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

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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 statistics

Demographics (n=75,698)

Variables	N	%
Race and Ethnicity		

Variables	N	%
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%

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Postsecondary Degree Information

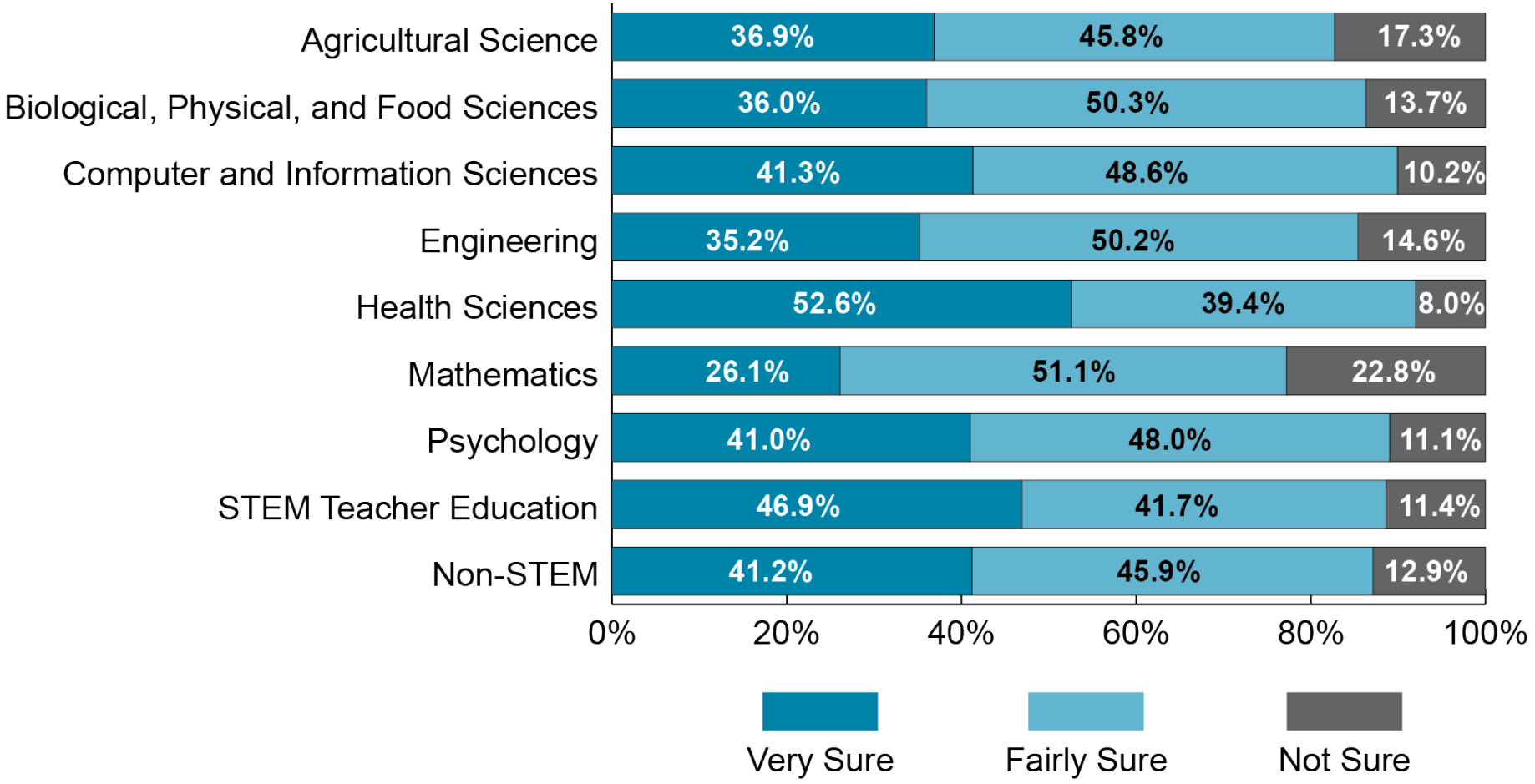
Variables	N	%
Postsecondary Degree Completion		
No Postsecondary Degree	46,406	61.3%
Certificate	1,565	2.1%
Associate's Degree	4,386	5.8%
Bachelors' Degree	23,341	30.8%
Missing	852	1.1%

| Bachelors' Degree | 23,341 | 30.8% |

College Major Information

Variables	N	%
Sure of College Major		
Very sure	31,783	42.0%
Fairly sure	34,608	45.7%
Not sure	9,307	12.3%
th	399	1.3%
sychology	2,371	7.6%
STEM Teacher Education	271	0.9%

