This document provides tables underlying figures in *Education, Employment, and Earnings: Expectations of 2009 Ninth-Graders in 2016* and describes the survey methodology, sources of error in estimates, response rates and nonresponse bias, and statistical procedures for the Statistics in Brief report *Education, Employment, and Earnings: Expectations of 2009 Ninth-Graders in 2016* (2021-056). See https//nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2021056 for the body of that report.

Methodology and Technical Notes

Survey Methodology

The High School Longitudinal Study of 2009 (HSLS:09) is the fifth in a series of secondary education longitudinal studies conducted by the National Center for Education Statistics (NCES). All of the studies monitor the transition of national samples of young people from the high school to postsecondary years, including further education, participation in the workforce, and assumption of other adult roles. The core research questions for HSLS:09 explore secondary-to-postsecondary transition plans and the evolution of those plans; the paths into and out of science, technology, engineering, and mathematics; and the educational and social experiences that affect these shifts.

The HSLS:09 base-year administration took place in the 2009–10 school year, with a randomly selected sample of fall-term ninth-graders in 944 public and private high schools with both a 9th and an 11th grade. In the base year, students took a mathematics assessment and survey online, and students' parents, school administrators, and mathematics and science teachers, as well as the school's lead counselor, completed a survey on the phone or on the Web. The first follow-up took place in 2012, when most sample members were in the spring term of the 11th grade, and included dropouts, newly home-schooled students, and transfer students, as well as students who remained in their base-year school. In addition to a student questionnaire and mathematics assessment, the first follow-up included surveys for parents, administrators, and counselors.

Following the first follow-up, an update was conducted between June and December of 2013. The 2013 Update could be completed by either the sample member or a parent and was designed to gather basic information about the sample member's high school completion status or plans, postsecondary education and work plans, and the college application and financing process.

A second follow-up interview took place in 2016, when most sample members were 3 years beyond high school graduation. The second follow-up extended the focus of the study to emphasize the transition of the cohort to postsecondary education—both baccalaureate and subbaccalaureate—and the workforce, including access to higher education and choice of postsecondary institution. In addition to the survey, the second follow-up included the collection of information from student financial aid records and postsecondary transcripts in 2017.

The next wave of data collection for the HSLS:09 cohort includes postsecondary transcripts (2017–18), with the expectation that the cohort will be followed to at least age 30, with a questionnaire administration and a postsecondary education transcript collection in 2025–26.

The estimates provided in this Statistics in Brief are based on data collected through the second follow-up of the HSLS:09. More detailed information on the HSLS:09 methodology is available in *High School Longitudinal Study of 2009 (HSLS:09) Base-Year to Second Follow-up Data File Documentation* (Duprey et al. 2018).

Sample Design

Base year. 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 11th 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 56 percent weighted (or 50 percent unweighted) school response rate. HSLS:09 base-year school and student samples are nationally representative and representative at the state level for a subset of 10 states.

In the second stage, students were randomly selected from school enrollment rosters, with 25,206 eligible sample members (or about 27 students per school). The target population of students was defined as all ninth-grade students who attended the study-eligible schools in the fall 2009 term. All students who met the target population definition were deemed eligible for the study.

2013 Update. Of the 25,206 students eligible for the base year, 25,168 were eligible for the 2013 Update. Not all cases were fielded: sample members were excluded if neither base-year nor first follow-up data had been collected for them or they were out of scope for a given round. These unfielded cases are classified as nonrespondents and appear in the sample denominator for the calculation of response rates.

Second Follow-Up. The second follow-up fielded sample included 23,316 of the 23,401 sample members fielded and found eligible for the 2013 update. The 85 sample

members not fielded withdrew from the study between the end of the 2013 Update collection and the beginning of the second follow-up data collection or were found to be deceased.

Response Rates

The second follow-up data collection ended with a 74 percent participation rate (17,335 sample members participated). However, the weighted unit response rate for students with responses in the second follow-up and the base-year data collection was 67.9 percent.

Unit nonresponse bias analyses were conducted for the respondents corresponding to the analytic weight, W4STUDENT. Approximately 23.9 percent of the 67 statistical tests conducted for the student-level unit response data identified bias statistically significant at the .05 significance level prior to adjusting the weights for nonresponse. After adjustment, no tests were statistically significant at the .05 level of significance, and the median absolute relative bias was reduced by 100 percent. The results of the non-response bias analyses suggest that there is not a substantial bias due to nonresponse after adjusting for that nonresponse (Duprey et al. 2018).

