CCRC COMMUNITY COLLEGE RESEARCH CENTER
Teachers College, Columbia University

"Waiving" Goodbye to Placement Testing: Broadening the Benefits of Dual Enrollment Through Statewide Policy

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January 2024

CCRC Working Paper No. 135

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The research reported here was supported by the Joyce Foundation. All errors are those of the authors.

Abstract

Each year, more than a million high school students nationally take college dual enrollment courses, which have been shown to increase college access and success among participants. Yet racial/ethnic and other equity gaps in dual enrollment participation are widespread. To broaden the benefits of dual enrollment, the state of Ohio passed legislation in 2017 establishing the Innovative Programs (IP) policy, allowing waivers to test-based eligibility requirements—a frequently identified barrier to equitable access—for specific high school–college partnerships providing expanded outreach and support for students underrepresented in the state's dual enrollment program. This paper describes a multiple methods study of IP we conducted to examine how these partnerships were implemented to address the needs of underrepresented students and to evaluate whether the partnerships were successful in broadening access to and success in dual enrollment, as measured by course participation, pass rates, and college matriculation after high school. We find that the IP increased participation in dual enrollment among Black and Hispanic students. And while the implementation of the policy broadened access without changing course outcomes, the impacts on college enrollment after high school were mixed. Our results underscore the importance of pairing increased access to dual enrollment with adequate financial, advising, and academic resources to promote student success in and beyond dual enrollment courses.

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1. Introduction

Too few Black, Hispanic, and low-income students successfully transition from high school to college (Lauff & Ingels, 2014). Dual enrollment (DE) programs—through which high school students take college courses and earn college credit—have great potential to increase college access and success for these students. Nationally, 82% of public high schools offer DE coursework, typically through partnerships with community colleges, enrolling over 1.5 million high school students each year (Marken et al., 2013; Taie & Lewis, 2020).

Although the benefits of participating in DE across its varied formats are well documented (An & Taylor, 2019; What Works Clearinghouse, 2017), access to DE courses is uneven in most communities across the country, with Black, Hispanic, low-income, and other underserved groups underrepresented (Taylor et al., 2022; Xu et al., 2021). Prior research has identified exclusionary policies, practices, and mindsets contributing to gaps in access to DE coursework. These include unequal access to information and advising about DE opportunities, educator bias in student referral to advanced coursework in high school, reliance on high-stakes standardized placement tests for eligibility, and insufficient financial assistance for books, fees, and transportation (Taylor et al., 2022).

The Innovative Program (IP) policy, implemented in recent years throughout the state of Ohio, is aimed at expanding access to DE for underrepresented high school students. We conducted a multiple methods study to examine how IPs were implemented and to evaluate their effect on broadening access to DE for two groups identified by the state as underrepresented in DE: Black and Hispanic students. We use interview data from IP leaders to describe how partnerships were implemented, and we employ a difference-in-differences empirical strategy leveraging statewide administrative data shared by the Ohio Department of Higher Education (ODHE) to provide the first causal evidence on how these programs impacted access and success in DE coursework.

Our study—the first to evaluate the IP policy—addresses the following research questions:

1. How were IPs implemented, and what did the programs do to broaden access to and support underrepresented students in DE?
2. Did the IP policy result in an increase in access to DE courses for Black and Hispanic students?
3. For participating high school–college partnerships, did the implementation of IPs result in any changes to Black and Hispanic students' DE course outcomes and post-high-school college attendance rates?

To ground discussion of our study in this paper, we first review the state and IP policy context as well as prior research on effective policies and practices to broaden access and support students of color in DE. Subsequent sections elaborate on the multiple methods we use to describe policy implementation and capture causal effects of IPs on select student outcomes. We conclude with a consideration of policy implications, as more states look to improve access to DE. Results of the study show that IPs varied in program design and implementation across high school–college partnerships. IPs increased DE participation among Black and Hispanic high school students; however, we find no evidence of downstream effects on college enrollment outcomes, highlighting the importance of program supports to promote student success beyond initial enrollment in DE coursework.

2. Background on Dual Enrollment and Equity

Similar to Advanced Placement (AP) courses, DE enables high school students to enroll in and earn college-level credits. DE is frequently administered through partnerships between high schools and postsecondary institutions, including both two- and four-year colleges. Students receive credits for DE coursework based on course performance; this contrasts with AP coursework, which requires a passing score on AP exams. Student participation in DE has grown substantially over the past two decades and is increasingly viewed as an important mechanism for smoothing high-school-to-college transitions and improving college access and outcomes (An & Taylor, 2019).

DE offers students an array of potential benefits with respect to college access and success. DE participation is associated with improvements in the quantity and quality of college applications as well as an increase in the likelihood of being admitted to a selective college (Liu et al., 2022). Beyond helping students to enroll in college, DE participation may improve the likelihood of postsecondary degree completion through an uptick in college-level credits accumulated prior to matriculation (An & Taylor, 2019; Blankenberger et al., 2017). Persistent equity gaps in DE access and participation, however, limit the extent to which high school students of color benefit from DE. While these gaps may not be as severe as in AP coursetaking, they still highlight the need to improve access to DE coursework, especially for students historically underrepresented in higher education (Xu et al., 2021).

DE programs enjoy bipartisan support, and a flurry of state policy activity has contributed to their expansion in the past two decades. In 2019 alone, 36 bills were enacted by 23 state legislatures addressing access to DE coursework (Pompelia, 2020). Despite numerous state policies and statewide efforts to expand access to DE coursework, a recent systematic literature review revealed few evaluations of such policies (Taylor et al., 2022). And although state policies aiming to increase access to DE are common, only six states currently have policies that incentivize participation among underserved high school students, and only two states explicitly focus incentives on racially minoritized students (Education Commission of the States, 2022). With few policies incentivizing underserved student participation in DE and with rare mention of racial equity, it is unsurprising that racial equity gaps in access to DE are widespread across the country (Xu et al., 2021).

College and K-12 practitioners working to broaden access to DE cite overreliance on placement testing to determine DE eligibility as creating an unnecessary barrier for students who could benefit from DE courses when given the right supports (Mehl et al., 2020). College placement tests have been scrutinized for bias among non-DE students, and researchers have called into question the validity of test scores as markers of college readiness (Scott-Clayton et al., 2014). Outside of their DE programs, community colleges have been adopting multiple measures assessment policies that use high school grades and other alternatives to college placement tests for determining student eligibility to

enroll in college-level (versus remedial) courses (Cullinan & Kopko, 2022). In the DE context, the use of multiple or alternative measures (e.g., high school grades) to college placement tests has become more widespread in the wake of the pandemic (Fink et al., 2022). Descriptive evidence suggests that the use of alternative placement measures has been successful in broadening access to DE while not affecting course success rates, but because this research has not accounted for potential confounding factors, questions remain as to whether the shift away from placement-test-based eligibility is a net positive for students overall and those underrepresented in DE. Our paper attempts to fill this gap in the literature by providing the first evaluation of the IP policy and one of the first causal estimates of the effectiveness of removing test-based eligibility for DE participation.

Ohio's IP policy (which we describe in more detail below) was conceived of as a tool to enable colleges and their high school partners to implement "innovative" programs designed to broaden the benefits of DE by increasing access with additional supports for students underrepresented in the state's DE program, College Credit Plus (CCP). Importantly, the IP policy allows high schools to waive placement testing for otherwise ineligible students so they can enroll in DE coursework. In *The Dual Enrollment Playbook*, Mehl et al. (2020) document the practices of high school–community college partnerships that had strong outcomes for expanding access to DE for low-income students and students of color in Ohio and two other states. We draw on findings from *The Dual Enrollment Playbook* and related work on effective DE models such as Early College High Schools (ECHSs) to ground our examination of how IPs have been implemented to advance equity in DE. As described in more detail below, these effective practices can be grouped into two areas: (1) increasing DE access through outreach and advising for underserved students and (2) promoting DE student success through high-quality instruction and academic supports.

2.1 Increasing Dual Enrollment Access Through Outreach and Advising for Underserved Students

Focused outreach efforts to underserved communities and supports for DE are a cornerstone of intensive DE models like ECHSs and are essential for advancing equity in DE more broadly (Barnett, 2018; Gilbert, 2017). Mehl et al. (2020) found that DE

programs with stronger results for low-income students and students of color engaged in active outreach beginning in middle school to low-income communities and communities of color to make students and families aware of opportunities for DE and other early college coursework in high school. Advising for DE students is typically limited, with colleges traditionally relying on high school counselors—overburdened and less familiar with college program options and requirements—to do the bulk of advising (Kanny, 2015). Colleges with stronger results for low-income students and students of color provided advising and planning assistance to their DE students, helping them explore career interests and develop a preliminary college educational plan (Mehl et al., 2020). This is consistent with other research showing that helping students explore academic and career interests and develop at least a preliminary post-high-school plan has the potential to boost student motivation and college aspirations (Brand et al., 2013; Glessner et al., 2017; Godbey & Gordon, 2019).

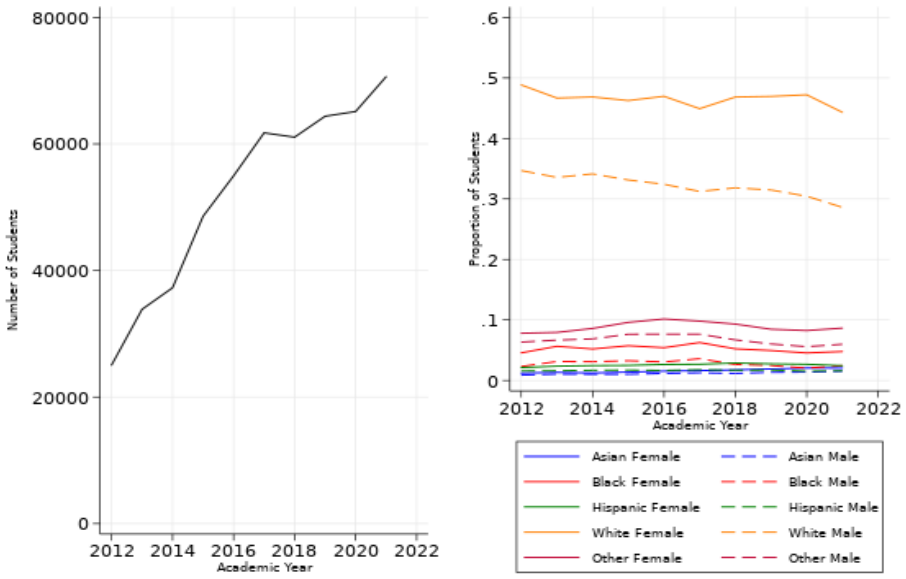
2.2 Promoting Dual Enrollment Student Success Through High-Quality Instruction and Academic Supports

To fully broaden the benefits of DE to underserved students, colleges and their high school partners need to not only expand access but also increase supports to promote students' success in their DE courses. ECHSs represent an intensive model of DE whereby the substantial challenge of meeting college-level expectations is accomplished with additional supports to promote students' success. Experimental studies demonstrate that participation in ECHS programs, which often prioritize students from underserved communities and which provide coherent college curricula and embedded counseling and student supports, increases the likelihood of entering college, persisting, and completing a college degree, with particularly strong effects for Black and Hispanic students and low-income students (Edmunds et al., 2020; U.S. Department of Education, 2017). In other, less intensive forms of DE, academic supports are also crucial to promote high school students' success in their college courses. In their study of effective DE partnerships with strong results for low-income and students of color, Mehl et al. (2020) found a high degree of coordination between college and high school personnel to ensure that DE students who were struggling academically were identified and provided additional academic supports in the early weeks of the DE course.

