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UCHICAGO Consortium on School Research

PRECARIOUS PROSPECTS

EDUCATION PAYS, YET SOCIOECONOMIC DISPARITIES PERSIST IN ILLINOIS STUDENTS' LATER EARNINGS

ILLINOIS HIGH SCHOOL TO CAREER SERIES

PART ONE

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External Review

To ensure that this report's contents are rigorous, accurate, and useful to educators and policymakers, we solicited feedback from experts at the state agencies that produce the High School to Career (HS2C) dataset. These experts included (in alphabetical order):

- Maureen Font, Illinois State Board of Education
- Ewa Gallagher, Ph.D., Illinois Department of Employment Security
- Shana Rogers, Illinois Student Assistance Commission
- Jackie Matthews, Illinois State Board of Education
- Logan Woods, Ph.D., Illinois State Board of Education

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PRECARIOUS PROSPECTS:

Education pays, yet socioeconomic disparities persist in Illinois students' later earnings

"The good we secure for ourselves is precarious and uncertain until it is secured for all of us [...]."
—Jane Addams (1892), Illinois sociologist and philosopher

In a society where individuals can control their own destiny, socioeconomic origins would have little bearing on educational outcomes or earnings prospects. This ideal has driven the work of generations of Illinois educators, activists, policymakers, and employers, and it animates current statewide efforts to provide equal opportunities and equitable outcomes for all residents. In this context, do the present-day opportunities available to youth from low-income families offer secure futures, or do they perpetuate the precarious state of low wages across generations?

This study, the first in the Illinois High School to Career series, examines education and earnings outcomes for Illinois youth from families across the socioeconomic spectrum. It draws on data from the Illinois High School to Career project, which documents the post-high school pathways of select Illinois high school seniors from the classes of 2008 to 2012,[1] including their postsecondary educational experiences and career outcomes. Findings show that for these students, the economic environment in which they were raised is not destiny, but it does matter a great deal for predicting outcomes, intersecting with race and gender to exacerbate existing inequalities.

Key Takeaways

01 **Educational attainment and industry of employment were better at predicting Illinois students' earnings outcomes than their economic origins alone.**

a. On average, students who earned degrees went on to earn more, regardless of race, gender, or how much their parents earned.
b. Certain degree programs and industries of employment were consistently associated with higher earnings for all student groups.

02 **Yet students' economic origins were strongly related to their educational attainment and industries of employment, contributing to persistent income disparities across generations.**

a. Illinois students from low-income families earned lower levels of education and were overrepresented in lower-earning industries compared to students from higher-income families.
b. Even with the same educational degree, degree program, or industry of employment, students from low-income families earned less than those from higher-income families.
c. Among students from low-income families, Black and Latino students and women earned less than their White and male peers.

[1] To be included in the study, high school seniors had to meet criteria as described in the "Population and Sample" section. The main criteria were that they had to complete the Free Application for Federal Student Aid (FAFSA) and find employment in Illinois as adults.

Put simply, higher education still leads to higher income, especially when paired with opportunity for employment in higher-earning industries. But students from lower-income families had lower educational attainment, on average. Furthermore, even when they earned a more advanced degree or worked in a lucrative industry, the economic payoffs were lower for them.

In what follows, we review existing literature on intergenerational mobility and provide background on the Illinois High School to Career project and data sample. We then describe the demographic characteristics of Illinois high school seniors from low-income households and examine their postsecondary educational and career pathways, including the highest degrees they earned, their degree programs, their industries of employment, and earnings. Finally, we compare how students from households with different income levels varied in their career earnings when grouped by race, gender, highest degree, degree program, and industry of employment.

Our findings suggest that work to expand educational and employment opportunity can indeed create upward socioeconomic mobility, yet Illinois remains far from achieving its meritocratic ideals. At the same time, we observed many low-income students across racial/ethnic and gender groups who beat the odds, earning high levels of education and robust wages. Report 2 of the Illinois High School to Career series, Promising Pathways, will examine the pathways of these outlier students, remaining cognizant that their very status as outliers evinces the presence of systemic and pervasive inequalities.

BACKGROUND

Intergenerational Mobility in the US and Illinois

Despite its historical reputation as the "land of opportunity," the United States today has lower rates of upward intergenerational mobility than other advanced economies (Corak, 2006; Jäntti et al., 2006). Mobility declined in the U.S. over the course of the 20th century as wage growth slowed for workers in lower-earning jobs, especially among those without college degrees (Davis & Mazumder, 2022). Using data from Chetty and colleagues (2020), the National Academies of Sciences, Engineering, and Medicine (NASEM, 2024) estimated that, among children born around 1980, those born into low-income households went on to live in low-income households as adults at twice the rate (34%) of children born into higher-income households (17%).

Black, Latino, and Native American children were more likely than White children to be born into low-income families. Household low-income rates upon reaching adulthood were highest among Black (37%) and Native American (46%) individuals raised in low-income households compared to their White (29%), Latino (25%), and Asian (17%) counterparts. Gender disparities in mobility also varied by race/ethnicity. On average, men experienced higher rates of mobility than women, but this pattern was reversed among Black individuals, among whom women had higher rates of mobility based on individual earnings than men (Chetty et al., 2020; NASEM, 2024).

Racial disparities in mobility are closely related to geographic variation in a child's chances of moving up the socioeconomic spectrum. Children who grow up in areas with high concentrations of poverty have lower intergenerational mobility rates, on average (Chetty & Hendren, 2015), while those who are raised in places with more social connections between high- and low-income people have higher mobility (Chetty et al., 2022). While the place in which they are raised affects the chances of adult economic success for children across racial/ethnic groups, high-poverty areas tend to be racially segregated, with residents of color more than three and a half times more likely to live in a high-poverty

neighborhood than White residents nationally (National Equity Atlas, 2020). Furthermore, racial/ethnic disparities in mobility appear even within neighborhoods. For example, White boys have higher adult incomes than Black boys raised in the same neighborhood for 99% of U.S. Census tracts (Chetty et al., 2020). These racialized socioeconomic disparities result in "inadequate access to health care and to well-funded, quality schools [and daycares]; greater exposure to crime, violence, and harm from the criminal justice system; housing insecurity and exposure to toxins; and lower family incomes, wealth, and neighborhood resources" (NASEM, 2024, p. 63).

These patterns by place and race are evident in Illinois. Census tracts in Illinois vary dramatically in the average adult earnings of children who grew up in low-income households as well as racial/ethnic composition (Chetty et al., 2018). High-poverty neighborhoods can be found throughout the state, in both urban and rural areas, where the percentage of people living in poverty in 2023 were 13% and 12%, respectively (U.S. Department of Agriculture, 2024). In 2020, 25% of Black Illinois residents, 17% of all people of color, and 8% of White residents lived below the poverty level (U.S. Census Bureau, 2020). In the same year, 24% of Black Illinois residents and 12% of all people of color in Illinois lived in high-poverty neighborhoods compared to 3% of White residents (National Equity Atlas, 2020). These statistics suggest that White residents experiencing poverty in Illinois are less likely than individuals from other racial/ethnic groups experiencing poverty to be living in neighborhoods with high poverty concentrations. Within Illinois neighborhoods, as seen nationally, Black residents from low-income households have been found to have lower adult earnings than other racial/ethnic groups (Chetty et al., 2018).

Beyond poverty concentration and social connections, geographic areas' mobility rates are related to factors such as local income inequality, family structure, commute times to work, and high school drop-out rates. On average, rural areas have advantages relative to urban areas in these domains, and low-income youth from rural areas tend to have slightly higher upward mobility than low-income youth from urban areas (Weber et al., 2018).

The Role of Educational and Employment Disparities in Limiting Upward Mobility

Differences in the environments in which children grow contribute to achievement disparities from the very start of school. Nationally and in Illinois, low-income, Black, and Latino children demonstrate lower school readiness at the start of kindergarten (García, 2015; Kiguel et al., 2024; Reardon & Portilla, 2016). These early disparities are compounded over time as the same student groups are more likely to attend schools with higher poverty concentrations, inadequate resources, less experienced teachers, fewer counselors and health workers, and higher discipline rates (Monarrez & Chien, 2021). A large body of literature has found that students from low-income families and students of color, especially Black boys, are disproportionately subject to exclusionary discipline, which in turn leads to decreased engagement and achievement, higher rates of truancy and drop-out, and higher risk of future involvement in the criminal justice system (Skiba et al., 2016, p. 26). Racially underrepresented, low-income, and rural students are also more likely to attend high schools that fall short in preparing them to navigate college application processes (Belasco, 2013; Diane Hill, 2008; Hoxby & Avery, 2012; Perna et al., 2008; Roberts & Grant, 2021; Roderick et al., 2011) and to take on the rigor of college coursework (Bound et al., 2009; Ciocca Eller & DiPrete, 2018; Deil-Amen & DeLuca, 2010; Jennings et al., 2015; Roberts & Grant, 2021).

Given this multifaceted inequality of educational opportunity, postsecondary educational attainment is lower nationally for Black and Latino students, students from low-income families, and rural students, especially for men among these groups (National Center for Education Statistics, 2022, 2023b; Sowl & Crain, 2021). These disparities reflect lower rates of both college enrollment and college completion.

Although rates of postsecondary enrollment for minoritized populations have increased in most years over the past several decades (U.S. Bureau of Labor Statistics, 2020), some groups–particularly Black and Latino men–continue to be severely underrepresented among college enrollees. In Illinois, Black and Latino high school graduates from the class of 2021 were less likely than White graduates to immediately enroll in a 2- or 4-year college by 21 and 16 percentage points, respectively (Illinois Board of Higher Education, 2023). Moreover, college persistence rates have shown only small improvements over the past decade (National Student Clearinghouse, 2024). Nationwide and in Illinois, colleges graduate Black, Latino, and low-income students at lower rates than White and higher income students (Midwestern Higher Education Compact, 2023; National Center for Education Statistics, 2022, 2023b).

Low completion rates reflect, in part, differences in the types of colleges students attend. For-profit colleges disproportionately recruit and enroll Black, Latino, and low-income students (National Center for Education Statistics, 2023a; U.S. Senate, 2012). A causal study found that enrolling in for-profit institutions led to greater debt, lower earnings outcomes, and higher rates of student loan defaults compared to enrolling in public colleges with similar selectivity (Armona et al., 2018). Black and Latino students, low-income students, and students from rural areas are also more likely to attend community colleges over four-year colleges than White, higher-income, and urban or suburban students with similar academic qualifications (Carnevale, Van Der Werf, et al., 2018; Dynarski et al., 2018; Hoxby & Avery, 2012; Wells et al., 2019). Community college students often face difficulty navigating complicated program and degree requirements, especially those related to remedial coursework and transfer to four-year institutions (Jenkins & Fink, 2016; Rosenbaum et al., 2017). Illinois has made a number of efforts to address these barriers, including the Illinois Articulation Initiative launched in 1993 and the Education and Workforce Equity Act of 2021.[2] In turn, Illinois ranks second nationally in the proportion of community college students who transfer to four-year schools and complete a bachelor's degree. Despite this relative success, this proportion is still just one in five community college students. Furthermore, Illinois ranks much lower for certain subgroups–on par with the national average for Latino students and below average for Black students (Velasco et al., 2024).

As a result of these and other barriers, students who come from the lowest rungs of the economic ladder are also the least likely to receive an education that moves them up that ladder. Evidence is mixed on whether attending some college but not attaining a certificate or degree has earnings benefits (Belfield & Bailey, 2011; Carnevale et al., 2011; Rosenbaum et al., 2017). Yet hefty tuition prices mean that many students who leave school with no degree have significant debt burdens that they struggle to pay off (Huelsman, 2018). On a larger scale, low college completion rates contribute to a reproduction of social stratification along the axes of race and class. Rising degree requirements for jobs combined with unequal degree attainment has kept many well-paying jobs out of reach for Black, Latino, low-income, and rural populations.

Even when workers from these populations do attain college degrees, the economic payoffs are not experienced evenly. With the same level of education, White workers earn more than Black and Latino workers (Carnevale, Strohl, et al., 2019), men earn more than women (Carnevale, Smith, et al., 2018), and workers who come from high-socioeconomic (SES) backgrounds earn more than those from low-SES backgrounds (Rosenbaum et al., 2017).

[2] The Illinois Articulation Initiative, first launched in 1993 (IAI et al., 2020), supports transfer from two-year to four-year institutions, while the Education and Workforce Equity Act (2021) requires community colleges to use multiple measures when making remedial coursework placements. Illinois also spends almost twice as much per student at two-year institutions as the national average (Kunkle, 2024), which could enhance instruction, advising, and other student supports (Brock, 2010; Carnevale, Van Der Werf, et al., 2018).

Within-degree earnings inequalities result from a number of factors. The colleges attended by Black, Latino, and low-SES students may be less likely to offer work-based experiences, such as internships and mentorship, that confer technical industry skills, professional soft skills, and access to professional networks (HR&A Advisors, 2020). These experiences, or lack thereof, could shape the occupations and industries in which students find entry-level employment. As discussed earlier, low-income students, especially those who are Black and Latino, are more likely to come from communities with concentrated poverty and fewer social connections to high income earners. Access to social networks and relationships among students from higher-income households result in more employment prospects and higher earnings, even among those with lower levels of education (M. Abbott & Reilly, 2019; Chetty et al., 2022; McDonald, 2015).

Workers of color and women experience discrimination on the job market for jobs across degree levels (Azmat & Petrongolo, 2014; NASEM, 2024). Once employed, these groups are more likely to experience stereotyping and hostility, limiting their retention and upward advancement (HR&A Advisors, 2020). Factors affecting women's earnings in particular include differences in degree program representation, occupational segregation (Delaney & Devereux, 2021), and the "motherhood wage penalty" (Cukrowska-Torzewska & Matysiak, 2020). Given these experiences, Black, Latino, and female workers, as well as workers from low-income families, are employed in lower-earning jobs than their White, male, higher-SES counterparts with the same degree levels. Low-earning jobs are also associated with more employment instability, unpredictable work hours, unsafe working conditions, and limited opportunities for advancement (Shakesprere et al., 2021).

Job opportunity also varies across geography for workers with the same degree levels, as detailed by Carnevale and colleagues (2024). For men with less than a bachelor's degree, Carnevale et al. found that well-paying jobs are more prevalent in rural areas compared to urban ones, in part due to rural areas having a higher share of blue-collar and protective service jobs and higher pay among workers with those occupations. Women, on the other hand, have a much higher likelihood of holding a well-paying job in urban areas for almost every degree level, resulting in greater gender disparities in rural areas than urban. Rural men and women also have lower employment rates than their urban counterparts, in part due to lower access to high-quality healthcare and higher rates of disability. Labor force participation has declined over the past two decades, especially among rural men with lower levels of education, counteracting some of the economic opportunities this group experiences via greater rural job opportunities (Carnevale et al., 2024).

Nationally, disparities in educational opportunity, combined with racial/ethnic and socioeconomic earnings disparities even among workers with the same educational degrees, have compounded the effects of discrimination in healthcare, crime, policing, pollution, housing, and other aspects of society (NASEM, 2024) to limit upward mobility for generations of children born into low-income households. The current report analyzes the state of socio-economic mobility for Illinois residents, following students for three years after their last enrollment in high school or college. We ask the following research questions:

Research Questions

Among Illinois high school seniors from the classes of 2008 to 2012 who met study parameters: [3]

1. What were the demographic characteristics of students from low-income households?
2. What postsecondary degrees did students from low-income households attain and in what degree programs? What industries did students from low-income households go on to work in?
3. How did students' career earnings vary by the income level of the households they grew up in?
   - A. How did this pattern vary by students' demographic characteristics?
   - B. How did this pattern vary by students' highest educational degree, program of study, and industry of work?

