**Supplementary Text**

A. Letters

Supplement Figures 1-7 reproduce the letters used in the various treatment arms.

B. Description of Setting

*Financial Aid in California*

The higher education landscape in California is complex. The state hosts two independent four-year public university systems, the University of California and the California State University, as well as a now 116-campus community college system that is the largest higher education system in the United States. It also has a host of for-profit and not-for-profit private colleges and universities. Tuition and fees vary dramatically among these institutions, as do institutional financial aid programs. Among the public segments, tuition and fees at the UC are more than double those at the CSU, which in turn are more than triple those at the community colleges.

The state has a range of different public programs that provide college aid, operating under the collective name of Cal Grant. We focus on two varieties of Cal Grants, the Cal Grant A and Cal Grant B entitlement awards. These are entitlements for students who meet eligibility criteria, based on high school grades and family income, and who enroll in college within a year of graduating from high school. The Cal Grant A is for high-achieving, moderate-income students pursuing associate’s or bachelor’s degrees. Students must have a GPA above 3.0 and a household income of less than $100,000 (with some variation by family size). The Cal Grant B is for low-income students, with household incomes of less than $50,000, who meet a lower high school achievement threshold, with a GPA above 2.0.

The terms of the Cal Grant A and B differ in their details but are similar in broad strokes: Both cover the full cost of in-state tuition and required fees at a public institution. Thus, the generosity of the Cal Grant is tied to institutional tuition levels, so it is more generous at the high-cost UC than at the lower-cost CSU, and more generous at both than at community colleges, which have much lower fees. Students who attend private colleges in the state receive awards that do not generally cover full tuition but are nevertheless quite generous relative to comparable programs in other states. For example, the well-known Georgia HOPE scholarship is worth about $2,000 per semester (or half this at private institutions); the CalGrant is worth as much as $12,600 per year for a student attending UC, or $9,000 for a student attending a private, non-profit college.

The Cal Grant layers on top of the federal Pell Grant. The UC and to a lesser extent the CSU also have institutional aid programs; community college institutional aid budgets are much smaller. These can support living expenses, which are not covered by the Cal Grant (with the exception of a small payment for Cal Grant B students). The result is that for many students the net cost of attending college may be lower at the CSU and UC than at community colleges, despite the much higher sticker prices. Offsetting this for many students is the fact that there is much more likely to be a community college than a UC within commuting distance of a student’s home, which can allow for substantial cost savings.

Colleges provide calculators on their websites that are meant to help students forecast the total amount of aid they will receive. Each college has its own calculator, and they vary in the information they solicit; sometimes colleges in the same system (e.g., different Cal State campuses) seem to use the same calculators, but in other cases they do not. In particular, the different UC campuses each seem to use different calculators. As an illustration, the fields solicited by the UC Berkeley web form for dependent students (the fields are somewhat different for independent students) are:

* Housing plans (on campus, off campus, with parents)
* Parents’ marital status
* Parents’ anticipated number of dependents in college
* Number of people in parents’ household
* Total parental assets
* Total parental income
* Parental earned income
* Parental income tax paid
* Parental other income
* State of residency
* Total student assets
* Total student income
* Student income tax paid
* Student other income

A student who provides this information is given non-binding estimates of tuition costs, fees, housing costs, and other living expenses, along with estimates of total available grant aid, inclusive of federal, state, and campus sources.

For our Net Cost (T7) letters, we use the information from students’ FAFSAs to populate the calculators for each of the colleges that the student listed on the FAFSA. All of the requested information from the UC, CSU, and CC calculators is available from the FAFSA, though some private colleges solicit information (like father’s occupation) that is not available. We draw estimates only from the public institutions.

Supplement Table 1 presents a hypothetical example of a student from a family of four with income of $30,000, using real output from the college calculators. For this student, the net cost at UC Berkeley was almost 40% lower than at Long Beach Community College, reflecting the additional $11,000 value of the Cal Grant and an additional $13,000 in non-Cal Grant grant aid, even though the sticker price at Berkeley was nearly twice that at Long Beach. Anecdotally, the potential for this kind of ranking reversal is not widely appreciated. In our sample, 58% of students whose FAFSAs listed both a community college and a CSU or UC campus had lower estimated net costs at one of the four-year schools than at any of the community colleges. Discussions with CSAC and campus aid officials suggest that this largely reflects more generous institutional aid budgets at the CSU and, especially, the UC than at the community colleges.

