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# Unmet Need among Financially Needy College Students in the State of Washington



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## **ABOUT THE ERDC**

The research presented here uses data from the Education Research and Data Center, located in the Washington Office of Financial Management. ERDC works with partner agencies to conduct powerful analyses of learning that can help inform the decisionmaking of Washington legislators, parents, and education providers. ERDC's data system is a statewide longitudinal data system that includes de-identified data about people's preschool, educational and workforce experiences.

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## Executive Summary

This report concerns Washington high school graduates who entered Washington public higher education institutions and at some time received need-based financial aid. It looks at the persistence and completion rates of these students over six years. It is part of a larger series of studies that explore the impacts of need-based financial aid on completion of postsecondary education.

### **There are more women than men in the study**

There are many more women in the study cohorts than men. This is the result of several factors:

- The high school graduating classes of 2008 and 2009, the starting point for this study, include more women than men.
- Women are more likely than men to pursue postsecondary education.
- Women are more likely than men to receive need-based financial aid.

Furthermore, women are more likely than men to earn a degree. For these reasons, the findings of the study were disaggregated by gender.

### **Students with greater amounts of unmet need were less likely to persist and complete than students with lower amounts of unmet need**

Not surprisingly, students having higher levels of “unmet need” (basically, the costs of higher education — tuition, room and board, books, etc. — not covered by family contributions and financial aid) are less likely to continue attending college and graduating.

### **In spite of being less expensive, community and technical colleges have higher levels of unmet need than the public four-year institutions**

Somewhat surprisingly, the levels of student unmet need are higher at the community and technical colleges (CTCs) than at the four-year universities and college. Even though the costs of attending community or technical colleges are considerably less than at four-year institutions:

- The students attending community or technical colleges generally are poorer and the expected family contributions are less.
- The financial aid packages at community and technical colleges are smaller than at four-year institutions.

## **Students with better high school academic records are more likely to receive better financial aid packages**

Among all the cohorts, students with higher high school GPAs, on average, had lower amounts of unmet need (as measured by either the first-year level of unmet need or the average annual amount of unmet need). With the exception of men who started at a four-year institution, students who had met the high school math assessment standard were more likely to have lower amounts of unmet need.

## **Students attending the four-year institutions borrow more than students attending the community and technical colleges; students attending the community and technical colleges work more than students attending the four-year institutions**

One-half of the students beginning at a four-year institution borrow an average \$6,000 in unsubsidized loans<sup>1</sup> in their first year while only about 10 percent of the beginning CTC students borrow, on average, \$2,600. Two-thirds of the first-year CTC work about 15 hours per week during the academic year, earning \$6,000, while one-half of the first-year four-year students work six hours per week, earning \$2,200.

## **Even students who do not complete a bachelor's degree borrow**

Not all students graduate, and many students who do not graduate take out loans. Overall, 70 percent of the students who start at a four-year institution earn a bachelor's degree within six years after graduating from high school. Of the remaining students who do not earn a bachelor's degree, 85 percent leave with an average \$19,000 in debt. At the CTCs, of those who do not earn a bachelor's or associate degree or a long-term certificate, 35 percent incur an average \$9,000 in debt.<sup>2</sup>

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1 Federal student loans come in two flavors: subsidized and unsubsidized. Unsubsidized loans may be made in excess of a student's financial need, and interest begins accruing from the date of the first loan disbursement. Subsidized loans are available to undergraduate students with financial need, not to exceed the amount of financial need, with interest paid by the federal government while the student is in college and for a six-month grace period after graduation.

2 In this report "bachelor's degree" includes all types of bachelor degrees such as Bachelor of Arts, Bachelor of Science, Bachelor of Applied Science, etc. "Associate degree" includes all types of associate degrees, transferable and nontransferable to a four-year program, such as Associate in Arts, Associate in Science, Associate of Applied Science, etc.

## Introduction

This study provides a descriptive analysis of the outcomes (persistence and completion) of students who have received need-based financial aid. This is a follow-up to an Education Research and Data Center (ERDC) study prepared in 2017, “Persistence and Completion of Students Receiving Need-based Financial Aid.” The next study will consist of a survival analysis of these students as they progress year-by-year through postsecondary education. The final study will be a multivariate analysis of different financial aid interventions.

### Study cohorts

This study includes only students who have received need-based financial aid sometime while attending a Washington public university or college. The study breaks these students into four groups based on their beginning institutional level and gender:

- Women who began their postsecondary education at a Washington public four-year institution (7,158 students)
- Men who began their postsecondary education at a Washington public four-year institution (5,397 students)
- Women who began their postsecondary education at a Washington public community or technical college (CTC) (9,820 students)
- Men who began their postsecondary education at a Washington public CTC (7,365 students)

Students who began in one sector and transferred to another sector are maintained in their initial cohort.

All students graduated from a Washington public high school in either 2007–08 or 2008–09. This study follows these students for six years: the 2008 graduates until the 2013–14 academic year and the 2009 graduates until the 2014–15 academic year.

Part-time and transfer students are included in this study if they stay within the Washington public higher education system. Students who begin postsecondary education anytime within six years after graduating from high school are included. The study is not limited to students who begin in the first year after graduating from high school. Students who transfer to a Washington private institution or an out-of-state institution, for which no information on financial aid is available, are not included in the cohorts if they have not first earned a degree or long-term certificate. Incidental students (defined as students who have earned fewer than 15 college-level credits over six years) have been excluded. This exclusion follows on the research conducted by Clifford Adelman, who has extensively studied college completion and found that these

students take two or three courses and then disappear from education.<sup>3</sup> The exclusion of the noncompleting students who transfer to a private or out-of-state institution and the incidental students has the effect of increasing persistence and completion rates when compared to rates calculated that include all entering freshmen.

See Appendix A for additional details on the criteria for including/excluding students from this study and their characteristics.

## Unmet need

The key variable used in this descriptive analysis of financial aid is “unmet need” — the gap remaining to pay for the costs of higher education after taking into account the expected family contribution and any need-based financial aid that the student may receive.

The cost of attendance (COA) at a higher education institution comprises tuition and fees, books and supplies, room and board, transportation and personal expenses. Some, all or none of these expenses are expected to be paid by the family or student. The amount expected to be paid by the family or student — known as the expected family contribution (EFC) — is based on the family’s and student’s income and assets, family size and the number of family members attending college during the year. The EFC is calculated according to a formula established in federal law.

The difference between COA and EFC is a student’s “financial need.” Need-based financial aid can be awarded to the student to offset all or some of the student’s financial need. Any remaining amount is considered “unmet need.”

$$\text{Unmet need} = \text{COA} - \text{EFC} - \text{need-based aid}$$

For this study, need-based financial aid is the total amount of financial aid (including merit aid) received by a student who has financial need minus any unsubsidized loans. Students receive financial aid from a variety of programs offered by the federal government, the state government, the institutions and private sources. This aid comes in the form of grants, loans and Work-Study. The loans may be subsidized or unsubsidized. The unsubsidized loans do not require that a student have financial need to participate, and students with need may take out these loans in excess of their need. To arrive at need-based aid, these loan programs have been deducted from the total amount of all aid received by the student.<sup>4</sup>

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3 For example, “The New College Course Map and Transcript Files,” Clifford Adelman, U.S. Department of Education, October, 1995. There are students “... whose records consist either of nothing but withdrawals, incompletes, and failures or who take two or three courses and then disappear from education ...” (page 22). Adelman’s incidental student threshold was 10 semester credits; this study converted the threshold to 15 quarter credits. See Appendix A for more information.

4 The loan programs deducted from total financial aid to arrive at need-based aid are Federal Direct Unsubsidized loans, Federal Parent PLUS loans, Federal Graduate PLUS loans, institutional loans, conditional loans, private loans and other institutional loans (all types). The subsidized loan programs

## Findings

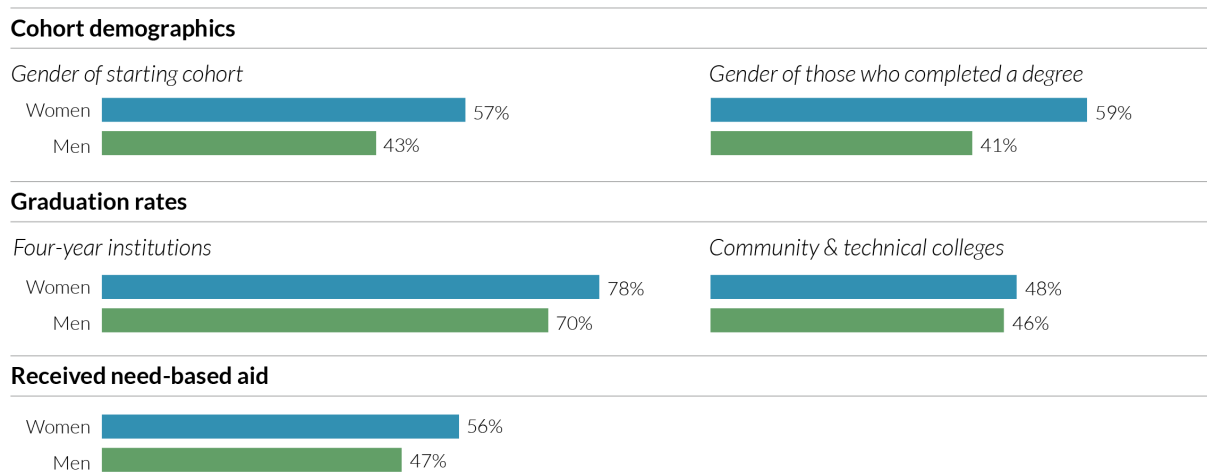
The cohort consisted of more women than men; women also completed their degrees at higher rates and were more likely to receive need-based aid.