METHODS

Data

This study uses data from the Illinois High School to Career project, which is the result of a partnership between the Illinois State Board of Education (ISBE), the Illinois Student Assistance Commission (ISAC), the Illinois Department of Employment Security (IDES), and Illinois State University (ISU). 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) (provided via ISAC), and wage records from IDES, providing a public tool for exploring the pathways of Illinois students after high school. See the Supplemental Materials for more information about these records. IWERC, along with a collaborator from the UChicago Consortium on School Research, entered into a data-sharing agreement with the partner agencies. This agreement allowed researchers from IWERC, the Consortium, and ISAC to analyze the data and describe the outcomes shared in this report.

Population and Sample

The population of Illinois students included in the Illinois High School to Career project includes five cohorts of high school students whose senior years ranged from 2007-08 to 2011-12—the tail end of the "Millennial" generation. See this report's Supplemental Materials section on Population and Sample and the Illinois High School to Career website for more information about the student records and inclusion criteria.

The current study draws on a subset of the Illinois High School to Career project data. Inclusion in the study sample required that students had completed the FAFSA, an application for federal financial aid for college, and that their FAFSA forms had complete data on parent adjusted gross income. Students also had to be employed in a job in Illinois at some point within 9 years of their high school senior year. Out of all high school seniors from 2008-2012 (N=706,453), 341,061 students (48%) met these requirements.

[3] These questions apply to the sample of high school seniors who met study inclusion criteria, described in the "Population and Sample" section.

For calculating industry counts and "Career Earnings," we limited to students who were employed in Illinois three years (12 quarters) 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 whose quarter 12 employment was in a stable job, meaning they were employed for at least three consecutive quarters including the quarter before and the quarter after quarter 12. This requirement makes our estimates closer to earnings students could expect at the outset of a career in a particular industry rather than earnings from temporary employment, which is common among young adults as they explore various occupational settings in the transition from school to work (A. Abbott, 2010). It also makes our findings comparable to those presented in the public Illinois High School to Career tool, which uses the same earnings measure. Our sample for estimating Career Earnings consisted of 171,357 students (24.3% of all seniors). Sample characteristics are detailed in our Supplemental Materials.

These samples—students with any Illinois employment and students with full-quarter employment in quarter 12—were demographically very similar. One primary difference was that those with full-quarter jobs in quarter 12 were more likely to have attended college in Illinois than those with any Illinois employment over the 9-year timespan.

However, the samples differed from the full population of high school seniors on several key characteristics. Most notably, students in the samples were about half as likely to have had an IEP in high school or to have ever been classified as homeless in K-12. Reflecting a sample inclusion requirement that students completed the FAFSA, students in the samples were also 37% more likely to have enrolled in a four-year college. 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). While 20% of the full population never enrolled in college, these students made up just 6% of the sample with any Illinois employment and 5% of the sample with full-quarter employment in quarter 12. Further differences between the sample and population are shown in the Supplemental Materials, Table SM1.

Given these differences, findings drawn from the samples included in this study are not representative of the full population of Illinois high school seniors from the 2008-2012 cohorts. Instead, they represent students with higher rates of college-going, especially at in-state colleges and four-year colleges, and students who successfully obtained employment. Students who did not enroll in college are poorly represented, making up one-fifth of all high school seniors in the population but just 4-6% of seniors in the samples. In turn, findings on students in the "high school only" group should be interpreted cautiously, and readers should keep this limitation in mind when making sense of aggregate findings in this report.

Measures

We used the following measures to categorize students and describe their outcomes. Additional information about each measure can be found in the Supplemental Materials.

Student Demographics

Student gender, race/ethnicity, and county of origin are HS2C dataset variables derived from ISBE records. All students are categorized as male or female based on birth certificate or student gender identification. Racial/ethnic identity was collapsed to five categories: Asian, Black, Latino, White, Other. Further details about this measure can be found in the Supplemental Materials section on Measures. County reflects the county where students attended school during their senior year of high school.

We used 2013 county classifications from the Illinois Department of Public Health (2014) to designate counties as rural or urban. Counties were considered urban if they were part of a U.S. Census Bureau designated metropolitan statistical area in 2013 or had a population of at least 60,000.

Parents' Income Quintiles & Defining Low-income Households

For each cohort of high school seniors, we developed quintiles of parent adjusted gross income (AGI) based on FAFSA records. Each cohort received its own quintile boundaries based on that year's data, and we categorized households in the lowest two quintiles as "low-income." The upper earnings threshold for this category varied by student cohort, from $39,358 for the 2008 cohort to $43,531 for the 2012 cohort. Within-year quintile boundaries can be found in the Supplemental Materials (see Table SM3).

Students' Highest Degree

We categorized students by the highest educational degree they earned within six years of their high school senior year. Our categories were: high school only; some college, no degree (for students who ended a postsecondary enrollment without a degree); certificate; associate; bachelor's; and the combined category of master's/doctoral/professional. Due to the low number of students with postbaccalaureate certificates, we excluded these students.

Students' Degree Program

For students who had a college completion, we identified their program of study using 2020 2-digit Classification of Instructional Programs (CIP) code titles.

Students' Industry of Work

We report industry of employment three years (12 quarters) after students' latest postsecondary enrollment/completion or after their senior year among those with no postsecondary enrollments. Industry is categorized using 2-digit North American Industry Classification System (NAICS) codes. 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. Half of students for whom we had parent AGI data worked in a full-quarter job during quarter 12. Of those, approximately 6% worked in two or more full-quarter jobs, in which case we report on the industry of their highest-paying full-quarter job.

Students' Career Earnings

We estimated a student's annual Career Earnings by multiplying the student's quarterly earnings from their highest-paying full-quarter job in quarter 12 by four. We report all earnings in 2017 dollars. Readers should keep in mind that the spending power of 2017 dollars was 31% higher than 2025 dollars due to inflation. For example, annual earnings of $37,536 in 2017, the average across all students in our sample, would have the spending power of $49,305 in 2025.

Analysis

We analyze descriptive statistics of the measures detailed above, examining how parent earnings intersected with student demographics, degree attainment, program of study, industry of work, student earnings, and combinations of these characteristics (e.g. degree attainment by student demographics and parent earnings quintile). These descriptive statistics are presented in bar charts, maps, and tables. To protect student privacy, the state agencies with which we partnered suppressed data cells with student counts lower than 10, in which case we treated student counts as 0. See the Supplemental Materials for more information on data suppression.

FINDINGS

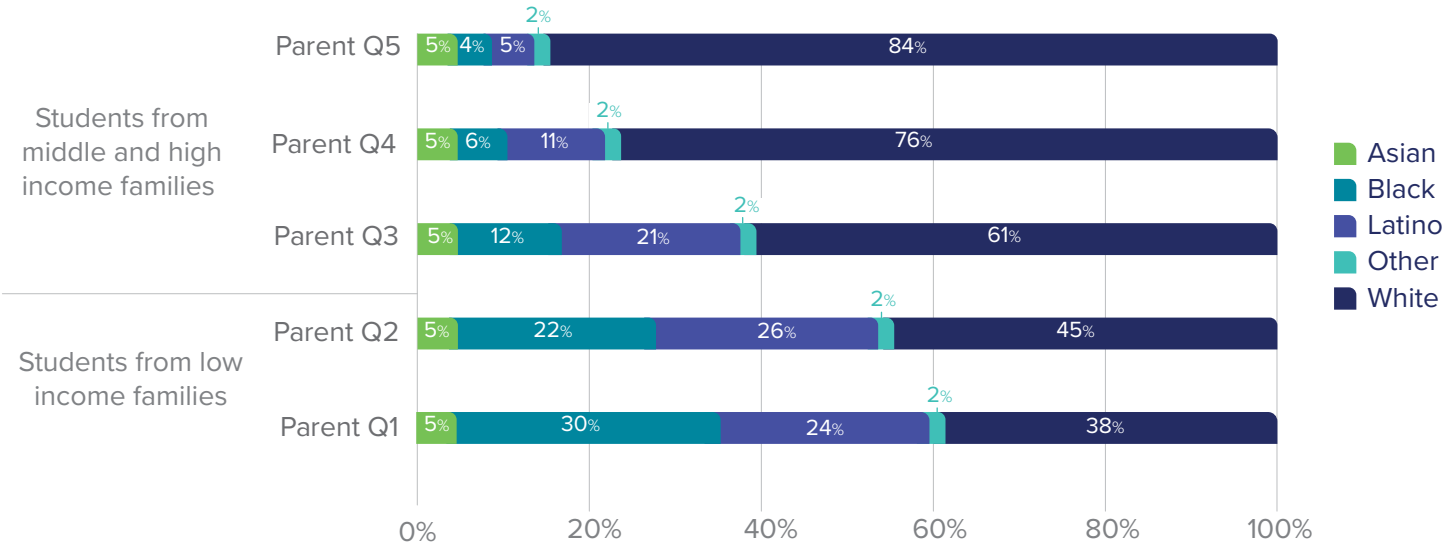
RQ.1

What were the demographic characteristics of students from low-income households?

Low-income Student Race/Ethnicity

Student racial/ethnic composition varied across quintiles of parent earnings. Figure 1 shows the percentage of students in each quintile of parent adjusted gross income (AGI) from each racial/ethnic group. In each quintile, White students were the largest group, reflecting their majority status statewide for these high school cohorts. However, quintiles varied dramatically in their percentages of each group. The bottom 2 quintiles (Parent Q1 and Parent Q2) were disproportionately Black and Latino, and the percentage of Black and Latino students decreased as parent AGI quintile increased. For example, Black and Latino students made up the majority (54%) of students from Parent Q1 but just 9% of students from Parent Q5. White students, on the other hand, were disproportionately overrepresented in the highest-earning parent quintiles. They made up 84% of students from Parent Q5 compared to 38% of students from Parent Q1. Overall, 73% of White students came from the top 3 quintiles of parent earnings (Parent Q3-Parent Q5). Students in the Asian and Other race categories were distributed approximately evenly across parent quintiles, making up 5% and 2%, respectively, of each.

Figure 1. Race/ethnicity by parents' income quintile.



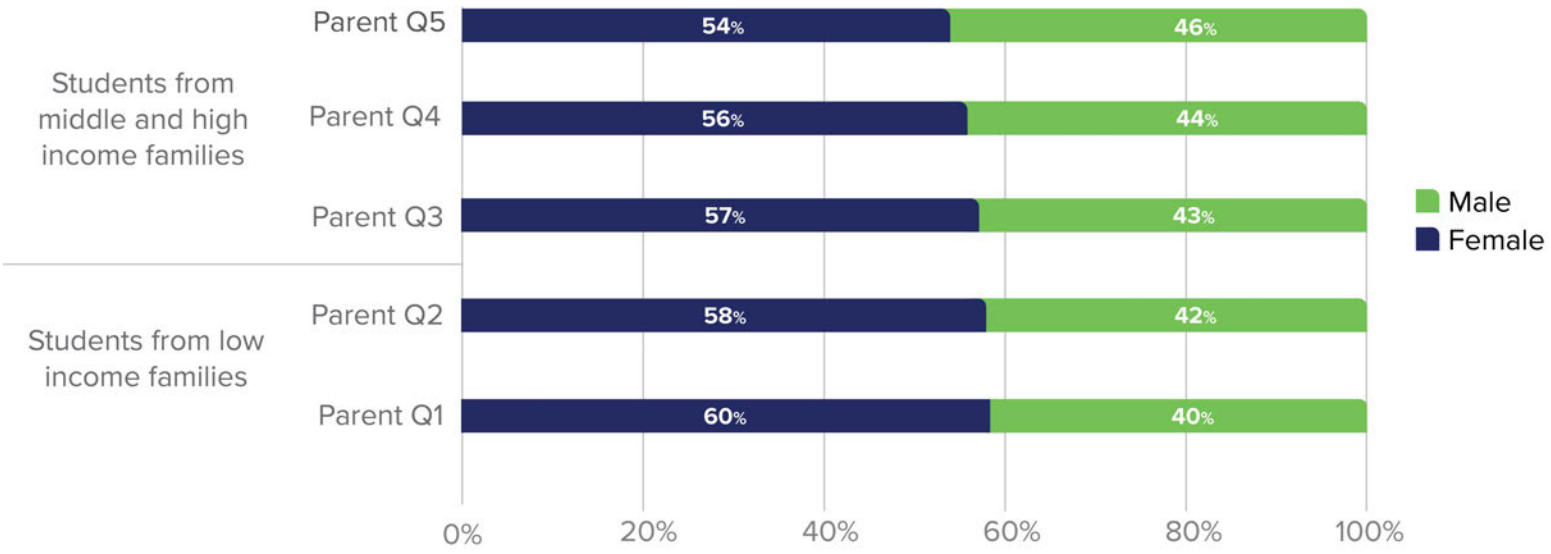
Note: Sample includes Illinois students from the high school senior classes of 2008-2012, n=341,061.

Low-income Student Gender

Women were slightly overrepresented in our sample, as shown in Figure 2. This overrepresentation reflects gender differences in students who met our sample inclusion requirements. These requirements as they relate to gender representation are discussed in our Supplemental Materials section on Findings.

Women's overrepresentation in our sample is highest among those from the lowest-earning families and the gender balance becomes more even as parent income increases from Q1 to Q5. It is unclear why we see this trend by family income, which could have several possible explanations related to gender differences by socioeconomic status in FAFSA completion, labor force participation, and out-of-state college attendance. These explanations are also discussed in our Supplemental Materials.

Figure 2. Gender by parents' income quintile.



Note: Sample includes Illinois students from the high school senior classes of 2008-2012, n=341,061.

Low-income Student Geography

Low-income students in our sample (those from parent AGI quintiles 1 and 2) most commonly attended high school in the Chicago-Naperville-Elgin and St. Louis metropolitan areas, reflecting residence patterns for the Illinois population more broadly. This pattern is shown in Figure 3, a heat map representing the number of low-income students by county.

Figure 3. Heat map of number of low-income students by Illinois county.

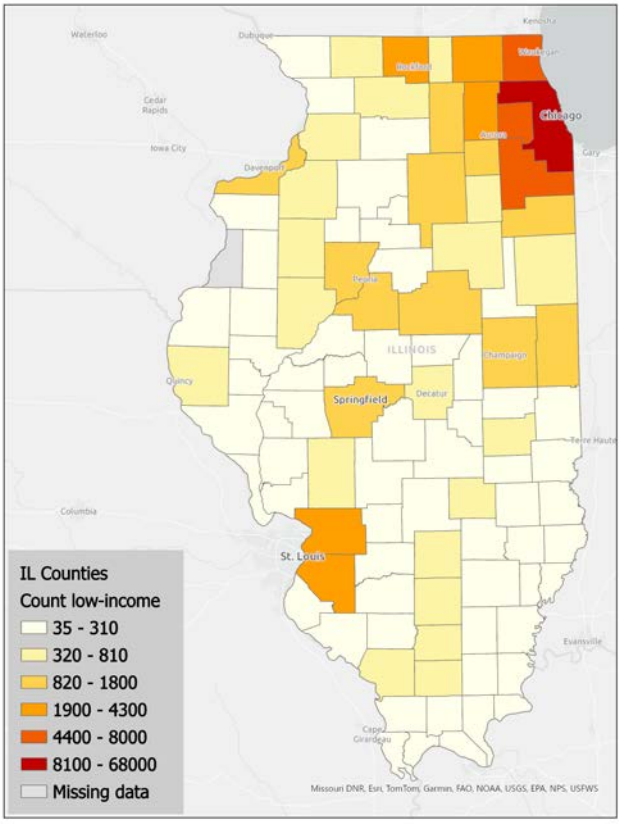
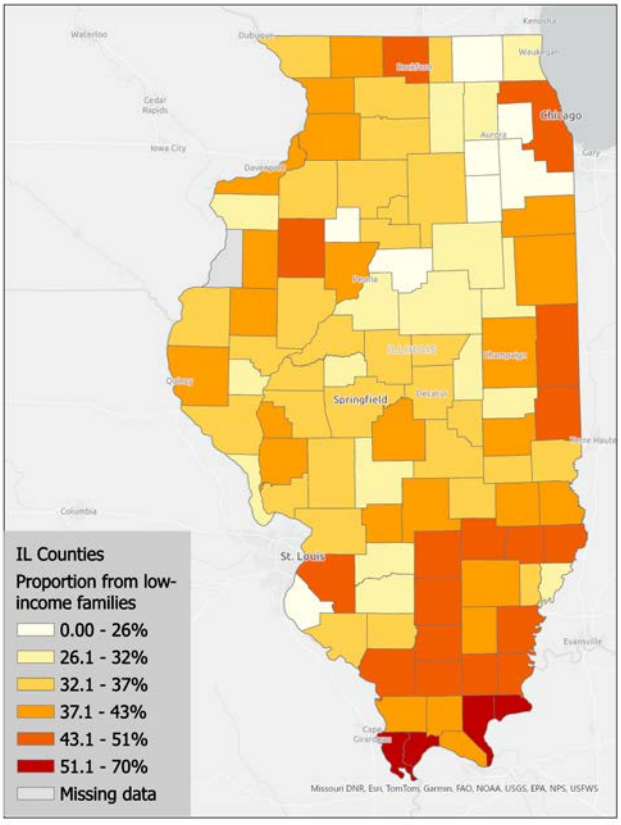


Figure 4. Heat map of low-income student percentage by Illinois county.



