

Findings and Lessons from a Synthesis of MDRC's Postsecondary Education Research

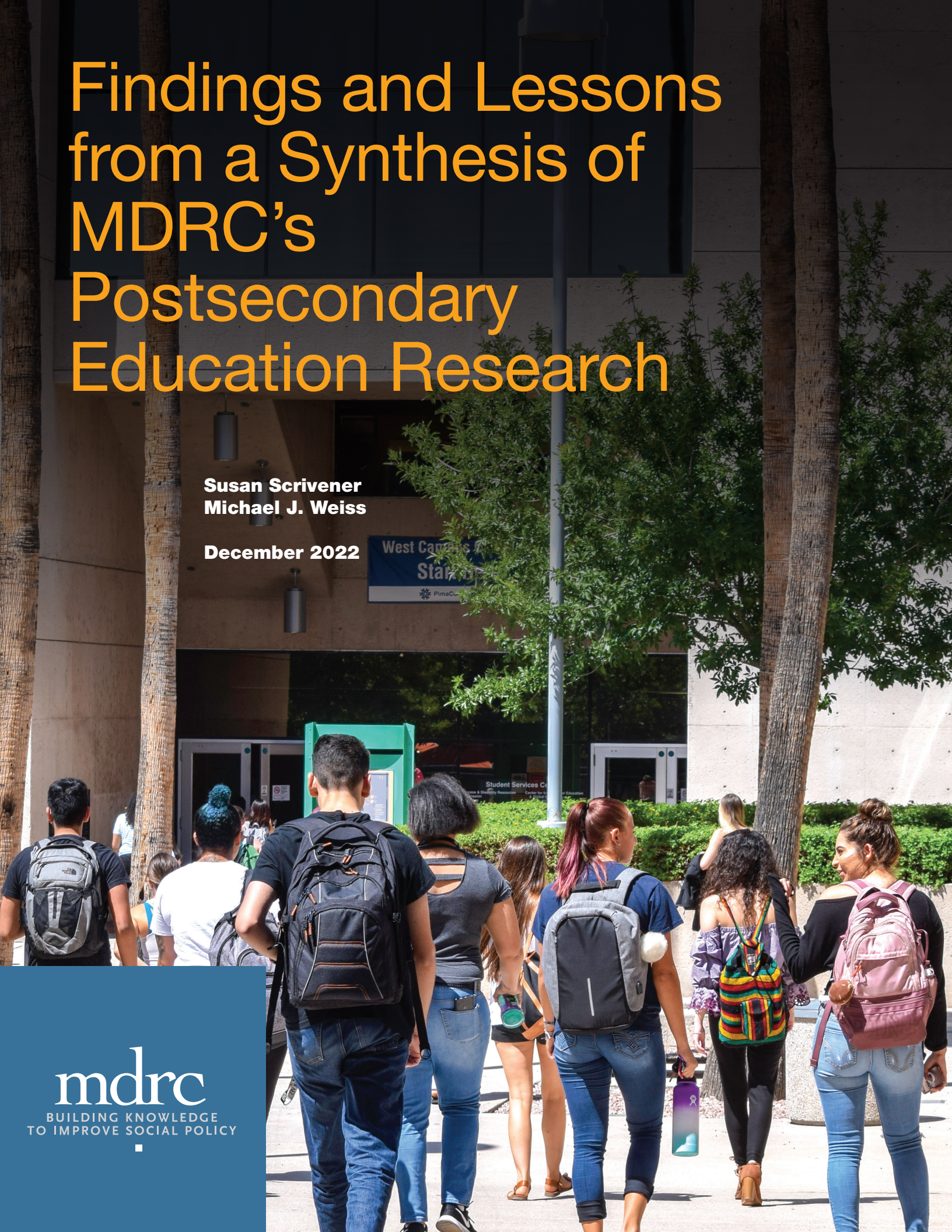
**Susan Scrivener
Michael J. Weiss**

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Findings and Lessons from a Synthesis of MDRC's Postsecondary Education Research

Susan Scrivener and Michael J. Weiss



DECEMBER 2022

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OVERVIEW

Community colleges provide postsecondary education to millions of students in the United States each year, but their graduation rates are low. Many community colleges have implemented interventions to help students persist in college and earn degrees. MDRC has studied many such interventions; several of them improved students' academic outcomes, but the effects varied.

This report synthesizes results from MDRC's studies. The data include findings from 30 studies of 39 interventions at 45 colleges. The interventions included different components designed to help students succeed: enhanced advising; enhanced tutoring; financial support; instructional reform; learning communities (which enroll small groups of students together in two or more courses); promoting full-time enrollment in fall and spring, summer enrollment, or both; and success courses (designed to help new students navigate college and build relevant skills). MDRC conducted a quantitative synthesis of the studies' results to examine the relationship between various intervention features and effects on selected student outcomes. This report draws from the quantitative synthesis and also from detailed information on how the interventions were implemented. Its findings include:

- The effects of community college interventions tend to be larger for interventions that are more comprehensive (those that have more components) and those that promote full-time or summer enrollment. Less consistent, but still promising evidence suggests that the effects of interventions tend to be larger for interventions that increase students' advising use, increase students' tutoring use, and provide increased financial support to students. This report describes these program features and shares additional findings that include:
 - Eight of the nine interventions with the largest estimated effects on credits earned through one year promoted full-time or summer enrollment.
 - The positive evidence about advising mostly reflects a few interventions that generated very large increases in advising use and included several other components. Few interventions in the synthesis generated a moderate increase in advising use; the effect of this middle range is an area ripe for research.
 - The most effective interventions offered middle-range financial support. A few interventions that offered financial support at the high end of the range examined were no more effective than some interventions offering far less. Most of the interventions that provided financial support offered it alongside other components.
- Interventions that last longer (more semesters) tend to have larger effects on students' outcomes than shorter interventions. Most of the effects of interventions occur while they are provided to students, which limits the potential of shorter interventions.

The research also points to some areas for further exploration. Those areas include how to support part-time community college students effectively, the implementation and effects of programs targeting students in rural areas and in small colleges, and the potential role of community college interventions in reducing racial inequality in students' academic outcomes.

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ACKNOWLEDGMENTS

This report synthesizes the results from 30 MDRC studies conducted over the past two decades. The studies reflect the work and commitment of myriad individuals, including multiple funders, researchers, and college administrators and staff members, as well as tens of thousands of students. We are indebted to everyone involved; the synthesis would not have been possible without them.

The synthesis research summarized in the report reflects the contributions of several current and former MDRC staff members and consultants. The Higher Education Randomized Controlled Trial (THE-RCT) database, from which the report draws, was designed and created by John Diamond, Colin Hill, Austin Slaughter, and Stanley Dai (along with report author Michael Weiss). Andrea Vasquez reviewed MDRC reports from some of the studies in the synthesis and helped the authors systematically code information about the interventions' implementation for the research. Howard Bloom and Kriti Singh partnered with Michael Weiss to design and carry out the quantitative synthesis research and write a journal article about the results, from which this report draws heavily.

The report itself reflects the contributions of several MDRC staff members. Colleen Sommo, Alyssa Ratledge, and Joshua Malbin reviewed early drafts of the report and provided helpful comments. Makoto Toyoda coordinated and fact-checked the report. Joshua Malbin edited the report and Ann Kottner prepared it for publication.

The Authors

Community colleges provide higher education to millions of students in the United States each year. In fall 2020, nearly five million students attended community colleges, representing 29 percent of undergraduates in the United States.¹ Graduation rates at community colleges, however, are quite low. Among first-time, full-time students seeking a degree or certificate whose first postsecondary school is a community college, only 31 percent graduate within three years.²

Community college practitioners and researchers who study community college student access and success have identified multiple systemic issues, institutional practices, and student-level barriers that can impede students' progress in school.³ These issues, practices, and barriers include the financial costs of college; competing time and resource demands of school, work and family; the challenge of navigating complex college systems; underfunded student support services; campus environments that do not foster a sense of belonging for all; and insufficient preparation for college-level work, often due to systemic issues that lead to unequal access to high-quality K-12 education.⁴

To address these challenges, many community colleges have implemented interventions aimed at helping students persist in college and earn degrees. The interventions have varied widely, in part reflecting differences in the barriers they intend to address and the resources they have available. The different interventions include various components (such as enhanced advising or financial support), vary in length and intensity, and target different groups of students.

MDRC has studied many such interventions using a randomized controlled trial research design, in which many students are assigned randomly either to a group with access to services from the intervention or to a group with access to usual college services. Because the groups are similar at the start of the study, any differences in outcomes found later provide estimates of the effects the intervention caused. In these randomized controlled trials, MDRC examined effects on academic outcomes such as credits earned, semesters enrolled, and degrees earned, and also examined how the interventions were implemented. As discussed below, many of the interventions improved students' outcomes.

In 2021, MDRC created The Higher Education Randomized Controlled Trial (THE-RCT) database,⁵ which includes data from all MDRC's randomized controlled trials in postsecondary education conducted through 2019. MDRC conducted a quantitative synthesis of these trials, using the database, to examine the relationship between intervention features and intervention effects on

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1. Integrated Postsecondary Education Data System (IPEDS) Trend Generator (2020b). This report uses the term "community colleges" to refer to all two-year public institutions.
 2. Integrated Postsecondary Education Data System (IPEDS) Trend Generator (2021).
 3. Baum, Kurose, and McPherson (2013); Braxton (2000); Calcagno et al. (2008).
 4. Bailey, Jeong, and Cho (2010); Bailey, Jaggars, and Jenkins (2015); Bettinger, Long, Oreopoulos, and Sanbonmatsu (2012); Bound, Lovenheim, and Turner (2007); Denning (2017); Horn, Berger, and Carroll (2004); Karp (2016); Kolenovic, Linderman, and Karp (2013); Perna et al. (2015).
 5. Diamond et al. (2021).

some student outcomes.⁶ The “intervention features” are the components of the interventions (for example, enhanced advising and financial support) and the comprehensiveness of the interventions (the number of components each one had). This report draws from the quantitative synthesis and also from detailed information on how the interventions were implemented. It is important to note that this report focuses exclusively on MDRC’s randomized controlled trials. Thus, this report focuses on the effects of the interventions MDRC studied and the range of ways various features were implemented in those studies.

After describing the studies and summarizing the results from the quantitative synthesis, this report describes the program features that the synthesis found were associated with larger-than-average effects on student outcomes. It describes the range of models for each feature that were present in the interventions MDRC studied, highlights similarities and differences among these models, provides examples of approaches to implementation, and notes areas ripe for future research. It briefly describes some program features that were not found in the quantitative synthesis to be associated with larger-than-average effects. The report also discusses the relationship between intervention duration (how many semesters an intervention lasts) and intervention effects on students’ outcomes. Duration was not examined in the quantitative synthesis (for reasons discussed in that section, below) but is examined here because it is an important dimension of interventions.

This report is intended for community college administrators and practitioners—people who design and implement student-facing interventions. It summarizes what is known from a substantial evidence base of multiple, large-scale randomized controlled trials and provides some descriptions of program components in order to help inform decision-making and practice. The report also identifies open questions and areas where additional research is warranted, information that will be useful for both community college practitioners and researchers who study community colleges.

DESCRIPTION OF THE STUDIES

The data for the quantitative synthesis and this report include findings from 30 randomized controlled trials that tested 39 interventions at 45 colleges in the United States, the vast majority of which were community colleges. The randomized controlled trials include a total research sample of over 60,000 students. The interventions operated at different time periods over the past two decades, the first beginning in 2003. The interventions are very diverse, ranging, for example, from one-component, low-intensity approaches to much more comprehensive programs with several components, and ranging in duration from one semester to three years.

6. Weiss, Bloom, and Singh (forthcoming); Weiss and Bloom (2022). Some of the material in this report also appears in these two publications.

The interventions included different components that were designed to help students succeed in college. Those components are enhanced advising; enhanced tutoring; financial support; instructional reform; learning communities; promoting full-time enrollment, summer enrollment, or both; and success courses.⁷ Each of these components is described in sections below.⁸ Given the broad range of interventions included in the research, these components are likely to be common components of community college interventions more generally.

