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## Technical Appendices

# **Making College Possible for Low-Income Students Grant and Scholarship Aid in California**

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# Appendix A: Data and Methods

We use numerous data sets and methods to evaluate grant and scholarship aid. Those data and methods are described below.

We use the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDs) to calculate sticker prices, aid, and net prices by college. Since 2008, each year IPEDs has collected administrative data from colleges that receive Title IV funding from the Federal Government and respond to its survey on net price, sticker price, and sources of financial aid. This survey provides institutional level data regarding the number of undergraduate students who receive different types of financial aid, as well as the average dollar amount of aid received by these students. Using these data IPEDs collects and then calculates the net price of attendance for each college. Net price is the total costs of attendance (the sticker price) less grant and scholarship aid. Data are reported by income group. Income groups are not adjusted for inflation. We restrict our sample of analysis to those institutions that reported net price data and received Title IV funding from the Federal Government. In California, that totals 343 institutions including all of the UC and CSU campuses, all community colleges, and almost all of the state's private non-profits. Figures 1-4 and tables 1-5 of this report are based on IPEDs data. Title IV is section of the Higher Education Act authorizing the Federal Government to administer and disperse financial aid. This aid is delivered through grants, loans, and work-study programs. To be eligible to receive Title IV funding an institution must apply to the US Department of Education and meet certain eligibility requirements (most basically involving state licensure, institutional accreditation by a Nationally Recognized Accrediting Agency, and various standards of financial responsibility and administrative capability). Also, the institution must ensure individual programs of study meet certain curriculum requirements in order to qualify a student enrolled in that program for Title IV funding.

To estimate persistence and completion, we use data from the Beginning Postsecondary Survey (BPS) and the College Access Foundation of California (CAFC).

The CAFC data consists of students granted a scholarship by one of the foundation's grantees. All students in the sample attended a California high school. We merge the CAFC data with National Student Clearinghouse data to identify college graduates. Our total sample is 11,712 students (with longitudinal records), with the earliest cohort entering college in 2008. In addition to descriptive analyses, we develop a logit model to estimate the probability of graduating with a bachelor's degree. (All CAFC students indicate that their educational goal is to earn at least a bachelor's degree). Our main model is restricted to the cohort entering college in 2008 and followed for five years. Separate models are run for students who first entered a community college and for students who first entered a four-year college. Results are shown in Table A1 and Table A2. The strongest predictor of earning a bachelor's degree is a student's high school grade point average. This is true for both community college students and four-year college students. When we convert the logit results to the predicted probability of earning a bachelor's degree, we see much higher probabilities for students who first enter a four-year college (see Figure 6 in the report). To develop the predicted probabilities shown in Figure 6, we estimate the predicted probability based on mean values for each variable except for GPA, where the GPA range of interest is set equal to one and other GPA ranges are set to zero. (In our regression models, GPA is a set of binary variables based on GPA range, as shown in Tables A1 and A2).

The BPS consists of approximately 16,000 students nationwide who first entered college in 2003 and were followed through 2009. The survey was conducted by the National Center of Education Statistics. To analyze baccalaureate completion, we use a linear probability model. Specifically, we estimate cumulative persistence and attainment anywhere by 2008-09. We control for income (as a percent of poverty level 2003-04), gender, race/ethnicity, and high school grade point average (GPA). We restrict our analyses to low-income students (students with family incomes up to 1.5 times the poverty level). Results are shown in Table A3 and discussed in the main body of the report. We report results using standardized coefficients, allowing for easy comparisons of the effect of a one-unit change in the standard deviation of any independent variable will have on our outcome of interest. (Results using non-standardized coefficients are available from the author). In our linear probability model, the coefficients show the change in probability for a unit change in standard deviation of the independent variable.

**TABLE A1**

**Logit regression results of the probability of earning a bachelor’s degree in six years for students who first attended a community college in 2008**