Note: Sample includes Illinois students from the high school senior classes of 2008-2012, n=341,061. Data for Henderson County is missing.

When examining geographic patterns of low-income student high school attendance in proportion to each county's population, a different pattern emerges. Figure 4 shows that Cook County, where Chicago is located, and St. Clair County, where East St. Louis is located, had high concentrations of students from low-income families. However, the counties surrounding Cook had relatively low concentrations, while the rate of low-income student representation was highest downstate, especially in counties at the very southern end of Illinois. Among students who attended high school in Alexander, Pulaski, Pope, and Hardin counties, more than 51% and up to 70% (Pulaski) were from low-income families.

Overall, findings from Figures 1-4 show that students from low-income households in our sample were disproportionately Black and Latino and slightly more likely to be female than male. They most commonly came from the largest metropolitan areas in Illinois, but they were most overrepresented among rural downstate counties. Next, we examine the postsecondary and career outcomes of these students.

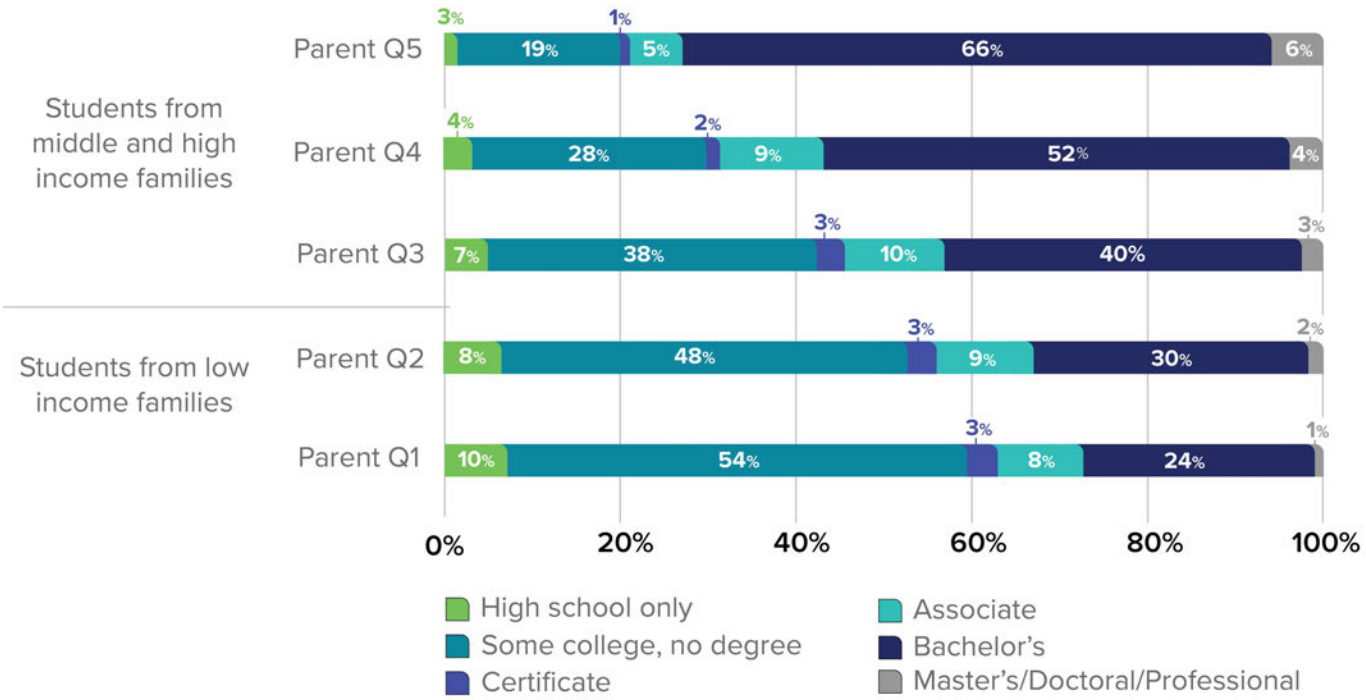
RQ2.

What postsecondary education degrees did students from low-income households attain and in what degree programs? What industries did students from low-income households go on to work in?

Low-income Student Degree Attainment

Figure 5 shows the distribution of students from each parent income quintile by the highest level of education they earned within six years of their high school senior year. Because our sample included only students who completed the FAFSA, those who enrolled in college were oversampled. Across quintiles, the most common levels of education were bachelor's degree, and "some college, no degree," which indicates that the student enrolled in college but did not graduate. However, the number of students in each of these categories varied dramatically by their parents' income. Students from low-income families (quintiles 1 and 2) most commonly earned some college but no degree, and the percentage of students in this category declined as parent income quintile increased. Students from the lowest-earning families (Q1) were 2.8 times more likely than students from the highest-earning families (Q5) to have "some college, no degree" as their highest level of education. Low-income students had the lowest representation among those with bachelor's degrees and master's, doctoral, or professional degrees, and the percentage of students in these categories increased as parent income quintile increased. Students from the highest-earning families (Q5) were 2.9 times as likely as students from the lowest-earning families (Q1) to earn a bachelor's degree or higher. Students from low-income households were also more likely than other students to have high school as their highest level of education and slightly more likely to have certificates, though both of these categories were uncommon.

Figure 5. Highest degree earned by parents' income quintile.



Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who had known degree attainment and met study inclusion criteria, excluding those who enrolled in or completed college outside of the 6-year postsecondary window and those who earned sub-baccalaureate certificates, n=329,319.

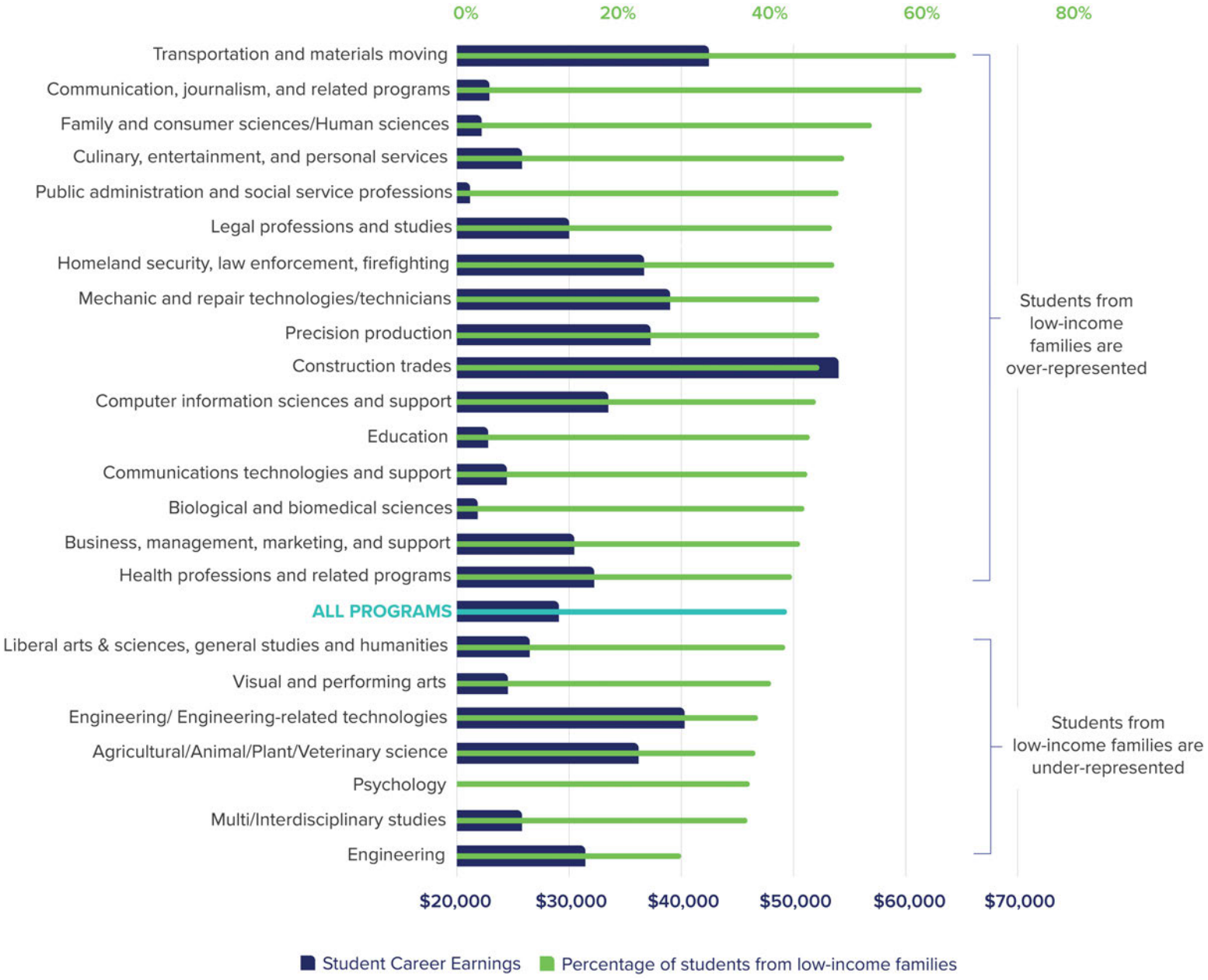
Low-income Student Programs of Study

Low-income students were not evenly represented across college degree programs. In what follows, we show the percentage of students from low-income households in each degree program across two graphs, one for associate degree and certificate graduates ("sub-BA degree holders"), and one for students who earned a bachelor's, master's, doctoral, or professional degree ("BA+ degree holders"). Note that students who enrolled in college but did not earn a degree are not included in these percentages.

In Figure 6A, the green bars display the percentage of students from low-income households for each degree program. For example, the top green bar shows that 65% of sub-BA degree holders in transportation and materials moving were from low-income households. Across all degree programs (shown on the teal bar), students from low-income households made up 43% of sub-BA degree holders. In other words, low-income students were greatly overrepresented among graduates with transportation and materials moving degrees. They were least represented among sub-BA degree holders in engineering, where they made up just 29% of graduates.

We also examine whether low-income students were overrepresented or underrepresented in programs that led to lower Career Earnings. The dark blue bars in Figure 6A display the Career Earnings of all sub-BA degree holders in that program who went on to work in stable jobs in Illinois three years later. We see that low-income students were overrepresented in both higher-earning programs, such as construction, and very low-earning programs, such as public administration and social service professions. Likewise, low-income students were underrepresented in both engineering/ engineering-related technologies, a higher-earning program, and psychology, a very low-earning program. Overall, there was little difference in average Career Earnings between graduates of degree programs with over- vs. under-representation of students from low-income households. Graduates of the sub-BA degree programs that consisted disproportionately of students from low-income households averaged $29,168 in earnings annually, while graduates of degree programs with an underrepresentation of students from low-income households averaged $30,982 annually.

Figure 6A. Percentage of students from low-income families and average Career Earnings by degree program, associate degrees and certificates (sub-BA degrees).

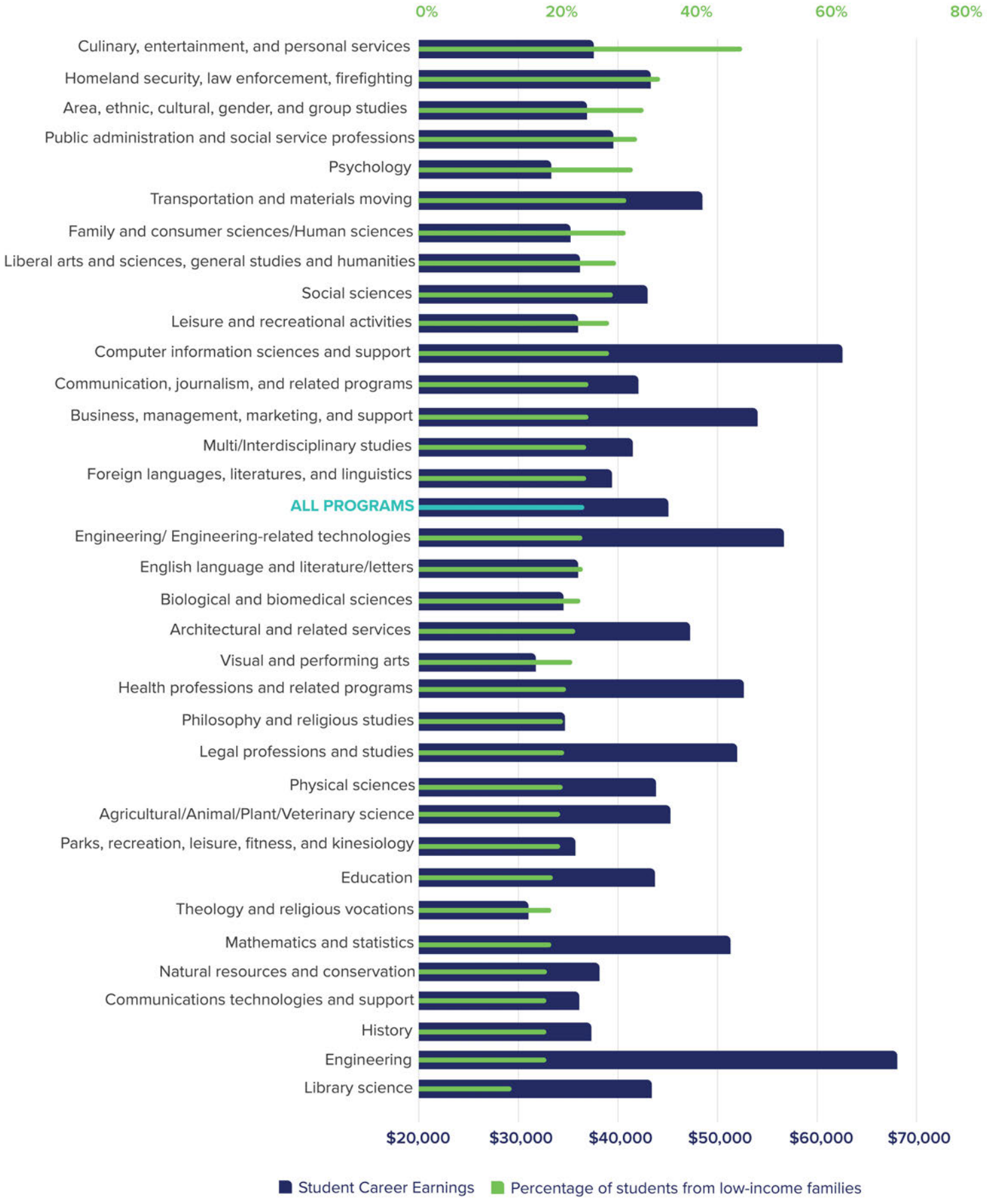


Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who earned an associate degree or certificate (i.e. sub-BA degree) and met study inclusion criteria, n=34,614. "Students from low-income families" refers to students whose parents' adjusted gross income was categorized as quintile 1 or 2. Degree labels reflect 2020 2-digit CIP titles. Career Earnings reflect estimated annual wages of all students (low- and medium/high-income) in that degree program with associate degrees or certificates who worked in a full-quarter job three years (12 quarters) after their highest degree or latest postsecondary enrollment. "All programs" percentage reflects percentage of students from low-income families across all associate degrees and certificates. "All programs" Career Earnings reflect weighted average wages across all associate degrees and certificates. Programs with counts (N) below 40 are not shown, nor are percentages and earnings for students with unknown degree programs.

