

Enrollment in Pre-College-Level Coursework

Washington State High School Graduates, 2008-09

Many recent high school graduates take pre-college courses in mathematics and/or English prior to continuing on to college-level work in those subjects. In Washington, placement of a postsecondary student in pre-college-level courses is determined by the college or university. Higher education institutions consider assessment scores, including SAT and ACT scores, and courses taken in high school to determine whether enrollment in pre-college courses is mandatory for admittance to the institution. Students may also elect to enroll in a pre-college course. Credits earned in a pre-college course are not applicable to a degree.

Pre-college-level courses are often referred to as “remedial” courses, suggesting that courses taken at the secondary level did not lead to college readiness in a particular subject. In fact, many first-year college students who enroll in pre-college courses may not have taken all the high school mathematics and English courses required for college admission.

In 2008-09, the most recent year for which national data are available, approximately 75 percent of public 4-year higher education institutions and virtually all public 2-year institutions offered services designed to ensure that all students can effectively participate in college-level work. These services can take the form of tutoring, comprehensive learning centers, or credit-bearing courses. Courses are available for a number of subjects. English and mathematics are the most common. Students enrolled in credit-bearing pre-college courses in mathematics and/or English are the focus of this report.

Some students enrolling in pre-college coursework may be accomplished in math, while still mastering English. Others may be capable writers, artists, or musicians who need assistance with math. In any case, pre-college-level coursework offered in postsecondary institutions provides many students the opportunity to succeed in their college work.

Purpose

This study reports on the number of Washington public high school graduates in 2008-09 who were enrolled in pre-college-level courses in Washington public higher education institutions during 2009-10. This report provides information at the state level and by student, school, and community

characteristics. It is a companion to a previously released ERDC report on overall postsecondary enrollment patterns for this cohort.¹

Enrollment in pre-college courses is reported in several ways. The approach taken in this report is a prospective look at pre-college course-taking by the high school graduates of 2008-09 – what were the pre-college course-taking patterns of these high school graduates in the year following graduation? Other reports and reporting specifications are described in Appendix A.

Data Sources

This study is based on the data set developed for the ERDC's P-20 Reports for High Schools and Districts.² Data for this study came from the following sources:

High School Graduates: The 2008-09 annual summary data file (P-210) for high school enrollment and completion from Office of Superintendent of Public Instruction (OSPI) is the source of information about the 2008-09 high school graduates. This file identifies regular high school graduates, their graduation date, school district and school, low-income status, gender, grade point average (GPA), and race/ethnicity.

Washington Community and Technical College Enrollment: Enrollment data from the State Board for Community & Technical Colleges (SBCTC), which includes student enrollment status, including whether the student was enrolled in pre-college mathematics or English, by term for the 34 colleges in the state system. All 2008-09 public high school graduates enrolled in community and technical colleges in 2009-10 are included in this study.

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). PCHEES includes information about pre-college enrollments in mathematics and English.

Cross-Sector Linkages: Education Research & Data Center (ERDC) linking file, April 15, 2011. The ERDC linking file relates enrollment across K-12, community and technical colleges, and public 4-year institutions.

Classification of Students as enrolled in Washington public postsecondary institutions is identical to that used in the ERDC P-20 Reports for High Schools and Districts.

Additional data definitions are included in Appendix B.

¹ "Participation in Postsecondary Education: Washington State High School Graduates, 2008-09," ERDC, December 2009. <<http://www.erd.cwa.gov/briefs/pdf/201005.pdf>>

² The P-20 Feedback Reports for High Schools and Districts along with relevant technical notes are available on the ERDC reporting website: www.erd.cwa.gov.