Confidence in College Major by Type of Anticipated College Major

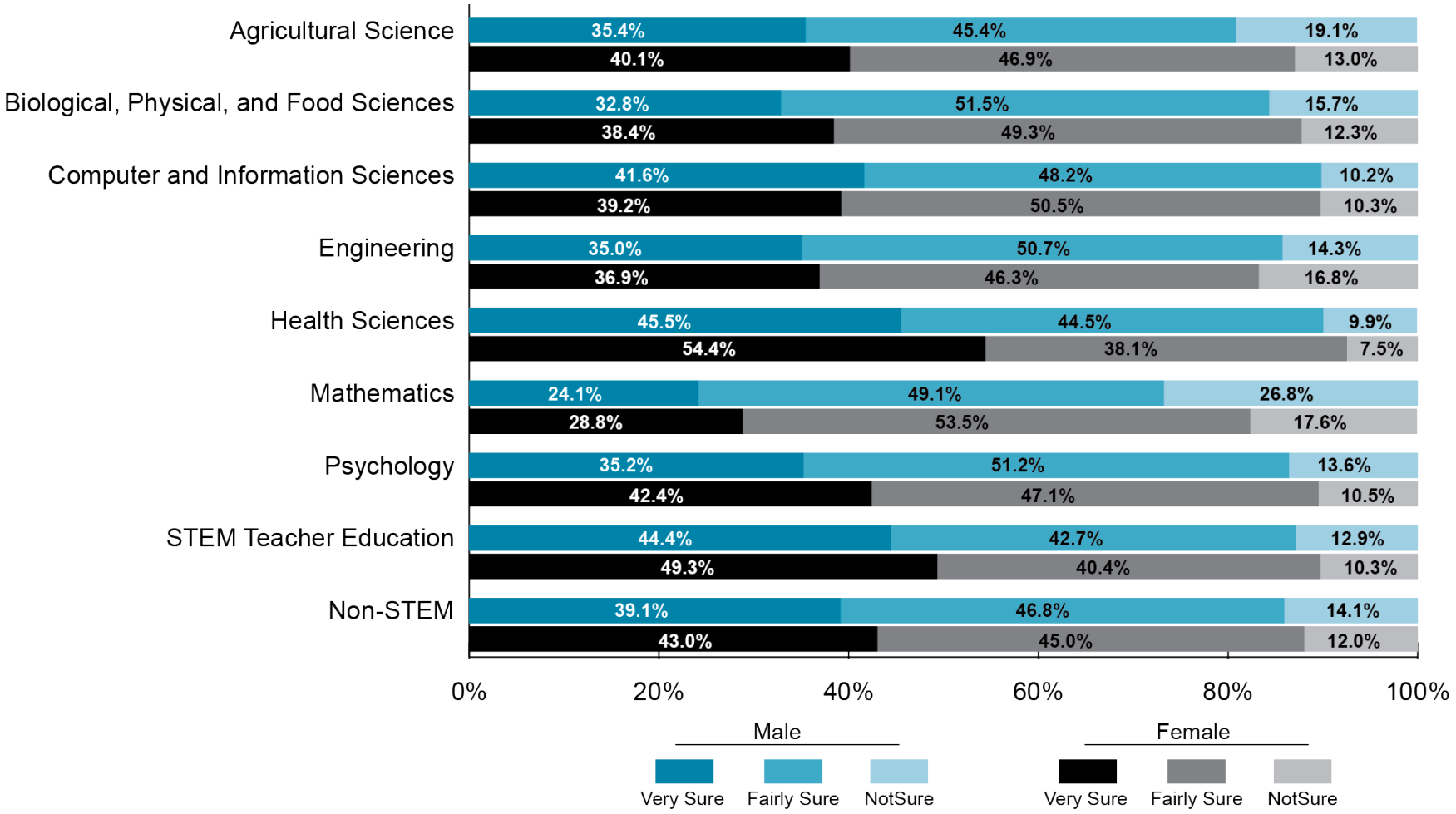


Anticipated Major by Gender

	Male	Female
Agricultural Science	3.7%	1.4%
Computer and Information Sciences	9.6%	2.0%
STEM Teacher Ed	0.4%	0.4%
Engineering	18.5%	2.2%
Health Sciences	6.7%	22.8%
Biological, Physical, and Food Sciences	3.9%	4.5%
Psychology	1.3%	4.8%
Mathematics	0.6%	0.4%
Non-STEM	55.4%	61.5%

