EVALUATION OF THE CCCCO FINANCIAL LITERACY PILOT

FINAL REPORT

RAY MARSHALL CENTER FOR THE STUDY OF HUMAN RESOURCES

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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 CCCCO's financial wellness consultants, reviewed benchmarking efforts implemented in various states. Their primary goal was to assess what a "different" and "effective" financial literacy intervention would look like and could be successfully implemented at California community colleges.

The CCCCO'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 CCCCO 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 CCCCO 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 2020 fall semester. Due to the COVID-19 pandemic, recruitment in the 2020 fall semester occurred virtually with the introductory financial literacy presentations being made during online workshops and online courses.

Overview of the evaluation

The CCCCO 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 CCCCO'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.[1] Of these, nine colleges shared evaluation data with RMC (see Figure 1). This final report synthesizes findings across these nine colleges. The analysis presented in this final report for the fall 2019 pilot includes 864 participating students from the nine colleges, representing 93 percent of all participating students across the ten participating colleges.

RMC also evaluated the outcomes and impacts of the pilots implemented in the 2020 fall semester. All six colleges that implemented the pilot in 2019 shared evaluation data with RMC (see Figure 2). This final report synthesizes findings across these six colleges and includes a total of 489 participating students.

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[1] 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.

Figure 1. 2019 fall pilot colleges and participation status

```
Implemented the
pilot in 2019 fall
├── Participated in the evaluation
│   ├── Provided data
│   │   ├── College of the Canyons
│   │   ├── East Los Angeles College
│   │   ├── Fullerton College
│   │   ├── Merced College
│   │   ├── Mission College
│   │   ├── Moorpark College
│   │   ├── Mount San Antonio College
│   │   ├── West Valley College
│   │   └── Yuba College
│   └── Did not provide data
│       └── Lake Tahoe Community College
└── Did not participate in the evaluation
    ├── Bakersfield College
    ├── Coastline Communtiy College
    ├── Grossmont College
    ├── Los Angeles Pierce College
    └── Porterville College
```

Figure 2. Fall 2020 pilot colleges and participation status

```
Implemented the
pilot in 2020 fall
└── Participated in the evaluation
    └── Provided data
        ├── Cerritos College
        ├── East Los Angeles College
        ├── Fullerton College
        ├── Mission College
        ├── West Valley College
        └── Yuba College
```
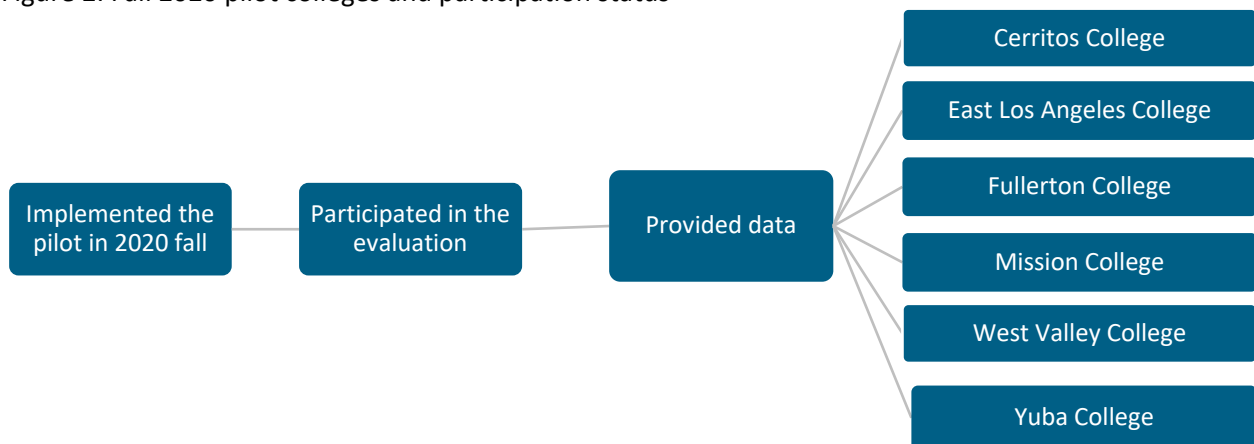
EVALUATION DESIGN

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 the 2019 fall cohort in February 2020, October 2020, and March 2021. Data was pulled for both opt-out and opt-in students in the 2020 fall cohort in April 2021. 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 pilots were implemented in the 2019 and 2020 fall semesters. 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 recommendations.

PROGRAM DESCRIPTION

PROGRAM CONTEXT

The ten colleges included in this final 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,[2] ranging from 65 percent at Yuba College to 87 percent at Fullerton 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 3. Persistence rates at participating colleges

College	Persistence Rate
Fullerton College	87%
Moorpark College	83%
College of the Canyons	81%
Cerritos College	80%
Mount San Antonio College	80%
West Valley College	79%
East LA College	78%
Merced College	76%
Mission College	66%
Yuba College	65%
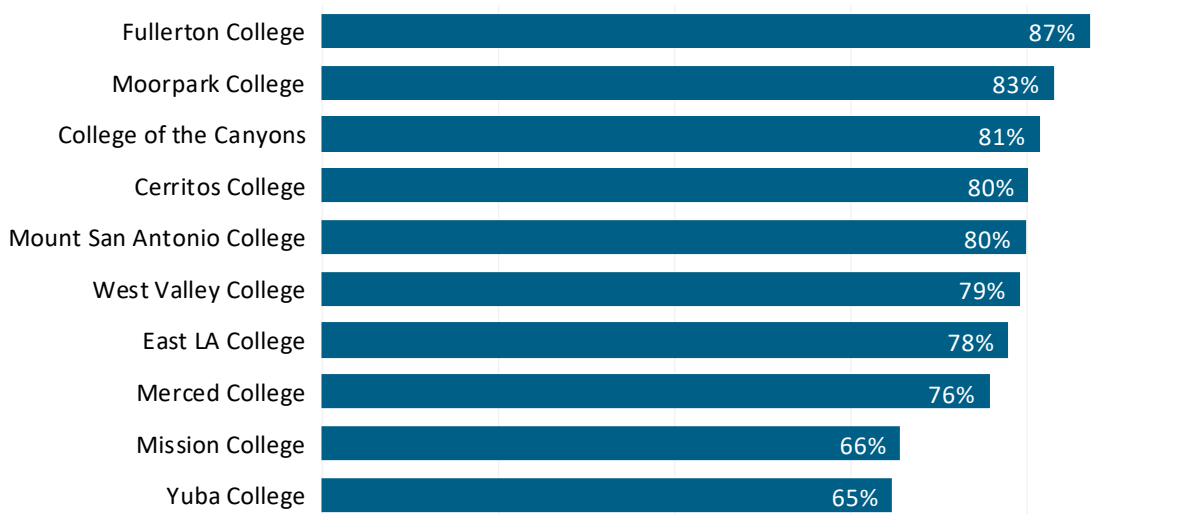
Cerritos College

Cerritos College is a suburban, large college located in Norwalk, California making the campus geographically convenient for students coming from Southeastern Los Angeles County and North Orange County. The college offers over 180 areas of study and 87 degree and certificate programs. In 2019 fall, 20,368 students enrolled. The majority of these students identified as Hispanic (72 percent) while 3 percent identified as White non-Hispanic, 8 percent identified as Asian, and only 2 percent

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[2] 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.

identified as Black. Only a third of the students enrolled in full-time studies and 61 percent received Pell grants. The college had a 74 percent first-year retention rate and a 26 percent graduation rate. Cerritos College costs on average $1,598 annually.

College of the Canyons

College of the Canyons is a suburban, large college located in the neighborhood of Valencia in the city of Santa Clarita in northern Los Angeles County, California. The college has a second campus in the Canyon Country neighborhood of Santa Clarita. The college offers Associate degrees in 69 academic programs, as well as credentials in 82 certificate programs. In 2019 fall, 18,649 students enrolled. About half of these students identified as Hispanic (49 percent) while 30 percent identified as White non-Hispanic, 9 percent identified as Asian, and only 6 percent identified as Black. Only a third of the students enrolled in full-time studies and 36 percent received Pell grants. The college had a 75 percent first-year retention rate and a 19 percent graduation rate. College of the Canyons costs on average $4,662 annually.

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[3] and a 21 percent graduation rate. East LA College costs on average $8,748 annually.

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 2019 fall. 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

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[3] 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.

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 2019 fall, 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 2019 fall, 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 2019 fall, 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 2019 fall, 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 2019 fall, 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 a 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 2019 fall. 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.

PROGRAM 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. Four colleges used texting while five colleges used email as their mode of communication for the 2019 fall pilot. Table 1 summarizes 2019 fall pilot implementation across the colleges. Three colleges used texting while three colleges used email as their mode of communication for the 2020 fall pilot. Table 2 summarizes 2020 fall pilot implementation across the colleges.

Table 1. Pilot implementation in 2019 fall

College	Target population	Method	Software
College of the Canyons	First-time Promise students[4] attending the Counseling class	Emails, two-way	Email
East Los Angeles College	Mostly first-time students attending the Counseling 20[5] course	Emails, two-way	Email
Fullerton College	First-time students, Anaheim Pledge program[6] students	Texts, two-way	Mongoose Cadence
Merced College	Extended Opportunity Programs and Services[7] (EOPS) students	Texts, one-way	Regroup
Mission College	First-time and continuing students receiving support services through TRIO[8] (Upward Bound, Talent Search, and Student Support Service programs), EOPS, Puente[9] , and the California College Promise.	Texts, one-way	SlickText

[4] The California Promise provides tuition assistance for qualifying students.

[5] 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.

[6] 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.

[7] 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.

