

College Confidence: How Sure High School Students Are of their Future Majors

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December 4, 2012



Agenda

- Planned major and college confidence
 - STEM vs. Non-STEM
 - By demographic factors and academic preparation
 - Highest anticipated degree
 - By highest actual degree
- Bachelor's Degree Completion
 - STEM vs. Non-STEM
 - College confidence
- Predicting college confidence

Purpose of the Study

- State and national needs to expand STEM education and degree attainment
- Opportunities for social mobility and gains in equity for traditionally underrepresented groups
- High school-to-college transition a key juncture in STEM education process
- Limited knowledge of students' perceived confidence in future college major

Data and Methods

- ACT Student Information for the Illinois High School Class of 2003
- Census; all juniors completed survey in 2002
- Primary questions of interest
 - What is your intended college major?
 - How sure are you of intended major?
- Analysis limited to students who indicated a specific intended college major
- Descriptive and predictive statistics

Demographics

Variables	N	%
Gender		
Male	35,258	46.6%
Female	40,153	53.0%
Missing	287	0.4%
Race and Ethnicity		
African American	8,378	11.1%
American Indian/Alaskan Native	374	0.5%
White	49,012	64.7%
Latino	6,637	8.8%
Asian Pacific Islander	3,290	4.3%
Other/Multiracial	2,971	3.9%
Preferred not to respond/missing	5,036	6.7%
Family Income		
High Quartile \$80K+	14,724	19.5%
Mid-high \$50K–<\$80K	15,605	20.6%
Mid-low \$30K–<\$50K	18,251	24.1%
Low <\$30K	17,658	23.3%
Missing	9,460	12.5%

Postsecondary Degree Information

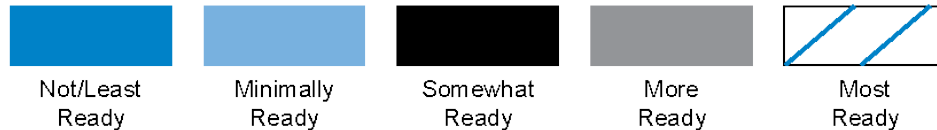
Variable	%
Highest Expected Degree	
Vocational/Technical	3.7%
Two-Year College Degree	8.7%
Bachelor's Degree	33.0%
One or two years of Graduate Study	19.7%
Professional Degree	28.8%
Other	4.9%
Missing	1.1%
Highest Earned Postsecondary Degree	
No Degree	61.3%
Certificate	1.4%
Associate	5.5%
Bachelor's or Higher	31.8%

College Major Information

Variables	N	%
Intended College Major		
Non-STEM Field	43,309	58.3%
STEM	31,671	41.7%
Intended STEM Major (n=31,671)		
Agricultural Science	1,888	2.5%
Biological, Physical, and Food Sciences	3,171	4.2%
Computer Science	4,197	5.6%
Engineering	7,439	9.9%
Health Science	11,549	15.4%
Math	399	0.5%
Psychology	2,371	3.2%
STEM Teacher Education	271	0.4%
Intended Non-STEM Major (n=43,309)		
Architecture	2,460	3.3%
Business	13,328	17.8%
Non-STEM Teaching	7,120	9.5%
Family and Consumer Sciences	1,404	1.9%
Visual Arts	7,323	9.8%
Liberal Arts	5,822	7.8%
Community and Personal Services	3,785	5.0%
Trade and Industrial	2,453	3.3%

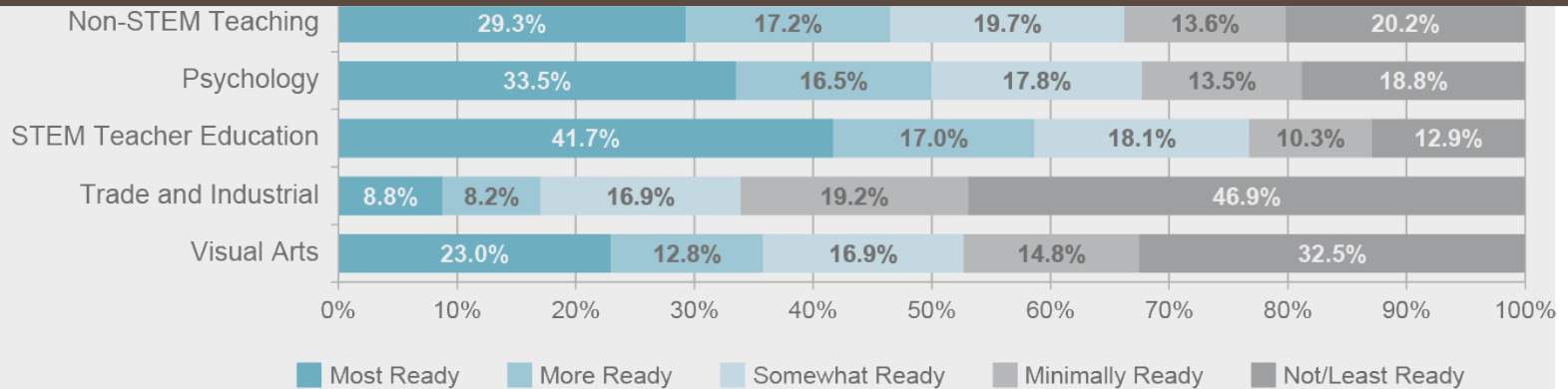
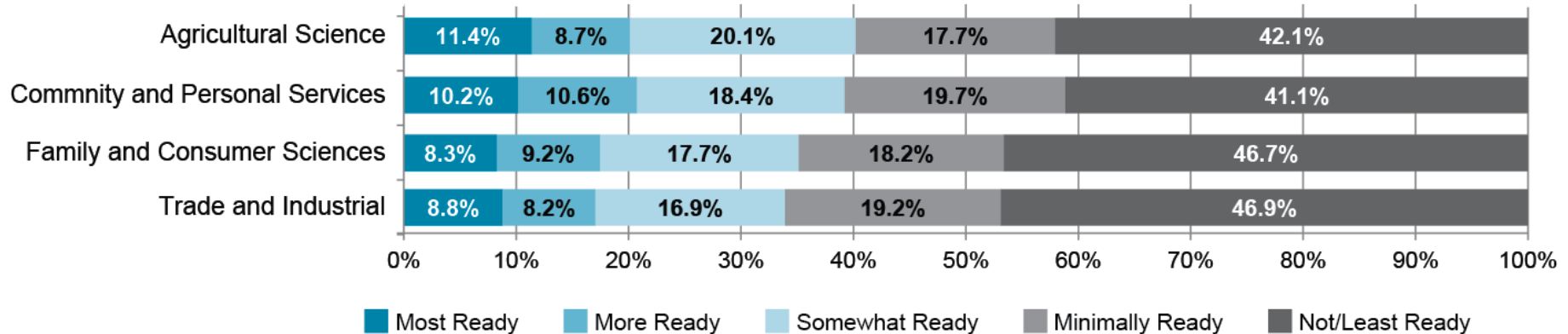
IERC College Readiness Index

