USING TECHNOLOGY TO REDESIGN COLLEGE ADVISING AND STUDENT SUPPORT

Findings and Lessons from Three Colleges' Efforts to Build on the iPASS Initiative

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DECEMBER 2020

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BUILDING KNOWLEDGE
TO IMPROVE SOCIAL POLICY

CCRC COMMUNITY COLLEGE
RESEARCH CENTER
TEACHERS COLLEGE, COLUMBIA UNIVERSITY

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OVERVIEW

College students have a better chance of succeeding in school when they receive high-quality advising. High-quality advising, when characterized by frequent communications between advisers and students, early outreach to students showing signs of academic or nonacademic struggles, and personalized guidance that addresses individual student needs, is ideal. It can be a crucial factor in student outcomes, academic and otherwise. But strained financial resources and personnel constraints at many community colleges and broad-access universities — where advisers often have large caseloads — means most students' advising experiences are limited to a handful of interactions that focus mostly on course registration.

Technology tools may help. Integrated Planning and Advising for Student Success (iPASS) is an initiative designed to help colleges redesign advising practices using technology. The iPASS goal is to use technology to support reforms aimed at improving communication and outreach to students, identifying and supporting struggling students, increasing the number and quality of advising sessions, and to ultimately improve students' short- and long-term academic outcomes.

To study how technology can support advising redesign, MDRC and the Community College Research Center partnered with three institutions already implementing iPASS that wanted to enhance their existing advising practices, including their standard iPASS services: California State University, Fresno; Montgomery County Community College in Pennsylvania; and the University of North Carolina at Charlotte. In general, the colleges focused their enhancements on three areas: expanding informational messages to students, identifying and supporting students who are struggling, and redesigning advising sessions. The study used a randomized controlled trial design, assigning students at random to a group eligible to receive the enhanced iPASS services for two semesters, or to a group eligible to receive the colleges' standard services, including standard iPASS. Thus, the study is not a test of iPASS, but a test of enhanced advising relative to standard practice under previous iPASS activities.

This final report from the project, which began in 2016, summarizes the program's implementation and its effects on students' academic outcomes for four semesters after study entry. The implementation research indicates that the enhancements led to a small difference in the student experience — the colleges saw an increase in communication with students, a small increase in the number of meetings between students and advisers, and, at two of the three colleges, an increase in the proportion of students who, along with their advisers, received early alerts if the student was struggling in a given course. However, the updated impact findings show the enhancements did not have positive effects on academic outcomes. Additionally, the enhancements caused a small reduction in credits earned at one college, most likely because some students could not register for the next semester until they had attended mandatory advising sessions.

Mounting evidence from the study of education reforms suggests improving students' academic outcomes requires more substantial changes to their college experiences. Reflecting a tension between scale and intensity, the study colleges managed to bring their iPASS work to more students, but the enhancements were not intense enough to create a substantial difference in students' experiences. Adopting new technology and using it to redesign advising is an iterative process, and it takes time. This effort should be viewed as one step in the process of achieving broader change. The findings from the project may serve as a useful guide to colleges as they move forward.

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Introduction

The labor market has changed dramatically over the past several decades. Technological advances, increased international outsourcing, and growing automation increased wages for workers with higher education levels and depressed wages for those at the bottom of the earnings distribution.[1] As a result, postsecondary education assumes greater importance as a pathway to good jobs and a middle class standard of living.

While college enrollment has increased over time, completion rates have remained low. Only about 60 percent of students who start at a four-year college earn a degree within six years, and completion rates are even lower for low-income students.[2] Completion rates are also lower at community colleges. These colleges serve about 40 percent of all college students, a disproportionate number of whom are low-income and underrepresented students, such as Black and Hispanic students and older students.[3] Among first-time students entering public two-year colleges, only about a third graduate with a degree or certificate within six years.[4]

Low completion rates reflect the many challenges students face, including the cost of attending college, balancing work, family obligations and school, low basic academic skill levels, and difficulty navigating the college environment. In response, colleges and universities have attempted to address these challenges with a variety of strategies, such as increased financial aid, blocked scheduling (in which students take many of the same courses together), and other student support.[5]

Enhanced advising plays a crucial role in these efforts. Advisers can provide critical support to students as they enter and progress through college. In an ideal world, advisers would communicate with students frequently, reach out early to them when they show signs of academic or nonacademic struggles, and provide personalized guidance to meet their needs.[6]

Unfortunately, most students do not have this kind of advising experience, often because of schools' inadequate financial resources and personnel constraints, particularly at community colleges. Advisers at community colleges and broad-access universities generally have large caseloads, in some cases as many as 1,000 students per adviser, severely limiting the time available for monitoring and interacting with students.[7] As a result, advising for many students is limited to a handful of interactions during college and focused mostly on transactional tasks, such as registration for courses, rather than on addressing challenges they may face.

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1   Autor and Dorn (2013); Goldin and Katz (2009).

2   Hussar et al. (2020); McFarland et al. (2019).

3   Baum and Ma (2016).

4   Radford, Berkner, Wheeless, and Shepherd (2010).

5   Goldrick-Rab, Harris, Kelchen, and Benson (2012); Patel, Richburg-Hayes, de la Campa, and Rudd (2013); Weiss, Visher, Weissman, and Wathington, (2015).

6   Karp and Stacey (2013).

7   Robbins (2013); Karp and Stacey (2013).

Technology tools may help by increasing advisers' ability to communicate with students, track their progress, and intervene when they are struggling. Many colleges now incorporate some forms of technology, such as degree planning tools, into their student support practices.[8] More institutions are also investing in early alert systems that allow faculty to flag students who are missing assignments or showing other signs of academic difficulties. Technology can support educational reform as a foundation for college advisers and staff to change how they interact with and support students, ultimately improving the student experience.

Integrated Planning and Advising for Student Success (iPASS) is an initiative funded by the Bill & Melinda Gates Foundation, designed to help colleges invest in and implement technology-based advising practices. To date, 45 colleges have received iPASS grants to support technology tools and redesigned advising and student support. Some of the colleges' new tools include communication tools, degree planning tools, and early alert systems.

This report focuses on three iPASS grantees (California State University, Fresno, Montgomery County Community College in Pennsylvania, and the University of North Carolina at Charlotte), that sought to further strengthen their advising and student support practices and accelerate reforms started under iPASS. The enhancements focused on increasing informational communication with students, improving the process through which struggling students are identified and supported, as well as redesigning advising sessions. Some students were also required to attend one or two mandatory advising sessions.

MDRC and CCRC partnered with the three colleges to assess the implementation and impact of the enhancements to iPASS programs. Specifically, the study assessed how enhancements were implemented at each college, how they changed the student experience, and how they affected students' academic progress in terms of retention and credits earned. The study was conducted as a randomized controlled trial, assigning students at random to a group eligible to receive the enhanced iPASS services for two semesters or a group eligible to receive the colleges' standard services, including standard iPASS. Thus, the study is not a test of iPASS, but a test of enhanced advising relative to standard practice under previous iPASS grants.

There have been two reports from the project to date — an early design and implementation report, and an interim impact report tracking effects through the program period, the first two semesters after students entered the study.[9] In addition to those publications and this report, there will be a forthcoming implementation report documenting the colleges' experiences using technology to redesign advising. The findings indicate that the colleges were largely able to implement their enhancements, although the adoption of new technology is an iterative process that takes time. The enhancements led to increased communication with students, an increase in the proportion of students who received early alerts, and small increases in the number of interactions between students and advisers. However, the content and nature of the advising sessions did not differ substantially for students in the enhanced iPASS group compared with students in the group that received the colleges'

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8   Tyton Partners and Babson Survey Research Group (2016).

9   Kalamkarian, et al. (2018); Mayer et al. (2019).

standard services. Finally, the enhancements did not positively affect students' academic progress during the first two semesters and led to a small and unexpected reduction in credits earned at one college, most likely due to the policy that did not allow students to register for the next semester (registration hold) until they attended mandatory advising sessions.

This report updates the findings from the interim impact report to include semesters three and four after students enrolled in the study, or for two semesters after the enhancements were no longer in effect. Although there were no observed effects on academic progress during the program period, or the first two semesters after students entered the study, it is possible that effects might have emerged in later semesters. If students benefit from additional advising early on, for example, they may continue to seek out advising in later semesters, potentially leading to positive effects on their later academic performance. However, the updated findings indicate that the enhancements did not improve student's students' school progress in semesters three and four, either in terms of retention or total credits earned. In addition, the small reduction in credits earned through semester two at one college persisted through semester four.

The paper also summarizes the implementation of enhancements at each college and concludes with lessons on the use of technology to support redesigning advising and student services. The paper draws heavily from the two earlier reports and is intended to present an overall summary of the project. Although the findings suggest that the enhancements led to small differences in student experiences, the project's results are more broadly applicable as a resource for the field, highlighting the opportunities and challenges colleges may face in redesigning advising and student support using technology.

The Integrated Planning and Advising for Student Success (iPASS) Initiative

The Bill & Melinda Gates Foundation began funding 19 colleges in 2013 to support iPASS activities. Since 2015, the Gates Foundation and other foundations have given 26 additional colleges iPASS grants of up to $225,000.[10] All iPASS grantees also received additional support from EDUCAUSE and Achieving the Dream for integrating technology and redesigning advising services over the three-year grant period.[11] Grantees also had access to professional development opportunities through a broad network of institutions, technology vendors, and technical assistance partners. Each participating college identified individuals across several departments (such as Institutional Research and Effectiveness, Information Technology, Student Affairs and Enrollment Management, and Academic Affairs) to plan, manage, and implement the integration of technologies and advising reforms.

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[10] The 2015 grants were funded by the Bill & Melinda Gates Foundation and The Leona M. and Harry B. Helmsley Charitable Trust.

[11] EDUCAUSE is a nonprofit association that supports postsecondary institutions in their use of information technology. Achieving the Dream is a nonprofit organization focused on evidence-based efforts to improve community college students' outcomes.

The goals of iPASS are improving communication and outreach to students, identifying and supporting struggling students, and increasing the number and quality of advising sessions through technology-based reforms. The ultimate objective is improving students' short- and long-term academic progress. Figure 1 illustrates the theory of change underlying the iPASS model, in which high-quality advising helps students clarify their goals and make better academic decisions to achieve those goals.

The concept of the "ideal advising experience" underlies the motivation for the iPASS program.[12] This ideal experience would begin with the student meeting with an adviser and charting degree and career plans. The student would receive regular communications from his or her adviser or other staff and information about college support and services. Struggling students would receive targeted and coordinated outreach and referrals to additional support, such as tutoring. The advising relationship would be sustained and personalized, moving beyond just helping with registration. The iPASS goal supports using technology to help transform advising and student experiences closer to this ideal.

