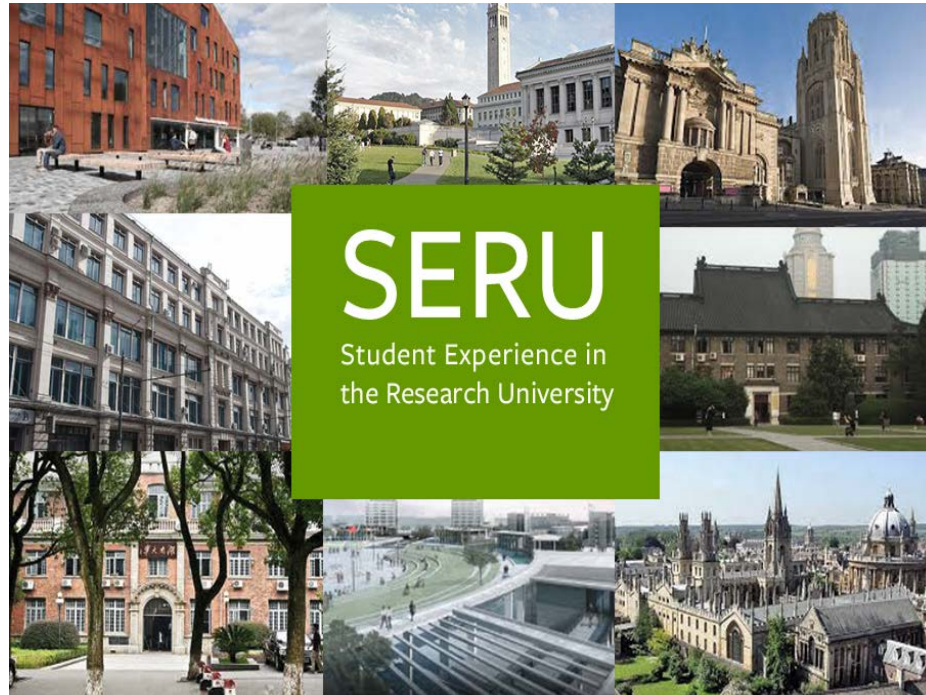


Research University Advantage



Are Students at US Research Universities Engaged or Adrift?

Research Team:

Gregg Thomson (CSHE), **Igor Chirikov** (CSHE/HSE-Moscow), **John Douglass** (CSHE), **Ron Huesman** (UMN), **Tongshan Chang** (UCOP), and **Steve Brint** (UC Riverside)

The Narrow View

Academically Adrift: Recent critique of American higher education: (1) students do not learn enough, (2) the curriculum is not rigorous, (3) students do not spend enough time studying and gaining critical thinking skills

The [only] function of higher education is the production of a reasonably skilled labor force

Focus on various “efficiency” metrics, e.g., WASC’s new “unit conversion ratio” and undue concern with “administrative bloat.”

The Broader View

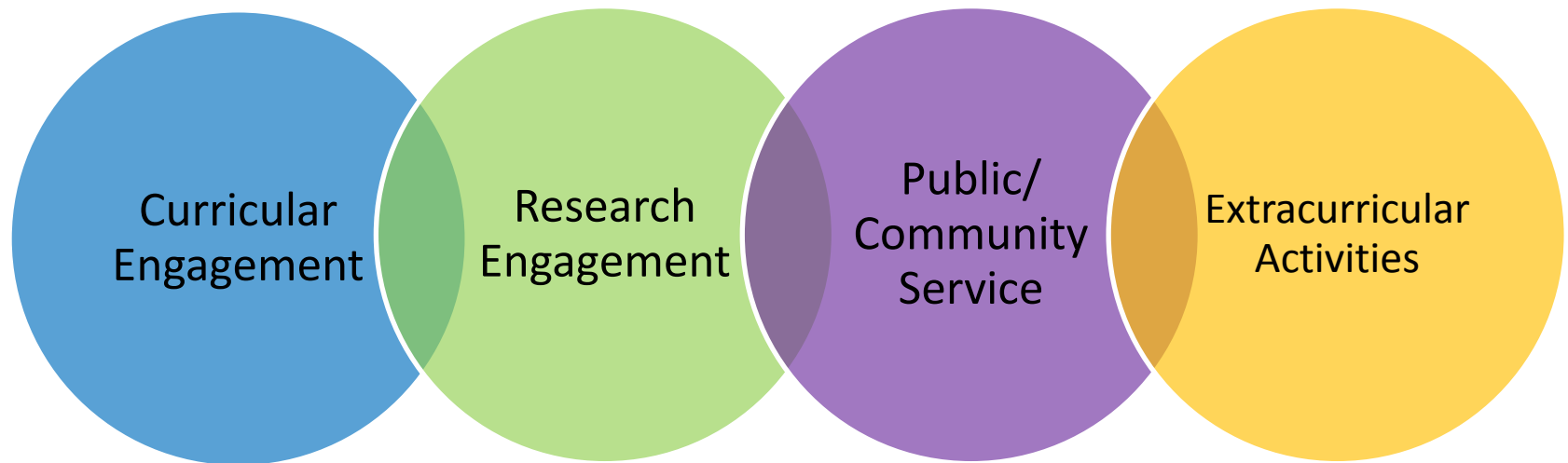
Research university undergraduates have opportunities for multiple forms of engagement and learning

The purpose of higher education should be to produce graduates equipped for both careers and democratic citizenship

Our research agenda for SERU both can and should embrace this broader view; we have, in other words, the opportunity to assess the multiple “pillars” of undergraduate engagement

The Pillars of Engagement

Turning to the Student Side of the Equation



Seeking a Holistic Understanding of the Student Experience

Some Exploratory Research

Brown, C. & Stuart, G. (2012). The University of Texas at Austin and the Research University Advantage. Division of Student Affairs, University of Texas.

Thomson, G. & Cantwell, A. (2012). Academically secure? Undergraduates with High Levels of Academic Engagement, Civic Engagement, and Co-Curricular Leadership. 6th Annual SERU Symposium, University of California, Berkeley.

Stuart, G. and Thomson, G. (2013). Adrift or engaged? What the SERU data tells us. 7th Annual SERU Symposium, University of Texas, Austin.

Brint, S. and Cantwell, A. (2014). Co-curricular study. Fall 2014 SERU Business Meeting and Colloquium, University of Minnesota-Twin Cities.

RUA Research Questions

1. Do students appear to be engaged or adrift when various modes of engagement (curricular, research, extracurricular, and civic) are examined?
2. To what extent are various modes of engagement mutually exclusive, independent, or correlated?
3. How does both the extent and patterns of engagement vary by student background, GPA, level of study, field of study?
4. What is the dynamics of student engagement in research-intensive universities?
5. How various forms of engagement affect student learning outcomes, satisfaction and career plans?

Timeline

- 1. Phase 1: Exploratory Analysis (January-June 2015)**
- 2. Phase 2: In-depth Analysis (June-December 2015)**
- 3. Phase 3: Book Draft (January-October 2016)**

RUA Data Sources

1. SERU/UCUES 2014 Data

1	UC-Berkeley	9785	11	University of Minnesota	8332
2	UC-Davis	10456	12	Rutgers University	7186
3	UC-Irvine	10193	13	University of Pittsburgh	5733
4	UC-Los Angeles	6807	14	University of Southern California	1960
5	UC-Merced	1947	15	Texas A&M University	11806
6	UC-San Diego	8064	16	University of Virginia	4763
7	UC-Santa Barbara	6822	17	Indiana University	3205
8	UC-Santa Cruz	6089	18	Purdue University	2944
9	UC-Riverside	6160	19	University of Iowa	4814
10	University of Michigan	4930	20	University of Washington	8129

Total: 130125 students

2. Previous SERU and UCUES Surveys (since 2008)

3. SERU-International surveys (China, Brazil, South Africa, Russia, etc.)

Phase 1: Exploratory Analysis

1. Do students appear to be engaged or adrift when various modes of engagement (curricular, research, extracurricular, and civic) are examined?
2. To what extent are various modes of engagement mutually exclusive, independent, or correlated?
3. How does both the extent and patterns of engagement vary by student background, GPA, level of study, field of study?

Data source: SERU-2014 data (UCUES data is not included). 11 institutions, >63000 student responses

Construction of Indices

Curricular, research, civic, and extracurricular engagement are latent variables. How to measure them?

Equal weights (Stuart and Thomson, 2013; NSSE)

Pros: Easy to interpret, Easy to Calculate

Cons: Not all forms of engagement are equal in terms of efforts, time, etc.

Weights are determined **based on experts opinion**

Pros: Inequality between forms of engagement is taken into account

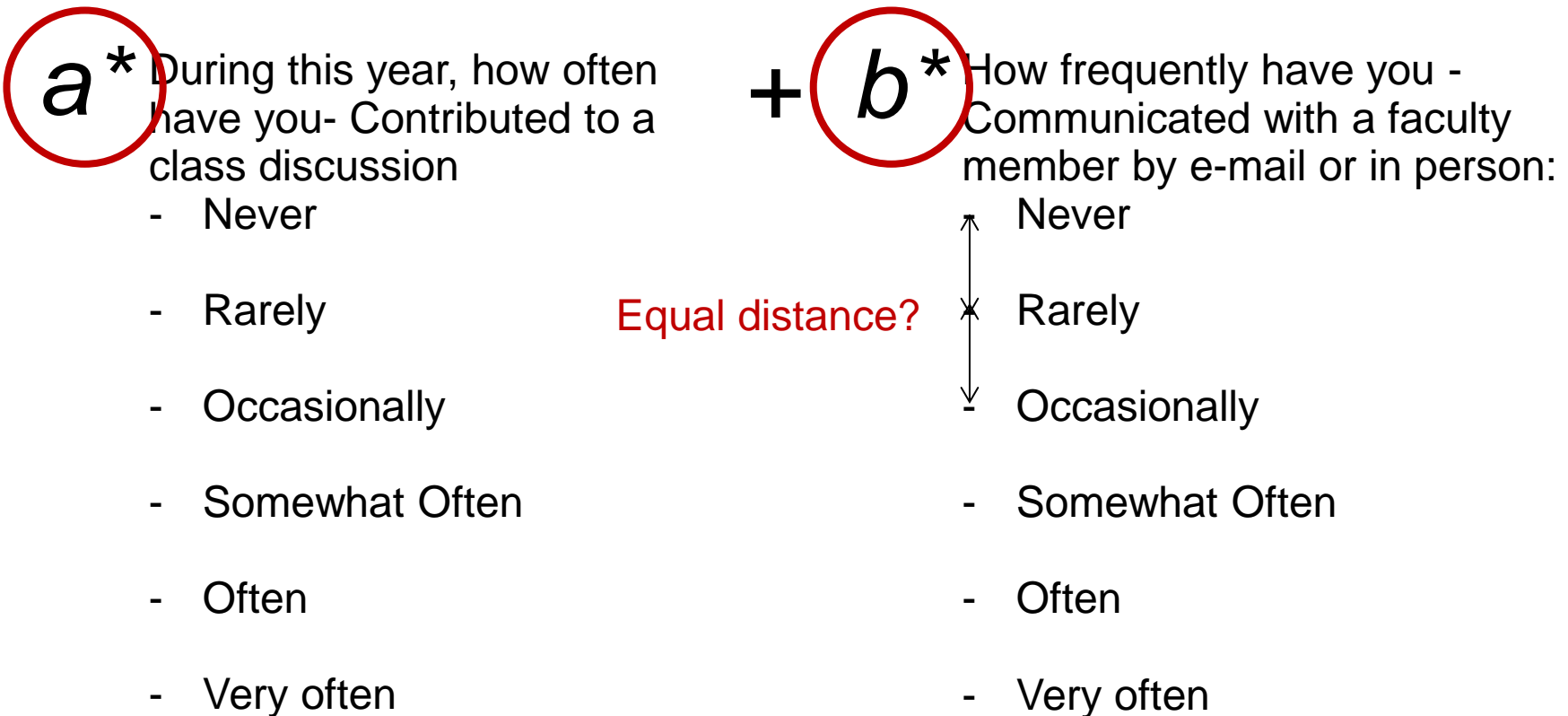
Cons: How to organize experts nomination?
How to resolve disagreement?