Table 1 shows the percentage of interventions in the synthesis that included each component—in other words, the prevalence of each component across the 39 interventions. Financial support is the most common component, present in 51 percent of the interventions. Enhanced advising is the second-most-common component and promoting full-time or summer enrollment is the third-most-common component (present in 38 percent and 33 percent of the interventions, respectively). Learning communities and success courses are the least common components, present in 23 percent of the interventions. Appendix Table A.2 shows the specific components that were present in each of the interventions. Specific interventions are discussed in sections below to help illustrate the different components discussed in the report (for example, enhanced advising), and to help illustrate the features of comprehensiveness and duration. (Appendix Table A.1 lists the interventions and the abbreviations used for each in exhibits, including Appendix Table A.2. It also provides links to reports about each intervention and its effects.)

Table 1 also shows how many components were present in the interventions, or how *comprehensive* they were. Over a third of the interventions, 41 percent, had zero or one of the intervention components that were part of this synthesis research,⁹ and 44 percent had two or three components. Only 15 percent of the interventions had four or more components. This percentage suggests that highly comprehensive interventions are not common in community colleges or are infrequently evaluated. Note that 59 percent of the interventions had two or more components, which highlights the challenge of identifying the separate contributions of specific intervention components to the interventions' overall effects.

Each intervention targeted a specific subset of students but generally served students from low-income backgrounds, who often were new or relatively new to college. Students across the interventions were racially/ethnically diverse. In 11 interventions there was no racial majority, in 4 interventions Black students were the majority, in 16 interventions Hispanic students were the majority, and in 8 interventions White students were the majority. Students ranged in age, though a majority were 24 or younger. (See Appendix Tables A.3 and A.4 for selected sample characteristics for each intervention.)

-
7. Components that were present in just a few interventions were not included in the analysis.
 8. As explained in those sections below, learning communities enroll small groups of students together in two or more courses. Success courses are designed to help new students navigate college and build relevant academic and personal skills.
 9. One intervention, Aid Like a Paycheck (ALAP), was a financial aid reform that changed how aid was paid to students but did not change the amount paid. For the purposes of this synthesis, it is considered to have none of the components examined, as it repackaged but did not increase students' financial support.

TABLE 1. Prevalence and Number of Components Across Interventions

	Percentage of Interventions
Presence of component	
Enhanced advising	38
Enhanced tutoring	28
Financial support	51
Instructional reform	26
Learning communities	23
Promoting full-time/summer enrollment	33
Success course	23
Comprehensiveness (number of components)	
0	3
1	38
2	23
3	21
4	5
5	5
6	5
Number of interventions	39

SOURCES: MDRC calculations using data from THE-RCT and reports and journal articles. A list of reports and articles can be found in Appendix Table A.1.

NOTE: One intervention was a financial aid reform that did not result in any increase in the amount of aid distributed. It is therefore the only intervention with none of the seven intervention components that were coded.

In all but a few studies, students were attached to a specific college before the intervention began: They were current students, had registered at the college, or clearly intended to attend the college. In this way, nearly all these interventions aimed to help students persist in or complete college, but generally were not designed to increase access to college.

As noted above, the interventions were set at 45 different colleges. The colleges were located in 12 different states, 8 of which were among the 10 most populous states in the nation (estimated in 2021).¹⁰ Most of the colleges were in cities/urban settings and some were in suburbs. Few were in rural areas. Most of the colleges are large, with 10,000 or more students. (Appendix Table A.5 shows urban/rural character and college size for each study.) Given that many of the interven-

¹⁰. Stats America (2021).

tions in the synthesis were set in large, urban colleges, there is not enough variation across the studies to examine differences in implementation or effects systematically along the dimensions of urban/rural character and college size.

The original studies found that many of the interventions had at least some positive effects on students' outcomes, but the effects of the interventions varied substantially. In each study, the difference between the program group's and control group's outcomes yields the estimated effect of the intervention. Appendix Figure A.1 shows each intervention's estimated effect on the number of credits accumulated through one year after each study began, one of the outcomes examined in all the studies and one used in the quantitative synthesis discussed below. Interventions are listed in the figure in the order of the magnitude of their estimated effects. Estimated effects range from a slight reduction in credits to an increase of over 4 credits. Reports and articles from the individual studies describe the results in detail. (These reports and articles are listed in Appendix Table A.1.)

This report and the quantitative synthesis from which it draws shift the focus from the individual studies to look *across* the interventions at specific features—intervention components and the comprehensiveness of the interventions—and their relationship to the size of the interventions' effects. The focus is on the value of specific intervention features, as opposed to promising whole-program models. In other words, instead of focusing on which program models are most effective, this report and the quantitative synthesis explore why some program models are more effective than others based on their features. They provide evidence regarding program features that tend to be present in more effective program models.

RESULTS FROM THE QUANTITATIVE SYNTHESIS

This report complements and builds on a journal article and brief that relied on data from the studies described in the preceding section.¹¹ These companion pieces rely on statistical analyses to examine the predictive relationship between intervention features and intervention effects on two outcomes: credits accumulated through one year and enrollment in the third semester after the intervention began. (For simplicity, this report focuses on credit accumulation, briefly noting a few instances where findings were inconsistent between credit accumulation and enrollment.) The focus on these shorter-term outcomes maximizes the number of interventions included in the analyses, since many studies did not track long-term outcomes. Credit accumulation and continued enrollment are important indicators of student academic progress, are related to degree completion, and are measured consistently across many postsecondary evaluations. There are other important outcomes that interventions may influence that are *not* explored here, such as measures of subject-specific learning and engagement in and satisfaction with college.

11. Weiss and Bloom (2022); Weiss, Bloom, and Singh (forthcoming).

The brief and journal article start by examining a common refrain that more comprehensive programs have larger effects.¹² Next, they examine the relationships between seven intervention components and the magnitude of intervention effects.

This research consistently indicates that the effects of community college interventions tend to be larger in interventions that:

- Are more comprehensive, as measured by their number of components
- Promote full-time enrollment during fall or spring, summer enrollment, or both

Less consistent, but still promising evidence suggests that the effects of community college interventions tend to be larger in interventions that:

- Induce increased advising use among students
- Induce increased tutoring use among students
- Provide increased financial support to students

This research consistently *fails* to find evidence that the effects of community college interventions tend to be larger in interventions that:

- Involve instructional reforms
- Offer learning communities
- Increase participation in success courses

These analyses are not necessarily causal. The analyses show that, for example, interventions that promote full-time or summer enrollment tend to have larger effects. The analyses do *not* definitively show that promoting full-time or summer enrollment *causes* an intervention to have larger effects. It is possible that other characteristics of the interventions studied, such as their student populations or their local settings, are the cause of larger or smaller intervention effects and are correlated with promoting full-time or summer enrollment.

For example, in this sample of studies, interventions that promoted full-time or summer enrollment also tended to emphasize increased advising use. Thus, if increasing the intensity of both components causes an increase in intervention effects, the omission of one of them from the analyses will tend to produce an overestimate of the effect of the other. This result occurs because the analyses will attribute part of the effect of the omitted component to the included component.

12. Dawson, Kearney, and Sullivan (2021); Scrivener and Coghlan (2011).

Similarly, if intervention effects were systematically larger for students from low-income backgrounds and if interventions serving a higher percentage of students from low-income backgrounds tended to promote full-time or summer enrollment, then the predictive relationship between interventions' promotion of full-time or summer enrollment and intervention effects would overstate how much promoting full-time or summer enrollment increases intervention effects.

To address some of these issues, Weiss, Bloom, and Singh (forthcoming) conducted extensive sensitivity analyses, statistically controlling for various intervention, student, and setting characteristics to test the robustness of the findings. The preponderance of evidence across all analyses led to the classifications above of consistent evidence of positive relationships (for comprehensiveness and promotion of full-time or summer enrollment), mixed evidence of positive relationships (for increased advising use, tutoring use, and financial support) and no evidence of a positive relationship (for offering instructional reform, learning communities, and success courses).

Nonetheless, the findings *suggest* but cannot *confirm* causal relationships between intervention features and effects. They provide food for thought about the design of future community-college innovations to be tried by practitioners or tested by researchers.

The intervention features that are consistently present in interventions with larger effects as well as those with less consistent, but still promising evidence seem like a reasonable, evidence-based place to start when developing community college policy, designing a new community college intervention, or enhancing an existing community college intervention. Most of the remainder of this document provides more detail on these promising intervention features, making full use of the implementation research that was part of each intervention's evaluation.

COMPREHENSIVENESS

As discussed above, the number of components in the interventions studied varied. Just over a third of the interventions included only one component. Three Integrated Planning and Advising for Student Success (iPASS) programs, for example, provided only enhanced advising for students, and several performance-based scholarship programs provided only financial support that was tied to achieving specific academic benchmarks. The majority of the interventions had two or more components. The Dana Center Math Pathways program, for example, included two components: math instructional reform and tutoring. Detroit Promise Path provided three components: enhanced advising, financial support, and promoting full-time and summer enrollment. Only a handful of interventions included four or more components and the two most comprehensive interventions studied included six components. The City University of New York's CUNY Start program, for example, provided enhanced advising, enhanced tutoring, instructional reform, learning communities, and a success course, and promoted full-time or summer enrollment.

It seems reasonable to expect that interventions with multiple components that focus on multiple barriers to success in college would produce larger effects than interventions with fewer compo-

nents. Different students may face different barriers that different components are designed to address. For example, navigating the complex bureaucracy of college can confound some students, and information and support from enhanced advising might help them. An inability to pay the full cost of college may hold back other students, and financial support might alleviate some of this burden. Difficulties in mastering required course material may prevent other students from progressing, and enhanced tutoring or instructional reform may help them. Thus, by addressing multiple barriers to student progress, a multicomponent intervention should, all else being equal, produce positive effects for a broader range of students than a single-component intervention.

In addition, for many students, there is no single financial, academic, system-level, or personal barrier that, if addressed, would lead to college success. Rather, many students face multiple barriers to success and the barriers can change in severity over time. Thus, interventions with multiple, complementary components that address multiple barriers to student progress over multiple semesters would seem to have more potential to improve an individual student's outcomes than interventions with fewer components that seek to address fewer barriers.

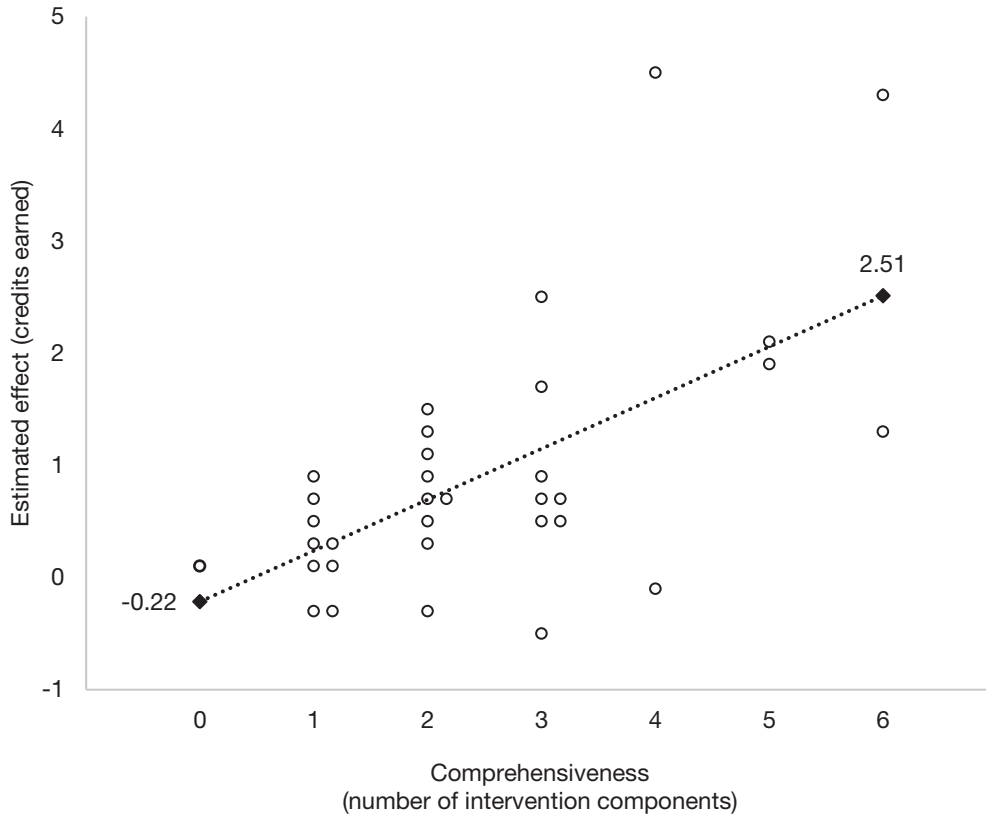
It may not be surprising, therefore, that the quantitative synthesis found that programs with more components—that is, those that were more “comprehensive”—tend to have larger effects. Indeed, this finding aligns with other research from MDRC and other researchers,¹³ but the analysis discussed in this report may be the first time this issue has been explored systematically and quantitatively.

