



# Creating NSSE Benchmarks for Assessment

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Measurement and Research Services

Texas A&M University

# What is NSSE?

*(pronounced "nessie")*

- Evaluates the extent to which first-year and senior students engage in educational practices associated with high levels of learning and development
- Supported by grants from Lumina Foundation for Education and the Center of Inquiry in the Liberal Arts at Wabash College



- Co-sponsored by The Carnegie Foundation for the Advancement of Teaching and the Pew Forum on Undergraduate Learning

# Benchmark

- A standard by which performance can be measured
- Stable referent
- A point of reference for a measurement.
- In surveying a benchmark is set by a surveyor to mark a point of known vertical elevation.



# NSSE Benchmark Domains

- Level of Academic Challenge
- Active and Collaborative Learning
- Student Interactions with Faculty Members
- Enriching Educational Experiences
- Supportive Campus Environment

# NSSE Benchmarks, cont'd

- 41 NSSE items are sorted by content into five clusters representing effective educational practices.
- Benchmarks are calculated on a 100-point scale for ease of interpretation.
- Benchmark analyses are based on data from more than 105,000 randomly selected students from 467 four-year schools.



# Making Benchmarks Useful

- University administrators and faculty are more likely to pay attention to survey data that offer comparisons with similar institutions
- They are more likely to take responsibility for student learning if they believe the data represent their students and suggest specific areas for improvement.



# Creating benchmark scales

## ■ Comparisons with Peer institutions

- Consortium members
- Ad hoc consortiums
- Councils and Associations

# Creating scales of interest to the University.

- Quality Enhancement Plan
- Task Force for Enhancing the Undergraduate Experience. (2005). *Final Report*
- Pedagogical Theory, e.g. Deep Learning
  - **Deep Learning and College Outcomes: Do Fields of Study Differ?** Nelson Laird, T.F., Kuh, G. D. & Shoup, T. R. Paper presented at the 45 th Annual Association for Institutional Research Forum San Diego , CA

# AAUDE NSSE

<http://www.colorado.edu/pba/surveys/nsse-aaude/>

- The National Survey of Student Engagement (NSSE) has been administered annually at selected AAUDE institutions each Spring 2000 and after. Participation is voluntary. Data sharing is coordinated by the University of Colorado at Boulder. AAUDE is the Association of American Universities Data Exchange.

- **AAUDE Institutions:**

Arizona • Colorado • **Florida**  
• **Illinois** • Indiana • Iowa •  
Iowa St • Kansas • Maryland •  
**Michigan** • Michigan St •  
Missouri • **N Carolina** •  
Nebraska • **Ohio St** • Oregon  
• **Penn St** • Pittsburgh •  
**Purdue** • SUNY-Buffalo •  
SUNY-Stony Brook • **Texas** •  
**Texas A&M** • Virginia •  
Washington • Wisconsin.  
(Institutions in bold are Vision  
20/20 comparison  
universities.)

# Benchmarks Scores

- **Benchmark score calculation:**
  - Benchmark mean calculated across all institutions for the years 2000-2005
  - Benchmark mean subtracted from TAMU mean
  - Difference divided by standard deviation of the benchmark mean
  - Also known as an effect size

# Issues with scales – Scale creation

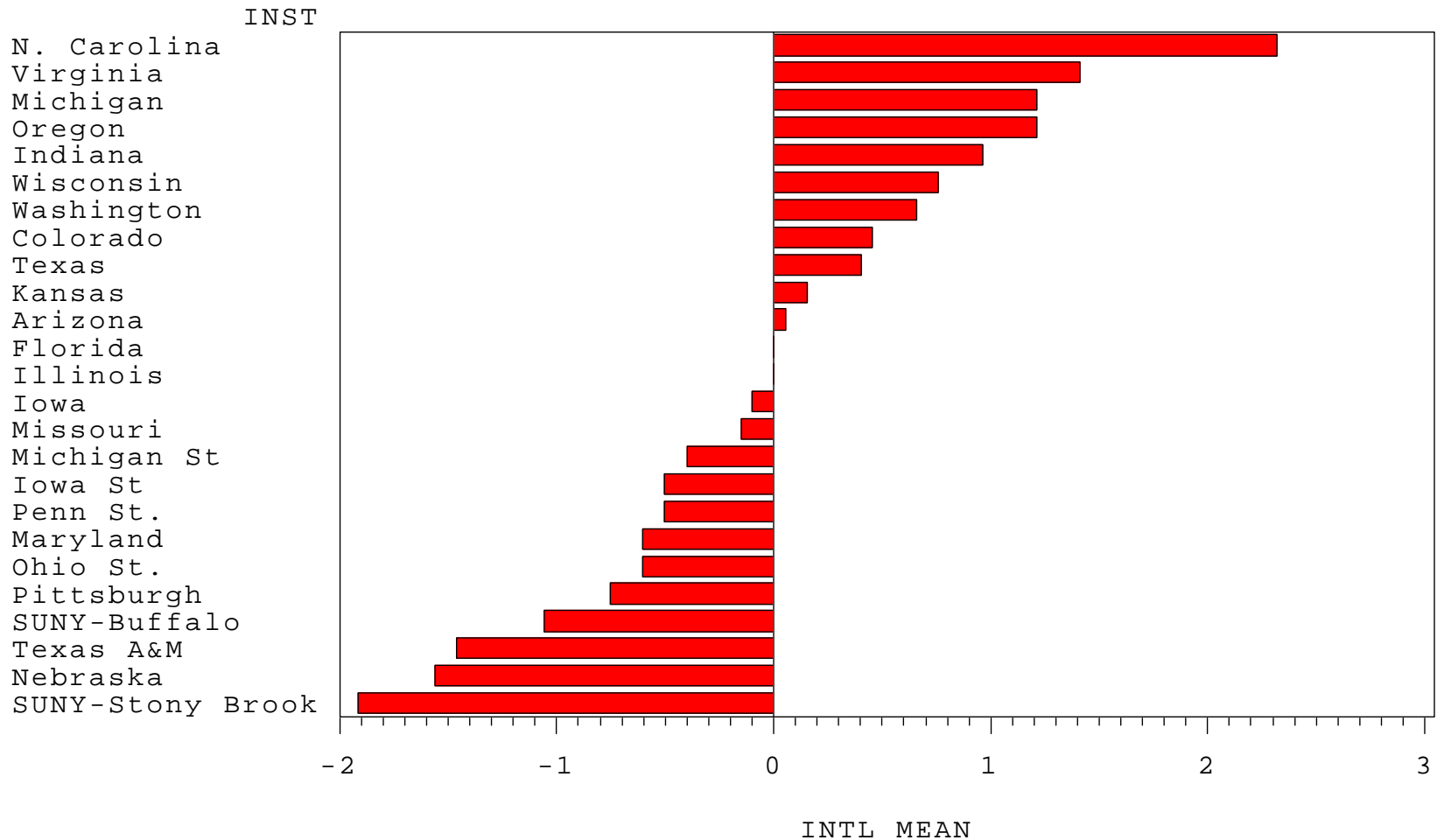
- NSSE items not created with scale creation in mind
  - Few items
  - Low internal consistency
  - Criterion deficiency
  - Different item response scales



# Issues with scales - Standardization

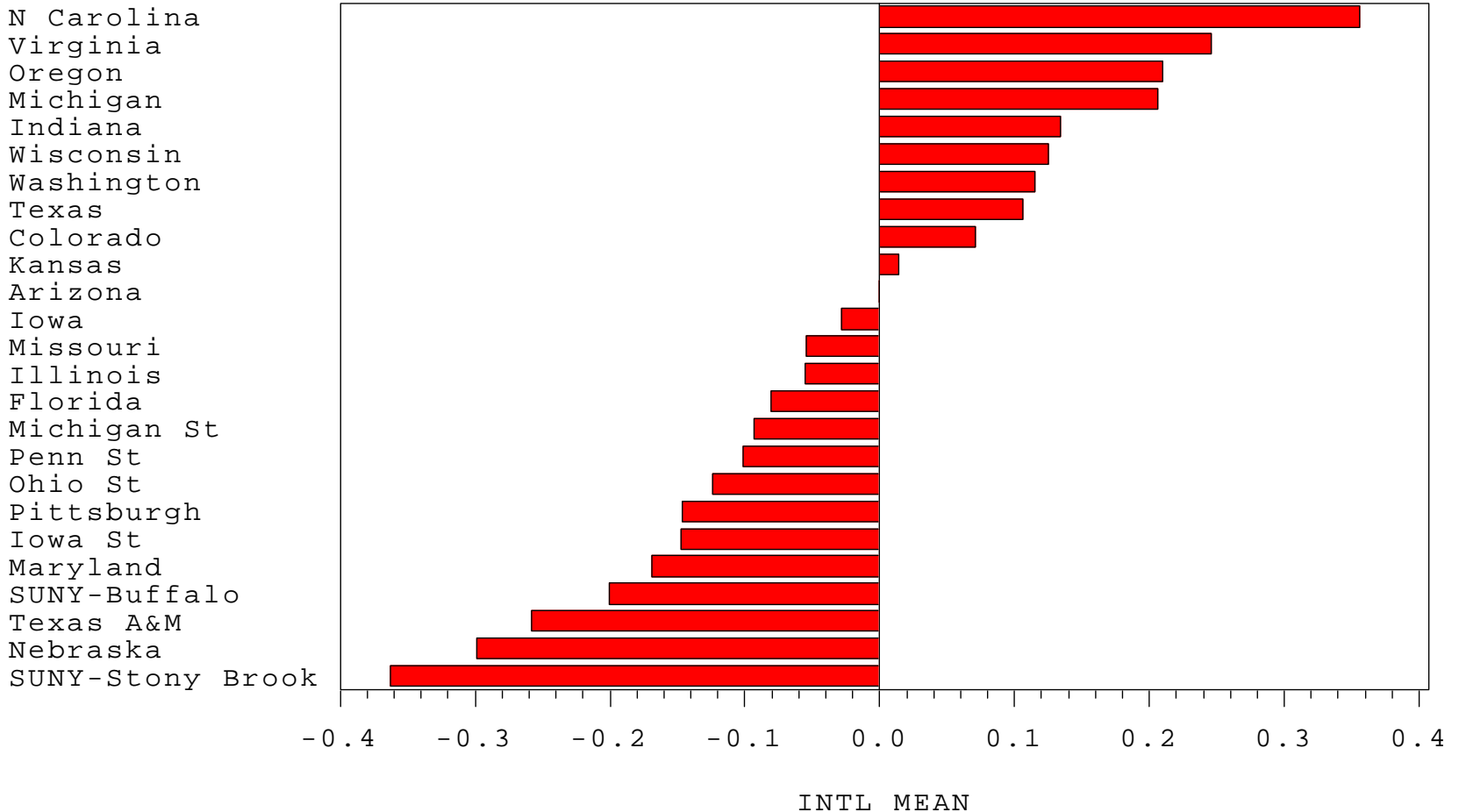
- Why standardize?
- Methods of standardizing
  - By groups or across groups
  - Individual scores or group means