In the study cohorts identified above, women greatly outnumber men. Combined, 57 percent of the four cohorts are women and 43 percent are men. Of those who completed postsecondary education, 59 percent were women and 41 percent were men. See Figure 1 (also Table C1a and Table C1b in the appendix).

This result is derived from several factors. First, slightly more women than men graduate from high school. The high school graduating classes of 2008 and 2009 were 51 percent women and 49 percent men for each year. Second, women high school graduates are more likely to enter postsecondary education. In a prior report, it was found that 78 percent of women high school graduates entered postsecondary education (public and private, in Washington and out of state) within six years of graduating from high school, compared to 72 percent of the male graduates.<sup>5</sup> Forty-six percent of the women entered Washington public four-year institutions and CTCs and earned at least 15 college credits, compared with 44 percent of men.

Women are more likely to receive need-based aid, the focus of this study. Fifty-six percent of the women students received need-based financial aid sometime during the six years after high school graduation. For the men, it was 47 percent. Finally, women are more likely

**Figure 1.** Gender differences in cohort and graduation rates.



included in need-based aid are Federal Perkins loans, Federal Stafford or Direct Subsidized loans, Federal Nursing scholarships, Federal Nursing Health loans and Federal TEACH grants.

5 "Persistence and Completion of Students Receiving Need-based Financial Aid," ERDC, 2017, page 9.

to graduate than men. For the students who received need-based financial aid and began at a four-year institution, 78 percent of the women earned a bachelor's degree while 70 percent of the men received a bachelor's degree. At the CTCs, 48 percent of the women earned a bachelor's or associate degree or long-term certificate, compared to 46 percent of the men.

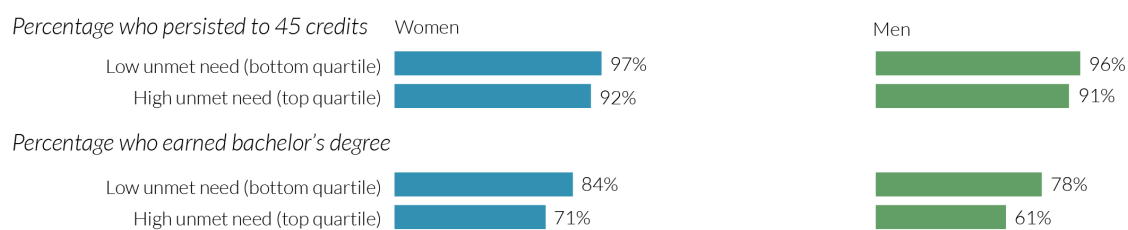
Students with greater amounts of unmet need were less likely to persist and complete than students with lower amounts of unmet need.

Each of the four study cohorts has been stratified into four equal numbered subgroups, or quartiles, based on the student's amount of unmet need. For first-year students persisting to 45 credits, the amount of unmet need is calculated using their first-year of attendance financial aid record.<sup>6</sup> The average amount of unmet need over all the years a student received need-based aid is used to create the quartiles for determining completion rates. Students do not necessarily receive need-based aid every year they are attending a college or university; whether a student receives need-based aid and the amount of unmet need can vary from year-to-year.

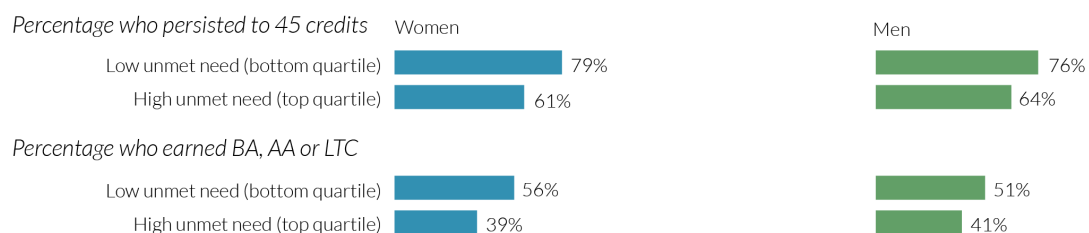
In Figure 2 (see also Table C2 in the appendix), the students are divided into quartiles based on each student's level of unmet need. The lowest quartile includes the 25 percent of students who have the lowest amount of unmet need (from \$0 to the 25<sup>th</sup> percentile).

**Figure 2.** Differences in persistence and graduation rates, by level of unmet need.

#### Four-year institutions



#### Community & technical colleges



6 The "first-year" is the first year that a high school graduate attended college. It is not necessarily the first year after high school graduation but rather the first year that a student entered postsecondary education, which may be one or more years after high school graduation.



The highest quartile contains the 25 percent of students with more than the 75<sup>th</sup> percentile amount of unmet need.

Persistence is defined as completing 45 college-level credits (one year's worth) at any public institution within six years after graduating from high school. Transfer and part-time students are included. In all cases, students in the lowest quartile of unmet need persisted at higher rates than students in the highest quartile with the greatest amount of unmet need. For example, 97 percent of the four-year women with the least amount of unmet need (lowest quartile) persisted to 45 credits while 92 percent of the students with greatest amount of unmet need (highest percentile) persisted. The gap between the lowest and highest quartiles was widest for CTC women, where 79 percent of the students in the lowest quartile persisted, compared to 61 percent in the highest quartile.

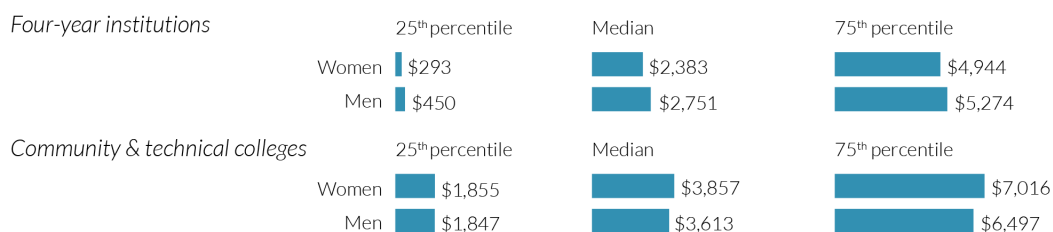
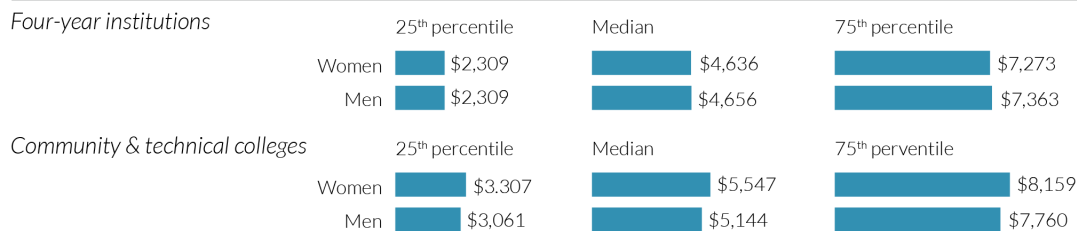
Completion for a student first entering a public four-year institution is considered to be earning a bachelor's degree within six years after graduating from high school. For a student first entering a CTC, completion is considered to be earning a bachelor's or associate degree or a long-term certificate within six years after graduating from high school. Again, this includes transfer and part-time students. Students who began at CTC and earn a bachelor's degree from a four-year institution are counted as a CTC student.

As with persistence, students with lower average amounts of unmet need completed at higher rates than students with greater average amounts of unmet need. The 25 percent of four-year women with the least average amount of unmet need had a completion rate of 84 percent, while 71 percent of the four-year women with greatest average amount of unmet need obtained a bachelor's degree. Again, the widest difference between the lowest and highest quartiles was CTC women, where 56 percent of the students with the least amount of unmet need completed, while 39 percent of the students with the most amount of unmet need completed.

In spite of being less expensive, the levels of unmet need are higher at the CTCs than at the four-year institutions.

Unmet need is the gap remaining to pay for the costs of higher education after taking into account the expected family contribution (EFC) and any need-based financial aid that the student may receive. The quartile dividing points on unmet need for first-year students are provided in the top portion of Figure 3 (see also Table C3a and Table C3b in the appendix). For example, one-half of the women students starting at a four-year institution receiving need-based financial aid in their first year had unmet need of \$2,383 or less and one-half had unmet need greater than \$2,383. One-quarter of the four-year women had unmet need of \$293 or less and one-quarter had unmet need of more than \$4,944.

Students beginning at four-year institutions had the least amount of unmet need, with women having slightly lower amounts of unmet need than men. CTC students had the highest levels of unmet need, with women at CTCs having slightly more unmet need

**Figure 3.** Unmet need by quartile, gender and institution.**First-year unmet need****Average annual unmet need**

than CTC men. At the median, the CTC students had unmet need of \$3,600 (men) to \$3,900 (women). The median unmet need for the CTC students was \$900 to \$1,500 higher than for the four-year students.

