Engineering Students' Post-College Pathways and Careers

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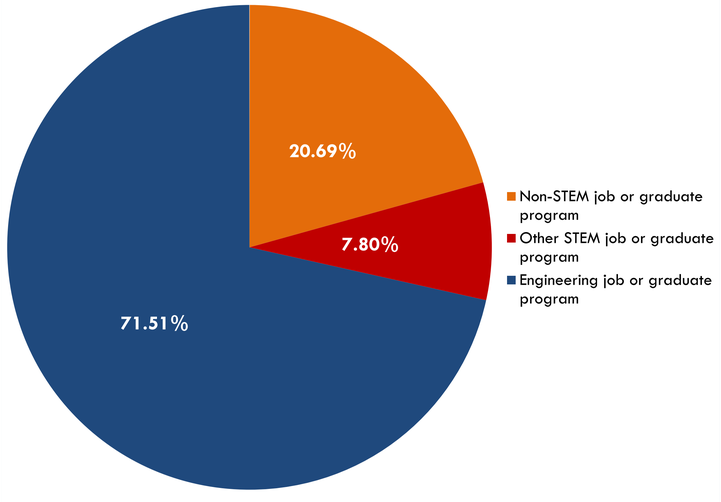
Purpose

Economic forecasts project an estimated half-million engineering job openings in the United States over the next decade due to anticipated retirements and job growth (PCAST, 2012). As the nation's economically competitive position in the world relies on the strength of its STEM workforce (National Academy of Sciences, 2011), whether engineering graduates enter engineering careers is of national concern. As such, meeting the U.S. need for engineering professionals will require not only improving the capacity for institutions to produce engineering degrees but also strengthening the pipeline from degree completion to entry into the engineering workforce.

Very few studies have been able to follow students after they leave their undergraduate institutions to determine how their aspirations translate into career decision-making behaviors, so this analysis stands to make an important contribution.

The present study aims to better understand differences in career pathways taken by engineering graduates based on whether they aspired to engineering at college entry or switched into engineering later. Comparisons between pathways into engineering and other fields—both non-STEM and other STEM fields—will be investigated.

Post-college Pathways Taken by Engineering Graduates



Method and Sample

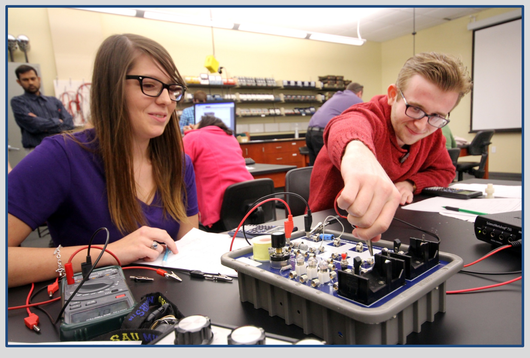
Data Sources:
2004 CIRP Freshman Survey
2011 HERI Post-Baccalaureate Survey
IPEDS

Sample:
1,956 students, 185 institutions

Analyses:
Multinomial Logistic Regression

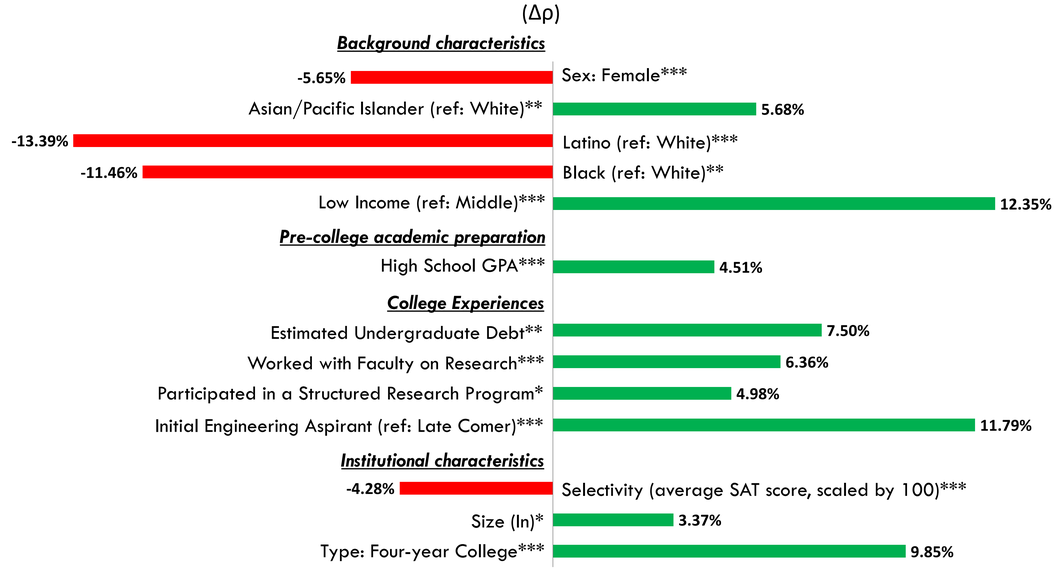
Dependent Variable:
Post-college career or educational pathway
- Engineering pathway, other-STEM pathway, non-STEM pathway