Weights are determined **based on Factor Analysis** (PCA, CatPCA)

Pros: The most accurate method

Cons: Harder to interpret, Multiple solutions, Data-sensitive

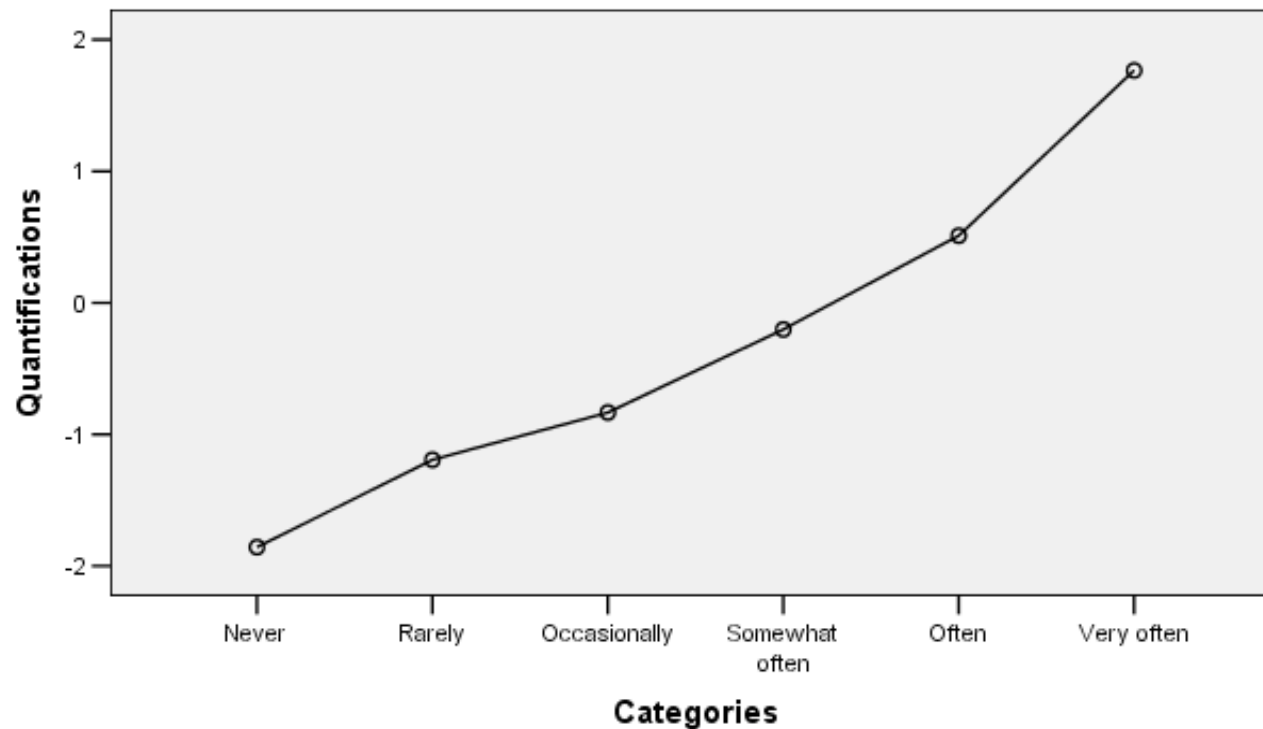
Construction of Indices



Categorical Principal Component Analysis (CatPCA)

Quantification of Categorical Variables

Transformation: During this year, how often have you- Contributed to a class discussion

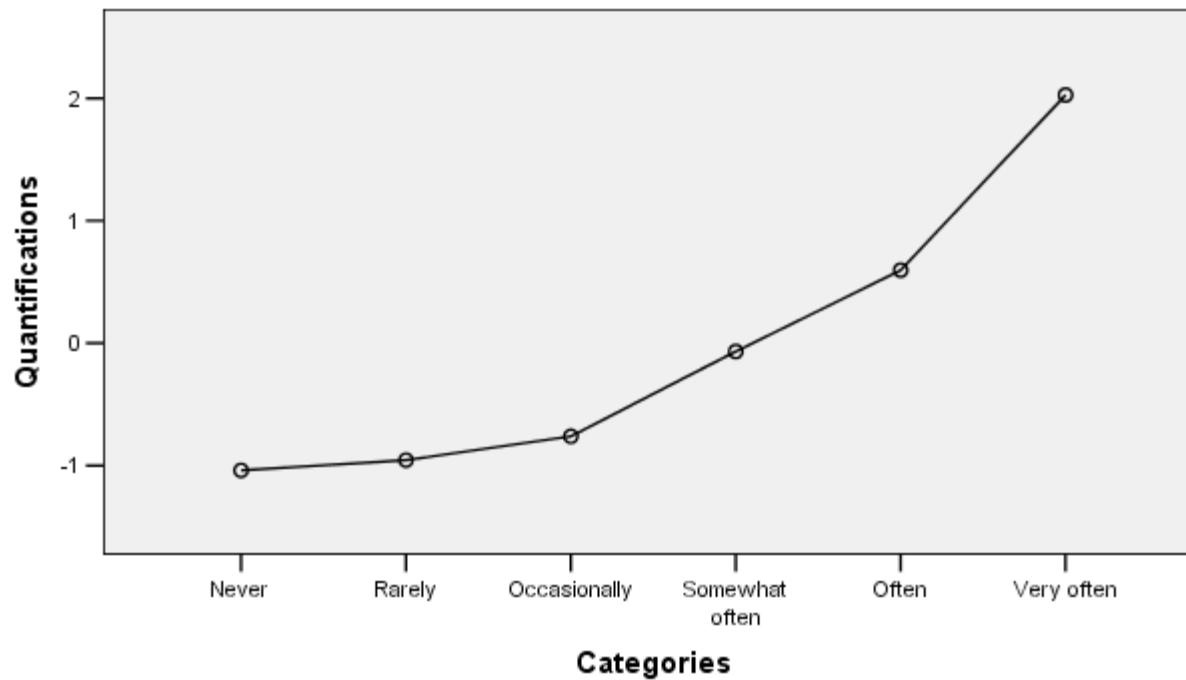


Optimal Scaling Level: Ordinal.

Variable Principal Normalization.

Quantification of Categorical Variables

Transformation: During this year, how often have you- Made a class presentation



Optimal Scaling Level: Ordinal.

Variable Principal Normalization.

Construction of Indices

$$I = \frac{\sum_i (f_i \times V_i)}{\sum_i f_i}$$

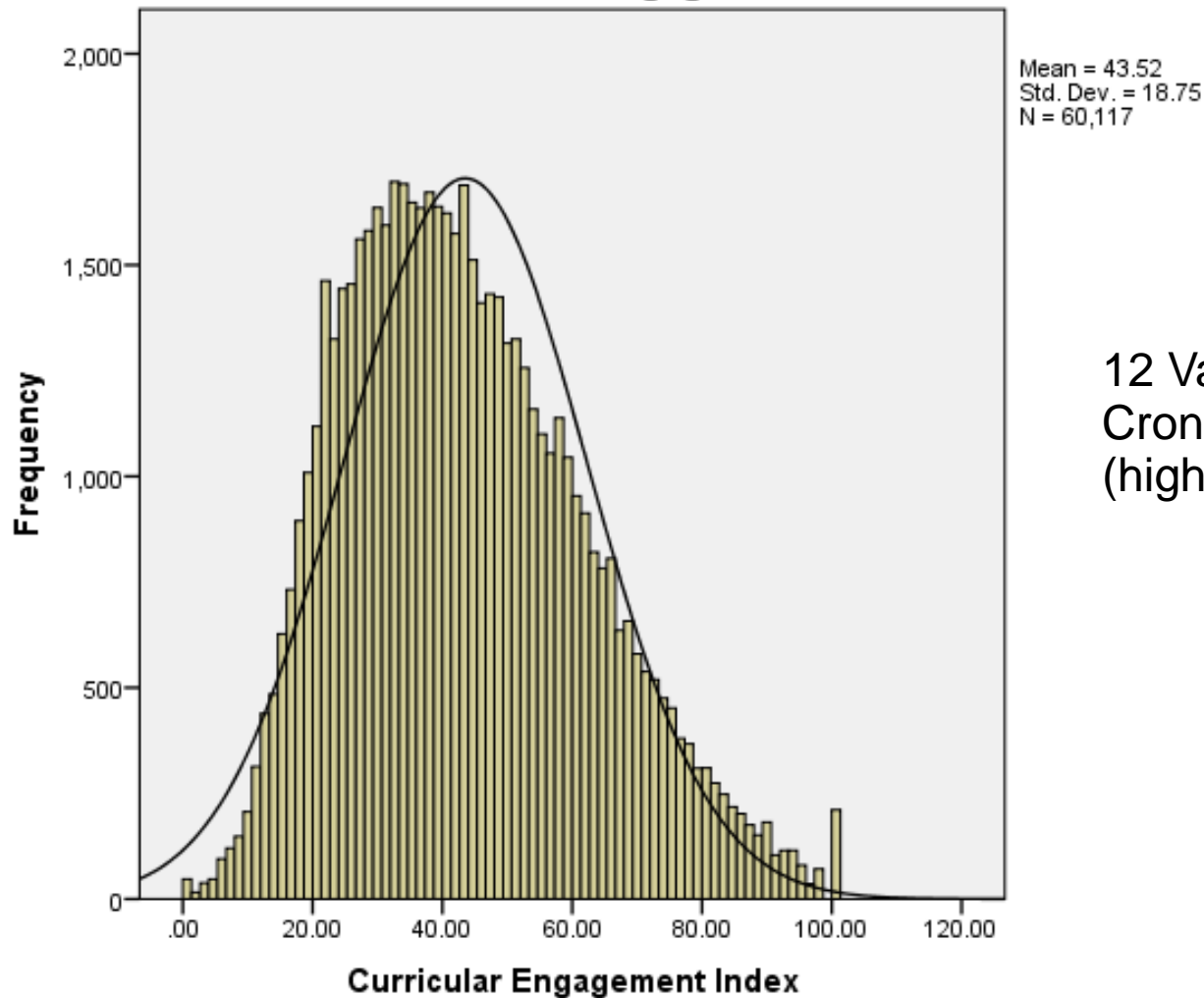
f_i – factor loadings,

V_i – value after quantification and transformation into 0-100 scale

Curricular Engagement Index

1. During this year, how often have you- Contributed to a class discussion
2. During this year, how often have you- Asked an insightful question in class
3. During this year, how often have you- Found a course so interesting that you did more work than was required
4. During this year, how often have you- Chosen challenging courses, when possible, even though you might lower your GPA by doing so
5. During this year, how often have you- Made a class presentation
6. How frequently have you engaged -Communicated with a faculty member by e-mail or in person
7. How frequently have you engaged -Talked with the instructor outside of class about issues and concepts derived from a course
8. How frequently have you engaged -Interacted with faculty during lecture class sessions
9. How frequently have you -Raised your standard for acceptable effort due to the high standards of a faculty member
10. How frequently have you -Extensively revised a paper before submitting it to be graded
11. How frequently have you -Worked on class projects or studied as a group with classmates outside of class
12. How frequently have you -Helped a classmate better understand the course material when studying together