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Pr > ChiSq	Exp(Est)
Intercept		1	-2.0166	0.6521	0.002	0.133
High school gpa:	3.0 to 3.49	1	0.598	0.3758	0.1115	1.818
	3.5 to 3.99	1	1.0775	0.415	0.0094	2.937
	4.0 or higher	1	1.8423	0.9207	0.0454	6.311
	blank or missing	1	-0.3386	0.5905	0.5664	0.713
	less than 2.0	1	-12.8005	744.4	0.9863	0
Gender	M	1	-0.3277	0.3245	0.3125	0.721
Ethnicity:	American Indian or Alaskan Native	1	-12.8983	615.4	0.9833	0
	Asian	1	1.9447	0.6212	0.0017	6.991
	Black or African American	1	-0.5119	0.7128	0.4726	0.599
	Declined to State	1	0.5116	0.6438	0.4268	1.668
	Hispanic or Latino	1	-0.1953	0.4979	0.6949	0.823
	Two or More Races	1	-12.7828	798.5	0.9872	0
First generation to go to college	No	1	1.5688	0.8429	0.0627	4.801
	Unknown	1	-0.045	0.4619	0.9223	0.956
Expected family contribution	blank or missing	1	0.1224	0.4615	0.7908	1.13
	some contribution	1	0.3104	0.554	0.5753	1.364

SOURCE: Author’s calculations based on CAFC students graduating from high school and entering college in 2008. Students are followed through 2014.

NOTE: Reference groups are high school gpa 2.0 to 2.99 female gender, white ethnicity, first generation to go to college (yes), expected family contribution of zero (no contribution). Total cohort size equals 1,443 students. In relation to observed responses, model predictions are 75% concordant and 23% discordant.

**TABLE A2**

**Linear probability model of earning a bachelor’s degree in six years for students who first attended a four-year college in 2008**

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Pr > ChiSq	Exp(Est)
Intercept		1	1.5139	0.3884	<.0001	4.545
High school grade point average	2.0 to 2.99	1	-2.1818	0.3279	<.0001	0.113
	3.0 to 3.49	1	-1.4611	0.2727	<.0001	0.232
	3.5 to 3.99	1	-0.779	0.2612	0.0029	0.459
	blank or missing	1	-0.9354	0.2952	0.0015	0.392
Gender	Male	1	-0.3341	0.1411	0.0179	0.716
Ethnicity	American Indian or Alaskan Native	1	-0.4844	1.2527	0.699	0.616
	Asian	1	-0.00981	0.358	0.9781	0.99
	Black or African American	1	-0.5174	0.3271	0.1137	0.596
	Declined to State	1	0.0142	0.3678	0.9691	1.014
	Hispanic or Latino	1	-0.1796	0.291	0.5373	0.836
	Native Hawaiian or Other Pacific Islander	1	-0.9988	0.9929	0.3144	0.368
First generation to go to college	Two or More Races	1	-0.5155	0.6159	0.4026	0.597
	No	1	0.2648	0.4372	0.5447	1.303
Expected family contribution	Unknown	1	-0.3002	0.1942	0.1221	0.741
	blank or missing	1	0.4549	0.2126	0.0324	1.576
	some contribution	1	0.6633	0.2784	0.0172	1.941

SOURCE: Author’s calculations based on CAFC students graduating from high school and entering college in 2008. Students are followed through 2014.

NOTE: Reference groups are high school gpa 4.0 or higher, female gender, white ethnicity, first generation to go to college (yes), expected family contribution of zero (no contribution). Total cohort size equals 1,443 students. In relation to observed responses, model predictions are 66% concordant and 31% discordant.

**TABLE A3**

**Linear probability model results on the likelihood of earning a bachelor’s degree by 2009 among students first entering college in 2003, BPS data**

**Standardized regression coefficients**

	<b>Std.B.</b>	<b>S.E</b>	<b>Lower 95%</b>	<b>Upper 95%</b>
Intercept				
Age first year enrolled	-0.043	0.01	-0.062	-0.023
Gender				
Male	-0.03	0.008	-0.047	-0.014
Race/ethnicity				
Black or African American	-0.038	0.008	-0.054	-0.021
Hispanic or Latino	-0.039	0.01	-0.058	-0.02
Asian	0.024	0.011	0.003	0.045
American Indian or Alaska Native	-0.011	0.005	-0.021	-0.001
Native Hawaiian / other Pacific Islander	0.005	0.018	-0.031	0.041
Other	-0.004	0.007	-0.017	0.009
More than one race	-0.022	0.01	-0.042	-0.002
Income of parent or student (if independent student) 2003-04	0.099	0.011	0.078	0.121
High school grade point average (GPA)				
less than 2.0	-0.084	0.009	-0.102	-0.067
2.0-2.4 (C to B-)	-0.135	0.013	-0.16	-0.11
2.5-2.9 (B- to B)	-0.121	0.012	-0.144	-0.098
3.0-3.4 (B to A-)	-0.108	0.015	-0.137	-0.079
Missing or unknown GPA	-0.176	0.016	-0.207	-0.145
Type of institution				
Not degree granting	-0.243	0.015	-0.273	-0.214
Public 2-year associate's	-0.321	0.026	-0.372	-0.271
Public doctoral	0.066	0.018	0.03	0.102
Private non-profit non-doctoral except lib arts	-0.054	0.021	-0.095	-0.012
Private non-profit doctoral and liberal arts	-0.021	0.02	-0.061	0.019
Other public degree granting	-0.046	0.019	-0.083	-0.01
Other private non-profit degree granting	-0.091	0.015	-0.122	-0.061
Private for-profit degree granting	-0.223	0.018	-0.259	-0.188
Tuition and fees in 2003-04	0.163	0.023	0.118	0.209
Total grants 2003-04	0.067	0.011	0.044	0.089