At the item level, S4OCC30EARN had an unweighted item response rate of 82.1 and required nonresponse bias analysis. The characteristic with the greatest significant bias was male/female.

Weighting

Analytic weights are used in combination with software that accounts for the HSLS:09 complex survey design to produce estimates for the target population, with appropriate standard errors. When appropriately weighted, the HSLS:09 data are generalizable to the U.S. population of ninth-graders who were attending schools with both a 9th and an 11th grade in fall 2009.

Estimates for this report were produced using the analytic weight associated with the students who responded to the second follow-up in 2016/17 (W4STUDENT). This weight is for analyses specific to the second follow-up. The estimates generated with this weight are associated with the HSLS:09 target population of ninth-grade students adjusted for the number of deceased students observed in the HSLS:09 sample. Corresponding balanced repeated replicate (BRR) weights were used to compute standard errors.

Statistical Procedures

Comparisons of medians and 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.

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.

Variables Used

All variables are available through DataLab. The variable names are in all capital letters. All estimates were computed using the sample weight, W4STUDENT, because all of the variables come from the second follow-up student interviews.

Additional detail on the questions sample members were asked and how variables were recoded in DataLab follow.

The analyses presented in this Brief focus on sample members' expected highest level of education and expected occupation at age 30. In the second follow-up questionnaire, sample members were asked, "As things stand now, how far in school do you think you will ever go?" (S4EDUEXP).

Sample members were also asked, "As things stand now, what is the job or occupation that you expect or plan to have at age 30?" (X4STU30OCC2). The jobs written in by sample members were classified into the corresponding 2-digit 2010 Occupational Information Network—Standard Occupational Classification (O*NET-SOC) code. The categories were:

- Management Occupations;
- Business and Financial Operations Occupations;
- Computer and Mathematical Occupations;
- Architecture and Engineering Occupations;
- Life, Physical, and Social Science Occupations;
- Community and Social Services Occupations;
- Legal Occupations; Education, Training, and Library Occupations;
- Arts, Design, Entertainment, Sports, and Media Occupations;
- Healthcare Practitioners and Technical Occupations;
- Healthcare Support Occupations;
- Protective Service Occupations; Food Preparation and Serving-Related Occupations;
- Building and Grounds Cleaning and Maintenance Occupations;
- Personal Care and Service Occupations;
- Sales and Related Occupations; Office and Administrative Support Occupations;
- Farming, Fishing, and Forestry Occupations;
- Construction and Extraction Occupations;

- Installation, Maintenance, and Repair Occupations;
- Production Occupations;
- Transportation and Material Moving Occupations; and
- Military Specific Occupations.

Thirty-six percent responded that they "don't know" what occupation they expect or plan to have at age 30 and another 1.5 percent were not planning to work. Responses that were uncodeable were treated as missing (these represented 3 percent of all responses).

The O*NET-SOC code categories were then grouped by industry for the analyses presented in this report:

- arts and entertainment,
- business and management,
- education,
- healthcare,
- military and protective services,
- other,
- service industry occupations,
- STEM fields, and
- trades and technical occupations.

Arts and entertainment occupations include arts, design, entertainment, sports, and media occupations. Education fields include teaching, education, training, and library occupations. Business and management occupations include management occupations as well as business and financial operations occupations. Healthcare occupations include healthcare practitioners, technical occupations, and healthcare support occupations. STEM occupations include computer and mathematical occupations, architecture and engineering occupations, and life, physical, and social science occupations. Service industry occupations include food preparation and serving-related occupations; personal care and personal service occupations; and community and social services occupations include farming, fishing, and forestry occupations; production maintenance, and repair occupations; production occupations; and transportation and material moving occupations; construction and extraction occupations; installation, occupations. Military and protective services occupations include protective service occupations and military specific occupations. Other occupations include legal occupations; building and grounds cleaning and maintenance occupations; sales and related occupations; and office and administrative support occupations.

Regarding future earnings, sample members were asked, "How much do you expect to earn per year (in today's dollars) [as a(n) [expected job at age 30 (S4OCC30)]] at age 30?" (S4OCC30EARN). Sample members were also asked, "Salary may be one part of why people choose a job. Compared to the salary, how important is each of the following to you?" Sample members could rate each aspect as more important than salary, equally important, or less important than salary. The six aspects of a job are contributing to society (S4JOBCONTRIB), geographic location (S4LOCATION), autonomy (deciding how to get work done) (S4JOBDECISION), work-personal life balance (S4JOBBALANCE), job security (S4JOBSECURITY), and working with a team (S4JOBTEAMWRK).

