

# English Learners' Access to Massachusetts Early College Programs

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## **English Learners' Access to Massachusetts Early College Programs**

### **Abstract**

Early college provides high school students historically underrepresented in higher education with opportunities to earn college credits while still in high school. Although English learners (ELs) constitute one such underrepresented group, their participation in early college programs (ECPs) thus far has received little attention. To fill this gap in knowledge, we conducted a secondary data analysis of administrative records in Massachusetts to examine ELs' access to ECPs as well as factors that shaped their access. We found that high school students currently classified as ELs were severely underrepresented in ECPs across the state while those who were previously ELs but have since been reclassified as English proficient were slightly overrepresented in ECPs. There was also substantial variation in the levels of EL participation across programs. We call for greater attention to ELs' participation in early college research and policy reforms to remove the barriers that limit ELs' equitable access.

## **English Learners' Access to Massachusetts Early College Programs**

Early college is one model of dual enrollment wherein a K-12 school/district and an institution of higher education (IHE) form a collaborative partnership to enable high school students who come from groups historically underrepresented in higher education to make a head start in earning college credits while still in high school (Parthenon-EY Education Practice, 2016). Unlike general dual enrollment courses that often serve as enrichment opportunities for already privileged and high-achieving students, early college programs (ECPs) specifically target groups of historically underserved students and place them on clearly articulated pathways to postsecondary degrees/credentials with substantial academic and social support (e.g., Berger et al., 2013; Duncheon, 2020; Edmunds et al., 2017). By exposing historically underrepresented students to college-level courses and college culture, ECPs aim to inspire students who may not have considered going to college and to help them develop both a college-going identity and familiarity with the college environment and expectations (Massachusetts Department of Higher Education [MADHE] & Massachusetts Department of Elementary and Secondary Education [MADESE], 2017). In addition, by enabling students to earn college credits while in high school, ECP can reduce the time to degree completion and offset the overall cost of college.

English learners (ELs), multilingual learners who have been institutionally identified as needing language support services while learning English, represent a growing share of students in the U.S. and are substantially underrepresented in postsecondary education. ELs comprise 10.3% of the K-12 public school population in the United States (National Center for Education Statistics, 2023) and 13.1% in Massachusetts (MADESE, n.d.-b). A robust research base has documented that ELs have limited access to postsecondary education (e.g., Callahan & Humphries., 2016; Kanno, 2021; Kanno & Cromley, 2015; Jiang, 2021; Jiang & Harklau, 2023).

At the national level, only 21% of students who are ELs in 9th grade subsequently enroll in four-year colleges, compared with 47% of monolingual English speakers (Jiang, 2021). A similar gap exists in Massachusetts, where students classified as ELs in 9th grade are 26% less likely than non-ELs to enroll in any form of college in general and 33% less likely to enroll in four-year colleges in particular (Winters & Kanno, 2023).

Many ELs are also racially minoritized, low-income, and first-generation college students (García et al., 2008; Kanno & Kangas, 2024; U.S. Department of Education, 2018). Therefore, part of the gap in college enrollment is likely due to the well-documented barriers common to underrepresented students more broadly, such as high financial costs of college and lack of familiarity with college admissions procedures (Winters & Kanno, 2023). However, ELs also face unique challenges: They must learn a new language while also learning academic content through that language (Mantil et al., 2023). Moreover, because they must take courses in English language development, they have fewer opportunities in high school for rigorous college-preparatory courses, which narrows their postsecondary options (e.g., Callahan et al., 2010; Callahan & Shifrer, 2016; Kanno, 2021; Kanno & Kangas, 2014; Nuñez et al., 2016; Nguyen, 2021).

Given that the central mission of ECPs is to increase postsecondary participation of historically underrepresented students and that ELs are substantially underrepresented in postsecondary education, it is vital for ELs to have equitable access to ECPs. However, there has been very little focus on ELs in the early college research, and the little research that does exist suggests a clear underrepresentation of this population in the programs (Duncheon, 2020; Hooker et al., 2020).

This study, then, aims to examine patterns in ELs' access to ECPs by focusing on a state that is rapidly expanding ECP offerings: Massachusetts. We ask the following research questions:

1. To what extent do ELs participate in ECPs in Massachusetts high schools, and does participation vary across schools?
2. What individual and school factors predict ELs' participation in ECPs?
3. Do patterns of participation differ for subgroups of ELs?