3. Ohio's Innovative Program Policy

Amidst a national backdrop largely characterized by the lack of state action to expand access to DE for underserved students (Education Commission of the States, 2022), Ohio stands out as an early adopter of an equity-focused statewide DE policy (College in High School Alliance & Level Up, 2020). In 2015, Ohio passed legislation to enact College Credit Plus (CCP), a DE initiative designed to increase high school students' college and career readiness. While participation in DE increased by more than 15,000 students within the initiative's first two years, concerns remained around access to DE coursework for underrepresented student groups (ODHE, 2020). Figure 1 highlights the rapid increase in DE enrollment in Ohio over the past decade as well as the gender and racial composition of students participating in DE. Despite accounting for roughly 20% of students enrolled at Ohio public schools, Black and Hispanic students account for only 12% of students participating in DE. A major barrier identified by state leaders was the requirement for students to score above a certain threshold on math, reading, and writing placement tests to participate in CCP.

Figure 1. CCP Enrollment Overall (Left) and Proportion by Race and Gender (Right)



To address the concern that the placement testing requirement may be shutting students out of CCP who might benefit if provided adequate supports, the state passed a revised code in 2017—the IP policy—which allows approved high schools and colleges to waive testing-based eligibility requirements and employ alternative measures of eligibility (e.g., high school grades) or to provide open access to CCP courses to students interested in enrolling in DE coursework (College Credit Plus Program, 2017). In response to concerns that the policy may result in increased access to and participation in CCP at the expense of student success in DE courses, the IP policy requires that high school–college partnerships design and implement "innovative" supports for students to specifically meet the needs of underrepresented students (College Credit Plus Program, 2017). The policy also requires partnerships to develop an outreach plan to recruit students from underrepresented groups (C. Boseker, personal communication, March 3, 2023). Since the policy's inception, 26 IPs have been approved; as a result, these programs waive testing-based requirements to take DE courses (see Table 1).

Table 1. Number of Approved Innovative Programs

Program Year	Approved Programs	Unique College Partners
2018-19	16	11
2019-20	21	13
2020-21	21	13
2021-22	26	15

Note. Authors' calculations based on program partnership data shared by the ODHE.

We hypothesize that waiving testing-based eligibility requirements for DE participation increases access to DE for Black and Hispanic high school students who were disproportionately underrepresented in DE prior to IP implementation. Program effects on course outcomes should similarly be positive insofar as innovative supports, including advising and outreach plans, are implemented as designed by policymakers. However, in the absence of such supports, we may expect to see more limited program effects on course and subsequent academic outcomes. Since the policy was designed to target high school students on the margin of DE participation eligibility, program effects on course success and subsequent academic achievement may hinge on the quality of

these innovative supports. In the following section, we explain our approach to describing implementation and estimating IP effects on high school student outcomes.

4. Methods

We use a multiple methods approach to answer our research questions. The methodological approach to addressing each research question is described below.

4.1 Research Question 1: How Were IPs Implemented, and What Did They Do to Broaden Access and Provide Additional Supports to DE Students?

Qualitative data on this question were drawn from interviews with a sample of 15 college personnel involved in the implementation of IPs. Six individuals participated in individual interviews, and nine individuals participated in a total of four group interviews. Thirteen participants worked at community colleges hosting IPs, and two participants worked at four-year universities hosting IPs. Participants had varying titles but were all involved in the administration or implementation of one or more IPs at their institution and are referred to in this paper as "IP leaders." Identification and recruitment of IP leaders involved a multi-step process. First, members of the research team identified CCP personnel at colleges that had been approved for one or more IPs. Researchers asked these personnel for assistance in identifying IP leaders and then inviting them via email to participate in an interview. CCP personnel were provided a standard recruitment message to email to IP leaders. Following this initial outreach, researchers scheduled interviews with any individuals who expressed interest in participating in an interview.

Researchers used a semi-structured interview protocol to guide the interviews. The protocol was designed to solicit background information about CCP at a participant's institution (number of school partners, number of participating students, CCP offerings, and placement policies for CCP) and about their institution's IPs. Participants were asked to describe their rationale for applying for an IP, the ways specific IPs were implemented to identify and recruit underrepresented students in CCP, the course offerings available to students and how these courses were implemented, supports included in the program to help students participate in and succeed in DE, and any other program practices designed

to support participating students. Following each interview, designated notetakers from the research team answered a series of questions we had provided in a notetaking form in order to summarize the workings of the IP, including the host college's rationale for applying for the waiver, a description of the program and student experience, and a description of how the IP intentionally supported underrepresented students to access CCP and succeed in DE coursework. Interviews captured information about 10 IPs at 10 colleges.

4.2 Research Questions 2 & 3: Did the Implementation of IPs Result in Increased Access to DE Coursework or Improved DE Course and Post-High-School College Outcomes for Black and Hispanic Students?

To address our second and third research questions, we used statewide administrative data provided by the ODHE. Data included student transcript records for all undergraduate enrollment at Ohio public colleges and universities from academic years 2012-13 through 2021-22; this includes student records for any DE coursetaking as well as student demographic data such as home district and high school, race/ethnicity, and gender. We merged high-school-level data from the National Center for Education Statistics to observe DE students' high school characteristics, including urbanicity, racial composition, Title I eligibility, and enrollment size. We also accessed two program years of IDs for students who received waivers to participate in IPs. We focused our empirical analysis on outcomes at the school level but present descriptive statistics for this subset of student data to offer some additional context for IP participation. Throughout this project, we had regular meetings with our ODHE contacts to understand these data and their limitations.

IP partnerships. Through our collaboration with the ODHE, we linked information about IP participation to the statewide administrative data. For each year of data, we identified the specific high school–college partnerships that implemented any IPs and had approval from the ODHE in a given year to offer waivers to placement tests for DE coursework eligibility.

Outcome variables. We focus on three outcome variables: the number of students taking any DE courses, DE course completion rates, and matriculation at any public Ohio college within one year of high school graduation. This includes indicators

for whether a student enrolled at a public community college, university branch campus, or university main campus. University branch campuses are generally more open-access four-year universities, whereas main campuses are more selective four-year schools (e.g., The Ohio State University). For each of these outcomes, we focus on disaggregated trends by race/ethnicity and gender, with a particular focus on effects for Black and Hispanic students—students who are underrepresented among DE coursetakers in Ohio.

Analytic sample. The IP policy started in 2017 but was implemented at different high school–college partnerships each year thereafter. There were 16 partnerships in the program's inaugural year, 21 partnerships in academic years 2019-20 and 2020-21, and 26 partnerships in 2021-22. Where specified in summary tables, "IP waiver students" refers to students for whom we can confirm participation in dual enrollment through a waiver; "other CCP students" refers to students who participated in DE without having to submit a waiver. Similarly, "IP partner high schools and colleges" refers to schools that we confirmed as having an established IP partnership, whereas "other CCP high schools and colleges" refers to schools whose students participate in DE through non-IP programs.

Analytic strategy. In the ideal experiment, high schools would be randomly assigned to participate in IPs. Differences in DE participation and academic outcomes for students at participating and non-participating high schools could then be attributed to IP implementation. Without the luxury of such an experiment, we turn to quasi-experimental methods to estimate the causal effects of IPs on student enrollment, coursetaking, and longer term academic outcomes. We use a dynamic difference-in-differences (DID) model that compares changes in key outcome variables over time between IP-participating high schools and other CCP-participating high schools for graduating high school cohorts from 2015-16 to 2021-22. More specifically, we use a two-way fixed effects (TWFE) model that accounts for staggered treatment take-up at the high school level. We create a binary indicator for whether schools participated in IP. We then flag high schools as one, or treated, if they participated in IP in a given year; IP partner high schools remain treated after their initial year of program participation. High schools that never participated in IP are flagged as zero and act as a control group. We focus our

analysis at the school rather than student level since IPs were approved between high schools and colleges as partnerships. Additionally, estimating program effects at the school level enables us to more readily address the question of whether IPs improved access and outcomes for student subgroups of interest.

To uncover unbiased treatment effect estimates, it is not necessary for IP high schools to be similar to control high schools participating in other CCP along all observable and unobservable characteristics. Rather, it is critical that, in the absence of statutory requirement waivers for IP participation, treatment and control high schools share trends in DE coursetaking and outcomes. Event study plots in the Results section show pre- and post-policy implementation trends and highlight the extent to which pre-trends, or the core identifying assumption of our model, hold across outcomes of interest.

We estimate the effects of IP waivers on DE access and success measures using the following model:

$$Y_{st} = \beta IP_{st} + \tau_t + \gamma_s + x_{st} + \epsilon_{st} \qquad (1)$$

where *Y* represents a series of outcome variables for students at school *s* in year *t*, and τ and γ refer to year and high school fixed effects, respectively. IP switches to 1 after program implementation, and β corresponds to the difference in outcomes across cohorts that were exposed to IP waivers for DE participation and those that were not. We show results with and without a set of high-school-level demographic characteristics (*x)*, and standard errors are clustered at the school-by-year level. DE has steadily increased throughout all years included in this analysis, but our identification strategy enables us to isolate effects of statutory requirement waivers and IP participation on DE coursetaking and longer term academic outcomes.

By using multiple methods, our analysis offers an in-depth and nuanced approach to evaluating IP implementation. In the subsequent section, we outline qualitative results on how IPs were implemented. We then turn to empirical estimates of program effects on student outcomes.

5. Results

5.1 Research Question 1: How Were IPs Implemented?

Overall, interviews with IP leaders showed that no IP looked alike. Programs varied substantially in their design and implementation: They targeted different subgroups of students underrepresented in CCP, had different programmatic foci, used different outreach strategies, and implemented different supports inside and outside the classroom to help students with their coursework and college preparation. Programs also varied in terms of how many students were served. This variation may be partly attributed to the fact that college and school partners were encouraged to create "innovative" practices and approaches to support underrepresented students. Additionally, partnerships differed in terms of the backgrounds of high school students in their communities, the goals that partnerships established for their programs, the types of courses or programs that colleges offered, and the relationships that colleges and schools had prior to implementing the programs—all of which influenced the design and implementation of programs. Results for Research Question 1 are described below by theme.

IPs were created to focus on various subgroups of underrepresented DE students, and they prioritized recruiting students who met multiple criteria. To receive the placement-test waiver, IPs were required to identify a student group underrepresented in DE and implement outreach and support activities specifically tailored to that group. Among the IPs we interviewed, the most common underrepresented student groups in focus for the IP were students of color, low-income students, and students who were the first generation in their family to attend college. Other characteristics included students who were English language learners, students considered falling behind academically based on indicators such as high school grades or attendance records, students considered "middle achieving" based on standardized test scores, students with documented disabilities, and female students underrepresented in particular career fields. Additionally, one program designed for students from "disadvantaged" backgrounds focused on low-income students and students who had experienced trauma. Staff from three institutions mentioned that their IPs also considered school or community characteristics more broadly to identify students from under-

resourced schools (in rural or urban areas) and schools in cities where community members had greater economic barriers or where schools had greater populations of students living in poverty.

The design and implementation of IPs varied substantially. Table 2 presents an overview of each program, including its size, programmatic focus, and common design features. As this table shows, the size of IPs varied considerably: While some programs served a smaller number of students (fewer than 16 or between 16 and 30 students), most IPs served 50 or more students across all high school partnerships. The largest program served over 700 students. Programs fell into different programmatic areas: (1) preparation for college-level English and math (and/or programs that included college-level English and math courses), (2) Science Technology Engineering and Math (STEM), (3) career and technical education (CTE) (or workforce development areas), and (4) other content areas (history and social justice). We also found that for most programs, college and school sponsors both contributed to outreach efforts. Finally, programs were characterized by three main design features: (1) alignment of the programs to college degrees and career paths, (2) career exploration and college advising, and (3) academic supports and instruction. Some programs shared one or more of these design features.

