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TRENDS, TRANSITIONS, AND SUBGROUP DIFFERENCES ON THE PATHWAY TO A FAMILY-SUSTAINING HOURLY WAGE FOR MINNESOTA STUDENTS

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Introduction

The Importance of Earning a Family-Sustaining Hourly Wage

There is broad consensus that education and workforce training are closely linked to economic well-being (Ma, Pender, & Welch, 2016). Consequently, Minnesota’s vision for its workforce under the Workforce Innovation and Opportunity Act is to create “a healthy economy where all Minnesotans have – or are on a path to – meaningful employment and a family-sustaining hourly wage, and where all employers are able to fill jobs in demand” (MN Department of Employment and Economic Development, 2016, p. 3). Earning a family-sustaining hourly wage (FSHW) thus serves as an important indicator of a family’s economic well-being (we provide further detail on the FSHW in the Methods).

Understanding how individuals achieve a FSHW is key to the work of various stakeholders, including educators, policy makers, non-profits, students, and their families. Thus, researchers have documented key milestones that students must meet on their trajectory from early childhood through adulthood (Sawhill, Winship, & Grannis, 2012). Two important milestones on this trajectory to the workforce and attaining economic success include graduating from high school and completing a postsecondary certificate or degree (Haskins, Holzer, & Lerman, 2009; Sawhill, Winship, & Grannis, 2012).

The Tracing Pathways Study

The Tracing Pathways Study seeks to describe the educational pathways individuals take and to explore whether or not these pathways led individuals to earn a FSHW as an adult. Until recently, understanding the specific pathways that lead to a FSHW has proven difficult, primarily due to a lack of longitudinal data at the individual level. To address this challenge, this study utilized a unique dataset, the Minnesota Statewide Longitudinal Education Data System (SLEDS). SLEDS offers researchers access to deidentified, individual-level educational and employment data that spans from kindergarten through employment, making it possible to examine the specific pathways that lead to a FSHW. By connecting data from a variety of sources, SLEDS allows researchers, education and policy stakeholders, and the general public to gain insights about key transition points in individuals’ lives.

In Phase 1 of the Tracing Pathways Study (Ingram, Brown, & Vagi, 2019), researchers from the Center for Applied Research and Educational Improvement (CAREI) used SLEDS data to examine the educational pathways and economic outcomes of individuals who entered high school (Grade 9) in the 2004–05 school year. The study followed their pathways through 2017, thus encompassing 13 years of their educational and economic histories. In Phase 2 of the study (reported here), researchers incorporated data from four additional cohorts who entered high school in 2005–2008, and added newly available wage data through June 2018, in order to broaden the base of research to address the study’s research questions. These research questions, which are addressed in this report, are as follows:

1. **Trends.** Where are the individuals from the identified cohorts currently, in terms of educational attainment, employment, and achievement of a family-sustaining hourly wage? How do these outcomes compare across cohorts?
2. **Transitions.** What happened when individuals in the identified cohorts transitioned at key points – high school graduation/GED, postsecondary enrollment, and employment – in their pathways from K-12 to postsecondary and the workforce?
3. **Subgroup Differences.** How do pathways differ for minority subgroups that typically see wage gaps, as compared to majority subgroups (e.g., people of color vs. non-people of color)?

Methods

CAREI conducted this research in partnership with the SLEDS coordinators from the Minnesota Office of Higher Education (OHE), Minnesota Department of Education (MDE), and Minnesota Department of Employment and Economic Development (DEED) as part of CAREI's role in the SLEDS Technical Assistance Network. These partnering organizations, collectively considered the Minnesota P-20 Education Partnership, provide data for the SLEDS system, oversee its management and dissemination, and assist SLEDS users in Minnesota and beyond.

Dataset

The data used in this study were obtained via a Minnesota SLEDS Data Access Request Application¹ and included 306,696 individuals who were identified as Minnesota public school students who entered Grade 9 between 2004 and 2008 (see Table 1). For all analyses, students in all five cohorts must have been part of the Minnesota school system in the 2004–05 school year; students who entered the Minnesota school system after the 2004–05 school year are not included in the data, which may be why more recent cohorts reflect smaller student populations in Table 1. Throughout the report, we refer to each cohort by the year that the individuals entered Grade 9. At the time of this study, the most recent economic data available on these students were from June 2018.

Table 1. Overview of Each Cohort's Timeline after Entering Grade 9

Cohort Year: Fall of Year Entering Grade 9	<i>n</i>	4-Year High School Graduation Year	Workforce Outcome Year: June, 10 Years after Entering Grade 9
2004	70,020	Spring 2008	2014
2005	62,581	Spring 2009	2015
2006	60,741	Spring 2010	2016
2007	57,833	Spring 2011	2017
2008	55,521	Spring 2012	2018

Measures

The measures used in the Phase 2 analyses include the following and are reviewed below:

- Demographic information of the identified cohorts;
- Education-related milestone information; and
- Workforce outcomes, including whether the individual earned a FSHW (the main focus of this report) and their job classification.

¹ Available at <http://sleds.mn.gov/#research>

Demographic information. Demographic variables provided background information about participant characteristics and were drawn from MDE data (Table 2). Some results were disaggregated to provide results specific to the six distinct Planning Regions of the state as specified in Minnesota’s Workforce Innovation and Opportunity Act (WIOA) (displayed in Figure 1). The six areas are Central, Northeast (NE), Northwest (NW), Southeast (SE), Southwest (SW), and the 7-County Metro Area (composed of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington counties).

Table 2. Descriptions of Demographic Variables Used in Analysis

Demographic Variables	Description
Gender	An individual’s gender as reported by their K-12 institution in 2004–05: female or male.
Race/Ethnicity	An individual’s race/ethnicity as reported by their K-12 institution in 2004–05: American Indian/Alaskan Native, Asian/Pacific Islander, Black, Hispanic (which may include individuals who also identify as Black or White), and White.
Ever English Learner (Ever EL)	Whether an individual was <i>ever</i> identified for English language support services during K-12.
Ever Free or Reduced-Price Lunch (Ever FRPL)	Whether an individual was <i>ever</i> eligible for free or reduced-price lunch during K-12.
Ever Special Education (Ever SPED)	Whether an individual was <i>ever</i> eligible for special education during K-12.
K12 Area	The area of the state where each individual’s K-12 institution is located (see Figure 1).

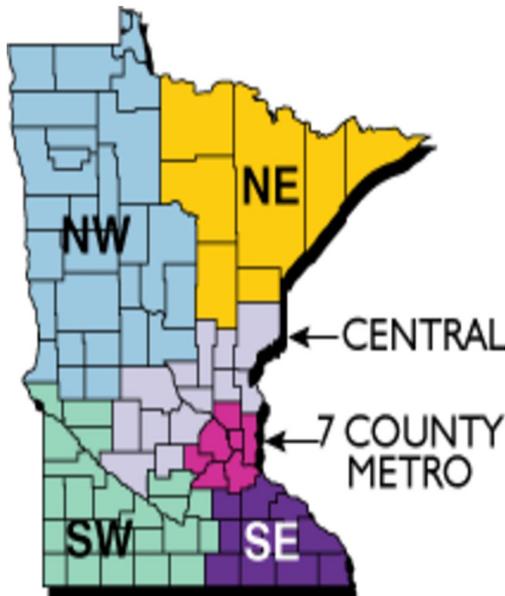


Figure 1. Minnesota’s Six Planning Regions as Specified in Minnesota’s Workforce Innovation and Opportunity Act

Educational milestones. Milestones represent major transition points and distinguishing features of an individual’s journey through secondary and postsecondary educational systems. Examples of milestone variables used in these analyses include high school and postsecondary enrollment, graduation data, and test performance information based on Minnesota’s standardized assessment (the Minnesota Comprehensive Assessment-II [MCA-II]) (Table 3).

Table 3. Descriptions of Milestone Variables Used in Analysis

Milestone Variable	Description
Grade 9 Chronic Absenteeism	Whether an individual was absent more than 10% of the year during Grade 9.
Reading Proficiency	Whether an individual reached the criteria for proficiency on the MCA-II Grade 10 Reading Exam.
Math Proficiency	Whether an individual reached the criteria for proficiency on the MCA-II Grade 11 Math Exam.
High School Graduation	Whether an individual graduated from high school/earned a diploma in 4 years or less; if they graduated/earned a diploma in more than 4 years; if they obtained a GED; or if they had no high school equivalency by 6/30/2018.
Timing of Postsecondary Enrollment	Whether an individual enrolled in a postsecondary institution immediately after high school graduation, delayed their enrollment in a postsecondary institution for at least 1 semester after high school graduation, or had not enrolled in a postsecondary institution by 12/25/2018.
Developmental Course-Taking	Whether an individual was required to take developmental courses/units in the first fall term of their postsecondary program. Courses designated as “developmental” indicate that the postsecondary institution considers the course/unit to be below the postsecondary level and thus the postsecondary institution awards no credit that can be applied to a certificate or degree. These data are only available for individuals whose enrollment for their first fall term was at a postsecondary institution located in Minnesota.
Persistence	Whether an individual persisted to complete at least 3 terms of their postsecondary program (“yes” or “no”). Because some individuals may earn a postsecondary credential in less than 3 terms, this also appears as a category for this variable (“<3 terms”).
Highest Degree Attained	The highest postsecondary award or degree attained by an individual as of 7/16/2018. These data are only available for individuals who enrolled in postsecondary institutions located in Minnesota.
Postsecondary Completion	Whether an individual earned a postsecondary certificate or degree by 11/02/2018.

Workforce outcome 1: Family-sustaining hourly wage (FSHW). Broadly, for the purposes of this report, we define a FSHW as the hourly wage that is needed to cover the cost of living of a typical Minnesota family. DEED defines the typical family as a 3-person family, with 2 adults working a combined 60 hours per week (averaging 30 hours per worker per week) (DEED, 2018a). To capture regional variability in the cost of living, we used DEED (2018b) estimates of FSHW by the area of the state (Figure 1) in which each individual’s employer was located. In addition to variations in the FSHW by Minnesota Planning Region, estimates also varied by year. We provide the FSHW for each Minnesota Planning Region for 2014–18 in Table 4.

Table 4. Family-Sustaining Hourly Wage by Planning Region, 2014–18

Minnesota Planning Region	2014	2015	2016	2017	2018
Central	\$18.25	\$16.86	\$16.88	\$17.56	\$17.01
Northeast	\$16.17	\$15.00	\$14.70	\$15.26	\$15.56
Northwest	\$16.06	\$14.88	\$14.54	\$15.21	\$15.11
Southeast	\$16.72	\$15.65	\$15.52	\$16.17	\$15.81
Southwest	\$15.44	\$14.34	\$14.03	\$14.70	\$14.41
7-County Metro	\$20.37	\$19.25	\$19.63	\$20.51	\$19.51
Statewide	\$18.72	\$17.57	\$17.69	\$18.47	\$17.80

Note. The FSHW consists of the yearly cost of living for the typical Minnesota family in that year for that region, divided by 52 (the number of weeks in a year) × 60 (number of working hours in a week). When an individual’s planning region of employment was not provided by the wage records, the statewide value was used.

Although SLEDS does not contain details on family structure or partnership, the FSHW provides a common benchmark for the adequacy of wages. Based on these data, we created three categories for individuals specific to their wage data 10 years after entering Grade 9:²

- **Earning a FSHW** – individuals who had employment records in the 10th year after high school entry and were earning a FSHW or higher.
- **Not Earning a FSHW** – individuals who had employment records in the 10th year after high school entry and were earning below a FSHW.
- **Unknown** – individuals in the cohort for whom we did not have wage data. This includes not only individuals in the cohort who were unemployed and those who were not participating in the labor force, but also any individual in the cohort whose employer is not required to report unemployment insurance data to the state of Minnesota (e.g., military personnel, self-employed workers, farmers, federal employees, people employed outside Minnesota, and others).

We note that our definition of a FSHW is used throughout this report with the understanding that this is our *best approximation* for whether an individual is earning a living wage. There are, of course, potential scenarios where our *family-level* designation of “Earning a FSHW” or “Not Earning a FSHW” may not necessarily be true for individuals. Consider two examples:

- An individual may be working part time (30 hours/week), but without a partner or child. In our analyses, this individual could potentially be represented as **earning below a FSHW** (because additional wages from a partner are not being accounted for), but may still be earning a wage that sufficiently covers their costs as an individual.
- An individual may be working full time (40 hours/week) with a partner working part-time (20 hours/week), and they may have multiple children. In our analyses, this individual could potentially be represented as **earning a FSHW**, but they may not in fact be earning enough to sufficiently cover their costs as a family since they have more than one child.

² Specifically, this included July of their 9th year after high school entry – June of their 10th year after high school entry. For example, for an individual who entered Grade 9 in 2004, the FSHW data used for analyses would be from July 2013 – June 2014.

Workforce outcome 2: Job classification. An indicator for how many hours an employee worked, on average, during their 10th year after high school entry. The categories are defined as follows, based on individuals' employment data 10 years after entering Grade 9:

- **Full-time** – individuals who worked for a single employer each quarter, for 35 hours/week or more (on average).
- **Part-time** – individuals who had at most 1 job each quarter, for less than 35 hours/week (on average).
- **Multiple part-time** – individuals who had more than one job per quarter (on average), but no single job had an average of 35 hours/week or more.
- **Unknown** – individuals in the cohort for whom we did not have wage data. These are the same individuals identified as “unknown” for FSHW above.

Data Analysis

Below, we present the analytic methods we used to investigate trends across cohorts, pathways to a FSHW, and subgroup differences in those pathways. When it was not possible to uniquely specify a variable for an individual, that individual was excluded from analyses involving that variable. For example, if an individual were listed as having one race/ethnicity in one school year and a different race/ethnicity in a different school year, that individual was excluded from race/ethnicity analyses because it was not clear which race/ethnicity information should be used.

Trends. Trends in workforce outcomes were analyzed by examining trends across cohorts and across time for a single cohort. We looked at the workforce outcomes 10 years after high school entry for the 2004–08 cohorts. Because comparing different cohorts also meant that we were comparing different groups of people, we decided to also examine one cohort longitudinally; thus, we examined trends across time for the 2004 cohort, as this was the cohort for which we had the most data.

Transitions. Transitions were analyzed by creating pathway diagrams that charted progress from Grade 9 through the education system and concluding with whether they were known to be earning a FSHW. For each possible transition, percentages were calculated of how many individuals took each pathway out of the total number who were in the category under consideration. These analyses focused on the 2008 cohort, which allowed us to use the most recent data available.

Subgroup differences. To dive deeper into the pathways, we next examined how pathways to a FSHW varied by subgroups with known opportunity gaps. Again, the outcome was whether the individual was earning a FSHW 10 years after entering Grade 9. However, we now restricted the sample to only those individuals who had employment records in the state of Minnesota (in other words, we excluded individuals with “unknown” wage data); because different subgroups had different rates of known employment, this restriction levels the playing field for comparing FSHWs, but does not provide information on which individuals were more likely to be employed (or known to be employed) overall.

The subgroups we examined were: ever eligible for free or reduced-price lunch (Ever FRPL); ever eligible for special education (Ever SPED); gender (defined as male or female in the data); and race/ethnicity (White as compared to Asian/Pacific Islander, American Indian/Alaskan Native, Hispanic, or Black). Ever English Learner (Ever EL) was not included because of the small number of individuals in this category. The milestones we considered were those presented in Table 3, including chronic absenteeism and completion of postsecondary education, for example.

We recognize that there are methodological limitations to this approach. For example, we conducted a single analysis for all students, regardless of postsecondary institution attended, in order to provide an overall comparison of the different milestones. Therefore, we could only include potential milestones that could be calculated for all students. This meant that milestones that were only available for students who attended a Minnesota postsecondary institution, such as Developmental Education, were absent. Furthermore, rigorous course-taking could not be calculated due to limitations in the particular data received for this project, even though it could theoretically be calculated from SLEDS data; thus, although this is likely another important milestone (Feygin, Guarino, & Pardo, 2019), it is not included here.

To compare these milestones (or “mediators”) for each subgroup, we first calculated the percentage of employees in the subgroup that were earning a FSHW 10 years after entering Grade 9. Then, we calculated how much this percentage changed for the pathways of an individual milestone. The “winning” pathway was the one that was associated with the largest percentage of employees in the subgroup who earned a FSHW. For instance, if a higher percentage of employees who enrolled in a postsecondary institution immediately after high school were earning a FSHW than those who were proficient on the MCA-II Grade 11 Math (regardless of their postsecondary enrollment status), then the winning pathway would be immediate enrollment in a postsecondary institution.

These milestones are, of course, interrelated; therefore, we also looked to see if two or three milestones in combination could produce pathways that provided an even higher percentage of individuals in the subgroup who earned a FSHW (the “winning” pathway). Throughout, we also examined the gaps between the minority subgroup (e.g., Ever FRPL) and the majority subgroup (e.g., non-FRPL) for these winning pathways. We originally also examined alternative criteria for winning where we looked at the pathways that showed the smallest gaps between the minority and majority subgroups; however, the pathways that minimized the gap often involved *lower* percentages earning a FSHW for the majority subgroup, or sometimes for both the minority and majority subgroups. We do not include those analyses here, as our goal was to examine the pathways where *higher* percentages of individuals were earning a FSHW.

Results

Cohort Demographics³

We examined the educational pathways and outcomes for five cohorts of Minnesota public school students who entered Grade 9 between 2004 and 2008. As Table 5 shows, over half of each of the cohorts attended school as 9th graders in the 7-County Metro area. The next largest number of individuals in the cohort attended school as 9th graders in the Central or Northwest areas of Minnesota (11%–13%), with smaller percentages in the Southeast, Southwest, and Northeast areas.

