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Clackamas Community College: Data Exploration Project

December 2008

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December 2008

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Executive Summary

The Clackamas Community College (CCC) community—consisting of board members, administrators, faculty, staff, and students—is working together to ensure the education and training services provided through CCC are meeting the community's needs and helping students reach their full potential as learners and community members.

In an effort to learn more about the trends and changes happening in the college and the larger community, CCC asked MPR Associates to explore 10 areas it considers high priority, both in the short- and long-term. Working with CCC staff, MPR researchers accessed CCC internal student, course, and enrollment records, high school transfer data, census records, labor market information, and state enrollment data. This Executive Summary provides brief highlights of some of the key findings and observations of that exploration.

Enrollment

Due to differences between CCC internal data and state-reported full-time equivalent (FTE) enrollment numbers, researchers consulted FTE information through the Oregon Department of Community Colleges and Workforce Development (CCWD) to explore enrollment trends. According to the state, CCC's total FTE and funding formula FTE have been trending downward since 2003–04 and hit a six-year low (7,436.55 total and 7,200.82 funding formula FTE) in 2006–07, the most recent year of data available.

According to the results derived using a newly developed method of identifying a student's program by his or her course-taking activity, CCC saw a 38 percent growth in Lower Division Collegiate programs from 2001–02 through 2006–07. And Supplemental Technical FTE increased more than 127 percent in the same time period.

Students

Prior to 2006–07, most CCC students (nearly 70 percent) lived inside the district boundaries. That changed dramatically in 2006–07; in that year more CCC students lived outside the district boundaries (46 percent) than inside (43 percent).

The enrollment status of students (i.e., the proportion who attend full, half, or part time) has been stable since the early part of the decade. Approximately 80 percent of CCC students attend part time (0.1–254.99 clock hours), 12 percent attend half time (255–509.99 clock hours), and only 8 percent attend full time (510 clock hours or more).

Adult Education Target Population

According to the 2006 American Community Survey, the census area that includes all of Clackamas County and a portion of eastern Multnomah County (Super-PUMA 41502) houses 388,778 adults (i.e., people over the age of 16). Of those, 40,029 (10 percent) do not have a high school diploma or equivalent and are not currently enrolled in school. Another 12,685 (3 percent) possess a high school diploma or equivalent, but report they do not speak English or speak English less than "very well."

The adult education target population has declined approximately 6 percent, from 42,651 individuals in 2000 to 40,029 individuals in 2006. However, the limited English proficiency with diploma population has increased more than 82 percent, from 6,953 in 2000 to 12,685 in 2006.

Of the more than 40,000 adults with no diploma who are not enrolled in school, 38 percent (15,576) have less than a 9th-grade education. The remaining 62 percent (24,453) have completed at least one year of high school education.

Nearly 60 percent of Hispanic/Latino adults age 16 years and older are part of the adult education target population or the limited English proficient with diploma population—a much higher proportion than any other racial or ethnic group.

Persistence and Transition to Credit Courses

According to available data, nearly 60 percent of students who were enrolled in credit courses in Fall 2001 and Fall 2004 persisted in taking one or more credit courses within three academic years.

Among students with a known gender, females were slightly more likely to persist in credit courses within three years than were males. However, the difference is not large, and in both years the number of males persisting is larger than the number of females persisting.

Students younger than age 25 persisted at much higher rates (70 percent or more) than students age 25 years and older (less than 60 percent). Working-age students 45 to 64 years of age had the lowest persistence rates, with fewer than 4 students out of every 10 persisting in credit courses sometime in a three-year period. In contrast, nearly 3 of every 5 students younger than 25 years old persisted in credit courses within three years.

Very few students who took one or more Adult Basic Skills (ABS) courses in 2001–02 or 2004–05 went on to take a credit course within three years. Of the students who took at least one ABS course in 2001–02, only one in seven students (14 percent) took a credit course by the end of 2003–04. And for students who took at least one ABS course in 2004–05, one in five (20 percent) took a credit course by the end of 2006–07.

Among ABS students who transitioned into credit courses, the vast majority did so in the same year they took an ABS course.

High School Transfer

Nearly 500 2005–06 graduates of Oregon public high schools attended CCC in Fall 2006. Of those 498 students, 326 attended a high school located within the Clackamas Community College district.

Course Capacity

According to Clackamas data for all program areas in the years 2001–02 through 2006–07, on average, while a little more than one-third of the *seats* in each section were full, only about one out of every seven *sections* was actually full.

Postsecondary Remedial courses had the highest average of seats filled per section at 69.8 percent and Adult Continuing Education (ACE) Non-reimbursable courses had the lowest at 15.3 percent.

The Wilsonville campus had the highest percentage of full sections with 51.6 percent of its sections full, compared to only 19 percent for the Main Campus and 9.4 percent for the Harmony campus.

Classes held only on Friday mornings had the highest average student enrollment with 29.9 students per section. CCC classes held only on Monday, Tuesday, or Thursday mornings also had relatively high enrollment numbers (21.1, 20.6, and 22.2 students, respectively). Low enrollment classes (10 or fewer students enrolled)

were generally held on Saturday evenings or afternoons, or were held four or more times per week.

Penetration Rate

According to available data for 1999–2000, 2004–05, 2005–06, and 2006–07, Clackamas' penetration rate was at its highest (8.5 percent) in 1999–2000. In recent years, the college's penetration rate has ranged from 6.4 percent to 7.7 percent, much lower than the early part of the decade.

Labor Market Information

According to information available through the Oregon Employment Department, there will be an estimated 147 high-wage, high-skill, high-demand occupations available in Clackamas County from 2006 to 2016.

Among the projected high-skill, high-wage, high-demand occupations, 60 (41 percent) are expected to typically require a bachelor's degree. Thirty-eight occupations (26 percent) are likely to require some form of postsecondary vocational training or an associate's degree. And although 34 occupations (23 percent) require only long-term on-the-job training or work experience, the competitive education requirement for these occupations is postsecondary training or higher.

Acknowledgments

This report was produced at the request of Clackamas Community College (CCC) and was guided by staff from CCC's Student and Enrollment Services Division and the Curriculum and Reporting Office. MPR Associates would like to extend its thanks to the many members of the college community who assisted with this project, and in particular, to Joanne Truesdell, President; Diane Drebin, Dean of Enrollment Services; and Judy Redder, Curriculum and Reporting Operations Manager.

The author would also like to thank Stephen Lew and Xiaojie Li of MPR Associates for providing programming expertise and Barbara Kridl, Natesh Daniel, Martha Hoeper, and Alicia Broadway of MPR Associates for editing, designing, and producing the report.

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Introduction

Clackamas Community College (CCC) is a two-year college offering academic and career education to more than 30,000 students a year. CCC has multiple campuses and extension sites, with a large main campus in Oregon City and smaller campuses and sites in Harmony, Wilsonville, Estacada, and Molalla.

CCC's mission "[i]s to serve the people of the college district with high quality education and training opportunities that are accessible to all students, adaptable to changing needs, and accountable to the community we serve." Under the leadership of the CCC Board and President Joanne Truesdell, CCC is embarking on a renewed effort to incorporate data and information into its decision making and develop innovative ways to inform the local community about CCC's education services and performance.

CCC has identified a pressing need to know more about the patterns and trends in the college's enrollment data and the college's capacity to effectively meet community needs in the future. Clackamas has two primary objectives for this exploratory data analysis project:

1. gain access to reliable information the college can use immediately to make budget and planning decisions for the next two years, and
2. build a foundation for an ongoing research plan that CCC can use to analyze its data internally.

CCC identified several high-priority questions related to enrollment, capacity, and student outcomes that served as the foundation for the project and the following report. The questions were initially divided into four separate "tasks" and this document represents the findings of all four tasks. The following sections of the report review the overall project methodology and present the findings for each of CCC's priority questions.

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Methodology

MPR Associates and staff from Clackamas Community College's Student and Enrollment Services Division and the Curriculum and Reporting Office collaborated to refine CCC's original question topics and determine the appropriate methods for addressing each one. The following section details the overall approach researchers used to mine CCC data records. When more specific methodologies were used to address individual questions and topics, information about those methodologies is included within the section.

Clackamas Community College Data and Protocols

Clackamas provided MPR with a detailed background on how the college has historically populated and used its Datatel database. Current CCC staff have made substantial progress in updating the approach and technology used for the database and are continuing to build on the work of staff who originally established the data system. Originally, the information technology and research departments developed and wrote three separate programs that allowed researchers to pull course, enrollment, and student data files. Each extract was written and maintained at different times by different individuals. The extracts were designed to focus on specific data elements and pulled data from different tables within Datatel, which meant that the resulting student, enrollment, and course files were not linked to each other. As a result, files extracted during those years cannot be matched to one another.

In 2005–06, CCC upgraded its Datatel system and changed the database's operating system. This resulted in changes to internal processes and some procedures could no longer be used with the new system. The process for extracting data was greatly affected, and as a result, data for the 2005–06 year were very difficult to extract and deliver to the state. CCC staff in the research and information technology departments worked closely with the state to meet its annual reporting obligations and have since been building new data processes that link the course, enrollment, and student files. Beginning with the 2006–07 academic year, CCC anticipates that the student, enrollment, and course files will match much more closely, and eventually will match exactly. However, because CCC is in the process of standardizing its data

collection approaches, both the college and MPR were aware that data from earlier years were likely to pose challenges in terms of validity.

Data Exploration

The college provided MPR with six full years and one partial year of data files from its Datatel database, including student records, enrollment data, course information, and waitlist data. The files were carefully stripped of information that could identify students and MPR provided CCC with a secure means of transferring all files.

Researchers initially employed exploratory techniques to assess the information available in the files, as well as the validity and reliability of the records. Consistent with the background information CCC provided, MPR found that, in fact, data in student, enrollment, and course files from earlier years did not match. As a result, researchers could not identify data for several topics that had the level of validity needed to generate reliable results. After several months of exploration and discussion with the college, CCC administrators and MPR researchers determined to move forward with the information that was available and answer questions by focusing on trends rather than specific data points. This approach provides the college with a basis for discussing the changes it is seeing in enrollment and capacity as well as a starting point for developing future research questions and research plans.

Changes in Full-Time Equivalent Enrollment

The changes in headcount and full-time equivalent (FTE) enrollment in recent years have been a concern for many Oregon community colleges. Clackamas Community College is looking for a way to better understand and interpret its enrollment trends and ensure the college's internal, interim estimates are consistent with final state-reported numbers. The following section explores recent trends in the college's headcount and FTE enrollment, and poses questions for the college to consider as it makes its enrollment plans.

Methodology

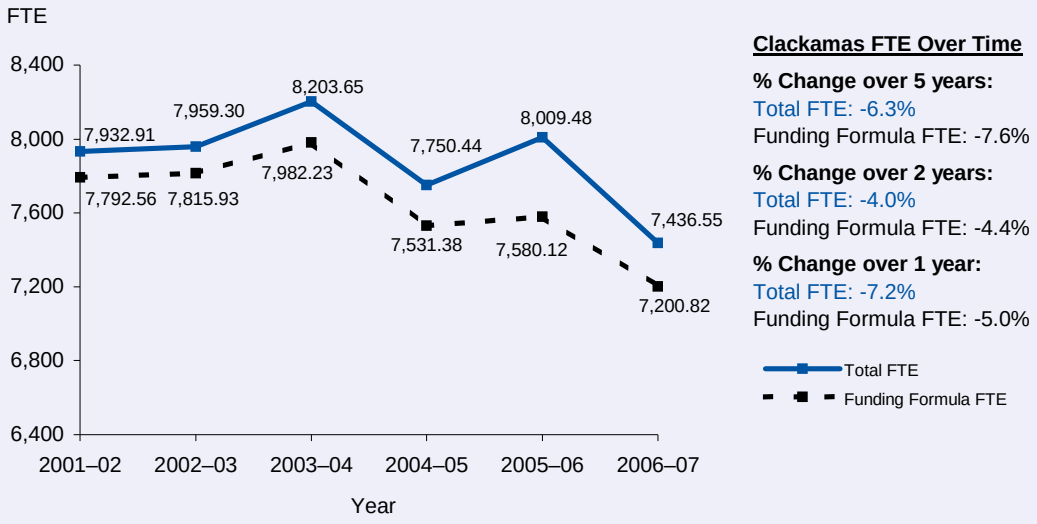
Because CCC's student, enrollment, and course files do not match in most of the years prior to 2006–07, researchers knew the results of any analysis of FTE for those years was likely to be unreliable and would not match state information. Because state data are used in all aggregate statewide reporting and for distributing state funds, MPR and CCC chose to use state records to explore FTE trends. MPR accessed state data available through the Community Colleges and Workforce Development's (CCWD) website at www.oregon.gov/ccwd. CCWD had data available through the 2006–07 academic year at the time this report was created.

FTE Trends

Over the last five years, CCC full-time equivalent enrollment has been trending downward, although FTE has been somewhat volatile in the last three years. As displayed in figure 1, between 2001–02 and 2006–07, the college saw large declines in both total FTE (-6.3 percent) and Funding Formula FTE (-7.6 percent).

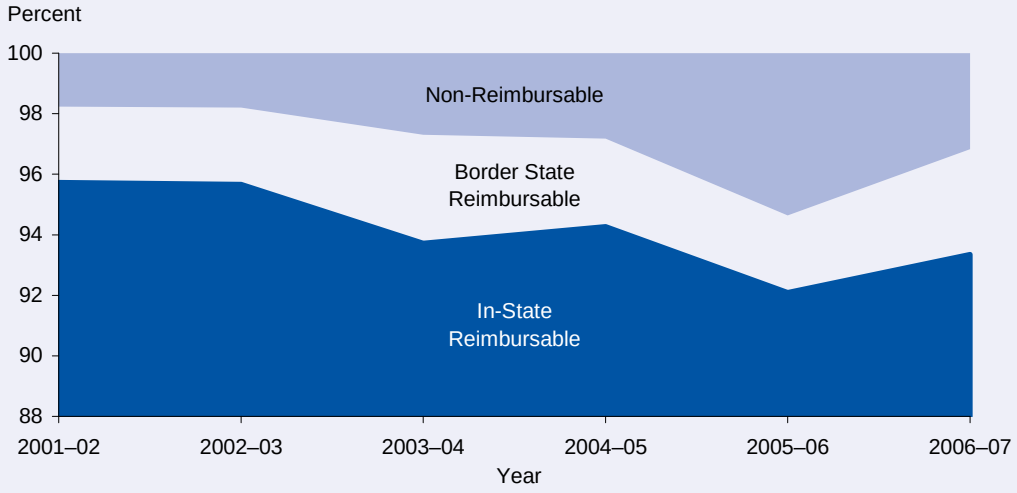
While non-reimbursable FTE still represents only a small part of CCC's total FTE (3.2 percent), it has grown by nearly 80 percent in the past five years. During the same period, border-state reimbursable FTE grew by 39 percent, and now represents 3.5 percent of total FTE. Neither of these gains represents large numbers of students, although it is a shift in the mix of CCC's student population and the programs those students take (figure 2).

Figure 1. Clackamas Total FTE and Funding Formula FTE: 2001–02 to 2006–07



SOURCE: Oregon Department of Community Colleges and Workforce Development, *Community College Profiles.*

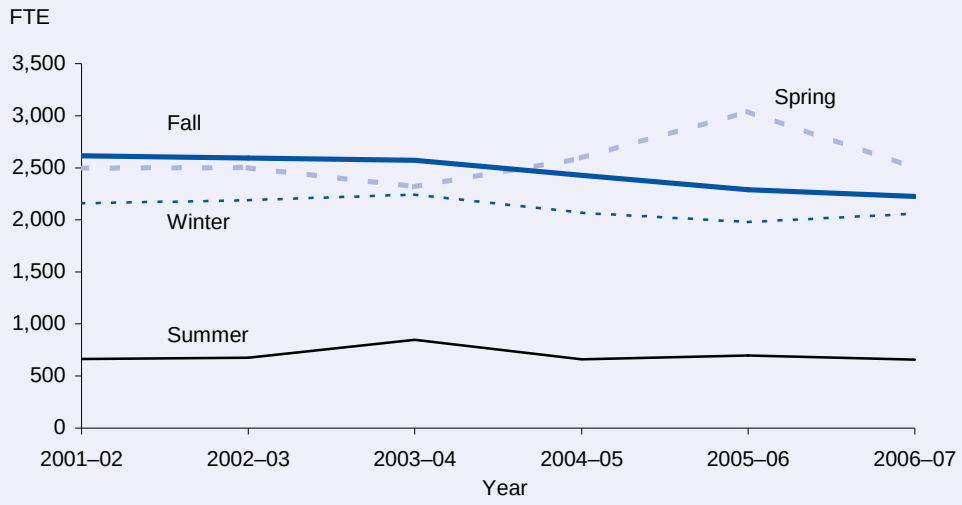
Figure 2. Proportion of Reimbursable and Non-Reimbursable FTE: 2001–02 to 2006–07



SOURCE: Oregon Department of Community Colleges and Workforce Development, *Community College Profiles.*

FTE enrollment in Fall term has declined steadily over the past five years, dropping nearly 15 percent in that period, while Summer and Winter terms have remained relatively flat over time. Although Spring term enrollment was almost identical in 2006–07 and 2001–02, the college saw a spike in Spring FTE enrollment in 2005–06 (figure 3). The college reports this spike was an anomaly and CCC does not anticipate this growth will persist in future Spring terms.

Figure 3. Total FTE by Term: 2001–02 to 2006–07



SOURCE: Oregon Department of Community Colleges and Workforce Development, *Community College Profiles.*

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FTE by Program Area According to Student Course-taking Activity

MPR and Clackamas developed a methodology for determining each student's program area by reviewing his or her course-taking activity throughout the year. Program area has historically been hard to identify for a variety of reasons, primarily because students are not asked to update their program area or educational goals over time. In using course-taking behavior, CCC and researchers hoped to clarify which program represented the student's primary area within each year. Future research could potentially expand to use course-taking behavior to identify a student's program over multiple years. In addition to providing knowledge about students' program areas, course-taking behavior offers insight into what courses and programs the college may need to offer each year.

Methodology

The course-taking methodology differs from the traditional approach of using student intent, which is usually collected the first time a student registers, to determine his or her program. Currently, student intent is believed to be a largely unreliable method for determining program area since student goals change over time and student intent is generally not updated to reflect those changes. Students may also indicate they are interested in pursuing a degree or certificate even when they are not because federal financial aid is more readily available to degree-seeking students.

