

2019

Determinates of Need-based Financial Aid



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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 study is about the amount of need-based financial aid awarded to college students compared to their financial need. It involves a group of students who entered public higher education in Washington State in the first year after their high school graduation. They all received need-based financial aid in the first year of attending college. The students were followed for six years. They differed in the amounts of financial aid they received relative to their financial need. This study is an attempt to identify the key determinates as to why some students received more aid than others. Study highlights include:

- For students who begin postsecondary education at a public 4-year institution, the primary factors associated with the total level of need-based financial aid relative to need are:
 - Academic ability as measured by their high school GPA (students with higher GPAs received more aid in relation to their need).
 - Whether or not they attended full-time (full-time students received more aid in relation to their need).
 - Family income (students who had higher expected family contributions had less of their financial need met by aid and, conversely, students from poorer families received more aid relative to their need).
 - The relative poverty of the high school from which the student graduated (students from high schools with higher shares of students eligible for free or reduced-price lunches received more aid relative to their need).
 - Independence (students who became independent from their parents for financial aid purposes received less aid relative to need).¹
 - Institutional financial aid (students attending institutions that on average provided higher levels of grant aid per all undergraduate students received more aid relative to their need).
 - Race/ethnicity (for men being African-American meant more aid compared to need; for women being Hispanic or African-American meant more aid compared to need).
- For students who begin postsecondary education at a public community or technical college (CTC), the important factors associated with relatively higher amounts of total need-based financial aid included:
 - Attending full-time (full-time students received more aid compared to need; part-time students received lesser amounts of aid compared to need).

¹ A student becomes financially independent for financial aid purposes if they marry, have a child or turn age 24.

- Transferring to a 4-year institution (on average students attending a 4-year institution received more aid than students attending a CTC; this holds even for students who start at a CTC and then transfer to a 4-year institution).
- Academic ability as measured by their high school GPA (as with 4-year students, a higher GPA means more aid relative to need).
- Independence (women who were at some point became independent of their parents for financial aid purposes received less financial aid relative to need).
- Free or reduced price lunch (FRPL) eligible (students that were eligible sometime during high school for free or reduced-price lunches received more aid relative to need).

Introduction

Purpose

This study attempts to identify some of the key factors, including student-level and institutional characteristics, that influence the amount of financial aid as a share of financial need that a student receives, by type of aid.

Study Cohorts

This analysis includes 2007-08 and 2008-09 Washington public high school graduates who subsequently entered Washington public postsecondary institutions and earned at least 15 college-level credits. The students attended only Washington public postsecondary institutions. Students who attended private or out-of-state institutions were not included.²

The students all entered postsecondary education in the first year after graduating from high school and received need-based financial aid in the first year. Thus every student in this study was considered “needy”, at least in their first year of postsecondary education. Every student received some level of “treatment” with a key difference being the amount of aid or “treatment” that a student received. Each student was followed for up to six years.

In an attempt to minimize the differences between the students, they are grouped into four relatively homogeneous cohorts by gender and the institutional sector in which they began postsecondary education:

- 4-Year Men: 3,696 men who first entered a public 4-year institution;
- 4-Year Women: 5,083 women who first entered a public 4-year institution;
- CTC Men: 3,504 men who first entered a public community or technical college; and
- CTC Women: 4,729 women who first entered a public community or technical college.³

Due to differences in average academic background, socioeconomic status, financial aid, work history and postsecondary outcomes, CTC students are analyzed separately from students who began at a 4-year institution. CTC students generally:

- have lower high school GPAs,
- are less likely to have met the high school standardized math assessment standard,

2 Information on student financial aid was not available for private or out-of-state students. Financial aid data on students attending Washington public postsecondary institutions were provided by the Washington Student Achievement Council.

3 Students who first entered a CTC and subsequently transferred to a 4-year institution are retained in the CTC cohorts.

- more likely to have been eligible for free or reduced-price lunches while in high school,
- less likely to receive need-based financial aid (and students who do receive aid receive smaller amounts),
- less likely to borrow,
- more likely to work (and work longer hours) and
- less likely to persist and graduate.⁴

Women are separated from men in this analysis because female high school graduates are more likely than male high school graduates to pursue postsecondary education, more likely to receive need-based financial aid, and are more likely to earn a degree.⁵

Need-based Financial Aid Basics

$$\text{Financial Need} = \text{COA} - \text{EFC}$$

A student's financial need is equal to the cost of attendance (COA) at a postsecondary institution less the expected family contribution (EFC) towards the student's education. The COA 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 EFC, the amount expected to be paid by the family or student, 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.⁶ All students in this study had some amount of financial need, at least in their first year.

$$\text{Need-based Aid} = \text{Grants} + \text{Subsidized Loans} + \text{Work Study}^7$$

Table 1 presents a summary of financial aid programs for students who have and do not have financial need.

4 See "Persistence and Completion of Students Receiving Need-based Financial Aid," ERDC, 2017 and "Unmet Need among Financially Needy College Students in the State of Washington," ERDC, 2018.

5 Again, see "Persistence and Completion of Students Receiving Need-based Financial Aid," ERDC, 2017 and "Unmet Need among Financially Needy College Students in the State of Washington," ERDC, 2018.

6 Families are not required to provide the EFC. Families may contribute more or less than what the amount determined by the formula. The formula is only used to determine the extent of eligibility for need-based aid.

7 All financial aid data used in this study comes from the Unit Record Report as provided by the Washington Student Achievement Council (WSAC). Only financial aid that has gone through an institution's financial aid office and subsequently reported to the WSAC is used in this analysis. Information on private grants or loans not reported to an institution is not reported to WSAC.

Table 1: Summary of Student Financial Aid

Need-Based Aid	Non-Need-Based Aid
Student has need, i.e., COA > EFC	Student may or may not have need
Grants: Includes grants, scholarships, tuition waivers; do not need to be repaid; are provided by governments, institutions or other entities	
Examples: Federal Pell Grant, State Need Grant, need-based institutional gift aid; Note: non-need-based grants provided to needy students are treated as need-based aid	Examples: merit aid, academic scholarships, athletic scholarships, non-need-based institutional gift aid
Loans: Need to be repaid; provided by the federal government, institutions and private financial institutions	
Subsidized loans are offered by the federal government only to needy students up to the amount of need; Note: unsubsidized loans to needy students are NOT treated as need-based aid	Unsubsidized loans do not require that a student have need and may be in excess of need; offered by the federal government, institutions and private entities
Work study: Provide part-time jobs to students, either on or off-campus, to help pay for college expenses	
Examples: Federal Work-Study Program, State Work-Study Program; Note: institutional employment to needy students is treated as need-based aid	Example: Institutional Employment

$$\text{Need-based Aid as a Percent of Need} = (\text{Need-based Aid} / \text{Financial Need}) * 100$$

A measure of the relative amount of financial aid provided to a student is need-based aid as a percent of need. This compares the amount of need-based aid a student receives to the student's financial need. It is the amount of need-based aid that a student receives over their postsecondary career divided by the student's total need, expressed as a percentage. The amount of a student's financial need that is met by need-based financial aid cannot exceed 100 percent. Since all students in this study received some need-based aid in at least their first year the minimal need-based aid as a percent of need is greater than zero.