Our results reveal three key findings. First, on average, ELs are underrepresented in ECPs across the state. Second, there is substantial variation across two distinct subgroups of ELs: Those who are currently classified as ELs are substantially underrepresented in ECPs, while former ELs (i.e., those who were previously classified as an EL but subsequently reclassified as English proficient) are slightly overrepresented in ECPs. Third, substantial variation exists across high schools and IHEs. In particular, ECPs at high schools with larger shares of ELs have more underrepresentation of ELs, as do ECPs that partner with four-year IHEs (compared to those that partner with two-year IHEs). In what follows, we first provide the context and literature review. We then describe our research methods before we share our findings and interpretations. We conclude with research and policy implications of the findings.

## **Context and Literature Review**

### **Massachusetts Early College Initiative**

Massachusetts launched an Early College Initiative in 2017 with a specific goal of reducing barriers to higher education and increasing postsecondary degree completion among students historically underrepresented in higher education (MADHE & MADESE, 2017; Massachusetts Alliance for Early College, 2024; Rennie Center Education Research & Policy,

2019). Although the state is known for high academic standards, persistent inequities in postsecondary opportunities are also evident: While 50% of White students complete a postsecondary degree within 6 years, only 24% of Black students, 17% of Latino students, and 23% of low-income students earn a degree, respectively (Massachusetts Alliance for Early College, 2024). The Massachusetts Early College Initiative was launched to address these opportunity gaps (MADHE & MADESE, 2017; MADHE, 2023). The initiative was also motivated by the state's human capital bottom line: The state has been experiencing a sizeable gap between the number of workers with four-year college degrees and the number of jobs that require a bachelor's degree (MADHE, 2016). Increasing the share of students who have been traditionally underrepresented in higher education through ECPs has been seen as a promising way to expand the home-grown college-educated workforce.

Massachusetts ECPs are based on five guiding principles: (a) *equitable access*, (b) *guided academic pathways*, (c) *enhanced student support*, (d) *relevant connection to career*, and (e) *deep partnerships* (MADESE, 2017, 2023; see Table 1 for more details). Each ECP is required to offer opportunities for students to earn at least 12 transferable college-level credits on a clearly articulated pathway. In addition, participating students receive wraparound support services such as college academic advising and tutoring (MADHE & MADESE, 2017, 2023). Above all, the prioritized enrollment of minority and low-income students is considered the program's "reason for being" (Rennie Center Education Research & Policy 2019, p. 10). Together, these guiding principles are meant to provide historically underrepresented students with early exposure to college-level courses and college culture and to place them on clear pathways to college degrees, so that "young people who may not have seen themselves going to college" will "see themselves as college students" (MADESE, 2017, p. 3). The program is scaling rapidly: The state budget

that began with just \$1 million in 2018 has grown to \$27.6 million by 2024. Nine ECPs were launched in the 2018-19 school year with 1,140 students; within six years, 50 programs across the state have been approved, with over 8,200 students enrolled in the fall of 2023-24 school year (MADESE, n.d.-a).

Under the Massachusetts early college model, each public high school partners with one or more IHEs (some are public institutions while others are private). Some high schools partner with only one IHE while others partner with two, usually one two-year college and one four-year college. There are far more high schools than IHEs in the partnerships; each IHE, on average, partners with multiple high schools. Partnership with four-year colleges is a unique feature of Massachusetts ECPs since ECPs in other states (e.g., Texas, North Carolina, and California) predominantly involve partnerships with two-year colleges (e.g., Berger et al., 2010; Edmunds et al., 2017). Another unique feature of the Massachusetts model for early college is the placement of ECPs in local schools. In other states, early college is usually a whole school program (which we refer to as *ECP schools*). In these states, either new ECP schools were created or existing schools were converted to ECP schools. Therefore, students enroll in these schools, knowing that they will participate in early college. In contrast, ECPs in Massachusetts tend to be housed as elective programs in the context of larger schools, and students typically elect to enroll in the ECP after they are already enrolled in the school.

### **Existing Evidence of Historically Underrepresented Students' Access to and Success in ECPs**

Early college is a relatively new policy initiative in the State of Massachusetts; however, it has a longer history elsewhere in the United States. Although a small number of ECPs had previously existed, the current profusion of ECPs can be attributed to the Early College High



School Initiative, launched in 2002 with funding from the Bill & Melinda Gates Foundation. Within 7 years, more than 200 ECP schools opened across the United States (Berger et al., 2010). The central goal of the initiative was to provide historically underrepresented students with opportunities to experience college while still in high school. General dual enrollment was already common in high schools by the early 2000s; however, only high-achieving students tended to take advantage of the system, exacerbating the opportunity gap between privileged and underprivileged students. The Early College High School Initiative, then, specifically aimed to address this inequity by targeting historically underrepresented students who may not consider themselves “college material” (Berger et al., 2010, p. 337).

