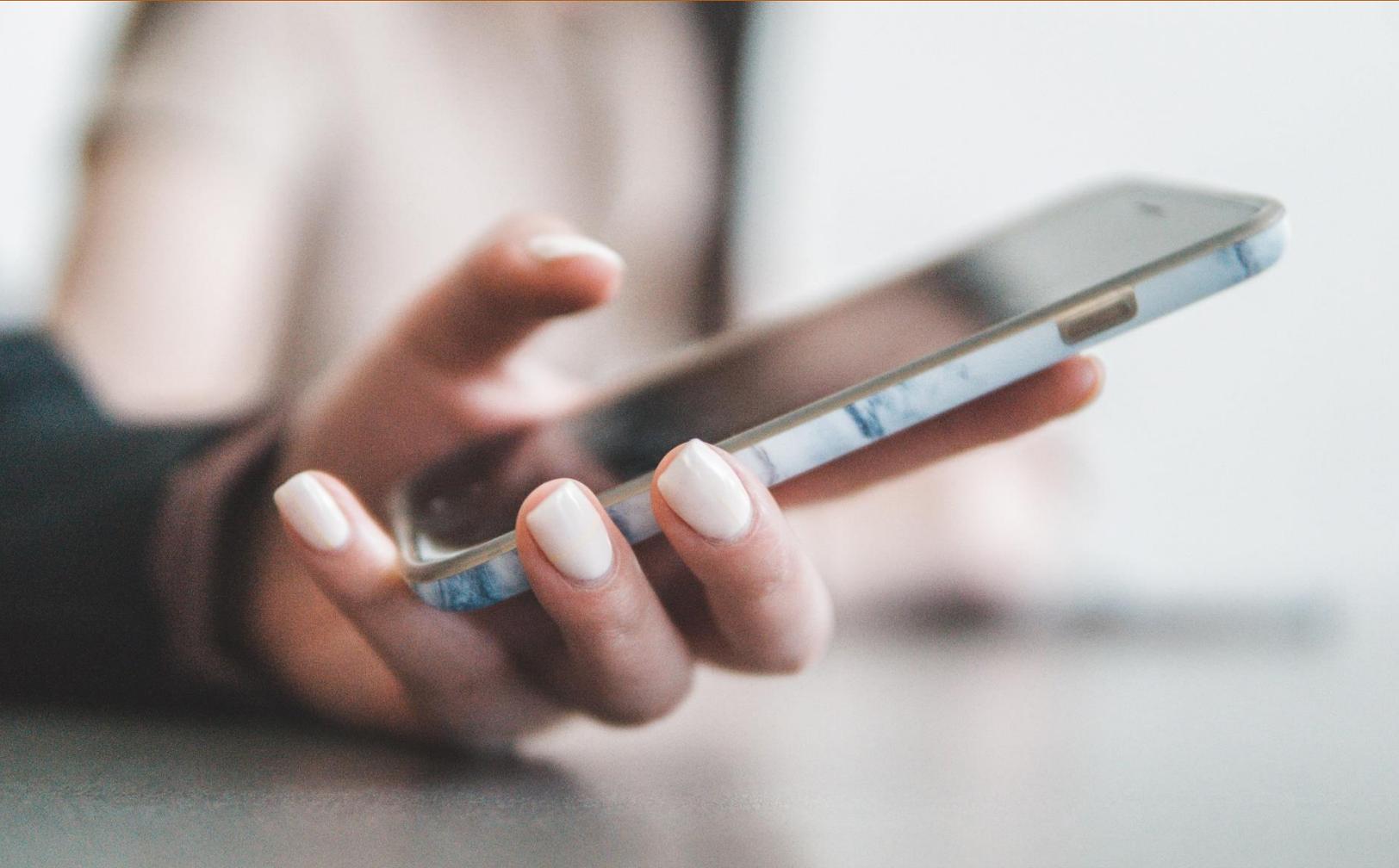


EVALUATION OF THE CCCCO FINANCIAL LITERACY PILOT  
YEAR ONE REPORT



RAY MARSHALL CENTER FOR THE STUDY OF HUMAN RESOURCES  
DECEMBER 2020

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# EVALUATION OF THE CCCCO FINANCIAL LITERACY PILOT YEAR ONE ANNUAL REPORT

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December 2020



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# INTRODUCTION

## BACKGROUND

The California Community College Chancellor's Office (CCCCO) has a financial literacy initiative whose focus for the past six years has been to provide financial literacy training and certification for California community college staff. In 2018, John Pierson and CJ Juleff, the CCCCCO's financial wellness consultants, reviewed benchmarking efforts implemented in various states. Their primary goal was to assess what a "different" and "effective" intervention would look like and could be successfully implemented at California community colleges.

The CCCCCO's consultants identified a model implemented at Austin Community College (ACC) in Austin, Texas. This model views financial wellness as a tool to increase institutional student success and retention efforts by using current technology (texting) to deliver selected financial literacy messages to a selected group of students. The model has been very successful at ACC, where 4,000 first-year students have participated in the texting intervention over three years and data shows a thirteen percent increase in fall-to-fall retention of participating students (Patnaik et al., 2018; Patnaik et al., 2019).

## OVERVIEW OF THE FL PILOT

Financial wellness and financial literacy are important when it comes to the success of California community college students. With this in mind, the CCCCCO brought together fifteen California community colleges to pilot a unique financial literacy messaging intervention (FL pilot) in 2019. The goal of the pilot was to increase student retention and success by delivering useful financial literacy material, focusing on much-needed information about budgeting and credit, and specifically targeting first-year, first-time students, via a texting/email platform. The CCCCCO provided the colleges with all the necessary tools and training. Colleges implemented the pilot in a manner that best reflected their institutional resources.

Participating colleges used a variety of strategies to implement the FL pilot, including choosing diverse student settings and delivering materials to as few as two group settings and as many as five. Colleges identified a target population for the intervention, made an introductory financial literacy presentation to the target population, and recruited students to participate in the pilot. Students who opted in to participate in the pilot received ten messages related to budgets and ten messages related to credit (see

Appendix A). Following the implementation of the pilot in 2019, several colleges chose to implement the pilot again in the fall 2020 semester.

## OVERVIEW OF THE EVALUATION

The CCCCCO partnered with the Ray Marshall Center for the Study of Human Resources (RMC), the LBJ School of Public Affairs, The University of Texas at Austin to conduct a comprehensive evaluation of the FL pilot. RMC is nationally and internationally recognized for its policy and program evaluation in human resources and education. For the last five years, RMC has been evaluating and monitoring the federally-funded financial literacy initiative at Austin Community College, the effort that is the model for the CCCCCO's pilot.

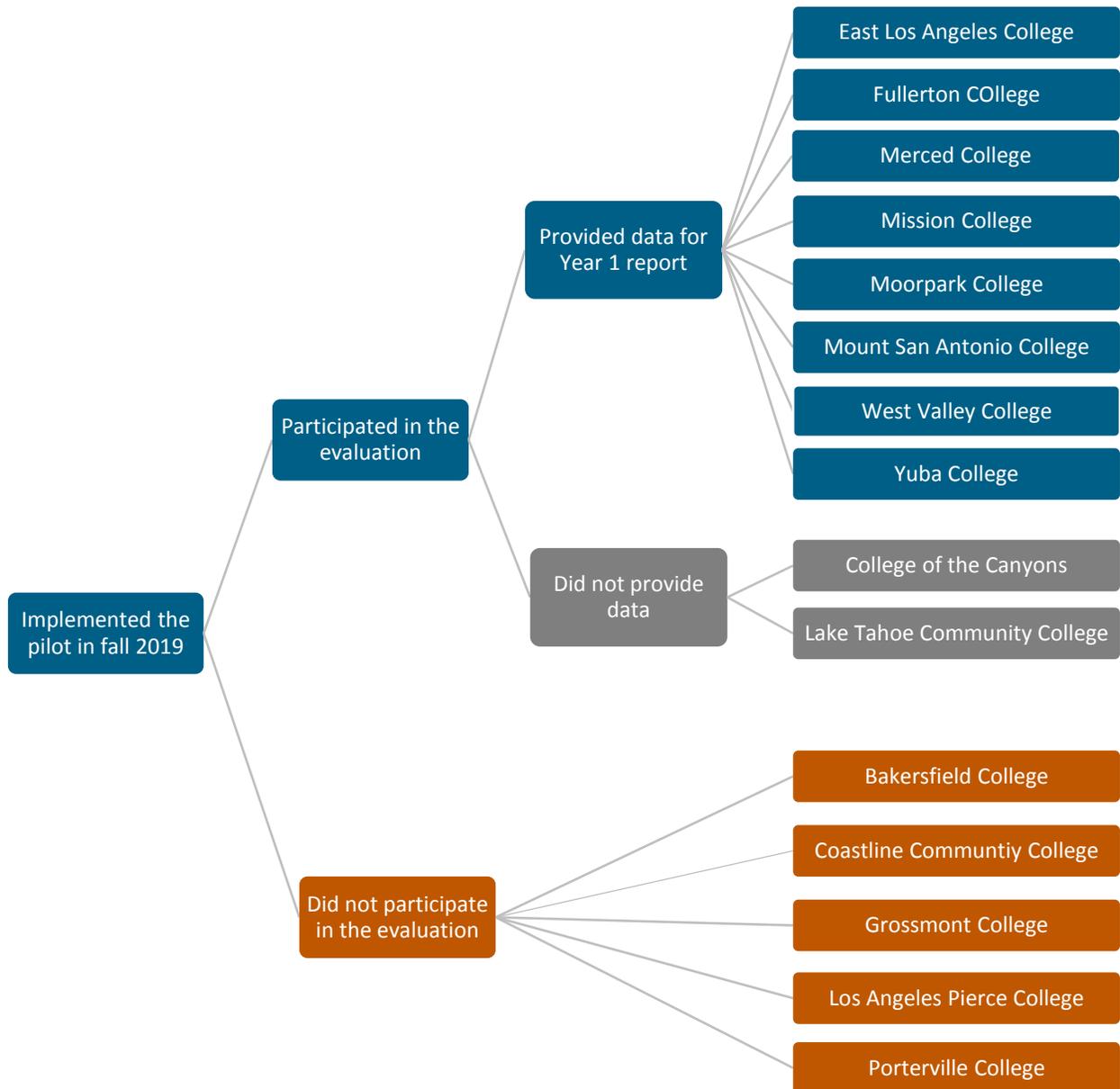
The goal of this evaluation of the FL pilot was to determine if this 'low investment/high return' approach to delivering financial literacy to California community college students would generate the kind of outcomes already observed in Texas. RMC's evaluation included an outcome evaluation for each college and a rigorous impact evaluation for the pilot as a whole. RMC tracked and evaluated the academic and retention outcomes of students participating in the FL pilot.

Of the fifteen colleges that implemented the pilot in 2019, ten colleges chose to participate in the evaluation. RMC developed a self-evaluation toolkit for the five colleges that selected not to participate in the evaluation. RMC also offered technical assistance to help these colleges conduct an internal evaluation of their pilot's outcomes and impacts.

At the time of this report, RMC had received evaluation data from eight of the ten colleges participating in the evaluation (see Figure 1). This Year 1 report synthesizes findings across these eight colleges. The analysis presented in this Year 1 report includes 673 participating students from the eight colleges, representing 73 percent of all participating students across the ten participating colleges.

RMC will also evaluate the outcomes and impacts of the pilots implemented in the fall 2020 semester. Data for these pilots will be collected from participating colleges in February 2021 and results will be included in our final report in May 2021.

Figure 1. Fall 2019 pilot colleges and participation status



## EVALUATION DESIGN

In designing the FL pilot, the CCCCO’s working hypothesis was that the additional financial literacy support provided to these first-year first-time students, particularly focused on topics related to budgeting and credit, would improve academic and retention outcomes for these students. As the cost of community colleges is relatively low from semester to semester, knowledge of budgeting and accessing credit and subsequent financially literate behaviors might play a role in whether individuals

have enough money to continue to the next semester. Even if college is completely paid for (as might be the case for those receiving Pell grants), other costs likely still play a role in the decisions around re-enrolling.

Research has suggested that financial wellness and financial literacy are important when it comes to the success of students in higher education. Robb et al. (2012) evaluated the perception of debt and student retention at two major universities and found that financial factors play a significant role in student retention. Eichelberger et al. (2020) utilized comparative data to demonstrate that students who completed a personal finance course had a significantly higher probability of year-to-year retention and successful degree completion.

The Ohio State University conducted a national survey in 2017 (Survey of Collegiate Financial Wellness: “Making Ends Meet”) in which fifteen California community colleges participated. That survey indicated that: 40 percent of California community college students consider dropping out of school because of financial challenges; financial challenges caused 47 percent to neglect academic work; and, 51 percent considered taking a break from school because of financial challenges. Survey data also suggests that the greatest challenges for these community college students were related to the successful management of budgeting and understanding how credit works.

Thus, the research questions guiding this evaluation included:

- Did students who received the financial literacy messages have better academic outcomes than similar students who did not receive the messages, measured in terms of GPA, credit hour accumulation, and academic standing?
- Did students who received the financial literacy messages have higher retention rates than similar students who did not receive the messages, measured in terms of fall-to-spring retention and fall-to-fall retention?

