



Washington Eighth Graders' Educational and Employment Trajectories

This study is one of five funded by Washington's ARRA Statewide Longitudinal Data Systems Grant as a mechanism to explore the use of P20W data in collaboration with Washington's P20W partners.

Policymakers and educators have often asked the question: What are the outcomes of dropouts from the K-12 system? Prior to the creation of Education Research & Data Center (ERDC), answering this question at the statewide level was difficult because of the need to link data from various state agencies. Most studies looking at the outcomes of K-12 students focused on the path of graduates from K-12 to post-secondary because the data were easier to link. However, this limits our view to a narrow definition of student success. This paper begins to acknowledge that students may embark on numerous pathways as they strive to meet their individual needs within the educational system. To demonstrate the long-term development of individuals, ERDC, in collaboration with the representatives from Office of Superintendent of Public Instruction, developed this study to provide a first look at students' trajectories from eighth grade forward.

By incorporating student and school characteristics, this study provides a longitudinal review of eighth graders who ever enrolled in the 2004-05 school year for seven years to observe their progress. In addition, this brief also presents an analysis of high school dropouts, which has been a long-term educational issue about students at risk.

Dropping out from high school may be associated with several negative outcomes for individuals and society.¹ Every year in the last decade, approximately one quarter of high school students did not graduate from high school². Although there is an increase in completion rates and a decrease in dropout rates nationally in last five years, the high school "incompletion" rate is still about 25 percent in Washington.³

This study makes use of P20W data and demonstrates how P20W data can be used to provide baseline analysis for similar research and policy questions. All findings are reported at the state level.

¹ Alliance for Excellent Education. (2011). *The High Cost of High School Dropouts: What the Nation Pays for Inadequate High Schools*. Issue Brief- November 2011.

² Chapman, C., Laird, J., Ifill, N., and KewalRamani, A. (2011). *Trends in the High School Dropout and Completion Rates in the United States: 1972-2009* (NCES 2012-006). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved June 3, 2012 from <http://nces.ed.gov/pubsearch>.

³ Office of Superintendent of Public Instruction, *Washington State Report Card: 2002-03 to 2010-11*. Retrieved June 6, 2012 from <http://reportcard.ospi.k12.wa.us/summary.aspx?year=2010-11>

Data

ERDC uses the following data sources for this study:

1. The Middle and High School Enrollment Summary Report (P-210) data from OSPI is used to provide information about students' demographics, enrollment information, and academic progress.
2. The Core Student Record System (CSRS) from OSPI is a monthly collection of K-12 students and school records. It is the source data used to identify eighth graders' enrollment status in the 2004-05 school year.
3. Unemployment Insurance (UI) wage data to provide students' employment status and outcomes over time.
4. Incarceration records from the Department of Corrections (DOC) are used for the criminal justice involvement of the students in this study.
5. Students' educational attainments after high school are extracted from three sources:
 - General Educational Development (GED®) completion data from the State Board for Community and Technical Colleges (SBCTC).
 - Washington state community and technical college (CTC) enrollment and completions data from SBCTC.
 - Washington state public baccalaureate institution enrollment and completions data from the Public Centralized Higher Education Enrollment System (PCHEES) housed in the Office of Financial Management.

Purpose

This brief aims to answer the following research questions:

1. What are eighth graders' educational trajectories from eighth grade through high school and beyond including postsecondary education?
2. What student and institutional characteristics are associated with students' educational trajectories and outcomes?
3. What is the K-12 educational experience of students who dropped out of high school? And what are the factors associated with dropout status?
4. What are the employment experiences for this group of students? How are degree completions associated with employment outcomes?

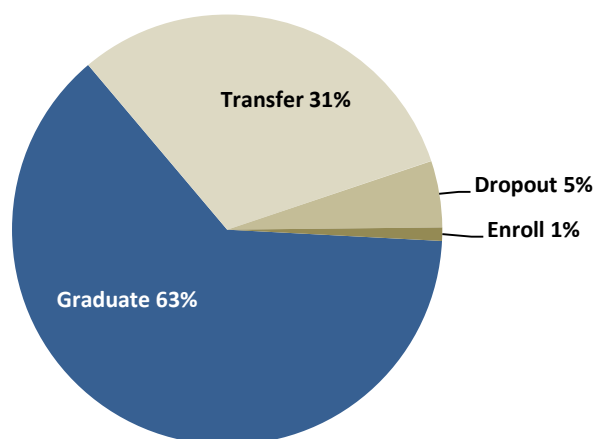
This study follows a cohort of students over a seven-year period. The cohort consists of students enrolled in eighth grade in Washington public schools in the 2004-05 school year. The eighth graders are followed for seven years through the 2011-12 school year. Over this time period, the students demonstrated varied educational and employment trajectories.

Section I describes the eighth graders' educational outcomes in high school and the association between student characteristics and high school outcomes. Section II examines the eighth graders enrollment in postsecondary education, followed by Section III, an analysis of their workforce outcomes. Section IV focuses on eighth graders who dropped out of Washington public schools and their outcomes.

I. The eighth graders' high school outcomes

Figure 1 presents eighth graders' high school outcomes by examining their final enrollment status from OSPI's P-210 summary data. At some point within the seven years following 2004-05, 63% graduated from high school^{4, 5}, 31% transferred out of the Washington public school system, 5% dropped out, and 1% remained enrolled. A student whose final enrollment status in Washington public school is as a "transfer" may have enrolled in a private school; moved out of state; or could have dropped out without being captured in the school's reporting.

Figure 1: Eighth graders' final high school enrollment status, 2004-05 through 2011-12 (N=93,773)



Prior K-12 enrollment patterns and high school outcomes

The eighth graders in this study experienced different enrollment patterns associated with their final status in K-12 education.⁶ Table 1 shows that regardless of their final K-12 enrollment outcomes, 62% of eighth

⁴ This does not represent a graduation rate. Washington State's on-time graduation rate is 73.5% for the class of 2010 (<http://reportcard.ospi.k12.wa.us/summary.aspx?year=2009-10>).

⁵ Among those who graduated, 86% graduated in 2008-09 school year, 10% in 2009-10, 1% in earlier years and about 2% in later years.

⁶ Because of low proportion (about 1%) of those whose final high school completion status were flagged as unknown and enrolled, this study focuses on the discussion for the "graduate," "transfer" and "dropout" in the remainder of this report.

graders stayed enrolled in Washington public K-12 schools, 1% dropped out, 35% transferred out of Washington public schools and 1% had another enrollment status. Students who transferred out of Washington K-12 public schools represent school mobility among eighth graders before their final attainment status.

For the eighth graders in 2004-05, the pattern of continuous enrollment without dropping out or transferring is more likely to lead to high school graduation. Among graduates, 75% were continuously enrolled and 24% transferred one or more times between eighth grade and high school graduation. However, only 38% of the dropouts were continuously enrolled prior to dropping out while 50% of them transferred at some point prior to dropping out. This finding shows that high school mobility is highly associated with students' dropout status.