The following results represent CCC's first attempt at defining program by behavior. Future research will likely refine this methodology and address some of the limitations found in the current process. Those limitations include the following:

1. Not all students could be assigned to a program area due to lack of sufficient data or because they took the same number of courses in two or more program areas.
2. The methodology does not accurately identify students in Adult Basic Skills programs.
3. Historic student enrollment files do not match accurately to course records, so in several years, the number of FTE generated using this methodology differs from the records CCC reported to the state.

To identify each student's program area, researchers first identified a program area for each course in each term using Activity Codes (ACTI codes). CCC provided a crosswalk of ACTI codes to program area for this purpose. Next, researchers merged those codes with the student enrollment file so that every student had an ACTI code assigned to each course they took in that year. The process to identify program area followed a prioritization methodology, where if a student fell into an earlier category, he or she was assigned that program area and was not considered when reviewing the subsequent steps of the program area assignment process. MPR used the following prioritization method:

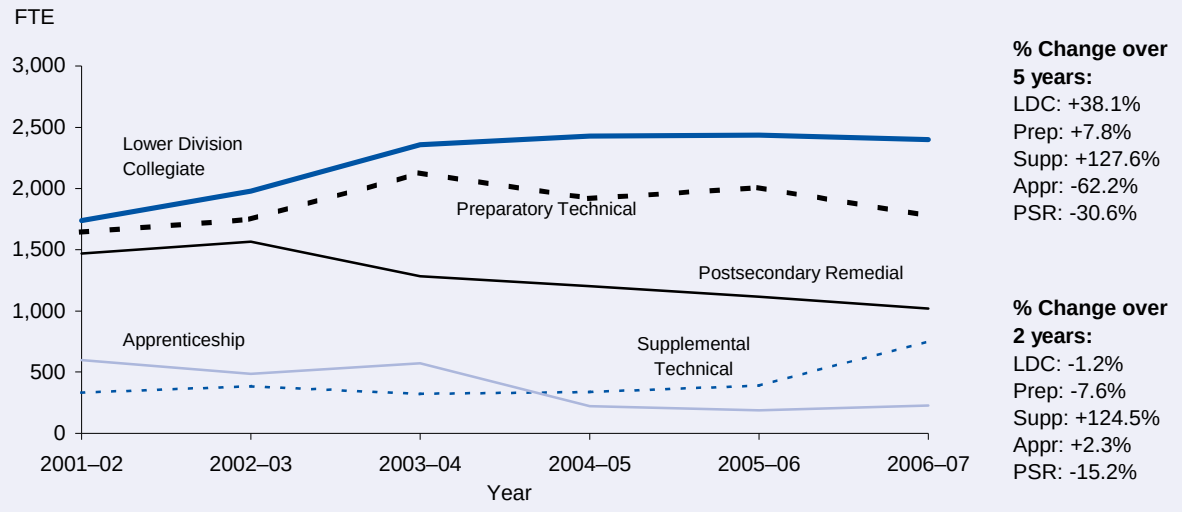
1. If a student enrolled in at least one course in a given area and no courses in all other areas, then that area is the student's program.
2. If a student enrolled in at least two courses in "Postsecondary Remedial" then that is the student's program area.
3. If a student enrolled in at least two courses in "Apprenticeship" then that is the student's program area.
4. If a student enrolled in at least two courses in "Preparatory Technical" then that is the student's program area.
5. If a student enrolled in at least two courses in "Supplemental Technical" then that is the student's program area.
6. If a student enrolls in more courses in one program area than any other, that area is the student's program area.

A student is missing a value for program area if researchers could not identify a program area for any course the student enrolled in or the student has two or more program areas that are tied for the greatest number of courses.

FTE in Credit Programs

Overall, Clackamas is experiencing the most growth in its Lower Division Collegiate (LDC) program; LDC FTE has increased 38 percent since 2001–02, although that growth appears to have leveled off in the past three years. Supplemental Technical also saw a surge in enrollment, with an FTE increase of 95 percent between 2005–06 and 2006–07 (figure 4). Prior to 2005–06, Supplemental Technical was fairly stable, so the college may be interested in looking for the causes of the change. Two possible reasons, identified in collaboration with CCC staff, could be a sudden increase in high school student enrollment in that program area or a change in one of the college's internal processes for coding and tracking courses and programs.

Figure 4. FTE in Credit Programs: 2001–02 to 2006–07



SOURCE: Clackamas Community College course and enrollment data.

While LDC course-taking was increasing, Postsecondary Remedial (PSR) course-taking was on an inverse path, dropping more than 30 percent in five years. It is unclear whether this should be a cause for concern: it could indicate fewer entering students require remedial mathematics, reading, and writing courses before taking college-level courses. However, the college would need to explore its placement test records to determine if that theory has any merit. Another possibility is that students feel their resources are better spent on college-level courses that count toward a degree or certificate, so opt out of taking remedial courses, even when placement tests indicate they need remedial coursework. These are only two possibilities among many, and Clackamas may wish to explore this enrollment change further to identify the true cause.

FTE in Adult Basic Skills Programs

It is clear the current methodology—using course-taking to identify program area—does not accurately determine which students are in Adult Basic Skills (ABS) programs. According to data reported to CCWD, Clackamas has one of the largest ABS programs in the state, second only to Portland Community College (Oregon Department of Community Colleges and Workforce Development, 2007). In contrast, the course-taking methodology identified only a third of ABS students reported to the state in 2005–06, and in some years, did not categorize any students as enrolled in the Adult Basic Education (ABE) program (table 1). It is possible that some General Educational Development (GED) students are miscategorized under

Table 1. FTE in Adult Basic Skills Programs: 2005–06

	English as a Second Language	Adult Basic Education	General Educational Development	Adult High School Diploma	Total ABS
Student intent[1]	836.61	273.65	374.02	145.24	1,629.52
Course-taking	282.15	0.00	63.95	250.31	596.41

[1] Methodology used to report enrollments by program area to Oregon Community College Unified Reporting System (OCCURS).

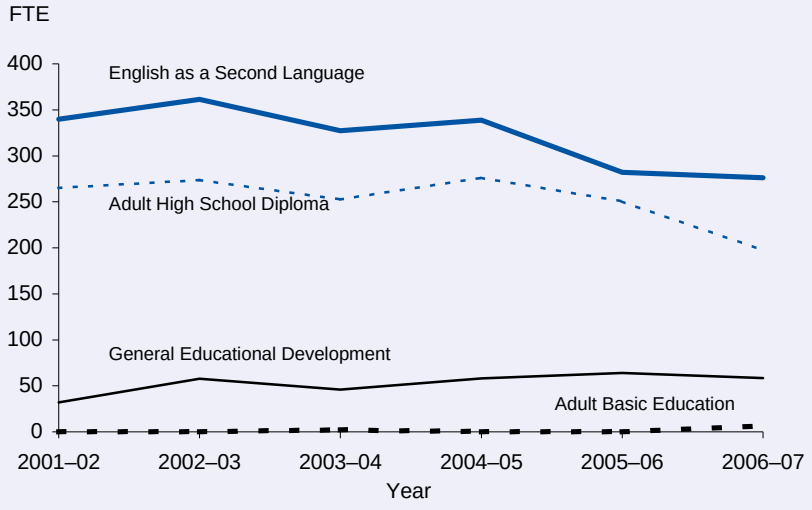
SOURCE: Oregon Department of Community Colleges and Workforce Development, *Community College Profile: 2005–06*; Clackamas Community College course and enrollment data.

this methodology as Postsecondary Remedial, but that does not explain why so few students are found in English as a Second Language (ESL) and ABE programs.

Clackamas and MPR anticipated differences between the two methods, but these discrepancies are too great and indicate the course-taking methodology is not yet accurate enough to identify students in these programs. As the college seeks to refine the new methodology for determining program area, it will need to look closely at ABS programs to determine how to accurately categorize students enrolled in these areas.

Figure 5 displays enrollment in ABS programs using the course-taking methodology. However, for the reasons stated above, these results should not be used for policy-making relating to ABS enrollment. The results are highly questionable, and will not serve as a valid basis for enrollment planning.

Figure 5. FTE in Adult Basic Skills Programs: 2001–02 to 2006–07

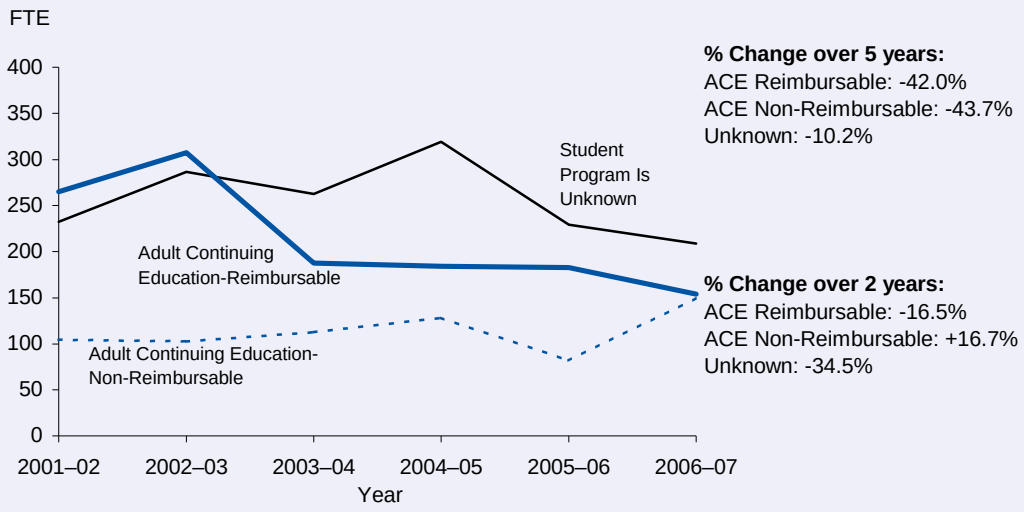


SOURCE: Clackamas Community College course and enrollment data.

FTE in Other Programs

Following the legislature's elimination of much of the funding for Adult Continuing Education (ACE) courses in the early part of the decade, Clackamas rapidly lost approximately 40 percent of its reimbursable ACE courses. That change was not matched with an immediate increase in non-reimbursable ACE courses, but over time, non-reimbursable ACE has grown just over 43 percent (figure 6).

Figure 6. FTE in Adult Continuing Education and Unknown Programs: 2001–02 to 2006–07



NOTE: Student program is unknown when a program area could not be identified for any course the student enrolled in, or when the student has two or more program areas that are tied for the greatest number of courses.
SOURCE: Clackamas Community College course and enrollment data.

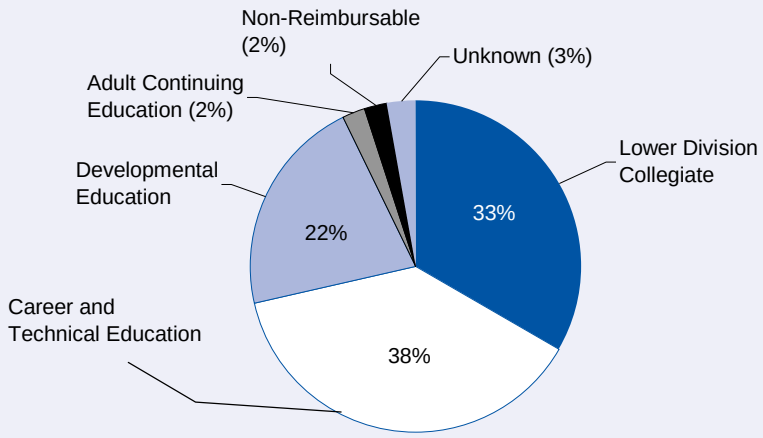
Course-taking Versus Student Intent

In order to show the differences between the course-taking methodology and the traditional method of using student intent to identify program area, researchers collapsed CCC's program area categories into the categories the Oregon Department of Community Colleges and Workforce Development presents in the annual *Community College Profiles*.[1] Those categories include Lower Division Collegiate, Career and Technical Education (or Professional Technical), Developmental Education, Adult Continuing Education, and Non-Reimbursable.

[1] CCWD's annual *Profiles* can be found on its website, at http://www.oregon.gov/CCWD/pub_rpts.shtml#Community_College_Profiles.

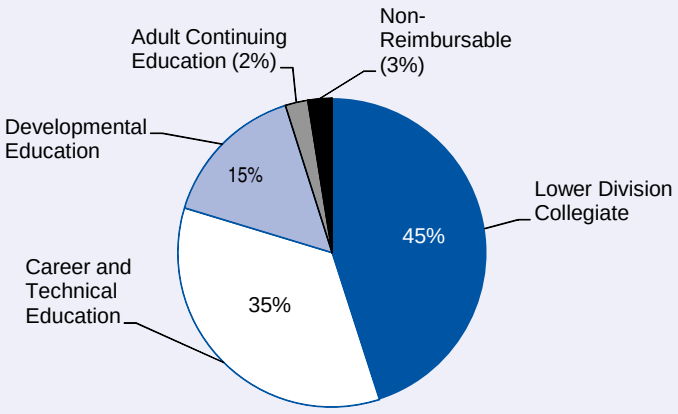
Notably, the Developmental Education program area is much larger when using students' course activity to identify their program area (figures 7 and 8). The state includes all the Adult Basic Skills programs (ABE, ESL, GED, and AHSD [Adult High School Diploma]) as well as Postsecondary Remedial in the Developmental Education category, so researchers mirrored that approach for this comparison. Based on the differences noted in table 1 above, it is clear the growth in the Developmental

Figure 7. FTE by Program Area: 2006–07 Course-Taking Methodology



NOTE: Developmental Education includes Adult Basic Education, English as a Second Language, General Educational Development, Adult High School Diploma, and Postsecondary Remedial.
SOURCE: Clackamas Community College course and enrollment data.

Figure 8. FTE by Program Area: 2006–07 Student Intent Methodology



NOTE: Developmental Education includes Adult Basic Education, English as a Second Language, General Educational Development, Adult High School Diploma, and Postsecondary Remedial.
SOURCE: Oregon Department of Community Colleges and Workforce Development, *Community College Profile: 2006–07*.

Education category is not due to the course-taking methodology overestimating the number of students in ABS programs. The difference may be due, at least in part, to the course-taking methodology categorizing all students who take two or more PSR courses, regardless of other course-taking activity, into the PSR category. At first glance, this seems counterintuitive to the findings reported earlier in figure 4, which showed that PSR has declined over 30 percent since 2001–02. However, while the *number* of PSR students may have declined, the *proportion* of CCC's programs that PSR represents appears to have grown. While it is possible part of this change is due to a miscategorization of some career and technical education students who take pre-collegiate mathematics courses to fill the requirements of their program, Postsecondary Remedial students have historically been hard to identify, and this methodology may be one step closer to accomplishing that task.

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About CCC Students

CCC is interested in understanding its students' circumstances in order to better serve them. The following section presents information about CCC students, including residency, demographic characteristics, and enrollment status.

Methodology

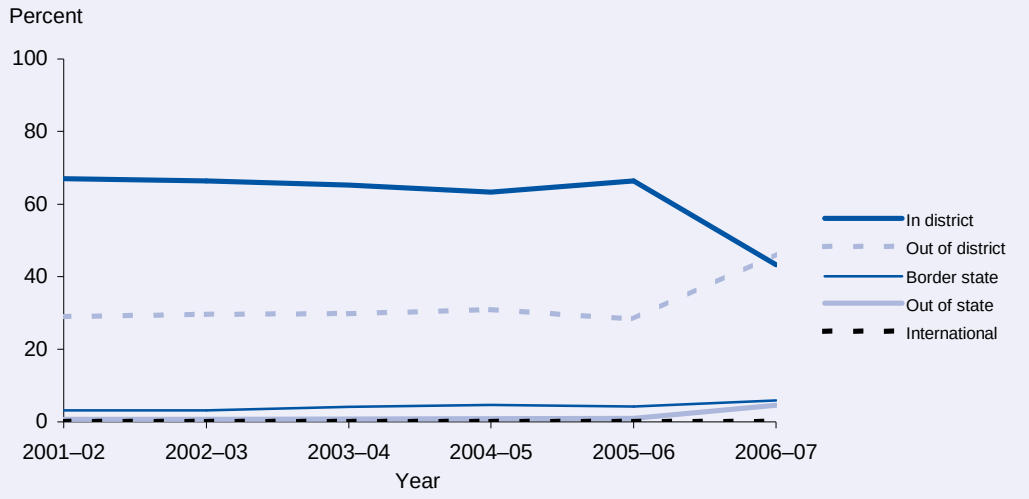
MPR retrieved information about student demographics and residency from CCC's student files. Data regarding enrollment status (full-, part-, or half-time enrollment) was available through CCC enrollment files.

Residency

For the five years prior to 2006–07, nearly 70 percent of Clackamas students lived within CCC's district boundaries and nearly all students lived in the state of Oregon. A very small proportion of students lived out-of-state or were from other counties. However, that student mix appears to be changing. For the first time, in 2006–07, more CCC students lived outside the college's district (46 percent) than inside (43 percent) (figure 9). There are a number of factors that may be causing this shift, including:

- Students may be taking advantage of the increased program and transfer alignment among community colleges and between community colleges and universities. Students can now be assured credits they take as part of an Associate of Arts—Oregon Transfer degree and the Oregon Transfer Module will be accepted at any community college or Oregon public university, allowing them to take classes when and where it is most convenient for them.
- Students may be engaging in distance learning, which allows students from any point in the state, country, or around the world to take some of Clackamas' courses.

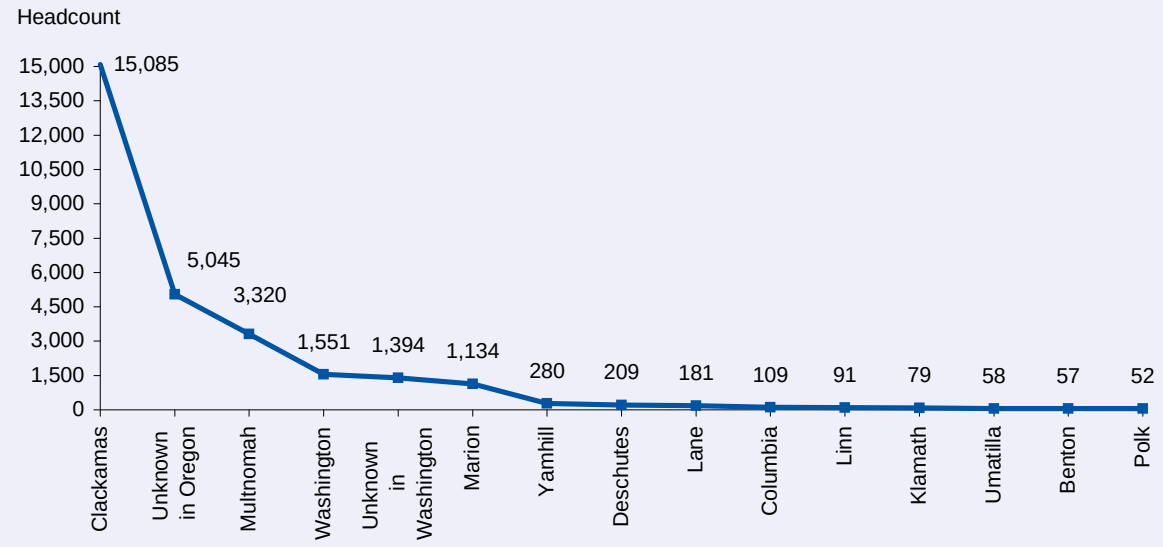
Figure 9. Student Residency Status: 2001–02 to 2006–07



SOURCE: Clackamas Community College student data.