To that end, the colleges implemented a range of technology tools, including early alert systems, predictive analytics used to help target struggling students, education planning tools, communication tools, and case management software. Examples of how these tools can help include the following:

- **Early alert systems** allow faculty to identify students who are missing assignments or struggling academically at multiple points during the semester.

- **Predictive analytics tools** use individual student data, such as demographic information and prior performance, to identify students who are likely to struggle academically, assigning them a "risk score" based on their predicted likelihood of particular outcomes, such as not persisting to the next semester or not graduating.

Using these tools, advisers can proactively reach out to students at risk of struggling academically and offer help. Typically, advisers determine if students need help by interacting with them during advising sessions or looking up their grades in a learning management system. Ideally, data provided by early alert and predictive analytics systems can help advisers identify at-risk students more efficiently, differentiate their interventions based on the nature and degree of individual needs, and allocate their limited time to addressing students with the greatest needs.

- **Education planning tools** include systems for selecting programs and courses, mapping degree plans, and tracking progress toward degree completion.

These tools allow students and advisers to define clear plans for education and career goals and track progress towards those goals. Planning tools can help students map out the specific courses required each semester for a selected program. Some tools will also notify students and advisers when a student attempts to enroll in a course that is not part of his or her course plan. Information gathered using these tools can also guide students' advising discussions, helping advisers work with them to determine individual pathways and stay on track.

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12 Karp and Stacey (2013).

FIGURE 1 iPASS Logic Model

RESOURCES	PROGRAM ACTIVITIES	MEDIATORS	OUTCOMES

RESOURCES

- Trained student support staff

- Institutional leaders who provide staff members with technology tools and professional development

- Technology tools, like early alert systems, predictive analytics, education planning tools, and communication tools

PROGRAM ACTIVITIES

- Advisers regularly communicate with students, in-person and using technology tools

- Early in the semester, advisers and faculty use technology tools to identify struggling students

- Advisers intervene with identified students, virtually and during required advising appointments

- Advisers use technology tools to refer students to support services

- Advisers use technology tools to teach students to think critically about academic and career goals

- Advisers use technology tools to document and share notes from advising sessions

MEDIATORS

- Clear academic and career goals

- Understanding of how current courses align with long-term goals

- Support from peers, faculty, and staff members

- Improved time-management and study skills

- Enrollment in required courses for program of study in optimal sequence

- More attempted credits that align with program of study

OUTCOMES

Short-Term

Students earn more credits

Students continue to enroll

Students earn higher grades

Long-Term

Students complete a certificate or degree

Community college students seeking a bachelor's degree transfer to a four-year institution

Students have higher cumulative GPA

- **Communication tools** allow electronic messaging and outreach to students, electronic referrals to support services, and shared information across staff.

These tools allow advisers to regularly communicate with students, providing general and personalized information, and intervening when necessary. Advisers can use communication tools to electronically refer students to resources that align with their needs, such as tutoring or mental health services.[13]

Communication tools can also help advisers and other college personnel coordinate when intervening on behalf of a student to ensure he or she gets a coherent message consistent with the entire school's approach. For example, when a student is referred to tutoring, the tutor or other staff member providing the service can see the referral, allowing them to follow up with the student if needed. The adviser can also see whether and when the student acts on the referral.[14]

As another example, a shared note-taking platform allows colleagues to see each other's notes about their interactions with students. When meeting with a student who has been served before, staff members can refer to those notes and engage in a more personalized discussion. Staff members can align their advising with previously offered information and guidance.

A study of iPASS implementation at six colleges that received grants in 2013 examined their use of technology to transform advising and student services during the first 18 months of their grants. Each college put the technology in place, which is an accomplishment in itself, given the challenges within any organization to using new data and communication systems.[15] Each college made progress in transforming student support, although there were challenges. Obstacles included getting advisers and other staff to use available data to change how they interact with students and have more meaningful discussions with them. Some advisers continued to focus on helping students with registration, a more clerical and transactional approach.

In terms of its impact, earlier research on iPASS indicated that this work to transform student services using technology is nonlinear, complex, and often conducted under dynamic internal and external conditions. Thus, it is challenging to tease apart the impact of the advising work from the multitude of other initiatives taking place at colleges and universities at any given time.[16]

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13 Communication tools such as email, learning management systems (such as Blackboard), and case management technologies were used to facilitate electronic messaging.

14 Advisers were typically required to log in to the system to see the referral, rather than receiving this information as a push notification.

15 Karp et al. (2016).

16 Klempin, Pellegrino, Lopez, and Barnett (2019); Klempin and Pellegrino (2020); Velasco, Hughes, and Barnett, (2020).

Enhancements to Advising Using iPASS at the Three Participating Colleges

To better understand how technology can support advising redesign, MDRC and CCRC partnered with three institutions — California State University, Fresno; Montgomery County Community College in Pennsylvania; and the University of North Carolina at Charlotte. These institutions, referred to hereafter as Fresno State, MCCC, and UNCC, sought to strengthen their advising processes with enhancements that would accelerate and deepen their iPASS reforms. The goal was expanding on their existing iPASS work and studying the effects of these enhancements on student outcomes.

These three colleges were selected for the study showed an interest in making the enhancements and had already been identified as strong implementers of technology-based practices under iPASS. The team also sought two-year and four-year institutions willing to meet the requirements of the evaluation design and with adequate sample size. The colleges each received supplementary funding from the Bill & Melinda Gates Foundation to offset study participation costs (such as time for research-related activities) and to expand the capacity of advising staff to support students. Table 1 presents selected features of each college. Further demographic information is listed in Table A.1 in the Appendix.

The colleges began planning for their selected enhancements in fall 2016. CCRC and MDRC provided ongoing support and feedback throughout the planning period, working with college administrators and advisers to design the enhancements and providing training on the enhancement components and operations to college staff. CCRC and MDRC continued their technical assistance through site visits, regular phone calls, and feedback on advising materials through the spring 2018 semester.

Table 2 presents the components of each college's enhancement and the differences from standard practices. The colleges focused on three areas: expanding informational messages to students, identifying and supporting at-risk students, and redesigning advising sessions.

1. Expanding informational messages

As part of standard practice, colleges did send some communications to students. At UNCC, for example, email and phone messages went to selected students, determined on a case-by-case basis, but there was no systematic outreach to students. Enhancements made communication with students more frequent, systematic, and sustained. Schools targeted additional outreach to subgroups of students with specific circumstances or needs. Email and phone outreach informed students about relevant campus resources and activities, including how to get tutoring and deadlines for financial aid requirements, as well as more general information, such as tips for preparing for and taking exams. The colleges all sent multiple phone or email informational communications each semester.

For example, at MCCC, students received messages welcoming them to the new semester, reminding them to complete their MyCareerPlan tool and informational messages about various campus resources throughout the semester. At Fresno, students received alert messages if they were struggling in certain courses and calls from peer mentors to check in on students who received early alerts.

TABLE 1 Insitutional Characteristics

CHARACTERISTICS	FRESNO	MCCC	UNCC
Overview			
Degree of urbanization	City: Large	Suburb: Large	City: Large
Level of institution	Four-year and graduate	Two-year	Four-year and graduate
Open admission policy	No	Yes	No
Fall enrollment			
Total students	24,405	11,480	28,721
Total undergraduates	21,530	11,480	23,404
Undergraduate status (%)			
Full-time	87.5	32.9	86.6
Part-time	12.5	67.1	13.4
Race/ethnicity of undergraduates (%)			
American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander	0.5	0.6	0.4
Asian	14.3	5.7	6.0
Black or African American	3.0	14.3	16.4
Hispanic	49.3	6.2	9.2
White	19.9	59.3	58.8
Two or more races, Nonresident Alien	8.4	4.7	6.6
Race/ethnicity unknown	4.7	9.3	2.6
Financial aid status of undergraduates (%)			
Awarded Pell Grant	57.4	27.5	37.3
Full-time first-time students awarded any financial aid	87.4	63.7	75.9
Outcomes			
Retention rates[a] (%)			
Full-time	79.0	65.0	82.0
Part-time	47.0	48.0	79.0
Completion rate of degree/certificate[b] (%)			
100% of normal time	15.0	8.0	25.0
150% of normal time	52.0	20.0	55.0
200% of normal time	60.0	26.0	58.0

SOURCE: Data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) 2016-17.

NOTES: [a]This represents first- to second-year retention rates of first-time students in fall 2016.
[b]Completion rates for California State University, Fresno and University of North Carolina at Charlotte are calculated for a four-year bachelor's degree (four, six, eight years). Completion rates for Montgomery County Community College are calculated for two-year degrees or certificates.

TABLE 2 Summary of Enhanced and Standard Advising Models: California State University, Fresno; Montgomery County Community College; University of North Carolina at Charlotte

COMPONENT	ENHANCED ADVISING	STANDARD ADVISING
California State University, Fresno		
Informational communication	Message welcoming students to semester, announcing MyDegreePlan workshops	No welcome message required, though some advisers may send one
Targeted communication	Early alert messages at Weeks 5, 7, and 10 informing students of flags in specific courses	Early alert message at Week 7 informing students of flags in specific courses
	Call from peer mentor reminding students to sign up for MyDegreePlan workshop	No peer mentor phone calls regarding MyDegreePlan
	Call from peer mentor checking in on flagged students	No peer mentor phone calls to check in on flagged students. Email or call from Support Net staff for flagged students; process and criteria for outreach vary by college
	Call from peer mentor reminding students to sign up for advising appointment	No peer mentor phone calls reminding students to sign up for advising appointment
	Call from peer mentor reminding students about upcoming advising appointment	Peer mentor phone calls at one of eight colleges reminding students about upcoming advising appointment
Advising sessions	Mandatory advising	Advising required only for students who are in their freshman year, have reached 75 credits, or are on academic probation
	Email campaign sent by adviser to schedule appointment	Walk-in or scheduled appointments initiated by student
	One-hour session	30- to 45-minute advising sessions (varies by college)
	Adviser toolbox to guide advising session	No adviser toolbox to guide advising session
Training for students on MyDegreePlan	One-hour workshop on MyDegreePlan, with opportunity to complete degree plan with facilitators	No targeted in-person training on MyDegreePlan
Montgomery County Community College		
Informal communication	Message welcoming students to semester, requesting completion of self-report survey	No welcome message required, though some advisers may send one
	Message instructing students to complete MyCareerPlan	No message about completing MyCareerPlan
	Automated early alert message at Week 3 informing students of their progress in specific courses	No Week 3 early alert message
	Message requesting completion of second self-report survey	No self-report surveys