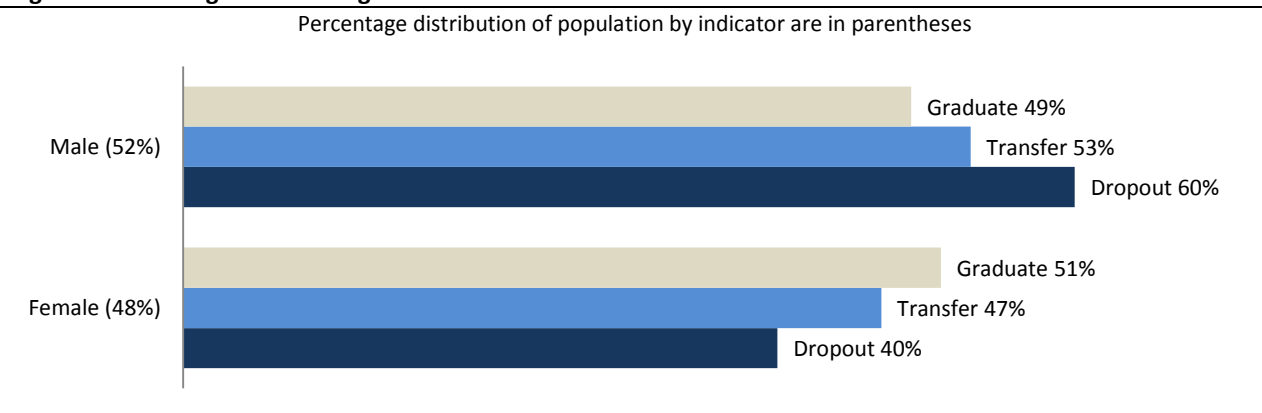
Table 1: Percent distribution of prior K-12 enrollment patterns, by high school outcome

K-12 Enrollment Pattern	High School Outcome			
	All cohort	Graduate	Dropout	Transfer
Continuous enrollment	62%	75%	38%	48%
Dropout and transfer	1%	0%	6%	2%
Ever dropout	1%	0%	5%	1%
Ever transfer	35%	24%	50%	47%
Other	1%	1%	1%	2%

What student demographic characteristics are associated with high school completion?

This study examines available student demographic information and its association with high school outcomes as identified above (graduate, transfer, and dropout). As shown in Figure 2, females had a higher proportion of graduates than males (51% versus 49%), and males are overrepresented among students who dropped out (60% compared to 52%).

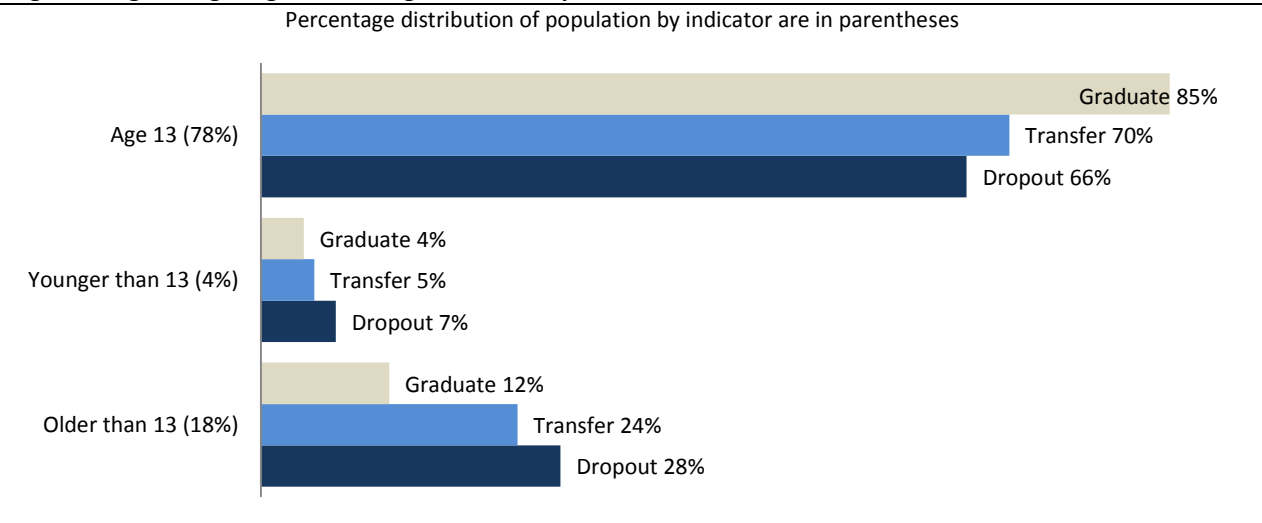
Figure 2: Student gender and high school outcome



The majority of students enter eighth grade at age 13, although there were some who entered early and late (18%). Figure 3 shows that of the 78 percent of students who entered eighth grade at age 13, 85% graduated from high school. At the other extreme, students older than 13 in eighth grade represented 18 percent of the cohort, but account for only 12 percent of the high school graduates. Apparent age effects are especially

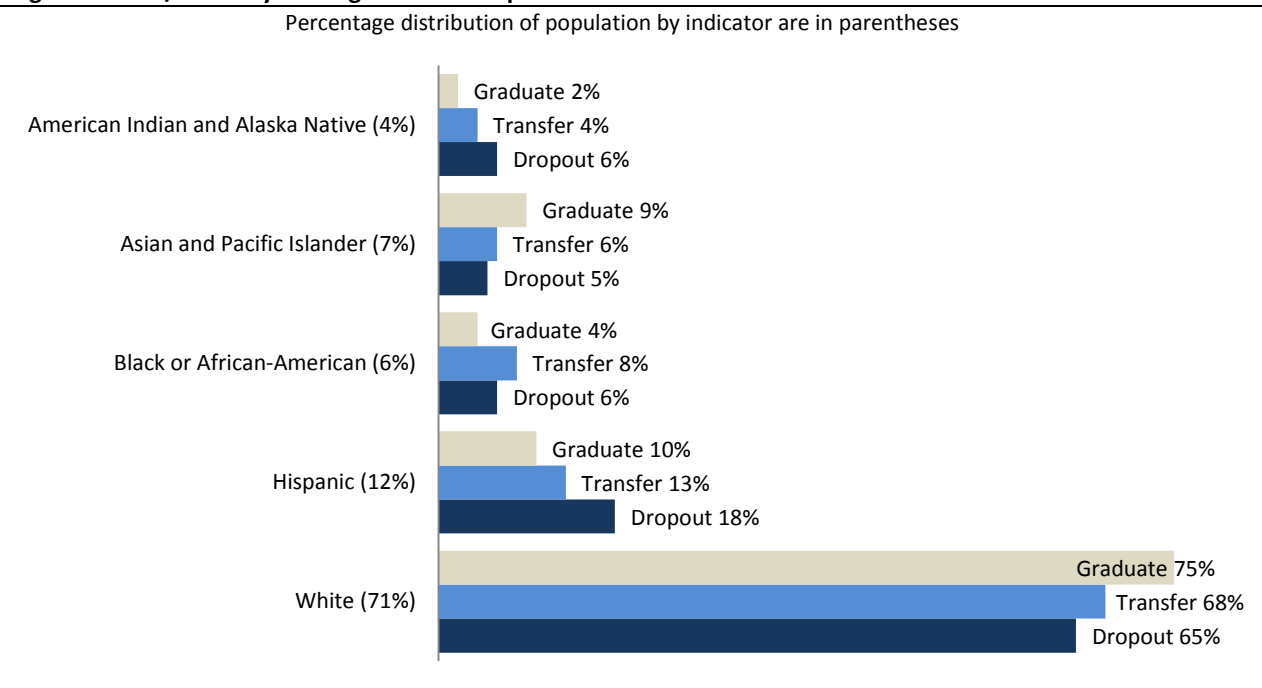
noteworthy among the dropout group – 66% of students who dropped out attended eighth grade as 13-year-olds (compared to 78% of all eighth graders), while 28% of the eighth graders who dropped out enrolled at an older age (compared to 18% of all 13-year-old eighth graders).