[8] 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.

[9] The Puente program typically provides support services to improve graduation and transfer rates to four-year colleges for low income, first generation Hispanic students.

Moorpark College	First-year and continuing students receiving support services through the following programs: First-Year Experience[10] (FYE), EOPS, and Collaborative for Hispanics in Higher Education and Student Success[11] (Project CHESS)	Texts, one-way	Regroup
Mount San Antonio College	Students enrolled in Counseling 1[12]	Emails, two-way	Email
West Valley College	First-time and continuing students receiving services through TRIO, Upward Bound, Talent Search, and Student Support Service programs as well as freshmen students from the First-Year Experience Program College Success Counseling classes	Emails, two-way	Email
Yuba College	Umoja[13] and Puente participants	Emails, two-way	Remind 101

Table 2. Pilot implementation in 2020 fall

College	Target population	Method	Software
Cerritos College	CalWORKs, Care, LINC (foster youth)	Texts, two-way	Remind Me
East Los Angeles College	Mostly first-time students attending the Counseling 40 course	Emails, two-way	Email
Fullerton College	First-time students in the Promise programs	Texts, two-way	Mongoose Cadence
Mission College	All students	Texts, one-way	SlickText
West Valley College	TRIO students at workshops	Emails	Canvas
Yuba College	EOPS students	Emails, two-way	Colleague Communication Management System

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[10] The FYE program provides academic, career, and personal counseling; priority registration and transfer assistance; and access to special activities and workshops.

[11] Project CHESS is designed to support the transition of Hispanic students to four-year programs.

[12] Counseling 1 is an introduction to college course providing an orientation to college life and educational resources along with education and degrees planning.

[13] 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

2019 fall cohort

The 2019 fall pilot at the nine participating colleges targeted a total of 864 students. The pilots at the colleges varied considerably by size, ranging from 12 students at Merced College to 296 students at Moorpark College.

Figure 4. 2019 fall pilot size by college
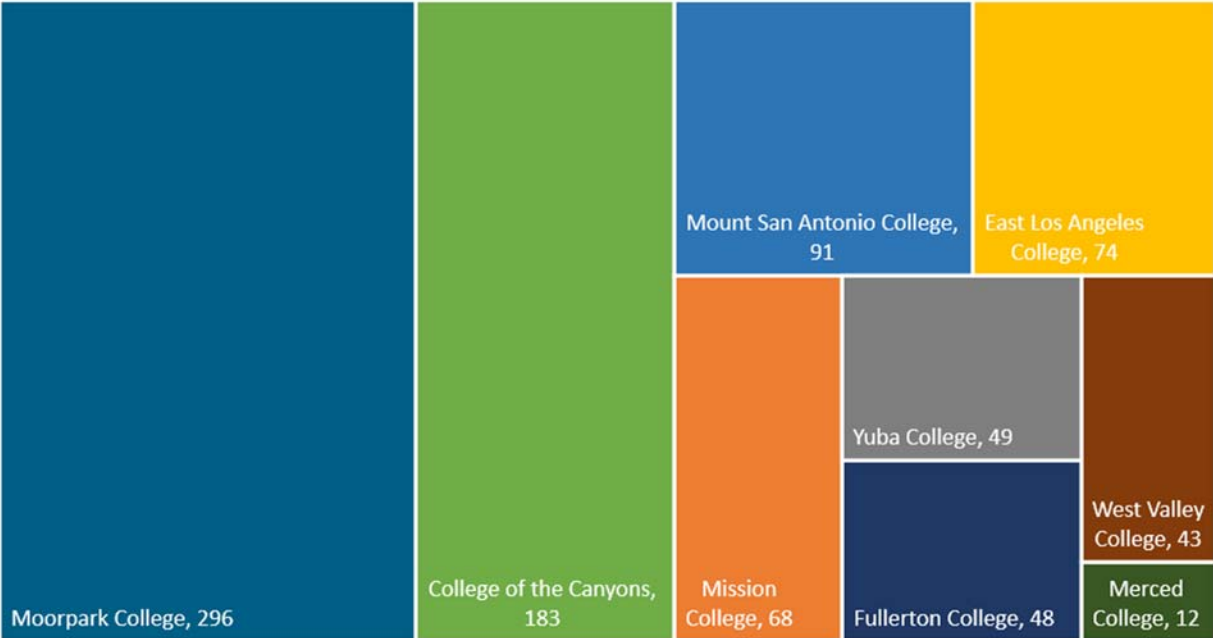
Of the 864 targeted students, 79 percent opted-in to the 2019 fall pilot. Of the 683 students who opted into the 2019 fall pilot, a total of 24 students provided inaccurate contact information and hence did not receive the financial literacy messages. Thus, our analysis of the 2019 fall pilot includes 659 students in the treatment group who opted-in and received messages and 205 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 5. 2019 fall pilot opt-in rates by college
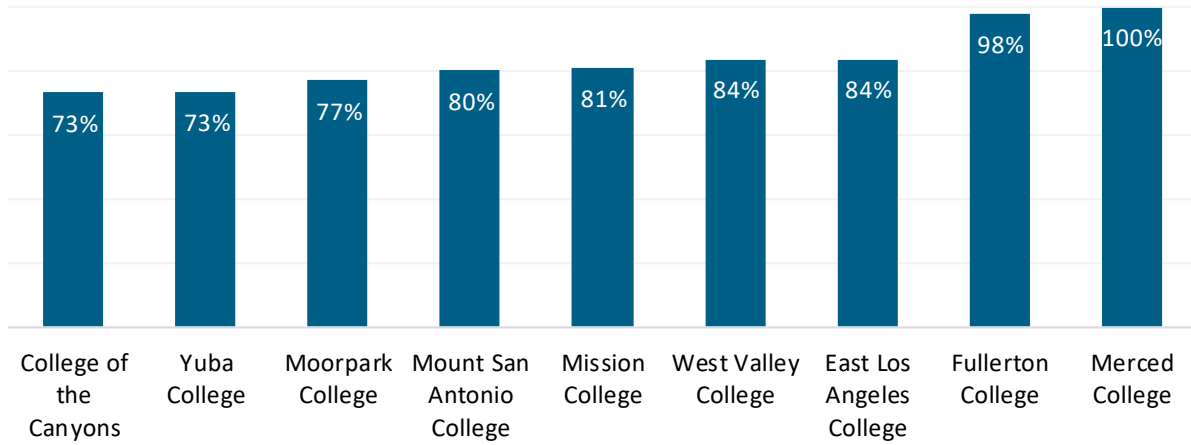
2020 fall cohort

The 2020 fall pilot at the four participating colleges targeted a total of 464 students. The pilots at the colleges varied considerably by size, ranging from 5 students at Fullerton College to 348 students at Yuba College.

Figure 6. 2020 fall pilot size by college

Of the 489 targeted students, 39 percent opted-in to the 2020 fall pilot. Thus, our analysis of the 2020 fall pilot includes 191 students in the treatment group who opted-in and received messages and 298 students in the comparison group who did not receive messages. Opt-in rates varied considerably across the colleges, ranging from a low of 20 percent at Yuba College to a high of 100 percent at Cerritos College and West Valley College.

Figure 7. 2020 fall pilot opt-in rates by college
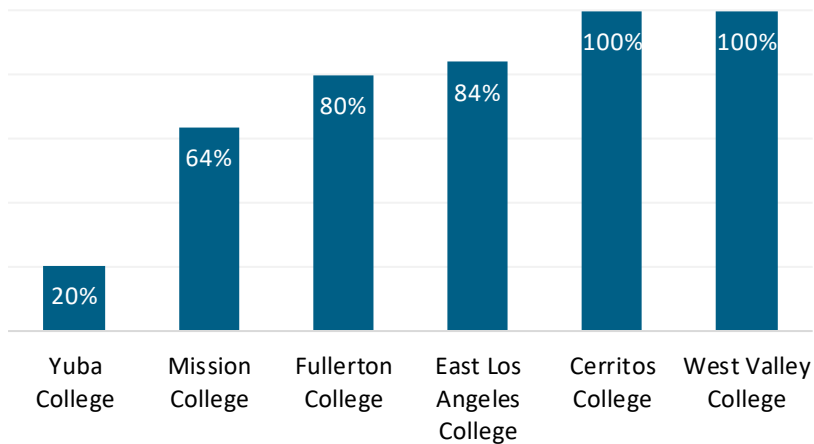
DEMOGRAPHIC CHARACTERISTICS

2019 fall cohort

Figure 8 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. A little over a tenth of students in both groups were Asian.

Table 3 lists student characteristics for the 864 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. 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 fifth of students received EOPS services.

Figure 8 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. A little over a tenth of students in both groups were Asian.