Two major groups of assessment studies of ECP schools exist and are well known because they were large-scale randomized controlled studies employing lottery systems in ECP admissions, one conducted by the American Institutes for Research (AIR; Berger et al., 2010, 2013; Haxton et al., 2016) with ECP schools across the United States, and the other by Edmunds and colleagues (2017; 2020) with ECP schools in North Carolina. Because of the lottery systems, any differences in the outcomes between early college students (who were admitted by lottery) and control groups (those who applied but who were eliminated by lottery) in these studies can be attributed to the school effect, allowing scholars to claim causal impacts of the early college model. In the ECP schools that are included in these studies, ethnic/racial minority and low-income students were either fairly represented or even slightly overrepresented. For example, Berger et al. (2010), which followed the evolution of ESP schools funded by the Gates Foundation, documented higher rates of racial and ethnic minority and low-income students in ESPs than in comparison districts. A second study (Edmunds et al., 2017) tracked 12 ECP schools in North Carolina between 2005 and 2009. In these ECPs, first-generation college,

ethnic/racial minority, and low-income students were equally represented, though not overrepresented, compared with the same districts as participating ECP schools. The authors do note, however, that students with disabilities were underrepresented in ECPs whereas ECP students were higher achieving at entry than students in the districts (Edmunds et al., 2017). Neither of these studies records the shares of ELs in the ESPs.

In terms of the impacts of early college, these studies found clear evidence of the effectiveness of ECPs across the United States. AIR's evaluation study included a sample of 2,458 students across five states (Berger et al., 2013; Haxton et al., 2016) and found that ECPs increased college enrollment by 9 percentage points. A follow-up study (Song et al., 2021) tracked students' postsecondary trajectories up to 6 years after high school graduation and found that ECP students were more likely to earn a postsecondary degree or certificate by 12 percentage points than control students (45.4% of ESP students compared with 33.5% of control students) and more likely to earn a bachelor's degree by 5.2% (30.1% of ECP students compared with 24.9% of control students). ECP students tended to initially enroll in two-year colleges and then transfer to four-year institutions to pursue a bachelor's degree, whereas control students were more likely to enroll directly in four-year institutions. These outcomes did not differ by race/ethnicity or low-income status. Earning college credits during high school had the largest share of the explanation of the impact of ECPs on degree completion outcomes, underscoring the importance of college credit accumulation during early college.

Likewise, Edmunds et al.'s (2017) North Carolina study found that ECP schools increased college enrollment within six years after ninth-grade entry by 15.6 percentage points (89.9% of ECP students compared with 74.3% control students), showing a higher percentage-point difference than the AIR project (Berger et al., 2013; Haxton et al., 2016). A follow-up

study (Edmunds et al., 2020) tracked the students for six years after high school graduation and found that far more ECP students (32.8%) earned an associate degree within that time frame than the control group (11.0%) while there was no difference in bachelor's degree attainment.

However, ECP students who earned a bachelor's degree graduated from college approximately half a year earlier than control students, resulting in significant college cost savings and the opportunity to enter the workforce sooner.

Similarly, in Massachusetts, ECPs have enrolled large shares of Black/Latino students and low-income students. In the last three years (2022-24), 56% of ECP students have been low-income students on average, and approximately 60% have been Black/Latino students (Lucien, 2024, March). Analyses of the impact of ECPs have shown that participation in ECPs has resulted in increased college enrollment and college persistence rates for these students. The latest report of 12th-grade ECP participants during 2019-2022 (MADESE Office of Planning and Research, 2023) shows that Black/Latino participants and low-income students were 15% and 16% more likely to enroll in college (two-year or four-year), respectively, than comparable nonparticipants. Notably, the impact of ECPs is largest for students with low prior academic achievement: Fifty percent of ECP students who had failed to meet expectations in the 8th grade English Language Arts state assessment enrolled in college as opposed to 21% of comparable students. The result suggests not only that low-achieving students can be successful in ECPs but that ECPs can be a real catalyst for changing the academic trajectories of such students. In terms of college persistence, results are equally promising. Black and Latino ECP participants were 14% more likely to persist to a second year in college compared with comparable students; the difference was 15% for low-income students.

