Institute of Education Sciences

STEM Occupational Intentions
Stability and Change Through High School

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Statistics in Brief publications present descriptive data in tabular formats to provide useful information to a broad audience, including members of the general public. They address simple and topical issues and questions. They do not investigate more complex hypotheses, account for interrelationships among variables, or support causal inferences. We encourage readers who are interested in more complex questions and in-depth analysis to explore other National Center for Education Statistics (NCES) resources, including publications, online data tools, and public- and restricted-use datasets. See nces.ed.gov and references noted in the body of this document for more information.

Actual and projected growth

in the science, technology, engineering, and mathematics (STEM) economy has led to an emphasis on STEM education as a strategy for increasing the supply of STEM workers (Atkinson and Mayo 2010). Between 2005 and 2015, employment in STEM occupations grew faster than in non-STEM occupations. In 2015, approximately 6 percent of all U.S. workers were in STEM occupations (Noonan 2017). Additionally, job openings in STEM and health care are projected to grow the fastest among occupational clusters (Carnevale, Smith, and Strohl 2013).

Because of the anticipated demand for STEM occupations, researchers and policymakers have been studying and trying to address attrition from STEM fields as students move through the education pipeline (Metcalf 2010). For example, 48 percent of bachelor's degree students who declared a STEM major left their initially chosen STEM major within 6 years of entering postsecondary education (Chen 2013). Attrition from STEM majors at the postsecondary level is associated with academic performance, coursetaking patterns, and the sex and race/ethnicity of students (Chen 2013). To increase the supply of students interested in STEM fields at the postsecondary level, educators and policymakers have focused on increasing student interest and engagement in K-12 STEM education.

Previous reports from the U.S. Department of Education's NCES within the Institute of Education Sciences have presented findings regarding postsecondary majors, STEM participation, and 2013 change in college major (Chen 2013; Leu 2017). While such postsecondary information is critical, information on high school students' changing occupational intentions can also provide insights into their postsecondary choices.

Many studies have examined the relationship between student characteristics and STEM interest, occupations, and coursetaking. Using a nationally representative sample of over 6,000 students to examine how interest in STEM fields changed throughout high school, Sadler et al. (2012) found that female interest in STEM decreased by the end of high school, while male interest remained relatively stable. In general, females are less likely than males to be interested in a STEM major (Chen 2009; Moakler and Kim 2014). Family members can influence students' academic and occupational pursuits (Oymack 2018). For example, having at least one parent in a STEM occupation is related to students' STEM career aspirations (Holmes et al. 2017). Additionally, parent attitudes during students' high school years and parents' expectations for the length of their children's education are related to success in a STEM major in postsecondary education (Hinojosa et al. 2016). Further, exposure to occupations of family members may influence students' expectations and intentions for future jobs (Hinojosa et al. 2016; Holmes et al. 2017).

Using data from a cohort of 2009 high school freshmen, this brief presents data on occupational intentions of students and changes in intentions over the first 3 years of high school, as students are preparing to make decisions about postsecondary education. The brief includes information on student, family, and school-level factors associated with changes in STEM occupational intentions over time in high school. It also compares

STEM coursetaking of students who consistently throughout high school intended later to be employed in a STEM field, students who never intended to be employed in a STEM field, and students who changed intentions during high school. This brief complements other studies by NCES that examine recruitment and retention of students in STEM fields during and after college (Chen 2013). It builds on the work of Mangu et al. (2015) who used the NCES High School Longitudinal Study of 2009 (HSLS:09) baseline and first follow-up data on students' declared occupational intentions in STEM fields to classify them as Intenders, Not intenders, Newcomers, or Leavers. Mangu et al.'s definition of STEM included health occupations. The definition of STEM fields used in this brief does not include health or health sciences.

While the relationship between interest and intention for future careers and student, family, and school factors is complex, this report provides only simple descriptive statistics. It does not investigate more complex hypotheses, account for interrelationships among variables, or support causal inferences. The analyses are limited to considering one factor at a time, rather than looking at the patterns by gender and race/ethnicity or the pattern by gender and race/ethnicity by family background characteristics.

Data, Methods, and Structure of the Report

This Statistics in Brief presents data from the NCES HSLS:09. HSLS:09 is a longitudinal dataset that is nationally representative of high school freshmen in the United States in 2009. Students who participated in the HSLS:09 were followed through 2016, with intermediate survey follow-ups in 2012 and 2013. The base-year data collection in 2009 included interviews with parents, students, and school staff.

The analyses in this brief rely on multiple sources of information from HSLS:09. Student data are used to gauge STEM occupational intentions, interest in mathematics and science, engagement in school, academic performance, and coursetaking. Parent information is used to establish parents' highest level of educational attainment and parent STEM occupation.

Students were asked, "As things stand now, what is the job or occupation that you expect or plan to have at age 30?" Their responses were coded on the data file into the corresponding 6-digit Occupational Information Network (O*NET) codes and then into the following categories: not a STEM occupation; life and physical science, engineering, mathematics, and information technology occupations; and health occupations. Overall, 71 percent of students (approximately 15,000) had responses to the questions about job or occupational expectations at both time points, 2009 and 2012.

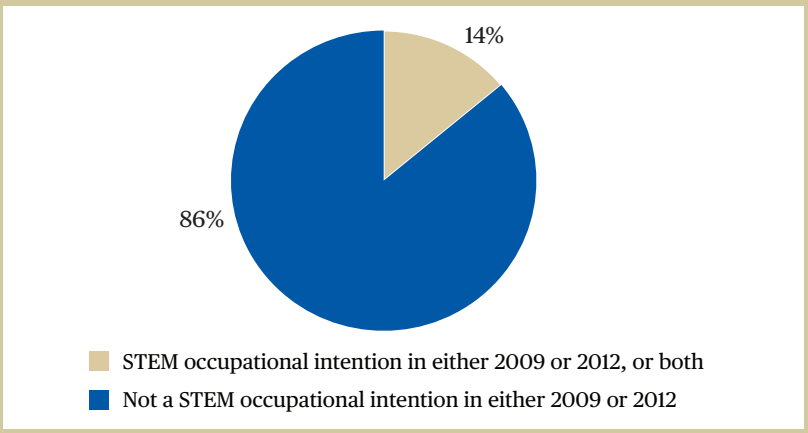
This brief provides information about the students in the fall of their ninth-grade year in 2009 and again from the spring of 2012, when most were in 11th grade. It defines STEM as life and physical science, engineering, mathematics, and information technology. This definition of STEM has been used in previous NCES reports. Reports using this definition of STEM have covered topics such as STEM degree outcomes, students who major in STEM, and attrition in STEM within postsecondary education (Chen 2009; Chen 2013; Hinz and Chen 2018).

Background Information

At some point in high school, 14 percent of students expected or planned to have a job at age 30 that could be classified as STEM (figure 1). The distribution of occupational intentions at age 30 was similar in both the 2009 and 2012 survey follow-up, but there were changes within occupational intention categories. Some of the students who reported intentions for a STEM occupation at age 30 in 2009 reported intentions for an occupation in a field other than STEM in 2012. Likewise, some of the students who reported intentions for a job in a field other than STEM in 2009 reported intentions for a STEM occupation in 2012. Health occupations and health science are considered non-STEM fields in this brief.