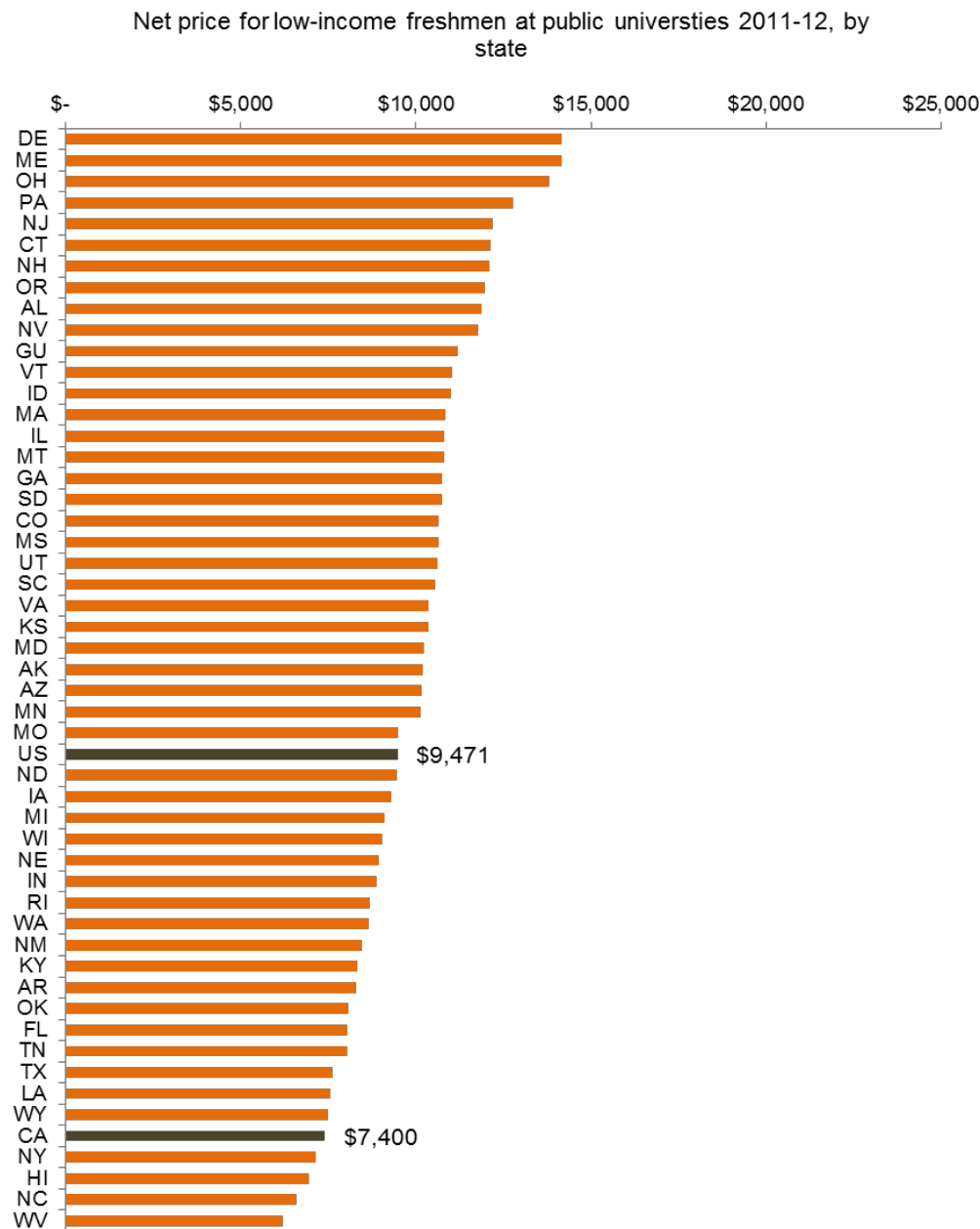
NOTE: Dependent variable is whether a student earned a bachelor’s degree within six years. Reference categories for independent variables: female, white, GPA 3.0-3.4, public non-doctoral colleges. Institution categories are based on the Carnegie code (2000 classification system) with level of control (public or private) from 2003-04.