The impact analysis was designed to address the question: what impact did the FL pilot have on key student outcomes? The main goal of the impact analysis was attribution – isolating the effect of the FL pilot from other factors and potential selection bias. The main challenge of any impact analysis is to determine what would have happened to program participants if the program had not existed (i.e. the counterfactual). While a program’s impact can truly be assessed only by comparing the actual and counterfactual outcomes, the counterfactual is not observed. Without information on the counterfactual, the next best alternative is to compare outcomes of program participants with those of

a comparison group of non-participants. Successful impact analyses hinge on finding a good comparison group (Khandker et al., 2009).

The Ray Marshall Center used a quasi-experimental evaluation methodology to estimate the impacts of the FL pilot on key student outcomes. A quasi-experimental design was appropriate since the program did not easily lend itself to a random assignment evaluation. Recent research has demonstrated that, when carried out under the right conditions, quasi-experimental estimation produces impact estimates that are similar in direction and magnitude to those resulting from more expensive and intrusive experimental evaluation methods (Greenberg et al., 2006).

Propensity score matching (PSM) was used to create a statistically matched comparison group of non-participants who were as similar to pilot participants as possible on a wide range of observed characteristics — age, gender, race, disability status, first-time college student status, first-generation college student status, and financial aid status, etc. Using PSM, estimated impacts can help capture the incremental value of the pilot over and above services traditionally delivered by the college.

### *Selection of the comparison group pool*

At the beginning of this pilot, RMC considered the use of two potential comparison group pools: (1) students from colleges that did not participate in the FL pilot and (2) students from colleges that did participate in the pilot but were not recruited for participation. However, we found that colleges were unwilling to participate in the evaluation and share individual-level student data for students who were not directly involved with the pilot. As a result, the comparison group pool in our final analysis design was made up of all students who attended the Financial Literacy presentation, opted-out, and did not receive the financial literacy messages at the eight colleges participating in the FL pilot evaluation.

While presenting a challenge, this setup also offered an advantage. Individuals targeted by colleges for this intervention often participated in specific programs that were already providing supports to increase academic performance and retention. Thus, both opt-out as well as opt-in participants received these traditional supports absent the intervention. Had other students at the colleges potentially been selected as part of a comparison group, they might not have participated in these programs, and impact results could have been confounded between traditionally offered supports and the FL pilot.

## DATA SOURCES

All colleges implementing the FL pilot maintained a student tracking worksheet (see Appendix B). The student tracking worksheet documented the students targeted for the intervention, their opt-in status, and other metrics related to the pilot. Data on student characteristics and key outcomes were pulled from colleges' instructional research data systems. Data was pulled for both opt-out and opt-in students in February 2020 and October 2020. Colleges already regularly report these data elements to the California Community Colleges Management Information System. Appendix C and Appendix D list the data elements that were pulled.

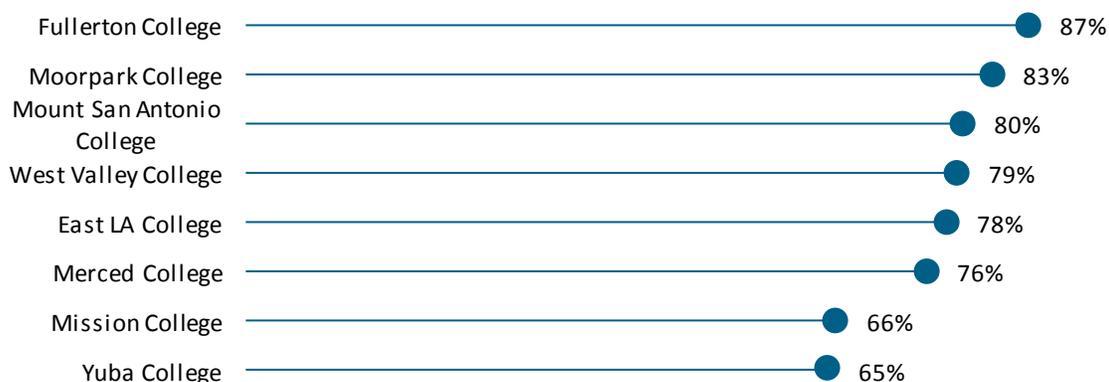
## REPORT ORGANIZATION

The following chapter describes the local context at the colleges participating in the pilot and how the pilot was implemented in 2019. The next chapter describes the characteristics of the pilot participants, followed by a chapter describing key outcomes for pilot participants. The penultimate chapter describes the impact analysis and results, while the final chapter discusses key findings and next steps for the evaluation.

## PROGRAM DESCRIPTION

The eight colleges included in this Year 1 report are geographically spread out across the state of California and include both large and medium-size colleges, as well as city and suburban colleges. Data from CCCCO's 2019 Student Success Scorecard indicates that participating colleges had relatively high persistence rates,<sup>1</sup> ranging from 65 percent at Yuba College to 79 percent at Mount San Antonio College. The following sections describe each college and draw information from the college websites and the U.S. Department of Education's College Scorecard.

Figure 2. Persistence rates at participating colleges



### *East Los Angeles College*

East LA College's main campus is located 10 miles east of downtown Los Angeles in suburban Monterey Park. The college maintains a satellite campus located approximately 10 miles southwest of the main campus. The college offers 47 associate degrees and 71 certifications. East LA College serves the largest CA community college student population; in fall 2017, the college served 30,975 students. The majority of these students identified as Hispanic (67 percent) while 6 percent identified as White non-Hispanic, 7 percent identified as Asian, and only 4 percent identified as Black. One-fourth of the students enrolled in full-time studies and 47 percent received Pell grants. The college had a 68 percent first-year retention rate<sup>2</sup> and a 21 percent graduation rate. East LA College costs on average \$8,748 annually.

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<sup>1</sup> The CCCCO's 2019 College Scorecard defines persistence as the percentage of degree, certificate and/or transfer-seeking students starting first time in 2012-13 who enrolled in the first three consecutive terms.

<sup>2</sup> The U.S. Department of Education's College Scorecard defines retention as the share of first-time, full-time undergraduates who returned to the school after their freshman year.

### *Fullerton College*

Fullerton College serves residents of Orange County, CA, located southeast of Los Angeles. The college offers associate degrees in 68 areas of study and over 90 certifications. Fullerton College is a large, suburban campus that served 20,260 students in fall 2019. The majority of these students identified as Hispanic (56 percent) while 19 percent identified as White non-Hispanic, 14 percent identified as Asian, and only 3 percent identified as Black. Just over one-third of the students enrolled full-time and 45 percent received Pell grants. The college had a 72 percent first-year retention rate and a 27 percent graduation rate. Fullerton College costs on average \$5,289 annually.

### *Merced College*

Merced College has two campuses: Merced Main located in the city of Merced, and Los Banos located approximately 40 miles from the main campus on the west side of Merced County. Merced County is approximately 120 miles east of San Jose. The college offers associate degrees in 47 areas of study and 32 certifications requiring 30 or more units of study. In fall 2019, 9,873 students enrolled. The majority of these students identified as Hispanic (55 percent) while 19 percent identified as White non-Hispanic, 8 percent identified as Asian, and only 3 percent identified as Black. Nearly half of the students enrolled in full-time studies and 65 percent received Pell grants. The college had a 69 percent first-year retention rate and a 27 percent graduation rate. Merced College costs on average \$8,486 annually.

### *Mission College*

Mission College is located in the City of Santa Clara in the heart of Silicon Valley. Mission College is a medium-size campus offering associate degrees in 25 areas of study and 39 certifications. In fall 2019, 6,452 students enrolled. The majority of these students identified as Asian (42 percent) while 29 percent identified as Hispanic, 16 percent identified as White non-Hispanic, and only 4 percent identified as Black. Just over one-fourth of the students enrolled full-time and 22 percent received Pell grants. The college had a 69 percent first-year retention rate and a 21 percent graduation rate. Mission College costs on average \$7,590 annually.

### *Moorpark College*

Moorpark College, a suburban, medium-sized college, is located at the eastern edge of the city of Moorpark, northwest of Los Angeles by about 45 miles. The college offers associate degrees in 65 areas of study and 34 certifications. In fall 2019, 13,282 students enrolled. The majority of these students

identified as White non-Hispanic (47 percent) while 36 percent identified as Hispanic, 8 percent identified as Asian and only 2 percent identified as Black. Over 40 percent of the students enrolled full-time and 28 percent received Pell grants. The college had a 75 percent first-year retention rate and a 29 percent graduation rate. Moorpark College costs on average \$1,272 annually.

### *Mount San Antonio College*

Mt. San Antonio College (Mt. SAC) is one of the largest California community colleges located in Walnut, CA, on the eastern edge of the Greater Los Angeles Area. Mt. SAC offers associate degrees in 14 areas of study and over 100 certifications. In fall 2019, 26,702 students enrolled. The majority of these students identified as Hispanic (63 percent) while 18 percent identified as Asian, 10 percent identified as White non-Hispanic, and only 4 percent identified as Black. Thirty-eight percent of the students enrolled full-time and 47 percent received Pell grants. The college had a 79 percent first-year retention rate and a 32 percent graduation rate. Mount San Antonio College costs on average \$2,570 annually.

### *West Valley College*

West Valley College is a suburban, medium-sized campus located at the southwest border of Silicon Valley offering associate degrees in 35 areas of study and 50 certifications. In fall 2019, 6,719 students enrolled. The majority of these students identified as White (40 percent) with 30 percent identifying as Hispanic, 19 percent identified as Asian, and only 2 percent identified as Black. Thirty-eight percent of the students enrolled in full-time studies and 25 percent received Pell grants. The college had a 74 percent first-year retention rate and 21 percent graduation rate. West Valley College costs on average \$6,720 annually.

### *Yuba College*

Yuba College, a medium-sized suburban campus, is located in Marysville, approximately 40 miles north of Sacramento. The college offers associate degrees in 32 areas of study and 43 achievement and training certifications. In addition to the main campus, the college operates two remote education centers and served a total of 4,901 students in fall 2019. The majority of these students identified as either White non-Hispanic or Hispanic (36 percent and 34 percent respectively), while 15 percent identified as Asian and only 4 percent identified as Black. Nearly 45 percent of the students enrolled full-time and 48 percent received Pell grants. The college had a 65 percent first-year retention rate and a 26 percent graduation rate. Yuba community college costs on average \$2,724 annually.

## IMPLEMENTATION

Colleges chose to implement their pilots in many different ways. The choice of the target population, size of the pilot, and method of communication varied quite a bit across the colleges. Three colleges used texting as their mode of communication, while two colleges used email as their mode of communication, and two colleges used both email and texting.

### *East LA College*

Students were recruited to participate in the Financial Literacy pilot from two Counseling 20 Post-Secondary Education: The Scope of Career Planning classes (Counseling 20).<sup>3</sup> The same instructor taught both classes, one at the main campus and one at the smaller satellite campus. The majority of the students attending the course are first-time students. Students opted-in to receive email messages allowing for two-way communication.

### *Fullerton College*

All first-time college students were recruited to participate in the FL pilot. These students were sent an email inviting them to attend a Financial Literacy presentation. Anaheim Pledge program<sup>4</sup> students were also recruited to participate. The financial aid office used the Mongoose Cadence texting platform to send the financial literacy messages to students; this platform provides the opportunity for students to respond to text messages with questions and comments.

### *Merced College*

Extended Opportunity Programs and Services<sup>5</sup> (EOPS) students were recruited to participate in the FL pilot. The financial aid office used the Regroup software to send financial literacy messages to students.

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<sup>3</sup> The Counseling 20 course introduces students to the higher education system and their role as students. The course presents material on the following topics: critical thinking skills, effective study strategies, communication skills, diversity issues, time management, health issues & lifestyle choices, the career planning and decision-making process, and transfer & educational planning. An overview of campus resources & policies is also provided.

<sup>4</sup> Recent graduates of the Anaheim Union High School district have the opportunity to enroll in the Anaheim Pledge program to receive a tuition-free first-year of college. Students receive outreach services and support as they transition from high school to full-time college students. In addition, counseling and mentoring services are also available to ensure they have a successful first year.

<sup>5</sup> The EOPS program is designed to encourage enrollment, retention, and transfer to four-year institutions for eligible students challenged by language, social, economic and educational disadvantages. The program offers students a number of support services including academic, career and transfer counseling, and financial aid.

The Regroup software configuration used by Merced College only allows for one-way communication - students did not have an opportunity to respond with questions or comments.

### *Mission College*

First-time and continuing students receiving support services through several programs were recruited for the FL pilot. Recruited students received services from the following programs: TRIO<sup>6</sup> (Upward Bound, Talent Search, and Student Support Service programs), EOPS, Puente<sup>7</sup>, and the California College Promise.<sup>8</sup> In addition, the general student population was also recruited to participate. The school marketing department used the SlickText platform to send financial literacy messages to students. Students received one-way text messages without the opportunity to respond.

### *Moorpark College*

Students were recruited for the FL pilot from several different venues including new student orientation, college strategies courses, and students receiving support services through the following programs: First-Year Experience<sup>9</sup> (FYE), EOPS, and Collaborative for Hispanics in Higher Education and Student Success<sup>10</sup> (Project CHES). The students receiving support services included both first-year and continuing students. The financial aid office used the Regroup texting platform to send financial literacy messages to students. The Regroup software configuration only allowed for one-way communication; students did not have an opportunity to respond with questions or comments.