Table 3. 2019 fall target population characteristics

All CCCCO FL Pilot colleges	All students N = 864
% 21 or older	10%
% Female	54%
% Hispanic	60%
% Asian	12%
% Black	5%
% White	30%
% first-time college student	75%
% first-generation college student	29%
% disabled students	11%
% EOPS students	19%
% received financial aid	71%

Figure 8. Demographic characteristics by opt-in status for the 2019 fall cohort
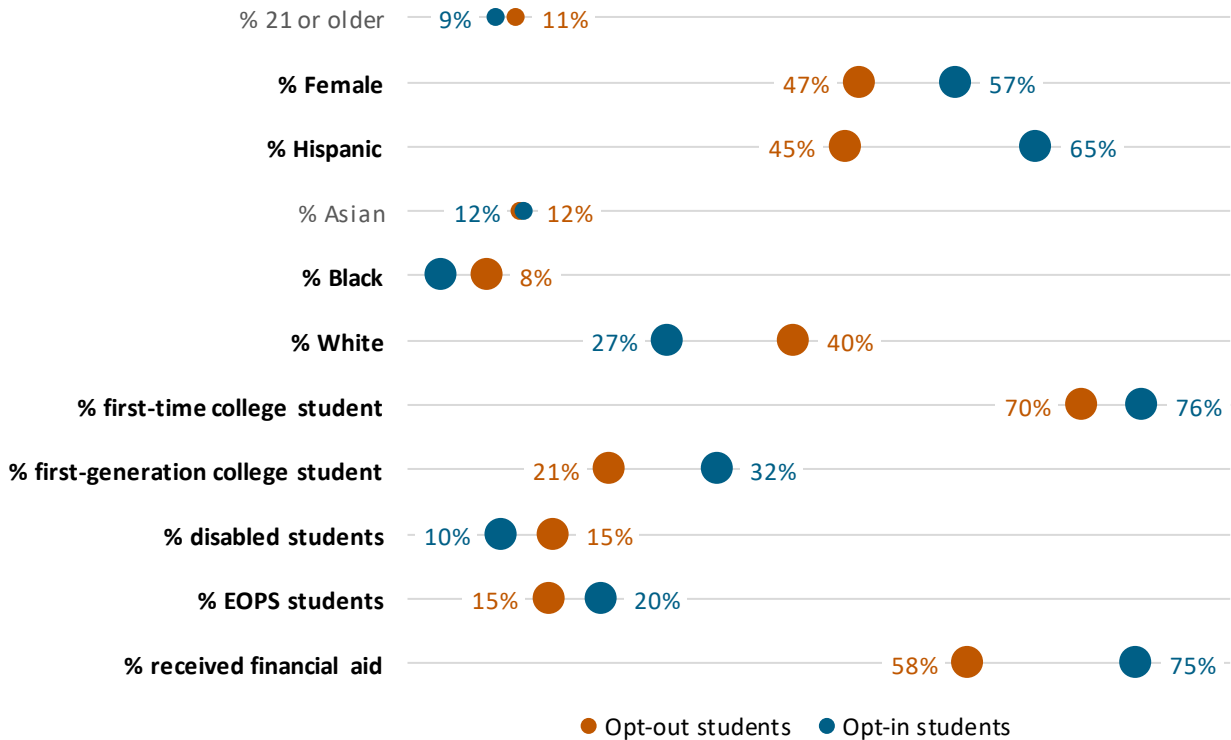
There are, however, major differences worth noting. The opt-in group had significantly higher proportions of female students and Hispanic students and significantly lower proportions of Black and White students, compared to the opt-out group. The opt-in group also had significantly higher proportions of first-time college students, 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.

2020 fall cohort

Table 4 lists student characteristics for the 489 students included in our analysis. About 40 percent of students were aged 21 or older. Nearly three-quarters of all students were female. Nearly a fifth of all students were White non-Hispanic while more than half were Hispanic. Only 16 percent of students were attending college for the first time. The vast majority of students received financial aid, while nearly three-quarters of students received EOPS services.

Table 4. 2020 fall target population characteristics

All CCCCO FL Pilot colleges	All students N=489
% 21 or older	41%
% Female	70%
% Hispanic	58%
% Asian	17%
% Black	4%
% White	17%
% first-time college student	16%
% disabled students	10%
% EOPS students	71%
% received financial aid	86%

Figure 9 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. Nearly two-thirds of students in both groups were female. Less than a fifth of students in both groups were first-time college students. About a tenth of students in both groups were students with a disability. The vast majority of students in both groups received financial aid.

There are, however, major differences worth noting. The opt-in group had significantly higher proportions of Hispanic students and significantly lower proportions of Asian students, compared to the opt-out group. The opt-in group also had significantly lower proportions of EOPS students. It is thus necessary to account for these differences in characteristics between the two groups when comparing outcomes for the two groups.

Figure 9. Demographic characteristics by opt-in status for the 2020 fall cohort

Characteristic	Opt-in	Opt-out
% 21 or older	38%	44%
% Female	69%	70%
% Hispanic	70%	50%
% Asian	10%	21%
% Black	3%	5%
% White	14%	19%
% first-time college student	17%	14%
% disabled students	10%	10%
% EOPS students	46%	87%
% received financial aid	88%	84%

● Opt-out students   ● Opt-in students
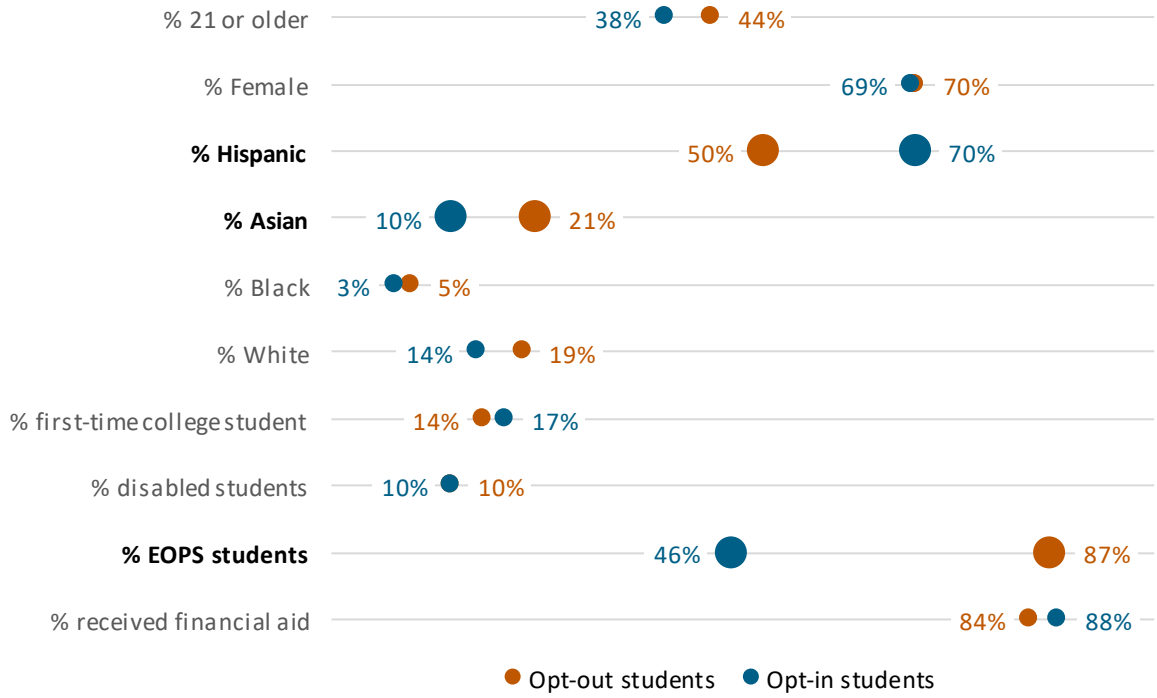
PROGRAM OUTCOMES

In this final report, we examine short-term outcomes including first-semester GPA, first-semester academic standing, and fall-to-spring retention. We also examine long-term outcomes including first-year GPA, first-year academic standing, fall-to-fall retention, and credential attainment. Outcomes for the opt-in students in the 2019 fall cohort are compared with outcomes for the opt-out students in Table 5 and statistically significant differences are identified with a bold font.

Table 5. Overall outcomes for the 2019 fall cohort

All CCCCO FL Pilot colleges	Opt-out students	Opt-in Students
	N=205	N=657
Average GPA in Fall 2019	**2.6**	**2.9**
% in good academic standing at the end of Fall 2019	**78%**	**86%**
% enrolled in Spring 2020	**85%**	**91%**
Average GPA in 2019-2020	**2.6**	**2.8**
% in good academic standing at the end of 2019-2020	83%	85%
% enrolled in Fall 2020	74%	78%
% earned any credential	4%	3%

Overall, opt-in students who received the financial literacy messages in the 2019 fall pilot 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. There also does not appear to be any significant difference in credential attainment between the two groups at the end of their first year.

Table 6 summarizes outcomes for the 2020 fall pilots. Overall, there appear to be no significant differences in academic and retention outcomes at the end of the first semester between opt-in students who received the financial literacy messages in the 2020 fall pilot and opt-out students who did not receive the messages.

Table 6. Overall outcomes for the 2020 fall cohort

All CCCCO FL Pilot colleges	Opt-out students N=298	Opt-in Students N=191
Average GPA in Fall 2019	2.7	2.5
% in good academic standing at the end of Fall 2019	91%	86%
% enrolled in Spring 2020	84%	86%

The results presented in Table 5 and Table 6 are descriptive and do not control for differences in demographic characteristics between the opt-out and opt-in groups. The impact analysis in the next chapter accounts for the differences in the demographic differences between the two groups documented in Figure 8 between the two groups.

Outcomes varied by college (see Appendix F). However, 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 groups at individual colleges cannot be interpreted meaningfully.

PROGRAM IMPACTS

IMPACT ANALYSIS METHODOLOGY

The treatment group included all students who opted-in to receive the financial literacy messages at the 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 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 (1988) 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.

2019 fall cohort

After matching, the evaluation team first estimated program impacts on key outcomes for all students in

the 2019 fall cohort (see Table 7). PSM models found that the 2019 fall pilot had small but significant positive impacts on academic outcomes in the semester that the 2019 fall pilot was implemented. The treatment group had an average GPA of 2.8 in the 2019 fall semester, compared to an average GPA of 2.5 for the matched comparison group - a statistically significant 0.3-point difference. Also, 86% of the treatment group were in good academic standing at the end of the 2019 fall semester, compared to only 76% of the matched comparison group - a statistically significant 11 percentage point difference. However, PSM models found no significant impacts on retention or credential attainment overall.