SOURCE: Author’s calculations based on U.S. Department of Education, National Center for Education Statistics, 2003-04 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:04/09).

## Appendix B: Supplemental Figures

As shown in Figure B1 and Figure B2, California has low net prices at public four-year colleges for low-income students and high net prices for high-income students. The difference in prices paid at public universities between low-income and high-income students is greater than in any other state.

FIGURE B1

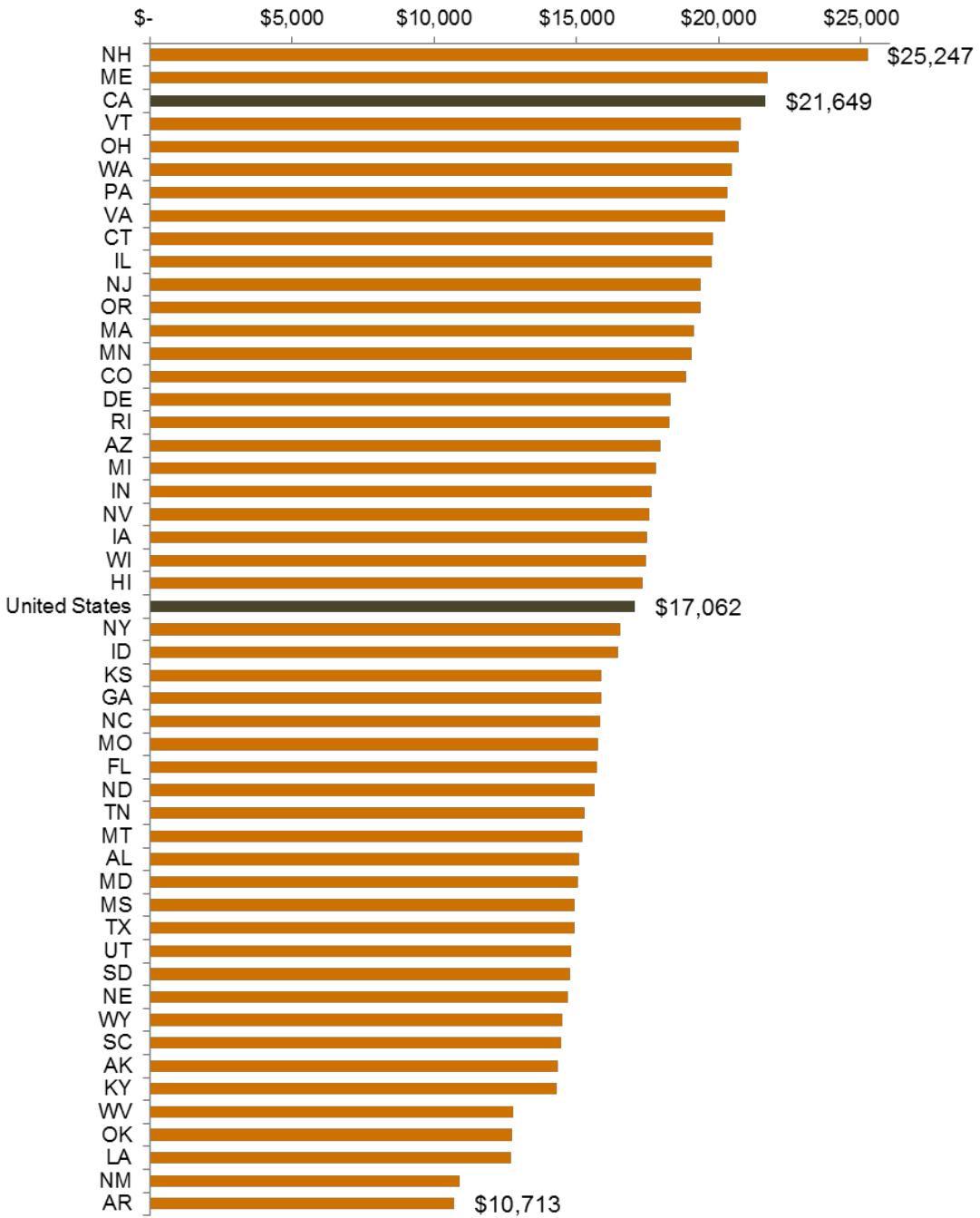


SOURCE: PPIC, based on U.S. Department of Education data.