Amount of Aid Models

For each cohort, four models are developed to predict the amount of financial aid that a student receives based on characteristics of the student (such as ability and background) and characteristics of the schools that the student attends. For each cohort, equations are estimated to predict the following four outcomes:

- Total need-based aid received as a percent of need;
- Grant aid received as a percent of need;
- Subsidized loans received as a percent of need; and
- The total amount of unsubsidized loans taken out by a student.

Due to the relatively small share of aid provided by work study programs (2 to 3 percent of all aid or 1 to 2 percent of need) no model is developed to predict the amount of work study that a student receives. While unsubsidized loans are not considered a component

of need-based aid they do represent a sizable amount of the funds used by needy students and, therefore, a model was developed to predict their use. Ordinary least squares regression is used to predict the above dependent variables using student-level and institutional variables as predictors.⁸

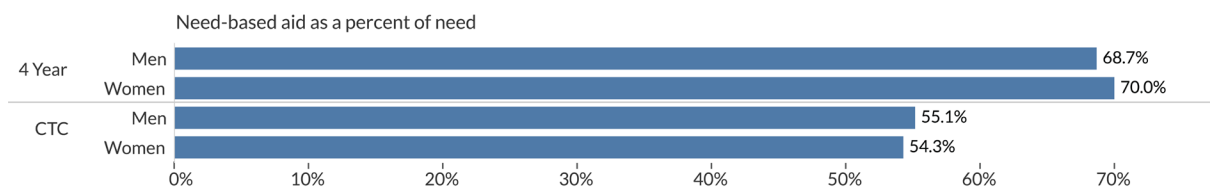
The results of the regression analysis developing the need-based financial aid models are presented in Appendix 4 – Student Financial Aid Models. Summary tables of the results are found in Appendix 1 – Summary Tables.

Findings

Four-year students have more of their need met by financial aid than CTC students

As shown in Figure 1 (see also Appendix Table A1.1), the average amount of need-based aid as a percent of need ranged from about 55 percent for students who began at a CTC to 70 percent for students who began at a 4-year institution.

Figure 1: Need-based aid as a percent of need (see also Table A1.1).

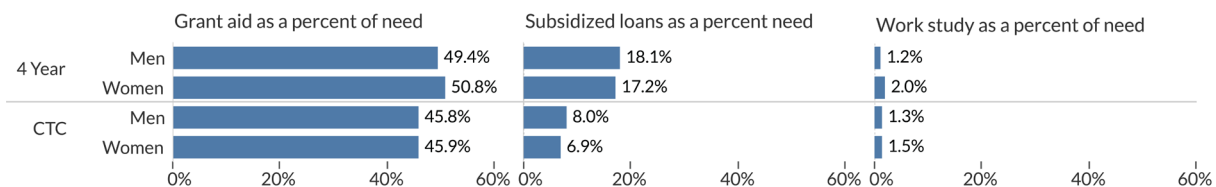


Most need-based financial aid comes in grants

This aid is comprised primarily of grant aid and subsidized loans as shown in Figure 2 (see also Appendix Table A1.1). The average amount of grant aid is about 50 percent of need for the 4-year students and 46 percent of need for the CTC students. For the 4-year students, subsidized loans average 18 percent of need while for the CTC students subsidized loans average around 8 percent of need.

8 For a discussion of the theoretical underpinnings and conceptual framework for examining college outcomes see “Financial Aid and Student Dropout in Higher Education: A Heterogeneous Research Approach,” Rong Chen in “Higher Education: Handbook of Theory and Research,” J. C. Smart (ed.), pp. 209-239, Springer, New York, 2008 and “Understanding College Degree Completion of Students with Low Socioeconomic Status: The Influence of the Institutional Financial Context,” Marvin A. Titus, *Research in Higher Education*, Vol. 47, No. 4, June 2006.

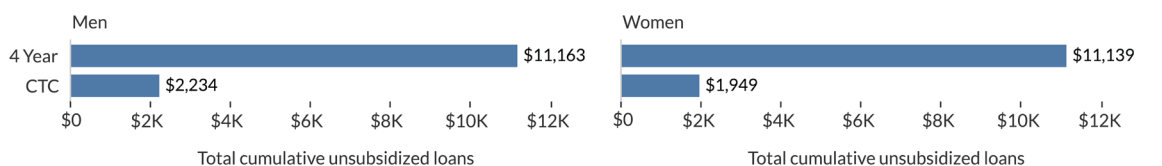
Figure 2: Grants, subsidized loans and work study as a percent of need (see also Table A1.1).



On average 4-year students borrow more unsubsidized loans than CTC students

Figure 3 (see also Appendix Table A1.1) presents the average accumulated amount of unsubsidized loans taken out by students who have financial need. Needy students who begin at a 4-year institution borrow an average total of \$11,000 in unsubsidized loans while in postsecondary education and the CTC students borrow an average total of \$2,000.

Figure 3: Average accumulated amount of unsubsidized loans (see also Table A1.1).



Key factors in determining aid amounts

For students who begin at a 4-year institution, the primary factors associated with the total level of need-based financial aid relative to need are:

- Academic ability as measured by their high school GPA (students with higher GPAs received more aid in relation to their need).
- Whether or not they attended full-time (full-time students received more aid in relation to their need).
- Family income (students who had higher expected family contributions had less of their financial need met by aid and, conversely, students from poorer families received more aid relative to their need).
- The high school from which the student graduated (students from high schools with higher shares of students eligible for free or reduced-price lunches received more aid relative to their need).
- Independence (students who became independent from their parents for

financial aid purposes received less aid relative to need).⁹

- Institutional financial aid (students attending institutions that on average provided higher levels of grant aid per all undergraduate students received more aid relative to their need).
- Race/ethnicity (for men being African-American meant more aid compared to need; for women being Hispanic or African-American meant more aid compared to need).

For students who begin at a CTC, the important factors associated with relatively higher amounts of total need-based financial aid included:

- Attending full-time (full-time students received more aid compared to need; part-time students received lesser amounts of aid compared to need).
- Transferring to a 4-year institution (on average students attending a 4-year institution received more aid than students attending a CTC; this holds even for students who start at a CTC and then transfer to a 4-year institution).
- Academic ability as measured by their high school GPA (as with 4-year students, higher GPAs means more aid relative to need).
- Independence (women who were at some point became independent of their parents for financial aid purposes received less financial aid relative to need).
- FRPL eligible (students that were eligible sometime during high school for free or reduced-price lunches received more aid relative to need).

