



The Impact of Pell Grants on Academic Outcomes for Low-Income California Community College Students

By Jennie H. Woo

This is the fifth in a series of MPR Research Briefs published on the outcomes and experiences of California community college students.

The research, funded by the William and Flora Hewlett Foundation, focuses primarily on transfer students, but we are also investigating the financial aid support that community college students receive.

This study examines whether financial aid, specifically federal Pell grants, is associated with academic success for low-income community college students in California. Previous studies in this series of MPR Research Briefs have examined transfer patterns and the types of financial aid typically received by students in this sector. This work follows directly from a previous study, *Financial Aid at California Community Colleges: Pell Grants and Fee Waivers in 2003–04*, and is a companion to *Seeking Assistance: Who Gets Financial Aid at California Community Colleges*. This analysis uses the success measures, both the relevant denominators and the outcomes, delineated in the first research brief, *California Community College Transfer Rates: Who Is Counted Makes a Difference*.

In this report, we focused on low-income students, identified as such because they received need-based financial aid in their first year of enrollment. Almost all students at California community colleges who received financial aid got it from one of two sources: federal Pell grants and Board of Governors (BOG) fee waivers.

This study is based on data files from the California Community College Chancellor's Office Management Information System (COMIS). The study examined data for two student cohorts. The first cohort was composed of those who first enrolled in a California community college in 2000–01 and had outcome variables three and six years later (in 2003 and 2006), and the second cohort was students who began in 2003–04 and had outcomes three years later (in 2006). This permits extensive

examination of the characteristics of aid recipients for two time periods, as well as an analysis of the academic progress of a group of low-income students over a significant period of time.

The study examined four interim milestones (see definitions in chart 1) for both cohorts. The multivariate analysis focused on students who demonstrated serious academic intent by examining only those who completed 12 units (3 or 4 courses) and

attempted a transferable mathematics or English course within six years. The focus of this study, then, is on students who demonstrated that they were seeking to transfer to a four-year school, rather than studying to enrich their lives, update or acquire job skills, or complete a GED. Three outcome measures were used to represent academic success: becoming transfer-ready, obtaining an associate's degree, and transferring to a four-year institution.



Chart 1. Study Definitions

Four Interim Milestones

(not mutually exclusive but successively more limiting)

Completion-oriented	Completed any transfer credits
College pathway status	Completed 12 transfer credits
Halfway milestone	Completed 30 transfer units
Transfer-directed	Completed one transferable English course and one transferable mathematics course with passing grades by 2006

Standard for Defining Students Who Are Planning to Transfer

Transfer intent	Completed 12 units and attempted a transferable English or mathematics course
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Three Outcome Measures

(neither mutually exclusive nor prerequisites)

Transfer-ready	Completed at least 60 transfer credits with a GPA of 2.0 or higher
Transferred	Enrolled in a four-year college or university
Obtained a degree	Obtained an Associate of Arts or Sciences degree

For more information, see Horn and Lew (2007).

Summary of Major Findings

- Low-income students who demonstrated an intent to transfer were mostly young, single, and financially dependent. Just over half began as full-time students. Based on measures that are not mutually exclusive, about 20 percent had achieved transfer-ready status, 33 percent had transferred to four-year colleges, though they did not necessarily begin as third-year students, and 27 percent had obtained an associate's degree within six years.
- Receiving a Pell grant was positively associated with persevering and becoming transfer-ready, for low-income students who had demonstrated transfer intent, when controlling for merit indicators, attendance status, and demographic variables.

Defining Success at Community College

Defining success is difficult at the community college level, particularly in the California system, which has open enrollment and relatively low fees. Students are asked their academic goals, but many are undecided or do not report any goal. Of the two million students attending in the 2006–07 academic year, only one-third stated that their goal was to transfer to a four-year college. The next three most frequent answers, each offered by about 15 percent of students, were obtaining job skills, undecided, or other. A very low percentage of students planned to obtain degrees or certificates or to study for personal enrichment.