The x-axis in Figure 1 represents the number of components in an intervention and the y-axis represents the estimated effect of an intervention on credit accumulation one year after students joined their intervention studies. As shown in the figure, as the number of intervention components increases from zero to six, the average effect increases by 2.73 credits. Said another way, the effect on credits accumulated increases by 0.46 credits, on average, for each additional intervention component.

Considering two specific interventions can help illustrate this relationship. One of the interventions with one component that falls along the dotted line in the figure is a performance-based scholarship program in New York City. It provided a scholarship if a student met specific academic benchmarks. The intervention's estimated effect on credits earned over a year was 0.44. In contrast, one of the interventions with five components that falls along the dotted line is a performance-based scholarship program in Arizona that included a similar scholarship but also included other forms of support for students: enhanced advising, enhanced tutoring, a success course, and encouragement to enroll full time. That intervention's estimated effect on credits earned over a year was 1.81. The additional components in the Arizona intervention were designed to help students in multiple ways beyond the scholarship itself, and the more comprehensive package indeed made more of a difference.

13. See for example, Scrivener et al. (2015); Miller, Headlam, Manno, and Cullinan (2020); Miller and Weiss (2021); Bertrand et al. (2019); Roder and Elliott (2019).

FIGURE 1. Intervention Effects on Credits Earned Versus Their Comprehensiveness (Year 1)



SOURCES: MDRC calculations using data from THE-RCT and reports and journal articles. A list of reports and articles can be found in Appendix Table A.1.

NOTES: Sample size = 60,683; interventions = 33.

HOW TO READ THIS FIGURE: In Figure 1, each data point represents an intervention. For example, the point on the top right of the figure indicates that an intervention (this one is CUNY ASAP) had six intervention components and the estimated effect through one year after students joined the study was 4.3 credits earned. The line in the figure summarizes the trend.

All else being equal, interventions with more components are likely to make a bigger difference for students than interventions with fewer components. But which components should a program designer choose to provide? Of course, the specific program’s goals, target population, and context are essential to consider. The quantitative synthesis of MDRC’s studies provides the most consistent evidence about the effects of promoting full-time enrollment or summer enrollment and less consistent but still promising evidence about providing enhanced advising, enhanced tutoring, and financial support. Those intervention components are discussed in the following sections.

PROMOTING FULL-TIME ENROLLMENT, SUMMER ENROLLMENT, OR BOTH

Enrolling full time (that is, attempting 12 or more credits) or enrolling during the summer are associated with improved student outcomes.¹⁴ Yet in the fall of 2020, among the 4.8 million students enrolled in community colleges, just 1.6 million (34 percent) attended full time.¹⁵ Similarly, only around 30 percent of community college students seeking degrees enroll in summer.¹⁶

To increase academic progress among community college students, some interventions explicitly promote full-time enrollment, summer enrollment, or both. Across the interventions MDRC has evaluated, the promotion of full-time or summer enrollment came in different forms, including:

- Strictly requiring full-time enrollment, where if students drop to part-time enrollment, they lose out on some or all the intervention that semester
- Nominally requiring full-time enrollment, but with no real penalties for dropping to part-time status
- Providing financial incentives for registering for 12 or more credits (in fall or spring) or enrolling in summer
- Providing financial incentives for earning 12 or more credits (in fall or spring)
- Conducting informational campaigns encouraging full-time or summer enrollment
- Structuring an intervention's course requirements around a full-time schedule

For example, Detroit Promise Path staff members communicate the value of full-time and summer enrollment to students, and coaches direct students to enroll full time (12 or more credits) in fall and spring. However, if students drop to part-time status for a semester, there is no penalty; students continue to receive coaching and financial incentives. As another example, the Ohio Performance-Based Scholarship intervention offered student parents from low-income households a \$900 award for achieving a “C” grade or better in 12 or more credits during each semester, providing an incentive for full-time enrollment. The Encouraging Additional Summer Enrollment (EASE) intervention included a student informational campaign (with messages sent by email and postal mail) that promoted summer enrollment among program group members, all of whom were Pell Grant recipients. The City University of New York's Accelerated Study in Associate Programs (CUNY ASAP) required full-time enrollment for program participants; students were not eligible for the program's financial support in semesters they enrolled part time. Finally, for some students in the Opening Doors Learning Communities program, the learning

14. Attewell, Heil, and Reisel (2012).

15. Integrated Postsecondary Education Data System (IPEDS) Trend Generator (2020a).

16. Attewell and Jang (2013).

community had students enrolling together in a developmental (remedial) English course for eight hours each week (an eight-credit course), a three-credit content course, and a one-credit orientation class for new students. Thus, built into the structure of the learning community was the equivalent of a full-time 12-credit course load.

Several interventions provided financial incentives of varying amounts tied directly to full-time or summer enrollment. For example, EASE provided a last-dollar summer tuition waiver to Pell Grant recipients, which can be worth hundreds of dollars to some. The average award among students offered the waiver was just \$63, however, and the average award among students who enrolled in summer was just \$164.¹⁷ On the other end of the spectrum, one performance-based scholarship offered students \$250 for registering for 12 or more credits and another offered \$1,000 for earning 12 or more credits.

Figure 2 shows results from the quantitative synthesis. There is a strong, positive relationship between intervention effects and the number of terms an intervention promotes full-time or summer enrollment during the first year after students enter their programs. Moving from an intervention that does not explicitly promote full-time or summer enrollment to an intervention that promotes full-time fall and spring enrollment plus summer enrollment (that is, enrollment for three terms) is associated with a 2.53 credit increase in the average size of an intervention's effects (calculated as 2.83 minus 0.31).¹⁸ Moreover, eight out of the nine interventions with the largest estimated effects on credits earned through one year promoted full-time or summer enrollment in one or more terms.

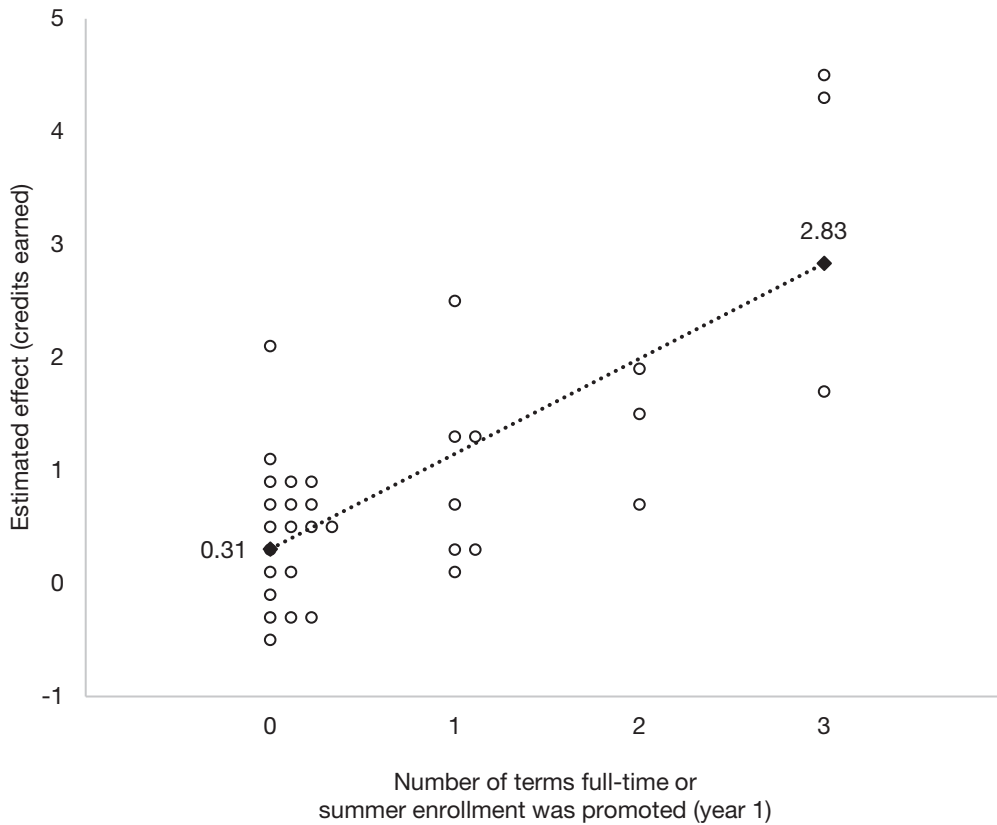
But what about part-time students? Around 66 percent of community college students enroll part time—around 3.1 million students. Some of these students could be induced, by an intervention, to enroll full time. The research samples in several studies (for example, those of CUNY ASAP and the ASAP Demonstration in Ohio) were restricted to students who said they would enroll full time if offered the intervention. In these cases, the interventions caused some students who would have enrolled part time without the intervention to enroll full time because of the intervention. That is, part of what these interventions did was convert would-be-part-timers into full-timers. It is unknown how many of the nation's 3.1 million part-time students would enroll full time if offered the right package of services and other forms of support, but the present evidence suggests it is worth trying to enable more students to go full time.

Still, strictly requiring full-time enrollment will limit who participates in an intervention: many students will opt out of the intervention if they feel full-time status is not an option for them due to, for example, time or financial constraints. Fortunately, nominal requirements, financial

17. Anzelone, Weiss, and Headlam (2020).

18. Weiss, Bloom, and Singh (forthcoming) show that this positive relationship holds even after it is probed in various ways, including: (1) the inclusion or exclusion of the two most extreme observations in the top right corner of Figure 2, (2) controlling for other intervention features, (3) controlling for observed student characteristics (gender, age, and race), (4) controlling for observed contextual factors (the size and urban/rural character of the institutions), and (5) controlling for the number of other components in the intervention.

FIGURE 2. Intervention Effects on Credits Earned Versus the Number of Terms Full-Time or Summer Enrollment Was Promoted (Year 1)



SOURCES: MDRC calculations using data from THE-RCT and reports and journal articles. A list of reports and articles can be found in Appendix Table A.1.

NOTES: Sample size = 60,683; interventions = 33.

HOW TO READ THIS FIGURE: In Figure 2, each data point represents an intervention. For example, the point on the top right of the figure indicates that an intervention (this one is the Ohio ASAP) promoted full-time enrollment in fall and spring and summer enrollment (a total of three terms) and the estimated effect through one year after students joined the study was 4.5 credits earned. The line in the figure summarizes the trend.

incentives, and strong informational campaigns can be used more broadly to promote full-time and summer enrollment without excluding part-time students. For example, the PBS Ohio intervention offered students a full-time scholarship award of \$900 per semester for achieving a “C” or better in 12 or more credits and also offered a part-time scholarship award of \$450 per semester for achieving a “C” or better in 6 to 11 credits. Such an approach may still help part-timers while also promoting full-time enrollment. In addition, it is worth promoting summer enrollment among part-time students—a part-time student earning 9 credits each fall and spring can still graduate in three years by passing a few summer courses.

Differences in the effectiveness of these various approaches to promoting full-time or summer enrollment is an area ripe for future research. In addition, there may be a need for interventions that better support part-time students.

ENHANCED ADVISING

Colleges commonly provide advising to students: guidance about academic or nonacademic matters (such as social or personal issues). Typically at community colleges, student-to-adviser ratios are high—in some cases as high as 1,000 students to one adviser.¹⁹ Students often see different advisers each time they seek help, and advising is focused primarily on selecting and registering for courses.

Several of the interventions MDRC studied included enhanced advising—that is, advising that went beyond the standard advising at the college. The enhanced advising in the interventions ranged widely from low-intensity “mentoring” (in which a staff member visited a class a few times a semester to tell students about college services and was available outside of class) to intensive, frequent, required advising. Most of the advising in the interventions was in person but some was by phone, email, or text message; most was one-on-one but some was in group settings.