ACT	High School GPA (self-reported)				
	≤ 2.4	2.5 - 2.9	3.0 - 3.4	3.5 - 4.0	Missing
<20	19.7%	8.0%	6.5%	1.9%	14.6%
20-22	3.1%	3.5%	5.2%	2.9%	4.0%
23-25	1.1%	1.7%	4.2%	4.8%	2.7%
26+	0.4%	0.8%	2.7%	9.5%	2.8%

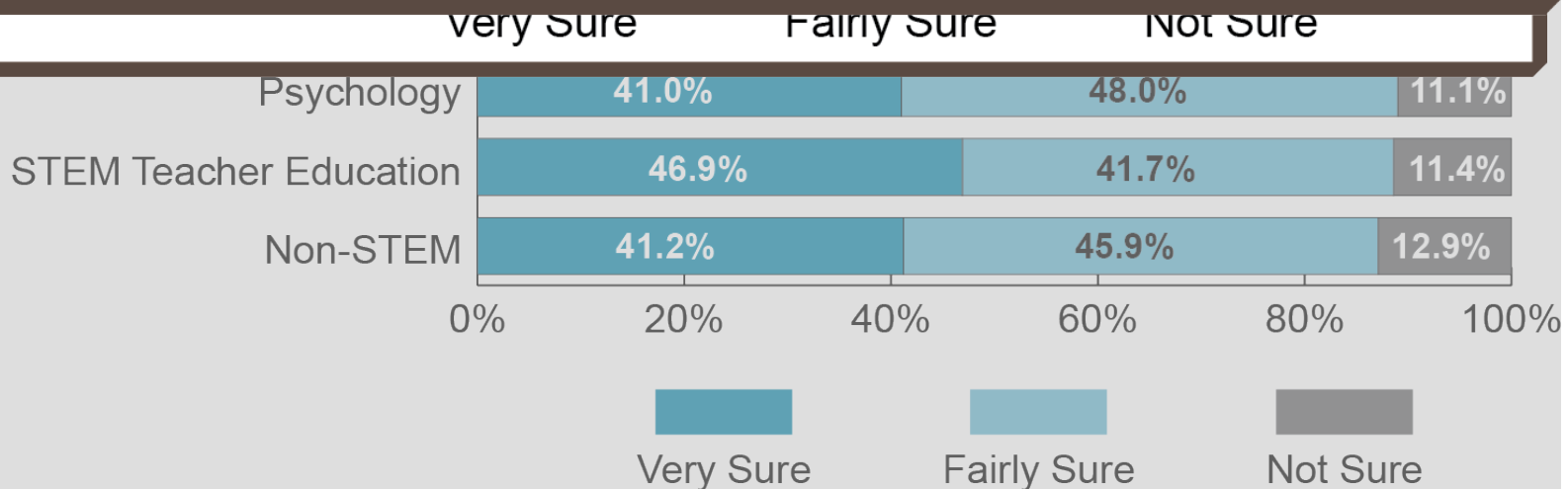
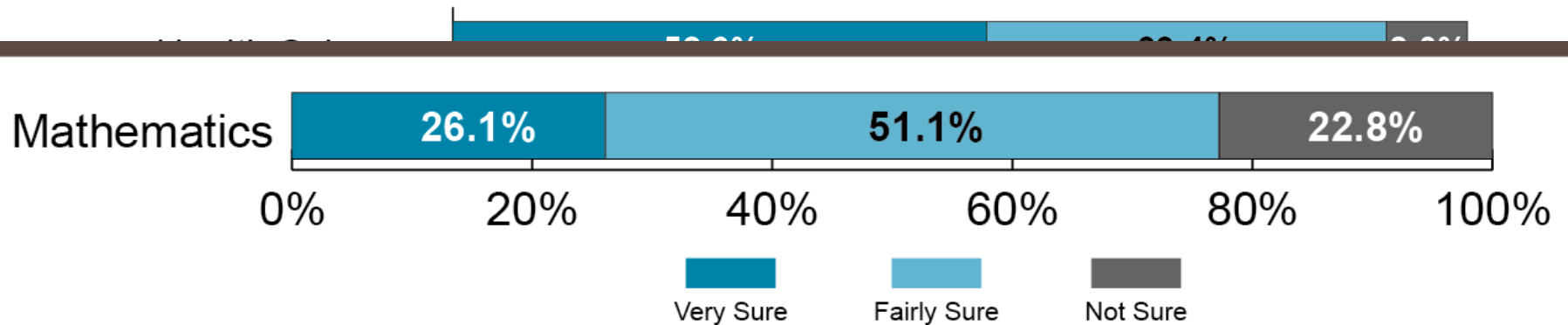