The three points that split the cohorts into four equal groups based on all the years the students received need-based aid (average annual unmet need) is shown in the bottom portion of Figure 3. The percentile points represent the average amount of unmet need over the years a student received need-based aid while in postsecondary education. At the four-year institutions, the 25 percent of the students with the least amount of unmet need averaged less than \$2,300 of unmet need per year. The median amount of unmet need was \$4,600 per year. The 25 percent of students with the greatest amount of unmet need averaged more than \$7,300 per year in unmet need. At the CTCs, the quartile break points are higher, more so for women CTC students than men. The median amount of unmet need averaged \$5,100 for CTC men, about \$500 higher than men four-year students. For CTC women, the median amount of unmet need was \$5,500, some \$900 higher than women four-year students.

That unmet need is greater at the CTCs is somewhat surprising: CTCs cost significantly less than four-year institutions and thus it should not take as much financial aid to meet a student's financial need. With the major aid programs (Pell Grant and State Need Grant) going to both sets of students, one may think that unmet need, on average, should be less at the CTCs. The quick answer as to why that is not the case is that (a) students receiving aid at a CTC are, on average, poorer than students receiving aid at a four-year institution and, thus, are in need of more aid, and (b) the financial aid packages at the four-year institutions are about double the size of the aid packages at the CTCs. Taking a look

at the averages in Figure 4 (see also Table C4 in the appendix) and Table 1 clarifies the results.

Figure 4 presents averages for first-year need-based financial aid recipients — students who received need-based aid while in their first year of postsecondary education. The table includes data on the amounts of unmet need, need-based aid received and the expected family contribution as well as the approximate cost of attendance.

**Cost-of-attendance:** CTCs are about \$7,600 per year cheaper than public four-year universities and colleges. The annual cost of attendance at a CTC for a needy student is in the range of \$11,600, compared to \$19,200 at a four-year institution. The cost of attendance includes not only tuition and fees but also room and board, books and supplies, transportation and personal expenses.

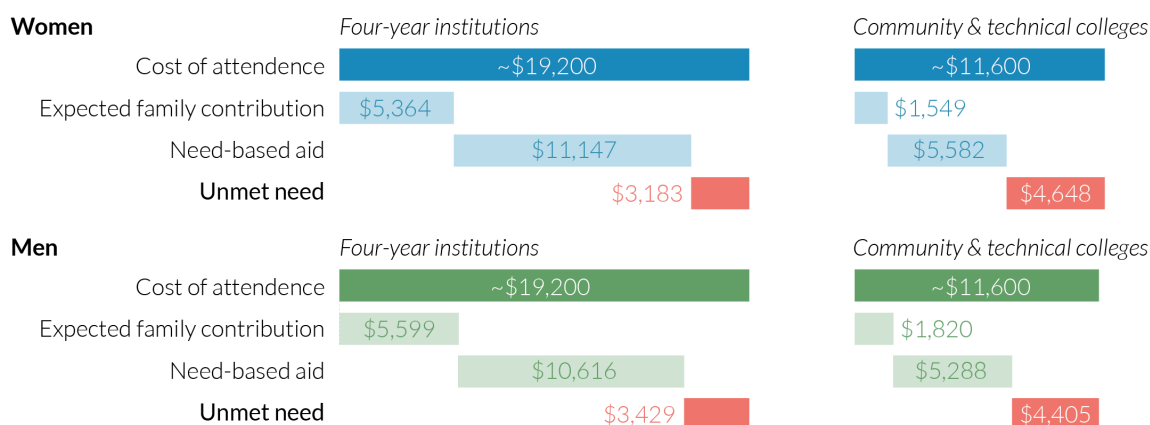
**Expected family contribution:** The EFC is based on a family's and student's income and assets, family size and the number of family members attending college during the year. CTC students are on average poorer than students attending a four-year institution. CTC students have a lower EFC than four-year students: The mean EFC for a CTC student is \$1,500 (women) to \$1,800 (men), compared to an EFC of \$5,300 (women) to \$5,600 (men) for a four-year student. For about one-half of the CTC students, there is no EFC, while this true for one-fifth of the four-year students.

**Financial aid:** The financial aid packages are richer at the four-year institutions. On average, twice as much aid (excluding unsubsidized loans) is provided at the four-year institutions than at the CTCs: \$11,000 compared to \$5,500.

**Unmet need:** The combination of lower EFC and smaller aid packages, even with a lower cost of attendance, results in unmet need at the CTCs being \$1,000 to \$1,500 higher than at the four-year institutions.

Table 1 presents the first-year average financial aid packages at the four-year institutions and the CTCs by the type of aid provided and the source of the aid. The average need-based financial aid packages at the four-year institutions are composed of three-fourths grants, about one-fifth subsidized loans and a small amount of Work-Study. At the

**Figure 4.** Average first-year costs and aid.



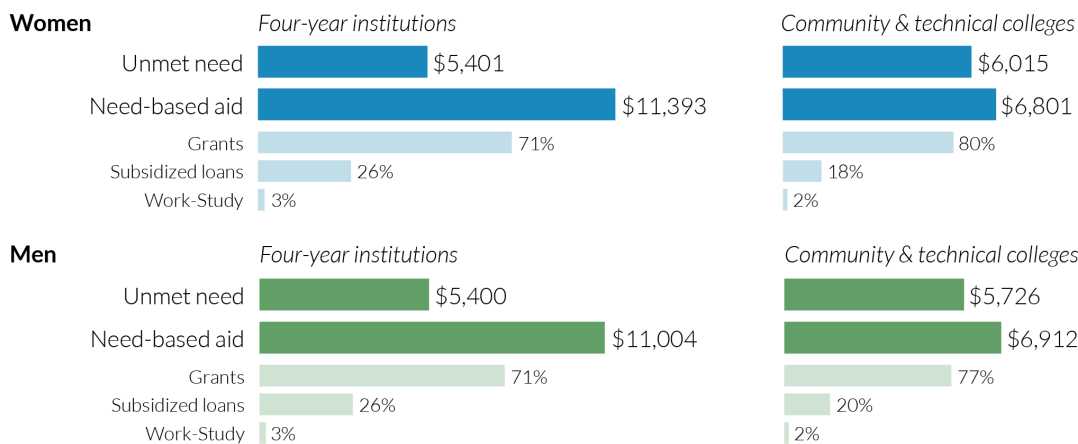
CTCs, the average need-based financial aid package is made up of nearly 90 percent grants, with about 10 percent in subsidized loans and a small amount of Work-Study.

Table 1: Average (mean) first-year financial aid by type and source.

	Four-year women	Four-year men	CTC women	CTC men
Need-based aid	\$11,147	\$10,616	\$5,582	\$5,288
Shares by type of aid				
Grants	77%	76%	89%	88%
Subsidized Loans	20%	23%	8%	10%
Work-Study	2%	1%	3%	2%
Shares by source				
Federal	46%	47%	65%	67%
<i>Pell grants</i>	20%	20%	55%	56%
<i>Subsidized loans</i>	20%	23%	8%	10%
<i>All other federal</i>	5%	5%	2%	2%
State	26%	25%	25%	24%
<i>State Need Grant</i>	24%	24%	22%	22%
<i>All other state</i>	2%	2%	3%	3%
<i>Institutional &amp; other</i>	28%	28%	10%	8%

For needy four-year students, nearly one-half of the aid came from the federal government, mostly split between Pell Grants and subsidized loans. For needy CTC students, the federal government accounted for two-thirds of the aid package, mostly in Pell Grants. State government accounted for a quarter of both the four-year students' and the CTC students' aid package, primarily in the form of the State Need Grant. Institutional and other aid is another major difference between the four-year and CTC financial aid packages: institutional aid composed nearly 30 percent of the four-year aid package, compared to about 10 percent at the CTCs.

Figure 5. Annual average unmet need and need-based aid, by gender and institution type.



Looking beyond the first year to the entire postsecondary experience, the difference in unmet need narrows but still remains higher for students who began at the CTCs.<sup>7</sup> Unmet need averages \$300 to \$600 higher annually for the initial CTC students than at the students who began at a four-year institution (see Figure 5 and Table C5 in the appendix). The four-year students received, on average, a larger amount of aid per year, about \$11,000 annually, compared to the initial CTC students, whose aid averaged about \$7,000 per year.

Students with better high school academic records are more likely to receive better financial aid packages.

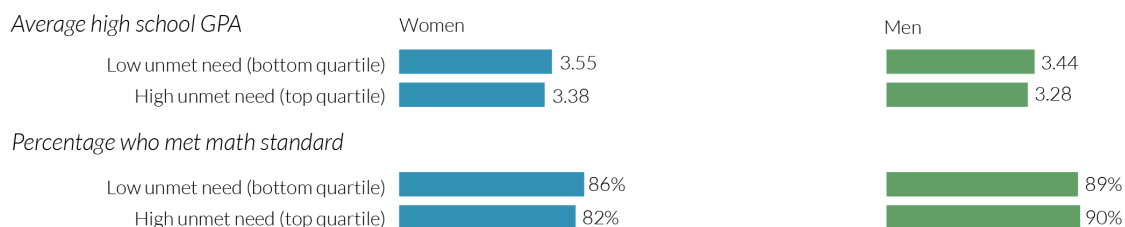
The level of financial aid a student receives, as measured by the remaining amount of unmet need, is apparently not strictly based on need alone. If it were, then every student would have the same amount of unmet need. As it is, some students have zero unmet need while other students have thousands of dollars in unmet need.