(Continued)

TABLE 2 (continued)

COMPONENT	ENHANCED ADVISING	STANDARD ADVISING
Montgomery County Community College (continued)		
	Message wishing students good luck on finals	No good luck or end-of-semester message required, though some advisers may send one
	Series of "Did you know?" general informational messages throughout the semester	No "Did you know?" messages
Targeted communication	Message responding to early alert surveys	Practice varies by adviser
	Message responding to self-report survey results	Self-report surveys not administered
	Message responding to midterm grades	Practice varies by adviser
Advising sessions	Mandatory advising for all students during their first program semester and a subset of students during their second program semester	Advising not required for students who are beyond their first semester at the college and not on probation
	Advisers send messages to students to schedule appointment	Walk-in or scheduled appointments initiated by student
	45-minute session	30- to 45-minute advising session (varies by appointment reason)
	Adviser toolbox with eight core performance areas to guide advising session	No adviser toolbox to guide advising session
University of North Carolina at Charlotte		
Informal communication	Message to welcome students and assign "advising homework" or intake form	No welcome message required, though some advisers may send one; no "advising homework" required
	Standard messages sent via mail merge application and based on enrollment in critical progression courses, early alerts, and midterm grades	No customized messages based on students' risk status
Targeted communication	At least five messages from adviser over the course of the semester asking students to establish goals and providing feedback based on academic performance and early alerts	Communication sent to students on a case-by-case basis but with no systematic outreach process
Advising sessions	Mandatory advising session for students who get two or more D or F grades on midterms, or one D or F on a midterm in a critical progression course	Walk-in or scheduled appointments initiated by student
	30-minute session	Length of advising sessions varies by college
	Adviser toolbox document to guide advising session, with three overarching questions and instructions on how to integrate risk information	No adviser toolbox to guide advising session

2. Identifying and supporting students who are struggling

Each college had an early alert system that allowed faculty to use software to flag academically struggling students. However, the alert surveys were rarely issued early in a course, and went out after midterm exams or after the seven-week mark. One college lacked a systematic procedure for advisers to use to respond to the alerts.

One iPASS enhancement was collecting these alerts earlier in the semester and, in some cases, at multiple points during the semester. Advisers and other support staff responded to these notifications with targeted outreach to academically struggling students flagged in the surveys. At Fresno, for example, students previously received early alert flags in certain courses only at week seven. The enhanced practice sent early flags out after surveys at weeks 5, 7, and 10, charting student progress over the fuller course period.

As part of the effort to identify challenges early, each college also gave a self-analysis survey to students in the program group to catalog any self-reported concerns or needs. The plan was that advisers and peer mentors would then use survey data to reach out to students if the need could be addressed immediately or refer to the survey responses during an advising session that semester.

3. Redesigning advising

As part of their standard practices, each college required advising for some students, such as new students, those on academic probation, or those declaring majors. All other students outside of these designated subgroups typically initiated walk-in or scheduled advising appointments. Sessions were typically 35 to 45 minutes long and did not follow a specific format.

The first enhancement was to expand the required advising appointment to more students. UNCC, for example, instituted a mandatory advising session for students in the program group who were doing poorly in critical progression courses, defined as receiving a D or F on a midterm exam. At Fresno, all students in the study's program group were required to meet with their adviser before registering for courses for the next semester. All three colleges placed registration holds on students to compel them to attend the meeting.

The second enhancement was changing the nature of the advising session interaction. Each college, with support from the research team, developed a "toolbox," a guiding document for advisers to use when meeting with students face-to-face.[17] The toolbox contained learning objectives for the advising session; probing, open-ended questions to foster student-led discussion; and suggested topics for advisers to explore with students, such as non-college obligations, career aspirations, and experiential learning opportunities such as study abroad.

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17 The project worked with Elizabeth Wilcox at UC Berkeley to design the toolbox. See https://advisingmatters.berkeley.edu/academic-advising-toolbox.

Evaluation

The evaluation sought to understand how the enhancements were implemented at each college and assess their effects on student outcomes. Because the colleges continued making adjustments over the course of the study period, the study does not evaluate a static program. As noted earlier, the study also does not attempt to evaluate iPASS as a whole at each institution, but the effects of the enhancements under iPASS relative to standard iPASS.

These are the study's key research questions:

1. How did the colleges enhance their iPASS reforms?

2. Were the iPASS enhancements implemented as intended?

3. Did the iPASS enhancements produce a different experience for students, compared with standard iPASS?

4. Did the enhancements produce short- or medium-term gains in student outcomes, compared with standard iPASS?

INTAKE AND RANDOM ASSIGNMENT

To assess the enhancements' effects on student outcomes, the study was conducted as a randomized controlled trial. Each college first selected a target group for the project, discussed below. Random assignment took place across two cohorts, creating the first cohort at the start of the 2017 spring semester and the second cohort at the start of the 2017 fall semester. (See Appendix Figure A.1 for a timeline of the broader iPASS initiative and the study of enhanced iPASS.)

Eligible students were randomly assigned to either a program group and offered the two-semester enhanced iPASS program, or a control group, which received the institution's typical advising services via standard iPASS.[18] Students in the program group received the iPASS enhancements for two semesters.

PARTICIPATING STUDENTS

Each college targeted a specific group of students for the project. In general, the target groups consisted of students at risk of poor performance who were not previously required to visit their advisers and in some cases did not already receive targeted outreach from their colleges.

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18 All eligible students were enrolled in the study and could voluntarily opt out of participating at any time.

- **Fresno** targeted second-year continuing students who, at the start of the year, had a GPA between 2.0 and 2.9 and had completed more than 15 but fewer than 75 credits. There are generally no policies or institutionalized practices for proactive outreach to these students. Students flagged in the early alert system receive emails or calls from support staff, but the process and criteria vary by college within the university. Finally, the students targeted for the study typically only engage with an adviser if they seek it out.

- **MCCC** first selected a subgroup of continuing students in degree programs who were not already required to meet with an adviser. They were not on academic probation or in selected subgroups with required advising services. Within this group, the project was further targeted to students who were determined, based on a predictive data model, to have a "low" or "moderate" risk of persisting to the next semester.

- **UNCC** targeted two at-risk groups of students. The first cohort included continuing students with a GPA of 2.0 or higher but with a low probability of graduating, based on a predictive data model. As discussed in an earlier report, an error in the predictive model meant many students received incorrect probabilities and were included in the study erroneously.[19] The second cohort included transfer students, who tend to drop out at higher rates than continuing students.[20]

Table 3 presents selected characteristics of the students at each college. Women comprise a slight majority of the student body at two of the colleges. Their racial and ethnic compositions, with a high fraction of Hispanic students at Fresno, for example, reflect regional differences as well as the composition of the broader student bodies at the colleges. Most students were traditional college-aged at study entry, between ages 19 and 24, although a sizeable share of students at MCCC were over age 25, which is typical among community colleges. Finally, all students entered the study with some credits earned. Students at Fresno had earned the most credits, in part because that college targeted second-year students for the study.

KEY MEASURES OF SERVICE CONTRAST AND ACADEMIC PROGRESS

The studies collected qualitative and quantitative data to understand how the changes were being implemented and to assess their effects on student outcomes. These data were also used to provide feedback to the institutions, and the qualitative data informed adjustments to the program over the course of the study period. The study tracked implementation of the iPASS enhancements using a variety of sources, including site visits to each institution and iPASS program information, such as early alert and advising appointment data. Key outcomes used to measure service contrast — the difference between the services received between the program and control groups — are early alert

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19 The error in the model has implications for the impact of the enhancements on student progress, since some proportion of the study sample was not at risk and thus may not have needed the enhanced services to succeed.

20 Duggan and Pickering (2008).

TABLE 3 Demographics of Study Sample, by School

SCHOOL	FRESNO	MCCC	UNCC
Female (%)	61.7	59.2	43.4
Race/ethnicity (%)			
Hispanic	62.5	7.4	9.5
White	12.2	56.2	60.1
Black	2.8	18.0	14.4
Other	22.6	18.4	15.9
Age (%)			
18 and under	10.5	4.5	28.9
19-24	89.5	54.9	66.5
25 and over	0.0	40.7	4.5
College credits earned at study enrollment	44.35	37.97	29.71
Sample size	1,219	2,989	3,803

SOURCE: MDRC calculations using data from California State University, Fresno; Montgomery County Community College; and University of North Carolina at Charlotte.

NOTES: Rounding may cause slight discrepancies in sums and differences.
   Sample sizes may vary because of missing values.

notices and number of advising sessions, obtained from iPASS program data. Academic outcomes include enrollment in each semester and credits earned over the full period, both of which were obtained from the colleges' student transcript data.

Implementation

Across two rounds of qualitative fieldwork the research team uncovered key successes and challenges associated with implementing enhancements to advising.[21] The research team took an iterative approach, working closely with the colleges to qualitatively gauge how the tools and tactics were working

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[21] During 2017, the research team conducted two visits at each institution in the spring and fall semesters (six total) to better understand how advising redesign, particularly as specified by the enhancements, was being implemented. During that time, the study team conducted 238 in-person interviews. In spring 2018 (the second intervention semester for cohort two students), the team conducted an additional 18 interviews by phone. During each round of data collection, the team interviewed a wide range of stakeholders including advisers, administrators, key project staff members (who oversaw the work), and other support personnel such as peer mentors at Fresno and the retention specialist at MCCC. For additional information about the implementation research methodology see Mayer et al. (2019).

and making adjustments as needed. The research and institutionally based teams communicated regularly in meetings and with on-site visits, weekly calls, and ongoing correspondence. The many lessons learned during the course of the study may be useful to institutions embarking on advising reform work, particularly in the areas of jobs and roles of college staff, student engagement, early alerts and student support, enhancements to advising sessions, technology, and perceptions of advising and student support at the institutions.

This report presents a few of the most important indications from the fieldwork, concentrating on those the research team judged to be most likely to lend insights into the findings in this report. A comprehensive presentation of qualitative findings can be found in the forthcoming implementation report (Santikian-Kalamkarian, Pellegrino, & Lopez, 2020).