Table 2 presents the top three independent variables that predict the amount of financial aid received by students. The table utilizes the standardized coefficients developed in the regression equations found in Appendix 4: Student Financial Aid Models. Standardized coefficients compare the strength of the effect of each individual independent variable. The higher the absolute value of the standardized coefficient, the stronger the effect. For example, among the cohort of men who began at a 4-year institution, the most important variable in determining the share of need met by financial aid was the student's past academic record as measured by high school GPA. The higher the high school GPA, the greater the share of need that was met by financial aid. Following in importance was whether the student enrolled full-time by attempting an average of at least 36 college-level credits per year while in college. The third key variable was relative family income as measured by the expected family contribution, with the greater the EFC (implying a higher family income) the less aid was provided relative to need.

⁹ A student becomes financially independent for financial aid purposes if they marry, have a child or turn age 24.

Table 2: Key Determinates of Student Need-based Financial Aid

Model	4-Year Men	4-Year Women	CTC Men	CTC Women
Need-based aid as a percent of need	HS GPA (+) Full-time (+) EFC (-)	Full-time (+) HS GPA (+) EFC (-)	Full-time (+) Attended 4-yr Inst. (+) HS GPA (+)	Full-time (+) Ever independent Attended 4-yr Inst. (+)
Grant aid as a percent of need	EFC (-) HS GPA (+) Inst. grant per student (+)	EFC (-) HS GPA (+) Inst. grant per student (+)	EFC (-) Full-time (+) HS GPA (+)	EFC (-) Full-time (+) HS GPA (+)
Subsidized loans as a percent need	Grants (-) EFC (+) Ever Ind. (-)	Grants (-) EFC (+) Ever Ind. (-)	Grants (-) EFC (+) Attended 4-yr Inst. (+)	Grants (-) EFC (+) Attended 4-yr Inst. (+)
Total unsubsidized loans	Grants (-) Full-time (+) EFC (+)	Grants (-) Full-time (+) EFC (+)	Attended 4-yr Inst. (+) Grants (-) EFC (+)	Attended 4-yr Inst. (+) Grants (-) EFC (+)

Note: (+) and (-) indicates whether the variable has a positive or negative effect the amount of aid received.

Academic Ability: Students with a higher high school GPA received a higher amount of grants and total aid in relation to their need

When it comes to overall need-based aid and grants (grants being the largest share of aid) academic ability as measured by a student's high school GPA is a key variable. Students with higher GPA's receive more aid as a percent of need and receive more grant aid relative to their need.

For the 4-year students each one-tenth increase in high school GPA (say from 3.4 to 3.5) on average increases the amount grant aid relative to need by 1.2 percentage points. For the CTC students a one-tenth increase in high school GPA increases grants by 0.5 percentage points.

Borrowing is another matter. High school GPA is statistically insignificant in regard to 4-year students and how much they borrow, in either subsidized or unsubsidized loans. For CTC students, high school GPA is negatively associated with subsidized loans relative to need – meaning students with lower high school GPAs are likely to borrow more in subsidized loans. CTC women with lower high school GPAs were also more likely to borrow more in unsubsidized loans.

Full-Time Student: Students who attempted more than 36 quarter credits per year received more aid in relation to their need

Being a full-time student (on average enrolling in 36 or more academic credits per year) means more aid relative to need (or conversely, it could mean students who get more aid are more likely to become full-time students).

Full-time students received, on average, 7 to 10 percentage points more in total aid as a percent of need than less than full-time students. Full-time students received 5 to 8 percentage points more in grants as a share of need and 3 to 4 percentage points more in subsidized loans. The full-time 4-year students borrowed \$7,000 to \$8,000 more in unsubsidized loans while full-time CTC students borrowed \$1,400 more in unsubsidized loans.

Being poorer: Needy students from families with lower expected family contributions received more in grants in relation to their need; needy students from families where contributions were expected to be higher borrowed more

The relative impoverishment of a student was an important factor in determining how much need-based aid a student received as a percent of need. All the students were needy (their expected family contribution was less than the cost-of-attendance) and received some need-based in their first year of college. Some students received more aid as a percent of need than others.

Several factors were used to measure the income of a student: expected family contribution, FRPL eligibility, and the relative poverty of the student's high school.

The expected family contribution was a key factor for both the 4-year and CTC students in regard to grants and loans. The relationship is negative for grants. Students from families that could contribute less received more in grant aid as a share of their need. For every \$1,000 increase in EFC, the amount of grant aid as a percent of need declines about 2 percentage points. On the other hand, the higher the EFC, the more a student borrows in both subsidized and unsubsidized loans. The "wealthier" of the needy students were more likely to borrow more than the "poorer" of the needy students.

Needy CTC students who had been eligible for FRPL while in high school received about 2 percentage points more in need-based aid as a percent of need than the students who were not. Grant aid for the FRPL students was 4 percentage points more. The FRPL eligible students received less in the way of subsidized and unsubsidized loans.

For 4-year students graduating from relatively poor high schools, where a higher percentage of fellow students were FRPL eligible, meant more in the way of overall need-based aid relative to need. These students received more in grant aid. Also, CTC women from higher FRPL eligible high schools received more in grant aid. The poverty of a high school from which a student graduated was statistically insignificant in regard to loans.

Transferring to a 4-Year Institution: Transfer students borrow more than CTC students who do not transfer

Students who begin at 4-year institutions receive more aid in relation to their need than students who begin at a CTC. This is also true for CTC students who transfer to a 4-year institution – transfer students receive more aid in relation to their need than CTC students who do not transfer. Overall CTC students who transfer receive 5 to 6

percentage points more in need-based aid as a percent of need than CTC students who do not transfer.

Students who start at a CTC and later attend a 4-year institution borrow more money. The amount of subsidized loans as a percent of need increased by 6 percentage points and the amount of unsubsidized loans increased on average by \$4,000 to \$5,000. Transferring did not have a statistically significant impact on the amount of grants a student received.

Impact of Grants on Loans: Receiving more grant aid means less borrowing

Not surprisingly, receiving grants has a negative effect on borrowing. How much a student receives in grants affects the amount of borrowing that the student does. When more of a student's need is met by grants, the less that student borrows. However, it is not dollar for dollar (or percent of need for percent of need).

Table 3: Change in loan amounts associated with a 1 percentage point increase in grants as a percent of need

	Average Annual Grants		Average Annual Subsidized Loans		Cumulative Unsubsidized Loans
	PP Change	\$ Change	PP Change	\$ Change	\$ Change
4-Year Men	1.000 pp	\$159	-0.425 pp	-\$68	-\$25
4-Year Women	1.000 pp	\$164	-0.429 pp	-\$70	-\$27
CTC Men	1.000 pp	\$112	-0.293 pp	-\$33	-\$62
CTC Women	1.000 pp	\$115	-0.264 pp	-\$30	-\$54

As shown in Table 3, for each one percentage point increase in grants as a percent of need, 4-year students borrow 0.4 percentage points less in subsidized loans. On average, a one percentage point increase in grants as a percent of need (e.g., moving from grants being 50 percent of need to 51 percent of need) equates to around \$160 per year which is associated with a \$70 per year reduction in subsidized loans.

CTC students borrow 0.3 percentage points less for each one percentage point increase in need that is met by grants. For the CTC students, the increase in grants is about \$115 per year and the reduction in subsidized loans is around \$30 per year.