³ The results presented in this report may not reflect those available on the SLEDS public website or the Minnesota Report Card because data files obtained for this study contain more information and allow for more subtleties in reporting and filtering.

Table 5. Location Distribution of Cohorts

K12 Area (n = 279,668)	2004		2005		2006		2007		2008	
	n	%	n	%	n	%	n	%	n	%
Central	8,467	13%	7,630	13%	7,288	13%	6,973	13%	6,594	13%
Northeast	3,760	6%	3,271	6%	3,196	6%	2,920	6%	2,767	6%
Northwest	7,346	11%	6,518	11%	6,043	11%	5,711	11%	5,303	11%
7-County Metro	34,835	53%	30,205	53%	29,387	53%	27,754	53%	27,057	55%
Southeast	6,087	9%	5,540	10%	5,118	9%	4,878	9%	4,350	9%
Southwest	4,983	8%	4,318	8%	4,079	7%	3,825	7%	3,465	7%
Total	65,478	100%	57,482	100%	55,111	100%	52,061	100%	49,536	100%

Note. Records for 27,028 individuals who appeared in multiple areas throughout their K-12 career have been excluded from this table.

As we display in Table 6, the cohorts were nearly evenly divided between males and females. For example, the cohort entering Grade 9 in 2004 was represented by 49% males and 51% females.

Table 6. Gender Demographics, by Cohort

Gender (n = 306,696)	2004		2005		2006		2007		2008	
	n	%	n	%	n	%	n	%	n	%
Male	34,056	49%	30,221	48%	29,696	49%	28,089	49%	27,086	49%
Female	35,964	51%	32,360	52%	31,045	51%	29,744	51%	28,435	51%

Over four out of five individuals in each cohort were White, followed by individuals identified as Black, Asian/Pacific Islander, Hispanic, and American Indian/Alaskan Native (see Table 7). For example, 81% of individuals in the cohort entering Grade 9 in 2004 were White, followed by 8% who were Black, 5% who were Asian/Pacific Islander, 4% who were Hispanic, and 2% who were American Indian/Alaskan Native.

Table 7. Race/Ethnicity Demographics, by Cohort

Race/Ethnicity (n = 304,915)	2004		2005		2006		2007		2008	
	n	%	n	%	n	%	n	%	n	%
American Indian/ Alaskan Native	1,550	2%	1,480	2%	1,349	2%	1,226	2%	1,202	2%
Asian/ Pacific Islander	3,539	5%	3,035	5%	2,923	5%	2,838	5%	2,774	5%
Black	5,359	8%	4,399	7%	4,314	7%	4,023	7%	3,969	7%
Hispanic	3,090	4%	2,501	4%	2,503	4%	2,474	4%	2,656	5%
White	56,063	81%	50,817	82%	49,313	82%	46,920	82%	44,598	81%

Note. Race/ethnicity data were not available for 1,781 individuals across all cohorts.

As we display in Table 8, roughly one-quarter of each cohort qualified for free or reduced-price lunch at least once while they were enrolled in a public K-12 school (Ever FRPL), while relatively few members of the cohort (4% or less) were identified as English learners at least once while they were enrolled in a public K-12 school (Ever EL). Finally, about one in seven people in each cohort were ever in special education (Ever SPED).

Table 8. Additional Demographics, by Cohort

Demographics (n = 306,696)	2004		2005		2006		2007		2008	
	n	%	n	%	n	%	n	%	n	%
Ever FRPL	15,571	22%	14,108	23%	14,718	24%	14,687	25%	14,637	26%
Ever EL	2,477	4%	1,134	2%	930	2%	818	1%	728	1%
Ever SPED	9,156	13%	9,131	15%	9,187	15%	9,475	16%	9,933	18%

As we display in Table 9, gender was nearly evenly divided between males and females across all planning regions. For example, males represented between 51%–52% of all cohorts, while females represented between 48%–49% of all cohorts.

Table 9. Gender Demographics, by Region

Gender (n=279,668)	Central		Northeast		Northwest		Metro		Southeast		Southwest	
	n	%	n	%	n	%	n	%	n	%	n	%
Male	18,912	51%	8,261	52%	15,971	52%	76,139	51%	13,323	51%	10,634	51%
Female	18,040	49%	7,653	48%	14,950	48%	73,099	49%	12,650	49%	10,036	49%

Note. Region information was not available for 27,028 individuals.

There was variation in the race/ethnicity demographic characteristics across the different planning regions of Minnesota (see Table 10). For example, the majority of individuals in the Central region were White (94%), followed by small percentages of individuals who were Hispanic (2%), American Indian/Alaskan Native (1%), Asian/Pacific Islander (1%), and Black (1%). In the Northeast and Northwest regions, the second highest percentage of individuals after White were identified as American Indian/Alaskan Native (6% in each region), whereas the next highest percentage of individuals in the Southeast and Southwest regions were identified as Hispanic (5% in each region). Overall, the Metro area had the greatest diversity in terms of race/ethnicity, with 73% White, 12% Black, 8% Asian/Pacific Islander, 5% Hispanic, and 1% American Indian/Alaskan Native.

Table 10. Race/Ethnicity Demographics, by Region

Race/Ethnicity (n = 278,519)	Central		Northeast		Northwest		Metro		Southeast		Southwest	
	n	%	n	%	n	%	n	%	n	%	n	%
American Indian/ Alaskan Native	296	1%	954	6%	1,987	6%	1,655	1%	78	0%	151	1%
Asian/ Pacific Islander	456	1%	152	1%	209	1%	12,401	8%	697	3%	415	2%
Black	430	1%	212	1%	228	1%	18,071	12%	720	3%	190	1%
Hispanic	919	2%	109	1%	805	3%	7,743	5%	1,241	5%	1,117	5%
White	34,795	94%	14,433	91%	27,613	89%	108,512	73%	23,195	89%	18,735	91%

Note. Region information was not available for 27,028 individuals; of those individuals with a region, an additional 1,149 did not have race/ethnicity data available.

As we display in Table 11, the percentage of individuals in each planning region who qualified for free or reduced-price lunch at least once while they were enrolled in a public K-12 school (Ever FRPL) ranged from 18% in the Central region to 27% in both the Northeast and Northwest regions. Again, relatively few individuals in each region (3% or less) were identified as English learners at least once while they were enrolled in a public K-12 school (Ever EL). Finally, the percentage of individuals who were ever in special education (Ever SPED) varied slightly across regions, from 12% in the Central region to 16% in the Northwest region.

Table 11. Additional Demographics, by Region

Demographics (n = 279,668)	Central		Northeast		Northwest		Metro		Southeast		Southwest	
	n	%	n	%	n	%	n	%	n	%	n	%
Ever FRPL	6,543	18%	4,246	27%	8,338	27%	33,905	23%	5,005	19%	4,921	24%
Ever EL	322	1%	10	0%	157	1%	4,482	3%	480	2%	247	1%
Ever SPED	4,531	12%	2,391	15%	5,057	16%	20,202	14%	3,403	13%	3,054	15%

Note. Region information was not available for 27,028 individuals.

Participation in targeted programs such as FRPL, EL, and SPED varied by race/ethnicity, as well (Table 12). For example, the percentage of individuals ever eligible for FRPL ranged from 16% for individuals identified as White to 63% for individuals identified as Black. Less than 1% of individuals identified as White ever qualified for English learner services; however, 19% of Hispanic, 13% of Asian/Pacific Islander, and 6% of Black individuals were classified as Ever EL. Finally, the distribution of individuals ever qualifying for SPED varied by race/ethnicity as well, with Asian/Pacific Islanders having the lowest percentage of individuals identified as Ever SPED (9%) and American Indian/Alaskan Native having the largest percentage identified as Ever SPED (28%).

Table 12. Ever FRPL, Ever EL, and Ever SPED Demographics, by Race/Ethnicity

Demographics	American Indian/ Alaskan Native (n=6,807)		Asian/ Pacific Islander (n=15,109)		Black (n=22,064)		Hispanic (n=13,224)		White (n=247,711)	
	n	%	n	%	n	%	n	%	n	%
Ever FRPL	3,728	55%	7,693	51%	13,808	63%	7,372	56%	40,360	16%
Ever EL	CTSTR		1,921	13%	1,291	6%	2,559	19%	268	0%
Ever SPED	1,888	28%	1,311	9%	5,557	25%	2,310	17%	35,357	14%

Note. Race/ethnicity data were not available for 1,781 individuals across all cohorts. CTSTR = Cell Too Small To Report. The *ns* reported for each column can also be found by summing across cohorts in Table 7.

Targeted programs such as FRPL, EL, and SPED were interrelated, as shown in Table 13. For example, of the 73,721 individuals who qualified for free or reduced-price lunch at least once while they were enrolled in a public K-12 school (Ever FRPL), 25% were also enrolled in special education services; conversely, of the 46,882 individuals who ever received special education services (Ever SPED), 39% qualified for FRPL.

Table 13. Relationships Between Demographic Characteristics

Demographics	Ever FRPL (n=73,721)		Ever EL (n=6,087)		Ever SPED (n=46,882)	
	n	%	n	%	n	%
Ever FRPL	--	--	4,635	76%	18,143	39%
Ever EL	4,635	6%	--	--	845	2%
Ever SPED	18,143	25%	845	14%	--	--

Trends in Workforce Outcomes

Our first analysis examined trends in workforce outcomes for each cohort, from those who began high school in 2004 through those who did so in 2008. In Figure 2, we present the percentage of individuals who were earning a FSHW 10 years after *entering* high school; thus, if an individual graduated from high school in 4 years, this would provide a benchmark of earning a FSHW approximately 6 years after

graduating. For the 2004 cohort, for example, 15% of the cohort was earning a FSHW in 2014. Overall, a greater percentage of individuals in each subsequent cohort after 2004 earned a FSHW, with more students who entered high school in 2008 earning a FSHW 10 years after entering high school than those who entered high school in earlier years.

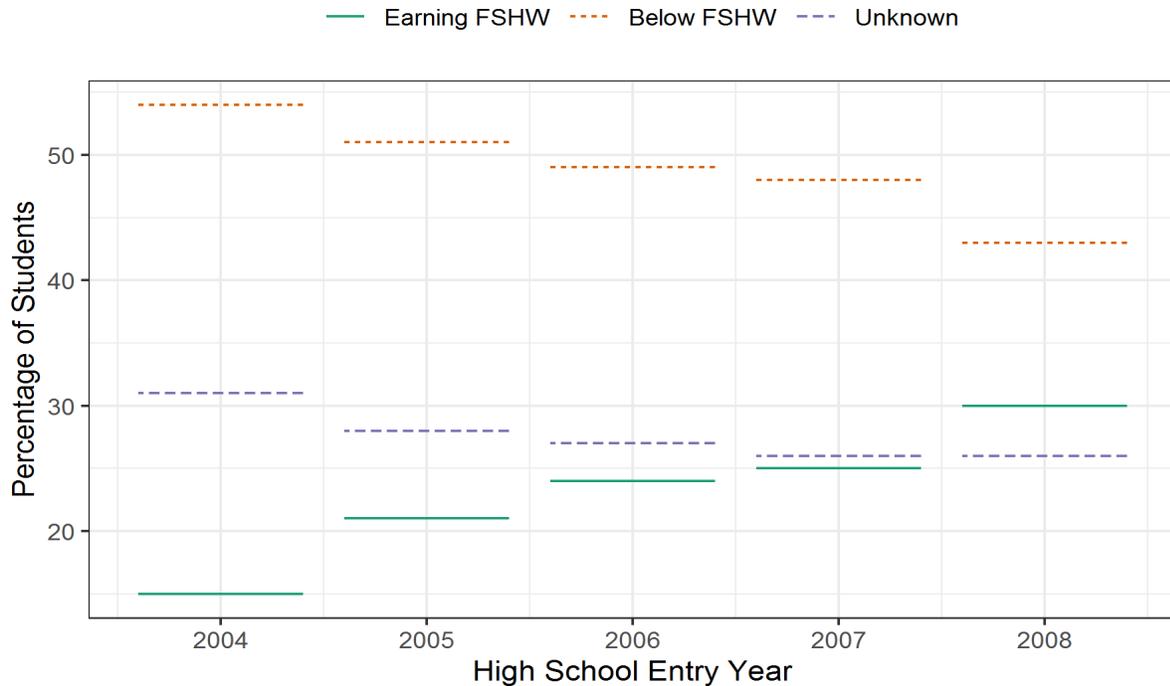


Figure 2. Percentage of Cohort Earning a Family-Sustaining Hourly Wage 10 Years After Entering Grade 9

Note. Unknown individuals represent individuals for whom we did not have wage data or postsecondary enrollment data. Also, individuals who were identified as enrolled in postsecondary education but for whom wage data were not available are not included in these analyses (see Methods for additional information).

In Figure 3, we present the percentages of individuals employed in full-time, part-time, or multiple part-time jobs 10 years after entering high school for those who *entered* Grade 9 in 2004 through those who did so in 2008. For example, for those entering high school in 2004, 22% were employed full-time in 2014, 29% were employed part-time at a single job, 19% held multiple part-time jobs, and 30% were unknown. Overall, the percentage of individuals in part-time or multiple part-time jobs was largely the same 10 years after high school entry for those who entered high school between 2004 and 2008; however, there was an increasing percentage of individuals with full-time jobs and decreasing percentage of individuals in the unknown category (e.g., unemployed, out of labor force, out of state, self-employed, federal/military employee, etc.).

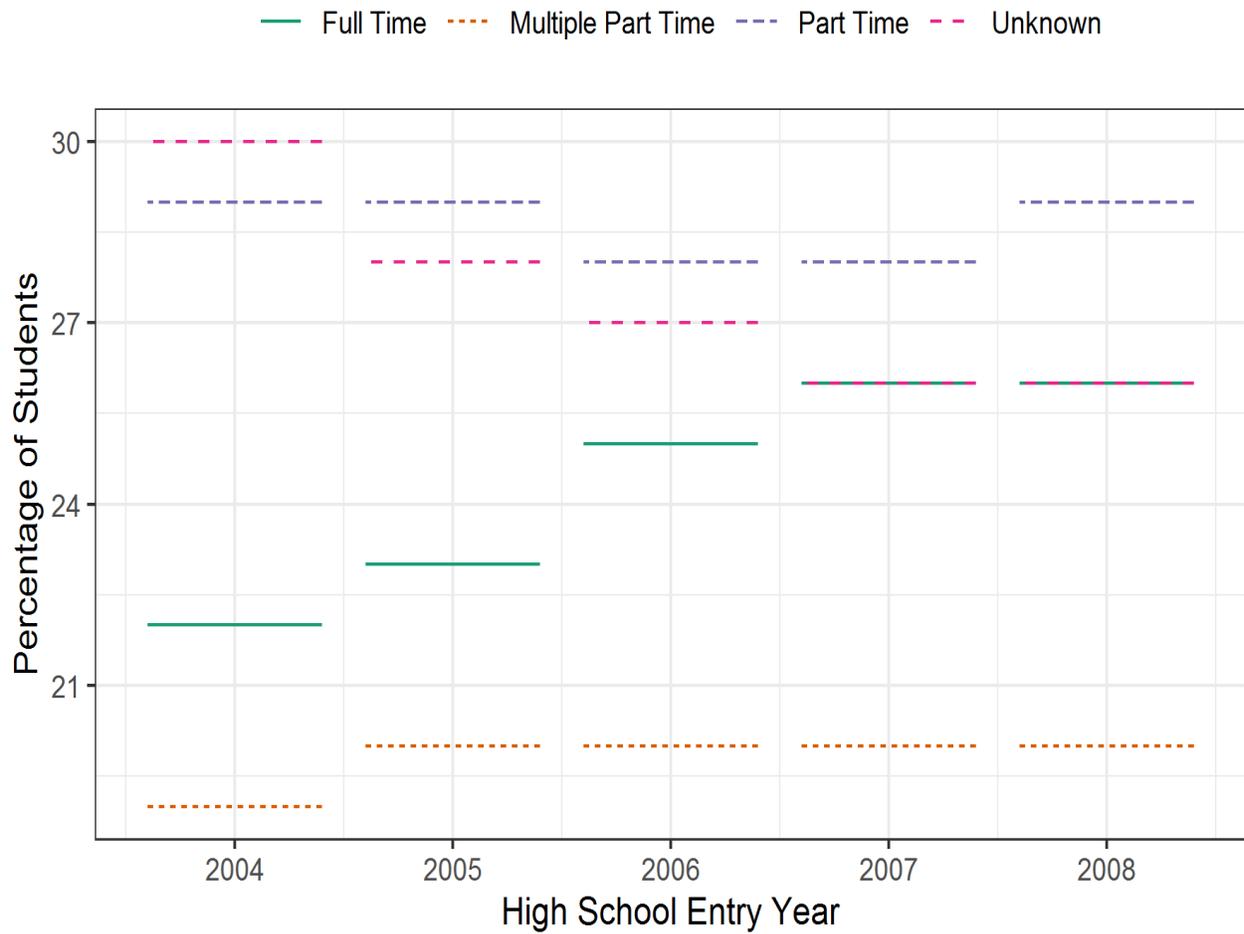


Figure 3. Job Classification 10 Years After Entering Grade 9, by Cohort

Note. Unknown individuals represent individuals for whom we did not have wage data or postsecondary enrollment data. Also, individuals who were identified as enrolled in postsecondary education but for whom wage data were not available are not included in these analyses (see Methods for additional information).

Figure 4 shows the percentage of students earning a FSHW, by year, from their entry into Grade 9 in 2004 (information is presented here for the 2004 cohort only). For this cohort, approximately 1% were earning a FSHW prior to 2008 (which would be their graduation year, if on a “typical” high school progression); however, from July 2006 to June 2007 (their junior year), approximately 63% were employed and earning less than a FSHW (note also that a large percentage were in the “unknown” category until 2008 when that percentage dropped to 27%). After 2010, two years after the typical graduation year of 2008, the percentage unknown remained relatively stable and the percentage earning a FSHW gradually rose, with more earning a FSHW in 2018 than were either unknown or below a FSHW.