- **Engaging students in the study's messaging components was challenging. Strategies worked differently at different schools and different contexts. Personalized communications were perceived to be most effective.**

At least once during the study time frame, each of the three colleges sent out a student survey that encouraged students to report their concerns and any barriers they faced. Advisers overwhelmingly reported receiving very low response rates to these surveys (fewer than 10 students per adviser in most cases). Advisers said they discussed the survey results during sessions with the few students who responded. In some instances, advisers said they were able to proactively reach out to students and offer support. One adviser referred to the survey results as a "jumping-off point" for the advising session with a student. This small number of experiences indicated that self-reported student data may indeed be helpful, though it proved difficult to obtain without an incentive for students to respond. In that case, the additional cost of increasing response rates would need to be weighed against the benefits from obtaining the data.

At all three schools, advisers used informational messaging strategies to students through the course of each semester. Approximately every two weeks, advisers emailed students with information about things like campus resources and upcoming deadlines. The messages also encouraged students to see their advisers. When asked about these messages, however, students often could not recall receiving them and indicated they tended to read emails that they received from people they know or perceived as being personalized and not "mass emails."

Despite low student response rates, some advisers indicated they felt the ongoing communication strategy were an important part of their efforts because they provided useful information regularly. They believed this strategy aligned with their personal commitments to providing developmental student support. Some advisers sent students words of encouragement, such as well wishes for final exams and study tips. Still, there was consensus among advisers that the messages may have been more meaningful to students if they were able to send more personalized messages, acknowledging that students tended not to respond to emails from people they didn't know. Most students did not recall receiving the messages from advisers and said they primarily focused on emails from faculty and classmates. Notably, emails administered by UNCC encouraging students to make appointments with their adviser and including a link to schedule the appointments — dubbed appointment campaigns — received strong student response, according to advisers.

- **Advising sessions were not notably different for students in the program group from those in the control group, and there was an uneven engagement by advisers with the toolbox.**

College leaders and advisers at each school reported varying levels of engagement with the advising toolbox. Advisers indicated they intentionally did not differentiate their advising approaches toward program and control group students because they did not want to treat their students differently. Most advisers were generally using a portion of the toolbox, often citing a question or two that they found particularly helpful when talking with students. However, few said they regularly referred to the document. Many advisers reported recalling a question or two they used during advising sessions, drawing from memory rather than engaging with the toolbox document itself. Early alerts were perceived as helpful to advisers in identifying students who may be struggling, however, response to these resources was mixed.

As Figure 2 illustrates, some colleges used early alerts more than others. As expected, on average they were used more with program group students than control group students. While early alerts were most often deployed when students were struggling, in some settings they included "kudos" to praise students who did well. At UNCC, where faculty could use the early alert system to provide positive feedback during one semester of the study, students said they appreciated those messages and felt assured they were on the right track.

Some implementation challenges had the potential to diminish the efficacy of early alerts. One issue was that if faculty triggered an alert but did not specify why — attendance, grades, test scores — advisers could not reach out to students with targeted and personalized support to the extent they would have liked. Moreover, many advisers indicated that when they had many students with early alert flags, they only had the time and capacity to reach out to the students with multiple flags or those deemed most in need. Some advisers expressed concern about the tone and content of the messages. One adviser referred to early alerts as potentially "scary" to student recipients.

Predictive analytics data were also available to advisers at some colleges, which helped them better target conversations with students during advising sessions. However, these data were sometimes flawed or out of date, and college leaders and advisers sometimes mistrusted them. At UNCC and MCCC, advisers reported not using the predictive analytics risk scores for communication with students — virtually or in person — because they did not believe them accurate or actionable. At UNCC, the predictive analytics algorithm mistakenly identified some strong performing students as "at risk." The predictive analytics tool at MCCC coded students with demographic variables that ostensibly put students at risk — such as their residential zip codes — but advisers could not use those data in a meaningful way to assist students.

Students had mixed responses to early alerts. Most students believed early alerts were a good thing for those who were struggling, and some students said they especially appreciated the "kudos." Some students said they felt motivated and developed a sense of urgency to improve their academic performance after getting an alert. However, other students said that early alerts were discouraging or confusing, particularly if they were not told why they received the alert or did not know the sender.[22]

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22 Some early alert systems include features that allow the instructor to appear as the sender, while others do not.

FIGURE 2 Early Alerts by Semester and Number of Alerts in the First Year

Legend: ■ Program ■ Control

California State University, Fresno

	Program	Control
1st semester (With enhancements)	34.9	5.8
2nd semester (With enhancements)	39.9	11.5
3rd semester (After enhancements)	5.8	6.0
4th semester (After enhancements)	3.0	2.6
First year (With enhancements)	1.34	0.24

Montgomery County Community College

	Program	Control
1st semester (With enhancements)	87.6	46.3
2nd semester (With enhancements)	47.9	34.0
3rd semester (After enhancements)	25.1	27.6
4th semester (After enhancements)	12.9	4.2
First year (With enhancements)	3.92	1.56

University of North Carolina at Charlotte

	Program	Control
1st semester (With enhancements)	30.3	31.5
2nd semester (With enhancements)	17.5	17.3
3rd semester (After enhancements)	14.3	15.1
4th semester (After enhancements)	9.8	10.6
First year (With enhancements)	0.67	0.69

FIGURE 2 (continued)

- **Technology tools helped advisers but were also limited in some ways.**

Advisers at every school said technology helped with degree planning, career planning discussions (particularly at MCCC, where advisers used a career assessment tool with their students), scheduling advising appointments, and maintaining well-organized documentation for their caseloads. Advisers appreciated being able to pull reports and develop lists of students who might need extra support so that they could keep an eye on their progress and make them a priority for intervention if needed.

Students seemed comfortable with scheduling appointments and with using college-based tools, including email. Students and advisers at Fresno said students wanted initial face-to-face assistance from a helpful person to feel comfortable selecting courses and planning their future semesters. Many advisers said much of their initial advising appointments with new students were dedicated to helping them feel feeling confident using degree planning tools.

- **Colleges adjusted staff members' job responsibilities and mobilized non-advising staff members as they implemented the program enhancements. However, this required training new personnel and adapting business processes to fit new job responsibilities.**

At each of the three colleges, formal and informal leaders in advising departments or operations had to oversee the development and implementation of the new advising enhancement procedures, as well as performing their existing job responsibilities. In their daily roles, they generated and supplied lists of students for advisers to contact, provided email templates for messages, and supported technology-related inquiries. Overwhelmingly, advisers said they appreciated this leadership and felt assured that a person or people "owned" the work and could serve as a source of support.

Entirely new staff roles emerged during the study as Fresno and MCCC addressed issues with their advising capacity. Fresno hired two student peer mentors (a junior and a senior) to conduct informational outreach to students receiving enhancements. The peer mentors were later trained to follow up with students who had received early alerts. MCCC hired a retention specialist to support advisers by conducting outreach to students who were struggling.

- **The study showed evidence of emerging shifts in attitudes at the colleges about how to do advising well. This may carry forward the work of advising reform beyond the grant period.**

Engaging in advising redesign and participating in the RCT using an iterative approach facilitated institutional learning and growth at all three schools. Several stakeholders reported a shift in attitudes about advising and student support, indicating the enhancements offered valuable lessons. For example, advisers — even those who said the enhancements had made their workloads challenging

— appreciated the opportunity to participate in the study. They said it brought greater attention to the value associated with advising and student support in general. Several advisers said they hoped that institutional leaders would direct more resources to advising and student support. Two advisers at MCCC indicated that participating in the study helped them develop stronger, more meaningful relationships with students.

Institutional leaders responded positively to this work as well. At Fresno, university leadership directed considerable resources toward advising during and following the study. The university created two subcommittees consisting of full-time advisers and faculty advisers — one to consider ways to assess advising across campus and a second examining the training and development needs of full-time advisers and faculty advisers. The university also allocated a large state grant toward expanding the peer mentor program, so that they would be able to work alongside students and help them learn to use the degree planning tool. At UNCC, university leaders developed and implemented a career ladder, with "tiers," so that advisers could have increased career mobility at the institution.

Service Contrast

This section assesses the service contrast created by the enhancements, or the differences in experiences and services between students in the program and control groups. Expanded communication was a notable aspect of the iPASS enhancements. That was assessed through the implementation data collected on adviser and student experiences with the student survey and informational messages. The other two program components — advising sessions and early alerts — were assessed using program data. For these two components, the following discussion focuses on service contrasts in each semester between program and control group students.

To better understand the baseline experience to which the program group is compared, it is important to note that the control group students were experiencing "standard" iPASS, which looked different at each of the three schools. During the time of this study, the standard iPASS initiative does not appear to have led to big changes in students' experiences relative to the pre-iPASS period. The colleges were not implementing iPASS practices intensively with any particular group of students. Students could access iPASS services and tools on their own, and while some tools, such as MCCC's degree planning tool, were marketed to students, their use was not consistently encouraged as standard practice. As shown below, for example, most students in the control groups did not receive early alerts during the follow-up period.

- **Students in the program group were sent more adviser communications than students in the control group.**

As mentioned earlier, communications with program group students included a survey administered to the students. This helped collect information on challenges students faced or expected to face during the semester. Advisers also used mass email tools to send large groups of students information and resources. Although response rates to both these efforts were low, advisers reported that the few survey responses they received were useful.

- **Students in the program group were more likely than students in the control group to meet with an adviser at least once. The differences in the average number of advising visits, however, were small.**

Figure 3 presents differences in percentages of study participants who met with an adviser during each semester after study enrollment. At Fresno, almost all program group students met with their advisers in the first two semesters, when the iPASS enhancements were in place, compared with about half of the control group students.[23] At MCCC, program group students were also much more likely to meet with their advisers than control group students. Fewer than 60 percent of control group students had adviser meetings in the first two semesters. Because advising appointments are required by some colleges at UNCC, the school had a larger proportion of control group students meeting with advisers than the other two schools starting in the first semester of the program. Program group students at UNCC were more likely to meet with advisers than control group students, although the difference was less stark than at the other schools.

The right panel of the figure presents impacts on the number of times students met with an adviser during the first year of study. While the differences in ever meeting with an adviser are relatively large in Fresno and MCCC, the iPASS enhancements induced students to have, on average, just one or two more meetings with their advisers than they otherwise would have at Fresno and MCCC, with even smaller differences at UNCC, as shown in Appendix Table A.2. Thus, the additional advising interactions created by the enhancements was small.

Data on the duration of adviser meetings were not consistently available across the data systems, so time spent with advisers could not be quantified accurately in this analysis. In theory, longer appointment times and the toolbox used to structure meeting times with program group students could have led to better quality advising for students in the program group. However, as reported in the earlier implementation section, some advisers adapted some practices they liked from the toolbox for use with their control group students, while others did not typically access the toolbox when meeting with program group students — so it is unlikely that the advising sessions for program or control group students differed much in their content.