While the amount of grants a student receives is a key predictor of how much a student borrows, for unsubsidized loans the practical impact is relatively minor. For a 4-year student, an additional \$160 dollars yearly in grants reduces unsubsidized loan borrowing by a cumulative \$25. For CTC students, an additional \$115 in annual grants reduces total unsubsidized borrowing by around \$60.

Independence: Financially independent students receive less need-based aid and borrow more

Except for CTC men, students who become independent of their parents for financial aid purposes sometime while in college receive on average less need-based financial aid relative to their need than students who remain dependent. These students also tend to borrow more subsidized and unsubsidized loans. Students who did become

independent sometime during college had on average less need met by need-based aid by about 4 to 6 percentage points. An exception to this is men who started at a CTC, for whom dependency status was not statistically significant. For CTC women, grants as a percent of need were 5 percentage points lower. Subsidized loans were also lower for CTC women as well as the 4-year students. The amount of unsubsidized loans increased for the students who became independent at some time while attending college. Independent 4-year students had higher borrowing of unsubsidized loans by \$5,000.

Institutional factors: As might be expected, the overall richness of an institution's financial aid program has a bearing on how much of an individual's need was met by financial aid

For 4-year students, the institution they attended was an important factor in the amounts need that was met by grants. Needy students at schools with richer financial aid programs, where the average level of grants across all undergraduate students were higher, had more of their need met by grants. Also, students at institutions with the richer grant programs borrowed less in unsubsidized loans.

Students who began at CTCs with larger grant and loan financial aid programs borrowed more subsidized loans (either from a CTC or from a 4-year institution if they transferred).

Race/Ethnicity: The race or ethnicity of a student sometimes makes a difference and sometimes not when it comes to need-based financial aid

The race and ethnicity of a student was never one of the top factors in the amount of need-based aid a student received relative to need. Sometimes the race and ethnicity of a student had a statistically significant impact on the amount of aid received and sometimes not. Generally, race and ethnicity makes less of a difference for CTC students than for students who begin at a 4-year institution.

Asians overall are no different than whites in the total amount of need-based aid they receive as a percent of their need. This holds for both the 4-year and CTC students, male and female. However, Asians receive more in grant aid than whites and tend to borrow less in subsidized and unsubsidized loans.

Hispanic students who begin at a 4-year institution receive more aid relative to their need than white students. Grant aid compared to need for the Hispanic 4-year students is 5 percentage points higher than for white students. Hispanic students beginning at a CTC are no different than white students in the overall amount of aid they receive. The CTC Hispanic students do, however, receive more in the way of grants and less in subsidized loans than white students.

African-American students beginning at a 4-year institution have a greater share of their need met by need-based aid than white students. The difference is primarily in the form of grants. Overall, African-American men and women beginning at a CTC are similar to white students in the amount of need that is met by all financial aid.

Appendices

Following are four appendices: (1) summary tables, (2) variables used, (3) descriptive statistics, and (4) student financial aid amount models. In appendices 3 and 4 each section has four sets of tables: 4-year men, 4-year women, CTC men and CTC women.

Appendix Tables

	4-Year Men	4-Year Women	CTC Men	CTC Women
Appendix 1: Summary Tables				
Mean aid amounts	A1.1	A1.1	A1.1	A1.1
Total Need-based Aid as a Percent of Need (variable coefficient)	A1.2	A1.2	A1.2	A1.2
Grant Aid as a Percent of Need (variable coefficient)	A1.3	A1.3	A1.3	A1.3
Subsidized Loan Aid as a Percent of Need (variable coefficient)	A1.4	A1.4	A1.4	A1.4
Subsidized Loan Aid as a Percent of Need (variable coefficient)	A1.5	A1.5	A1.5	A1.5
Appendix 3: Descriptive Statistics				
Descriptive Statistics	A3.1	A3.2	A3.3	A3.4
Appendix 4: Student Financial Aid Models				
All Need-based Aid	A4a.1	A4a.1	A4a.2	A4a.2
Grant Aid	A4b.1	A4b.1	A4b.2	A4b.2
Subsidized Loans	A4c.1	A4c.1	A4c.2	A4c.2
Unsubsidized Loans	A4d.1	A4d.1	A4d.2	A4d.2

Appendix 1: Summary Tables for Financial Aid Models

Table A1.1 presents the average amount of need being met by financial aid for the four cohorts. Column 2 is the grant aid portion of need-based aid as a share of need and column 3 is subsidized loans. For the 4-year students on average grant aid meets 50 percent of need and subsidized loans about 18 percent of need. For the CTC students grants meet 46 percent of need and loans about 7 to 8 percent of need.

Column 5 is all need-based aid as a percent of need (the sum of grants, subsidized loans and work study as a percent of need). The 4-year students receive about 70 percent of their need in financial aid dollars whereas the CTC students' aid packages cover about 55 percent of their need.

Column 6 shows that, on average, needy 4-year students take out \$11,000 in unsubsidized loans while CTC students take out \$2,000.

Table A1.1: Average aid amounts

	Grant aid as a percent of need	Subsidized loans as a percent need	Work study as a percent of need	Need-based aid as a percent of need	Total unsubsidized loans
4-Year Men	49.4%	18.1%	1.2%	68.7%	\$11,163
4-Year Women	50.8%	17.2%	2.0%	70.0%	\$11,139
CTC Men	45.8%	8.0%	1.3%	55.1%	\$2,234
CTC Women	45.9%	6.9%	1.5%	54.3%	\$1,949

The following tables (A1.2 – A1.5) are derived from the financial aid models found in Appendix 4 – Student Financial Aid Models. For each cohort four models are developed to predict the amount of financial aid that a student receives: (1) total need-based aid as a percent of need; (2) grant aid as a percent of need; (3) subsidized loans as a percent of need; and (4) the sum of unsubsidized loans. The predictor variables include student and institutional characteristics. The variable coefficients are presented in the following tables where the variable was statistically significant (at less than 5 percent chance of the variable being statistically insignificant).

Table A1.2 presents the linear regression coefficients predicting the total amount of need-based financial aid a student receives related to the student's financial need. Attempting on average 36 or more credits per year adds 7 to 10 percentage points to the overall amount of need a student receives. For every one-tenth increase in a student's high school GPA a 4-year student's aid as a percent of need increases by 0.8 percentage points; a CTC student's aid goes up by nearly 0.3 percentage points. CTC students who transfer to a 4-year institution receive more aid in relation to their need. For every \$1,000 increase in a 4-year student's expected family contribution the amount of aid a student receives is reduced by 0.4 to 0.5 percentage points.