### *Mount San Antonio College*

The financial aid office worked with the campus counseling office to recruit new students enrolled in Counseling 1<sup>11</sup> for the FL pilot. Emails were sent using each student's official Mt. SAC email address,

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<sup>6</sup> The federal TRIO programs provide services to increasing retention, graduation, and transfer rates of students that are first generation college, low income, and/or students with disabilities.

<sup>7</sup> The Puente program typically provides support services to improve graduation and transfer rates to four-year colleges for low income, first generation Hispanic students.

<sup>8</sup> The California Promise provides tuition assistance for qualifying students

<sup>9</sup> The FYE program provides academic, career, and personal counseling; priority registration and transfer assistance; and access to special activities and workshops.

<sup>10</sup> Project CHES is designed to support the transition of Hispanic students to four-year programs.

<sup>11</sup> Counseling 1 is an introduction to college course providing an orientation to college life and educational resources along with education and degrees planning.

allowing for two way communication.

### *West Valley College*

First-time and continuing students receiving services through TRIO, Upward Bound, Talent Search, and Student Support Service programs were recruited for the FL Pilot. Freshmen students were also recruited from the First-Year Experience Program College Success Counseling classes. Students received email messages allowing for two-way communication.

### *Yuba College*

Two groups of students receiving Student Services support were targeted for the FL pilot to receive the text messages: Umoja<sup>12</sup> and Puente participants. The financial aid office used Remind 101 which allows for two-way communication between students and financial aid staff sending the messages.

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<sup>12</sup> The Umoja program typically provides support services to improve graduation and transfer rates to four-year colleges for low income, first generation students of African ancestry.

# PARTICIPANT CHARACTERISTICS

## RECRUITMENT

The FL pilot at the eight participating colleges targeted a total of 673 students. The pilots at the colleges varied considerably by size, ranging from 12 students at Merced College to 296 students at Moorpark College.

Of the 673 targeted students, 77 percent opted-in to the pilot. Of the 544 students who opted into the pilot, a total of 24 students provided inaccurate contact information and hence did not receive the financial literacy messages. Thus, our analysis includes 520 students in the treatment group who opted-in and received messages and 153 students in the comparison group who did not receive messages. Opt-in rates across the colleges were high but varied, ranging from a low of 72 percent at Moorpark College to a high of 100 percent at Merced College.

Figure 3. Pilot size by college

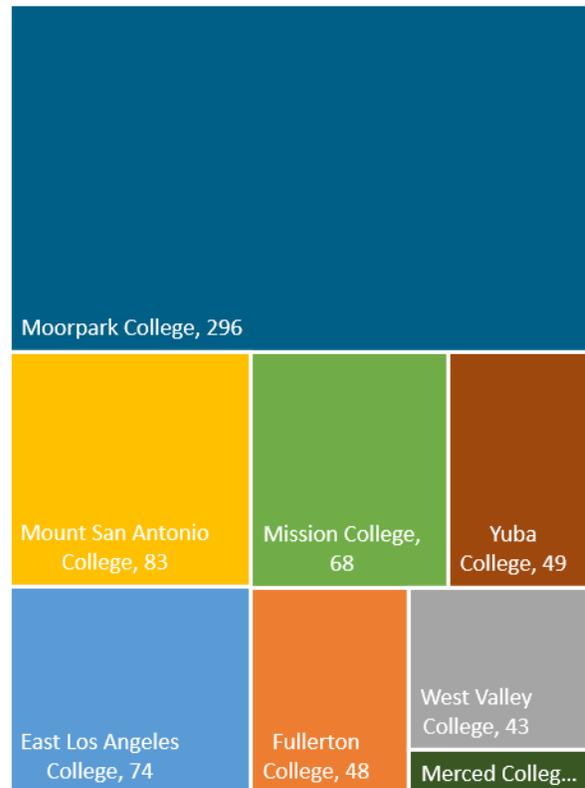


Figure 4. Opt-in rates by college



## DEMOGRAPHIC CHARACTERISTICS

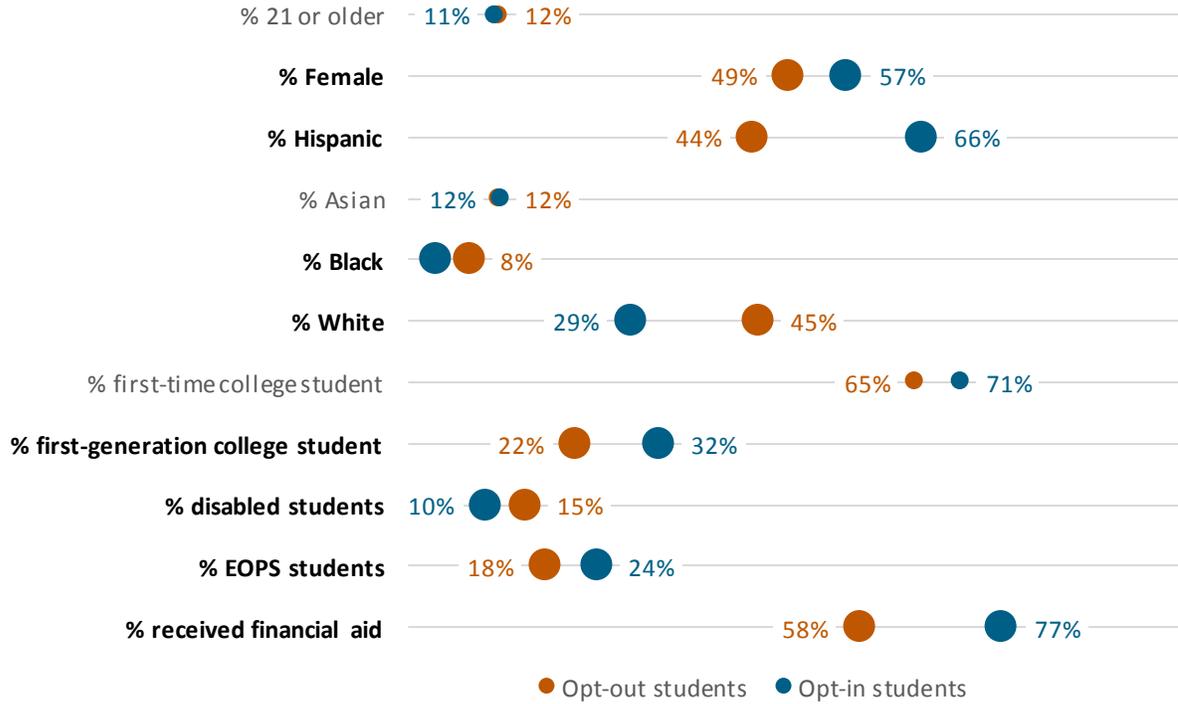
Table 1 lists student characteristics for the 673 students included in our analysis. Only a tenth of students were aged 21 or older. Over half of all students were female. Nearly a third of all students were White non-Hispanic while nearly two-thirds were Hispanic. Nearly three-quarters of students were attending college for the first time, while nearly a third reported being the first in their family to attend college. Nearly three-quarters of students received financial aid, while nearly a quarter of students received EOPS services.

Table 1. Target population characteristics

All CCCCO FL Pilot colleges	All students N = 673
% 21 or older	11%
% Female	55%
% Hispanic	61%
% Asian	12%
% Black	4%
% White	32%
% first-time college student	70%
% first-generation college student	30%
% disabled students	11%
% EOPS students	23%
% received financial aid	72%

Figure 5 illustrates the differences in the demographic characteristics of the opt-out and opt-in students. Statistically significant differences are identified with a bold font and large markers. In some ways, opt-in students appeared to be relatively similar to opt-out students. Both the groups were young with about 90 percent of students under the age of 21. About a tenth of students in both groups were Asian. About two-thirds of both groups were first-time college students.

Figure 5. Demographic characteristics by opt-in status



There are, however, major differences worth noting. The opt-in group had significantly higher proportions of female students and Hispanic students and significantly lower proportions of Black and White students, compared to the opt-out group. The opt-in group also had significantly higher proportions of first-generation college students, EOPS students, and financial aid students. The opt-in group also had a significantly lower proportion of students with a disability. It is thus necessary to account for these differences in characteristics between the two groups when comparing outcomes for the two groups.

## PROGRAM OUTCOMES

In this Year 1 report, we examine short-term outcomes including first-semester GPA, first-semester academic standing, and fall-to-spring retention as well as long-term outcomes including first-year GPA, first-year academic standing, and fall-to-fall retention. Outcomes for the opt-in students are compared with outcomes for the opt-out students in Table 2.

Table 2. Overall outcomes

All CCCCO FL Pilot colleges	Opt-out students N=153	Opt-in Students N=520
Average GPA in Fall 2019	2.6	2.8
% in good academic standing at the end of Fall 2019	80%	86%
% enrolled in Spring 2020	86%	90%
Average GPA in 2019-2020	2.6	2.7
% in good academic standing at the end of 2019-2020	86%	84%
% enrolled in Fall 2020	74%	76%

Overall, opt-in students who received the financial literacy messages appeared to have slightly better academic and retention outcomes at the end of their first semester, compared to opt-out students who did not receive the messages. However, there appeared to be no significant differences in academic and retention outcomes between the two groups at the end of their first year. These results are descriptive in nature and do not control for differences in demographic characteristics between the two groups. The impact analysis in the next chapter accounts for the differences in the demographic differences documented in Figure 5 between the two groups.

## OUTCOMES BY COLLEGE

Outcomes varied by college. Due to the small sample sizes at individual colleges, as well as the documented demographic differences between the opt-in and opt-out groups, differences in outcomes between the opt-in and opt-out students at individual colleges described below should be interpreted carefully.

## GPA

Opt-in and opt-out students had similar average first-semester GPAs and first-year GPAs at East LA College, Mission College, and Moorpark College. However, opt-in students had a significantly higher first-semester GPA as well as a significantly higher first-year GPA at Mount San Antonio College, West Valley College, and Yuba College.

Figure 6. Average first-semester GPA, by college and opt-in status

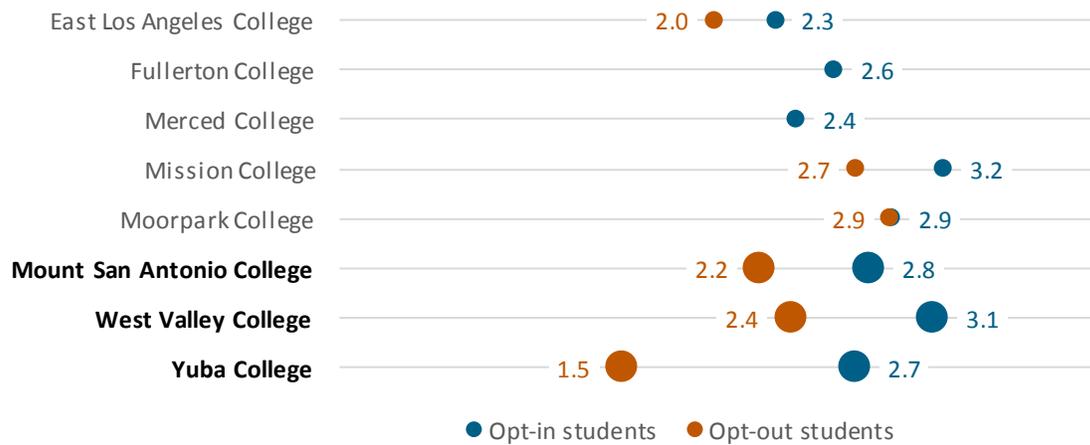
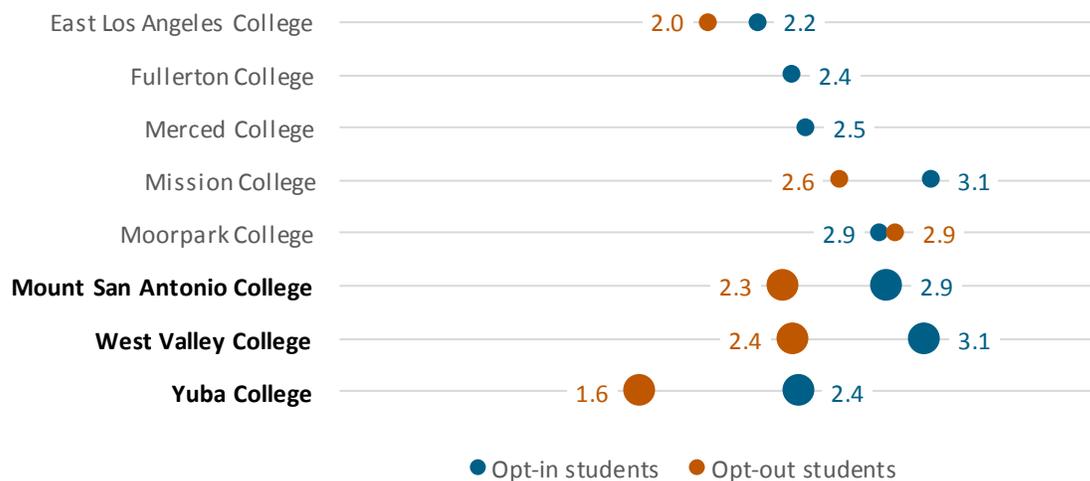


Figure 7. Average first-year GPA, by college and opt-in status



### Academic standing

There were no significant differences in academic standing at the end of the first semester between opt-in and opt-out students at all colleges except Yuba college, where 92 percent of opt-in students were in good academic standing at the end of the first semester compared to 46 percent of opt-out students - a statistically significant difference. There were no significant differences in academic standing at the end of the first year between opt-in and opt-out students at all colleges.