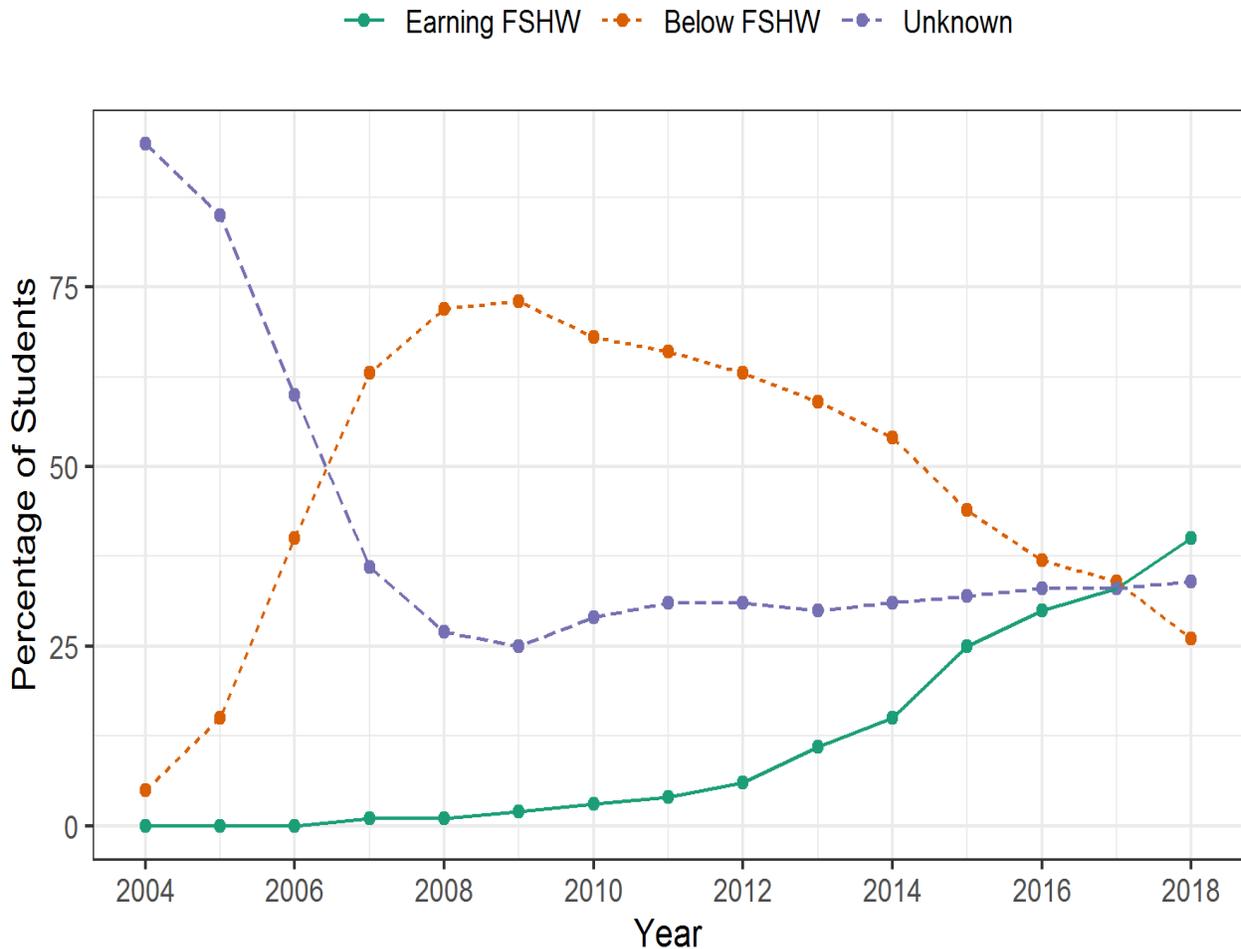


Figure 4. Percentage of 2004 Cohort Who Earned a Family-Sustaining Hourly Wage, by Year

Note. Unknown individuals represent individuals for whom we did not have wage data or postsecondary enrollment data. Also, individuals who were identified as enrolled in postsecondary education but for whom wage data were not available are not included in these analyses (see Methods for additional information).

By 2007, when most of the students in the 2004 cohort were still in high school, about half had found part-time work (Figure 5). Between 2008 and 2013, more students began working a full-time job compared to a single part-time job, but the percentage of students with multiple part-time jobs stayed steady. Between 2013 and 2018, 9 to 14 years after entering high school, more individuals had full-time jobs than multiple-part time jobs. In addition, although both types of part-time jobs gradually decreased, only about one-third had full-time jobs as of 2018, which was slightly less than those who had unknown employment status.

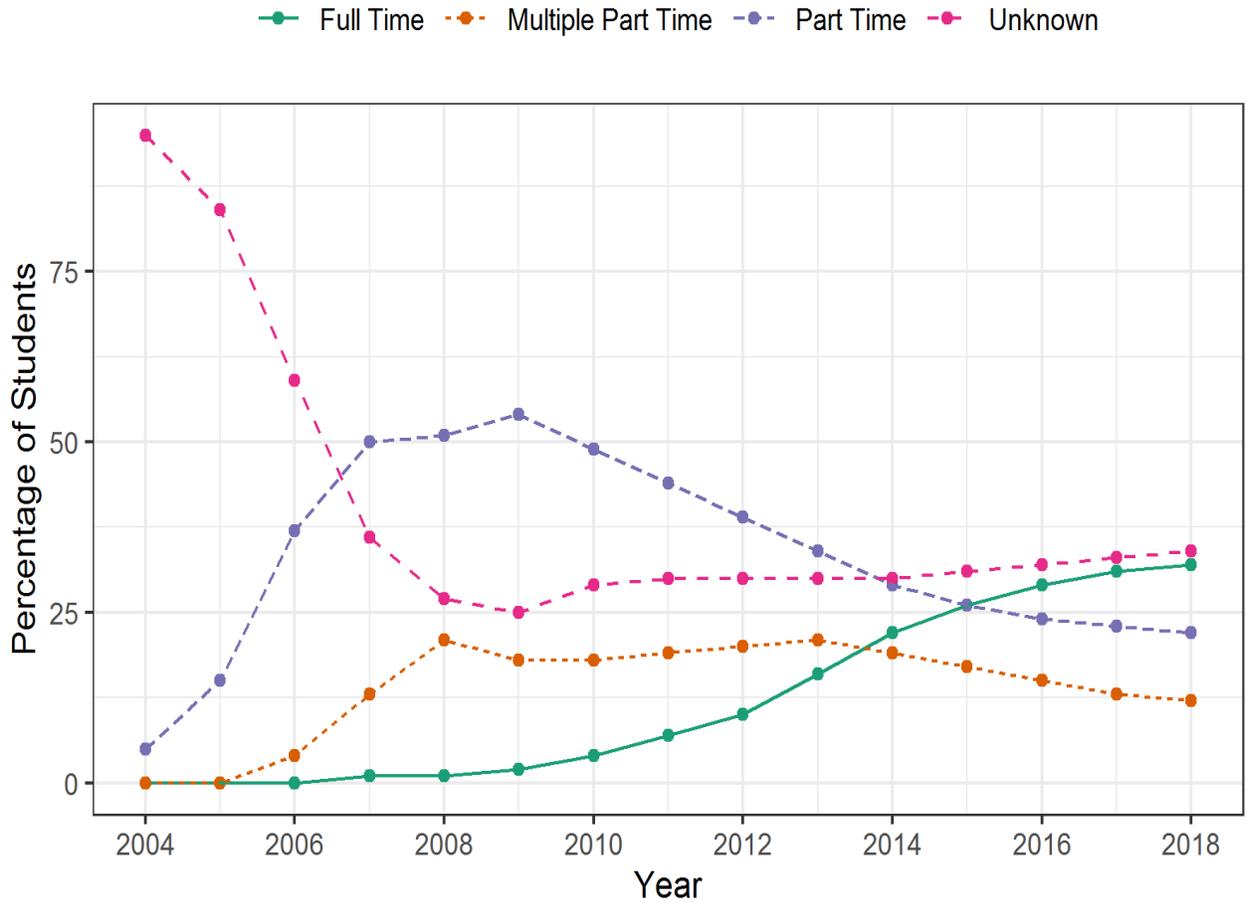


Figure 5. Job Classification for 2004 Cohort, by Year

In Figure 6, regional percentages of students earning a FSHW 10 years after entering high school are shown for students who *entered* high school in 2008. The Southwest region had the highest percentage of individuals in this cohort earning a FSHW (40%), while the 7-County Metro region had the lowest percentage earning a FSHW (28%). The Central region had the lowest percentage of individuals in the unknown category (21%, implying 79% known employed), and the Northwest had the highest percentage of individuals in the unknown category (34%, implying 66% known employed).

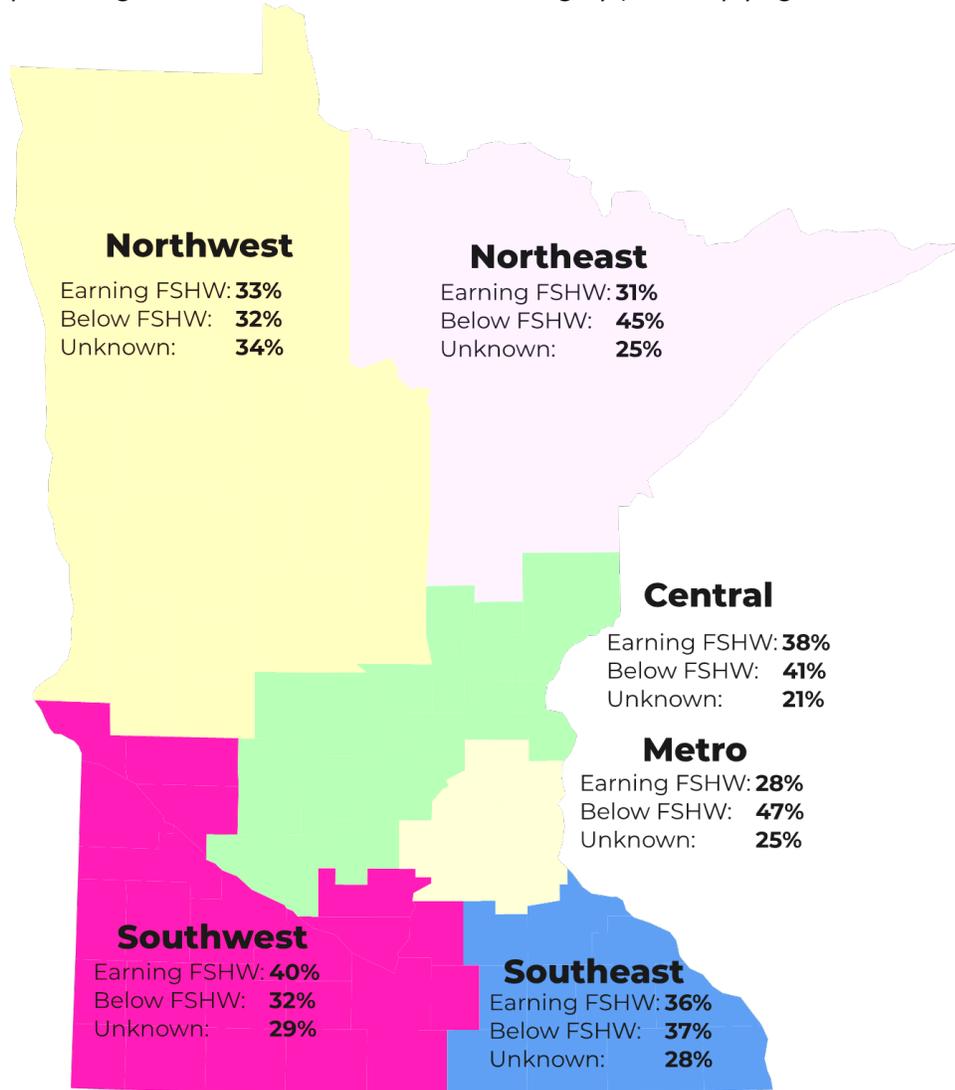


Figure 6. Family-Sustaining Hourly Wage 10 Years After Entering Grade 9 for 2008 Cohort, by Region

Transitions: Pathways to a Family-Sustaining Hourly Wage 10 Years after Entering Grade 9

In this section, we examine the question “What pathways did individuals take to earning a FSHW?” We first looked at all students who *entered* Grade 9 in 2008, examining how their wage outcomes 10 years after Grade 9 (i.e., in 2018) differed by whether or not they completed high school or postsecondary (Figure 7). For example, of the individuals who graduated high school in 4 years or less, and who completed postsecondary, 42% were earning a FSHW in 2018; conversely, of those individuals who did not graduate from high school or receive a GED (i.e., no HS equivalency), and who did not complete postsecondary, only 11% were earning a FSHW in 2018.

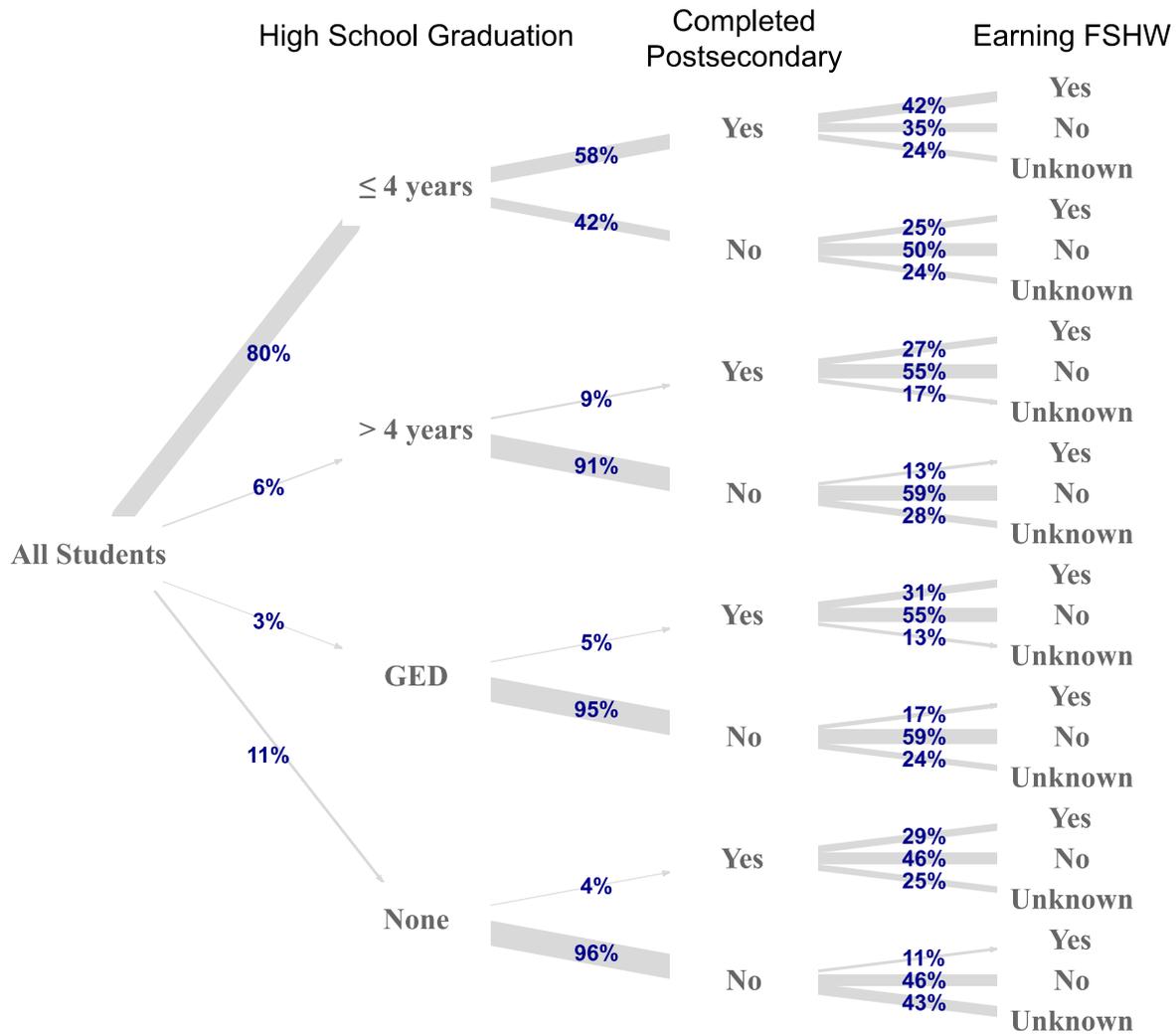


Figure 7. Overall Pathways to a Family-Sustaining Hourly Wage, by High School Graduation and Postsecondary Completion

We also looked at outcomes specifically for students who enrolled in a Minnesota postsecondary institution. This allowed us to examine data that we had only on Minnesota postsecondary students, such as Developmental Course-Taking (Figure 8). The pathway that resulted in the largest percentage of individuals in the 2008 cohort earning a FSHW in 2018 (48%) was for those who were proficient in math, who did not take developmental courses, and who completed postsecondary.