Table A1.2: Total Need-based Aid as a Percent of Need (variable coefficient)

	4-Year Men	4-Year Women	CTC Men	CTC Women
Full-time Student	7.042	9.335	9.585	10.084
Attended 4-yr Institution			4.599	5.767
High School GPA	0.838	0.819	0.246	0.286
Expected Family Contribution	-0.418	-0.544	†	†
FRPL in High School			2.318	2.655
Ever Independent	-3.772	-6.406	†	-5.886
High School Income	0.109	0.115	†	†
Asian	†	†	†	†
Hispanic	2.985	3.491	†	†
African-American	7.127	3.406	†	†
Other Non-white Races	†	†	†	4.544
Average Grant per UG Student	1.097	1.134	†	1.685
Average Loan per UG Student			†	0.312

† Not statistically significant

Table A1.3 takes a look at the amount of grant aid a student receives in relation to their need. The higher the EFC the fewer grants that a student receives. Higher high school GPA's mean more grants – more so for a 4-year student than a CTC student. Being a full-time student means more grants. The impact on CTC students transferring to a 4-year institution is statistically insignificant.

Table A1.3: Grant Aid as a Percent of Need (variable coefficient)

	4-Year Men	4-Year Women	CTC Men	CTC Women
Full-time Student	5.355	6.841	8.255	8.300
Attended 4-yr Institution			†	†
High School GPA	1.212	1.279	0.465	0.511
Expected Family Contribution	-2.238	-2.377	-2.796	-2.371
FRPL in High School			4.452	3.985
Ever Independent	†	†	†	-4.990
High School Income	0.177	0.169	†	0.052
Asian	2.495	3.456	2.180	2.381
Hispanic	5.195	5.651	2.121	1.818
African-American	6.873	5.993	†	†
Other Non-white Races	†	3.250	†	2.976
Average Grant per UG Student	2.347	2.455	-2.042	
Average Loan per UG Student			†	†

† Not statistically significant

Table A1.4 contains the regression coefficients for subsidized loans as a percent of need. The more grants that a student receives results in fewer subsidized loans. The higher the EFC for a student the more loans that student takes out. A CTC student transferring to a 4-year institution is another key factor in the amount of subsidized loans that student receives.

Table A1.4: Subsidized Loan Aid as a Percent of Need (variable coefficient)

	4-Year Men	4-Year Women	CTC Men	CTC Women
Grants as Percent of Need	-0.425	-0.429	-0.293	-0.264
Full-time Student	3.338	4.312	3.277	3.025
Attended 4-yr Institution			6.017	6.594
High School GPA	†	†	-0.127	-0.123
Expected Family Contribution	0.948	0.956	2.097	1.714
FRPL in High School			-1.243	†
Ever Independent	-4.326	-5.775	†	-2.173
High School Income	†	†	†	†
Asian	-1.306	-2.046	†	†
Hispanic	†	†	-1.941	-1.217
African-American	2.840	†	†	1.502
Other Non-white Races	†	†	†	2.061
Average Grant per UG Student	†	†	2.572	1.628
Average Loan per UG Student			0.297	0.409

† Not statistically significant

Table A1.5 has the regression coefficients for predicting the total amount of unsubsidized loans a student borrows. As noted in Table A1.1 (and Figure 3), CTC students borrow less in unsubsidized loans than 4-year students – averaging around \$2,000 total versus \$11,000. The coefficients for the predictor variables generally reflect this difference. Being a full-time student adds \$7,000 to \$8,000 more in unsubsidized loans for a 4-year student compared to about \$1,400 for a CTC student. Every \$1,000 more in the EFC adds about \$400 in unsubsidized loans for a 4-year student and \$300 for a CTC student. A CTC student who transfers to a 4-year institution will likely incur \$4,000 to \$5,000 in additional debt. The more a student gets in grants the less debt they incur – for a 4-year student every percent increase in grants relative to need results in an average \$250 less in loans; for a CTC student it is about \$60 less in debt.

Table A1.5: Sum of Unsubsidized Loans (variable coefficient)

	4-Year Men	4-Year Women	CTC Men	CTC Women
Grants as Percent of Need	-0.246	-0.268	-0.062	-0.054
Full-time Student	7.147	8.134	1.450	1.386
Attended 4-yr Institution			5.179	4.278
High School GPA	†	†	†	-0.037
Expected Family Contribution	0.412	0.460	0.290	0.335
FRPL in High School			-0.534	†
Ever Independent	4.987	5.003	1.179	0.861
High School Income	†	†	†	†
Asian	-1.946	-1.420	-1.242	-1.074
Hispanic	†	†	†	†
African-American	†	1.811	†	0.629
Other Non-white Races	†	†	†	†
Average Grant per UG Student	-0.486	-0.334	†	0.379
Average Loan per UG Student			0.121	†

† Not statistically significant

Appendix 2: Variables

Dependent Financial Aid Variables (left side)

All need-based aid as a percent of need: Cumulative reported need-based aid divided by cumulative reported financial need (percent).

Grant aid as a percent of need: Cumulative reported grants received divided by cumulative reported financial need (percent).

Subsidized loans as a percent of need: Cumulative reported subsidized loans received divided by cumulative reported financial need (percent).

Sum of unsubsidized loans: Cumulative sum of reported unsubsidized loans (\$ in thousands).

Independent Control Variables (right side)

Grants as a percent of Need: Grants received as a percent of a student's financial need (subsidized and unsubsidized loan models only).

Full-time: Student attempted an average of 36 or more college-level (quarter) credits per year while attending postsecondary education. Semester credits were converted to quarter credits.

Attended 4-year institution (CTC students): Whether a student who started at a CTC ever attended a 4-year institution.

High school GPA: Reported high school grade point average at graduation (times 10).

Expected family contribution: The reported expected family contribution in the student's first year of postsecondary education.

FRPL in high school: Whether the student was ever eligible for free or reduced-price lunches while in high school (CTC students only).

Ever independent: Whether the student was ever independent for financial aid purposes while attending postsecondary education.

High school income: The average percentage of 10th grade students eligible for free or reduced-price lunch during the 2005-06 to 2008-09 school years at the high school from which the student graduated.

Race/ethnicity: Whether the student was Asian, Hispanic/Latino of any race, African-American, or other non-white race (American Indian/Alaskan Native, Native Hawaiian/Other Pacific Islander, two or more races, and "race not provided") as opposed to White.

Average grant per undergraduate student (first institution): Average financial aid grants awarded to all undergraduates in 2008-10 at the first institution attended.

Average loan per undergraduate student (first institution): Average financial aid loans awarded to all undergraduates in 2008-10 at the first institution attended.

Appendix 3: Descriptive Statistics

The following tables display descriptive statistics for the variables used in the financial aid models. There are four study cohorts of 2007-08 and 2008-09 Washington public high school graduates who subsequently entered Washington public postsecondary institutions and earned at least 15 college-level credits. The students attended only Washington public postsecondary institutions. The students all entered postsecondary education in the first year after graduating from high school and received need-based financial aid in the first year. The students are divided into four cohorts by gender and the institutional sector in which they began postsecondary education:

- 4-Year Men: 3,696 men who first entered a public 4-year institution;
- 4-Year Women: 5,083 women who first entered a public 4-year institution;
- CTC Men: 3,504 men who first entered a public community or technical college; and
- CTC Women: 4,729 women who first entered a public community or technical college.¹⁰

¹⁰ Students who first entered a CTC and subsequently transferred to a 4-year institution are retained in the CTC cohorts.