Table 7. Program impacts for the 2019 fall cohort

All students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P>|z|	Effect size
Average GPA in Fall 2019	2.6	2.9	0.3	0.11	**0.009**	0.3
% in good academic standing at end of Fall 2019	76%	86%	11%	5%	**0.034**	0.3
% enrolled in Spring 2020	86%	91%	4%	3%	0.187	0.2
Average GPA in 2019-2020	2.6	2.8	0.2	0.10	0.085	0.2
% in good academic standing at end of 2019-2020	85%	85%	-1%	3%	0.846	0.0
% enrolled in Fall 2020	74%	78%	4%	5%	0.373	0.1
% earned a credential	1%	3%	2%	1%	0.123	0.1

Next, the evaluation team estimated the impacts of participation in the 2019 fall 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. For financial aid recipients, we found evidence of program impact on 2019 fall GPA and 2019 fall academic standing, but no impacts on other outcomes. For first-time students, we found evidence of program impact on 2019 fall GPA and fall-to-spring retention, but no impacts on other outcomes. PSM models found evidence of program impacts on 2019 fall academic standing and fall-to-spring retention for female students.

Table 8. Program impacts for financial aid students in the 2019 fall cohort

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	0.13	**0.021**	0.3
% in good academic standing at end of Fall 2019	75%	88%	13%	6%	**0.026**	0.4
% enrolled in Spring 2020	85%	92%	7%	5%	0.133	0.3
Average GPA in 2019-2020	2.6	2.8	0.2	0.13	0.182	0.2
% in good academic standing at end of 2019-2020	87%	85%	-2%	4%	0.651	-0.1
% enrolled in Fall 2020	75%	80%	6%	5%	0.302	0.2
% earned a credential	1%	3%	2%	1%	0.214	0.1

Table 9. Program impacts for first-time college students in the 2019 fall cohort

First-time students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P>|z|	Effect size
Average GPA in Fall 2019	2.6	2.9	0.3	0.13	**0.027**	0.3
% in good academic standing at end of Fall 2019	81%	86%	5%	5%	0.319	0.2
% enrolled in Spring 2020	82%	91%	9%	4%	**0.050**	0.3
Average GPA in 2019-2020	2.6	2.8	0.2	0.14	0.127	0.2
% in good academic standing at end of 2019-2020	89%	85%	-4%	4%	0.263	-0.1
% enrolled in Fall 2020	71%	80%	8%	5%	0.102	0.2
% earned a credential	1%	1%	0%	1%	0.744	0.0

Table 10. Program impacts for Hispanic students in the 2019 fall cohort

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	0.4	0.16	**0.012**	0.5
% in good academic standing at end of Fall 2019	77%	86%	10%	6%	0.091	0.3
% enrolled in Spring 2020	84%	89%	6%	5%	0.257	0.2
Average GPA in 2019-2020	2.4	2.7	0.3	0.16	0.073	0.3
% in good academic standing at end of 2019-2020	87%	83%	-4%	4%	0.409	-0.1
% enrolled in Fall 2020	68%	76%	8%	6%	0.212	0.2
% earned a credential	1%	3%	2%	1%	0.044	0.2

Table 11. Program impacts for female students in the 2019 fall cohort

Female students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P>|z|	Effect size
Average GPA in Fall 2019	2.7	2.9	0.2	0.15	0.203	0.2
% in good academic standing at end of Fall 2019	77%	88%	11%	6%	**0.052**	0.4
% enrolled in Spring 2020	81%	92%	11%	5%	**0.031**	0.4
Average GPA in 2019-2020	2.7	2.8	0.1	0.17	0.431	0.1
% in good academic standing at end of 2019-2020	84%	87%	2%	4%	0.520	0.1
% enrolled in Fall 2020	70%	82%	12%	6%	0.060	0.3
% earned a credential	2%	3%	1%	1%	0.303	0.1

2020 fall cohort

Next, the evaluation team estimated program impacts on key outcomes for all students in the 2020 fall cohort (see Table 12). PSM models found a statistically significant program impact on 2020 fall GPA for the pilot overall. Subgroup analyses also found evidence of program impact for students receiving financial aid. Opt-in students receiving financial aid had an average GPA of 2.6 in the 2020 fall semester, compared to an average GPA of 2.1 for the matched comparison group - a statistically significant 0.5-point difference. Also, 90 percent of opt-in students receiving financial aid returned in the spring 2020 semester, compared to only 72% of the matched comparison group - a statistically significant 13 percentage point difference. However, PSM models found no statistically significant impacts for other sub-groups: returning students, Hispanic students, and female students.

Table 12. Program impacts for the 2020 fall cohort

All students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P>|z|	Effect size
Average GPA in Fall 2020	2.1	2.5	0.4	0.19	**0.027**	0.4
% in good academic standing at end of Fall 2020	87%	86%	-1%	6%	0.852	0.0
% enrolled in Spring 2021	76%	86%	10%	7%	0.124	0.4

Table 13. Program impacts for continuing students in the 2020 fall cohort

Continuing students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P>|z|	Effect size
Average GPA in Fall 2020	2.1	2.5	0.4	0.22	0.057	0.4
% in good academic standing at end of Fall 2020	86%	88%	2%	7%	0.761	0.1
% enrolled in Spring 2021	72%	84%	13%	8%	0.115	0.4

Table 14. Program impacts for financial aid students in the 2020 fall cohort

Financial aid students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P>|z|	Effect size
Average GPA in Fall 2020	2.2	2.6	0.5	0.21	**0.026**	0.4
% in good academic standing at end of Fall 2020	92%	87%	-5%	4%	0.189	-0.2
% enrolled in Spring 2021	75%	90%	15%	7%	**0.034**	0.5

Table 15. Program impacts for Hispanic students in the 2020 fall cohort

Hispanic students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P>|z|	Effect size
Average GPA in Fall 2020	1.9	2.4	0.5	0.26	0.061	0.4
% in good academic standing at end of Fall 2020	83%	88%	4%	7%	0.565	0.1
% enrolled in Spring 2021	73%	85%	13%	9%	0.159	0.4

Table 16. Program impacts for female students in the 2020 fall cohort

Female students	Matched Comparison Group Mean	Treatment Group Mean	Difference	S.E.	P>|z|	Effect size
Average GPA in Fall 2020	2.3	2.6	0.3	0.24	0.170	0.3
% in good academic standing at end of Fall 2020	89%	87%	-2%	5%	0.691	-0.1
% enrolled in Spring 2021	78%	87%	9%	8%	0.264	0.3

DISCUSSION

KEY FINDINGS

Our final report builds upon and extends the analyses presented in our interim report and Year 1 report. The interim report included seven colleges participating in the 2019 fall pilot while the Year 1 report included eight colleges (with the addition of East Los Angeles College). This final report includes nine colleges participating in the 2019 fall pilot (with the addition of College of the Canyons) also includes six colleges in the 2020 fall pilot. The analysis presented in this final report includes 864 students participating in the 2019 fall pilot and 489 students participating in the 2020 fall pilot. Thanks to the increased sample size, we were also able to examine impacts for multiple sub-groups in this final report.

Our final analysis of both pilots found that overall, the financial literacy messaging campaign had small but positive impacts on academic outcomes in the semester that the pilot was implemented in, but no impacts on longer-term academic outcomes, retention outcomes, and credential attainment outcomes. Our sub-group analyses found that the financial literacy messaging campaign also had a positive impact on fall-to-spring retention for first-time students and female students in the fall 2019 cohort, and financial aid students in the fall 2020 cohort. 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).

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 2020 fall 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 CHESS, student success courses, etc. Receipt of such support services would have better informed the impact analysis.

Sample size

The financial literacy messaging campaign was designed to be implemented as pilots by participating colleges. Pilot studies are intended to be small-scale and preliminary studies whose aim is to investigate

whether crucial components of the intervention are feasible. However, this design poses methodological challenges to evaluating program impact. The evaluation had a relatively small sample size of 864 students in the 2019 fall pilot with only 205 students in the comparison group pool. This modest sample size limits our ability to detect program impact as well as study how impacts differ by demographic characteristics. We could not conduct subgroup analyses for White students, 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 in the 2019 fall pilot). 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.

DISCUSSION

Our findings suggest that the financial literacy pilot had some impact on immediate outcomes like first-semester GPA, first-semester academic standing, and fall-to-spring retention, but no impact on longer-term outcomes like first-year GPA, fall-to-fall retention, and credential attainment. Below, we discuss various factors that may have played a role.

Existing supports

For students who started college in fall 2011 at public two-year institutions, the persistence rate was 57.9 percent nationwide (National Student Clearinghouse, 2020b), compared to 76.5 percent in California (CCCCO Datamart, 2020). California community colleges have strong student support programs in place, including the Extended Opportunity Programs and Services (EOPS) for students disadvantaged by social, economic, educational, or linguistic barriers; the Cooperative Agencies Resources for Education (CARE) program for EOPS students who are single parents receiving public

assistance; the NextUp/Guardian Scholar program for current or former foster youth; the Disabled Student Programs and Services (DSPS) for students with disabilities; and, the California Work Opportunity and Responsibility to Kids (CalWORKs) program for students on public assistance. In the presence of these existing academic supports and student services, students may not have been particularly receptive to the FL pilot.

Length of intervention

The messaging intervention in this pilot was designed to be short with messages delivered over 10 weeks in the fall semester. Thus, it is perhaps not surprising that we see impacts on immediate outcomes like fall GPA, fall academic standing, and fall-to-spring retention but no impacts on outcomes in the following semesters.