Sample Demographics	(%)
Sex	
Male	73.17
Female	26.83
Race	
White	63.64
Asian/Pacific Islander	14.24
Latino	11.63
Black	5.83
Native American	2.10
Other	2.56



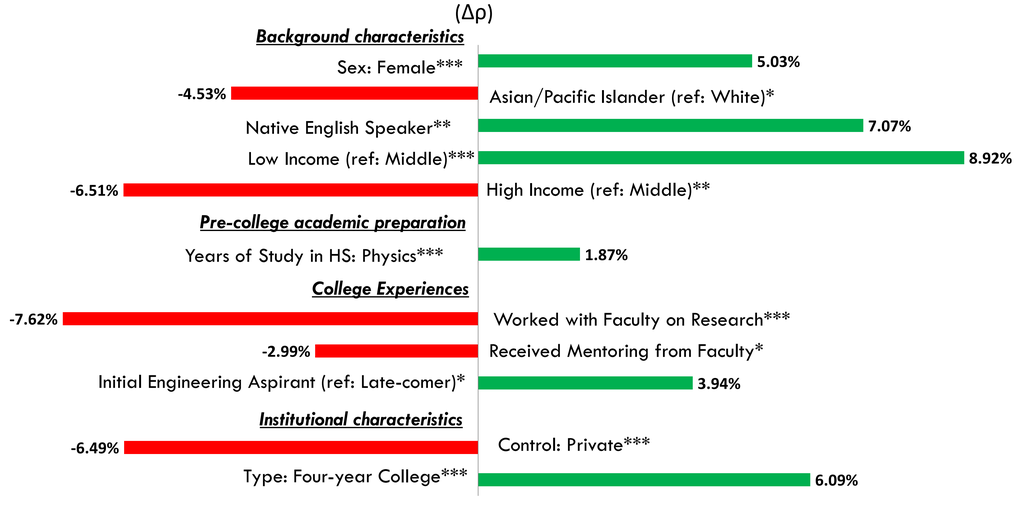
Factors that predict Engineering pathway relative to non-STEM pathway

(Δp)



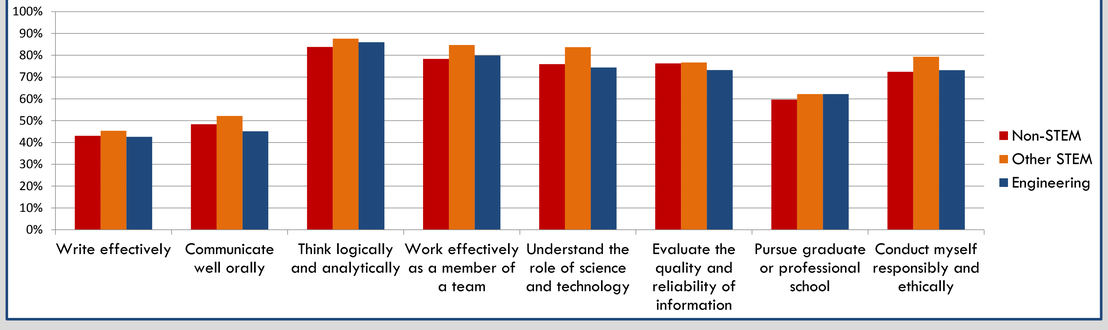
Factors that predict Engineering pathway relative to other-STEM pathway

(Δp)



Preparation in ABET Outcomes by Post-College Pathway

(% who indicated "more than adequately" or "very well")



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Conclusions

- Most students who graduate with engineering degrees choose an engineering pathway after college—either enrolling in a graduate program or joining the workforce.
- Women are more likely to leave STEM than men, but for those who stay in STEM, female engineering graduates are more likely to move on to engineering pathways.
- Several college experiences relate to choice of post-college pathway:
  - Working with faculty on research and participating in a structured research program increase students' likelihood of choosing engineering over non-STEM pathway.
  - Engineering graduates who worked with faculty on research or received mentoring from faculty are more likely to choose an other STEM pathway over engineering, suggesting they may have gone into research.