College Readiness

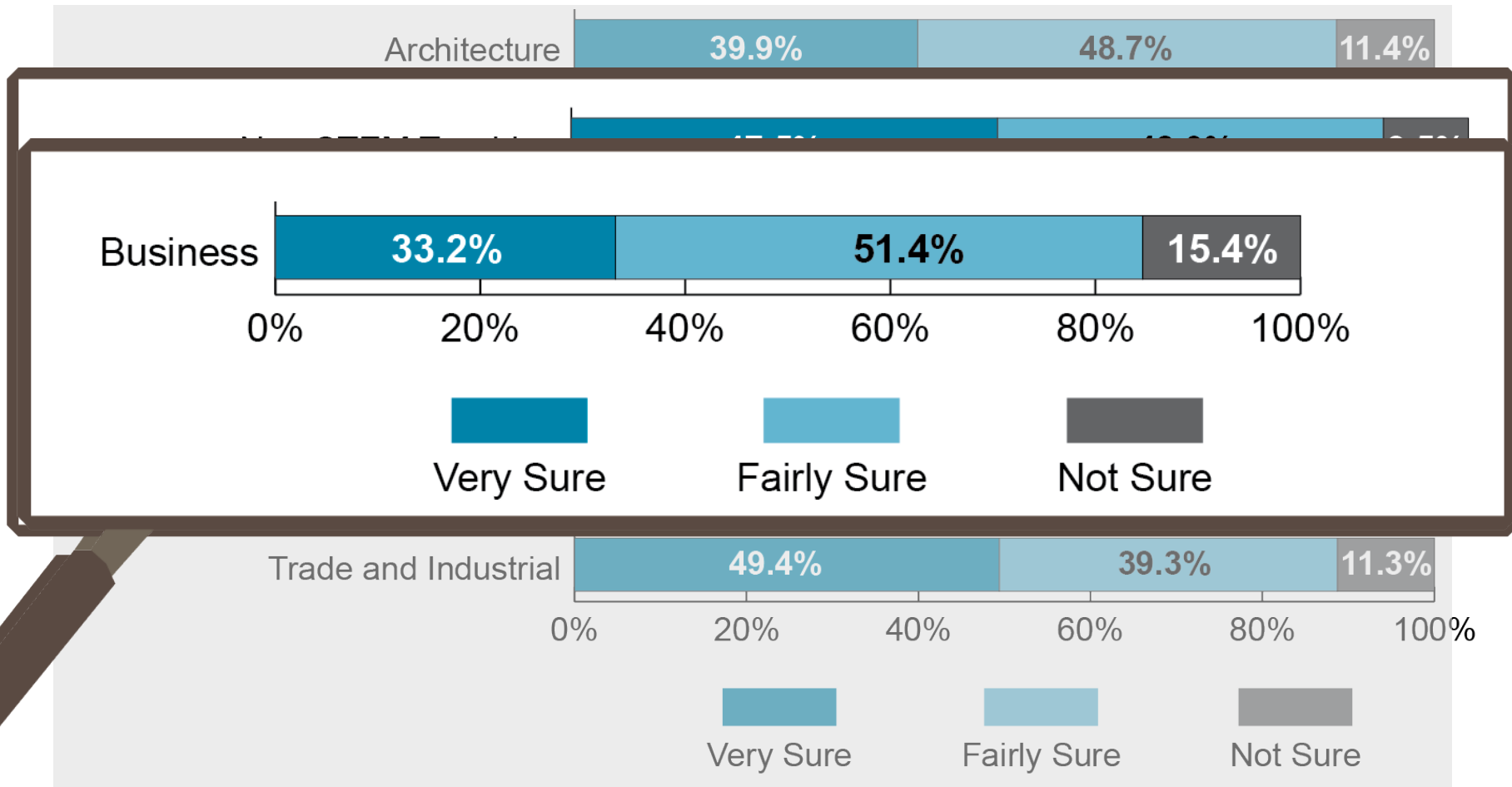
Agricultural Science 11.4% 8.7% 20.1% 17.7% 42.1%



Confidence in College Major by Type of Anticipated College Major (STEM)



Confidence in College Major by Type of Anticipated College Major (Non-STEM)



Anticipated Major by Gender

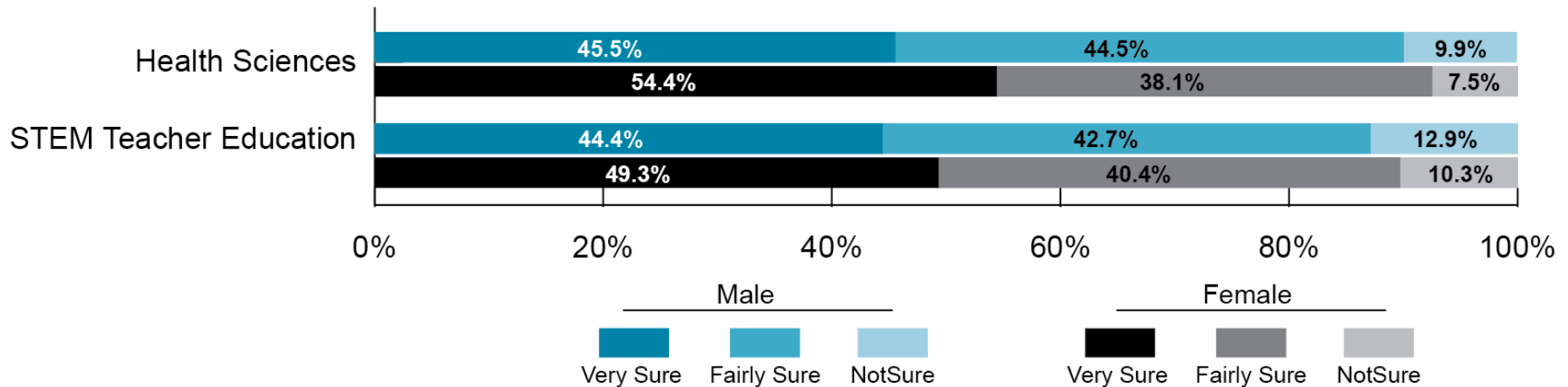
	Male	Female
Agricultural Science	69.8%	30.2%