NOTE: Low-income is defined as family income of \$30,000 or less. Data are only provided for students who received federal aid.

FIGURE B2

Net price for high-income freshmen at public universities 2011-12, by state



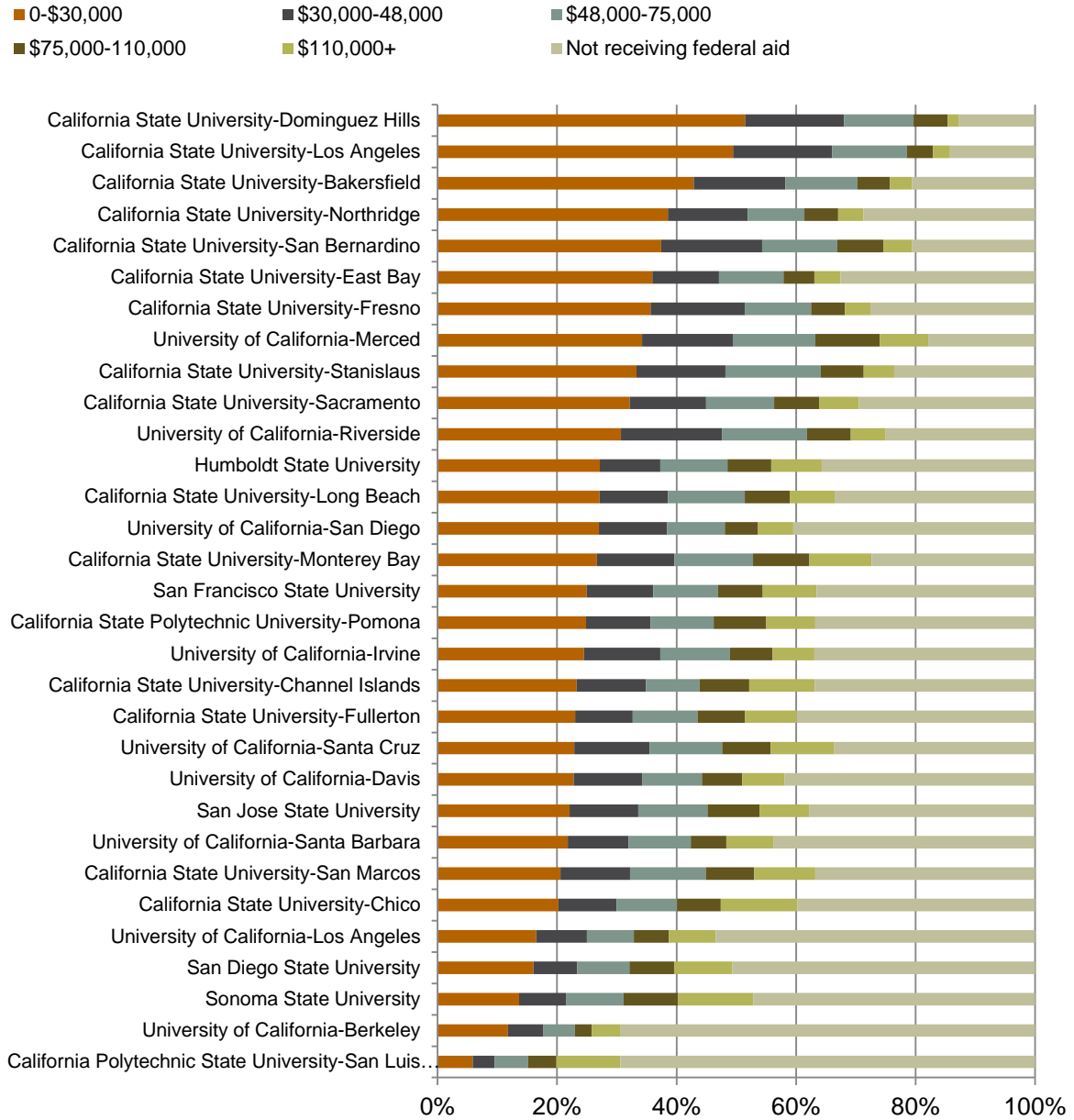
SOURCE: PPIC, based on U.S. Department of Education data.

NOTE: Low-income is defined as family income of \$30,000 or less. Data are only provided for students who received federal aid.