Figure 8. Percent in good academic standing at the end of fall 2019, by college and opt-in status

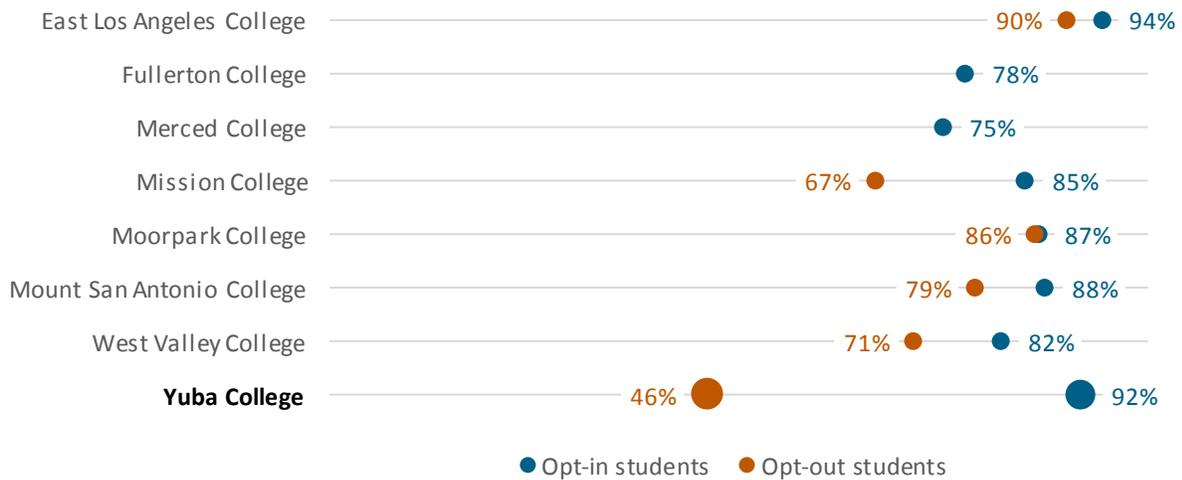
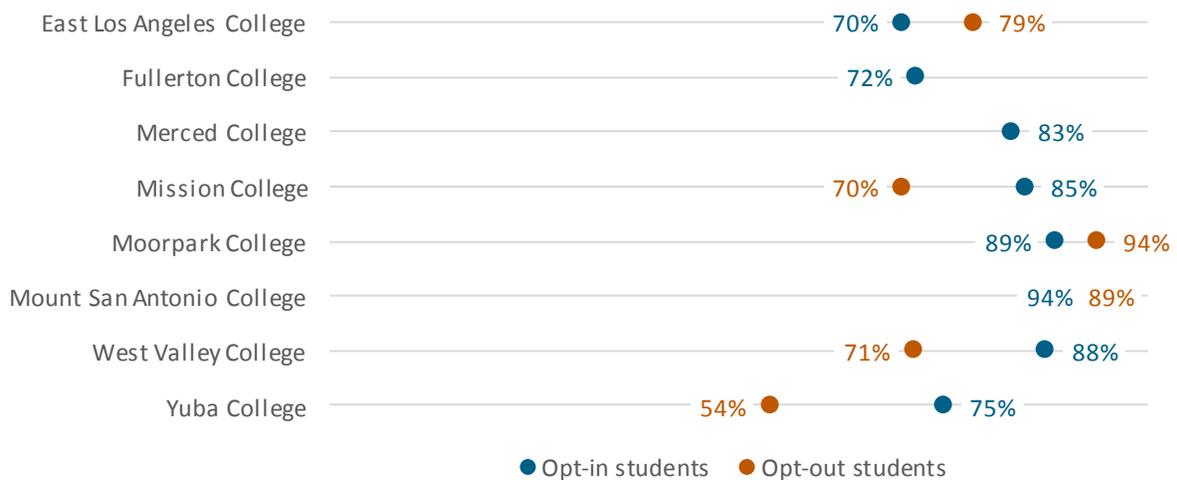


Figure 9. Percent in good academic standing at the end of 2019-2020, by college and opt-in status



## Retention

There were no significant differences in fall-to-spring retention and fall-to-fall retention between opt-in and opt-out students at East LA College, Mission College, Moorpark College, and Mt. San Antonio College. At West Valley College and Yuba College, a significantly higher proportion of students were retained from fall to spring compared to opt-out students. Notably, nearly three-quarters of opt-in students at Yuba College were retained in the fall compared to less than half of opt-out students - a statistically significant difference.

Figure 10. Fall-to-spring retention rates, by college and opt-in status

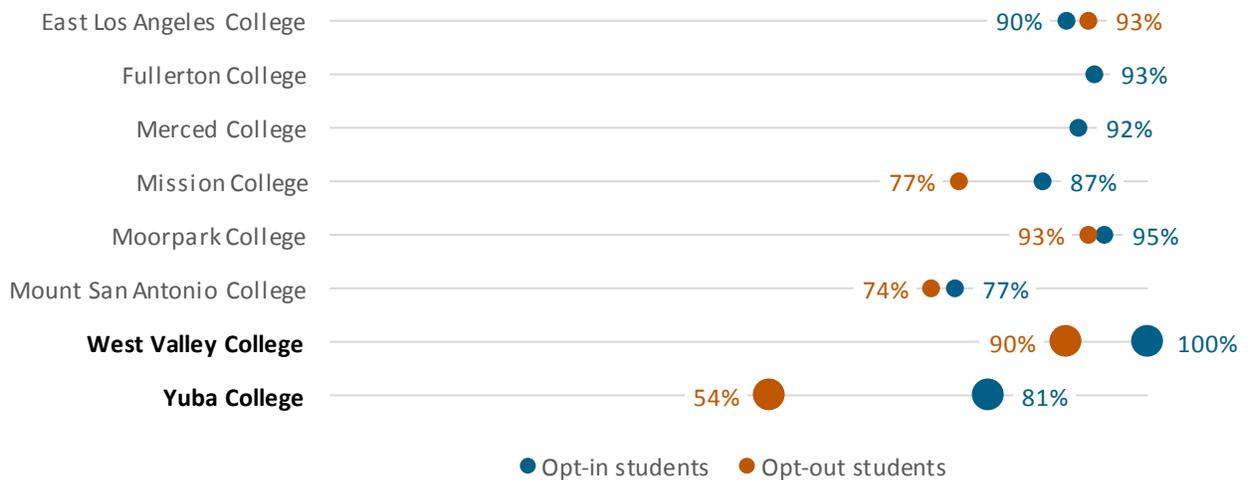
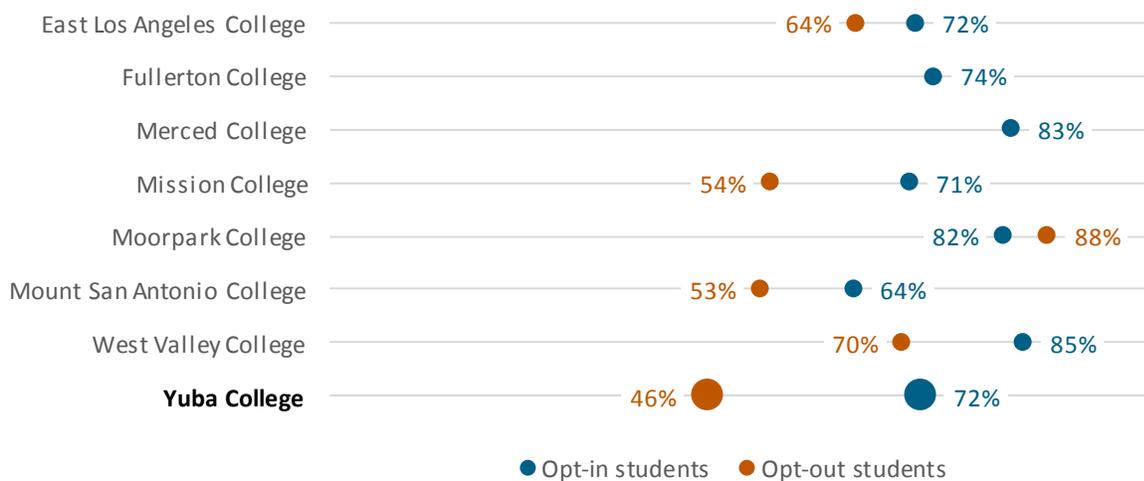


Figure 11. Fall-to-fall retention rates, by college and opt-in status



# PROGRAM IMPACTS

## IMPACT ANALYSIS METHODOLOGY

The treatment group included all students who opted-in to receive the financial literacy messages at the eight colleges participating in the FL pilot evaluation. The comparison group pool included all students who opted-out and did not receive the financial literacy messages at the eight colleges participating in the FL pilot evaluation.

The evaluation team used the propensity score matching (PSM) approach to account for differences in the observable characteristics between the treatment group and the comparison group pool. See Appendix E for a detailed description of the application of this method. For subgroup analyses, the study sample was first limited to the sub-group and then the propensity score matching approach was utilized.

Opt-in students in the treatment group were matched to individuals from the comparison group pool of opt-out students. Students were matched on a wide range of observed characteristics: age, gender, race, disability status, first-time college student status, first-generation college student status, EOPS status, and financial aid status. The single nearest-neighbor technique was used; this technique involves finding for each treated individual that non-treated individual with the most similar propensity score and so, the most similar characteristics.

The evaluation team assessed and confirmed that this matching approach achieved a satisfactory balance in all observables characteristics (See Appendix F). Thus, the evaluation team can be confident that genuinely similar individuals are being compared in the estimates of the causal impact of the FL pilot on student outcomes.

# IMPACT FINDINGS

The tables below present the impact findings for the pilot overall as well as for selected sub-groups. Column 5 in each table presents the *p*-value while column 6 presents the effect size (Cohen’s *d*). A significant *p*-value (*p*<0.05) indicates that the program had an impact on the outcome while the effect size quantifies the impact. Cohen<sup>13</sup> suggested that *d* = 0.2 be considered a 'small' effect size, 0.5 a 'medium' effect size and 0.8 a 'large' effect size. Significant program impacts are highlighted in blue.

## Overall impacts

After matching, the evaluation team estimated the impacts of participation in the FL pilot on key outcomes for all students (see Table 3). PSM models found that the FL pilot had a small but significant positive impact on first-semester GPA: the treatment group had an average GPA of 2.8, compared to an average GPA of 2.5 for the matched comparison group - a significant 0.3 point difference. However, PSM models found no significant impacts on other outcomes.

Table 3. Program impacts

All students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P> z	Effect size
Average GPA in Fall 2019	2.5	2.8	0.4	0.15	<b>0.015</b>	0.4
% in good academic standing at end of Fall 2019	84%	86%	3%	5%	0.591	0.1
% enrolled in Spring 2020	82%	90%	8%	5%	0.068	0.3
Average GPA in 2019-2020	2.5	2.7	0.3	0.14	0.064	0.3
% in good academic standing at end of 2019-2020	86%	84%	-2%	4%	0.521	-0.1
% enrolled in Fall 2020	67%	76%	9%	5%	0.082	0.2

<sup>13</sup> Cohen, J. (1988). Statistical power analysis for the behavioral sciences, 2nd edn.

### *Sub-group impacts*

Next, the evaluation team estimated the impacts of participation in the FL pilot on key outcomes for subgroups. Due to the small sample sizes for most sub-groups, we could only examine impacts for first-time college students, financial aid students, Hispanic students, and female students at this time. We found evidence of significant positive program impacts (with modest effect sizes) on first-semester GPA and fall-to-spring retention for students receiving financial aid - notably, 91 percent of financial aid students receiving the financial literacy messages were retained from fall to spring, compared to only 79 percent of the matched comparison group.

We also found evidence of significant positive program impacts (with modest effect sizes) on both fall-to-spring retention and fall-to-fall retention for first-time students - notably, 79 percent of first-time students receiving the financial literacy messages were retained from fall to fall, compared to only 65 percent of the matched comparison group. PSM models found no evidence of program impacts on the key outcomes for other sub-groups.