In 2006–07, nearly half of all CCC students listed their home address as Clackamas County. Another 20 percent of students were from three counties near the college: Multnomah (11 percent), Washington (5 percent), and Marion (4 percent). Clackamas records also indicate that a large percentage of students hail from Oregon and Washington, but their specific counties are unknown (21 percent). Figure 10 shows the 15 counties with the highest representation among CCC's student population in 2006–07.

Figure 10. Top 15 Student Home Counties: 2006–07



SOURCE: Clackamas Community College student data.

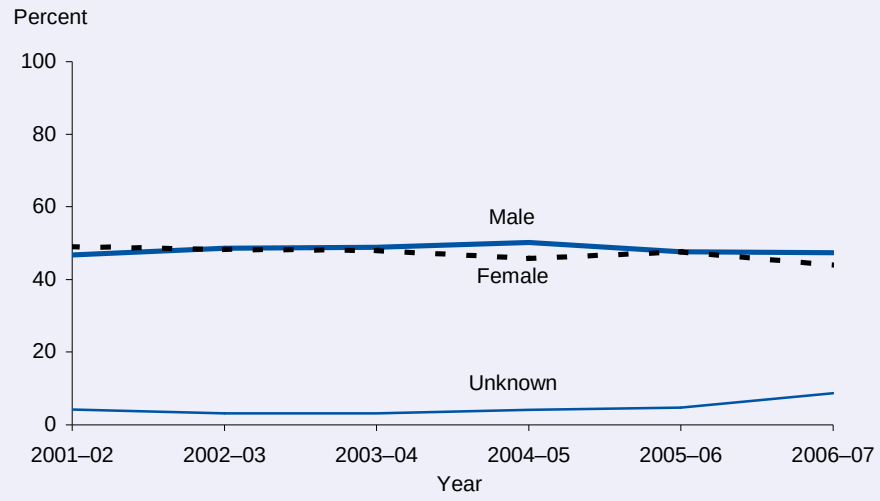
Student Demographics

Researchers looked at the demographics of CCC students using student data files for six years. The college is interested in learning if any shifts in demographics—including gender, age, and race/ethnicity—indicate a need for the college to change how it serves students.

Gender

Clackamas' gender mix is fairly even among all students (figure 11). More research is likely needed to explore the gender balance within programs, particularly programs that lead to occupations listed as "nontraditional" for one gender.[2] CCC may also wish to investigate the growth in the percentage of students with an unknown gender: nearly 10 percent of students in 2006–07 did not have gender listed on their records.

Figure 11. Student Gender: 2001–02 to 2006–07



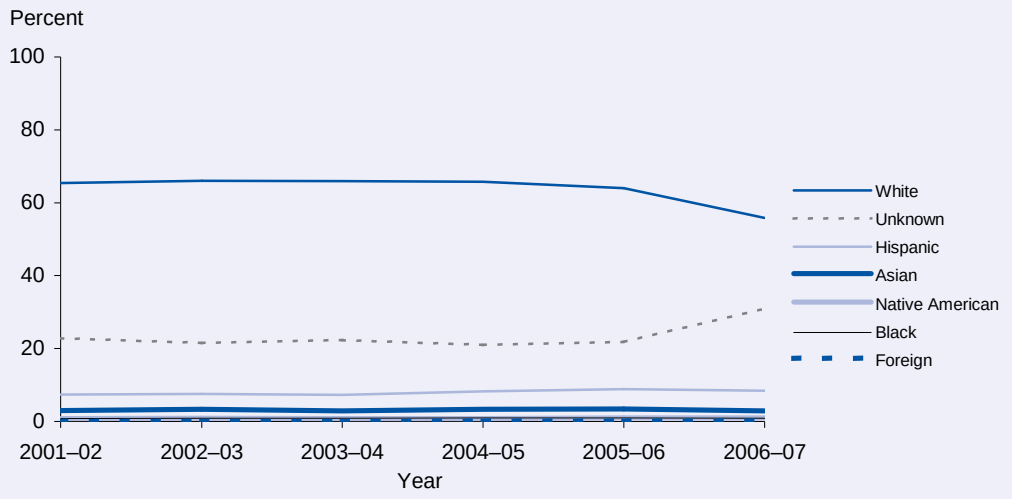
SOURCE: Clackamas Community College student data.

[2] For a complete listing of nontraditional occupations for females and males, refer to the crosswalks prepared by the National Alliance for Partnerships in Equity (NAPE), found on the Peer Collaborative Resource Network website at http://cte.ed.gov/quality/crosswalks.cfm.

Race and Ethnicity

Since 2001–02, the proportion of students who are Hispanic or Latino increased from 7.3 percent to 8.4 percent (figure 12). While that is not an insubstantial change, between 2000 and 2006, the Hispanic/Latino population in Clackamas County nearly doubled (U.S. Census Bureau, 2000, 2006). The college continues to have a larger proportion of Hispanic/Latino students (8.4 percent) than are represented in the total county population (6.7 percent); however, the college may be interested in learning more about the demographic mix of its primary service district and surrounding counties to ensure it continues to adequately serve a wide range of community members now and in the future.

Figure 12. Student Race and Ethnicity: 2001–02 to 2006–07



SOURCE: Clackamas Community College student data.

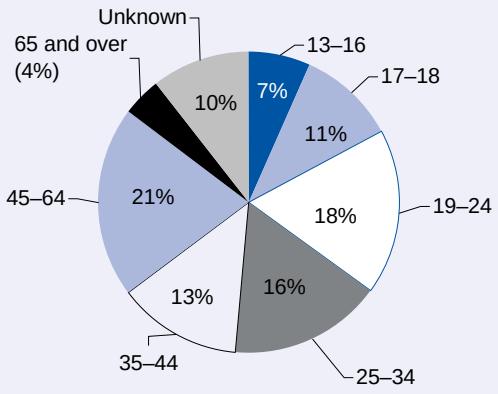
In addition, a much larger percentage of students did not have a race or ethnicity listed on their records for 2006–07, which could reflect changes in intake forms, registration processes, or perhaps in student preferences about providing this kind of personal information.

Age

Students at CCC represent a wide range of ages, from teenagers to people in their nineties. Interests and goals can be similar for students of any age—a person looking to finish high school or earn a GED could be age 16 or 60—but age categories may provide some indication of broad student needs and interests. In 2006, half of all Clackamas students were "working-age" adults between 25 and 64 years old, another

18 percent were "college-age" adults between 19 and 24 years old, and 11 percent were "high school-age" young adults—17 or 18 years old (figure 13).

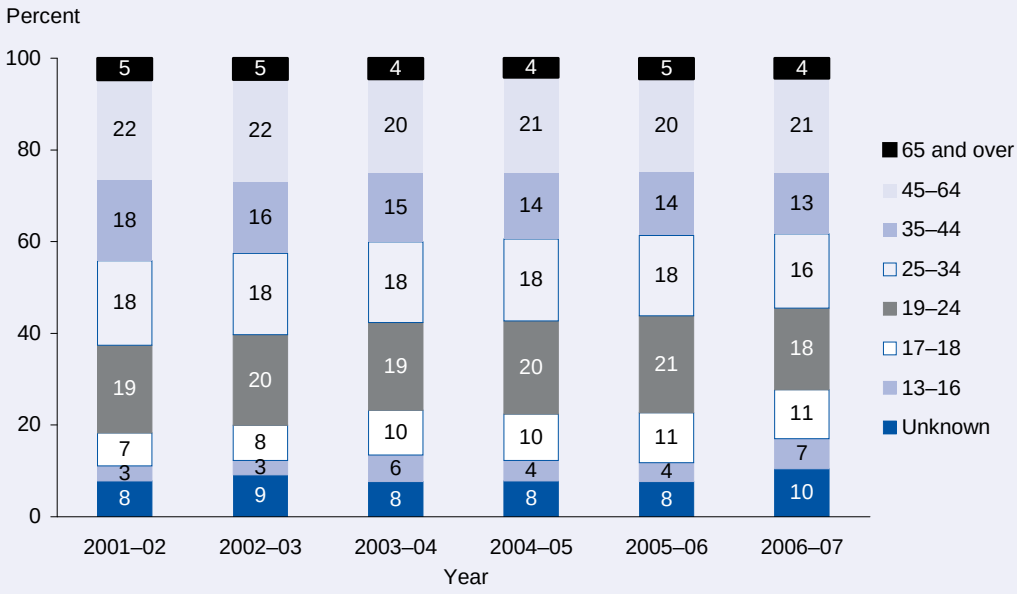
Figure 13. Student Age in Years: 2006–07



SOURCE: Clackamas Community College student data.

Between 2001–02 and 2006–07, the proportion of students ages 35 to 44 dropped from 18 percent to 13 percent, and the proportion of working-age adults (ages 25 to 64) dropped from 58 percent to 50 percent (figure 14). It is unclear from preliminary research if the change is due to an increase in the types of programs students are pursuing—perhaps more young students are attending to earn college transfer credit, increasing the proportion they represent—or if it is due to an actual decline in working-age adults enrolling in Clackamas courses. It may also be explained, in part, by the increase in the proportion of students with no age listed on their record. As the consistency and quality of Clackamas student and enrollment data records improves, the college will have more opportunities to explore the underlying causes of this shift in student ages.

Figure 14. Student Age in Years: 2001–02 to 2006–07

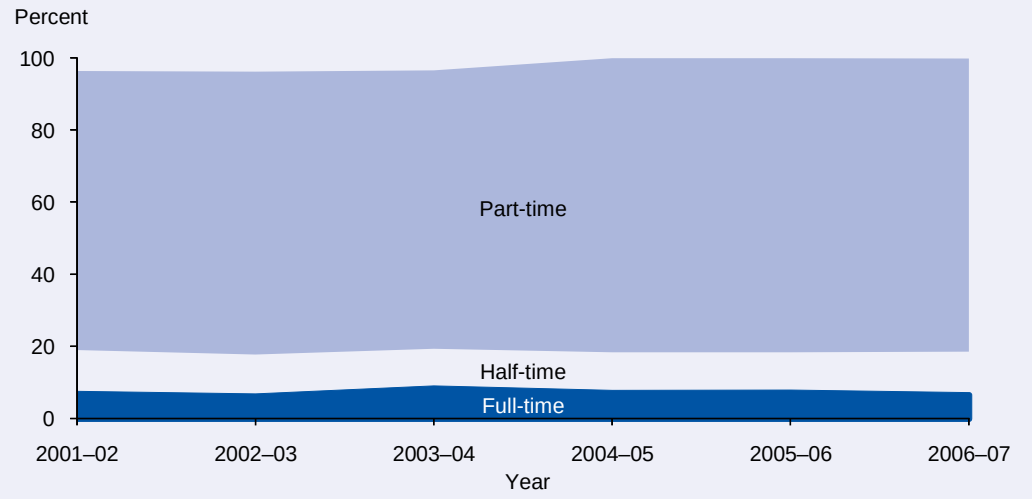


SOURCE: Clackamas Community College student data.

Student Enrollment Status

Enrollment status—whether students attend Clackamas full, half, or part time—has remained stable since 2001–02 (figure 15). In 2006–07, approximately 81 percent of students attended CCC part time (0.1 to 254.99 clock hours), 12 percent attended half time (255 to 509.99 clock hours), and 7 percent attended full time (510 clock hours or more).

Figure 15. Student Enrollment Status: 2001–02 to 2006–07

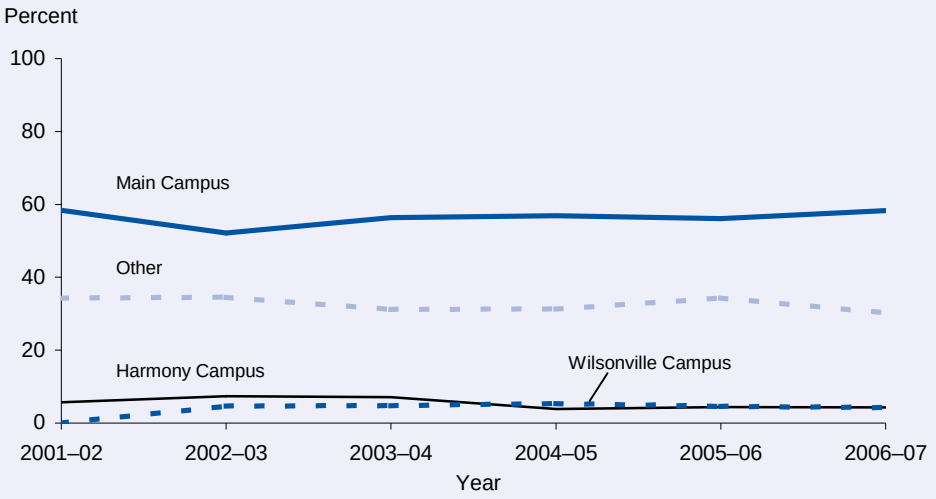


NOTE: Enrollment status is determined by each student's annual clock hours.
Part-time enrollment = 0.1–254.99 clock hours.
Half-time enrollment = 255–509.99 clock hours.
Full-time enrollment = 510 clock hours or more.
SOURCE: Clackamas Community College student data.

Enrollment distributions among the Clackamas campuses have not varied greatly since 2001–02. In 2006–07, most CCC students attended the Main Campus in Oregon City (58 percent), while 4 percent attended the Wilsonville Campus, 4 percent attended the Harmony Campus, and 30 percent attended other campuses. The Harmony Campus has seen the most variability in its proportion of Clackamas' total student enrollment, ranging from a low of 4 percent to a high of 7 percent (figure 16).

Researchers based the assignment of a student's primary campus on where the student earned the most credits. To categorize students without credits and those with the same number of credits at multiple campuses, researchers also relied on students' units attempted, clock hours, units earned in a program area, units attempted in a program area, and clock hours in a program area.

Figure 16. Student Enrollment by Primary Campus: 2001–02 to 2006–07



SOURCE: Clackamas Community College enrollment data.

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Adult Education Target Population

As part of its ongoing exploration of trends and changes in the college community, Clackamas Community College requested that MPR Associates identify the proportion of its district population that is considered part of the "adult education target population," defined as individuals age 16 and older who do not have a high school diploma or equivalent and who are not currently enrolled in school. The following sections identify the overall size of this population and present information about its demographic characteristics, educational attainment, and income and labor force status.

Methodology

MPR Associates employed data from the Integrated Public Use Microdata Series (IPUMS) website through the Minnesota Population Center to identify the adult education target population. IPUMS-USA is a project dedicated to collecting and distributing U.S. census data. The majority of data included in this report, regarding the adult education target population, are derived from the American Community Survey 2006 sample. This sample is a 1-in-100 (1 percent) national random sample of the population. When comparison information is shown for 2000, the data are derived from the 2000 census 1 percent sample, which is also a 1-in-100 random sample of the population.

The geographic area identified in this study is the Clackamas County Super-Public Use Microdata Area (Super-PUMA). Super-PUMAs are geographic areas with 400,000+ residents. Super-PUMAs do not cross state lines. Super-PUMA area 41502 includes all of Clackamas County and a part of eastern Multnomah County.

The analysis of the adult education target population is modeled in part on a report prepared for the U.S. Department of Education, Office of Vocational and Adult Education in 2005, titled *Profiles of the Adult Education Target Population*. The analysis and definitions are not identical, however, due to differences in the census datasets and variables available for use in this report.

For the purposes of this report, the following terms were defined as follows:

Adult population: individuals age 16 years and older

Adult education target population: individuals age 16 years and older who have not attained a high school diploma or equivalent and are not currently enrolled in school.

Limited English proficient (LEP): individuals age 16 years and older who have rated their ability to speak English as "well," "not well," or "not at all."

LEP adults with diploma: individuals age 16 years and older with limited English proficiency (as defined above) who have attained a high school diploma or equivalent.

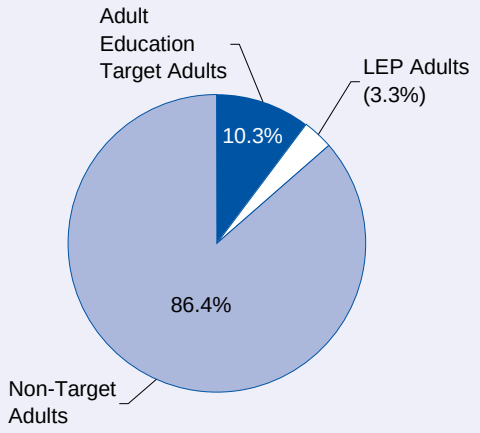
Non-target adults: individuals age 16 years and older who have a high school diploma or equivalent or are currently enrolled in school.

Clackamas County Super-PUMA (CC Super-PUMA): Super-PUMA area 41502 includes all of Clackamas County and part of eastern Multnomah County.

Overall

According to the 2006 American Community Survey, the Super-PUMA that includes all of Clackamas County and a portion of eastern Multnomah County (Super-PUMA 41502) houses 388,778 adults over the age of 16 years. Of those, 40,029 (10 percent) do not have a high school diploma or equivalent and are not currently enrolled in school. Another 12,685 (3 percent) possess a high school diploma or equivalent, but report they do not speak English or speak English less than "very well" (figure 17).

Figure 17. Targeted, LEP, and Non-Targeted Adult Population: 2006 (Total Adult Population = 388,778)



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Table 2 presents a comparison of the adult education target, LEP with diploma, and non-target adult populations from the United States, Oregon, and the CC Super-PUMA.