# Standardized means



# Mean z-scores

Institution Name





# Examples of benchmarks

- University benchmark examples

- QEP, Communication skills, Deep learning

- College-level benchmark examples

- QEP, Communication skills



# QEP scales

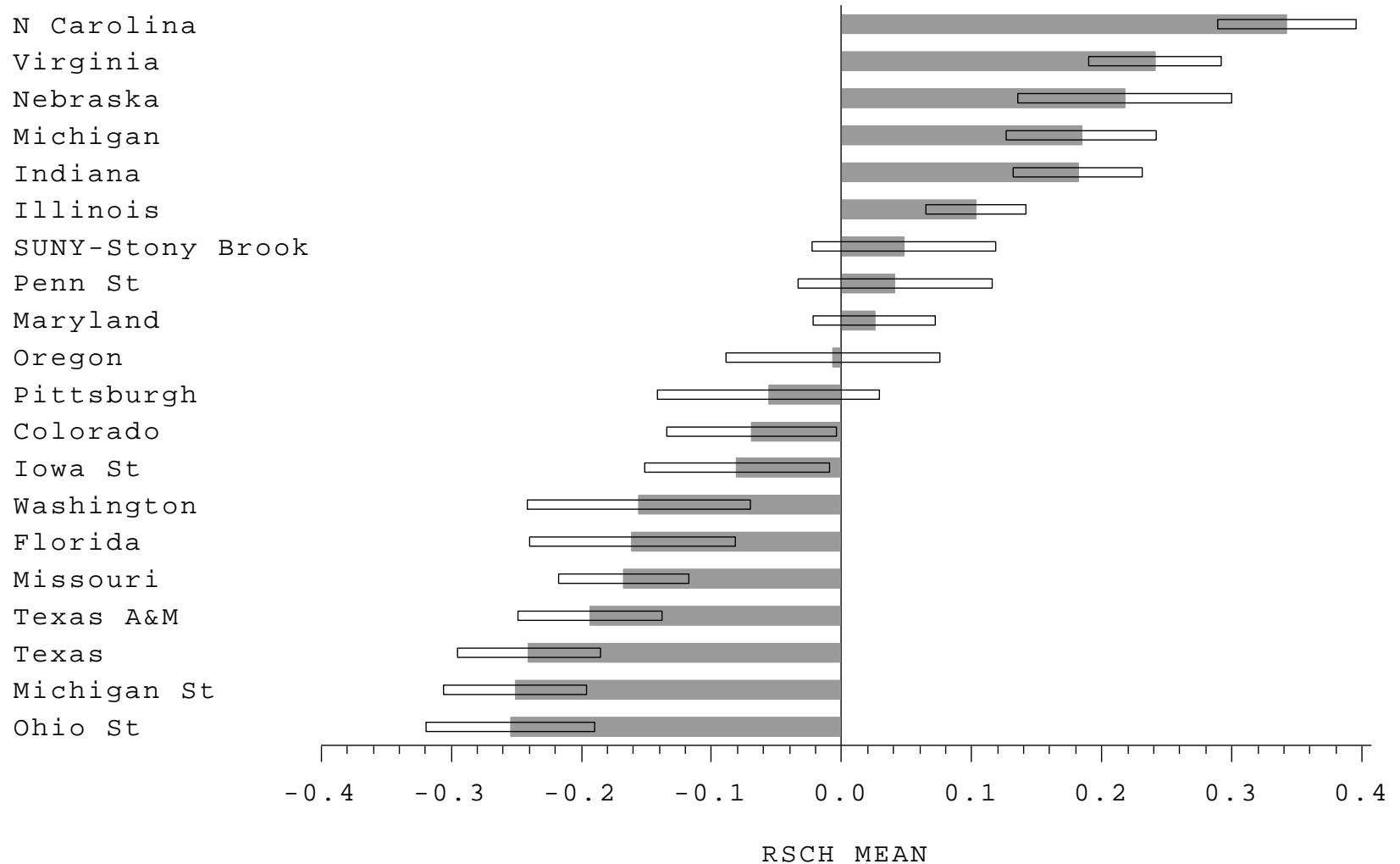
- Internationalization
- Information technology
- Diversity
- Research

# Example of QEP items

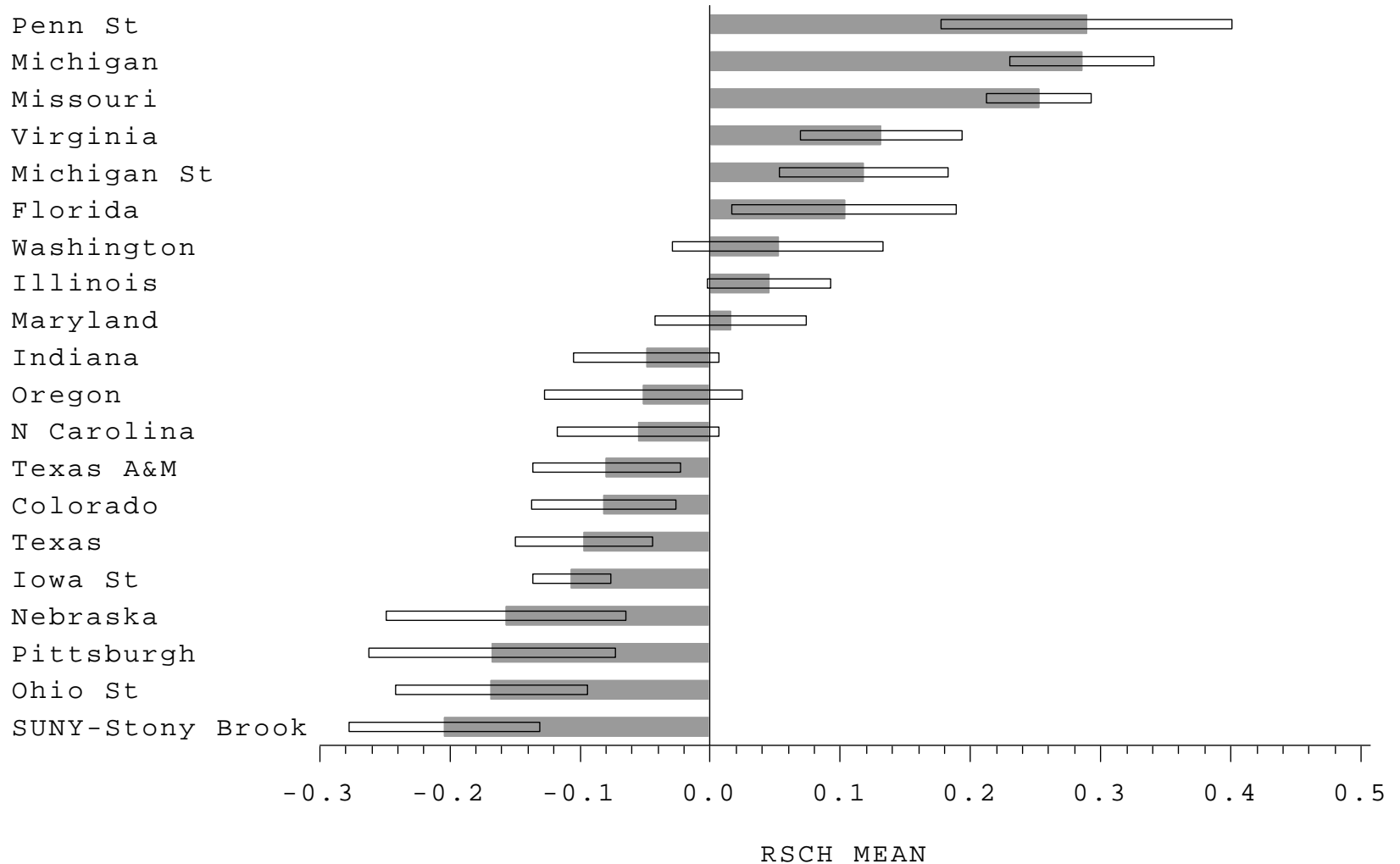
## ■ Research

- Number of papers written
- Put together ideas from different courses during class
- Culminating senior experience (thesis, project, etc.)
- Research project with faculty outside of course
- Practicum, internship, field experience
- University emphasized significant time studying and academic work