Supplement Figure 7 – the example T7 letter – shows another illustration. This table shows a student who listed five UC campuses on their FAFSA. In this case, each of those campus’ calculators shows a different value for estimated costs and for estimated grant aid. This may reflect real differences among campuses in either their cost structure (particularly for housing costs) or their financial aid policies, or differences in the assumptions made by their respective calculators. We cannot be sure that the estimates are always accurate, but because they are drawn from the colleges’ own calculators we are assured that they reflect the information that colleges are providing to prospective students.

*The process of applying for aid*

The process of establishing eligibility for and claiming the Cal Grant has several steps and involves both the students and their colleges. High schools provide GPAs for all members of their senior classes to CSAC, usually at the beginning of the school year but sometimes later. Students must then submit FAFSAs, as early as October 1st of their senior year. These FAFSAs include student family and financial information. Students also provide a list of schools to which they would like their information to be sent. We interpret this as a weak proxy for where students actually apply (though note that community colleges do not require traditional applications – students can simply register for classes). For each listed school, students indicate whether they plan to live on campus, off campus, or with parents.

CSAC receives FAFSA information from the federal Department of Education and uses this information to identify potentially eligible students. Once a student is identified as potentially eligible, CSAC mails the student a preliminary notification of his or her award eligibility. Notification letters include instructions about how students can claim their awards. They are sent by postal mail, with the first letters going out in mid-November of the senior year and additional letters processed on a rolling basis through the next spring as FAFSA information arrives to CSAC. Importantly, both UC and CSU admissions applications are due by the end of November, so notification letters will generally not arrive in time to influence application decisions.

The notification letters direct students to register for accounts on WebGrants4Students, CSAC’s online portal for students. On the portal, they must confirm their GPAs and eventually report the college or university they will be attending. Many students are contacted by federal programs or by colleges over the summer after the senior year and asked to provide documentation for the information provided on the FAFSA.

To receive the Cal Grant, students must enroll in a qualifying college program in the year following high school graduation (or, only for those who register for WebGrants4Students accounts in that year, in the following year). Following enrollment, institutions must verify both that the student meets the financial eligibility requirements and that the student is enrolled in a program that meets Cal Grant eligibility guidelines. In principle, colleges then claim the Cal Grant on the student’s behalf and apply it to the student’s tuition charge. However, CSAC reports that some colleges fail to claim awards on behalf of all of their eligible students so it may be necessary for the student to advocate for herself at this stage as well.

C. Mailing timing

The first 2017-18 preliminary notification letters were printed in the second week of November for students who submitted FAFSAs shortly after they became available in October. By that point, over 30,000 students had been identified as eligible. To overcome internal logistical hurdles involved with printing and mailing so many letters, CSAC printed and mailed them in batches. The first large batch of 6,004 Baseline (T1) letters were mailed on November 20, 2017, with another 5,967 following on November 27-28. Following this, 12,041 Simplified (T2) letters were mailed November 28-30. The Simplified + Belonging (T3) letters were then mailed, with 4,002 on November 30 and December 1. By December 7, the mailings had evened out, with a cumulative total of between 17,000 and 18,000 in each treatment arm. New batches were sent approximately weekly thereafter as students filed their FAFSAs and were identified as eligible, with much smaller gaps between treatment arms. Baseline letters were typically mailed on Monday with Simplified and Simplified + Belonging letters following later in the week.

In year 2, batching was reduced and the initial round of letters for three treatment arms (T4, T5, and T6) were mailed approximately simultaneously, between November 27 and December 3, 2018. However, bugs in the programs used to populate the Net Cost letters (T7) delayed the initial large batch of these letters until December 18-20.