Figure 6B displays the percentage of students from low-income households and average Career Earnings by degree program among those BA+ degree holders. The teal bar shows that, across all degree programs, 24% of BA+ degree holders were from low-income households. The associated dark blue bar shows that BA+ degree holders who went on to work in a stable job in Illinois three years later earned an average of $45,195 annually. Students from low-income households were most overrepresented in culinary, entertainment, and personal services degree programs, where they made up 47% of all graduates. In fact, this degree program was the only one in which low-income students were over-represented not only relative to their representation among BA+ degree holders, but also relative to their representation in the full student sample (of which they made up 40%). Students from low-income households were least represented in library science degree programs, where they made up just 14% of graduates.

As we saw when examining representation among sub-BA degree holders, we see in Figure 6B that students from low-income households were overrepresented in some high-earning programs of study and underrepresented in others. There was little difference in average annual earnings between the programs in which students from low-income households were over- vs. underrepresented. Career earnings among graduates of degree programs in which students from low-income households were concentrated averaged $42,091 annually, while Career Earnings among degree programs with low percentages of students from low-income households averaged $43,290 annually.

Figure 6B. Percentage of students from low-income families and average Career Earnings by degree program, bachelor's, master's, doctoral, & professional degrees (BA+ degrees).



Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who earned a bachelor's degree or higher (BA+ degrees) and met study inclusion criteria, n=150,127. "Students from low-income families" refers to students whose parents' adjusted gross income was categorized as quintile 1 or 2. Degree labels reflect 2020 2-digit CIP categories. Career Earnings reflect estimated annual wages of all students (low- and medium/high-income) in that degree program with bachelor's, master's, doctoral, or professional degrees who worked in a full-quarter job three years (12 quarters) after their highest degree or latest postsecondary enrollment. "All programs" percentage reflects percentage of students from low-income families across all bachelor's, master's and doctoral/ professional degrees. "All programs" Career Earnings reflect weighted average wages across all bachelor's, master's and doctoral/professional degrees. Programs with counts (N) below 40 are not shown, nor are percentages and earnings for students with unknown degree programs.

Low-income Student Industry of Employment

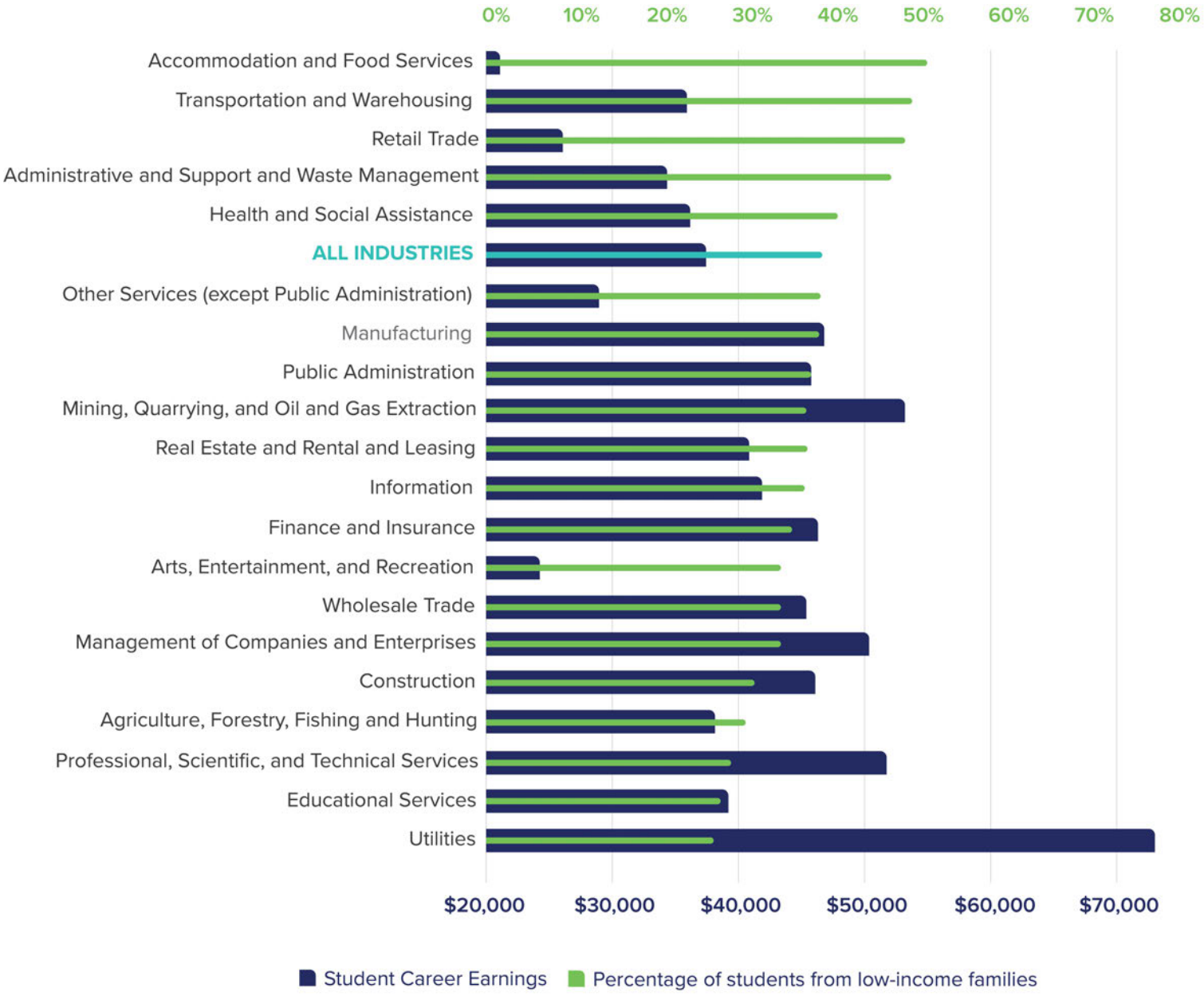
Next, we move from looking at degree programs and examine the industries in which students from low-income households worked three years after their latest educational enrollment or graduation. Figure 7 displays the percentage of students from low-income households working in each industry in green bars and the average earnings among students in that industry in dark blue bars. Note that the sample for this figure differs from those of Figures 6A and 6B in that it includes all students working in a stable job in Illinois three years following high school or their latest postsecondary event, not only college graduates.

Across all industries, 39% of students were from low-income households, as shown in the teal bar. Average Career Earnings across all students in all industries was $37,536 annually. Students from low-income households were overrepresented in several industries, especially Accommodation and Food Services, where they made up 51% of all workers, followed closely by Transportation and Warehousing (49%) and Retail Trade (49%). They were least represented in Utilities and Educational Services, where they made up just 27% of workers.

To some extent, patterns of industry representation reflected the degree programs in which college graduates from low-income households were most concentrated. For example, students from low-income households were overrepresented among graduates of transportation and materials moving as well as workers in the Transportation and Warehousing industry. Similarly, they were over-represented among graduates of culinary, entertainment, and personal services as well as workers in the Accommodation and Food Services industry. In other cases, the degree programs in which students from low-income households concentrated were not indicative of industry representation. For example, students from low-income households were overrepresented in construction trades and precision production degree programs, but they were underrepresented in the Construction and Manufacturing industries.

On average, the industries in which students from low-income households were overrepresented were lower-earning than the industries in which they were underrepresented. There were some exceptions to this general trend; for example, students from low-income households were underrepresented in Arts, Entertainment, and Recreation, a very low-earning industry category. Yet overall, the industries in which students from low-income households were concentrated earned $30,786 annually, just two thirds of the earnings for industries in which they were underrepresented, where students averaged $44,905 annually.

Figure 7. Percentage of students from low-income families and average Career Earnings by industry.



Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who were employed in a full-quarter job in quarter 12 and met study inclusion criteria, n=171,357. "Students from low-income families" refers to students whose parents' adjusted gross income was categorized as quintile 1 or 2. Career Earnings reflect estimated annual wages of all students who worked in a full-quarter job three years (12 quarters) after their highest degree or latest postsecondary enrollment. Industry labels reflect 2-digit NAICS categories. "All industries" percentage reflects percentage of students from low-income families across industries. "All industries" Career Earnings reflect weighted average wages across all industries.

RQ3.

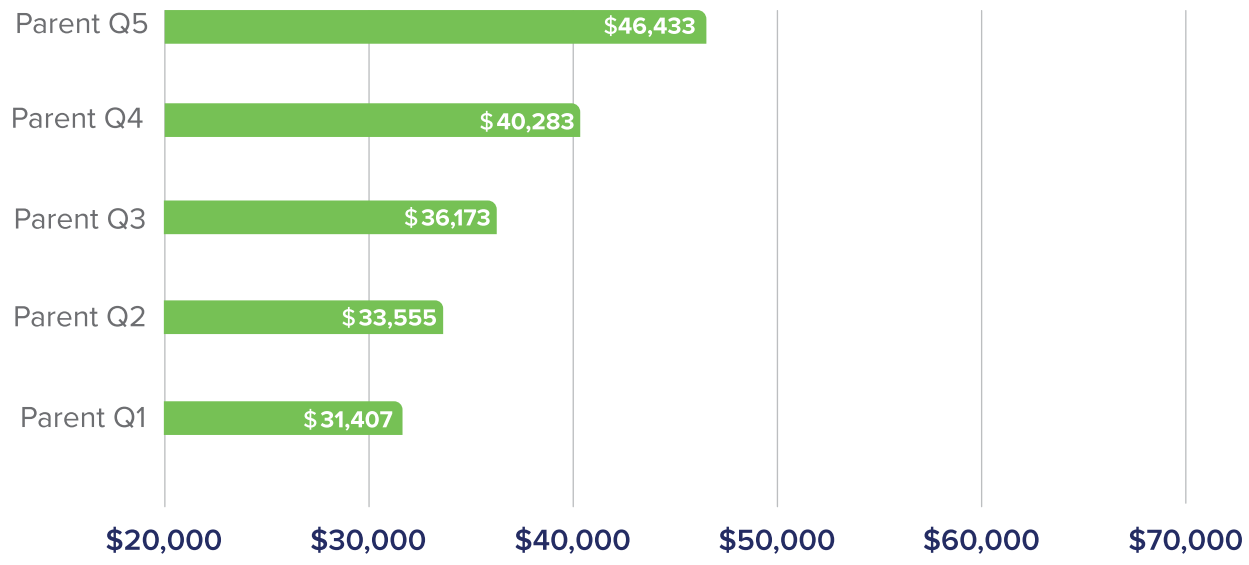
How did students' earnings vary by the income level of the households they grew up in?

Earnings Disparities by Parent Income

Our final section examines how Career Earnings varied across students who grew up in low-, middle-, and high-income households. We found that, on average, the higher the earnings of students' parents, the higher the earnings of students themselves, as measured three years after their latest educational enrollment or graduation among students in stable jobs in Illinois. Figure 8 shows that students whose parents earned in the lowest quintile (Parent Q1) went on to earn an average of $31,407 annually, while those whose parents earned in the highest quintile (Parent Q5) earned 48% more, averaging $46,433 annually in 2017 dollars.

For context, the federal poverty level (FPL) for a single adult with no children in 2017 was $11,756 (US Census Bureau, 2024), putting average earnings among students from the lowest-income families above 250% of the FPL. However, according to the MIT living wage calculator, which estimates the earnings required to pay for basic needs (Glasmeier, 2024), the annual living wage for a single adult with no children in Illinois would be $36,973 in 2017 dollars[4]—a threshold met only by students whose parents earned in the two highest-income quintiles.

Figure 8. Student Career Earnings by parents' income quintile.



Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who were employed in full-quarter jobs in quarter 12 and met study inclusion criteria, n=171,357. Parent Q1 refers to students with parents with adjusted gross income (AGI) in quintile 1, Parent Q2 reflects students with parents with AGI quintile 2, and so forth.

[4] This estimate was calculated using the Living Wage Calculator's estimate of a living wage in Illinois for a single adult with no children in 2024 ($47,559). The authors converted this to 2017 dollars using a cumulative inflation rate from 2017 to 2024 of 28.6%.

RQ3 A.

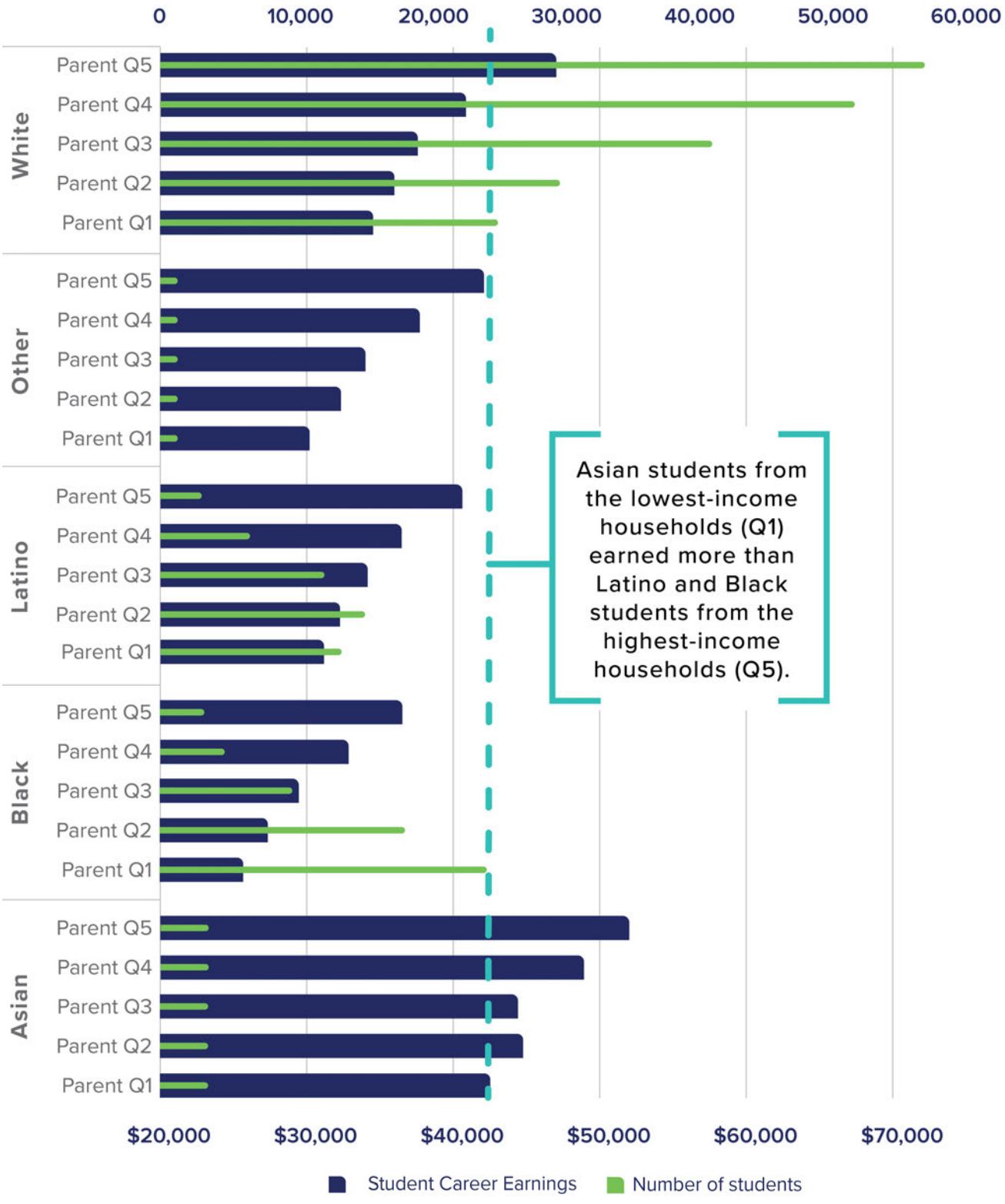
How did the relationship between parent income and student earnings vary by students' demographic characteristics?

