

Postsecondary Education Enrollment Patterns

Washington State Public High School Graduates, 2004-05

Complex enrollment patterns reflect the variety of strategies students use to complete their postsecondary education. Previous studies suggest that heterogeneity in enrollment patterns is associated with a higher likelihood of degree completion¹. However, studies that specifically track high school graduates' postsecondary enrollment patterns longitudinally are finite, and no study has examined Washington students' postsecondary enrollments over time.

The Washington State Education Research & Data Center (ERDC) is charged with conducting analyses of early learning, K-12, and higher education programs and education issues across the P-20 system. ERDC focuses on longitudinal education studies, particularly those that involve transitions across education sectors. This study is funded by Washington's ARRA Statewide Longitudinal Data Systems Grant. Five research briefs are funded under the grant as a mechanism to explore the use of P-20 data in collaboration with Washington's P-20 partners.

Representatives from the Higher Education Coordinating Board (HECB), State Board for Community and Technical Colleges (SBCTC), and Washington Public Baccalaureate Institutions were involved throughout the development of this research brief, including identifying the research questions, refining methodology, and reviewing and providing feedback on the final research brief.

Enrollments in Washington Postsecondary Education

The proportion of Washington high school graduates' enrollments in postsecondary education has increased over the years. About 58 percent of 2004-2005 high school graduates enrolled in postsecondary education within one year after graduation compared to 64 percent of 2008-09 high school graduates who enrolled in postsecondary education within one year after graduation, with the majority of students enrolled in Washington State². Of students who

¹ Attewell, P., Geukm S, & Reisel, L. (2011). "Competing Explanations of Undergraduate Noncompletion." *American Educational Research Journal* 48:536

Attewell, P., Geukm S, & Reisel, L. (2012). "What is Academic Momentum? And Does It Matter?" *Educational Evaluation and Policy Analysis* 34(1): 27-44.

² "Participation in Postsecondary Education: Washington State High School Graduates, 2008-09," ERDC, December 2010. <Retrieved on March 31, 2012 from <http://www.ercd.wa.gov/briefs/pdf/201005.pdf>>

enrolled in Washington postsecondary institutions, over half attended community or technical colleges (58.4 percent) and 35.3 percent attended public baccalaureates. Another study indicates that after the first enrollment, students progressed through postsecondary education using different pathways. The most important trend is the increase in student transfers to 4-year institutions, as well as an increase in the number of students who complete a bachelor's degree within three years after transferring to a public baccalaureate³.

Purpose

This study describes the postsecondary enrollment patterns for a cohort of 2004-05 Washington public high school graduates by examining their postsecondary enrollment records for a period of five-years following their graduation. Several factors, such as timing and institutional features of the first enrollment, transfer patterns, and students' pre-college preparation have been found to characterize enrollment patterns⁴. Previous research, input from ERDC's P-20 partners, and data availability have identified four research questions to address through this exploratory study:

- When do Washington public high school graduates enroll in postsecondary education?
- Where do students initially enroll in postsecondary education?
- What are students' enrollment patterns⁵ within five years after high school graduation?
- What enrollment and student characteristics are associated with enrollment patterns and the timing of enrollment in postsecondary education?

Data Sources

Multiple data sources were used in this study to identify the cohort of 2004-05 Washington public high school graduates and their high school characteristics and postsecondary enrollment records for five years (from 2005-06 to 2009-10):

³ "Transfer Report." Washington Higher Education Coordinating Board, Retrieved on March 31, 2012 from [http://www.hecb.wa.gov/sites/default/files/TransferReport2011.pdf#search="transfer report">](http://www.hecb.wa.gov/sites/default/files/TransferReport2011.pdf#search=transfer%20report) State Board for Community and Technical Colleges. (2010). "Transfers to Baccalaureate Institutions in Washington (including Running Start Transitions)." SBCTC Academic Year Report 2009-10. <Retrieved on April 1, 2012 from http://www.sbctc.ctc.edu/college/studentsvcs/4prog_0910.3.pdf>

Washington State University, Social and Economic Services Research Center. (2009). The Role of Transfer in the Attainment of Bachelor's Degree at Washington Public Baccalaureate Institutions, Class of 2006.

⁴ Adelman, Clifford. 1999. "Answer in the Tool Box: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment." Office of Educational Research and Improvement, U.S. Department of Education. < <http://www2.ed.gov/pubs/Toolbox/index.html>>

⁵ Enrollment patterns include enrollments before the first bachelor's degree is obtained. Enrollments after obtaining the first bachelor degree for the same student are excluded.

- **High School Graduates:** The 2004-05 annual summary data file (P-210) for public high school enrollment and completion from the Office of Superintendent of Public Instruction (OSPI) is the source of information about the 2004-05 public high school graduates;
- **Washington Community and Technical College Enrollment:** Enrollment Data from the State Board for Community and Technical Colleges (SBCTC), which includes student enrollment by term for the 34 colleges in the state system;
- **Washington Public 4-Year Higher Education Enrollment:** Enrollment data for the state's six public baccalaureate higher education institutions from the Public Centralized Higher Education Enrollment System (PCHEES) maintained by the Office of Financial Management (OFM); and
- **Out-of-State and Private Postsecondary Institution Enrollment:** Enrollment data for private institutions in Washington and all out-of-state institutions (private and public) from the National Student Clearinghouse (NSC).

Detailed information about data elements, definitions, and other technical notes are provided in Appendix B.

Summary of Findings

2004-05 High School Graduates' Characteristics and Postsecondary Enrollment

Enrollment in postsecondary education is associated with student characteristics. For example, students who initially enroll in 2-year institutions may have different characteristics from students who initially enroll in 4-year institutions. This section examines student characteristics and their relationship to initial postsecondary enrollment. Table 1 shows that about 70 percent of the 2004-05 Washington public high school graduates enrolled in some type of postsecondary education *at some point within five years after graduation* (from school year 2005-06 to 2009-10), leaving about 30 percent who did not enroll in the same time period.

Gender

A higher percentage of female high school graduates enrolled in postsecondary education⁶ within 5 years of high school graduation (72.7%) compared to males (67.9%). More females also initially enrolled in 4-year institutions (34.2%) than males (29.1%). See Table 1.

⁶ See "Technical Note" in Appendix B for definition of enrollment term.

Table 1: Postsecondary Enrollment for 2004-05 High School Graduates by Gender
(Universe: All 2004-05 public high school graduates)

Gender	Total (column %)	No Enrollment		Enrollment 2-Year Institution		Enrollment 4-Year Institution	
		Count (column %)	%	Count (column %)	%	Count (column %)	%
Female	31,119 (51.3%)	8,485 (47.2%)	27.3%	11,968 (51.0%)	38.5%	10,666 (55.3%)	34.2%
Male	29,584 (48.7%)	9,495 (52.8%)	32.1%	11,479 (49.0%)	38.8%	8,610 (44.7%)	29.1%
Total	60,703	17,980	29.6%	23,447	38.6%	19,276	31.8%

Race and Ethnicity

American Indians/Alaskan Natives and Hispanics are underrepresented in postsecondary education. About 45 percent of American Indians/Alaskan Natives and 46 percent of Hispanics did not enroll in postsecondary education, and only 17 to 18 percent enrolled in 4-year institutions. Asians/Pacific Islander and White high school graduates have the highest enrollment in 4-year institutions (39.8% and 33.3%, respectively), and African Americans have the highest percentage enrolled in 2-year institutions (44.7%). See Table 2.

Table 2: Postsecondary Enrollment for 2004-05 High School Graduates by Race/Ethnicity
(Universe: All 2004-05 public high school graduates)

Race/ethnicity	Total (column %)	No Enrollment		Enroll 2-Year Institution		Enroll 4-Year Institution	
		Count (column %)	%	Count (column %)	%	Count (column %)	%
American Indian/ Alaskan Native	1,233 (2.0%)	558 (3.1%)	45.3%	458 (2.0%)	37.1%	217 (1.1%)	17.6%
Asian/Pacific Islander	5,125 (8.4%)	1,156 (6.4%)	22.6%	1,926 (8.2%)	37.6%	2,043 (10.6%)	39.8%
African American	2,660 (4.4%)	843 (4.7%)	31.7%	1,190 (5.1%)	44.7%	627 (3.3%)	23.6%
Hispanic	4,865 (8.0%)	2,213 (12.3%)	45.5%	1,848 (7.9%)	38.0%	804 (4.1%)	16.5%
Multi-race/unknown	193 (0.3%)	82 (0.5%)	42.5%	63 (0.3%)	32.6%	48 (0.3%)	24.9%
White	46,627 (76.8%)	13,128 (73.0%)	28.2%	17,962 (76.6%)	38.5%	15,537 (80.6%)	33.3%
Total	60,703	17,980	29.6%	23,447	38.6%	19,276	31.8%

Student Income Status

Low-income students make up 23 percent of the 2004-05 high school graduates. Low-income students access postsecondary education at different rates than non-low income students with

45 percent of low income student not enrolled in postsecondary education compared to 25 percent of non-low income students.