Mode of intervention

About half of all participating colleges used email instead of texting as their mode of communication for the pilot. Recent research suggests that texts are better suited for messaging campaigns targeted at college students. Texting is a communication channel that most young people engage with daily (Lenhart, 2012). Texts are accompanied by alert notifications and this attention-grabbing feature can be leveraged to nudge students to complete important actions before their attention is diverted (Castleman & Mayer, 2020). The use of emails as the mode of communication by many of the participating colleges may have impacted the potency of the messaging campaign.

Delivery at scale

More recent research has found that large-scale interventions that are predominately "light-touch" and information-driven did not significantly impact student success (Bergman et al., 2019; Bird et al., 2019; Oreopoulos & Petronijevic, 2019; Page et al., 2019). Researchers have posited that the salience and value of the messaging campaign may be diluted when an intervention is delivered broadly. Another potential limitation of a global approach to scale is that messages are primarily generic and one-way, so students lack a more direct relationship with the sender.

The messaging campaign in this pilot was designed by CCCCO's consultants to be delivered consistently across colleges with no college-specific customization allowed. While this enhanced the fidelity of program implementation across colleges, the generic nature of the messages lacked local college and community context, such as connecting students to campus-based resources. A few colleges reported

using two-way communication but receiving little to no responses from students, suggesting a lack of relationship between sender and recipients.

Focus of intervention

Research in the last decade has found that low-cost, technological solutions such as text-based outreach show promise for supporting students in overcoming barriers that hinder college enrollment, retention, and completion (Castleman & Page, 2015; Castleman & Page, 2016; Bird & Castleman, 2016; Castleman & Page, 2017). Such interventions usually focus on behavioral nudging, message framing, and logistical guidance, such as reminding students about important college and financial aid tasks as well as offering students the opportunity to connect one-on-one with a financial aid counselor for assistance.

The messaging campaign in this pilot built in these best practices including nudging, framing, and guidance; however, the campaign focused on boosting financial literacy, with a specific focus on providing information about improving credit and utilizing budgets. Nudges, prompts, and reminders in the messages did not connect the student to college-specific tasks and deadlines related to enrollment, academics, and financial aid.

CONCLUSION

The CCCCO financial literacy messaging campaign was designed to be implemented as pilots by individual colleges. The pilots achieved their purpose of demonstrating the feasibility of implementing such an intervention. Participating colleges gained knowledge and experience on (1) the content of messages to include in such a messaging campaign, (2) methods and approaches for targeting and recruiting students, (3) methods and systems to communicate with students, and (4) methods and approaches to tracking outcomes for participating students.

Our evaluation has demonstrated that the messaging campaign had small but statistically significant impacts on academic and retention outcomes in the semester that the intervention was implemented. These results can serve as an impetus for colleges to scale up and expand their financial literacy messaging campaign while adopting evidence-based best practices. Based on our review of current literature and the results from this pilot, we make the following recommendations for colleges considering implementing a financial literacy messaging campaign:

- Target first-time and/or financial aid students to receive the intervention.

- Use a texting platform to send financial literacy messages.

- During recruitment, prime students by specifying the type of information the student will receive and who will be sending the text message.

- Conduct the intervention over the entire fall semester with salient messages sent twice a week.

- Personalize and tailor messages to avoid genericness and build trust between the recipients and the sender.

- Include links to local campus resources (e.g., phone number, email or website for college scholarships, FAFSA filing resources, financial aid workshops, etc.) in the messages.

- In addition to providing broad financial literacy information, use nudges, prompts, and reminders in the messages to connect students to college-specific tasks and deadlines e.g., registering for classes, re-filing FAFSA, applying for scholarships, etc.

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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!

[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.

[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.

[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, but you will also 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.]

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) ensure 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:
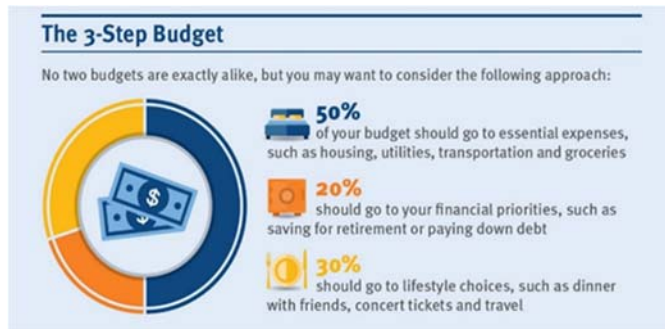
NerdWallet (nerdwallet.com) provides a free budget worksheet and allows you to check the boxes for college student, parent, homeowner and more and then enter your income and expenses. It breaks expenses into necessities and wants. In addition, it provides the opportunity to consider savings and debt 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.

[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.

[The FASFA is the first step to getting financial assistance for college. The FASFA is the link between ink 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 hand 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. 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. OUTCOMES BY COLLEGE
OUTCOMES BY COLLEGE FOR THE 2019 FALL COHORT

GPA

Figure E-1. Average first-semester GPA for the 2019 fall cohort, by college and opt-in status

College	Opt-out	Opt-in
College of the Canyons	2.7	3.0
East Los Angeles College	2.0	2.3
Merced College		2.4
Fullerton College		2.6
Mission College	2.7	3.2
Moorpark College	2.9	2.9
Mount San Antonio College	2.0	2.8
West Valley College	2.4	3.1
Yuba College	1.5	2.7

● Opt-in students   ● Opt-out students
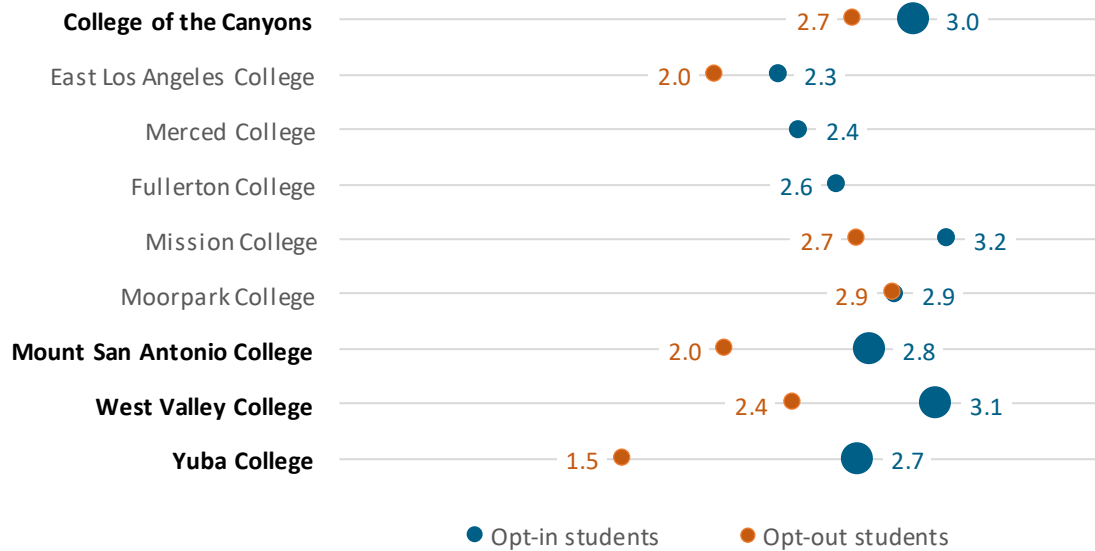
Figure E-2. Average first-year GPA for the 2019 fall cohort, by college and opt-in status

College	Opt-out	Opt-in
College of the Canyons	2.7	2.9
East Los Angeles College	2.0	2.2
Merced College		2.5
Fullerton College		2.4
Mission College	2.7	3.1
Moorpark College	2.9	2.9
Mount San Antonio College	2.0	2.9
West Valley College	2.4	3.1
Yuba College	1.5	2.4

● Opt-in students   ● Opt-out students
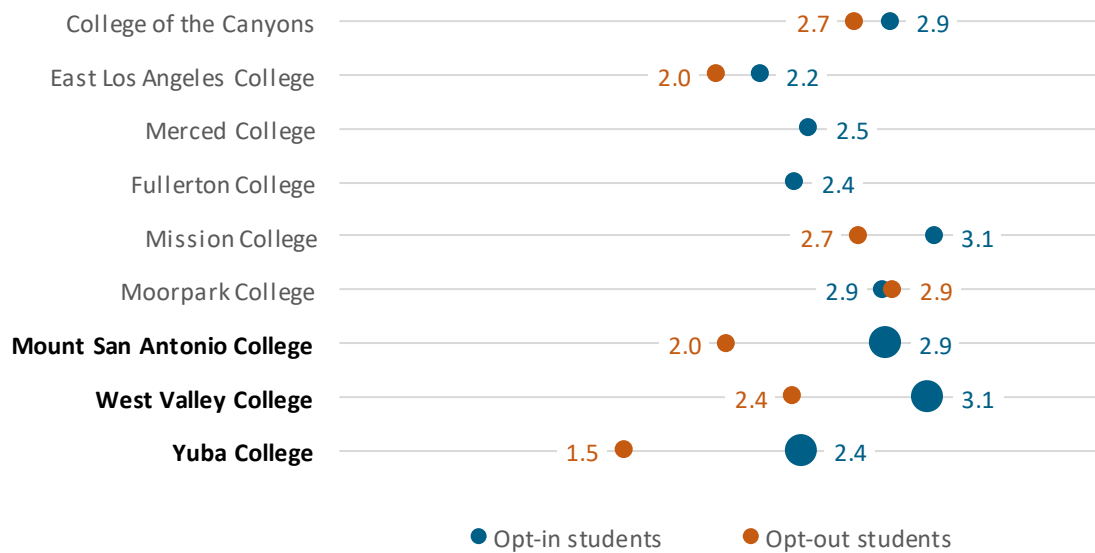
Academic standing