The amount of need-based financial aid a student receives in relation to need likely is contingent on many factors, including, for example, the choice of school and that institution's capability of providing financial aid; the student's eligibility for federal, state or institutional aid programs; and a student's ability to acquire aid from outside sources.

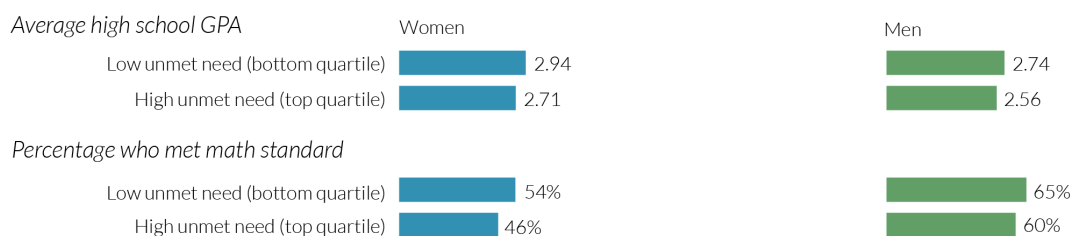
7 Students who initially began at a CTC (4-year institution) and later transferred to a 4-year institution (CTC) are kept in their initial cohort even though the aid packages they received after transferring were from a 4-year institution (CTC).

**Figure 6.** First year unmet need by gender and academic performance.

#### Four-year institutions



#### Community & technical colleges



In addition, whether a student received aid beyond the first year depends on application for and continued eligibility for aid.

Academic ability also appears to play a role. Among all the cohorts, men and women, four-year institutions and CTCs, the students with the highest average high school GPAs generally received the best financial aid packages in postsecondary education. As shown in Figure 6 (see also Table C6 in the appendix), students in the lowest quartile with the least amount of unmet need averaged higher high school grades than the students with the highest amounts of unmet need. While in their first year at a four-year institution, women with the least amount of unmet need had an average high school GPA of 3.55 while women the highest levels of unmet need had an average high school GPA of 3.38.

Another marker of academic ability is whether the student met the high school math assessment standard. With the exception of four-year men, the students who met the high school math assessment standard generally received the better financial aid packages. Ninety percent of the four-year men met the high school math assessment standard and are evenly distributed across the unmet need quartiles. For CTC women who received need-based at any time while in postsecondary education, 55 percent overall had met the math standard but 61 percent of the women with the lowest average amount of unmet need met the math standard while 53 percent of the students with the highest average amounts of unmet need met the standard.

A stronger high school academic record by itself would make it more likely for a student to earn a postsecondary degree or certificate. It is not clear to what extent better high school academic records and better financial aid packages *separately* had on higher college completion rates.

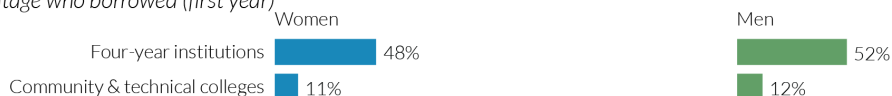
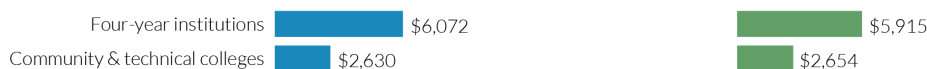
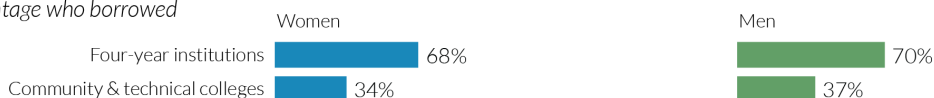
## Four-year students borrow more than CTC students; CTC students work more than four-year students

Two ways that students might cover unmet need are by borrowing and working. The amounts of unmet need are shown in Figures 4 and 5 above. First-year four-year students had average unmet need of about \$3,300 and first-year CTC students' unmet need averaged \$4,500. Over all the years students receive need-based aid, the needy four-year students' average annual unmet need was \$5,400 and needy CTC students had an annual average unmet need of \$5,900.

Loans offered by the federal government, institutions or the private sector may be subsidized or unsubsidized.<sup>8</sup> Subsidized loans have been included in the definition of need-based financial aid. Unsubsidized loans, which do not require that a student

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<sup>8</sup> Again, subsidized loans are available to students with need, up to the need amount, with interest paid by the federal government while the student is in college and for a six-month grace period after graduation. Unsubsidized loans can be excess of need and interest begins accruing from the first loan disbursement.

**Figure 7.** Unsubsidized borrowing, by gender and institution type.**First year***Percentage who borrowed (first year)**Average \$ borrowed (first year)***All years***Percentage who borrowed**Average \$ borrowed*

have financial need to participate and may be in excess of the need amount, have been excluded from need-based financial aid. The share of students who participate in unsubsidized student loan programs and the amounts borrowed are shown in Figure 7 (see also Table C7 in the appendix).<sup>9</sup>

In their first-year of attending a four-year college, one-half of the students borrowed an average \$6,000 in unsubsidized loans. Unsubsidized loans were far less common at the CTCs: Just slightly more than 10 percent borrowed an average of \$2,600. Over their postsecondary education careers, 70 percent of the students who started at a four-year institution borrowed a cumulative average \$16,000 in unsubsidized loans. Around 35 percent of students who started at a CTC borrowed a cumulative average of \$8,500. For some of these CTC students, this borrowing took place after transferring to a four-year institution.

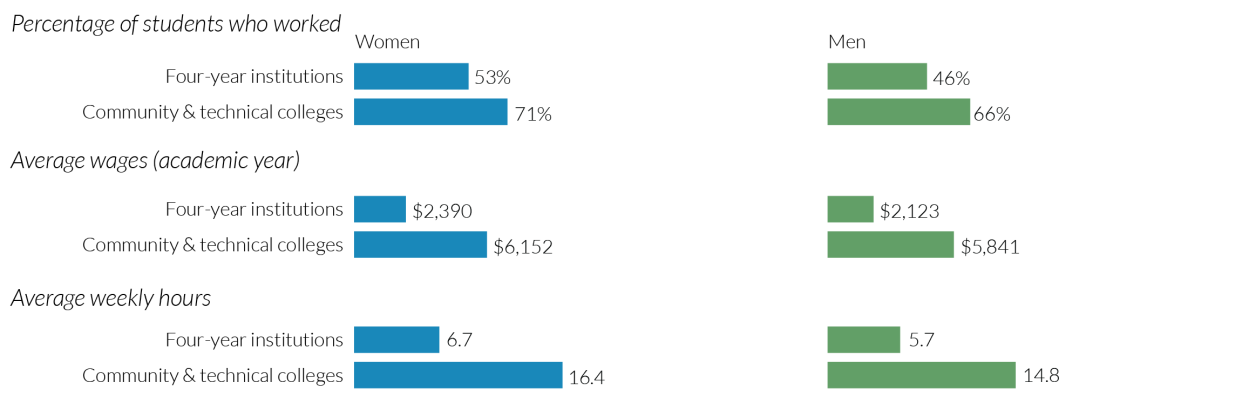
Besides financial aid and unsubsidized loans, earnings from work are another way to cover the costs of postsecondary education. Students might have worked during high school, summers or the academic year while enrolled in postsecondary education.

As shown in Figure 8 (see also Table C8 in the appendix), CTC students worked more hours and earned more during the academic year (October 1 through June 30) than

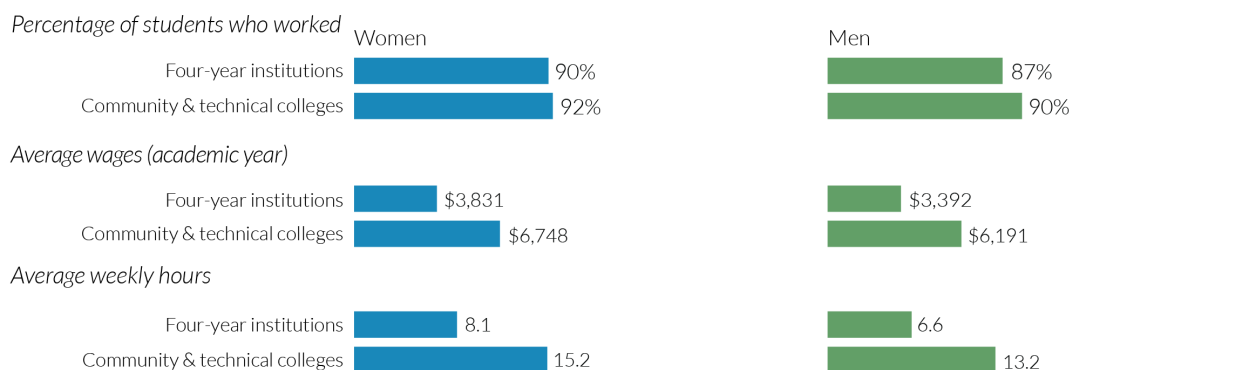
<sup>9</sup> The loans included in this analysis are only loans that go through (or are reported by) an institution's financial aid office issued to needy students and are reported to the Washington Student Achievement Council. The source of the loans may be federal, institutional or private. Loans that are not reported, such as loans taken out directly from a bank or lending institution or taken out by parents, are not included. Loans taken out by students who are not then receiving need-based aid are not included.