Enrollment in a 2-year or 4-year institution also varies by income. Sixteen percent of low-income students enroll in 4-year institutions compared to 37 percent of non-low income students. The enrollment rates for low-income and non low-income students at 2-year institutions are similar (39% and 38% respectively).

Table 3: Postsecondary Enrollment for 2004-05 High School Graduates by Income Status
(Universe: All 2004-05 public high school graduates)

Income Status	Total (column %)	No Enrollment		Enrollment 2-Year Institution		Enrollment 4-Year Institution	
		Count (column %)	%	Count (column %)	%	Count (column %)	%
Low-income	14,078 (23.2%)	6,270 (34.9%)	44.5%	5,542 (23.6%)	39.4%	2,266 (11.8%)	16.1%
Non-low income	46,625 (76.8%)	11,710 (65.1%)	25.1%	17,905 (76.4%)	38.4%	17,010 (88.2%)	36.5%
Total	60,703	17,980	29.6%	23,447	38.6%	19,276	31.8%

High School GPA and Participation in Running Start in High School

Almost 50 percent of high school graduates achieved a high school GPA equal to or above 3.0. Fifty-four percent of high school graduates who enrolled in 4-year institutions had a GPA equal to or greater than 3.0, compared to 30 percent who enrolled in 2-year institutions. See Table 4.

Table 4: Postsecondary Enrollment for 2004-05 High School Graduates by GPA and Prior Running Start
(Universe: All 2004-05 public high school graduates)

High School Characteristics	Total (column %)	No Enrollment		Enrollment 2-Year Institution		Enrollment 4-Year Institution	
		Count (column %)	%	Count (column %)	%	Count (column %)	%
High School GPA < 2 ^a	5,611 (9.5%)	3,287 (18.9%)	58.6%	2,097 (9.1%)	37.4%	227 (1.2%)	4.0%
High School GPA 2.0-3.0	24,273 (40.9%)	9,591 (55.1%)	39.5%	11,927 (52.0%)	49.1%	2,755 (14.5%)	11.4%
High School GPA 3.0-4.0	29,463 (49.7%)	4,521 (26.0%)	15.3%	8,929 (38.9%)	30.3%	16,013 (84.3%)	54.4%
Prior Running Start ^b	5,000	-	-	2,984 (12.7%)	59.7%	2,016 (10.5%)	40.3%

^aStudents with a missing high school GPA are not included in this analysis (n=1,356).

^bRecords about students' prior Running Start enrollment are only available for students who enroll in Washington public institutions. See Appendix B.

Enrollment in Postsecondary Full-time or Part-time

Nearly all of high school graduates who enrolled in 4-year institutions enrolled full-time (98.6%) compared to 68 percent of those who enrolled in 2-year institutions. See Table 5.

Table 5: Postsecondary Enrollment for 2004-05 High School Graduates by Enrollment Status
(Universe: All 2004-05 public high school graduates who enrolled in postsecondary education at Washington Public Institutions)

Postsecondary Enrollment Status	Total (column %)	No Enrollment		Enrollment 2-Year Institution		Enrollment 4-Year Institution	
		Count (column %)	%	Count (column %)	%	Count (column %)	%
Full-time ^a	25,520		-	14,926 (68.4%)	58.5%	10,594 (98.6%)	41.5%
Part-time	7,049		-	6,895 (31.6%)	97.8%	154 (1.4%)	2.2%

^a Students' full-/part-time enrollment status is only available from Washington public institutions. Private and out-of-state institutions are excluded from this analysis.

Postsecondary Enrollment Patterns for 2004-05 High School Graduates

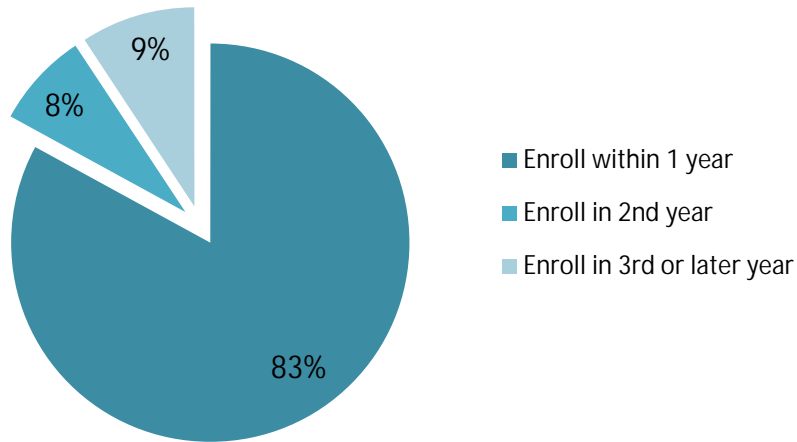
This section of brief only includes students with some type of postsecondary education within 5 years after high school graduation.

When do Washington public high school graduates enroll in postsecondary education?

Examining a 5-year period after high school graduation, 83 percent of students who enrolled in postsecondary education enrolled in the first year after high school graduation (Figure 1). However, there are a substantial number of students (17 percent) whose initial enrollment occurred later between 2-5 years after graduation. (Supporting tables can be found in Appendix A.)

Figure 1. Year(s) to the First Enrollment

(Universe: 2004-05 public high school graduates enrolled in any postsecondary institution within 5 years of high school graduation)



Where do students initially enroll in postsecondary education?

Figure 2 indicates that the majority of high school graduates started their postsecondary education in a Washington state public institution. More than half of students started their postsecondary education in 2-year institutions, either in or outside of Washington State.

Figure 2. First Enrollment by Institutional Characteristics

(Universe: 2004-05 public high school graduates enrolled in any postsecondary institution within 5 years of high school graduation)

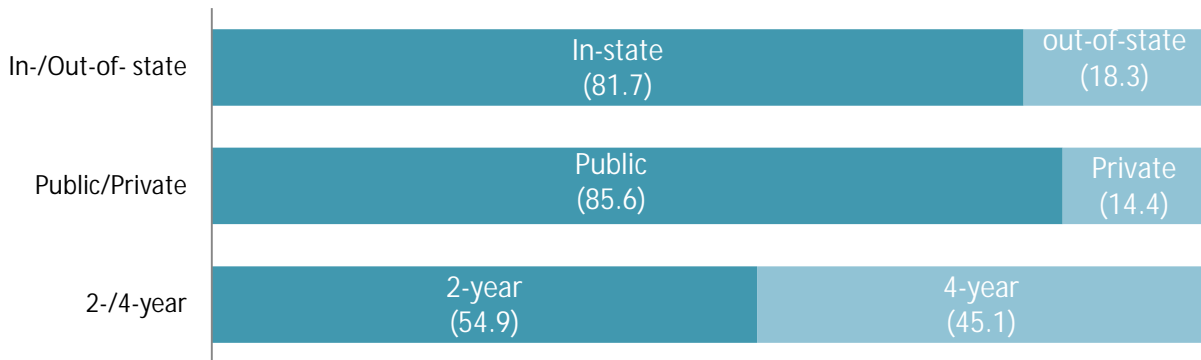


Figure 3a shows that the longer students waited to start their postsecondary education, the less likely they were to enroll in institutions within Washington State⁷.

