Supplemental Materials

Illinois High School to Career Series

These materials provide supplemental information for both reports of the Illinois High School to Career Series.

Data

The project links high school student records from ISBE, Free Application for Federal Student Aid (FAFSA) records from ISAC, postsecondary education records from the National Student Clearinghouse (NSC), and employment records from IDES. The National Student Clearinghouse is a national nonprofit research center with data on college records for 97% of students who enroll in two- and four-year postsecondary institutions in the U.S. The coverage of for-profit institutions is lower at 74%. The Illinois Student Assistance Commission (ISAC) linked student records from the Illinois State Board of Education (ISBE) to enrollment records from NSC for seniors from the classes of 2008-2012 who completed the FAFSA. The FAFSA is the application for federal college financial aid including need-based Pell grants and student loans. It is also the primary application for Illinois' need-based MAP grant program and is used for other state and institutional need-based aid programs. Wage records are available for students who worked for an Illinois employer subject to reporting under the Unemployment Insurance Act (95% of employers). Table SM1 shows the study measures derived from each agency/institution's records (Measures are described in more detail below.). See the Illinois High School to Career website for more information about the student records and inclusion criteria.

Table SM1. Study measures derived from each agency/institution's records.

Agency/Institution	**Measures Derived from Agency/Institution Records**
Illinois State Board of Education (ISBE)	Student demographics (e.g. race/ethnicity, gender, IEP, native language, ever homeless) Student county
Illinois Student Assistance Commission (ISAC)	Parents' income quintile
National Student Clearinghouse (NSC) (via ISAC)	Student highest degree earned Student degree program
Illinois Department of Employment Security (IDES)	Student industry of employment Student Career Earnings

Population and Sample

The study includes only students who completed the FAFSA, including information on their parent(s)' adjusted gross income. Independent students were not included. For the cohorts in our study (senior classes from 2008-2012), independent students made up between 6.3% and 7.7% of all FAFSA completers. Inclusion in our sample also required that students were employed in a job in Illinois at some point within 9 years of their high school senior year.

To estimate Career Earnings, we limited to those who worked in Illinois during the twelfth quarter (3 years) after either (a) their latest postsecondary event (postsecondary graduation or an enrolled term), among those who ever enrolled in college, or (b) their senior year of high school, among those who never enrolled in college. We further limited to those who had quarter 12 employment in a "full-quarter" job, meaning that students were employed by the same employer during the quarter immediately

preceding quarter 12 (quarter 11) and the quarter immediately following (quarter 13). Among those employed in multiple full-quarter jobs, we used the employer and wage records from the student's highest-paying full-quarter job.

Table SM2 shows characteristics of the samples—FAFSA completers with any Illinois employment and FAFSA completers with full-quarter employment in quarter 12—compared to the full population of Illinois high school seniors from the spring of 2008 to the spring of 2012. Students in the samples were about half as likely to have had an Individualized Education Plan (IEP) in high school or to have ever been classified as homeless in K-12. They were also more likely to be female (by 5.1 and 6.8 percentage points among the samples with any Illinois employment and full-quarter employment in quarter 12, respectively). They were only slightly less likely (by 1.5 percentage points) to be low-income according to ISBE records, which is a category for students eligible for free or reduced-price meals or who meet other requirements as described in ISBE's Student Information System Data Elements. Note that this low-income indicator is *not* used to classify students as coming from low-income families. That measure is described below in the section, "Parent Income Quintile."

The sample was also more likely to have enrolled in a 4-year college (68.6% of the sample with any Illinois job and 68.3% of the sample with full-quarter jobs in quarter 12) compared to the population (50.0%). Just 6.2% (any Illinois job) and 4.8% (full-quarter jobs) of the samples had high school as their highest level of education, compared to 20.0% of the full high school senior population. Students with any Illinois employment were slightly more likely (by 2 to 4 percentage points) to have attended college in Illinois than the full population, while those with full-quarter employment in quarter 12 were much more likely to have attended college in Illinois (by 12 to 14 percentage points).

Table SM2. Sample and population characteristics.