Curricular Engagement Index

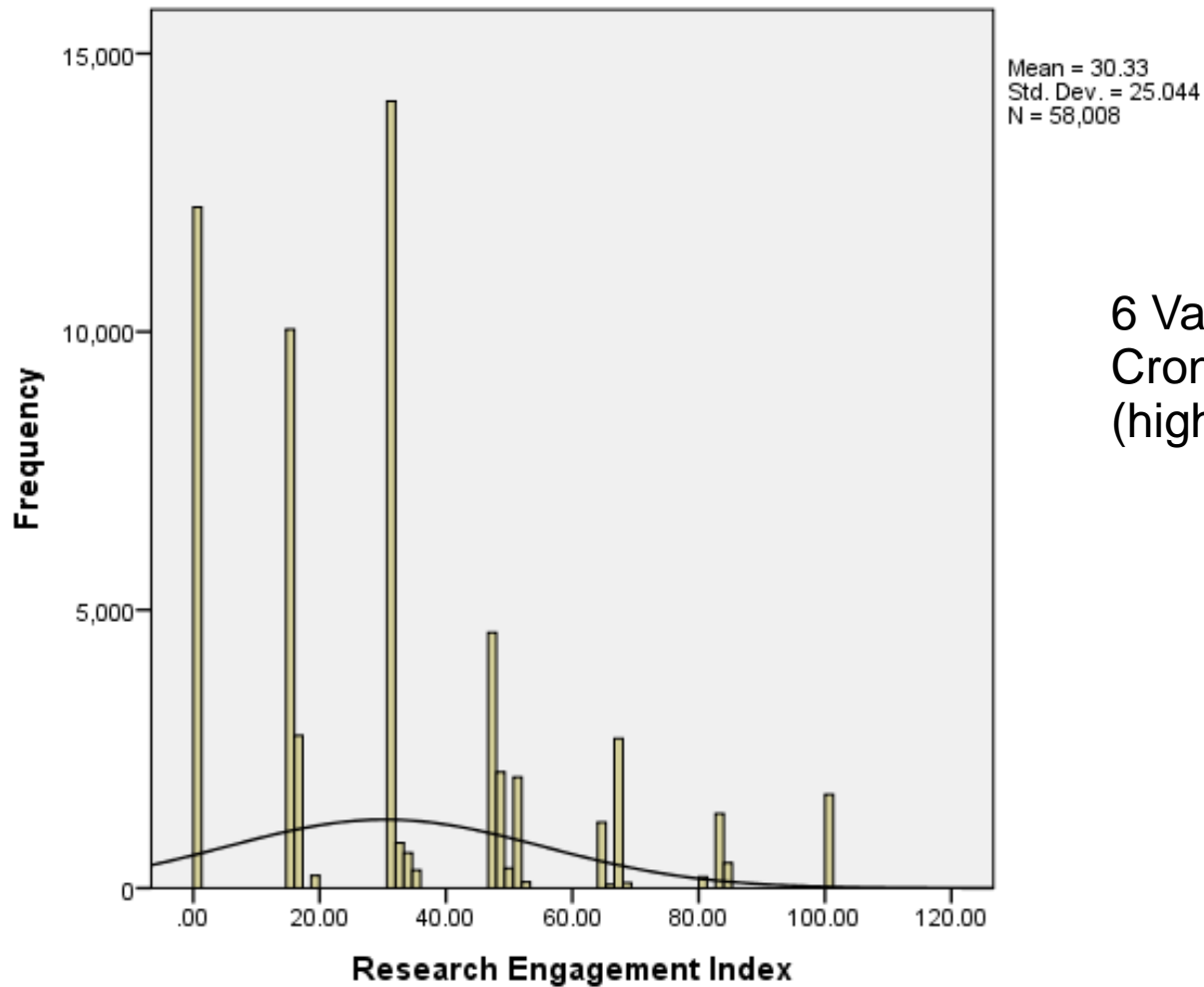


12 Variables
Cronbach's alpha = .867
(high internal consistency)

Research Engagement Index

1. Currently doing or have completed-A research project or research paper as part of your coursework
2. Currently doing or have completed-At least one student research course (a course in which you learned research methods or researched a topic)
3. Currently doing or have completed-At least one independent study course
4. Currently doing or have completed-Assist faculty in research with course credit
5. Currently doing or have completed-Assist faculty in research for pay without course credit
6. Currently doing or have completed-Assist faculty in research as a volunteer without course credit

Research Engagement Index

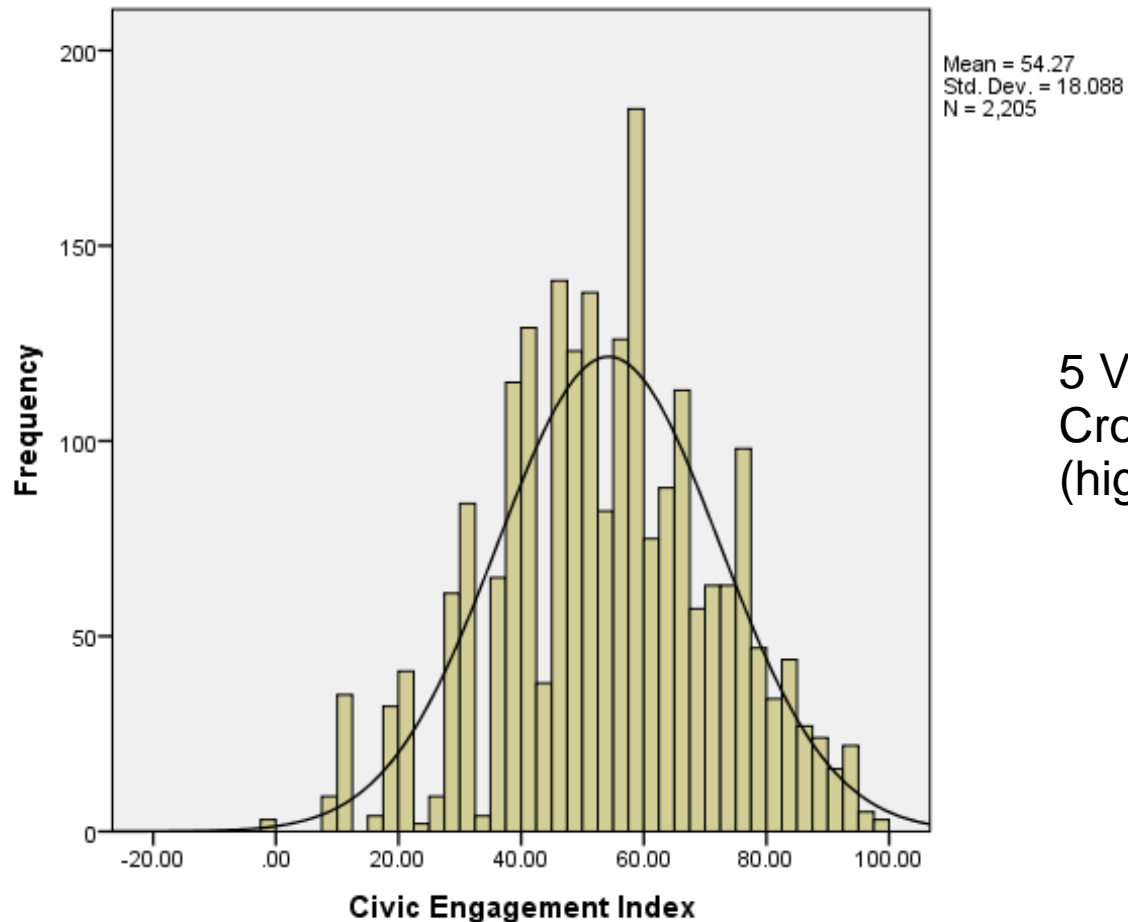


6 Variables
Cronbach's alpha = .671
(high internal consistency)

Civic Engagement Index

1. Involved-Community service club (e.g., Special Olympics Volunteers Club, Habitat for Humanity)
2. Total hours of service you completed this academic year
3. How many times have you enrolled in a course that had a service-learning component?
4. How often in classroom-Act on community or social issues
5. How often outside classroom-Act on community or social issues