- **In two of the three colleges, program group students were more likely than control group students to receive at least one early alert during the two program semesters. But, on average, program group students only received one to two more alerts than control group students during the program.**

Figure 2 presents differences in percentages of study participants who received early alerts in each semester. The patterns are similar to the adviser meeting rates — many more program than control group students in Fresno and MCCC received early alerts in the first two semesters. MCCC appears to have made the most use of the early alerts, sending alerts to almost 90 percent of program group students during the first program semester, and about 50 percent of students during the second semester (which accounts for about 90 percent of enrolled second semester students). As a result,

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23 In fall 2018, Fresno began implementing new technology tools for early alerts, case management, and analytics. For the remainder of the data collection time period, faculty and staff could issue early alerts; however, the university did not formally solicit the information.

FIGURE 3 Advising Contacts by Semester and Number of Contacts in the First Year
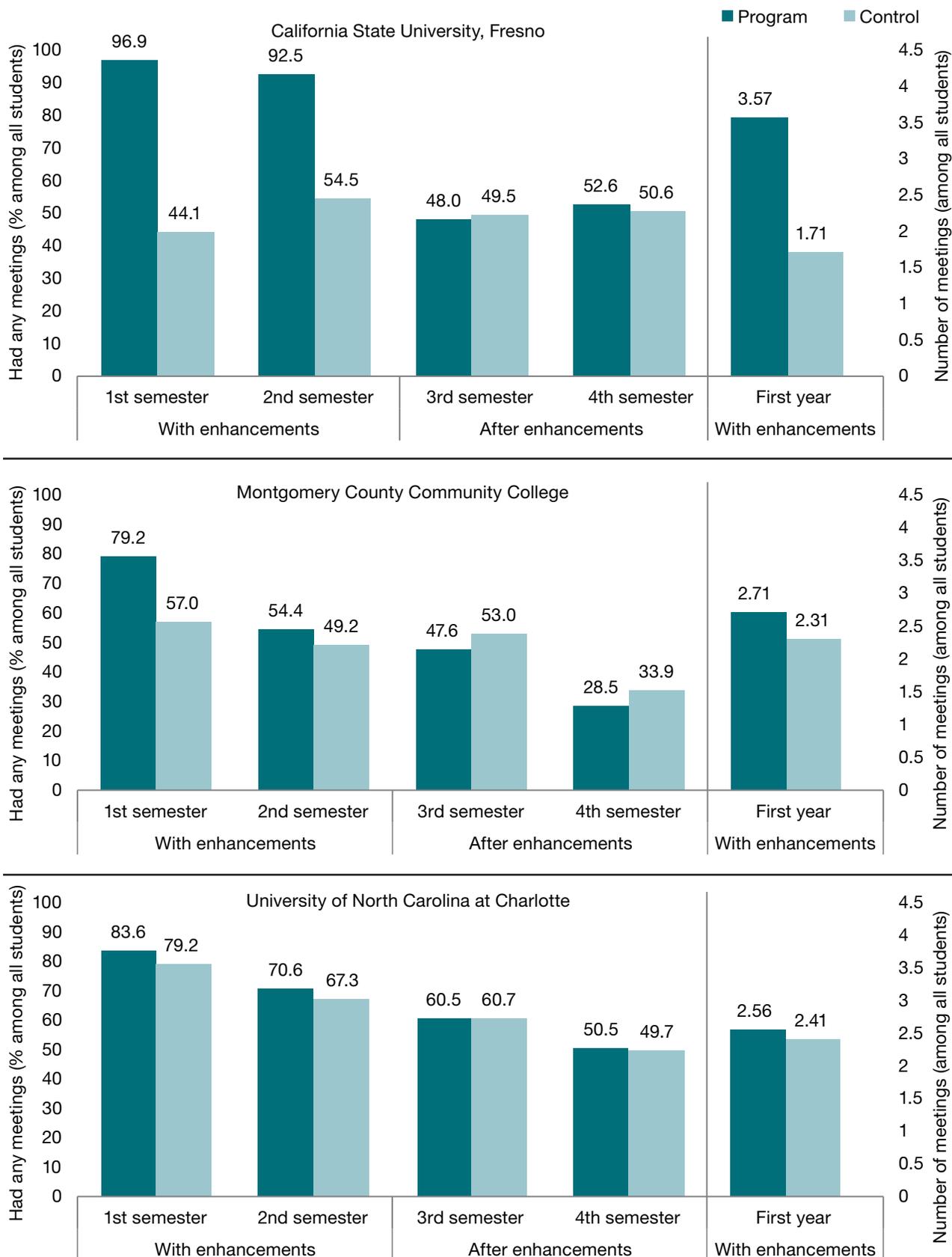
California State University, Fresno

■ Program ■ Control

Montgomery County Community College

University of North Carolina at Charlotte

FIGURE 3 (continued)

program group students averaged two to three more alerts than control group students over two semesters of the study, while at Fresno, program group students received one more alert than control group students did, on average. At UNCC, students in both groups received alerts at similar rates. The majority of Fresno and UNCC students did not receive any early alerts. While receiving early alerts is an important element of adviser-student engagement, students who received better advising may also be less likely to be flagged as struggling in the early alerts system.

In the third and fourth semesters, after the enhancements were no longer offered, differences in advising meetings and alerts were no longer apparent between the program and control groups.

Impact on Academic Outcomes

The iPASS theory of change shown in Figure 1 is described in the earlier iPASS report.[24] That report considers that if iPASS successfully increased adviser-student interaction and facilitated better support for students to set and accomplish their academic goals, then short-term academic outcomes, such as enrollment and credits earned, would also improve. This section examines whether the enhancements implemented by the colleges led to improvements in students' academic progress.

Table 4 presents effects on enrollment and credits earned during the two program semesters, as well as the two semesters after the enhanced iPASS intervention ended.[25] Results showed that iPASS enhancements did not increase enrollment in subsequent semesters or credits earned at the colleges. As described in the previous section, enhanced iPASS produced small changes in student advising experiences, but colleges may not have had the capacity or resources to implement the program enhancements at scale.

It is possible that two semesters of an enhanced iPASS intervention did not allow sufficient time for refining iPASS practices in a way that could substantially improve most students' advising experience (for example, revising the early alert system to provide students with more detailed and relevant information), which would be necessary for the program to increase enrollment or credits earned. Small differences in service contrasts described in the previous sections may also explain the lack of impacts on academic outcomes.

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24 Mayer et al. (2019).

25 Appendix Table A.4 shows some more academic outcomes by program group not covered in the main body of the report, including degree outcomes.

TABLE 4 Differences in Enrollment and Credits Earned

INSTITUTIONS	PROGRAM	CONTROL	DIFFERENCE	STANDARD ERROR	P-VALUE
California State University, Fresno					
Enrollment (%)					
1st semester (with enhancements)	98.5	98.9	-0.4	0.3	0.165
2nd semester (with enhancements)	94.2	93.5	0.8	1.3	0.565
3rd semester (after enhancements)	88.2	86.2	1.9	1.9	0.308
4th semester (after enhancements)	83.3	80.4	2.9	2.2	0.189
Total credits earned	43.84	42.94	0.89	0.96	0.353
Sample size	610	609			
Montgomery County Community College					
Enrollment (%)					
1st semester (with enhancements)	97.1	97.6	-0.6	0.4	0.171
2nd semester (with enhancements)	52.2	55.8	-3.5	1.8	0.050
3rd semester (after enhancements)	39.6	43.5	-3.9	1.8	0.029
4th semester (after enhancements)	29.0	30.1	-1.1	1.7	0.490
Total credits earned	12.54	13.37	-0.83	0.43	0.051
Sample size	1,248	1,741			
University of North Carolina, Charlotte					
Enrollment (%)					
1st semester (with enhancements)	98.2	98.3	-0.1	0.3	0.686
2nd semester (with enhancements)	89.3	88.4	0.9	1.0	0.354
3rd semester (after enhancements)	82.9	83.1	-0.2	1.2	0.870
4th semester (after enhancements)	77.6	77.7	-0.1	1.3	0.931
Total credits earned	46.26	46.24	0.01	0.61	0.983
Sample size	1,902	1,901			

SOURCE: MDRC calculations using transcript data from California State University, Fresno, Montgomery County Community College, and University of North Carolina at Charlotte.

NOTES: Rounding may cause slight discrepancies in sums and differences.

The p-value indicates the likelihood that the estimated impact (or larger) would have been generated by an intervention with zero true effect. A lower p-value suggests a higher likelihood of a nonzero effect.

Estimates are adjusted by pre-random assignment characteristics of sample members.

Estimates are weighted to account for differences in random assignment ratios across advisers.

Spring and summer records are combined. Similarly, winter and fall records are combined.

Transcript records for summer 2019 are not included in the fourth semester estimates. Few students enrolled in any classes during the summer terms.

On average, about 80 percent of students in the study sample were still enrolled in the fourth semester of the study at Fresno and UNCC, while only about 30 percent were enrolled in the fourth semester at MCCC. Recall that MCCC is a community college, and Fresno and UNCC are four-year universities. The sharp drop in enrollment between semesters at MCCC is stark compared with the two universities in the study, but is typical for community colleges.[26] The differences in credits earned between the schools also reflect differences in retention rates and may also reflect the higher proportion of part-time students at MCCC relative to the other colleges; at Fresno and UNCC, students earned, on average, about 45 credits over the four semesters of the study. At MCCC, students averaged 13 credits. Included in this average are 0 credits for each semester a student was not enrolled in the school. Because a much larger percentage of students initially enrolled at MCCC were no longer enrolled in later semesters, and because community college students are generally pursuing associate rather than four-year degrees, the average credits earned at MCCC was lower than at the other schools.

During the second and third semesters, the iPASS enhancements appear to have reduced enrollment at MCCC by 4 percentage points. The interim impact report found that the reduction in credits attempted at MCCC in the first semester of the program was driven by the registration hold placed on program group students, which prevented them from registering for some classes if they had not yet met with their advisers.[27] For the spring 2017 cohort, the hold may have prevented some students from enrolling in the summer term. The registration hold on the program group was eventually eliminated in spring 2018, which was the second program semester for the second cohort. Nevertheless, the reduction in enrollment from these initial holds appears to have persisted beyond the two program semesters with iPASS enhancements.