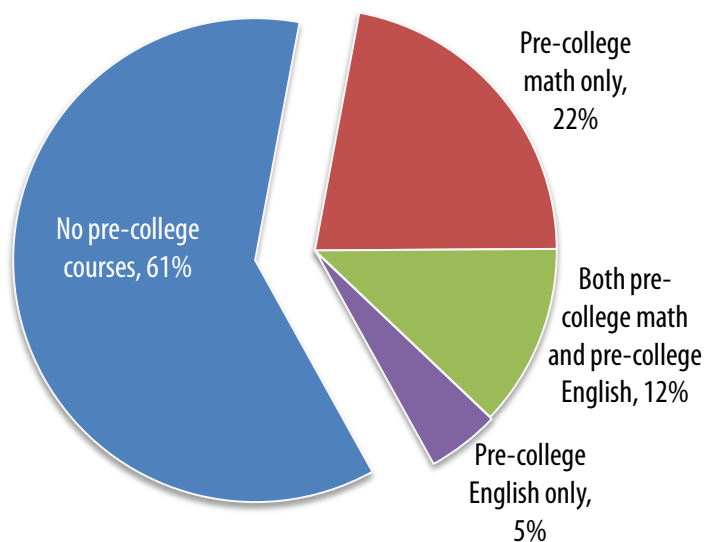
Summary of Findings

Of the Washington 2008-09 public high school graduates who enrolled in public higher education in Washington in 2009-10, 39 percent enrolled in one or more pre-college reading, writing, or mathematics courses. The proportion of recent high school graduates who enrolled in pre-college mathematics courses (34 percent) was larger than that for English (17 percent). The share of students enrolling in both mathematics and English pre-college coursework was 12 percent.

Table 1: Pre-college course-taking rates, 2008-09 high school graduates enrolled in Washington public postsecondary education, 2009-10

	Total students	Percent of total
2008-09 graduates enrolled in Washington public postsecondary education in 2009-10	30,966	100%
Enrolled in any pre-college class (mathematics or English), 2009-10	12,077	39%
Pre-college mathematics (total including some also enrolled in pre-college English)	10,574	34%
Pre-college English (total including some also enrolled in pre-college mathematics)	5,278	17%
<i>Both pre-college mathematics and pre-college English</i>	3,775	12%

Figure 1: Pre-college course-taking rates, 2008-09 high school graduates enrolled in Washington public higher education in 2009-10



Washington's system of community and technical colleges (CTC) accounts for most pre-college enrollment.³ Students enrolling in the public 4-year institutions frequently satisfy their requirement for pre-college work at a community or technical college either prior to or concurrent with enrollment in the 4-year institution. Of all students enrolled in pre-college coursework, over 90 percent are served by the CTC system. Most pre-college enrollment offered by 4-year institutions is offered by institutions in locations without a nearby community or technical college.

³ The State Board for Community and Technical Colleges reports annually on students enrolled in pre-college work in the community and technical college system. <www.sbctc.ctc.edu/college/d_deveducation.aspx>

Pre-college Course-Taking and Student Characteristics

GENDER

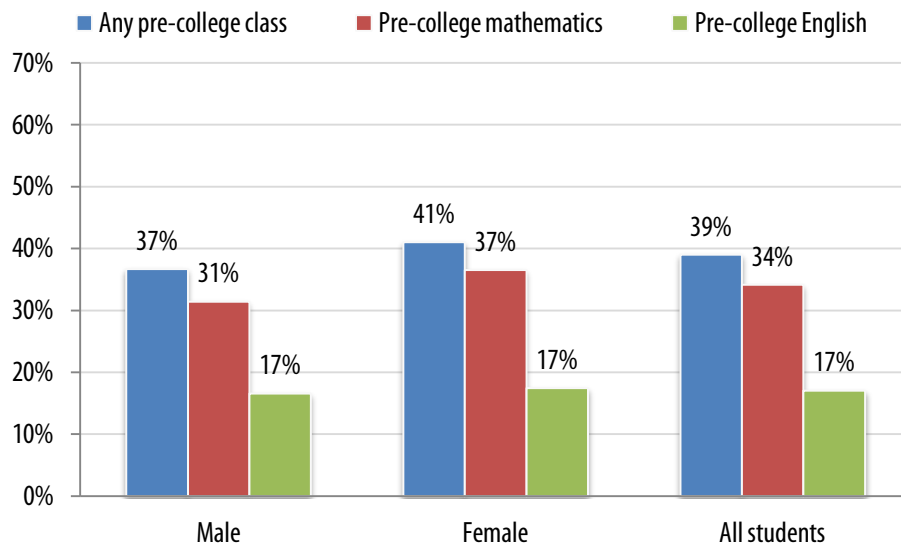
Male and female high school graduates enrolled in pre-college English classes at the same rate – 17 percent. Female graduates enrolled in pre-college mathematics at significantly higher rates than males, resulting in an overall pre-college course-taking rate of 41 percent for females and 37 percent for males.