The analyses presented throughout the brief use the following four categories of STEM occupational

FIGURE 1. Distribution of fall 2009 ninth-graders in spring 2012, by occupational intention at age 30 in 2009 and 2012



NOTE: Students wrote in their expected occupation at age 30 in both 2009 and 2012. STEM occupations include life and physical science, engineering, mathematics, and information technology.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), 2013 Update and High School Transcript File.

intentions: STEM Intenders, STEM Newcomers, STEM Leavers, and Non-STEM Intenders (figure 2).

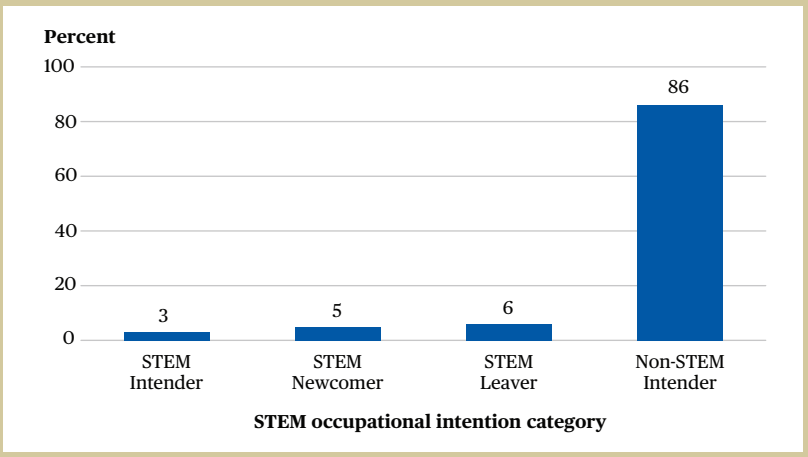
STEM Intenders are students who, as high school freshmen in 2009, expected to be in a STEM occupational field at age 30 and maintained that intention when surveyed again in 2012. STEM Intenders represent **3 percent** of the population. STEM Intenders include those who changed from one STEM career to another within STEM.

STEM Newcomers are students who, as high school freshmen in 2009, expected to be in a non-STEM occupational field at age 30 but in 2012 changed their occupational expectation to a STEM field. STEM Newcomers represent **5 percent** of the population.

STEM Leavers are students who, as high school freshmen in 2009, expected to be in a STEM occupational field at age 30 but in 2012 changed their occupational expectation to a non-STEM field. STEM Leavers represent **6 percent** of the population.

Non-STEM Intenders are students who, as high school freshmen in 2009, expected to be in an occupation in a field other than STEM, and in 2012 reported expectations for an occupation in a field other than STEM at age 30. Non-STEM Intenders represent **86 percent** of the population.

FIGURE 2. Distribution of fall 2009 ninth-graders in spring 2012, by STEM occupational intention categories



NOTE: Students wrote in their expected occupation at age 30 in both 2009 and 2012. STEM occupations include life and physical science, engineering, mathematics, and information technology. STEM Intenders include students who wrote in any STEM occupation in both 2009 and 2012. STEM Newcomers include students who wrote in a non-STEM occupation in 2009 and a STEM occupation in 2012. STEM Leavers include students who wrote in a STEM occupation in 2009 and a non-STEM occupation in 2012. Non-STEM Intenders include students who wrote in a non-STEM occupation in both 2009 and 2012. Students with missing data at either time were not included.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), 2013 Update and High School Transcript File.

Thus, by spring 2012, 8 percent of students who were high school freshmen in 2009 expected to pursue a STEM career (i.e., STEM Intenders, STEM Newcomers); 92 percent did not (i.e., STEM Leavers, Non-STEM Intenders).

The comparisons highlighted in the text are statistically significant at the $p < .05$ level. Only statistically significant differences are described in the text of the report. No adjustments were made for multiple comparisons. For additional information about *p* values and the data or methods used in this study, see the **Technical Notes** at the end of the report.

STUDY QUESTIONS

1 **What are the student characteristics of STEM Intenders, STEM Newcomers, STEM Leavers, and Non-STEM Intenders?**

2 **What are the family and school characteristics of STEM Intenders, STEM Newcomers, STEM Leavers, and Non-STEM Intenders?**

3 **What are the similarities and differences in high school STEM coursetaking of STEM Intenders, STEM Newcomers, STEM Leavers, and Non-STEM Intenders?**

Key Findings

- Among STEM Intenders, a higher percentage were male (77 percent) than female (23 percent). Among Non-STEM Intenders, a higher percentage were female (54 percent) than male (46 percent) (figure 3).
- A higher percentage of STEM Intenders than Non-STEM Intenders were White (60 percent compared to 51 percent), and a lower percentage were Black (9 percent compared to 14 percent) (figure 4).
- Among STEM Intenders, STEM Newcomers, and STEM Leavers, a higher percentage had a parent whose highest degree was an associate's or bachelor's degree compared to all students (45 percent compared to 39 percent) (figure 5).
- A higher percentage of STEM Intenders compared to Non-STEM Intenders had a parent with an occupation in a STEM field (18 percent compared to 9 percent) (figure 6).
- A higher percentage of STEM Intenders compared to Non-STEM Intenders took a mathematics course higher than algebra I by the end of ninth grade (57 percent compared to 34 percent) (figure 7).
- A higher percentage of STEM Intenders compared to Non-STEM Intenders were on an academic track (55 percent compared to 34 percent) (figure 8).

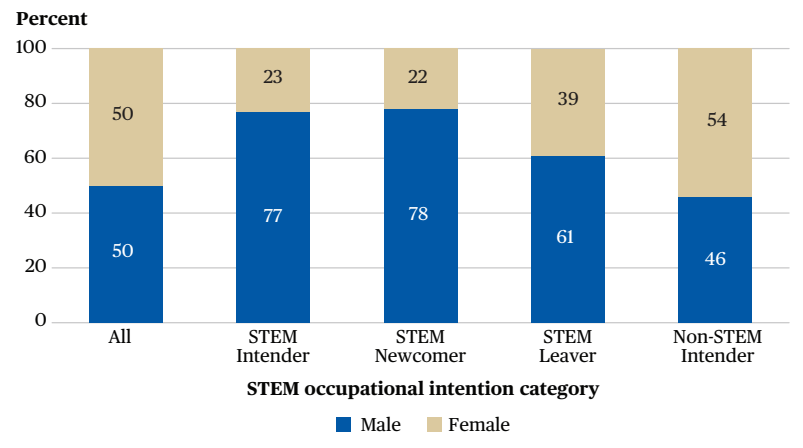
1 What are the student characteristics of STEM Intenders, STEM Newcomers, and Non-STEM Intenders?

Approximately half of 2009 ninth-graders in 2012 were male and half were female, but 77 percent of STEM Intenders were male and 23 percent were female. Similar to STEM Intenders, 78 percent of STEM Newcomers were male and 22 percent were female (figure 3).

While a small percentage of ninth-graders reported intentions to pursue STEM, there was significant variation by race/ethnicity (figure 4).