Earnings Disparities by Parent Income and Race

The pattern of higher parent earnings being associated with higher student Career Earnings holds within every racial/ethnic group. However, race/ethnicity intersected with parents' household income to predict vastly different earnings among students with different racial/ethnic identities within the same household earnings quintile. These patterns are shown in Figure 9, where the dark blue bars display students' average Career Earnings across racial/ethnic groups and household income quintiles. Within each quintile of parents' earnings, Asian students earned more than White students, who earned more than Other, Latino, and Black students. In many cases, the between-race earnings differences were greater than the between-household income earnings differences. For example, Asian students from the lowest-income households (Parent Q1) earned more than Other race, Latino, and Black students from the highest-income households (Parent Q5). Overall, the average earnings gap between the highest versus lowest-earning racial/ethnic groups—Asian versus Black—was greater at $18,302 annually than the earnings gap between students from the highest versus lowest household income groups, which was $15,026 annually.

The green bars in Figure 9 display the count of students in each racial/ethnic and household income quintile group. These counts, which underlie the percentages displayed in Figure 1, highlight differences across racial/ethnic groups in representation across quintiles of parent earnings. We see, for example, that not only did White students go on to earn more than Other race, Latino, and Black students from the same household income quintiles; they were also much more likely to come from higher-earning households. In this way, Latino and Black students in our sample were doubly disadvantaged, earning less than other racial/ethnic groups across parent earnings quintiles and being disproportionately represented among students with low-income parents.

Figure 9. Student Career Earnings and number of students by race/ethnicity and parents' income quintile.



Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who met study inclusion criteria, n=341,061. Career Earnings reflect estimated annual wages of all students who worked in a full-quarter job three years (12 quarters) after their highest degree or latest postsecondary enrollment, n=171,357. Parent Q1 refers to students with parents with adjusted gross income (AGI) in quintile 1, Parent Q2 reflects students with parents with AGI quintile 2, and so forth.

Earnings Disparities by Parent Income and Gender

Like with race/ethnicity, Career Earnings within each household income quintile varied by gender. The dark blue bars in Figure 10 show that coming from a household with higher income is associated with higher earnings for both men and women. Within each quintile of household income, male students went on to earn more than female students, on average. In fact, male students whose parents were in the lowest earnings quintile (Parent Q1) earned more than female students whose parents were in the middle earnings quintile (Parent Q3). However, the overall average annual earnings gap between all men and women was $5,988—smaller than the annual earnings gap between students from the highest- versus lowest-earning household income quintiles, which was $15,006 for men and $14,483 for women.

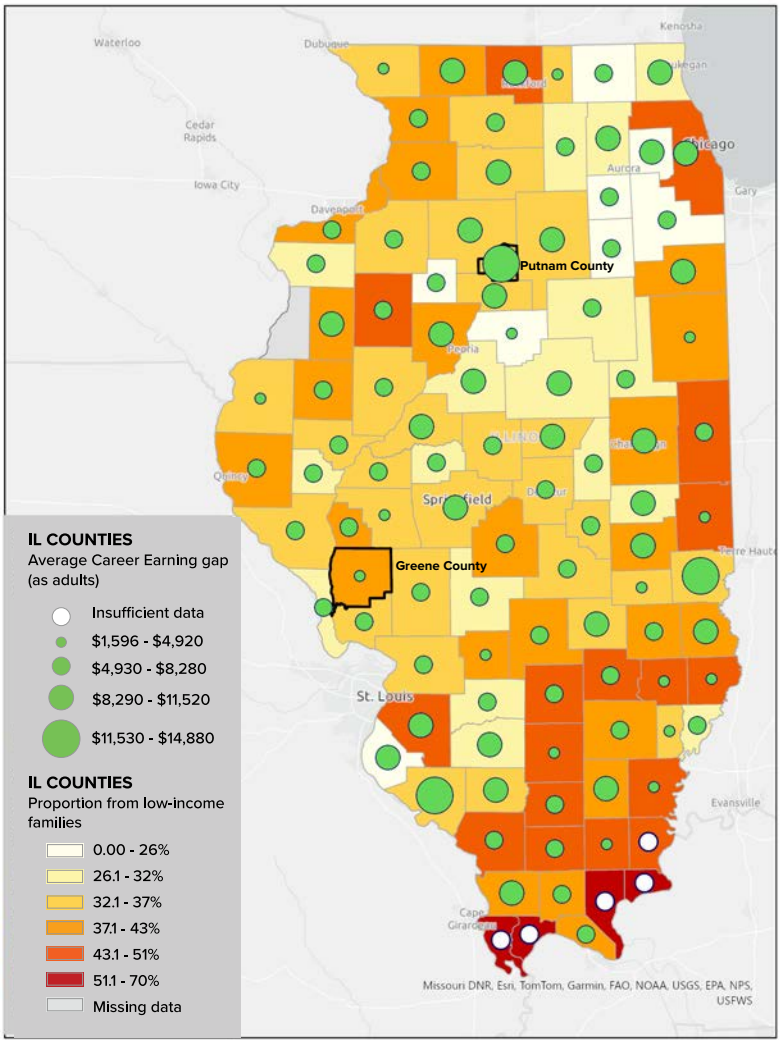
Figure 10. Student Career Earnings and number of students by gender and parents' income quintile.

Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who met study inclusion criteria, n=341,061. Career Earnings reflect estimated annual wages of all students who worked in a full-quarter job three years (12 quarters) after their highest degree or latest postsecondary enrollment, n=171,357. Parent Q1 refers to students with parents with adjusted gross income (AGI) in quintile 1, Parent Q2 reflects students with parents with AGI quintile 2, and so forth.

Earnings Disparities by Parent Income and Geography

Next, we examined how the relationship between parents' income and students' Career Earnings varied by county. Figure 11 displays the heat map of low-income student concentration from Figure 4 with an overlay of the average adult Career Earnings difference between students who came from low-income (Parent Q1 or Q2) versus medium- or high-income (Parent Q3-Q5) families. This difference is represented by the green circles. In every county of Illinois for which we had sufficient data,[5] students from higher-earning families went on to earn more than students from lower-earning families. However, the size of this earnings gap, represented by the size of the green circles, varied greatly, ranging from $1,596 annually (Greene County) to $14,880 annually (Putnam County).

Figure 11. Heat map of low-income student percentage by Illinois county with overlay displaying average Career Earnings gap.



Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who met study inclusion criteria, n=341,061. Adult earnings gap is derived from Career Earnings, based on students with full-quarter employment in quarter 12, n=171,357. Parent Q1 refers to students with parents with adjusted gross income (AGI) in quintile 1, Parent Q2 reflects students with parents with AGI quintile 2, and so forth.

[5] The four counties with the highest percentages of students from low-income families—Alexander, Pulaski, Pope, and Hardin counties—had insufficient numbers (N<40) of students from middle- and high-income families to make a valid comparison. Data from Henderson County was missing.

We were interested in whether the size of the observed earnings gaps varied consistently by the percentage of students from low-income households. In Table 1, we show earnings data by each category of county percentage of students from low-income households. The third column shows the average Career Earnings for each category. We see that Career Earnings among students in each county decreased as the percentage of students from low-income families increased. This finding is consistent with our previous figures showing that students from higher-income households earned more, on average. However, there was no clear relationship between a county's percentage of students from low-income households and the adult earnings gap compared to students from middle- and high-income households, as shown in the right-most column.

Table 1. Students' average Career Earnings and average Career Earnings gap, by county percentage of students from low-income households.

County percentage of students from low-income households	Number of counties in category	Students' average Career Earnings (annual)	Average gap in Career Earnings between students from low and middle/high income households (annual)
0.00-26%	8	$39,970	$6,585
26.1-32%	17	$36,727	$7,820
32.1-37%	31	$35,334	$7,664
37.1-43%	24	$33,477	$7,474
43.1-51%	17	$32,624	$6,177
51.1-70%	4	$27,307	Insufficient data

Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who met study inclusion criteria, n=341,061. Career Earnings based on students with full-quarter employment in quarter 12, n=171,357.

We also examined differences in Career Earnings and earnings gaps between students who attended high school in urban versus rural counties. Students who attended high school in urban counties went on to earn $1,975, or 6%, more annually than those who attended in rural counties. Using data from the Economic Policy Institute (Family Budget Map, 2024),[6] we estimate that the average cost of living in urban Illinois counties is approximately 5% higher than in rural counties. While we do not have data on where students lived as adults, we assume based on national data that many lived in or near the community they were raised (Parker et al., 2018). Therefore, the true spending power between students from urban areas versus rural areas, adjusted for cost of living, may have been more similar than our estimates suggest. However, the earnings gap between students from low-income households (Parent Q1 or Q2) and students from higher-income households (Parent Q3-Q5) was significantly larger—by $1,792, or 26%—among students from urban counties compared to rural.

[6] Economic Policy Institute Family Budget Calculator estimates cost of living in January 2024 using 2023 dollars. We used data on cost of living by county for a single adult with no children.

Table 2. Students' average adult earnings and average adult earnings gaps by county urbanicity.

County Urbanicity	Students' average Career Earnings (annual)	Average gap in Career Earnings between students from low and middle/high income households (annual)
Urban	$36,583	$8,725
Rural	$34,608	$6,933

Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who met study inclusion criteria, n=341,061. Career Earnings reflect estimated annual wages of all students who worked in a full-quarter job three years (12 quarters) after their highest degree or latest postsecondary enrollment, n=171,357.

RQ3 B.

How did the relationship between parent income and student earnings vary by students' highest educational degree, program of study, and industry of work?

Earnings Disparities by Parent Income and Degree Attainment

Figure 12 shows in dark blue bars the average Career Earnings for students across quintiles of their parents' income and levels of the highest degree students earned. We see that within every level of education except high school only, students from higher-income families earned more than students from lower-income families. Across degree levels, this socioeconomic disparity averaged $5,815 annually. Interestingly, among those with no more than a high school degree, students from low-income families (Parent Q1 and Q2) earned more than students from high-income families (Parent Q4 and Q5). However, earnings across all students at this degree level were very low, on average.

Despite the differences in students' earnings by their parents' earnings within degree levels, there were much larger differences in students' earnings across degree levels. Students with sub-baccalaureate education (some college, no degree; certificate; associate degree) earned more at every level of parent income than students with no more than a high school degree. Likewise, students with a bachelor's degree earned more at every level of parent income than students with sub-baccalaureate education, and students with a master's, doctoral, or professional degree earned more at every level of parent income than students with a bachelor's degree. In general, students with higher education earned more, regardless of how much their parents earned.

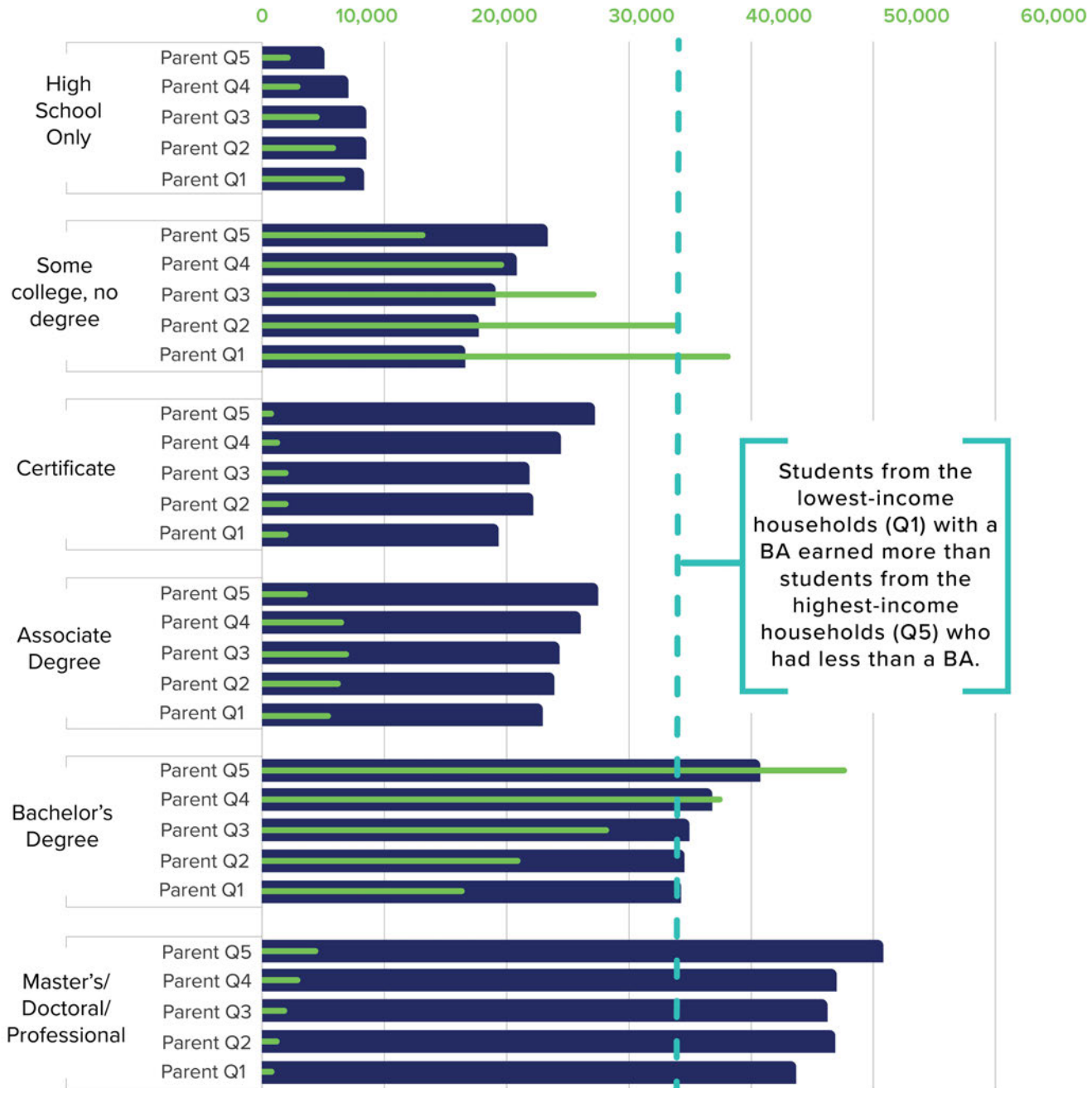
There were caveats to this general trend among students with sub-baccalaureate levels of postsecondary education, for whom average Career Earnings were similar.[7] Among these degree levels, students from higher-income families often earned more than students from lower-income families who had higher degrees. For example, students from the highest earning families (Parent Q5) who earned some college but no degree earned more than students with certificates from low- and middle-income families (Parent Q1-Q3) and more than students with associate degrees from the lowest-earning families (Parent Q1). Similarly, students from the highest earning families (Parent Q5) who earned certificates earned more than students with associate degrees from all but the highest-earning families.

[7] Average Career Earnings among students with sub-baccalaureate degrees were as follows: some college, no degree averaged $28,767 annually; certificate averaged $32,325 annually; and associate degree averaged $34,738 annually.

Yet overall, a student's highest level of education was more strongly related to their adult Career Earnings than their parents' income was. The average annual earnings gap between students from the highest-income families and the lowest income families was $15,026, while the average annual earnings gap between students with the highest level of education (master's/doctoral/professional degrees) and the lowest level of education (high school only) was more than 2.5 times larger, at $39,966. In fact, the gap between the most common educational degree—bachelor's—and the next-highest degree—associate—was $12,968, almost as large as the gap between students from the highest- and lowest-income families.