Table 2: Pre-college course-taking rates by gender

Gender	Enrollment in Pre-college Course(s)				Pre-college Rate		
	No Pre-College	Math Only	English Only	Both	Any Course	Math	English
Male	9,134	2,900	758	1,635	37%	31%	17%
Female	9,755	3,899	745	2,140	41%	37%	17%
All students	18,889	6,799	1,503	3,775	39%	34%	17%

This is illustrated in Figure 2.

Figure 2: Pre-college course-taking rates by gender



STUDENT LOW-INCOME STATUS

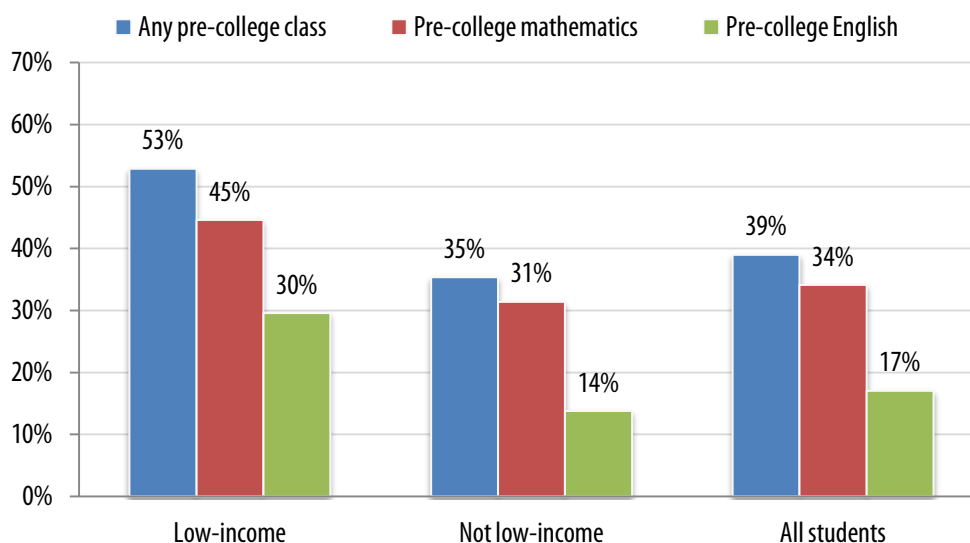
Pre-college course-taking rates of the graduates varied by income status. For K-12 students a student's free and reduced-price lunch eligibility status is frequently used as a surrogate for income status. Students eligible for free and reduced-price lunch are identified as low-income students. Table 3 shows the pre-college enrollment rates for mathematics and English for low-income students, students not considered low-income, and all students. Students classified as low-income enroll in pre-college courses at higher rates than those not classified as low-income.

Table 3: Pre-college course-taking by student low-income status (determined by eligibility for free or reduced-price lunch)

Low-Income Status	Enrollment in Pre-college Course(s)				Pre-college Rate		
	No Pre-College	Math Only	English Only	Both	Any Course	Math	English
Low-income	3,025	1,496	531	1,368	53%	45%	30%
Not low-income	15,864	5,303	972	2,407	35%	49%	14%
<i>All students</i>	<i>18,889</i>	<i>6,799</i>	<i>1,503</i>	<i>3,775</i>	<i>39%</i>	<i>34%</i>	<i>17%</i>

Figure 3 depicts the same information in chart form.