The enhanced advising in the interventions varied in several important ways:

- **Staffing approach.** Most interventions had full-time advisers who were dedicated to the program, but some had part-time advisers.
- **Caseloads.** Many interventions assigned students to specific advisers with relatively small caseloads (typically fewer than 150 students) who could provide ongoing support. In a smaller number, advisers had larger caseloads.
- **Requirements.** Some interventions required students to see an adviser a minimum number of times in a month or in a semester, but some interventions just encouraged contact with advisers.
- **Use of incentives.** Some interventions used incentives such as monthly gift cards or transit cards to encourage students to see their advisers. The incentive was given once the student met the advising requirement, such as attending one advising session in a month. (These incentives are counted as a “financial support” component in this synthesis research.)
- **Active outreach.** Advisers in many interventions actively reached out to students, to engage those who might benefit from assistance but who were not initiating contact themselves.

19. Miller, Cohen, Yang, and Pellegrino (2020).

- **Content of advising.** Most of the enhanced advising addressed both students' academic and nonacademic issues and referred students to other support services on campus.
- **Use of data and technology.** Most interventions recorded information about students and the advising services. Some interventions used a management information system to record such information, to assess which students had not received advising (so advisers could reach out to them), to communicate with students, and to track student advising contacts to determine who was eligible for an incentive.²⁰

The quantitative synthesis assessed the relationship between increased advising use and the effect on credits earned over a year. Overall, as Figure 3 shows, the effects of interventions tended to be larger for interventions that yielded larger increases (compared with the control group) in the number of times students met with an adviser. The dotted line represents that relationship. It is important to note, however, that 10 of the 15 interventions that included enhanced advising led to very small increases in advising use—an average of just one or two additional advising contacts over the course of a year. Only two interventions, CUNY ASAP and ASAP Ohio, led to very substantial increases in advising use. (ASAP is a comprehensive program originally developed at CUNY that was later replicated at three Ohio colleges.) These two interventions are represented by the two dots in the top right part of the figure. CUNY ASAP increased advising by 32 contacts over the year and ASAP Ohio increased advising by 19 contacts (according to students' responses to a survey). Correspondingly, the largest effects on credits earned over a year were for the interventions with the largest increases in advising contacts, the two ASAP programs.

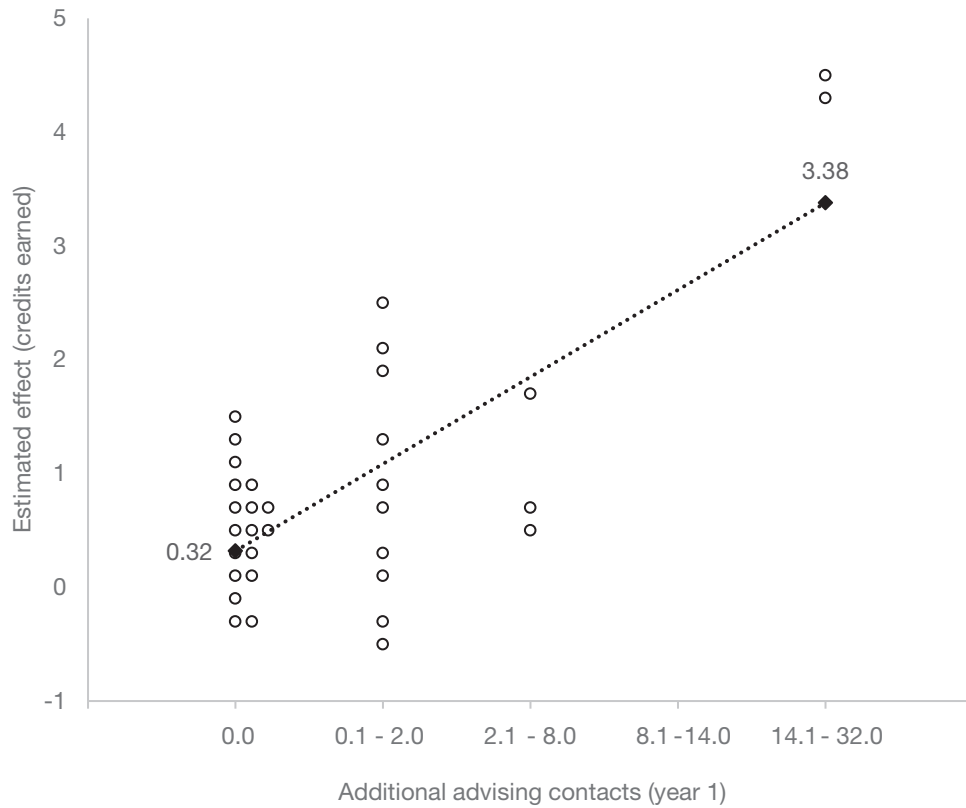
It should be noted that when the ASAP programs are not included in the quantitative analysis, there is no discernable relationship between advising and effects on credits earned. The relationship between increased advising use and the effects on the other outcome examined in the quantitative synthesis, enrollment in the third semester, is present both with and without ASAP. Overall, as discussed above, the evidence on enhanced advising is positive.

The results from the quantitative synthesis do not necessarily suggest, however, that interventions need to increase advising as much as the ASAP programs did. First, if the MDRC randomized controlled trials are representative of the broader field, there is a notable lack of evidence about the effect of interventions that increase advising moderately or substantially but not as much as the ASAP programs. As shown in Figure 3, no interventions increased advising use by 8 to 14 contacts over a year and only three interventions increased advising use by between 2 and 8 contacts over a year. It is possible that this middle range of advising increases may yield meaningful effects for students. This is an area ripe for research.

Second, the ASAP programs include multiple components in addition to enhanced advising. CUNY ASAP includes six components: enhanced advising, enhanced tutoring, financial support, learning communities, promoting full-time or summer enrollment, and a success course.

20. A management information system is a computer-based system used to capture information about program participants and the activities they engage in with the program's staff.

FIGURE 3. Intervention Effects on Credits Earned Versus Additional Advising Use (Year 1)



SOURCES: MDRC calculations using data from THE-RCT and reports and journal articles. A list of reports and articles can be found in Appendix Table A.1.

NOTES: Sample size = 60,683; interventions = 33.

HOW TO READ THIS FIGURE: In Figure 3, each data point represents an intervention. For example, the point on the top right of the figure indicates that an intervention (this one is the Ohio ASAP Demonstration) caused students to have contact with an adviser 14 to 32 more times than they would have in the absence of the intervention and the estimated effect through one year after students joined the study was 4.5 credits earned. The line in the figure summarizes the trend.

ASAP Ohio includes four components: the same components as CUNY ASAP except for learning communities and a success course. The ASAP programs’ effects on credits earned shown in Figure 3 represent the effect of the full ASAP package of services. In the quantitative synthesis, MDRC attempted to isolate the effect of each individual component by statistically controlling for others, but the process is not perfect.²¹ If an intervention increased advising use as much as

21. For example, to isolate the impact of increased advising use it must be assumed that there are no characteristics of the interventions studied, their student populations, or their institutional settings that

the ASAP programs but did not include other components, it is unlikely its effects would be as large as ASAP's. In fact, the interventions in Figure 3 with larger effects on credits earned tend to be more comprehensive and the programs with smaller effects are more likely to include just advising or advising and one other component. It may be that enhanced advising is an important element but is generally not enough, alone, to change students' outcomes substantially.

The ASAP advising model, which includes elements recommended by researchers and practitioners,²² is intensive and worth examining. Both CUNY and Ohio ASAP programs hired dedicated full-time staff members to serve as advisers in the program. The advisers had relatively small caseloads—during the time of the studies, between 60 and 80 students at CUNY and between 80 and 140 students at the Ohio colleges—allowing them to devote time to each student. ASAP required students to attend advising each month and provided monthly incentives to encourage contact—transit cards at CUNY and \$50 gift cards in Ohio to buy things like gas or groceries. The ASAP advising model was holistic, addressing multiple issues beyond academic ones, including family, work, and personal issues.

As discussed above, the ASAP programs yielded very large increases in advising contacts and thus provided students with a great deal of additional advising, compared with the standard advising at the colleges. It seems very likely that the facts that the programs required advising and provided meaningful incentives to encourage contact played critical roles in that large increase. It seems likely, too, that students seeing the same adviser regularly can over time build relationships that helped motivate ongoing contact.

ENHANCED TUTORING

Community colleges commonly offer tutoring—instruction intended to help students learn course content or build skills more generally—but it is often underused. Some of the interventions that MDRC studied included enhanced tutoring. That tutoring varied across the interventions that included it. Some interventions simply encouraged students to use a college's existing tutoring resources, some embedded tutoring in specific courses, and some required students to attend tutoring with program-specific staff members.

The enhanced tutoring in the interventions varied in several ways:

- **Staffing approach.** Some interventions had program-dedicated tutors, but many relied on tutors who also served other students at the college. The tutors across the interventions included course instructors and former or current students.

cause differences in intervention effects and are correlated with the intensity of increased advising use. Weiss, Bloom, and Singh (forthcoming) conducted numerous sensitivity analyses to attempt to control for these factors.

22. See, for example, Karp et al. (2021); Karp and Stacey (2013); Klempin, Kalamkarian, Pellegrino, and Barnett (2019); Vasquez and Scrivener (2020).

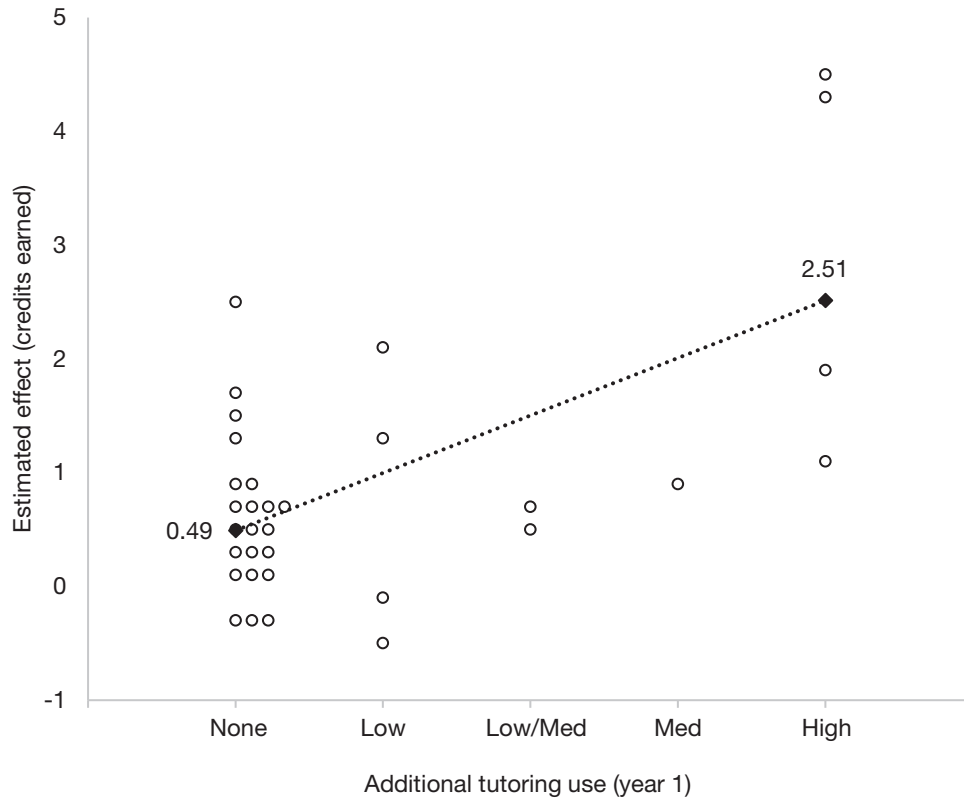
- **Requirements.** A few interventions required tutoring for all or a subset of students, such as those in developmental courses or on academic probation. Some interventions encouraged but did not require tutoring.
- **Use of incentives.** A few interventions provided incentives such as money or monthly transit cards to encourage the use of tutoring.
- **Content.** Some of the tutoring was focused on the content and assignments of specific courses, while some was focused more broadly on building skills in areas such as writing or math.
- **Location.** Some tutoring took place within classrooms and some occurred in tutoring-specific spaces such as math labs, writing centers, or tutoring centers.
- **Mode.** One-on-one tutoring was common. Some interventions also provided small-group instruction and computer-assisted instruction.