### **Existing Evidence of ELs' Access to and Success in ECPs**

While research has shown that early college has prioritized the enrollment of historically underserved student populations and has been effective at increasing their postsecondary outcomes, the evidence is more limited *and* mixed with respect to ELs. Studies of general dual enrollment programs that have included ELs as one of the student populations under investigation have consistently reported ELs' underrepresentation (Giani et al., 2014; Hooker et al., 2021; Liu et al., 2020; Minaya, 2021). There is no large-scale investigation of ELs' representation in ECP schools. However, Duncheon's (2020) qualitative study of five ECP schools in Texas borderlands shows an acute underrepresentation of ELs in all five schools. While other underrepresented subgroups (low-income, Black, and Latino) were only slightly underrepresented at some schools and slightly overrepresented at others compared with their traditional high school counterparts, ELs were the only subgroup that was consistently underrepresented across ECP schools and by more than 15 percentage points on average.

Thus far, there is only one study that examined the impact of early college on ELs. Johnson and Mercado-Garcia (2022) conducted a quantitative analysis to estimate the impact of one ECP in California specifically designed to serve ELs. They found that the ECP enabled ELs to earn roughly two semesters' worth of college credits. However, it had no impact on their college enrollment after high school, and participation in the ECP had a *negative* effect on ELs' enrollment in four-year colleges. These null and negative results contrast with the general trends of positive postsecondary enrollment for ethnic/racial minority and low-income students discussed above and merit further investigation to understand whether these impacts are specific to this program or extend to ELs in other ECPs.

In summary, clear research evidence exists both for the targeted recruitment of racial/ethnic minority and low-income students in early college and for positive postsecondary

outcomes of early college participants. ELs, on the other hand, have been largely left out of early college research, despite being one of the subgroups clearly underrepresented in higher education. In this study, then, we aim to fill this gap in knowledge, by examining ELs' participation in early college in Massachusetts.

## Data and Methods

### Data

Our analysis of ELs' participation in ECPs relies on student-level longitudinal data from Massachusetts. These data include detailed information on all students enrolled in K-12 public schools in Massachusetts, including which students enrolled in ECPs and their EL designation each year. In addition, the data include students' demographic characteristics (e.g., race and gender), measures of academic achievement (e.g., annual math and English state standardized test scores), an indicator for having a disability, and an indicator for low-income status<sup>1</sup>). We focus our analysis on 12<sup>th</sup> grade students, as these are the most likely grade level to participate in ECPs, and we use data from the most recent three years (2021-22 through 2023-24).<sup>2</sup>

Because students learning English are expected to exit out of EL status when they become sufficiently proficient in the language, we create two separate measures of students' EL status in 12<sup>th</sup> grade. First, we identify students who are currently classified as ELs in 12<sup>th</sup> grade (*current ELs*). Second, we identify students who entered high school with a classification as an EL but subsequently became reclassified as English-proficient by 12<sup>th</sup> grade (*former ELs*). Summary statistics for these two categories of ELs, as well as for all 12<sup>th</sup> grade students, are presented in Table 2.

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<sup>1</sup> *Low income* status is a designation for “students whose family’s income is not more than 185 percent of the federal poverty guidelines used to determine financial eligibility for certain federal programs” (Student Opportunity Act, 2019).

<sup>2</sup> In earlier years, detailed data on early college enrollment is not consistently available across all schools in the state.

As shown in the first three columns of Table 2, 6,113 current ELs and 1,491 former ELs are included in our sample of 12<sup>th</sup> grade students in schools with ECPs, representing 16 percent and 4 percent of all 38,540 twelfth graders in these 56 high schools. Therefore, while students classified as either current or former ELs represent 20% of all 12<sup>th</sup> graders in this sample, the majority are classified as current ELs. Panel A highlights differences in the composition of these groups during high school. Compared to the average student in a high school offering an ECP, both current and former ELs are substantially more likely to be Latinx, low-income, and new to the United States.<sup>3</sup> There are also substantial differences between current ELs and former ELs. For instance, compared to current ELs, former ELs are less likely to be Latinx and more likely to be Asian, less likely to come from a low-income family, less likely to have a disability, and less likely to be new to the United States in high school.