	Male	Female
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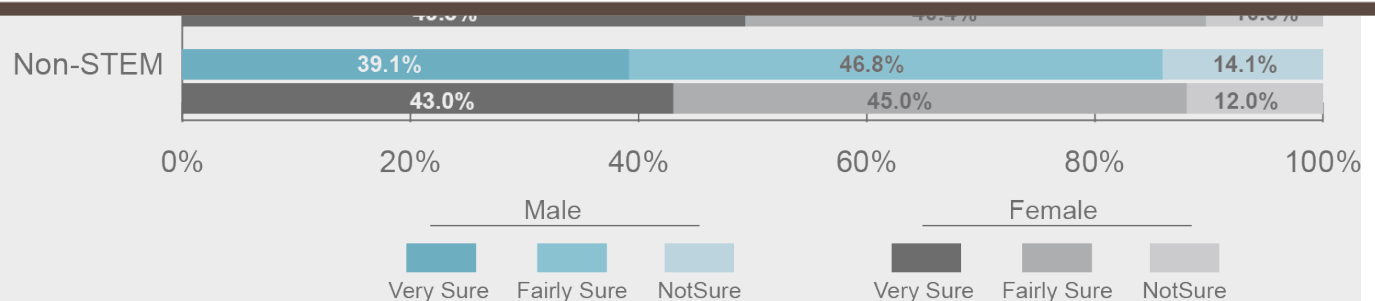
	Male	Female
Health Science	20.4%	79.6%
Psychology	19.0%	81.0%
Non-STEM Teaching	20.1%	79.9%
Family and Consumer Sciences	19.7%	80.3%

Non-STEM Teaching	20.1%	79.9%
Family and Consumer Sciences	19.7%	80.3%
Visual Arts	45.4%	54.6%
Liberal Arts	39.9%	60.1%
Community and Personal Services	43.9%	56.1%
Trade and Industrial	96.0%	4.0%

Confidence in Anticipated Major by Gender

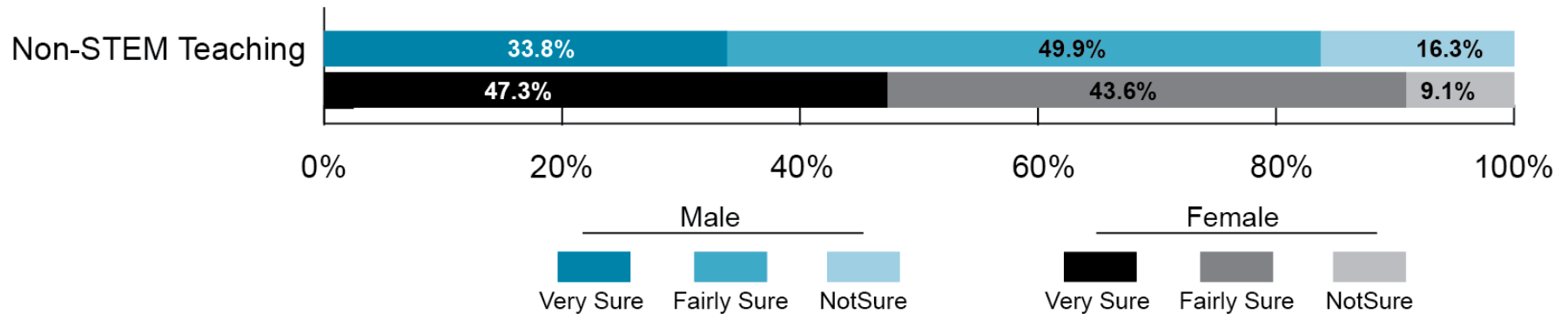


* Note: Excludes responses from students with missing gender information

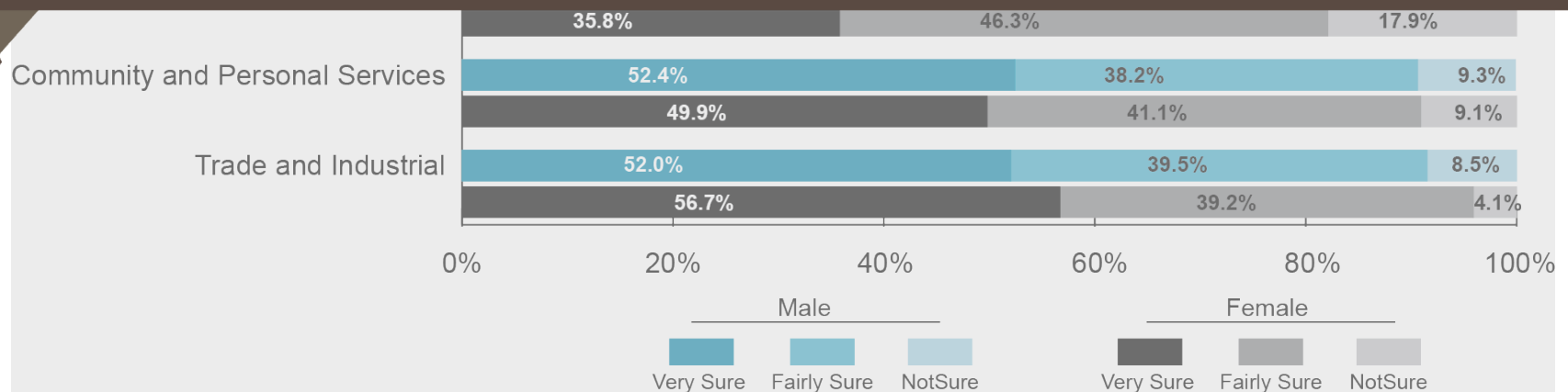


* Note: Excludes responses from students with missing gender information

Confidence in Anticipated Major by Gender (Non-STEM)



* Note: Excludes responses from students with missing gender information



* Note: Excludes responses from students with missing gender information

Anticipated Major by Race (STEM)

Asian/

Asian/

	African-American	White	Latino/a	Asian/ Pacific Islander
Biological, Physical, and Food Sciences	2.4%	4.7%	2.5%	5.3%

Biological, Physical, and Food Sciences	2.4%	4.7%	2.5%	5.3%
Psychology	3.5%	3.2%	2.7%	2.1%
Mathematics	0.4%	0.6%	0.3%	0.6%
Non-STEM	55.4%	59.9%	60.8%	41.1%

Anticipated Major by Race (Non-STEM)

African-				
	African-American	White	Latino/a	Asian
Non-STEM Teaching	4.9%	11.3%	7.2%	4.3%
Visual Arts	9.4%	9.3%	11.0%	6.6%
Liberal Arts	6.9%	7.9%	7.0%	5.6%
Community and Personal Services	4.4%	5.3%	6.1%	1.5%
Trade and Industrial	1.4%	3.6%	3.9%	1.3%
Unknown	0.5%	0.3%	0.6%	0.6%