While students from low-income families earned substantially more when they attained higher levels of education, they were the least likely to do so, as underscored by the green bars displaying student counts. These counts underlie the percentages previously displayed in Figure 5.

Figure 12. Student Career Earnings and number of students by parents' income quintile and highest degree earned.



Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who had known degree attainment and met study inclusion criteria, excluding those who enrolled in or completed college outside of the 6-year postsecondary window and those who earned sub-baccalaureate certificates, n=329,319. Career Earnings reflect estimated annual wages of all students who worked in a full-quarter job three years (12 quarters) after their highest degree or latest postsecondary enrollment, n=171,357. Parent Q1 refers to students with parents with adjusted gross income (AGI) in quintile 1, Parent Q2 reflects students with parents with AGI quintile 2, and so forth.

Earnings Disparities by Parent Income and Program of Study

Among college graduates, we examined whether student earnings among those with degrees in the same programs of study varied by their parents' income levels. The dark blue bars in Figure 13A show student Career Earnings by degree program and parent income quintile among students who earned certificates or associate degrees ("sub-BA degree holders"). We see that students from higher-income families earned more than students from lower-income families in the same certificate and associate degree programs by $3,753 annually on average. However, there were a number of exceptions to this general trend. For example, among sub-BA degree holders in visual and performing arts, students whose parents earned in the second-lowest quintile averaged the highest earnings, though earnings in this degree program were relatively low across all quintiles. Some other programs, such as liberal arts and sciences, general studies and humanities followed the trend of students from higher-income families earning more, but the differences by parent earnings were small.

Differences in Career Earnings between degree programs, on the other hand, were large. For example, students from the lowest-earning families who earned sub-BA degrees in construction trades earned more than students from the highest-earning families in most other degree programs (with the exceptions of engineering/engineering-related technologies, mechanic and repair technologies/technicians, and precision production). Overall, the average annual earnings gap between sub-BA degree holders from the highest-earning program (construction trades) and lowest-earning program (psychology[8]) was $34,029—more than 2 times larger than the gap between students from the highest-income families and the lowest-income families of $15,026. These findings suggest that degree program was more strongly related to sub-BA degree holders' earnings than was the income of the household they grew up in.

The green bars show that some degree programs were much more popular than others, with liberal arts and sciences, general studies and humanities leading in popularity. We also see that low-income students were overrepresented in some degree programs and underrepresented in others. These findings echo those shown in Figure 6A, which showed the percentage of students from low-income families in each degree program among sub-BA degree holders. Figure 13A provides additional detail, showing that the programs in which low-income students were most overrepresented had very low counts overall. For example, among graduates of transportation and materials moving programs, which had the highest low-income representation, students from the lowest-earning households (Parent Q1) were the only group with sufficient representation (N>40) to be displayed in the figure.

[8] The psychology degree program is not shown in Figure 13A due to low counts (<40).

Figure 13A. Student Career Earnings and number of students by degree program and parents' income quintile, certificate and associate degrees (sub-BA degrees) (continued on next page).

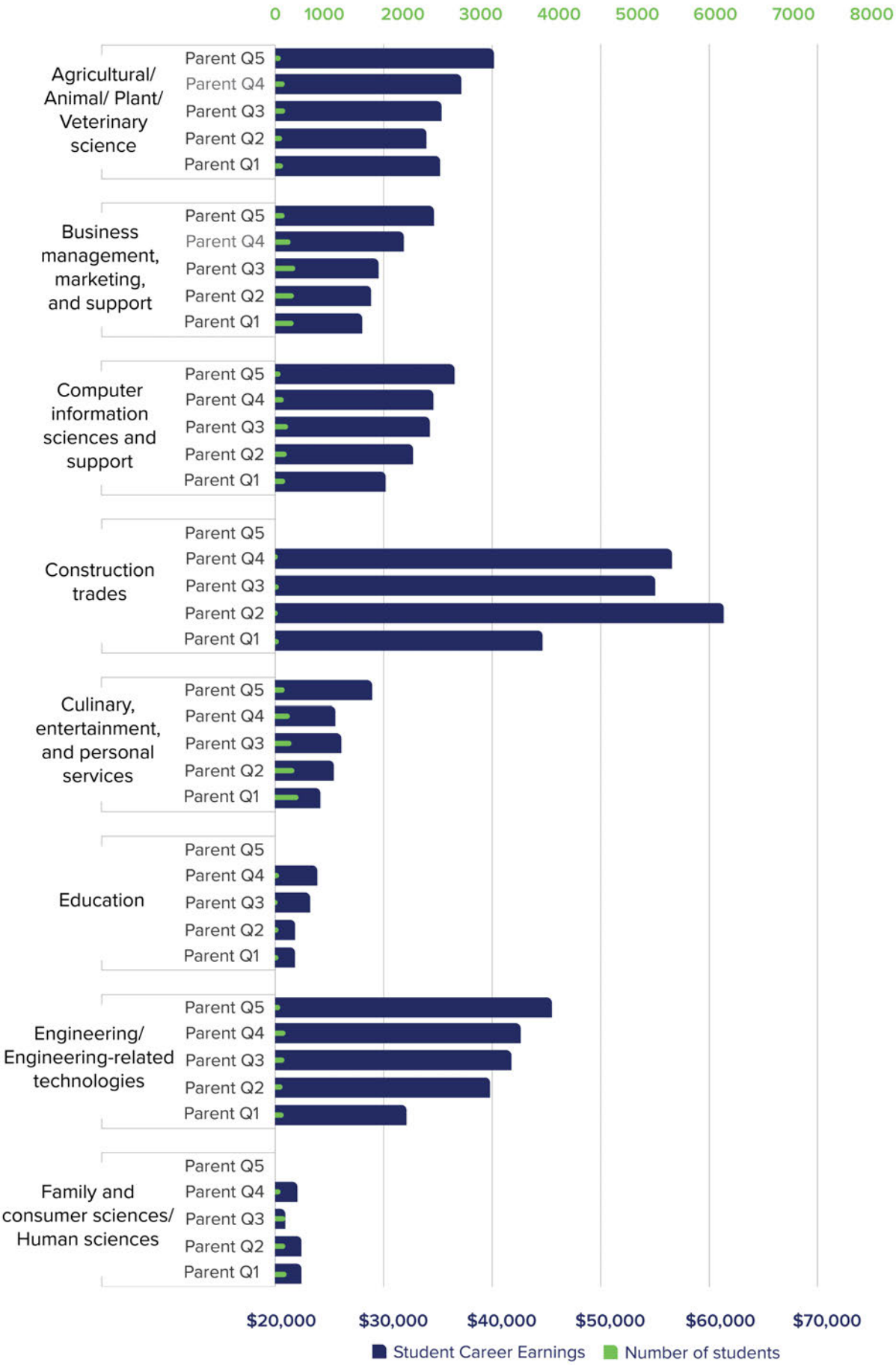
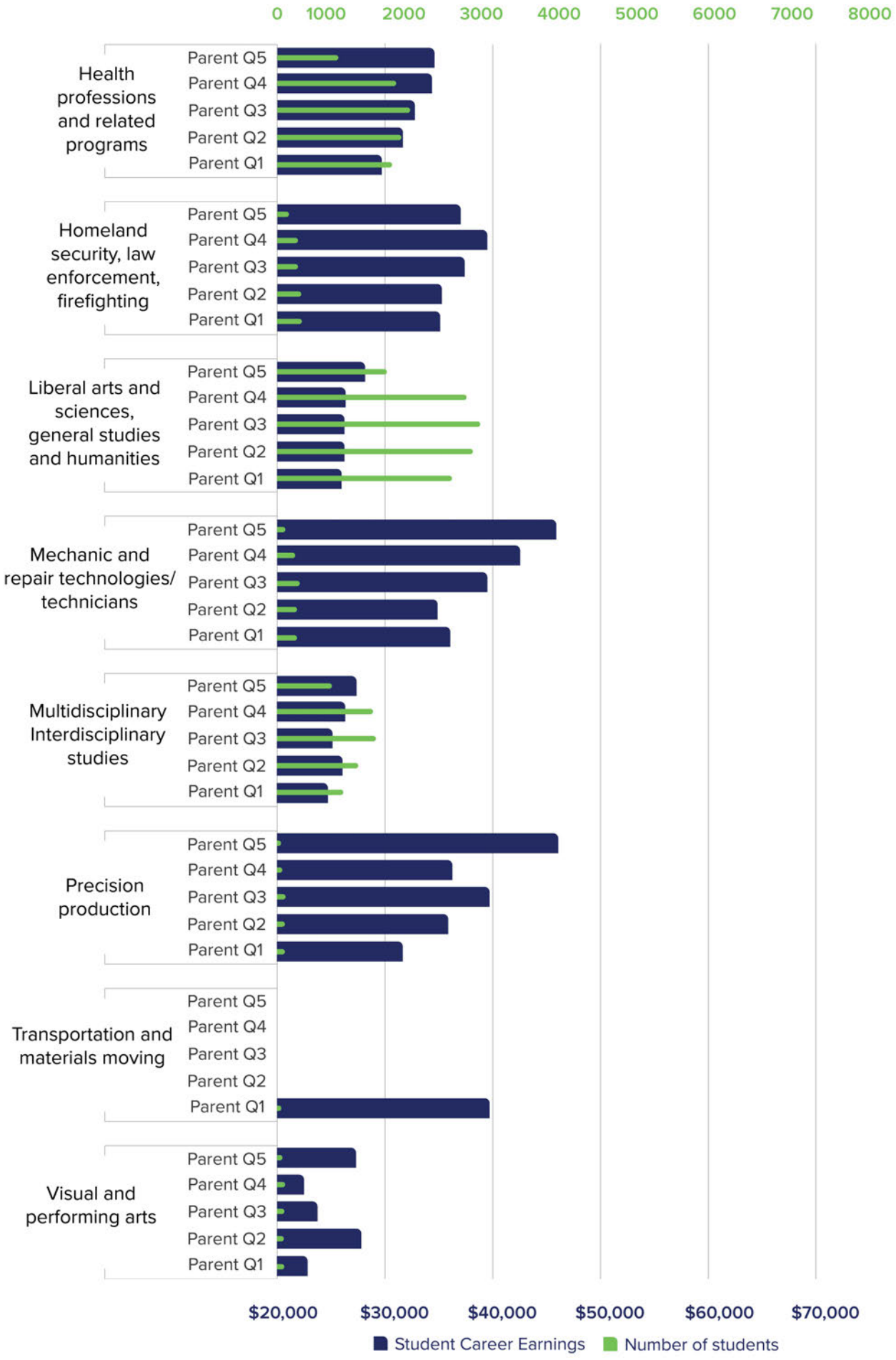


Figure 13A (cont.).



Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who met study inclusion criteria and earned an associate degree or certificate (sub-BA degree), n=33,428. Career Earnings reflect estimated annual wages of all students (low- and medium/high-income) in that degree program with associate degrees or certificates who worked in a full-quarter job three years (12 quarters) after their highest degree or latest postsecondary enrollment. Degree program labels reflect 2020 2-digit CIP titles. Parent Q1 refers to students with parents with adjusted gross income (AGI) in quintile 1, Parent Q2 reflects students with parents with AGI quintile 2, and so forth. Quintiles with counts (N) below 40 for any degree program are not shown.

Figure 13B shows how Career Earnings among graduates with bachelor's, master's, doctoral, and professional degrees (BA+ degree holders) varied by degree program and parents' income levels. As with sub-BA degree holders, we found that students from higher-income families earned more on average than students from lower-earning families in the same degree programs, with a mean difference of $5,028 annually. Some degree programs did not follow this trend, also echoing findings for sub-BA degree holders. For example, among BA+ degree holders in architecture and related services, earnings were similar across parent income quintiles, and students from the lowest-earning households (Parent Q1) averaged the highest earnings.

Differences by parents' income quintiles in Career Earnings within degree programs were small relative to differences in Career Earnings between degree programs. Within the highest-earning degree program, engineering, students from households in the second quintile of parent earnings (Parent Q2) averaged the lowest earnings. Yet this group earned more than graduates of any other degree programs regardless of parent income, with the exception of students from the highest-earning families (Parent Q5) who earned degrees in computer and information sciences and support services. Between engineering graduates and graduates of the lowest-earning degree program, theology and religious vocations, the annual earnings gap was $37,261, about 2.5 times the size of the average earnings gap between students from the highest-income families compared to the lowest. As we saw with sub-BA degree holders, degree program was related more strongly to students' earnings than the income of the household they grew up in.

The green bars show that BA+ degree holders most commonly came from higher-income families. This was true for every degree program except culinary, entertainment, and personal services, which is not displayed due to low counts (N<40) in each parent quintile group. This pattern reflects Figure 5's findings that students from low-income families were severely underrepresented among BA+ degree holders. Of the degree programs in which low-income students were overrepresented relative to their population among BA+ degree holders (shown in Figure 6B), several were degrees that were very popular overall, including business, management, marketing, and support (the most popular degree program); psychology; and social sciences.

Figure 13B. Student Career Earnings and number of students by degree program and parents' income, bachelor's, master's, and doctoral/professional degrees (BA+ degrees) (continued on next page).

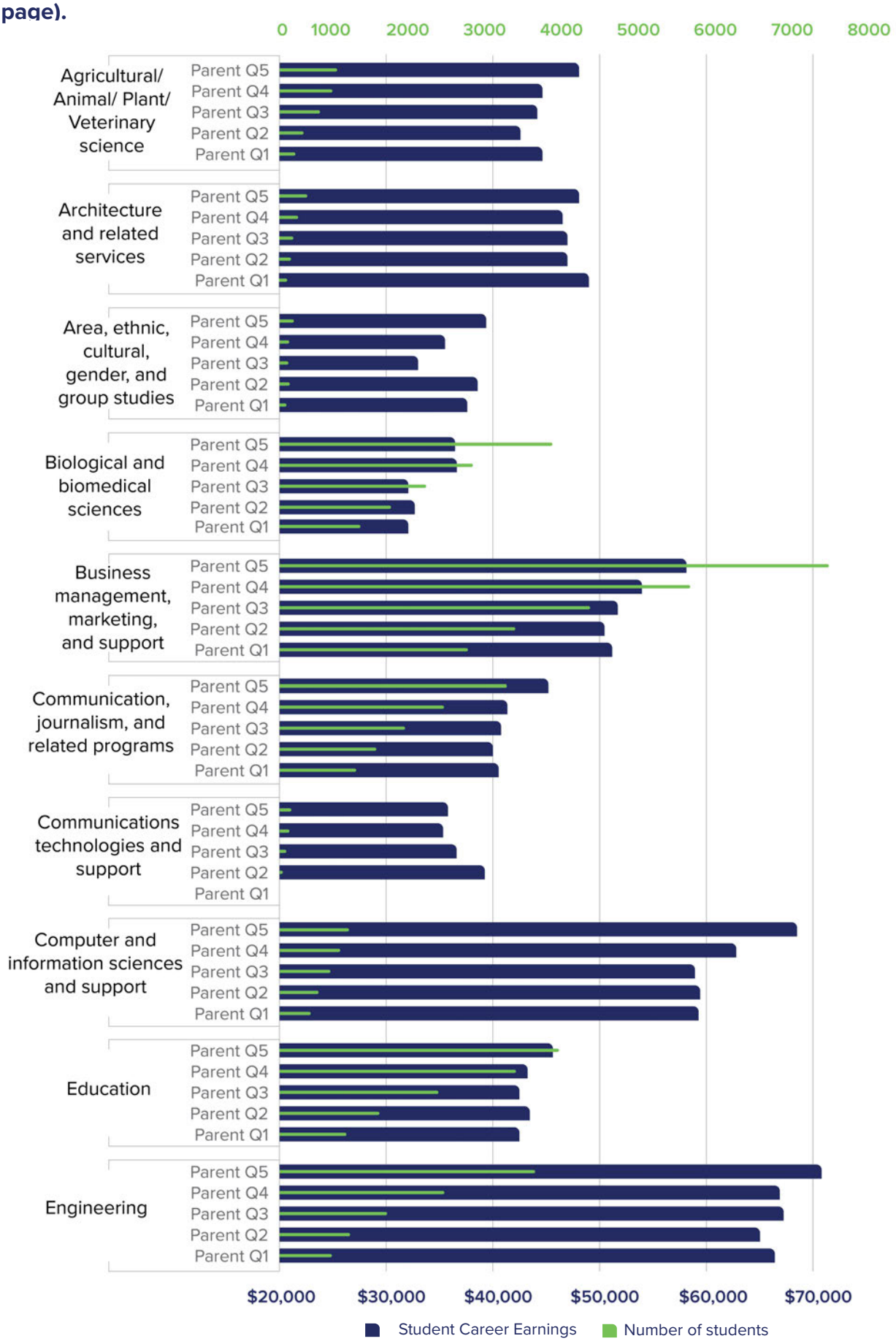


Figure 13B (cont.). (continued on next page).

