

## The American Freshman: National Norms Fall 2017

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The results reported here are derived from 120,357 first-time, full-time students who entered 168 U.S. colleges and universities of varying selectivity and type in the fall of 2017. Weights have been applied to these data to reflect the more than 1.5 million first-time, full-time undergraduate students who began college at 1,482 four-year colleges and universities across the U.S. in the fall of 2017. Within this brief, we recognize specific pre-college experiences such as the increasing importance of the campus visit in incoming students' college choice process, as well as AP course participation by gender, and anticipated major. Additionally, we introduce science self-efficacy and science identity which are two new related constructs revolving around students' self-confidence and self-perception of scientific ability. Finally, we address how students spend their time before they begin college and how their behaviors are associated with their goals related to social agency.

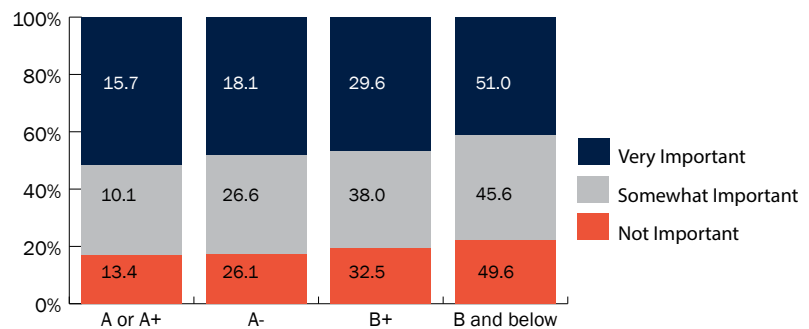
### CAMPUS VISIT INCREASINGLY IMPORTANT IN COLLEGE CHOICE

Campus visits have become increasingly important in students' college choice. Introduced in 2003, the proportion of students who report a visit to campus as "very important" in their decision to attend their current institution has increased from 37.6% to 47.3% after fifteen iterations of the survey. While just under half of students overall considered a visit to their campus very important in their choice to attend, there were differences across subgroups. For example, only 40.5% of male students considered a campus visit very important in choosing their current institution, compared to the majority (52.7%) of female students. There was also significant variation by race/ethnicity. Asian students were least likely to consider the campus visit very important in their choice (32.3%). By contrast, 50.8% of White students and 49.4% of Black students felt similarly.

Students with higher high school grades were more likely to consider a campus visit very important in their choice of college. Figure 1 displays the gap of about 10 percentage points that exists between those who enter college with a B average or below (41.2%) and those with an A or A+ average (51.5%). A similar relationship is evident when examining

income, as 43.3% of those who have an income of less than \$60,000 consider a campus visit very important, while 52.8% of those who come from families with an income of \$150,000 or more feel the same. Students from disparate income groups do not necessarily have an equal opportunity to visit their campus before making a decision, so it is not clear whether the visit itself has less impact or if fewer students are actually able to visit the campus beforehand. Overall, students who are attending their first-choice institution (55.1%) are significantly more likely to consider a campus visit very important in their choice of college than those who are not attending their first choice (36.9%), a difference of about 18 percentage points.

Figure 1. Importance of Campus Visits, by High School GPA



**EXAMINING ADVANCED PLACEMENT (AP) COURSE PARTICIPATION BY INSTITUTIONAL SELECTIVITY AND ANTICIPATED MAJOR**

Advanced Placement (AP) courses are an important college preparation opportunity for high school students. A relatively small proportion of incoming freshmen (6.9%) shared that no AP courses were offered at their high school. Of students who attended high schools where AP courses were offered, more than 80% (81.5%) reported taking at least one AP course in high school with almost half (48.6%) reporting having taken between one and four AP courses. Just under one-third (32.9%) of first-time, full-time students reported having taken five or more AP courses while in high school.

Respondents also indicated whether they completed a select set of AP courses in STEM related fields. Among this subset of AP courses, AP Calculus had the highest level of participation, with two of five incoming freshmen (40.0%) having taken the course. Just over one-quarter of incoming freshmen (27.5%) took AP Biology, making it the second most common AP course. Finally, roughly one-fifth of incoming students took AP Physics (23.0%), AP Probability and Statistics (23.1%), and AP Chemistry (19.9%).

