

College and Postsecondary Outcomes Data Memo:

Comparison of College Majoring and Postsecondary Outcomes Between *FIRST*[®] Program Participants and a Propensity Score Matched Subset of the Baccalaureate and Beyond Study 2016/2017 Dataset and the Beginning Postsecondary Students Longitudinal Study (2012/2017)

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Background

Restricted use datasets were acquired from the National Center for Educational Statistics (NCES). For college outcomes data, the Baccalaureate and Beyond Study (B&B) was requested. This is a nationally representative longitudinal study of students who completed the requirements for a bachelor's degree in a given academic year. The latest cohort contains records on over 24,000 individuals and follows graduating seniors 1, 4, and 10 years after completing their bachelor's degree. Students in the most recent cohort completed their bachelor's degree in 2015–16 and were followed up in 2017.

For the postsecondary outcomes, restricted use data from Beginning Postsecondary Students Longitudinal Study was for comparisons. This study originally sampled students in 2011/2012 school year at the end of their freshman year of college. Approximately 35,540 students were determined to be eligible for BPS:12/17. Eligible students were those who had enrolled at an institution that was eligible to participate in Title IV federal student aid programs and was located in one of the 50 states or the District of Columbia. Eligible students were also those who attended a postsecondary institution for the first time between July 1, 2011, and June 30, 2012.

Propensity Score Matching (PSM) was used to create a comparison group that had similar demographic and socioeconomic characteristics. (See the 2024 Technical Note for more details.)

The tables below show the differences between *FIRST* and PSM matched national comparison as well as between the national comparison group and *FIRST* Longitudinal Study (FLS) comparison group. Statistically significant differences between *FIRST* and the national comparison are indicated with asterisks (*). For statistically significant differences between the national comparison and FLS comparison, a plus sign was used (+).

Tables 1 through 3 show college outcomes data that uses data from the Baccalaureate and Beyond Study. Table 1 shows the overall differences by the senior year for STEM majors overall, engineering, and computer science. In tables 2 and 3, the same comparisons are made for males and for females.

Tables 4 through 6 show the available postsecondary outcomes using the Beginning Postsecondary Students Longitudinal Study data. These data were collected during the 6th year post study enrollment which corresponds to the 2nd year post-college. There are 3 available outcomes for the postsecondary data; percentage working in a STEM field, salary, and the percentage with job certifications.¹ For these data, table 4 shows the overall comparisons and tables 5 and 6 show the breakdowns by gender.

College Majors

Table 1: College Majors by Senior Year, *FIRST* compared to the National Comparison and National Comparison to FLS Comparison

	STEM Major	Engineering	Computer Science
<i>FIRST</i>	83%***	54%***	27%**
National Comparison	49% ⁺	21%	14%
Comparison (FLS)	61%	16%	10%

*p<.05, **p<.01, ***p<.001, *FIRST* compared to National Comparison

⁺p<.05, ⁺⁺p<.01, ⁺⁺⁺p<.001, National Comparison to FLS Comparison

- *FIRST* participants by their senior year report significantly higher rates of majoring in any STEM field overall, as well as majoring in either engineering or computer science specifically in relation to the national comparison group.
- For any STEM majors overall, the FLS comparison group also had a significantly higher percentage in relation to the national comparison (61% to 49%).
- There were no statistically significant differences between the two types of comparison groups for engineering majors or computer science majors.

¹ Please note that in the BPS, the question is a yes/ no to "Do you have a currently active professional certification or a state or industry license?". On the *FIRST* surveys, the wording of the yes/ no question is "Have you received any professional certifications".

Table 2 Males: College Majors by Senior Year, *FIRST* compared to the National Comparison and National Comparison to FLS Comparison

	STEM Major	Engineering	Computer Science
<i>FIRST</i>	90%***	55%***	32%**
National Comparison	54% ⁺⁺	26%	16%
Comparison (FLS)	72%	25%	16%

*p<.05, **p<.01, ***p<.001, *FIRST* compared to National Comparison

+p<.05, ++p<.01, +++p<.001, National Comparison to FLS Comparison

- For males, *FIRST* participants by their senior year had significantly higher rates majoring in any STEM field overall, as well as majoring in either engineering, and computer science in relation to the national comparison group.
- For males, the FLS comparison group report significantly higher rates of majoring in any STEM field in relation to the national comparison (72% to 54%).
- For males, there were no statistically significant differences between the two types of comparison groups for engineering majors or computer science.