In this study, just over half of students are in their first level and have a high school diploma. About 10 percent are second-level students and have a high school diploma but no college degree. Half of the students are under age 24, but

the average student age is 30. We defined low-income students as those who qualified for need-based financial aid, and we used categories developed in the first research brief, *California Community College Transfer Rates: Who Is Counted Makes a Difference* to examine their progress. These categories are based on the requirements for transfer to a California State University (CSU) or the University of California (UC) and represent interim milestones along the path to becoming transfer-eligible. We examined four interim milestones for this group to measure their progress over three years, including successfully completing units and passing the crucial gateway courses for transfer. The four milestones were (1) completing any transfer units, (2) completing 12 transfer units, (3) completing 30 transfer units, and (4) completing at least one transferable English course and one transferable math course with passing grades. Each of these groups includes the succeeding groups.

Low-Income Students Showed Few Differences in Achieving Milestones Between 2000–01 and 2003–04

We compared two cohorts of low-income students who enrolled at community college three years apart (see table 1). Low-income students comprised about 23 percent of the 2000–01 cohort and 35 percent of the 2003–04 cohort (data not shown in table). Comparing their success in accumulating transfer units and passing the crucial math and English courses, the rates for both cohorts were virtually the same after three years. After three years, about three-quarters of both cohorts had completed at least one transfer unit, about half had completed 12 transfer units, one-third had completed 30 transfer units (about 8 courses), and roughly 10 percent had passed the gateway math and English courses.



Table 1. Number and percentage of low-income California community college students completing credit milestones in three years, 2000–01 and 2003–04 cohorts

	2000–01		2003–04	
	Number	Percent	Number	Percent
Total students in cohort	508,800		387,800	
Low-income students	116,200	100.0%	134,410	100.0%
Completed any transfer units	87,670	75.4%	103,250	76.8%
Completed 12 transfer units	57,760	49.7%	71,410	53.1%
Completed 30 transfer units	42,400	36.5%	48,630	36.2%
Completed one transferable English and one transferable mathematics course	10,910	9.4%	15,150	11.3%

SOURCE: Analysis file based on COMIS 2000–01 and 2003–04 first-year students.

Low-Income Students Intending to Transfer Were Young, Single, and Ethnically Diverse

We then identified, among the low-income students, those whose objective was transfer to a four-year institution, distinguishing them from students attending for other purposes (see table 2). Based on previous analyses in this series of MPR Research Briefs, we used course-taking patterns to identify transfer intent, instead of relying on students' self-reported goals. Transfer intent was defined as completion of 12 units (3 or 4 courses)

and attempting a transferable math or English course within either three years or six years. After excluding students who had begun as dual-enrolled high school students and those for whom no other information was available, there were about 54,300 low-income students in the 2000–01 cohort who demonstrated intent to transfer within six years.

Table 2 is a profile of these students upon entry into the community college system. Most began as young, unmarried, without dependents, and financially dependent on their parents—although



Table 2. Profile of low-income students who demonstrated intent to transfer within six years, 2000–01 cohort

	Number	Percent
Total	54,300	100.0%
Dependent	33,500	61.7%
Under age 22	42,300	77.8%
Unmarried, no dependents	41,200	75.9%
Has dependents	7,600	14.0%
Full-time	30,100	55.4%
Female	32,900	60.7%
Transfer goal (self-reported)	32,700	61.9%
Asian	10,400	19.9%
Black	4,700	9.1%
Hispanic	19,000	36.4%
White	16,300	31.1%
Native American	1,800	3.5%
High school graduate	39,900	73.4%
U.S. citizen	39,300	72.4%
Received other aid besides fee waiver	35,900	66.0%
Received aid first year only	36,700	67.6%
Received aid subsequently	17,600	32.4%
Average parent income	\$21,680	
Average independent student income	\$11,770	
Average Expected Family Contribution (EFC)	\$2,490	
Average terms of BOG fee waiver	5.1	
Average terms of Pell grant	3.4	
Average terms attended	10.4	