- Higher proportions of males planned to major in Engineering, Computer and Information Sciences, and to a lessor extent Agricultural Sciences.
- Higher proportions of female students planned to major in the Health Sciences and Psychology.

Confidence in Anticipated Major by Gender



* Note: Excludes responses from students with missing gender information

Anticipated Major by Race

	African-American	White (Non-Hispanic)	Hispanic	Asian/ Pacific Islander
Agricultural Science	2.2%	2.6%	2.2%	1.6%
Computer and Information Sciences	7.6%	4.9%	6.5%	6.3%
STEM Teacher Ed	0.2%	0.4%	0.3%	0.3%
Engineering	10.1%	9.1%	11.5%	14.6%
Health Sciences	18.1%	14.6%	13.2%	28.1%
Biological, Physical, and Food Sciences	2.4%	4.7%	2.5%	5.3%
Psychology	3.5%	3.2%	2.7%	2.15
Mathematics	0.4%	0.6%	0.3%	0.6%
Non-STEM	55.4%	59.9%	60.8%	41.1%

Confidence in Anticipated Major 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%
	Fairly Sure	40%	47%	47%	53%
	Not Sure	7%	14%	11%	14%

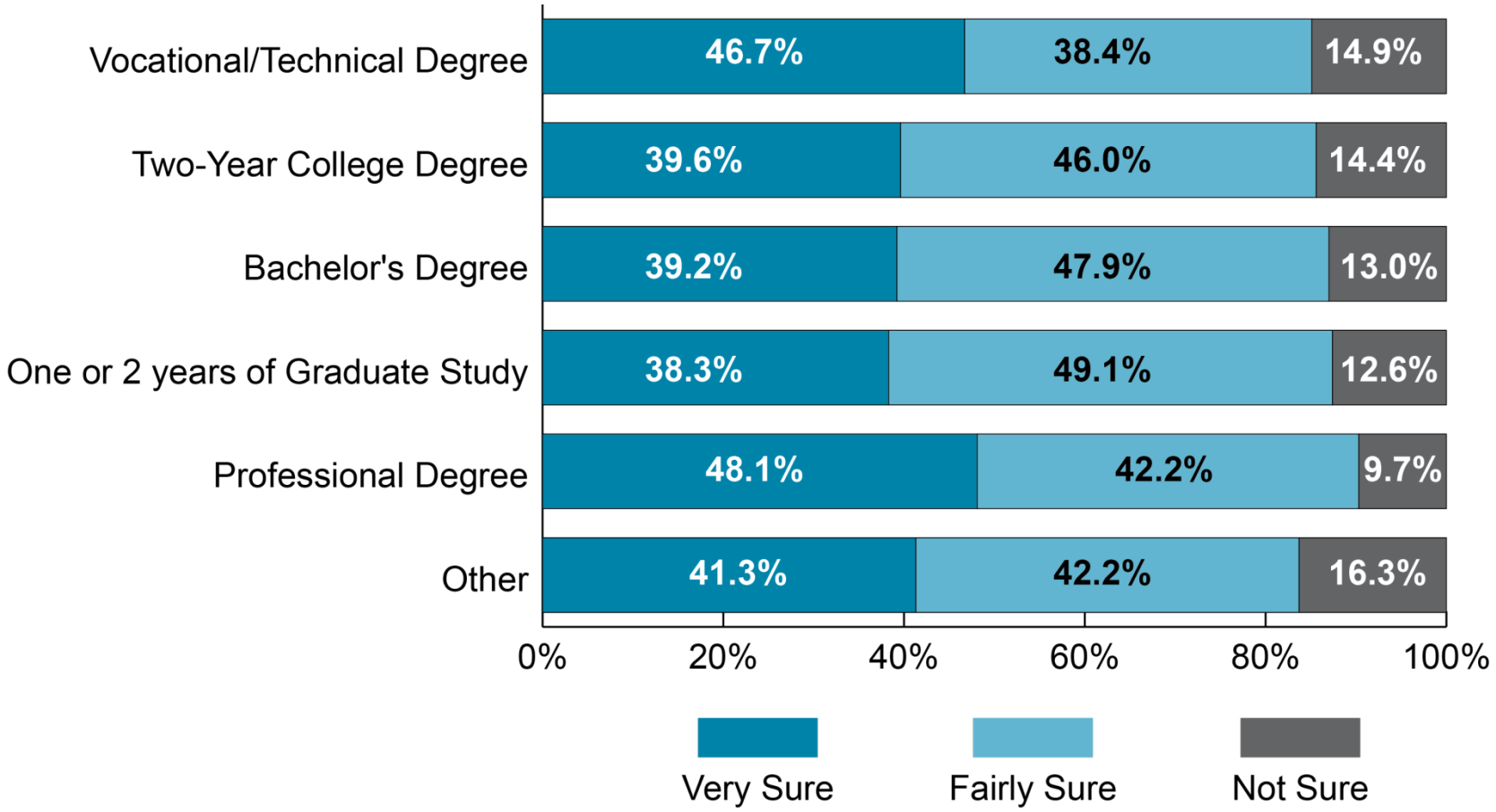
Anticipated Major by Family Income Level