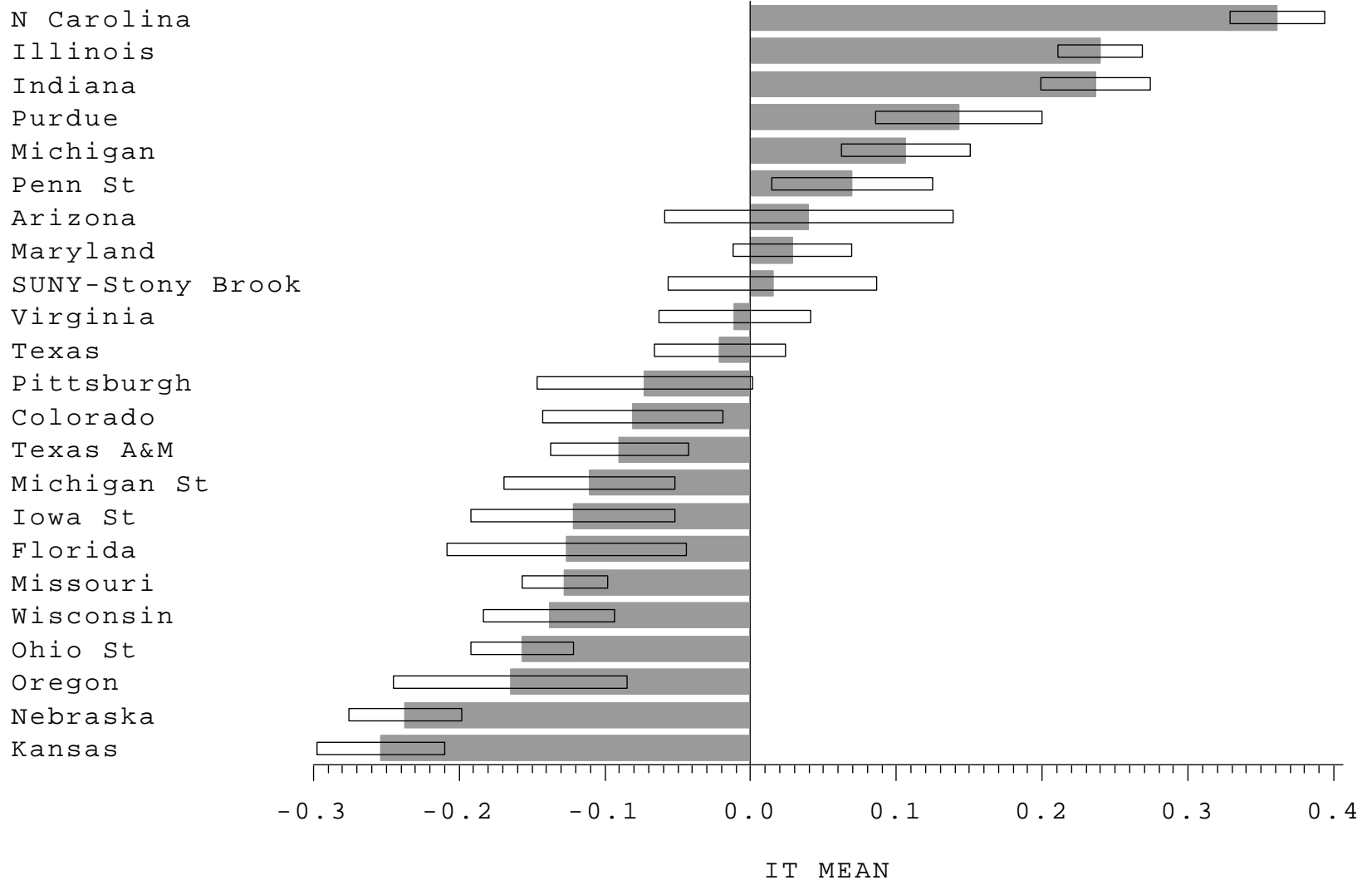
# NSSE Benchmark Analysis on QEP Research Scale, Freshmen, 2000-2004



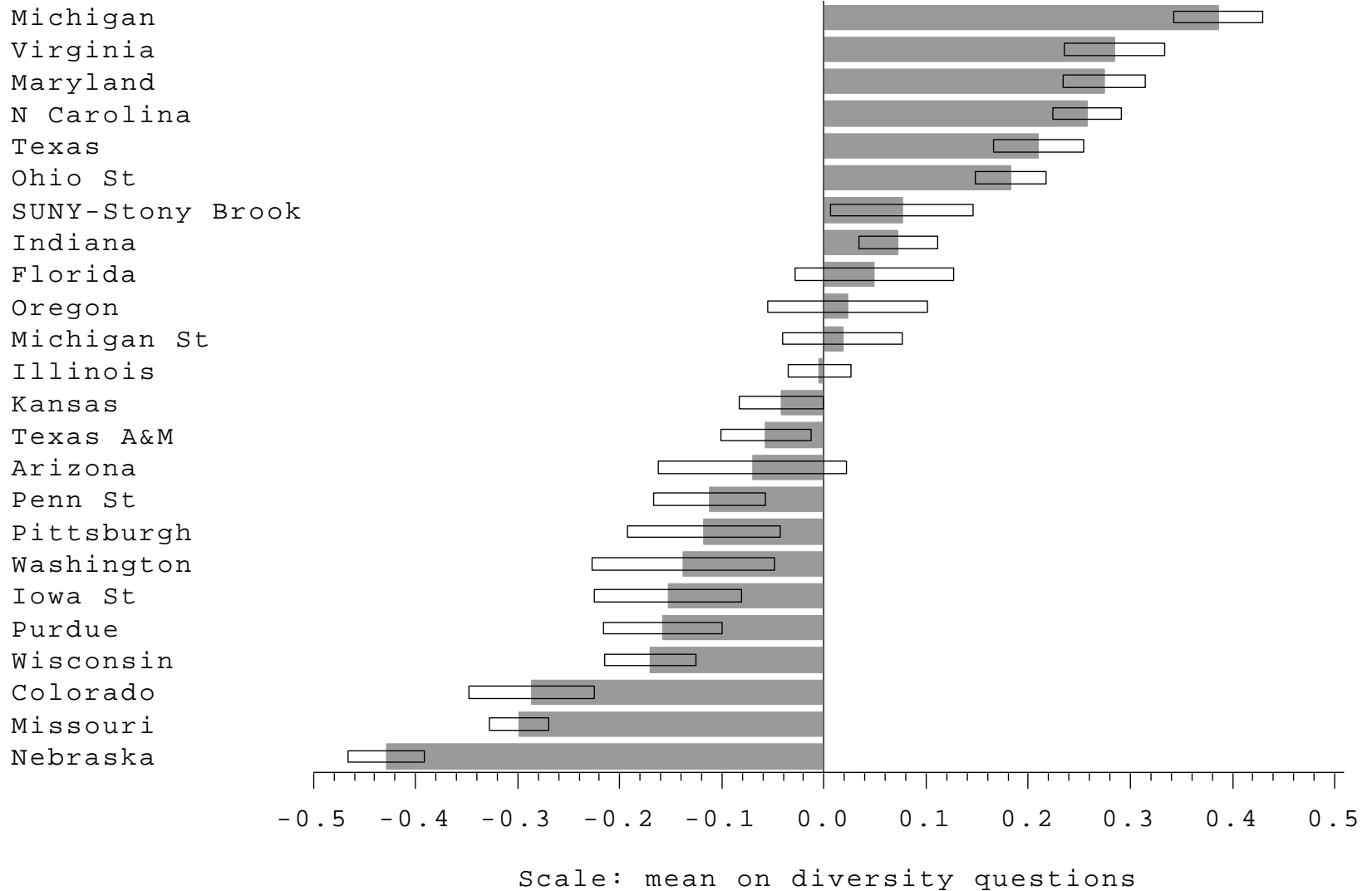
# NSSE Benchmark Analysis on QEP Research Scale, Seniors, 2000-2004



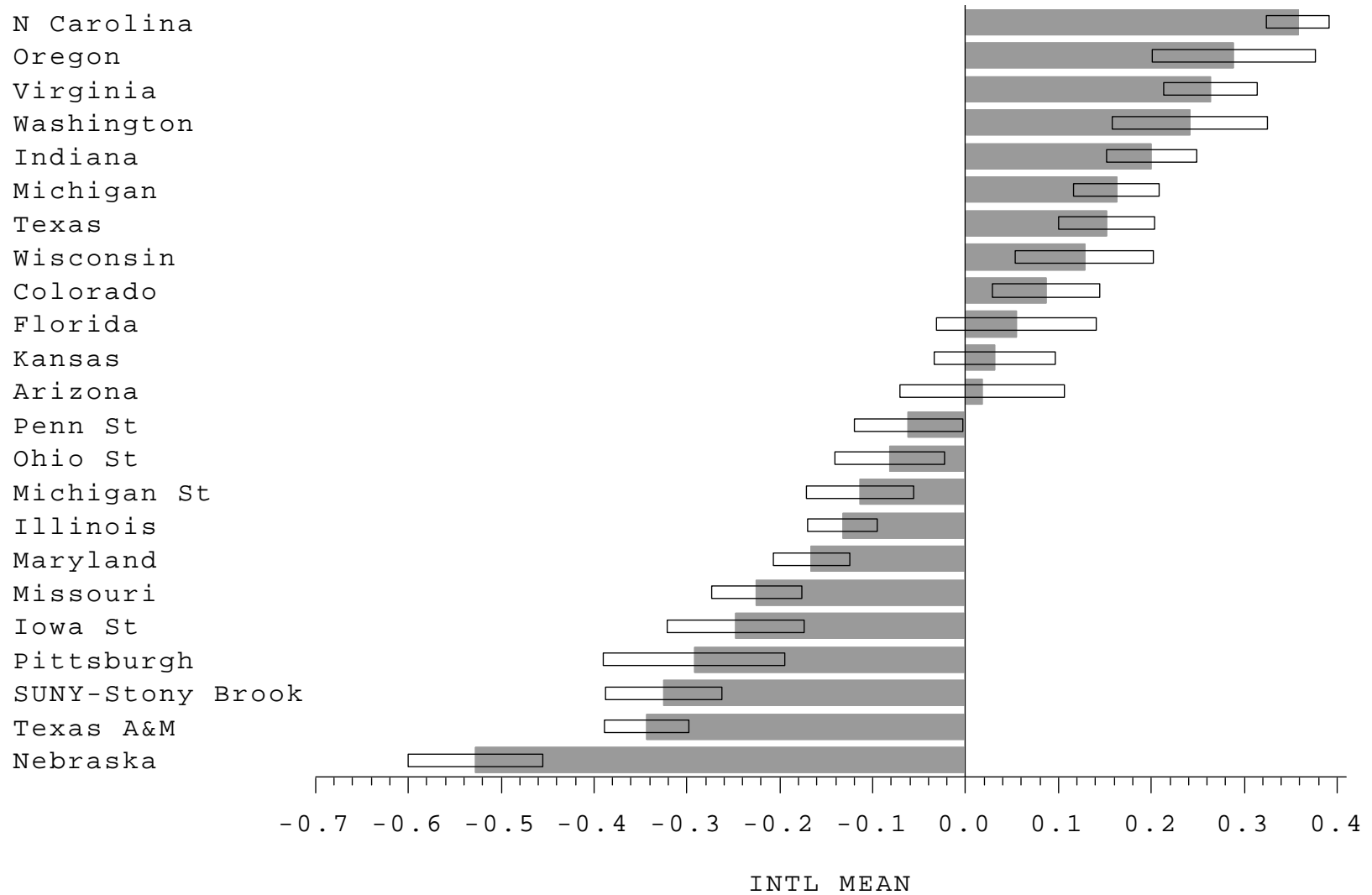
# NSSE Benchmark Analysis on QEP IT Scale, Freshmen, 2000-2004