College Confidence by Race and Major

		African-American	White (Non-Hispanic)	Hispanic	Asian/ Pacific Islander
Agricultural Science	Very Sure	41%	38%	29%	~
Computer and Information Sciences	Very Sure	52%	40%	38%	37%
Engineering	Very Sure	47%	33%	36%	31%
Health Sciences	Very Sure	66%	49%	53%	54%
Biological, Physical, and Food Sciences	Very Sure	51%	34%	44%	33%
Non-STEM	Very Sure	53%	39%	42%	33%

Non-STEM	Very Sure	53%	39%	42%	33%
	Fairly Sure	40%	47%	47%	53%
	Not Sure	7%	14%	11%	14%

Anticipated Major by Family Income Level

	High \$80K+ (N=14,724)	Mid-High \$50K-<\$80K (N=14,605)	Mid-Low \$30K-<\$50K (N=18,251)	Low <\$30K (N=17,658)	Missing (N=9,460)
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Agricultural Science	1.6%	2.3%	2.9%	3.1%	2.3%
Computer & Information Sciences	4.6%	5.3%	5.7%	6.5%	5.4%
Health Sciences	14.0%	15.2%	15.4%	16.4%	15.0%

Psychology	3.1%	3.2%	3.0%	3.2%	3.2%
Mathematics	0.6%	0.6%	0.5%	0.4%	0.6%
Non-STEM	59.1%	58.3%	58.6%	57.7%	60.6%

Anticipated Major by Family Income Level (Non-STEM)

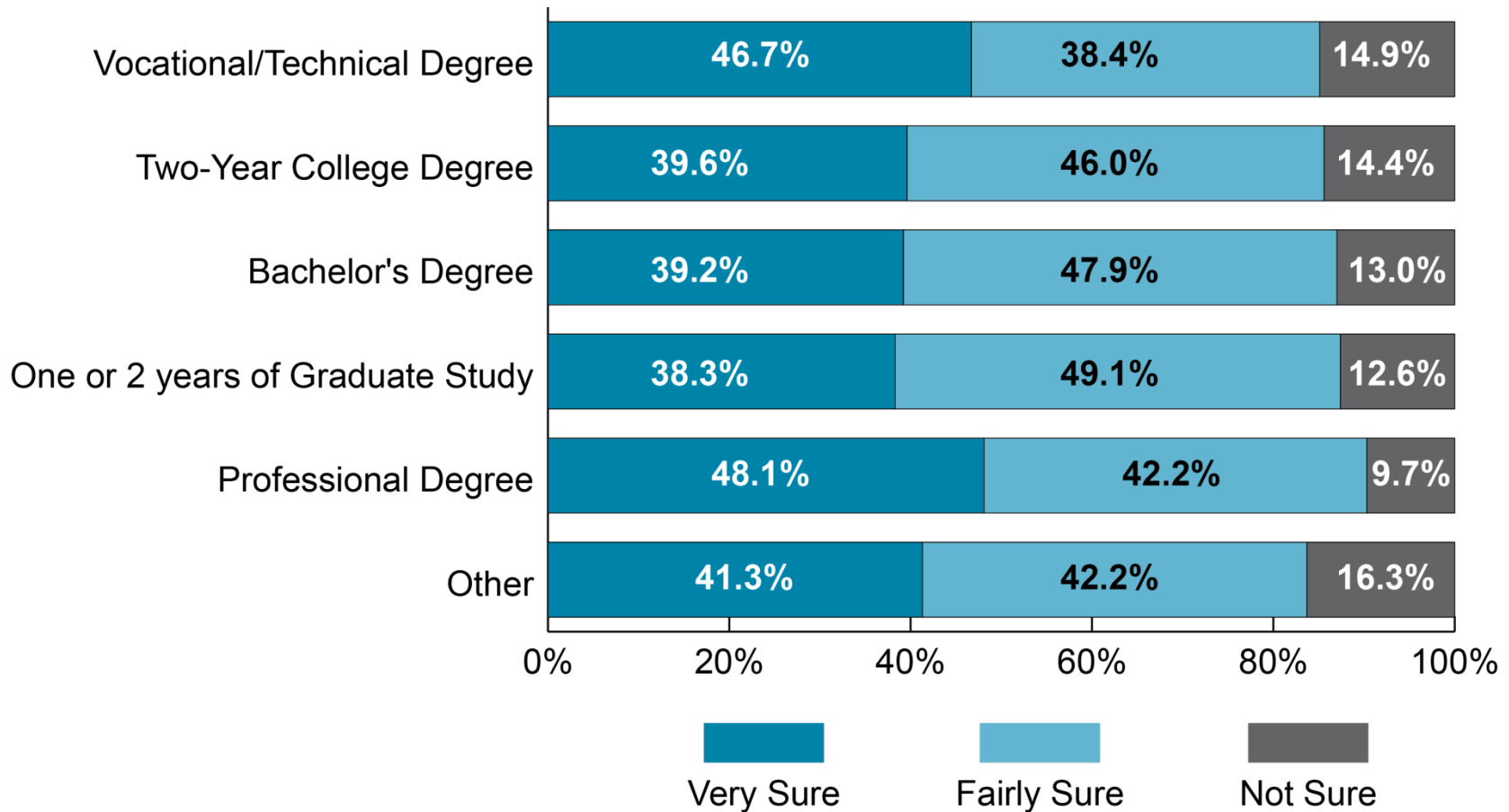
	High \$80K+	Mid-High \$50K-<\$80K	Mid-Low \$30K-<\$50K	Low <\$30K	Missing
Visual Arts	7.8%	8.9%	10.4%	10.5%	11.6%
Community and Personal Services	3.3%	4.7%	5.7%	6.0%	5.2%
Liberal Arts	9.6%	8.2%	7.5%	6.6%	6.8%
Community and Personal Services	3.3%	4.7%	5.7%	6.0%	5.2%
Trade and Industrial	2.4%	3.7%	3.7%	3.2%	3.3%
Non-STEM	59.1%	58.3%	58.6%	57.7%	60.6%