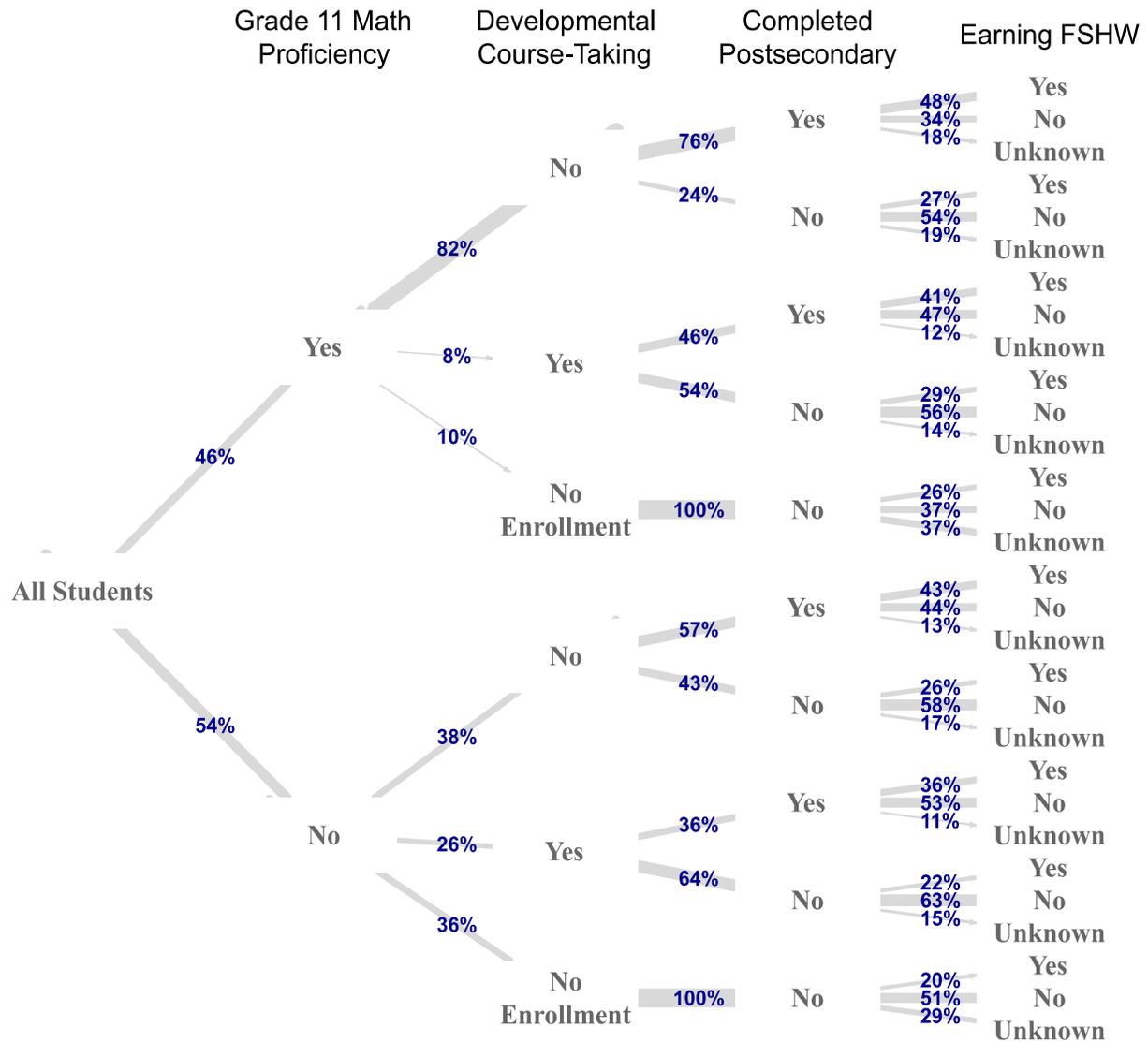


Figure 8. Overall Pathways to a Family-Sustaining Hourly Wage for Students Who Enrolled in Minnesota Postsecondary Institutions, by Math Proficiency, Developmental Course-Taking, and Postsecondary Completion

Subgroup Differences in Pathways to a Family-Sustaining Hourly Wage 10 Years after Entering Grade 9

In this section, we only present pathways to a FSHW based on one or two milestones (e.g., completing postsecondary education). The decision to include only one or two milestones was made because the addition of a third milestone provided limited additional information about pathways in different subgroups to a FSHW.⁴ Discussion (and associated figures) for each subgroup focuses on the most recent cohort—those who entered Grade 9 in 2008—but differences across time are also discussed.

Overall. Among those who entered Grade 9 in 2008 and were known to be employed 10 years later in 2018, 43% were earning a FSHW, while the majority were not doing so (57%) (Figure 9).

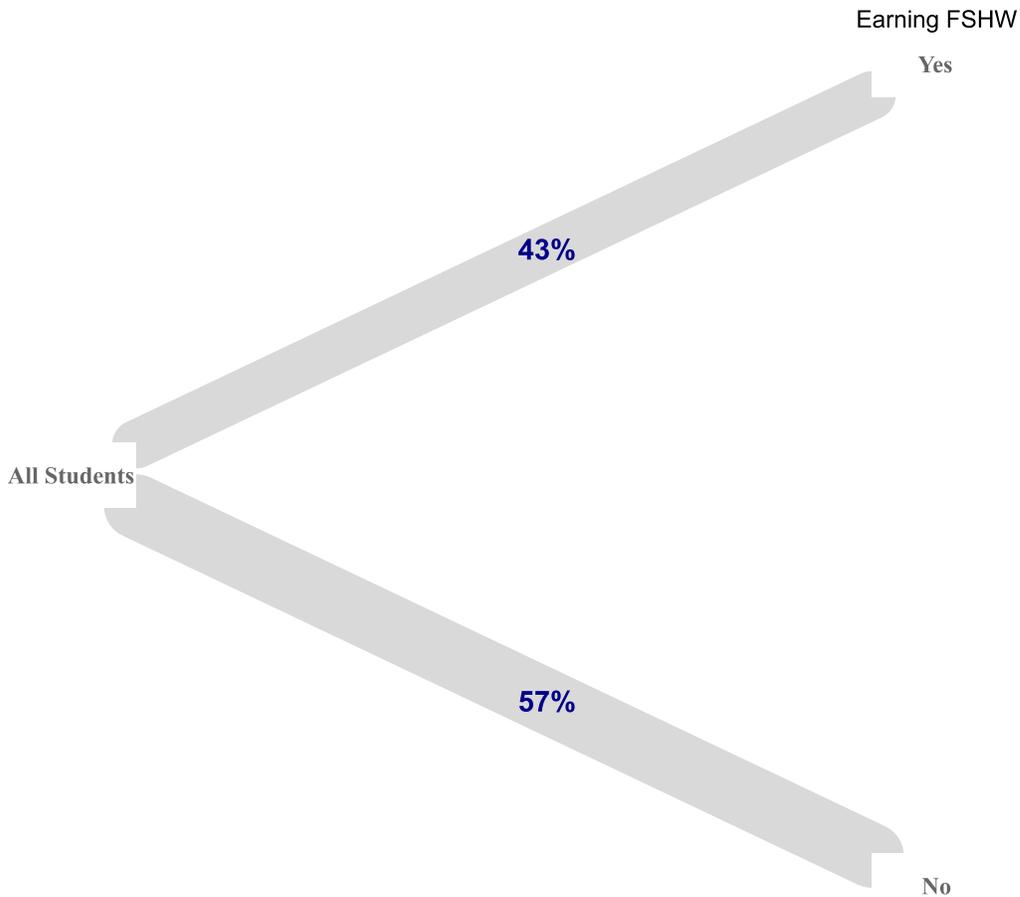


Figure 9. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, With No Milestones

⁴ For a single milestone, the highest-performing pathway provided between a 4 percentage point decrease to a 17 percentage point increase in subgroup individuals earning a FSHW as compared to individuals having no milestones. When a second milestone was added to the pathway, the highest-performing pathway for each subgroup was associated with an additional 2 percentage point decrease to an 8 percentage point increase compared with the corresponding highest-performing pathway with one milestone. Adding a third milestone appeared to provide little additional benefit: the highest-performing pathway for each subgroup with three milestones provided between a 2 percentage point decrease and a 3 percentage point increase.

The milestone associated with the greatest percentage of individuals earning a FSHW 10 years after entering Grade 9 was **postsecondary completion**, with 54% of individuals who completed postsecondary later earning a FSHW (Figure 10). **Math proficiency** was a close second for the 2008 cohort, with 52% of individuals who were proficient in math later earning a FSHW (Figure 11). Although not shown, for the cohorts entering Grade 9 in 2004 through 2006, math proficiency was the milestone associated with the greatest percentage of individuals earning a FSHW 10 years after entering high school.

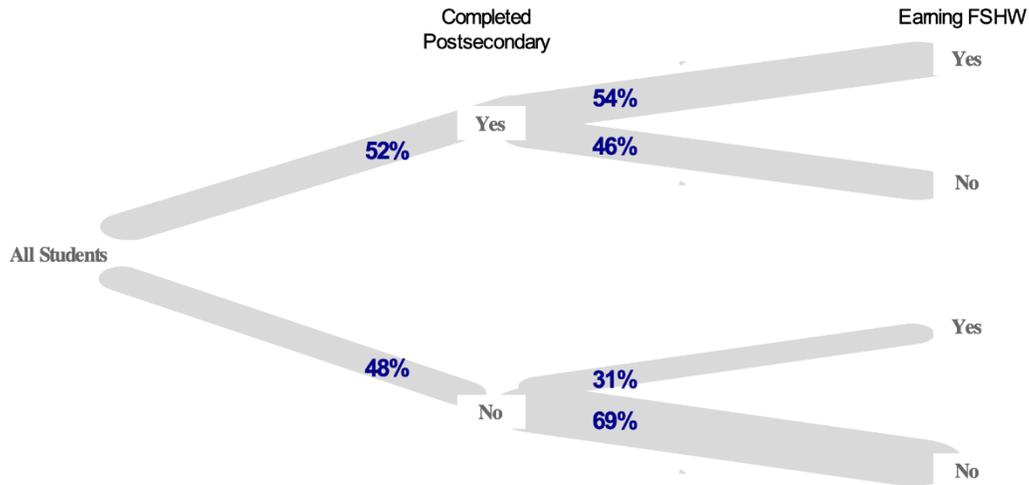


Figure 10. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Postsecondary Completion

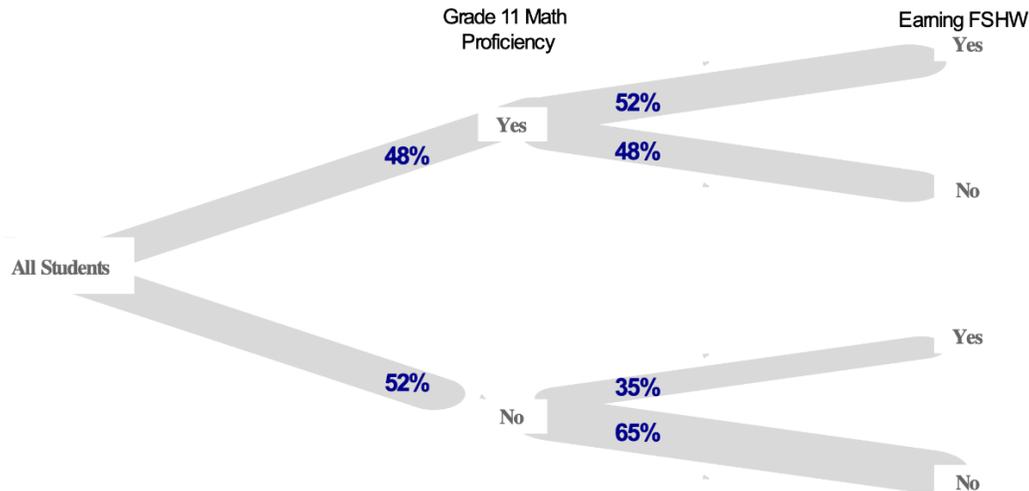


Figure 11. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Math Proficiency

Next, we examined individuals' pathways when two milestones were included in their pathways to a FSHW. The two milestones that led to the greatest percentage of individuals from the 2008 cohort earning a FSHW were **math proficiency** and **persistence**. More specifically, of all individuals who were proficient in math and who completed a postsecondary credential in less than three terms (indicated as "< 3 terms" under Persistence in Figure 12), 62% were earning a FSHW 10 years after high school entry, and 55% who persisted to at least the third term of a credential were earning a FSHW (indicated as "Yes" in Figure 12). Note that the group completing in less than three terms is a small group, consisting of only 515 students from the 2008 cohort; this group from the other cohorts was too small to include in the pathways analysis. Although not shown here, two milestones that led to a similar percentage of individuals earning a FSHW (59%) were **math proficiency** and **postsecondary completion**; this was the most promising pathway for the 2004–2007 cohorts.

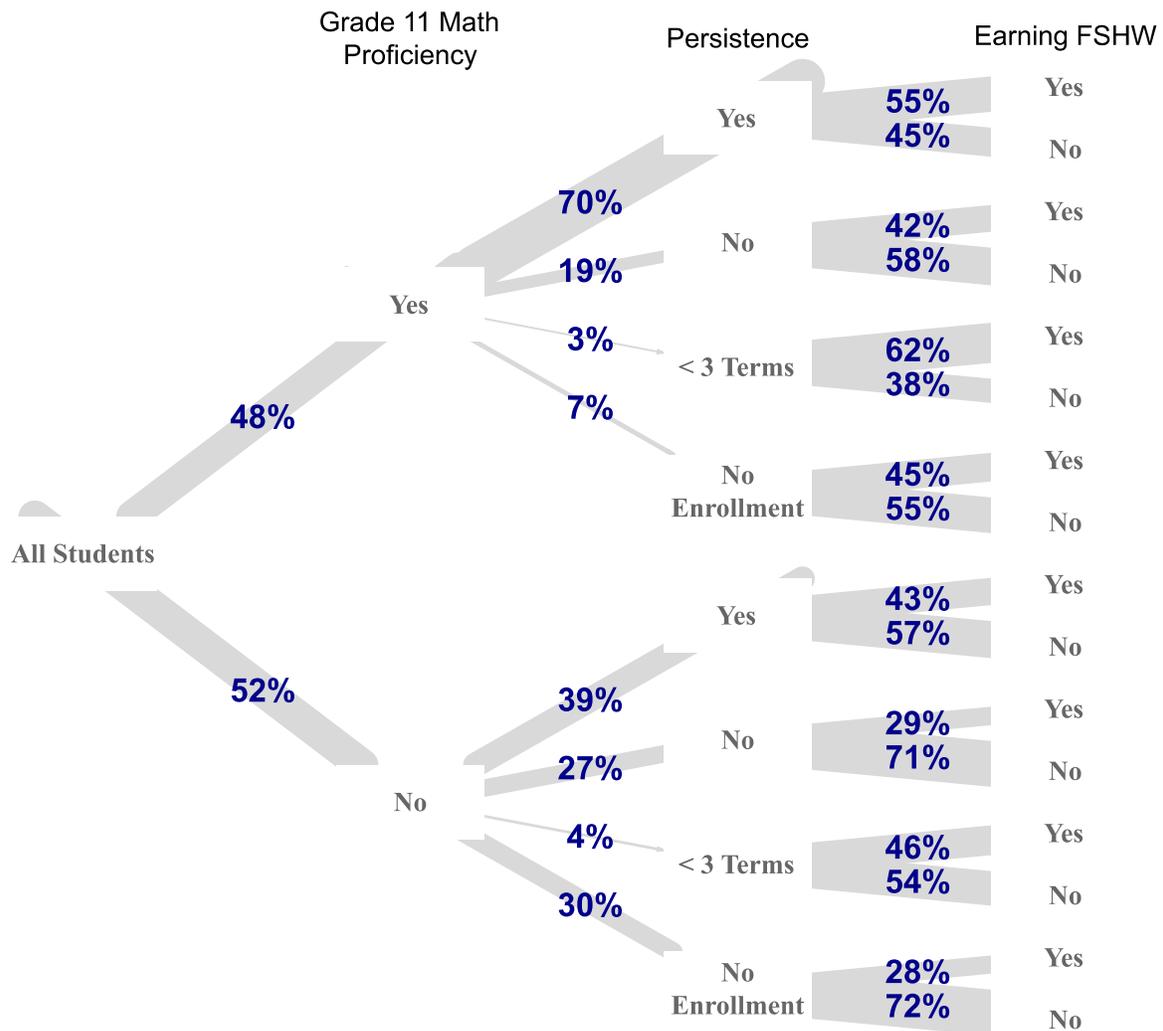


Figure 12. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Math Proficiency and Persistence

Ever Eligible for Free or Reduced-Priced Lunch (Ever FRPL). When we examined pathways to a FSHW for individuals who were ever eligible for FRPL, we observed a sizable gap in outcomes: 47% of non-FRPL-eligible individuals who entered Grade 9 in 2008 earned a FSHW 10 years later, compared to 30% of FRPL-eligible individuals, a gap of 17 percentage points (Figure 13). This gap was slightly smaller for previous cohorts—ranging from 11% for the 2004 cohort to 16% for the 2007 cohort—which seemed to be largely due to the fact that lower percentages of all individuals earned a FSHW in prior years.