Figure 3a. Year(s) to the First Enrollment by Initial Institution's In-State/Out-of-State Location

(Universe: 2004-05 public high school graduates enrolled in any postsecondary institution within 5 years of high school graduation)

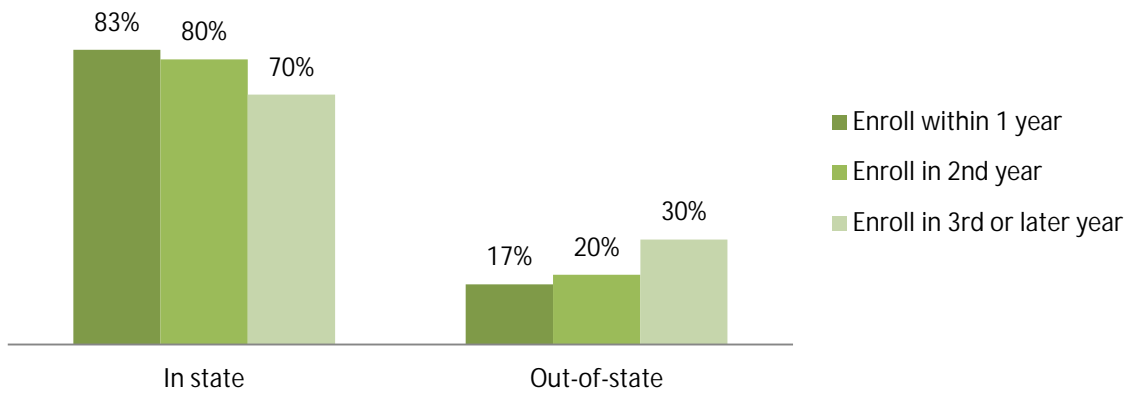
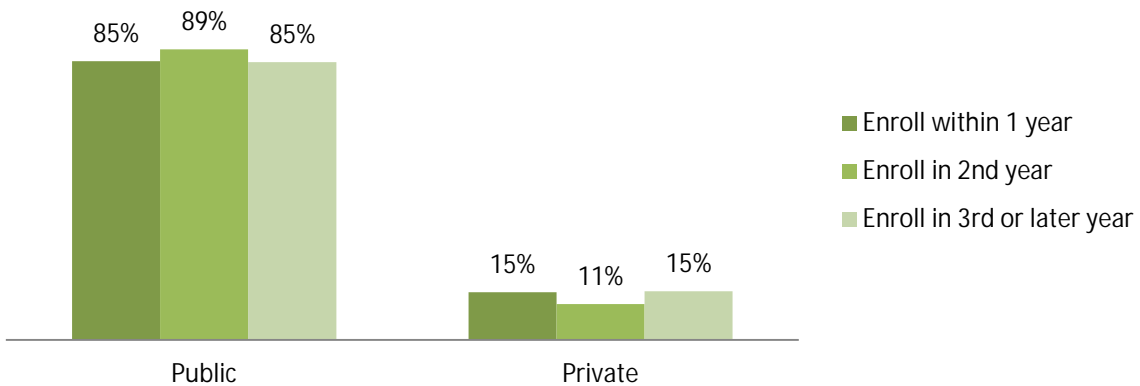


Figure 3b indicates that the percent of students' enrolling in public or private institutions does not differ by the timing of the first enrollment. About 85-89 percent of students enrolled in public institutions regardless of how long it took to first enrollment (1-3+ years).

Figure 3b. Year(s) to the First Enrollment by Initial Institution's Public/Private Sector

(Universe: 2004-05 public high school graduates enrolled in any postsecondary institution within 5 years of high school graduation)

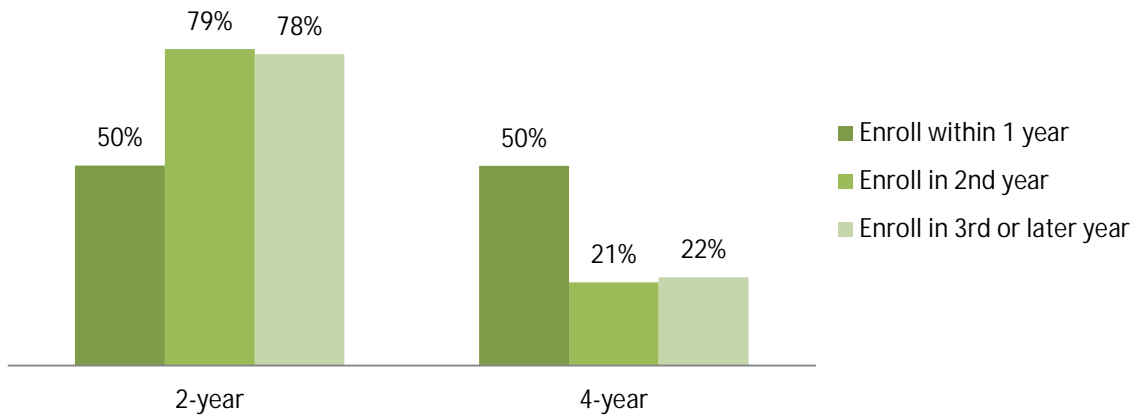


⁷ Further analysis of the out-of-state institutional characteristics is needed to understand whether this result can be explained by enrollments in online institutions that are located out-of-state by students residing in Washington.

For students who enrolled within one year, half enrolled in 2-year and half in 4-year institutions (Figure 3c). However, students were more likely to enroll in 2-year institutions when they waited to enroll in postsecondary longer than one year.

Figure 3c. Year(s) to the First Enrollment by 2-Year/4-Year Institution

(Universe: 2004-05 public high school graduates enrolled in any postsecondary institution within 5 years of high school graduation)



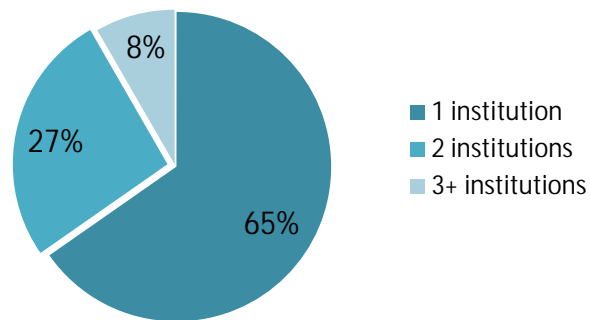
What are students' enrollment patterns⁸ within five years after high school graduation?

Number of institutions attended

For students who enrolled in postsecondary education within five years, most of them (65.3%) attended only one institution, but about one-third of students changed institutions at least once within the 5 year period (Figure 4). This does not include summer enrollment and enrollments in postsecondary education prior to fall enrollment of the 2005-06 school year.

Figure 4. Number of Institutions Attended

(Universe: 2004-05 public high school graduates enrolled in any postsecondary institution within 5 years of high school graduation)



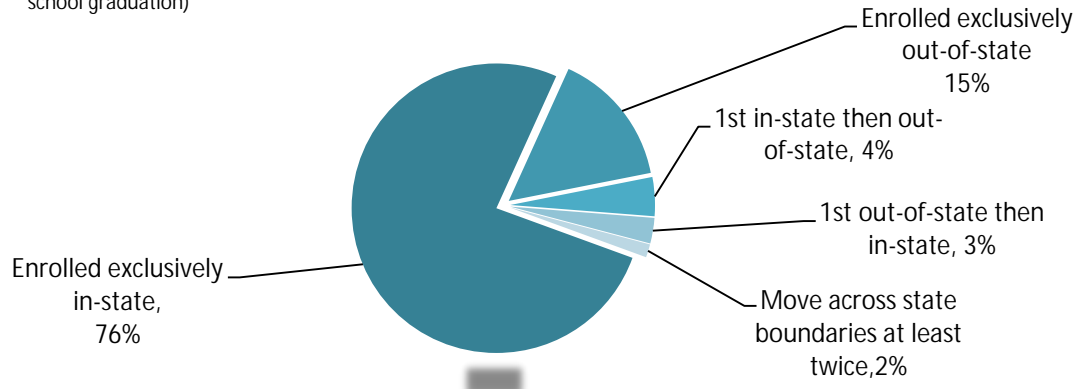
⁸ All enrollment patterns include enrollments before the first bachelor's degree is obtained. Enrollments after obtaining the first bachelor degree are excluded.

Mobility across states

Most students (76 percent) who enrolled in postsecondary education stayed in Washington state institutions for the five year period examined in this report. About 15 percent of students enrolled exclusively in out-of-state institutions. About 9 percent of students attended schools across state boundaries at some point within the five year period. See Figure 5.

Figure 5. Enrollment Mobility across States

(Universe: 2004-05 public high school graduates enrolled in any postsecondary institution within 5 years of high school graduation)

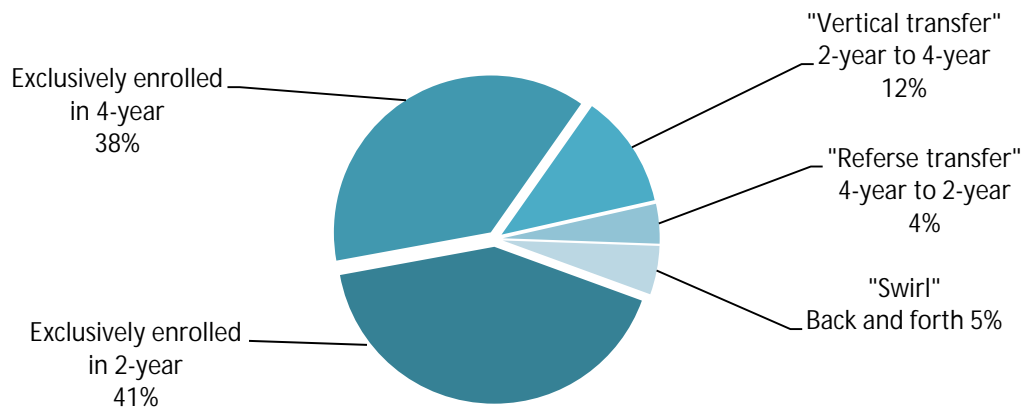


Movement between 2-year and 4-year institutions

Most of students who enrolled in postsecondary education stayed in the same sector of institution (first enrolled in 2-year college and stayed in 2-year, including horizontal transfer between 2-year colleges; or first enrolled in 4-year and stayed in 4-year, including horizontal transfer between 4-year colleges). Slightly more students stayed in 2-year institutions without moving across sector than the students staying in 4-year institutions. About 21 percent of students moved across sectors. The "vertical transfer" (2-year to 4-year) accounts for 12 percent of student movement, compared to "reverse transfer" (4-year to 2-year) which accounts for 4 percent. Students who "swirled"⁹ between different sectors accounts for 5 percent of those enrolled in postsecondary education. See Figure 6.