Figure 3: Pre-college course-taking rates by student low-income status (determined by eligibility for free or reduced-price lunch)



RACE AND ETHNICITY

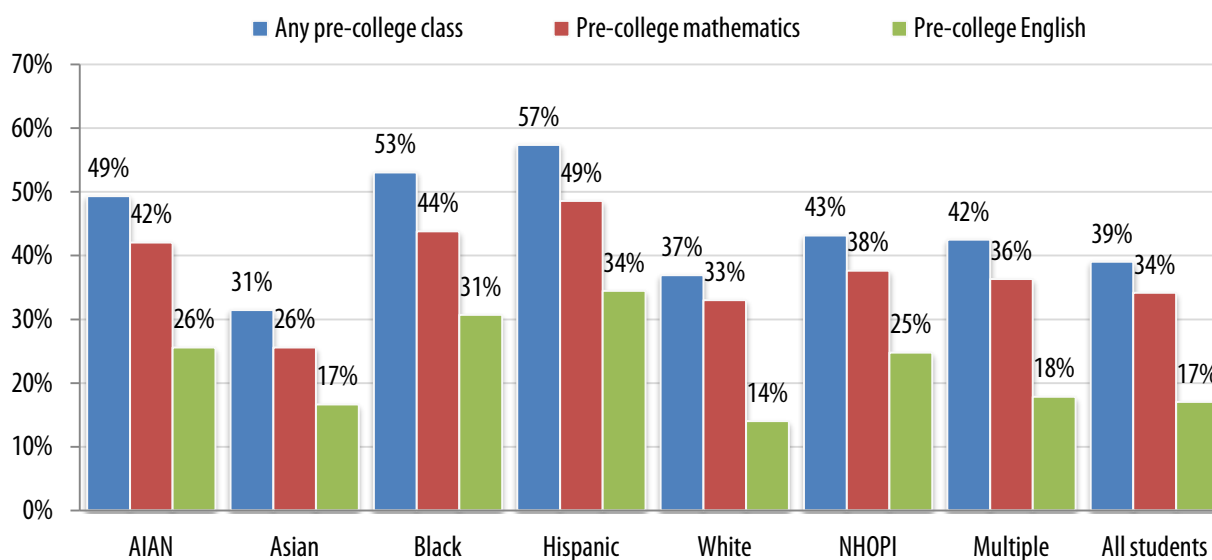
Asian students had the lowest rates of pre-college course taking overall – 32 percent. Asian students and white students had relatively low rates of pre-college course-taking in English. Asian students took pre-college mathematics classes at a rate much lower than the rate for all students.

Table 4: Pre-college course-taking rates by student race and ethnic categories

Race/ethnicity	Enrollment in Pre-college Course(s)				Pre-college Rate		
	No Pre-College	Math Only	English Only	Both	Any Course	Math	English
American Indian and Alaska Native	252	118	36	91	49%	42%	26%
Asian	2,406	520	207	377	31%	26%	17%
Black/African-American	649	309	128	296	53%	44%	31%
Hispanic/Latino	1,112	598	230	668	57%	49%	34%
White	14,184	5,145	873	2,277	37%	33%	14%
Native Hawaiian or Other Pacific Islander	62	20	6	21	43%	38%	25%
Multiple Races	187	80	20	38	42%	36%	18%
<i>All students</i>	<i>18,889</i>	<i>6,799</i>	<i>1,503</i>	<i>3,775</i>	<i>39%</i>	<i>34%</i>	<i>17%</i>

Figure 4 presents this information in chart form.

Figure 4: Pre-college course-taking rates by student race and ethnic categories



AIAN = American Indian and Alaska Native; Black = African-American or Black; Hispanic = Hispanic or Latino; NHOPI = Native Hawaiian or Other Pacific Islander; Multiple = Two or more Races

HIGH SCHOOL GRADE POINT AVERAGE (GPA)

It is logical that students with higher grade point averages (GPA) in high school would have lower rates of pre-college course-taking than those with lower GPAs. Higher GPAs may indicate greater student engagement in the mathematics and English courses taken in high school. Higher GPAs may be associated with students taking more rigorous mathematics and English courses as well. Both of these factors would likely be associated with lower pre-college course-taking rates.