Table 4. Program impacts for financial aid students

Financial aid students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P> z	Effect size
Average GPA in Fall 2019	2.5	2.8	0.3	0.17	<b>0.055</b>	0.3
% in good academic standing at end of Fall 2019	81%	88%	7%	5%	0.182	0.2
% enrolled in Spring 2020	79%	91%	12%	6%	<b>0.040</b>	0.4
Average GPA in 2019-2020	2.5	2.7	0.2	0.17	0.180	0.2
% in good academic standing at end of 2019-2020	86%	85%	-1%	5%	0.759	0.0
% enrolled in Fall 2020	67%	78%	11%	8%	0.144	0.3

Table 5. Program impacts for first-time college students

First-time students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P> z	Effect size
Average GPA in Fall 2019	2.6	2.8	0.2	0.18	0.177	0.3
% in good academic standing at end of Fall 2019	80%	85%	5%	6%	0.396	0.2
% enrolled in Spring 2020	78%	91%	13%	6%	<b>0.041</b>	0.4
Average GPA in 2019-2020	2.5	2.7	0.2	0.17	0.233	0.2
% in good academic standing at end of 2019-2020	90%	84%	-5%	3%	0.108	-0.2
% enrolled in Fall 2020	65%	79%	13%	7%	<b>0.053</b>	0.3

Table 6. Program impacts for Hispanic students

Hispanic students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P> z	Effect size
Average GPA in Fall 2019	2.4	2.7	0.3	0.18	0.141	0.3
% in good academic standing at end of Fall 2019	80%	86%	6%	7%	0.432	0.2
% enrolled in Spring 2020	82%	89%	7%	6%	0.234	0.2
Average GPA in 2019-2020	2.5	2.7	0.2	0.17	0.324	0.2
% in good academic standing at end of 2019-2020	89%	82%	-7%	5%	0.140	-0.2
% enrolled in Fall 2020	66%	74%	8%	8%	0.317	0.2

Table 7. Program impacts for white non-Hispanic students

White students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P> z	Effect size
Average GPA in Fall 2019	2.8	3.0	0.3	0.19	0.185	0.3
% in good academic standing at end of Fall 2019	82%	83%	1%	7%	0.890	0.0
% enrolled in Spring 2020	84%	94%	10%	5%	0.066	0.3
Average GPA in 2019-2020	2.8	2.9	0.1	0.18	0.693	0.1
% in good academic standing at end of 2019-2020	90%	86%	-3%	6%	0.594	-0.1
% enrolled in Fall 2020	76%	83%	7%	8%	0.378	0.2

Table 8. Program impacts for female students

Female students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P> z	Effect size
Average GPA in Fall 2019	2.5	2.9	0.4	0.21	0.059	0.4
% in good academic standing at end of Fall 2019	78%	88%	10%	8%	0.208	0.3
% enrolled in Spring 2020	79%	91%	12%	8%	0.116	0.4
Average GPA in 2019-2020	2.4	2.8	0.3	0.24	0.160	0.3
% in good academic standing at end of 2019-2020	84%	87%	3%	7%	0.706	0.1
% enrolled in Fall 2020	69%	81%	13%	8%	0.114	0.3

Table 9. Program impacts for male students

Male students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P> z	Effect size
Average GPA in Fall 2019	2.6	2.8	0.1	0.22	0.511	0.1
% in good academic standing at end of Fall 2019	90%	84%	-6%	6%	0.326	-0.2
% enrolled in Spring 2020	85%	89%	4%	9%	0.623	0.1
Average GPA in 2019-2020	2.7	2.7	0.0	0.19	0.818	0.0
% in good academic standing at end of 2019-2020	87%	81%	-6%	6%	0.283	-0.2
% enrolled in Fall 2020	66%	70%	4%	10%	0.689	0.1

Table 10. Program impacts for students receiving messages through texts

Male students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P> z	Effect size
Average GPA in Fall 2019	2.6	2.8	0.1	0.22	0.511	0.1
% in good academic standing at end of Fall 2019	90%	84%	-6%	6%	0.326	-0.2
% enrolled in Spring 2020	85%	89%	4%	9%	0.623	0.1
Average GPA in 2019-2020	2.7	2.7	0.0	0.19	0.818	0.0
% in good academic standing at end of 2019-2020	87%	81%	-6%	6%	0.283	-0.2
% enrolled in Fall 2020	66%	70%	4%	10%	0.689	0.1

# DISCUSSION

## KEY FINDINGS

Our Year 1 report builds upon and extends the analyses presented in our interim report. The interim report included seven colleges participating in the pilot while the Year 1 report includes eight colleges, with the addition of East Los Angeles College. We were only able to examine sub-group impacts for first-time students in the interim report. Thanks to the inclusion of an additional college leading to increased sample size, we were able to examine impacts for additional sub-groups in the Year 1 report, including students receiving financial aid, Hispanic students, white students, female students, male students, and students receiving messages through texts. For the interim analysis, not all colleges provided financial aid data and we were unable to include financial aid receipt in the propensity score models. However, all colleges provided financial aid receipt data for the Year 1 analysis, thus allowing us to address this analytical limitation.

Our current analysis confirms our preliminary findings in the interim report that the financial literacy messaging campaign overall had a small but positive impact on first-semester GPA, but no impact on first-semester academic standing and fall-to-spring retention for all students. We also find that the financial literacy messaging campaign overall had no impact on longer-term outcomes like first-year GPA, first-year academic standing, and fall-to-fall retention for all students.

Our current sub-group analyses also confirm our preliminary findings in the interim report that the financial literacy messaging campaign had a fairly large positive impact on fall-to-spring retention for first-time college students. We also now find that the financial literacy messaging campaign had a fairly large positive impact on fall-to-fall retention for first-time college students. Finally, we find evidence of impacts on short-term outcomes (first-semester GPA and fall-to-spring retention) for students receiving financial aid, but no impacts on longer-term outcomes.

These findings contribute to a growing body of research investigating the use of behaviorally-informed strategies incorporating low-cost technological solutions such as text-based outreach to help students navigate complex decisions and overcome barriers that hinder college enrollment, persistence, and completion (Castleman & Page, 2015; Castleman & Page, 2016; Bird & Castleman, 2016; Castleman & Page, 2017). Our findings suggest that a low-cost financial literacy campaign can be beneficial for colleges seeking to boost fall-to-fall retention for first-time students.

## CONTEXT

Our findings should be examined keeping in mind the far-reaching impacts of the COVID-19 pandemic on community colleges across the country in the past year.

### *Transition to virtual learning*

On March 19, 2020, California Governor Newsom issued Executive Order 33-20, a state-wide stay-at-home order. The order directed all residents in the State of California to stay home unless their presence was necessary to the operation of one of the state's 16 critical infrastructure areas. Following this order, community colleges closed and transitioned classes and services to a virtual format. Most classes remained virtual through the summer and fall terms.

Courses that require on-site instruction were postponed as campuses developed approved safety protocols to continue training. Many programs that require on-site instruction train students for professions in the state's 16 critical infrastructure areas. These training programs may have certification and accreditation requirements that have no virtual alternative to provide the training students need to develop skills. To meet these training requirements, colleges developed hybrid formats with online learning complemented by small-group experiences conducted with safety protocols in place.

### *Digital equity*

As college campuses closed computer labs and libraries, colleges strived to serve students who lacked adequate access to internet services at home. Colleges created laptop and hotspot loan programs, some offered tech support, and all colleges informed students of local internet providers who offered free or reduced-cost internet access. Some campuses expanded Wi-Fi access to quad areas and parking lots. In the fall some campuses opened their libraries for students to access research support, desktop computers, printing, and study space.

### *Support services*

All campuses continued offering support services online, including all administrative offices, tutoring, mental health, disability, and other support services. Libraries instituted online checkout services with curbside pickup. Colleges distributed CARES Act funds and other student emergency aid funds. Yuba College also distributed emergency assistance to students impacted by area fires.

## *Student enrollment*

Undergraduate enrollment nationwide has declined as students face a global pandemic and the worst economic recession in decades. The National Student Clearinghouse (2020a) reported that while the rate and the pattern of intra-term status changes in spring 2020 were consistent with pre-pandemic years, undergraduate enrollment in fall 2020 fell by 4 percent overall, and by 9.4 percent for community colleges. Enrollment among continuing students (students who maintained enrollment from the spring term or the summer term) declined by 5.4 percent at community colleges (Causey et al., 2020). Students are dealing with many challenges due to the pandemic, including job security, safety, and childcare.

The Public Policy Institute of California (PPIC) reported that in Fall 2020, California community colleges saw a 5.2 percent drop in student enrollment compared to the previous spring—the biggest year-to-year change in enrollment since 2012 (Jackson & Perez, 2020). In addition, many students enrolled during the term when campuses moved to online learning withdrew from courses (a change in course withdrawal policy allowed students a refund and no impact on their academic standing). The PPIC report identified that the total course withdrawals increased by 55 percent—increasing from 458,867 withdrawals in spring 2019 to 713,216 in spring 2020.

## LIMITATIONS

### *Quasi-experimental design*

The impact analysis is limited by its non-experimental design. While propensity score matching (PSM) controls for observed differences between the treatment group and the comparison group, it cannot control for selection bias that may be due to unobserved differences between the groups. The degree to which unmeasured sources of bias affect the comparability of groups is unknown. The limitation of any PSM approach is that, unlike an experiment, it is unable to ensure that the only difference between treatment and comparison group members is that the former received the treatment and the latter did not. In quasi-experimental designs, individuals who have identical observable characteristics may differ on unobservable characteristics, such as their motivation to succeed. It is important to note that the limitations discussed here are common in quasi-experimental studies, and the design that the evaluation team used sought to mitigate them to the greatest extent possible.

The evaluation team made efforts to incorporate all available and important characteristics such as age, gender, race, first-time college student status, first-generation college student status, disability status,

EOPS status, and financial aid status. However, some important characteristics such as marital status and number of dependents could not be included in the analysis, since data on these characteristics were not available for all students.

Student data available to the evaluation team only identified students receiving EOPS and financial aid. Unfortunately, the evaluation team does not have information about student participation in other student support programs such as TRIO programs, FYE programs, Project CHES, student success courses, etc. Receipt of such support services would have better informed the impact analysis.

### *Sample size*

A limitation of this pilot study is the modest size of the overall comparison group. Because of the overall modest size of the comparison group pool (N=153), subgroup analyses could not be conducted for Asian students, first-generation students, and EOPS students. We were also unable to disaggregate impact by intervention mode (text or email, one-way or two-way).

Another limitation is our inability to match by blocking on college, due to the small size of the comparison group at most colleges (only one college had a comparison group with more than 25 students). Blocking on colleges would ensure that we were comparing opt-in participants from a college only to opt-out participants from the same college.

### *Comparison group selection*

Due to difficulties encountered in establishing data-sharing agreements with participating colleges, our comparison group was made up of students who opted-out. Although the comparison group of opt-out students did not receive the financial literacy messages over the fall semester, they still received some financial literacy information during the hour-long financial literacy presentation during recruitment.

### *Retention calculation*

Currently, we have not received graduation and credential attainment data from the colleges. Since 30 percent of students were returning or continuing students, some of these students may have graduated before the fall 2020 semester and our fall-to-fall retention indicator does not capture this. This limitation will be resolved in the final report as we expect to receive graduation data from colleges in February 2021.

## NEXT STEPS

RMC will continue to receive and analyze follow-up data for students who participated in the pilot in fall 2019. Additionally, RMC will also receive data for the new cohort of students who participated in the pilot in fall 2020. Following data collection for both cohorts in February 2020, RMC will publish our final report in May 2020. The final report will include a final analysis of long-term outcomes for the 2019 cohort (including credential attainment) as well as an analysis of short-term outcomes for the 2020 cohort. The inclusion of credential attainment data will also allow us to refine our retention indicators.

We hope to add two more colleges to the final analysis: Lake Tahoe Community College, and College of the Canyons. Lake Tahoe Community College and College of the Canyons agreed to participate in the evaluation and established data-sharing agreements with RMC; however, the two colleges have so far been unable to share evaluation data with RMC. With the addition of these two colleges, we hope to increase our study sample size allowing us to better detect program impacts, examine impacts for additional subgroups, and study variations in impacts by mode of communication (text vs. email and one-way vs. two-way).

## REFERENCES

- Barr, A., Bird, K., & Castleman, B. L. (2016). *Prompting active choice among high-risk borrowers: Evidence from a student loan counseling experiment*. Charlottesville, VA: EdPolicyWorks Working Paper.
- Bergman, P., Denning, J. T., & Manoli, D. (2019). Is information enough? The effect of information about education tax benefits on student outcomes. *Journal of Policy Analysis and Management*, 38, 706–731.
- Bird, K. A., Castleman, B. L., Denning, J. T., Goodman, J. S., Lambertson, C., & Rosinger, K. O. (2019). *Nudging at scale: Experimental evidence from FAFSA completion campaigns*. NBER Working Paper No. 26158. Cambridge, MA: National Bureau of Economic Research.
- CCCCO Datamart. (2020). *Student Success Scorecard [Dataset]*.  
[https://datamart.cccco.edu/outcomes/Student\\_Success\\_Scorecard.aspx](https://datamart.cccco.edu/outcomes/Student_Success_Scorecard.aspx)
- Castleman, B. L., & Page, L. C. (2015). Summer nudging: Can personalized text messages and peer mentor outreach increase college going among low-income high school graduates? *Journal of Economic Behavior & Organization*, 115, 144-160.
- Castleman, B. L., & Page, L. C. (2016). Freshman year financial aid nudges: An experiment to increase FAFSA renewal and college retention. *Journal of Human Resources*, 51(2), 389-415.
- Castleman, B. L., & Page, L. C. (2017). Parental influences on postsecondary decision making: Evidence from a text messaging experiment. *Educational Evaluation and Policy Analysis*, 39(2), 361-377.
- Castleman, B.L., & Meyer, K.E. (2020). Can Text Message Nudges Improve Academic Outcomes in College? Evidence from a West Virginia Initiative. *The Review of Higher Education* 43(4), 1125-1165.
- Causey, J., Harnack-Eber, A. et. al. (2020, October), *COVID-19 Transfer, Mobility, and Progress, Report #1*. Herndon, VA: National Student Clearinghouse Research Center.  
<https://nscresearchcenter.org/wp-content/uploads/Covid19-TransferMobilityProgress-FirstLookFall2020.pdf>
- Eichelberger, B., Gerbing, D., & Gilpatrick, T. (2020). Financial Education, College Retention, and

Graduation Rates. *College Student Journal*, 53(4), 479-489.