# NSSE Benchmark Analysis on QEP Diversity Scale, Freshmen, 2000-2004



# NSSE Benchmark Analysis on QEP Internationalization Scale, Freshmen, 2000-2004



# Communication skills items

**Table 1 NSSE questions relating to communication skills**

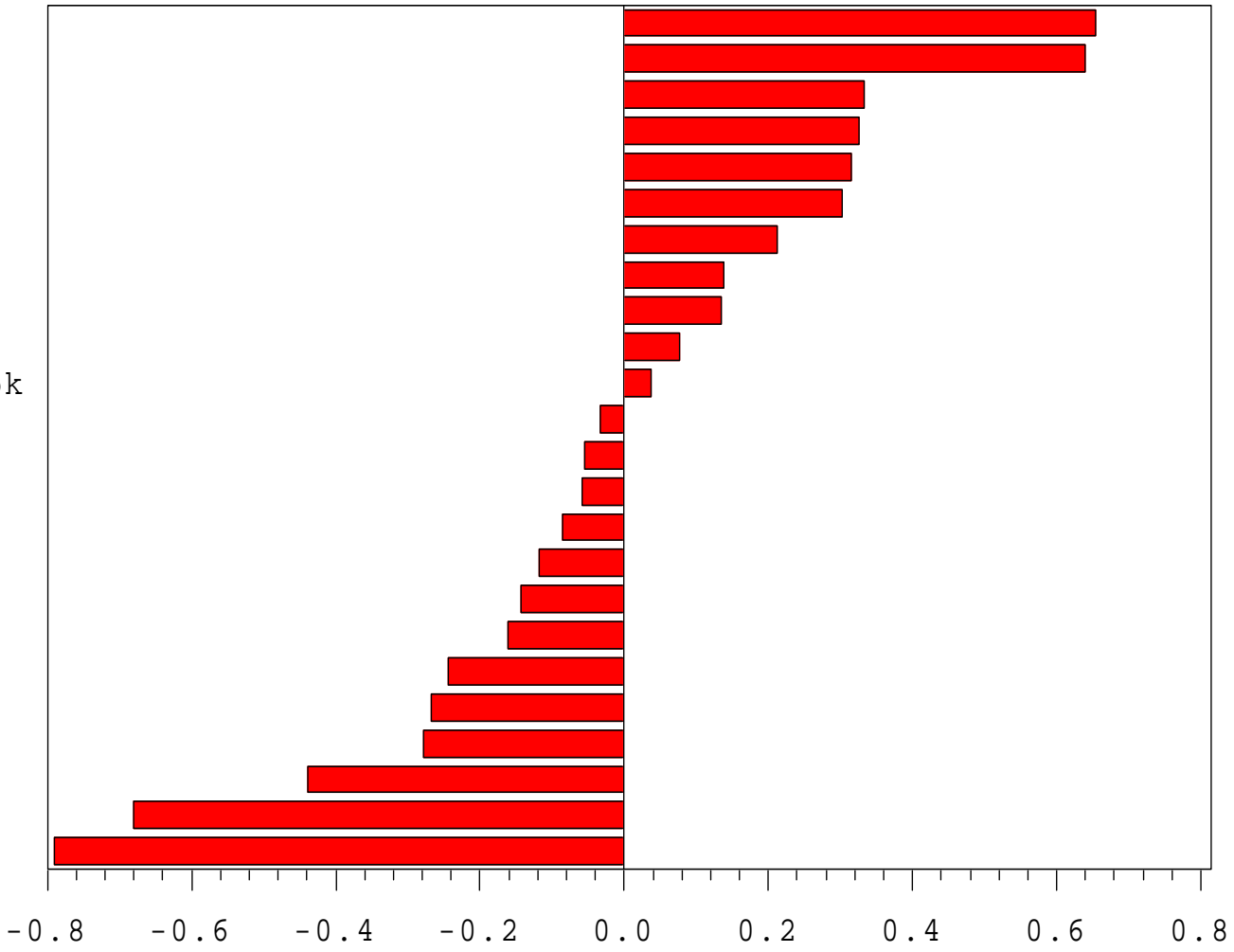
<b>Question</b>	<b>Code</b>
Number of written papers or reports between 5 and 19 pages	WRITEMID
Number of written papers or reports of fewer than 5 pages	WRITESML
Made a class presentation	CLPRESEN
Asked questions in class or contributed to class discussions	CLQUEST
Worked on a paper or project that required integrating ideas or information from various sources	INTEGRAT
Prepared two or more drafts of a paper or assignment before turning it in	REWROPAP
Used e-mail to communicate with an instructor	EMAIL
Number of written papers or reports of 20 pages or more	WRITEMOR
Used an electronic medium (listserv, chat group, Internet, instant messaging, etc.) to discuss or complete an assignment	ITACADEM
Writing clearly and effectively (outcome)	GNWRITE
Speaking clearly and effectively (outcome)	GNSPEAK

# AAUDE Benchmark Comparisons Communication Skills

- TAMU freshmen engagement in communication activities is below benchmark.
- Considerable variation between colleges
- Moderate to large differences:
  - writing 5-19 page papers
  - writing papers of fewer than 5 pages
  - making class presentations
  - asking questions in class
  - integrating ideas from various sources

Institution Name

Arizona  
N Carolina  
Michigan  
Indiana  
Oregon  
Nebraska  
Penn St  
Maryland  
Illinois  
Kansas  
SUNY-Stony Brook  
Wisconsin  
Virginia  
Purdue  
Washington  
Pittsburgh  
Colorado  
Iowa St  
Ohio St  
Missouri  
Michigan St  
Florida  
Texas  
Texas A&M