High College Confidence by Family Income Level and Major

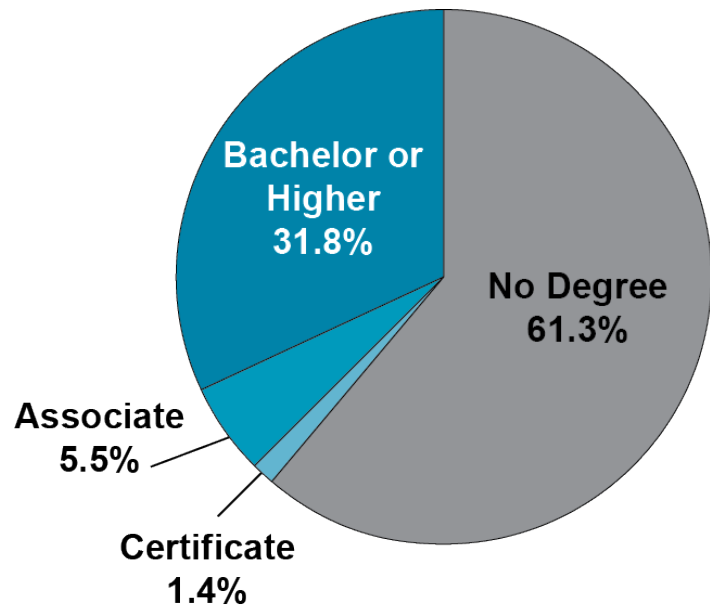
	High Quartile \$80K+	Mid-high Quartile \$50K-<\$80K	Mid-Low Quartile \$30K-<\$50K	Low Quartile <\$30K
Health Sciences	48.6%	51.0%	52.5%	57.3%

Health Sciences	57.3%
Psychology	51.0%
Non-STEM Teaching	50.8%
Liberal Arts	51.0%

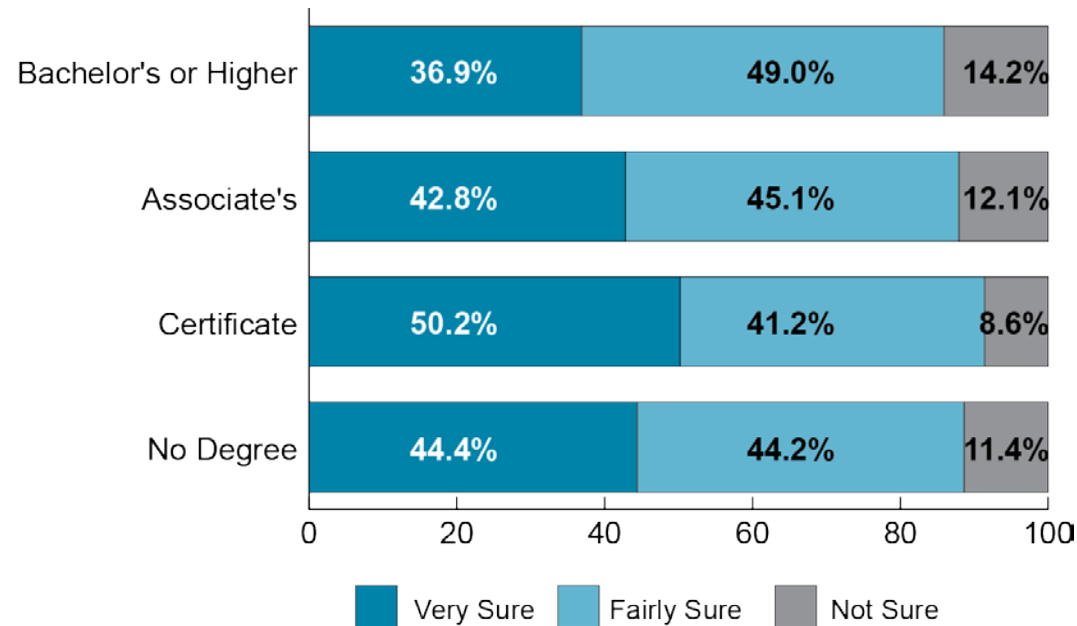
College Confidence by Highest Expected Degree