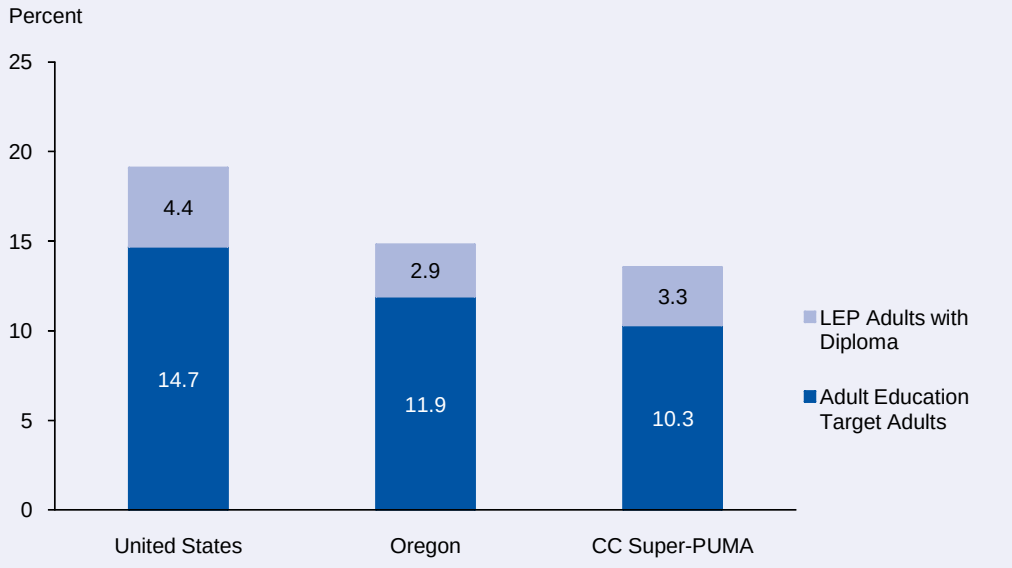
Table 2. Adult Population, Age 16 and Over: 2006

	Adult Education Target Adults	LEP Adults with Diploma	Non-Target Adults	Total Adult Population
Clackamas County Super-PUMA 41502	40,029	12,685	336,064	388,778
Oregon	350,656	86,216	2,508,536	2,945,408
United States	34,400,000	10,350,000	189,500,000	234,250,000

SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Proportionally, the CC Super-PUMA has a smaller adult education target population and LEP with diploma population than Oregon or the United States. As shown in figure 18, the CC Super-PUMA adult education target population is 10.3 percent while Oregon's adult education target population is 11.9 percent and the U.S. target population is 14.7 percent. The CC Super-PUMA does have a slightly larger population of limited English proficient adults with diploma (3.3 percent) than the state of Oregon (2.9), although it is smaller than the U.S. LEP with diploma population of 4.4 percent.

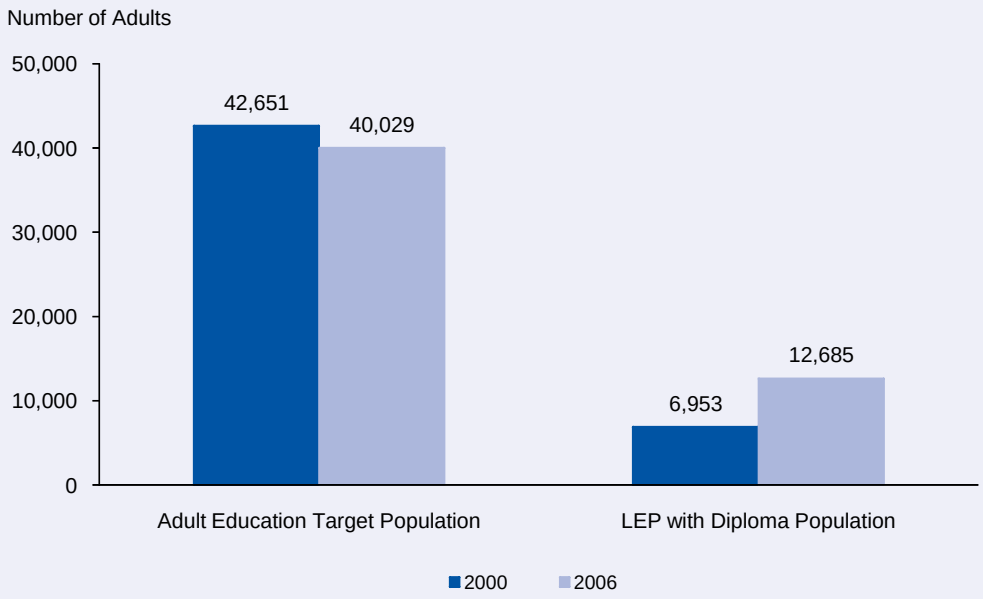
Figure 18. Adult Education Target and Limited English Proficiency Populations: 2006



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Figure 19 displays the change in the adult education and LEP with diploma populations from 2000 to 2006. According to estimates from the 2006 American Community Survey, the adult education target population has declined approximately 6 percent, from 42,651 individuals in 2000 to 40,029 individuals in 2006. However, the LEP with diploma population has increased more than 82 percent, from 6,953 in 2000 to 12,685 in 2006.

Figure 19. Change in Adult Education Target and LEP with Diploma Populations from 2000 to 2006

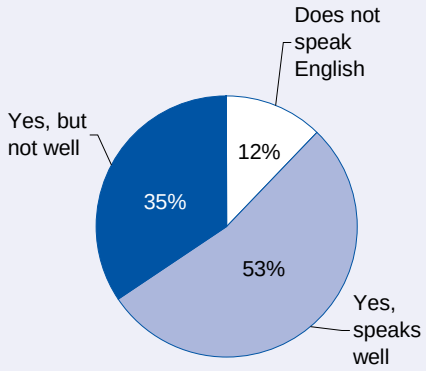


SOURCE: 2000 U.S. Census and 2006 American Community Survey (IPUMS 1% Sample).

Ability to Speak English

Of the estimated 12,685 adults who have a diploma but rated their ability to speak English as less than "very well," 47 percent (5,913 people) report they either do not speak English at all or they speak English but "not well." These are individuals that are likely to benefit from beginning and intermediate levels of English as a Second Language instruction through the college. The remaining 53 percent of the LEP with diploma population report they speak English "well," but may benefit from advanced ESL instruction (figure 20).

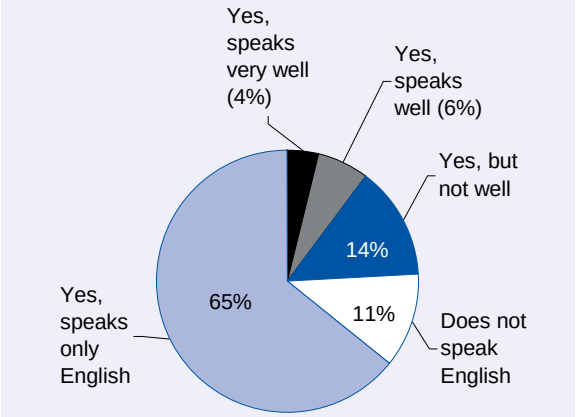
Figure 20. LEP with Diploma Population by Ability to Speak English: 2006



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

In addition to the population of adults with a diploma who speak English less than "very well," more than 12,700 individuals who are part of the adult education target population (meaning they are age 16 or older, do not have a diploma, and are not enrolled in school) also report they speak English less than "very well." As shown in figure 21, the majority (65 percent) of the adult education target population speaks only English. However, among the remaining 35 percent of adult education target adults, only 4 percent report they speak English "very well." Eleven percent (4,602) report they do not speak English at all, and 14 percent (5,546) report they speak English but "not well."

Figure 21. Adult Education Target Population by Ability to Speak English: 2006



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Among adults over 16 years of age in the Clackamas County Super-PUMA, 28,240 (7.3 percent) report they do not speak English or speak English less than "very well" (table 3).

Table 3. Self-Reported Ability to Speak English: 2006

	Adult Education Target Adults	LEP with Diploma Adults	Non-Target Adults	Total Adults	Percent of Total Adults
Yes, speaks only English	25,719	0	314,135	339,854	87.4
Yes, speaks very well	1,589	0	19,095	20,684	5.3
Yes, speaks well	2,573	6,772	1,701	11,046	2.8
Yes, but not well	5,546	4,377	1,133	11,056	2.8
Does not speak English	4,602	1,536	0	6,138	1.6
Total	40,029	12,685	336,064	388,778	100.0

SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

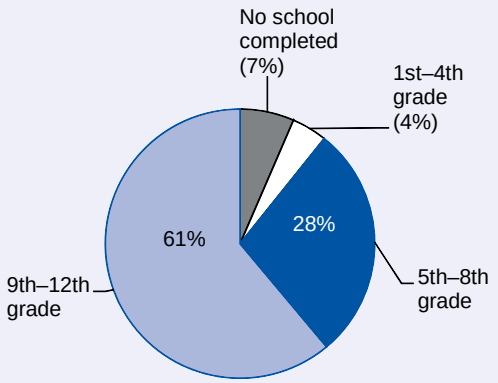
Educational Attainment

According to the 2006 American Community Survey, more than 40,000 individuals in the Clackamas County Super-PUMA region are over age 16, do not have a high school diploma or equivalent, and are not enrolled in school. Of those, 39 percent

(15,576) have less than a 9th-grade education (figure 22). CCC's Adult Basic Education (ABE) programs are targeted to just such individuals. The college's General Educational Development (GED) and Adult High School Diploma (AHSD) programs are in place to serve the remaining 62 percent (24,453) of adult education target adults who have completed at least one year of high school education.

Table 4 presents the educational attainment of all adults over age 16 in the Clackamas County Super-PUMA.

Figure 22. Educational Attainment of Adult Education Target Population: 2006



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Table 4. Level of Educational Attainment: 2006

	Adult Education Target Adults		LEP with Diploma Adults		Non-Target Adults	
	Number	Percent	Number	Percent	Number	Percent
Total	**40,029**	100.0	**12,685**	100.0	**336,064**	100.0
No school completed	2,601	6.5	0	0.0	0	0.0
1st to 4th grade	1,701	4.2	0	0.0	0	0.0
5th to 8th grade	11,274	28.2	0	0.0	513	0.2
9th to 12th grade	24,453	61.1	0	0.0	20,018	6.0
9th grade	3,903	9.8	0	0.0	3,817	1.1
10th grade	5,706	14.3	0	0.0	6,980	2.1
11th grade	6,683	16.7	0	0.0	8,191	2.4
12th grade, no diploma	8,161	20.4	0	0.0	1,030	0.3
High school graduate or GED	0	0.0	6,511	51.3	98,671	29.4
Some college, no degree	0	0.0	3,542	27.9	102,087	30.4
Associate's degree	0	0.0	690	5.4	25,060	7.5
Bachelor's degree	0	0.0	917	7.2	61,337	18.3
Master's, professional, or doctorate degree	0	0.0	1,025	8.1	28,378	8.4

SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

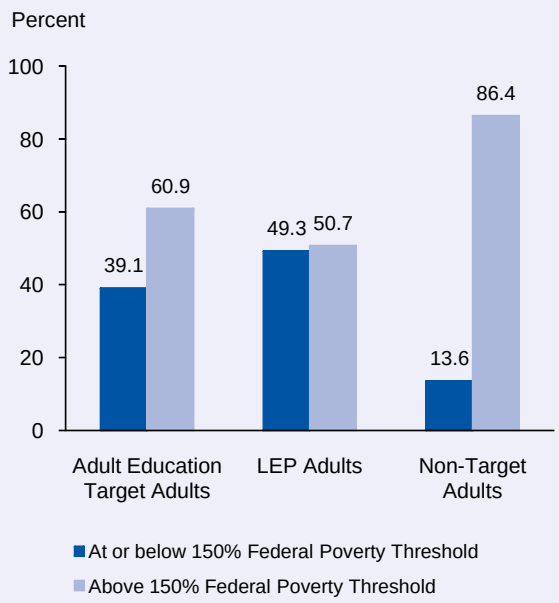
Income and Labor Force Status

According to the 2006 American Community Survey, 17.4 percent of adults over the age of 16 living in Clackamas County and eastern Multnomah County have incomes at or below 150 percent of the federal poverty level. LEP with diploma adults have

the highest poverty rate at nearly 50 percent (6,253 individuals), while 39.1 percent (15,537) of adult education target adults are at or below 150 percent of the poverty threshold. Only 13.6 percent (45,492) of non-target adults have incomes at or below 150 percent of the federal poverty threshold (figure 23).

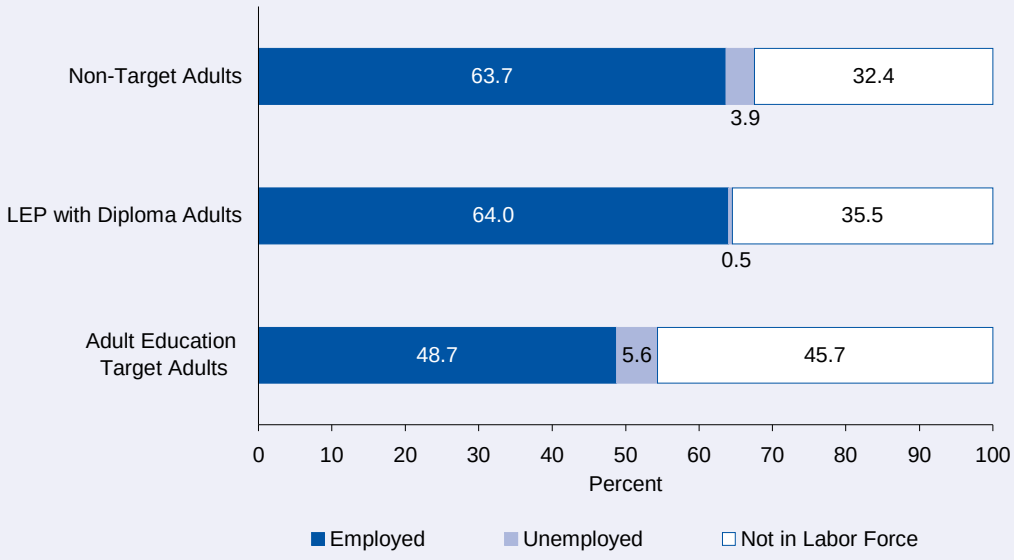
Fewer than half of adult education target adults in the CC Super-PUMA are employed. Nearly 46 percent are not in the labor force—compared with 32 percent of non-target adults—and nearly 6 percent are unemployed—compared with 4 percent of non-target adults and less than 1 percent of LEP with diploma adults (figure 24).

Figure 23. Adult Education, LEP, and Non-Target Adult Populations by Poverty Level: 2006



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Figure 24. Adult Education Target, LEP with Diploma, and Non-Target Adults by Employment Status: 2006

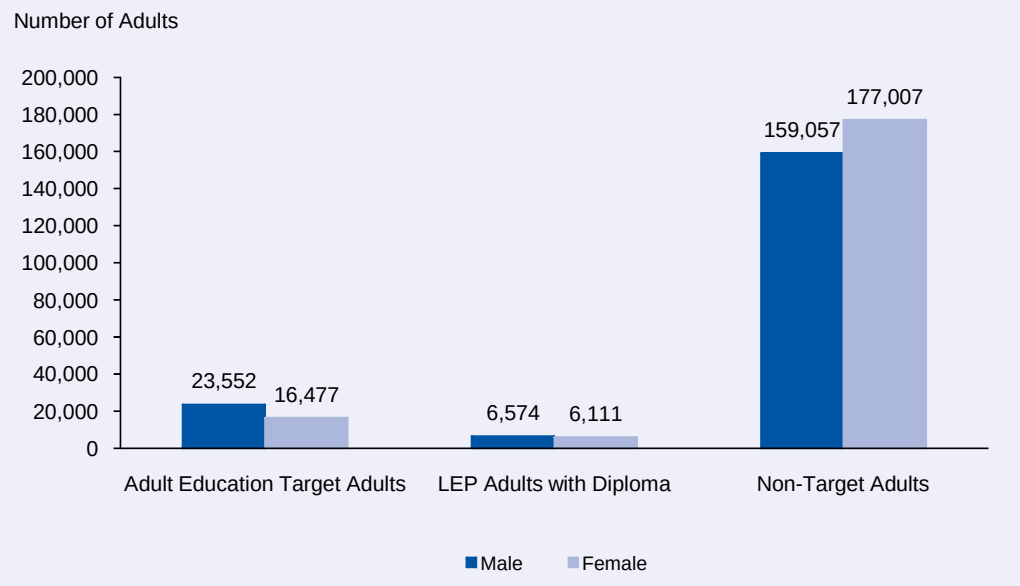


SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Demographic Characteristics

More men (59 percent) are designated part of the adult education target population than women (41 percent). And among adults with limited English proficiency who have diplomas, there are slightly more men (52 percent) than women (48 percent). In contrast, there are more women (53 percent) than men (47 percent) in the non-target adult population. Figure 25 presents the number of men and women in the adult education target, LEP with diploma, and non-target adult populations.

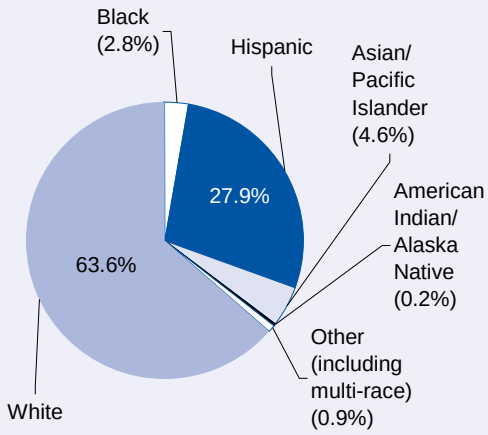
Figure 25. Adult Target, LEP, and Non-Target Populations by Gender: 2006



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Within the adult education target population in the Clackamas County Super-PUMA, 63.6 percent of adults are White, 27.9 percent are of Hispanic or Latino descent, and 4.6 percent are of Asian descent. A very small proportion of adults in the target population report they are American Indian or Alaska Native (0.2 percent) or multi-racial (0.9 percent) (figure 26).

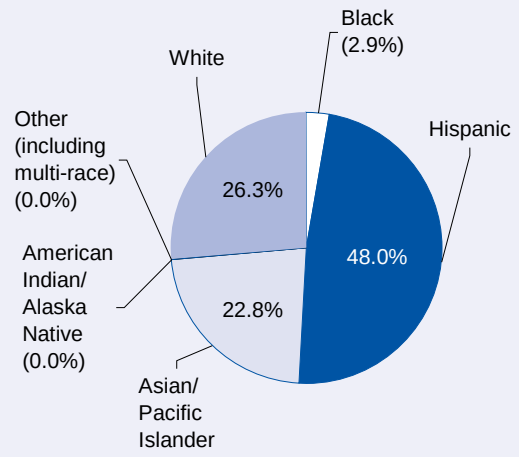
Figure 26. Adult Education Target Population by Race: 2006



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Individuals who are of Hispanic or Latino descent represent 48 percent (6,092) of the adults who have a diploma but report they speak English less than "very well." People who are of Asian/Pacific Islander descent represent an additional 22.8 percent (2,894) of this population (figure 27).