In each year, less than half of the letters were mailed by the end of December, with additional letters generated on a rolling basis as FAFSAs arrived to CSAC. We include in our analyses only students whose letters were mailed by June 1. Although in principle the federal FAFSA deadline is not until June 30, institutional aid deadlines are much earlier and there were relatively few letters mailed this late in the season. Supplement Figure 8 shows the distribution of mailing dates, indicating both the overall time pattern and the differences in mail dates across treatment arms early in the year. Vertical lines show key dates: The UC application deadline (November 30), the UC and CSU “priority deadline” for FAFSA submission (March 2), and the deadline for accepting UC admissions offers (May 1).

In year 2, the Simplified treatment arm (T4) amounted to fewer total letters than the other arms. This arose randomly; approximately the same number of high schools were assigned to each arm, but the schools assigned to this arm generated fewer letters, on average, than the others. A test of the hypothesis that the average number of letters per school was the same in each treatment arm yields p=0.11. As discussed in the main text, we do not find any systematic differences in observable characteristics of students or high schools assigned to different arms in either year.

When we measure account registration we include only accounts registered by September 1. Although a few account registrations trickle in after this time, the number is small, and is unlikely to be affected by letters sent months earlier.

The variation in mailing timing across treatment arms raises the possibility that this could contribute to (or mask) the effects of the letter content. If a letter received in early December is more likely to be read or acted upon than one received later in December, for example, that would lead us to understate the impact of our alternative treatments in year 1 relative to the control condition, or the impact of the net cost treatment relative to the other three in year 2. We have conducted extensive additional analyses to confirm that this is not a factor in our results. Specifically, we have estimated versions of our main specifications that control for flexible polynomials in the mailing date, and have estimated event study models that measure the treatment effects on account registrations based on registrations that occur within a few weeks of when the student’s letter was mailed (while controlling for calendar time patterns in registration). Neither of these yields qualitative changes in our results.

D. Additional Results

Supplement Table 2 shows the distribution of high schools across treatment arms in the two years. High schools are included in the table for a given year only if at least one letter was sent to a student at that school, and the treatment arm is indicated as missing otherwise. (Schools that received no letters in either year are excluded entirely.) A chi-square test of independence of the two years’ assignments, estimated only on schools included in each year, has a p-value of 0.516.

Supplement Table 3 presents results for the impact of the letter variants on enrollment at any time in the academic year after high school graduation. The first two columns repeat the results for account creation and fall semester enrollment from Table 3. In the final column, we modify the column-2 dependent variable to code as 1 students who first enrolled in the spring following high school graduation. We do not have complete data for this for year 2, so we present results only for the year-1 experiment. The enrollment rate goes up only 1.5 percentage points when spring data are included, and not surprisingly our estimates of treatment effects do not change.

Supplement Table 4 shows an analysis of the role of living at home as a moderator of the effect of the net cost letter. In columns 1 and 2, we take as the outcome the payout of the Cal Grant at a college where the student listed on the FAFSA a plan to live at home while attending. We see positive effects of the net cost letter on this outcome. In column 3, we estimate effects on any Cal Grant payout in the subsample of students who listed at least one college with the live-at-home option, while in column 4 we further limit the sample to students who listed at least one *four-year* college where they planned to live at home. We find marginally statistically significant effects of the net price letter on payout of the Cal Grant in column 3, though not in column 4.

Supplement Table 5 presents an additional heterogeneity analysis, parallel to those in Table 7 and 8, that was specified in our project pre-registration. Here, we divide high schools by the share of the recipients of the prior year’s Cal Grant notification letters for whom the grant was eventually paid out, and estimate the impact of our treatments separately for schools that are above and below median. We do not see meaningful differences in treatment effects across this dimension.

**Supplement Figure 8**



Notes: Figures show the cumulative distribution of letter mailing dates by treatment arm in the two years. Vertical lines indicate the University of California application deadline (November 30), the UC and CSU "priority deadline" for FAFSA submission (March 2), and the deadline for submitting statements of intent to register for students admitted to UC (May 1).