Civic Engagement Index

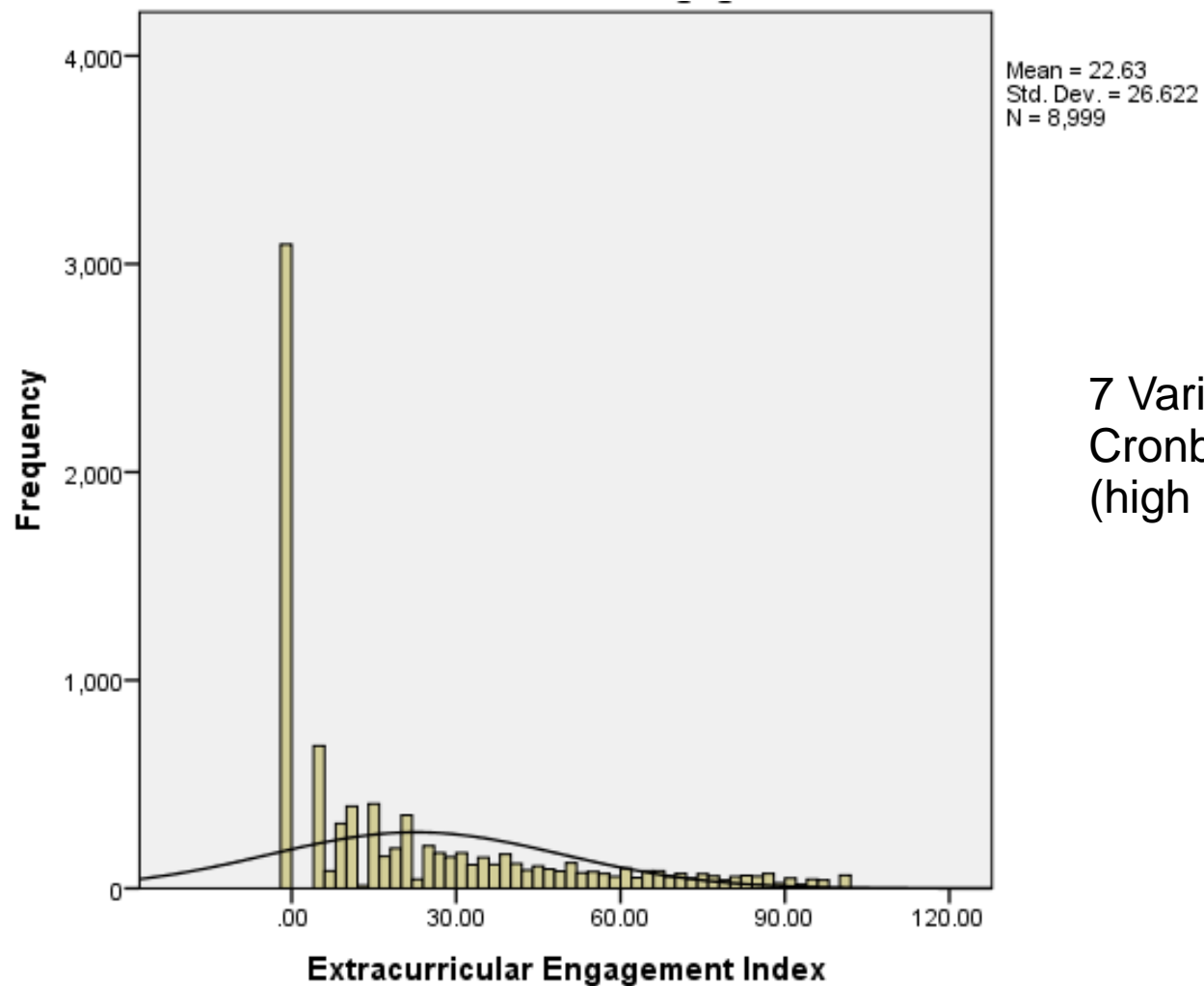


5 Variables
Cronbach's alpha = .678
(high internal consistency)

Extracurricular Engagement Index

1. How often-Chaired a meeting
2. How often-Planned an event
3. How often-Promoted or marketed an event
4. How often-Led or facilitated a discussion
5. How often-Recruited new members for the organization/club
6. How often-Invited or hosted a speaker
7. How often-Mediated a dispute

Extracurricular Engagement Index



7 Variables
Cronbach's alpha = .910
(high internal consistency)

Correlations between Indices

		Curricular Engagement Index	Research Engagement Index	Civic Engagement Index	Extracurricular Engagement Index
Curricular Engagement Index	Pearson Correlation	1	.212	.296	.259
	Control variables: Class level & University & Field of study	1	.168	.271	.232
	Control variables: Gender & Social class & Race	1	.206	.321	.259
	Control variables: GPA	1	.192	.310	.259
	Sig. (2-tailed)		.000	.000	.000
Research Engagement Index	Pearson Correlation	.212	1	.181	.167
	Control variables: Class level & University & Field of study	.168	1	.123	.119
	Control variables: Gender & Social class & Race	.206	1	.202	.220
	Control variables: GPA	.192	1	.183	.214
	Sig. (2-tailed)	.000		.000	.000
Civic Engagement Index	Pearson Correlation	.296	.181	1	.333
	Control variables: Class level & University & Field of study	.271	.123	1	.285
	Control variables: Gender & Social class & Race	.321	.202	1	.345
	Control variables: GPA	.310	.183	1	.334
	Sig. (2-tailed)	.000	.000		.000
Extracurricular Engagement Index	Pearson Correlation	.259	.167	.333	1
	Control variables: Class level & University & Field of study	.232	.119	.285	1
	Control variables: Gender & Social class & Race	.259	.220	.345	1
	Control variables: GPA	.259	.214	.334	1
	Sig. (2-tailed)	.000	.000	.000	

Are Students Engaged or Adrift?

0.69%

**of students are
completely
disengaged.**

They belong to the
lowest quartile in all
4 areas (curricular,
research, civic,
extracurricular
engagement)



Are Students Engaged or Adrift?



8%

**of students have
below median
engagement in all 4
areas (they belong to
the lowest 2 quartiles)**

Which means...

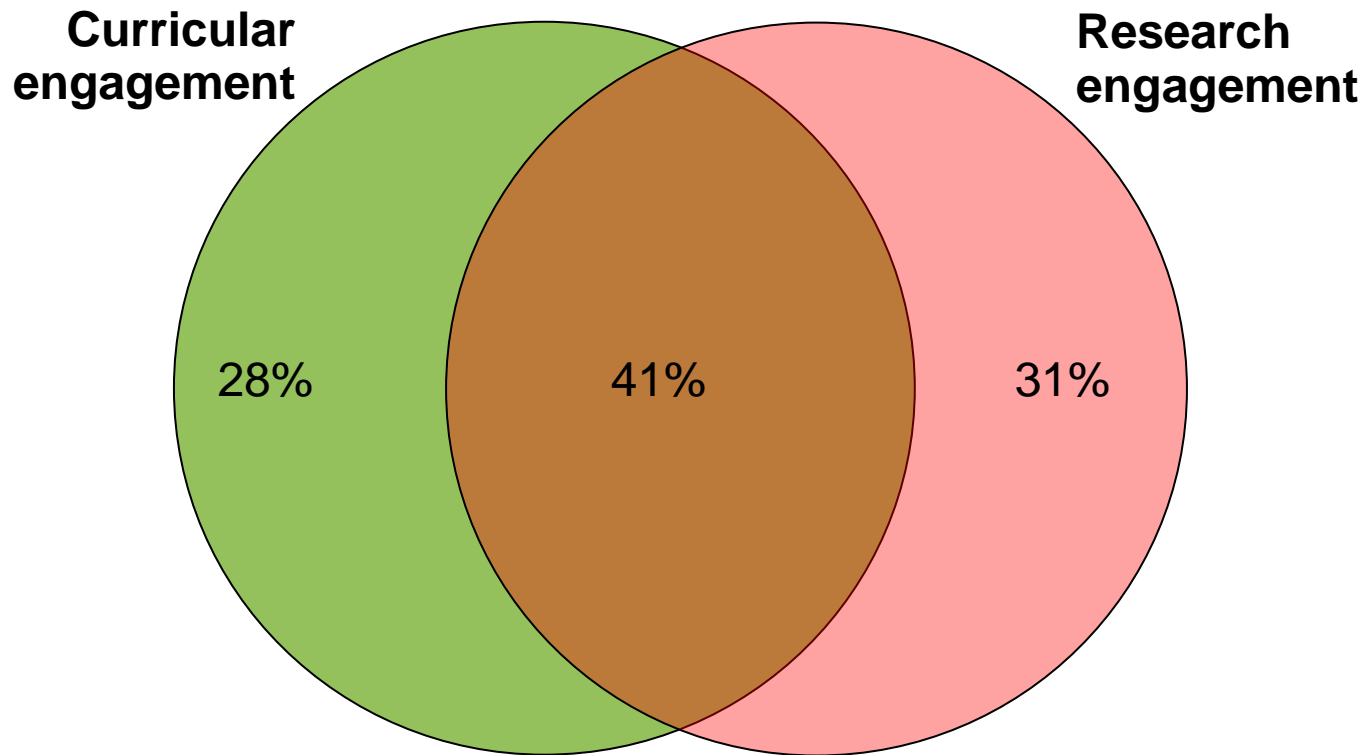
Are Students Engaged or Adrift?

92%

of students have **above average level of engagement** in at least one area (curricular, research, civic or extracurricular)



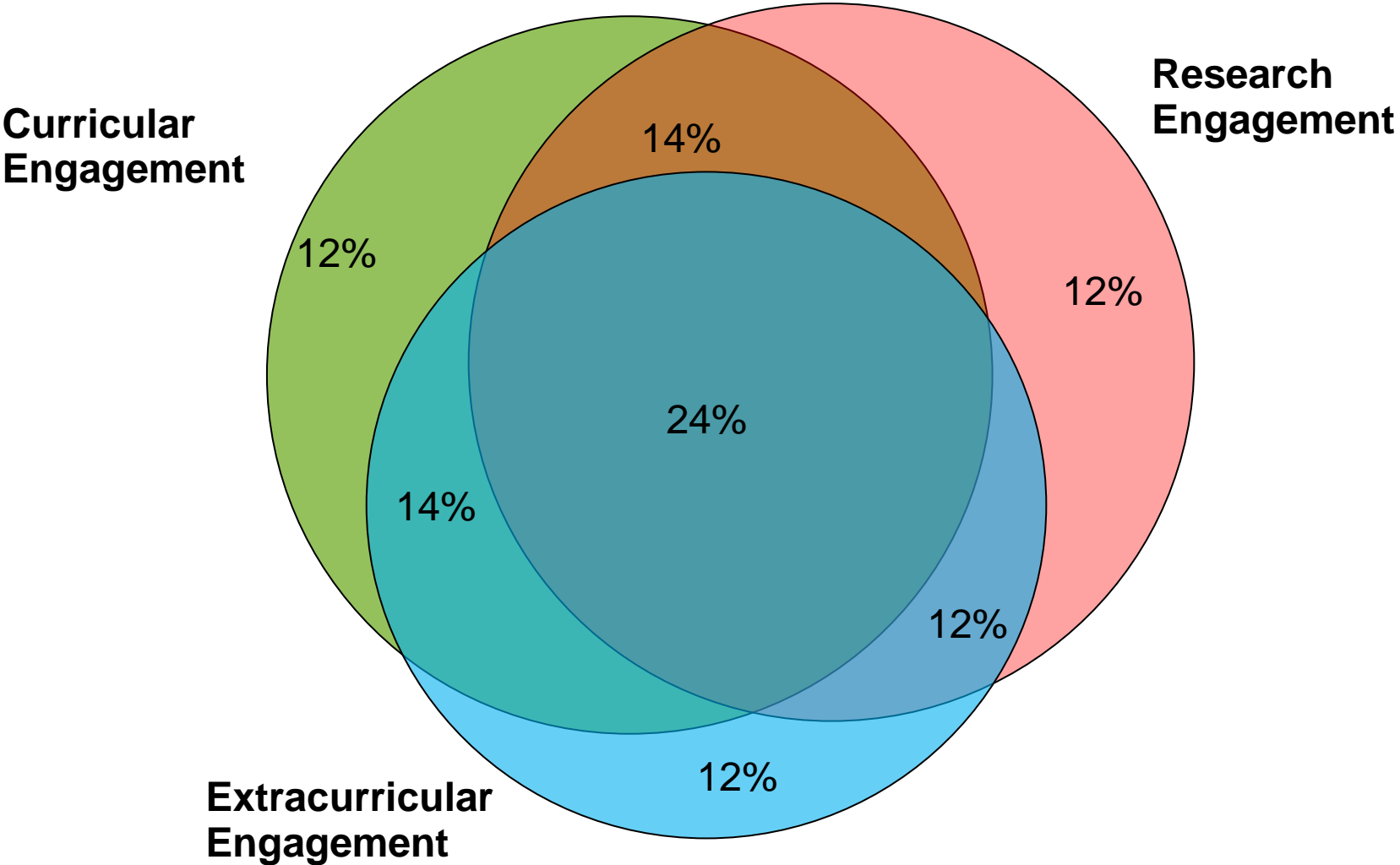
Curricular and Research Engagement – Above Average