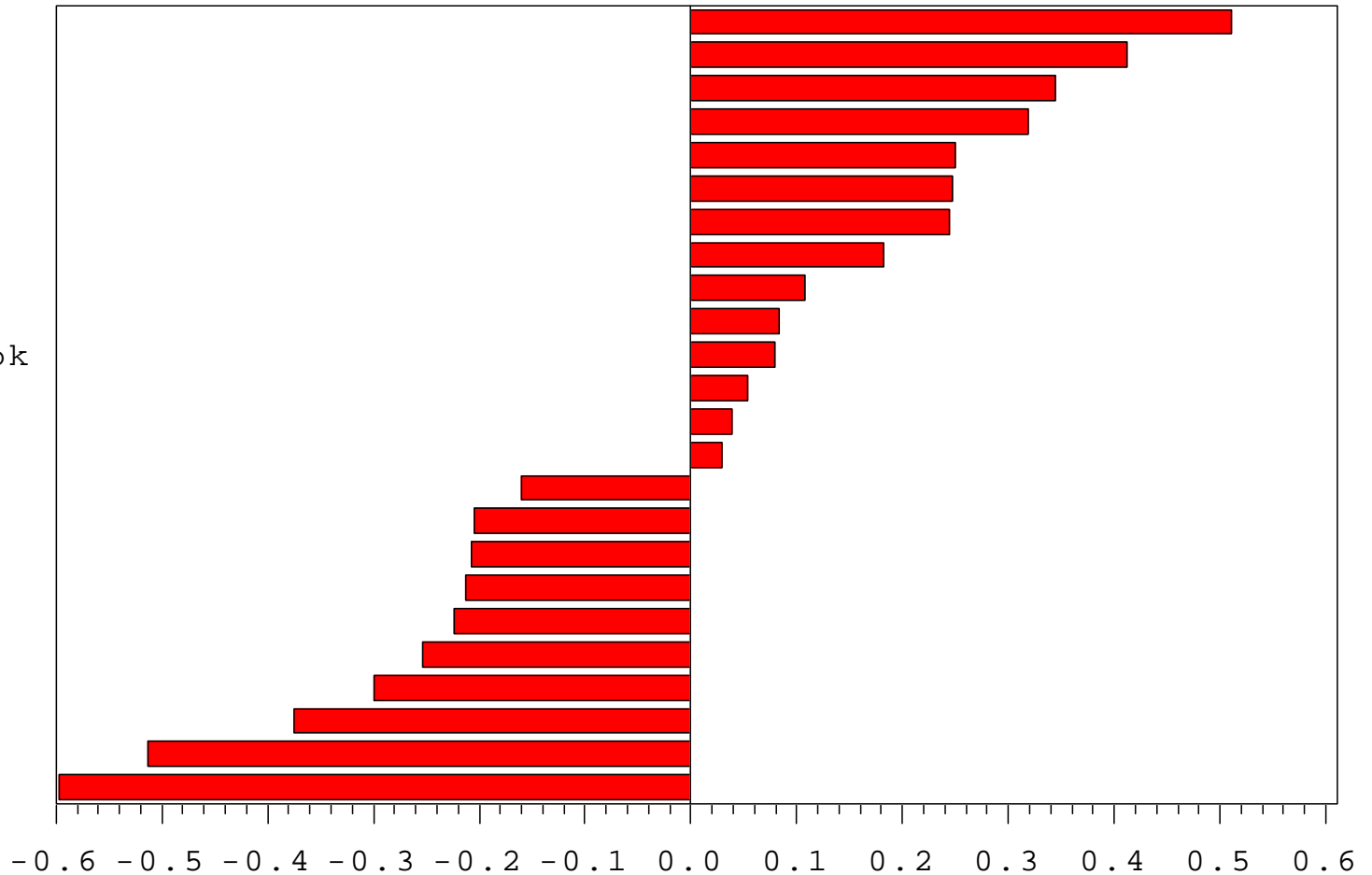


COMSKILL MEAN

# Freshmen: # of Written Papers 5-19 pages

Institution Name

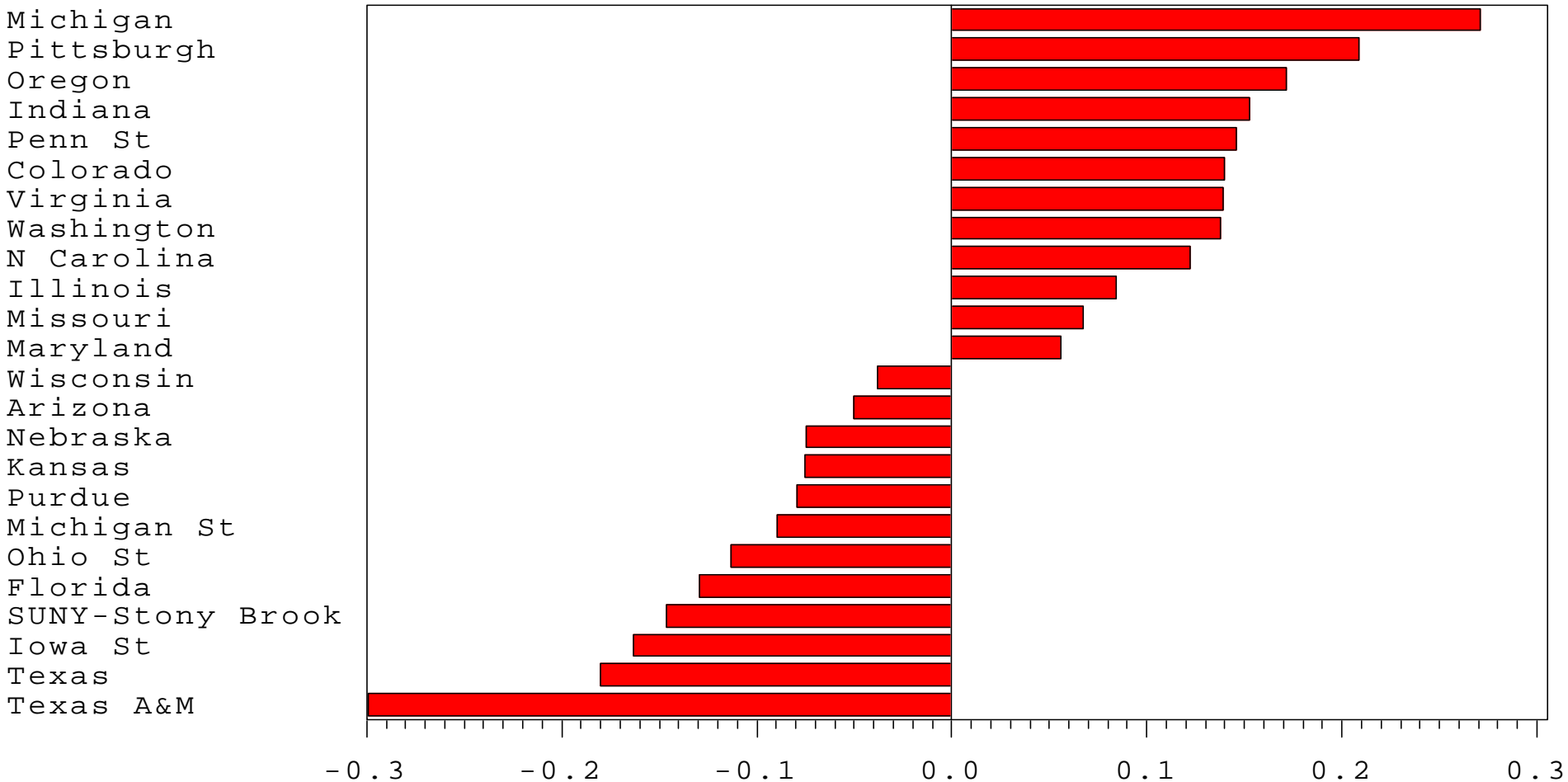
N Carolina  
Arizona  
Michigan  
Nebraska  
Maryland  
Virginia  
Penn St  
Illinois  
Pittsburgh  
Oregon  
SUNY-Stony Brook  
Indiana  
Washington  
Colorado  
Kansas  
Ohio St  
Purdue  
Michigan St  
Missouri  
Wisconsin  
Florida  
Iowa St  
Texas  
Texas A&M



N written papers/reports of 5-19 pages

# Seniors: # of Written Papers 5-19 pages

Institution Name



N written papers/reports of 5-19 pages



# AAUDE Benchmark Comparisons Communication Skills

- TAMU senior engagement in communication activities is near benchmark.
- Considerable variation between colleges
- Small to moderate differences:
  - writing 5-19 page papers

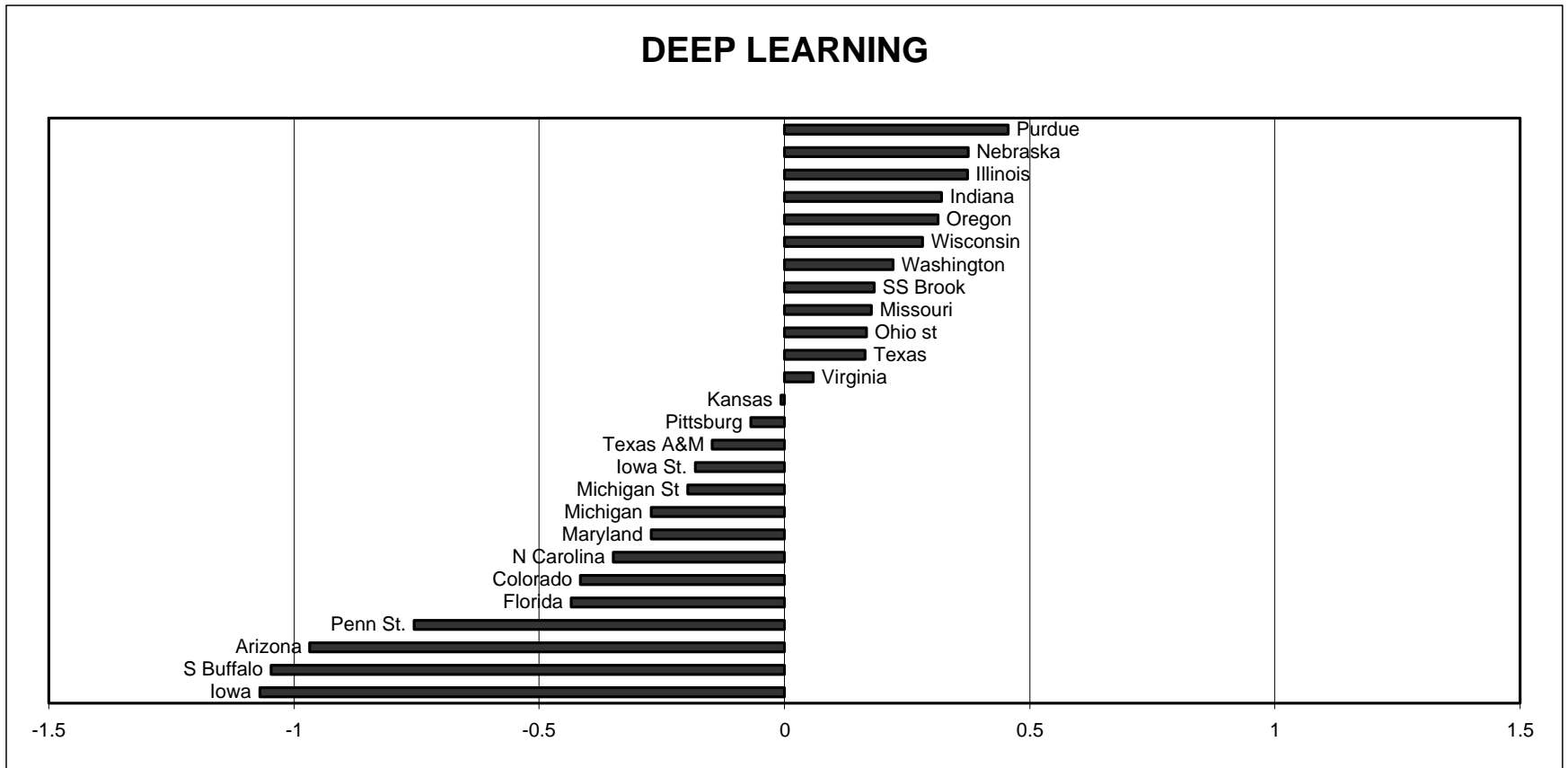
# Deep learning benchmarks

- Students using deep-level processing focus not only on substance but on the underlying meaning of the information.
- personal commitment to the information
- employing various strategies such as reading widely
- combining a variety of sources
- integrating and synthesizing information from a variety of sources.