Figure 3: Age at eighth grade and high school completion status



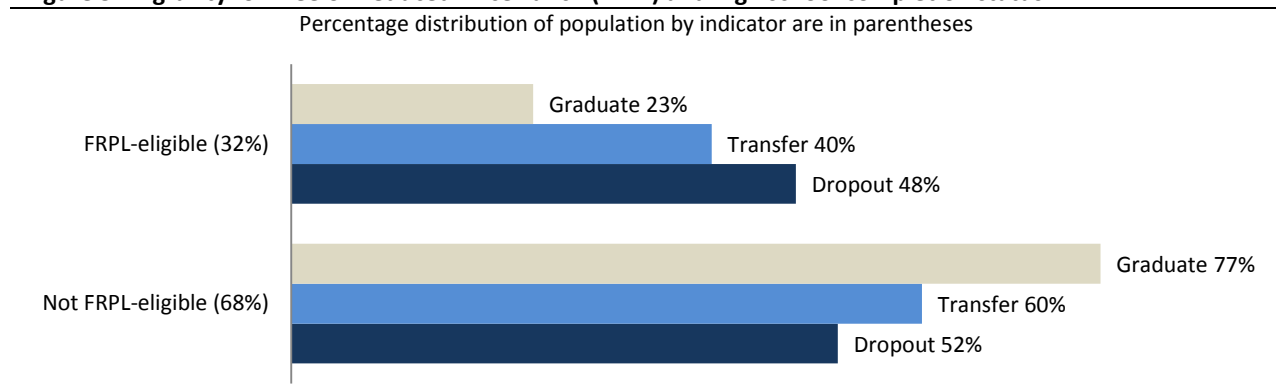
Comparing across race/ethnicity, White and Asian and Pacific Islander students are slightly overrepresented among high school graduates (75% and 9%, respectively in Figure 4). Black or African-American students are slightly overrepresented among students who transferred (8%), and Hispanic students and American Indian and Alaskan Native students are overrepresented among dropouts (6%).

Figure 4: Race/ethnicity and high school completion status



Whether students are eligible for free or reduced-price lunch is an indicator of students' family income level. Figure 5 shows that 2004-05 eighth-graders who graduated from high school are less likely to be from low-income households (23% were eligible for FRPL). However, 40% of transferred and 48% of students who dropped out are from low-income households.

Figure 5: Eligibility for Free or Reduced Price Lunch (FRPL) and high school completion status



K-12 Student Progress and High School Completion

What was eighth graders' academic performance before they completed or left Washington high schools? The findings from Figure 6 show a positive association between students' assessment scores and grades and high school completion. Overall, 83% of 2004-05 eighth graders met the reading standard and 53% met the math standard on their 10th-grade state assessments. Overall, 38% achieved a 3.0 or above grade point average (GPA).

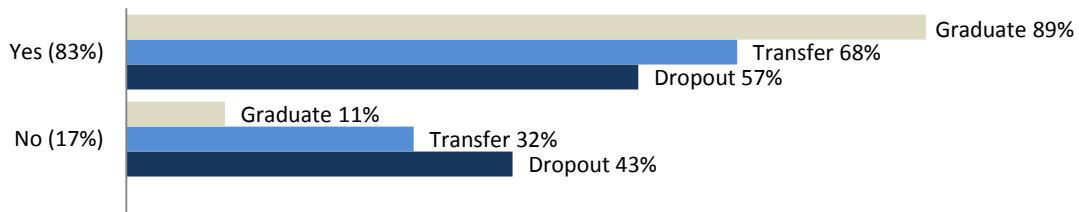
Comparing academic performance across high school completion status, high school graduates are overrepresented on the three performance measures. Among graduates, 89% met the reading standard, 60% met the math standard and 50% achieved a GPA of 3.0 or above.

Students who transferred out performed less well than graduates in academic assessments, but better than those who dropped out. First, 68% of transfers and 57% of dropouts met the reading standard. Only 30% of transfers and 23% of dropouts met the math standard. On high school GPA, 50% of graduates achieved a GPA of 3.0 or above, whereas only 17% of transfers and 5% of dropouts reached the same level.

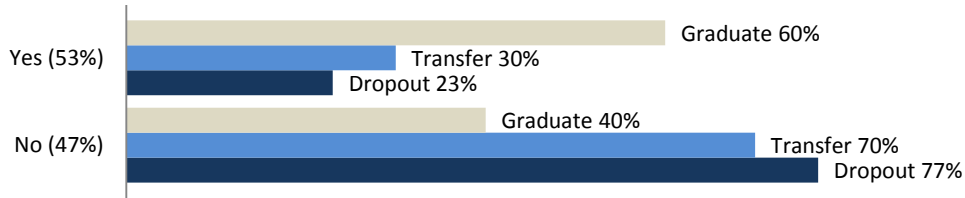
Figure 6: Academic performance and high school completion status

Percentage distribution of population by indicator are in parentheses

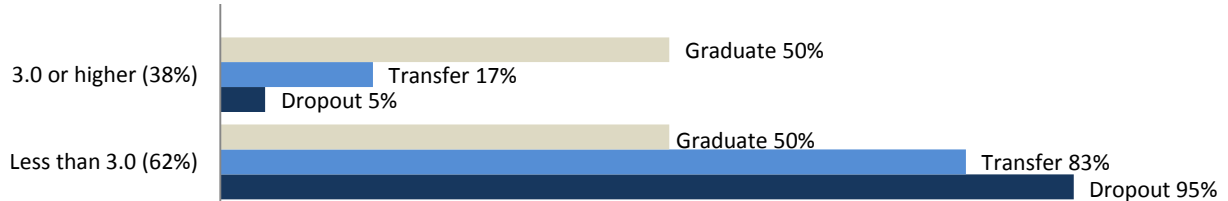
Met 10th Grade Reading Standard



Met 10th Grade Mathematics Standard



Latest High School GPA

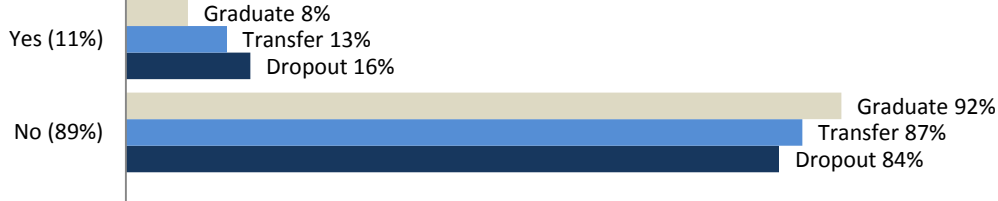


Students' participation in K-12 programs that support student learning and development play a role in academic success. Figure 7 shows that compared to high school graduates and those who transferred, students who dropped out had a higher proportion of participation in a special education (16%) and/or bilingual programs (6%).

Figure 7: Program participation and high school completion status

Percentage distribution of population by indicator are in parentheses

Special Education



Bilingual Program



II. Postsecondary enrollment for 2004-05 eighth graders

This study follows the eighth grade cohort's postsecondary enrollment from 2008-09 to the 2012-13 school year. The 2008-09 school year was chosen as the starting point for postsecondary follow up because it is the year that the majority of students graduated from high school. Overall, about 62% (18% + 44%) of 2004-05 eighth graders enrolled in Washington public higher education institutions (including 4-year baccalaureate and 2-year community and technical colleges) from 2008-09 through the 2012-13 school year. The majority of first-time postsecondary enrollments occurred in the 2009-2010 school year (11% in 4-year institutions and 18% in 2-year institutions), which is the year after most graduates earned their high school diploma. Regardless of completing high school or not, 44% of the eighth grade cohort enrolled in 2-year institutions. Even in 2008-09, 13% of cohort had their first enrollment in 2-year institutions⁷ (among them, about 62% are high school graduates).