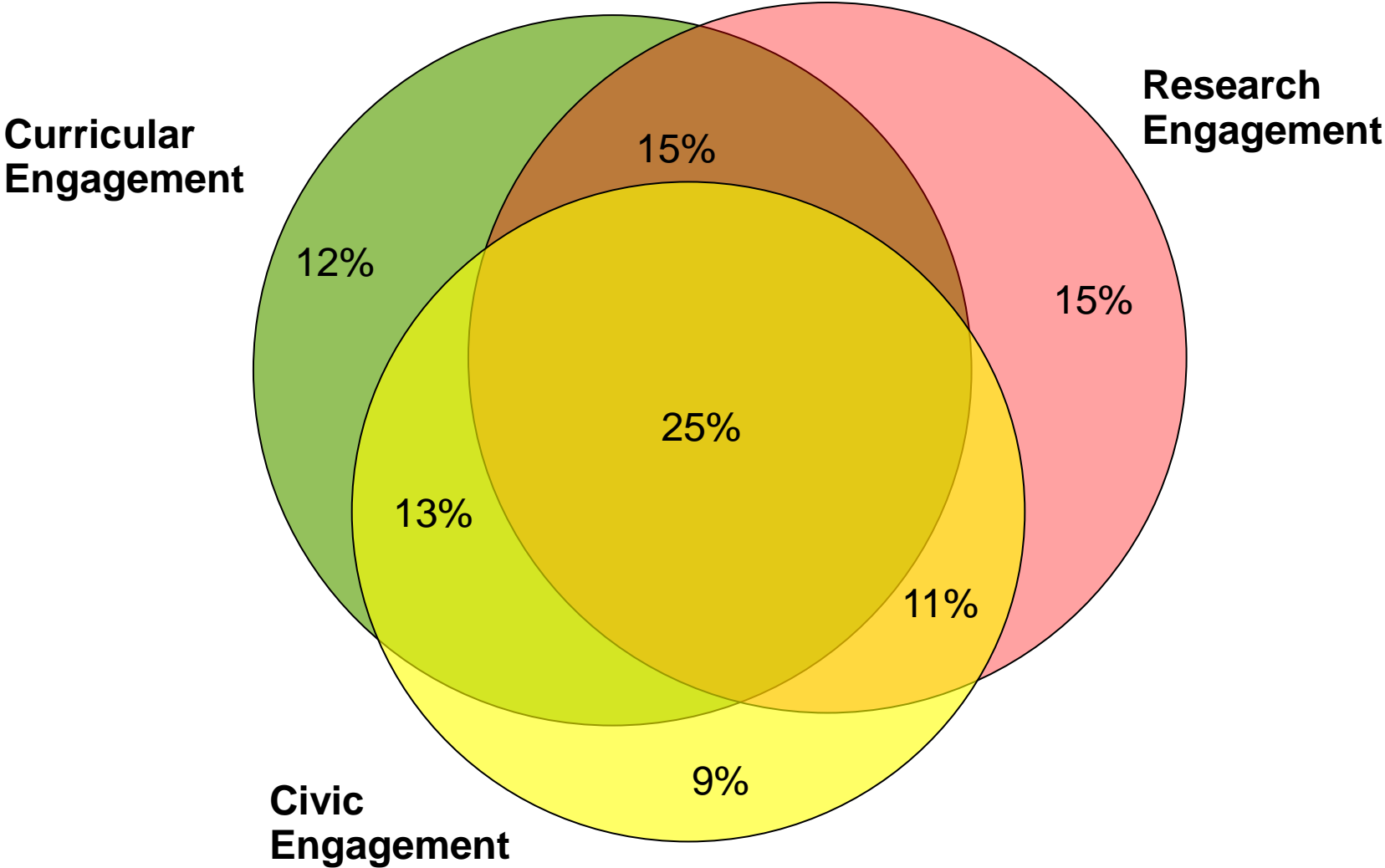
Among students whose curricular engagement OR research engagement are above average:

41% have BOTH curricular and research engagement above average,
28% have ONLY curricular engagement above average,
31% have ONLY research engagement above average

Curricular, Research and Extracurricular Engagement – Above Average



Curricular, Research and Civic Engagement – Above Average



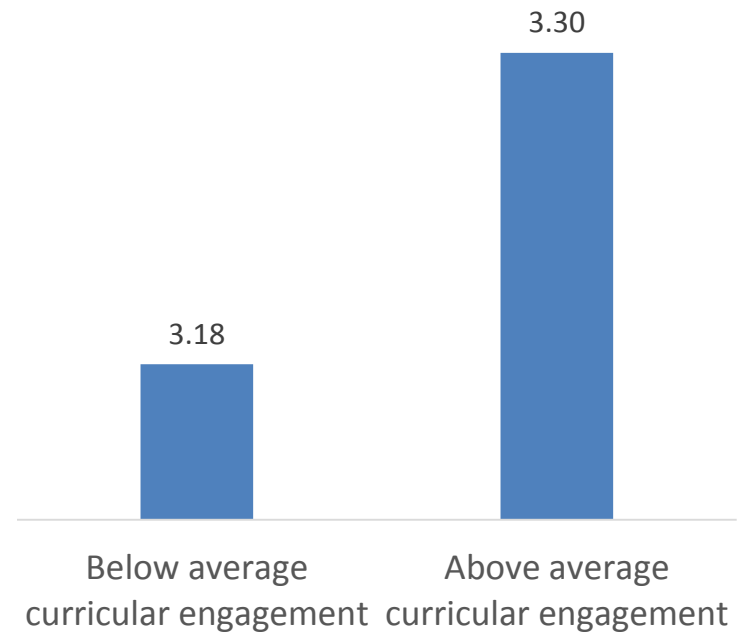
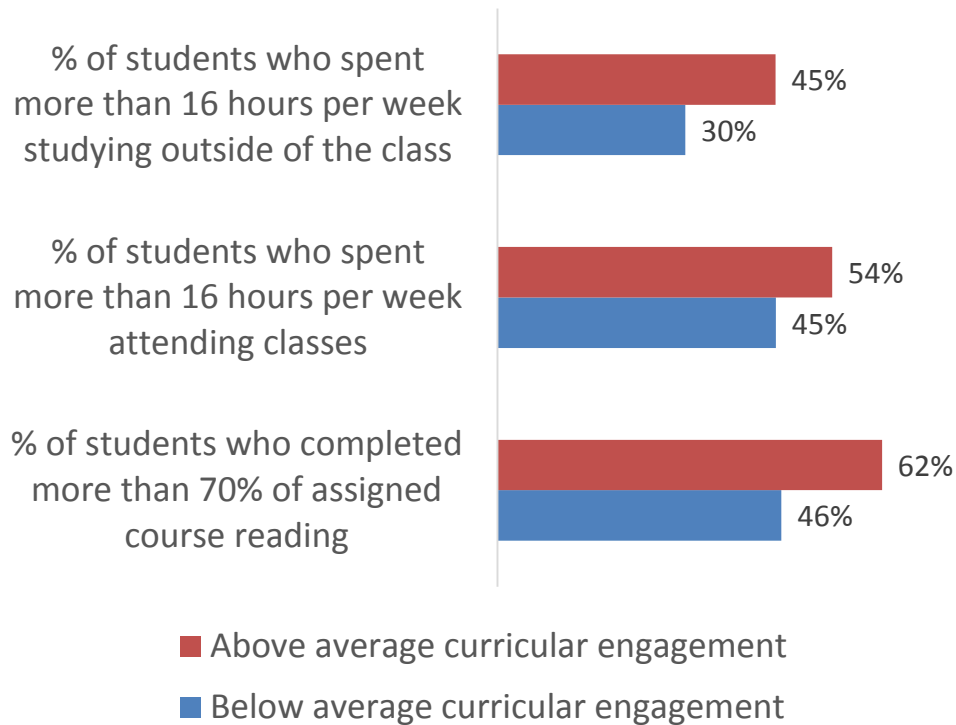
1. Curricular Engagement: Profiles of Engaged Students

	Above average curricular engagement: Most frequent response	Below average curricular engagement: Most frequent response
Contributed to a class discussion	'Often'	'Occasionally'
Asked an insightful question in class	'Often'	'Occasionally'
Found a course so interesting that you did more work than was required	'Somewhat Often'	'Occasionally'
Chosen challenging courses, when possible, even though you might lower your GPA by doing so	'Often'	'Occasionally'
Made a class presentation	'Often'	'Occasionally'
Communicated with a faculty member by e-mail or in person	'Very Often'	'Occasionally'
Talked with the instructor outside of class about issues and concepts derived from a course	'Often'	'Occasionally'
Interacted with faculty during lecture class sessions	'Often'	'Occasionally'
Raised your standard for acceptable effort due to the high standards of a faculty member	'Often'	'Occasionally'
Extensively revised a paper before submitting it to be graded	'Often'	'Occasionally'
Worked on class projects or studied as a group with classmates outside of class	'Very Often'	'Occasionally'
Helped a classmate better understand the course material when studying together	'Often'	'Occasionally'