	Population % (N=706,453)	**Sample % - FAFSA completers with any IL employment** (n=341,061)	**Sample % - FAFSA completers with full-quarter IL employment, quarter 12** (n=171,357)
Demographics & Programs			
White	60.1%	60.1%	60.8%
Other	1.8%	2.0%	1.8%
Hispanic	16.3%	14.9%	17.6%
Black	17.5%	17.8%	14.9%
Asian	4.3%	5.4%	4.9%
Low-income	32.7%	31.2%	31.2%
Female	50.2%	55.3%	57.0%
IEP	11.8%	6.7%	6.2%
Native Spanish	10.9%	9.5%	11.6%
Native other/unknown language	8.4%	8.9%	8.9%
Ever homeless	1.5%	0.8%	0.7%
County			
Cook County	35.8%	37.7%	38.7%
Collar county (DuPage, Lake, McHenry, Will, Kane)	29.7%	29.7%	30.4%

Other county	34.4%	32.5%	31.0%
College-going			
Enrolled in any college	80.0%	93.8%	95.2%
Enrolled in 4-year college	50.0%	68.6%	68.3%
Enrolled in 2-year college	26.3%	23.9%	25.8%
High school only	20.0%	6.2%	4.8%
Highest college degree completed (completers only)			
Highest college in-state	69.8%	73.9%	83.7%
Highest college out-of-state	30.2%	26.1%	16.3%
Latest college enrollment (college-goers only)			
Latest college in-state	75.6%	77.7%	87.2%
Latest college out-of-state	24.4%	22.3%	12.8%

Measures

Student Demographics: Race/Ethnicity

Racial/ethnic identity was collapsed to five categories for the purpose of reporting on the HS2C website, where "Other" contains race groups with small numbers to reduce the data suppression that occurs on the website for small cell sizes. The race/ethnicity groups were derived from ISBE records as shown in Table SM3. In this report, the "Hispanic" HS2C category is reported as "Latino."

Table SM3. HS2C-ISBE racial/ethnic category alignment.

HS2C racial/ethnic category	ISBE racial/ethnic categories
Asian	Asian
Black	Black or African American
Hispanic	Hispanic or Latino
White	White
Other	American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Two or More Races

Parents' Income Quintile

Our parent income measure was based on reporting of Adjusted Gross Income (AGI) on the FAFSA. As described on the Federal Student Aid website, when legal parents are divorced or separated, filers are instructed to complete information for the parent that the student lived with the most and that parent's spouse, if applicable. If the student did not live with one parent more than the other, they are instructed to fill out information for the parent that provided the most financial support, and that parent's spouse, if applicable.

For each cohort of high school seniors, we developed quintiles of parent AGI, with each cohort receiving its own quintile boundaries based on that year's data (see Table SM4). Students with any Illinois job within the 9-year postsecondary window were included, while students whose parents had missing data or negative values were excluded. In consultation with Dr. Daniel Rich, an economist who has worked extensively with the dataset, we also excluded values of $0, assuming they reflected

missing data or reporting errors. Out of our population of 706,453 high school seniors, 454,392 had FAFSA data available and 341,061 (48% of all seniors) had non-missing, non-negative, and non-zero parent AGI data. Table SM4 displays within-year quintile boundaries based on this sample of 341,061 seniors.

Table SM4. Parent adjusted gross income quintile boundaries (inclusive), by cohort.

High school senior cohort	Quintile 1 boundaries	Quintile 2 boundaries	Quintile 3 boundaries	Quintile 4 boundaries	Quintile 5 boundaries
2008	$1 – $22,383	$22,384 - $39,358	$39,359 - $62,910	$62,911 - $97,000	$97,001 - $999,999
2009	$1 – $24,022	$24,023 - $43,238	$43,239 - $70,639	$70,640 - $107,831	$107,832 - $999,999
2010	$1 – $23,763	$23,764 - $42,218	$42,219 - $69,509	$69,510 - $107,809	$107,810 - $999,999
2011	$1 – $23,671	$23,672 - $42,534	$42,535 - $70,165	$70,166 - $109,083	$109,084 - $999,999
2012	$1 – $23,610	$23,611 - $43,531	$43,532 - $72,924	$72,925 - $113,647	$113,649 - $999,999

Note: Cohort year reflects spring of senior year.

Students' Highest Degree

We used NSC records on students' postsecondary completions to categorize the highest degree students earned within six years after July 1 of their high school senior year. For example, for students who were seniors during the 2007-08 school year, the six-year postsecondary window began July 1, 2008 and ended June 30, 2014. In the current study, we do not analyze postsecondary outcomes for students who enrolled in or completed college at some point outside of the six-year postsecondary window.

If students did not have any NSC records (including records from outside the six-year postsecondary window), they were categorized as "high school only." Students who appeared in the NSC data and had at least one enrollment end within the six-year postsecondary window, but no completions within that window, were categorized as "some college, no degree." Students who had a college completion within the six-year postsecondary window were categorized according to their highest degree type: certificate, associate, bachelor's, master's, or doctoral/professional. Due to the low number of students with master's or doctoral/professional degrees, we combined these degrees into a master's/doctoral/professional category. We excluded students who earned a post-baccalaureate certificate due to low numbers ($n<40$).