SOURCE: Analysis file based on COMIS 2000–01 first-year students.

this changed as six years passed. Just over half began as full-time students, and somewhat less than two-thirds were women. Only about 60 percent stated they had a goal of transferring to a four-year institution. Reflecting the population of California, the group was ethnically diverse, with about one-third Hispanic, one-third White, 20 percent Asian, 10 percent Black, and 4 percent Native American and other. Almost three-quarters reported receiving a high school diploma, although this was before California instituted the High School Exit Exam, which increased the barriers to a high school diploma.

California has a large number of recent immigrants, and they were reflected in this group. About 6 percent received secondary school certificates from outside the country. About 72 percent were U.S. citizens, 16 percent were permanent residents, 1 percent had refugee/asylum status, 3 percent had another status, and for 9 percent, the status was unknown (data not shown in table).

Paying for Community College

Almost all of these students received a BOG fee waiver, and about two-thirds received other aid as well, almost all of which included a Pell grant (table 2). They attended school for an average of 10 terms, receiving fee waivers for 5 terms and Pell grants for only 3 terms, mostly the first year. The average income of dependent students' parents was \$21,700; for independent students, it was \$12,000, indicating that many came from families with incomes below the poverty level. (In 2000, the federal poverty guideline for a family of four was \$17,050.) The average Expected Family Contribution (EFC) from the federal student aid formula was \$2,500.

Low-Income Students Had Low Academic Success Rates

We looked at three outcome measures for these students: becoming transfer-ready, obtaining an associate's degree, and transferring to a four-year institution. These outcomes are neither mutually exclusive nor prerequisites for each other. Being transfer-ready means meeting the UC/CSU transfer requirements of completing at least 60 transfer units, including the required English and math courses, with a minimum 2.0 GPA. Students do transfer who have not met the minimum transfer requirements (usually ending up as freshmen or sophomores at a four-year institution), and students who complete transfer requirements may or may not actually obtain a degree.

For the 2000–01 cohort of low-income students intending to transfer, we examined academic outcomes in 2003, three years later, and again in 2006, six years later (see table 3). Although their success rates were not high, they increased substantially after three more years had passed. In three years, 13 percent had achieved transfer-ready status by completing 60 transferable units with a grade point average of 2.0 or higher in those courses. In six years, 20 percent had become transfer-ready. In three years, only 8 percent had actually transferred to a four-year college, but, in six years, fully one-third had transferred. About 27 percent of the students received an Associate of Arts or Sciences (AA or AS) degree in six years. Students whose coursework took the longest time were more likely to attend part time, to have dependents, to have lower incomes, to lack a high school diploma, and to receive less financial aid.



Table 3. Academic outcomes of low-income students who demonstrated intent to transfer after three and six years, 2000–01 cohort

Transfer milestones	Three years later		Six years later	
	Number	Percent	Number	Percent
Demonstrated transfer intent (Completed 12 units and attempted a transferable English or math course)	36,000	100.0%	54,300	100.0%
Transfer-ready	4,800	13.3%	11,000	20.3%
Transferred	2,700	7.5%	17,800	32.8%
Obtained an Associates of Arts or Sciences degree	5,000	13.9%	14,600	26.9%

SOURCE: Analysis file based on COMIS 2000–01 first-year students.