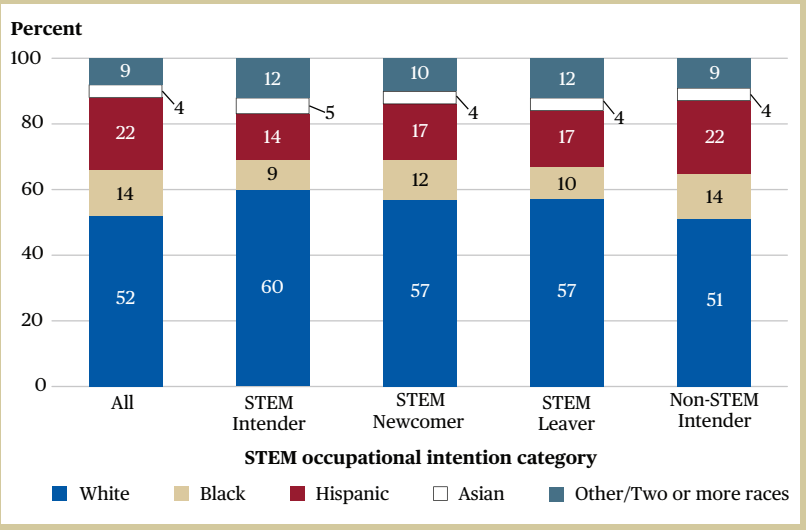
Approximately half of the fall 2009 ninth-graders in spring 2012 were White (52 percent), 14 percent were Black, 22 percent were Hispanic, 4 percent were Asian, and 9 percent were Other/Two or more races. By comparison, the racial/ethnic distribution of STEM Intenders was 60 percent White, 9 percent Black, 14 percent Hispanic, 5 percent Asian, and 12 percent Other/Two or more races.

FIGURE 3. Percentage distribution of fall 2009 ninth-graders in spring 2012 in each STEM occupational intention category, by sex



SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), 2013 Update and High School Transcript File.

FIGURE 4. Percentage distribution of fall 2009 ninth-graders in spring 2012 for each STEM occupational intention category, by student's race/ethnicity



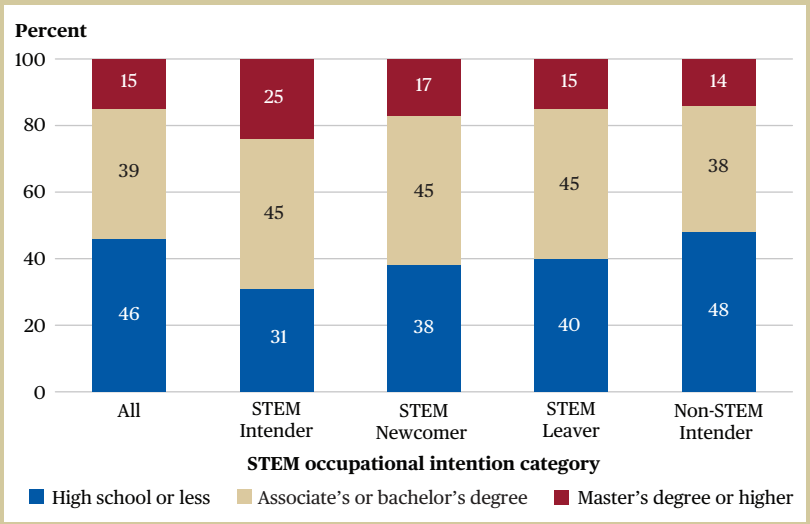
NOTE: Detail may not sum to 100 because of rounding. Black includes African American, Hispanic includes Latino, Other/Two or more races includes American Indian, Alaska Native, Pacific Islander, Native Hawaiian, and respondents having origins in more than one race.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), 2013 Update and High School Transcript File.

2 What are the family and school characteristics of STEM Intenders, STEM Newcomers, STEM Leavers, and Non-STEM Intenders?

Family Characteristics

For the sample, a "parent" could be a biological parent, adoptive parent, stepparent, other relative, or other guardian. Overall, 39 percent of 2009 ninth-graders in 2012 had a parent with an associate's or bachelor's degree, and 15 percent had a parent with a master's degree or higher (figure 5). A higher percentage of STEM Intenders than Non-STEM Intenders had a parent whose highest degree was an associate's or bachelor's degree (45 percent compared to 38 percent), and a higher percentage had a parent whose highest degree was a master's degree or higher (25 percent compared to 14 percent). The percentage of students whose parent's highest degree was an associate's or bachelor's degree was not different between STEM Intenders, STEM Newcomers, and STEM Leavers (45 percent each).

FIGURE 5. Percentage distribution of fall 2009 ninth-graders in spring 2012 for each STEM occupational intention category, by parent's educational attainment



NOTE: Detail may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), 2013 Update and High School Transcript File.

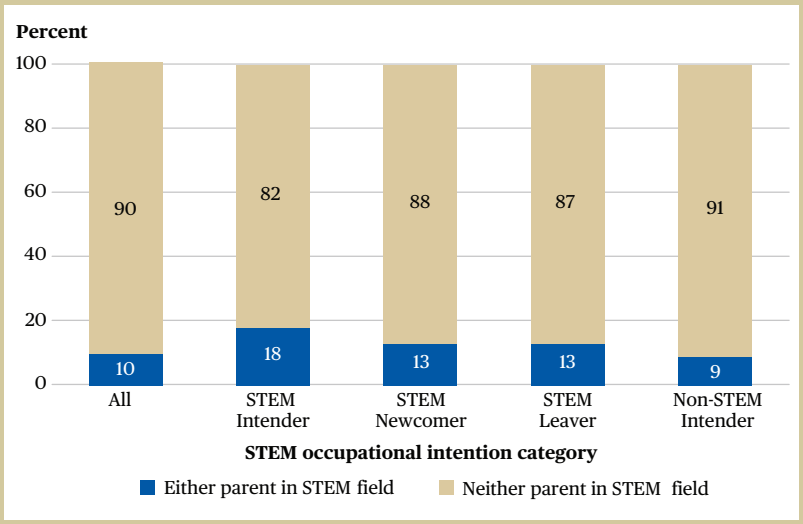
This brief examines the most recent job or occupation of the adult in the student's house acting in the role of parent (figure 6). Overall, approximately 10 percent of students had at least one parent in a STEM field when the student was in ninth grade. Compared to Non-STEM Intenders (9 percent), a higher percentage of STEM Intenders, STEM Newcomers, and STEM Leavers had at least one parent in a STEM field (18 percent, 13 percent, and 13 percent, respectively).

A higher percentage of STEM Intenders (38 percent) than STEM Leavers (28 percent) or Non-STEM Intenders (24 percent) had family income greater than $95,000. There was not a statistically significant difference between the percentage of STEM Intenders and STEM Newcomers whose family income was above $95,000 (table 1).

School Characteristics

There was not a consistent pattern between school control (public versus private) or school urbanicity and students' STEM occupational intentions (table A-1). For example, there were not statistically significant differences between public and private school students in the rate of STEM Intenders, STEM Newcomers, or STEM Leavers. Looking at urbanicity, a lower percentage of STEM Intenders (17 percent) attended rural schools compared to Non-STEM Intenders (23 percent) and STEM Leavers (26 percent). There were not statistically significant differences in rates of STEM Intenders or other occupational intention categories in schools classified as city, suburb, or town (table A-1).

FIGURE 6. Percentage distribution of fall 2009 ninth-graders in spring 2012 for each STEM occupational intention category, by parent's occupational field



NOTE: Detail may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), 2013 Update and High School Transcript File.

Table 1. Percentage distribution of fall 2009 ninth-graders, by STEM occupational intention categories and total family income in 2008

Total family income in 2008	STEM Intender	STEM Newcomer	STEM Leaver	Non-STEM Intender
Less than or equal to $35,000	15	29	26	33
Between $35,000 and $95,000	47	40	47	43
Greater than $95,000	38	31	28	24

NOTE: Detail may not sum to 100 because of rounding. Standard errors can be found in table B-1.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), 2013 Update and High School Transcript File.

3 What are the similarities and differences in high school STEM coursetaking of STEM Intenders, STEM Newcomers, STEM Leavers, and Non-STEM Intenders?