Figure E-3. Percent in good academic standing at the end of 2019 fall, by college and opt-in status
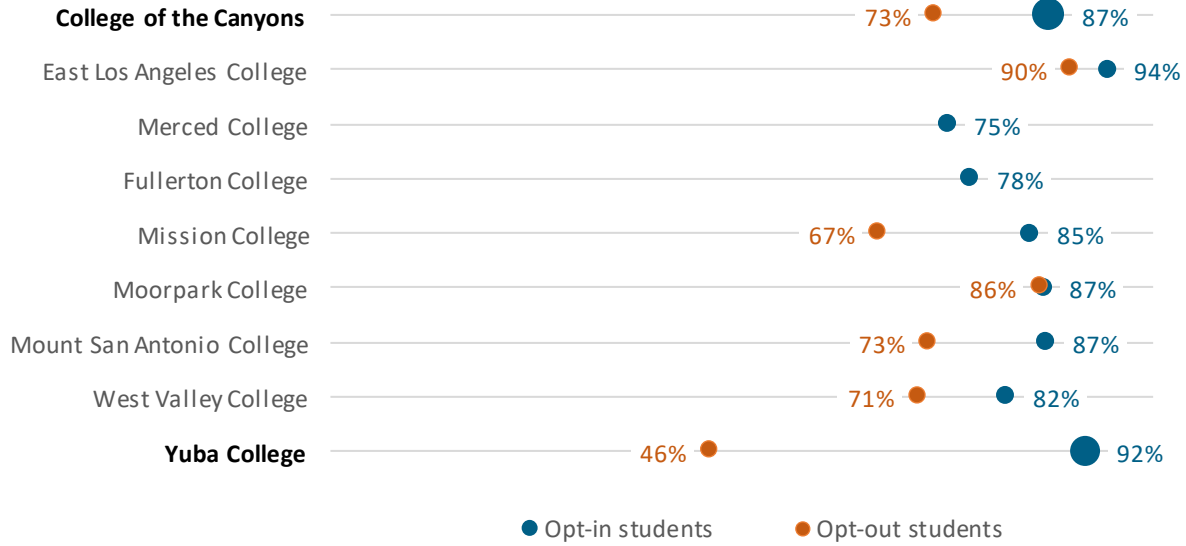
Figure E-4. Percent in good academic standing at the end of 2019-2020, by college and opt-in status
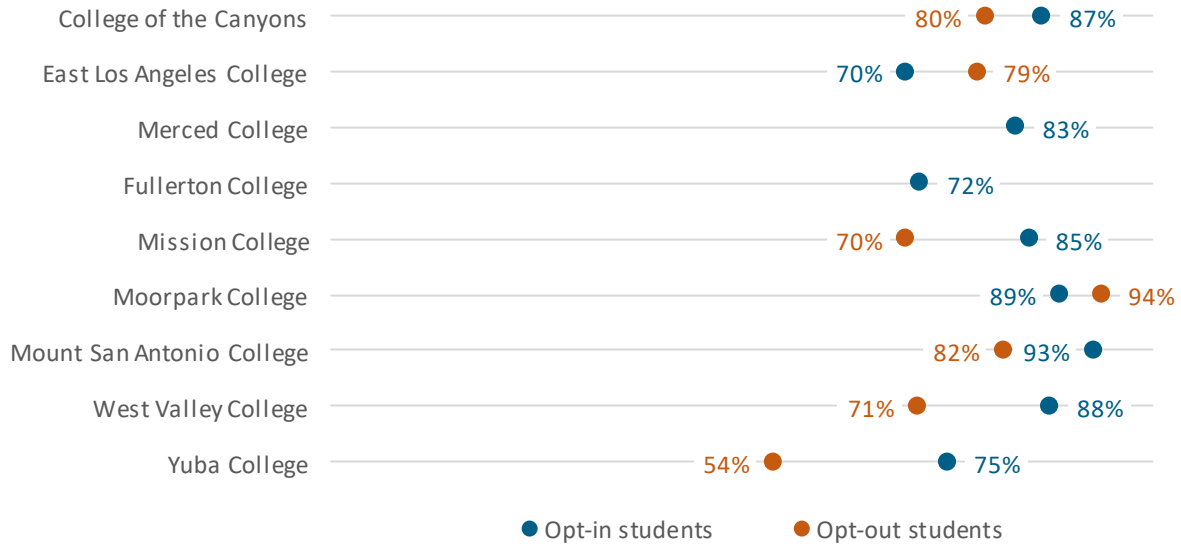
Retention

Figure E-5. Fall-to-spring retention rates for the 2019 fall cohort, by college and opt-in status
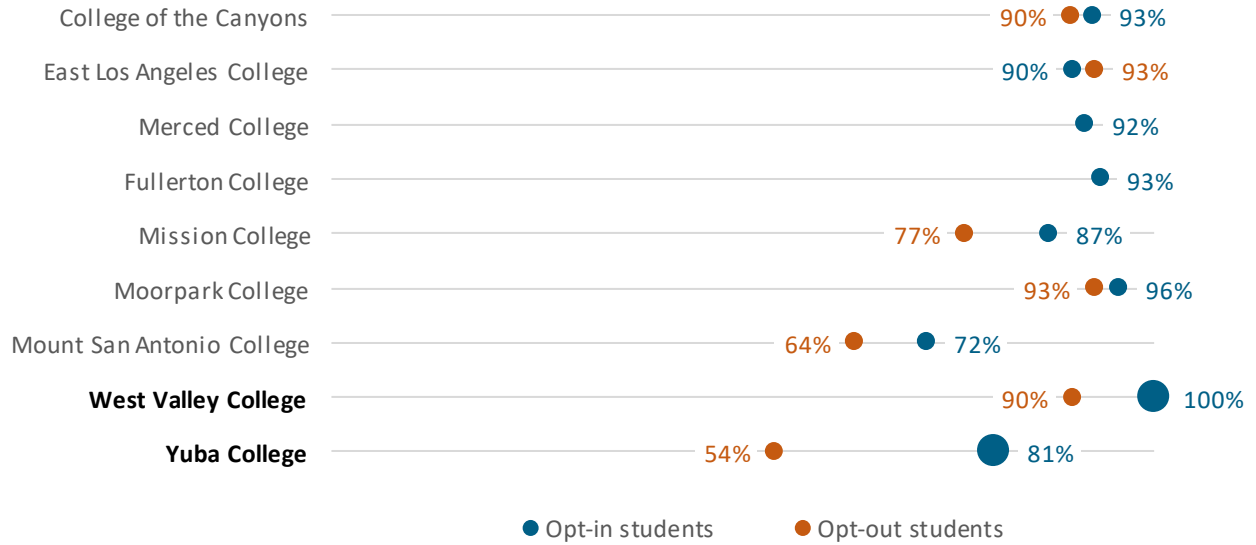
Figure E-6. Fall-to-fall retention rates for the 2019 fall cohort, by college and opt-in status
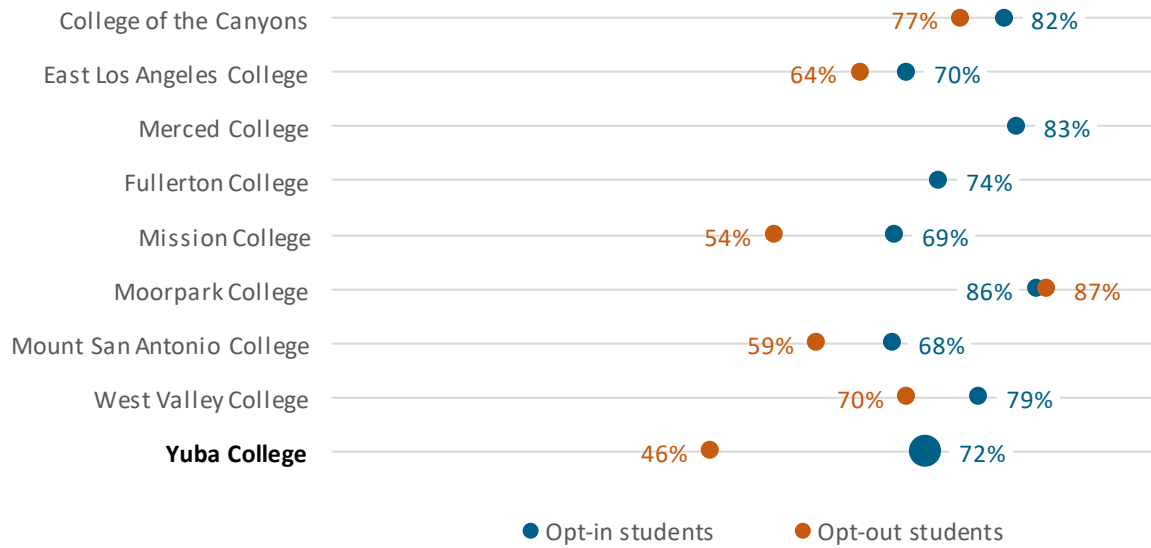
OUTCOMES BY COLLEGE FOR THE 2020 FALL COHORT

GPA

Figure E-7. Average first-semester GPA for the 2020 fall cohort, by college and opt-in status