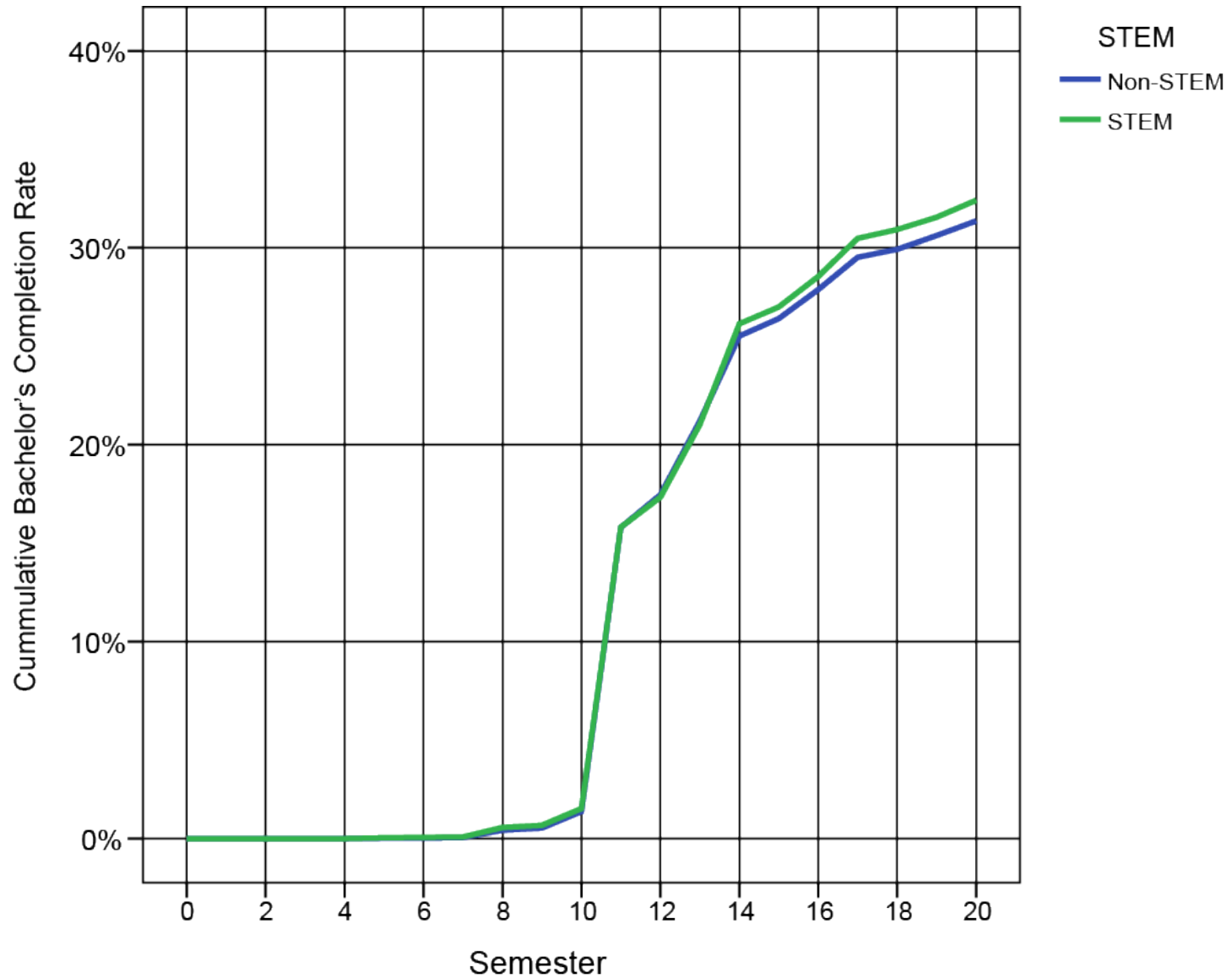
Highest Degree Earned



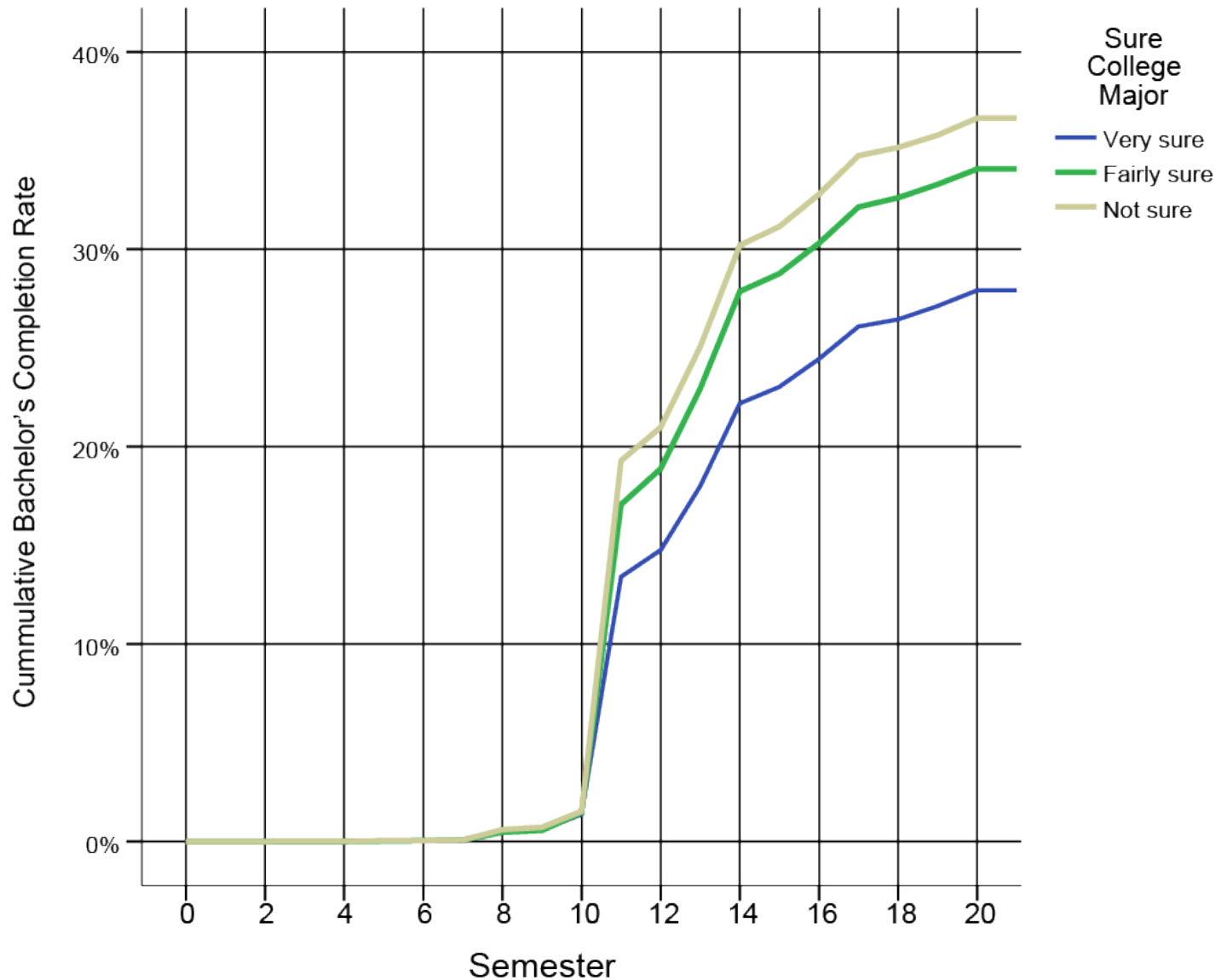
Highest Degree by Confidence in Anticipated Major