Executive Department State of California. (2020, March) *Executive Order 33-20*.

<https://www.gov.ca.gov/wp-content/uploads/2020/03/3.19.20-EO-N-33-20-COVID-19-HEALTH-ORDER-03.19.2020-signed.pdf>

Greenberg, D. H., Michalopoulos, C., & Robin, P. K. (2006). Do experimental and nonexperimental evaluations give different answers about the effectiveness of government-funded training programs? *Journal of Policy Analysis and Management: The Journal of the Association for Public Policy Analysis and Management*, 25(3), 523-552.

Jackson, J. and Perez, C. (2020, October). *The Pandemic's Effect on Community College Enrollment [Blog post]*. Public Policy Institute of California. <https://www.ppic.org/blog/the-pandemics-effect-on-community-college-enrollment/>

Khandker, S., B. Koolwal, G., & Samad, H. (2009). *Handbook on impact evaluation: quantitative methods and practices*. The World Bank.

Lenhardt, A. (2012). *Teens, smart phones, and texting*. Washington, DC: Pew Research Center.

[http://www.pewinternet.org/files/old-media//Files/Reports/2012/PIP\\_Teens\\_Smartphones\\_and\\_Texting.pdf](http://www.pewinternet.org/files/old-media//Files/Reports/2012/PIP_Teens_Smartphones_and_Texting.pdf)

National Student Clearinghouse. (2020, June). *A COVID-19 Supplement to Spring 2020 Current Term Enrollment Estimates*. <https://nscresearchcenter.org/wp-content/uploads/CurrentTermEnrollmentReport-Spring2020Supplement.pdf>

National Student Clearinghouse (2020, August). *First-year persistence and retention. 2018 beginning cohort*. <https://nscresearchcenter.org/wp-content/uploads/PersistenceRetention2020.pdf>

Oreopoulos, P., & Petronijevic, U. (2019). *The remarkable unresponsiveness of college students to nudging and what we can learn from it (No. w26059)*. National Bureau of Economic Research.

Page, L. C. et al. (2019). *Financial Aid Nudges: A National Experiment with Informational Interventions*. The Hope Center for College, Community, and Justice.

Patnaik, A. J., Cynthia; Cumpton, Greg (2018). *Evaluation of ACC SIP Initiatives: annual outcomes and*

*impact report 2018*. Austin, TX, Ray Marshall Center for the Study of Human Resources.

Patnaik, A. J., Cynthia; Cumpton, Greg (2019). *Evaluation of ACC SIP Initiatives: annual outcomes and impact report 2019*. Austin, TX, Ray Marshall Center for the Study of Human Resources.

Robb, C. A., Moody, B., & Abdel-Ghany, M. (2012). College student retention to degree: The burden of debt. *Journal of College Student Retention: Research, Theory & Practice*, 13(4), 431-456.

## APPENDIX A. MESSAGES SENT TO STUDENTS

### Text 1

Hi \_\_\_\_\_ (insert first name). It was great to have you in the workshop last week. Have you created your Spending Plan? Check out [mint.com](http://mint.com)!

*[Mint.com is a good app for students to consider. The ability to track expenses is the key to managing money. You can connect your banks, bills and credit cards to get insights into your spending. Mint even allows accounts like PayPal and Venmo. Creating a Spending Plan is easy with Mint. If your community college has online budgeting templates on your website, you may want to highlight those tools in subsequent correspondence.]*

### Text 2

\_\_\_\_\_ (insert first name), it's \_\_\_\_\_ (insert sender's name). In the workshop we spent some time talking about credit reports. Make a point of checking your credit report at [annualcreditreport.com](http://annualcreditreport.com).

*[Identity theft is a significant issue for individuals in the age group 18-24 because this age group tends to share a great deal of personal information via social media. In addition, individuals are meeting new people on campus and are not always considering the true character of strangers because of the social settings. Checking your credit report three times a year (you are eligible for one free credit report per agency in a 12-month period versus a calendar year) enables you to discover any accounts that do not belong to you. We recommend setting a tickler system to remind you to access one of your three credit reports during a 12-month period. For example, mark your calendar for July to celebrate your financial independence; mark your calendar for November in gratitude for having the skills to manage your money; mark your calendar for February because you'll love knowing everything is fine.]*

### Text 3

Hello \_\_\_\_\_ (insert first name). What kind of shopper are you —impulsive, cautious, comparison, coupon, sale? Because spending is such a big part of our financial and social life, it pays to put some thought into our purchases.

*[Most people make purchase every week, if not every day. Amazon makes it easy and appealing to buy items with a 1-Click option. Groupon encourages you to get a great deal on things you might otherwise never purchase. Buying things is an important part of our economy and it's important to put some thought into not only WHAT we are purchasing, but WHERE we're buying, and HOW MUCH we are paying. In addition, it's worth some thought about WHY we are buying. It's easy to turn a need into a want—but if you take the time to really think about your needs AND wants (short-term and long-term) before you shop, you may find it easier to stay on track with your Spending Plan.]*

### Text 4

\_\_\_\_\_ (insert first name), have you checked your credit lately? Remember you can get a good idea where you stand at [creditkarma.com](http://creditkarma.com).

*[Credit Karma offers a snapshot of creditworthiness. It's a great place to start and can give you a good idea of what your credit looks like. However, most lenders and other entities that check credit rely on the universal credit scoring corporation, Fair Isaac Corporation. FICO® scores range from 300 to 850; the higher the number, the better. Each creditor decides what credit score range it considers a good risk or a poor risk. Most lenders consider a score*

*below 640 to be a poor risk.*

*If you are turned down for a loan or are offered a higher interest rate than you were expecting, there are steps you can take. First, under the law, you have the right to request a written explanation from the lender and the lender is obligated to provide your credit score. Then, you can make an action plan to begin to address the situation.*

*Keep in mind that the lender, not your credit score, makes the final decision to approve a loan application. A credit score is simply a tool used by the lender. The lender may take into consideration any special reasons for your past credit problems. In addition, the lender will consider the value of the property you own, your job history, income, savings, and the type of loan you want—before making a final decision.]*

#### **Text 5**

Hi, \_\_\_\_\_ (insert first name). Credit cards are the most widely used form of credit. Here's a tip: Before you use your credit card, be sure you can pay off the balance in full on the items you purchase.

*[Alert: A \$1,000 credit limit on your credit card is not \$1,000 in additional income. Instead, consider it as a different way to spend the money you already have. The smart way to build a good credit history is to save up for the item you want to buy and then use the convenience of your credit card to make the purchase. When your statement arrives, immediately pay off the item (balance) with the money you saved in your bank account. Not only will you pay your bill on time, you will not pay MORE for the item because you will not incur interest or late fees.*

*People who carry a balance on their credit cards month to month are paying more for the items than if they paid cash. Who want to do that?]*

#### **Text 6**

\_\_\_\_\_ (insert first name), have you checked your spending leaks lately? Grab a notebook or use your phone to list every purchase and the amount for one week. You may be shocked!

*[Spending leaks are simply expenses than can drain money from your weekly budget without you really noticing. They're often incidental items which may seem small in themselves, but which nonetheless add up over time. Just to name a few:*

- *a daily stop at Starbucks (instead of making coffee at home)*
- *grabbing lunch to go (instead of brown-bagging it)*
- *incurring avoidable bank fees (overdraft fees, fees for using "other bank" ATMs)*
- *bottled water (instead of investing in a reusable bottle and filling it up)*
- *Groupons that sound good in the moment and then expire before use*
- *Impulse buying from the end displays at the checkout counter*

*Identifying the culprits is half the battle when it comes to plugging the holes in your spending plan once and for all and converting a spending leak into a savings windfall.]*

#### **Text 7**

It's \_\_\_\_\_ (insert sender's name) again! Have you written down a short-term or a long-term financial goal? Smartypig.com is a great tool for establishing savings goals and then setting \$\$ aside to reach your goals.

*[It's possible that we think we can achieve success by carrying our financial goals and our spending plan in our head. The truth is that goals that are not written down are just unrealized dreams and spending plans in our head are too many numbers flying around. The best technique for establishing goals that are achievable is the SMART model.]*

- *S = specific: What do you want to do?*
- *M = measurable: How will you know when you've reached it?*
- *A = achievable: Is it within your power to accomplish it?*
- *R = relevant: Is it important to YOU?*
- *T = Time bound: When exactly do you want to accomplish it?*

*The most important money management goal is to have enough money to live on!]*

### **Text 8**

Hello \_\_\_\_\_ (insert first name). Did you realize that borrowing federal student loans for higher education expenses is an investment in yourself? But, only borrow as much as you need for school and basic living expenses.

*[It's important to think about the return on your investment —or what you'll get for the money you're borrowing and the interest you're paying. A good rule of thumb is to borrow no more than you think your first year's salary will be after graduation.]*

*Federal student loans come in two types: Subsidized and unsubsidized. Subsidized loans do not accrue interest while you are in school. Unsubsidized loans do. If you have unsubsidized loans, consider making interest payments while you are in school – it will save you money in the long run.*

*To figure out what you can expect as a monthly payment, visit Federal Student Aid's Repayment Estimator to find out: [bitly/2Repay](https://bitly/2Repay).]*

### **Text 9**

\_\_\_\_\_ (insert first name), are you worried about financial fragility? Take a breath and open a savings account! Start saving \$10 today and keep up the habit.

*[If you do not currently have a savings account, banks and credit unions will be happy to help you open an account so you can begin saving today. You can trust that your money will be safe in a savings account because the Federal Deposit Insurance Corporation (FDIC) and the National Credit Union Association (NCUA) insure bank or credit union deposits up to \$250,000 per account.]*

*If you have an open savings account, the key is to make regular deposits. You can set up automatic transfers from your checking account to your savings account—you determine the amount and day of the month. You can also set aside some money each week to deposit. Whatever you decide to do, just be sure to make a habit out of saving!*

*Remember, your spending plan should have a line item: PYF (pay yourself first)!]*

### **Text 10**

Hi \_\_\_\_\_ (insert first name). Is peer pressure taking a bite out of your wallet?

Instead of following your friends into debt, take the lead and manage your money.

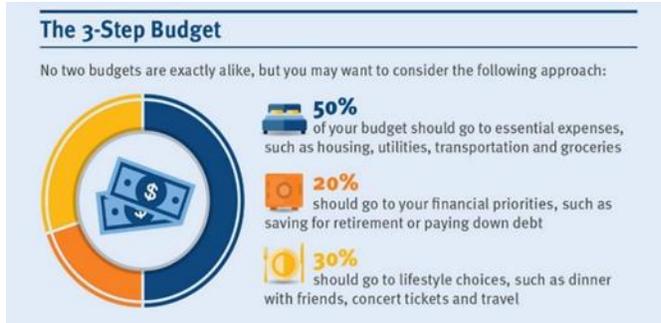
*[Peer pressure is a very powerful influence in many areas of our lives, especially in how we spend our money. One of*

*the biggest problems with peer pressure is that the group of people we see as our “peers” is much bigger than in the past. Thanks to social media, we’re comparing ourselves to people with very different financial situations—like celebrities and famous athletes. Being your own person and making spending decisions that are right for you, not other people, takes discipline and courage.]*

**Text 11**

\_\_\_\_\_ (insert first name) are you struggling with creating your budget? The 50-30-20 method may be the answer! Try out the FREE budget calculator app from NerdWallet.

*[The 50-30-20 Rule helps you build a budget by using three spending categories:*



*NerdWallet (nerdwallet.com) provides a free budget worksheet and allows you to check the boxes for college student, parent, homeowner and more and then enter your income and expenses. It breaks expenses into necessities and wants. In addition, it provides the opportunity to consider savings and debt repayments. Then it provides the 50/30/20 comparison and recommendation.*

*This budget method was first mentioned in Elizabeth Warren and Amelia Warren Tyagi’s 2005 book, “All Your Worth: The Ultimate Lifetime Money Plan.” The rule is easy to remember and contains sound financial advice. However, the 50/30/20 budget assumes you bring home roughly the same amount of money every month. If your income fluctuates significantly each month, you may need to find a budgeting method that fits your situation better.]*

**Text 12**

Hello, \_\_\_\_\_ (insert first name). Do you want to be a millionaire? Here’s a secret that millionaires know: live within (or below) your means. Check out The Millionaire Next Door, Thomas J Stanley.

*[Authors Thomas J Stanley, Ph.D. and William D Danko, Ph.D. researched millionaires and identified seven common traits that show up again and again among those who have accumulated wealth. According to the authors, most of the truly wealthy in the USA don’t live in Beverly Hills or on Park Avenue – they live next door. Dr. Stanley has written several other books that are easy reads, including The Millionaire Mind, Stop Acting Rich...and Start Living Like a Millionaire, and Millionaire Women Next Door.]*

**Text 13**

Hi, \_\_\_\_\_ (insert first name). Interested in a simple, systematic way of saving money and paying bills? The Envelope Budgeting Method is it! YouTube has several fun videos – watch today.