Panel B highlights differences in baseline test scores. Our primary baseline test score measures come from students' 7<sup>th</sup> grade math and English Language Arts (ELA) state test score proficiency levels.<sup>4</sup> One clear difference is that current and former ELs are less likely to have test scores in 7<sup>th</sup> grade than the average student. This is driven – at least to a large degree – by the fact that current ELs and former ELs are more likely to be newcomers in the United States, meaning many of them were not yet in the country to take the state standardized test in 7<sup>th</sup> grade. Among those who took the test in 7<sup>th</sup> grade, current and former ELs tended to have lower proficiency ratings than the average student. We also collect present 8<sup>th</sup> grade WIDA ACCESS scores, the annual English language proficiency assessment adopted by the Massachusetts state

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<sup>3</sup> *New to the United States* is defined as having arrived in the United States within the past three years.

<sup>4</sup> We use 7<sup>th</sup> grade standardized test scores in math and English Language Arts (ELA) as a measure of baseline test scores before students enter high school. Ideally, we would use 8<sup>th</sup> grade test scores as a baseline measure of achievement before high school, but the 2023-24 12<sup>th</sup> grade cohort did not take 8<sup>th</sup> grade test scores when they were in 8<sup>th</sup> grade (2019-20) due to the Covid-19 pandemic.

and administered to kindergarten through 12th grade students who have been identified as ELs.<sup>5</sup> Because this test is only administered to students who are currently classified as ELs, it is not meaningful to compare all students to ELs. However, it is worth noting that former ELs had higher average ACCESS scores than current ELs, meaning that they had higher baseline levels of English proficiency. Finally, and most importantly, current ELs participate in ECPs at far lower rates (9%) than former ELs' participation rate (25%), which is higher than the average of all students.

The last three columns of Table 2 present the same information for students in all schools across the state (i.e., both those with ECPs and those without ECPs). Comparing these columns to the first three, several patterns emerge. First, and unsurprisingly, ECP participation is lower. Second, the schools that offer ECPs tend to serve more Hispanic/Latinx, low-income, and newcomer students (column 3) than the average school in the state (column 6). This highlights how ECPs are, indeed, being offered in targeted locations with student populations who are traditionally underrepresented in postsecondary education.

## **Methods**

We conduct a series of descriptive analyses at the high school level and at the IHE level to quantify the extent to which ELs participate in Massachusetts ECPs at equal rates as their peers. At the high school level, we create a measure that compares a) the share of 12<sup>th</sup> grade (current or former) ELs participating in that school's ECP to b) the share of 12<sup>th</sup> grade students in that school who are (current or former) ELs.

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<sup>5</sup> Unlike the state standardized test scores, which were not administered in 2019-20, ACCESS had already been administered in spring 2020 before the onset of the Covid-19 pandemic, so we can use a baseline measure from 8<sup>th</sup> grade instead of 7<sup>th</sup> grade for all 12<sup>th</sup> grade cohorts in our sample.

Formally, let  $Access_s$  define the extent to which current ELs in school  $s$  enroll in ECPs at rates that are at parity with the overall share of students in school  $s$ :

$$Access_s = \frac{1}{t} \sum_t \left[ \left( \frac{EL\ ECP\ Enroll_{s,t}}{Total\ ECP\ Enroll_{s,t}} \right) - \left( \frac{EL_{s,t}}{Total\ Enroll_{s,t}} \right) \right]. \quad (1)$$

In the above equation,  $EL\ ECP\ Enroll_{s,t}$  represents the number of ELs who enroll in ECPs in 12<sup>th</sup> grade from high school  $s$  in year  $t$ , and  $Total\ ECP\ Enroll_{s,t}$  identifies the total number of 12<sup>th</sup> grade students who enroll in ECPs in 12<sup>th</sup> grade from high school  $s$  in year  $t$ . This fraction, therefore, represents the rate at which ELs from school  $s$  in year  $t$  participate in ECPs. We also calculate the overall share of ELs in school  $s$  and year  $t$ , by dividing the number of 12<sup>th</sup> grade ELs in school  $s$  in year  $t$  ( $EL_{s,t}$ ) by the total number of 12<sup>th</sup> grade students in school  $s$  and year  $t$ . By subtracting these two fractions, we identify the extent to which ELs are over- or under-represented in ECPs compared to their overall composition in school  $s$  and year  $t$ . A positive value indicates ELs' overrepresentation in the ECP, while a negative value indicates underrepresentation. Finally, to generate a single measure for each school, we create a school-level average across all years  $t$  during which school  $s$  offered early college. We estimate an analogous measure for former ELs.