1. Curricular Engagement: Profiles of Engaged Students

Engaged students spend more time studying, complete more assigned course reading

Engaged students have a higher GPA

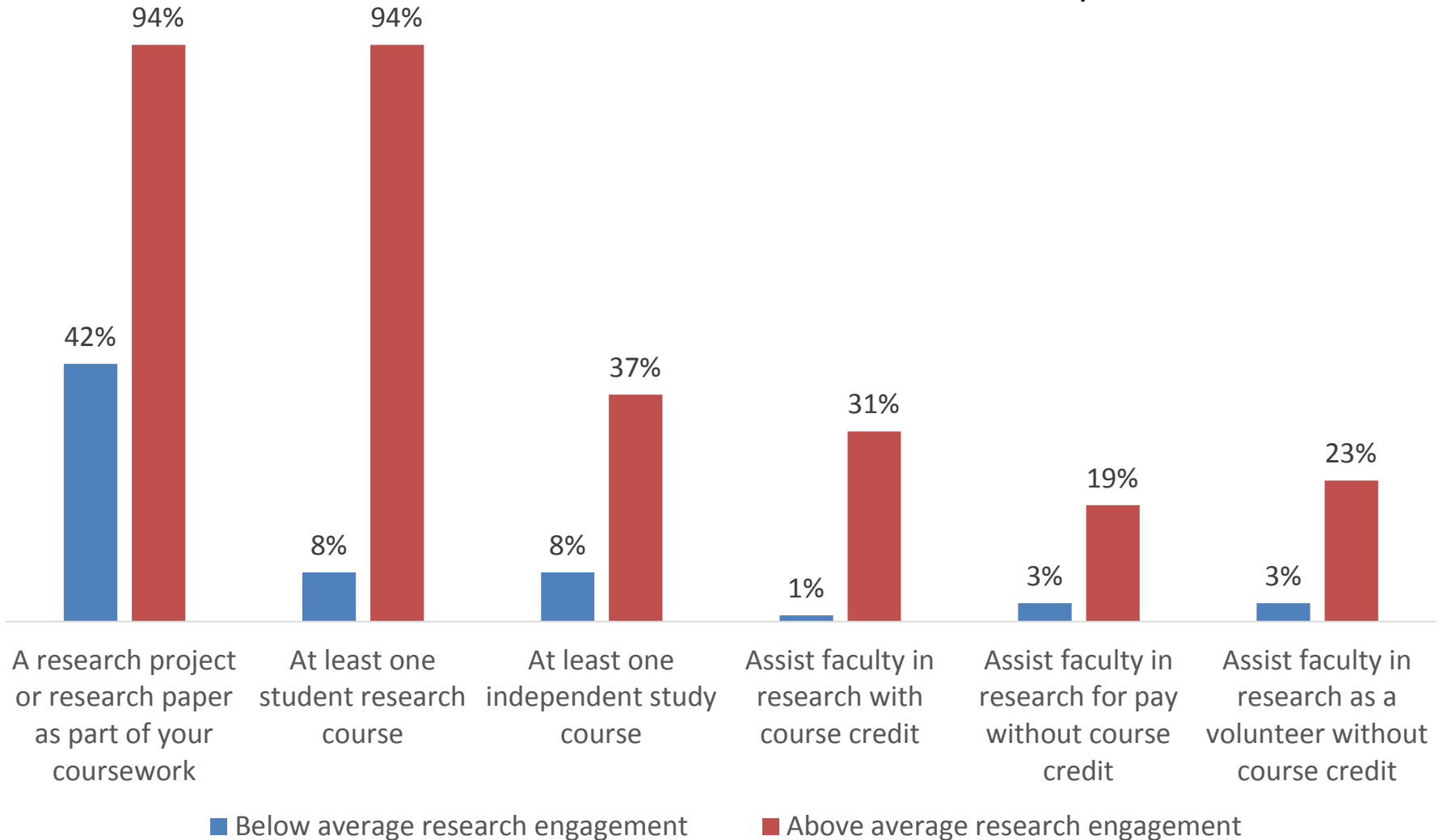


1. Curricular Engagement: Profiles of Engaged Students

	Significantly higher percentage of engaged students	Significantly lower percentage of engaged students	No significant differences in the level of engagement
Social class	Wealthy Upper-middle class	Working class Middle class	Low-income
Race	African American	Asian	White Hispanic
Mother's education	Postgraduate degree	Less than Bachelor degree	Bachelor degree
Father's education	Postgraduate degree	Less than Bachelor degree	Bachelor degree
Gender			Female / Male
International students			International Domestic
Field of study	Arts and Humanities Business Professional	STEM	Social sciences Other
SAT/ACT scores			Quartiles 1-4
Class level	Senior	Freshman / Sophomore	Junior
Matriculation	Transfer		Freshman

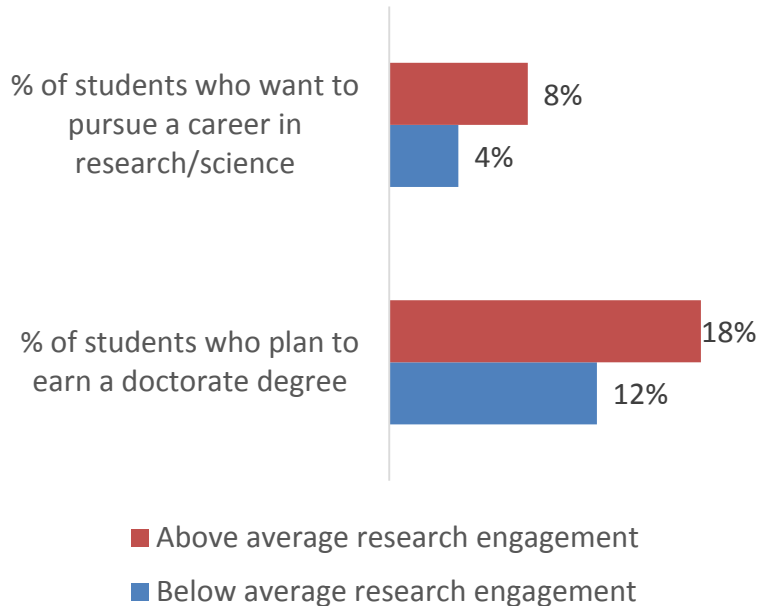
2. Research Engagement: Profiles of Engaged Students

% of students who have completed:

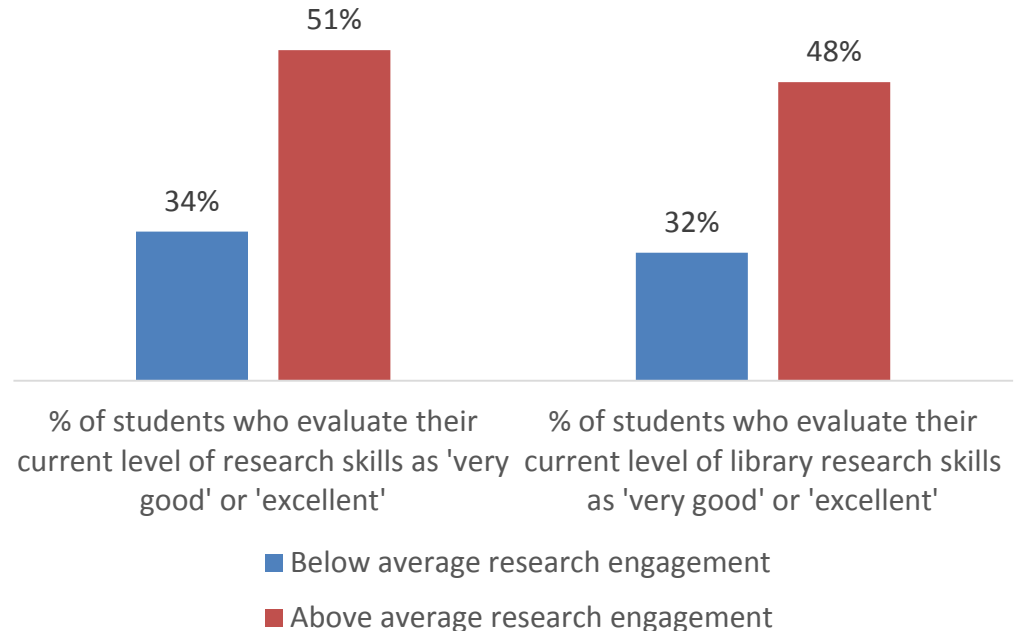


2. Research Engagement: Profiles of Engaged Students

More engaged students are more likely to pursue a scientific career



Engaged students report higher levels of current library and other research skills (no difference in the initial level)



Engaged students have a slightly higher GPA

2. Research Engagement: Profiles of Engaged Students

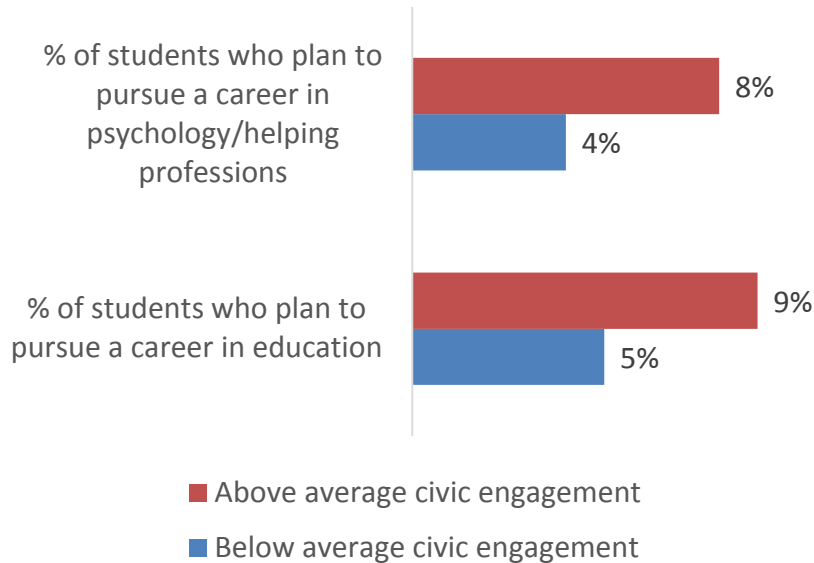
	Significantly higher percentage of engaged students	Significantly lower percentage of engaged students	No significant differences in the level of engagement
Social class			Low-income through wealthy
Race			All races
Mother's education			All education levels
Father's education			All education levels
Gender			Female / Male
International students			International students Domestic students
Field of study	Social sciences Professional		Arts and Humanities Business / Other / STEM
SAT/ACT scores			Quartiles 1-4
Class level	Senior	Freshman / Sophomore	Junior
Matriculation			Freshman / Transfer