# Deep learning items

	A&M Mean	Grand Mean
Discussed ideas from reading/classes w/ faculty outside of class	1.73	1.79
Analyzing the basic elements of an idea/experience/theory	3.17	3.18
Synthesizing & organizing ideas/info/experiences into new ideas	2.82	2.89
Making judgments about the value of info/arguments/methods	2.68	2.75
Applying theories/concepts to practical problems/new situations	3.14	3.08
Put together ideas/concepts from different courses during class	2.67	2.64
Contributed to: solving complex real-world problems	2.76	2.60

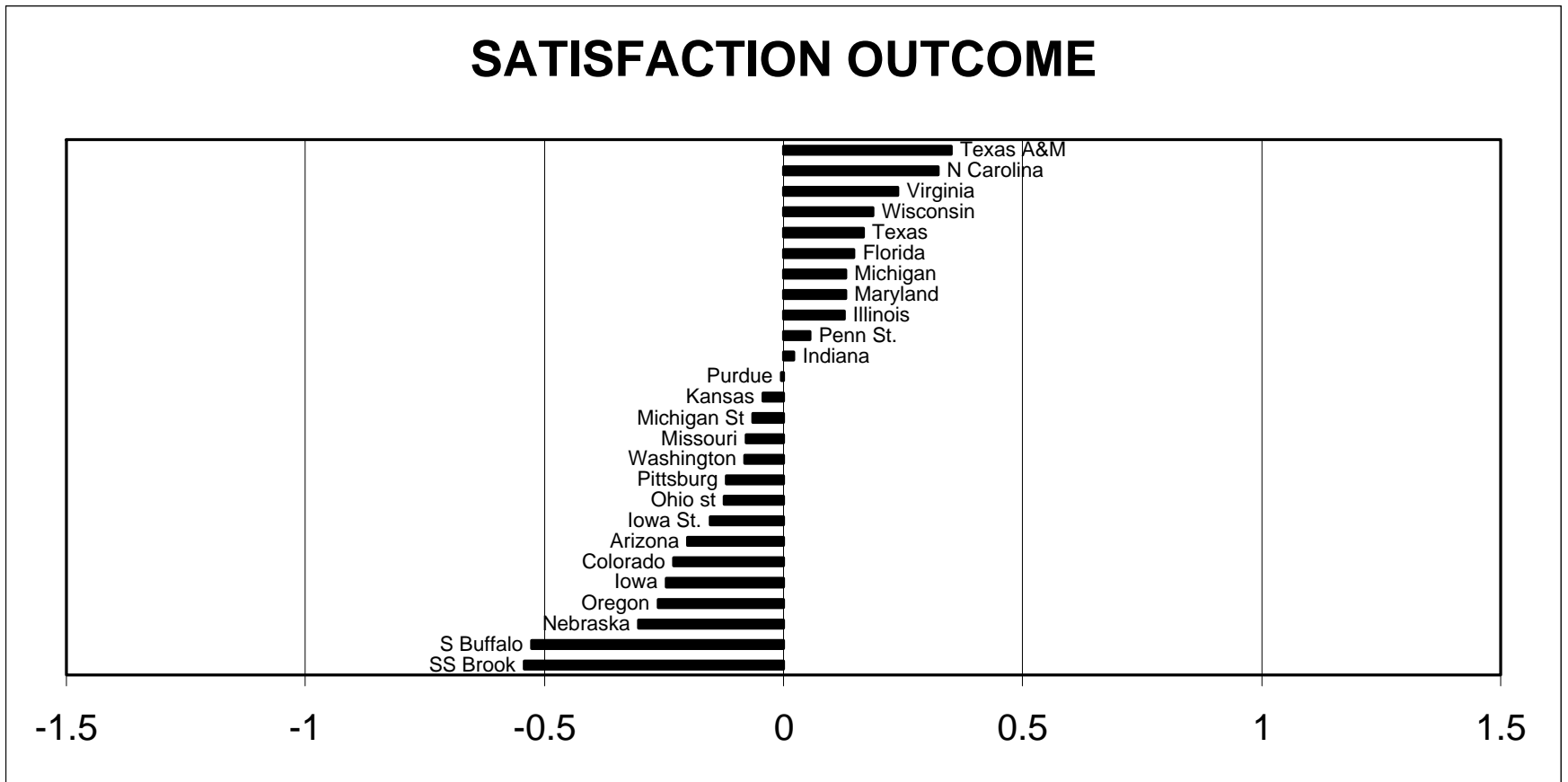
# AAUDE Universities on Deep Learning



# Satisfaction Scale

	A&M Mean	Grand Mean
Evaluate entire educational experience at this institution	3.43	3.21
If started over again, go to the same institution now attending	3.56	3.28

# AAUDE Universities on Satisfaction



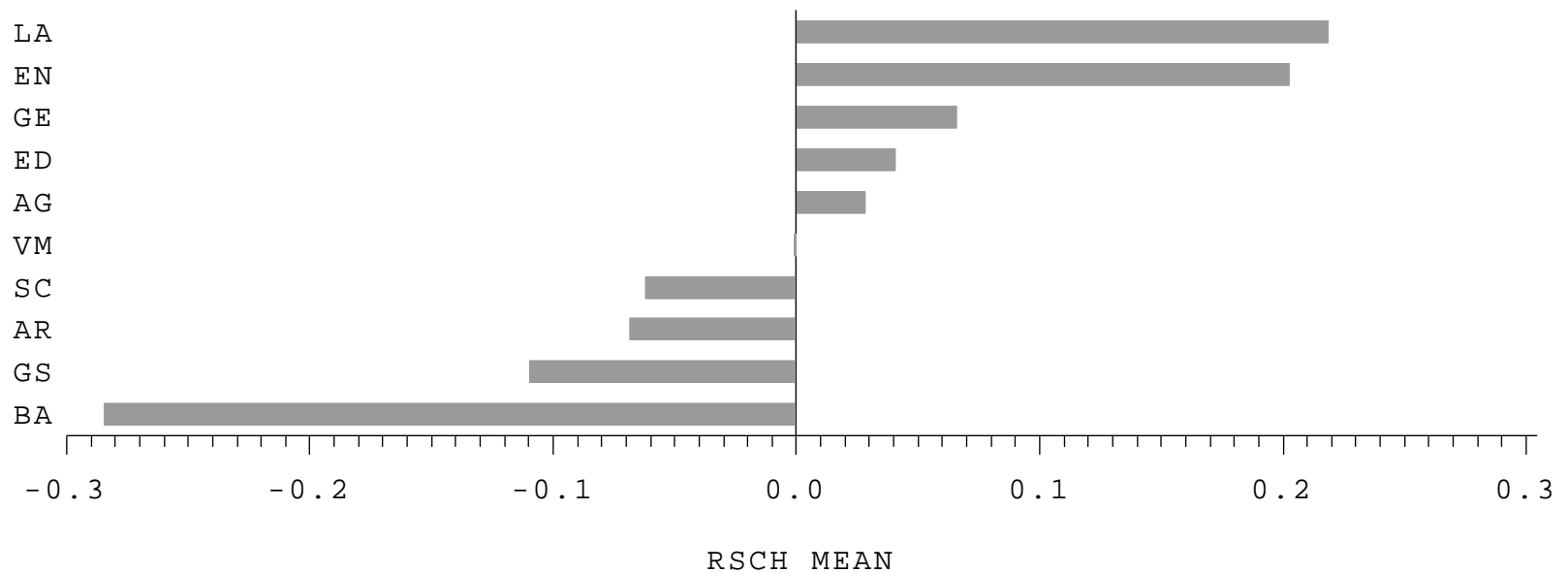


# College benchmarks

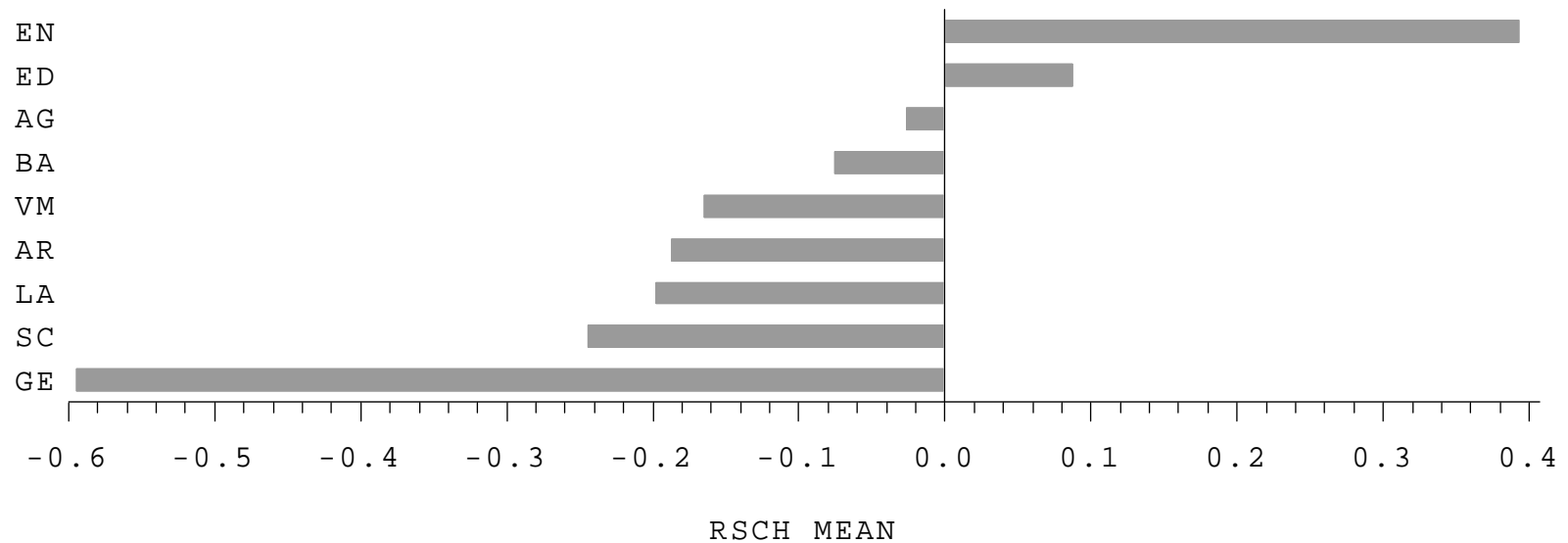
## ■ Colleges at Texas A&M

- Agriculture
- Architecture
- Business
- Education
- Engineering
- Geosciences
- General studies
- Liberal Arts
- Science
- Veterinary Medicine