Figure 6. Enrollment Patterns between 2-Year/4-Year Institutions

(Universe: 2004-05 public high school graduates enrolled in any postsecondary institution within 5 years of high school graduation)



⁹ "Swirl" refers to when students' enrollment in institutions changes across sectors at least twice. The patterns include transfer from a 2-year institution to 4-year institution, then back to 2-year (and forth), as well as from a 4-year institution to 2-year institution, then back to 4-year (and so forth).

Enrollment continuity across five-year time period (2005-06 to 2009-10)

The definition of enrollment continuity used in this study takes into account the sector (2-year or 4-year institution) of the first enrollment and examines whether students stopped out from postsecondary education for 2 or more consecutive terms and re-enrolled later. Figure 7 shows that for students who went to 2-year institutions, about 29 percent stopped out before they continued enrollment in postsecondary education. Among students who initially enrolled in 4-year institutions, about 14 percent stopped out and continued. Those students who stopped out may or may not have completed a degree/award prior to the first bachelor’s degree before stopping out. They may go back to the same institution or transfer to another within or across the sectors. This level of enrollment detail is not captured in this analysis. Future studies could explore these detailed enrollment patterns and investigate the association between enrollment continuity and degree completion.

Figure 7. Enrollment Continuity by the 1st Enrollment Sector

(Universe: 2004-05 public high school graduates enrolled in any postsecondary institution within 5 years of high school graduation)

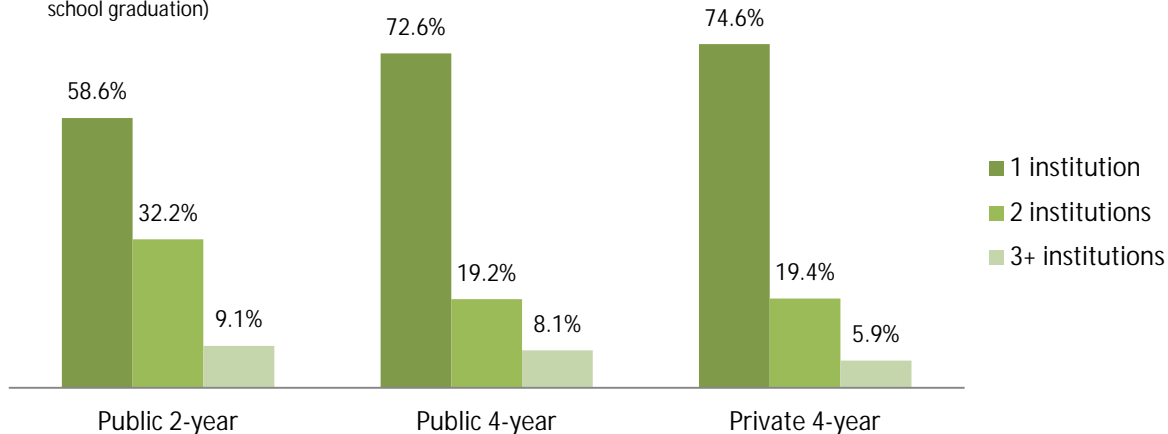


Sector of first enrollment and number of institutions attended

Figure 8 shows the association between the characteristics of students' first postsecondary institution and the number of institutions students attended over five years. Students whose initial enrollments were in 4-year institutions were more likely to enroll in only one institution and less likely to enroll in two or more institutions than those who started in public 2-year institutions. About 74.6 percent of private 4-year students enrolled in one institution over five years, compared to 72.6 percent of students in public 4-year institutions and 58.6 percent of students in public 2-year institutions. Students who first enrolled in public 2-year institutions have higher proportion of students enrolling in two institutions than the other two groups. The increasing trend to transfer from 2-year to 4-year¹⁰ institutions may, to a certain degree, explain this association.

Figure 8. Number of Institutions by Public and Private Institutions

(Universe: 2004-05 public high school graduates enrolled in any postsecondary institutions within 5 years of high school graduation)



What enrollment and student characteristics are associated with enrollment patterns and the timing of enrollment in postsecondary education?

Full- or part-time enrollment status

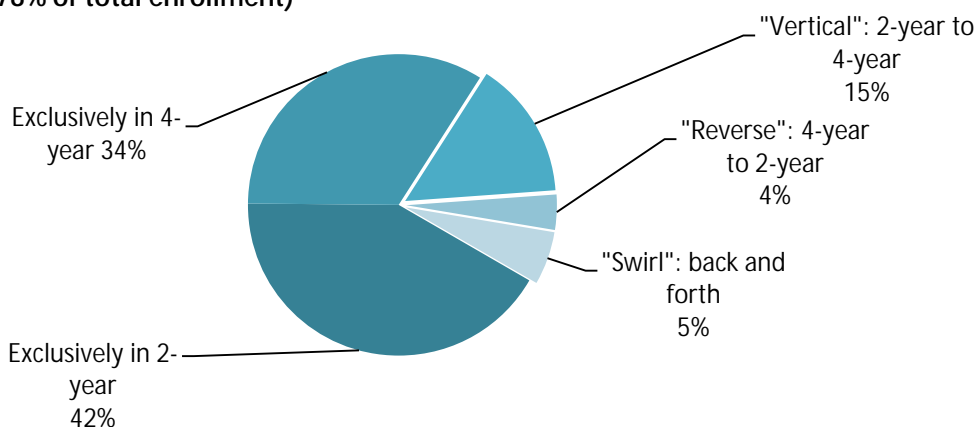
Figure 9a shows postsecondary enrollment patterns for students who enrolled full-time when they first enrolled in postsecondary and for those who enrolled part-time when they first enrolled in postsecondary education. This analysis only includes students with initial

¹⁰ "Transfer Report." Washington Higher Education Coordinating Board. Retrieved on March 31, 2012 from <http://www.hecb.wa.gov/sites/default/files/TransferReport2011.pdf#search='transfer report'>

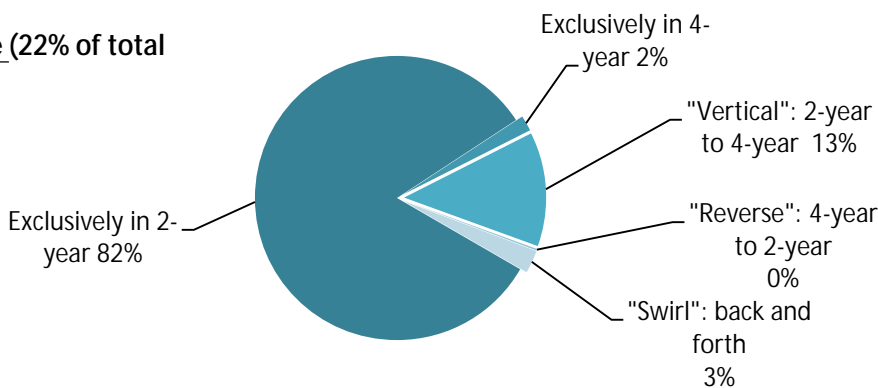
enrollments at Washington public institutions¹¹. Compared to full-time students, those who initially enrolled part-time were more likely to be enrolled exclusively in 2-year institutions¹², and less likely to be enrolled exclusively in 4-year institutions. There was little difference in the proportions of full or part-time students transferring from 2-year to 4-year institutions.

Figure 9a. Enrollment Patterns between 2-Year and 4-Year Institutions by Full-or Part-Time Enrollment Status (Universe: 2004-05 public high school graduates enrolled in Washington public postsecondary institutions within 5 years of high school graduation)

Full-Time (78% of total enrollment)



Part-Time (22% of total)



Running Start Program Participation

Among those who enrolled in postsecondary education after high school graduation, 15 percent of them were prior Running Start students. For students who participated in the Running Start program in high school and who enrolled in postsecondary education within 5 years of graduation, about the same proportion enrolled exclusively in 4-year and 2-year

¹¹ Full/part-time enrollment status is not adequately reported for the private and out-of-state institutions as provided in the National Student Clearinghouse data, so it is not included in this analysis.