Participation rates for several of these AP courses varied considerably by gender. Men and women reported taking AP Probability and Statistics (24.1% and 22.2%, respectively) and AP Chemistry (21.4% and 18.6%, respectively) at roughly the same rate. Three out of ten incoming female students took AP Biology (30.0%), compared to just under one-quarter (24.3%) of their male classmates. Men’s enrollment rate in AP Calculus exceeded women’s rate by 7.6 percentage points (44.2% versus 36.6%, respectively), but AP Physics had an even larger gender gap: 29.9% of men compared to 17.4% of women.

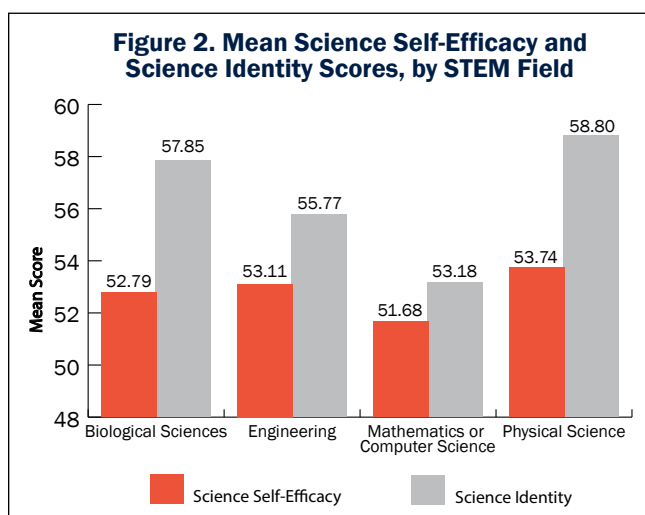
AP course participation rates differ in notable ways when comparing students based on intended major. Although the vast majority of respondents indicated having taken at least one AP course (81.5%), students intending to pursue a STEM major enrolled in AP courses at slightly higher rates than their peers intending to pursue a non-STEM major (85.4% versus 78.1%, respectively). Additionally, STEM aspirants not only had a higher likelihood of taking at least one AP course but they also tended to take more AP courses than their peers intending to pursue non-STEM majors. Nearly half of all students took between one and four AP courses, with non-STEM majors (49.8%) slightly outpacing STEM majors (47.2%). Finally, nearly 40 percent (38.2%) of STEM majors took five or more AP courses, compared to just over one-quarter (28.2%) of non-STEM majors, a difference of 10

percentage points.

Unsurprisingly, STEM majors participate in STEM-themed AP courses at higher rates than non-STEM majors. For example, 48.3% of STEM majors took AP Calculus while only 27.9% of non-STEM majors took this course. Similarly, 34.5% of STEM majors took AP Biology compared to 18.6% of non-STEM majors.

**SCIENCE SELF-EFFICACY AND SCIENCE IDENTITY: DIFFERENCES WITHIN STEM FIELDS**

In higher education research, students in STEM fields are often compared to those in non-STEM fields, and as such, are treated as a homogenous group. This section discusses two new HERI constructs, science self-efficacy and science identity, and analyzes differences in scores across four STEM fields: biological sciences, engineering, math/computer science, and physical sciences. Science self-efficacy is a measure of students’ confidence in their ability to conduct scientific research, assessing confidence with such skills as determining how to collect appropriate data, integrating results from multiple studies, generating research questions, and explaining the results of a study. When originally scored, each construct has a theoretical population mean of 50 and standard deviation of 10. Figure 2 shows that students intending to major in each of these four STEM fields felt more confident in their ability to conduct research, as evidenced by their higher mean scores relative to the population mean of 50. Among STEM students, those



intending to major in the physical sciences expressed the greatest level of confidence in their research abilities as indicated by their mean score of 53.74, slightly outpacing their peers in engineering (53.11), biological sciences (52.79), and math/computer science (51.68).