**Supplement Table 1. Illustrative net price table.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **UC Berkeley** | **San Francisco State University** | **Cal State Los Angeles** | **Long Beach Community College** |
| Housing plans | On campus | On campus | Off campus | Off campus |
|  |  |  |  |  |
| Costs |  |  |  |  |
| Tuition & fees | $ 17,048 | $ 6,476 | $ 6,632 | $ 1,182 |
| Room & board | $ 18,144 | $ 13,434 | $ 14,502 | $ 12,492 |
| Books & supplies | $ 916 | $ 1,860 | $ 1,948 | $ 1,791 |
| Other expenses | $ 3,048 | $ 2,878 | $ 2,974 | $ 4,399 |
| *Total cost of attendance* | *$ 39,156* | *$ 24,648* | *$ 26,056* | *$ 19,864* |
| Grant aid |  |  |  |  |
|  | $ 12,630 | $ 5,742 | $ 5,742 | $ 1,672 |
| Other grants | $ 17,726 | $ 7,561 | $ 7,215 | $ 4,143 |
| *Total grant aid* | *$ 30,356* | *$ 13,303* | *$ 12,957* | *$ 5,815* |
|  |  |  |  |  |
| *Estimated net price* | *$ 8,800* | *$ 11,345* | *$ 13,099* | *$ 14,049* |

Notes: Table reflects actual output from four college cost calculators for a hypothetical student from a family of four with income $30,000 who lists the indicated housing plans on the FAFSA. Cost elements, total grant aid, and estimated net price (equal to total cost minus grant aid) are obtained from the calculators. We impute the value of the Cal Grant and compute the value of other grants based on this.

**Supplement Table 2. Assignment of high schools in year 1 and year 2.**

|  |  |  |
| --- | --- | --- |
|  | **Year 2 assignment** | **Total** |
|  | **Simplified (control)** | **Simplified + Belonging** | **Simplified + Social Norm** | **Simplified + Belonging + Net Costs** | **Not in sample** |  |
| **Year 1 assignment** |  |  |  |  |  |  |
| **Control** | 185 | 183 | 159 | 176 | 54 | 757 |
|  | 7.5% | 7.4% | 6.4% | 7.1% | 2.2% | 30.7% |
|  |  |  |  |  |  |  |
| **Simplified** | 181 | 179 | 174 | 172 | 51 | 757 |
|  | 7.3% | 7.3% | 7.1% | 7.0% | 2.1% | 30.7% |
|  |  |  |  |  |  |  |
| **Simplified + Belonging** | 171 | 175 | 199 | 173 | 57 | 775 |
|  | 6.9% | 7.1% | 8.1% | 7.0% | 2.3% | 31.4% |
|  |  |  |  |  |  |  |
| **Not in sample** | 47 | 51 | 42 | 39 | 0 | 179 |
|  | 1.9% | 2.1% | 1.7% | 1.6% | 0.0% | 7.3% |
|  |  |  |  |  |  |  |
| **Total** | 584 | 588 | 574 | 560 | 162 | 2468 |
|  | 23.7% | 23.8% | 23.3% | 22.7% | 6.6% | 100.0% |

Notes: Table shows unweighted counts of high schools assigned to each combination of treatments in years 1 and 2, among all schools with Cal Grant-eligible students in at least one year. Schools with Cal Grant-eligible students in only one year are listed as "not in sample" in the other year. Percentages are of the total count of 2,468 high schools that appear in either year. For schools that appear in both years, a χ2 test of independence of the two years' assignments is 5.219 (p=0.516).

**Supplement Table 3. Effects on enrollment in any semester of the first year.**

|  |  |
| --- | --- |
|  | **Year 1** |
|  | **Account** | **Fall** | **Full-year** |
| Control group mean | 0.618 | 0.604 | 0.619 |
|  |  |  |  |
| Simplified | 0.055 | 0.006 | 0.006 |
|  | (0.008) | (0.007) | (0.007) |
| Simplified + Belonging | 0.068 | 0.004 | 0.005 |
|  | (0.008) | (0.007) | (0.007) |
| Social Norm |  |  |  |
|  |  |  |  |
| Net Price |  |  |  |
|  |  |  |  |
| N | 134,138 | 134,138 | 134,138 |
| p, all TEs=0 | 0.000 | 0.70 | 0.69 |

Notes: All specifications include stratum fixed effects, and standard errors are clustered at the high school level. Columns 1 and 2 repeat results from Table 3. Column 3 shows results where the dependent variable is enrollment in any semester/quarter of the academic year after high school graduation. This outcome is available only for year 1 of the experiment.