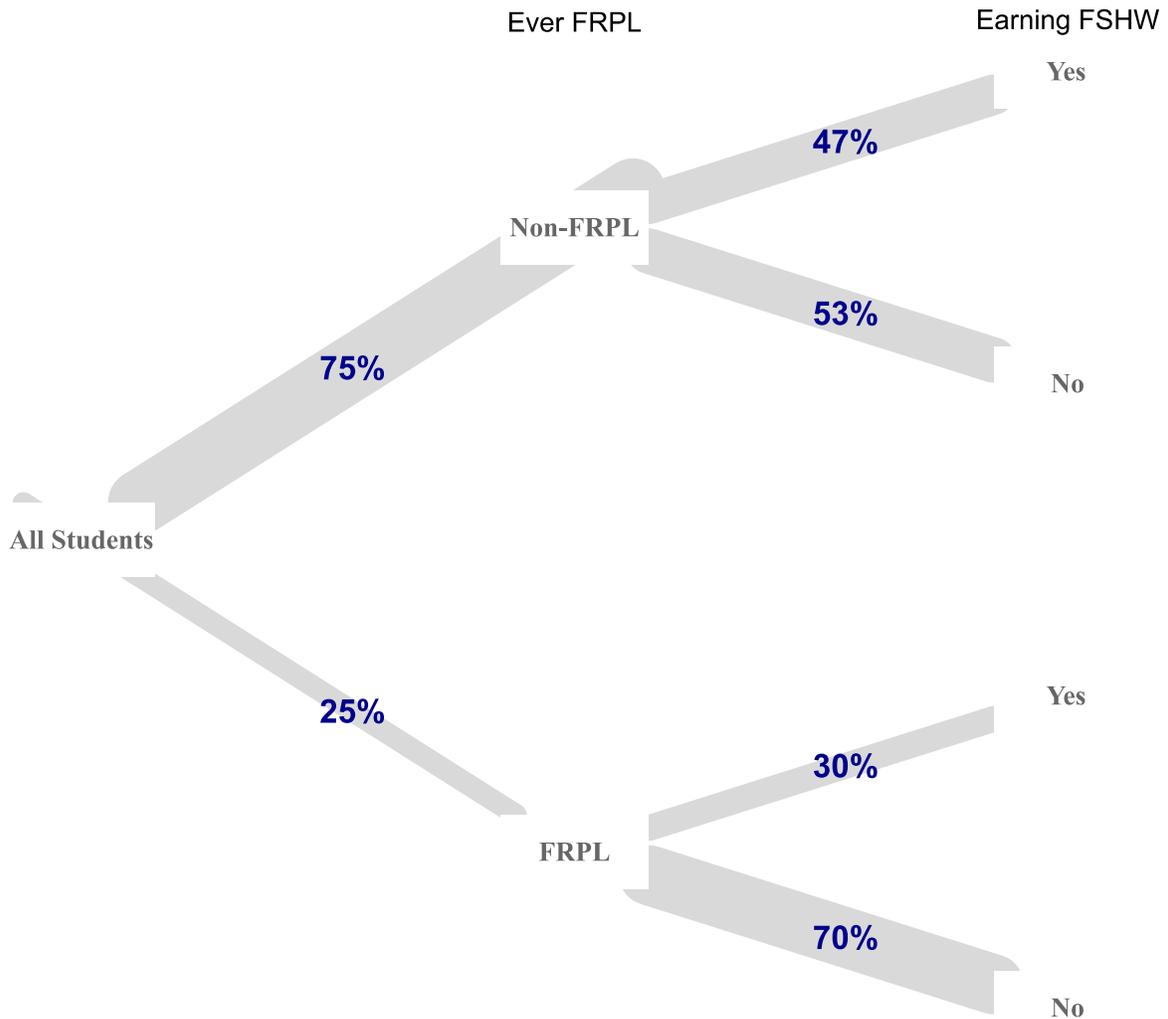


Figure 13. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Free or Reduced-Price Lunch (FRPL) Eligibility

When one milestone was added to the FRPL eligibility pathways, the pathway that led to the greatest percentage of FRPL-eligible individuals from the 2008 cohort earning a FSHW was **postsecondary completion**: of these individuals, 43% were earning a FSHW 10 years after entering Grade 9, as compared to 56% of non-FRPL-eligible individuals who completed postsecondary (Figure 14). Prior cohorts of FRPL-eligible individuals had similar results, with either **postsecondary completion** or **math proficiency** as the top milestone.

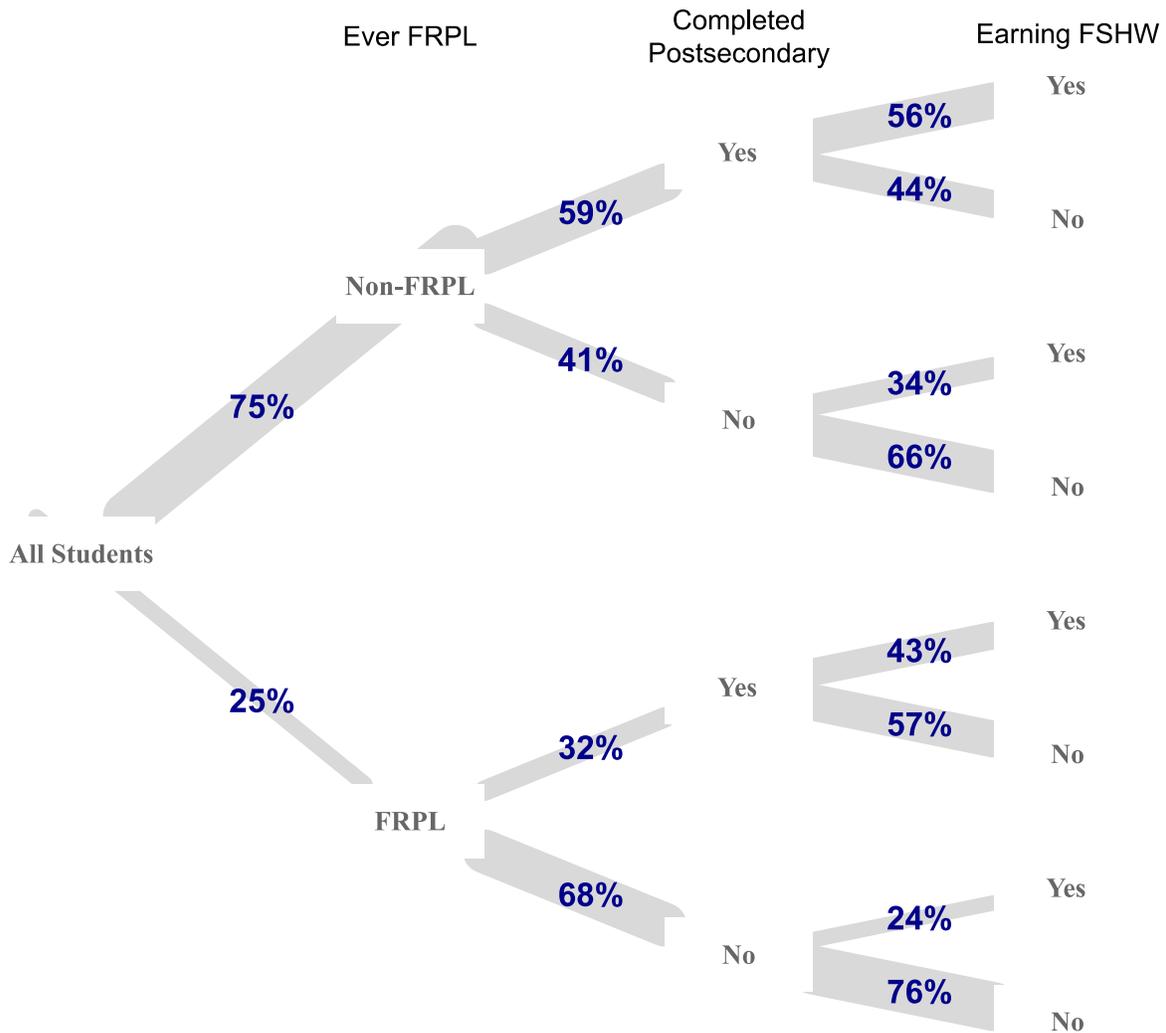


Figure 14. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Free or Reduced-Price Lunch (FRPL) Eligibility and Postsecondary Completion

When two milestones were added to the FRPL eligibility pathways, we observed that the pathway that led to the greatest percentage of FRPL-eligible individuals from the 2008 cohort earning a FSHW 10 years after entering Grade 9 included **math proficiency** and **postsecondary completion**, and this was true for all cohorts. On this pathway, 50% of FRPL-eligible individuals who were proficient in math and who completed postsecondary were earning a FSHW, as compared to 60% of the corresponding non-FRPL-eligible individuals (Figure 15). Two milestones that led to a similar percentage of FRPL-eligible individuals earning a FSHW were **reading proficiency** and **postsecondary completion**, with 46% of reading proficient, postsecondary-completing FRPL-eligible individuals earning a FSHW 10 years after entering Grade 9. Although the highest-performing pathway remained the same for prior cohorts, the runners-up showed variability, with a variety of other top combinations of two milestones within 5–9 percentage points; however, these other top combinations all contained either **math proficiency** or **postsecondary completion** as a pathway milestone.

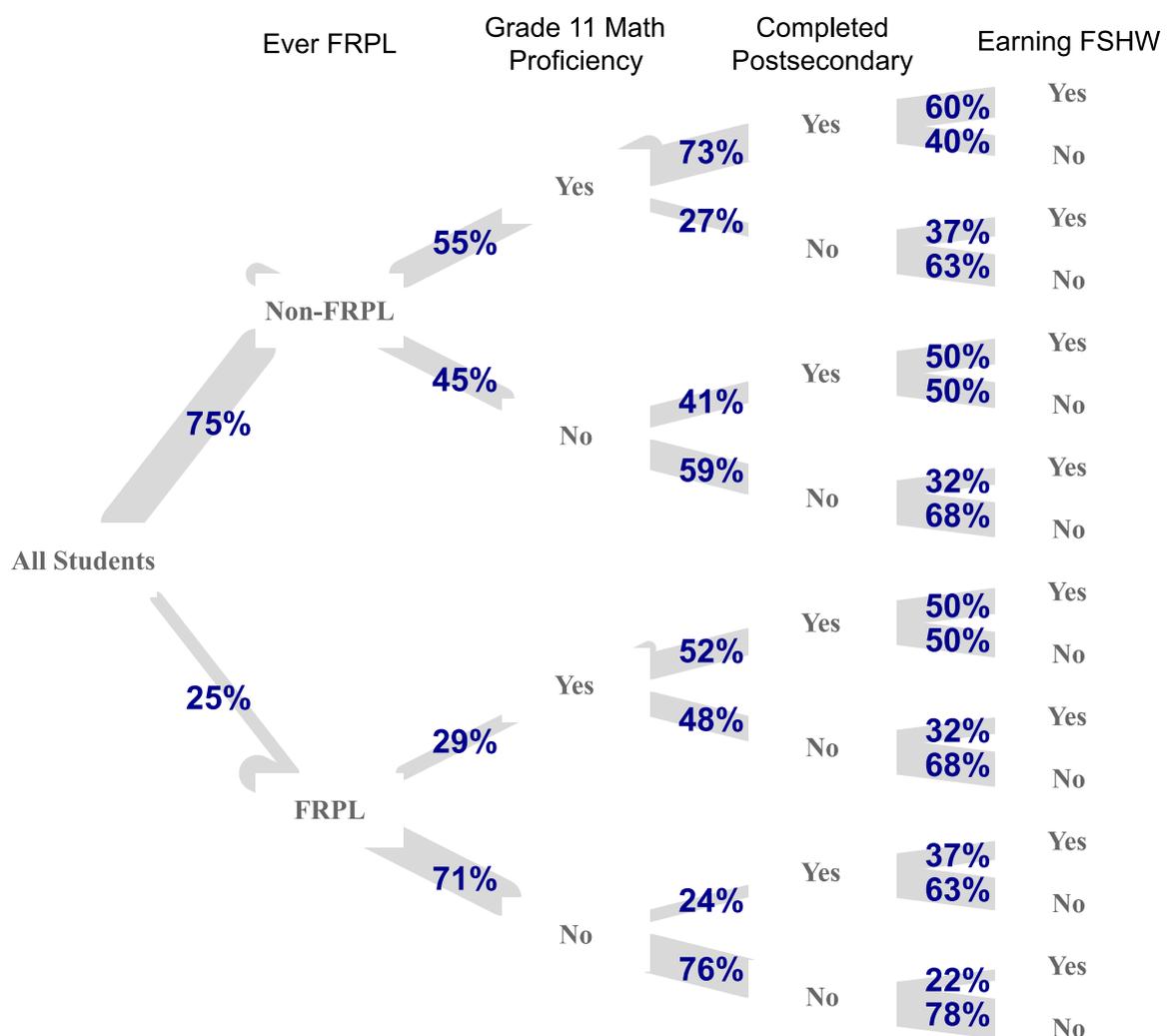


Figure 15. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Free or Reduced-Price Lunch (FRPL) Eligibility, Math Proficiency, and Postsecondary Completion

Ever Eligible for Special Education (Ever SPED). When we examined pathways to a FSHW for individuals who were ever eligible for special education, we observed that only 29% of individuals entering high school in 2008 who were ever eligible for special education (SPED) earned a FSHW 10 years after entering Grade 9, as compared to 45% of those who were never eligible for special education (non-SPED), a gap of 16% (Figure 16). This gap was persistent in previous cohorts as well, ranging from 13% for the 2004 cohort to 17% in the 2007 cohort.

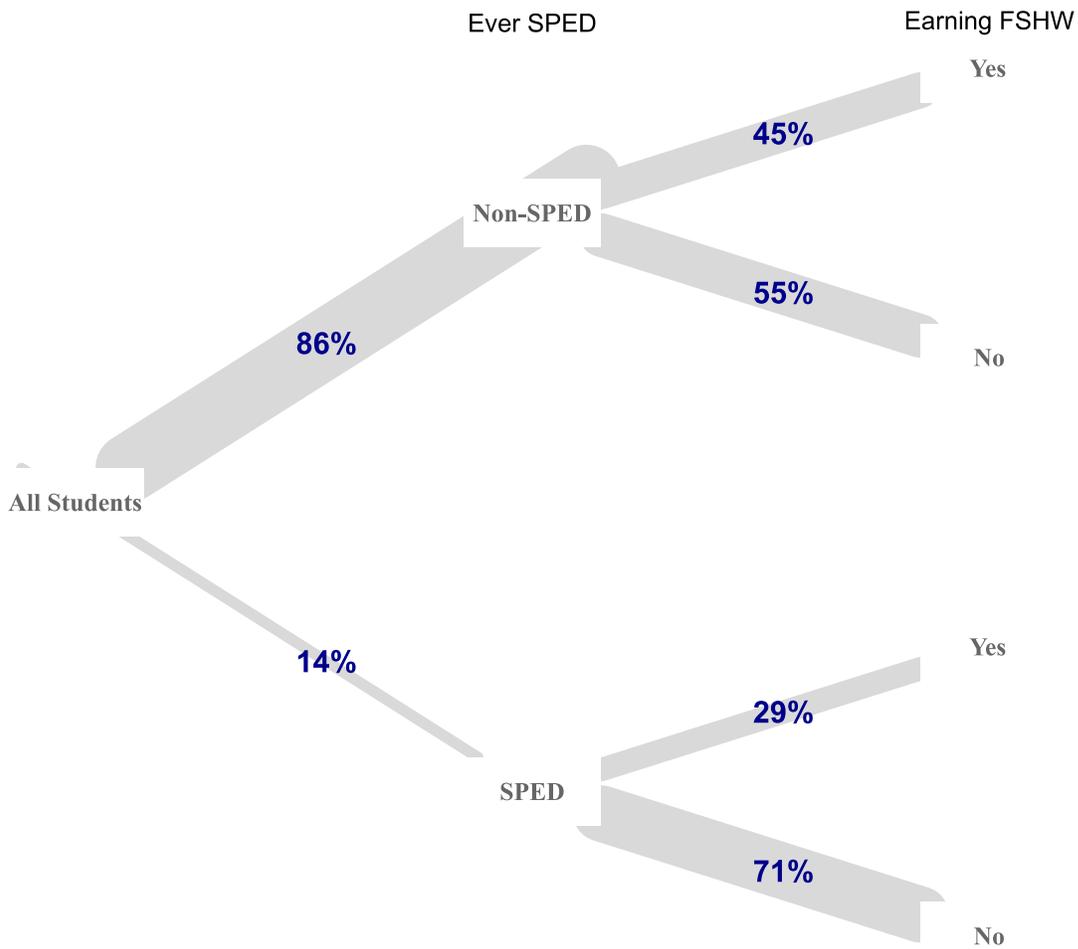


Figure 16. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Special Education (SPED) Eligibility

When one milestone was added to the SPED eligibility pathways, the pathway that led to the greatest percentage of SPED-eligible individuals from the 2008 cohort earning a FSHW was **postsecondary completion**: of these SPED-eligible individuals, 44% were earning a FSHW as compared to 55% of non-SPED-eligible individuals who completed postsecondary (Figure 17). **Postsecondary completion** was the top single milestone for SPED-eligible individuals in prior cohorts as well, but these prior cohorts did not show any noticeable decrease in the gap in earning a FSHW between SPED-eligible and non-SPED-eligible individuals, even after accounting for postsecondary completion. Across all cohorts, the second milestone that was most associated with the highest percentage of SPED-eligible individuals earning a FSHW 10 years after entering Grade 9 was **math proficiency**, which showed nearly comparable performance to postsecondary completion, but was 0 to 3 percentage points lower.