Table 2: First postsecondary enrollment by institution sector over years

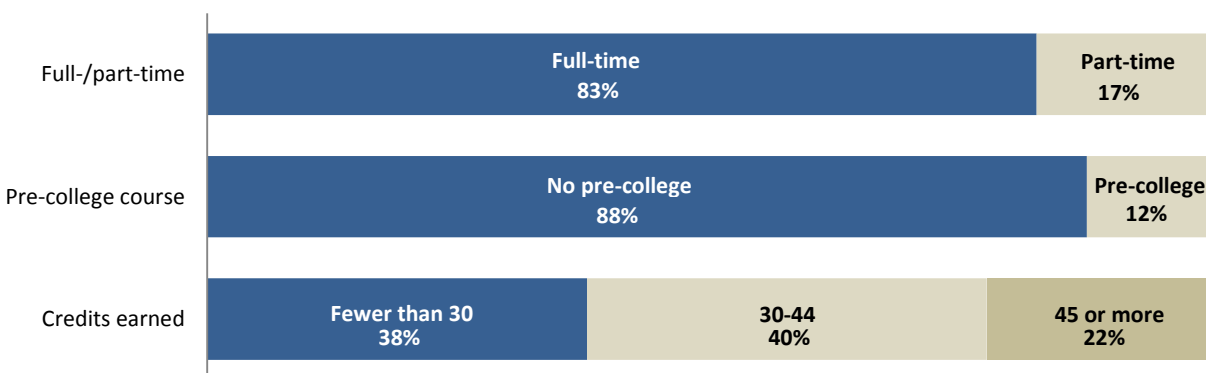
School Year	Enrollment			
	In 4-Year Institution	% in 4-Year Institution	In CTC	% in CTC
2008-09	2,033	2%	12,246	13%
2009-10	10,707	11%	16,986	18%
2010-11	1,987	2%	7,695	8%
2011-12	1,745	2%	4,247	5%
2012-13	769	1%	296	0%
Total	17,241	18%	41,470	44%

Note: The denominator for these calculations is the total number in the eighth grade cohort = 93,773.

The characteristics of the first-year postsecondary enrollment

For students who enrolled in 4-year institutions, 83% enrolled as full-time in the first year (see Figure 8). Most of them (88%⁸) did not take pre-college courses (also known as "remedial courses"). In the first year, 38% earned fewer than 30 credit hours, 40% earned 30-44 credit hours and 22% earned 45 or more credits.

Figure 8: First-year enrollment characteristics for students in 4-year institutions

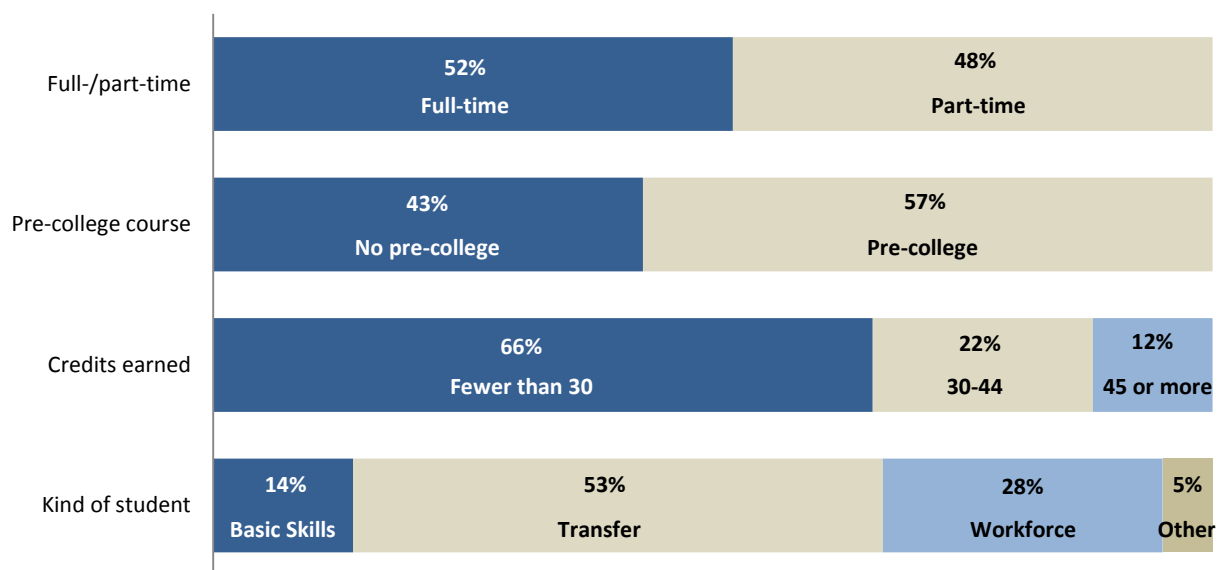


⁷ Some of them might enroll in Running Start or other dual enrollment programs.

⁸ For more information about high school graduates' pre-college course taking, see the report by Washington Education Research and Data Center on 2008-09 high school graduates (<http://www.erd.c.wa.gov/briefs/pdf/201103.pdf>).

Approximately 50% of CTC students enrolled as full-time at the time of their first CTC enrollment (see Figure 9). About 57% of CTC students took pre-college courses⁹. They tended to earn fewer credits than 4-year students - a majority of CTC students (about 66%) earned fewer than 30 credit hours in the first year. However, over half (about 53%) enrolled in a CTC with the purpose of preparing themselves to transfer to 4-year institutions. Besides attending a CTC with the intention of transferring, about 28% enrolled for workforce study and 14% for basic skills courses.

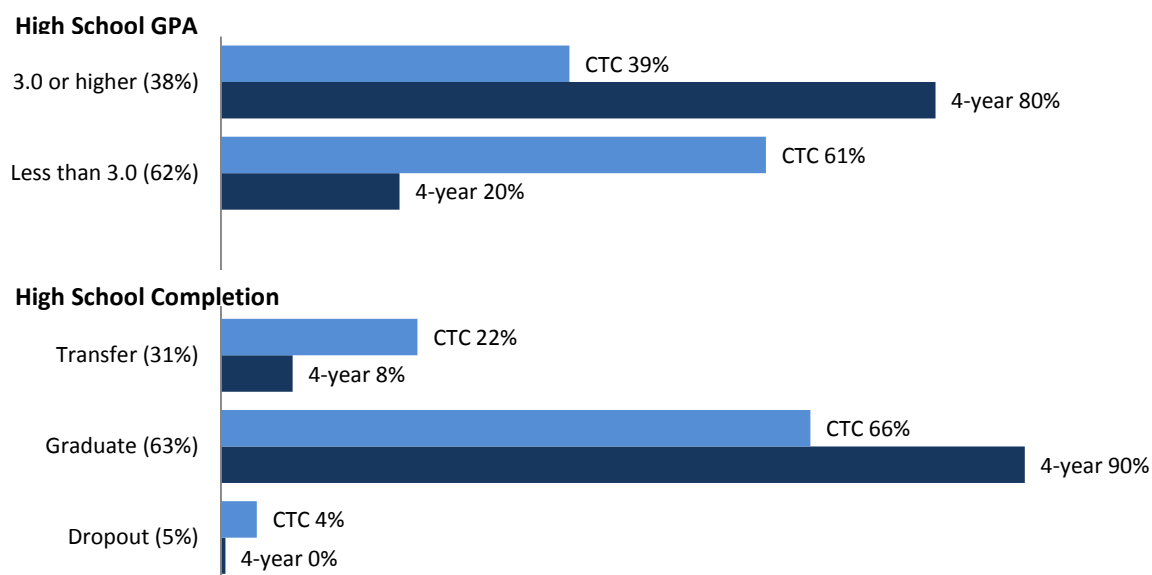
Figure 9: First-year enrollment characteristics for students in community and technical colleges



High school preparation and postsecondary enrollments

It is important to examine students' high school academic performance when we examine their postsecondary enrollments. Figure 10 shows that among students who attended CTCs, about 39% achieved a GPA of 3.0 or above and 66% of them were high school graduates, 22% were students who transferred out of Washington public high schools, and 4% were dropouts. For students enrolling in 4-year institutions, 80% achieved a GPA of 3.0 or above, 90% earned high school diplomas, 22% were transfers, and almost none were dropouts.