College	Opt-in students	Opt-out students
Cerritos College	2.8	
East Los Angeles College	2.4	2.0
Yuba College	2.5	2.7
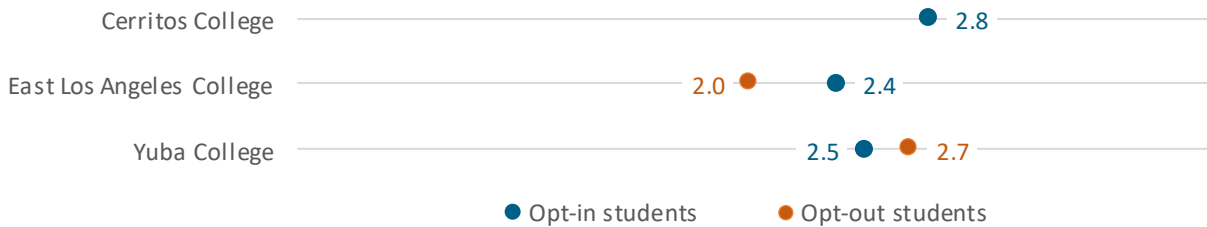
Figure E-3. Percent in good academic standing at the end of 2020 fall, by college and opt-in status

College	Opt-in students	Opt-out students
Cerritos College	88%	
East Los Angeles College	93%	100%
Yuba College	82%	91%
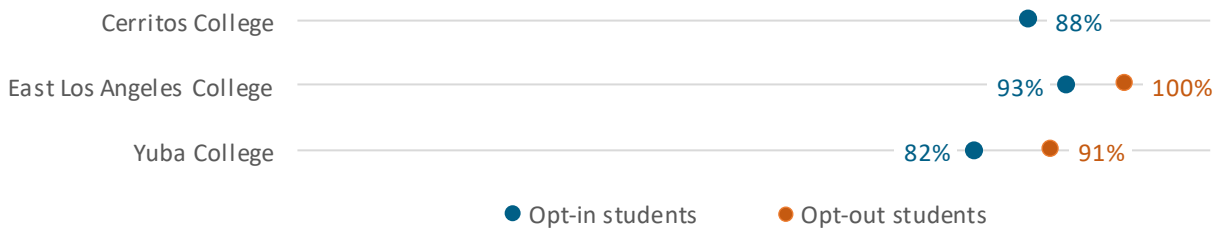
Figure E-9. Fall-to-spring retention rates for the 2019 fall cohort, by college and opt-in status

College	Opt-in students	Opt-out students
Cerritos College	94%	
East Los Angeles College	85%	75%
Yuba College	83%	85%
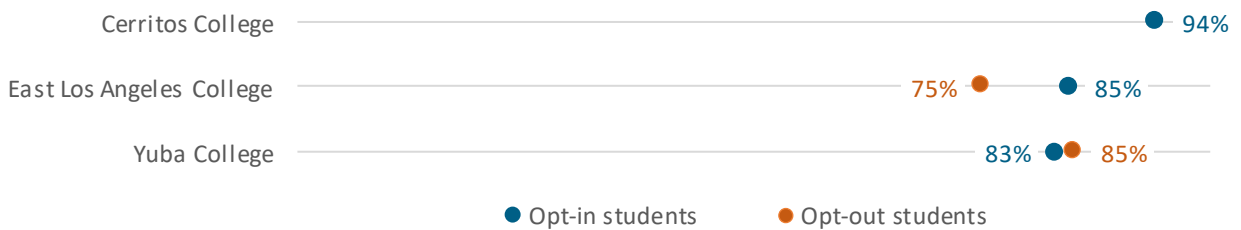
APPENDIX F. PROPENSITY SCORE MATCHING

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 *pscore* 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. Figure D-1 illustrates common support in the PSM model examining impacts on fall-to-fall retention for all students in the 2019 fall cohort.

Figure D-1. Common support in the PSM model examining impacts on fall-to-fall retention for all students in the 2019 fall cohort
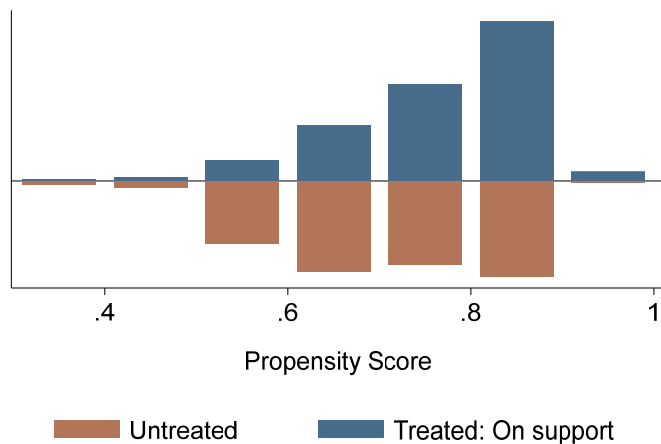
STEP 2: MATCHING

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[14] for all covariates is less than 5%, (2) t-

---

[14] 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[15], (4) the likelihood-ratio test[16] is non-significant, (5) the mean and median absolute bias are less than 5%, (6) Rubin's B[17] is close to 0, and (7) Rubin's R[18] is close to 1. Figure D-2 shows the standardized percentage bias for each covariate using a dot chart for the PSM model examining impacts on fall-to-fall retention for all students in the 2019 fall cohort.

Figure D-2. Individual covariate balance for the PSM model examining impacts on fall-to-fall retention for all students in the 2019 fall cohort
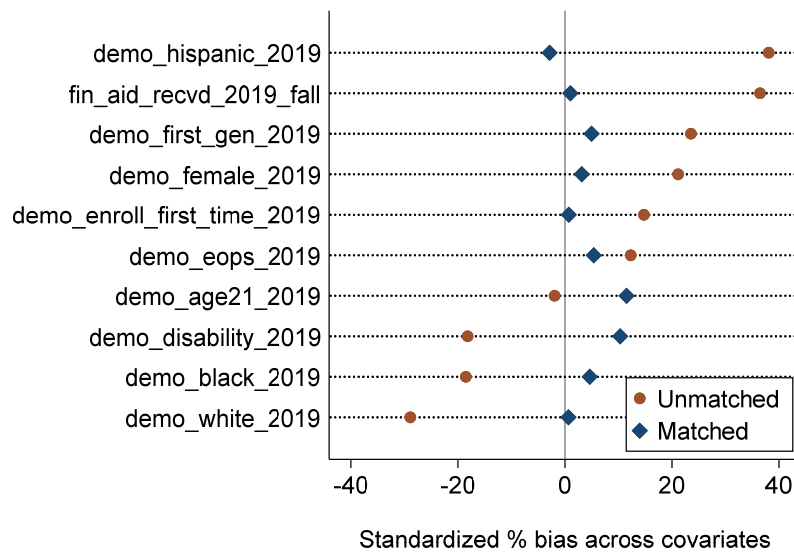
Thus, while the differences between the treatment group and the comparison group pool in observable characteristics were documented to be substantial in the unmatched sample, the evaluation team's matching approach (nearest neighbor matching with replacement) achieved satisfactory balance in all observable 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.

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[15] The pseudo-R2 indicates how well the regressors X explain the participation probability.

[16] the likelihood-ratio test of the joint insignificance of all the regressors

[17] Rubin's B is the standardized difference in mean of the linear prediction of the propensity score before and after matching

[18] 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 G. COVARIATE BALANCE AFTER PSM

Table E-1. Covariate balance for all students in the 2019 fall cohort

```
-----------------------------------------------------------------------------------
                    Unmatched |      Mean            %reduct |    t-test    | V(T)/
Variable             Matched | Treated Control  %bias  |bias| |   t    p>|t| | V(C)
-----------------------------+-----------------------------------+--------------+----------
demo_age21_2019          U  |  .0854   .09091   -1.9          | -0.24  0.810 |   .
                         M  |  .08398  .05132   11.5  -493.2  |  2.33  0.020 |   .
                            |                                  |              |
demo_female_2019         U  |  .56988  .46465   21.1          |  2.61  0.009 |   .
                         M  |  .56921  .55365    3.1   85.2   |  0.56  0.574 |   .
                            |                                  |              |
demo_hispanic_2019       U  |  .65062  .46465   38.1          |  4.74  0.000 |   .
                         M  |  .65008  .66407   -2.9   92.5   | -0.53  0.597 |   .
                            |                                  |              |
demo_black_2019          U  |  .03727  .08081  -18.5          | -2.53  0.012 |   .
                         M  |  .03733  .02644    4.6   75.0   |  1.11  0.267 |   .
                            |                                  |              |
demo_white_2019          U  |  .27329  .40909  -28.9          | -3.65  0.000 |   .
                         M  |  .27372  .27061    0.7   97.7   |  0.13  0.900 |   .
                            |                                  |              |
demo_enroll_first_time_2019 U | .7764  .71212   14.7          |  1.86  0.064 |   .
                         M  |  .77605  .77294    0.7   95.2   |  0.13  0.894 |   .
                            |                                  |              |
demo_first_gen_2019      U  |  .31522  .21212   23.5          |  2.80  0.005 |   .
                         M  |  .31415  .29238    5.0   78.9   |  0.85  0.396 |   .
                            |                                  |              |
demo_disability_2019     U  |  .09627  .15657  -18.2          | -2.37  0.018 |   .
                         M  |  .09642  .06221   10.3   43.3   |  2.27  0.023 |   .
                            |                                  |              |
demo_eops_2019           U  |  .19255  .14646   12.3          |  1.47  0.142 |   .
                         M  |  .19129  .17107    5.4   56.1   |  0.94  0.347 |   .
                            |                                  |              |
fin_aid_recvd_2019_fall  U  |  .75466  .58586   36.4          |  4.65  0.000 |   .
                         M  |  .75428  .74961    1.0   97.2   |  0.19  0.847 |   .
                            |                                  |              |
-----------------------------------------------------------------------------------
* if variance ratio outside [0.86; 1.17] for U and [0.86; 1.17] for M


-----------------------------------------------------------------------------
 Sample    | Ps R2   LR chi2   p>chi2   MeanBias   MedBias     B      R     %Var
-----------+-----------------------------------------------------------------
 Unmatched | 0.057    52.55    0.000      21.4      19.8     59.5*   0.83     .
 Matched   | 0.008    13.66    0.189       4.5       3.9     20.5    1.58     .
-----------------------------------------------------------------------------
* if B>25%, R outside [0.5; 2]
```