Pell Grant Recipients Were More Academically Successful

Students who received Pell grants in their first year of enrollment were more likely to persevere and become transfer-ready in six years than those who did not receive one, even after controlling for demographic and other factors. Employing multivariate regression, we examined whether financial aid contributed significantly to a student's success for this group of low-income students intending to transfer, controlling for demographic variables. Table 4 shows the detailed results for one of the models we estimated. This model examined the probability that a low-income student intending to transfer would become transfer-ready (achieve 60 transferable units with a GPA of at least 2.0

within six years). The variables are grouped by significant school-related variables, significant demographic variables, or variables that were not significant. One variable used as a control was receiving a Cal Grant. These are state grants that students receive in addition to Pell grants and fee waivers. They are directed to low-income students with a minimum GPA, allowing us to control for both high GPAs and the direct effects of Cal Grants. Average cumulative Cal Grant awards were \$2,345 (smaller than Pell grants, for which the average amount was \$4,645), but the recipients had average GPAs of 3.81, much higher than the 2.86 of those without Cal Grants for this low-income group. Only one-fifth of these low-income students received Cal Grants as opposed to the 65 percent who received Pell grants.



Table 4. Effects of Pell grant on becoming transfer-ready for low-income students with intent to transfer, 2000–01 cohort

Variable	Variable type	Mean	Logistic Regression			
			Parameter estimate	Standard error	Probability > Chi-Square	Change in probability/original probability
Intercept			-4.849	0.078	<.0001	
School-Related Variables						
Ratio of completed units to attempted	continuous	0.611	4.684	0.071	<.0001	223.2%
Full-time in first term	binary	0.557	0.500	0.026	<.0001	52.9%
Cal Grant recipient	binary	0.202	0.379	0.032	<.0001	38.4%
Pell recipient	binary	0.645	0.123	0.028	<.0001	11.3%
Completed remedial units	binary	0.652	-0.153	0.026	<.0001	-12.7%
Demographic Variables						
Male	binary	0.390	0.141	0.025	<.0001	13.1%
U.S. citizen	binary	0.726	-0.251	0.028	<.0001	-20.0%
Asian	binary	0.191	0.544	0.035	<.0001	58.5%
Black	binary	0.087	-0.512	0.058	<.0001	-37.0%
Has dependents	binary	0.139	-0.611	0.043	<.0001	-42.6%
Age 30 or older	binary	0.107	-1.036	0.052	<.0001	-61.5%
Not Significant Variables						
High school graduate	binary	0.802	0.093	0.034	0.0058	8.5%
Native American	binary	0.034	0.053	0.071	0.4575	4.7%
Hispanic	binary	0.351	-0.073	0.031	0.0171	-6.2%

Dependent Variable: Transfer Ready = completed at least 60 units with GPA of 2.00 or higher within six years.

Mean = 0.226

Chi-Square for Likelihood Ratio: 10,706 DF = 14 Pr>ChiSq = <.0001

Sample = Completed at least 12 units and attempted at least one transferable English or math course.
Received some need-based financial aid.

Number of Observations Used = 47,926

Original probability = 0.121

R-Square = 0.200

NOTE: Race/ethnicity variables use "white" as the reference category, with a mean of .301. To better describe the relative effects of the different factors a new probability is calculated for each variable where the binary variable is changed to equal one or the continuous variable is increased by one standard deviation. The change in probability over original probability is defined as the percent difference between the new probability for each variable and the original probability for the model.

SOURCE: Analysis file based on COMIS 2000–01 first-year students.

The most powerful factor in determining the likelihood of becoming transfer-ready was the ratio of completed to attempted units. This indicates that successful academic completion of each course was the strongest predictor of success. Our model showed that, taking remedial courses in general reduced the probability of becoming transfer-ready, and Pell grant recipients were more likely to have taken remedial courses. The model also shows that for this group, men and Asians were slightly more likely to succeed in becoming transfer-ready than women and Whites. It also showed that Blacks were less likely to become transfer-ready than Whites and that having dependents and being older also reduced the chances of success. Groups who were not U.S. citizens, particularly permanent residents and refugees, were more likely than citizens to succeed academically. Having a high school diploma, GED, or other certificate or being Hispanic or Native American instead of White were not significant factors in predicting a student's prospects of becoming transfer-ready.