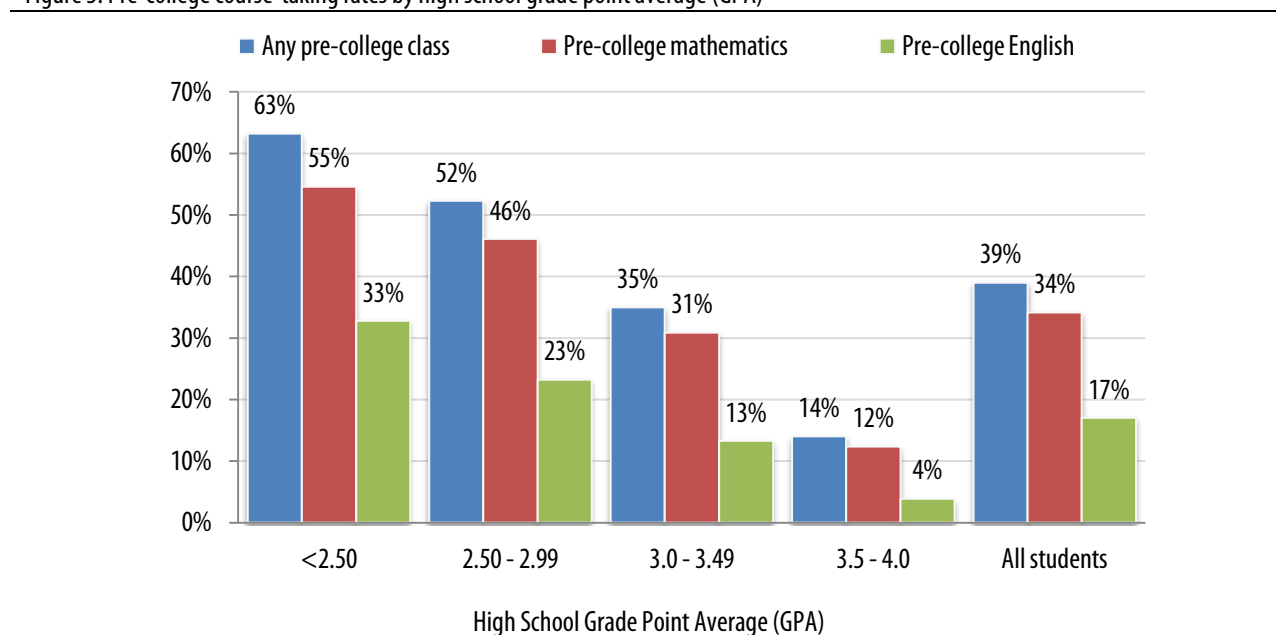
As expected, students in the highest high school GPA category (3.50 – 4.00) have the lowest overall rates of pre-college course-taking. An unexpected finding is the degree to which pre-college course-taking rates increase in the next lowest GPA category, 3.00 to 3.49. Pre-college course-taking rates are more than double those in the highest category.

Table 5: Pre-college course-taking rates by high school grade point average (GPA)

High school grade point average (GPA)	Enrollment in Pre-college Course(s)				Pre-college Rate		
	No Pre-College	Math Only	English Only	Both	Any Course	Math	English
Less than 2.50	2,145	1,766	498	1,409	63%	55%	33%
2.50 - 2.99	3,306	2,012	430	1,181	52%	46%	23%
3.00 - 3.49	5,662	1,885	355	803	35%	31%	13%
3.50 - 4.00	6,978	824	136	180	14%	12%	4%
<i>All students</i>	<i>18,889</i>	<i>6,799</i>	<i>1,503</i>	<i>3,775</i>	<i>39%</i>	<i>34%</i>	<i>17%</i>

This is illustrated in chart form in Figure 4.

Figure 5: Pre-college course-taking rates by high school grade point average (GPA)