Science identity, which measures the extent to which students think of themselves as scientists, consists of four agreement items: I have a strong sense of belonging to the community of scientists; I derive great personal satisfaction from working on a team that is doing important research; I think of myself as a scientist; and I feel like I belong in the field of science. STEM aspirants’ identify as scientists significantly more than the average first-year student. Similar to science self-efficacy, mean scores within STEM were lowest, though still above the population mean of 50, for those in math/computer science (53.18), and highest for those in physical science (58.80), nearly a full standard deviation above the mean. Put a different way, more than seven out of ten physical science students (71.5%) had science identity scores that placed them in the high group compared to 68.5% of those in biological sciences, 54.3% in engineering, and 38.9% in math/computer science.

Male students scored slightly higher on the science identity construct than women did, with male students averaging 51.21 and female students averaging 49.73. Again students intending to major in STEM fields scored higher than the population mean. Differences between male and female students were significant, with males in physical science, math/computer science, and biological sciences scoring higher than their female peers within their respective fields. The difference by sex for students in engineering was not statistically significant. The biggest difference in science identity by sex exists for those in math/ computer science, as nearly 13 percentage points separate the proportion of male students (42.6%) from the proportion of female students (29.8%) who scored at least one-half of a standard deviation above the mean.

**STUDENTS TODAY MORE LIKELY TO SPEND TIME STUDYING, SOCIALIZING**

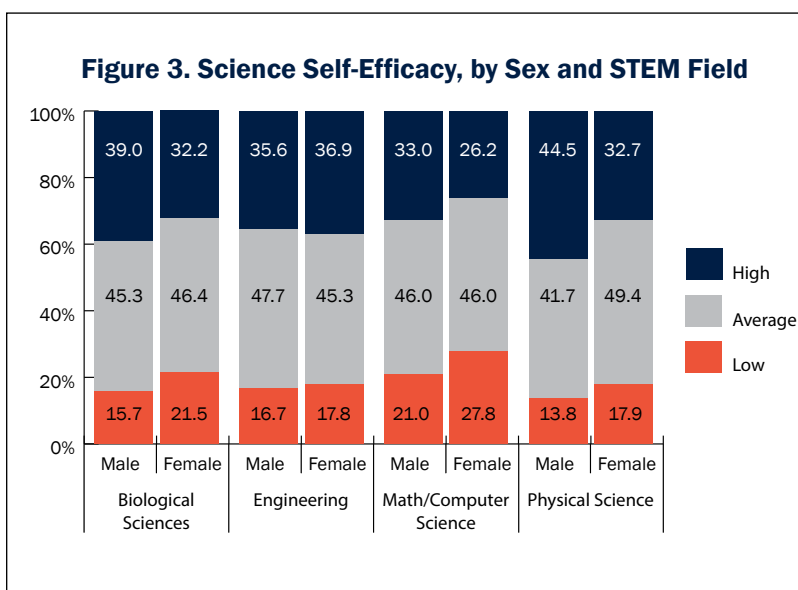
Regarding academic preparation, the upward trend in the amount of time students spent studying or doing homework during their senior year continued with the 2017 cohort. Overall, 44.1% of incoming freshmen indicated spending six or more hours per week doing homework, with 27.1% spending three to five hours per week, 27.0% spending one to two hours per week, and 1.9% reporting spending no time studying/doing homework during their senior year of high school. By contrast in 2007, only 33.8% of incoming first year students reported spending six or more hours on homework, 28.4% spent three to five hours, 22.7% spent one to two hours per week, and 2.4% reported spending no time studying/doing homework during their senior year of high school. Comparing the current data by sex revealed that women hit the books significantly more hours each week than men, as nearly half (48.7%) of women studied at least six hours each week compared to 22.8% of men.