MCCC program group students earned, on average, 0.8 fewer credits over 4 semesters than control group students. Since the ability to earn credits is dependent on class enrollment, the cumulative reduction in credits earned can likely be attributed to the negative effects on enrollment in the earlier semesters. The earlier iPASS report provides a more detailed description of the unintended negative enrollment effect of the registration hold, and a more comprehensive table examining courses potentially affected by the registration hold is presented in Appendix Table A.3.[28]

Although not shown in the table, if the results were pooled across all three institutions, the iPASS enhancements would show a near zero effect on academic outcomes.

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26 The study participant retention rate, however, is still about 20 percentage points lower than the national average at two-year public institutions. The 2019 annual report from the National Student Clearinghouse showed that about 54 percent of students who started school in two-year public institutions in 2017 returned to the same school in 2018, compared with 71 percent at four-year institutions. Since students who enrolled in a community college may not take classes in consecutive semesters or may transfer between institutions or to a four-year school, the large drop in enrollment in the second program semester at MCCC, compared with smaller enrollment reductions at the other two colleges, is not unexpected.

27 Mayer et al. (2019).

28 Mayer et al. (2019).

Lessons

This project studied three colleges' efforts to enhance their existing iPASS work and measure the effects of the enhancements on their students. The enhancements implemented did not positively impact students' academic outcomes. Nonetheless, the findings from the study may provide lessons to the large and growing number of colleges working to integrate technology into their student support efforts. What follows presents some lessons from the project and some more general lessons about enhancing student support with the help of technology.

- **More intensive interventions and more frequent advising contacts are probably needed to impact student outcomes.**

The three participating colleges were all involved in the preexisting iPASS initiative prior to the random assignment study, as shown in the timeline in Appendix Figure A.1. For the study, students in the program group experienced a mix of enhancements to what colleges had put in place using previous iPASS grants and new components.

The main program components — and, therefore, points of contrast — were additional informational communication, additional early alerts and the use of other methods to support identification of and intervention with struggling students, the addition of an advising appointment requirement (enforced using a registration hold) for a subset of students, and the use of the advising "toolbox" during the required appointment. However, these components resulted in an experience for students in the program group that did not differ substantially from business as usual. For example, as mentioned earlier, although the program increased the number of advising meetings at all three colleges, on average, program students at all three colleges only experienced zero to two more advising meetings.

Though iPASS was not designed to be a comprehensive student support program, given the body of research on what works, this level of program intensity — and therefore level of contrast with business-as-usual — is likely not enough to improve long-term outcomes.[29] Studies of the most effective programs showed students meet frequently with support providers. When students meet with an adviser or coach only once or twice in a semester, the effects are usually not long-lasting.[30]

In a study of the City University of New York's Accelerated Study in Associate Programs (ASAP) program, which nearly doubled graduation rates, students in the program group met with advisers 38 times, on average, in their first year in the program, roughly 32 more times than students in the control group.[31] A replication of ASAP at three Ohio colleges, which led to large increases in graduation rates, required students to meet with an adviser twice a month in their first semester — over 60 percent of students met with their adviser six or more times during that period. Some students

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[29] Scrivener et al. (2015); Bertrand, Hallberg, Hofmeister, Morgan, and Shirey (2019); Evans, Perry, Kearney, and Sullivan (2018).

[30] Scrivener and Coghlan (2011).

[31] Scrivener et al. (2015).

did not have advising requirements in subsequent semesters, but students continued to meet with advisers, though less frequently.[32]

In a study of the Detroit Promise Path (DPP) — a less intensive program than ASAP — students in the program group were instructed to meet with their coach twice per month. In all four semesters, most enrolled students met with a coach six or more times each semester. Students were given a financial incentive for meeting with their coaches. The program is still being studied, and early findings are promising, though effects appear to be decreasing in magnitude.[33]

The Opening Doors demonstration in Ohio offered a program with a less intensive advising requirement: students were expected to meet with an adviser at least twice per semester and received a $150 stipend after their second meeting. The program generated modest positive effects on registration rates but did not affect long-term outcomes.[34]

In general, programs that led to smaller increases in advising have not generated large, if any, improvements in academic outcomes. However, increasing advising interactions was not the sole goal of iPASS. The iPASS theory of change hypothesizes that technology tools will support more intensive, personalized advising experiences, even with limited human resources. That is, even though students meet less frequently compared with programs like ASAP and DPP, technology could allow advisers to use resources in a more targeted way and more frequently than business as usual. This would in turn lead to improved academic outcomes. Ideally, technology like early alerts and predictive analytics would provide advisers with timely information that a student is struggling, allowing advisers to focus their limited time on the students who need the most help. With that information, the adviser could then intervene with that student digitally or in person to help get them back on track. Based on the findings from this study, technology use is not yet supporting this goal to the degree required to improve student outcomes.

Though the programs mentioned above are the most effective, they require time, people and money, which can make them challenging to implement at a larger scale. More work is needed to learn lower-cost ways to achieve positive results.

- **Consider alternative approaches to collecting information from faculty.**

One iPASS goal is for faculty and student support staff to identify students when they show early signs of academic or nonacademic struggle, and have support staff intervene in a timely manner. Early alert technology supports this goal, in theory. Faculty must complete early alert surveys for the early alert system to be successful. At participating colleges, faculty responsiveness to early alert surveys varied depending on individual college culture. For example, one college had been using early alerts for a longer time, which may explain their higher response rates. At another college, a slight improvement in early alert response rates may be attributed to promotional activities college

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32 Miller, Headlam, Manno, and Cullinan (2020).

33 Ratledge, O'Donoghue, Cullinan, Camo-Biogradlija (2019).

34 Scrivener and Weiss (2009).

staff conducted with the faculty prior to the study to encourage their use. Involving faculty more in discussions about data may help buy-in and response rates will likely improve over time, as faculty become more familiar with this kind of reporting.

- **Registration holds can have unintended consequences, particularly for community college students. Consider alternative methods to encourage students to meet with an adviser.**

At MCCC, the sole community college in the study, the program had negative effects on enrollment and credits earned, which were likely driven by the registration holds. It is possible that the registration hold caused more students to meet with an adviser at UNCC and Fresno State. But at MCCC, advisers reported that classes rarely fill up early. Thus, students may have been less motivated to come in early — that is, before the semester's end — for an advising appointment. The additional barrier to registration created by the registration hold may have discouraged students from registering for additional classes or reenrolling.

Some effective community college student support programs offer students incentives to meet with advisers or coaches.[35] These incentives might come in the form of financial incentives (for example, transportation vouchers, gift cards, campus bookstore vouchers) or priority registration. The findings from this study suggest that incentives may be a worthwhile alternative approach, particularly for community college students. At a minimum, community colleges should take care as to how, why, and when they place registration holds.[36]

- **Consider alternative approaches to informational communication.**

In addition to receiving personalized messages about their academic status based on early alert data, students in the program also received messages with general information about tutoring hours and child care availability, among other topics. When interviewed, most students did not remember receiving these messages. Most colleges send messages like these to all students, informing them of registration dates and services offered on campus. It can be challenging to get students to read emails. To ensure students receive this more general information, it may be worthwhile for colleges to try to frame this content in a more personalized or action-oriented way, disseminate this information using multiple modes of communication, and consider how the message's sender might influence whether a student will open a message.

Some other strategies that can be used to engage message recipients and prompt them to act are rooted in the principles of behavioral economics. Examples include simplifying message content, using language that prompts actions, setting deadlines for action, making actions easier to complete (such as by providing hyperlinks), personalizing content, and using frequent reminders.[37] The Encouraging Additional Summer Enrollment (EASE) project used behavioral messaging strategies to encourage students to enroll in summer courses. Messages were personalized, came from multiple

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35 Ratledge (2017); Scrivener et al. (2015).

36 For more on this finding, see Mayer et al., (2019).

37 Richburg-Hayes, Anzelone, and Dechausay (2017).

senders, and utilized different modes of communication (for example, email and postal mail).[38] The program increased summer enrollment by 5 percentage points.[39]

The mode of communication is important. A study of adviser communications found a positive relationship between the number of in-person advising meetings attended and an adviser's use of instant messaging and text messaging. However, there was a negative relationship between meetings attended and the use of Facebook.[40] The EASE project found that while some information was communicated over both email and mailed letters, many students recalled their mailed letters.[41] These varying preferences make it important to diversify modes to ensure all students are reached.

It is also important to consider the message's sender: A survey of 315 students found that students were very likely to read emails coming from faculty but less so when coming from advisers and other campus offices. In the same survey, students preferred text messaging to phone calls, emails, and social media (in that order).[42] Perhaps having faculty share information with students could be more effective.

Colleges participating in this study asked students to complete a survey on challenges they faced and their academic progress. However, very few students completed these self-reports. When asked about them during interviews, very few, if any, students remembered being asked to complete these surveys. But advisers found this information useful when it was available. It may be possible to take a similar approach to the informational messages to prompt action for students to complete these surveys. To boost survey completion rates, it also may be worthwhile to give students incentives, either financial or through priority registration.

Colleges could also consider student focus groups and surveys to further understand what would be most salient and effective.

- **When using predictive analytics, there can be a tension between complexity and utility. More transparency may lead to more effective practice.**

Advisers at MCCC disagreed with the predictive analytics risk assessment scores provided by the predictive analytics tool, whose algorithm includes many variables. However, because the algorithm is proprietary, the variables included are not public, and it is unclear which variables drive an individual student's score. Additionally, at UNC Charlotte, there was an error with the predictive analytics tool. This lack of clarity — and accuracy, in the case of UNC Charlotte — made it challenging for advisers to know why a student had been identified as "at risk." In order to account for this, during student's second semester, risk was identified using course-specific grades, GPA, and

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38 Headlam, Anzelone, and Weiss (2018).

39 Weiss (2019).

40 Reynol, Mastrodicasa, Aguiar, Longnecker, and Rokkum (2016).

41 Headlam, Cohen, Reiman, and Handy (2020).

42 Straumsheim (2016).

information gleaned from interactions with students, ignoring the risk score. This provided advisers with a measure of risk that was easier to address.

This challenge raises questions about the utility of predictive analytics in student support. How useful is it to identify a student determined to be at risk if the adviser is unsure why the student is at risk? If an adviser does not know what is driving a student's risk score, how they can intervene effectively? To maximize accuracy, these algorithms are complex and incorporate many variables. While this may improve predictions about a student's likelihood of achieving positive outcomes, the increase in complexity may make the tool less helpful to advisers. Perhaps a simpler algorithm would be more useful, or more transparency is needed in terms of the variables included the algorithm or the variables that appear to be driving an individual student's score.