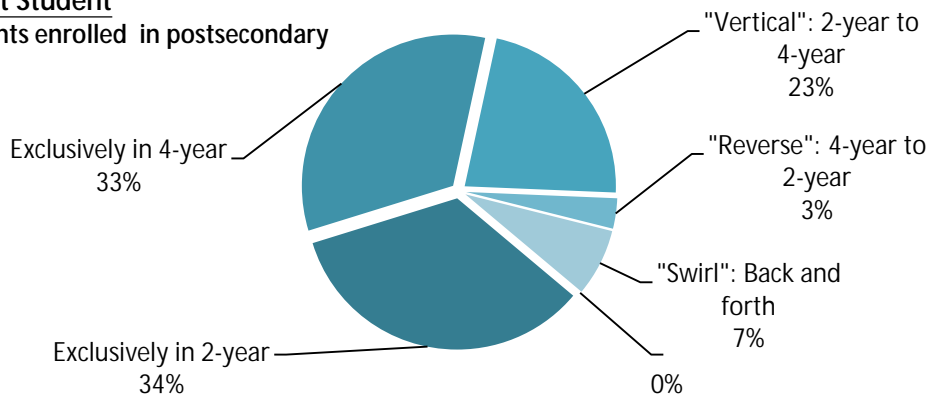
¹² Those students are more likely to be enrolling for workforce purposes.

institutions (33 and 34 percent) (Figure 9b). The majority of non-Running Start students enrolled exclusively in 2-year institutions (54%), while 26 percent enrolled exclusively in 4-year institutions. This analysis only includes students with initial enrollments at Washington public institutions because Running Start status is not available for private and out-of-state institutions.

Figure 9b. Enrollment Patterns between 2-Year and 4-Year Intitution by Running Start Program Participation (Universe: 2004-05 public high school graduates enrolled in Washington public postsecondary institutions within 5 years of high school graduation.

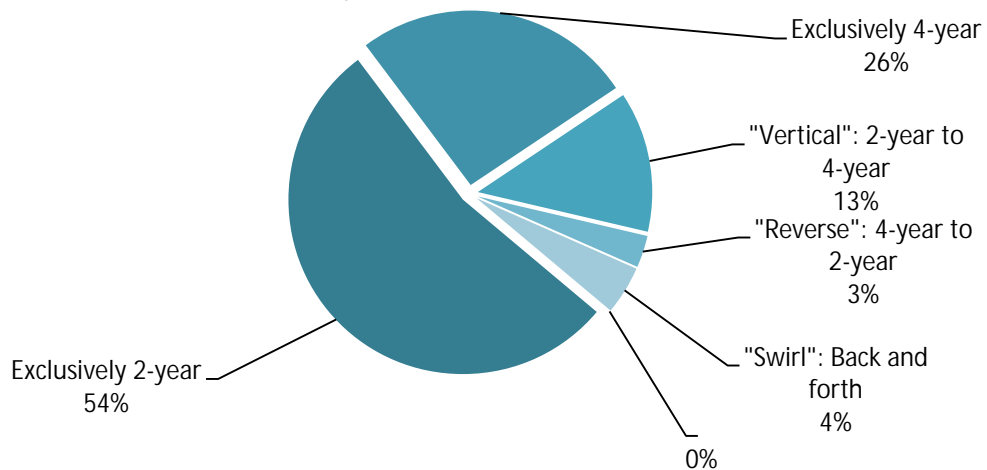
Running Start Student

(15% of students enrolled in postsecondary education)



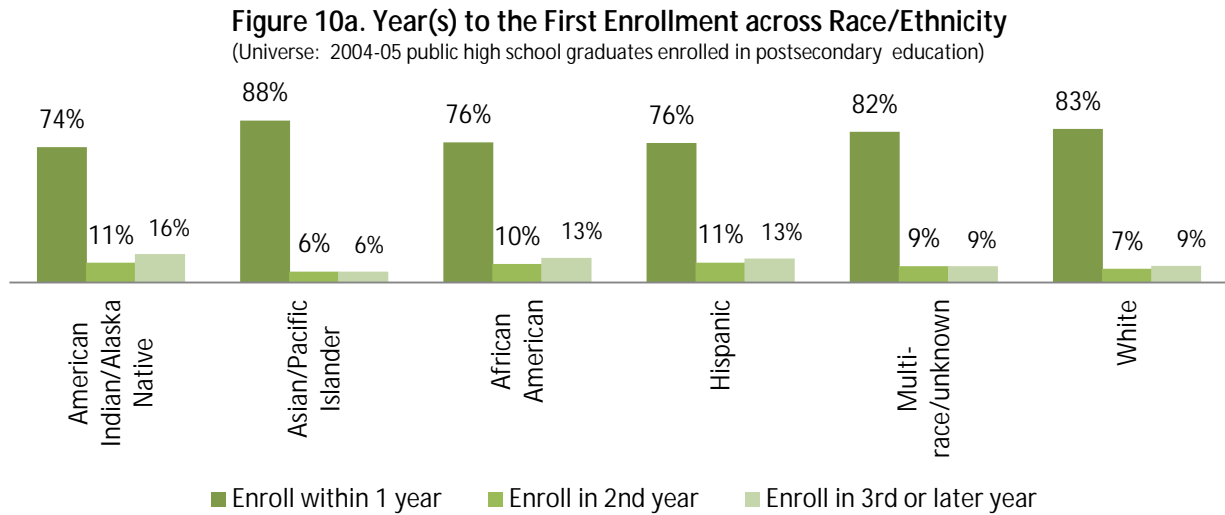
Non-Running Start Student

(85% of students enrolled in postsecondary education)

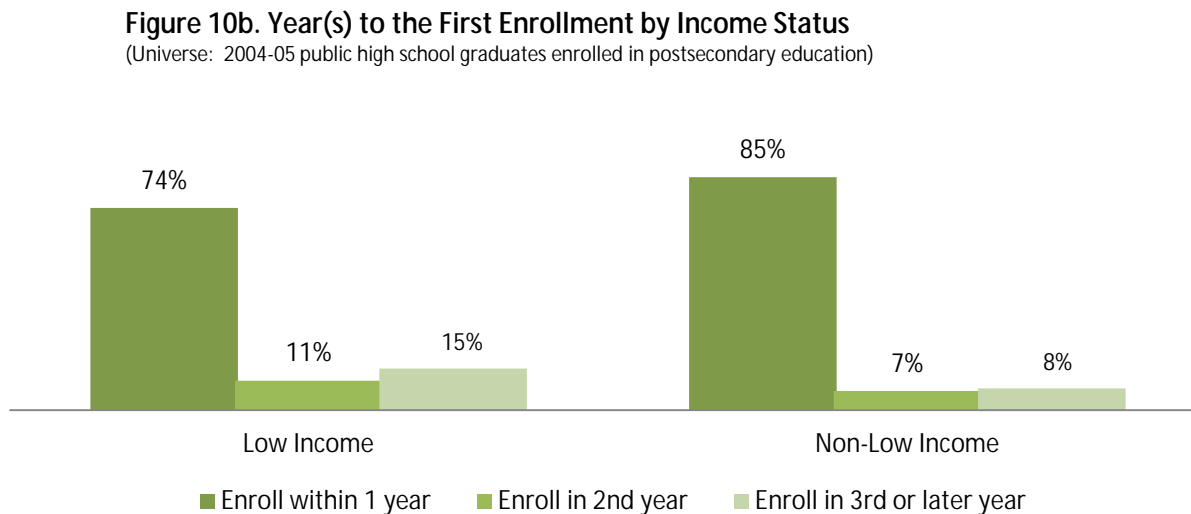


Race/ethnicity and income status and timing of first enrollment

Figure 10a shows that most students enrolled in postsecondary education the first year after high school graduation, regardless of race/ethnicity. Asian/Pacific Islanders had the highest proportion of enrolling within one year.



Among students who enrolled in postsecondary education, low-income students are less likely to enroll in postsecondary within the first year after high school graduation. Figure 10b shows that 74% of low-income students enrolled in the first year, compared to 85% of non-low income students.