Variables used. The variables used in this report are listed below. The program files that generated the statistics presented in this Statistics in Brief can be found at https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2021056.

Label	Name
Sample member's highest level of education expected	S4EDUEXP
Sample member's expected occupation at age 30: 2-digit ONET-SOC code	X4STU30OCC2
Sample member's job at age 30: expected yearly earnings	S4OCC30EARN
Importance of balancing work and personal life compared to salary	S4JOBBALANCE
Importance of contributing to society compared to salary	S4JOBCONTRIB
Importance of autonomy in deciding how to get work done compared to salary	S4JOBDECISION
Importance of geographic location compared to salary	S4LOCATION
Importance of job security compared to salary	S4JOBSECURE
Importance of working with a team compared to salary	S4JOBTEAMWRK

Appendix A. Data Tables

Table A-1. Percentage distribution of 2009 ninth-graders, by 2016 planned job at age 30

Expected education and planned job at age 30	Percent	Standard error
Wrote in a job title for planned job at age 30	62.8	0.67
Don't know	35.7	0.66
Not planning to work at age 30	1.5	0.18

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09) Second Follow-Up.

Table A-2. Percentage distribution of 2009 ninth-graders, by 2016 highest level of education expected and planned job industry at age 30

Planned job at age 30	Percent	Standard error
Total	**100.0**	†
Highest level of education expected		
High school diploma, equivalent, or less	7.2	0.36
Some college	11.0	0.47
Associate's degree	8.5	0.45
Bachelor's degree	29.3	0.66
More than a bachelor's degree	30.5	0.91
Don't know	13.4	0.46
Planned job industry at age 30		
Arts and entertainment	4.2	0.24
Business and management	10.9	0.47
Education	4.6	0.33
Healthcare	16.2	0.71
Military and protective services	3.9	0.26
Service	4.7	0.23
STEM	7.9	0.34
Trades and technical	6.9	0.39
Other	4.6	0.25
Don't know	36.2	0.66

† Not applicable.
NOTE: Detail may not sum to 100 because of rounding. Arts and entertainment includes arts, design, entertainment, sports, and media occupations. Education includes teaching, education, training, and library occupations. Healthcare includes healthcare practitioners and technical and healthcare support. Service includes food preparation and serving-related occupations, personal care and service, and community and social services. STEM refers to science, technology, engineering, and mathematics and includes computer and mathematical architecture and engineering, and life/physical/social science occupations. Trades and technical includes installation, maintenance, and repair; production; transportation and material moving; farming, fishing, and forestry; and construction and extraction. Other includes legal occupations, building/grounds cleaning and maintenance, sales and related occupations, and office and administrative support occupations.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09) Second Follow-Up.

Table A-3. Median expected yearly earnings at age 30 of 2009 ninth-graders, by 2016 highest level of education expected and planned job industry at age 30

Expected education level and planned job	Median	Standard error
Total	**$60,000**	**$630**
Highest level of education expected		
High school diploma, equivalent, or less	40,000	2,590
Some college	50,000	3,240
Associate's degree	49,000	2,260
Bachelor's degree	60,000	320
More than a bachelor's degree	70,000	970
Don't know	50,000	1,680
Planned job industry at age 30		
Arts and entertainment	56,000	4,300
Business and management	70,000	2,700
Education	45,000	1,400
Healthcare	60,000	3,200
Military and protective services	50,000	1,700
Service	40,000	2,600
STEM	75,000	3,100
Trades and technical	56,000	3,900
Other	60,000	4,500
Don't know	50,000	2,400

NOTE: Arts and entertainment includes arts, design, entertainment, sports, and media occupations. Education includes teaching, education, training, and library occupations. Healthcare includes healthcare practitioners and technical and healthcare support. Service includes food preparation and serving-related occupations, personal care and service, and community and social services. STEM refers to science, technology, engineering, and mathematics and includes computer and mathematical architecture and engineering, and life/physical/social science occupations. Trades and technical includes installation, maintenance, and repair; production; transportation and material moving; farming, fishing, and forestry; and construction and extraction. Other includes legal occupations, building/grounds cleaning and maintenance, sales and related occupations, and office and administrative support occupations.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09) Second Follow-Up.