- **Technology implementation may require more time and resources to lead to changes in student experiences.**

Advisers' use of technology is central to the iPASS theory of change, as shown in Figure 1. Theoretically, the key program activities — from communication to the identification of struggling students to the material covered during advising appointment discussions — will be aided by technology, which should provide advisers with more data on students and increase efficiency.[43] This study's early alert data shows that advisers at two of the three colleges *were* provided with more data on program group students. (These students received more early alerts than control group students.) However, at all the colleges, advisers described struggling to find time to become acclimated to the new technology tools, then use them. Advisers also struggled to find time to meet with all their assigned program group students. Though the goal of iPASS is to employ technology to make advisers' lives easier, technology, to be effectively implemented, may require more time and resources from advisers than they have available. Furthermore, it may be important to explore providing additional resources to decrease adviser caseloads, allowing them more time to devote to individual students.

Changes in infrastructure may be prioritized over changes in students' experiences when incorporating technology tools into student support and using it to spur institutional change. A key goal of this work is to streamline processes for advisers, which does provide clear benefits. It may allow them to use their time more efficiently and better identify and intervene with the most struggling students.

That said, there is no guarantee that this streamlining will trickle down to changes in students' experiences. Technology may provide better planning and information but not necessarily more support and guidance for students. Previous iPASS publications have emphasized the importance of not just deploying technology tools but providing support, guidance, and professional development for staff to ensure that technology is actually used and used effectively.[44] It is not yet clear how effective technology use by faculty and advising staff members best translates into positive outcomes for students. Future research could further explore how advising interactions could make effective use of technology tools.

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[43] Mayer et al. (2019).

[44] Karp et al. (2016).

- **In addition to improving student support, advising redesign work may present new opportunities for growth and learning across institutions.**

Across the three schools, leadership roles for individuals emerged, as did new supporting roles, such as the peer mentors at Fresno. Institutions planning or implementing advising redesign may find it helpful to take stock of existing roles and leadership responsibilities — formal and informal — and consider how individual roles and responsibilities may evolve as advising redesign progresses. In addition to faculty, schools may consider including stakeholder groups such as students and executive leadership, so they may contribute to moving the work forward, holistically and intentionally. Finally, institutions may want to consider ways to document advising redesign work (and rework) to identify challenges and opportunities that may arise.

Conclusion

Technology has the potential to support educational reform, providing the foundation for college advisers and staff to change how they interact with and support students. iPASS is an initiative designed to help colleges invest in technology and use it to redesign advising and student support. This report focused on three institutions' efforts to enhance their existing iPASS work by increasing informational communication with students, improving the process through which struggling students are identifying and supported, and redesigning the advising session.

The findings from the project show that the colleges were largely able to implement their enhancements, although overall they did not lead to a large difference in student experiences and did not have positive effects on their academic outcomes.

Mounting evidence from the study of education reforms suggests that impacting students' academic outcomes requires more substantial changes in their experiences. Reflecting a tension between scale and intensity, the study colleges managed to expand the iPASS enhancements to a broader group of students, but staff rarely had the time or resources to implement them fully, particularly finding enough time to devote to individual students.

Adopting new technology and using it to redesign advising is an iterative process that takes time. Thus, this effort should be viewed as one step in the process to broader change. As such, it is hoped that the findings from the project can be a useful guide to colleges as they move forward.

OUTCOME	PROGRAM	CONTROL	DIFFERENCE	STANDARD ERROR	P-VALUE
University of California, Fresno					
Female (%)	61.4	62.0	-0.6	2.8	0.826
Race/ethnicity (%)					
Hispanic	63.2	61.8	1.4	2.8	0.623
White	12.4	11.9	0.5	1.9	0.773
Black	3.2	2.3	0.8	0.9	0.394
Other	21.2	24.0	-2.7	2.4	0.259
Age (%)					
18 and under	10.9	10.1	0.9	1.8	0.613
19-24	89.1	89.9	-0.9	1.8	0.613
25 and over	0.0	0.0	0.0	0.0	
College credits earned at study enrollment	44.40	44.29	0.11	0.70	0.871
Sample size	610	609			
Montgomery County Community College					
Female (%)	59.9	58.6	1.3	1.8	0.468
Race/ethnicity (%)					
Hispanic	7.5	7.3	0.3	1.0	0.790
White	55.8	56.5	-0.8	1.8	0.677
Black	18.3	17.8	0.5	1.4	0.702
Other	18.4	18.4	0.0	1.4	0.980
Age (%)					
18 and under	4.4	4.6	-0.2	0.8	0.775
19-24	53.8	55.9	-2.1	1.8	0.251
25 and over	41.8	39.5	2.3	1.8	0.200
College credits earned at study enrollment	38.51	37.44	1.07	0.99	0.276
Sample size	926	1,086			

(continued)

OUTCOME	PROGRAM	CONTROL	DIFFERENCE	STANDARD ERROR	P-VALUE
University of North Carolina, Charlotte					
Female (%)	43.7	43.1	0.7	1.6	0.680
Race/ethnicity (%)					
Hispanic	9.1	10.0	-0.8	1.0	0.382
White	59.9	60.3	-0.4	1.6	0.795
Black	14.5	14.4	0.2	1.1	0.895
Other	16.5	15.4	1.1	1.2	0.356
Age (%)					
18 and under	29.5	28.4	1.2	1.5	0.436
19-24	66.2	66.8	-0.5	1.5	0.722
25 and over	4.2	4.8	-0.6	0.7	0.374
College credits earned at study enrollment	29.62	29.80	-0.19	0.57	0.744
Sample size	1,902	1,901			

SOURCE: MDRC calculations using data from California State University, Fresno, Montgomery County Community College, and University of North Carolina at Charlotte.

NOTES: Rounding may cause slight discrepancies in sums and differences.

The p-value indicates the likelihood that the estimated impact (or larger) would have been generated by an intervention with zero true effect. A lower p-value suggests a higher likelihood of a nonzero effect.

Estimates are weighted to account for differences in random assignment ratios across advisers.

Spring and summer records are combined. Similarly, winter and fall records are combined.

APPENDIX TABLE A.2 Differences in Early Alerts and Advising Appointments

INSTITUTIONS	PROGRAM	CONTROL	DIFFERENCE	STANDARD ERROR	P-VALUE
California State University, Fresno					
Had any early alerts (%)					
1st semester (with enhancements)	34.9	5.8	29.1	2.2	0.000
2nd semester (with enhancements)	39.9	11.5	28.4	2.4	0.000
3rd semester (after enhancements)	5.8	6.0	-0.2	1.4	0.909
4th semester (after enhancements)	3.0	2.6	0.4	0.9	0.704
Number of alerts					
1st semester (with enhancements)	0.59	0.08	0.50	0.04	0.000
2nd semester (with enhancements)	0.75	0.15	0.60	0.05	0.000
3rd semester (after enhancements)	0.08	0.09	-0.01	0.02	0.603
4th semester (after enhancements)	0.04	0.03	0.01	0.01	0.661
First year (with enhancements)	1.34	0.24	1.10	0.07	0.000
Had any meetings with an adviser (%)					
1st semester (with enhancements)	96.9	44.1	52.8	2.1	0.000
2nd semester (with enhancements)	92.5	54.5	38.1	2.2	0.000
3rd semester (after enhancements)	48.0	49.5	-1.5	2.9	0.607
4th semester (after enhancements)	52.6	50.6	2.0	2.9	0.477
Number of meetings					
1st semester (with enhancements)	1.94	0.73	1.21	0.07	0.000
2nd semester (with enhancements)	1.63	0.98	0.65	0.08	0.000
3rd semester (after enhancements)	0.79	0.74	0.05	0.06	0.438
4th semester (after enhancements)	0.82	0.80	0.02	0.06	0.681
First year (with enhancements)	3.57	1.71	1.86	0.12	0.000
Sample size	610	609			
Montgomery County Community College					
Had any early alerts (%)					
1st semester (with enhancements)	87.6	46.3	41.3	1.6	0.000
2nd semester (with enhancements)	47.9	34.0	13.9	1.9	0.000
3rd semester (after enhancements)	25.1	27.6	-2.5	1.7	0.149
4th semester (after enhancements)	12.9	4.2	8.7	1.1	0.000
Number of alerts					
1st semester (with enhancements)	2.45	0.88	1.57	0.07	0.000
2nd semester (with enhancements)	1.47	0.68	0.79	0.07	0.000
3rd semester (after enhancements)	0.55	0.59	-0.04	0.05	0.460
4th semester (after enhancements)	0.37	0.06	0.31	0.04	0.000
First year (with enhancements)	3.92	1.56	2.36	0.10	0.000
Had any meetings with an adviser (%)					
1st semester (with enhancements)	79.2	57.0	22.2	2.0	0.000
2nd semester (with enhancements)	54.4	49.2	5.2	2.2	0.021
3rd semester (after enhancements)	47.6	53.0	-5.4	2.2	0.016
4th semester (after enhancements)	28.5	33.9	-5.4	2.1	0.009

(continued)

INSTITUTIONS	PROGRAM	CONTROL	DIFFERENCE	STANDARD ERROR	P-VALUE
Number of meetings					
1st semester (with enhancements)	1.32	0.90	0.41	0.05	0.000
2nd semester (with enhancements)	1.39	1.40	-0.01	0.13	0.936
3rd semester (after enhancements)	2.08	2.11	-0.03	0.19	0.877
4th semester (after enhancements)	1.00	1.21	-0.21	0.14	0.130
First year (with enhancements)	2.71	2.31	0.40	0.14	0.005
Sample size	926	1,086			
University of North Carolina - Charlotte					
Had any early alerts (%)					
1st semester (with enhancements)	30.3	31.5	-1.2	1.5	0.432
2nd semester (with enhancements)	17.5	17.3	0.3	1.2	0.824
3rd semester (after enhancements)	14.3	15.1	-0.7	1.1	0.525
4th semester (after enhancements)	9.8	10.6	-0.8	1.0	0.409
Number of alerts					
1st semester (with enhancements)	0.45	0.48	-0.03	0.03	0.267
2nd semester (with enhancements)	0.22	0.21	0.01	0.02	0.663
3rd semester (after enhancements)	0.18	0.20	-0.02	0.02	0.306
4th semester (after enhancements)	0.13	0.13	-0.01	0.01	0.491
First year (with enhancements)	0.67	0.69	-0.02	0.03	0.506
Had any meetings with an adviser (%)					
1st semester (with enhancements)	83.6	79.2	4.5	1.2	0.000
2nd semester (with enhancements)	70.6	67.3	3.3	1.5	0.025
3rd semester (after enhancements)	60.5	60.7	-0.1	1.6	0.937
4th semester (after enhancements)	50.5	49.7	0.8	1.6	0.626
Number of meetings					
1st semester (with enhancements)	1.37	1.29	0.07	0.04	0.040
2nd semester (with enhancements)	1.19	1.12	0.07	0.04	0.065
3rd semester (after enhancements)	1.11	1.13	-0.02	0.05	0.759
4th semester (after enhancements)	0.88	0.86	0.02	0.05	0.724
First year (with enhancements)	2.56	2.41	0.15	0.06	0.013
Sample size	1,902	1,901			

SOURCE: MDRC calculations using data from California State University, Fresno, Montgomery County Community College, and University of North Carolina at Charlotte.