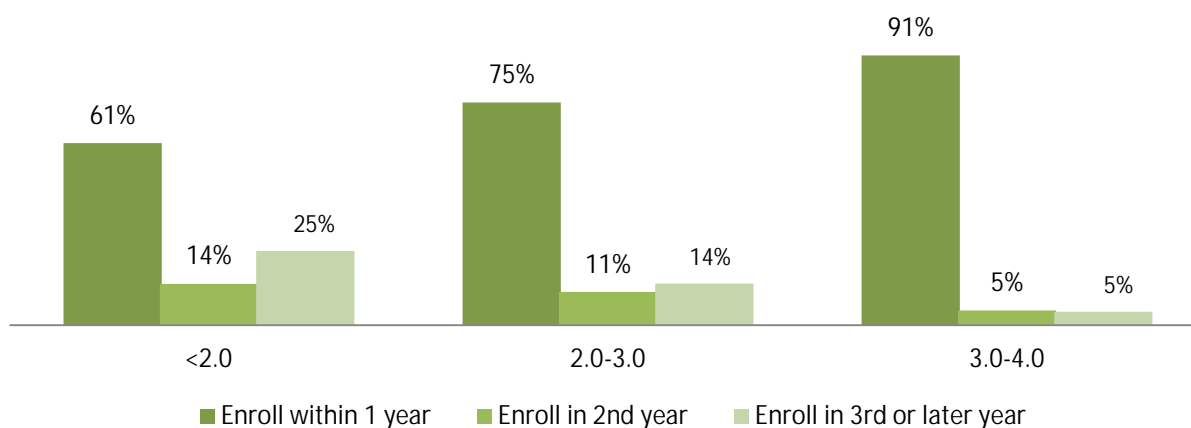


Grade point average (GPA) and timing of first enrollment

Figure 10c demonstrates that a greater proportion of students in the higher GPA category enroll within 1 year of high school graduation. Students with lower GPAs (less than 2.0) have the highest proportion starting postsecondary enrollment two years or more after high school graduation (39%). The analysis of other enrollment patterns by GPA level shows the consistent pattern that students with high GPAs are more likely to stay with a 4-year academic track.

Figure 10c. Year(s) to the First Enrollment by GPA

(Universe: 2004-05 public high school graduates enrolled in postsecondary education)



The student demographic characteristics associated with Figure 10c are available in Appendix A, Table A6 on page A-5.

Gender and the timing of first enrollment was also examined, but no gender differences were found so they are not reported.

Postsecondary Enrollment Status Five Years after Graduation from High School

Postsecondary enrollment status is examined for all 2004-05 high school graduates. About 70% of the high school graduates enrolled in some type of postsecondary education within 5 years of high school graduation (42,723). See Table 6. Among the 2004-05 high school graduates who enrolled in postsecondary education at some point within the 5 years, about 50% (21,649) of students completed a degree, certificate, or other award. About a quarter left postsecondary (11,274) and about a quarter were still enrolled (9,800).

Table 6. Postsecondary Education Status within 5 years, 2004-05 High School Graduates

Total High School Graduates	60,703	
	Count	%
Did not enroll in postsecondary education within 5-year period	17,980	29.6%
Enrolled in postsecondary education at some point within 5-year period	42,723	70.4%
Received an award within 5-year period	21,649	50.7%
Still enrolled in postsecondary education	9,800	22.9%
Left postsecondary education ^a	11,274	26.4%

^a "Left postsecondary education" is defined as a student who has not obtained an award and is not enrolled in postsecondary education for at least two consecutive terms.

For those who completed an award from Washington public institutions or from any 4-year institution (private or out-of-state), 60.5% (13,103) completed a bachelor degree, 27.4% (5,941) an associate degree, 5% (1,089) a workforce associate degree, 5% (1,079) a certificate, and 437 with other types of unspecified awards as their highest award. See Table 7.

Table 7. Highest Award within 5 Years, 2004-05 High School Graduates

Total Students who Enrolled in Postsecondary Education	42,723	
	Count	%
Highest Award ^b		
Bachelor's Degree ^c	13,103	30.7%
Associate Degree (DTA and AS-T)	5,941	13.9%
Workforce Associate Degree	1,089	2.5%
Certificate	1,079	2.5%
Apprenticeship	15	0.0%
Others	421	1.0%
Total students who received an award within 5-year period	21,649	50.7%

^bThis analysis includes degree completions for all Washington public institutions and for 4-year private and 4-year out-of-state institutions. Two-year institutions that are private or out-of-state are excluded.

^cBachelor degree attainment may include students who also earned an associate degree at a 2-year institution or who transferred from a 2-year institution.

For the purpose of this study, postsecondary completions are reported for a cohort of high school graduates who pursue postsecondary education in many different ways and for many different reasons, as reflected in the diversity of awards. Table 7 is not intended to report completion rates for a specific sector or institution but to look at the system as a whole for a cohort of high school graduates. It also should not be used to calculate completion rates

because the definition of postsecondary enrollment is not sufficient to be used as a denominator (details are discussed in the following summary section and technical notes in Appendix B.)

SUMMARY

This study explored the postsecondary enrollment patterns of a cohort of 2004-05 Washington public high school graduates. The cohort was followed from their high school graduation in 2005 through the spring of 2010 – covering a 5-year time period.

About 70 percent of 2004-05 Washington public high school graduates enrolled in postsecondary education within five years after graduation. For high school graduates who enrolled in postsecondary education, the following enrollment characteristics and patterns were identified:

- A higher percentage of high school graduates enrolled in 2-year institutions than 4-year institutions.
- High school graduates who postponed their initial enrollment were less likely to enroll in 4-year institutions.
- About 35 percent of high school graduates who enrolled in postsecondary education changed institutions.
- About 21 percent of high school graduates who enrolled in postsecondary education changed institutions across sectors (2-year and 4-year institutions).
- A higher percentage of students who first enrolled at 2-year institutions (30%) stopped out for 2 or more consecutive academic terms compared to those enrolled at 4-year institutions (14%).

Postsecondary education enrollment also varied by student characteristics:

- A higher percentage of females enrolled in postsecondary education than males and the difference was greater at 4-year institutions.
- American Indians/Alaskan Natives and Hispanics are underrepresented in postsecondary education. About 45 percent of American Indians/Alaskan Natives and 46 percent of Hispanics did not enroll in postsecondary education, and only 17 to 18 percent enrolled in 4-year institutions.
- Low income students access postsecondary education at different rates than non-low income students with 45 percent of low income student not enrolled in postsecondary education compared to 25 percent of non-low income students.

- Eighty-four percent of high school graduates who enrolled in 4-year institutions had a GPA equal to or greater than 3.0, compared to 39 percent who enrolled in 2-year institutions.
- Eighty-two percent of part-time students exclusively enrolled in 2-year institutions compared to 2 percent who exclusively enrolled in 4-year institutions.
- Students who were in the Running Start program in high school show higher mobility across the 2-year and 4-year sector. About 33 percent transferred between sectors- 22 percent for vertical transfer (2-year to 4-year), 3 percent for reverse transfer (4-year to 2-year), and 8 percent with a swirl pattern of enrollment.

FUTURE STUDIES

This research brief is 'first look' at postsecondary enrollment patterns for a cohort of high school graduates. It has answered some questions and pointed to many more than can be addressed in future studies.

First, the follow up period for this study covers a five-year period, which is too short to assess the roll of enrollment patterns on degree completion. The current study starts to define and describe the enrollment patterns for a cohort of high school graduates, but in the future with a longer follow up period it will be possible to examine the relationship between enrollment patterns and completions.

Second, in future studies the definition of enrollment could be expanded to use the number of credits attempted or earned in an academic term or year as a proxy for student intent. This would allow for better differentiation of students who enroll at 2-year institutions by their purpose of enrollment. In the future different definitions of enrollment could be explored to see their relationship between certain postsecondary outcomes.

Third, many factors that may influence students' enrollment patterns are not currently available in this study. For instances, the courses completed and academic performance in the first term or school year has been found to be an important predictor of students' postsecondary pathways as well as their degree completion¹³. The mechanism through which some student background characteristics (i.e. family income status) are associated with the timing of postsecondary education is not fully explored yet.

¹³ Attewell, P., Geukm S, & Reisel, L. (2012). "What is Academic Momentum? And Does It Matter?" *Educational Evaluation and Policy Analysis* 34(1): 27-44.

Fourth, financial aid plays an important role in students' degree completion and the time to completion. Information about students' financial aid status may also inform the variation in enrollment patterns and completions.

Lastly, it is crucial to understand how college experiences have shaped students' pathways to degree completion. For example, how does employment status impact students' length of study, enrollment patterns, and degree completion? Does it take longer for students to complete degree in certain major (e.g. STEM) than others?

As the cross-sector P-20 education and workforce data that is housed at ERDC becomes more robust, it may allow us to address some of the additional questions raised by this exploratory study.