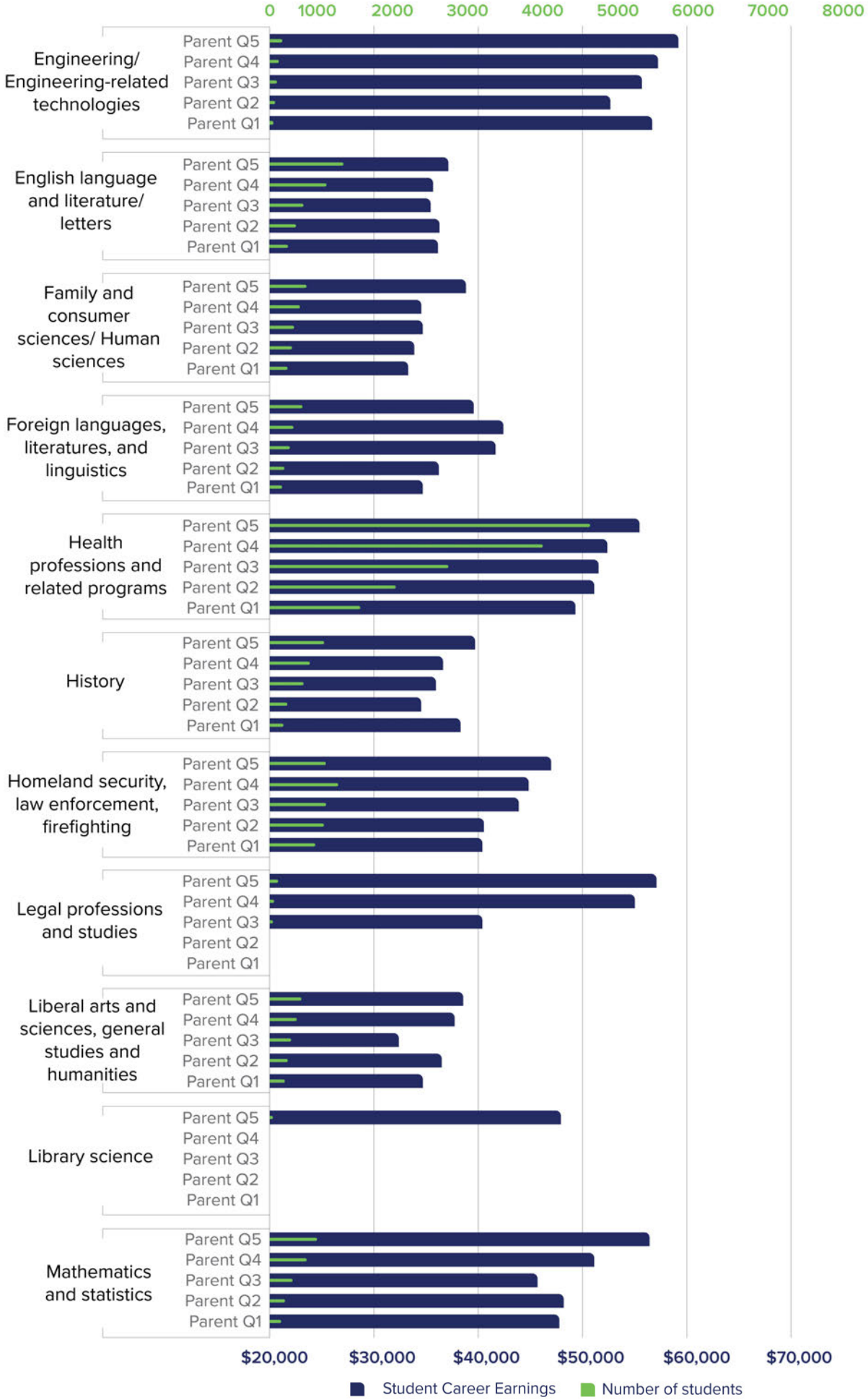
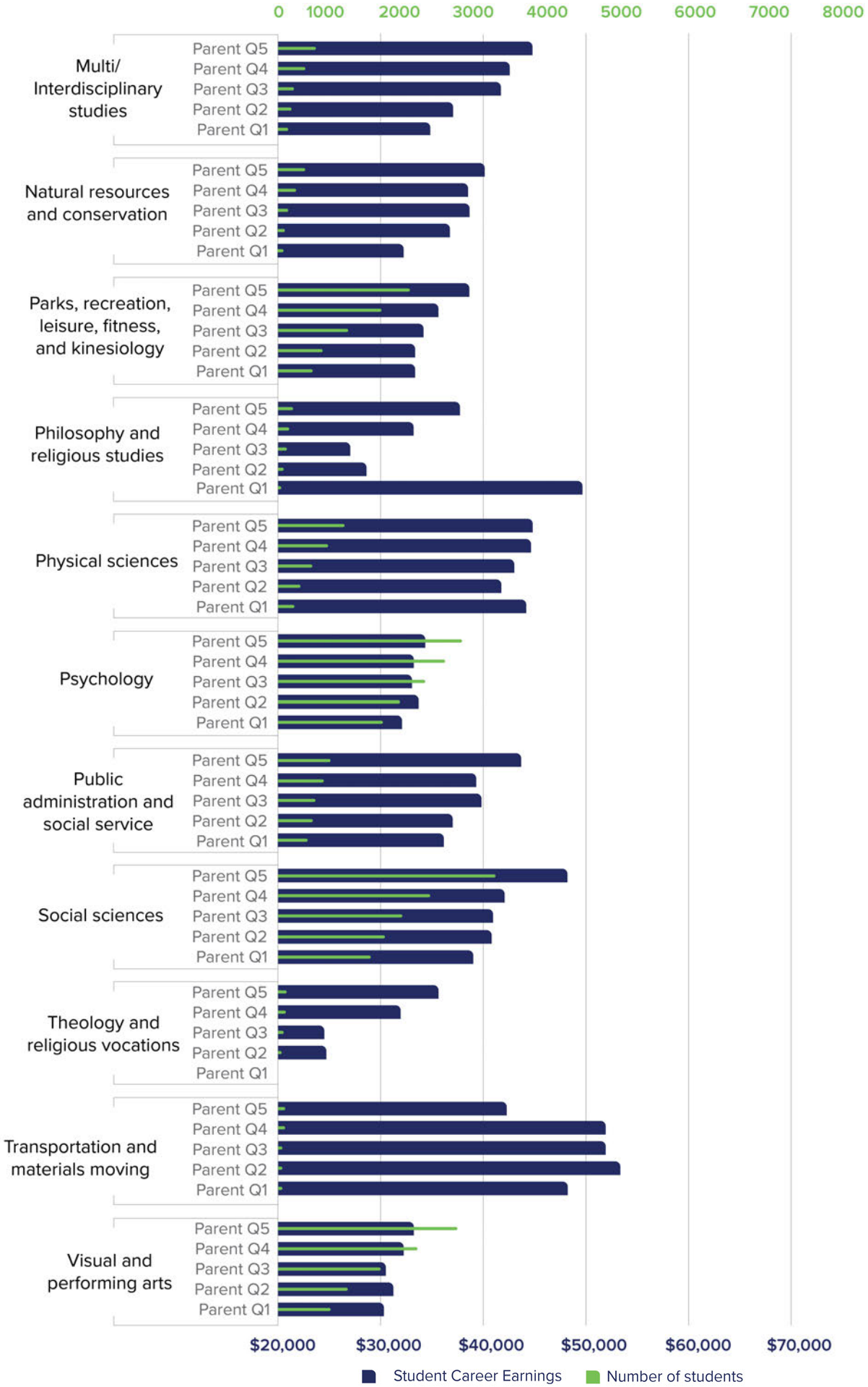


Figure 13B (cont.).



Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who met study inclusion criteria and earned a bachelor's degree or higher (BA+ degree), n=147,242. Career Earnings reflect estimated annual wages of all students (low- and medium/high-income) in that degree program with bachelor's, master's, doctoral, or professional degrees who worked in a full-quarter job three years (12 quarters) after their highest degree or latest postsecondary enrollment. Degree labels reflect 2020 2-digit CIP titles. Parent Q1 refers to parents with adjusted gross income (AGI) in quintile 1, Parent Q2 reflects AGI quintile 2, and so forth. Quintiles with counts (N) below 40 for any degree program are not shown.

Earnings Disparities by Parent Income and Industry

Finally, we examined how students' Career Earnings within industries varied by their parents' income levels. In Figure 14, we show earnings among not only college graduates, but all students in the sample. Within every industry, students from low-income families (Parent Q1 and Q2) earned less than students from middle- and high-income families (Parent Q3-Q5). On average, the annual within-industry earnings gap between students from the lowest versus the highest-income households was $11,274.

The size of the within-industry earnings gap by parent income varied across industries, however. The earnings gap was lowest within the two lowest-earning industries: Arts, Entertainment, and Recreation, where the difference between students from Parent Q5 households and Parent Q1 households was $3,753 annually, and Accommodation and Food Services, where the difference was $5,116 annually. The gap was highest in Administrative and Support and Waste Management and Remediation Services, where the difference was $17,013 annually. This large gap may reflect the broad range of occupations with differing educational requirements within this industry sector, and students from different household income levels likely sorted into these occupations differently. For example, this sector employs significant numbers of janitors/cleaners, who typically are required to have no more than a high school degree, as well as human resource specialists, who typically hold bachelor's degrees. Indeed, all of the within-industry earnings differences reflect, to some extent, earnings differences between occupational groups and educational achievement within industries.

Not only did students from low-income households earn less within industries; they also were less likely to work in industries that earned more on average. For example, students from low-income households were most overrepresented in the lowest-earning industry, Accommodation and Food Services, and most underrepresented in the highest-earning industry, Utilities. The average annual earnings gap between these industries was $22,523—1.5 times the average gap between students from the highest- versus lowest-income households ($15,026) and 1.3 times the largest-within industry gap based on parent earnings (Administrative and Support and Waste Management and Remediation Services, $17,013). Since Utilities had very low counts overall, contributing little to overall earnings disparities across students, we can repeat this comparison with a more popular industry that had the next-most underrepresentation of low-income students, Educational Services. On average, students who worked in Educational Services earned $18,278 more annually than students who worked in Accommodation and Food Services—a gap that is still substantially greater than the average gaps based on parents' income overall and in the industry with the largest gap based on parents' income. In short, differences in between-industry representation contributed even more than within-industry earnings gaps to the disparities observed between students from low- versus middle- and high-income families.

Like within-industry earnings gaps, between-industry earnings gaps reflected in part differences in average educational achievement. In some industries, the majority of students had bachelor's degrees or higher, such as in Professional, Scientific, and Technical Services (67%), while in others, a small minority of students had any postsecondary degree, such as in Accommodation and Food Services (10%). On average, industries in which higher percentages of students had college degrees were higher earning.

Figure 14. Student Career Earnings and number of students by industry and parents' income quintile (continued on next page).

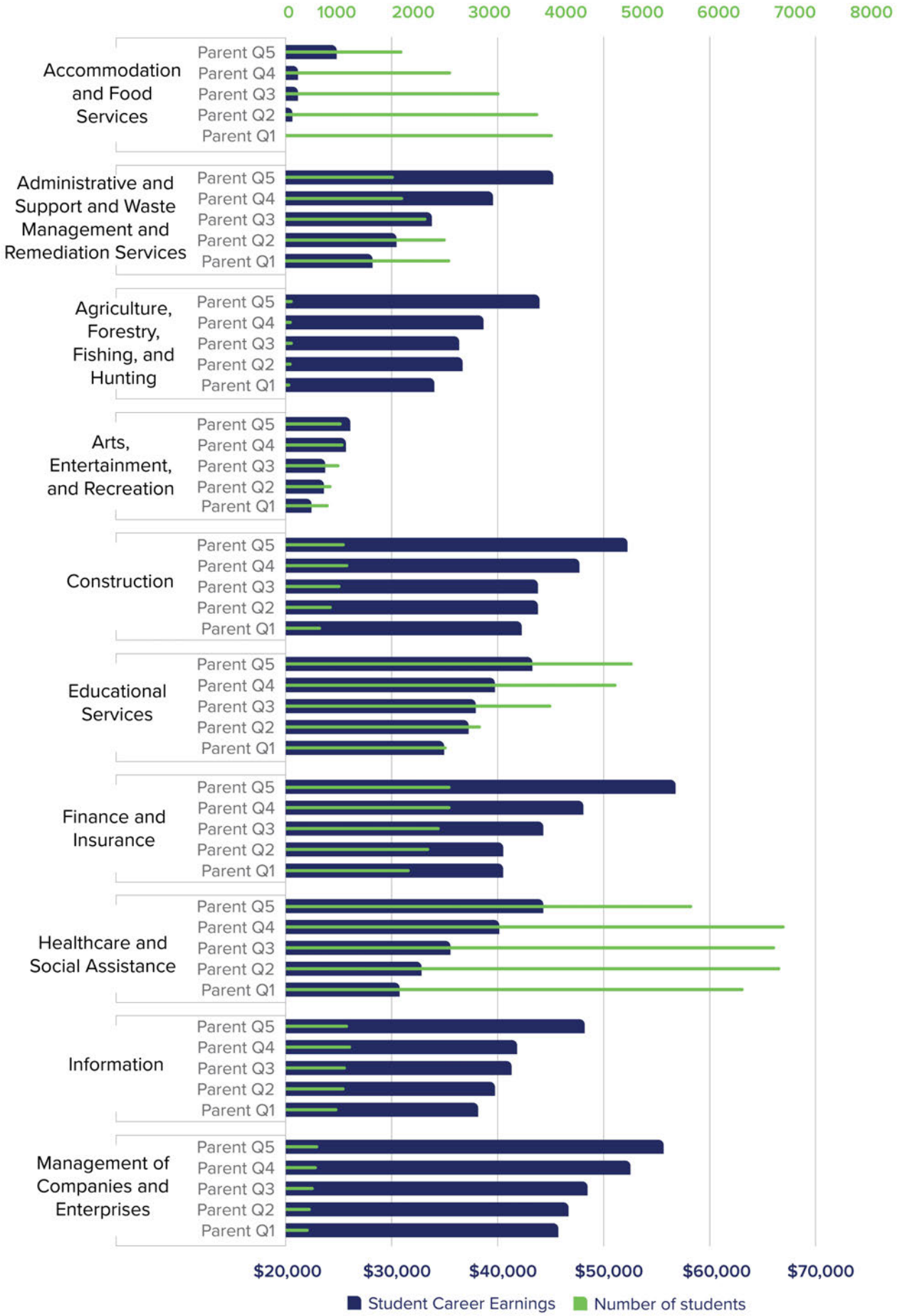
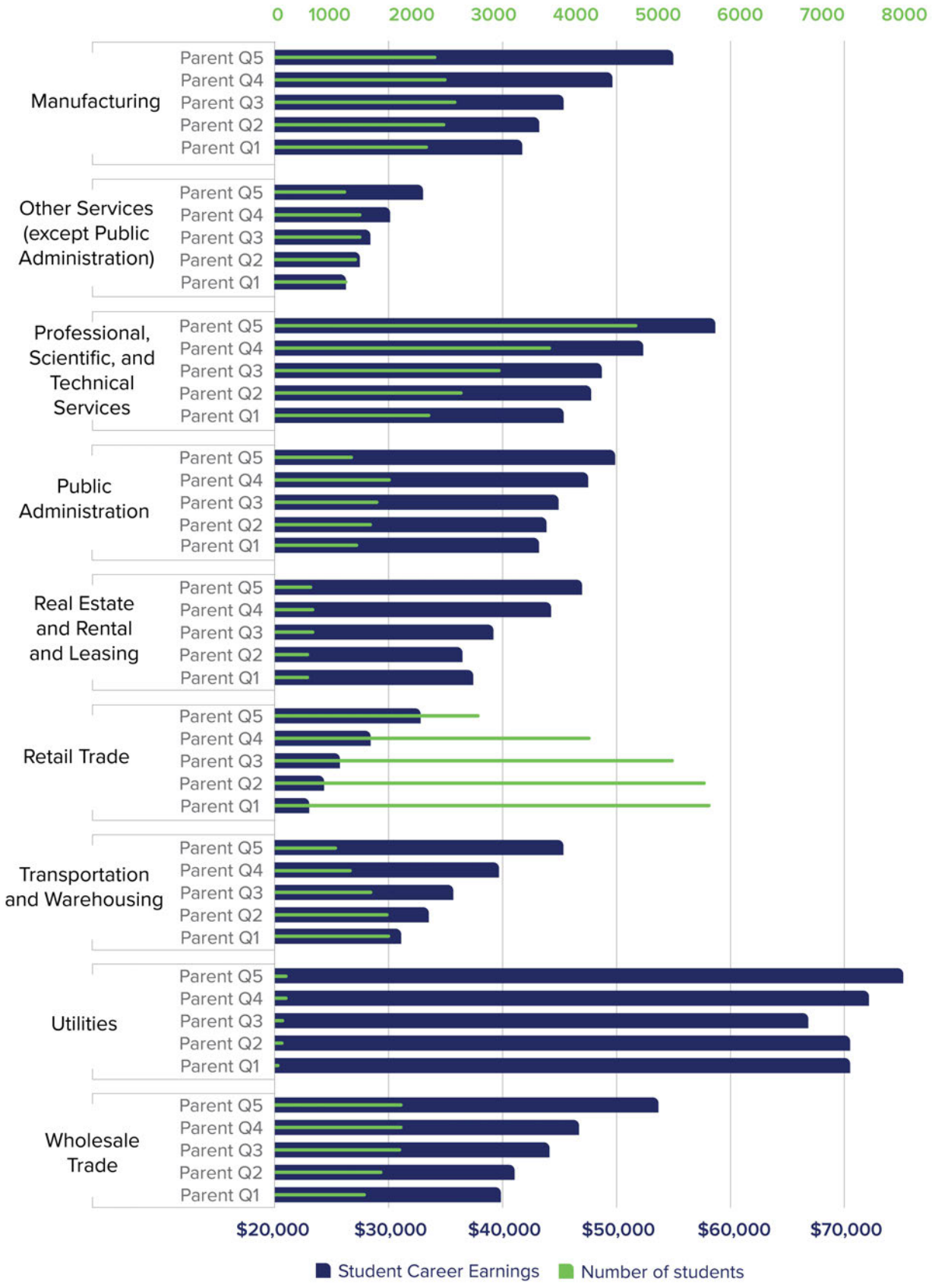