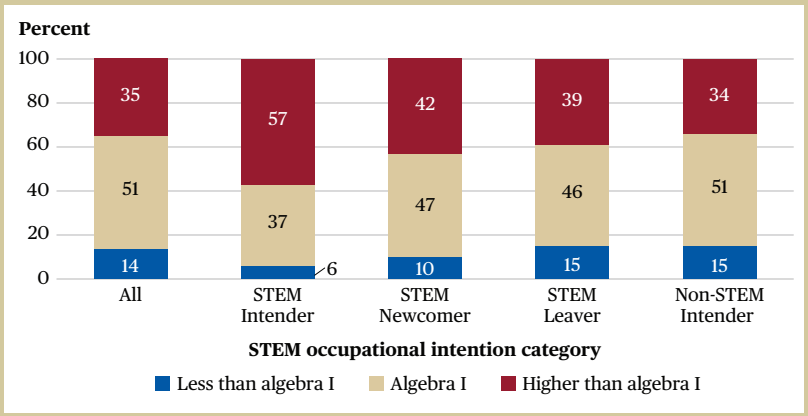
Which mathematics and science courses students take in ninth grade can lead them down different pathways. Algebra I is a prerequisite for higher level mathematics and science courses. Early or late completion of algebra I could lead a student to different college majors or career paths.

A higher percentage of STEM Intenders than Non-STEM Intenders took a math course higher than algebra I by the end of ninth grade (57 percent compared to 34 percent) (figure 7).

There was no difference in the percentage of STEM Intenders and Non-STEM Intenders who took either general or advanced science courses (table A-2). Advanced science courses include specialty courses (aerospace, anatomy, microbiology), advanced studies courses, Advanced Placement (AP) courses and International Baccalaureate (IB) courses.

Looking at completing specific mathematics and science courses, a greater percentage of STEM Intenders and STEM Newcomers took at least one credit in precalculus, calculus, or physics compared to STEM Leavers and Non-STEM Intenders (table A-2).

FIGURE 7. Percentage distribution of fall 2009 ninth-graders in spring 2012 for each STEM occupational intention category, by student's highest level of mathematics completed by the end of ninth grade

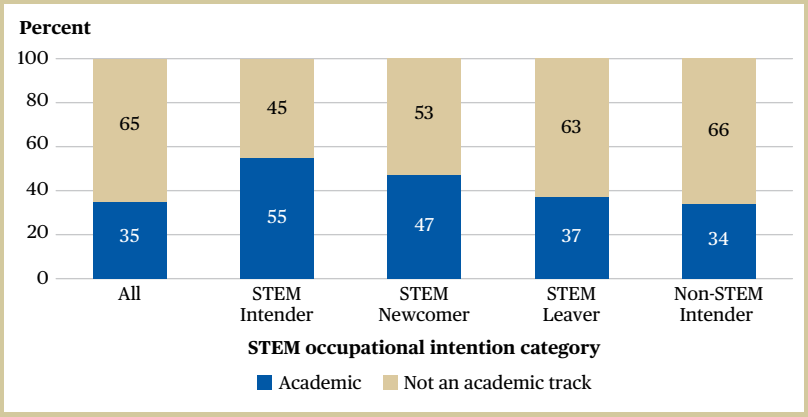


NOTE: Details may not sum to 100 because of rounding. Courses less than algebra I include no math, basic math, other math, and prealgebra. Courses higher than algebra I include geometry, algebra II, trigonometry, other advanced math, and precalculus.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), 2013 Update and High School Transcript File.

Many higher paying occupations–both STEM and non-STEM–require college degrees. According to the National Science Board (2019), "S&E [science and engineering] occupations"–defined as life science, computer and mathematical science, physical science, social science, and engineering–are generally assumed to require at least a bachelor's degree in an S&E field. Pursuing an academic track in high school can help ensure students' access to postsecondary education. Students with interests and intentions outside of STEM fields may intend to pursue postsecondary education and take courses on an academic track. To be on an academic track, a student must earn four credits in English, three credits in math with one higher than algebra II, three credits in science with one higher than biology, three credits in social studies with one in U.S. or world history, and two credits in one foreign language. A higher percentage of STEM Intenders than Non-STEM Intenders were on an academic track (55 percent compared to 34 percent) (figure 8).

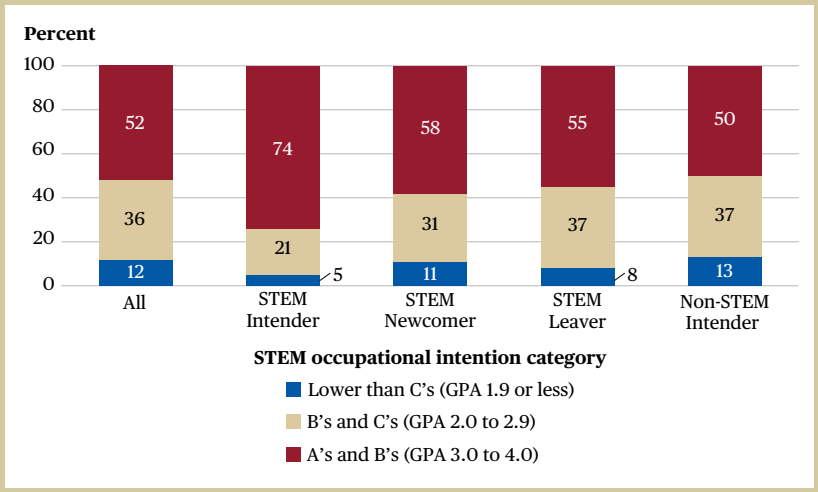
In addition to differences between STEM Intenders and Non-STEM Intenders in courses taken and being on an academic track, there were also differences in their overall high school GPA scores. A higher percentage of STEM Intenders (74 percent) than STEM Newcomers (58 percent), STEM Leavers (55 percent), and Non-STEM Intenders (50 percent) had GPAs between 3.0 and 4.0 (figure 9).

FIGURE 8. Percentage distribution of fall 2009 ninth-graders in spring 2012 for each STEM occupational intention category, by academic track



NOTE: Students on an academic track must earn four credits in English, three credits in math with one higher than algebra II, three credits in science with one higher than biology, three credits in social studies with one in U.S. or world history, and two credits in one foreign language.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), 2013 Update and High School Transcript File.

FIGURE 9. Percentage distribution of fall 2009 ninth-graders in spring 2012 for each occupational intention category, by overall unweighted high school GPA



NOTE: Detail may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), 2013 Update and High School Transcript File.

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https://nces.ed.gov/pub-search/pubsinfo.asp?pubid=2020167

Readers may also be interested in the following NCES products related to topics covered in this Statistics in Brief:

Health and STEM Career Expectations and Science Literacy Achievement of U.S. 15-Year-Old Students (NCES 2020-034). https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020034.

High School Longitudinal Study of 2009 (HSLS:09) 2013 Update and High School Transcript Study: A First Look at Fall 2009 Ninth-Graders in 2013 (NCES 2015-037rev). http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015037rev.

High School Longitudinal Study of 2009 (HSLS:09) First Follow-up: A First Look at Fall 2009 Ninth-Graders in 2012 (NCES 2014-360). https://nces.ed.gov/pubs2014/2014360.pdf.

High School Longitudinal Study of 2009 (HSLS:09): A First Look at Fall 2009 Ninth-Graders (NCES 2011-327). https://nces.ed.gov/pubs2011/2011327.pdf.