Table 2
Overview of Innovative Programs

		Number of Students			Programmatic Focus								
Program	Number of School Partners	< 16	16–30	50+ Students	English/ Math	CTE	STEM	Other	College Outreach	High School Outreach	Alignment of DE Offerings to Degrees and Careers	Career Exploration and College Advising	Academic Supports and Instruction
1	2			x			x		x	x	x	x	x
2	1				x (E)								
3	5			x	x (E)				x	x		x	x
4	17			x		x	x					x (CE)	x
5	2			x		x	x		x	x	x	x	x
6	2			x		x			x	x	x	x	
7	49			x		x			x	x	x		x
8	1	x			x (E & M)				x	x			x
9	1			x				x	x	x		x	
10	5		x					x	x	x			x

Note. Programs 2 and 10 are no longer active due to implementation challenges. Information about Program 2 is missing because the interviewees were not involved with the implementation of the program when it was active. Information posted in the "Number of Students" columns represents estimates by interviewees. "Academic Supports" and "Instruction" were combined into one category (see rightmost column) because these program features were often described together and/or in similar ways by interviewees.

The following describes what we learned about programs' outreach efforts and design features, including examples that align with effective practices for supporting underrepresented DE students.

For nearly every program, IP leaders described outreach efforts by both colleges and high schools to broaden access to DE for identified underrepresented student groups. Most often, outreach about IPs consisted of efforts by high school counselors to provide information about the opportunity to participate in the IP and identify students who would be candidates for the program. College personnel, particularly those overseeing CCP programs but also college faculty, most often participated in outreach efforts by facilitating meetings or presentations on high school campuses in collaboration with high school personnel. Colleges often provided information about CCP and college opportunities more broadly rather than just sharing information about IPs. Though it is promising that high schools and colleges made joint efforts to identify and recruit students to IPs, high schools tended to lead these efforts, while colleges played a less active role in outreach. The strongest examples of these outreach efforts identified from the interviews are discussed below.

For Program 4, representatives from the college's CCP office and admissions department were regularly involved with outreach and recruitment activities in high school classrooms. The IP leader said this approach has been very effective in helping students learn about IP offerings and what program participation entails:

> Going into the class and school creates a better working relationship with the high school and allows [the college representatives] to work with the students and talk directly to them about all the information and decision-making. This is better than just sending out an email because the in-person connection is so essential. Students can find information (like for placement testing), and these opportunities help alleviate [students'] stress from confusion or not knowing who to go to.

As another example, school and college personnel from Program 5 used a systematic approach to identify students for recruitment to their IP. First, they reviewed rosters of 9th- and 10th-grade students to identify those who had not applied to CCP. Of these students, they identified those who belonged to the targeted underrepresented

student groups (in this case, racially minoritized students and those receiving free and reduced-price lunch [FRPL]) and then individually reached out to these students to see if they were interested in the program. If so, they determined whether the program courses fit into students' schedules.

Some programs made efforts to align program courses to degrees and credentials and educate students and families about these options. IP leaders from four programs (1, 5, 6, and 7) described how their IPs provided pathways to college degrees and credentials. However, this design feature was less common than others, which suggests that programs could do more to help students use their participation in IPs to get a head start on a college degree or credential. Toward this end, for example, college staff in Program 5 explained how program courses fit into college credentials during outreach events at schools. This college has also mapped academic (or transfer) pathways to bachelor's degrees and CTE pathways, and they used these maps to support their outreach and recruitment activities and their student advising appointments.

Half of the programs included advising from a college academic advisor, and one program included career exploration activities. Several colleges provided college-level advising to IP students, which is positive in light of the fact that high school counselors have traditionally assumed advising responsibilities for DE students. Some programs, though, did not require students to participate in advising, and only one program (4) embedded career-exploration activities. These findings indicate that programs could do more to ensure that DE students receive advising and information about career paths that may help them figure out their plans after graduating high school. The strongest examples of IPs providing advising are discussed below.

Two IPs provided either mandated or "intrusive" advising for students. In one of these programs (9), IP students received an extra "tier"—or more intensive advising—than other CCP students received. Specifically, students were required to meet with a college advisor twice every semester to review their progress and address any challenges. These meetings usually took place face-to-face. In the other program (5), the IP leader explained that students received a lot of intrusive advising:

> There's a lot of intrusive advising done, too, where . . . like, if a student is not doing well, they are pulled down into offices and [asked], "Okay, what's the plan here? Let's get

> you on track. Do you need tutoring? What's going on?" That is really kept an eye on much more closely with those students than a traditional CCP student.

In another program (4), each course included an academic competition to help students further their interests in the subject matter; the program also organized career-specific field trips to provide greater exposure to the associated career field.

Most programs included strategies to provide academic support with DE coursework, but there are few examples of how programs used curricula and instructional practices to support DE students. Examples of academic support included interventions such as tutoring, study halls, one-on-one meetings to check in on students' academic progress, and assistance from additional program staff in instructional roles (e.g., teaching assistants) or coaching roles. One program also provided workshops to support students' development of college readiness skills. Only two programs described specific efforts to use curriculum to support students' success with coursework. Although most programs incorporated one or more of these supports, the intensity varied. Since IP students spend more time in the classroom than they do participating in other program activities, our findings suggest that there may be more room to provide IP students with greater academic supports. The following are the strongest examples of IPs providing academic support.

Students in Program 1 participate in workshops on college readiness topics such as study skills, practices to support concentration, practices to avoid procrastination, active reading skills, and test-taking skills, including practices to cope with test anxiety. A theme across these workshops is helping students understand how expectations for college students differ from the expectations for high school students.

Program 1 has embedded student success coaches who provide one-on-one support for students in the classroom. Additionally, coaches support the college's early alert system by individually following up with students when faculty members submit alerts about students' academic performance or classroom behavior. Another program (4) has also provided extra personnel to support IP students with their coursework. In this program, students are assisted in the classroom by field specialists who help students complete activities and assignments. Field specialists also provide feedback to instructors

on students' performance. This same program has coordinators who monitor students' grades and regularly communicate with instructors about students' progress.

Program 3 was designed to encourage high levels of coordination between English instructors at the school and college levels. Using grant funds, high school and college instructors participated in a series of working meetings where they created curriculum designed to help high school students transition from English at the high school level to English at the college level. All participating instructors are trained on the purpose and goals of the program's curriculum, and each high school instructor is paired with a college instructor to facilitate ongoing collaboration and provide guidance with instructional matters.

Lastly, all courses in Program 4 have been designed to be project based to help students gain greater exposure to the subject matter and to build students' confidence as learners.

5.2 Research Questions 2 & 3: What Impacts Did IPs Have on DE Course Access for Black and Hispanic Students? What Impacts Did IPs Have on Post-High-School College Outcomes for Black and Hispanic Students?

Qualitative findings highlight the extent to which IP implementation varied across high school–college partnerships. Insights gleaned from interview data underscored IP implementation variation in terms of student groups targeted, curricular focus, and supports offered to participating students. This variation holds critical implications for program effectiveness and the extent to which IPs have made progress toward stated goals of improving access to and success in DE for underserved high school students. We expand below on the quantitative findings used to answer these questions.

Descriptive results. Black and Hispanic students comprised 39% of students identified as participating in IPs through a waiver; on average, IP partner high schools served roughly twice as many Black and Hispanic students compared to high schools participating in other CCP programs.

Table 3 shows demographic characteristics for students graduating between 2018-19 and 2021-22. We break down results for students participating in IPs through waivers, students attending IP partner high schools, and students participating in other CCP

programs. We also highlight student demographic characteristics among DE students at IP-participating and other CCP-participating colleges. Results show significant growth in IP and other CCP programs.

Table 3. Student Demographics by IP Waiver Status

Student Characteristic	IP Waiver Students (*n* = 690)	IP Partner High School (*n* = 19,698)	Other CCP (*n* = 149,714)	IP Partner College (*n* = 72,118)	Other CCP Partner College (*n* = 97,984)
Gender					
Male	58%	40%	41%	41%	40%
Female	42%	60%	59%	59%	60%
Race/Ethnicity					
Asian	4%	3%	3%	4%	3%
Black/Afr. Am.	30%	16%	7%	11%	6%
Hispanic	9%	5%	4%	5%	4%
White	44%	68%	77%	72%	79%
Other/Multiracial	13%	8%	9%	8%	9%
HS Graduation Year					
2018-19	--	25%	25%	25%	24%
2019-20	26%	26%	25%	26%	25%
2020-21	44%	26%	25%	25%	26%
2021-22	30%	24%	25%	24%	25%

Asian students who participated in DE were about 10 percentage points more likely on average to attend any college than students in other racial groups (see Figure 2, Panel B, below). Persistent racial equity gaps in college matriculation again highlight the potential for IPs to increase access to high-quality DE courses and in turn promote college access for underserved student groups.

Colleges participating in IP served a greater proportion of Black and Hispanic students than colleges participating in other CCP programs. Table 4 shows high-school-level demographic characteristics of IP versus other CCP partner high schools. IP partner high schools on average served more Black and Hispanic students and Title I-eligible students, were more likely to be located in urban areas, and had larger student enrollment than other CCP partner high schools. This offers descriptive evidence that IPs are making progress toward stated goals of closing equity gaps in access to DE.

Table 4. High School Demographics by IP Partner Status

Student/School Characteristic	IP Partner High School (*n* = 335)	Other CCP (*n* = 2,014)
Gender		
Male	52%	51%
Female	48%	49%
Race/Ethnicity		
Asian	2%	1%
Black/Afr. Am.	29%	8%
Hispanic	7%	4%
White	57%	82%
Other/Multiracial	5%	5%
Urbanicity		
Urban	38%	7%
Rural	22%	45%
Title I Eligible	84%	62%
Average School Enrollment	750	675

One concern around waivers for IP relates to the potential for underprepared students to participate in and thus perform poorly in DE. Course pass rates were comparable on average for Black and Hispanic students at IP partner and other CCP high schools. Among students whom we can identify as having participated in IP through a waiver for academic years 2019-20 and 2020-21, racial equity gaps in course outcomes persist: Three fourths of Black and Hispanic students passed DE coursework, and about 50% of Black students passed DE courses with a B or higher (see Table 5). White and Asian students were still more likely on average to pass dual enrollment coursework overall and with a B grade or higher, highlighting the importance of program designs within the IP policy to provide supports for Black and Hispanic students to not only access DE but succeed in these courses. Descriptive results do not offer conclusive evidence on program effectiveness, as course pass rates for Black and Hispanic IP waiver students may have been lower in the absence of the program. We explore this issue further in our discussion of causal effects of IPs on college-access outcomes.

Table 5. Student-Level Course Outcomes

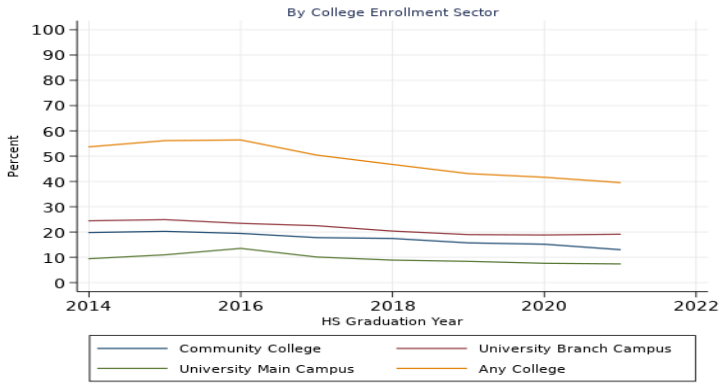
	IP Waiver Students (*n* = 690)		IP Partner High School Students (*n* = 19,698)		Other CCP Students (*n* = 149,714)	
Race and Gender	Pass Rate	Pass Rate (B or Higher)	Pass Rate	Pass Rate (B or Higher)	Pass Rate	Pass Rate (B or Higher)
Asian						
Male	87%	85%	89%	80%	89%	81%
Female	--	--	92%	86%	90%	84%
Black						
Male	71%	48%	76%	58%	77%	57%
Female	74%	50%	80%	64%	78%	63%
Hispanic						
Male	77%	63%	84%	69%	84%	71%
Female	88%	74%	82%	71%	84%	72%
White						
Male	83%	70%	89%	76%	88%	76%
Female	76%	64%	89%	79%	90%	80%
Other/Multiracial						
Male	82%	69%	84%	71%	88%	76%
Female	77%	65%	87%	75%	89%	78%
Overall	78%	63%	87%	76%	88%	77%

Note. Cells omitted if *n* is fewer than 20 students. Limited to academic years 2019-20 and 2020-21.