3. Civic Engagement: Profiles of Engaged Students

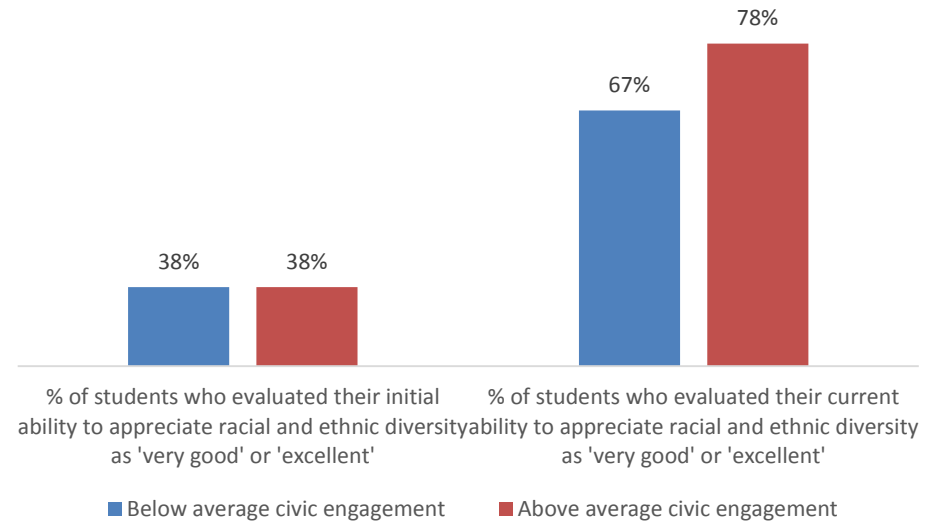
	Above average civic engagement: Most frequent response	Below average civic engagement: Most frequent response
A member/participant or officer/leader of community service club (e.g., Special Olympics Volunteers Club, Habitat for Humanity)	'Neither'	'Neither'
Total hours of community service completed this academic year	'21 hours or more'	'1-20 hours'
Times enrolled in a course that had a service-learning component	'Once or more'	'Zero'
How often in classroom-Act on community or social issues	'Sometimes'	'Rarely'
How often outside classroom-Act on community or social issues	'Often'	'Occasionally'

3. Civic Engagement: Profiles of Engaged Students

More engaged students are more likely to pursue careers in education, psychology and helping professions



Engaged students report higher levels of current ability to appreciate racial and ethnic diversity



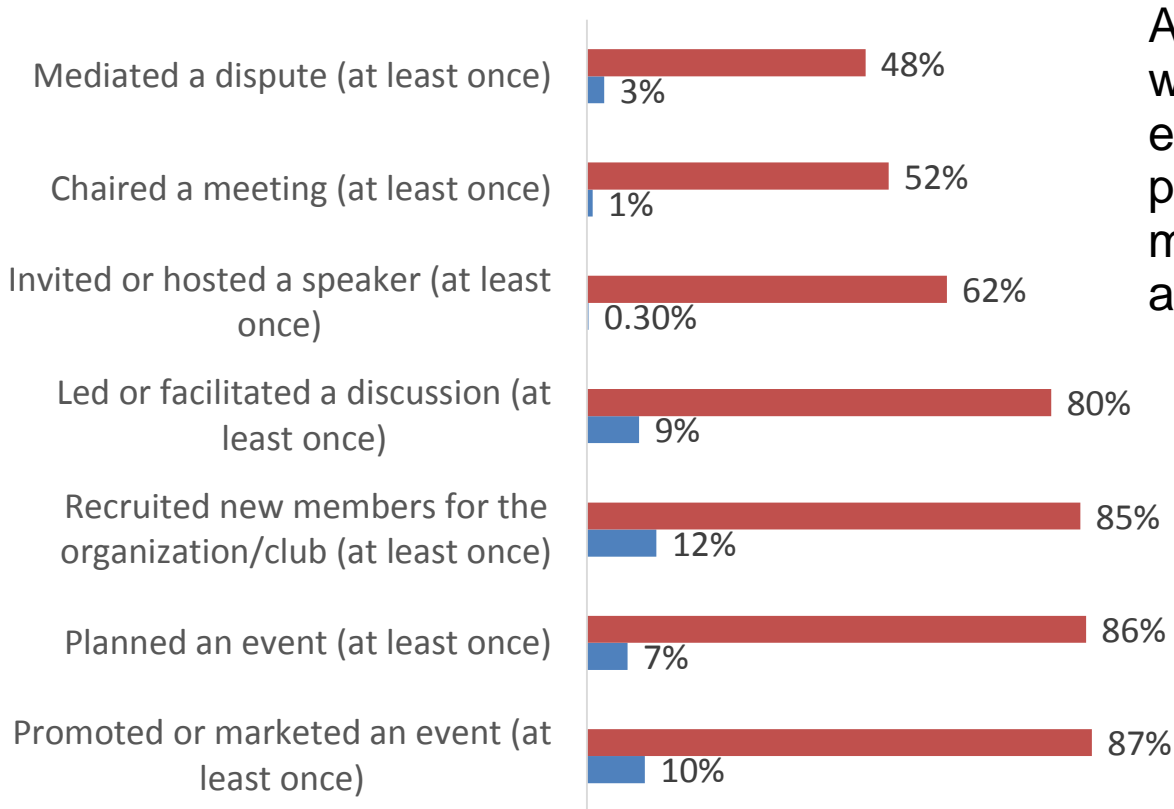
No difference in GPA

3. Civic Engagement: Profiles of Engaged Students

	Significantly higher percentage of engaged students	Significantly lower percentage of engaged students	No significant differences in the level of engagement
Social class	Low-income	Wealthy	Working class Middle and upper-middle class
Race	African American Hispanic	Asian	White
Mother's education			All education levels
Father's education			All education levels
Gender		Male	Female
International students		International	Domestic
Field of study	Social sciences Professional	STEM	Arts and Humanities Business / Other
SAT/ACT scores		Quartile 4	Quartiles 1-3
Class level	Senior	Freshman / Sophomore	Junior
Matriculation			Freshman/Transfer

4. Extracurricular Engagement: Profiles of Engaged Students

% of students who:

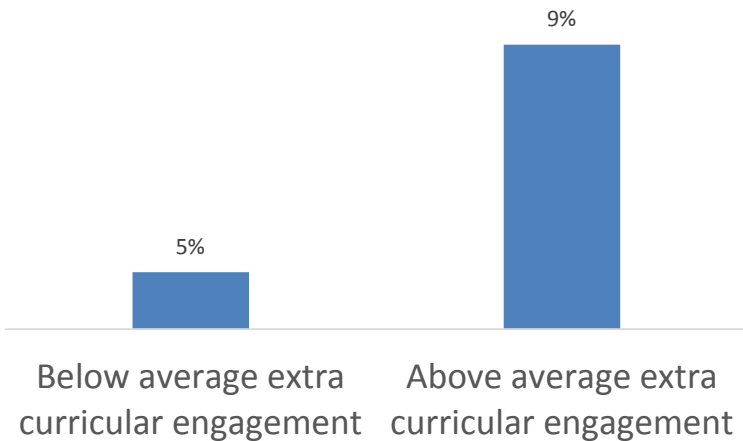


Around one fourth of students who have above average extracurricular engagement participated in these activities more than 5 times (during academic year)

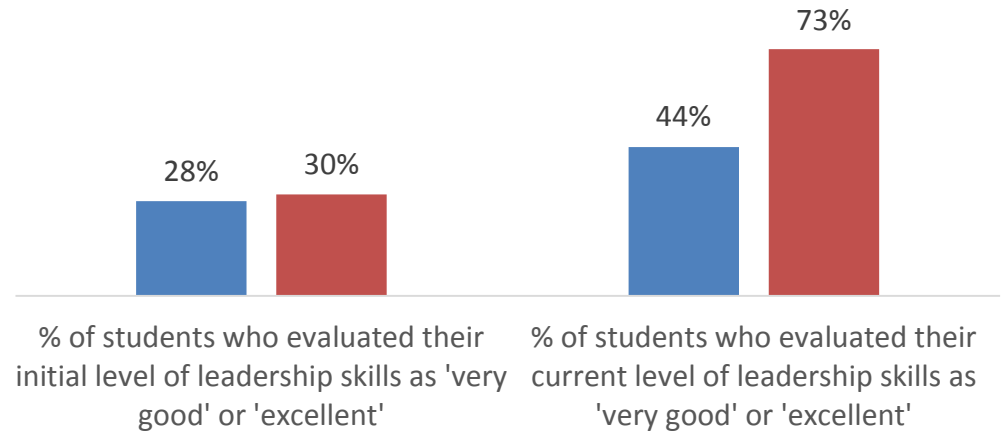
- Above average extra curricular engagement
- Below average extra curricular engagement

4. Extracurricular Engagement: Profiles of Engaged Students

More engaged students are more likely to pursue career in business



Engaged students report higher levels of leadership skills, interpersonal skills, ability to make a presentation



■ Below average extra curricular engagement

■ Above average extra curricular engagement

Engaged students have a higher GPA

4. Extracurricular Engagement: Profiles of Engaged Students

	Significantly higher percentage of engaged students	Significantly lower percentage of engaged students	No significant differences in the level of engagement
Social class	Upper-middle class Wealthy	Middle class	Low-income Working class
Race			All races
Mother's education	Postgraduate degree	Less than Bachelor degree	Bachelor degree
Father's education	Postgraduate degree	Less than Bachelor degree	Bachelor degree
Gender			Female / Male
International students			Domestic / international
Field of study	Business	Professional	Arts and Humanities Social sciences STEM / Other
SAT/ACT scores	Quartile 4	Quartile 1	Quartiles 2 and 3
Class level	Senior	Freshman	Sophomore / Junior
Matriculation		Transfer	Freshman

Limitations

1. Indices are data sensitive. Not all survey items were included in the core module -> the lack of responses in civic and extracurricular engagement areas
2. SERU survey questions measure particular types of engagement ('participating in discussions' as opposed to 'reading books in a library')
3. Engagement is defined in relative terms. Do researchers have other options?
4. No comparison group. It is unclear whether this level of engagement is unique for research universities (compared to teaching universities, liberal arts colleges, etc.)

Preliminary Conclusions (1)

1. Students at US research-intensive universities are engaged when not only curricular but other forms of engagement (research, civic, and extracurricular) are considered:
 - **92%** of students have above average level of engagement in at least one of four areas
 - Less than **1%** of students are completely disengaged
 - Four pillars of engagement are **not independent** but **not highly correlated**. Each area offers a unique array of experiences yet complements the others. Students benefit from multiple forms of engagement.