Figure 14 (cont.).



Note: Sample includes Illinois students from the high school senior classes of 2008-2012 who met study inclusion criteria and had full-quarter employment in quarter 12, n=171,357. Career Earnings reflect estimated annual wages from full-quarter jobs three years (12 quarters) after students' highest degree or latest postsecondary enrollment. Degree program labels reflect 2020 2-digit CIP titles. Parent Q1 refers to students with parents with adjusted gross income (AGI) in quintile 1, Parent Q2 reflects students with parents with AGI quintile 2, and so forth. Quintiles with counts (N) below 40 for any degree program are not shown.

LIMITATIONS

The students in this study were a subset of all Illinois students from the classes of 2008 through 2012. Students who were included in the samples differed systematically from those not included in a number of observable ways, as described in the Methods section and further detailed in the Supplemental Materials section on Population and Sample. As such, findings should not be considered representative of the Illinois student population from this time period.

We also limited our earnings analyses to students with stable employment three years (12 quarters) after entering the job market, excluding those who had started their jobs or ended employment in the same quarter earnings data were collected. This requirement allowed us to base our estimates on outcomes of students with stronger labor market attachment. However, it means that our earnings estimates are likely higher than if we had included students with less stable employment, and our estimates of earnings disparities may be smaller (Butcher & Schanzenbach, 2018; O'Reggio, 2019).

In the 13 years since the latest cohort of students in this study finished high school, educational and labor market trends have changed, especially in the years since the onset of the COVID-19 pandemic. Nationally, college enrollment rates have declined since 2012 for all racial/ethnic groups except Asian, particularly for men and at 2-year colleges (National Center for Education Statistics, 2024). Unemployment rates have declined in the same time period, with a jump during the pandemic followed by new lows in the years following (Bureau of Labor Statistics, 2024). In turn, the opportunities and barriers students in this study experienced in their educational and employment trajectories likely differed in a number of ways from the opportunities and barriers students experience today.

To protect student privacy and ensure findings were representative of trends in the sample, we did not report on student outcomes for groups smaller than 40 students. Ensuring that we included as many students as possible therefore required reporting on degree programs (according to CIP code titles) and industries (according to NAICS code categories) at their highest, 2-digit levels. This decision resulted in sacrificing more granular data on the degree programs and industries that shaped student trajectories. Industry categories were especially broad. Each comprised of a range of occupations that varied in educational requirements, job responsibilities, and other characteristics. Our dataset did not have information on occupation of employment.

We compared students' earnings three years following their latest educational graduation or enrollment to ensure that the comparisons reflected equal time in the labor market across students with different educational trajectories. We acknowledge that decision obscures the earnings premiums that students who enter the labor force early receive compared to students who delay labor market entry due to continuing education. At the same time, examining earnings at the three-year mark, early in students' careers, likely underestimates the long-term earnings of students with higher education levels (Carnevale, Cheah, et al., 2019) and variation in earnings growth by program of study (Andrews et al., 2024).

INTERPRETATION

This report examined young adult earnings outcomes among five cohorts of Illinois high school students who were seniors between 2008 and 2012—the tail-end of the Millennial generation. Using a sample of data from the Illinois High School to Career project, we examined the demographic characteristics of students from low-income households and their postsecondary educational and employment outcomes across racial, gender, and geographic groups. We compared these outcomes to those of students from higher-income households, consistently finding that those from higher-income families earned higher wages. Unpacking these findings reveals stark disparities in educational and employment opportunities among Illinois students. Our analysis provides hope that expanding educational attainment and employment in high-earning industries could dramatically improve upward socioeconomic mobility. At the same time, findings suggest that fully leveling the playing field will also require identifying and addressing systemic inequities in order to make these opportunities pay off in the same way for all students, regardless of their economic origins.

How Did Earnings Vary Across Student Demographic Groups?

On average, the higher the earnings of students' parents, the more students went on to earn themselves, following trends that have been documented nationally in prior generations (Chetty et al., 2020). Among students in our sample, those whose parents were the highest earners went on to earn 48% more than those whose parents were in the lowest earnings group. These earnings disparities by parent income intersected with demographic earnings disparities. Among those whose parents were from the same earnings quintile, Black, Latino, and Other race students went on to earn much less than Asian and White students, echoing national findings on racial disparities in intergenerational mobility (Chetty et al., 2020; NASEM, 2024). Strikingly, Asian students from the lowest-income households earned more as adults than Black, Latino, and Other race students from the highest-income households. These racial/ethnic disparities within household income levels put Black and Latino students, who were already less likely to come from high-income households, at a double disadvantage. Earnings gaps by parent income level also intersected with gender, with women earning less than men within every parent income quintile, as has been observed in national datasets (NASEM, 2024). However, the gender disparity was not as large as the racial disparities observed, and the average earnings gap between men and women was a fraction (40%) of the earnings gap between students from the highest and lowest-income households.

We also found that earnings, roughly adjusted for cost of living, were similar among students from urban compared to rural counties. The earnings gap between students from low-income households (Parent Q1 or Q2) and students from higher-income households (Parent Q3-Q5) was 26% larger among students from urban compared to rural counties. These larger earnings gaps may reflect lower average rates of social mobility among low-income youth in urban compared to rural areas (Weber et al., 2018).

What Were the Primary Drivers of Socioeconomic Earnings Disparities?

We found two primary drivers of earnings disparities between students from differing socioeconomic backgrounds. First, we found that students from low-income households tended to earn lower levels of education and work in lower-earning industries than students from higher-income households. Second, we found that even with the same levels of education, degrees from the same types of degree programs, and employment in the same industries, students from lower-income households earned less. We unpack these explanations in turn.

Differences in Attainment

A crucial factor shaping intergenerational mobility is the degree to which higher educational achievement results in higher income for individuals across the socioeconomic spectrum. We found that students from families of all income levels earned more when they earned higher levels of education. Within six years of their high school senior year, students from the highest-income households were three times more likely than students from the lowest-income households to have earned a bachelor's degree or higher. These findings are consistent with national trends (National Center for Education Statistics, 2022, 2023b), and they speak to socioeconomic and racial disparities in concentrated poverty and access to high-quality schools that adequately prepare students to enter and persist in college (Belasco, 2013; Bound et al., 2009; Ciocca Eller & DiPrete, 2018; Deil-Amen & DeLuca, 2010; Diane Hill, 2008; Hoxby & Avery, 2012; Jennings et al., 2015; Monarrez & Chien, 2021; Perna et al., 2008; Roberts & Grant, 2021; Roderick et al., 2011).

When looking at earnings differences by educational degree levels, it is important to keep in mind that students often take on debt to pay for degree programs. While students who earn higher degrees (e.g. bachelor's or master's) usually also have higher earnings, they also tend to have higher debt burdens. Yet over time, their net earnings exceed those of students with lower levels of education, on average (Carnevale, Cheah, et al., 2019). At the greatest disadvantage are students who take on college debt but do not finish their degree (Huelsman, 2018). In our study, students who completed some college but did not earn a degree earned just marginally more than those with only a high school education. "Some college, no degree" was the most common educational achievement category for low-income students, a finding that speaks to the urgent need for support for degree completion.

Among students who graduated from college, those from low-income families were more likely than those from higher-income families to earn degrees in some programs, such as transportation and materials moving, and less likely to earn degrees in other programs, such as library science.

The degree programs in which low-income college graduates were concentrated were not systematically higher- or lower-earning than those in which they were underrepresented. We conclude that while program of study choice mattered for students' earnings outcomes, it did not contribute to the observed socioeconomic earnings disparities among students who successfully completed a college degree. In other words, students from lower-earning families could expect to earn less than their counterparts regardless of their choice of degree program.

However, when considering the industries in which all students from low-income families went on to work (not just those with college degrees), we found that they were disproportionately working in lower-earning industries. Average earnings differences between industries were vast, contributing heavily to the earnings disparities observed by students' socioeconomic backgrounds. These earnings differences between industries reflect in part differences in the average education levels required of each industry's workforce. The socioeconomic disparities in educational attainment among our sample meant that students from low-income households had less opportunity for higher-earning employment.

Differences in Outcomes Given the Same Attainment

One of the primary findings of this report is that even among students with the same degree level, degrees from the same program of study, or employment in the same industry, students who came from lower-earning families earned less. On average, the annual earnings gap between students from the lowest-earning households (Q1) versus the highest-earning households (Q5) was $5,815 among students with the same level of educational attainment; $3,753 among sub-BA degree holders in the same program of study; $5,028 among BA+ degree holders in the same program of study; and

$11,274 among students working in the same industry. The large average within-industry gap likely reflects the wide range in each industry of educational degree levels.

These systemic earnings disparities by socioeconomic background, which are closely tied to racial disparities, have been observed nationally (Carnevale, Strohl, et al., 2019; Rosenbaum et al., 2017). Researchers have documented factors including differences in resources, opportunities, and advising at the colleges students from different socioeconomic backgrounds attend (Brock, 2010; Carnevale, Van Der Werf, et al., 2018; HR&A Advisors, 2020; Niu, 2017; Rosenbaum et al., 2017), socioeconomic disparities in access to social networks that connect students to higher-earning employment opportunities (M. Abbott & Reilly, 2019; Chetty et al., 2022; McDonald, 2015), racialized labor market discrimination (Azmat & Petrongolo, 2014; NASEM, 2024), and racialized barriers to employment retention and advancement (HR&A Advisors, 2020). Combined, these and other social inequalities create uneven playing fields that contribute to the disparities observed in the current study.

What Mattered Most?

Given the observed differences between students from high- and low-income households in attainment as well as differences in earnings even among those with similar attainment, we might ask: Which mattered most for driving the overall earnings disparities we observe across students from different household income levels?

By and large, the highest levels of education students earned, the programs of study in which they earned degrees, and the industries in which they were employed mattered more for their adult earnings than their socioeconomic backgrounds net of these attainment metrics. Compared to the average within-degree socioeconomic earnings gap of $5,815 between students from the lowest- compared to the highest-earning families, the average gap between the highest and lowest educational levels was over 6 times larger, at $39,966. The within-degree program socioeconomic gap averaged $3,753 annually for sub-BA degree holders—just one-ninth of the gap between the highest- and lowest-earning degree programs for these degrees ($34,029). For BA+ degree holders, the average socioeconomic earnings gap of $5,028 within degree programs was less than one-seventh of the gap between the highest- and lowest-earning degree programs ($37,261). Of all the socioeconomic earnings gaps, the average within-industry gap was largest at $11,274, reflecting, in part, occupational sorting by education level within broad industry categories. This was still just half of the average earnings gap between the highest and lowest-earning industries ($22,523).

Of course, educational level, degree program of study, and industry of employment themselves were all closely related to students' economic backgrounds and their associated opportunities and barriers, as discussed previously. Yet even the overall annual earnings gap between students from the highest- versus lowest-income households of $15,026, which reflects these educational and employment disparities, was not as large as the earnings differences between the highest- and lowest-earning degrees, degree programs, and industries. The greater importance of educational outcomes and industry of employment gives promise that interventions to improve educational and employment opportunity have the potential to substantially close these gaps. Nonetheless, it is discouraging to find that similar attainment still results in earnings disparities by students' economic origins. These findings suggest that efforts to create equal opportunity will not succeed until the discrimination and structural inequalities underlying these disparities are also addressed.

CONCLUSIONS AND NEXT STEPS

Using data from the Illinois High School to Career project, this study found that, among our sample of Illinois high school seniors from the classes of 2008 to 2012, those from low-income families had unequal chances of moving up the socioeconomic ladder. Mobility was especially low among students who were Black, Latino, or Other race. Differences in educational attainment and industry of employment were the primary drivers of the earnings gaps observed between those who came from low-income families and their counterparts from higher-income families. Yet even among those who earned the same educational degree, majored in the same degree program, or worked in the same industry, students from lower-income families earned less. Combined, these factors point to systemic inequalities in education, the workforce, and related social structures and institutions.

Despite these disparities, some select students from low-income families in our sample found pathways to high-earning jobs. Our next report in the Illinois High School to Career series, Promising Pathways, will identify these pathways, extracting lessons for how economically disadvantaged students might best navigate an uneven playing field. At the same time, we acknowledge that Illinois and our society at large will not achieve its meritocratic ideals until the playing field is leveled.

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