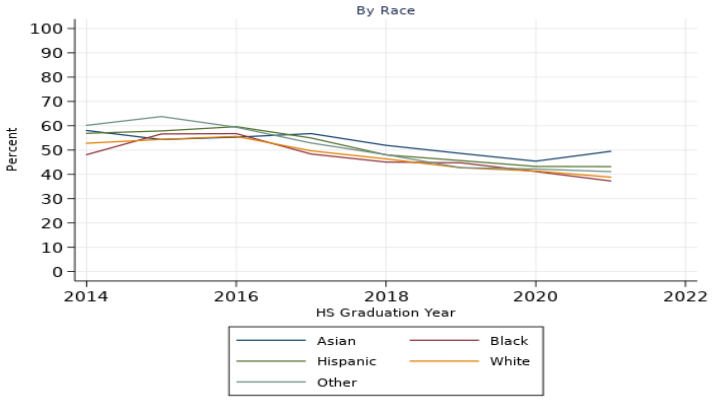
Before turning to our causal analyses, we explore college enrollment rates of IP and other CCP program participants within one year of high school graduation. Trends in college enrollment rates are presented in Figure 2 and are broken down by college type (e.g., community college, university branch campus, and university main campus) (Panel A), race/ethnicity (Panel B), and IP versus other CCP partner high schools (Panel C). Enrollment at any public college as well as at four-year public colleges more specifically is similar across IP and other CCP partner high schools, and enrollment rates have steadily declined overall and across each college type available in our data (not shown in figure).

Figure 2. Student-Level College Enrollment Outcomes

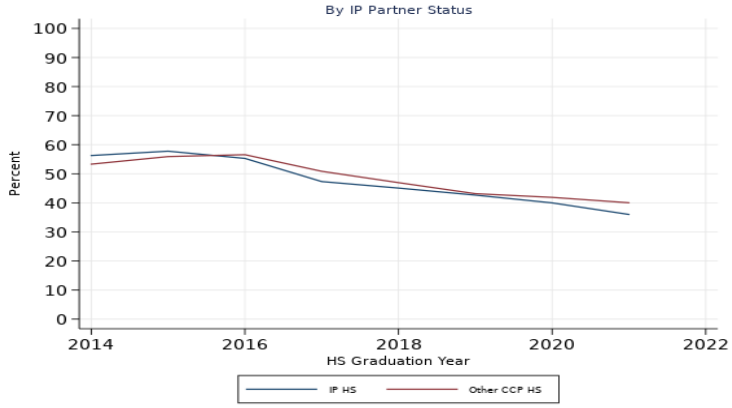
Panel A



Panel B



Panel C

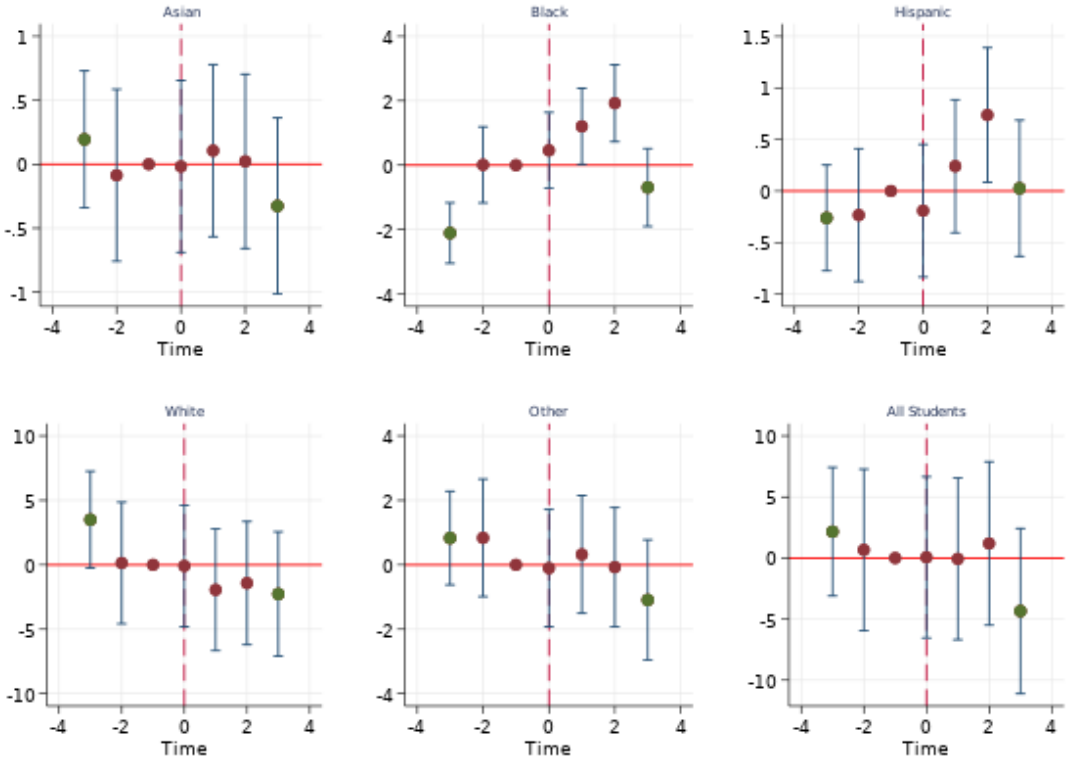


Note. Panel A shows college enrollment rates over time by college type within one year of high school graduation. Panel B shows any college enrollment within one year of high school graduation by race/ethnicity. Panel C shows any college enrollment rates within one year of high school graduation for IP versus other CCP partner high schools.

Dynamic difference-in-differences (DID) results. We expand on descriptive trends to focus on whether IPs had causal effects on course participation, course performance, and college enrollment outcomes. We present a series of event study plots in Figures 3 and 4 that show causal estimates of the effects of IP exposure on the number of students participating in DE, passing DE coursework, and enrolling in college within one year of high school graduation. For each event study plot, we show coefficients for each racial/ethnic subgroup and overall. Coefficients depicted in event study plots correspond to the DID estimator captured by β in Equation 1. We present results without school-level demographic controls below but also include results inclusive of these controls in the Appendix.

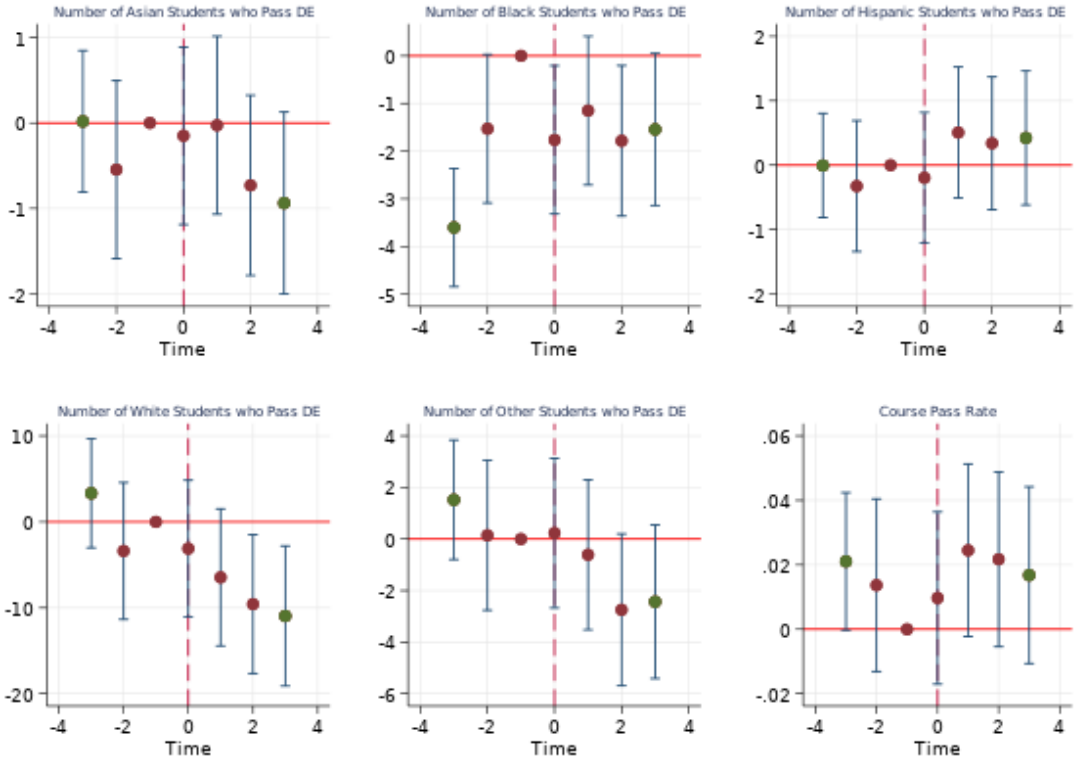
With respect to student demographics, event study plots depicted in Figure 3 show that IPs increased access to DE for Black and Hispanic students. Point estimates should be interpreted as two to three additional Black and Hispanic students in a given high school participating in DE in the years after IP implementation. While these results may seem small, they correspond to a 15-to-30-percent increase in Black and Hispanic student participation in DE. Black and Hispanic participation in DE in years prior to 2017 was low at baseline relative to other racial/ethnic subgroups, so an average increase of, for instance, two students participating in DE is quite large in terms of a percentage change. In contrast, we find no effects on the number of White, Asian, or Other students participating in DE as a result of IPs.

Figure 3. Event Study Plots: DE Participation by Race/Ethnicity



To better understand effects on course outcomes, we run this same DID model on the number of students who pass any DE coursework by race/ethnicity at the school level (see Figure 4 below). Figure A4 in the Appendix shows similar results but uses "Passed with a B or Higher" as the outcome variable. Results are near zero and imprecisely estimated for most student subgroups and course outcomes. For Hispanic students, there is some suggestive evidence of slight improvements in course pass rates, whereas negative pre-trends hinder a more definitive interpretation of IP effects on course pass rates for Black students. The lack of positive findings with respect to course outcomes by race raises additional questions about IP's impact on student outcomes and the kinds of DE experiences students were exposed to as a result of the policy, which we explore in greater depth in the Discussion section.