Table 3 Females: College Majors by Senior Year, *FIRST* compared to the National Comparison and National Comparison to FLS Comparison

	STEM Major	Engineering	Computer Science
<i>FIRST</i>	75%***	50%***	24%**
National Comparison	42% ⁺	16%	8%
Comparison (FLS)	50%	12%	7%

*p<.05, **p<.01, ***p<.001, *FIRST* compared to National Comparison

+p<.05, ++p<.01, +++p<.001, National Comparison to FLS Comparison

- For females, *FIRST* participants by their senior year had significantly higher rates of majoring in any STEM field overall, engineering, and computer science in relation to the national comparison group.
- For females in STEM overall, the FLS comparison group report significantly higher rates majoring in any STEM field in relation to the national comparison (50% to 42%).
- For females, there were no statistically significant differences between the two types of comparison groups for engineering or computer science.
- In sum, there are no gender differences in these comparisons.

Early Career Outcomes

Table 4: Postsecondary outcomes at 2nd Year Post-College, *FIRST* compared to the National Comparison and National Comparison compared to FLS Comparison

	STEM job	Salary	Job Certification
<i>FIRST</i>	59%***	\$53,500***	25%**
National Comparison	27% ⁺	\$44,500	19% ⁺⁺⁺
Comparison (FLS)	40%	\$44,000	2%

*p<.05, **p<.01, ***p<.001, *FIRST* compared to National Comparison

⁺p<.05, ⁺⁺p<.01, ⁺⁺⁺p<.001, National Comparison to FLS Comparison

- *FIRST* participants had a significantly higher rates than the national comparison group working in a STEM related job and job certifications, as well as significantly higher salaries.
- The FLS comparison group had significantly higher rates in working in a STEM job than the national comparison (40% to 27%). This is not surprising given the significantly higher rates of majoring in any STEM field.
- The FLS comparison group had significantly lower rates of job certifications than the national comparison (2% to 19%).
- There are no statistically significant differences in salary between the two comparison groups.

Table 5 Males: Postsecondary outcomes at 2nd Year Post-College, *FIRST* compared to the National Comparison and National Comparison compared to FLS Comparison

	STEM job	Salary	Job Certification
<i>FIRST</i>	68%***	\$51,000	27%
National Comparison	39% ⁺	\$49,500 ⁺	22% ⁺⁺⁺
Comparison (FLS)	49%	\$45,000	3%

*p<.05, **p<.01, ***p<.001, *FIRST* compared to National Comparison

⁺p<.05, ⁺⁺p<.01, ⁺⁺⁺p<.001, National Comparison to FLS Comparison

- For males, *FIRST* participants had a significantly higher percentage working in a STEM job than the national comparison (68% to 39%). There were no statistically significant differences in salary or job certifications.
- For males, the FLS comparison group had a significantly higher percentage working in a STEM job (49% to 39%).
- Males in the FLS comparison group significantly earned less salary than the national comparison group (median salary of \$45,000 to \$49,500 in the national comparison).
- As for the group overall, males in the FLS comparison group also significantly had less job certifications than the national comparison group (3% to 22%).

Table 6 Females: Postsecondary outcomes at 2nd Year Post-College, *FIRST* compared to the National Comparison and National Comparison compared to FLS Comparison

	STEM job	Salary	Job Certification
<i>FIRST</i>	50%***	\$55,500***	24%*
National Comparison	20%+++	\$41,000	17%+++
Comparison (FLS)	31%	\$42,500	2%

*p<.05, **p<.01, ***p<.001, *FIRST* compared to National Comparison

+p<.05, ++p<.01, +++p<.001, National Comparison to FLS Comparison

- Female *FIRST* participants report significantly higher rates of working in a STEM job, and job certifications, and a significantly higher salary than the national comparison group. The findings on significantly higher salaries resemble the findings in the FLS study.
- Females in the FLS comparison group had a statistically significant higher percentage working in a STEM job but there is no significant difference in salaries.
- There is a significant difference in job certifications as females in the FLS comparison group and the national comparison group (2% in the FLS comparison group and 17% in the national comparison group).

In sum, these analyses providing a comparison group drawn from a nationally representative sample provide additional evidence of the long-term impact of *FIRST*. First, the results underscore the significant higher STEM related majors during college and early careers for the *FIRST* cohort for both, males and females. These results mirror the results depicted in the *FIRST* Longitudinal Study survey analyses. Second, due to the range in similar outcomes among the two comparison groups, these analyses underline the quality of the *FIRST* Longitudinal Study comparison group. The major significant difference between the two comparison groups, majoring in any STEM field, can be explained by the selection of this group from science and math courses. And finally, because of the overall similarity of the two comparison groups, these results give additional scientific rigor to the results reported in the study, including some of the impacts reported for *FIRST* female participants, such as significant higher salaries.