Preliminary Conclusions (2)

2. The level of curricular, research, civic and extracurricular engagement varies by student characteristics.

Lower level of engagement:

	Curricular	Research	Civic	Extracurricular
Social class	Working class Middle class		Wealthy	Middle class
Race	Asian		Asian	
Mother's education	Less than Bachelor degree			Less than Bachelor degree
Father's education	Less than Bachelor degree			Less than Bachelor degree
Gender			Male	
International students			International	
Field of study	STEM		STEM	Professional
SAT/ACT scores			Quartile 4	Quartile 1
Class level	Freshman Sophomore	Freshman Sophomore	Freshman Sophomore	Freshman
Matriculation				Transfer

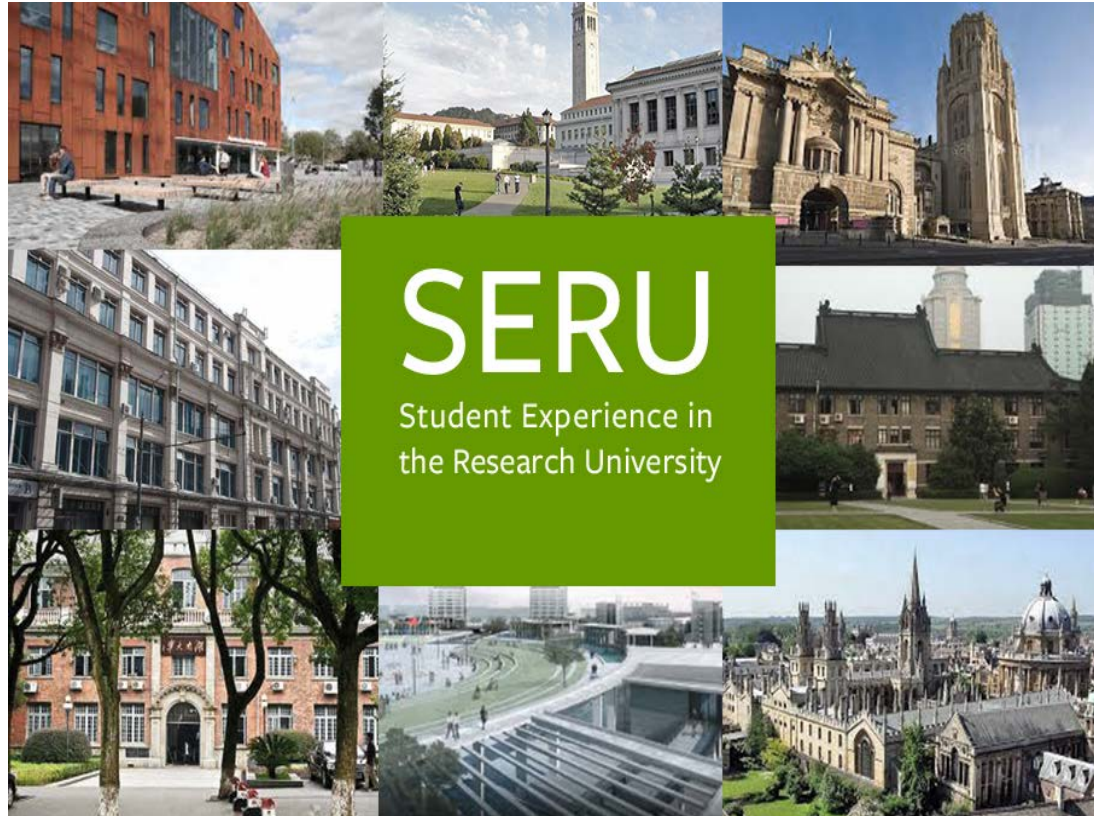
Preliminary Conclusions (3)



1. Research universities offer much more than just a classroom experience: curricular engagement is the tip of the iceberg
2. High GPA important but not enough for many employers. Students try to engage in various activities beyond studying to strengthen their resume (and because they are curious).

Next Steps

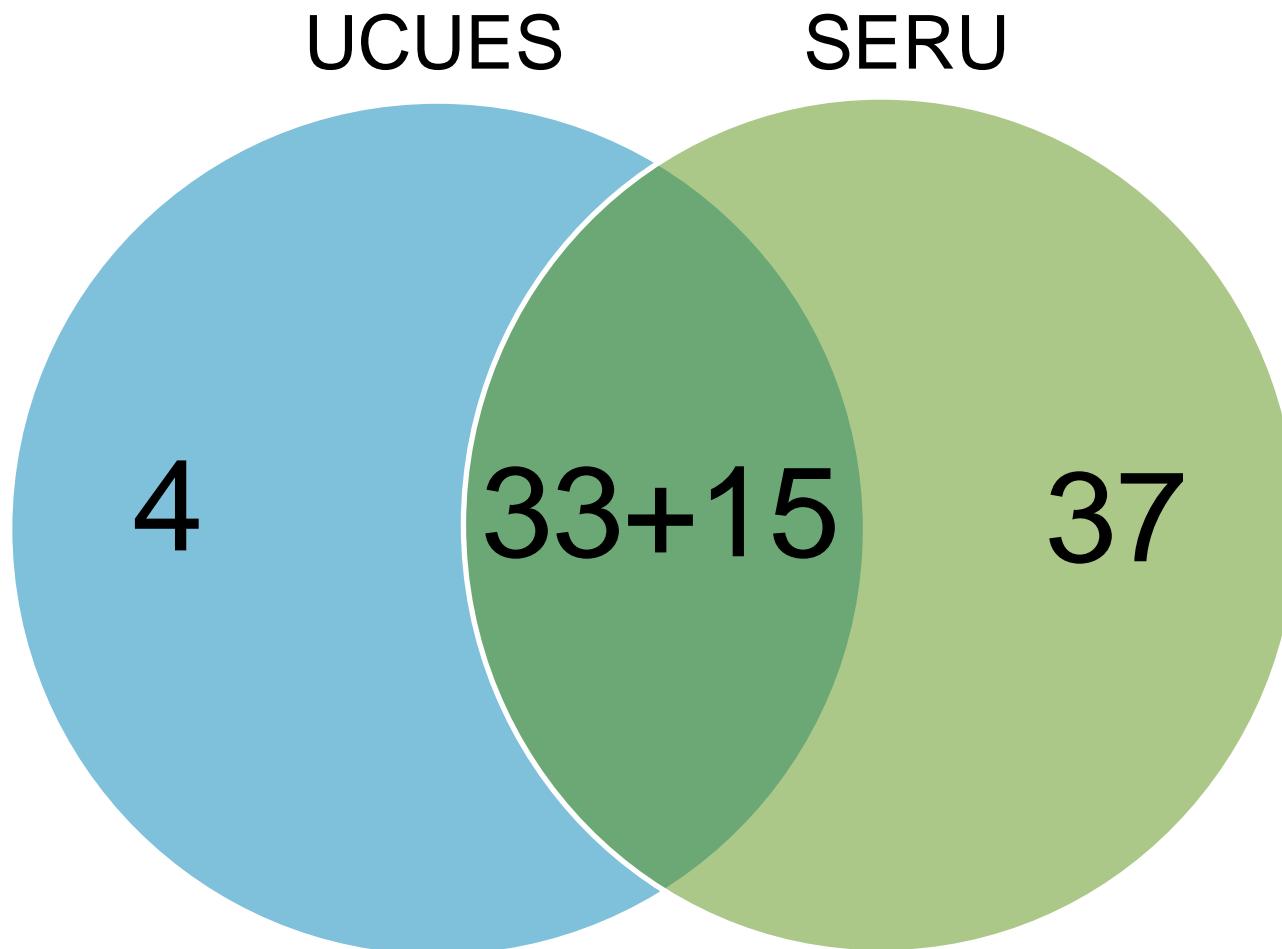
1. To add UCUES 'Best of module' 2014 data / historical AAU data / International data
2. To explore correlations between engagement indices and student characteristics (regression models)
3. To analyze how various forms of engagement influence learning outcomes, satisfaction, plans and aspirations.



Thank you!

Indicators of Research Engagement: Challenges (1)

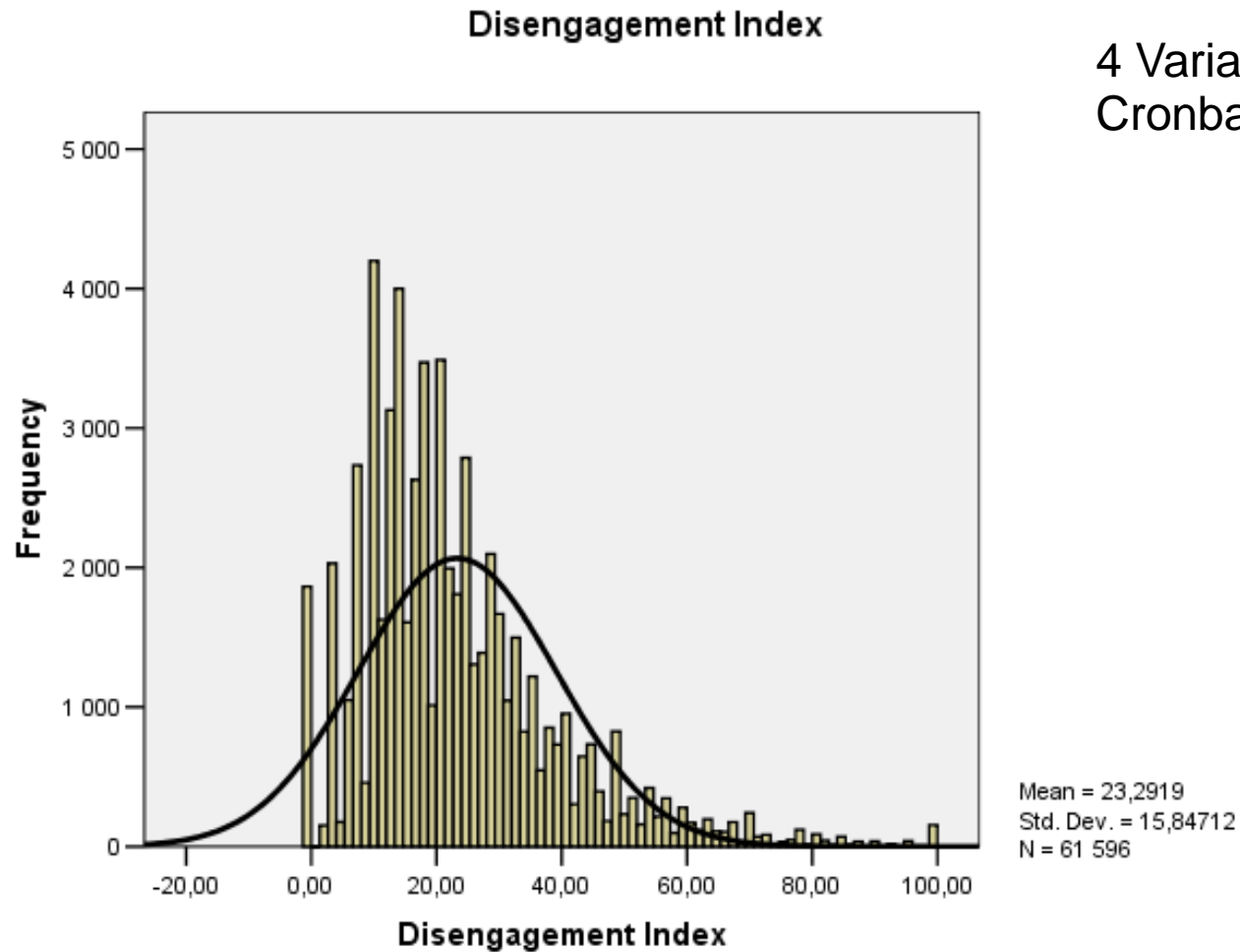
SERU and UCUES surveys use different survey items



Academic Disengagement Index (D-Index)

1. How frequently have you -Turned in a course assignment late(a)
2. How frequently have you -Gone to class without completing assigned reading(a)
3. How frequently have you -Gone to class unprepared(a)
4. How frequently have you -Skipped class(a)

Academic Disengagement Index (D-Index)



4 Variables
Cronbach's alpha = .761