Figure 4. Event Study Plots: Number of Students Who Passed DE Coursework

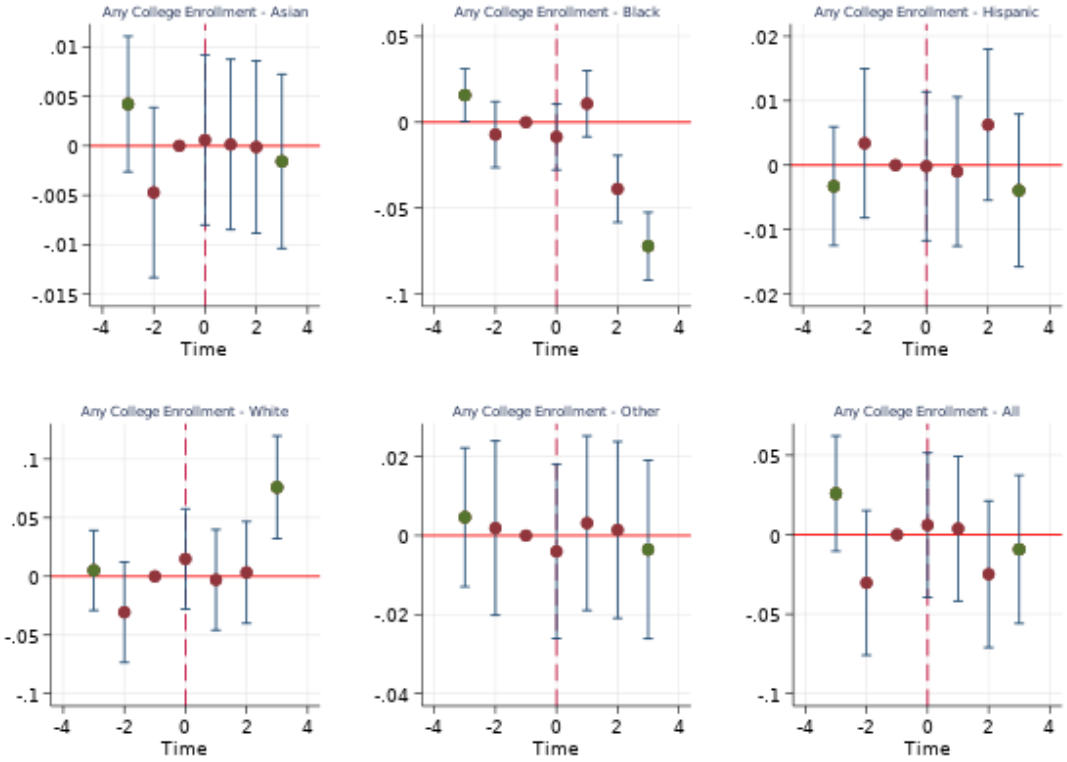


Estimated effects of IPs on any college enrollment, which includes community college, university branch campus (UBC), and university main campus (UMC) enrollment, are near zero for all students (see Figure 5 below). College enrollment outcomes are captured within one year of high school graduation. Effects are similarly near zero for most racial/ethnic subgroups, though we observe a negative effect on college enrollment for Black students. To explore this further, we show community college, UBC, and UMC enrollment event study plots in the Appendix (Figures A7–A12). Negative effects on college enrollment for Black students are driven primarily by declines in community college enrollment that are observed several years after policy implementation. While Black student enrollment in UBCs increased, this was not sufficient to offset declines in community college enrollment, and UMC enrollments are too imprecisely estimated to interpret meaningfully. Before the IP policy was implemented, Black students attending IP partner high schools were more likely to attend community colleges and less likely to attend UMCs. The fact that enrollments at four-year colleges did not increase after the implementation of IP creates some cause for

concern since we do not observe a "democratization effect" of students attending four- instead of two-year colleges (Rouse, 1995). College enrollment outcome effects for other student subgroups are near zero, suggesting that the policy had limited impact on immediate postsecondary enrollment.

Our estimated effects of IPs on college enrollment involve cohorts of students who were likely impacted by the COVID-19 pandemic. Across the U.S., initial community college enrollment declined by 12% for the 2020 graduating high school cohort as compared to the prior year's cohort (National Student Clearinghouse Research Center, 2021). Bulman and Fairlie (2022) found that these declines in community college enrollment were particularly large for Black and Hispanic students in California. Enrollment shocks stemming from the pandemic may help to explain some of the observed declines in community college enrollment in Ohio, so caution is warranted in interpreting this study's results. We discuss this issue further in our section on limitations.

Figure 5. Event Study Plots: College Enrollment



6. Discussion

Despite persistent racial and other equity gaps in access to DE, statewide policy explicitly addressing increasing equity in DE is rare, and policy evaluation is even rarer (Taylor et al., 2022). The Ohio IP policy is significant because of its focus on increasing access for underrepresented students specifically and its emphasis on placement testing as a major barrier. Both continue to be relevant post-pandemic given persistent equity gaps in access to DE and many states' shift away from placement testing for developmental education, dual enrollment, and other purposes on a large scale. Our central research questions ask how the IP policy was implemented and what effect implementation had on broadening the benefits of DE for Black and Hispanic students.

Colleges and their high school partners implemented the IP policy in a variety of ways. The IPs varied in their design, ranged widely in the number of students and schools served, and focused on different fields of study. One common feature was the focus on

broadening access for underrepresented student groups and providing supports to help high school students succeed in college coursework. Although program leaders shared that their programs were designed to increase DE participation among underrepresented students, there was limited evidence from our interviews of how the programs took into account students' needs related to their membership in specific underrepresented groups. Given the wide variation in implementation, it is difficult to isolate which particular program features were more effective than others in increasing access to and success in DE coursework for underrepresented students.

Nonetheless, the IPs did implement practices that align with other research documenting effective practices for advancing equitable DE programming, such as expanded outreach to underserved communities, proactive academic supports, and college advising (Mehl et al., 2020). The presence of an IP partnership within a high school–college pair resulted in a 15-to-30-percent increase in the number of Black and Hispanic students participating in DE. IP partnerships generally had larger enrollments of Black and Hispanic students before the policy was launched, but the policy implementation caused an additional increase above and beyond other high school–college pairs without an IP.

Additionally, estimated effects of the IP on DE course pass rates for high school–college pairs are imprecisely estimated and near zero. This is important to note because a major concern about broadening access to DE is that course pass rates may decline and more students may end up with a D or F on their college transcript. These findings may mask variation in program quality across high school–college pairs that we discovered in our qualitative analysis. While the IP leaders we spoke with described deliberate efforts to design and implement programs to provide additional outreach, advising, and supports through their IP partnership, our qualitative analysis suggests that program implementation varied widely across high school–college partnerships: Some programs were designed with a greater and more effective focus on supporting student success in DE than others. More specifically, our findings show that some IPs were more proactive than others in providing advising and academic supports to students.

These findings come with a few caveats. Descriptively, Black students—and to a lesser degree Hispanic students—attending IP partner schools and overall in CCP pass

their DE courses at lower rates than other students. Rates are even lower when looking at passing with a B or better. And for a subsample of Black students who we know received a waiver, pass rates were lowest, with only about half of these students earning a B or better in their DE courses. In addition, we find no causal evidence of increases in college enrollment outcomes, which is at odds with previously cited literature that found positive effects of increased access to and participation in DE on college matriculation. The lack of effects on college enrollment outcomes precludes the potential for democratization or diversion effects, whereby some students shift the type of college they attend as a result of IP participation (Jagesic et al., 2022; Rouse, 1995). Well-documented shocks on college enrollment from the COVID-19 pandemic likely contribute to our estimated effects of IPs on college enrollment. These findings underscore the importance of ensuring the quality of supports and instruction for underrepresented DE students, as opposed to just making supports available.

Despite some encouraging findings, there is undoubtedly room for improvement to fully realize the benefits of Ohio's IP policy and of CCP overall. IPs made an impact on broadening access for Black and Hispanic students. And while there was no significant effect of the policy change on course outcomes, course outcomes already were low and remained so for Black and Hispanic students—including those who entered DE through the IP policy's placement test waivers. As DE has continued to grow since the onset of the pandemic, many community colleges—including those in Ohio—have invested in efforts to increase access with expanded supports to broaden the benefits of dual enrollment to more students (OACC, 2021). One emerging framework for strengthening DE programs is called "dual enrollment equity pathways" (DEEP) (Fink et al., 2023). The DEEP framework describes how community colleges are extending their guided pathways student success reforms to DE to provide a stronger on-ramp to college and career opportunity by increasing outreach to underserved communities and reducing barriers to participation—such as implementing alternatives to standardized placement testing—while also offering DE courses aligned to postsecondary pathways of interest and expanding advising to increase college enrollment and completion after high school. It is essential for state and college leaders to continue investing in strong, evidence-based

supports that change the experience for these students if they want to realize and broaden the benefits of DE.

7. Limitations

In interpreting these findings, it is important to note a few limitations in the data. The number of student IDs we report on is significantly less than the estimated number of IP participants reported by the ODHE. We roughly estimate that our list of students receiving waivers represents between 50% and 75% of statewide waiver recipients. This does not bias causal effects of IP on outcomes of interest since treatment status is assigned at the school level, but it is a missed opportunity for both this analysis and for future state evaluations to better track outcomes for students who participate in DE through IP waivers. Next, we are not currently able to account for all high schools in the Cleveland Metropolitan School District (CMSD) that participated in IP. The ODHE shared a list of school district and college partners by year but did not have an up-to-date and complete list of actively participating high schools specifically in the CMSD and Cuyahoga Community College partnership. We were able to confirm partnership with 107 high schools but have not been able to confirm the existence of additional schools in this IP partnership. This omission likely leads us to underestimate effects of IP on access since high schools in the CMSD serve a higher percentage of minority students relative to other high schools in Ohio; however, the direction of bias on other course and college enrollment outcomes is ambiguous.

As mentioned earlier, qualitative analysis suggests substantial variation in how the IP policy was implemented across partnerships, but we lack statistical power to investigate variation in program effects across high school–college partnerships. Given the number of partnerships and the variation in specific program goals, there is likely considerable heterogeneity in treatment effects of interest. Our results are predominantly driven by partnerships with two large colleges, which account for about 60% of IP student participants. Conversely, several of the partnerships enrolled fewer than 20 students. We do try to estimate program effects for treatment schools that were in the top two quartiles in terms of the share of Black, Hispanic, and Free or Reduced-Price Lunch

(FRPL) students enrolled (see Appendix Figures A14–A17). While the direction of point estimates remains the same and is larger in magnitude as compared to our main results, we lose precision by limiting the sample and, again, cannot rule out null effects for most outcomes.

In terms of our implementation research, IP leaders had varying levels of knowledge about IPs, which at times limited the amount of information we could document. For instance, the leaders we interviewed of a now-inactive IP (Program 2) had very limited information about it as they were not involved when the program existed. In other and more frequent instances, IP leaders described program features without much detail about how those features were intended to support students underrepresented in CCP on the basis of race or other characteristics. Background questions about CCP offerings at the college, questions about eligibility requirements for DE (for both CCP and IP programs), and other topics that emerged during the time of our interviews occasionally limited the amount of time for discussion of IPs specifically.

We present descriptive and causal findings across student demographic characteristics but are missing several demographic characteristics that align with target areas of the policy. Many IPs specifically targeted low-income students, but we do not observe family income at the student level. We are able to identify student waiver participants in only two cohorts, and, due to limited data availability, these lists of waiver participants are a subsample of all students who received waivers. Caution is thus warranted in interpreting student-level descriptive findings for IP waiver students presented in Table 3.

Finally, we are limited in our time frame for observing college outcomes. The first cohort of IP students was from the 2018-19 school year, which prohibits us from estimating longer term program effects on college enrollment, persistence, and completion. For this reason, college outcomes presented in the paper focus solely on enrollment within one year of high school graduation. These results should be interpreted as floors since many students do not enroll in college directly after high school. As mentioned earlier, several cohorts of students included in our analysis were directly impacted by the COVID-19 pandemic. Enrollment shocks from the pandemic may downwardly bias estimates of IPs on college enrollment and further highlight the need to

estimate effects on college enrollment beyond one year after high school graduation and for subsequent cohorts of students.

8. Conclusion

This study is the first evaluation of Ohio's Innovative Programs (IPs), a policy aiming to broaden the benefits of dual enrollment to students who had been excluded in the state's initial efforts to expand DE access. The IP policy was designed with the explicit purpose of increasing access to DE for underrepresented student populations: Participating high schools and colleges were permitted to waive testing-based eligibility requirements, and they were required to recruit underrepresented student groups and provide adequate supports to ensure that such students could be successful in DE courses. The approach taken in Ohio may provide a useful framework for other states hoping to better leverage DE programs as a mechanism for increasing equity in college access and attainment. During the pandemic, many states waived test-based eligibility requirements for DE. While some states have returned to these requirements, others have enshrined alternatives to high-stakes placement tests or are studying the issue or deferring to college policy. State leaders in Ohio learned from the early IP policy implementers and in 2022 codified in state statute alternatives to placement testing for determining DE eligibility. This evaluation of Ohio's IP policy can inform other state policymakers rethinking status quo policies post-pandemic with the goal of broadening the benefits of DE.