Table A3.1: Descriptive Statistics – 4-Year Men

Variable	Mean	Std. Dev.	Minimum	Maximum
Average Annual Need (\$000)	15.904	6.301	0.077	41.117
Average Annual Need-Based Aid (\$000)	10.925	5.724	0.077	31.287
Average Annual Grants (\$000)	7.86	5.668	0	31.287
Average Annual Subsidized Loans (\$000)	2.873	1.733	0	7.941
Average Annual Work Study (\$000)	0.192	0.567	0	5.759
Sum Unsubsidized Loans (\$000)	11.163	16.741	0	119.100
Full-time Student	0.819	0.385	0	1.000
High School GPA (tenths)	33.593	4.056	16.000	40.000
Expected Family Contribution (\$000)	5.627	5.565	0	53.985
Ever Independent	0.119	0.324	0	1.000
High School Income (%)	32.549	18.397	0	94.000
Average Grant per UG Student (\$000)	8.069	1.600	6.165	10.224
White	0.659	0.474	0	1.000
Asian	0.172	0.377	0	1.000
Hispanic/Latino	0.0914	0.288	0	1.000
African-American	0.0515	0.221	0	1.000
Other Non-White Races	0.0262	0.160	0	1.000

Table A3.2: Descriptive Statistics – 4-Year Women

Variable	Mean	Std. Dev.	Minimum	Maximum
Average Annual Need (\$000)	16.405	6.358	0.305	42.613
Average Annual Need-Based Aid (\$000)	11.481	5.818	0.305	33.191
Average Annual Grants (\$000)	8.327	5.749	0	32.091
Average Annual Subsidized Loans (\$000)	2.828	1.759	0	8.779
Average Annual Work Study (\$000)	0.326	0.767	0	7.773
Sum Unsubsidized Loans	11.139	16.517	0	156.600
Full-time Student	0.846	0.361	0	1.000
High School GPA (tenths)	34.681	3.721	16.500	40.000
Expected Family Contribution (\$000)	5.385	5.431	0	30.720
Ever Independent	0.143	0.350	0	1.000
High School Income (%)	33.272	18.338	0	99.000
Average Grant per UG Student (\$000)	8.075	1.612	6.165	10.224
White	0.640	0.480	0	1.000
Asian	0.175	0.380	0	1.000
Hispanic/Latino	0.094	0.292	0	1.000
African-American	0.061	0.239	0	1.000
Other Non-White Races	0.029	0.168	0	1.000

Table A3.3: Descriptive Statistics – CTC Men

Variable	Mean	Std. Dev.	Minimum	Maximum
Average Annual Need (\$000)	11.184	4.643	0.217	35.726
Average Annual Need-Based Aid (\$000)	6.16	3.461	0.14	22.171
Average Annual Grants (\$000)	5.125	3.007	0	18.75
Average Annual Subsidized Loans (\$000)	0.891	1.292	0	5.944
Average Annual Work Study (\$000)	0.144	0.528	0	6.802
Sum of Unsubsidized Loans (\$000)	2.234	6.452	0	86.704
Full-time Student	0.37	0.483	0	1
Attended 4-Year Institution	0.282	0.45	0	1
High School GPA (tenths)	27.36	5.733	0.8	40
Expected Family Contribution (\$000)	1.836	2.666	0	28.699
FRPL in High School	0.66	0.474	0	1
Ever Independent	0.184	0.388	0	1
High School Income (%)	37.72	17.551	0	99
Average Grant per UG Student (\$000)	4.515	0.446	3.671	5.297
Average Loan per UG Student (\$000)	4.319	1.907	0	6.723
White	0.596	0.491	0	1
Asian	0.139	0.346	0	1
Hispanic/Latino	0.148	0.355	0	1
African-American	0.076	0.265	0	1
Other Non-White Races	0.0412	0.199	0	1

Table A3.4: Descriptive Statistics – CTC Women

Variable	Mean	Std. Dev.	Minimum	Maximum
Average Annual Need (\$000)	11.535	4.52	0.111	34.979
Average Annual Need-Based Aid (\$000)	6.258	3.42	0.07	23.981
Average Annual Grants (\$000)	5.29	2.991	0	20.83
Average Annual Subsidized Loans (\$000)	0.793	1.217	0	6.89
Average Annual Work Study (\$000)	0.175	0.565	0	5.601
Sum of Unsubsidized Loans (\$000)	1.949	5.522	0	71.793
Full-time Student	0.303	0.46	0	1
Attended 4-Year Institution	0.249	0.432	0	1
High School GPA (tenths)	29.354	5.594	4.3	40
Expected Family Contribution (\$000)	1.7	2.663	0	31.182
FRPL in High School	0.681	0.466	0	1
Ever Independent	0.28	0.449	0	1
High School Income (%)	38.99	18.003	0	94
Average Grant per UG Student (\$000)	4.528	0.435	3.671	5.297
Average Loan per UG Student (\$000)	4.358	1.887	0	6.723

Table A3.4: Descriptive Statistics – CTC Women

Variable	Mean	Std. Dev.	Minimum	Maximum
White	0.627	0.484	0	1
Asian	0.102	0.303	0	1
Hispanic/Latino	0.159	0.366	0	1
African-American	0.0712	0.257	0	1
Other Non-White Races	0.0407	0.198	0	1

Appendix 4: Student Financial Aid Models

The following tables present the ordinary least squares regression results estimating the amount of need-based aid that a student receives. Four sets of models are presented for each cohort: (1) all need-based aid as a percent of need; (2) grant aid as a percent of need; (3) subsidized loans as a percent of need; and (4) the sum of unsubsidized loans. The predictor variables include student and institutional characteristics.

For the aid amount models using ordinary least squares regression, the tables contain the variable coefficient, the standardized (or beta) coefficient and the t-value for the variable indicating its statistical significance. Also included are the number of observations and the adjusted R-squared statistic. The standardized (or beta) coefficient compares the strength of the effect of each individual independent variable to the dependent variable. The higher the absolute value of the standardized coefficient, the stronger the effect. Standardized coefficients provide the relative weight of each independent variable in predicting the dependent variable. The adjusted R-squared statistic provides the proportion of the dependent variable variation that is explained by the model (on a scale of 0 to 1). For example, an adjusted R-squared value of 0.25 is interpreted to mean that the independent variables explain 25 percent of the variation in the dependent variable.

In regard to the receipt of all need-based aid as a percent of need, the key variables for 4-year students were their high school GPA, whether they attended full-time, and their expected family contribution (a negative relationship). For students who began at a CTC, another variable of import was whether they ever transferred to a 4-year institution.

The receipt of grant aid is predicated on the student's expected family contribution (the lower the EFC the more grant aid a student received) as well as the student's high school GPA. For the 4-year students, another factor was the institution's average amount of grants awarded per undergraduate student. For CTC students another important factor was whether they attended full-time.