STEM Time to Degree



College Confidence-Time to Degree



Sure of Major – STEM and Non-STEM Completion Rate

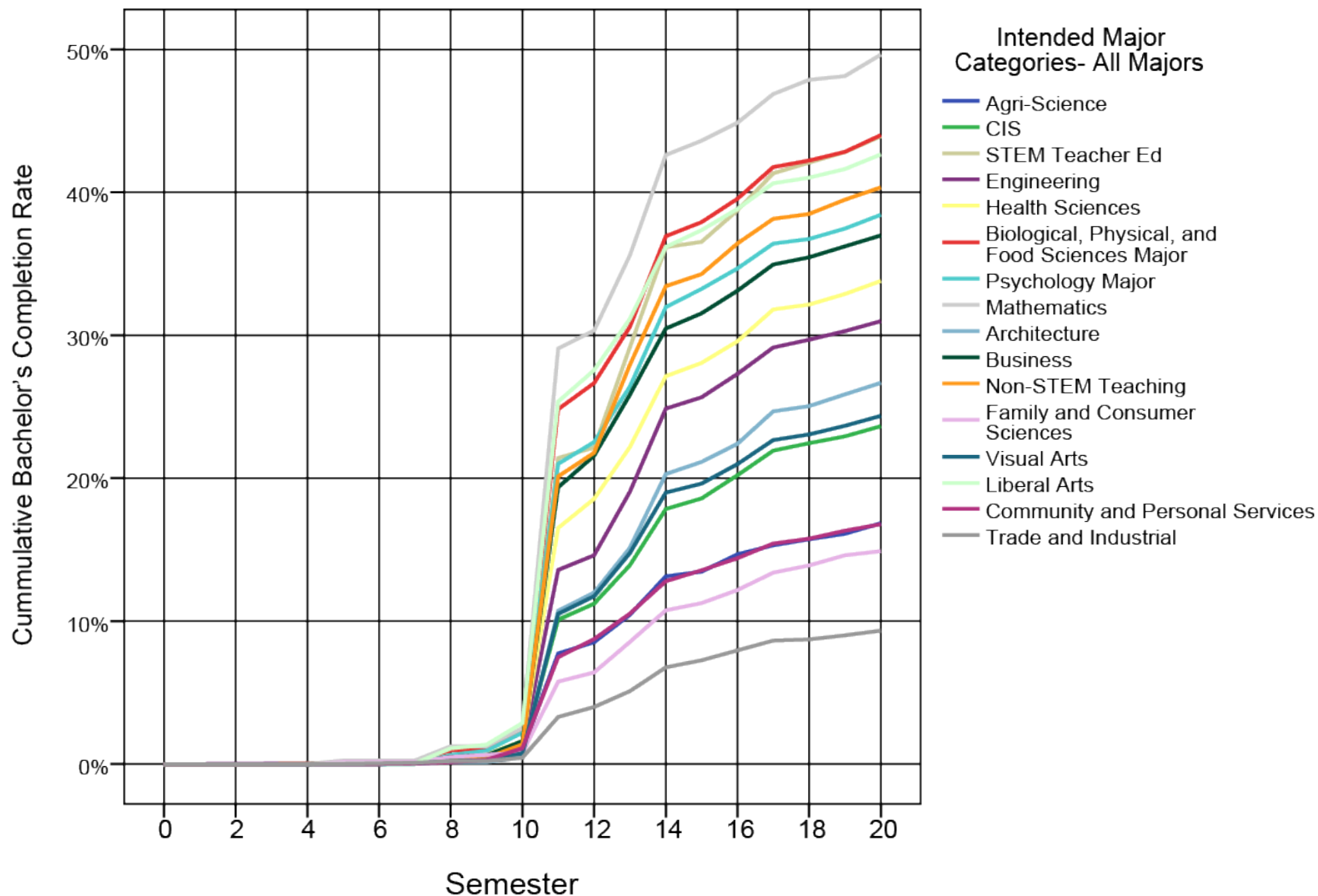
Sure College Major		Bachelor's Completion Rate
Very sure	Non-STEM	27%
	STEM	29%
Fairly sure	Non-STEM	33%
	STEM	35%
Not sure	Non-STEM	37%
	STEM	37%
Total	Non-STEM	31%
	STEM	32%

Rate of Bachelor's Completion

Intended Major	Bachelor Completion Rate
Agricultural Science	17%
Family and Consumer Science	15%
Community and Personal Services	17%
Trade and Industrial	9%

Liberal Arts	43%
Community and Personal Services	17%
Trade and Industrial	9%

Number of Semesters to Bachelor's Degree Completion



Predictive Model

Very Sure

Model 1

Model 2

Very Sure

Very Sure

Very Sure

	Model 1 Exp (B)	Model 2 Exp (B)
Planned Major		
Agri-science to Non-STEM	0.797*	0.733**
Computer and Information Sciences to Non-STEM	1.236*	1.276**
STEM Teacher Education to Non-STEM	0.883	0.934
Engineering to Non-STEM	0.776***	0.797**
Health Sciences o Non-STEM	1.726***	1.678***
Biological, Physical, and Food Sciences to Non-STEM	0.820*	0.851
Psychology to Non-STEM	0.945	0.961
Mathematics to Non-STEM	0.351***	0.393***

*p<.05. **p<.01. ***p<.001.

ACT Reading

0.989

ACT Science

1.022**

*p<.05. **p<.01. ***p<.001.

Findings

- The following types of students were most confident in their intended college major: women, African-Americans, and Low-Income Students, HS CTE students
- Students who intended to major in a vocational-oriented field that has clear educational expectations were more confident (e.g., Health Sciences and STEM Teacher Education)
- Students who expected to complete a vocational/technical or professional degree were most sure of their major
- Confidence seemed to have a negative impact on bachelor's degree completion (a little more so for non-STEM Majors).
- Same groups that were college ready had high rates of BA completion (interaction of college readiness and college confidence).

Limitations

- Why students are confident is not included in dataset
- Confidence in an intended major does not equate to degree attainment in the same major (60% did not complete a postsecondary degree within 7 years)
- Students are exposed to a variety of disciplines in college and may switch majors; examine actual majors
- Need to examine congruency between intended major and academic qualifications/preparation

Implications and Conclusions

- Early-awareness of STEM majors and career opportunities may increase students' confidence in an intended STEM major
- Inform Illinois Learning Exchanges designed to coordinate P-20 STEM education, particularly for underrepresented students
- Disrupts common notions of underrepresented students in STEM, yet may be due to perceived need to be over-confident

Questions?

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