	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)
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%
STEM Teacher Ed	0.4%	0.4%	0.4%	0.3%	0.4%
Engineering	11.4%	10.2%	9.3%	9.4%	8.6%
Health Sciences	14.0%	15.2%	15.4%	16.4%	15.0%
Biological, Physical, and Food Sciences	5.3%	4.7%	4.3%	2.9%	3.9%
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%

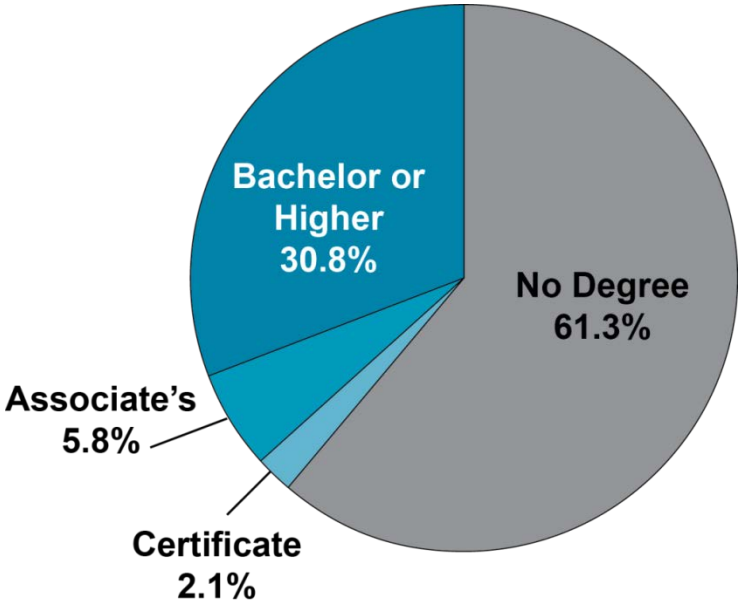
Confidence in Anticipated Major by Family Income Level and Major

		High Quartile $80K+	Mid-High Quartile $50K-<$80K	Mid-Low Quartile $30K-<$50K	Low Quartile <$30K
Agricultural Science	Very Sure	36.9%	36.7%	36.0%	36.9%
Computer and Information Sciences	Very Sure	38.7%	39.3%	40.7%	45.6%
STEM Teacher Ed	Very Sure	30.8%	46.6%	47.0%	54.2%
Engineering	Very Sure	31.4%	33.6%	36.6%	39.2%
Health Sciences	Very Sure	48.6%	51.0%	52.5%	57.3%
Biological, Physical, and Food Sciences	Very Sure	31.9%	35.4%	39.4%	41.5%
Psychology	Very Sure	31.6%	42.5%	39.9%	51.0%
Mathematics	Very Sure	25.8%	22.7%	31.1%	25.7%
Non-STEM	Very Sure	36.1%	40.0%	41.5%	46.9%
	Not Sure	15.3%	13.5%	12.3%	10.8%