Figures B3 and B4 show the distribution of freshmen at California’s largest colleges by federal aid receipt and family income (for those receiving federal aid).

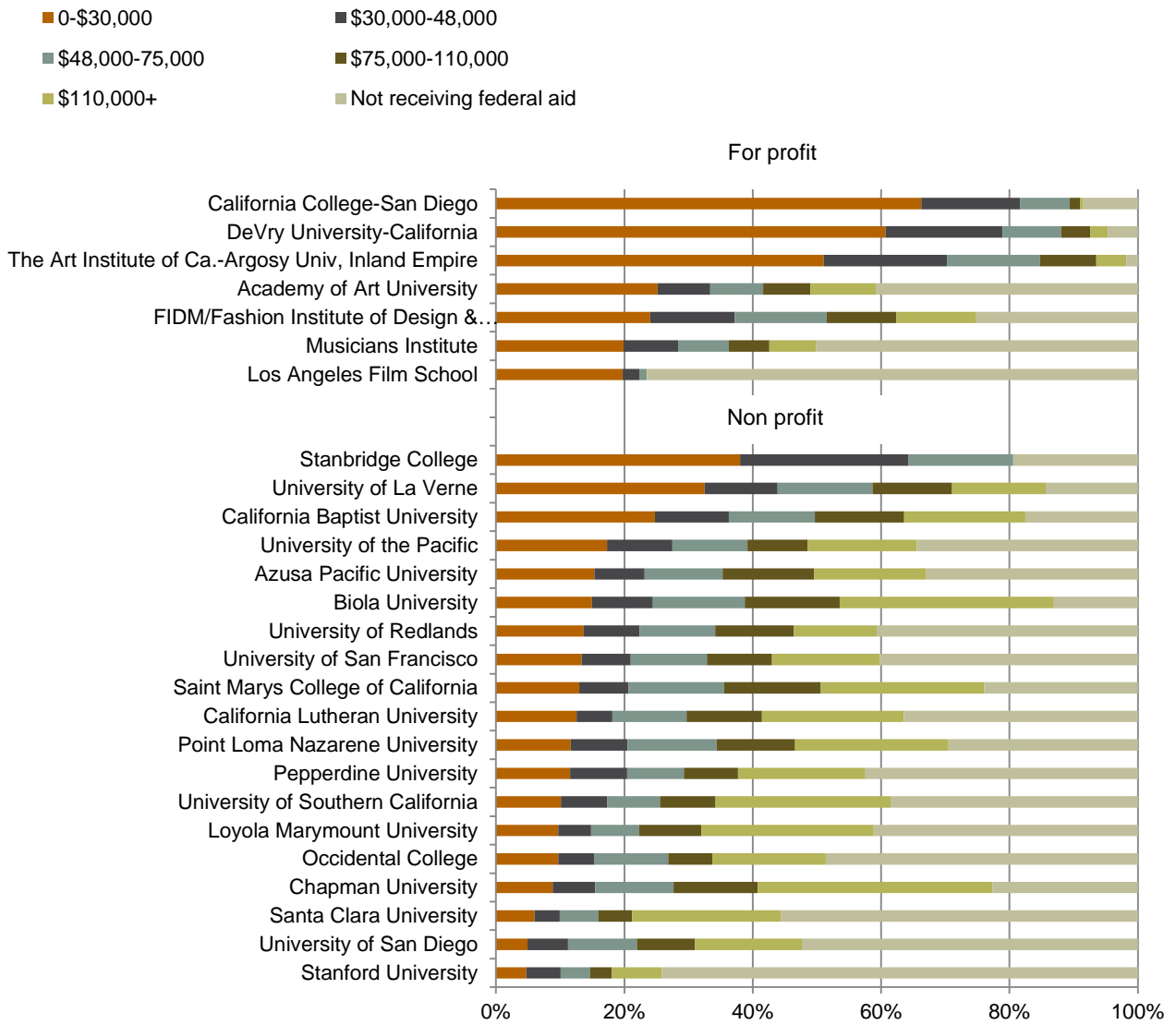
**FIGURE B3**  
**Distribution of freshmen by aid and family income, public universities in California**



SOURCE: PPIC, based on U.S. Department of Education data.

NOTE: Restricted to four-year colleges with at least 500 first-time full-time freshmen.

**FIGURE B4**  
**Distribution of freshmen by aid and family income, private universities in California**



SOURCE: PPIC, based on U.S. Department of Education data.

NOTE: Restricted to four-year colleges with at least 500 first-time full-time freshmen.

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