The number of students participating in DE nationwide has increased dramatically over the past two decades, yet gaps persist in DE participation for students who are already underrepresented in higher education. We use qualitative and quantitative methods to evaluate Ohio's IPs, which removed standardized testing as a barrier to participate in DE coursework. We find that the policy increased participation among Black and Hispanic students. And while the implementation of the policy broadened access without changing course outcomes, the impacts on college enrollment after high school were mixed. Variation in program quality and implementation likely contributed to relatively poor course outcomes for Black and Hispanic students, which may in turn have contributed to mixed effects on college enrollment. The findings suggest that

eliminating eligibility requirements for DE can help increase access for underserved student groups. Yet, limited program effects on course outcomes and college enrollment after high school underscore the importance of pairing increased access to DE with adequate financial, advising, and academic resources to promote student success in and beyond these DE courses.

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Appendix: Supplementary Figures

Figure A1. Event Study Plots: DE Participation by Race With Controls

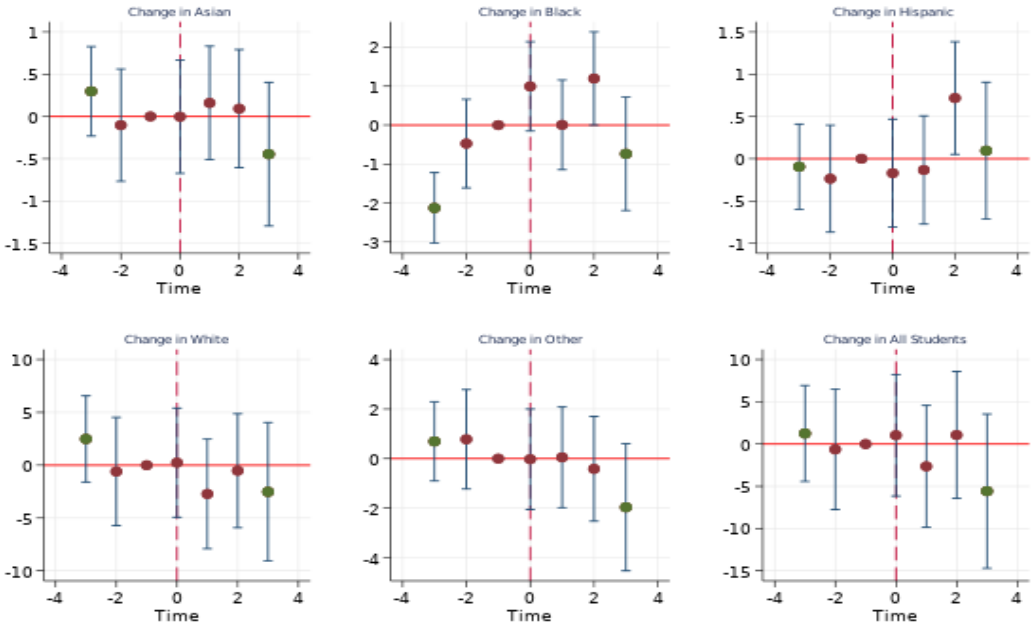

Figure A2. Event Study Plots: Number of DE Courses Attempted

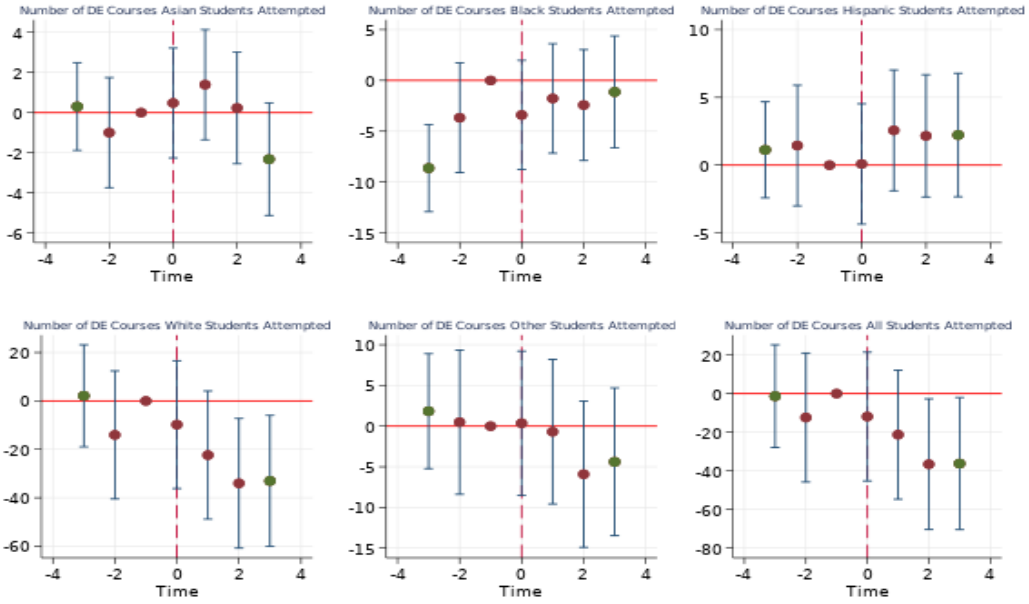

Figure A3. Event Study Plots: Number of DE Courses Attempted With Controls

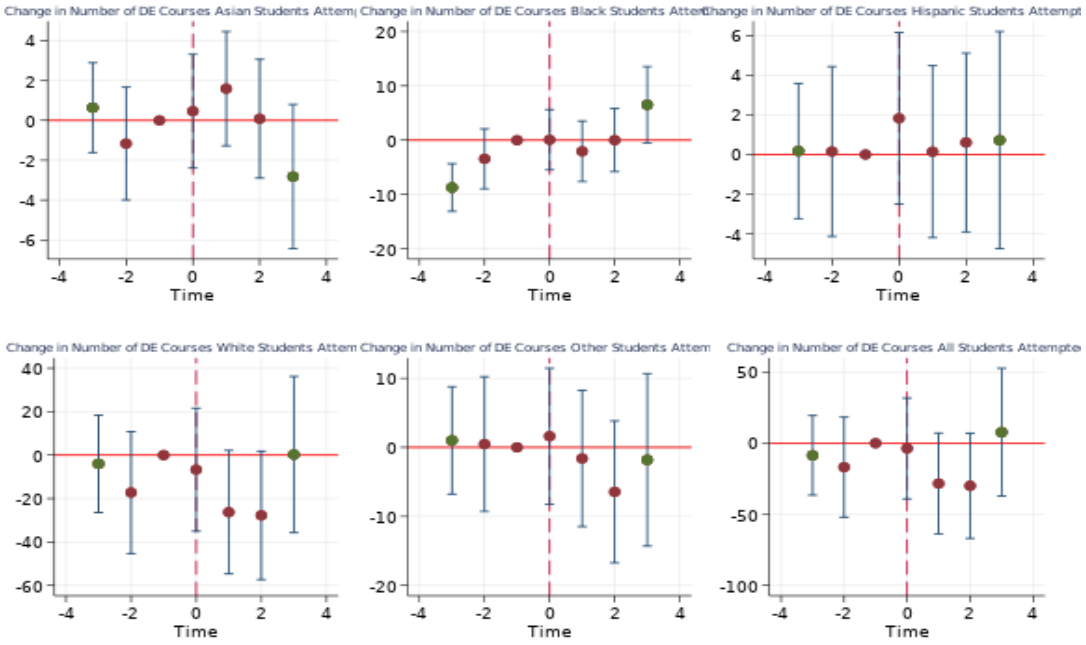

Figure A4. Event Study Plots: Number of Students Who Passed DE Coursework With a B or Higher

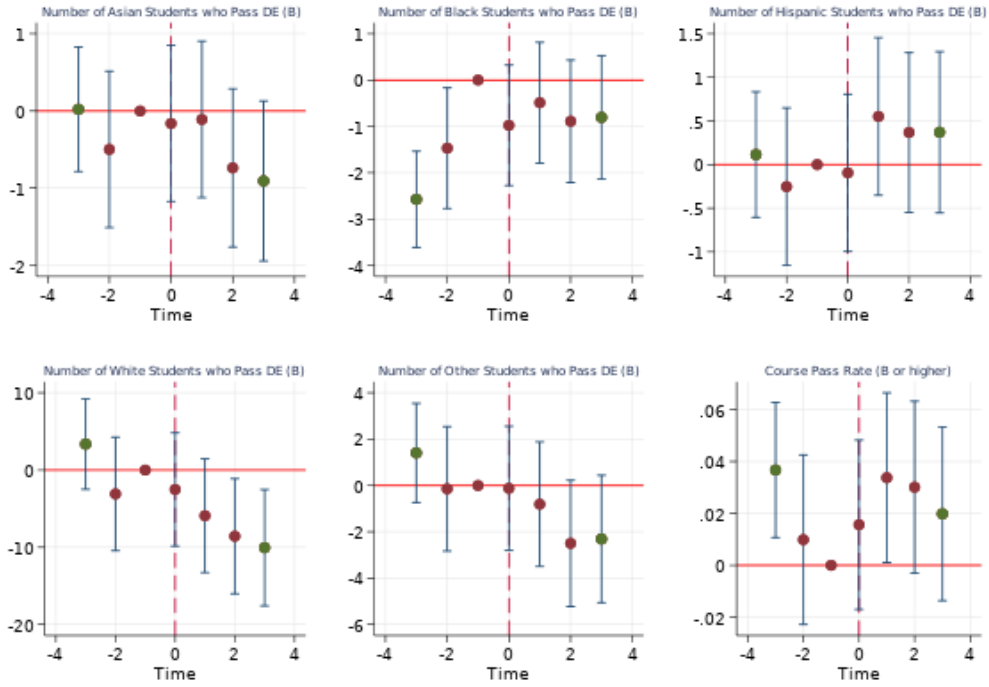

Figure A5. Event Study Plots: Number of Students Who Passed DE Coursework With a B or Higher With Controls