**Figure 8.** Employment during college, by gender and institution type.

**First year**



**All years**



four-year students.<sup>10</sup> Women in each sector tended to work more than men in that sector. During their first year, more than two-thirds of the CTC students worked on average 15–16 hours per week during the academic year, earning about \$6,000. About one-half of the four-year students worked on average six–seven hours per week, earning \$2,100–\$2,400 in their first year.<sup>11</sup>

Over their entire postsecondary education years, about 90 percent of all the students in each of the sectors worked sometime between October and June. On an annual

10 To be included in this analysis, the wages and hours worked needed to have been reported to the Washington Employment Security Department by the student’s employer. Self-employment, independent contractors or other employment arrangements (e.g., babysitting, newspaper carriers) where reporting does not take place are not included. Average wages and weekly hours during a student’s first year of postsecondary education include the period from October 1 through June 30 of the year in which the student first entered postsecondary education. This aligns somewhat with a fall to spring academic year. All years average annual wages and average weekly hours are the wages earned and hours worked from October 1 through June 30 during the years in which a student is participating (earning credits) in postsecondary education. Summer employment (July 1 through September 30) and employment in years in which the student is not earning credits have not been included.

11 Note: For the purposes of this analysis, academic year consists of any reported employment occurring from October 1 through June 30.

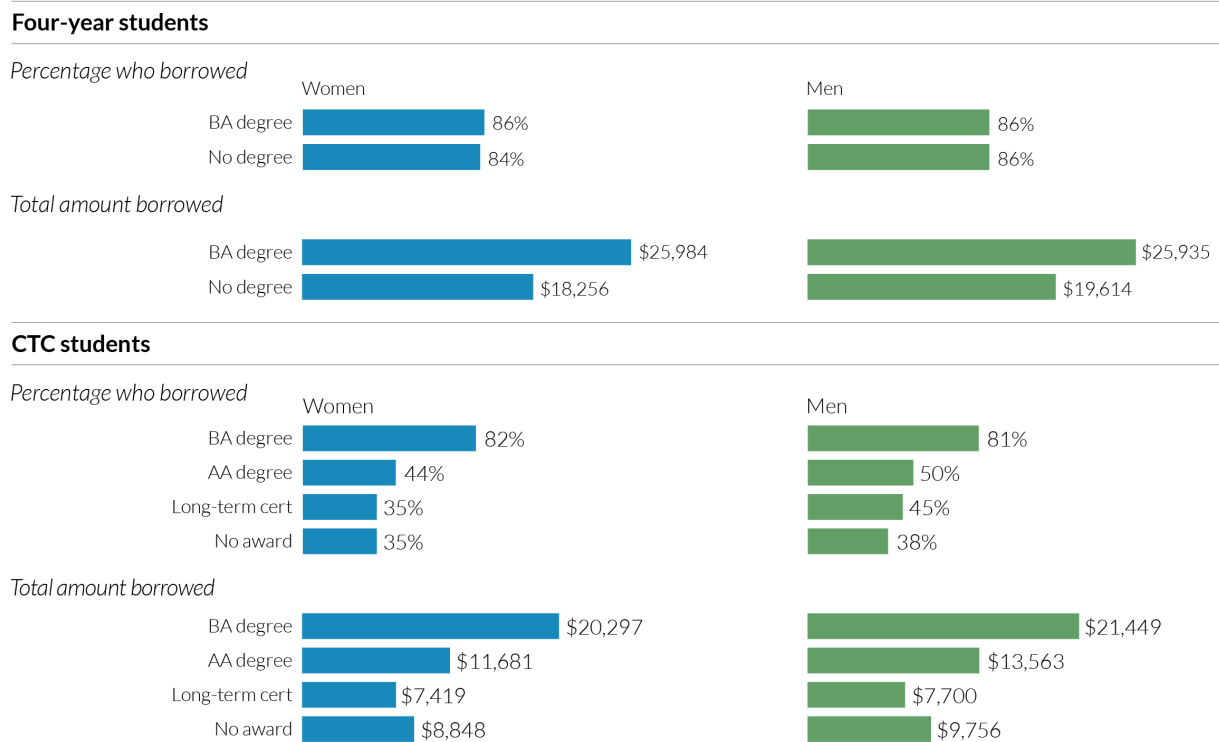


average basis, the CTC students worked more hours and earned more than the four-year students. While they were attending college, the CTC students were working 13–15 hours per week, making from \$6,200 (men) to \$6,700 (women) for nine months of employment. The four-year students worked an average seven–eight hours per week, earning \$3,400 (men) to \$3,800 (women) for nine months of employment.

Even students who do not graduate incur debt.

As mentioned, loans come in two flavors: subsidized and unsubsidized. Table 1 and Figure 5 (see also Table C5 in the appendix) present the share of subsidized loans as a percentage of the average need-based financial aid packages. For first-year students, subsidized loans make up about one-fifth of the four-year students’ aid packages and 10 percent of the CTC students’ aid packages. Subsidized loans are over one-fourth of the aid packages for four-year students and 20 percent for the CTC students over the course of their postsecondary education years. Figure 6 (see also Table C6 in the appendix) shows the amount of unsubsidized borrowing conducted by students taking out such loans: \$8,000–\$9,000 for CTC students and \$16,000 for students starting at a four-year institution. These amounts are only loans taken out by need-based financial aid recipients in the years they received need-based aid. Loans taken out in years in which no need-based financial aid was received are not included in the totals.

**Figure 9.** Debt incurred by students, by institution type and gender.



Students who do not complete and graduate with a degree or certificate also borrow. Figure 9 (see also Table C9a and Table C9b in the appendix) shows the amount of borrowing, both subsidized and unsubsidized loans, conducted by completers and noncompleters.<sup>12</sup> About 85 percent of the students who start at a four-year institution borrow sometime during their postsecondary education. The average amount borrowed by the students who complete is \$26,000. For noncompleters — those students who do not obtain a bachelor's degree — the average borrowing is \$18,000 for women and \$20,000 for men.

At the CTCs, the students who obtain a bachelor's degree (by later transferring) incur the most debt, with more than four-fifths of the students earning a bachelor's degree borrowing an average \$20,000. Fewer students earning an associate degree or a long-term certificate borrow, and when they do, they borrow less money. As to the noncompleters, just more than one-third of the students who never earn a degree or certificate leave postsecondary education with \$9,000–\$10,000 of debt.

## Conclusions

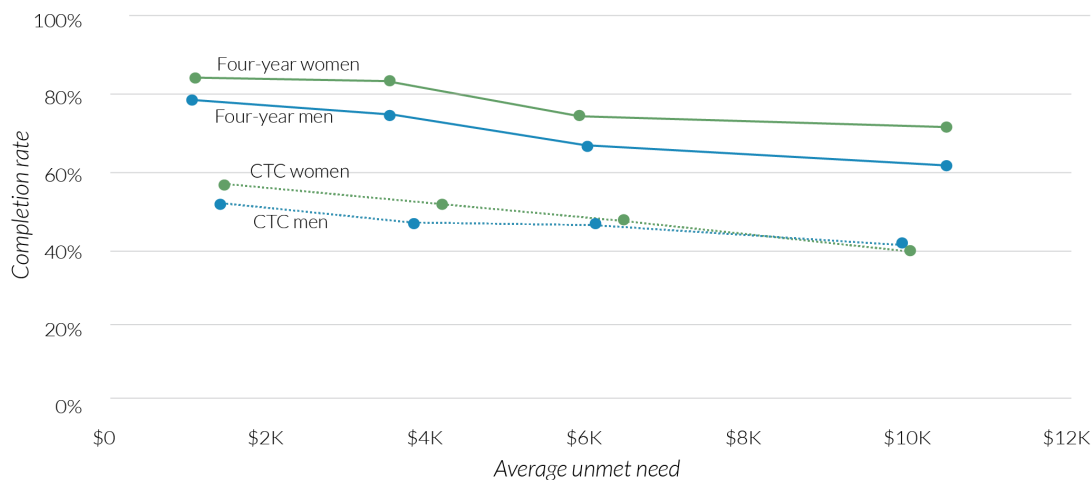
The ERDC's 2017 report "Persistence and Completion of Students Receiving Need-based Financial Aid" found that 56 percent of the Washington high school graduates who first entered a Washington public four-year institution received need-based financial aid at some point in their academic career. Students who received need-based aid, on average, persisted and completed their degrees at rates slightly lower than those students who did not receive any need-based aid — 75 percent compared to 79 percent. Students who received need-based also had slightly less impressive high school academic records — 83 percent had a high school GPA of 3.0 or better compared to 87 percent of nonaided student; 86 percent met the math assessment standard compared to 91 percent of the nonaided students.

The 2017 report also found that the 52 percent of the students who first entered a CTC received need-based aid sometime in their academic career. The CTC students presented a different picture from the four-year students — CTC students who received need-based financial aid completed at a higher rate (44 percent) than did students who did not receive need-based aid (35 percent). As with the four-year need-based aid recipients, the CTC need-based recipients had slightly less impressive high school academic backgrounds compared to the nonaided students, with 64 percent having a high school GPA over 3.0 compared to 72 percent of the non-aided students and 53 percent met the math assessment standard compared to 66 percent of the non-aided students.