Students' Degree Program of Study

We also used NSC records to group students who had a college completion within the six-year postsecondary window by their highest degree's program of study. Major was identified using the 2-digit Classification of Instructional Programs (CIP) code title associated with their program of study. We used 2020 codes, which had 50 possible categories. Our figures contain CIP code titles, which we abbreviated in select cases as shown in Table SM5.

Table SM5. CIP Code Titles and Abbreviations.

CIP Code	Title	Abbreviated Title (if applicable)
01	AGRICULTURAL/ANIMAL/PLANT/VETERINARY SCIENCE AND RELATED FIELDS.	Agricultural/Animal/Plant/Veterinary science
04	ARCHITECTURE AND RELATED SERVICES.	
05	AREA, ETHNIC, CULTURAL, GENDER, AND GROUP STUDIES.	
32	BASIC SKILLS AND DEVELOPMENTAL/REMEDIAL EDUCATION.	
26	BIOLOGICAL AND BIOMEDICAL SCIENCES.	
52	BUSINESS, MANAGEMENT, MARKETING, AND RELATED SUPPORT SERVICES.	Business, management, marketing, and support
33	CITIZENSHIP ACTIVITIES.	
09	COMMUNICATION, JOURNALISM, AND RELATED PROGRAMS.	
10	COMMUNICATIONS TECHNOLOGIES/TECHNICIANS AND SUPPORT SERVICES.	Communications technologies and support
11	COMPUTER AND INFORMATION SCIENCES AND SUPPORT SERVICES.	Computer and information sciences and support
46	CONSTRUCTION TRADES.	
12	CULINARY, ENTERTAINMENT, AND PERSONAL SERVICES.	
13	EDUCATION.	
14	ENGINEERING.	
15	ENGINEERING/ENGINEERING-RELATED TECHNOLOGIES/TECHNICIANS.	Engineering/Engineering-related technologies
23	ENGLISH LANGUAGE AND LITERATURE/LETTERS.	
19	FAMILY AND CONSUMER SCIENCES/HUMAN SCIENCES.	
16	FOREIGN LANGUAGES, LITERATURES, AND LINGUISTICS.	
51	HEALTH PROFESSIONS AND RELATED PROGRAMS.	
60	HEALTH PROFESSIONS RESIDENCY/FELLOWSHIP PROGRAMS.	
34	HEALTH-RELATED KNOWLEDGE AND SKILLS.	
53	HIGH SCHOOL/SECONDARY DIPLOMAS AND CERTIFICATES.	
54	HISTORY.	
43	HOMELAND SECURITY, LAW ENFORCEMENT, FIREFIGHTING AND RELATED PROTECTIVE SERVICES.	Homeland security, law enforcement, firefighting
35	INTERPERSONAL AND SOCIAL SKILLS.	
22	LEGAL PROFESSIONS AND STUDIES.	
36	LEISURE AND RECREATIONAL ACTIVITIES.	
24	LIBERAL ARTS AND SCIENCES, GENERAL STUDIES AND HUMANITIES.	
25	LIBRARY SCIENCE.	
27	MATHEMATICS AND STATISTICS.	

47	MECHANIC AND REPAIR TECHNOLOGIES/TECHNICIANS.	
61	MEDICAL RESIDENCY/FELLOWSHIP PROGRAMS.	
28	MILITARY SCIENCE, LEADERSHIP AND OPERATIONAL ART.	
29	MILITARY TECHNOLOGIES AND APPLIED SCIENCES.	
30	MULTI/INTERDISCIPLINARY STUDIES.	
03	NATURAL RESOURCES AND CONSERVATION.	
31	PARKS, RECREATION, LEISURE, FITNESS, AND KINESIOLOGY.	
37	PERSONAL AWARENESS AND SELF-IMPROVEMENT.	
38	PHILOSOPHY AND RELIGIOUS STUDIES.	
40	PHYSICAL SCIENCES.	
48	PRECISION PRODUCTION.	
42	PSYCHOLOGY.	
44	PUBLIC ADMINISTRATION AND SOCIAL SERVICE PROFESSIONS.	Public administration and social service
55	RESERVED.	
21	RESERVED.	
41	SCIENCE TECHNOLOGIES/TECHNICIANS.	
45	SOCIAL SCIENCES.	
39	THEOLOGY AND RELIGIOUS VOCATIONS.	
49	TRANSPORTATION AND MATERIALS MOVING.	
50	VISUAL AND PERFORMING ARTS.	