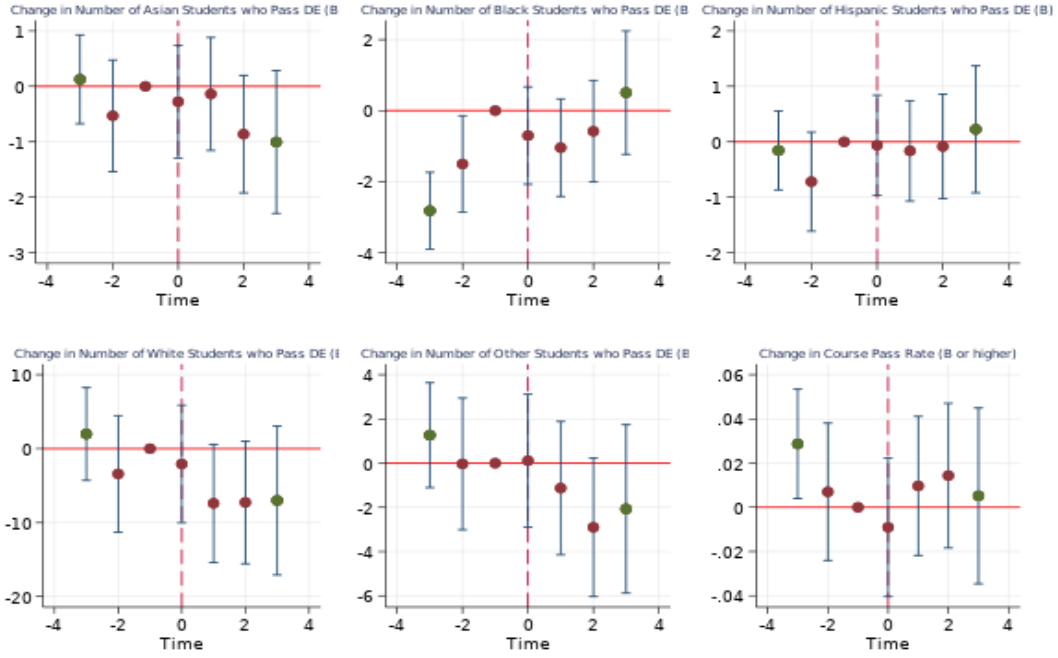

Figure A6. Event Study Plots: Any College Enrollment With Controls

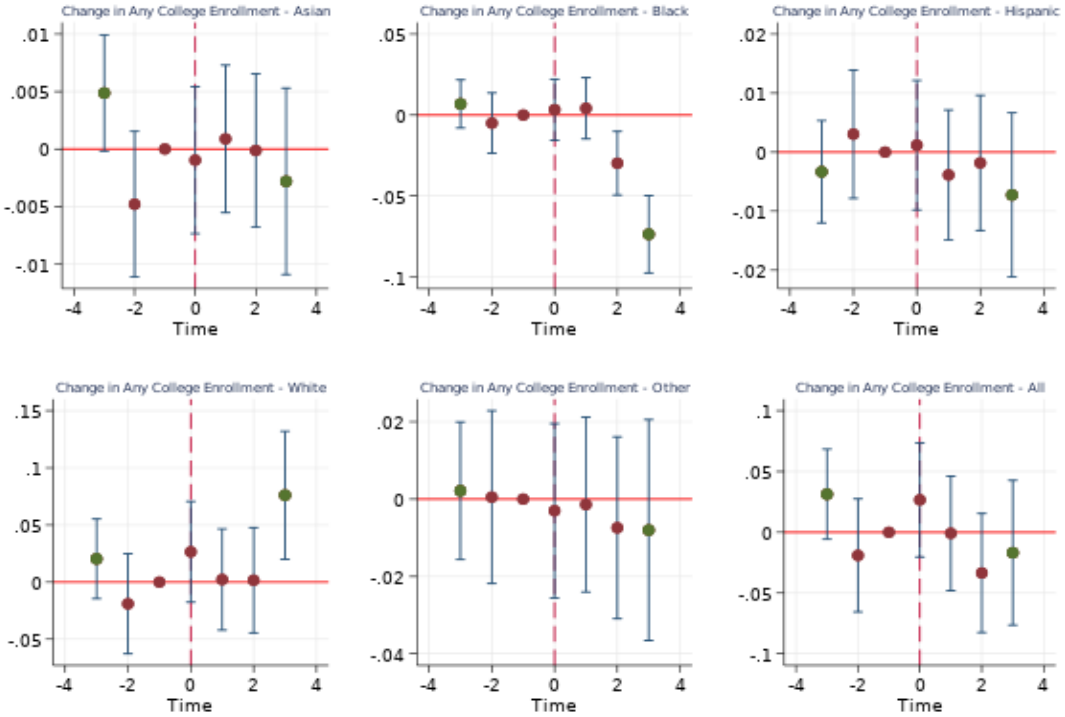

Figure A7. Event Study Plots: Community College Enrollment

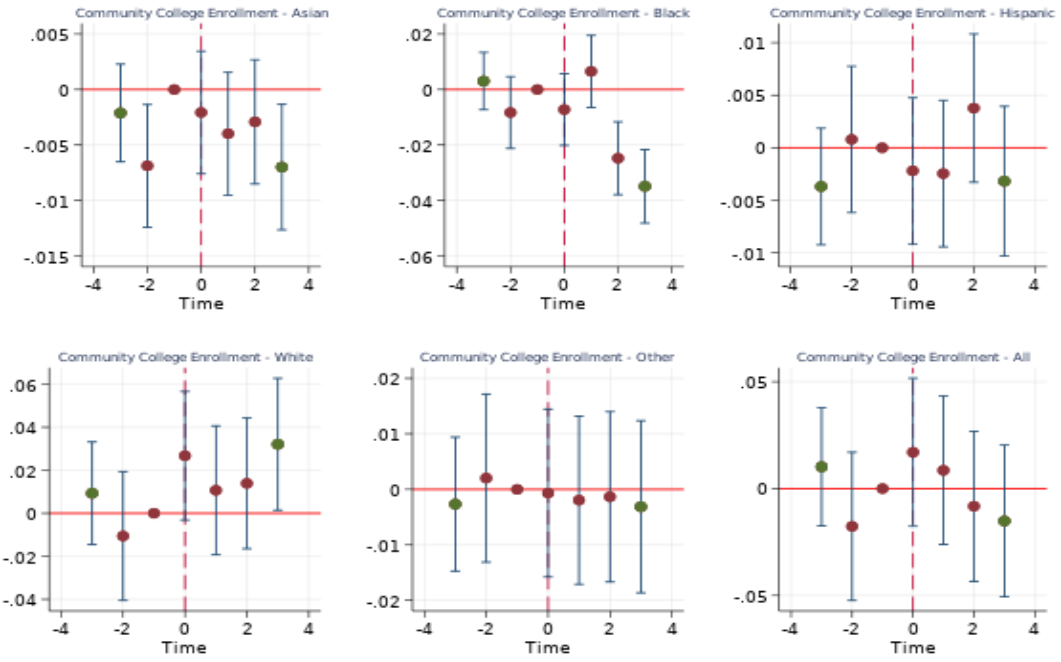

Figure A8. Event Study Plots: Community College Enrollment With Controls

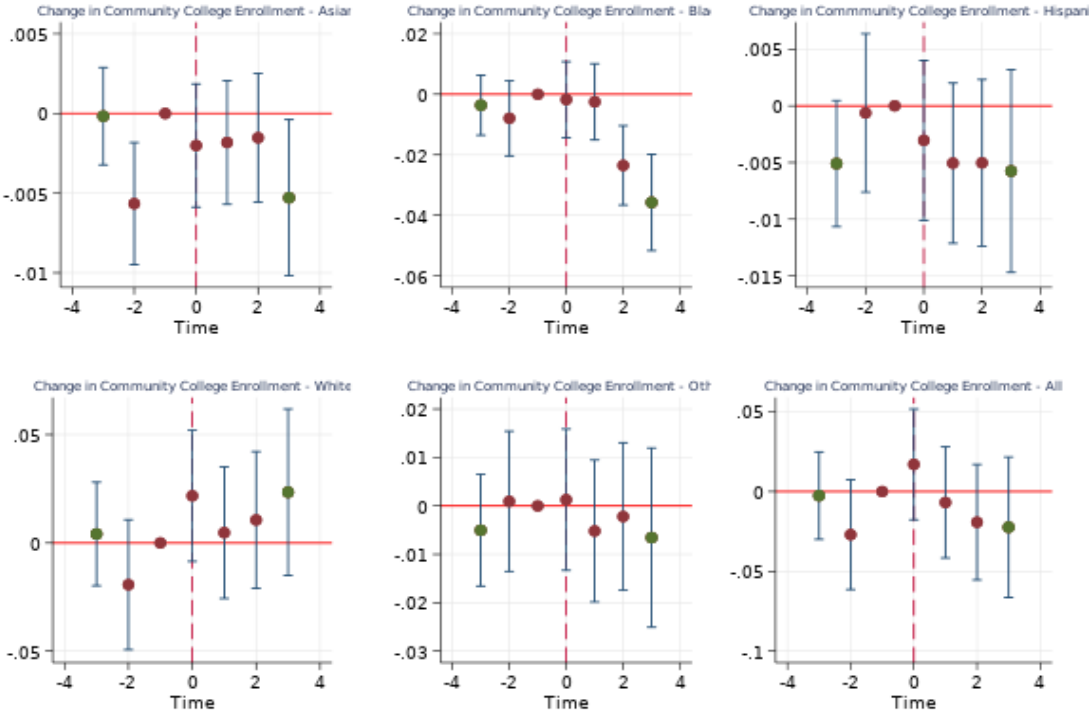

Figure A9. Event Study Plots: University Branch Campus Enrollment

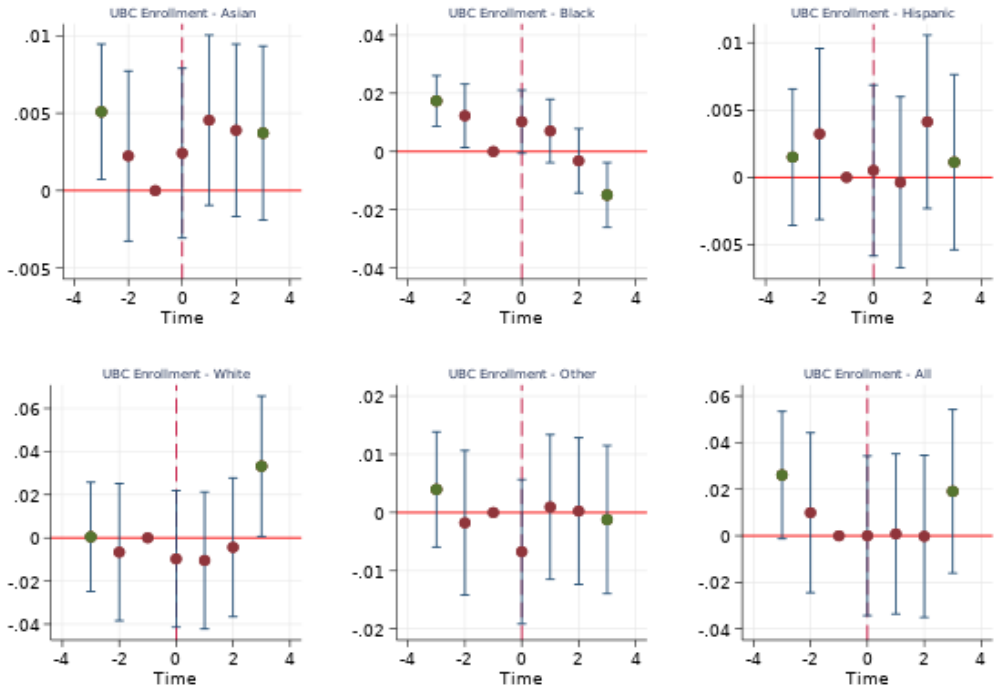

Figure A10. Event Study Plots: University Branch Campus Enrollment With Controls

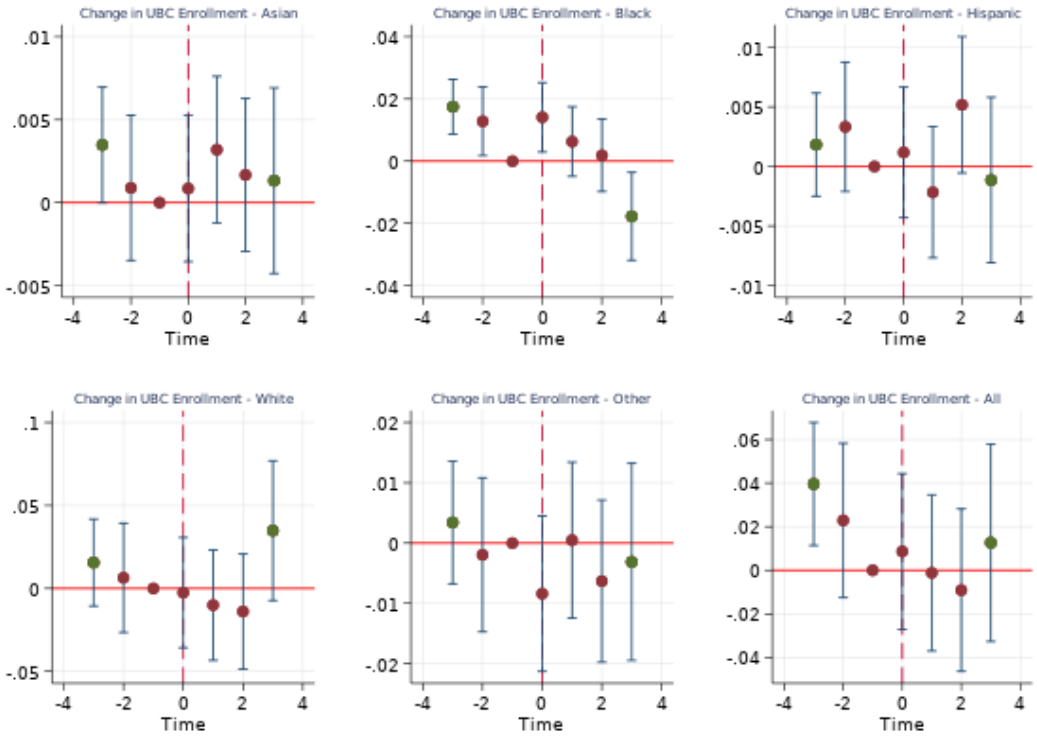

Figure A11. Event Study Plots: University Main Campus Enrollment