Pre-college Course-Taking and School Characteristics

SCHOOL INCOME CATEGORY

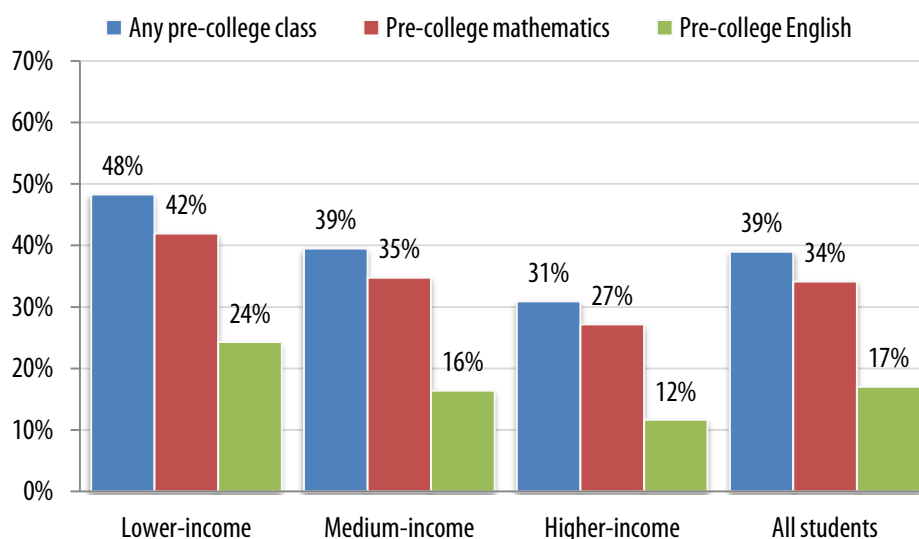
Students were classified by the percentage of students eligible for free or reduced-price meals at the school they attended. Three categories were identified, each corresponding to roughly one-third of the total number of graduates. Lower-income schools were those with 36.0 percent of students eligible for free or reduced-price meals. Higher-income schools were those with free or reduced-price lunch eligibility of 22.4 percent or less. Medium-income schools were those with free or reduced-price lunch eligibility rates of 22.5 through 35.9 percent. The calculation of free or reduced-price lunch percentages was based on the eligibility rates for all students at the school, not just the rates for the graduates examined here.

Figure 6: Pre-college course-taking rates by school income category (based on percent of students in school eligible for free or reduced-price lunch)

School income category	Enrollment in Pre-college Course(s)				Pre-college Rate		
	No Pre-College	Math Only	English Only	Both	Any Course	Math	English
Lower-income	4,832	2,242	595	1,679	48%	42%	24%
Medium-income	6,158	2,346	480	1,191	39%	35%	16%
Higher-income	7,870	2,195	425	903	31%	27%	12%
<i>All students</i>	<i>18,889</i>	<i>6,799</i>	<i>1,503</i>	<i>3,775</i>	<i>39%</i>	<i>34%</i>	<i>17%</i>

This information is presented in chart form in Figure 6.

Figure 6: Pre-college course-taking rates by school income category (based on percent of students in school eligible for free or reduced-price lunch)