Male and Female High School Students' Expectations for Working in a Health-Related Field (NCES 2020-082). https://nces.ed.gov/pubsearch/pubinfo.asp?pubid=2020082.

Technical Notes

Survey Methodology

Starting with a cohort of students who were in the ninth grade in fall 2009, HSLS:09 follows students throughout their high school and early adult years to understand their trajectories from the beginning of high school into postsecondary education, the workforce, and beyond. The estimates provided in this Statistics in Brief are based on data collected in the base year (fall 2009), first follow-up study (spring 2012), and 2013 update (2013) of the HSLS:09. The HSLS:09 base year and first follow-up study included a student questionnaire, and questionnaires administered to students' parents, school counselors, and school administrators. The student questionnaire collected information such as expectations and aspirations; high school interests; grade progression; and demographics and family background. The 2013 update collected information on high school completion and postsecondary plans. High school transcripts were also collected. The update did not include new information about students' STEM occupational intentions.

In the base-year HSLS:09, students were sampled through a two-stage process: schools were sampled first, followed by students within schools. The target population at the school level was defined as regular public schools (including public charter schools) and private schools in the 50 states and the District of Columbia that provided instruction in both ninth and eleventh grades. Stratified random sampling based on school type (public, private-Catholic, private-other), geographic region (Northeast, Midwest, South, West), and geographic location of the school (city, suburban, town, rural) resulted in the identification of 1,889 eligible schools. A total of 944 of these schools participated in the study, resulting in a 55 percent weighted response rate, or 50 percent unweighted response rate.

In the second stage of sampling, students were randomly selected using a stratified systematic sampling procedure from base-year enrollment lists provided by administrative contacts at the school. The second-stage sampling strata were defined by the students' race/ethnicity (White, Black, Hispanic, Asian, Other) specified by the school, yielding approximately 26,300 sampled students (or about 28 students per school). The target population of students was defined to include all ninth-grade students who attended the study-eligible schools in the fall 2009 term. Students who were unable to directly participate in the study because of language barriers or severe disabilities were retained in the sample, and contextual data were sought for them. Their ability to complete the study instruments was reassessed in the first follow-up.

Of the 26,300 sampled students, all 25,200 base-year, study-eligible students were eligible to participate in the assessment, with the exception of a few cases in which students passed away or were found to not have been in ninth grade during the base year. (Two exceptions to this are sample members who died or were removed as a result of base-year sampling errors discovered only in the first follow-up; e.g., the student was not a ninth-grader in 2009.) Approximately 20,600 students participated in the assessment, resulting in a weighted student-level response rate of 82 percent. Unlike prior NCES secondary studies, the HSLS:09 student sample was not freshened to include a representative later-grade cohort. As a result, first follow-up estimates from the sample are associated only with the ninth-grade cohort 2.5 years later and not the universe of students attending the eleventh grade in the spring of 2012.

Two broad categories of error occur in estimates generated from surveys: sampling and nonsampling errors. Sampling errors occur when observations are based on samples rather than on entire populations. The standard error of a sample statistic is a measure of the variation due to sampling and indicates the precision of the statistic, that is, how close to the population value the estimated statistic is likely to be. The complex sampling designs used in HSLS:09 must be taken into account when calculating such variance estimates as standard errors. The variance for the estimates in this Statistics in Brief was calculated using balanced repeated replication to accommodate the complex sample design.

Nonsampling error can be attributed to several sources: incomplete information about all respondents (e.g., some students or schools refused to participate or students participated but answered only certain items); differences among respondents in question interpretation; mistakes in recording or coding data; and other errors in collecting, processing, and imputing missing data. Standard quality-control procedures were followed in the HSLS:09 data collection process in order to minimize nonsampling errors.

For more information on HSLS:09 methodology, see the following:

High School Longitudinal Study of 2009 (HSLS:09): Base-Year Data File Documentation (NCES 2011-328). https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011328.

High School Longitudinal Study of 2009 (HSLS:09) Base Year to First Follow-Up Data File Documentation (NCES 2014-361). https://nces.ed.gov/pubs2014/2014361.pdf.

High School Longitudinal Study of 2009 (HSLS:09) 2013 Update and High School Transcript Data File Documentation (NCES 2015-036). https://nces.ed.gov/pubs2015/2015036.pdf.

Response Rates, Weighting, and Variables Used in the Analysis

NCES requires that for any stage of data collection yielding a response rate below 85 percent, the data must be evaluated for nonresponse bias (Seastrom 2014). For this brief, this requirement pertains to unit response rates—the percentage of students completing the student questionnaire—and item response rates for each of the questionnaire items used in this analysis.

The overall student response rates for the fall 2009, spring 2012, and 2013 Update student questionnaires were 86 percent, 82 percent, and 79 percent, respectively. The unit weighted response rate for students with response in the 2013 Update, base year, and first follow-up was 62.5 percent.

A total of 18 variables were used for the student base-year to first follow-up to 2013 Update longitudinal unit nonresponse bias analysis. These 18 variables resulted in 67 comparisons (tests). Bias was detected for 41.8 percent of the 67 tests implemented with the student base-year to first follow-up to 2013 Update longitudinal weight (W3W1W2STU). After applying the nonresponse adjustments, no bias was statistically significant in any of the 67 tests. Details are available in Ingels et al. 2015. Estimates in this brief were weighted to adjust for the unequal probability of selection and enable the production of national estimates. Because this brief uses variables from the base year, first follow-up, and 2013 Update, the student weight, W3W1W2STU, was used to account for base-year school nonresponse and student nonresponse in the base year, first follow-up, and 2013 Update.

The variables used and weighted response rate are displayed in exhibit 1.

Exhibit 1: Variables used in this brief and response rates

Variable label	Variable name	Nonresponse adjusted weighted response rate
Student's expected occupation at age 30: STEM code 1 in base year	X1STU30OCC_STEM1	98
Student's expected occupation at age 30: STEM code 1 in first follow-up	X2STU30OCC_STEM1	98
Student's sex	X2SEX	100
Student's race/ethnicity composite	X2RACE	100
Student's interest in mathematics course in ninth grade	X1MTHINT	96
Student's interest in science course in ninth grade	X1SCIINT	96
Student's engagement in school in ninth grade	X1SCHOOLENG	97
Student's final grade in most advanced eighth-grade mathematics course	S1M8GRADE	98
Student's final grade in most advanced eighth-grade science course	S1S8GRADE	97
Parents'/guardians' highest level of education	X1PAREDU	83
Parent 1's current/most recent occupation: STEM code 1 (subdomain)	X1PAR1OCC_STEM1	83
Parent 2's current/most recent occupation: STEM code 1 (subdomain)	X1PAR2OCC_STEM1	83
Total family income from all sources in 2008	X1FAMINCOME	83
School locale (urbanicity)	X1LOCALE	100
School control	X1CONTROL	100
Student's highest level of math completed by the end of ninth grade	X3THIMATH9	92
Student's highest level of science completed by the end of ninth grade	X3THISCI9	92
At least one credit earned in: algebra II	X3T1CREDALG2	95
At least one credit earned in: precalculus	X3T1CREDPREC	95
At least one credit earned in: calculus	X3T1CREDCALC	95
At least one credit earned in: statistics	X3T1CREDSTAT	95
Credits earned in computer/information sciences	X3TCREDCOMPSCI	95
At least one credit earned in: chemistry	X3T1CREDCHEM	95
At least one credit earned in: physics	X3T1CREDPHYS	95
Academic track/concentrator	X3TACADTRCK	95
Occupational concentrator	X3TOCCUCON	95
Overall computed GPA	X3TGPATOT	95

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Survey, Base Year, First Follow-Up, and 2013 Update.