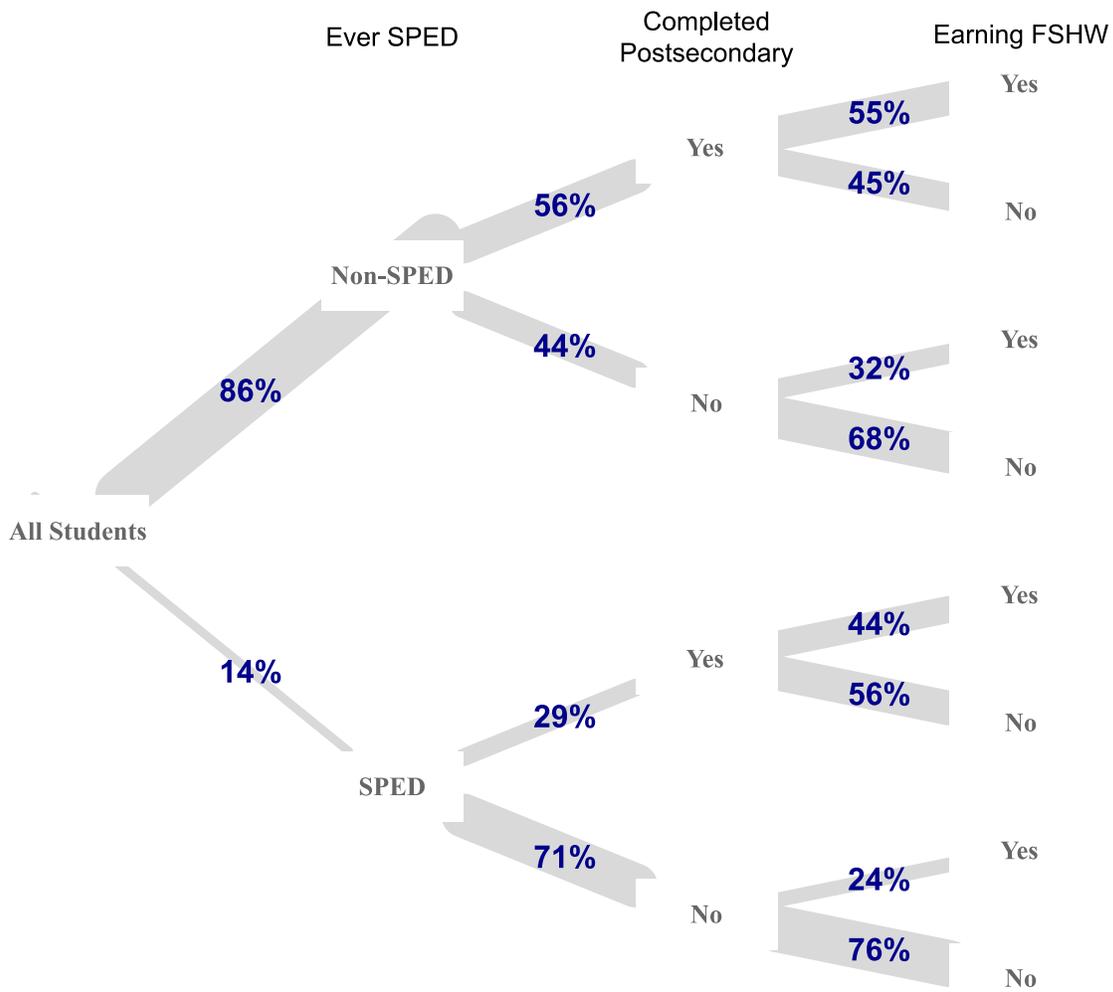


Figure 17. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Special Education (SPED) Eligibility and Postsecondary Completion

When two milestones were added to the SPED eligibility pathways, the pathway that led to the greatest percentage of SPED-eligible individuals from the 2008 cohort earning a FSHW 10 years after entering Grade 9 included **math proficiency** and **postsecondary completion**. Specifically, of all SPED-eligible individuals who were proficient in math and who completed postsecondary, 52% were earning a FSHW, compared to 59% of non-SPED-eligible individuals, a gap of 7% (Figure 18). This gap of 7% is a substantial decrease from the 16% gap among all SPED-eligible and non-SPED-eligible individuals shown above in Figure 16, but note that these are selective criteria: only 22% of SPED-eligible individuals were proficient in math, and only 55% of those proficient individuals completed a postsecondary degree.

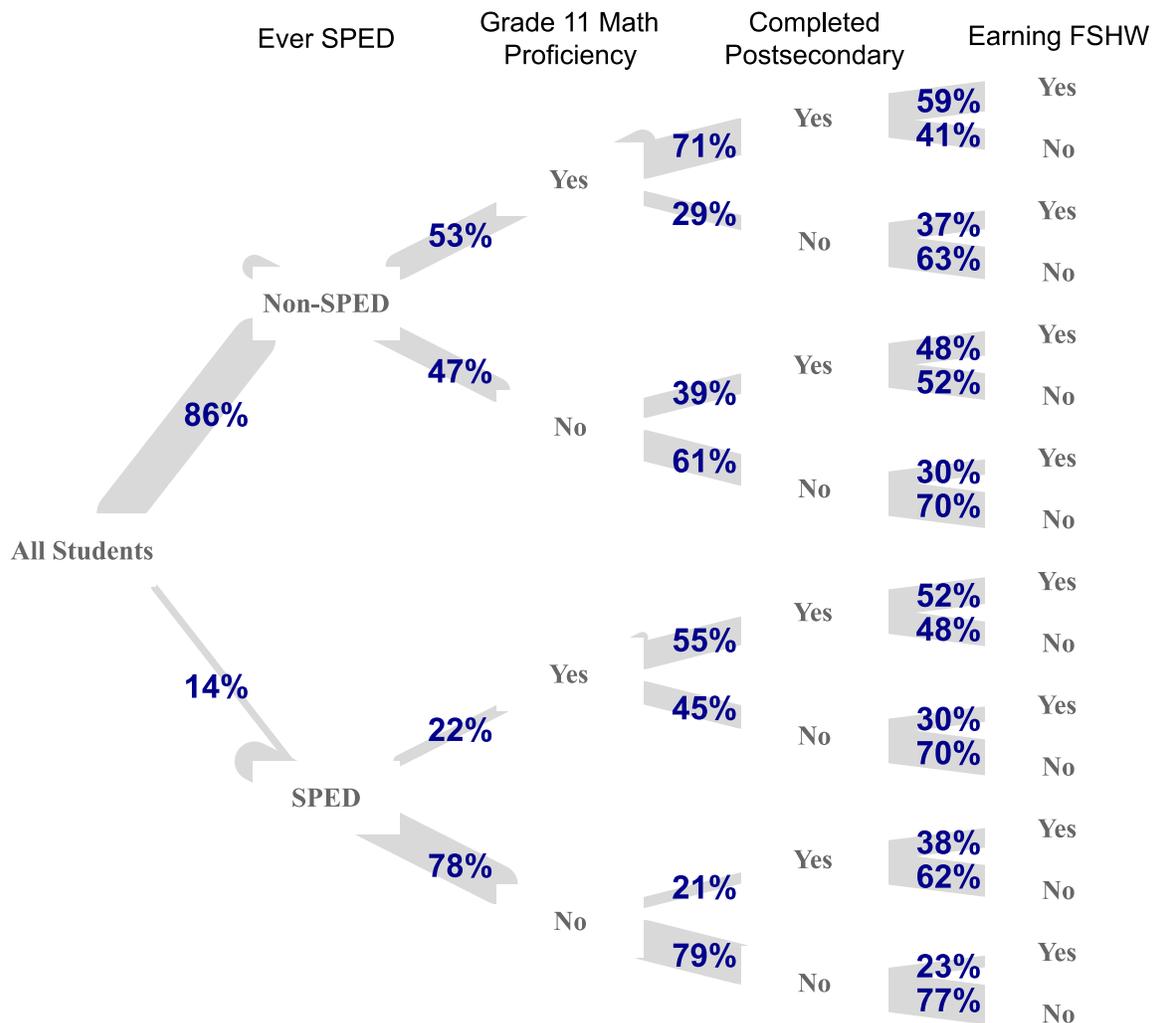


Figure 18. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Special Education (SPED) Eligibility, Math Proficiency, and Postsecondary Completion

Across the SPED eligibility pathways, several other pairs of milestones led to similar outcomes for SPED-eligible individuals from the 2008 cohort earning a FSHW 10 years after entering Grade 9 as the top-performing pair. These pairs included **postsecondary completion** or **math proficiency** paired with a variety of other milestones. However, the primacy of math proficiency appears to be an anomaly of the 2008 cohort. The top-performing milestone pairs in prior years all included postsecondary completion paired with other milestones such as persistence, timing of enrollment, and reading proficiency. These changes could represent actual differences in year-to-year performance, but may also be a sign that analyses of pairs of milestones for SPED-eligible individuals, itself already a small group, may be unreliable and should be considered with caution.

Gender. When we examined pathways to a FSHW for individuals by gender, we observed that a smaller percentage of females were earning a FSHW (40%) as compared to males (46%). Note that there were approximately equal numbers of male and female individuals in the 2008 cohort (Figure 19).

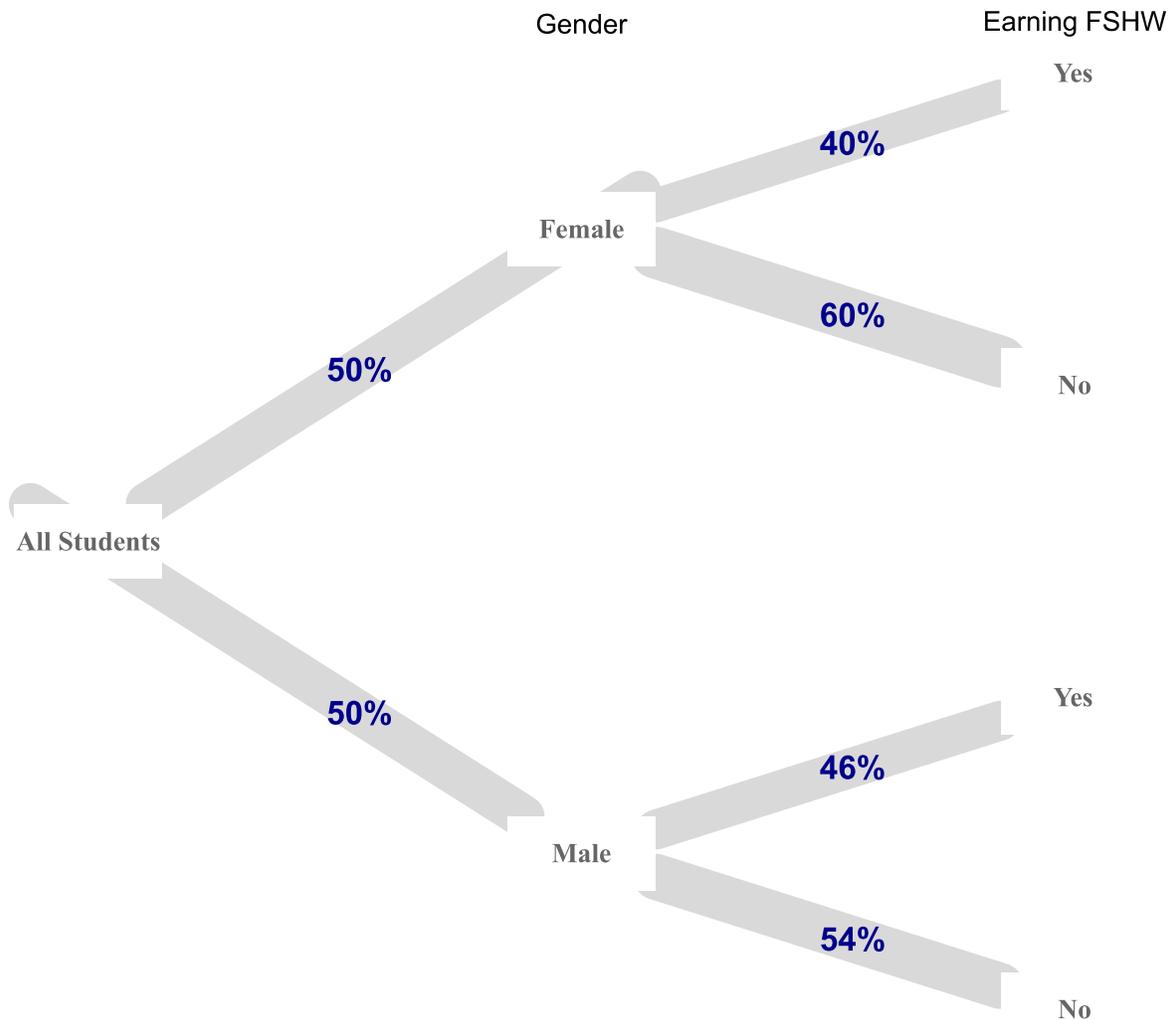


Figure 19. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Gender

As in other subgroup analyses, when one milestone was added to pathways based on gender, the pathway that led to the greatest percentage of female individuals from the 2008 cohort earning a FSHW 10 years after entering Grade 9 was for individuals who had **completed postsecondary**: of these individuals, 51% were earning a FSHW as compared to 60% of male individuals who completed postsecondary (Figure 20). However, females actually completed postsecondary at a higher rate (60%) than males (44%).

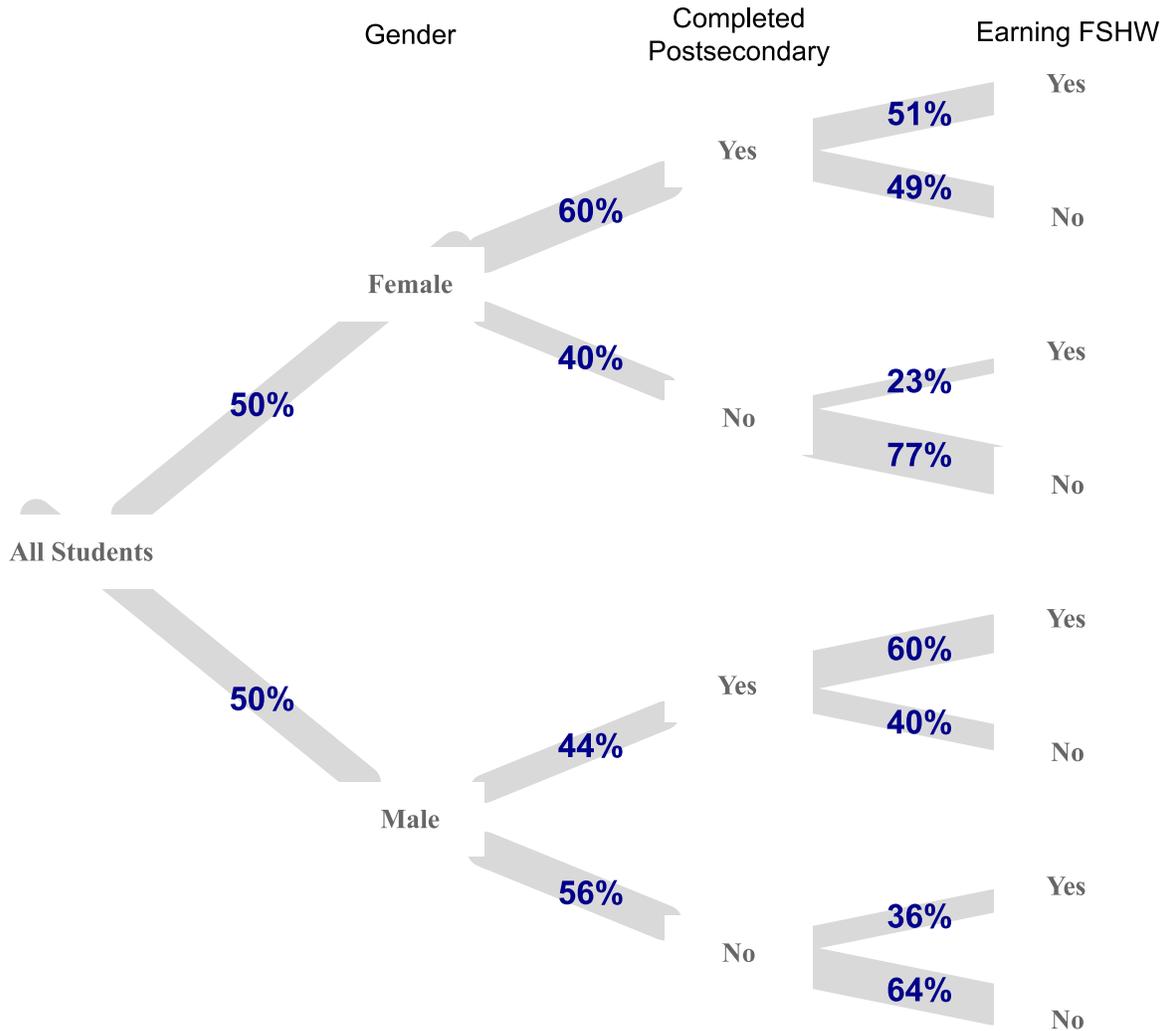


Figure 20. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Gender and Postsecondary Completion

After postsecondary completion, the second-highest performing milestone along the pathways to a FSHW based on gender for the 2008 cohort was **math proficiency**. For example, 50% of females proficient in math later earned a FSHW (Figure 21), compared to 51% of females who completed postsecondary (Figure 20). While the gap between females and males earning a FSHW for postsecondary completion was 9% (51% vs. 60%, respectively; Figure 20), the gap narrowed to 3% for the math proficiency milestone (50% vs. 53%, respectively; Figure 21). In prior cohorts, math proficiency was actually the top milestone for female individuals, as compared to postsecondary completion for the 2008 cohort.