The quantitative synthesis examined the relationship between increased tutoring use and the effect on credits earned over a year. Overall, as Figure 4 shows, the effects of interventions tended to be larger for interventions that yielded larger increases in the number of times students attended tutoring. As illustrated by the two circles in the upper right corner of the figure, the two ASAP programs both increased tutoring use a substantial amount, and fall into the “high” category in the figure. CUNY ASAP increased tutoring use by 17 sessions over a year and Ohio ASAP increased tutoring by 9 sessions (according to students’ responses to a survey), and their effects on credits earned are larger than the other interventions’. When the ASAP programs are not included in the quantitative analysis, there is no discernable relationship between tutoring and effects on credits earned. This change when ASAP programs are excluded could mean that ASAP’s tutoring is more effective than the tutoring in the other interventions, could reflect the fact that ASAP includes several components that together generate effects, or both.

ASAP’s tutoring model was more intensive than most of the interventions’. Both ASAP programs required tutoring for students who were taking a developmental course and CUNY ASAP also required tutoring for students who were on academic probation (students with grade point averages of 2.0 or lower). Both programs tracked students’ participation in tutoring and used monthly incentives to encourage that participation. CUNY ASAP had program-dedicated tutors who were typically adjunct faculty members or former students. Ohio ASAP students received tutoring in the college’s regular tutoring centers. CUNY ASAP tutors provided instruction outside of class (typically in a location separate from the college’s tutoring center) and sometimes visited classes that had several ASAP students enrolled to provide tutoring there.

Overall, MDRC’s studies do not provide a comprehensive look at tutoring in community colleges. Fewer than one in three of the interventions studied included enhanced tutoring, and in most cases the research did not focus in depth on the implementation of that component. There

FIGURE 4. Intervention Effects on Credits Earned Versus Additional Tutoring Use (Year 1)



SOURCES: MDRC calculations using data from THE-RCT and reports and journal articles. A list of reports and articles can be found in Appendix Table A.1.

NOTES: Sample size = 60,683; interventions = 33. Additional tutoring use refers to the average amount of additional tutoring use the intervention caused program group students to experience during their first two semesters after joining the study. Categories are defined as follows. Low: one semester with an average of greater than zero but less than three additional tutoring sessions per student and one semester with no additional tutoring. Low/Med: two semesters each with an average of greater than zero but less than three additional tutoring sessions per student. Med: one semester with an average of greater than three additional tutoring sessions per student and one semester with an average of greater than zero but less than three additional tutoring sessions per student. High: two semesters each with an average of greater than three additional tutoring sessions per student.

HOW TO READ THIS FIGURE: In Figure 4, each data point represents an intervention. For example, the point on the top right of the figure indicates that an intervention (this one is Ohio ASAP) caused students to experience a relatively high amount of additional tutoring (at least three additional tutoring sessions in each of two semesters) and the estimated effect through one year after students joined the study was 4.5 credits earned. The line in the figure summarizes the trend.

is substantial evidence from K-12 research on tutoring’s positive effects on students,²³ which suggests further research on tutoring in the community college setting may be warranted.

FINANCIAL SUPPORT

Community college students have multiple expenses, including tuition and fees, the costs of books and supplies, commuting costs, and living expenses. Financial aid, grants, and scholarships from government and private agencies help some students cover these expenses, but costs remain a barrier to success for many, especially students from families with low incomes.

About half of the interventions MDRC studied included some form of financial support. Over half of those offered performance-based scholarships, which were supplemental scholarships (beyond typical financial aid) paid to students after they achieved a specific academic benchmark. Other forms of financial support included tuition waivers, monthly stipends, and means of covering textbook costs.

The financial support provided as part of the interventions varied in some important ways:

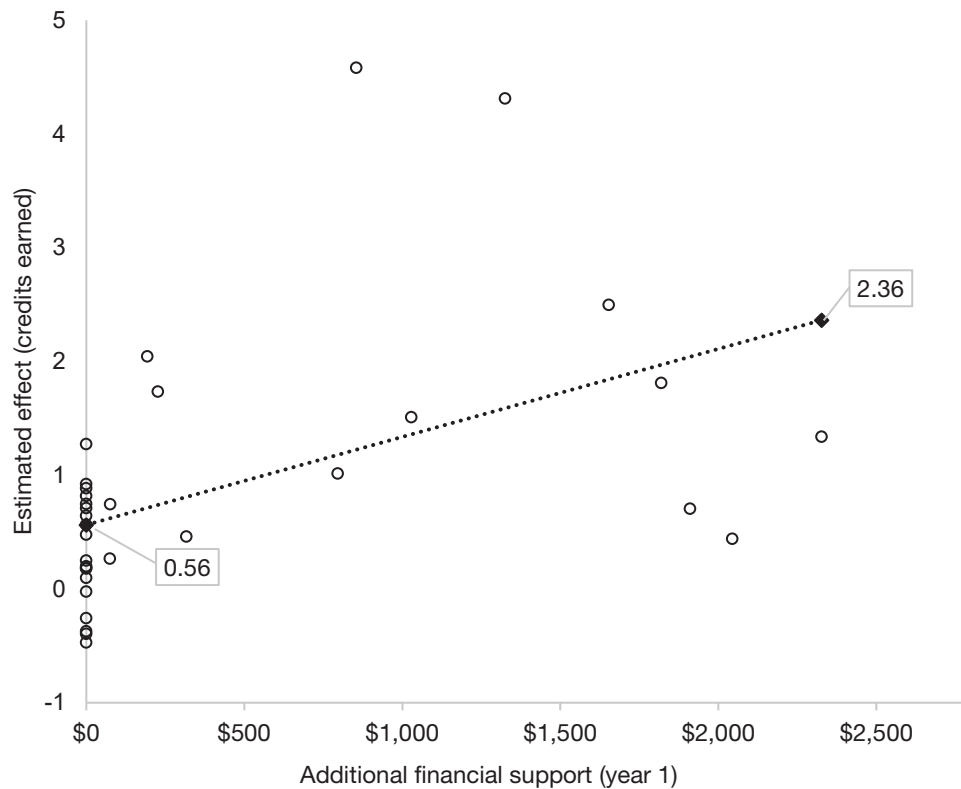
- **Type of support.** The interventions included a wide range of types of financial support: scholarships, grants, tuition waivers, lowered tuition, monthly gift cards, monthly transit cards, vouchers for textbooks, and the free use of textbooks. Some of the financial support was paid directly to students and some was paid to colleges on students’ behalf. Most interventions provided one type of financial support, but two interventions provided a few different types: Both ASAP programs provided a tuition waiver, a monthly gift card or transit card, and support to defray textbook expenses.
- **Link to behavior.** Many of the forms of financial support were intended to provide incentives for specific behaviors, and thus payment of the support was linked to those behaviors. A performance-based scholarship was typically paid to a student in a few installments over a semester, after the student displayed a specific behavior or achieved a specific milestone. An intervention in Louisiana, for example, paid students \$250 if they enrolled for six or more credits in a semester, \$250 if they were still enrolled midsemester and had a “C” or higher average, and \$500 if they completed their courses with a “C” or higher average. Some financial support, such as monthly gift cards or transit cards, was paid after students met the program’s monthly advising or other program-participation requirement. Some support, such as some tuition waivers and textbook vouchers, was paid as long as students registered for courses.
- **Amount.** Some financial support was relatively modest, for example a \$150 stipend for attending two advising sessions in a semester or a \$150 textbook voucher. Several interventions offered more substantial financial support of \$1,000 or more in a semester.

23. Nickow, Oreopoulos, and Quan (2020).

Figure 5 plots the additional amount of financial support received over two semesters and effects on credits earned. The quantitative synthesis found that the effects of interventions increased as they increased the amount of financial support that was provided students. However, after controlling for other intervention components in the analysis, there is no discernable relationship between increased financial support and effects.

Among the 10 interventions with the smallest effects on credits earned after two semesters, none provided financial support, whereas among the 10 interventions with the largest effects, 9 provided at least some financial support. Among the interventions that offered financial support, however, there is no clear linear relationship between the amount of support and the size

FIGURE 5. Intervention Effects on Credits Earned Versus Additional Financial Support (Year 1)



SOURCES: MDRC calculations using data from THE-RCT and reports and journal articles. A list of reports and articles can be found in Appendix Table A.1.

NOTE: Sample size = 60,683; interventions = 33.

HOW TO READ THIS FIGURE: In Figure 5, each data point represents an intervention. For example, the point farthest to the right of the figure indicates that an intervention (one of the New York performance-based scholarship programs) caused students to receive \$2,300 more in financial support than they would have in the absence of the intervention and the estimated effect through one year after students joined the study was 1.34 credits earned. The line in the figure summarizes the trend.

of the effects. The interventions with the largest effects offered middle-range financial support and a few interventions that offered financial support at the high end of the range had effects no larger than those of some interventions offering far less.

Most of the interventions that provided financial support offered it paired with other components. As noted above, some interventions provided incentives to encourage students to see their advisers or participate in other program services. Others provided tuition support to encourage full-time or summer enrollment. Others provided textbook vouchers to ensure that students had all the books they needed for their courses. So while the isolated effect of more dollars is not fully clear, well-designed financial support can be an important dimension of community college interventions.

It is worth noting that, as Figure 5 shows, the largest amount of additional financial support received over two semesters was about \$2,300 on average. Thus this synthesis does not speak to the effects of much larger amounts of financial support.

OTHER INTERVENTION COMPONENTS

As mentioned above, the quantitative synthesis did not find evidence of a discernable relationship between the size of effects and the presence or intensity of instructional reforms, learning communities, or success courses. This section briefly discusses each component.

The component “instructional reform” in the synthesis encompasses a wide range of reforms, including changing the pedagogy, content, and timing of developmental math, English, and reading; changing the pedagogy and credit structure of developmental math courses by creating a computer-assisted, modular approach; and integrating content across courses within a learning community. About a quarter of the interventions studied included instructional reform. Given the relatively small number of studies and the wide variety of specific reforms encompassed in this component, the results from the synthesis should not be seen as a definitive answer on the promise of instructional reform generally. In fact, one reform that has been found to improve students’ academic outcomes, corequisite remediation,²⁴ was not part of any of the interventions in the synthesis research.

Learning communities enroll small cohorts of students together in two or more courses, typically for one semester. They typically include instructional reform as well, with courses using mutually reinforcing themes and assignments and faculty members who try to coordinate their efforts. Learning communities occasionally provide added support in the form of advising or tutoring. An MDRC synthesis of studies of learning communities found that the typical one-semester

24. In corequisite remediation, students who need remedial help are not placed in a developmental course, as is typical practice at many colleges, but are instead placed in a college-level course along with additional support. See, for example, Miller, Daugherty, Martorell, and Gerber (2021); Logue, Douglas, and Watanabe-Rose (2019); Logue, Watanabe-Rose, and Douglas (2016).

learning community is not likely to lead to large effects on student outcomes, but a program with several added support services can have longer-term effects.²⁵ This finding aligns with the finding discussed above that the effects of interventions increase with their comprehensiveness.

Student success courses are designed to help new students navigate college and build relevant academic and personal skills. Common course topics include information about a college and its services, assistance in academic and career planning, and instruction about setting goals and improving study skills. Just under a quarter of the interventions studied included a success course. It may not be surprising to some that the quantitative synthesis did not find a relationship between the presence of success courses and effects on student outcomes. The courses lasted one semester, typically did not offer college credits, and typically were part of an intervention but arguably not its central component.

DURATION

Interventions, and the individual components that make up interventions, can vary in duration from one-time services to multiyear programs. Each semester after students initially enroll in college, some students stop attending or drop out. In addition, impediments to succeeding in school extend beyond one semester. Thus, all else being equal, it is expected that longer-lasting interventions that consistently address barriers to success over multiple semesters will have larger effects than shorter-duration interventions.

Table 2 presents the durations of the programs in the synthesis. Among the interventions MDRC has evaluated, three-quarters lasted for one year or less, with 38 percent being single-semester interventions.

Data limitations make it difficult to conduct direct, convincing analyses of the relationship between intervention duration and intervention effects. Unfortunately, most studies did not track all students' progress (or degree completion) through three years, the duration of the longest-lasting programs. Moreover, studies that tracked students' longer-term outcomes are quite different from those that did not (a phenomenon known as "follow-up selection bias"). Those with longer-term follow-up data had larger short-term effects and lasted longer.²⁶

Nonetheless, among the subset of interventions with longer-term follow-up data, longer-duration interventions *tend* to have larger effects than the shorter-term interventions. But caution is

25. Weiss, Visher, Weissman, and Wathington (2015).

26. Bailey and Weiss (2022). For example, there are three years of follow-up data for the full study sample in 75 percent of the interventions that lasted over one year. In contrast, there are three years of follow-up data for the full sample in only 42 percent of studies of interventions lasting one year or less. Thus, the database offers a very skewed view of the longer-term effects of shorter-duration interventions.