⁹ This is close to the finding from the Washington State Board for Community and Technical Colleges annual report on students enrolled in pre-college work in the community and technical college system (http://www.sbctc.ctc.edu/college/education/resh_rpt_11_3_role_of_precollege_education_revised3_000.pdf).

Figure 10: High school academic performance and postsecondary enrollment

Eighth grade cohort who completed a General Educational Development (GED®) credential

Some students leaving high schools without a diploma may pursue and complete a GED® credential. Among the cohort of study, 8% received GED credentials. The majority of those GED credential recipients left high school as transfers (51%, from Table 3). Sixteen percent were identified as dropping out, and 31% had an ambiguous high school completion status. The ambiguous records include final K-12 enrollment records flagged as "enrolled" or "unknown." It is possible that many of the unknown ended up dropping out or transferring.

High School Completion Status	Total GED Credentials	Postsecondary Enrollment	
		4-Year Institution	CTC
Dropout	1,190	13	665
	16%	17%	17%
Transfer	3,712	39	1,986
	51%	51%	52%
Graduate	72	6	43
	1%	8%	1%
Other	2,274	18	1,143
	31%	24%	30%
Total	7,248	76	3,837
Percent of all GED credentials	100%	1%	53%

Note: GED recipients account for 8 percent of the eighth grade cohort.

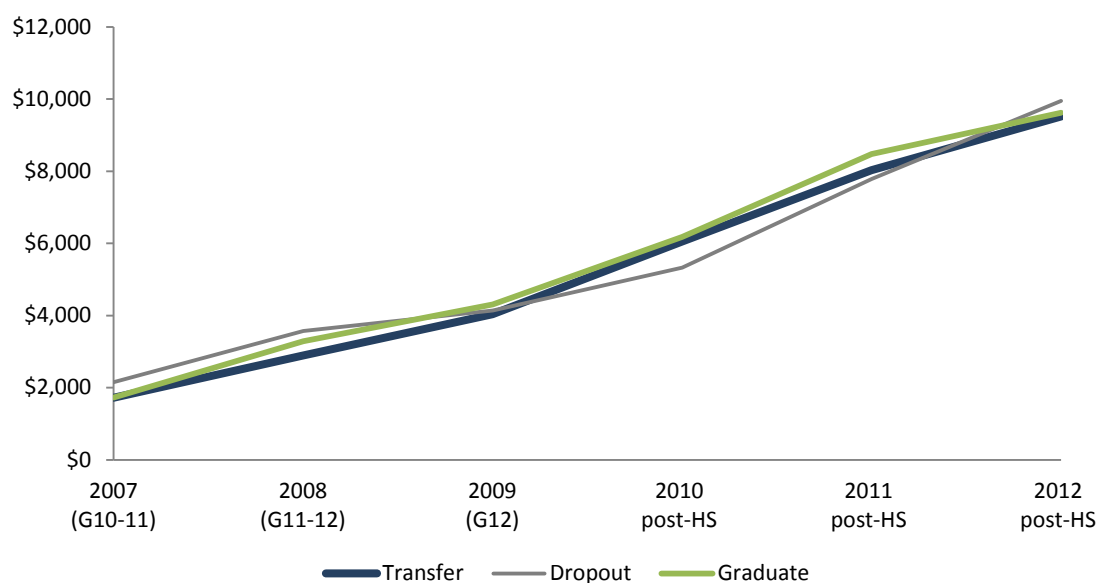
III. Workforce outcomes for the 2004-05 eighth grade cohort

To demonstrate how Unemployment Insurance (UI) wage data can be used to understand students' workforce outcomes, this study links UI wage data to the 2004-05 eighth grade cohort, where possible, to analyze students' employment¹⁰.

Figure 11 illustrates how median annual wage is associated with students' high school completion status.¹¹ We observe wage increases at two points in time. The first wage increase begins in 2007 when most students in the cohort were in 10th to 11th grade – at age 16, when many students find their first jobs. The second increase with a steeper slope begins in 2009 when most students in the cohort graduated.

Compared to dropouts and transfers, students who stayed in high school until graduating had lower median annual wages before they left high school (12th grade in 2009). In the post-high school years (2010-2012), graduates' wage levels start to catch up with the other two groups. The lower wage for graduates may be due to their spending less time or fewer hours working, especially compared to students who were not enrolled, and thus available for full-time work.

Figure 11: Median annual wage over years, by high school completion status



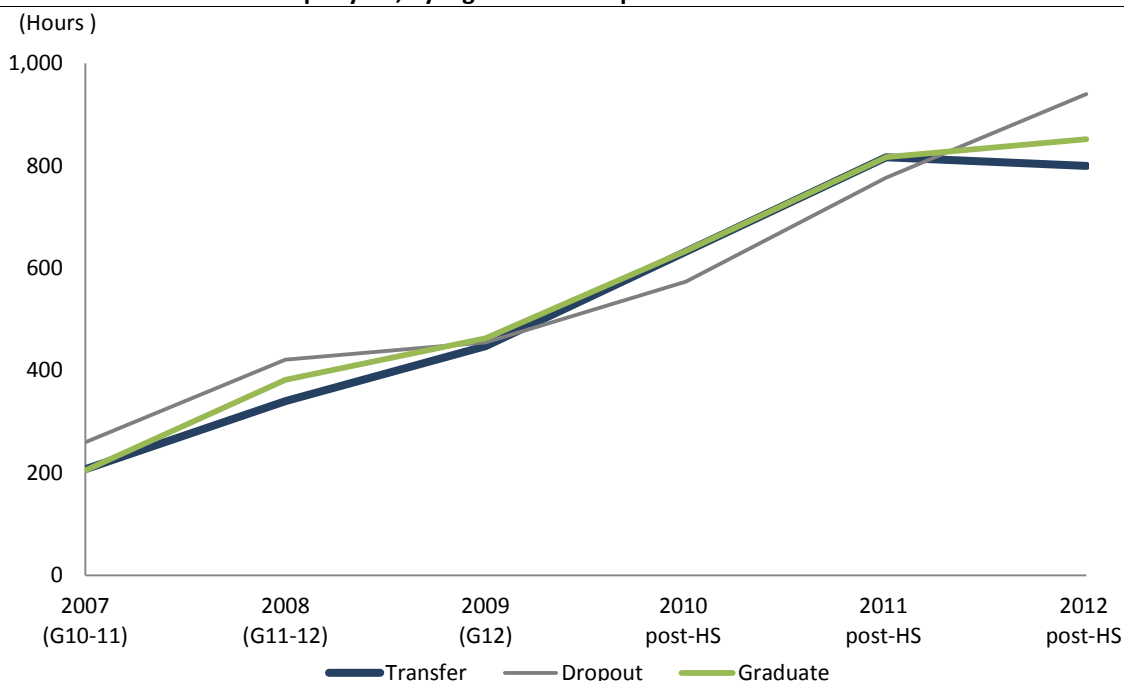
The analysis of median work hours each year in Figure 12 shows variation across high school completion status before 12th grade in 2009. Before 2009 (while the majority of students are in 12th grade), students who dropped out maintained higher median work hours regardless of when they dropped out. From 2004 to 2012 (from eighth grade to post-high school), high school graduates had the lowest median work hours among the

¹⁰ Because Social Security Number (SSN) is not a required field to be collected in OSPI K-12 data system and SSN is the only key field to link K-12 with wage data, it results with only 53% of the cohort students attached to UI Wage records. The SSN records are mainly from PCHEES, SBCTC and SBCTC-GED files, and some are from the K-12 file.