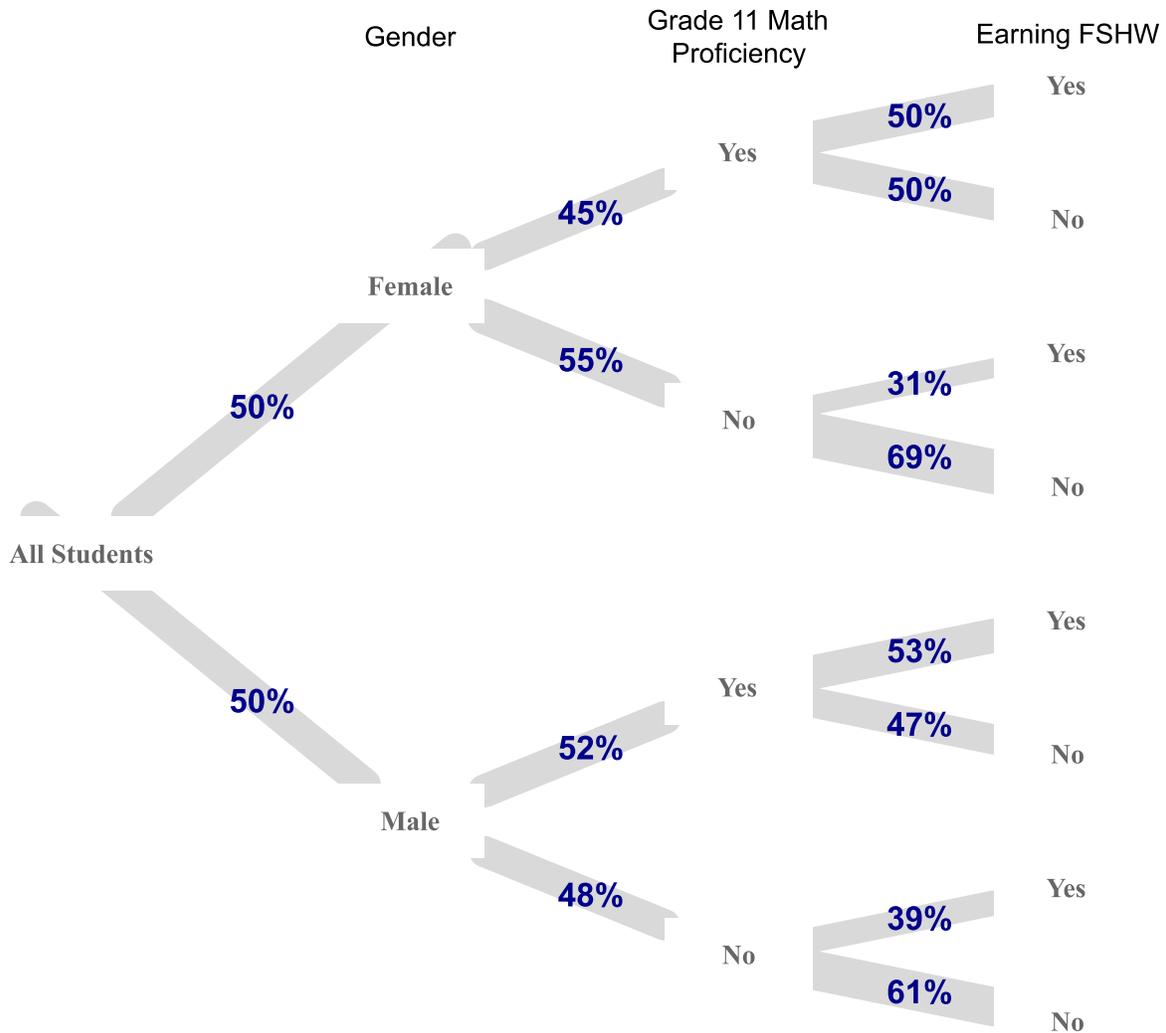


Figure 21. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Gender and Math Proficiency

Again, the top-performing pair of milestones along the pathways to a FSHW for female individuals in the 2008 cohort was **math proficiency** and **postsecondary completion**. Specifically, of the female individuals who were proficient in math and who completed postsecondary, 55% were earning a FSHW, as compared to 62% of males, a gap of 7% (Figure 22). This was the highest-performing pair of milestones on the gender pathways in all prior cohorts as well.

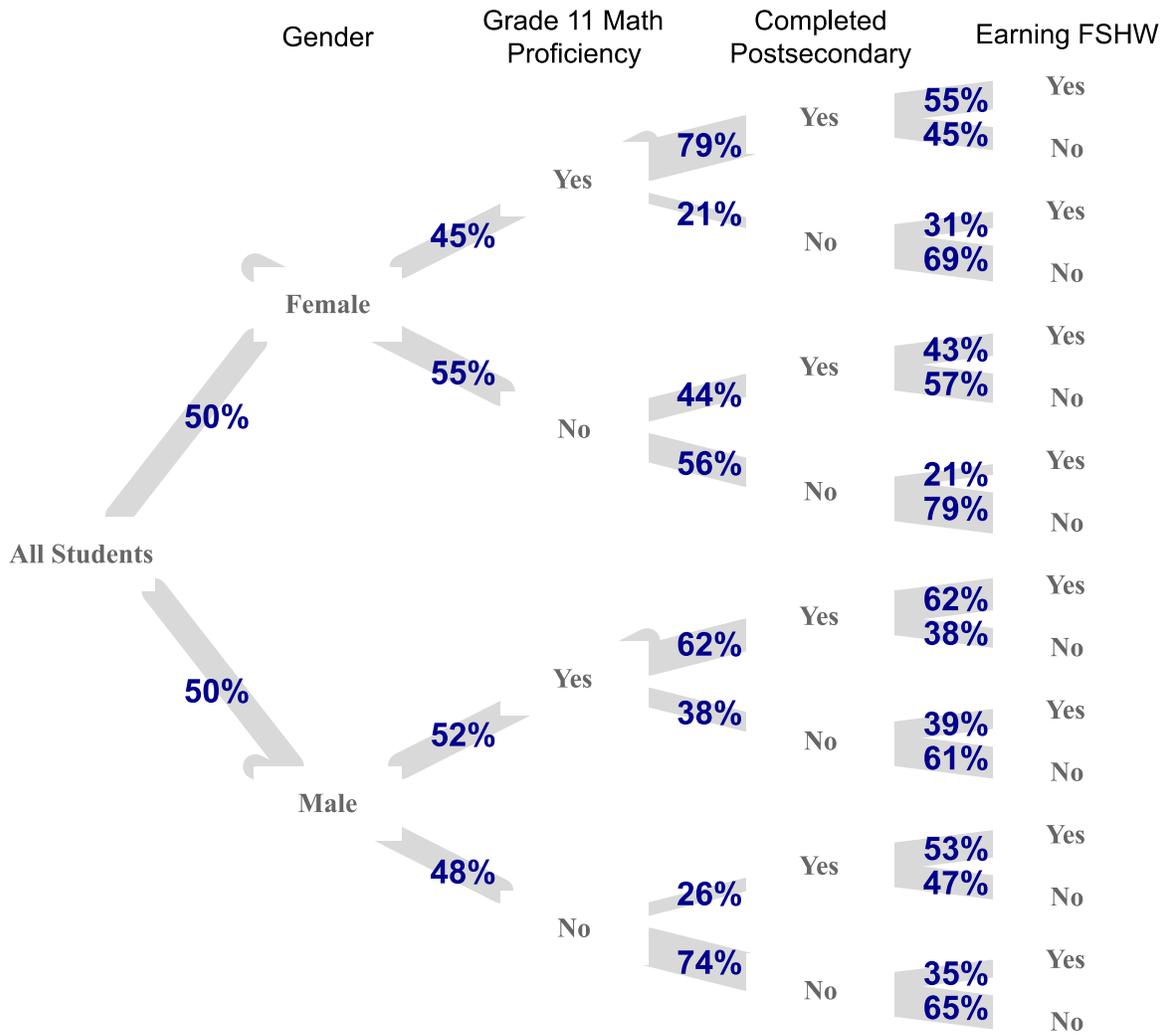


Figure 22. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Gender, Math Proficiency, and Postsecondary Completion

Race/Ethnicity. Of all subgroups, race/ethnicity had the largest gap in individuals from the 2008 cohort earning a FSHW 10 years after entering Grade 9 (21 percentage points), with 26% of people of color (POC) earning a FSHW and 47% of non-people of color (non-POC) doing so (Figure 23). This gap varied by race/ethnicity, with 25% of American Indian/Alaskan Native, 31% of Asian/Pacific Islander, 19% of Black, and 30% of Hispanic individuals in the 2008 cohort earning a FSHW, compared to 47% of White individuals (Figure 24).

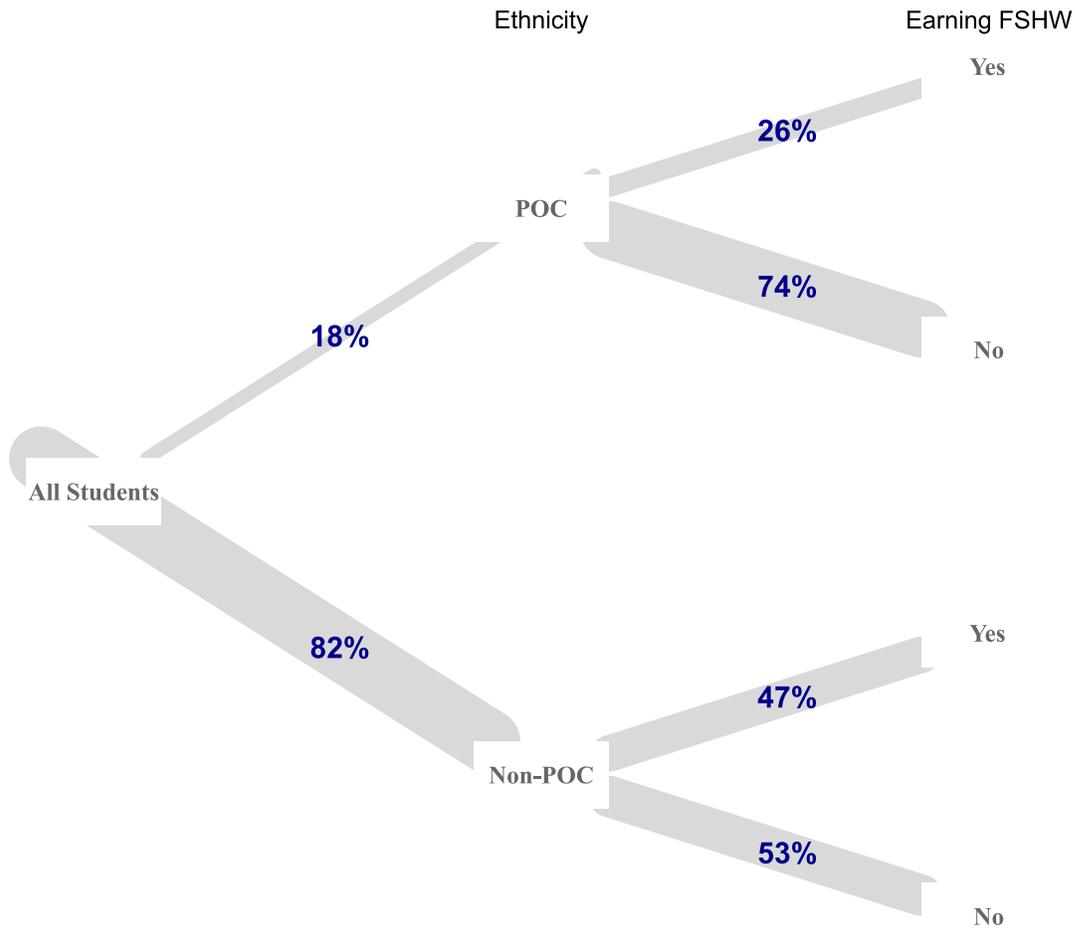


Figure 23. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by People of Color vs. non-People of Color

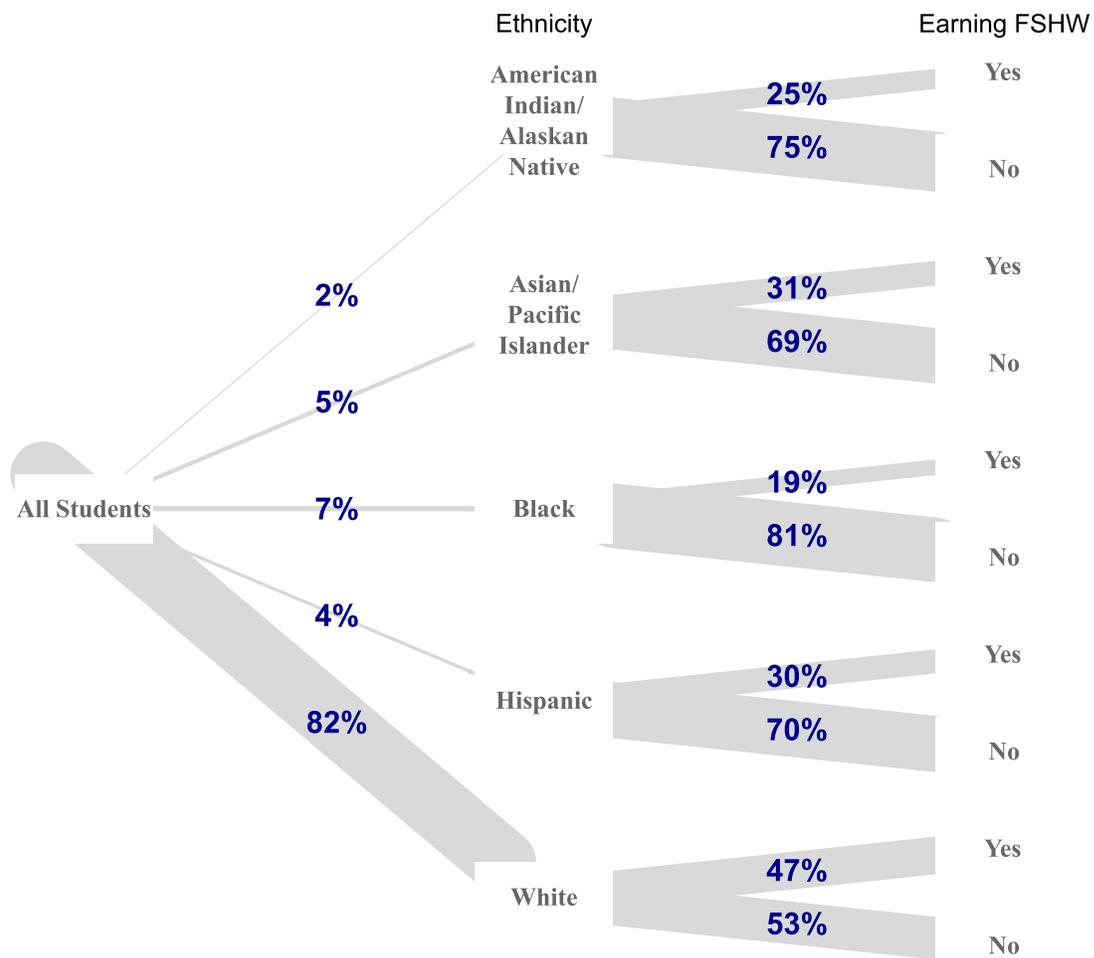


Figure 24. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by Race/Ethnicity

When one milestone was added to the pathways based on race/ethnicity, the pathway that led to the greatest percentage of POC individuals from the 2008 cohort earning a FSHW 10 years after entering Grade 9 was **postsecondary completion**. Of these individuals, 40% were earning a FSHW as compared to 56% of non-POC individuals who completed postsecondary (Figure 25). Although the race/ethnicity wage gap decreased from the gap of 21% without any milestones (see Figure 23), it remained robust at 16% even among the select group of postsecondary completers.

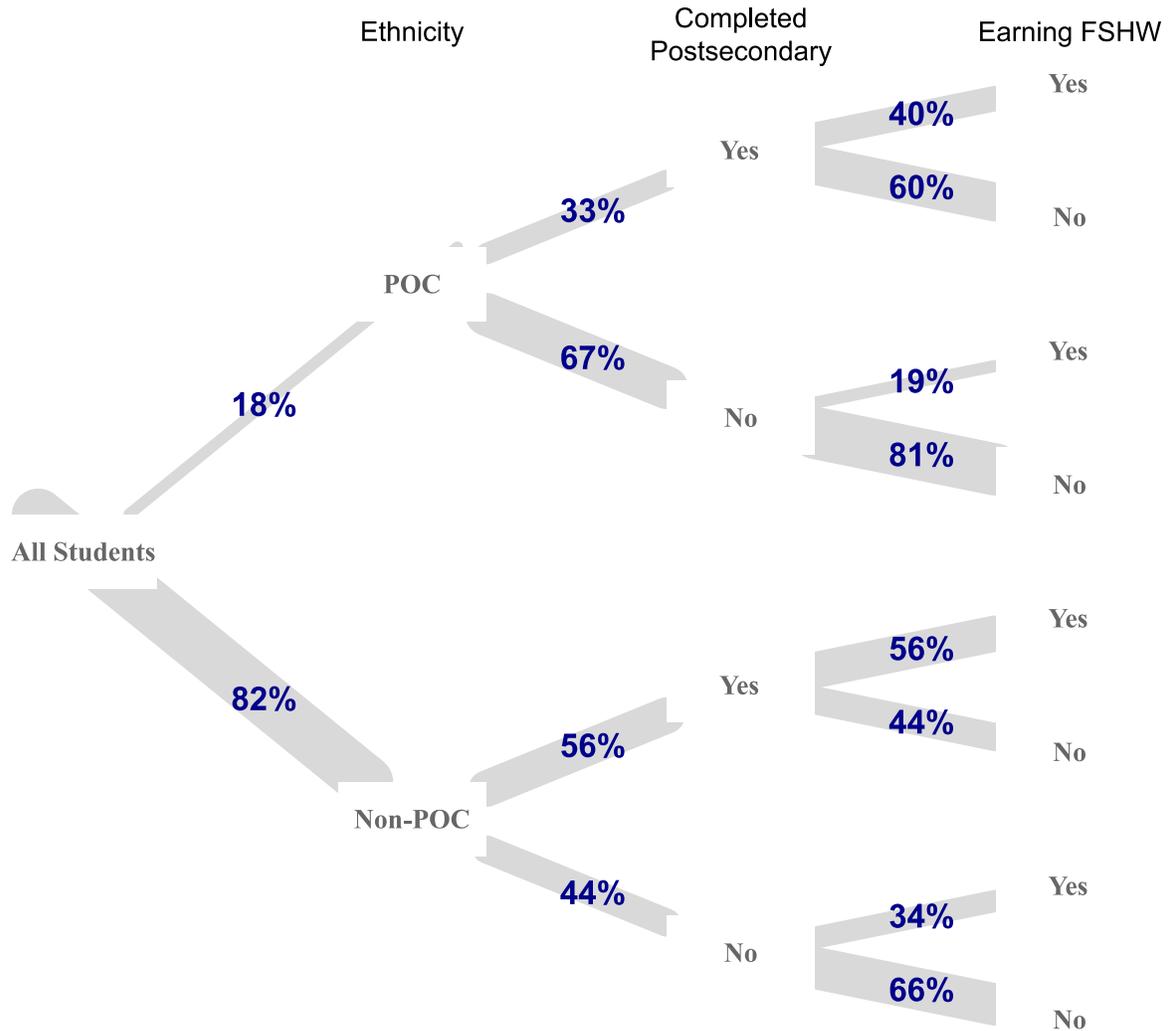


Figure 25. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by People of Color vs. non-People of Color and Postsecondary Completion

The second milestone associated with FSHW outcomes for the 2008 cohort of POC individuals, and the top milestone of all previous cohorts of POC individuals, was **math proficiency**. In the 2008 cohort, 38% of math-proficient POC individuals earned a FSHW 10 years after entering Grade 9 and 53% of math-proficient non-POC individuals did so, for a gap of 15% (Figure 26).