TABLE 2. Intervention Duration

Duration	Percentage of Interventions
0.5 years	38
1 year	36
1.5 years	8
2 years	8
2.5 years	0
3 years	8
Number of interventions:	39

SOURCES: MDRC calculations using data from THE-RCT and reports and journal articles. A list of reports and articles can be found in Appendix Table A.1.

needed when interpreting this finding, because longer-lasting interventions were different in other ways too.²⁷

Still, there may be additional reasons to believe that longer-term interventions will tend to have larger long-term effects than short-term interventions. In a recent exploration, Weiss, Unterman, and Biedzio (2021) examined what happens to program effects after a program ends. Using THE-RCT database, they found that intervention effects on cumulative credits earned are maintained after programs end. Effects do not fade out (that is, they do not diminish), but they do not grow either. This pattern could be observed across 29 college interventions (mostly at community colleges).

Thus, it appears that the main opportunity for an intervention to have an effect is while the program is in progress. Unless program features are uncovered that result in effects that continue to grow *after* a program ends, the limitation that effects are most likely to occur while programs are in progress may limit the potential of short-duration interventions.

DISCUSSION AND NEXT STEPS

The synthesis research discussed in this report found that the effects of community college interventions tend to be larger for interventions that are more comprehensive and those that promote full-time enrollment during fall or spring, summer enrollment, or both. Less consis-

27. Consider that the longer-duration interventions in THE-RCT also tend to have larger short-term effects. This fact probably implies that longer-duration interventions are not only more effective because of their longer duration, but are also more effective for other reasons as well. For example, longer-duration interventions in THE-RCT also tended to promote full-time or summer enrollment at higher rates.

tent, but still promising evidence suggests that the effects of interventions tend to be larger for interventions that increase students' advising use, increase students' tutoring use, and provide increased financial support to students. Interventions that last longer (that is, last for more semesters) tend to have larger effects on students' outcomes than shorter interventions. Most of the effect of an intervention occurs while the intervention is provided to students, which limits the potential of shorter interventions. These conclusions provide an evidence-based place to start when developing or refining community college interventions.

This study aimed to examine policy-relevant questions by looking at a large body of rigorous research evidence. It raises many other important issues for researchers, policymakers, and practitioners to wrestle with. MDRC plans to investigate some of these topics in the future.

- **Supporting part-time students.** Two related conclusions from this research are: (1) It is valuable to provide incentives and support to enable students who would otherwise enroll part time to enroll full time and in the summer, when possible. (2) It is important to research ways to better serve students who cannot enroll full time. Given the prevalence of part-time enrollment among community college students, it is imperative both to encourage more students to attend full time and to figure out how better to serve students who, even with additional support, cannot attend college full time.
- **Evidence gaps (for example, rural colleges).** One value of pulling together data for a synthesis is that it can show where there are major gaps in the evidence. For example, the settings in which MDRC's evaluations have taken place are striking. If MDRC's research reflects the broader field, then researchers are doing an excellent job learning about the effectiveness of programs, policies, and practices in large colleges in cities and suburbs, and to a lesser extent in medium-sized colleges (see Appendix Table A.5). However, evidence is sparse in rural settings and at small colleges. This gap in the evidence matters for at least two reasons: First, the effectiveness of some interventions may vary based on institutional characteristics. If effectiveness varies based on a college's urban/rural character, for example, then intervention effects from evaluations taking place in cities may not prove useful to colleges in rural settings. Second, policymakers and practitioners at small, rural colleges may simply ignore the results from evaluations taking place in large, metropolitan colleges. Considering such evidence gaps is one way to inform where more research is needed.
- **The role of community college interventions in reducing racial inequality in students' academic outcomes.** Capitalizing on THE-RCT, it is possible to examine important equity-focused questions, such as: Are some community college interventions more effective than others at reducing race-based gaps in students' academic outcomes? To what extent do specific community college intervention components tend to be part of interventions that are better at reducing race-based gaps in students' academic outcomes? If community college interventions are more effective for Black and Hispanic students than for White students—or they are effective for all students and target Black and Hispanic students—they may be an important tool in reducing racial inequality in college outcomes.

- **Cost-effectiveness benchmarks.** When interpreting results from an evaluation of a community college intervention, it is important to consider the costs of that intervention as well as its effects on student outcomes. To do so, researchers may calculate the cost per additional outcome caused by an intervention, for example, the cost per intervention-induced credit earned or the cost per intervention-induced degree completed. While important, such measures are difficult to interpret. A valuable tool for interpretation is to compare the cost per intervention-induced outcome with previously estimated costs per intervention-induced outcome for interventions implemented in a similar context. Using THE-RCT, it is possible to provide such empirical benchmarks for improving the interpretation of cost-effectiveness analyses.
- **Using short-term effects to predict long-term effects.** It takes time for an intervention to affect longer-term outcomes such as degree completion after three years. If effects on shorter-term outcomes such as credit accumulation after one year and grade point average were highly predictive of effects on longer-term outcomes, then researchers might be more confident in their ability to draw conclusions about longer-term outcomes at an earlier time. Currently, these types of predictions are how most cost-benefit analyses are conducted: researchers project future labor market outcomes based on shorter-term findings. There is a critical need to validate benefits projections by comparing projections based on shorter-term data with estimated effects using actual labor market data collected later on. THE-RCT presents a chance to examine these types of issues.

This report offers insights into ways to improve the academic outcomes of community college students. It does so by capitalizing on individual-level data from a wide range of impact evaluations. This examination was made possible by the standardized, student-level data in THE-RCT. As randomized controlled trials become an increasingly common evaluation approach for community college research, the authors strongly encourage others who conduct these trials to create the commonly defined outcome variables that are available in THE-RCT (credits accumulated, enrollment, grade point average, and degree completion), for commonly defined time periods (for example, semesters), and to make these data available to other researchers, via THE-RCT or elsewhere.²⁸ Doing so could greatly increase the knowledge payoff from the original trials, making it possible to synthesize data and advance knowledge of what works in postsecondary education beyond what can be learned from individual studies.

28. After exhausting all options, if it is not possible to make student-level data publicly available, researchers ought to include summary-level data that can be used in syntheses or meta-analyses: program/control outcome levels, sample sizes, standard deviations, adjusted impact estimates, standard errors, etc.—provided semesterly, for commonly defined outcomes.

APPENDIX

A

Supplemental Materials

APPENDIX TABLE A.1 Study Abbreviations, Study Names, and References

Study Abbreviation	Study Name	References
ALAP	Aid Like a Paycheck	<p>Weissman, Evan, Oscar Cerna, Dan Cullinan, and Amanda Baldiga. 2017. <i>Aligning Aid with Enrollment: Interim Findings on Aid Like A Paycheck</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/ALAP_Interim_Report_2017.pdf</p> <p>Weissman, Evan, Oscar Cerna, and Dan Cullinan. 2019. <i>Incremental Disbursements of Student Financial Aid: Final Report on Aid Like A Paycheck</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/ALAP_2019_FINAL_rev.pdf</p>
ASAP CUNY	Accelerated Study in Associate Programs: City University of New York	<p>Scrivener, Susan, Michael J. Weiss, Alyssa Ratledge, Timothy Rudd, Colleen Sommo, and Hannah Fresques. 2015. <i>Doubling Graduation Rates: Three-Year Effects of CUNY's Accelerated Study in Associate Programs for Developmental Education Students</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/doubling_graduation_rates_fr.pdf</p> <p>Weiss, Michael, Alyssa Ratledge, Colleen Sommo, and Himani Gupta. 2019. "Supporting Community College Students from Start to Degree Completion: Long-Term Evidence from a Randomized Trial of CUNY'S ASAP." <i>American Economic Journal: Applied Economics</i> 11, 3: 253–297. https://doi.org/10.1257/app.20170430</p> <p>Azurdia, Gilda, and Katerina Galkin. 2020. "An Eight-Year Cost Analysis from a Randomized Controlled Trial of CUNY's Accelerated Study in Associate Programs." New York: MDRC. https://www.mdrc.org/sites/default/files/ASAP_Cost_Working_Paper_final.pdf</p>
ASAP Ohio	Accelerated Study in Associate Programs: Ohio Replication	<p>Sommo, Colleen, Dan Cullinan, and Michelle Manno. 2018. <i>Doubling Graduation Rates in a New State: Two-Year Findings from the ASAP Ohio Demonstration</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/ASAP_brief_2018_Final.pdf</p> <p>Miller, Cynthia, and Michael J. Weiss. 2021. "Increasing Community College Graduation Rates: A Synthesis of Findings on the ASAP Model from Six Colleges Across Two States." <i>Educational Evaluation and Policy Analysis</i> 44, 2: 210–233. https://www.mdrc.org/sites/default/files/ASAP_LT-Paper_Final.pdf</p>
AtD Mentoring	Achieving the Dream: Beacon Mentoring Program	<p>Visher, Mary, Kristin F. Butcher, and Oscar S. Cerna. 2010. <i>Guiding Developmental Math Students to Campus Services: An Impact Evaluation of the Beacon Program at South Texas College</i>. New York: MDRC and Achieving the Dream. https://www.mdrc.org/sites/default/files/full_382.pdf</p>

(continued)

APPENDIX TABLE A.1 (continued)

Study Abbreviation	Study Name	References
AtD Success Course	Achieving the Dream: Student Success Course	Zachry Rutschow, Elizabeth, Dan Cullinan, and Rashida Welbeck. 2012. <i>Keeping Students on Course: An Impact Study of a Student Success Course at Guilford Technical Community College</i> . New York: MDRC and Achieving the Dream. https://www.mdrc.org/sites/default/files/Keeping%20Students%20on%20Course%20Full%20Report.pdf
CUNY Start	CUNY Start	<p>Scrivener, Susan, Himani Gupta, Michael J. Weiss, Benjamin Cohen, Maria Scott Cormier, and Jessica Brathwaite. 2018. <i>Becoming College-Ready: Early Findings from a CUNY Start Evaluation</i>. New York: MDRC and Community College Research Center. https://www.mdrc.org/sites/default/files/CUNY_START_Interim_Report_FINAL_0.pdf</p> <p>Weiss, Michael J., Susan Scrivener, Austin Slaughter, and Benjamin Cohen. 2021. "An On-Ramp to Student Success: A Randomized Controlled Trial Evaluation of a Developmental Education Reform at the City University of New York." <i>Educational Evaluation and Policy Analysis</i> 43, 4: 555–586. https://doi.org/10.3102/01623737211008901</p>
DCMP	Dana Center Math Pathways	<p>Zachry Rutschow, Elizabeth. 2018. <i>Making It Through: Interim Findings on Developmental Students' Progress to College Math with the Dana Center Mathematics Pathways</i>. New York: MDRC and Center for the Analysis of Postsecondary Readiness. https://www.mdrc.org/sites/default/files/DCMP-InterimFindings.pdf</p> <p>Zachry Rutschow, Elizabeth, Susan Sepanik, Victoria Deitch, Julia Raufman, Dominique Dukes, and Adnan Moussa. 2019. <i>Gaining Ground: Findings from the Dana Center Mathematics Pathways Impact Study</i>. New York: Center for the Analysis of Postsecondary Readiness. https://www.mdrc.org/sites/default/files/DCMP_Final_Report_2019.pdf</p>
DPP	Detroit Promise Path	<p>Ratledge, Alyssa, and Andrea Vasquez. 2018. <i>Learning from Success: The Detroit Promise Path</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/Detroit_Promise_Path_Issue_Focus.pdf</p> <p>Ratledge, Alyssa, Rebekah O'Donoghue, Dan Cullinan, and Jasmina Camo-Biogradlija. 2019. <i>A Path from Access to Success: Interim Findings from the Detroit Promise Path Evaluation</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/Detroit_Promise_Path_Report-Final_0.pdf</p>

(continued)

APPENDIX TABLE A.1 (continued)

Study Abbreviation	Study Name	References
EASE*	Encouraging Additional Summer Enrollment	<p>Headlam, Camielle, Caitlin Anzelone, and Michael J. Weiss. 2018. <i>Making Summer Pay Off: Using Behavioral Science to Encourage Postsecondary Summer Enrollment</i>. New York: MDRC Center for Applied Behavioral Sciences. https://www.mdr.org/sites/default/files/EASE_Phase_1_Brief_Final_Web.pdf</p> <p>Weiss, Michael. 2019. <i>How Can Community Colleges Increase Student Use of Year-Round Pell Grants? Two Proven Strategies to Boost Summer Enrollment</i>. New York: MDRC Center for Applied Behavioral Sciences. https://www.mdr.org/sites/default/files/EASE_Brief_Phase%202_Final2.pdf</p> <p>Headlam, Camielle, Benjamin Cohen, and Kayla Reiman. 2020. <i>EASE Handbook for Community Colleges: Encouraging Summer Enrollment</i>. New York: MDRC Center for Applied Behavioral Sciences. https://www.mdr.org/sites/default/files/EASE_Practitioner_Guide_2020_0.pdf</p>
iPASS Fresno State	Integrated Planning and Advising for Student Success: California State University Fresno State	Mayer, Alexander, Hoori S. Kalamkarian, Benjamin Cohen, Lauren Pellegrino, Melissa Boynton, and Edith Yang. 2019. <i>Integrating Technology and Advising: Studying Enhancements to Colleges' iPASS Practices</i> . New York: MDRC. https://www.mdr.org/sites/default/files/iPASS_Interim_Report.pdf
iPASS MCCC	Integrated Planning and Advising for Student Success: Montgomery County Community College	Mayer et al. (2019).
iPASS UNCC	Integrated Planning and Advising for Student Success: University of North Carolina at Charlotte	Mayer et al. (2019).