¹¹ Approximately 35% of students who dropped out and 51% of those who did not can be linked with workforce records through SSN.

three groups. Whether higher workforce participation is a factor increasing the risk of dropping out is a question for further analysis.

Figure 12: Median work hours per year, by high school completion status



Is a postsecondary degree beneficial to students' workforce outcomes? Table 4 shows that high school graduates from the eighth grade cohort who enrolled in 4-year institutions earned less (\$3,518) annual income from 2004 to 2012) than those in community and technical colleges (\$5,031) and those who did not continue to postsecondary education (\$4,413). Most 4-year college students were full-time students so it is likely that they did not spend as much time working as the other high school graduates did (see the median hours per year in the bottom row). In addition, 2012 is the last year of employment data that is included in this analysis which is only 3 years after high school graduation and most 4-year college students had not graduated from college yet.

The middle two columns in Table 4 compared workforce outcomes for 2-year enrollees by their CTC degree recipient status¹². Those who earned a CTC degree earned slightly lower annual wages with fewer working hours, compared to those who did not complete CTC degrees. It could be because a large proportion of the CTC degree awardees were full-time students while the non-degree completers enrolled only part-time or chose not to pursue a CTC degree.

¹² This study does not analyze baccalaureate completion because the length of study year covers only 3-4 years of students' postsecondary education. It is probably sufficient to study CTC degree completion, but it is suggested to observe students' baccalaureate completion with 6 years of length after their first enrollment. For more discussion about this topic, see ERDC research brief on postsecondary education enrollment patterns (<http://www.ercd.wa.gov/briefs/pdf/201201.pdf>).

The last two columns further examine whether completing a degree results in higher median annual wages. The CTC degree recipients' UI wage records were split into two groups - annual wage and working hours before and after degree completion. The median annual wage after CTC degree completion is higher than their prior median annual wage. CTC degree recipients earned \$4,378 and worked 485 hours each year. However, after they completed a CTC degree, their annual wage increased to \$6,121 with 515 working hours.

Table 4: Workforce outcomes for high school graduates, by postsecondary education status

	High School Graduates			CTC Enrollees		CTC Degree Recipients	
	Enrolled 4-Year	Enrolled CTC	No Postsec	With CTC Degree	No CTC Degree	Before Completion	After Completion
Median Annual Earnings	\$3,518	\$5,031	\$4,413	\$5,076	\$4,771	\$4,378	\$6,121
Median Hours Worked/Year	358	449	449	500	476	485	515

Please see Appendix C: Technical Notes for the definition of CTC degrees.

IV. Trajectories of students who dropped out

The results from Figures 11 and 12 above demonstrated that students who dropped out of high school have different education and workforce experiences and outcomes. The following analysis focuses on understanding the experiences and outcomes of this group of students after they left high school.

Educational outcomes for those who dropped out of high school

For students who dropped out of high school, a majority did not continue their education, but there were some who completed a GED credential and even enrolled in higher education. However, there were also some who were incarcerated after they dropped out of high school. This study briefly presents the situation of dropouts in terms of their education, employment, and incarceration status.

Among the dropouts from the 2004-05 eighth grade cohort, 26% (N=1,506) completed GED credentials at some point after they dropped out. Examining Table 5, most students earned their GED credential in or the year after dropping out. For example, for students who dropped out in 2005, 33% earned a GED in 2005, 17% in 2008, 33% in 2009 and 17% in 2011. The exception is for those who dropped out in 2012, with 13% earning a GED credential in 2008, 25% in 2009, and 13% in 2010. The reason for this anomalous result may be due to the fact that 2012 is the last year of data available for this study. The complete analysis for students who dropped out in 2012 will be possible once GED completion data for subsequent years becomes available.

Table 5. Percent of dropout-GED credential completers by years

	Year of GED Credential Completion							
	2005	2006	2007	2008	2009	2010	2011	2012
2005	33	0	0	17	33	0	17	0
2006	4	21	16	19	9	10	16	7
2007	0	1	29	20	13	16	13	8
2008	0	0	5	45	19	16	9	5
2009	0	0	1	11	37	26	17	8
2010	0	0	1	2	11	50	29	7
2011	0	0	0	2	3	15	48	33
2012	0	0	0	13	25	13	0	50

Earned GED credential: In the same year After dropout Before dropout

Employment outcomes and GED credential completion for those who dropped out

Does completing a GED credential help students who dropped out of high school improve their wage outcomes? Table 6 compares the wage outcomes for GED credential completers and non-completers among those dropouts from the 2004-05 eighth grade cohort. The median annual wage for those with a GED credential (\$4,219 for 442 hours) is higher with fewer working hours than those without a GED credential (\$4,195 for 445 hours).

Because 65% of dropouts could not be attached to UI wage records due to the lack of SSN, it is not conclusive to state that GED credential completers did earn more than non-completers among dropouts. We thus develop a further analysis to compare wage outcomes among those dropouts who received a GED credential. The last two columns of Table 6 show a difference in median annual wage and working hours after receipt of a GED credential. Those who received GED credentials earned \$5,350 median annual wage by working 499 hours a year after they received the GED credential. However, before that, they earned relatively lower wages with fewer working hours (\$2,626 for 308 hours). From these findings, the GED credential seems to benefit students who dropped out with increased average annual wages.

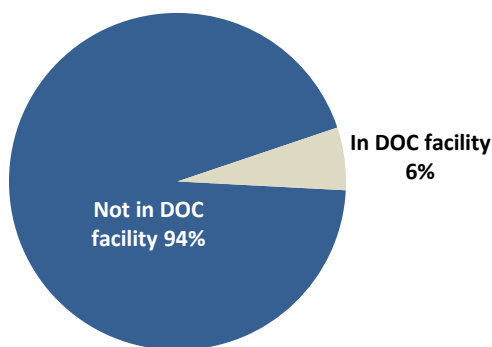
Table 6: Workforce outcomes for eighth grade cohort members who dropped out

	All Dropouts		GED Credential Recipients	
	Without GED Credential	With GED Credential	Before GED Completion	After GED Completion
Median Annual Earnings	\$4,195	\$4,219	\$2,626	\$5,350
Median Hours Worked/Year	445	442	308	499

Incarceration status for students who dropped out

This study uses data from the Department of Corrections (DOC) to identify whether members of the eighth grade cohort were ever incarcerated at a Washington state Department of Corrections facility. By linking the eighth grade cohort to DOC records, we found that 6% of dropouts were ever in a DOC facility (Figure 13).¹³

Figure 13: Percent Incarcerated (in DOC facility) Among the eighth Grade Cohort Who Dropped Out