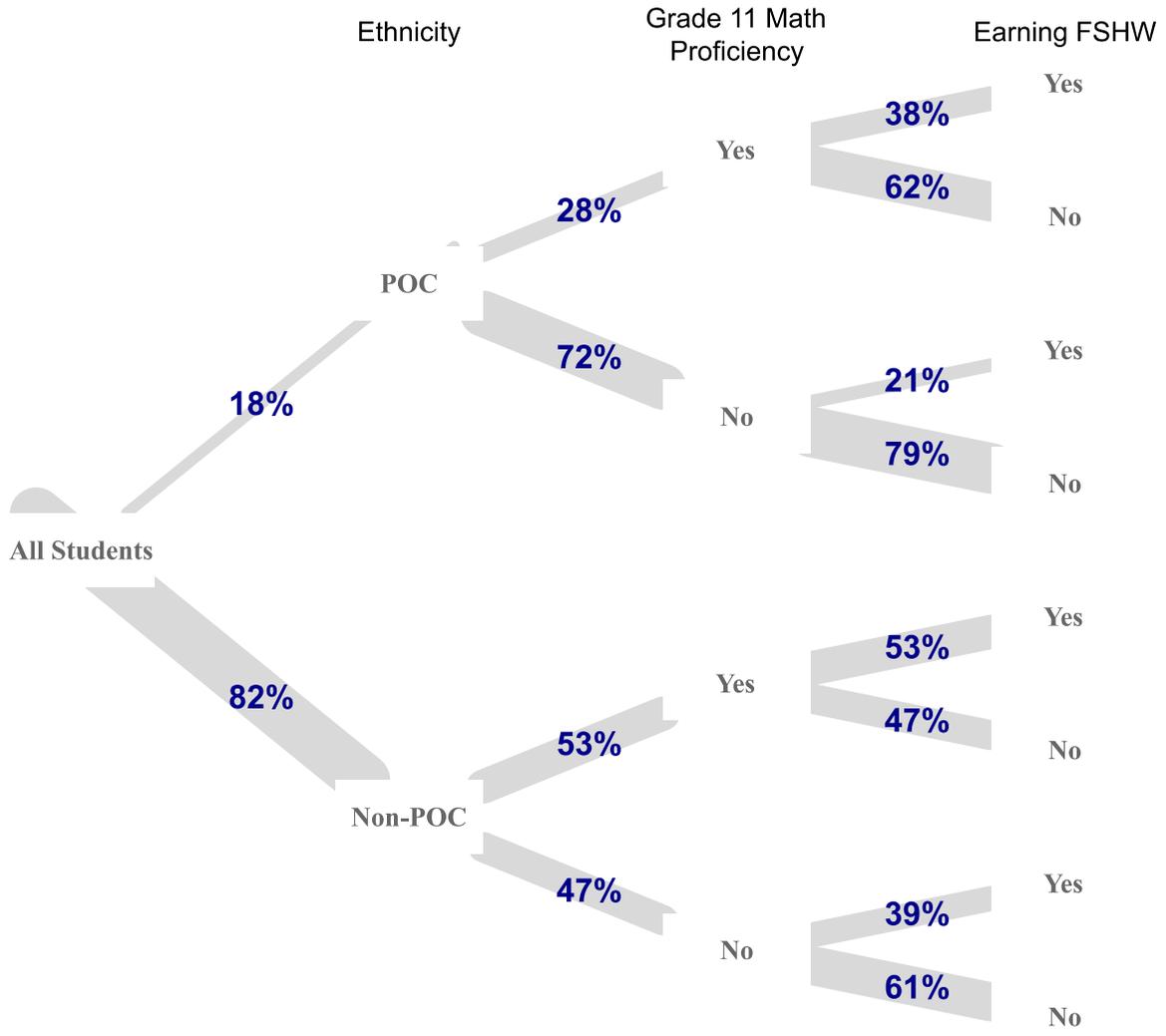


Figure 26. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by People of Color vs. non-People of Color and Math Proficiency

The top-performing *pair* of milestones, once again, for individuals of color for the 2008 cohort were **math proficiency** and **postsecondary completion**, with 48% of POC individuals passing both of these milestones earning a FSHW 10 years after entering Grade 9, as compared to 60% of non-POC individuals (Figure 27). This was consistent with prior cohorts, and all of the top 10 highest-performing milestone pairs included one or the other of these two milestones.

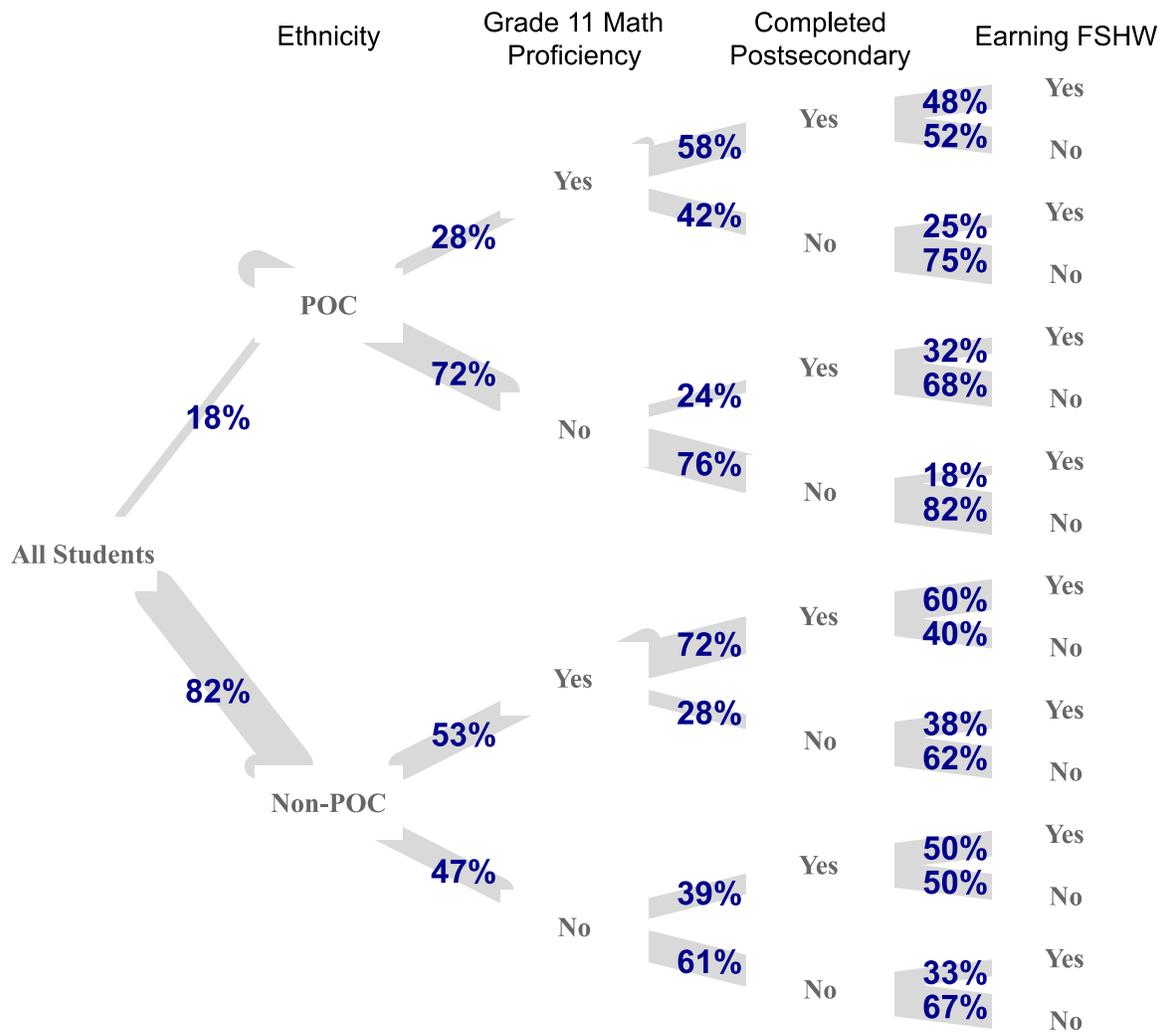


Figure 27. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by People of Color vs. non-People of Color, Math Proficiency, and Postsecondary Completion

We next examined pathway differences by race/ethnicity. However, the number of individuals in each race/ethnicity category was too small for reliable comparisons, so we aggregated across all five cohorts (2004–2008) in order to investigate whether any patterns emerged in individuals earning a FSHW 10 years after entering Grade 9. Although not displayed, results showed that for individuals who were Asian/Pacific Islander, Black, or Hispanic, **math proficiency** was the top milestone, and the top milestone pair was **math proficiency** and **postsecondary completion**. Because these patterns were similar to the overall group, these pathway diagrams are not shown. However, American Indian/Alaskan Native individuals showed a different pattern, with the top milestone being **postsecondary completion** (Figure 28) and the top milestone pair being **reading proficiency** and **postsecondary completion** (Figure 29). Note that the number of American Indian/ Alaskan Native individuals in 2004–2008 was relatively small ($n=3,098$); thus, these results should be interpreted with some caution.

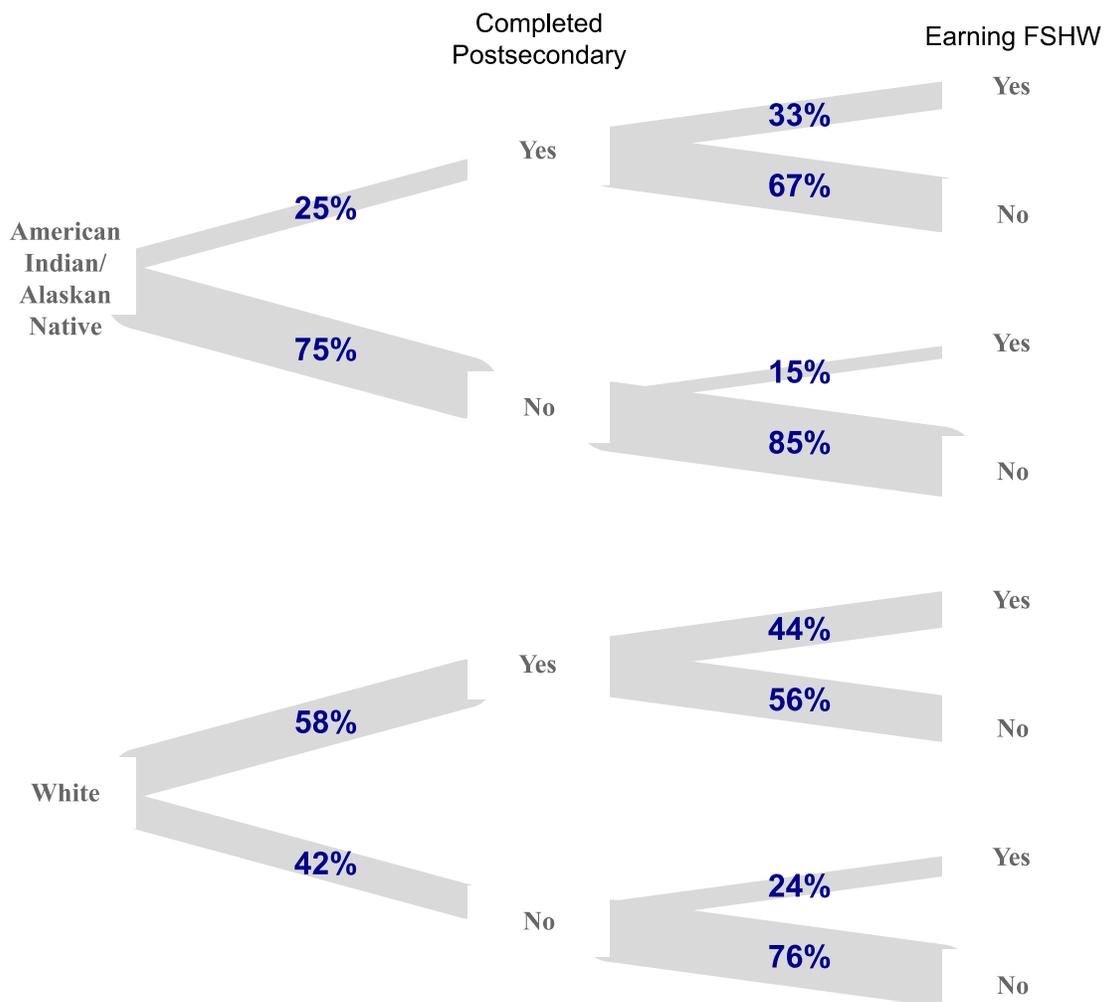


Figure 28. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by American Indian/Alaskan Native vs. White and Postsecondary Completion

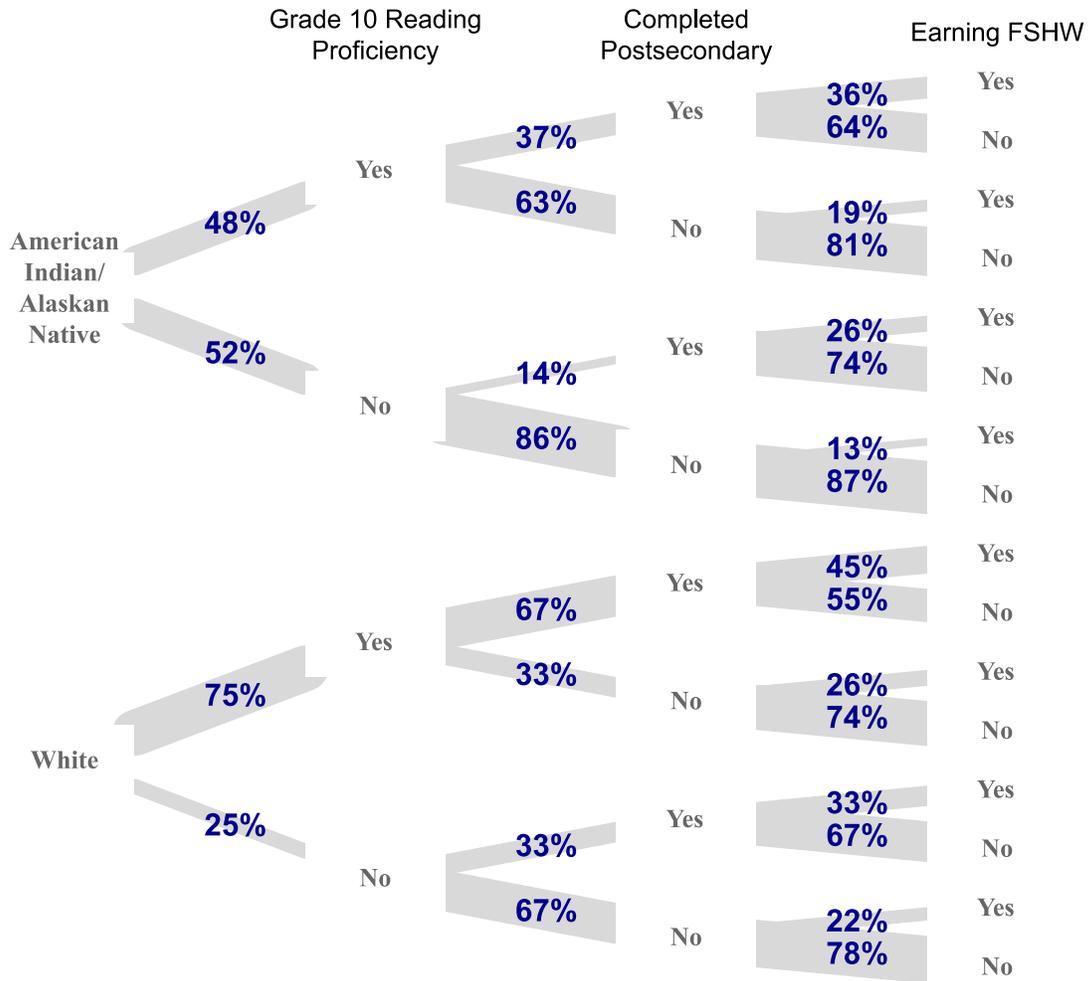


Figure 29. Pathways to a Family-Sustaining Hourly Wage for the 2008 Cohort, by American Indian/Alaskan Native vs. White, Reading Proficiency, and Postsecondary Completion

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