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APPENDIX TABLE A.1 (continued)

Study Abbreviation	Study Name	References
LC Career	Learning Communities: Career-Focused at Kingsborough Community College	<p>Visher, Mary, and Jedediah Teres. 2011. <i>Breaking New Ground: An Impact Study of Career-Focused Learning Communities at Kingsborough Community College</i>. New York: National Center for Postsecondary Research. https://www.mdrc.org/sites/default/files/full_30.pdf</p> <p>Visher, Mary G., Michael J. Weiss, Evan Weissman, Timothy Rudd, and Heather D. Wathington. 2012. <i>The Effects of Learning Communities for Students in Developmental Education</i>. New York: National Center for Postsecondary Research. https://www.mdrc.org/sites/default/files/LC%20A%20Synthesis%20of%20Findings%20FR.pdf</p>
LC English	Learning Communities: Developmental English	<p>Weissman, Evan, Dan Cullinan, Oscar Cerna, Stephanie Safran, and Phoebe Richman. 2012. <i>Learning Communities for Students in Developmental English: Impact Studies at Merced College and the Community College of Baltimore County</i>: MDRC. https://www.mdrc.org/sites/default/files/full_422.pdf</p> <p>Weiss, Michael J., Mary G. Visher, Weissman Evan, and Heather Wathington. 2015. "The Impact of Learning Communities for Students in Developmental Education: A Synthesis of Findings from Randomized Trials at Six Community Colleges." <i>Educational Evaluation and Policy Analysis</i> 37, 4: 520–541. https://doi.org/10.3102/0162373714563307</p>
LC English + Success	Learning Communities: Developmental English + Success Course	<p>Weissman et al. (2012).</p> <p>Weiss, Visher, Weissman, and Wathington (2015).</p>
LC Math	Learning Communities: Developmental Math at Queensborough and Houston Community Colleges	<p>Weissman, Evan, Kristin F. Butcher, Emily Schneider, Jedediah Teres, Herbert Collado, and David Greenberg. 2011. <i>Learning Communities for Students in Developmental Math: Impact Studies at Queensborough and Houston Community Colleges</i>. New York: National Center for Postsecondary Research. https://www.mdrc.org/sites/default/files/full_423.pdf</p> <p>Weiss, Visher, Weissman, and Wathington (2015).</p>
LC Math + Success	Learning Communities: Developmental Math + Success Course	<p>Weissman et al. (2011).</p> <p>Weiss, Visher, Weissman, and Wathington (2015).</p>

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APPENDIX TABLE A.1 (continued)

Study Abbreviation	Study Name	References
LC Reading	Learning Communities: Developmental Reading at Hillsborough Community College	<p>Weiss, Michael, Mary Visher, and Heather Wathington. 2010. <i>Learning Communities for Students in Developmental Reading: An Impact Study at Hillsborough Community College</i>. New York: National Center for Postsecondary Research. https://www.mdrc.org/sites/default/files/full_424.pdf</p> <p>Weiss, Visher, Weissman, and Wathington (2015).</p>
ModMath	Modularized, Computer-Assisted Developmental Math	<p>Gardenhire, Alissa, John Diamond, Camielle Headlam, and Michael J. Weiss. 2016. <i>At Their Own Pace: Interim Findings from an Evaluation of a Computer-Assisted, Modular Approach to Developmental Math</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/ModMath%20Report%202016.pdf</p> <p>Weiss, Michael J., and Camielle Headlam. 2019. "A Randomized Controlled Trial of a Modularized, Computer-Assisted, Self-Paced Approach to Developmental Math." <i>Journal of Research on Educational Effectiveness</i> 12, 3: 484–513. https://doi.org/10.1080/19345747.2019.1631419</p>
OD Advising + Incentive	Opening Doors: Advising + Financial Incentive	<p>Scrivener, Susan, and Michael J. Weiss. 2009. <i>More Guidance, Better Results? Three-Year Effects of an Enhanced Student Services Program at Two Community Colleges</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/full_450.pdf</p> <p>Scrivener, Susan, and Erin Coghlan. 2011. <i>Opening Doors to Student Success: A Synthesis of Findings from an Evaluation at Six Community Colleges</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/policybrief_27.pdf</p>
OD LC	Opening Doors: Comprehensive Learning Community	<p>Scrivener, Susan, Dan Bloom, Allen LeBlanc, Christina Paxson, Cecilia Elena Rouse, and Colleen Sommo. 2008. <i>A Good Start: Two-Year Effects of a Freshmen Learning Community Program at Kingsborough Community College</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/A%20Good%20Start.pdf</p> <p>Weiss, Michael, Alexander Mayer, Dan Cullinan, Alyssa Ratledge, Colleen Sommo, and John Diamond. 2015. "A Random Assignment Evaluation of Learning Communities at Kingsborough Community College: Seven Years Later." <i>Journal of Research on Educational Effectiveness</i> 8, 2: 189–217. http://dx.doi.org/10.1080/19345747.2014.946634</p> <p>Scrivener and Coghlan (2011).</p>

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APPENDIX TABLE A.1 (continued)

Study Abbreviation	Study Name	References
OD PBS + Advising	Opening Doors: Performance-Based Scholarship + Advising	<p>Richburg-Hayes, Lashawn, Thomas Brock, Allen LeBlanc, Christina Paxson, Cecilia Elena Rouse, and Lisa Barrow. 2009. <i>Rewarding Persistence: Effects of a Performance-Based Scholarship Program for Low-Income Parents</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/rewarding_persistence_fr.pdf</p> <p>Patel, Reshma, Lashawn Richburg-Hayes, Elijah de la Campa, and Timothy Rudd. 2013. <i>Performance-Based Scholarships: What Have We Learned? Interim findings from the PBS Demonstration</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/pbs_what_have_we_learned.pdf</p> <p>Scrivener and Coghlan (2011).</p>
OD Success	Opening Doors: College Success Course + Centers	<p>Scrivener, Susan, Colleen Sommo, and Herbert Collado. 2009. <i>Getting Back on Track: Effects of a Community College Program for Probationary Students</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/full_379.pdf</p> <p>Scrivener and Coghlan (2011).</p>
OD Success (Enhanced)	Opening Doors: College Success Course + Centers (Enhanced)	<p>Scrivener, Sommo, and Collado (2009).</p> <p>Weiss, Michael, Thomas Brock, Colleen Sommo, Timothy Rudd, and Mary Clair Turner. 2011. <i>Serving Community College Students on Probation: Four-Year Findings from Chaffey College's Opening Doors Program</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/full_506.pdf</p> <p>Scrivener and Coghlan (2011).</p>
PBS + Advising	Performance-Based Scholarships + Advising: New Mexico	<p>Binder, Melissa, Kate Krause, Cynthia Miller, and Oscar Cerna. 2015. "Providing Incentives for Timely Progress Toward Earning a College Degree." New York: MDRC. https://www.mdrc.org/sites/default/files/PBS_New-Mexico.pdf</p> <p>Patel, Richburg-Hayes, de la Campa, and Rudd (2013).</p> <p>Mayer, Alexander K., Reshma Patel, Timothy Rudd, and Alyssa Ratledge. 2015. <i>Designing Scholarships to Improve College Success</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/designing_scholarships_FR.pdf</p>

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APPENDIX TABLE A.1 (continued)

Study Abbreviation	Study Name	References
PBS + Math	Performance-Based Scholarships + Math Lab: Florida	<p>Sommo, Colleen, Melissa Boynton, Herbert Collado, John Diamond, Alissa Gardenhire, Alyssa Ratledge, Timothy Rudd, and Michael J. Weiss. 2014. <i>Mapping Success: Performance-Based Scholarships, Student Services, and Developmental Math at Hillsborough Community College</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/PBS-HCC%202014%20Full%20Report.pdf</p> <p>See Patel, Richburg-Hayes, de la Campa, and Rudd (2013).</p> <p>See Mayer, Patel, Rudd, and Ratledge (2015).</p>
PBS + Support	Performance-Based Scholarships + Support: Arizona	<p>Patel, Reshma, and Ileri Valenzuela. 2013. <i>Moving Forward: Early Findings from the Performance-Based Scholarship Demonstration in Arizona</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/Moving_Forward_FR_0.pdf</p> <p>Patel, Richburg-Hayes, de la Campa, and Rudd (2013).</p> <p>Mayer, Patel, Rudd, and Ratledge (2015).</p>
PBS NY*	Performance-Based Scholarships: New York	<p>Richburg-Hayes, Lashawn, Colleen Sommo, and Rashida Welbeck. 2011. <i>Promoting Full-Time Attendance Among Adults in Community College: Early Impacts from the Performance-Based Scholarship Demonstration in New York</i>. New York: MDRC. https://www.mdrc.org/sites/default/files/full_480.pdf</p> <p>Patel, Richburg-Hayes, de la Campa, and Rudd (2013).</p> <p>Mayer, Patel, Rudd, and Ratledge (2015).</p>
PBS OH	Performance-Based Scholarships: Ohio	<p>Mayer, Alexander, Reshma Patel, and Melvin Gutierrez. 2015. "Four-Year Effects on Degree Receipt and Employment Outcomes from a Performance-Based Scholarship Program in Ohio." New York: MDRC. http://www.mdrc.org/sites/default/files/Four-Year_Effects_on_Degree_Receipt_0.pdf</p> <p>Patel, Richburg-Hayes, de la Campa, and Rudd (2013).</p> <p>Mayer, Patel, Rudd, and Ratledge (2015).</p>

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APPENDIX TABLE A.1 (continued)

Study Abbreviation	Study Name	References
PBS Variations*	Performance-Based Scholarships, Varying Amounts: California	<p>Richburg-Hayes, Lashawn, Reshma Patel, Thomas Brock, Elijah de la Campa, Timothy Rudd, and Ileri Valenzuela. 2015. "Providing More Cash for College: Interim Findings from the Performance-Based Scholarship Demonstration in California." https://www.mdrc.org/sites/default/files/Providing_More_Cash_FR.pdf</p> <p>Patel, Richburg-Hayes, de la Campa, and Rudd (2013).</p> <p>Mayer, Patel, Rudd, and Ratledge (2015).</p>

NOTES: Studies examining the effects of more than one intervention are indicated with an asterisk. They were collapsed into a single row because all research groups are described within the same references. The Encouraging Additional Summer Enrollment (EASE) project tested the effects of two interventions designed to promote summer enrollment: (1) an information campaign and (2) an information campaign plus financial support. The project's summer 2017 cohort was offered a "double dose" of the intervention, that is, summer enrollment was promoted in students' first and second summers after enrolling in college. The summer 2018 cohort was offered a "single dose" of the intervention, that is, summer enrollment was promoted in students' summer after enrolling in college only. Consequently, EASE tested four interventions. PBS Variations tested the effects of six different financial support programs. The programs varied in duration and in the amount of financial support offered. Details can be found in the reports cited.