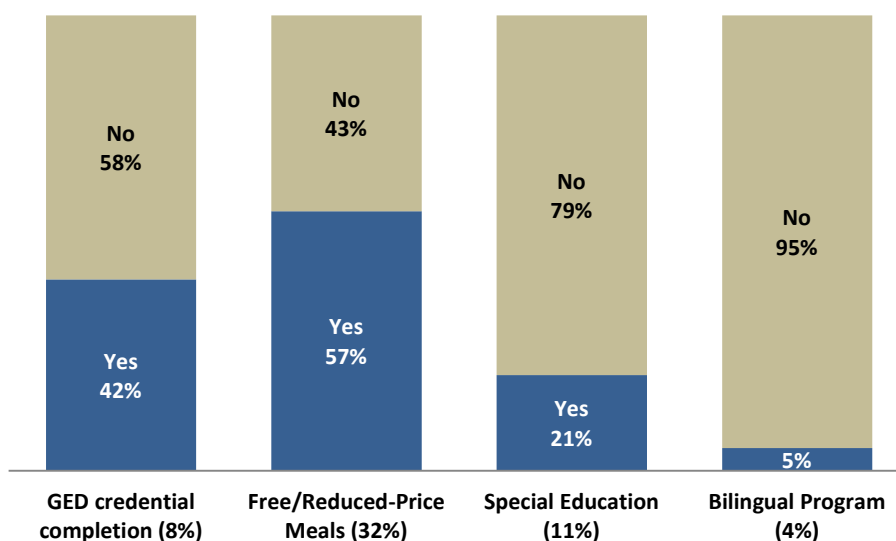


¹³ We did not process identity matching to match the entire eighth grade cohort with the DOC file at the time this study was conducted. A future study may compile full matching to compare the incarceration status across the three groups—dropouts, transfers and graduates.

Figure 14 shows participation in K-12 programs and GED credential completion status for those students who dropped out and were incarcerated at a DOC facility. Among those who dropped out and were in a DOC facility, 42% ever received a GED credential, 57% were from low-income households (eligible for free/reduced-price lunch), 21% were in special education programs and 5% were in bilingual programs. Compared to the proportion of students in special education for all 2004-05 eighth graders and for dropouts (see Figure 7), those who were incarcerated had a higher proportion of being in a special education program before they dropped out from high school, and they were also more likely to be from low-income families (see Figure 5).

Figure 14: Participation in K-12 programs and GED credential completion status prior to incarceration for students who dropped out and were incarcerated in a DOC facility

The proportion distributions for total eighth grader cohort are in parentheses



SUMMARY

This study explored the educational and employment progression of a cohort of eighth graders in 2004-05 from Washington public schools. The cohort was followed from their eighth grade year in 2004-2005 through 2011-2012, covering a 7-year time period. Some of the major findings include:

- Among the study cohort, about 63% graduated from the Washington public K-12 system by the 2011-2012 school year. For those who did not graduate, a majority transferred out (31%) and few had dropped out (5%). Enrollment continuity is found to be associated with students' high school completion:
 - About 75% of those who graduated remained continuously enrolled up until their graduation.
 - For those whose final enrollment status was dropout, about 50% had transferred at some point in time, and 11% dropped out and returned before dropping out for good.
 - For students whose final enrollment status in Washington public K-12 was transferred, 47% had dropped out and returned at some earlier point in time.

- Males and those who enrolled in eighth grade at older ages (above 13) were overrepresented among students who did not graduate.
- Eighteen percent of the eighth grade cohort enrolled in 4-year baccalaureate institutions and 44% in 2-year CTCs between 2008-09 and 2012-13. The enrollment characteristics of students during their first year enrolled in higher education vary by sector:
 - 83% of students in 4-year institutions and 52% in 2-year institutions enrolled full-time.
 - 12% in 4-year institutions and 57% in 2-year CTCs took pre-college courses in the first year of enrollment.
 - 62% of students in 4-year institutions earned equal to or more than 30 credit hours in the first year, compared to 34% of students in 2-year CTCs.
- Students' workforce outcomes are associated with high school completion from 2004 (the eighth grade year) to 2012 (post-high school). Those who dropped out from high school earned higher average annual wages with more working hours in the earlier years than high school graduates and most other transfers who continued to progress in schools. However, the difference in average annual wages narrowed after most students reached 12th grade and graduated from high schools.
- CTC students who earned CTC degrees earned higher average annual wages after they completed the degree than before.
- Outcomes of students who dropped out from high school were examined:
 - About 26% of dropouts completed a GED credential. The longer they waited, the less likely they were to complete a GED credential.
 - GED credential completers earned higher annual wages with less working hours than those who did not complete a GED credential. And for those who completed a GED credential, wages increased after GED credential completion.
 - Among dropouts, 6% were incarcerated at some point in time in a Department of Correction facility. For those who were incarcerated, low-income households (57%), participation in a special education program in high school (21%) and completing a GED credential (42%) were over-represented.

FUTURE STUDIES

This study provides a descriptive analysis of the early outcomes of an eighth grade cohort. Analyses from this brief can be extended to address additional research questions and inform K-12 policies related to K-12 and postsecondary education in the future.

- This study covers only three to four years post-high school to track students' postsecondary education after the majority graduate from high school. It is too short to track students' enrollments and completions especially for those who enrolled in 4-year institutions. Adding more years of data can improve the understanding of the association between high school degree completion, progression through college and degree completion.
- Almost half of the cohort does not have a Social Security Number (SSN) in our data (about 48%), which limits the employment analysis. Further efforts to link student from the public K-12

system with employment records will provide a more complete analysis of workforce participation.

- The employment analysis could include the industry in which employment occurs, which would provide a richer examination of workforce outcomes.
- A high percentage of the eighth grade cohort moved in and out of the Washington public school system. High school mobility is found to be associated with negative educational outcomes in this study. An in-depth study of this mobile group of students will help us understand how school mobility is intertwined with individual and institutional factors to produce variation in students' outcomes.
- Education enrollments, completions and workforce participation are events happening throughout each student's life. The sequence of timing for each event could affect later outcomes. Using longitudinal data, a time-series or event history study would further our understanding of how the timing of different events may causally affect students' lifelong outcomes. Such studies could inform policies to improve students' transitions through each educational stage.

Appendix A: Additional Tables

Table A1: Age and Grade Level of Dropping Out

Grade Level of Dropping Out	Student Age of Dropping Out										Total
	12	13	14	15	16	17	18	19	20	21	
8	4 (2%)	106 (44%)	85 (35%)	25 (10%)	4 (2%)	11 (5%)	0 (0%)	2 (1%)	1 (0%)	3 (1%)	241
9	0 (0%)	9 (1%)	237 (24%)	302 (30%)	235 (23%)	152 (15%)	52 (5%)	14 (1%)	5 (1%)	1 (0%)	1,007
10	0 (0%)	0 (0%)	4 (0%)	353 (39%)	274 (30%)	166 (18%)	74 (8%)	28 (3%)	10 (1%)	0 (0%)	909
11	0 (0%)	0 (0%)	0 (0%)	11 (1%)	573 (41%)	481 (34%)	244 (17%)	68 (5%)	22 (2%)	1 (0%)	1,400
12	0 (0%)	0 (0%)	0 (0%)	1 (0%)	28 (1%)	1,428 (45%)	1,067 (34%)	426 (13%)	220 (7%)	2 (0%)	3,172
Total	4	115	326	692	1,114	2,238	1,437	538	258	7	6,729

Age at enrollment, eighth grade: Age 13 Older than 13 Younger than 13

(Note: This table contains counts of dropouts, not head counts of students who ever dropped out. N=5,868; about 6.3% of the cohort.)