*[Envelope budgeting is a simple, systematic way of saving money and paying bills. The envelope budgeting method started back when pills were paid with cash, and people could separate physical cash bills into different envelopes, each representing a different purpose. The envelope system is an excellent way to track exactly how much money you have in each budget category for the month by keeping your cash tucked away in separate envelopes labeled*

with the budget categories. At the end of the month, you can see exactly how much cash is left by peeking in your envelope.

If you frequently go overboard in a certain category (hello, eating out!), then “cash out” the amount you’ve budgeted for and stick to it. When the money is gone, you get to be creative and stay home.

Here’s how it works:

1. Think of the budget categories that need a cash envelope. (groceries, gas....).
2. Figure out your budget amount.
3. Create and fill cash envelopes for the budget categories on payday.
4. Spend only what you’ve put in the cash envelope – when your cash is gone, it’s gone!
5. Do not borrow from other cash envelopes.

Remember, the whole purpose of the envelope system is to help you stick to your budget and control your spending.]

#### **Text 14**

\_\_\_\_\_ (insert first name), have you been paying yourself first? The first bill you pay each month should be to yourself. This habit can help you build tremendous wealth.

*[To pay yourself first means simply this: Before you pay your bills, before you buy groceries, before you do anything else, set aside a portion of your income to save. Do not worry as much about the amount, as establishing a savings habit. If you need to start out small, you can always increase the amount as your income increases or your expenses decrease.*

*If you’re just getting started in the “real world,” saving can seem impossible. You may have rent, a car payment, groceries, and maybe student loans. You’d like to save, but at the end of the month there’s no money left. That’s the problem! Most people save what’s left over – left over at the end of the month – which is often zero. Paying yourself first means that you can develop a savings habit early and continue to build on it.*

*When you pay yourself first, you are mentally and physically establishing saving as a priority. You’re telling yourself that you worth the effort. Nobody tells themselves, “Saving was a mistake.” Don’t delay, begin saving today.]*

#### **Text 15**

Hi, \_\_\_\_\_ (insert first name). Looking for ways to stretch a dollar? Check out special discounts for students on and around campus as well as [www.giftcardgranny.com](http://www.giftcardgranny.com).

*[College students should become pros at exploring the ways their educational status can save them money. Local venues, vendors, restaurants and services on or near college campuses often provide student discounts that could save students big money. What’s more, by keeping a lookout for discounts, students learn the value of comparison shopping and hunting down deals.*

*Retailers understand that college students don’t have a lot of money, so many of them offer discounts to gain their business. Gift Card Granny lists more than 100 retailers that offer such discounts as, including Apple, Amazon, Microsoft, movie theaters, and more.]*

#### **Text 16**

Hello, \_\_\_\_\_ (insert first name). Did you know you have to complete the FAFSA application every year? Be sure to visit [www.fafsa.gov](http://www.fafsa.gov).

*[The FASFA is the first step to getting financial assistance for college. The FASFA is the link between you and your financial aid. It helps the financial aid office understand your family's financial picture. Plan to fill it out every year you want to be considered for aid. Once you get the hang of it, it's not that bad. FASFA is FREE and is the universal application for financial aid at all eligible colleges and universities. It is available to complete online in English and Spanish. The only legitimate website to complete your FASFA is [www.fasfa.gov](http://www.fasfa.gov). Beware of scams that ask you to pay to complete a FAFSA.]*

#### **Text 17**

\_\_\_\_\_, remember that a credit card doesn't equal free money. Research which card makes the most sense based on your spending habits and ability to repay.

*[Credit cards are the most widely used form of credit. A credit card allows you to borrow money from your bank or credit union to make purchases. Before applying for a credit card, read the fine print. Pay attention to interest rates, annual fees, and penalties associated with credit cards. All credit cards are NOT created equal.*

*Remember that paying with a credit card is a different way to spend money you already have. Before you use your credit card, ensure you can pay off the balance in full on the items you purchase.]*

#### **Text 18**

Hi, \_\_\_\_\_ (insert first name). Before you spend more than \$50 on something, ask yourself if you really need it. Use the \$50 limit to keep spending in check.

*[Being able to manage your money effectively depends on being able to distinguish between "needs" and "wants." Needs are things you must have and wants are things that would be nice to have. We put needs on the top of our financial priorities because needs are necessary for our survival. Wants are a lower priority because they are not necessary for survival. However, it's OK sometimes to spend money on a want, if we realize we are choosing to give up something else.]*

#### **Text 19**

\_\_\_\_\_ (insert first name), are you aware of your financial risks? Take a moment to list your risks so you can start managing them.

*[Many people don't realize they have financial risk. But almost everyone carries some risk. Consider these questions:*

- *Am I a licensed driver?*
- *Do I have a job?*
- *Am I in good health?*
- *Will I be able to take care of myself financially if I am injured or sick?*
- *Do I own valuable personal property, such as a computer?*
- *Do I rent an apartment?*

*If your answer to any of these questions is "yes," you have financial risks.*

*Risk management and insurance can protect your financial worth if something goes wrong. If you choose to ignore risks or potential benefits from managing risk, time bombs could be waiting to explode your wallet and potentially cause consequences that impact you for a long time.]*

#### **Text 20**

Hello, \_\_\_\_\_ (insert first name). Managing your money reduces stress and creates opportunities.  
Keep up the good work!

*[Consider using this last text to link to a survey that students can complete to evaluate the effectiveness of the texting initiative. You might also want to ask students if they want to continue receiving texts.]*

# APPENDIX B. STUDENT TRACKING WORKSHEET

BEFORE MESSAGING BEGINS					AFTER MESSAGING ENDS						
Student ID	First Name	Middle Name	Last Name	Opted in	IF RECEIVING TEXTS: Cellphone number	IF RECEIVING EMAILS: Email address	Incorrect cellphone number or email address	Opted out after messaging began	Total number of BUDGET related messages sent TO the student	Total number of CREDIT related messages sent TO the student	Total number of messages sent BY the student

## APPENDIX C. STUDENT CHARACTERISTICS

Data element	Corresponding CCCCO Datamart data element
Date of birth	SB03
Gender	SB04
Race/ethnicity	SB29
Student's family status	SF07
Student's highest education level	SB11
Student's enrollment status	SB15
Student's parent/guardian's education level	SB33
Student's disability status	SD01
Student's veteran status	SG01
Student's foster youth status	SG03
Student's economically disadvantaged status	SG14
Student's ex-offender status	SG15
Student's homeless status	SG16
Student's long-term unemployed status	SG17
Student's seasonal farmworker status	SG19
Student's low-level literacy status	SG20
Student's EOPS status	SE01
Student received services from the Puente program	SG06
Student received services from the Umoja program	SG08
Received financial aid	SF01
Type of financial aid received	SF21
Estimated family contribution (EFC)	SF17

## APPENDIX D. STUDENT OUTCOMES

Data element	Corresponding CCCCO Datamart data element
First-semester GPA	SX03
First-semester credits	SX04
Enrolled in second semester	GI03
Second-semester credits	SX04
Second-semester GPA	SX03
Enrolled in second year	GI03
Second-year credits	SX04
Second-year GPA	SX03

## APPENDIX E. PROPENSITY SCORE MATCHING

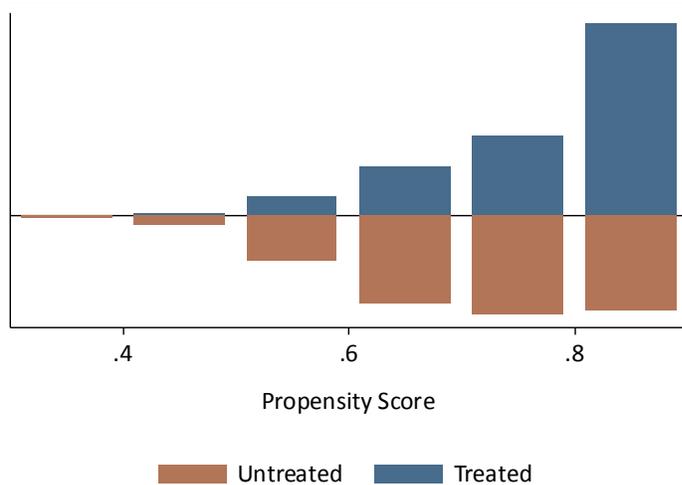
The Ray Marshall Center used the propensity score matching approach to account for differences in the observable characteristics between the treatment group and the comparison group pool. Propensity score matching aims to construct a balanced sample of treatment and comparison students who both attended the college, but are distinct only in their participation in the FL pilot. The PSCORE, PSMATCH2, and TEFFECTS modules in the Stata software package were utilized (Garrido et al., 2014).

### STEP 1: PROPENSITY SCORE ESTIMATION

First, a propensity score was constructed for each individual (in both the treatment group and the comparison group pool) that estimated the likelihood of participating in the FL pilot, using all the observable characteristics. This was done by using the *p\_score* procedure in Stata (Becker and Ichino 2002) to perform a probit regression of the treatment dummy variable on all available covariates that, in the evaluation team’s judgment, had the potential to influence the chances of being treated.

Overlap in the range of propensity scores across the treatment and comparison groups, called “common support”, was ensured. This is important because no inferences about treatment effects can be made for a treated individual for whom there is not a comparison individual with a similar propensity score. Common support was subjectively assessed by examining a graph of propensity scores across treatment and comparison groups (see Figure D-1).

Figure D-1. Common Support



## STEP 2: MATCHING

Next, individuals in the treatment group were matched to individuals from the comparison group pool, using the *psmatch2* procedure in Stata (Leuven and Sianesi 2014). Each treatment group individual can be matched to one or many comparison group individuals. When matching at the individual level, the first match is always best and will lead to the least biased estimates, but the decrease in bias from fewer matches needs to be weighed against the lower efficiency of the estimate that will occur with fewer observations. A broader one-to-many match will increase sample size and efficiency but can also result in greater bias from matches that are not as close as the initial match (Caliendo and Kopeinig 2008). The evaluation team selected to use the single nearest-neighbor technique; this technique involves finding for each treated individual that non-treated individual with the most similar propensity score and so, the most similar characteristics.

Matching with replacement was also used, which allows each comparison group individual to be used as a match more than once; matching with replacement improves the performance of the match and produces matches of higher quality than matching without replacement by increasing the set of possible matches (Dehejia and Wahba 1998, Abadie and Imbens 2006). Matching with replacement is also less demanding of the data than permitting comparison group individuals to be used only once. "Essentially, it avoids the problem of the non-treatment group being 'used up'. Should a certain type of individual be common in the treatment group but relatively uncommon in the comparator group, the pool of comparators able to provide a close match would become exhausted were non-treatment group members used only once" (Bryson et al., 2002). Also, if two or more observations had the same propensity score and were thus tied for "nearest neighbor", all ties were used for the match; including all the ties provides a more precise estimator (Abadie et al., 2004).

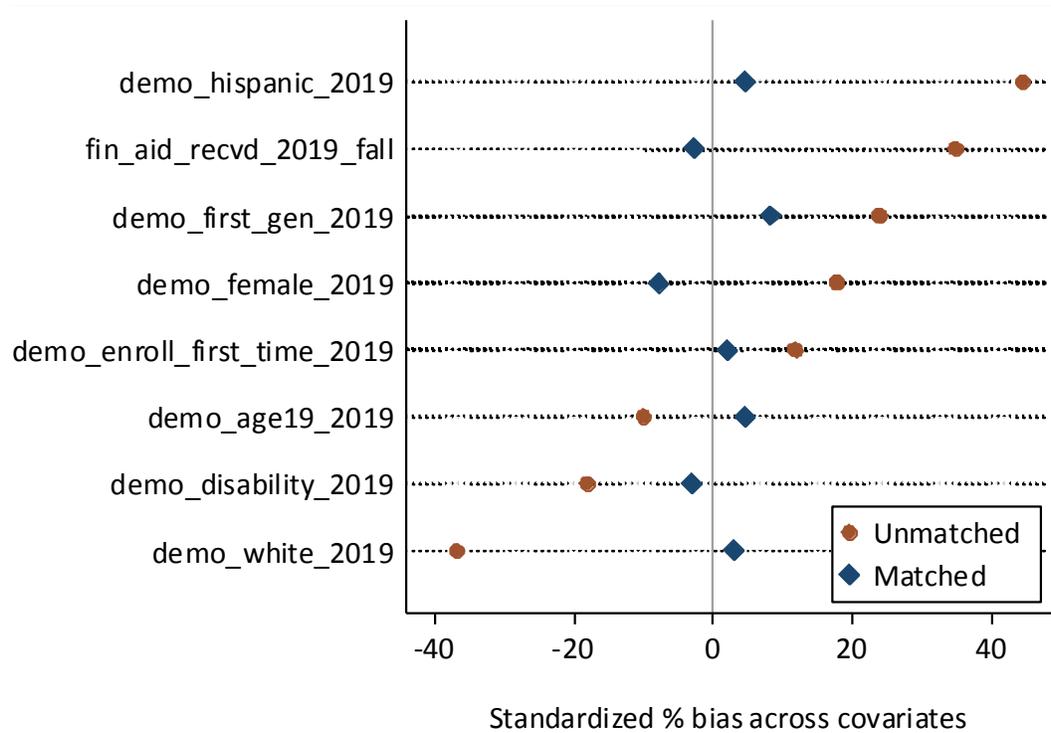
Next, the evaluation team assessed if the balance in the observable characteristics had been achieved, using the *pstest* procedure in Stata. Propensity score matching can only lead to viable estimates of the causal effects of treatment if the desired balancing of observable covariates is achieved. The evaluation team found that covariate balance had been successfully achieved (see Appendix F). After matching, the measures indicate good covariate balance: (1) standardized bias<sup>14</sup> for all covariates is less than 5%, (2) t-

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<sup>14</sup> The standardized bias is the % difference of the sample means in the treated and non-treated (full or matched) sub-samples as a percentage of the square root of the average of the sample variances in the treated and non-treated groups Rosenbaum, P. R. and D. B. Rubin (1985). "Constructing a control group using multivariate matched sampling methods that incorporate the propensity score." *The American Statistician* 39(1): 33-38..

tests for all covariates are non-significant, (3) the pseudo-R2 is very low<sup>15</sup>, (4) the likelihood-ratio test<sup>16</sup> is non-significant, (5) the mean and median absolute bias are less than 5%, (6) Rubin’s B<sup>17</sup> is close to 0, and (7) Rubin’s R<sup>18</sup> is close to 1. Figure D-2 shows the standardized percentage bias for each covariate using a dot chart.