APPENDIX A. DETAIL TABLES FOR GRAPHS PRESENTED

Table A1. The First Enrollment (For Figures 1-2)

		Counts	Percent of Total
Total		42,723	-
Year(s) to the first enrollment	1	35,443	83.0%
	2	3,309	7.8%
	3+	3,971	9.3%
Institution location	In-state	34,904	81.7%
	Out-of-state	7,819	18.3%
Institution sector	Public	36,576	85.6%
	Private	6,147	14.4%
	2-Year	23,447	54.9%
	4-Year	19,276	45.1%

Table A2. Year(s) to the First Enrollment and the First Institution's Characteristics (for Figures 3a-3c)

	Year(s) to the first enrollment					
	1 year	%	2 years	%	3+ years	%
In-state	29,451	83.1%	2,659	80.4	2,794	70.4
Out-of-state	5,992	16.9%	650	19.6	1,177	29.6
Total	35,443		3,309		3,971	
Public	30,256	85.3%	2,944	88.9%	3,376	85.0%
Private	5,187	14.7%	365	11.1%	595	15.0%
Total	35,443		3,309		3,971	
2-Year	17,736	50.0%	2,620	79.2%	3,091	77.8%
4-Year	17,707	50.0%	689	20.8%	880	22.2%
Total	35,443		3,309		3,971	

Table A3. Enrollment Patterns (for Figures 4-7)

		Counts	Percent of Total
Number of institutions (excludes summer enrollments)	1	27,895	65.3%
	2	11,273	26.4%
	3+	3,555	8.3%
Total		42,723	
<hr/>			
Mobility across states	Enrolled exclusively in WA state	32,579	76.2%
	Enrolled exclusively out-of-state	6,468	15.1%
	1st enrolled in state then out-of-state	1,857	4.3%
	1st enrolled out state and went in state	1,216	2.9%
	1st enrolled out state, to in state, then out state	443	1.0%
	1st enrolled in state, enrolled out state, then in state	182	0.4%
Total		42,739	
<hr/>			
Movement between 2- year and 4-year institutions	1st enrolled in 2-year institution and stayed in 2-year	17,763	41.6%
	1st enrolled in 4-year institution and stayed in 4-year	16,095	37.7%
	2-year to 4-year institution	5,004	11.7%
	4-year to 2-year institution	1,750	4.1%
	Back and forth 2-year and 4-year institution	2,127	5.0%
Total		42,739	
<hr/>			
Enrollment continuity	Stopped out from 2-year institution	6,718	28.7%
	No stopped out from 2-year institution	16,729	71.3%
	Stopped out from 4-year institution	2,684	13.9%
	No stopped out from 4-year institution	16,592	86.1%
Total		42,739	

Table A4. Number of Institution by the Sector of the First Institution (for Figure 8)

	Number of Institution					
	1	%	2	%	3+	%
Public 2-year	13,711	58.6%	7,533	32.2%	2,120	9.1%
Private 2-year	55	66.3%	19	22.9%	9	10.8%
Public 4-year	9,603	72.6%	2,542	19.2%	1,067	8.1%
Private 4-year	4,526	74.6%	1,179	19.4%	359	5.9%
Total	27,895		11,273		3,555	

Table A5. Student Characteristics at the First Enrollment and Enrollment Patterns (for Figures 9a-9b)

	Full Time Status				Running Start Student			
	Yes Count	%	No Count	%	Yes Count	%	No Count	%
Exclusively in 2-year institutions	10,676	41.8%	5,809	82.4%	1,705	34.1%	14,780	53.6%
Exclusively in 4-year institutions	8,666	33.9%	124	1.8%	1,658	33.2%	7,132	25.9%
2-year to 4-year institution	3,778	14.8%	917	13.0%	1,112	22.2%	3,583	13%
4-year to 2-year institution	966	3.8%	13	0.2%	162	3.2%	817	2.9%
Back and forth between 2-year and 4-year institutions at least twice	1,434	5.7%	196	2.6%	363	7.2%	1,257	4.5%
Total	25,520		7,049		5,000		27,569	

Table A6. Year(s) to the First Enrollment by Student Characteristics (for Figures 10a-10c)

	Year(s) to the first enrollment					
	1 year	%	2 years	%	3+ years	%
Ethnicity						
American Indian/Alaska Native	497	73.6%	73	10.8%	105	15.6%
Asian/Pacific Islander	3,495	88.1%	239	6.0%	235	5.9%
African American	1,386	76.3%	187	10.3%	244	13.4%
Hispanic	2,013	75.9%	290	10.9%	349	13.2%
Multi-race/unknown	91	81.9%	10	9.0%	10	9.0%
White	27,961	83.5%	2,510	7.5%	3,028	9.0%
Family Income Status						
Low-income	5,766	73.9%	849	10.9%	1,193	15.3%
Non-low income	29,677	85.0%	2,460	7.1%	2,778	7.9%
High School GPA						
Less than 2.0	1,894	61.1%	431	13.9%	774	25.0%
2.0 - 3.0	10,971	74.7%	1,656	11.3%	2,055	14.0%
3.0 - 4.0	22,578	90.5%	1,222	4.9%	1,142	4.6%

APPENDIX B. TECHNICAL NOTES

RESEARCH COHORT

The cohort consisted of all 2004-05 public high school graduates. The Office of Superintendent of Public Instruction (OSPI) annual summary data files for high school enrollment and completion (P-210) were used to identify high school graduates. The graduate cohort is defined by the academic year data file in which they are reported as graduated. For the most part this corresponds to the September 1, 2004 – August 31, 2005 school year.

A student is included as a high school graduate if he/she was reported in OSPI's academic year enrollment summary file with student enrollment status indicating "graduated with regular high school diploma" or Enrollment_Status_Type = 'G0'. Students who receive GED credentials, complete an Individualized Education Plan (IEP), or are awarded an adult high school diploma (usually by a community or technical college) are not included in this analysis.

If a student has more than one graduation record in the 2004-2005 P210 file, the record associated with the school primarily responsible for the student is used (IsPrimary = '1'). If a student has 2 graduation records both indicated as the primary school responsible for the student, the record with the most recent entrance date is used.

DATA SOURCES

Postsecondary enrollments and completions are from three data sources:

- The **Public Centralized Higher Education Enrollment System (PCHEES)** provides student enrollment and completion records from 6 Washington public baccalaureate institutions currently maintained by the Office of Financial Management (OFM).
- The **State Board of Community and Technical Colleges (SBCTC)** data includes enrollment and completion records from the state's 34 public community and technical colleges.
- The **National Student Clearinghouse (NSC)** file used for this study are enrollment and completion information from private institutions in Washington and out-of-state institutions. The NSC covers 96 percent of students enrolling in more than 3,300 U.S. postsecondary institutions. (<http://www.studentclearinghouse.org/about/>). NSC data does not include enrollment at military academies. In addition, NSC data does not

representatively cover private, for-profit institutions (<http://www.studentclearinghouse.info/signature/>). Therefore, several private institutions, especially 2-years, are not included into this analysis. For instance, most private career colleges are not included.

VARIABLE DEFINITIONS

Postsecondary Enrollment

1. For enrollment in Washington public 4-year institutions data from PCHEES is used. For the purposes of this study,
 - i. a student is counted as enrolled in postsecondary if they are registered in at least one credit earning course between Fall 2006 and Spring 2010, excluding summer terms;
 - ii. a student is counted as enrolled in a term if they are registered in at least one credit earning course during that term. Unlike the other 5 public baccalaureate institutions, enrollments at Washington State University follow a semester system. If a student was enrolled in the fall semester, they are considered enrolled in fall and winter terms.
2. For enrollment in Washington public 2-year institutions, data from SBCTC is used. For the purposes of this study, exclusively lifelong learners are excluded from the postsecondary enrollment analysis.
3. For enrollment in private and out-of-state institutions, NSC data are used. The following enrollment types are excluded: enrollment coded as 'L' indicating less than a 2 year degree program, if the enrollment start date came after the end date, or if the enrollment had the same start and end dates;

(Note: The enrollment start and end dates were used to determine whether the student was enrolled in each academic year (Summer 2005 – Spring 2010). Enrollment data provided by NSC is not provided in a term/year format.

The following notes apply across the 3 postsecondary data sources:

- Across all the data sources, for an enrollment to be valid it must have occurred before the first bachelor degree was obtained.
- Regardless of concurrent enrollments, the total number of enrollment terms ranges from 0 (never enrolled in any postsecondary institution) to 15(enrolled every term in the 5-year period).