NOTES: Rounding may cause slight discrepancies in sums and differences.
   The p-value indicates the likelihood that the estimated impact (or larger) would have been generated by an intervention with zero true effect. A lower p-value suggests a higher likelihood of a nonzero effect.
   Estimates are adjusted by pre-random assignment characteristics of sample members.
   Estimates are weighted to account for differences in random assignment ratios across advisers.
   Spring and summer records are combined. Similarly, winter and fall records are combined.
   Meetings with advisors were mostly conducted in-person, but some were over the phone or via email. The data did not allow for accurate differentiation of the types of meetings.

APPENDIX TABLE A.3 Differences in Enrollment and Credits Attempted/Earned, by Timing of Registration Hold at Montgomery County Community College

OUTCOME	PROGRAM	CONTROL	DIFFERENCE	STANDARD ERROR	P-VALUE
Enrollment in classes before registration hold (%)					
1st semester (with enhancements)	96.1	96.9	-0.9	0.5	0.092
2nd semester (with enhancements)	50.4	53.4	-2.9	1.8	0.105
3rd semester (after enhancements)	36.5	41.5	-5.0	1.8	0.005
4th semester (after enhancements)	27.0	28.1	-1.1	1.6	0.492
Enrollment in classes after registration hold (%)					
1st semester (with enhancements)	28.3	29.5	-1.2	1.7	0.455
2nd semester (with enhancements)	10.4	13.0	-2.7	1.2	0.024
3rd semester (after enhancements)	10.3	10.8	-0.5	1.1	0.677
4th semester (after enhancements)	6.0	6.0	0.0	0.9	0.980
Credits attempted before registration hold					
1st semester (with enhancements)	5.96	6.06	-0.10	0.11	0.345
2nd semester (with enhancements)	3.78	3.85	-0.07	0.16	0.679
3rd semester (after enhancements)	2.82	3.10	-0.29	0.16	0.082
4th semester (after enhancements)	1.78	1.89	-0.11	0.12	0.359
All semesters	14.33	14.90	-0.57	0.39	0.147
Credits attempted after registration hold					
1st semester (with enhancements)	1.33	1.50	-0.17	0.10	0.090
2nd semester (with enhancements)	0.41	0.50	-0.08	0.05	0.097
3rd semester (after enhancements)	0.46	0.43	0.02	0.05	0.660
4th semester (after enhancements)	0.23	0.25	-0.02	0.04	0.606
All semesters	2.43	2.68	-0.25	0.15	0.097
Credits earned before registration hold					
1st semester (with enhancements)	4.25	4.42	-0.17	0.12	0.144
2nd semester (with enhancements)	2.94	3.05	-0.11	0.15	0.470
3rd semester (after enhancements)	2.29	2.53	-0.24	0.15	0.108
4th semester (after enhancements)	1.34	1.55	-0.20	0.11	0.062
All semesters	10.64	11.31	-0.67	0.37	0.071
Credits earned after registration hold					
1st semester (with enhancements)	1.07	1.20	-0.13	0.09	0.147
2nd semester (with enhancements)	0.33	0.36	-0.04	0.04	0.414
3rd semester (after enhancements)	0.33	0.33	-0.01	0.05	0.866
4th semester (after enhancements)	0.18	0.18	0.00	0.03	0.919
All semesters	1.90	2.06	-0.16	0.13	0.219
Sample size	1,248	1,741			

SOURCE: MDRC calculations using transcript data from Montgomery County Community College.

NOTES: Rounding may cause slight discrepancies in sums and differences.

The p-value indicates the likelihood that the estimated impact (or larger) would have been generated by an intervention with zero true effect. A lower p-value suggests a higher likelihood of a nonzero effect.

Estimates are adjusted by pre-random assignment characteristics of sample members.

Estimates are weighted to account for differences in random assignment ratios across advisers.

Spring and summer records are combined. Similarly, winter and fall records are combined.

Transcript records for summer 2019 are not included in the fourth semester estimates. Few students enrolled in any classes during the summer terms.

APPENDIX TABLE A.4 Differences in Course Outcomes and Degrees Earned

INSTITUTIONS	PROGRAM	CONTROL	DIFFERENCE	STANDARD ERROR	P-VALUE
California State University, Fresno					
Received a D or F in any course (%)					
1st semester (with enhancements)	52.1	49.2	2.9	2.8	0.305
2nd semester (with enhancements)	47.3	48.9	-1.6	2.9	0.572
3rd semester (after enhancements)	41.4	39.1	2.3	2.8	0.417
4th semester (after enhancements)	34.8	33.3	1.5	2.7	0.572
Withdrew from any course (%)					
1st semester (with enhancements)	1.5	1.1	0.4	0.7	0.544
2nd semester (with enhancements)	2.6	1.5	1.2	0.8	0.153
3rd semester (after enhancements)	1.5	1.0	0.5	0.6	0.410
4th semester (after enhancements)	1.1	1.5	-0.4	0.7	0.576
Earned Bachelor's degree (%)	0.6	0.2	0.5	0.4	0.207
Sample size	610	609			
Montgomery County Community College					
Received a D or F in any course (%)					
1st semester (with enhancements)	32.8	33.6	-0.8	1.7	0.645
2nd semester (with enhancements)	15.1	15.8	-0.6	1.3	0.625
3rd semester (after enhancements)	11.1	10.5	0.6	1.1	0.573
4th semester (after enhancements)	8.0	7.3	0.7	1.0	0.494
Withdrew from any course (%)					
1st semester (with enhancements)	17.1	15.7	1.4	1.4	0.300
2nd semester (with enhancements)	9.2	10.8	-1.6	1.1	0.153
3rd semester (after enhancements)	6.3	8.4	-2.2	1.0	0.023
4th semester (after enhancements)	4.3	4.3	0.0	0.7	0.992
Earned any degree or certificate (%)	20.4	21.4	-1.1	1.5	0.473
Sample size	1,248	1,741			
University of North Carolina, Charlotte					
Received a D or F in any course (%)					
1st semester (with enhancements)	32.4	32.4	0.1	1.5	0.971
2nd semester (with enhancements)	29.6	28.5	1.2	1.5	0.428
3rd semester (after enhancements)	26.1	25.6	0.5	1.4	0.722
4th semester (after enhancements)	18.4	18.7	-0.3	1.3	0.784
Withdrew from any course (%)					
1st semester (with enhancements)	23.8	24.1	-0.3	1.4	0.836
2nd semester (with enhancements)	21.4	19.9	1.5	1.3	0.260
3rd semester (after enhancements)	17.8	17.8	0.0	1.2	0.982
4th semester (after enhancements)	12.9	13.9	-1.0	1.1	0.371
Earned Bachelor's degree (%)	4.7	5.0	-0.3	0.7	0.623
Sample size	1,902	1,901			

(continued)

SOURCE: MDRC calculations using transcript data from California State University, Fresno; Montgomery County Community College; and University of North Carolina at Charlotte.

NOTES: Rounding may cause slight discrepancies in sums and differences.
   The p-value indicates the likelihood that the estimated impact (or larger) would have been generated by an intervention with zero true effect. A lower p-value suggests a higher likelihood of a nonzero effect.
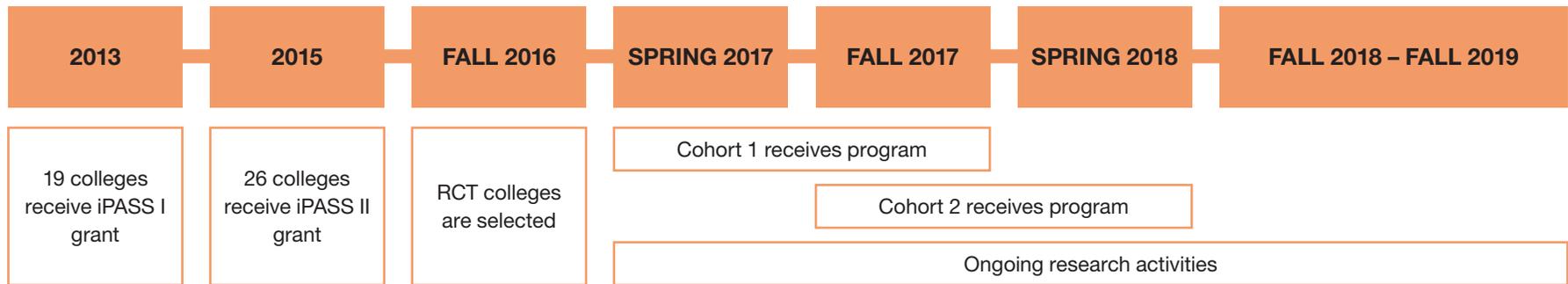   Estimates are adjusted by pre-random assignment characteristics of sample members.
   Estimates are weighted to account for differences in random assignment ratios across advisers.
   Spring and summer records are combined. Similarly, winter and fall records are combined.
   Transcript records for summer 2019 are not included in the fourth semester estimates. Few students enrolled in any classes during the summer terms.

APPENDIX FIGURE A.1 Timeline of iPASS Initiative

2013	2015	FALL 2016	SPRING 2017	FALL 2017	SPRING 2018	FALL 2018 – FALL 2019

| 19 colleges receive iPASS I grant | 26 colleges receive iPASS II grant | RCT colleges are selected |

Cohort 1 receives program

Cohort 2 receives program

Ongoing research activities

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Founded in 1974, MDRC builds and applies evidence about changes in policy and practice that can improve the well-being of people who are economically disadvantaged. In service of this goal, we work alongside our programmatic partners and the people they serve to identify and design more effective and equitable approaches. We work with them to strengthen the impact of those approaches. And we work with them to evaluate policies or practices using the highest research standards. Our staff members have an unusual combination of research and organizational experience, with expertise in the latest qualitative and quantitative research methods, data science, behavioral science, culturally responsive practices, and collaborative design and program improvement processes. To disseminate what we learn, we actively engage with policymakers, practitioners, public and private funders, and others to apply the best evidence available to the decisions they are making.

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