The key determinates for subsidized loans were the level of grants awarded to the student (more grants meant less subsidized loans) and the expected family contribution

(higher EFC leads to more loans). For CTC students another factor was whether they transferred to a 4-year institution.

The amount of unsubsidized loans a student borrowed was determined again by the amount of grants a student received and the expected family contribution. An additional factor for 4-year students was whether they were attending college full-time. For CTC students another factor was whether they transferred to a 4-year institution.

A4a. All Need-Based Aid as Percent of Need

Table A4a.1: All Need-Based Aid as % of Need – 4-Year Students

Independent Variable	4-Year Men				4-Year Women			
	Parameter Estimate	Standardized Coefficient	t-value		Parameter Estimate	Standardized Coefficient	t-value	
Intercept	23.540	0.000	8.750	***	22.993	0.000	9.480 ***	
Full-Time (1/0)	7.042	0.142	8.960	***	9.335	0.182	13.660 ***	
High School GPA (tenths)	0.838	0.179	10.160	***	0.819	0.166	11.500 ***	
Expected Family Contribution (Yr1) (\$000)	-0.418	-0.123	-7.590	***	-0.544	-0.162	-11.900 ***	
Ever Independent	-3.772	-0.064	-4.090	***	-6.406	-0.122	-9.180 ***	
High School Income (%)	0.109	0.103	6.020	***	0.115	0.113	7.890 ***	
Asian	0.475	0.009	0.550		0.286	0.006	0.400	
Hispanic/Latino	2.985	0.044	2.570	*	3.491	0.055	3.770 ***	
African-American	7.127	0.084	5.100	***	3.406	0.044	3.210 **	
Other Non-White Races	0.821	0.007	0.440		1.459	0.013	1.020	
Average Grant per UG Student (\$000)	1.097	0.093	5.100	***	1.134	0.099	6.670 ***	
				N = 3,678				N = 5,046
* p<.05, ** p<.01, ***p<.001				Adjusted R-squared = 0.1175	Adjusted R-squared = 0.1502			

Table A4a.2: All Need-Based Aid as % of Need – CTC Students

Independent Variable	CTC Men				CTC Women			
	Parameter Estimate	Standardized Coefficient	t-value		Parameter Estimate	Standardized Coefficient	t-value	
Intercept	34.161	0.000	8.670	***	31.156	0.000	9.430 ***	
Full-Time (1/0)	9.585	0.236	13.240	***	10.084	0.240	15.610 ***	
Attended 4-yr Institution	4.599	0.106	5.740	***	5.767	0.130	8.470 ***	
High School GPA (tenths)	0.246	0.072	4.170	***	0.286	0.083	5.740 ***	
Expected Family Contribution (Yr1) (\$000)	0.184	0.025	1.400		0.091	0.013	0.860	
FRPL in High School	2.318	0.056	3.050	**	2.655	0.064	4.220 ***	
Ever Independent	-1.180	-0.023	-1.390		-5.886	-0.137	-9.870 ***	
High School Income (%)	0.034	0.030	1.700		0.022	0.020	1.320	
Asian	-0.107	-0.002	-0.110		0.434	0.007	0.470	
Hispanic/Latino	-0.659	-0.012	-0.640		0.264	0.005	0.320	
African-American	-0.143	-0.002	-0.110		0.899	0.012	0.840	
Other Non-White Races	2.423	0.025	1.500		4.544	0.045	3.280 **	
Average Grant per UG Student (\$000)	1.191	0.027	1.550		1.685	0.038	2.630 **	
Average Loans per UG Student (\$000)	0.296	0.029	1.720		0.312	0.030	2.150 *	
				N = 3,465				N = 4,658
* p<.05, ** p<.01, ***p<.001				Adjusted R-squared = 0.1041	Adjusted R-squared = 0.2039			

A4b. Grant Aid as a Percent of Need

Table A4b.1: Grant Aid as % of Need – 4-Year Students

Independent Variable	4-Year Men				4-Year Women		
	Parameter Estimate	Standardized Coefficient	t-value		Parameter Estimate	Standardized Coefficient	t-value
Intercept	-14.777	0.000	-4.880	***	-18.730	0.000	-7.060 ***
Full-Time (1/0)	5.355	0.081	6.060	***	6.841	0.100	9.150 ***
High School GPA (tenths)	1.212	0.194	13.080	***	1.279	0.194	16.420 ***
Expected Family Contribution (Yr 1) (\$000)	-2.238	-0.491	-36.150	***	-2.377	-0.529	-47.530 ***
Ever Independent	0.389	0.005	0.380		-1.473	-0.021	-1.930
High School Income (%)	0.177	0.125	8.690	***	0.169	0.124	10.590 ***
Asian	2.495	0.037	2.570	*	3.456	0.054	4.470 ***
Hispanic/Latino	5.195	0.058	3.970	***	5.651	0.066	5.580 ***
African-American	6.873	0.060	4.370	***	5.993	0.059	5.170 ***
Other Non-White Races	3.416	0.021	1.610		3.250	0.022	2.080 *
Average Grant per UG Student (\$000)	2.347	0.148	9.710	***	2.455	0.161	13.210 ***
N = 3,678					N = 5,046		
* p<.05, ** p<.01, ***p<.001					Adjusted R-squared = 0.4291		

Table A4b.2: Grant Aid as % of Need – CTC Students

Independent Variable	CTC Men				CTC Women		
	Parameter Estimate	Standardized Coefficient	t-value		Parameter Estimate	Standardized Coefficient	t-value
Intercept	39.478	0.000	10.390	***	30.281	0.000	9.420 ***
Full-Time (1/0)	8.255	0.196	11.820	***	8.300	0.196	13.190 ***
Attended 4-yr Institution	-1.370	-0.030	-1.770		-0.300	-0.007	-0.450
High School GPA (tenths)	0.465	0.131	8.200	***	0.511	0.147	10.530 ***
Expected Family Contribution (Yr 1) (\$000)	-2.796	-0.365	-22.090	***	-2.371	-0.328	-23.010 ***
FRPL in High School	4.452	0.104	6.070	***	3.985	0.096	6.510 ***
Ever Independent	-1.066	-0.020	-1.300		-4.990	-0.115	-8.600 ***
High School Income (%)	0.029	0.025	1.520		0.052	0.047	3.250 **
Asian	2.180	0.038	2.280	*	2.381	0.037	2.670 **
Hispanic/Latino	2.121	0.036	2.130	*	1.818	0.034	2.260 *
African-American	-0.551	-0.007	-0.450		-0.397	-0.005	-0.380
Other Non-White Races	2.697	0.026	1.730		2.976	0.029	2.200 *
Average Grant per UG Student (\$000)	-2.042	-0.045	-2.760	**	-0.508	-0.011	-0.810
Average Loans per UG Student (\$000)	-0.074	-0.007	-0.440		-0.042	-0.004	-0.290
N = 3,465					N = 4,658		
* p<.05, ** p<.01, ***p<.001					Adjusted R-squared = 0.2039		