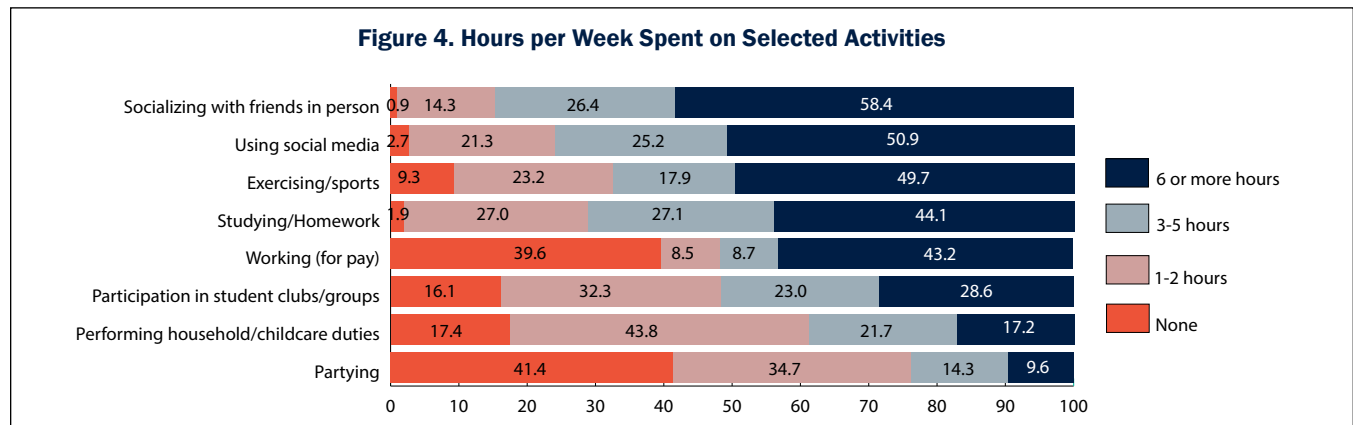
As Figure 4 notes, students who anticipated majoring in STEM fields (48.2%) reported studying at least six hours each week at a higher rate than their peers intending to major in social science (44.5%) humanities (40.4%), and business (37.1%). As incoming college students continue to spend more time on homework or studying, colleges and universities must ensure their campuses are equipped with proper study spaces to further support students’ academic success.

Similar to their increased time investment in studying, students in 2017 reported spending more time engaging with online social media compared to previous years, and they socialize online almost as often as they interact with their peers in person. In 2017, more than half of all first-time, first-year college students (50.9%) spent six or more hours per week on social media during their last year of high school, up 10 percentage points from the 2016 administration and more than 30 percentage points higher than when the question was first asked a decade ago (18.9% in 2007). It is important to note that utilizing social media has not completely replaced face-to-face interaction as 58.4% spent six or more hours socializing in person during their last year of high school.

Student clubs provide a more formal venue for students to socialize with their peers in high school, and the amount of time students spent participating in clubs during their senior year differed by their intended major. Across all

**Figure 3. Science Self-Efficacy, by Sex and STEM Field**





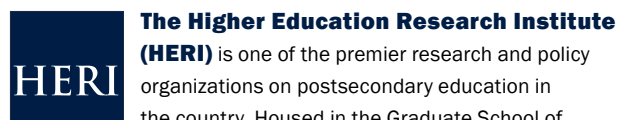
intended majors, more than a quarter of students (28.6%) indicated that they spent six or more hours per week participating in student clubs/ groups and just under a quarter (23.0%) spent three to five hours per week doing so. Students are more engaged in extracurricular activities than years past with only 16.1% of incoming freshmen reporting spending no time participating in student clubs or groups, the lowest it has been since the question was first asked in 1987 (25.0%) and more than three percentage points lower than the 2016 administration (19.7%). Also, Figure 4 shows that students who intend on majoring in humanities (33.2%) and social sciences (30.7%) were more likely to spend six hours or more participating in student clubs than students in STEM (28.1%), business (26.3%), or other majors (26.6%). STEM aspirants, in particular, may have less time available to participate in clubs in high school due to their tendency to take significantly more AP courses than their peers.

Given the significant time investments in academics,

extracurricular activities, and social networks, students in 2017 spend significantly fewer hours each week working for pay compared to their parents' generation. A significantly larger proportion of students in 2017 reported not working for pay (39.6%) compared to their counterparts who entered college in 1987 (26.1%), and a corresponding decrease is reflected in the proportion of students who spent six or more hours working for pay between 1987 (62.1%) and 2017 (39.6%). As illustrated in Figure 4, students intending to major in business (47.1%) or social science (44%) had a greater likelihood of working for pay in high school compared to their peers intending to pursue other majors.

**REFERENCE**

Stolzenberg, E.B., Eagan, M.K., Aragon, M.C., Cesar-Davis, N.M., Jacobo, S., Couch, V., Rios-Aguilar, C. (2018). *The American Freshman: National Norms Fall 2017*. Los Angeles: Higher Education Research Institute, UCLA.



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