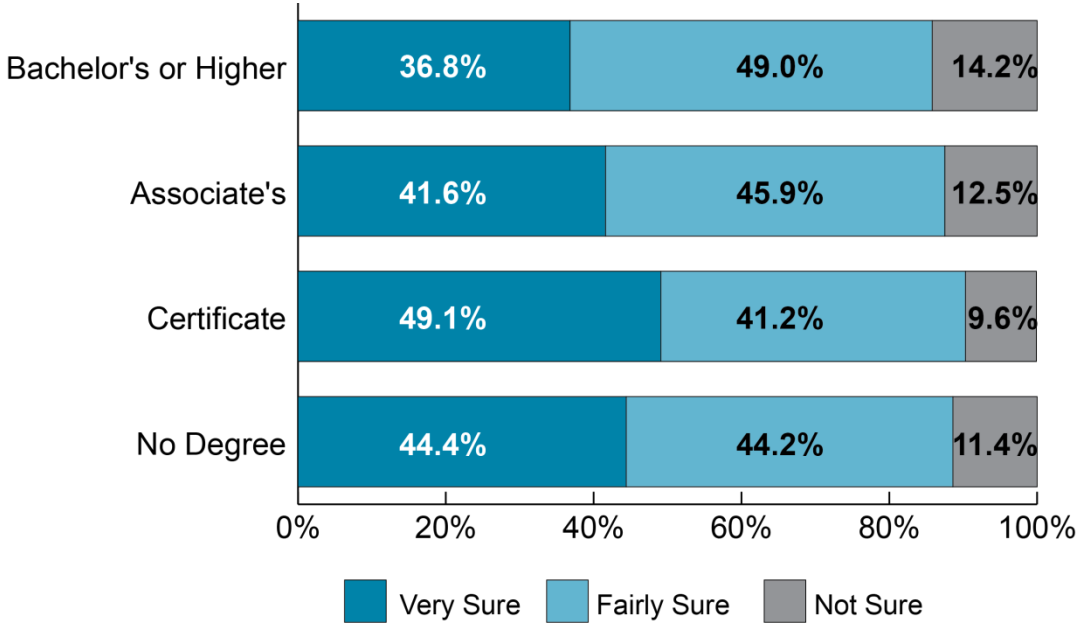
Confidence in Anticipated Major by Highest Expected Degree



Highest Degree Earned



Highest Degree by Confidence in Anticipated Major



Confidence in Anticipated Major by Highest Degree by Major

		Bachelor or Higher	Associates	Certificate	No Degree
STEM Teacher Ed	Very Sure	47.0%	47.4%	40.0%	47.0%
	Fairly Sure	40.9%	36.8%	40.0%	43.2%
	Not Sure	12.2%	15.8%	20.0%	9.8%
Biological, Physical, and Food Sciences	Very Sure	30.8%	37.0%	33.3%	40.5%
	Fairly Sure	54.2%	48.1%	58.8%	46.8%
	Not Sure	15.0%	14.9%	7.8%	12.6%
Psychology	Very Sure	36.5%	34.8%	43.9%	44.6%
	Fairly Sure	49.0%	51.8%	46.3%	46.9%
	Not Sure	14.5%	13.5%	9.8%	8.5%
Mathematics	Very Sure	23.4%	25.0%	50.0%	28.6%
	Fairly Sure	54.2%	50.0%	25.0%	48.6%
	Not Sure	22.4%	25.0%	25.0%	22.9%
Non-STEM	Very Sure	36.0%	39.4%	46.3%	43.8%
	Fairly Sure	49.0%	47.3%	42.3%	44.3%
	Not Sure	15.0%	13.3%	11.4%	11.9%

Findings

- By demographic background, the following types of students were most confident in their intended college major:
  - Women
  - African Americans
  - Low-income students
- Students who intended to major in a vocation-oriented major 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

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
- Additional survey items not yet investigated includes intended job and confidence of intended job
  - Examine alignment between intended (STEM) job and intended major

Implications and Conclusions

- Early-awareness of STEM majors and career opportunities may increase students' confidence in a planned 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-confidence

Questions?

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