The 2017 report also noted that women were more likely than men to go on to postsecondary education, more likely to receive need-based financial aid and more likely to graduate.

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<sup>12</sup> Again, the amounts in Figure 8 (and Table C8 in the appendix) are only for loans taken out in the years the student was receiving need-based financial aid. Any loans taken out during times the student was not receiving need-based aid are not reported.

**Figure 10.** Unmet need and completion.

This report takes a closer look at the need-based aid recipients and the amount of aid received. The students have been separated by sector and by gender. This is based on findings from the 2017 report that there are significant differences between students who enter and complete at the four-year institutions and students who enter and complete at the CTCs. And because there are noticeable differences in college-going rates, financial aid reception and completion rates, women and men are also separated into different cohorts.

By looking at the four cohorts by differing level of financial aid received — or more precisely, the lack of financial aid as measured by unmet need — it can be observed that students who had better financial aid packages with less unmet need persisted and completed at higher rates. Figure 10 (see also Table C10 in the appendix) shows that students with larger amounts of unmet need (i.e., bigger gaps between their financial need — the cost of attending a postsecondary institution minus the amount that the family and student were expected to pay for that education based on the family’s income and assets — and the amount of financial aid provided) completed college at lower rates.

Financial aid is not the only factor involved in whether a student persists and completes higher education. Other, possibly more important, factors include the academic intensity of the student’s high school curriculum and the socioeconomic status of the student’s family.<sup>13</sup> Students in this study who received greater amounts of need-based aid also had better high school academic records.

The 2017 ERDC study looked at high school GPAs. Students with higher GPAs persisted and completed at greater rates than students with lower GPAs. For example, 88 percent of four-year students with a high school GPA above 3.5 obtained a bachelor’s

13 For example, see “The Toolbox Revisited: Paths to Degree Completion from High School through College,” (Clifford Adelman, U.S. Department of Education, 2006) for a discussion of factors associated with completion of a bachelor’s degree.

degree, while 52 percent of the students with a high school GPA between 2.5 and 3.0 did so. Among CTC students, 69 percent of the students with a high school GPA above 3.5 earned a degree or long-term certificate, while 36 percent with a GPA between 2.5 and 3.0 earned a degree or long-term certificate.

The 2017 study also looked at whether students had been eligible for free or reduced price lunches (FRPL) while in high school, a commonly used measure of socioeconomic status. Students who had been FRPL-eligible persisted and completed at lower rates than students who had not been. Among the four-year students, 79 percent of the non-FRPL students obtained a bachelor's degree while 68 percent of the FRPL-eligible students did. At the CTCs, 43 percent of the non-FRPL students obtained a bachelor's or associate degree or long-term certificate compared to 34 percent of the FRPL-eligible students.

This study does not include students who did not receive need-based financial aid. Including these students who did not receive need-based aid would have produced biased results for a number of reasons. As noted in the 2017 report, there are academic and socioeconomic differences between students who receive need-based aid and those students who do not. In a study that is not carefully designed, "financial aid" can assume the explanatory power of other variables and ignore that students who receive financial aid have other issues that lead to lower graduation rates. Being eligible for financial aid in itself has a negative effect on completion while receiving financial aid should have a positive effect on graduation. If the positive effect of the latter is not larger than the negative effect of eligibility, it might be easy to arrive at the erroneous conclusion that providing aid has an overall negative effect on completion.<sup>14</sup>

This analysis, by looking at different financial amounts only among students who are eligible for financial aid, indicates that students with better financial aid packages and less unmet need persist and complete at higher rates. Simply stated, financial aid makes postsecondary education cheaper. By being cheaper, more is consumed.

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14 See "Model Mis-Specification in Assessing the Impact of Financial Aid on Academic Outcomes (Sigal Alon, *Research in Higher Education*, Vol. 46, No. 1, February 2005) or "Student Aid and Its Role in Encouraging Persistence (Don Hossler, et al., *Higher Education: Handbook of Theory and Research*, Springer Science+Business Media, 2009), which discuss the blending of the effect of aid eligibility with the influence of aid amounts on academic outcomes.

## Appendices

### Appendix A: Cohort information.

#### Cohort description

The study cohorts consist of four groups who have received need-based financial aid:

- Women who began their postsecondary education at a Washington public four-year institution (7,158 students)
- Men who began their postsecondary education at a Washington public four-year institution (5,397 students)
- Women who began their postsecondary education at a Washington public community or technical college (9,820 students)
- Men who began their postsecondary education at a Washington public community or technical college (7,365 students)

The impetus to divide the students into four groups was based on the findings of the 2017 report on “Persistence and Completion of Students Receiving Need-based Financial Aid” (Education Research and Data Center, 2017). That study identified differences in the high school academic background between students who started at a four-year institution compared to students who began at a CTC. Also there were differences in the receipt of financial aid and completions, not only between the four-year and CTC students, but also between men and women.

All students graduated from a Washington public high school in either 2007–08 or 2008–09. This study follows these students for six years: the 2008 graduates until the 2013–14 academic year and the 2009 graduates until the 2014–15 academic year.

Students who earned credits from a Washington public four-year institution in their first year of postsecondary education following high school graduation are treated as beginning at a public four-year institution. This includes students who may have also earned credits from a Washington public CTC in their first year. Students who exclusively earned credits from a Washington public CTC in their first year of postsecondary education are treated as beginning at a public CTC. The first-year of postsecondary education can be any year within six years of graduating from high school. The six-year look at these students begins with high school graduation, not when the student enters postsecondary education. For most students, the six-year look begins in the year following high school graduation because most students begin their postsecondary education in the year following high school graduation.<sup>15</sup>

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15 Of the 2008 and 2009 high school graduates who entered a four-year institution and eventually

These students all earned 15 or more college-level credits from a Washington public postsecondary institution within six years of their high school graduation. They also never attended a Washington private or out-of-state or postsecondary institution before earning a degree or long-term certificate from a Washington public postsecondary institution.

The 15-credit threshold is a basic participation criterion that excludes incidental students. These students have completed less than the equivalent of one quarter of coursework over six years after graduating from high school. Researchers have characterized these students' transcripts as consisting "either of nothing but withdrawals, incompletes, and failures or who take two or three courses and then disappear from education."<sup>16</sup> These students were excluded because they exhibited no real intent to attend postsecondary education and their high school academic profile resembled more closely that high school graduates who never earned any credits than students who earned 15 to 45 credits. Appendix A provides more details. By excluding incidental students, the resulting persistence and completion rates will be slightly higher than rates calculated by including all entering students.

Data on need-based financial aid recipients is available only for students attending Washington public institutions. Thus students attending Washington private or out-of-state colleges and universities have been excluded.<sup>17</sup> However, students who first entered a Washington public institution and completed a program (a bachelor's degree at a four-year institution or a bachelor's or associate degree or a long-term certificate at a community or technical college) have been included, even if they later attended a private or out-of-state institution.<sup>18</sup> To match the postsecondary enrollees with financial aid requires a Social Security number. There were 272 students who could not be associated with a SSN and therefore could not be linked to the financial aid data.<sup>19</sup>

In total, 31,263 high school graduates meet the above criteria. Due to missing financial aid data, 130 of these students were dropped from this analysis. Another 1,393 students

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earned 15 credits, 97 percent did so in the year following their graduation (i.e., post-high school graduation year one). For the graduates who first entered a CTC, 78 percent entered in the first year after graduation, with another 10 percent entering in the second year and the remainder entering in years three through six post-high school graduation.

16 "The New College Course Map and Transcript Files," Clifford Adelman, U.S. Department of Education, October, 1995, page 22. Adelman's incidental student threshold was 10 semester credits; this study converted the threshold to 15 quarter credits. See Appendix A for more information.

17 See Appendix B for the outcomes of students who attended private or out-of-state institutions and never a Washington public institution.

18 See Appendix B for the outcomes of students who first attended a Washington public institution and did not complete a program before entering a private or out-of-state institution.

19 These students were primarily Hispanic (55 percent) and Asian (25 percent); 64 percent had been FRPL eligible while in high school; 22 percent started at a four-year institution and 78 percent started at a CTC; and 38 percent completed with a bachelor's, associates or long-term certificate.

were dropped because of incomplete employment wage records.<sup>20</sup> In the end, 29,740 students with complete financial aid and employment records are the focus of this study.

Table A1 presents some of the characteristics of the students in the cohorts. Two-thirds or more of the aid recipients are white. The next largest racial/ethnic group at the four-year institutions were Asians (15 percent) and at the CTCs, the second largest racial/ethnic group were Hispanics (14 percent).

On average, students entering a four-year institution were more academically capable than students entering the CTC system as demonstrated by higher high school GPAs and a greater share who met the math assessment standard. In either sector, women had slightly higher GPAs while a greater share of men met the math assessment standard.

Students entering the CTCs were more likely to be from lower-income families. More than half the students receiving need-based financial aid at the CTCs had been eligible for the Free or Reduced-Price Lunch Program while in high school, compared to 30 percent of the students entering a four-year institution.

A greater share of women (75 percent) than men (70 percent) worked sometime during the last two years of high school. These shares were the same for both four-year institution and CTC entrants. Among the students who worked while in high school, students entering a CTC worked about 20 percent more hours than the students entering a four-year institution.

