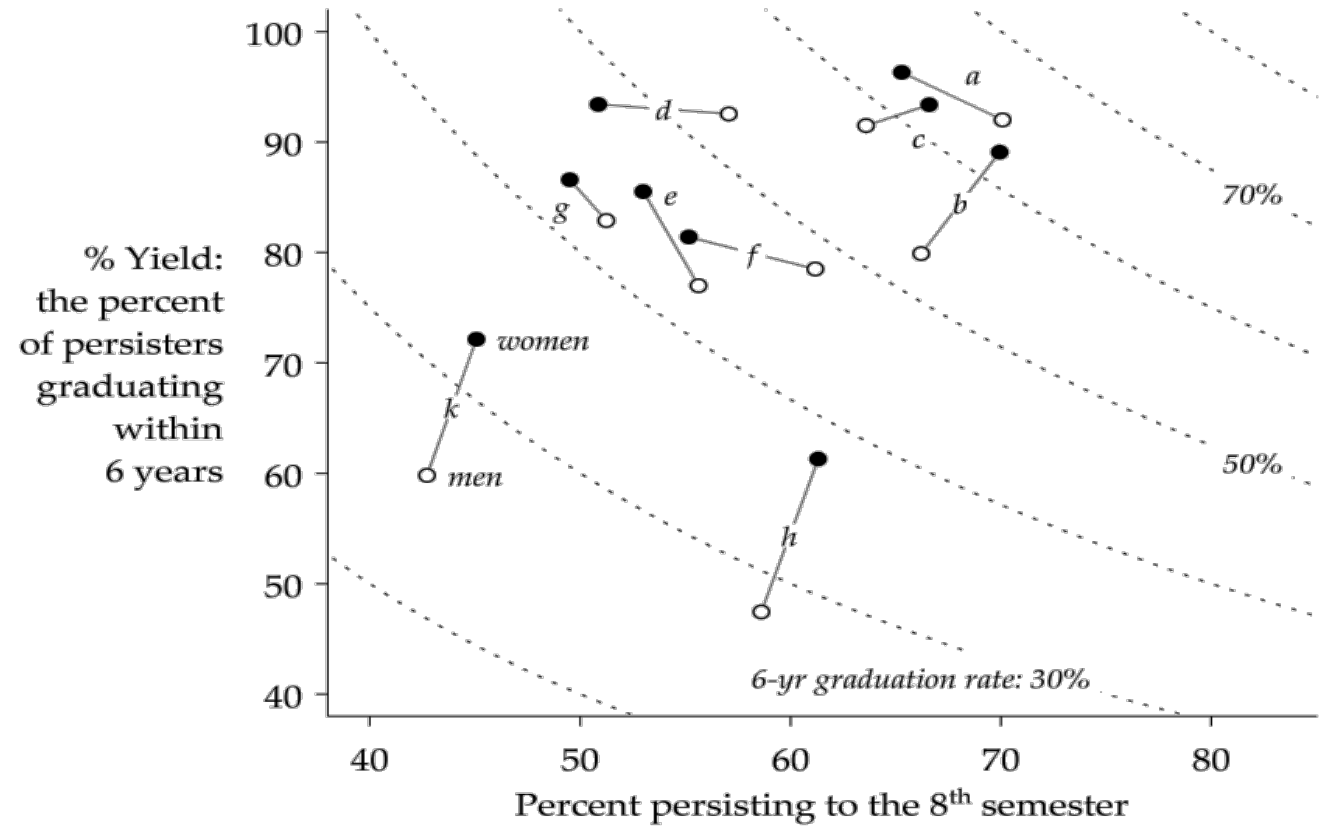
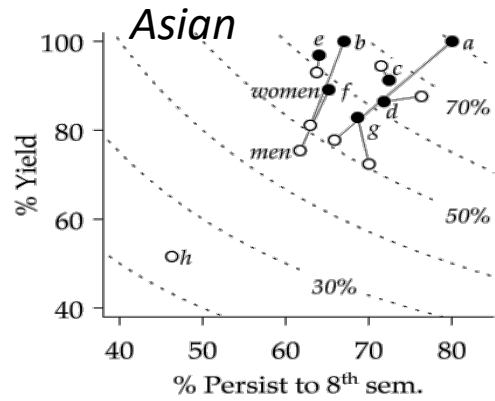
	n_F	n_M
Asian	1001	3927
Hispanic	390	1607
White	9997	45291
Black	3957	6624
Native-Am	68	258



Eight-semester persistence is a good predictor of six-year graduation... but not for everyone.



The aggregate experience doesn't represent the experience of any racial/ethnic group.



Some disciplines are better than others at graduating students... but some of the students who leave will graduate in other engineering majors.