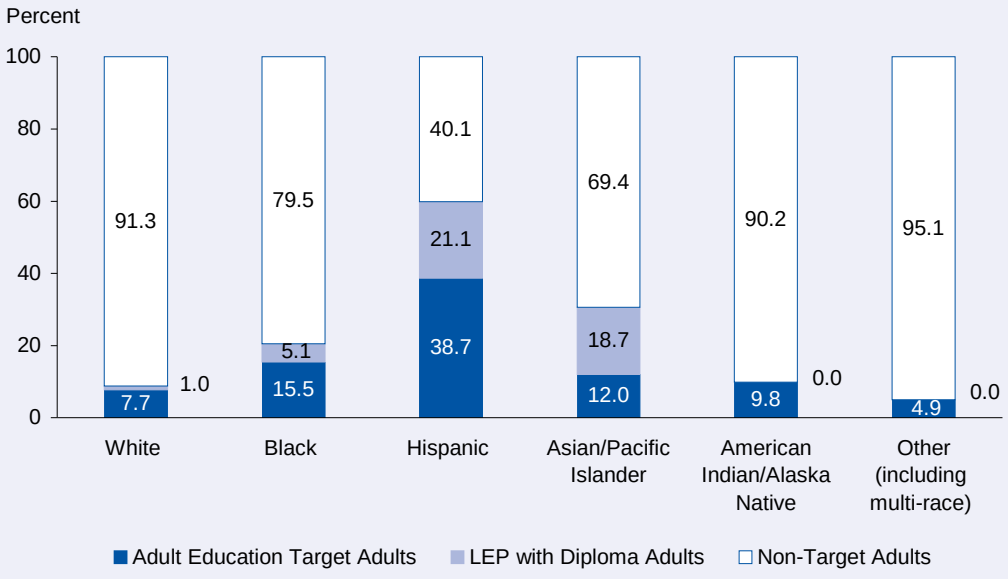
Figure 27. LEP with Diploma Adults by Race: 2006



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Within the Clackamas County Super-PUMA, nearly 60 percent of Hispanic/ Latino adults age 16 years and older are considered to be part of the adult education target population or the limited English proficient with diploma population. That is much higher than any other racial or ethnic group. Asian/Pacific Islanders are the group with the next highest proportion of targeted adults, but only 31 percent of adults in this ethnic group fall into the targeted population. And a much higher proportion of Asian/Pacific Islander adults have diplomas or are enrolled in school (88 percent) than Hispanic/Latino adults (61 percent). Hispanic/Latino adults have the highest proportion of adult education target adults and LEP adults with diplomas of any racial or ethnic group in the Clackamas County Super-PUMA (figure 28).

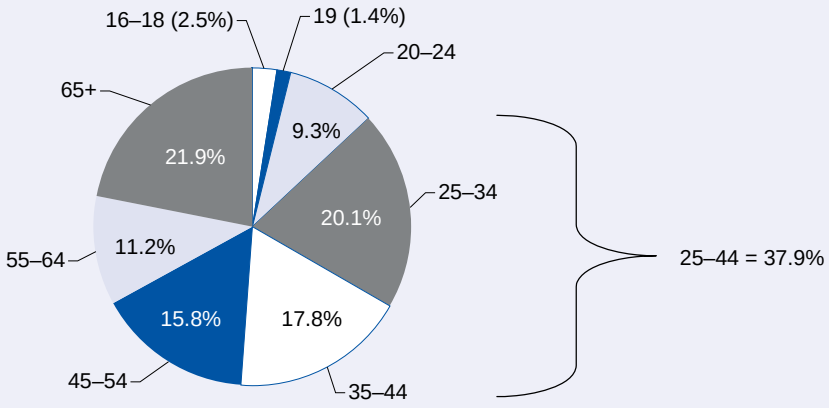
Figure 28. Adult Target, LEP, and Non-Target Populations by Race: 2006



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

The majority of people (64.9 percent) who are part of the adult education target population are "working age" (i.e., between 25 and 64 years old). Less than 14 percent are between 16 and 24 years old (figure 29). The large population of working-age adults—totaling approximately 26,000 individuals—who have never earned a high school diploma or equivalent is a major concern for the workforce and labor market pool in the Clackamas County area. And a high proportion of younger workers—those between 25 and 44 years old—do not have a diploma and are not enrolled in school. These are the individuals who will continue to be part of the labor force for 20 to 50 more years, but they likely do not have the skills to prepare them for future jobs.

Figure 29. Adult Education Target Population by Age: 2006



SOURCE: 2006 American Community Survey (IPUMS 1% Sample).

Persistence in Credit Courses

CCC is interested in knowing how many students in credit programs continue taking credit courses in subsequent terms and years. Ideally, this analysis would follow students in specific credit programs to determine if they continue taking courses in those programs over time until they achieve a degree or certificate or leave the college for an extended period of time. However, two issues make this level of analysis impossible at the current time:

- *Lack of completion data*: The CCC data records available to researchers did not include information regarding completion of degrees and certificates each year. Therefore, any analysis of persistence will be clouded by the inclusion of students who would not normally be expected to persist because they have completed their program. The results are likely to underestimate persistence for this reason.
- *Lack of information about program over time*: The course-taking methodology created for this project identifies each student's program for a single year. Depending on course activity, a student's program could shift from year to year, which precludes tracking a student in a single program for more than one year. Future iterations of the methodology could explore the feasibility of identifying a student's program based on multiple years of course-taking activity, and CCC may wish to explore this possibility further through its research plan.

Methodology

Researchers assigned students to a program for the initial year of the cohort and then tracked them to determine if they persisted in credit courses over time, regardless of program or whether the student completed a degree or certificate program during that period. This analysis was performed for two cohorts:

1. Students who took at least one credit course in Fall 2001 were followed through Spring 2004.
2. Students who took at least one credit course in Fall 2004 were followed through Spring 2007.

To identify each student's program area, researchers first identified a program area for each course in each term using Activity Codes (ACTI codes). CCC provided a crosswalk of ACTI codes to program area for this purpose. Next, researchers merged

those codes with the student enrollment file so that every student had an ACTI code assigned to each course he or she took in that year. The process to identify program area followed a prioritization methodology, where if a student falls into an earlier category, he or she is assigned that program area and is not considered when reviewing the subsequent steps of the program area assignment process.

1. If a student enrolled in at least one course in a given area and no courses in all other areas, then that area is the student's program.
2. If a student enrolled in at least two courses in "Postsecondary remedial" then that is the student's program area.
3. If a student enrolled in at least two courses in "Apprenticeship" then that is the student's program area.
4. If a student enrolled in at least two courses in "Preparatory technical" then that is the student's program area.
5. If a student enrolled in at least two courses in "Supplemental technical" then that is the student's program area.
6. If a student enrolls in more courses in one program area than any other, then that area is the student's program area.

A student is missing a value for program area if researchers could not identify a program area for any course the student enrolled in or the student has two or more program areas that are tied for the greatest number of courses.

Overall Persistence

According to available data, nearly 60 percent of the students who enrolled in credit courses in Fall 2001 and Fall 2004 persisted in taking one or more credit courses before the end of the three academic years (table 5).

Table 5. Students Persisting in Credit Courses: Fall 2001 and Fall 2004

	Fall 2001	Fall 2004
Did Not Persist in Credit Courses After Fall[1]	3,977	3,747
Persisted in Credit Courses by End of Three Years[2]	5,516	5,536
Total	9,493	9,283
Percent Persisted in Credit Courses	58.1%	59.6%

[1] Students were included in the 2001 cohort if they took a credit course in Fall 2001. Students were included in the 2004 cohort if they took a credit course in Fall 2004.

[2] Students in the 2001 cohort were tracked from Winter 2002 through Spring 2004. Students in the 2004 cohort were tracked from Winter 2005 through Spring 2007.

SOURCE: Clackamas Community College course and enrollment data.

Persistence by Program

In Fall 2001, over 9,400 students took a credit course at Clackamas Community College. Of those, 11 percent took at least one credit course the following term, Winter 2002. Term-to-term persistence varied among students assigned to credit programs according to their 2001–02 course-taking activity: persistence in the Winter 2002 term ranged from a low of 4 percent for Supplemental Technical students to a high of 17 percent for Apprenticeship students.

Very few students persisted to the next year: only 2 percent of all credit students in Fall 2001 took a credit course in Fall 2002. Only 102 Lower Division Collegiate (LDC) students (3.5 percent) and 7 Apprenticeship students (1 percent) persisted in taking at least one credit course the following fall (table 6).

Table 6. Persistence of Fall 2001 Credit Students by Program

	Lower Division Collegiate		Appren-ticeship		Supple-mental Technical		Prep-aratory Technical		Unknown Program But Took Credit Course		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Credit Students in Fall 2001	**2,924**	**100.0**	**695**	**100.0**	**1,967**	**100.0**	**1,960**	**100.0**	**1,947**	**100.0**	**9,493**	**100.0**
Persisted Next term, Winter 2002	385	13.2	118	17.0	79	4.0	258	13.2	240	12.3	1,080	11.4
Persisted Fall 2002	102	3.5	7	1.0	20	1.0	33	1.7	31	1.6	193	2.0
Persisted Any Time by Spring 2004	1,877	64.2	631	90.8	188	9.6	1,246	63.6	1,574	80.8	5,516	58.1

NOTE: Students were included in the 2001 cohort if they took a credit course in Fall 2001.
SOURCE: Clackamas Community College course and enrollment data.

By the end of the third academic year (Spring 2004), 58.1 percent of Fall 2001 credit students had taken at least one additional credit course at CCC. Apprenticeship students had a 90 percent persistence rate during that time period, while the rate was 64.2 percent for LDC and 63.6 percent for Preparatory Technical students. Students who were not categorized into a program or who were categorized into a non-credit program such as Adult Basic Skills, but who took a credit course in Fall 2001, had an 80 percent persistence rate by Spring 2004.

Within the Fall 2004 cohort of credit students, 10 percent enrolled in another credit course in Winter 2005. Only 3 percent enrolled the following fall for credit, although more than 60 percent eventually took another credit course within a three-year period (table 7).

Table 7. Persistence of Fall 2004 Credit Students by Program

	Lower Division Collegiate		Appren-ticeship		Supple-mental Technical		Prep-aratory Technical		Unknown Program But Took Credit Course		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Credit Students in Fall 2004	**3,454**	**100.0**	**643**	**100.0**	**1,760**	**100.0**	**1,894**	**100.0**	**1,532**	**100.0**	**9,283**	**100.0**
Persisted Next term, Winter 2005	412	11.9	37	5.8	59	3.4	223	11.8	211	13.8	942	10.1
Persisted Fall 2005	88	2.5	4	0.6	23	1.3	96	5.1	33	2.2	244	2.6
Persisted Any Time by Spring 2007	2,152	62.3	550	85.5	196	11.1	1,383	73.0	1,255	81.9	5,536	59.6

NOTE: Students were included in the 2004 cohort if they took a credit course in Fall 2004.
SOURCE: Clackamas Community College course and enrollment data.

Persistence by Gender

Among students with a known gender, females were slightly more likely to persist in credit courses within three years than were males in both 2001–02 and 2004–05. However, the difference is not large, and in both years the number of males persisting is larger than the number of females persisting (table 8).

Table 8. Persistence of Credit Students in Credit Courses Within Three Years by Gender: 2001–02 and 2004–05

	2001–02 Cohort				2004–05 Cohort			
	Female	Male	Unknown	Total	Female	Male	Unknown	Total
Did Not Persist in Credit Courses After Fall[1]	1,513	1,958	506	3,977	1,473	2,030	244	3,747
Persisted in Credit Courses by End of Three Years[2]	2,593	2,761	162	5,516	2,589	2,882	65	5,536
Total	4,106	4,719	668	9,493	4,062	4,912	309	9,283
Percent Persisted in Credit Courses	63.2%	58.5%	24.3%	58.1%	63.7%	58.7%	21.0%	59.6%

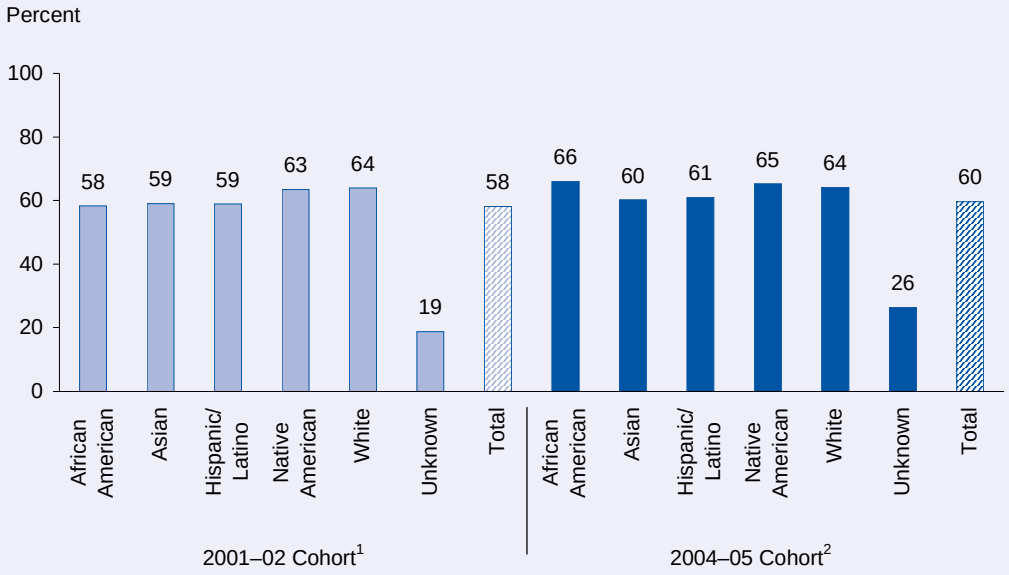
[1] Students were included in the 2001 cohort if they took a credit course in Fall 2001. Students were included in the 2004 cohort if they took a credit course in Fall 2004.
[2] Students in the 2001 cohort were tracked from Winter 2002 through Spring 2004. Students in the 2004 cohort were tracked from Winter 2005 through Spring 2007.
SOURCE: Clackamas Community College course and enrollment data.

Persistence by Race/Ethnicity

The rate at which students persisted in credit courses over three years increased for every racial and ethnic group from 2001–02 to 2004–05, with the exception of White students who showed the same persistence rate in both cohorts (64 percent). While these numbers indicate a positive trend, for some groups the number of students affected is

small, and could be the result of an anomaly rather than a real increase. For example, 63 of 108 African American students persisted in credit courses in the 2001–02 cohort, while 74 of 112 African American students persisted in the 2004–05 cohort. When numbers are this small, even minor changes in the student count can lead to somewhat misleading large changes in percentages (figure 30).

Figure 30. Percent of Credit Students Persisting in Credit Courses Within Three Years by Race/Ethnicity: 2001–02 and 2004–05



[1] Students were included in the 2001 cohort if they took a credit course in Fall 2001 and were tracked from Winter 2002 through Spring 2004.

[2] Students were included in the 2004 cohort if they took a credit course in Fall 2004 and were tracked from Winter 2005 through Spring 2007.

NOTE: Among Native American students in 2001–02, no students persisted beyond Fall 2003. Among Native American and African American students in 2004–05, no students persisted beyond Spring 2006.

SOURCE: Clackamas Community College course, student, and enrollment data.

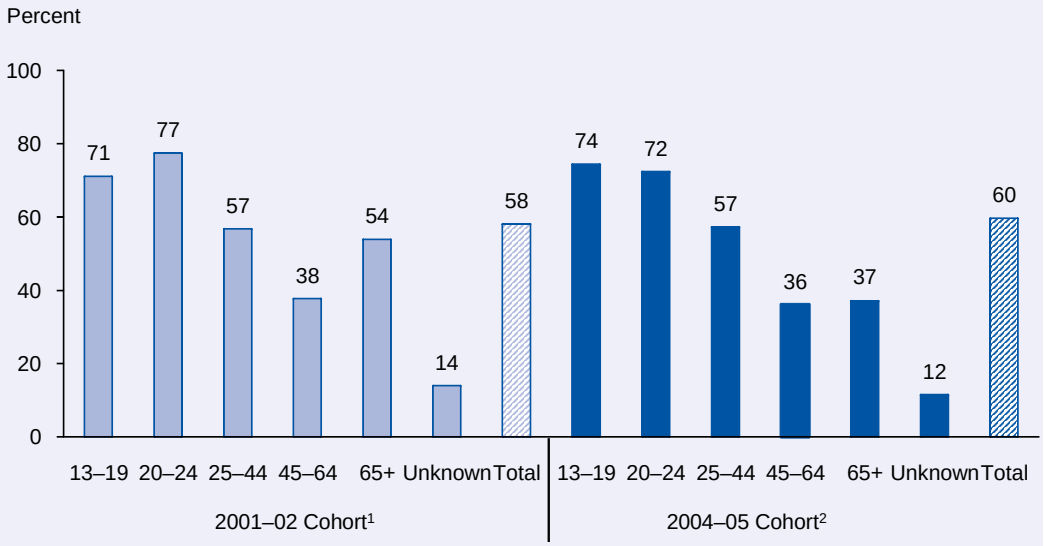
For the most part, students with a known ethnicity are persisting at relatively similar rates across racial and ethnic groups, although Asians and Hispanic/Latinos appear to have the lowest persistence rates across both cohorts. However, due to the limitations explained above regarding the lack of completion data, it is unclear whether students are not persisting because they have completed their certificate or degree program or because they have stopped out.

Persistence by Age

Persistence rates among students in different age categories varied dramatically in both the 2001–02 and 2004–05 cohorts. Students under the age of 25 persisted at much higher rates (70 percent or more) than students 25 years of age and older (less

than 60 percent). Working-age students between ages 45 and 64 years old had the lowest persistence rates in both cohorts, with fewer than 4 students out of every 10 persisting in credit courses sometime in a three-year period. In contrast, nearly three out of every five students less than 25 years old persisted in credit courses within three years (figure 31).

Figure 31. Percent of Credit Students Persisting in Credit Courses Within Three Years by Age Category: 2001–02 and 2004–05



[1] Students were included in the 2001 cohort if they took a credit course in Fall 2001. Students were included in the 2004 cohort if they took a credit course in Fall 2004.

[2] Students in the 2001 cohort were tracked from Winter 2002 through Spring 2004. Students in the 2004 cohort were tracked from from Winter 2005 through Spring 2007.