Figure D-2. Individual Covariate Balance



Thus, while the differences between the treatment group and the comparison group pool in observable characteristics were documented to be substantial in the unmatched sample, the evaluation team’s matching approach (nearest neighbor matching with replacement) achieved satisfactory balance in all observable characteristics. The evaluation team can be quite confident that in the estimates of the causal impact of the FL pilot on outcomes, genuinely similar students are being compared.

<sup>15</sup> The pseudo-R2 indicates how well the regressors X explain the participation probability.

<sup>16</sup> the likelihood-ratio test of the joint insignificance of all the regressors

<sup>17</sup> Rubin’s B is the standardized difference in mean of the linear prediction of the propensity score before and after matching

<sup>18</sup> Rubin’s R is the ratio of variance of the treated and comparison group for the linear prediction of the propensity score.

### STEP 3: TREATMENT EFFECT ESTIMATION

Finally, the average treatment effect on the treated (ATT) is estimated, which is the average difference on an outcome of interest between the matched treated and untreated observations. The ATT is the average effect of the treatment on the sort of person who participates in the program. The effectiveness of PSM is, in part, a function of having enough relevant information about the cases to accurately estimate the propensity score, and thus accurately estimate the ATT using the matching process that uses this score. The *teffects psmatch* procedure in Stata (StataCorp) calculates the treatment effect along with the Abadie Imbens corrected standard error calculation (Abadie and Imbens 2012).

# APPENDIX F. COVARIATE BALANCE AFTER PSM

Table E-1. Covariate balance for all students

Variable	Unmatched Matched	Mean		%reduct		t-test		V(T)/ V(C)
		Treated	Control	%bias	bias	t	p> t	
demo_age19_2019	U	.23614	.27972	-10.0		-1.06	0.288	.
	M	.23614	.21561	4.7	52.9	0.77	0.444	.
demo_female_2019	U	.58522	.4965	17.8		1.88	0.060	.
	M	.58522	.62423	-7.8	56.0	-1.24	0.213	.
demo_hispanic_2019	U	.68378	.46853	44.5		4.78	0.000	.
	M	.68378	.66119	4.7	89.5	0.75	0.453	.
demo_white_2019	U	.26078	.43357	-36.8		-4.01	0.000	.
	M	.26078	.24641	3.1	91.7	0.52	0.607	.
demo_enroll_first_time_2019	U	.71253	.65734	11.9		1.27	0.206	.
	M	.71253	.70226	2.2	81.4	0.35	0.725	.
demo_first_gen_2019	U	.3306	.22378	24.0		2.44	0.015	.
	M	.3306	.29363	8.3	65.4	1.24	0.214	.
demo_disability_2019	U	.09446	.15385	-18.0		-2.02	0.044	.
	M	.09446	.10472	-3.1	82.7	-0.53	0.593	.
fin_aid_recvd_2019_fall	U	.77413	.61538	34.9		3.83	0.000	.
	M	.77413	.78645	-2.7	92.2	-0.46	0.643	.

\* if variance ratio outside [0.84; 1.19] for U and [0.84; 1.19] for M

Sample	Ps R2	LR chi2	p>chi2	MeanBias	MedBias	B	R	%Var
Unmatched	0.056	38.06	0.000	24.7	21.0	59.7*	0.87	.
Matched	0.005	6.23	0.622	4.6	3.9	16.0	1.04	.

\* if B>25%, R outside [0.5; 2]

Table E-2. Covariate balance for financial aid students

Variable	Unmatched Matched	Mean		%reduct		t-test		V(T)/ V(C)
		Treated	Control	%bias	bias	t	p> t	
demo_age19_2019	U	.23342	.27273	-9.0		-0.78	0.439	.
	M	.23342	.22812	1.2	86.5	0.17	0.863	.
demo_female_2019	U	.61008	.54545	13.1		1.11	0.267	.
	M	.61008	.57294	7.5	42.5	1.04	0.300	.
demo_hispanic_2019	U	.7374	.625	24.2		2.11	0.035	.
	M	.7374	.76127	-5.1	78.8	-0.76	0.450	.
demo_white_2019	U	.21751	.38636	-37.3		-3.33	0.001	.
	M	.21751	.2122	1.2	96.9	0.18	0.859	.
demo_enroll_first_time_2019	U	.70292	.625	16.5		1.42	0.156	.
	M	.70292	.71088	-1.7	89.8	-0.24	0.811	.
demo_first_gen_2019	U	.37401	.28409	19.2		1.59	0.113	.
	M	.37401	.37666	-0.6	97.0	-0.08	0.940	.
demo_eops_2019	U	.29443	.30682	-2.7		-0.23	0.819	.
	M	.29443	.23077	13.8	-413.9	1.99	0.047	.

\* if variance ratio outside [0.82; 1.22] for U and [0.82; 1.22] for M

Sample	Ps R2	LR chi2	p>chi2	MeanBias	MedBias	B	R	%Var
Unmatched	0.034	15.30	0.032	17.4	16.5	47.0*	0.94	.
Matched	0.005	5.62	0.585	4.4	1.7	17.3	1.16	.

\* if B>25%, R outside [0.5; 2]

Table E-3. Covariate balance for first-time college students

Variable	Unmatched Matched	Mean		%reduct %bias	bias	t-test		V(T)/ V(C)
		Treated	Control			t	p> t	
demo_female_2019	U	.5879	.44681	28.4		2.45	0.015	.
	M	.5879	.55331	7.0	75.5	0.92	0.358	.
demo_hispanic_2019	U	.66859	.47872	39.0		3.42	0.001	.
	M	.66859	.68588	-3.6	90.9	-0.49	0.627	.
demo_white_2019	U	.30259	.51064	-43.2		-3.81	0.000	.
	M	.30259	.25072	10.8	75.1	1.53	0.127	.
demo_first_gen_2019	U	.36023	.2234	30.4		2.51	0.012	.
	M	.36023	.35735	0.6	97.9	0.08	0.937	.
demo_disability_2019	U	.06628	.15957	-29.7		-2.88	0.004	.
	M	.06628	.07493	-2.8	90.7	-0.44	0.657	.
demo_eops_2019	U	.18732	.10638	22.9		1.86	0.064	.
	M	.18732	.17579	3.3	85.8	0.39	0.694	.
fin_aid_recvd_2019_fall	U	.76369	.58511	38.7		3.48	0.001	.
	M	.76369	.75504	1.9	95.2	0.27	0.790	.

\* if variance ratio outside [0.81; 1.24] for U and [0.81; 1.24] for M

Sample	Ps R2	LR chi2	p>chi2	MeanBias	MedBias	B	R	%Var
Unmatched	0.065	29.72	0.000	33.2	30.4	63.8*	0.75	.
Matched	0.005	4.50	0.720	4.3	3.3	16.1	1.13	.

\* if B>25%, R outside [0.5; 2]

Table E-4. Covariate balance for Hispanic students

Variable	Unmatched Matched	Mean		%bias	%reduct  bias	t-test		V(T)/ V(C)
		Treated	Control			t	p> t	
demo_age20_2019	U	.11111	.16418	-15.4		-1.22	0.224	.
	M	.10574	.09366	3.5	77.2	0.52	0.604	.
demo_female_2019	U	.62162	.46269	32.2		2.43	0.016	.
	M	.62538	.58912	7.3	77.2	0.95	0.340	.
demo_white_2019	U	.12613	.25373	-32.8		-2.71	0.007	.
	M	.12085	.09668	6.2	81.1	1.00	0.319	.
demo_enroll_first_time_2019	U	.6967	.67164	5.4		0.40	0.686	.
	M	.70091	.71601	-3.2	39.7	-0.43	0.670	.
demo_first_gen_2019	U	.40841	.34328	13.4		0.99	0.322	.
	M	.40785	.41692	-1.9	86.1	-0.24	0.813	.
demo_eops_2019	U	.25225	.23881	3.1		0.23	0.817	.
	M	.24773	.21148	8.4	-169.6	1.11	0.268	.
fin_aid_recvd_2019_fall	U	.83483	.8209	3.7		0.28	0.781	.
	M	.83686	.84894	-3.2	13.3	-0.43	0.670	.

\* if variance ratio outside [0.81; 1.24] for U and [0.81; 1.24] for M

Sample	Ps R2	LR chi2	p>chi2	MeanBias	MedBias	B	R	%Var
Unmatched	0.038	13.76	0.056	15.1	13.4	49.4*	0.76	.
Matched	0.004	3.82	0.801	4.8	3.5	15.2	1.29	.

\* if B>25%, R outside [0.5; 2]

Table E-5. Covariate balance for female students

Variable	Unmatched Matched	Mean		%bias	%reduct  bias	t-test		V(T)/ V(C)
		Treated	Control			t	p> t	
demo_age20_2019	U	.13333	.23944	-27.4		-2.22	0.027	.
	M	.13028	.1338	-0.9	96.7	-0.12	0.902	.
demo_hispanic_2019	U	.72632	.43662	61.1		4.77	0.000	.
	M	.72887	.76408	-7.4	87.8	-0.96	0.336	.
demo_white_2019	U	.24561	.4507	-43.9		-3.47	0.001	.
	M	.24296	.23592	1.5	96.6	0.20	0.844	.
demo_enroll_first_time_2019	U	.71579	.59155	26.2		2.03	0.043	.
	M	.71831	.6831	7.4	71.7	0.92	0.360	.
demo_first_gen_2019	U	.33333	.25352	17.5		1.29	0.197	.
	M	.33451	.34155	-1.5	91.2	-0.18	0.859	.
demo_disability_2019	U	.09123	.16901	-23.2		-1.90	0.058	.
	M	.08803	.07746	3.1	86.4	0.46	0.648	.
demo_eops_2019	U	.27018	.25352	3.8		0.28	0.777	.
	M	.27113	.21831	12.0	-217.1	1.46	0.144	.
fin_aid_recvd_2019_fall	U	.80702	.67606	30.1		2.40	0.017	.
	M	.80986	.79577	3.2	89.2	0.42	0.674	.

\* if variance ratio outside [0.79; 1.26] for U and [0.79; 1.26] for M

Sample	Ps R2	LR chi2	p>chi2	MeanBias	MedBias	B	R	%Var
Unmatched	0.084	29.98	0.000	29.1	26.8	74.6*	0.78	.
Matched	0.007	5.65	0.686	4.6	3.2	19.9	1.53	.

\* if B>25%, R outside [0.5; 2]

Table E-6. Covariate balance for male students

Variable	Unmatched Matched	Mean		%bias	%reduct  bias	t-test		V(T)/ V(C)
		Treated	Control			t	p> t	
demo_age21_2019	U	.10891	.09722	3.8		0.28	0.783	.
	M	.10891	.06931	13.0	-238.8	1.40	0.163	.
demo_hispanic_2019	U	.62376	.5	25.0		1.84	0.067	.
	M	.62376	.67822	-11.0	56.0	-1.15	0.252	.
demo_white_2019	U	.28218	.41667	-28.4		-2.11	0.035	.
	M	.28218	.29208	-2.1	92.6	-0.22	0.826	.
demo_enroll_first_time_2019	U	.70792	.72222	-3.2		-0.23	0.819	.
	M	.70792	.77228	-14.2	-350.0	-1.48	0.141	.
demo_first_gen_2019	U	.32673	.19444	30.4		2.13	0.034	.
	M	.32673	.29703	6.8	77.5	0.64	0.521	.
demo_eops_2019	U	.19307	.125	18.6		1.30	0.193	.
	M	.19307	.19802	-1.4	92.7	-0.13	0.900	.
fin_aid_recvd_2019_fall	U	.72772	.55556	36.3		2.72	0.007	.
	M	.72772	.74257	-3.1	91.4	-0.34	0.736	.

\* if variance ratio outside [0.76; 1.32] for U and [0.76; 1.32] for M

Sample	Ps R2	LR chi2	p>chi2	MeanBias	MedBias	B	R	%Var
Unmatched	0.039	12.36	0.089	20.8	25.0	48.8*	0.96	.
Matched	0.011	5.95	0.545	7.4	6.8	24.3	1.14	.

\* if B>25%, R outside [0.5; 2]