Pre-college Course-Taking and Student plus School Characteristics

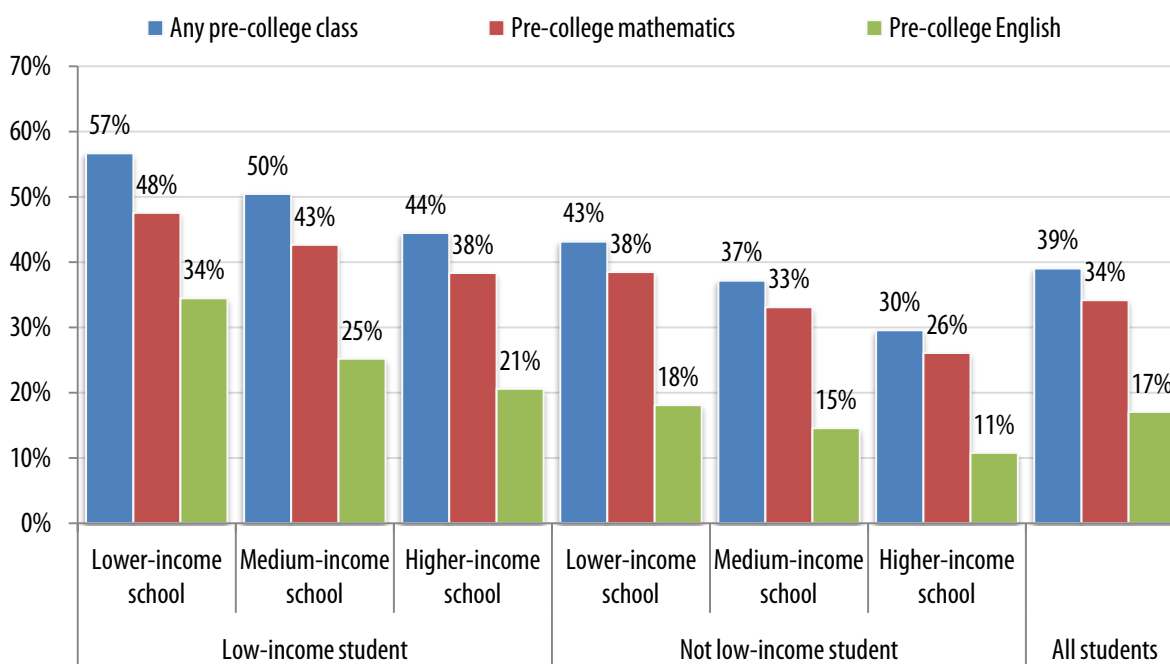
SCHOOL AND STUDENT INCOME CATEGORY

Combining student income characteristics and school income characteristics leads to interesting results. In Table 7, students are classified by both their individual low-income status and by the overall income status of the school they are attending, based on free or reduced-price lunch (FRPL) eligibility. As expected, the highest rates of pre-college course-taking are associated with low-income students who graduated from schools in the lowest income category. Pre-college course-taking rates for low-income students attending higher-income schools are very close to rates for students not classified as low-income attending lower-income schools.

Table 7: Pre-college course-taking rates by student income category (low-income and not low-income) and school income category (lower-income, medium-income, higher-income)

Student income category	School income category	Enrollment in Pre-college Course(s)				Pre-college Rate		
		No Pre-College	Math Only	English Only	Both	Any Course	Math	English
Low-income	Lower-income	1,549	793	326	906	57%	48%	34%
	Medium-income	886	452	140	310	50%	43%	25%
	Higher-income	581	250	64	151	44%	38%	21%
Not low-income	Lower-income	3,283	1,449	269	773	43%	38%	18%
	Medium-income	5,272	1,894	340	881	37%	33%	15%
	Higher-income	7,289	1,945	361	752	30%	26%	11%

Figure 7: Pre-college course-taking rates by student income category (low-income and not low-income) and school income category (lower-income, medium-income, higher-income)



Summary

Approximately 39 percent of the 2008-09 graduates of Washington public high schools who enrolled in public community or technical colleges or in public 4-year institutions enrolled in at least one pre-college course in English or mathematics.

Rates of pre-college course-taking varied by student characteristics and by school characteristics:

- Overall, female students enrolled in pre-college courses at higher rates than male students, largely due to their much higher participation in pre-college mathematics courses (37% compared to the male students (31%).
- Low-income students enrolled in pre-college English courses at higher rates than students not classified as low-income (30% vs. 14%). The differences were less pronounced than in pre-college mathematics course-taking, where low-income students enrolled at a 45% rate compared to a 49% rate for those not classified as low-income.
- Asian students had the lowest overall pre-college course-taking rates (31%). Hispanic/Latino students had the highest pre-college course-taking rates overall (57%).
- As expected, pre-college course-taking rates were lowest for students with the highest high school grade point averages (14%) compared to students in the lowest range (63%).
- Finally, school income category – based on the percent of students eligible for free or reduced-price lunch – was also related to pre-college course-taking rates. Low-income students at lower-income schools enrolled in pre-college courses at a higher rate (57%) than low-income students at higher-income schools (44%).

Answering one basic question almost always leads to other questions. Some that are suggested by the information presented in this report include:

What are the high school course-taking patterns associated with enrollment in pre-college courses after high school graduation?

How do students who take pre-college courses fare in their subsequent college career? How does their persistence in pursuing postsecondary education compare with students who do not take pre-college courses? Does it take longer for these students to graduate?

The comprehensive cross-sector P-20 education data that has been developed by ERDC will allow us to address such questions in the future.

Appendix A: Comparison of Approaches

Pre-college course-taking is the subject of several reporting efforts, each serving a particular need or requirement. The approaches vary by whether they are prospective (taking a cohort and looking forward) or retrospective (taking a cohort and looking backward). The length of time for the retrospective look varies from one to three years. Some approaches look at state-funded pre-college enrollments and others look at all enrollments, regardless of the source of funding. Some are focused on students who enroll in 2-year institutions, 4-year institutions, or any Washington public higher education institution.