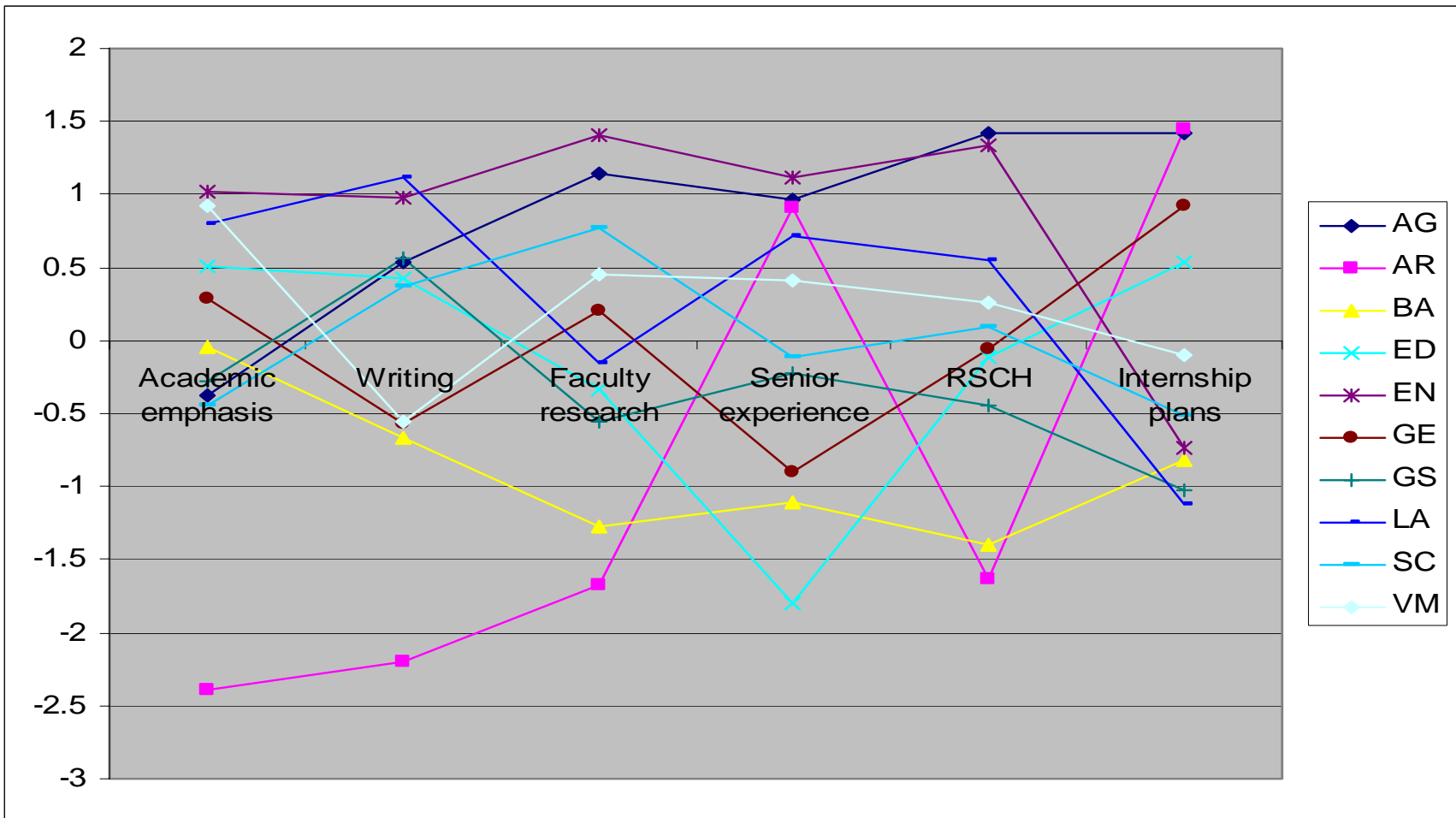
# College-level comparisons: Freshman research (QEP)