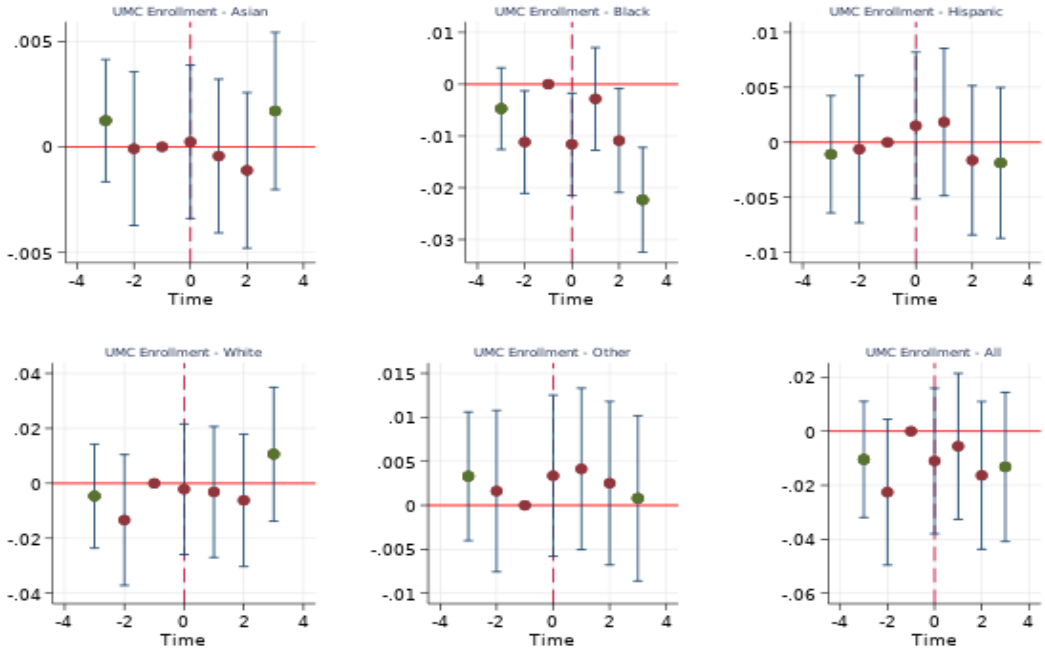

Figure A12. Event Study Plots: University Main Campus Enrollment With Controls

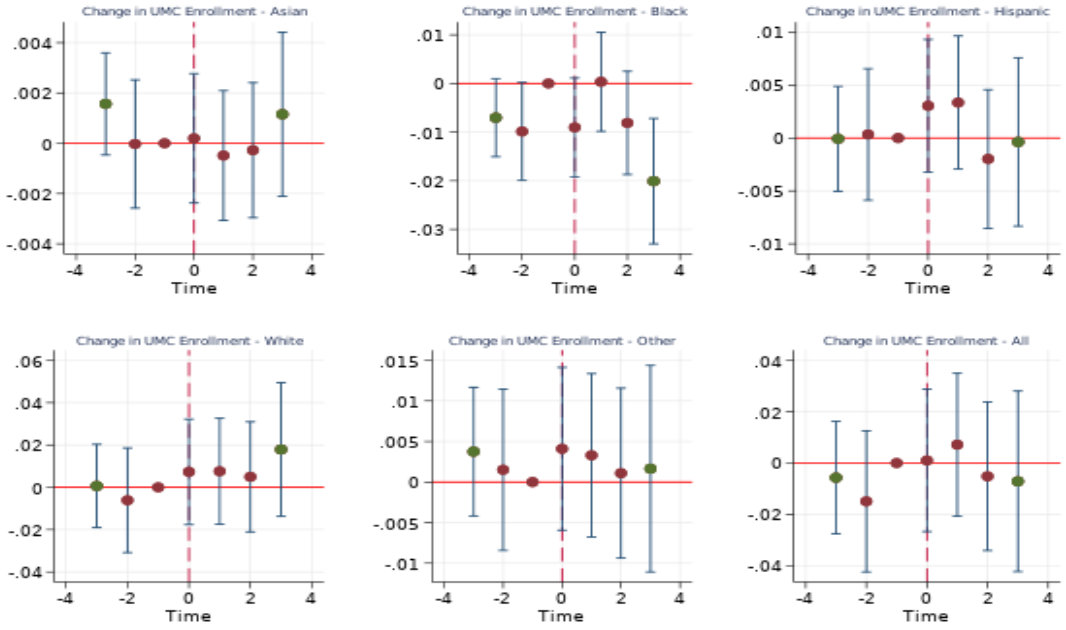

Figure A13. Event Study Plots: DE Participation at High FRPL Schools

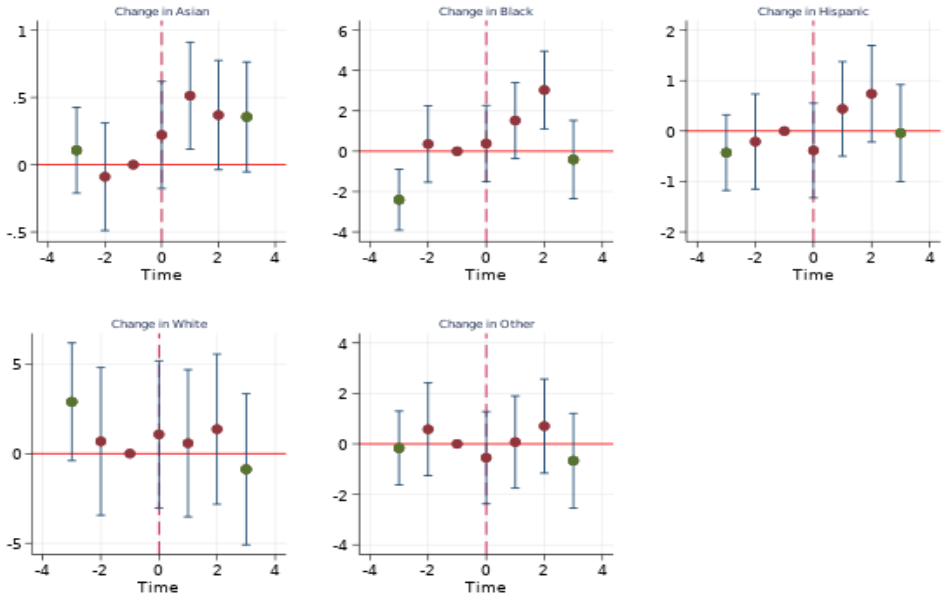

Figure A14. Event Study Plots: College Enrollment Outcomes at High FRPL Schools

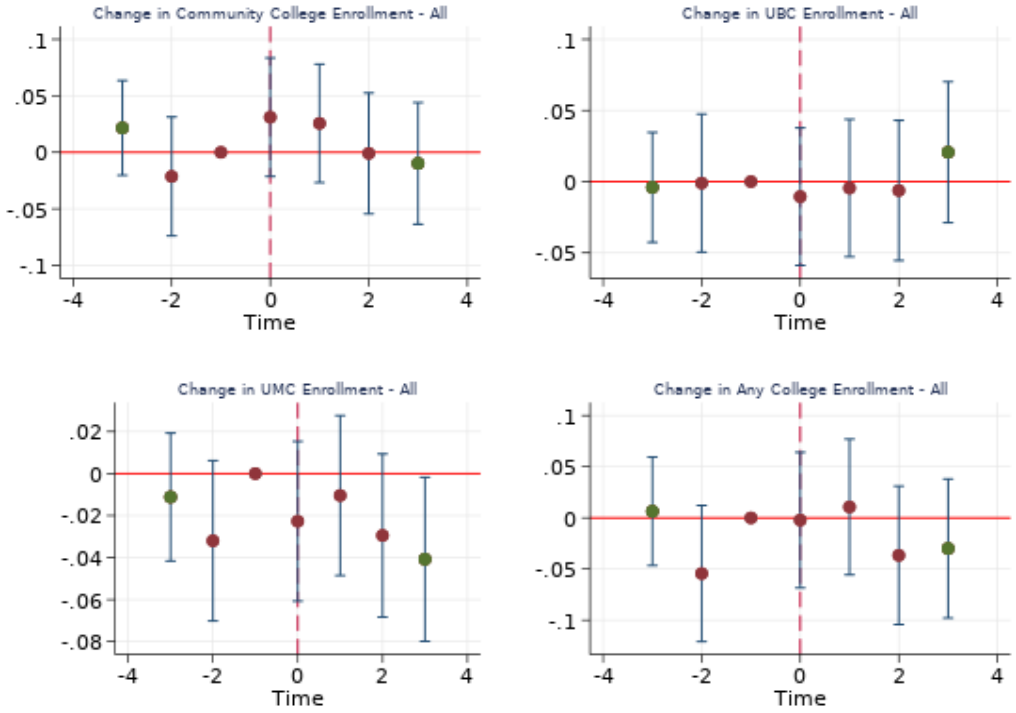

Figure A15. Event Study Plots: DE Participation at High Schools Serving Majority Black and/or Hispanic Students

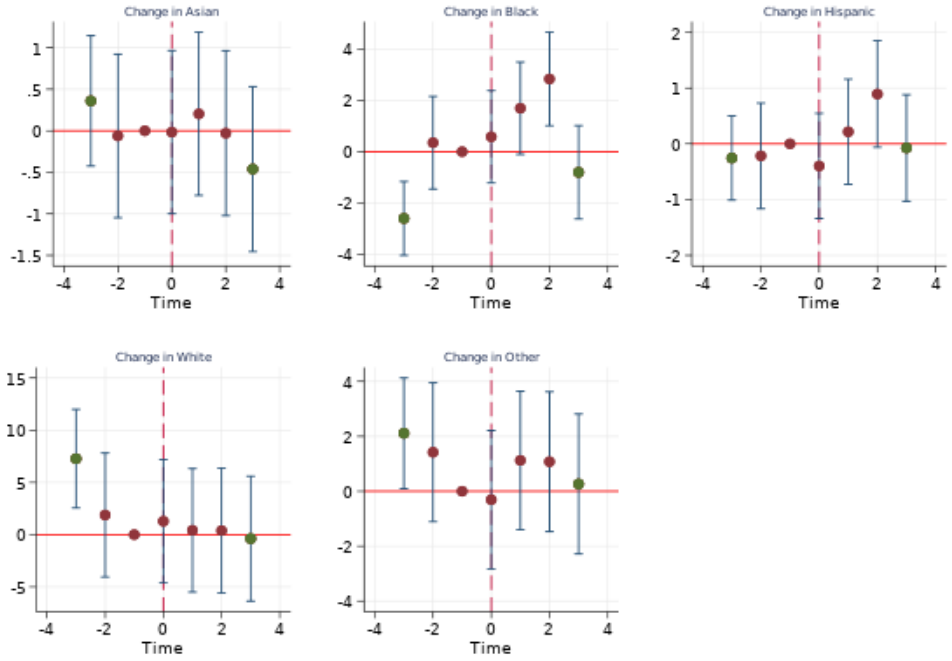

Figure A16. Event Study Plots: College Enrollment Outcomes at High Schools Serving Majority Black and/or Hispanic Students