Table A-4. Percentage of 2009 ninth-graders in 2016 rating the importance of selected aspects of a job compared to salary

Aspects of a job	More important than salary		Equally important as salary		Less important than salary	
	Percent	Standard error	Percent	Standard error	Percent	Standard error
Working with a team	16.6	0.55	54.2	0.77	29.1	0.70
Geographic location	18.4	0.52	52.2	0.67	29.4	0.56
Autonomy in deciding how to get work done	28.0	0.69	58.9	0.68	13.1	0.44
Contributing to society	32.8	0.63	52.4	0.73	14.8	0.45
Balancing work and personal life	39.0	0.71	54.7	0.69	6.3	0.34
Job security	44.0	0.68	52.0	0.72	4.0	0.27

NOTE: Detail may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09) Second Follow-Up.

Table A-5. Percentage distribution of 2009 ninth-graders' ratings of the importance of job security, contributing to society, and working with a team compared to salary, by 2016 planned job industry

Rating of importance of aspects of jobs compared to salary	More important than salary		Equally important as salary		Less important than salary	
	Percent	Standard error	Percent	Standard error	Percent	Standard error
Job security						
Arts and entertainment	34.9	2.18	57.6	2.41	7.4	1.54
Business and management	50.0	1.79	45.7	1.80	4.3	0.88
Education	50.5	3.07	48.0	3.13	1.5 !	0.49
Healthcare	49.6	1.69	47.9	1.72	2.6	0.68
Military and protective services	50.6	4.73	45.8	4.69	3.5 !	1.70
Service	42.9	3.40	52.7	3.39	4.4	0.92
STEM	49.0	2.05	45.7	2.15	5.3	0.94
Trades and technical	47.8	2.26	47.8	2.12	4.4	1.04
Other	42.0	2.84	54.0	2.75	4.0	0.90
Don't know	37.9	1.15	58.0	1.23	4.1	0.42
Contributing to society						
Arts and entertainment	37.1	2.64	50.4	2.65	12.5	1.85
Business and management	29.6	1.73	52.0	1.91	18.4	1.47
Education	63.8	2.19	32.8	2.17	3.4	0.87
Healthcare	43.2	1.69	50.0	1.65	6.8	0.79
Military and protective services	45.5	3.70	47.3	3.95	7.1	1.66
Service	45.1	3.13	47.2	2.89	7.7	1.41
STEM	36.0	2.24	46.0	2.45	18.0	1.53
Trades and technical	22.2	2.12	55.8	2.39	22.0	2.09
Other	28.4	2.46	56.1	2.92	15.6	2.08
Don't know	23.5	0.98	57.9	1.16	18.6	0.86
Working with a team						
Arts and entertainment	18.1	2.16	51.3	2.47	30.6	2.41
Business and management	18.5	1.68	52.1	2.11	29.5	1.78
Education	20.0	2.13	48.7	2.48	31.3	2.10
Healthcare	18.3	1.23	56.5	1.85	25.2	1.53
Military and protective services	31.8	3.96	48.0	3.80	20.2	2.90
Service	18.6	2.58	53.4	3.12	28.0	3.00

See notes at end of table.

Table A-5. Percentage distribution of 2009 ninth-graders' ratings of the importance of job security, contributing to society, and working with a team compared to salary, by 2016 planned job industry—Continued

Rating of importance of aspects of jobs compared to salary	More important than salary		Equally important as salary		Less important than salary	
	Percent	Standard error	Percent	Standard error	Percent	Standard error
STEM	13.3	1.22	48.6	2.17	38.1	2.14
Trades and technical	23.8	2.35	52.7	2.63	23.6	2.11
Other	15.7	2.46	53.3	3.15	31.0	2.61
Don't know	12.3	0.84	57.4	1.16	30.3	1.12

! Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 and 50 percent.
NOTE: Detail may not sum to 100 because of rounding. Arts and entertainment includes arts, design, entertainment, sports, and media occupations. Education includes teaching, education, training, and library occupations. Healthcare includes healthcare practitioners and technical and healthcare support. Service includes food preparation and serving-related occupations, personal care and service, and community and social services. STEM refers to science, technology, engineering, and mathematics and includes computer and mathematical architecture and engineering, and life/physical/social science occupations. Trades and technical includes installation, maintenance, and repair; production; transportation and material moving; farming, fishing, and forestry; and construction and extraction. Other includes legal occupations, building/grounds cleaning and maintenanc,; sales and related occupations, and office and administrative support occupations.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09) Second Follow-Up.