APPENDIX TABLE A.2. Presence/Absence of Intervention Components, by Intervention

Intervention	Enhanced Advising	Enhanced Tutoring	Financial Support	Instructional Reform	Learning Communities	Promoting Full-Time/Summer Enrollment	Success Course
ALAP							
ASAP CUNY	✓	✓	✓		✓	✓	✓
ASAP Ohio	✓	✓	✓			✓	
AtD Mentoring	✓						
AtD Success Course							✓
CUNY Start	✓	✓		✓	✓	✓	✓
DCMP		✓		✓			
DPP	✓		✓			✓	
EASE Info Summer '17						✓	
EASE Info + \$ Summer '17			✓			✓	
EASE Info Summer '18						✓	
EASE Info + \$ Summer '18			✓			✓	
iPASS Fresno State	✓						
iPASS MCCC	✓						
iPASS UNCC	✓						
LC Career				✓	✓		
LC English				✓	✓		✓
LC English + Success				✓	✓		
LC Math				✓	✓		
LC Math + Success		✓		✓	✓		✓
LC Reading				✓	✓		✓
ModMath				✓			
OD Advising + Incentive	✓	✓	✓				
OD Success	✓	✓					✓
OD Success (Enhanced)	✓	✓					✓
OD LC	✓	✓	✓	✓	✓		
OD PBS + Advising	✓		✓			✓	
PBS NY 1			✓				
PBS NY 2			✓			✓	
PBS OH			✓			✓	
PBS + Advising	✓		✓			✓	
PBS + Math		✓	✓				
PBS + Support	✓	✓	✓			✓	✓
PBS Variations 1			✓				
PBS Variations 2			✓				
PBS Variations 3			✓				
PBS Variations 4			✓				
PBS Variations 5			✓				
PBS Variations 6			✓				

SOURCES: MDRC calculations based on reports, journal articles, and communications with original study researchers. A list of reports and articles can be found in Appendix Table A.1.

**APPENDIX TABLE A.3. Sample Members'
Age and Gender, by Intervention**

Intervention	Age (%)			Gender (%)	
	< 20	20 to 24	≥ 25	Female	Male
ALAP	58	20	23	58	42
ASAP CUNY	57	26	17	62	38
ASAP Ohio	47	25	27	63	36
AtD Mentoring	29	42	29	58	42
AtD Success Course	48	16	36	69	31
CUNY Start	48	33	19	48	37
DCMP	57	21	23	62	30
DPP	97	3	0	59	41
EASE Info Summer '17	37	27	36	62	38
EASE Info + \$ Summer '17	34	29	37	62	38
EASE Info Summer '18	41	31	28	62	38
EASE Info + \$ Summer '18	41	29	30	61	39
iPASS Fresno State	83	15	0	61	38
iPASS MCCC	16	43	39	59	41
iPASS UNCC	62	33	4	43	56
LC Career	40	43	17	59	41
LC English	57	23	19	51	49
LC English + Success	71	17	12	59	41
LC Math	69	23	8	56	44
LC Math + Success	53	27	21	67	33
LC Reading	64	20	16	57	43
ModMath	33	27	40	64	36
OD Advising + Incentive	20	36	44	76	24
OD LC	68	25	7	55	45
OD PBS + Advising	11	36	53	92	8
OD Success	39	48	13	59	40
OD Success (Enhanced)	46	42	13	59	36
PBS + Advising	100	0	0	61	39
PBS + Math	23	29	48	66	34
PBS + Support	38	31	31	0	100
PBS NY 1	0	37	63	70	30
PBS NY 2	0	40	60	68	32
PBS OH	4	26	70	86	14
PBS Variations 1	100	0	0	60	40
PBS Variations 2	100	0	0	60	40
PBS Variations 3	100	0	0	58	42
PBS Variations 4	100	0	0	60	40
PBS Variations 5	100	0	0	60	40
PBS Variations 6	100	0	0	63	37

SOURCE: MDRC calculations using data from THE-RCT.

APPENDIX TABLE A.4. Sample Members' Race/Ethnicity, by Intervention

Intervention	Race/Ethnicity (%)						
	American Indian or Alaska Native	Asian or Pacific Islander	Black or African American	Hispanic/Latino	Multiracial	Other	White
ALAP	0	5	30	50	0	0	12
ASAP CUNY	0	7	33	42	2	2	10
ASAP Ohio	0	1	34	9	7	1	44
AtD Mentoring	0	0	0	95	0	1	3
AtD Success Course	1	2	57	6	3	1	28
CUNY Start	1	9	26	36	1	5	6
DCMP	1	1	15	54	1	0	17
DPP	0	2	80	12	4	0	1
EASE Info Summer '17	1	4	24	4	4	0	58
EASE Info + \$ Summer '17	1	4	24	4	4	0	56
EASE Info Summer '18	1	3	27	5	4	0	55
EASE Info + \$ Summer '18	1	3	27	5	5	0	53
iPASS Fresno State	1	12	3	62	0	9	12
iPASS MCCC	0	6	18	7	0	13	56
iPASS UNCC	0	7	14	9	0	9	60
LC Career	0	10	33	19	2	3	27
LC English	0	13	9	55	2	1	16
LC English + Success	0	2	55	4	2	1	31
LC Math	0	12	28	33	1	6	13
LC Math + Success	0	1	34	55	1	0	3
LC Reading	0	4	36	32	2	1	24
ModMath	0	4	19	27	2	0	45
OD Advising + Incentive	0	1	29	11	3	1	53
OD LC	0	8	36	19	1	5	26
OD PBS + Advising	0	0	82	3	1	0	10
OD Success	0	6	14	52	2	1	23
OD Success (Enhanced)	0	6	11	51	2	3	21
PBS + Advising	7	4	3	60	4	1	22
PBS + Math	0	1	32	30	3	1	30
PBS + Support	0	0	0	100	0	0	0
PBS NY 1	0	9	35	46	1	2	5
PBS NY 2	0	10	37	41	2	1	7
PBS OH	0	1	31	8	4	1	54
PBS Variations 1	1	9	4	63	4	0	19
PBS Variations 2	1	10	4	61	3	0	19
PBS Variations 3	1	10	4	59	3	1	21
PBS Variations 4	1	12	4	58	3	1	21
PBS Variations 5	0	11	4	60	3	0	20
PBS Variations 6	1	13	3	60	3	1	18

SOURCE: MDRC calculations using data from THE-RCT.

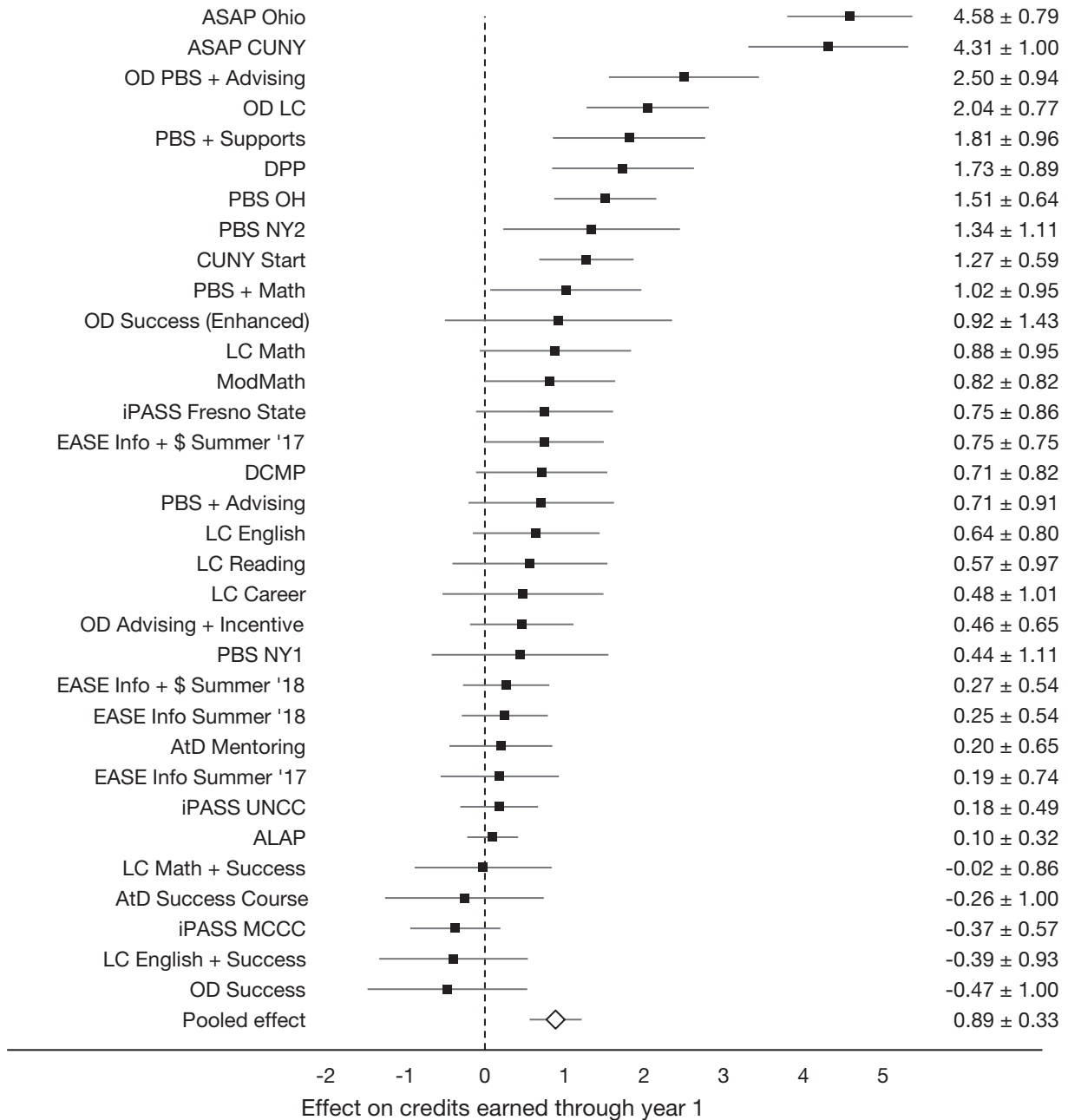
APPENDIX TABLE A.5. Institutional Setting, by Study

Study	Urban/Rural Character			Size (number of students)			
	State	Town/ Rural Area	Suburb	City	Small ($< 5,000$)	Medium ($5,000 - 9,999$)	Large ($\geq 10,000$)
ALAP	TX		✓	✓			✓
ASAP CUNY	NY			✓			✓
ASAP Ohio	OH			✓		✓	✓
AtD Mentoring	TX			✓			✓
AtD Success Course	NC		✓				✓
CUNY Start	NY			✓			✓
DCMP	TX	✓	✓	✓		✓	✓
DPP	MI		✓	✓		✓	✓
EASE*	OH	✓	✓	✓	✓	✓	✓
iPASS Fresno State	CA			✓			✓
iPASS MCCC	PA		✓			✓	
iPASS UNCC	NC			✓			✓
LC Career	NY			✓			✓
LC English	CA			✓			✓
LC English + Success	MD		✓				✓
LC Math	NY			✓			✓
LC Math + Success	TX			✓			✓
LC Reading	FL			✓			✓
ModMath	TX			✓			✓
OD Advising + Incentive	OH		✓	✓		✓	✓
OD LC	NY			✓			✓
OD PBS + Advising	LA			✓			✓
OD Success	CA		✓				✓
OD Success (Enhanced)	CA		✓				✓
PBS + Advising	NM			✓			✓
PBS + Math	FL			✓			✓
PBS + Support	AZ			✓			✓
PBS NY*	NY			✓		✓	✓
PBS OH	OH		✓	✓		✓	✓
PBS Variations*	CA	✓	✓	✓	✓	✓	✓
Percentage of studies		10	40	83	7	30	97

SOURCE: MDRC calculations using data from THE-RCT. A list of reports and articles can be found in Appendix Table A.1.

NOTE: Studies examining the effects of more than one intervention are indicated with an asterisk. They were collapsed into a single row because all research groups (that is, control, intervention 1, intervention 2, etc.) were in the same setting(s). If a study took place in more than one setting (multiple institutions in urban/suburban/rural areas or of different sizes), the row includes more than one check mark.

APPENDIX FIGURE A.1 Interventions' Effect Estimates and 90 Percent Confidence Intervals (Credits Earned Through Year 1)



SOURCES: MDRC calculations using data from THE-RCT. A list of reports and articles can be found in Appendix Table A.1.

NOTES: Sample size = 60,683; interventions = 33. Squares represent the estimated effects of the interventions on credits earned through year 1. Horizontal lines extending out of the squares represent 90 percent confidence intervals.

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