SOURCE: Clackamas Community College course, student, and enrollment data.

As with the differences among racial and ethnic groups, it is difficult to tell if the persistence rates are artificially low for some or all age groups due to the lack of completion data. Some of the students who did not persist certainly did so because they completed their educational goal of a certificate or a degree, which cannot be determined through the current analysis.

Transition from Adult Basic Skills to Credit Courses

In order to determine the rate at which Adult Basic Skills (ABS) students—students in General Educational Development (GED), Adult Basic Education (ABE), Adult High School Diploma (AHSD), and English as a Second Language (ESL) programs—transition into postsecondary programs, researchers reviewed student course-taking activity. Students in ABS programs are particularly hard to identify using intent because few students list basic education as their goal.

Methodology

MPR and CCC first assigned each student to a program area by reviewing his or her course-taking activity throughout the year. Program area has historically been hard to identify for a variety of reasons, primarily because students are not asked to update their program area or educational goals over time. The advantage to using course-taking behavior is that it bypasses student intent, which is usually collected the first time a student registers and may not reflect accurately the student's goals or the courses he or she takes. Using course-taking activity provides an indication of the actual need for certain types of courses over time. However, the current method is not yet fully refined and it does not accurately identify students in Adult Basic Skills programs. The methodology for determining program area by course-taking behavior is discussed in an earlier section of this report. As noted in that section, the methodology requires further refinement, particularly for the ABS program areas.

According to data reported to CCWD, Clackamas has one of the largest ABS programs in the state, second only to Portland Community College (Oregon Department of Community Colleges and Workforce Development, 2007). In contrast, the course-taking methodology identified only a third of ABS students reported to the state in 2005–06, and in some years, did not categorize any students as enrolled in the ABE program.

Due to these discrepancies, researchers chose not to use the program areas determined through the course-taking methodology to explore ABS to postsecondary transition. Instead, MPR identified all students who had taken at least one ABE,

GED, AHSD, or ESL course within an academic year and followed their course-taking for the two subsequent years. Using this approach, researchers were able to determine if students who had taken one or more ABS courses enrolled in at least one credit course within that year or the following two years. The analysis does not attempt to identify a program area for students based on their course-taking, only whether they took at least one ABS course during the period in question. This analysis was performed for two cohorts:

1. Students who took at least one ABS course in 2001–02 were followed through 2003–04.
2. Students who took at least one ABS course in 2004–05 were followed through 2006–07.

Trends in Transition

Overall, very few students who took one or more ABS courses in 2001–02 or 2004–05 went on to take a credit course within three years. Of the students who took at least one ABS course in 2001–02, only one in seven students (14 percent) took a credit course by the end of 2003–04. And for students who took at least one ABS course in 2004–05, one in five (20 percent) took a credit course by the end of 2006–07 (table 9).

Table 9. ABS Student Transition Within Three Years: 2001–02 and 2004–05

	2001–02	2004–05
Did Not Take Any Credit Courses Within Three Years	1,258	1,243
Took at Least 1 Credit Course Within Three Years	203	318
Total	1,461	1,561
Percent Transitioned	13.9%	20.4%

NOTE: For students in the 2001–02 cohort, credit course-taking activity was followed for 2001–02, 2002–03, and 2003–04. For students in the 2004–05 cohort, credit course-taking activity was followed for 2004–05, 2005–06, and 2006–07.
SOURCE: Clackamas Community College course and enrollment data.

The results for ABS transition into credit courses differed between the 2001–02 and 2004–05 cohorts, although the two cohorts are different by only 100 students: 1,461 students in 2001–02 and 1,561 students in 2004–05. However, 115 more students in the 2004–05 cohort went on to take at least one credit course within three years. This could be an anomaly or it could indicate a shift in how ABS programs are operating, representing a stronger emphasis on goals and opportunities beyond basic skill and language gains. An example of that change might be the college's practice of providing GED and AHSD students with a voucher for a credit course after students

complete their ABS programs. The vouchers can be used at any time, although students are encouraged to use them and transition to a credit course within a term or two. As CCC collects additional years of data over time, the college will have the ability to follow additional student groups and further explore the reasons for this change.

Among ABS students who transitioned into credit courses, the vast majority did so in the same year they took an ABS course. In 2001–02, more than 70 percent of the ABS students who went on to take a credit course within three years did so in the 2001–02 academic year. And nearly 80 percent of 2004–05 ABS students who took a credit course did so in the same year (table 10).

Table 10. Time Period in Which ABS Students Transitioned: 2001–02 and 2004–05

	2001–02 Cohort		2004–05 Cohort	
	Number	Percent	Number	Percent
Enrolled for credit the same year	144	70.9	253	79.6
Enrolled for credit the next year	38	18.7	44	13.8
Enrolled for credit two years later	21	10.3	21	6.6
Total Transitioned	203	100.0	318	100.0

NOTE: For students in the 2001–02 cohort, credit course-taking activity was followed for 2001–02, 2002–03, and 2003–04. For students in the 2004–05 cohort, credit course-taking activity was followed for 2004–05, 2005–06, and 2006–07.
SOURCE: Clackamas Community College course and enrollment data.

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High School Transfer

Initially, MPR and Clackamas Community College researchers planned to use records from local public school districts and education service districts to determine how many high school students attend CCC following graduation. Staff also intended to use the data to learn where graduates go for postsecondary education if they do not attend CCC. However, the college was not able to access this data during the course of the project, so MPR used information provided by the Oregon Department of Community Colleges and Workforce Development (CCWD) to address, in part, CCC's interest in trends in high school transfer.

Methodology

CCWD provided data regarding the number of students who graduated from Oregon public high schools in 2005–06 and then enrolled in an Oregon community college in Fall 2006. MPR also consulted a list of high schools by community college district—originally created by CCWD and supplied to MPR by Clackamas Community College staff—to identify the high schools that fall within the CCC district boundaries. MPR accessed graduate records by district and school—available through the Oregon Department of Education—to determine what percentage of high school graduates in each CCC district high school go on to attend CCC the following fall.

High School Graduates Attending Clackamas Community College

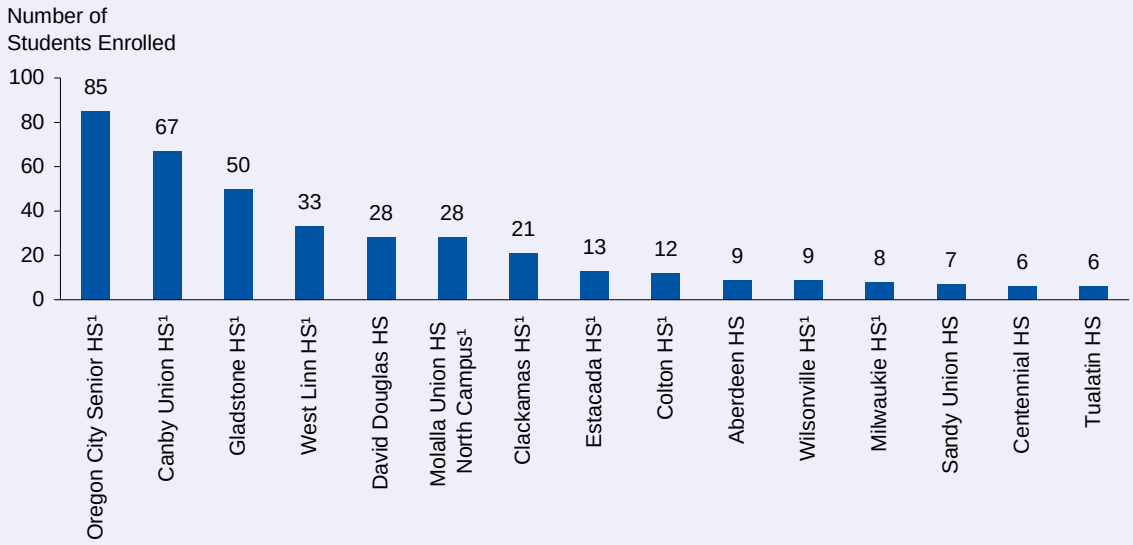
Nearly 500 graduates of Oregon public high schools during the 2005–06 academic year attended CCC in Fall 2006. Of those 498 students, 326 attended a high school within the Clackamas Community College district.[3]

Figure 32 displays the 15 high schools with the highest numbers of 2005–06 graduates enrolling in CCC in Fall 2006, 10 of which are within the CCC district. Oregon City High School had the highest number of graduate enrollees at 85, and

[3] According to public high school and college district information created by the Oregon Department of Community Colleges and Workforce Development and provided by Clackamas Community College.

Canby Union High School had the next highest number with 67 graduates. The number five feeder school, David Douglas High School, is not located within the CCC district, but 28 David Douglas 2005–06 graduates enrolled at CCC in Fall 2006.

Figure 32. Top 15 Feeder High Schools in Fall 2006



[1] Indicates the high school is within the CCC service district.
SOURCE: Oregon Department of Community Colleges and Workforce Development.

According to information from the CCWD, there are 23 public high schools located within the CCC district. Table 11 displays each of these schools along with the number of students who graduated in 2005–06 with a regular diploma[4] and the percentage of those graduates who attended CCC the following fall.

More than 28 percent of Gladstone High School 2005–06 graduates attended CCC in Fall 2006, indicating that while it may have been only the third highest feeder school in terms of number of students, a significant proportion of its graduates attend CCC following graduation.

Interestingly, while Putnam High School had a relatively large graduating class of 247 in 2005–06, none of its graduates attended CCC in Fall 2006. Putnam High School and the college are only about 7 miles apart—a much shorter distance than the 16 miles from David Douglas High School and CCC—yet no students made the trip to attend CCC following graduation. According to data from CCWD, 31

[4] A regular diploma includes diplomas awarded with a Certificate of Initial Mastery (CIM) or without. Honorary diplomas and modified diplomas are not included in the count of regular diplomas.

Putnam 2004–05 graduates attended CCC in Fall 2005 and 17 Putnam 2003–04 students attended in Fall 2004. It is possible that Fall 2006 was simply an anomaly or the results are caused by a data error, but CCC may be interested in tracking Putnam students' enrollment for future years and in investigating the reasons why it appears recent Putnam High School graduates did not attend CCC in Fall 2006.

Table 11. 2005–06 CCC District High School Graduates Who Enrolled at CCC in Fall 2006

CCC District High Schools	Total Regular Diplomas	2005–06 Grads Enrolled at CCC Fall 2006	Percent of 2005–06 Grads Enrolled at CCC Fall 2006
Arts & Technology Charter High School	N/A	0	N/A
Canby HS	370	67	18.1
Canby SD 86	2	0	0.0
Clackamas HS	393	21	5.3
Clackamas Middle College	28	0	0.0
Clackamas Web Academy	7	0	0.0
Colton HS	45	12	26.7
Estacada Alternative High School	N/A	0	N/A
Estacada HS	141	13	9.2
Gladstone HS	178	50	28.1
Gladstone SD 115	2	0	0.0
Milwaukie eSchool	N/A	0	N/A
Milwaukie HS	234	8	3.4
Molalla HS	146	28	19.2
Molalla River SD 35	14	0	0.0
New Urban HS	11	0	0.0
North Clackamas SD 12	N/A	0	N/A
Oregon City Senior HS	435	85	19.5
Oregon City Service Learning Academy	N/A	0	N/A
Putnam HS	247	0	0.0
West Linn HS	326	33	10.1
West Linn-Wilsonville SD 3J	N/A	0	N/A
Wilsonville HS	198	9	4.5
Total	**2,777**	**326**	

N/A indicates graduation data was not available from the Oregon Department of Education.

NOTE: The list of CCC district high schools was based on a list created by the Oregon Department of Community Colleges and Workforce Development and provided by Clackamas Community College.

SOURCE: Oregon Department of Community Colleges and Workforce Development; Oregon Department of Education, *High School Completers, Oregon Schools by County and District: 2005–06* .

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Course Capacity

MPR researchers performed two types of course capacity analyses for CCC. The first is a set of Excel pivot tables, organized by year, that show the college's course capacity in multiple views. The second is a summary graphical analysis demonstrating trends in course capacity from 2001–02 through 2006–07.

Methodology

In order to explore CCC's course capacity at each campus location, MPR researchers mined the CCC course data files for 2001–02 through 2006–07. MPR also included the available CCC waitlist data from 2003–04 through 2005–06 in the analysis.

Researchers assigned courses into a "time of day" category based on class start time.

- Morning = Class start time is in the range of 12:00am to 11:59am
- Afternoon = Class start time is in the range of 12:00pm to 5:59pm
- Evening = Class start time is in the range of 6:00pm to 11:59pm

Researchers then categorized courses by estimated course capacity.

- "Classes with 10 students enrolled" includes classes where the maximum seating is 10 or more and classes where the maximum seating is unknown yet the total enrollment is 10 or more.
- "Classes with 20 students enrolled" includes classes where the maximum seating is 20 or more and classes where the maximum seating is unknown yet the total enrollment is 20 or more.

Pivot Tables

The pivot tables MPR developed allow the college to see course capacity from a variety of viewpoints. The college has the ability to manipulate these yearly data tables, and the aggregate table for years 2001–02 through 2006–07, to explore specific questions. The pivot tables display the college's courses by program area, day and time, course level, and campus location. The pivot tables display the following for each category:

- Seats filled
- Class enrollment
- Classes that are full
- Classes with 10 students enrolled
- Classes with 20 students enrolled
- Classes where the waitlist was closed

MPR researchers developed the pivot tables and worked with CCC staff to refine them to display information that the college needs to engage in course planning for upcoming years. MPR delivered the pivot tables to CCC separately from this document.

Table 12 is an example of the pivot tables, displaying averages for the different CCC program areas. When working with the pivot tables, the small arrows at the top of each column allow the user to choose different options to view. For example, the user could choose to view all the program areas or only one at a time. Or the user could choose to view the mean (as shown below) or the count for every category.

Table 12. Course Capacity Pivot Table Example: 2005–06

		Average percent of seats filled	Average class enrollment	Percent of classes that are full	Percent of classes with 10 students enrolled	Percent of classes with 20 students enrolled	Percent of classes where waitlist was closed
Total	Mean	38.6	17.2	18.6	44.4	27.5	2.9
Program area							
Lower division collegiate	Mean	54.8	15.9	10.5	72.2	45.4	8.9
Preparatory technical	Mean	41.6	9.2	14.4	40.5	29.4	3.3
Supplemental technical	Mean	67.3	32.3	54.2	63.0	45.0	0.3
Apprenticeship	Mean	49.3	14.3	15.3	75.0	36.9	0.0
ESL	Mean	54.7	17.1	25.2	86.8	70.8	2.8
Adult basic education	Mean	55.2	17.3	0.0	80.0	20.0	0.0
GED	Mean	65.5	16.4	0.0	91.7	80.0	0.0
Adult high school diploma	Mean	45.4	5.3	39.8	53.4	32.7	0.0
Postsecondary remedial	Mean	71.8	20.8	21.9	88.0	71.4	23.0
Adult continuing education—reimbursable	Mean	26.0	15.9	10.8	53.4	22.3	0.0
Adult continuing education—nonreimbursable	Mean	12.5	15.4	10.5	10.0	6.3	0.0

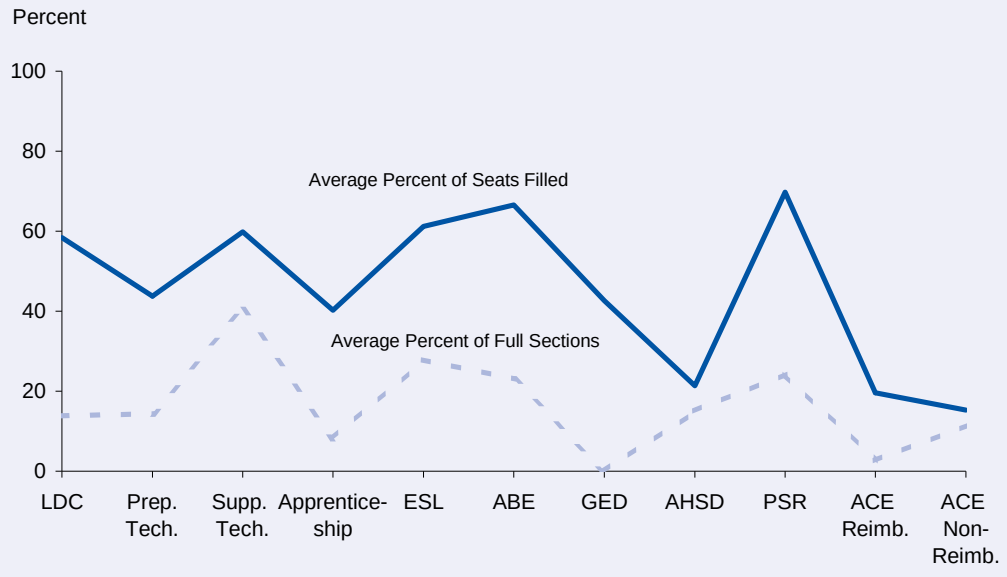
SOURCE: Clackamas Community College course and student enrollment data.

Full Sections and Seats Filled

According to Clackamas data across all sections in the years 2001–02 through 2006–07, an average of 15.3 percent of sections were full, while an average of 37.6 percent of seats in each section were full. In essence, on average, while a little more than one-third of the *seats* in each section were full, only about one out of every seven *sections* was actually full.

Figure 33 displays the average percent of full sections and the average percent of seats filled by program area from 2001–02 through 2006–07. Postsecondary Remedial courses had the highest average of seats filled per section at 69.8 percent, while Adult Continuing Education (ACE) Non-reimbursable courses had the lowest at 15.3 percent. Although Supplemental Technical had an average seat fill rate of only 59.9 percent, this program area had the highest average percent of full sections at 40.4 percent. On average, zero percent of General Educational Development (GED) classes were full from 2001–02 through 2006–07. Lower Division Collegiate (LDC) courses had a very low rate of full sections, averaging only 13.8 percent. In contrast, the average LDC seat fill rate was 58.4 percent.