Studies and Reports Related to Pre-College Course-Taking

Beginning with 2004-05, the State Board for Community and Technical Colleges (SBCTC) has published annual reports titled "*Role of Pre-College (Developmental and Remedial) Education for Recent High School Graduates Attending Washington Community and Technical Colleges – System Summary.*" These reports have focused on cohorts of students identified as recent high school graduates. They examine course-taking patterns and rates by demographic characteristics. Expenditures related to pre-college course-taking are assessed as well.⁴

ERDC developed this report to take a prospective look at public high school graduates who enroll in Washington public colleges and universities.

RCW 28B.10.685 requires public postsecondary institutions in Washington to report counts of high school graduates enrolling in pre-college courses in English and mathematics within three years of graduation from high school. Public higher education institutions and the community and technical college system as a whole report these counts to high schools, the Office of Superintendent of Public Instruction, and the State Board of Education.⁵ Reports responding to this legislative mandate are forthcoming and will be produced by ERDC on behalf of the state's public higher education institutions.

To receive funds under the federal State Fiscal Stabilization Fund (SFSF), states had to provide assurances, including an assurance addressing the collection and use of longitudinal education data. One of the requirements is that the State's P-20 data system include "information regarding the extent to which students transition successfully from secondary school to postsecondary education, including whether students enroll in remedial coursework."⁶ Washington has made this assurance

⁴ "Role Of Pre-College (Developmental And Remedial) Education For Recent High School Graduates Attending Washington Community And Technical Colleges" <http://www.sbctc.ctc.edu/college/d_deveducation.aspx>

⁵ RCW 28B.10.685 Precollege course work – Enrollment information – Report. <<http://apps.leg.wa.gov/rcw/default.aspx?cite=28B.10.685>>

⁶ SFSF funding requires that states provide assurances that longitudinal data systems will meet criteria identified in the America COMPETES Act of 2007. See "Required elements of a statewide P-16 education data system" in Subtitle D –

based on ERDC cross-sector linking capabilities. The ERDC P-20 Reports to High Schools and Districts satisfy this requirement.

The table that follows summarizes the characteristics of the five products described above.

Product	Cohort studied ("universe")	Prospective or retrospective
SBCTC annual report – "Role of Pre-College Education for Recent High School Graduates Attending Washington Community and Technical Colleges"	CTC students enrolled in a particular year with a focus on those who graduated from high school in recent years	Retrospective
P20 High School Feedback Reports for Washington State high schools and school districts (www.erdcddata.wa.gov/)	Public high school graduates in a single academic year	Prospective
RCW 28B.10.685 reports (forthcoming on ERDC website (www.ercd.wa.gov))	Public postsecondary students (CTCs and 4-year institutions) in a particular academic year who have graduated from high school within 3 years of enrolling in a pre-college course	Retrospective
This ERDC report " Enrollment in Pre-College-Level Coursework: Washington State High School Graduates	Public high school graduates in a single academic year	Prospective
SFSF assurance (met by ERDC P-20 Reports to High Schools and Districts)	Public high school graduates in a single academic year	Prospective

Alignment of Education Program. Full text of the America COMPETES Act is available at:
http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_bills&docid=f:h2272enr.txt.pdf

Appendix B: Data Definitions

Definitions

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

In instances where a student is associated with more than one graduation record, the one associated with the school primarily responsible for the student is included in this analysis.

Graduates included in this study were those 2008-09 high school graduates who enrolled in a Washington public higher education institution in 2009-10. Pre-college course-taking was not assessed for students attending private institutions in Washington or for students attending out-of-state institutions.

Low-income status for a student is determined by the free/reduced-price eligibility status of the student as contained in the graduation record.

School income level is defined based on the percentage of students at the school eligible for free or reduced-price lunch.

Race, ethnicity, and gender for students are based on data elements in the graduation record. For 2008-09, eight race/ethnic categories were used:

- American Indian and Alaska Native (AIAN)
- Asian
- Black or African-American
- Hispanic or Latino
- Caucasian or White
- Native Hawaiian or Other Pacific Islander (NHOPI)
- Of more than one race or Multiracial
- Not provided

Data is presented for specific race/ethnic categories only

Grade Point Average (GPA) is based on data contained in the student graduation record. GPA is reported for most graduates.