We similarly create measures of representation at the IHE level, using an equation very similar to the one described in Equation 1. The only difference is that we define the terms at the IHE level. Specifically, the first fraction becomes the number of ELs in that IHE's ECP divided by the total number of students in that IHE's ECP. The second fraction becomes the number of ELs in high schools partnering with that IHE divided by the total number of students in high schools partnering with that IHE.<sup>6</sup>

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<sup>6</sup> Note that we do not use the number of ELs in each IHE divided by the number of students in each IHE's ECP, because this fraction may be skewed if ELs participate in IHEs at different rates.



In addition to the descriptive analysis of average differences in access to ECPs across schools and IHEs, we leverage the student-level data to examine the extent to which individual student-level differences predict participation in ECPs. We do so using the following linear Ordinary Least Squares (OLS) regression:

$$ECP_{i,t,s} = \alpha EL_{i,t} + \mathbf{X}_{i,t}\mathbf{B} + \mathbf{\Lambda}_t + \mathbf{\Gamma}_s + \varepsilon_{i,t,s}. \quad (2)$$

$ECP_{i,t,s}$  denotes the outcome of interest, which indicates the participation in an ECP for student  $i$  in year  $t$  and high school  $s$ .  $EL_{i,t}$  indicates whether student  $i$  was classified as an EL in year  $t$ , and we estimate separate regression for current and former ELs.  $\mathbf{X}_{i,t}$  represents a vector of student-level baseline controls, which we use to account for differences between students in observable characteristics including race, gender, prior test scores, disability status, and low-income status. We also include school fixed effects ( $\mathbf{\Gamma}_s$ ) and year fixed effects ( $\mathbf{\Lambda}_t$ ) to account for different levels of participation over time and within specific schools. Therefore, the main coefficient of interest ( $\alpha$ ) identifies differences in ELs' participation in ECPs, compared to their peers with similar background characteristics in the same school and in the same school year who are not classified as ELs. We also estimate a version of Equation 2 that removes the set of school fixed effects ( $\mathbf{\Gamma}_s$ ), which allows for a comparison of differences in ECP participation for similar students across all schools in Massachusetts. We present and discuss results from both models below.

## Results

### School-level Variation in Access

We begin by presenting school-level variation in access to ECPs for ELs in Figure 1. The x-axis presents the fraction of each school's 12<sup>th</sup> grade population that is represented by current ELs (Panel A) and former ELs (Panel B). The y-axis presents the share of each high school's

ECP, which is represented by current ELs (Panel A) and former ELs (Panel B).<sup>7</sup> The size of the circles represents the size (i.e., the number of enrolled students) of the ECP at each school. In both panels, the red dashed line indicates the line of parity, which is the point at which ELs would be represented in ECPs at the same rate as their overall school representation. Panel A shows that current ELs are clearly underrepresented in most schools' ECPs. Of the 55 schools in Panel A, only four fall above the line of parity, three are exactly at parity, and 48 fall below.<sup>8</sup> Moreover, the schools above parity tend to have fewer students enrolled in ECPs, as indicated by the size of the circles. To summarize the relationship between school composition of ELs and ECP share of ELs, we present the line of best fit in solid gray, which we weight by each school's total ECP enrollment. The line of best fit is clearly below the line of parity, with a slope of 0.50. This indicates that as schools serve greater shares of current ELs, their enrollment in ECPs only increases at about half the rate of their overall enrollment increases.

In contrast to the underrepresentation of current ELs in ECPs, former ELs (Panel B) are overrepresented in ECPs, though the rate is much closer to parity. Of the 56 schools in Panel, 24 are above the line, 7 are exactly at parity, and 25 are below the line. Moreover, the best fit line is somewhat above the line of parity. The slope of 1.15 indicates that as schools serve greater shares of former ELs, their enrollment in ECPs increases by a factor of roughly 1.15. While the results for former ELs are more encouraging than current ELs, it is important to acknowledge that former ELs account for a substantially smaller share of students in each high school than

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<sup>7</sup> In other words, this figure separately represents each of the two terms included in Equation 1, with the axis representing  $\frac{1}{t} \sum_t \left( \frac{EL_{s,t}}{Total\ Enrollment_{s,t}} \right)$  and the y axis representing  $\frac{1}{t} \sum_t \left( \frac{EL\ ECP\ Enrollment_{s,t}}{Total\ ECP\ Enrollment_{s,t}} \right)$ .