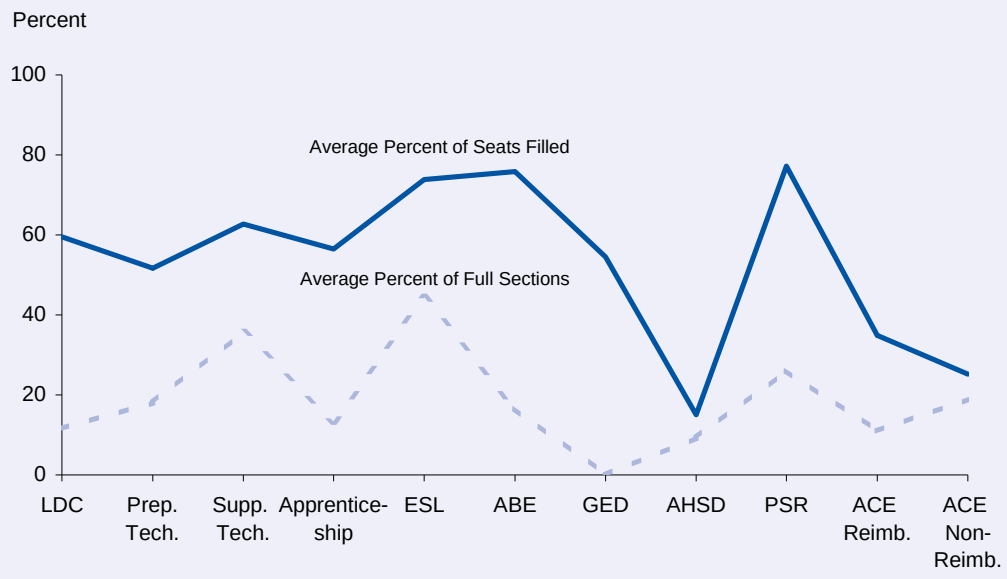
Figure 33. Average Percent of Full Sections and Average Percent of Seats Filled by Program: 2001–02 through 2006–07



SOURCE: Clackamas Community College course and student enrollment data.

Figure 34 shows the same view of average percent of seats filled and average percent of full sections, but for a single academic year—2006–07—rather than multiple years. The data on filled seats and full sections for the 2006–07 academic year follow a similar pattern to the multi-year results. According to Clackamas data, no GED classes were full in 2006–07, although on average, 54.5 percent of seats in each GED class were filled. Postsecondary Remedial courses had the highest seat fill rate at 77.2 percent, but only 26.1 percent of sections were full. The gap between the rate of full sections and the seat fill rate was slightly wider in 2006–07 compared with the multi-year average; the rate of seats filled was 46.7 percent and the rate of full sections was 17.6 percent.

Figure 34. Average Percent of Full Sections and Average Percent of Seats Filled by Program: 2006–07

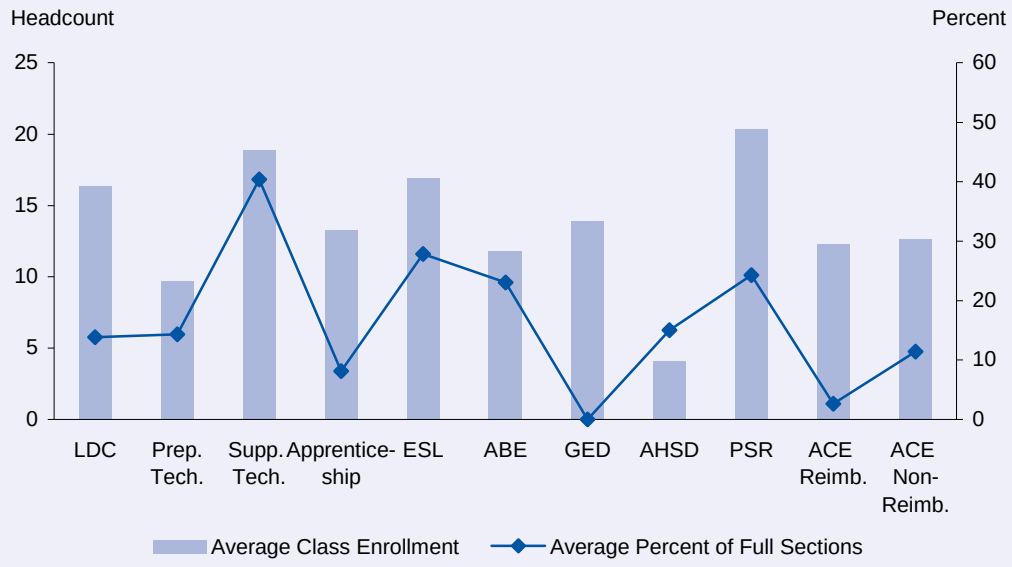


SOURCE: Clackamas Community College course and student enrollment data.

Class Enrollment and Full Sections

There is no clear pattern that suggests high average class enrollments lead to full sections, as one might expect. While the programs with the highest enrollments per section—PSR (20.3 students), Supplemental Technical (18.9 students), and English as a Second Language (16.9 students)—also had the highest full section rates, all had 40 percent or fewer of full sections from 2001–02 through 2006–07. LDC, Apprenticeship, and GED also had relatively high enrollments (16.4, 13.3, and 13.9 students per section, respectively), but each had a very low percentage of full sections across the years (13.8, 8.2, and 0.0, respectively) (figure 35).

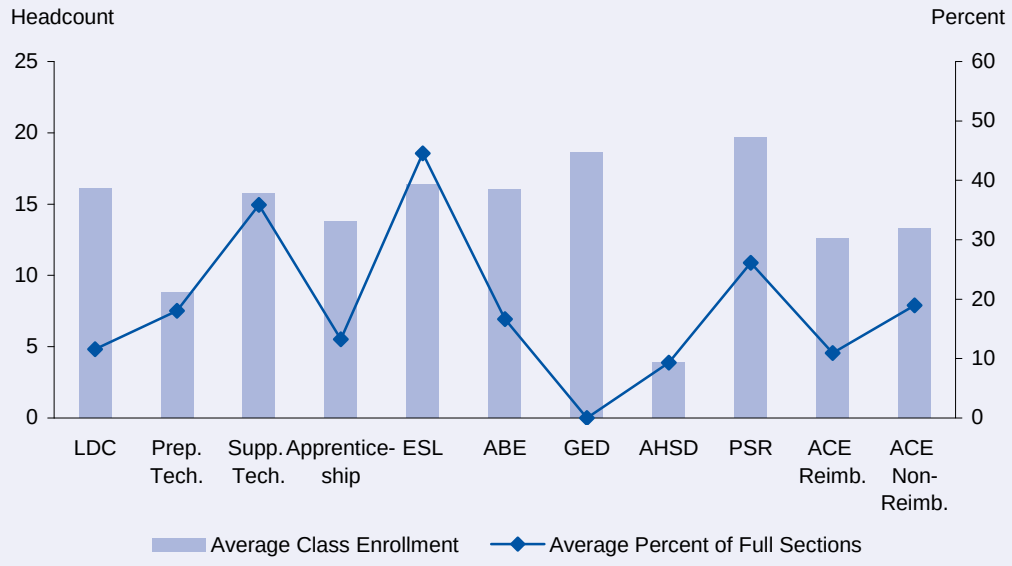
Figure 35. Average Class Enrollment and Average Percent of Full Sections by Program: 2001–02 through 2006–07



SOURCE: Clackamas Community College course and student enrollment data.

The data for a single year, 2006–07, show a similar lack of relationship between high course enrollment and percent of full sections (figure 36).

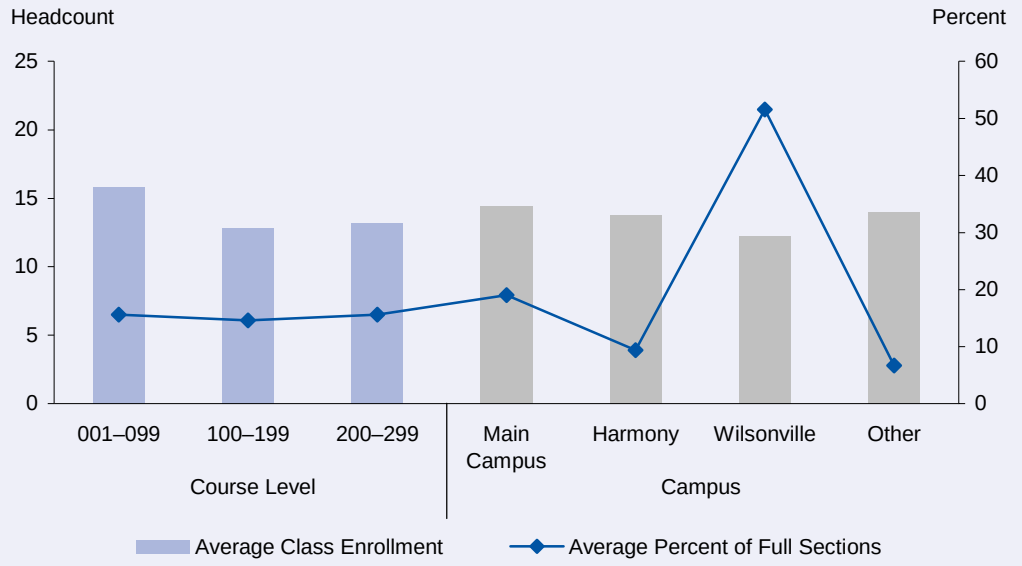
Figure 36. Average Class Enrollment and Average Percent of Full Sections by Program: 2006–07



SOURCE: Clackamas Community College course and student enrollment data.

Average class enrollment is slightly higher in lower-level courses (001–099) than in collegiate-level courses (100 and above). However, the average enrollment for courses below the 100 level is only 15.8 students, compared with an average of 12.8 students for 100–199 level courses and 13.2 students for 200–299 level courses. The average percent of full sections is nearly identical across the three course-level categories, ranging from a low of 14.6 percent for 100–199 level courses to 15.6 percent for both 001–199 and 200–299 level classes (figure 37).

Figure 37. Average Class Enrollment and Average Percent of Full Sections by Course Level and Campus: 2001–02 through 2006–07



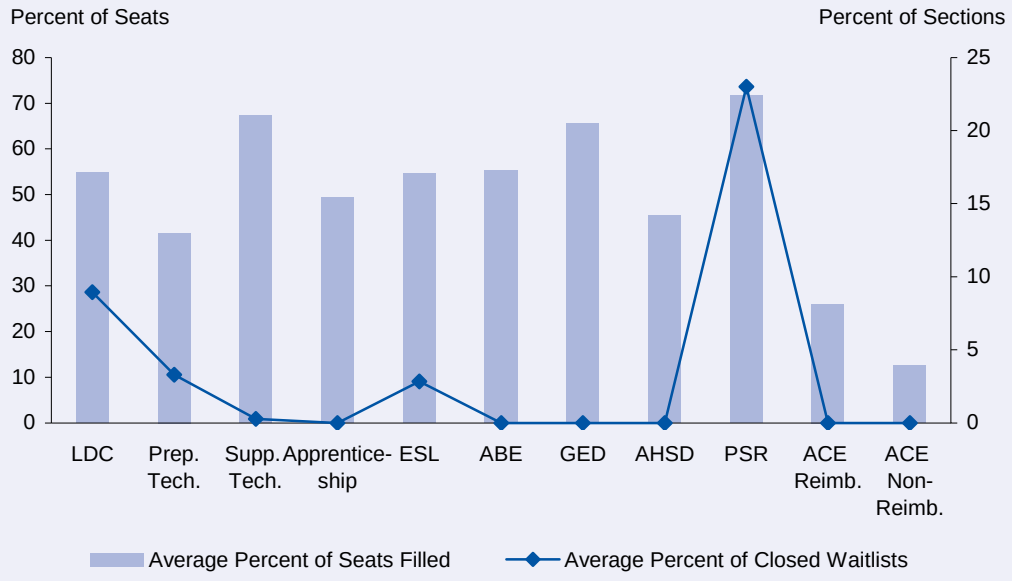
SOURCE: Clackamas Community College course and student enrollment data.

Average class enrollment is relatively similar across the three campuses, with Wilsonville having the lowest average enrollment at 12.2 students per section. In contrast, Wilsonville has the highest percentage of full sections, with 51.6 percent of its sections full compared with only 19 percent for the Main Campus and 9.4 percent for the Harmony campus. This could indicate that a larger proportion of Wilsonville's courses have smaller expected enrollments, leading to lower average enrollments but high proportions of full sections. However, the available information does not indicate whether the full capacity of the classrooms is being utilized.

Class Enrollment and Closed Waitlists

When a section becomes full, CCC "closes" any waitlist related to the section so that no more students will be added to the waitlist or to the course. Between 2001–02 and 2006–07, only 1.9 percent of waitlists were categorized as closed, which appears to be consistent with the somewhat low number of courses that were full during that same period (15.3 percent). Figure 38 shows that, in general, waitlists are less likely to be closed when the average percent of seats filled is low and more likely to be closed when the average percent of seats filled is higher.

Figure 38. Average Percent of Seats Filled and Average Percent of Courses Where the Waitlist Was Closed: 2005–06



NOTE: A closed waitlist indicates the waitlist has met its capacity and no more students will be added to the waitlist or the course.
SOURCE: Clackamas Community College course and student enrollment data.

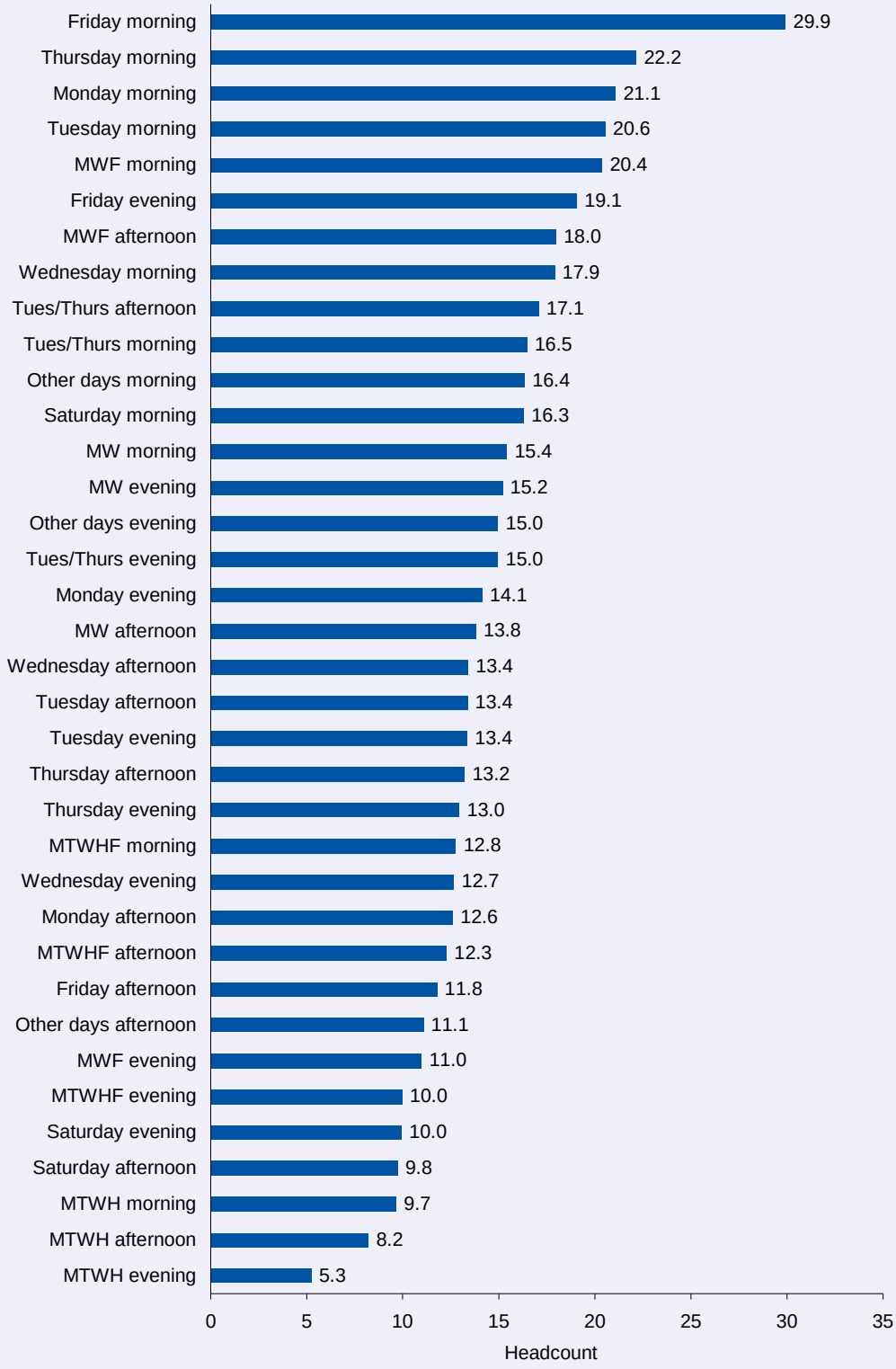
Further analysis of the 2005–06 waitlist data indicates that of the 8,173 sections that did not reach maximum capacity, 3.4 percent (289) had a closed waitlist. Of the 1,787 courses that were full, 7.7 percent (149) had closed waitlists. While it appears that data on waitlist closures is largely consistent with capacity in those same courses, there are some cases where a waitlist was closed even though the class was not at maximum capacity. However, the small number of cases could indicate there is incomplete data on capacity or waitlists.

Course Capacity by Day and Time

As shown in figure 39, in recent years, classes held only on Friday mornings had the highest average student enrollment with 29.9 students per section. CCC classes held only on Monday, Tuesday, or Thursday mornings also had relatively high enrollment numbers (21.1, 20.6, and 22.2 students, respectively). Classes with 10 or fewer students enrolled were generally held on Saturday evenings or afternoons, or were held four or more times per week.