A4c. Subsidized Loans as a Percent of Need

Table A4c.1: Subsidized Loans as % of Need – 4-Year Students

Independent Variable	4-Year Men				4-Year Women				
	Parameter Estimate	Standardized Coefficient	t-value		Parameter Estimate	Standardized Coefficient	t-value		
Intercept	30.977	0.000	15.290	***	30.444	0.000	16.510	***	
Grants (% of Need)	-0.425	-0.551	-38.610	***	-0.429	-0.547	-44.040	***	
Full-Time (1/0)	3.338	0.065	5.630	***	4.312	0.080	8.270	***	
High School GPA (tenths)	0.086	0.018	1.370		0.056	0.011	1.020		
Expected Family Contribution (Yr1) (\$000)	0.948	0.269	19.720	***	0.956	0.271	22.960	***	
Ever Independent	-4.326	-0.072	-6.260	***	-5.775	-0.105	-10.940	***	
High School Income (%)	0.008	0.007	0.590		0.020	0.019	1.790		
Asian	-1.306	-0.025	-2.010	*	-2.046	-0.041	-3.820	***	
Hispanic/Latino	-0.541	-0.008	-0.620		-0.313	-0.005	-0.450		
African-American	2.840	0.032	2.700	**	0.005	0.000	0.010		
Other Non-White Races	-0.892	-0.007	-0.630		0.052	0.000	0.050		
Average Grant per UG Student (\$000)	0.005	0.000	0.030		0.091	0.008	0.690		
				N = 3,678					N = 5,046
* p<.05, ** p<.01, ***p<.001				Adjusted R-squared = 0.5340	Adjusted R-squared = 0.5560				

Table A4c.2: Subsidized Loans as % of Need – CTC Students

Independent Variable	CTC Men				CTC Women				
	Parameter Estimate	Standardized Coefficient	t-value		Parameter Estimate	Standardized Coefficient	t-value		
Intercept	7.619	0.000	2.690	**	10.459	0.000	4.630	***	
Grants (% of Need)	-0.293	-0.352	-23.390	***	-0.264	-0.343	-25.860	***	
Full-Time (1/0)	3.277	0.094	6.260	***	3.025	0.093	6.780	***	
Attended 4-yr Institution	6.017	0.160	10.580	***	6.594	0.191	14.290	***	
High School GPA (tenths)	-0.127	-0.043	-3.020	**	-0.123	-0.046	-3.610	***	
Expected Family Contribution (Yr1) (\$000)	2.097	0.330	21.100	***	1.714	0.308	22.650	***	
FRPL in High School	-1.243	-0.035	-2.300	*	-0.375	-0.012	-0.880		
Ever Independent	-0.519	-0.012	-0.860		-2.173	-0.065	-5.340	***	
High School Income (%)	0.000	0.000	-0.010		-0.019	-0.022	-1.670		
Asian	-1.276	-0.027	-1.820		-0.953	-0.019	-1.540		
Hispanic/Latino	-1.941	-0.040	-2.650	**	-1.217	-0.029	-2.180	*	
African-American	0.092	0.001	0.100		1.502	0.026	2.080	*	
Other Non-White Races	0.586	0.007	0.510		2.061	0.026	2.190	*	
Average Grant per UG Student (\$000)	2.572	0.068	4.720	***	1.628	0.047	3.750	***	
Average Loans per UG Student (\$000)	0.297	0.033	2.440	*	0.409	0.050	4.160	***	
				N = 3,465					N = 4,658
* p<.05, ** p<.01, ***p<.001				Adjusted R-squared = 0.3944	Adjusted R-squared = 0.3506				

A4d. Sum of Unsubsidized Loans

Table A4d.1: Sum of Unsubsidized Loans – 4-Year Students

Independent Variable	4-Year Men				4-Year Women			
	Parameter Estimate	Standardized Coefficient	t-value		Parameter Estimate	Standardized Coefficient	t-value	
Intercept	16.782	0.000	7.580	***	15.171	0.000	7.500	***
Grants (% of Need)	-0.246	-0.373	-20.420	***	-0.268	-0.399	-25.090	***
Full-Time (1/0)	7.147	0.163	11.040	***	8.134	0.177	14.220	***
High School GPA (tenths)	0.001	0.000	0.020		0.021	0.005	0.340	
Expected Family Contribution (Yr 1) (\$000)	0.412	0.137	7.840	***	0.460	0.152	10.080	***
Ever Independent	4.987	0.097	6.600	***	5.003	0.106	8.640	***
High School Income (%)	0.017	0.019	1.160		0.003	0.004	0.280	
Asian	-1.946	-0.044	-2.750	**	-1.420	-0.033	-2.420	*
Hispanic/Latino	-0.169	-0.003	-0.180		-0.365	-0.006	-0.470	
African-American	1.037	0.014	0.900		1.811	0.026	2.050	*
Other Non-White Races	-1.188	-0.011	-0.770		1.006	0.010	0.850	
Average Grant per UG Student (\$000)	-0.486	-0.046	-2.720	**	-0.334	-0.033	-2.330	*
N = 3,678					N = 5,046			
Adjusted R-squared = 0.2371					Adjusted R-squared = 0.2731			

* p<.05, ** p<.01, ***p<.001

Table A4d.2: Sum of Unsubsidized Loans – CTC Students

Independent Variable	CTC Men				CTC Women			
	Parameter Estimate	Standardized Coefficient	t-value		Parameter Estimate	Standardized Coefficient	t-value	
Intercept	0.944	0.000	0.770		1.582	0.000	1.720	
Grants (% of Need)	-0.062	-0.192	-11.480	***	-0.054	-0.186	-12.880	***
Full-Time (1/0)	1.450	0.106	6.410	***	1.386	0.113	7.630	***
Attended 4-yr Institution	5.179	0.355	21.080	***	4.278	0.331	22.760	***
High School GPA (tenths)	-0.019	-0.017	-1.060		-0.037	-0.037	-2.680	**
Expected Family Contribution (Yr 1) (\$000)	0.290	0.117	6.760	***	0.335	0.161	10.870	***
FRPL in High School	-0.534	-0.039	-2.280	*	-0.218	-0.018	-1.250	
Ever Independent	1.179	0.069	4.540	***	0.861	0.069	5.190	***
High School Income (%)	-0.003	-0.009	-0.570		0.005	0.014	0.990	
Asian	-1.242	-0.067	-4.100	***	-1.074	-0.058	-4.250	***
Hispanic/Latino	-0.313	-0.017	-0.990		-0.432	-0.028	-1.890	
African-American	-0.239	-0.010	-0.620		0.629	0.029	2.140	*
Other Non-White Races	0.694	0.021	1.400		0.077	0.003	0.200	
Average Grant per UG Student (\$000)	0.454	0.031	1.930		0.379	0.029	2.140	*
Average Loans per UG Student (\$000)	0.121	0.035	2.290	*	-0.002	-0.001	-0.050	
N = 3,465					N = 4,658			
Adjusted R-squared = 0.2517					Adjusted R-squared = 0.2321			

* p<.05, ** p<.01, ***p<.001



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