Table E-2. Covariate balance for financial aid students in the 2019 fall cohort

```
-------------------------------------------------------------------------------
                    Unmatched |      Mean              %reduct |   t-test  | V(T)/
Variable            Matched | Treated Control   %bias   |bias|  |    t   p>|t| | V(C)
-----------------------------+---------------------------------+--------------+---------
demo_age19_2019          U  | .17695   .24138   -15.8           | -1.59  0.112 |   .
                         M  | .17355   .17149     0.5    96.8   |  0.08  0.932 |   .
                            |                                   |              |
demo_female_2019         U  | .59465   .50862    17.3           |  1.69  0.092 |   .
                         M  | .59711    .6095    -2.5    85.6   | -0.39  0.694 |   .
                            |                                   |              |
demo_hispanic_2019       U  | .71811   .59483    26.1           |  2.60  0.010 |   .
                         M  | .72107   .72521    -0.9    96.6   | -0.14  0.886 |   .
                            |                                   |              |
demo_black_2019          U  | .03292   .07759   -19.6           | -2.17  0.030 |   .
                         M  | .02893   .03512    -2.7    86.1   | -0.55  0.584 |   .
                            |                                   |              |
demo_enroll_first_time_2019 U | .76955   .7069    14.2          |  1.41  0.158 |   .
                         M  | .77273   .78099    -1.9    86.8   | -0.31  0.758 |   .
                            |                                   |              |
demo_first_gen_2019      U  |  .3642   .26724    20.9           |  1.98  0.049 |   .
                         M  |  .3657   .36157     0.9    95.7   |  0.13  0.894 |   .
                            |                                   |              |
demo_eops_2019           U  |  .2428   .24138     0.3           |  0.03  0.974 |   .
                         M  | .24174    .2314     2.4  -628.0   |  0.38  0.706 |   .
                            |                                   |              |
-------------------------------------------------------------------------------
* if variance ratio outside [0.84; 1.20] for U and [0.84; 1.20] for M


-----------------------------------------------------------------------------
Sample    | Ps R2   LR chi2   p>chi2   MeanBias   MedBias     B      R     %Var
----------+------------------------------------------------------------------
Unmatched | 0.027    16.09     0.024     16.3      17.3     42.2*   1.01     .
Matched   | 0.001     0.83     0.997      1.7       1.9      5.8    0.94     .
-----------------------------------------------------------------------------
* if B>25%, R outside [0.5; 2]
```

Table E-3. Covariate balance for first-time college students in the 2019 fall cohort

```
--------------------------------------------------------------------------------
                  Unmatched |      Mean                %reduct |     t-test    |  V(T)/
Variable           Matched | Treated Control   %bias    |bias|  |    t    p>|t| |  V(C)
---------------------------+----------------------------------+---------------+----------
demo_age19_2019        U |   .088    .10638    -6.2            |  -0.67  0.506 |    .
                       M |   .088      .072     5.4     13.0   |   0.93  0.352 |    .
                         |                                     |               |
demo_female_2019       U |   .564    .42553    27.9            |   2.93  0.004 |    .
                       M |   .564      .578    -2.8     89.9   |  -0.45  0.655 |    .
                         |                                     |               |
demo_hispanic_2019     U |   .636    .47518    32.7            |   3.47  0.001 |    .
                       M |   .636      .628     1.6     95.0   |   0.26  0.793 |    .
                         |                                     |               |
demo_first_gen_2019    U |   .344    .21277    29.5            |   2.98  0.003 |    .
                       M |   .344      .31      7.7     74.1   |   1.15  0.252 |    .
                         |                                     |               |
demo_disability_2019   U |   .07     .16312   -29.2            |  -3.43  0.001 |    .
                       M |   .07       .05      6.3     78.5   |   1.33  0.183 |    .
                         |                                     |               |
demo_eops_2019         U |   .15     .0922     17.8            |   1.76  0.078 |    .
                       M |   .15       .116    10.4     41.2   |   1.58  0.114 |    .
                         |                                     |               |
fin_aid_recvd_2019_fall U |  .748    .58156    35.7            |   3.89  0.000 |    .
                       M |  .748       .75     -0.4     98.8   |  -0.07  0.942 |    .
                         |                                     |               |
--------------------------------------------------------------------------------
* 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 | 0.053     36.01    0.000      25.6       29.2     57.5*   0.81     .
 Matched   | 0.005      6.50    0.483       4.9        5.4     16.1    1.45     .
--------------------------------------------------------------------------------
* if B>25%, R outside [0.5; 2]
```

Table E-4. Covariate balance for Hispanic students in the 2019 fall cohort

```
---------------------------------------------------------------------------------
                        Unmatched |       Mean              %reduct |    t-test    | V(T)/
Variable                Matched | Treated Control   %bias  |bias| |   t    p>|t| | V(C)
---------------------------------+------------------------------+----------------+---------
demo_age20_2019              U | .09069    .1413   -15.8           | -1.47  0.143 |    .
                            M | .09002   .06326     8.4    47.1 |  1.44  0.150 |    .
                              |                                  |              |
demo_female_2019            U | .60143   .42391    36.0           |  3.14  0.002 |    .
                            M | .59611   .55718     7.9    78.1 |  1.13  0.259 |    .
                              |                                  |              |
demo_white_2019            U | .11456   .19565   -22.5           | -2.11  0.036 |    .
                            M | .11436   .10462     2.7    88.0 |  0.45  0.655 |    .
                              |                                  |              |
demo_enroll_first_time_2019 U | .75895   .72826     7.0           |  0.62  0.537 |    .
                            M | .77372   .76156     2.8    60.4 |  0.41  0.680 |    .
                              |                                  |              |
demo_first_gen_2019        U | .40095   .32609    15.6           |  1.33  0.183 |    .
                            M | .39173   .42822    -7.6    51.3 | -1.06  0.288 |    .
                              |                                  |              |
fin_aid_recvd_2019_fall    U | .83294      .75    20.4           |  1.87  0.062 |    .
                            M | .83212   .82482     1.8    91.2 |  0.28  0.782 |    .
                              |                                  |              |
---------------------------------------------------------------------------------
* if variance ratio outside [0.83; 1.21] for U and [0.82; 1.21] for M


------------------------------------------------------------------------
 Sample    | Ps R2   LR chi2   p>chi2   MeanBias   MedBias    B     R     %Var
-----------+------------------------------------------------------------
 Unmatched | 0.036    17.39    0.008     19.5      18.1     48.5*  0.89    .
 Matched   | 0.005     5.93    0.431      5.2       5.2     17.0   1.02    .
------------------------------------------------------------------------
* if B>25%, R outside [0.5; 2]
```

Table E-5. Covariate balance for female students in the 2019 fall cohort

```
----------------------------------------------------------------------------------
                          Unmatched |      Mean            %reduct |   t-test    | V(T)/
Variable                  Matched | Treated Control  %bias  |bias| |   t    p>|t| | V(C)
----------------------------------+------------------------+------------+---------
demo_age20_2019               U  | .12032   .20833  -23.8          | -2.24  0.026 |    .
                              M  | .11796    .0992    5.1    78.7  |  0.82  0.411 |    .
                                 |                                 |              |
demo_hispanic_2019            U  | .68449   .40625   58.0          |  5.16  0.000 |    .
                              M  | .68633   .67292    2.8    95.2  |  0.39  0.695 |    .
                                 |                                 |              |
demo_white_2019               U  | .25401   .39583  -30.5          | -2.77  0.006 |    .
                              M  | .25201   .22252    6.3    79.2  |  0.95  0.344 |    .
                                 |                                 |              |
demo_enroll_first_time_2019  U  | .75401   .63542   25.9          |  2.34  0.020 |    .
                              M  | .75603    .7748   -4.1    84.2  | -0.60  0.546 |    .
                                 |                                 |              |
demo_first_gen_2019           U  | .32086   .21875   23.1          |  1.95  0.052 |    .
                              M  | .32172   .32708   -1.2    94.7  | -0.16  0.876 |    .
                                 |                                 |              |
demo_disability_2019          U  | .09091   .13542  -14.0          | -1.30  0.196 |    .
                              M  | .08847   .10188   -4.2    69.9  | -0.62  0.533 |    .
                                 |                                 |              |
fin_aid_recvd_2019_fall       U  | .79144   .63542   34.9          |  3.22  0.001 |    .
                              M  | .79357   .79625   -0.6    98.3  | -0.09  0.928 |    .
                                 |                                 |              |
----------------------------------------------------------------------------------
* if variance ratio outside [0.82; 1.23] for U and [0.82; 1.23] for M


-----------------------------------------------------------------------------
Sample      | Ps R2   LR chi2  p>chi2  MeanBias  MedBias    B      R    %Var
------------+----------------------------------------------------------------
Unmatched  | 0.070    33.54    0.000     30.0     25.9    67.3*  0.79    .
Matched    | 0.003     3.43    0.843      3.5      4.1    13.5   1.21    .
-----------------------------------------------------------------------------
* if B>25%, R outside [0.5; 2]
```