The four variables related to family characteristics, taken from the parent sample, had response rates below 85 percent.

Additional detail on constructs and scales follow.

Occupational Intention

In the base-year and first follow-up surveys, students were asked what job they expect or plan to have at age 30. The jobs written in by students were classified into the corresponding Occupational Information Network (O*NET) code, and then classified into Not a STEM occupation; Life and Physical Science, Engineering, Mathematics, and Information Technology Occupations; and Health Occupations. In this brief, the analyses of STEM occupational intentions treated Health Occupations as Not a STEM occupation. The occupational intention variables used in the analyses were created from X1STU30OCC_STEM1 (base year) and X2STU30OCC_STEM1 (first follow-up). For STEM occupational intentions, students whose jobs were classified as Life and Physical Science, Engineering, Mathematics, and Information Technology Occupations in both X1STU30OCC_STEM1 and X2STU30OCC_STEM1 were coded as "STEM Intenders"; students whose jobs were classified as either Not a STEM occupation or Health Occupations in X1STU30OCC_STEM1 and Life and Physical Science, Engineering, Mathematics, and Information Technology Occupations in X2STU30OCC_STEM1 were coded as "STEM Newcomers"; students whose jobs were classified as Life and Physical Science, Engineering, Mathematics, and Information Technology Occupations in X1STU30OCC_STEM1 and Not a STEM occupation or Health Occupations in X2STU30OCC_STEM1 were coded as "STEM Leavers"; and students whose jobs were classified as either Not a STEM Occupation or Health Occupations in both X1STU30OCC_STEM1 and X2STU30OCC_STEM1 were coded as "Non-STEM Intenders."

Responses that were split across O*NET subdomains, did not have a specified O*NET subdomain, or were uncodeable were treated as missing. As a result, 8 percent of students who provided occupational intentions data in both fall 2009 and spring 2012 were coded as missing. Overall, data were available for 71 percent of respondents. Because of the amount of missing data from nonresponse (21 percent) and other missing data, respondents were compared to nonrespondents on their sex, race, socioeconomic status quintile, school locale, and school institutional control. Differences between respondents and nonrespondents were tested for statistical significance using an alpha of .05. Respondents did not differ from nonrespondents on these characteristics.

Interest in Science or Mathematics, and School Engagement

Interest. Students' interest in their base-year mathematics and science courses was measured as a scale of six variables that asked students the degree to which a student enjoyed the subject, felt the course was a waste of time, rated the course as their favorite subject, and rated the course as their least favorite subject. The variables X1MTHINT and X1SCIINT are scales constructed through principal components analysis, with a mean of 0 and standard deviation of 1. Higher scale values represent greater interest. For the analyses in this brief, scale scores greater than 1 were recoded as high interest, scale scores between negative 1 and positive 1 were recoded as moderate interest, and scale scores lower than negative 1 were recoded as low interest.

School engagement. Students' engagement in their school during the base year was measured as a scale of four variables that measured how often the ninth graders went to class without completing their homework, went to class without pencil or paper, went to class without books, and went to class late. The variable X1SCHOOLENG was created through principal factor components analysis of four variables and standardized to a mean of 0 and standard deviation of 1, where higher values represent greater engagement. For the analyses in this brief, scale scores greater than 1 were recoded as high school engagement, scale scores between negative 1 and positive 1 were recoded as moderate school engagement, and scale scores lower than negative 1 were recoded as low school engagement.

Coursetaking

Highest level. Students' highest level of math and science taken by the end of their ninth-grade year was taken from their transcript data. Categories for highest level of mathematics taken in ninth grade included no math, basic math, other math, prealgebra I, algebra I, geometry, algebra II, trigonometry, other advanced math (including probability and statistics and other AP/IB math), and precalculus. These categories were recoded into less than algebra I (no math, basic math, other math, prealgebra I), algebra I, and higher than algebra I (geometry, algebra II, trigonometry, other advanced math, and precalculus). Categories for highest level of science taken in ninth grade included no science, general science, specialty science, advanced science, and AP/IB science. These categories were recoded into no science, general science, and advanced science (specialty science, advanced science, or AP/IB science).

Credits earned. Transcript data were used to determine if at least one Carnegie unit of various courses was earned. A Carnegie unit is equivalent to a 1-year academic course taken 1 period a day, 5 days a week. For each course, algebra I, algebra II, precalculus, calculus, geometry, statistics/probability, trigonometry, chemistry, physics, a student was coded as either yes, at least one credit earned, or no.

Academic track. Being on an academic track is defined by both number of credits earned and specific levels attained for math, science, and social studies. Students are flagged as having been on an

academic track if they earned at least four credits in English, three credits in math with one higher than algebra II, three credits in science with one higher than biology, three credits in social studies with one in U.S. or world history, and two in one foreign language. Only credits accrued in ninth through twelfth grade are included.

Occupational concentrator. Being an occupational concentrator is defined as completing three credits in a particular occupational concentration.

Statistical Procedures

Comparisons of proportions were tested using Student's *t* statistic. Differences between estimates were tested against the probability of a Type 1 error or significance level. The statistical significance of each comparison was determined by calculating the Student's *t* value for the difference between each pair of proportions and comparing the *t* value with published tables of significance levels for two-tailed hypothesis testing. Student's *t* values were computed to test differences between independent estimates using the following formula:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2}}$$

Where E_1 and E_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors. All comparisons highlighted in the text are statistically significant at the $p < .05$ level.

Some tests, however, compared estimates from related groups (STEM Intenders compared to all students). To account for sample dependency, the *t* statistic for dependent samples was computed using the following formula,

$$t = \frac{E_{sub} - E_{tot}}{\sqrt{\left(se_{sub}^2 + se_{tot}^2\right) - 2p\left(se_{sub}^2\right)}}$$

where *p* is the proportion of the subgroup to the total group.

No adjustments were made for multiple comparisons. It is important to note that many of the variables examined in this report may be related to one another and to other variables not included in the analyses. Complex relationships should be fully explored and warrant further analysis. Readers are cautioned against drawing causal inferences based on the results presented.

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APPENDIX A. DATA TABLES

Table A-1. Percentage distribution of fall 2009 ninth-graders in spring 2012, by STEM occupational intention categories and student, family, and school characteristics

Characteristics and Coursetaking	All	STEM Intender	STEM Newcomer	STEM Leaver	Non-STEM Intender
Total	100.0	3.4	4.9	5.7	86.1
Sex					
Male	50.2	77.2	77.9	60.7	46.5
Female	49.8	22.8	22.1	39.4	53.5
Race/ethnicity[1]					
White	52.0	59.8	56.9	57.1	51.1
Black	13.7	8.9	12.1	10.2	14.2
Hispanic	21.6	14.3	17.2	16.8	22.4
Asian	3.6	5.1	3.8	4.3	3.5
Other/Two or more races	9.1	12.0	10.1	11.7	8.7
Interest in mathematics course in ninth grade[2]					
Not taking mathematics course	9.9	4.6	10.2	8.6	10.2
Low interest	14.7	8.2	13.6	14.9	15.0
Moderate interest	60.8	53.6	58.3	59.9	61.3
High interest	14.6	33.6	17.9	16.7	13.5
Interest in science course in ninth grade[3]					
Not taking science course	17.4	9.9	16.5	14.5	17.9
Low interest	12.8	7.4	14.2	11.6	13.0
Moderate interest	58.1	60.6	55.9	55.2	58.4
High interest	11.7	22.1	13.4	18.8	10.7
Engagement in school in ninth grade[4]					
Low engagement	15.9	8.9	17.9	11.6	16.3
Moderate engagement	62.9	64.3	59.5	64.9	62.9
High engagement	21.2	26.8	22.7	23.4	20.8
Grade in eighth-grade mathematics course					
A	34.7	55.5	41.9	37.2	33.4
B	38.1	29.8	34.3	39.2	38.6
C	18.9	10.2	15.4	19.4	19.4
D or below	8.2	4.6	8.3	4.2	8.6

See notes at end of table.