Using other models on other groups, such as those who had taken some transfer courses or had passed the crucial gateway courses, we examined various outcome measures. We examined students in the 2000–01 cohort both three and six years later, and students in the 2003–04 cohort three years later. Results for all of these models are summarized in table 5.

Overall, we found that for low-income students who either had completed any transfer credits or had completed an English and mathematics course, receiving a Pell grant was positively associated with several measures of academic success: becoming transfer-ready (also defined above), transferring, or obtaining an associate's degree or certificate. The association was stronger for becoming transfer-ready than for actually transferring or obtaining a degree. Only 3 of the 20

models did not show receipt of a Pell grant to be significantly positively associated with an outcome variable.

Other variables associated with academic success were: having a high ratio of completed to attempted units, not taking remedial units, attending full time, and receiving a Cal Grant. Asians and eligible non-citizens were more likely to succeed than U.S. citizens or those of other racial or ethnic groups, among this low-income group. Variables negatively associated with academic success were having dependents (usually children) and being older than age 30.

Those who received Pell grants were different from other students in several ways. Besides having lower incomes, they were much more likely to take remedial courses and attend full time and less likely to be U.S. citizens. Their GPA was about 2.9, average for low-income students. Students who transferred were more likely to have higher incomes and GPAs, to hold U.S. citizenship, and not to take remedial courses. The only commonalities between Pell grant recipients and transfers were that both were more likely to attend full time and complete most of their courses.

For low-income students, receiving a Pell grant was associated with academic success, especially with becoming transfer-ready. No causation, however, can be inferred. Perhaps Pell funds allowed these students to spend more time on their studies and succeed academically. It could also be the case that smart, motivated students likely to excel in school are also more likely to seek and obtain financial aid.



Table 5. Summary of logit results for effects of Pell grants on academic outcome variables

Population	Outcome	Logistic Regressions			
		Parameter estimate for Pell variable	Standard error	Pr > Chi-Square	R-Square
2000–01 Cohort					
as of 2003					
Transfer-directed, low-income	Transfer-ready students	0.262	0.060	<.0001	0.182
	Transferred	-0.014	0.062	0.8207	0.040
as of 2006					
Completion-oriented, low-income	Completed 30 units	0.854	0.019	<.0001	0.338
	Transfer-ready students	0.545	0.026	<.0001	0.189
	Transferred	0.033	0.022	0.1202	0.187
Transfer intent, low-income	Transfer-ready students	0.123	0.028	<.0001	0.200
	AA degree	0.150	0.024	<.0001	0.069
	Transferred	0.130	0.022	<.0001	0.106
Transfer-directed, low-income	Transfer-ready students	0.216	0.040	<.0001	0.120
	Transferred	0.280	0.033	<.0001	0.053
	AA degree	0.155	0.033	<.0001	0.060
Transfer-directed	Transferred	0.331	0.024	<.0001	0.095
2003–04 Cohort					
as of 2006					
Completion-oriented, low-income	Transfer intent	0.333	0.019	<.0001	0.253
	Completed 30 units	0.727	0.020	<.0001	0.356
	Transfer-ready students	0.363	0.037	<.0001	0.165
	Transferred	-0.298	0.036	<.0001	0.062
Transfer-directed, low-income	Transfer intent	2.242	0.634	0.0004	0.011
	Completed 30 units	0.591	0.112	<.0001	0.070
	Transferred	-0.103	0.063	0.1028	0.106

Completion-oriented: Completed at least one transfer credit by 2006
 Low-income: Received some need-based financial aid
 Transfer-directed: Completed at least one transferable English course and one transferable math course with passing grades by 2006
 Transfer intent: Completed 12 units and attempted a transferable math or English course

SOURCE: Analysis file based on COMIS 2000–01 and 2003–04 first-year students.

References

Horn, L., and Lew, S. (2007). *California Community College Transfer Rates: Who Is Counted Makes a Difference*. Berkeley, CA: MPR Associates, Inc.

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