Table A1: Overview of cohorts.

	Four-year men	Four-year women	CTC men	CTC women
Received need-based aid	5,397	7,158	7,365	9,820
% White	70%	69%	66%	67%
% Asian	15%	15%	11%	9%
% Hispanic/Latino of any race	8%	8%	13%	14%
% Black/African American	4%	5%	6%	6%
% Other races <sup>1</sup>	2%	3%	4%	4%
High school GPA	3.4	3.5	2.7	2.9
% Met math assessment standard	90%	85%	67%	55%
% FRPL eligible	29%	31%	51%	54%
% Worked while in high school	71%	75%	70%	75%
Avg. wages (of those who worked)	\$5,364	\$5,709	\$6,403	\$6,732
Avg. hours (of those who worked)	625	674	745	813
Avg. hourly wage (of those who worked)	\$8.58	\$8.47	\$8.60	\$8.28

<sup>20</sup> Students for whom there was no record of employment have been included. Students who had missing or incomplete data on wages earned or hours worked were excluded from this study. Outcomes for these students are shown in Appendix B.

## **Incidental students – 15 credit threshold**

The rationale to set a 15- (quarter) credit threshold for a student to be included in this study was based on research performed by Clifford Adelman, a senior research analyst for the U.S. Department of Education, and the belief that students who did not earn at least 15 college-level credits over six years were more like high school graduates who never attended college than college students who earned 15 or more credits. In “The Toolbox Revisited: Paths to Degree Completion from High School Through College” (U.S. Department of Education, February 2006) Adelman follows a nationally representative cohort of students from high school to postsecondary education and asks what aspects of their formal schooling contribute to completing a bachelor’s degree. He looks at bachelor’s degree attainment among “non-incidental students” — those who earned more than 10 (semester) credits, e.g., students who “made a go of it.”

Other research conducted by Adelman in 1995 (“The New College Course Map and Transcript Files: Changes in Course-Taking and Achievement, 1972-1993,” U.S. Department of Education, October 1995) confined the universes of comparison to those students who earned more than 10 (semester) credits in postsecondary education. He excluded incidental students from the analysis. He found in his transcript analysis that there were many students whose records consisted either of nothing but withdrawals, incompletes and failures or who take two or three courses and then disappear from education.

A case can be made that students who earned fewer than 15 postsecondary credits over six years more closely resemble high school graduates who never earned any postsecondary credits than students who earned more than 15 credits. Table A2a provides a comparison of the high school academic records of the 2008 and 2009 high school graduates who earned zero postsecondary credits (anywhere) with those graduates who earned credits at a Washington public postsecondary institution. Students who earned fewer than 15 credits had an average high school GPA of 2.47, closer to the GPA of the graduates who never earned any credits (2.44) than to the students who earned 15 to 45 credits (2.63).

The distribution of GPAs by students who earned fewer than 15 credits matched more closely the distribution pattern of those who never earned any credits than those who earned 15 to 45 credits. Four-fifths of the students who earned no credits had high school GPAs under 3.0, as did students who earned fewer than 15 credits. Four-fifths of the students who earned 15 to 45 credits had GPAs between 2.0 and 3.5. Eighty-seven percent of the students who earned 45 or more credits had GPAs of 2.5 or higher.

As to the share of students who met the math assessment standard, the students who earned fewer than 15 credits were midway between the graduates who never earned any credits and those students who earned 15 to 45 credits.



Table A2a: Comparison of high school academic backgrounds by postsecondary credits earned.

	No PSE credits	>0<15 PSE credits	15<45 PSE credits	45 or more PSE credits
High school GPA	2.44	2.47	2.63	3.17
GPA < 2.0	25%	20%	14%	3%
GPA 2.0<2.5	30%	31%	27%	10%
GPA 2.5<3.0	24%	29%	32%	21%
GPA 3.0<3.5	14%	15%	21%	32%
GPA 3.5 or higher	7%	5%	6%	34%
Met math assessment standard	38%	47%	57%	78%

The choice of 15 quarter credits as the threshold is still somewhat arbitrary. Table A2b provides a breakdown of students by the amount of credits earned over six years, in 5 credit increments, compared to high school graduates who earned no credits. With regard to high school GPA, while it appears that students with fewer than 10 postsecondary credits are close to the graduates with no credits, there is beginning to be some separation after 10 credits. The average high school GPA for students who earned at least 10 credits was over 2.5. Thirty percent of the students with no credits, 0–5 credits and 5–10 credits had GPAs between 2.0 and 2.5. The 30 percent of students shifts to a GPA between 2.5 to 3.0 for the students who earned 10–15, 15–20, 20–25 and 25–30 credits. Less than one-half of the students who earned 10 or fewer credits met the math assessment standard while more than one-half of the students who earned 10 or more credits met the math assessment standard.

Table A2b: Comparison of high school academic backgrounds by postsecondary credits earned.

	No credits	>0<5	5<10	10<15	15<20	20<25	25<30
High school GPA	2.44	2.39	2.48	2.53	2.57	2.59	2.62
GPA < 2.0	25%	24%	20%	19%	16%	15%	14%
GPA 2.0<2.5	30%	32%	32%	29%	28%	27%	27%
GPA 2.5<3.0	24%	28%	28%	31%	32%	34%	33%
GPA 3.0<3.5	14%	11%	15%	16%	18%	19%	20%
GPA 3.5 or higher	7%	4%	5%	5%	5%	5%	6%
Met math assessment standard	38%	37%	48%	52%	54%	54%	56%

## Appendix B: Further outcomes.

**Outcomes of Washington high school graduates who attended only Washington private or out-of-state institutions (and never attended a Washington public institution).**

Table B1 presents the outcomes of 2008 and 2009 Washington public high school graduates who never attended a Washington public university or college following high school. These students attended Washington private or out-of-state institutions. No financial aid data is available for these students while attending the private or out-of-state institutions; these students were not included in the study cohorts.

Table B1: Completion by students who started at a Washington private or out-of-state institution.

	Men	Women
N	7,484	8,676
Bachelor's degree	49%	59%
A.A. degree	5%	4%
Long-term cert.	0.4%	2%
No award	46%	35%

**Outcomes of students who started at a Washington public postsecondary institution and earned at least 15 credits, but did not complete and then attended a Washington private or out-of-state institution**

Table B2 presents the outcomes of students who started postsecondary education at a Washington public higher education institution, did not complete (i.e., earn a bachelor's or associate degree or a long-term certificate) and later entered a Washington private or out-of-state institution. These students have been excluded from the study cohorts.

Table B2: Completion by students who started at a Washington public institution and then transferred to a Washington private or out-of-state institution.

	Four-year men	Four-year women	CTC men	CTC women
N	334	470	992	1,242
BA degree	40%	49%	26%	22%
AA degree	8%	5%	8%	8%
Long-term cert.	*1%	1%	0.4%	5%
No award	51%	45%	66%	64%

## Outcomes of students with incomplete employment data

Table B3a presents the characteristics of the students who were dropped from the study cohorts due to incomplete employment records. Overall, these students had slightly higher persistence and completion rates. Table B3b compares the persistence and completion rates of a cohort that includes these dropped students to the study cohorts that excludes them. Overall, the persistence and completion rates are very similar with or without the discarded students.

Table B3a: Characteristics of students discarded from cohorts due to incomplete wage and hour records.

	Four-year men	Four-year women	CTC men	CTC women
N	269	296	411	417
% White	68%	58%	73%	66%
% Asian	22%	25%	14%	13%
% Hispanic/Latino of any race	4%	8%	6%	10%
% Black/African American	3%	5%	4%	6%
% Other races	3%	4%	3%	4%
High school GPA	3.46	3.55	2.77	2.97
% Met math assessment standard	90%	84%	67%	47%
% FPR eligible	26%	34%	52%	63%
Persistence to 45 credits	96%	97%	82%	77%
Completion	76%	78%	51%	48%

Table B3b: Persistence and completion rates with and without discarded students.

	Four-year men	Four-year women	CTC men	CTC women
Persistence to 45 credits including discarded students	94.2%	95.7%	72.3%	70.8%
Persistence to 45 credits without discarded students	94.0%	95.6%	71.5%	70.4%
Completion including discarded students	70.3%	78.0%	46.3%	48.3%
Completion without discarded students	70.0%	78.0%	46.0%	48.4%

## Comparison of completion rates

Figure 1 presents completion rates for the needy four-year students who earned a bachelor's degree by unmet need quartiles. These students were 2008 and 2009 Washington public high school graduates who started at a Washington public four-year institution, earned at least 15 credits over six years and received need-based aid sometime

during their postsecondary education. For four-year men, the aggregate completion rate is 70.0 percent and for four-year women, it is 78.0 percent. The combined men and women completion rate is 74.5 percent. If the students who never received any need-based financial aid are included, the completion rate is 76.3 percent.

As part of the U.S. Department of Education Integrated Postsecondary Education Data System (IPEDS), postsecondary institutions report six-year graduation rates. This component collects data on the cohort of full-time, first-time degree-seeking undergraduates and tracks their completion status at 150 percent of the normal time to complete all requirements of their program of study. For bachelor's degrees, this is generally six years. Table B4a reports the IPEDS six-year graduation rates for the combined fall 2008 and 2009 cohorts for the public four-year institutions in Washington. Overall, for the four-year institutions, the six-graduation rate was 69.1 percent, significantly less than the 76.3 percent completion rate found above.