**Supplement Table 4. Effects on Cal Grant payout in year 2, by availability of live-at-home options**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Payout at school listed as live at home** |  | **Payout of Cal Grant** |
|  | **All** | **Conditional on any payout** |  | **Students listing at least one live-at-home school** | **Students listing at least one live-at-home 4-year school** |
| Control group mean | 0.158 | 0.317 |  | 0.464 | 0.593 |
| Simplified + Belonging | 0.006 | 0.016 |  | -0.004 | 0.008 |
| (0.008) | (0.015) |  | (0.012) | (0.014) |
| Social Norm | 0.000 | -0.001 |  | 0.004 | 0.004 |
| (0.009) | (0.016) |  | (0.014) | (0.016) |
| Net Price | 0.020 | 0.034 |  | 0.022 | 0.004 |
|  | (0.009) | (0.015) |  | (0.012) | (0.014) |
| N | 135,701 | 67,591 |  | 71,876 | 36,446 |
| p, all TEs=0 | 0.11 | 0.08 |  | 0.18 | 0.94 |

Notes: All specifications are linear probability models, including stratum fixed effects. Standard errors are clustered at the level of the high school.

**Supplement Table 5. Heterogeneity by high school prior-year enrollment rate.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Account registration** |  | **Fall enrollment** |  | **Cheapest school** |
|  | **Low enrollment** | **High enrollment** |  | **Low enrollment** | **High enrollment** |  | **Low enrollment** | **High enrollment** |
| *Panel A: Year 1* |  |  |
| Control group mean | 0.603 | 0.637 |  | 0.576 | 0.644 |  |  |  |
| Simplified | 0.056 | 0.060 |  | 0.009 | 0.005 |  |  |  |
|  | (0.010) | (0.012) |  | (0.008) | (0.012) |  |  |  |
| Simplified + Belonging | 0.074 | 0.064 |  | 0.006 | 0.000 |  |  |  |
| (0.010) | (0.013) |  | (0.009) | (0.012) |  |  |  |
| N | 78,255 | 54,071 |  | 78,255 | 54,071 |  |  |  |
| p, all TEs=0 | 0.000 | 0.000 |  | 0.580 | 0.868 |  |  |  |
| *Panel B: Year 2* |  |  |  |  |  |  |
| Control group mean | 0.616 | 0.662 |  | 0.454 | 0.530 |  | 0.153 | 0.163 |
| Simplified + Belonging | 0.020 | 0.002 |  | -0.005 | -0.009 |  | 0.001 | 0.001 |
| (0.015) | (0.013) |  | (0.013) | (0.013) |  | (0.011) | (0.010) |
| Social Norm | 0.002 | 0.022 |  | -0.017 | 0.010 |  | -0.015 | 0.004 |
| (0.016) | (0.012) |  | (0.013) | (0.014) |  | (0.010) | (0.011) |
| Net Price | 0.023 | 0.033 |  | 0.012 | 0.005 |  | 0.017 | 0.017 |
|  | (0.014) | (0.012) |  | (0.012) | (0.012) |  | (0.012) | (0.011) |
| N | 54,856 | 78,757 |  | 54,856 | 78,757 |  | 54,856 | 78,757 |
| p, all TEs=0 | 0.271 | 0.271 |  | 0.227 | 0.520 |  | 0.040 | 0.356 |

Notes: All specifications are linear probability models, including stratum fixed effects. Standard errors are clustered at the level of the high school. Low and high enrollment high schools are based on below and above median in the distribution of the share of the prior year's Cal Grant eligible seniors for whom the grants were paid out.