- Summer terms are not included in any of the postsecondary enrollment calculations except for the calculation of total number of institutions attend.
- This study uses one definition of postsecondary enrollment for the purpose of exploring global postsecondary enrollment patterns. However, there are many other ways to define enrollment depending on the question one is trying to address. For example, in each term a student at 2-year institutions may indicate a different purpose of attending the college (e.g. academic transfer, GED certificate, vocational preparation, etc.). This type of information would need to be considered when trying to understand the degree completion rates for different types of institutions.
- **The First Postsecondary Enrollment** is defined as the first *non-summer* enrollment after high school graduation that shows up on individual student's enrollment record between the fall of 2005 through the spring of 2010.
- **Number of Terms to First Enrollment** is the sum of the terms leading to the first postsecondary enrollment after high school graduation excluding summer enrollments. This variable is used to determine enrollment continuity which is reported in Figure 7 of the research brief. The calculation of this variable is shown below:

The first academic term enrolled	Number of terms to first enrollment
Fall, 2005-06	0
Winter, 2005-06	1
Spring, 2005-06	2
Fall, 2006-07	3
Winter, 2006-07	4
Spring, 2006-07	5
Fall, 2007-08	6
Winter, 2007-08	7
Spring, 2007-08	8

Fall, 2008-09	9
Winter, 2008-09	10
Spring, 2008-09	11
Fall, 2009-10	12
Winter, 2009-10	13
Spring, 2009-10	14

- **Year(s) to the First Enrollment** is identified by which academic year the first non-summer enrollment occurred. Three categories are used for the analysis:

The timing of the first enrollment	Year to the first enrollment
Between fall and spring of 2005-06	1
Between fall and spring of 2006-07	2
Between fall of 2007-08 and spring of 2009-10	3+

- **First Institution** is the institution for the first non-summer enrollment. If there was concurrent enrollment, the institution that a student continued to enroll in the next one or two terms is selected.
- **Baccalaureate Degree Completion** is a flag to identify the *first* baccalaureate degree obtained for each student from PCHEES, NSC, and SBCTC data. Additional BA degrees or other more advanced degrees are not included in this flag. This flag also include students who transferred from 2-year institutions to 4-year institutions and completed BA degree.
 - When the variable "award_level_code" is equal to "1" from PCHEES completion file, the BA degree obtained from Washington public baccalaureate institution is flagged as "1"

- When "Graduated" is equal to 'Y' and "degree_title" indicates bachelor degree from NSC file, the BA completions from Washington private or out-of-state institutions is also flagged as "1".
- BA degree from SBCTC is the "Applied baccalaureate degree" identified when "EXIT_CD" is "U" and "AWARD_TYPE" is "5" from SBCTC Completion Table.

To take into account the circumstance that a student may have BA completion record from both PCHEES and NSC data, the earliest BA completion record is selected.

- **Highest Award Completed from 2-Year Institutions**

A categorical variable identifies the highest awards received from SBCTC completions table. The 6 awards include "Applied Baccalaureate Degree," "Associated Degree-DTA or AS-T," "Workforce Associate Degree," "Certificate," "Apprenticeship," and "Others." Two variables- "EXIT_CD" and "AWARD_TYPE" which are used to identify 36 detailed award categories a student had received through the five years. Each award category is weighted by a priority score (provided from SBCTC). Based on the priority score, a student's highest award is selected.

Awards from private and out-of-state 2-year institutions are not included in this study because they are inconsistently reported in the NSC data using the "degree_title" variable.

- **Enrollment Patterns** include 4 categories that describe the characteristics of students' postsecondary enrollment across all non-summer terms captured in this study (Fall 2005 – Spring 2010) –

1. **Number of institutions** is the sum of institutions that students enrolled – excluding summer terms. There are 217 students, out of 60,703 high school graduates, who only exclusively enrolled in one or more summer terms. These students cases are coded as "0" postsecondary enrollment.

Without removing summer enrollments, the total number of institutions is the sum of different institutions students enrolled across the five year period. The distribution of this variable is shown below:

Total number of institutions	N	%
0	17,763	29.3

1	26,446	43.6
2	12,196	20.1
3	3,478	5.7
4	696	1.2
5	104	0.2
6	19	0.0
8	1	0.0

2. **Cross-state mobility** captures students' movement from in-state to out-of-state institutions. Again, this excludes summer enrollments.. Six mobility categories are identified to address students' mobility patterns:
- a) **Exclusively enrolled out-of-state** describes enrollment that was exclusively in out-of-state institutions before completing the first BA degree.
 - b) **Exclusively enrolled in-state** describes enrollment that was exclusively in Washington state institutions.
 - c) **From out-of-state to in-state** describes first enrollment was out-of-state and some subsequent enrollment was in Washington state. Movement across state boundary happened once. There were two cases initially identified by this category but were discovered to be actually enrollments in the same institution (Devry University) from NSC. The two records were re-coded as "exclusively out-of-state" status.
 - d) **From in-state to out-state** describes first enrollment in Washington state and some subsequent enrollment was out-of-state. Movement across state boundary happened once. Two records were also initially identified in this category but were found to be enrollments in the same institution so they were re-coded as "exclusively out-of-state" status.
 - e) **From out-of-state to in-state, then out-of-state** indicates multiple movements across Washington state's border - starting from out-of-state institution to Washington, then move out of state again. Students in this category changed institutions across state border at least twice.
 - f) **From in-state to out-state, then in-state** followed the same coding logic as above (from out-of-state to in-state, then out-of-state).

No students were found to be simultaneously enrolled in Washington and out-of-state institutions.

3. **4-year/2-year Movement** describes the movement(s) across 4-year and 2-year institutions over time. Six categories are identified by following the same coding logic as above to capture movement patterns:
 - a) **Exclusively 2-year** indicates no movement across sector. Students' enrollment records were only from 2-year institutions across the 5 years, including transfer only between 2-year institutions;
 - b) **Exclusively 4-year** indicates no movement across sectors. Students' enrollment records were only from 4-year institutions across the 5 years, including transfer only between 4-year institutions;
 - c) **From 2-year to 4-year** indicates a one-time transfer from 2-year to 4-year institution;
 - d) **From 4-year to 2-year** is a one-time transfer from 4-year to 2-year institution. A record from NSC data (enrollment in Whitworth University) showing students transfer from 4- to 2-year institution, but actually staying in the same institution was re-coded as "exclusively 4-year";
 - e) **Back and forth** refers to students' enrollment patterns between 2-year and 4-year institutions two or more times.

Both categories a) and b) include some "horizontal transfers" if any change of institution(s) within the same sector ever occurred, and c) refers to "vertical transfer," d) as "reverse transfer," and e) as "swirl."¹⁴ Because students who swirled account for a very small proportion of the whole cohort, this brief demonstrates the combined distribution of "swirl" regardless of their initial enrollment in 2-year or 4-year institutions.

4. **Enrollment Continuity** defines a student's non-continuous enrollment status by whether or not a student stop out from postsecondary education for 2 or more consecutive terms before he/she continues postsecondary education.

¹⁴ "Transfer Report." Washington Higher Education Coordinating Board. Retrieved on March 31, 2012 from [http://www.hecb.wa.gov/sites/default/files/TransferReport2011.pdf#search='transfer report'](http://www.hecb.wa.gov/sites/default/files/TransferReport2011.pdf#search='transfer report'>)>

Student Enrollment Characteristics at the First Enrollment include students full- or part-time status, Running Start status, and kind of student from SBCTC and PCHEES data. NSC data does not have information about students' Running Start status, and the records about students' full-or part-time status is also not complete. To be consistent through the analysis of enrollment patterns and students' characteristics at the first enrollment, NSC records are NOT included which excludes private and out-of-state enrollments.

- a) **Full- or part-time enrollment status** - "full-time" is when students registered for 12 or more credits in the 1st enrollment term from PCHEES ("credit_hours" >= 12) if the student 1st enrolled in a Washington public 4-year; or when variable "full_part_time_ind" is equal to "F" from SBCTC student table if the student 1st enrolled in a Washington public 2-year. The other SBCTC records not defined as "full-time" were coded as "part-time" status.
 - b) **Running Start status** indicates whether a student participated in Running Start while they were in high school. The Running Start status flag is coded as "Yes" if variable "registration_type" from PCHEES registration table is equal to '2' or '3' for students 1st enrolled in Washington public 4-year; or if "running_start_status" is equal to '1','2', or '3' from SBCTC student table when students 1st enrolled in Washington public 2-year.
- **Student Demographics** include students' gender and race/ethnicity from the Office of Superintendent of Public Instruction (OSPI) annual summary data files for high school enrollment and completion (P-210).
 - **Family income status** is determined by whether the student was eligible for free-or-reduced-price lunch program while in high school (low income) or not eligible (not low-income). This information comes from the OSPI P-210 file.
 - **High school GPA** is from the OSPI P-210 file. GPA is reported in three categories: less than 2.0, equal or higher than 2.0 and less than 3.0, equal or higher than 3.0 and less or equal to 4.0. There were 1,356 (about 2.2%) 04-05 high school graduates who did not have GPA reported in the P-210 file.