Students' Industry of Work

IDES employment records provided information on students' industry of employment. We report industry from the twelfth quarter (three years) after students' latest postsecondary enrollment/completion or the twelfth quarter after their senior year among those with no postsecondary enrollments. We limited the sample to students who were working in a "full-quarter" job in Illinois, meaning the same employer reported wages for them in the quarters before and after quarter 12 (quarters 11 and 13, respectively). The full-quarter requirement helps limit our analysis of outcomes to those with stronger, more stable labor market attachment. For students employed in multiple full-quarter jobs, we report the industry of their highest-paying full-quarter job.

Students in a full-quarter job were the majority of all students with jobs in quarter 12, as shown in Table SM6, and they made up 50% of the sample of students who had non-missing, non-negative, and non-zero parent AGI data.

Table SM6. Twelfth quarter employment among sample with parent AGI quintile information

	Count	**Percentage of sample**
Employed in quarter 12	215,195	63.1%
Employed, full-quarter job	171,357	50.2%
Employed, not full-quarter job	43,838	12.9%

Not employed in quarter 12	125,866	36.9%
Total	341,061	100%

Of all students with any full-quarter job, 10,375 (6.0%) worked in two full-quarter jobs and 484 (0.3%) worked in three or more full-quarter jobs. In these cases, we used the employer and wage records from the student's highest-paying full-quarter job.

Industry labels are based on the North American Classification System (NAICS) sectors, as shown in Table SM7, for students' highest-paying full-quarter job.

Table SM7. North American Classification System (NAICS) sectors.

NAICS Code	Description
11	Agriculture, Forestry, Fishing and Hunting
21	Mining, Quarrying, and Oil and Gas Extraction
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information
52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
81	Other Services (except Public Administration)
92	Public Administration (not covered in economic census)

Students' Career Earnings

We estimated a student's Career Earnings by multiplying the student's quarterly earnings from their highest-paying full-quarter job in quarter 12 by four. This transformation makes earnings more interpretable, but it may over- or under-estimate earnings for students whose employment and/or earnings varied over the course of the year. The year of quarter 12 wage records varied by student cohort and years of postsecondary education. To make earnings comparable across students, we transformed all wages to 2017 dollars, as 2017 was the median of years with quarter 12 wage records.

Analysis

To protect student privacy, the state agencies with which we partnered suppressed data cells with student counts lower than 10. In turn, some rare combinations of degree attainment by programs of study and parent income quintile are suppressed, in which case we treated student counts as 0. An example is students who earned an associate degree in a biological and biomedical sciences program and had parents whose income was in the top-earning quintile.

Supplemental Findings

Report 1: Precarious Prospects

Gender representation, overall and by parent adjusted gross income quintile

Women are slightly overrepresented in our sample, as shown in Figure 2 in the first report, *Precarious Prospects*. This overrepresentation reflects gender differences in students who met our sample inclusion requirements. Women may have been more likely than men to complete the FAFSA as high schoolers, an explanation consistent with national FAFSA completion rates among male versus female students (Bahr et al., 2018). Women also may have been more likely to work in the state of Illinois as opposed to other states as adults. Among those who ever worked in Illinois, we found that women were also slightly more likely than men to have stable employment during the earnings quarter of our analysis (three years after their latest postsecondary enrollment or graduation).

Women's overrepresentation is highest among those from the lowest-earning families and the gender balance becomes more even as parent income increases from Q1 to Q5. This trend could have several possible explanations. Men from higher-earning families could have been more likely than men from lower-earning families to complete the FAFSA as high schoolers. This explanation is consistent with national FAFSA completion trends by socioeconomic status for both genders (Bahr et al., 2018), such that low socioeconomic status would exacerbate already-lower completion rates among men. Men from lower-earning families may also have been less likely to be in the labor force as adults. Indeed, this report will show that students from lower-earning families were overrepresented among those who did not earn a college degree, a group that has driven men's declines in labor force participation and employment (Binder & Bound, 2019).

Women from higher earning families, on the other hand, were slightly less likely to appear in our sample. We show in the report that students from higher-earning families were more likely than students from lower-earning families to attend a four-year college. Four-year college-goers were more likely than students who attended two-year colleges to attend out-of-state and in turn could have been more likely to work out of state than in Illinois. This trend likely affected both men and women from higher-earning families similarly, but the lower FAFSA completion rates and labor force participation among men described above could be obscuring this trend for men in our data.