Table A2: Prior K-12 enrollment patterns and final high school completion status

K-12 Enrollment Pattern	All Cohort	Final High School Completion Status				
		Graduate	Dropout	Transfer	Enroll	Unknown
Total	93,773 (100%)	59,029 (63%)	4,682 (5%)	28,958 (31%)	1,075 (1%)	28 (0%)
Continuous enrollment	58,355 (62%)	42,667 (72%)	1,712 (38%)	13,772 (48%)	192 (18%)	12 (43%)
Dropout and transfer	1,050 (1%)	146 (0%)	376 (8%)	463 (2%)	64 (6%)	1 (4%)
Ever dropout	760 (1%)	134 (0%)	256 (5%)	337 (1%)	33 (3%)	0 (0%)
Ever transfer	32,370 (35%)	16,059 (27%)	1,805 (39%)	13,763 (48%)	729 (68%)	14 (50%)
Others	1,238 (1%)	23 (0%)	533 (11%)	623 (2%)	57 (5%)	1 (4%)

(Note: Because of rounding, the percentages in some columns may not add to 100%.)

Table A3. Descriptive analysis of high school completion by student demographics

	High school completion status			
	Dropout	Graduate	Transfer	Total
Race/ethnicity				
American Indian/Alaska Native	297 6%	1,050 2%	1,140 4%	2,487
Asian and Pacific Islander	247 5%	4,659 9%	1,600 6%	6,506
Black or African American	296 6%	2,148 4%	2,206 8%	4,650
Hispanic	847 18%	5,338 10%	3,499 13%	9,684
Others	25 1%	173 0%	165 1%	363
White	3,120 65%	40,075 75%	18,047 68%	61,242
Gender				
Female	1,944 40%	27,289 51%	12,463 47%	41,696
Male	2,888 60%	26,154 49%	14,194 53%	43,236
Age at eighth grade				
Younger than age 13	314 7%	1,931 4%	1,422 5%	3,667
Age 13	3,184 66%	45,330 85%	18,778 70%	67,292
Older than age 13	1,334 28%	6,182 12%	6,457 24%	13,973
Free/reduced-price lunch				
Yes	2,523 52%	40,938 77%	16,011 60%	59,472
No	2,309 48%	12,505 23%	10,646 40%	25,460

Table A4: Students' enrollment characteristics in the first year of postsecondary education, by institution sector

	4-year Institution		Community or Technical College	
	Count	%	Count	%
Total	17,241		41,470	
Full-/part-time enrollment				
Full-time	14,383	83%	21,501	52%
Part-time	2,854	17%	19,969	48%
Took pre-college courses				
No	15,246	88%	17,493	43%
Yes	1,995	12%	23,551	57%
Credit hours earned				
Less than 30 credits	6,613	38%	23,515	66%
30- 45 credits	6,884	40%	7,652	22%
Equal to or more than 45 credits	3,744	22%	4,392	12%
Kind of student				
Basic skill	N/A	N/A	5,944	14%
Transfer	N/A	N/A	21,885	53%
Workforce training	N/A	N/A	11,534	28%
Other	N/A	N/A	2,107	5%

Appendix B: Technical Notes

Cohort of study

The research cohort for this study includes all students enrolled in eighth grade in the Washington public schools at any point in time in the 2004-2005 school year. (For the most part this corresponds to the September 1, 2004 – August 31, 2005 school year.) The 2004-2005 Core Student Record System (CSRS) from the Office of Superintendent of Public Instruction (OSPI) is used to identify those eighth graders.

High school completion status

The P-210 summary enrollment file from OSPI was used to identify students' last enrollment record between the 2004-05 through 2011-12 school years. The categories are based on the following logic:

- High school completion status = "graduate" if EnrollmentStatusTypeCode in ('G0','GA','GB','C2','C3') and GradeLevelCode not in ('7', '8', '9').
- High school completion status = "dropout" if EnrollmentStatusTypeCode in ('D0','D1','D2','D3','D4','D5','D6','D7','D8','D9') AND GradeLevelCode in ('8','9','10','11','12').
- High school completion status = "transfer" if EnrollmentStatusTypeCode in ('T0','T1').
- High school completion status = "enroll" if EnrollmentStatusTypeCode in ('E0','P1').
- High school completion status = "unknown" if EnrollmentStatusTypeCode in ('U1','U2','U3','ZZ') or EnrollmentStatusTypeCode shows missing case.

Prior K-12 enrollment patterns

This is a variable that captures students' enrollment patterns in Washington K-12 public schools between eighth grade and the time before the student left the Washington public school system across a 7-year period (2004-05 through 2012-13). Enrollment records were extracted from the P-210 file, and the sequence of each enrollment record was ordered by school year. The enrollment sequence was categorized by 5 major patterns:

- "Continuous enrollment" indicates a student remaining enrolled continuously without exiting out of Washington public school system at any time before his/her final enrollment status (also identified as high school completion status here).
- "Dropout and transfer" refers to a student who has an enrollment status of dropped out and transferred, in addition to being enrolled at any point in the 7-year follow up.
- "Ever dropout" indicates a student who has dropped out at least once in addition to being enrolled at any point in the 7-year follow up. This student did not transfer or have any other non-recognized enrollment statuses during this time.
- "Ever transfer" indicates a student who transferred at least once at any point in the 7-year follow up in addition to being enrolled. The student did not drop out or have any other non-recognized enrollment status during this time.

- "Others " captures the enrollment pattern for a student who ever had graduate record or unknown status besides enrolling. The student did not have dropout or transfer record in his/her enrollment history *prior to* their last enrollment status.

Postsecondary education data

PCHEES and SBCTC enrollment and completion records are used to track the eighth grade cohort's postsecondary education in Washington public institutions. They include records from 2008-09 through the 2012-13 school years. This four year follow up period is inadequate to study students' postsecondary outcomes, especially for those who enrolled in 4-year institutions. It would be more informative to use a follow up period of 5 or 6 years to examine students' degree completion in postsecondary education. This is the major reason why this study did not include baccalaureate degree into the analysis.

CTC degrees

This is a categorical variable identifying the highest awards received from SBCTC historical completion table for the 2008-09 through 2012-13 school years. The 4 awards are "Associated Degree-DTA or AS-T," "Workforce Associate Degree," "Certificate," and "Others." Two variables- "EXIT_CD" and "AWARD_TYPE" are used to identify 36 detailed award categories a student had received. Each award category is weighted by a priority score (provided from SBCTC). Based on the priority score, sort through records by individual student to select the highest award completed with the lowest priority score.

Linking to UI Wage Data

The linking to UI Wage data could be done only by students' social security numbers (SSN). However, SSN is not consistently recorded in all data sources used in this study. SSN is consistently available in the PCHEES and SBCTC files used for the postsecondary enrollment and completions data so most students who ever enrolled in Washington public postsecondary institutions can be linked with wage data. However, for those eighth grade cohort students who did not enroll in Washington public postsecondary, the SSN records available from K-12 data for linking to wage data are very limited (about 52% of the eighth grader cohort have SSN available for UI wage linking).

Table B1: Availability of SSN for Wage Match

eighth grade cohort (N=93,773)	Total count	Enrolled in postsecondary	SSN available	Found in UI wage file
K-12 Final enrollment status				
Dropped out	4,689	1,802	2,026	1,778
Transferred	29,070	9,457	10,847	9,082
Graduated	59,077	34,773	36,148	32,839

The use of UI Wage data did not adjust for inflation, because this study mainly aimed to observe the changes in wage and workforce participation over time with and without degree completions. (For a discussion about the need for inflation adjustment, please see p. 14 from the ERDC employment handbook, http://erdc.wa.gov/briefs/pdf/EmploymentDataHandbook_v1.)