# College-level comparisons: Senior research (QEP)

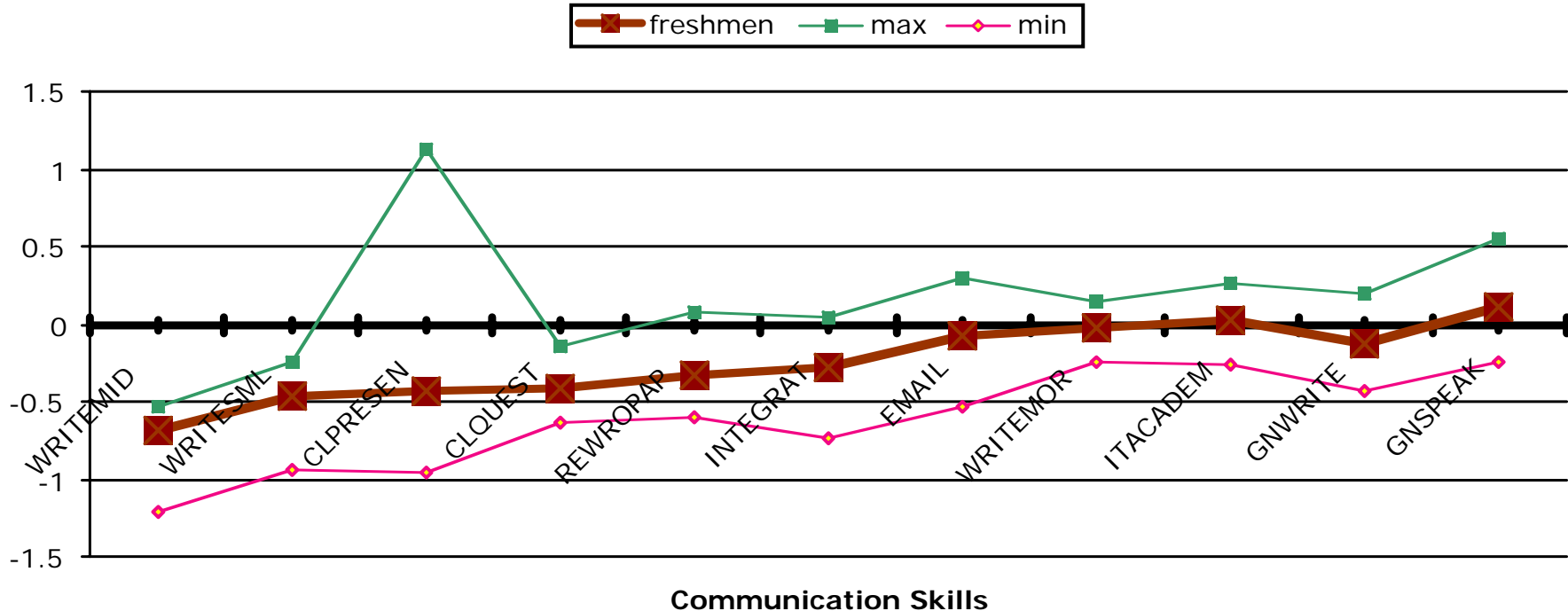


# College-level benchmarks: Research (QEP)



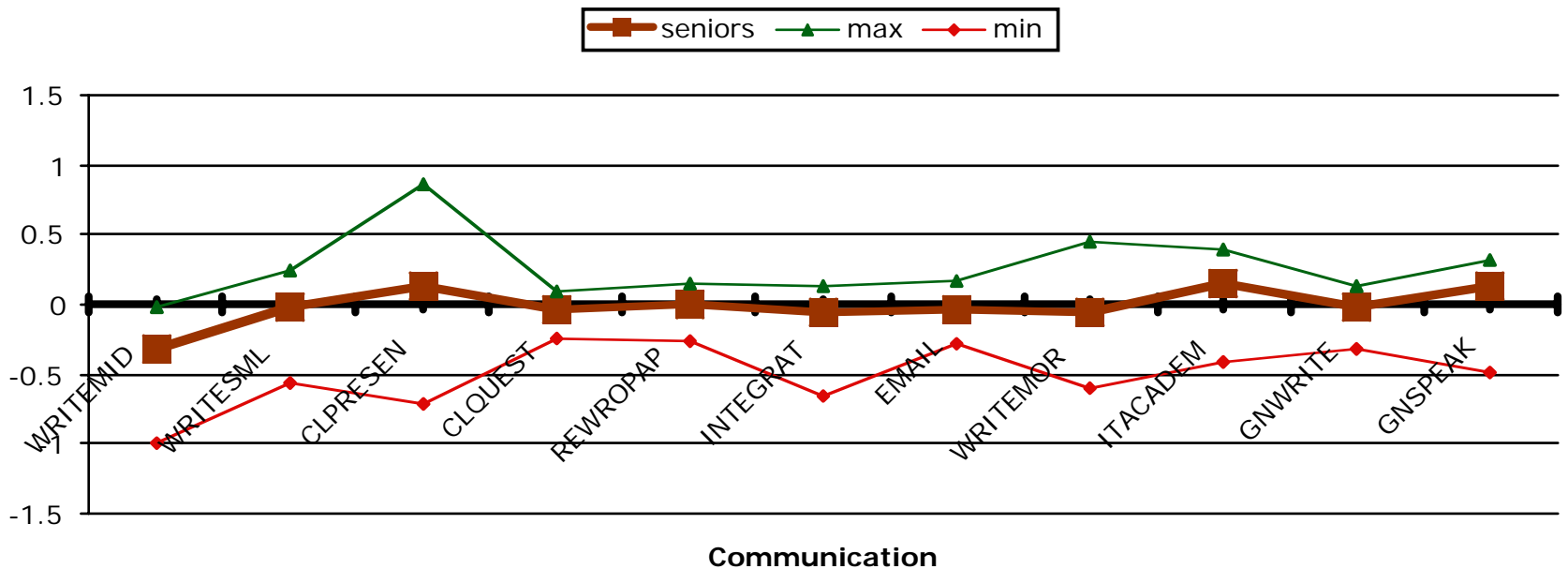
# First year communication skills

Figure 1. Freshmen Engagement in Communication Skills Compared to AAUDE Benchmark Universities

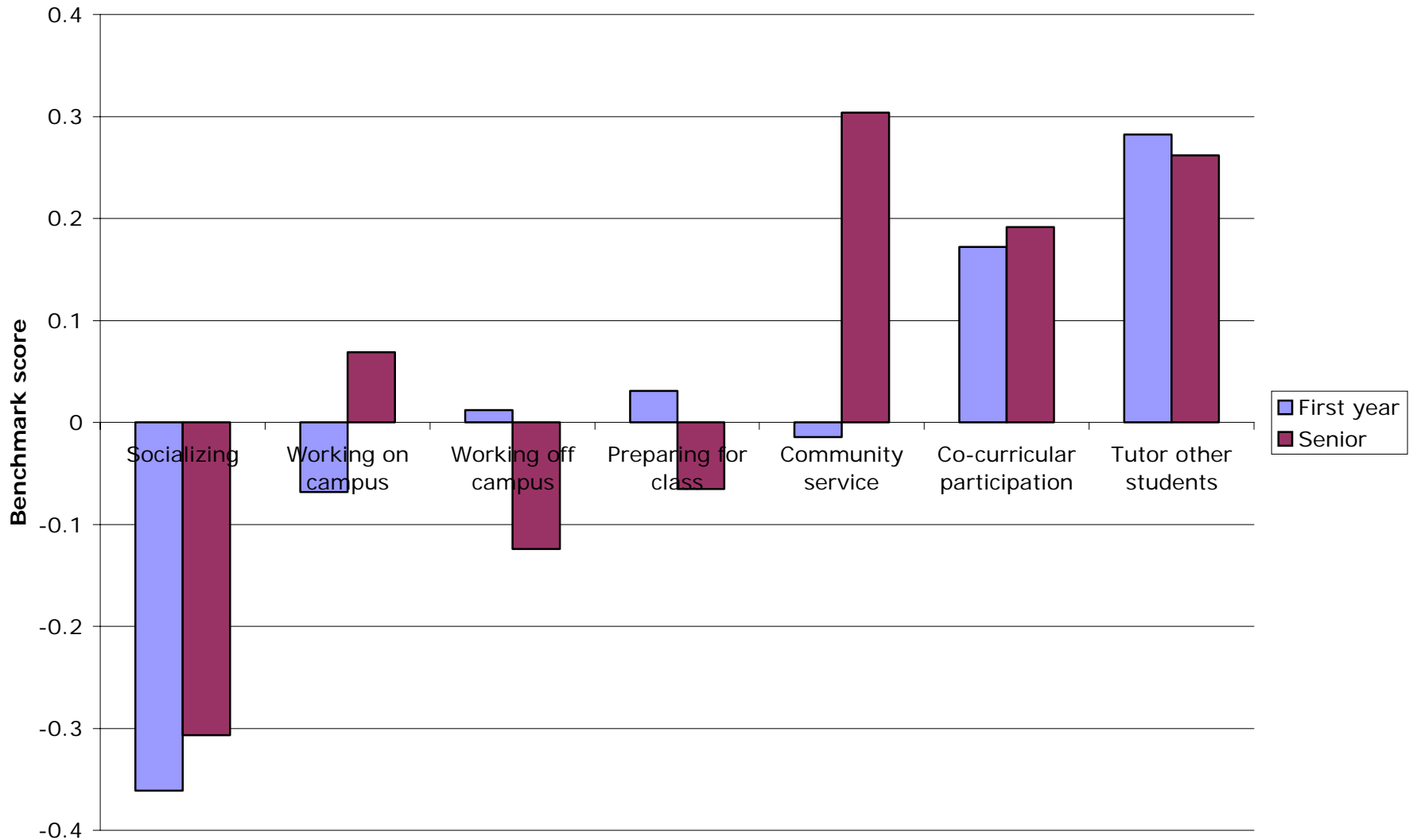


# Senior communication skills

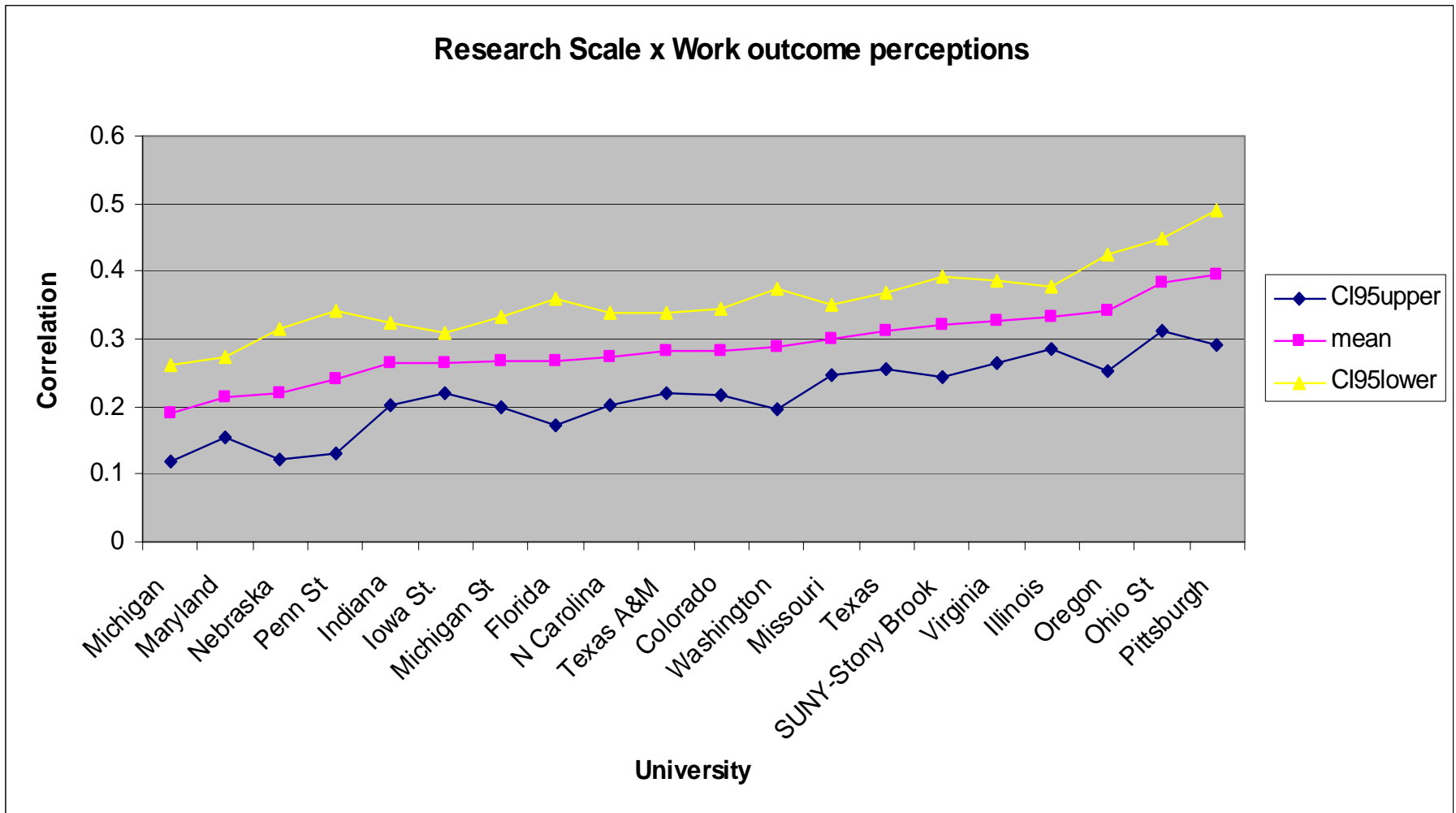
Figure 2. Senior Engagement in Communication Skills Compared to AAUDE Benchmark Universities



## How do students spend their time?



# Other benchmarks - Correlations



# Conclusions

- Widespread use of the NSSE facilitates creation of benchmarks for comparison
  - between institutions
  - within institutions
  - on subsets of scales important to the university
    - other comparisons can target demographics such as gender, ethnicity