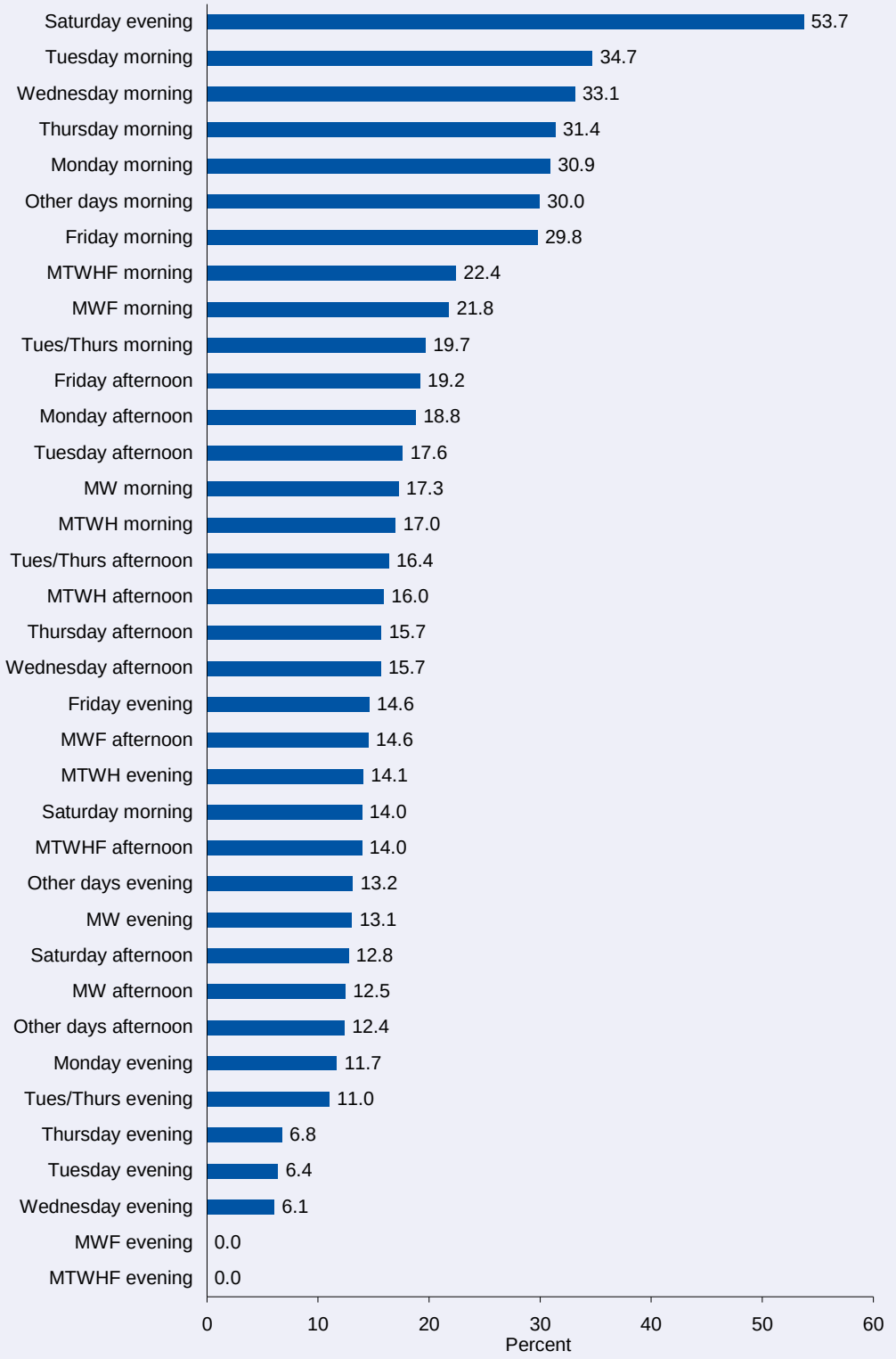
Figure 40 shows that while Saturday evening classes have relatively low enrollment, averaging about 10 students per section, these same classes have the highest rate of full sections at 53.7 percent. Courses held on a single morning each week also have higher rates of full sections compared with other day and time combinations. It appears that evening classes held during the week have the lowest rates of full sections.

Figure 39. Average Class Enrollment: 2001–02 to 2006–07



SOURCE: Clackamas Community College course and student enrollment data.

Figure 40. Percent of Full Sections: 2001–02 to 2006–07



SOURCE: Clackamas Community College course and student enrollment data.

Waitlists

According to CCC's waitlist records, 57 percent of students who were waitlisted for a specific course section in the last several years enrolled in the section or another section of the same course within one year. Many students (38.8 percent) were able to enroll in the same section in the term they were waitlisted, suggesting that the "shopping"[5] some students do early in a term may have freed up space for others (table 13).

Table 13. Outcomes of Waitlisted Students: 2003–04 to 2007–08

	Number of students	Percent
Did not enroll in waitlisted course	6,387	42.7
Total enrolled in waitlisted course within one year	8,569	57.3
Enrolled in waitlisted section in the same term	5,796	38.8
Enrolled in a different section of waitlisted course in the same term	1,655	11.1
Enrolled in waitlisted course one term later	698	4.7
Enrolled in waitlisted course two terms later	246	1.6
Enrolled in waitlisted course three terms later	174	1.2
Total	14,956	100.0

SOURCE: Clackamas Community College registration and waitlist data.

Approximately 11 percent of students who were waitlisted for a section were able to take the course that term by taking a different section of the course. The remaining 7.5 percent of students who took the course for which they were waitlisted did so one to three terms later.

[5] Early in the term, students commonly sit in on multiple courses they are interested in taking before deciding on a final schedule for the quarter. This activity is commonly called "shopping" for courses.

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Penetration Rate

Clackamas Community College is interested in learning more about the impact the college has on its surrounding community. One way to explore this question is to look at the proportion of adults who participate in education and training services through the college each year. Community colleges call this a "penetration rate." A penetration rate is calculated by dividing the total college headcount by the total adult population (i.e., people age 16 and older) for the year.

Methodology

MPR retrieved census data used in the calculation of penetration rates from the Integrated Public Use Microdata Series website through the Minnesota Population Center. Only four years of available sample data in the current decade included the variable needed to identify the Clackamas County Super-PUMA: 2000, 2005, 2006, and 2007. MPR matched the census data for these years to CCC's headcount for the years 1999–2000, 2004–05, 2005–06, and 2006–07. Researchers calculated penetration rates by dividing CCC's total headcount for each year by the population of the CC Super-PUMA age 16 and older.

CCC's Penetration Rate

Table 14 displays CCC's headcount for each academic year from 1999–2000 through 2006–07, as well as the population of the Clackamas County Super-PUMA for the years 2000, 2005, 2006, and 2007. In 1999–2000, Clackamas' penetration

Table 14. Clackamas Community College Penetration Rates

	CCC Headcount	CC Super-PUMA Population ≥ 16 years old	CCC Penetration Rate
1999–2000	28,617	337,506	**8.5%**
2000–01	27,402		
2001–02	28,073		
2002–03	27,872		
2003–04	25,290		
2004–05	26,047	381,900	**6.8%**
2005–06	25,024	388,778	**6.4%**
2006–07	30,914	401,464	**7.7%**

SOURCE: Oregon Department of Community Colleges and Workforce Development, *Community College Profiles* 2000–01 to 2006–07; 2000 U.S. Census and 2005, 2006, and 2007 American Community Surveys (IPUMS 1% Sample).

rate was at its highest (8.5 percent) for the years available during the current decade. From 2005–06 to 2006–07, the college's penetration rate has ranged from 6.4 percent to 7.7 percent, much lower than the early part of the decade. This change in penetration rate reflects the change in both the local population and college enrollment: while the CC Super-PUMA population has continued to grow since 2000, the college's headcount decreased, particularly between 2003–04 and 2005–06. The college saw a large increase in both population and enrollment in 2006–07, resulting in a somewhat higher penetration rate of 7.7 percent.

Labor Market Information

Clackamas Community College is working with local businesses to determine how best to meet current and future workforce and labor market needs in its district. Information available through the Oregon Employment Department (OED) is a valuable resource in understanding the types of occupations—particularly high-wage, high-skill, high-demand jobs—that will be available in upcoming years.

Methodology

Information about labor markets and occupations is available through OED's website at http://www.qualityinfo.org. OED's *Occupation Explorer* is an interactive tool that allows users to search for occupations based on educational requirements, wages, employment prospects, geographic area, and other criteria.

According to OED information, there will be an estimated 147 high-wage, high-skill, high-demand occupations in Clackamas County from 2006 to 2016. There are many more occupations that fit into one or two of the high-wage, high-skill, or high-demand categories, as well as many occupations that do not fit into any of these categories.

OED defines high-skill, high-wage, and high-demand occupations according to definitions developed in 2007 in collaboration with the Oregon Workforce Board, the Oregon Department of Education, and other partners.

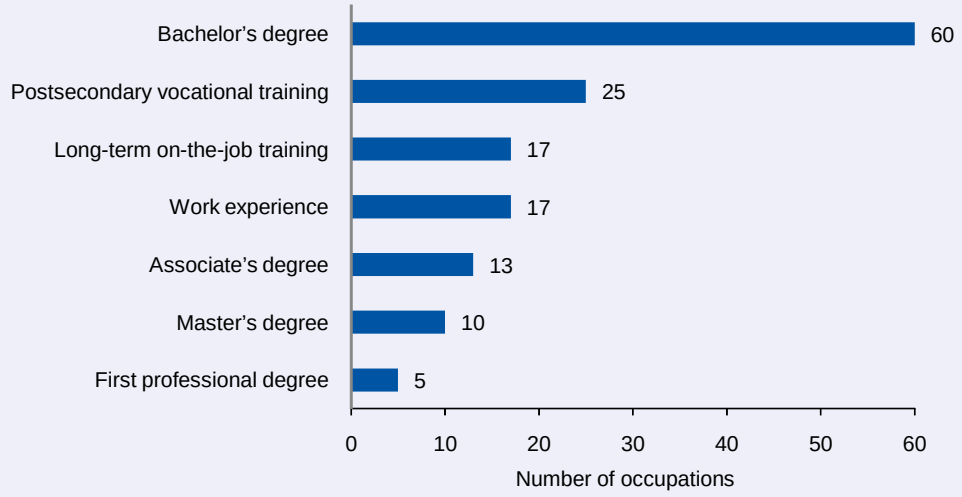
> *High-wage occupations*: Occupations paying more than the all-industry, all-ownership median wage for statewide or a particular region.
>
> *High-demand occupations*: Occupations having more than the median number of total (growth plus replacement) openings for statewide or a particular region.
>
> *High-skill occupations*: Occupations with a minimum educational requirement of postsecondary training or higher AND occupations with long-term on-the-job training or related work experience as a

minimum educational requirement and postsecondary training or above as a competitive educational requirement (Oregon Employment Department, 2007).

Overall Openings

Among the projected high-skill, high-wage, high-demand occupations, 60 (41 percent) are expected to typically require a bachelor's degree. Thirty-eight occupations (26 percent) are likely to require some form of postsecondary vocational training or an associate's degree. And although 34 occupations (23 percent) require only long-term on-the-job training or work experience, the competitive education requirement for these occupations is postsecondary training or higher (figure 41).

Figure 41. Typical Education Requirement for Projected High-Skill, High-Wage, High-Demand Occupations in Clackamas County: 2006–16



SOURCE: Oregon Employment Department: Occupation Explorer.

High-Skill, High-Wage, High-Demand Occupations with the Most Openings: 2006–16

The 10 high-skill, high-wage, high-demand occupations with the highest expected annual openings will each have a projected 30 or more openings each year. The two occupations with the highest projected total annual openings—registered nurses and

truck drivers—require an associate's degree and postsecondary vocational training, respectively (table 15).

Table 15. Top 10 High-Skill, High-Wage, High-Demand Occupations by Projected Annual Openings in Clackamas County: 2006–16

Occupation	2006 Employment	Typical Education Requirement	2008 Average Annual Salary	Projected Annual Openings: Growth	Projected Annual Openings: Replacement	Total Projected Annual Openings
Registered Nurses	2,088	Associate's degree	$72,977	53	49	**102**
Truck Drivers, Heavy and Tractor-Trailer	3,293	Postsecondary vocational training	$40,136	35	57	**92**
General and Operations Managers	1,938	Bachelor's degree	$111,301	28	39	**67**
Supervisors and Managers of Office and Administrative Support Workers	1,202	Work experience	$50,627	21	28	**49**
Supervisors and Managers of Retail Sales Workers	1,326	Work experience	$40,714	22	26	**48**
Elementary School Teachers, Except Special Education	1,708	Bachelor's degree	$50,259	4	38	**42**
Maintenance and Repair Workers, General	1,113	Long-term, on-the-job training	$37,194	13	23	**36**
Real Estate Sales Agents	1,238	Postsecondary vocational training	N/A	10	26	**36**
Physicians and Surgeons	693	First professional degree	N/A	22	11	**33**
Accountants and Auditors	985	Bachelor's degree	$59,168	12	20	**32**

N/A means not available.

SOURCE: Oregon Employment Department: Occupation Explorer.

Table 16 displays each of the top 10 high-skill, high-wage, high-demand occupations expected for Clackamas County in the next 10 years, along with corresponding education and training programs offered at CCC. The college has programs related to 7 of the top 10 occupations, including the occupation expected to have the most openings each year through 2016: registered nurses. CCC also has a program related to the occupation with the second highest anticipated openings: truck drivers, heavy and tractor-trailer. However, the college does not offer programs leading directly to credentials that some occupations require, such as elementary school teachers or physicians and surgeons.

Table 16. Top 10 Occupations and Related CCC Programs: 2006–16

Top 10 high-skill, high-wage, high-demand occupations (2006–16)	CCC Programs (current as of 2008)
Registered Nurses	AAS-Nursing
Truck Drivers, Heavy and Tractor-trailer	Cert-Transportation and Logistics Specialist (Less than 1 year)
General and Operations Managers	ASOT-Business Cert-Business Management (1 year) Cert-Project Management (Less than 1 year) Cert-Retail Management (Less than 1 year) Cert-Retail Management (1 year) AAS-Retail Management Cert-Supervisory Training (Less than 1 year)
Supervisors and Managers of Office and Administrative Support Workers	ASOT-Business Cert-Administrative Office Assistant Training (Less than 1 year) Cert-Administrative Office Assistant (1 year) AAS-Administrative Office Professional Cert-Business Management (1 year) Cert-Project Management (Less than 1 year) Cert-Retail Management (Less than 1 year) Cert-Retail Management (1 year) AAS-Retail Management Cert-Supervisory Training (Less than 1 year)
Supervisors and Managers of Retail Sales Workers	ASOT-Business Cert-Business Management (1 year) Cert-Project Management (Less than 1 year) Cert-Retail Management (Less than 1 year) Cert-Retail Management (1 year) AAS-Retail Management Cert-Supervisory Training (Less than 1 year) AAS-Marketing and Management
Elementary School Teachers, Except Special Education	
Maintenance and Repair Workers, General	AAS-Automotive Service Technology AAS-Collision Refinishing Technology Cert-Collision Repair/Refinishing Technology (1 year) AAS-Collision Repair Technology
Real Estate Sales Agents	
Physicians and Surgeons	
Accountants and Auditors	AAS-Accounting Cert-Accounting Clerk

SOURCE: Oregon Employment Department: Occupation Explorer; Clackamas Community College.

When reviewing this list, the college will need to think about several issues:

1. If CCC offers a related program, what is the capacity of the program? How many graduates come out of the program each year? How does that number relate to the number of expected job openings each year?
2. When CCC does not offer a related program, do any of CCC's other programs lead to connections with other postsecondary education or training institutions that do provide a degree, certificate, or credential related to this occupation?

High-Skill, High-Wage, High-Demand Occupations with the Least Openings: 2006–16

The Oregon Employment Department has projected that 17 high-skill, high-wage, high-demand occupations within Clackamas County will have three or fewer total job openings each year from 2006 through 2016. As shown in table 17, seven of those occupations require postsecondary vocational training or an associate's degree, and all but two of the occupations—dental laboratory technicians and glaziers—require some form of postsecondary education.

Table 17. Occupations with Three or Fewer Projected Openings in High-Skill, High-Wage, High-Demand Occupations: 2006–16

Occupation	2006 Employment	Typical Education Requirement	2008 Average Annual Salary	Projected Annual Openings: Growth	Projected Annual Openings: Replacement	Total Projected Annual Openings
Dentists, General	66	First professional degree	N/A	2	1	**3**
Health Educators	52	Master's degree	$61,729	2	1	**3**
Interior Designers	77	Bachelor's degree	N/A	2	1	**3**
Personal Financial Advisors	42	Bachelor's degree	N/A	2	1	**3**
Paralegals and Legal Assistants	88	Associate's degree	N/A	2	1	**3**
Surgical Technologists	84	Postsecondary vocational training	$50,317	2	1	**3**
Credit Analysts	91	Bachelor's degree	$54,086	1	2	**3**
Human Resources Managers, All Other	100	Bachelor's degree	$95,213	1	2	**3**
Kindergarten Teachers, Except Special Education	178	Bachelor's degree	$40,709	1	2	**3**
Technical Writers	64	Bachelor's degree	$57,230	1	2	**3**
Respiratory Therapists	50	Associate's degree	$56,707	1	2	**3**
Appraisers and Assessors of Real Estate	70	Postsecondary vocational training	N/A	1	2	**3**
Elevator Installers and Repairers	85	Postsecondary vocational training	N/A	1	2	**3**
Water and Liquid Waste Treatment Plant and System Operators	61	Postsecondary vocational training	$36,346	1	2	**3**
Glaziers	77	Long-term, on-the-job training	N/A	1	2	**3**
Telecommunications Equipment Installers and Repairers, Except Line Installers	132	Postsecondary vocational training	$56,841	0	3	**3**
Dental Laboratory Technicians	57	Long-term, on-the-job training	N/A	1	1	**2**

N/A means not available.

SOURCE: Oregon Employment Department: Occupation Explorer.

As shown in table 18, CCC offers several programs related to these "low-growth" occupations, including human resources and water and liquid waste treatment. CCC also offers a program relating to dental laboratory assistant, which has the lowest number of expected openings each year from 2006–16.

Table 18. Occupations with Three or Fewer Projected Openings and Related CCC Programs: 2006–16

Occupation	CCC Program
Dentists, General	
Health Educators	
Interior Designers	
Personal Financial Advisors	
Paralegals and Legal Assistants	
Surgical Technologists	
Credit Analysts	
Human Resources Managers, All Other	Human Resource Management Certificate
Kindergarten Teachers, Except Special Education	
Technical Writers	
Respiratory Therapists	
Appraisers and Assessors of Real Estate	
Elevator Installers and Repairers	
Water and Liquid Waste Treatment Plant and System Operators	AAS Water Technology Cert-Water Technology Short-term Cert-High Purity Water
Glaziers	
Telecommunications Equipment Installers and Repairers, Except Line Installers	
Dental Laboratory Technicians	Cert-Dental Assistant

SOURCE: Oregon Employment Department: Occupation Explorer.

Conclusion

This report provides information and observations based on Clackamas Community College internal student, course, and enrollment records; data from several state agencies, including the Oregon Department of Community Colleges and Workforce Development, the Oregon Department of Education, and the Oregon Employment Department; and U.S. census records. The report touches on many different topics with the intent of providing an immediate view of current trends and circumstances as well as an indication of longer-term trends and areas that will benefit from ongoing research and investigation by the college.

MPR Associates and staff from Clackamas Community College's Student and Enrollment Services Division and the Curriculum and Reporting Office worked closely throughout the process of creating this report to identify ways the college can incorporate the methodologies developed for this study in its internal research and planning procedures. Changes in enrollment, college capacity, and community needs happen quickly, and while some of the information contained in this report may soon be dated, the college will have opportunities to build on this initial study and continue analyzing available information so that it can be proactive as it plans for the future.

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