Table B4a: Six-year graduation rates for 2008 and 2009 entering students.<sup>21</sup>

	Cohort	BA within 6 years	Completion rate
CWU	3,186	1,669	52.4%
EWU	2,947	1,349	45.8%
TESC	1,234	679	55.0%
UW (all campuses)	11,392	9,388	82.4%
WSU (all campuses)	7,018	4,608	65.7%
WWU	5,337	3,809	71.4%
Total	31,114	21,502	69.1%

There are some significant differences in the calculation of these completion rates. IPEDS uses all entering first-time full-time students in the fall of 2008 and 2009, both residents and nonresidents. Included are students who do not eventually earn 15 credits (or at WSU, 10 semester credits). The students also needed to have graduated from the institution in which they initially enrolled. Transfer and part-time students are not included.

The present analysis starts with 2008 and 2009 Washington public high school graduates — primarily Washington state residents. It is not clear what effect not including nonresidents may have on the completion rate.

The students needed to earn at least 15 college-level credits within six years after graduating from high school. Thus incidental students who enroll but drop out without earning 15 credits have been excluded. Excluding incidental students has the effect of increasing the graduation rate.

<sup>21</sup> Source: IPEDS.

Students who transfer from one public four-year institution to another are included. While they first entered one public four-year institution, they may have earned a bachelor's degree from another public four-year institution. Allowing transfer students to be counted has the effect of increasing the graduation rate.

Table B4b: Six-year graduation rates by four-year public institutions.

	Study cohort	B.A. same institution	Own institution completion rate	B.A. different institution	Total B.A. degrees	Overall completion rate
CWU	2,609	1,447	55.5%	129	1,576	60.4%
EWU	2,297	1,149	50.0%	127	1,276	55.6%
TESC	519	316	60.9%	13	329	63.4%
UW (all campuses)	8,145	6,910	84.8%	141	7,051	86.6%
WSU (all campuses)	5,415	3,814	70.4%	271	4,085	75.4%
WWU	4,280	3,225	75.4%	213	3,438	80.3%
Total	23,265	16,861	72.5%	894	17,755	76.3%

**Note:** B.A. as used in this and following tables includes all types of bachelor degrees such as Bachelor of Arts, Bachelor of Science, Bachelor of Applied Science, etc.

Table B4b shows the completion rates by public four-year institution for the four-year cohorts used in this study plus the students who never received any need-based aid. The cohort is smaller than the IPEDS cohort since it excludes nonresidents and students who do not earn a minimum of 15 college-level credits. The same institution composite completion rate of 72.5 percent compares to the IPEDS completion rate of 69.1 percent. Excluding students who do not earn 15 credits causes the completion rate to be higher.

In addition to those students who earn a bachelor's degree from the institution in which they first enrolled, there are completers who earned a degree from another public four-year institution. This adds another 900 degrees, raising the overall completion rate of students who first entered a public four-year institution to 76.3 percent.

## Appendix C: Tabular versions of figures and charts.

Table C1a. Gender differences in cohorts.

	Gender of starting cohort	Gender of those who completed
Women	57%	59%
Men	43%	41%

Table C1b. Graduation rates by gender.

	Four-year institutions	Community & technical colleges
Women	78%	48%
Men	70%	46%

Table C2. Differences in persistence and graduation rates, by level of unmet need.

	Lowest quartile	Quartile 2	Quartile 3	Highest quartile
Four-year women				
45 credits	97.4%	96.2%	96.3%	92.4%
Bachelor's degree	83.9%	83.0%	73.9%	71.1%
Four-year men				
45 credits	96.2%	94.9%	94.1%	90.9%
Bachelor's degree	78.1%	74.3%	66.4%	61.2%
CTC women				
45 credits	78.8%	75.1%	66.7%	61.0%
B.A., A.A. or LTC	56.3%	51.4%	46.9%	38.8%
CTC men				
45 credits	76.4%	77.8%	67.9%	63.8%
B.A., A.A. or LTC	51.4%	46.4%	45.7%	40.5%

Table C3a. First-year unmet need by quartile, gender and institution.

	25 <sup>th</sup> percentile	Median	75 <sup>th</sup> percentile
Four-year women	\$293	\$2,383	\$4,944
Four-year men	\$450	\$2,751	\$5,274
CTC women	\$1,855	\$3,852	\$7,016

	25 <sup>th</sup> percentile	Median	75 <sup>th</sup> percentile
CTC men	\$1,847	\$3,613	\$6,497

Table C3b. Average annual unmet need by quartile, gender and institution.

	25 <sup>th</sup> percentile	Median	75 <sup>th</sup> percentile
Four-year women	\$2,309	\$4,636	\$7,273
Four-year men	\$2,309	\$4,656	\$7,363
CTC women	\$3,307	\$5,547	\$8,159
CTC men	\$3,061	\$5,144	\$7,760

Table C4. Average first-year costs and aid.<sup>22</sup>

	Four-year women	Four-year men	CTC women	CTC men
N	5,274	3,874	6,741	4,945
Cost of attendance	\$19,238	\$19,212	\$11,741	\$11,467
Expected family contribution	\$5,364	\$5,599	\$1,549	\$1,820
EFC = \$0	22%	20%	54%	47%
Financial need <sup>2</sup>	\$14,331	\$14,045	\$10,231	\$9,693
Need-based aid	\$11,147	\$10,616	\$5,582	\$5,288
Unmet need	\$3,183	\$3,429	\$4,648	\$4,405

Table C5. Annual average unmet need and need-based aid, by gender and institution type.

	Four-year women	Four-year men	CTC women	CTC men
N	7,158	5,397	9,820	7,365
Unmet need	\$5,401	\$5,400	\$6,015	\$5,726
Need-based aid	\$11,393	\$11,004	\$6,801	\$6,912
Grants	71%	71%	80%	77%
Subsidized loans	26%	28%	18%	21%
Work-Study	3%	2%	2%	2%

<sup>22</sup> When determining financial need and unmet need, the underlying reported financial aid data was not always internally consistent or data was missing. In many cases, financial need and unmet need was imputed. This has resulted in average financial need not exactly equaling average COA less average EFC.

Table C6a. First year amount of unmet need by gender and academic performance.

	Lowest quartile	Quartile 2	Quartile 3	Highest quartile
Four-year women				
Average high school GPA	3.55	3.49	3.42	3.38
% Met math standard	86%	83%	83%	82%
Four-year men				
Average high school GPA	3.44	3.35	3.30	3.28
% Met math standard	89%	89%	89%	90%
CTC women				
Average high school GPA	2.94	2.89	2.79	2.71
% Met math standard	54%	53%	49%	46%
CTC men				
Average high school GPA	2.74	2.67	2.58	2.56
% Met math standard	65%	61%	63%	60%

Table C6b. Average annual amount of unmet need by gender and academic performance.

	Lowest Quartile	Quartile 2	Quartile 3	Highest Quartile
Four-year women				
Average high school GPA	3.55	3.51	3.43	3.43
% Met math standard	88%	85%	82%	84%
Four-year men				
Average high school GPA	3.44	3.38	3.32	3.31
% Met math standard	91%	91%	90%	90%
CTC women				
Average high school GPA	2.98	2.91	2.86	2.80
% Met math standard	61%	55%	53%	53%
CTC men				
Average High School GPA	2.76	2.69	2.69	2.63
% Met math standard	69%	67%	66%	65%

Table C7. Unsubsidized borrowing, by gender and institution type.

	Four-year women	Four-year men	CTC women	CTC men
First-year postsecondary education				
Percentage who borrowed first-year	48%	52%	11%	12%
Average first-year loan amount	\$6,072	\$5,915	\$2,630	\$2,654
All postsecondary education years				
Percentage who borrowed ever	68%	70%	34%	37%
Average cumulative loan amount	\$16,231	\$15,572	\$8,083	\$8,960



Table C8. Employment during college, by gender and institution type.

	Four-year women	Four-year men	CTC women	CTC men
First-year postsecondary education				
Percentage of students who worked AY	53%	46%	71%	66%
Avg. AY wages (of workers)	\$2,390	\$2,123	\$6,152	\$5,841
Avg. weekly hours	6.7	5.7	16.4	14.8
All years postsecondary education				
Percentage who worked ever	90%	87%	92%	90%
Avg. AY wages (of workers)	\$3,831	\$3,392	\$6,748	\$6,191
Avg. weekly hours	8.1	6.6	15.2	13.2

Table C9a. Debt incurred by students at four-year institutions, by gender and degree completion.

	Earned B.A. degree	No degree
Women		
Percentage who borrowed	86%	84%
Total amount borrowed	\$25,984	\$18,256
Men		
Percentage who borrowed	86%	86%
Total amount borrowed	\$25,935	\$19,614

Table C9b. Debt incurred by CTC students by gender and award completion.

	B.A. degree	A.A. degree	Long-term cert.	No award
Women				
Percentage who borrowed	82%	44%	35%	35%
Total amount borrowed	\$20,297	\$11,681	\$7,419	\$8,848
Men				
Percentage who borrowed	81%	50%	45%	38%
Total amount borrowed	\$21,449	\$13,563	\$7,700	\$9,756



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