Table A-1. Percentage distribution of fall 2009 ninth-graders in spring 2012, by STEM occupational intention categories and student, family, and school characteristics—Continued

Characteristics and Coursetaking	All	STEM Intender	STEM Newcomer	STEM Leaver	Non-STEM Intender
Grade in eighth-grade science course					
A	38.7	65.2	48.3	46.1	36.6
B	37.7	25.7	31.8	34.7	38.7
C	17.8	6.6	15.3	16.1	18.5
D or below	5.8	2.5	4.5!	3.1!	6.2
Parents' highest degree					
High school diploma or less	46.2	30.7	38.2	40.2	47.8
Associate's degree or bachelor's degree	38.9	44.7	44.6	44.6	37.9
Master's degree or higher	14.9	24.6	17.2	15.2	14.3
Either parent's occupation in a STEM field					
Yes	9.5	17.7	12.6	13.3	8.7
No	90.5	82.3	87.8	86.8	91.3
Total family income in 2008					
Less than $35,000	31.8	15.5	29.4	25.6	33.1
Between $35,000 and $95,000	43.4	46.5	40.0	46.5	43.3
Greater than $95,000	24.8	38.0	30.6	27.9	23.7
School locale					
City	31.8	37.4	31.3	30.1	31.7
Suburb	33.4	36.2	37.1	34.7	32.9
Town	11.9	9.8	11.5	9.0	12.2
Rural	23.0	16.7	20.2	26.3	23.3
School control					
Public	92.9	91.4	91.5	92.1	93.0
Private	7.1	8.6	8.5	7.9	7.0

See notes at end of table.

Table A-1. Percentage distribution of fall 2009 ninth-graders in spring 2012, by STEM occupational intention categories and student, family, and school characteristics—Continued

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Black includes African American, Hispanic includes Latino, Other/Two or more races includes American Indian, Alaska Native, Pacific Islander, Native Hawaiian, and respondents having origins in more than one race.
[2] Interest in mathematics was constructed from a scale of the sample member's interest in his/her base-year math course; higher values represent greater interest in his/her base-year math course. The scale was created through principal components factor analysis and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1MENJOYING, S1MWASTE, S1MBORING, S1FAVSUBJ, S1LEASTSUBJ, and S1MENJOYS. Students with a scale score lower than -1 were classified as low interest, students with a scale score between -1 and 1 were classified as moderate interest, and students with a scale score greater than 1 were classified as high interest.
[3] Interest in science was constructed from a scale of the sample member's interest in his/her base-year science course; higher values represent greater interest in his/her base-year science course. Variable was created through principal components factor analysis and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1SENJOYING, S1SWASTE, S1SBORING, S1FAVSUBJ, S1LEASTSUBJ, and S1SENJOYS. Students with a scale score lower than -1 were classified as low interest, students with a scale score between -1 and 1 were classified as moderate interest, and students with a scale score greater than 1 were classified as high interest.
[4] Engagement in school in ninth grade was constructed from a scale of the sample member's school engagement; higher values represent greater school engagement. Variable was created through principal factor components analysis and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1NOHWDN, S1NOPAPER, S1NOBOOKS, and S1LATE. Students with a scale score lower than -1 were classified as low engagement, students with a scale score between -1 and 1 were classified as moderate engagement, and students with a scale score greater than 1 were classified as high engagement.
NOTE: Detail may not sum to 100 because of rounding. STEM Intenders are students who, as high school freshmen in 2009, expected to be in a STEM occupational field at age 30 and maintained that intention when surveyed again in 2012. STEM Newcomers are students who, as high school freshmen in 2009, expected to be in a non-STEM occupational field at age 30 but in 2012 changed their occupational expectation to a STEM field. STEM Leavers are students who, as high school freshmen in 2009, expected to be in a STEM occupational field at age 30 but in 2012 changed to a non-STEM field. Non-STEM intenders are students who did not expect to be in a STEM occupational field at age 30 at either time point.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Survey, Base Year, First Follow-Up, and 2013 Update.

Table A-2. Percentage distribution of fall 2009 ninth-graders in spring 2012, by STEM occupational intention categories and high school coursetaking

Coursetaking	All	STEM Intender	STEM Newcomer	STEM Leaver	Non-STEM Intender
Total	100.0	3.4	4.9	5.7	86.1
Student's highest level of mathematics completed by end of ninth grade					
Less than algebra I	14.4	5.7	10.4	15.0	14.9
Algebra I	50.5	37.2	47.5	46.4	51.5
Higher than algebra I	35.1	57.0	42.1	38.6	33.6
Student's highest level of science taken in ninth grade[1]					
No science	8.9	4.2!	6.8!	6.5	9.3
General science	86.1	90.4	88.6	89.3	85.6
Advanced science (specialty, IB, AP)	5.0	5.5!	4.6	4.2	5.0
Took at least one credit in algebra II					
Yes	59.4	67.4	64.0	61.0	58.7
No	40.6	32.6	36.0	39.0	41.3
Took at least one credit in precalculus					
Yes	27.9	49.1	42.2	29.4	26.2
No	72.1	50.9	57.8	70.6	73.8
Took at least one credit in calculus					
Yes	13.7	39.1	28.8	14.7	11.8
No	86.3	60.9	71.2	85.3	88.2
Took at least one credit in statistics					
Yes	10.1	17.7	9.9	11.9	9.6
No	90.0	82.3	90.1	88.1	90.4
Took at least one credit in geometry					
Yes	77.6	82.3	79.4	77.9	77.3
No	22.4	17.7	20.6	22.1	22.7
Took at least one credit in trigonometry					
Yes	14.2	23.3	16.5	17.0	13.6
No	85.8	76.7	83.5	83.0	86.4
Took at least one credit in chemistry					
Yes	63.2	82.8	67.7	69.8	61.8
No	36.8	17.2	32.3	30.2	38.2

See notes at end of table.

Table A-2. Percentage distribution of fall 2009 ninth-graders in spring 2012, by STEM occupational intention categories and high school coursetaking—Continued

Coursetaking	All	STEM Intender	STEM Newcomer	STEM Leaver	Non-STEM Intender
Took at least one credit in physics					
Yes	34.0	63.5	51.2	38.0	31.6
No	66.0	36.5	48.8	62.0	68.4
Took at least one credit in biology					
Yes	88.0	93.6	91.7	89.3	87.5
No	12.0	6.4	8.3	10.7	12.5
Took at least one credit in computer science/information technology					
Yes	30.4	35.1	38.3	36.0	29.5
No	69.6	64.9	61.7	64.0	70.5
Took an academic track					
Yes	35.3	54.6	46.9	37.3	33.7
No	64.7	45.4	53.1	62.7	66.3
Overall unweighted high school GPA					
A's and B's (GPA 3.0 to 4.0)	51.6	73.6	58.3	54.7	50.1
B's and C's (GPA 2.0 to 2.9)	36.2	21.4	31.1	36.9	37.1
C's and below (GPA 1.9 and below)	12.2	5.1	10.6	8.4	12.8

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] General science courses include courses such as earth science, life science, physical science, technological inquiry, biology, chemistry, and physics. Advanced science courses include specialty courses (aerospace, anatomy, microbiology), advanced studies courses, Advanced Placement (AP) courses, and International Baccalaureate (IB) courses.
NOTE: Detail may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Survey, Base Year, First Follow-Up, and 2013 Update.

APPENDIX B. STANDARD ERROR TABLES

Table B-1. Standard errors for table A-1: Percentage distribution of fall 2009 ninth-graders in spring 2012, by STEM occupational intention categories and student, family, and school characteristics

Student characteristics	All	STEM Intender	STEM Newcomer	STEM Leaver	Non-STEM Intender
Total		0.25	0.35	0.31	0.49
Sex					
Male	0.78	3.05	2.61	2.95	0.78
Female	0.78	3.05	2.61	2.95	0.78
Race/ethnicity					
White	1.24	3.66	3.42	3.95	1.26
Black	0.92	2.07	2.42	2.24	0.99
Hispanic	1.09	3.35	3.39	3.01	1.12
Asian	0.40	1.68	0.86	0.97	0.46
Other/Two or more races	0.46	2.83	1.56	2.46	0.43
Interest in mathematics course in ninth grade					
Not taking mathematics course	0.64	1.20	2.29	1.47	0.69
Low interest	0.51	1.68	2.02	2.96	0.57
Moderate interest	0.77	3.78	2.96	3.08	0.79
High interest	0.53	3.74	1.87	2.04	0.59
Interest in science course in ninth grade					
Not taking science course	1.16	2.11	2.39	2.35	1.22
Low interest	0.64	1.77	2.34	2.57	0.73
Moderate interest	0.99	3.08	2.97	2.92	1.11
High interest	0.49	2.73	2.06	2.47	0.55
Engagement in school in ninth grade					
Low engagement	0.59	1.94	2.39	1.67	0.63
Moderate engagement	0.69	4.06	2.83	2.88	0.78
High engagement	0.59	3.38	2.53	2.65	0.65
Grade in eighth-grade mathematics course					
A	0.94	3.76	3.44	2.97	0.98
B	0.76	3.38	2.98	2.53	0.83
C	0.58	2.24	2.54	2.61	0.64
D or below	0.51	1.85	2.57	1.02	0.56

See notes at end of table.

Table B-1. Standard errors for table A-1: Percentage distribution of fall 2009 ninth-graders in spring 2012, by STEM occupational intention categories and student, family, and school characteristics—Continued

Student characteristics	All	STEM Intender	STEM Newcomer	STEM Leaver	Non-STEM Intender
Grade in eighth-grade science course					
A	0.97	3.39	3.67	2.60	1.00
B	0.82	3.10	3.12	2.65	0.83
C	0.76	1.49	2.41	2.80	0.85
D or below	0.41	1.27	1.35	1.09	0.44
Parents' highest degree					
High school diploma or less	1.08	3.22	2.98	3.27	1.15
Associate's degree or bachelor's degree	0.84	3.28	2.85	3.34	0.88
Master's degree or higher	0.58	2.57	1.95	2.05	0.65
Either parent's occupation in a STEM field					
Yes	0.48	2.77	1.76	2.23	0.48
No	0.48	2.77	1.76	2.23	0.48
Total family income in 2008					
Less than $35,000	1.19	3.41	3.04	3.09	1.32
Between $35,000 and $95,000	0.88	4.41	3.18	3.33	0.98
Greater than $95,000	0.90	3.38	2.69	2.95	0.97
School locale					
City	0.34	3.53	3.50	2.77	0.41
Suburb	0.24	3.12	2.98	2.45	0.34
Town	0.17	1.73	1.96	1.74	0.20
Rural	0.22	2.37	3.19	2.41	0.28
School control					
Public	0.09	1.46	1.13	0.96	0.13
Private	0.09	1.46	1.13	0.96	0.13

Not applicable.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Survey, Base Year, First Follow-Up, and 2013 Update.

Table B-2. Standard errors for table A-2: Percentage distribution of fall 2009 ninth-graders in spring 2012, by STEM occupational intention categories and high school coursetaking

Student characteristics	All	STEM Intender	STEM Newcomer	STEM Leaver	Non-STEM Intender
Total		0.25	0.35	0.31	0.49
Student's highest level of mathematics completed by end of ninth grade					
Less than algebra I	0.98	1.55	2.36	2.53	1.06
Algebra I	1.15	3.32	3.14	3.07	1.23
Higher than algebra I	1.06	3.61	3.30	2.89	1.14
Student's highest level of science taken in ninth grade					
No science	0.96	1.62	1.99	1.85	1.04
General science	1.14	2.75	2.56	1.93	1.22
Advanced science (specialty, IB, AP)	0.61	1.76	1.37	0.92	0.63
Took at least one credit in algebra II					
Yes	1.57	3.82	3.51	3.89	1.55
No	1.57	3.82	3.51	3.89	1.55
Took at least one credit in precalculus					
Yes	0.87	3.46	3.57	2.62	0.87
No	0.87	3.46	3.57	2.62	0.87
Took at least one credit in calculus					
Yes	0.72	3.39	3.35	1.85	0.71
No	0.72	3.39	3.35	1.85	0.71
Took at least one credit in statistics					
Yes	0.76	2.45	2.42	1.76	0.77
No	0.76	2.45	2.42	1.76	0.77
Took at least one credit in geometry					
Yes	1.08	2.93	2.94	2.27	1.09
No	1.08	2.93	2.94	2.27	1.09
Took at least one credit in trigonometry					
Yes	1.08	3.17	2.50	2.52	1.09
No	1.08	3.17	2.50	2.52	1.09
Took at least one credit in chemistry					
Yes	1.15	2.72	2.99	2.89	1.18
No	1.15	2.72	2.99	2.89	1.18

See notes at end of table.

Table B-2. Standard errors for table A-2: Percentage distribution of fall 2009 ninth-graders in spring 2012, by STEM occupational intention categories and high school coursetaking—Continued

Student characteristics	All	STEM Intender	STEM Newcomer	STEM Leaver	Non-STEM Intender
Took at least one credit in physics					
Yes	1.2	3.1	3.6	3.1	1.2
No	1.2	3.1	3.6	3.1	1.2
Took at least one credit in biology					
Yes	0.85	1.75	1.65	1.86	0.89
No	0.85	1.75	1.65	1.86	0.89
Took at least one credit in computer science/information technology					
Yes	1.46	3.31	3.64	3.79	1.44
No	1.46	3.31	3.64	3.79	1.44
Took an academic track					
Yes	0.99	3.76	3.28	2.74	1.06
No	0.99	3.76	3.28	2.74	1.06
Overall unweighted high school GPA					
A's and B's (GPA 3.0 to 4.0)	1.02	3.56	3.43	3.47	1.10
B's and C's (GPA 2.0 to 2.9)	0.79	3.27	2.86	3.54	0.83
C's and below (GPA 1.9 and below)	0.69	1.83	2.18	1.76	0.75

NOTE: Advanced science courses include Advanced Placement (AP) courses and International Baccalaureate (IB) courses.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Survey, Base Year, First Follow-Up, and 2013 Update.

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