<sup>8</sup> We exclude one school ("School B") from Figure 1A and Figure 2A, as that school, with a recently designated ECP, only had one 12<sup>th</sup> grade student enrolled in an ECP and that one student was a current EL, which compresses the scale of the chart substantially. However, because only one student is enrolled in an ECP from School B, the overall results are unchanged: the slope of the best fit line best fit line only increases slightly from .504 to .515 when School B is included and the mean is unchanged (-0.081) in Figure 2. In other words, the overall conclusions are robust to the inclusion or exclusion of School B.

current ELs. As shown in shown in Table 2, 16% (6,113) of students in high schools with ECPs are classified as current ELs and 4% (1,491) are classified as former ELs. These differences are also reflected in Figure 1 as the scale of the x-axis is compressed in Panel B relative to Panel A. We elaborate on the implications of these differences in the discussion.

Figure 2 presents the high-school-level distribution of  $Access_s$ , as described in Equation 1. Schools that fall below the line of parity in Figure 1 have negative values of  $Access_s$ , which indicates an underrepresentation of ELs in ECPs. In contrast, schools that fall above the line of parity in Figure 1 have positive values of  $Access_s$ , which indicates an overrepresentation of ELs in ECPs. Panel A shows that ELs' representation in ECPs ranges from an approximately 30-percentage point underrepresentation to a 12-percentage point overrepresentation. While the range is quite wide, most schools have substantial underrepresentation: Half of schools have an underrepresentation of at least 7 percentage points, and one-quarter of schools have an underrepresentation of at least 14 percentage points. The average representation difference (i.e.,  $Access_s$ ) across all schools is -0.081, indicating that, on average, current ELs are underrepresented in Massachusetts ECPs by 8.1 percentage points.<sup>9</sup>

Panel B of Figure 2 shows that the distribution of  $Access_s$  for former ELs is centered on near parity. In fact, former ELs participate in ECPs at exact parity in the median high school in Massachusetts. The top 25% of schools have an overrepresentation of former ELs by 2.2 percentage points, and the bottom 25% of schools have an underrepresentation of former ELs in ECPs by approximately 0.5 percentage points. The average representation (i.e.,  $Access_s$ ) across all schools is 0.010, indicating that, on average, former ELs are overrepresented in ECPs by 1.0

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<sup>9</sup> All summary statistics from Figure 2 are weighted by ECP enrollment (i.e., the size of the circles in Figure 1), to account for differences in ECP size across schools.

percentage points. Overall, this highlights a much more concentrated distribution – centered near parity – for former ELs, while current ELs have lower average representation and more variation across high schools.

Given the variation across schools, we next examine whether there is a relationship between schools' representation of current ELs and their representation of former ELs. For instance, there may be a positive relationship if schools that provide relatively more opportunity for current ELs to enroll in ECPs also provide more opportunity for former ELs. On the other hand, there may be a negative relationship if the investment in former ELs comes at the expense of current ELs. To investigate this, Figure 3 presents the relationship of each school's representation difference (i.e.,  $Access_s$ ) for current ELs on the x-axis and former ELs on the y-axis. The relationship is nearly flat, and the line of best fit has a slope of 0.018, which is not statistically significant at conventional levels. Therefore, there is little evidence of any systematic relationship between the representation of current ELs and former ELs in ECPs. However, it is worth noting that, consistent with the prior evidence shown in Figure 2, the range on the x-axis is much wider than the range on the y-axis. This highlights the much larger variation across schools in the representation of current ELs relative to former ELs.

Finally, we examine school-level predictors of schools' representation difference. Table 3 presents a series of 11 bivariate regressions, each of which estimates the bivariate relationship between a single predictor variable and schools' representation of ELs (i.e.,  $Access_s$ ).<sup>10</sup> Column 1 presents the results for schools' representation of current ELs and shows that four school-level variables are statistically significant and negatively related to current ELs' representation in

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<sup>10</sup> Each regression includes 145 observations (one observation per school per year that the school offered ECPs) and standard errors are clustered at the school level.

ECPs: the percentage of Latinx students in a school, the percentage of low-income students in a school, the percentage of current ELs in a school, and the percentage of former ELs in a school. In other words, among the schools offering ECPs, those with higher concentrations of students along these four dimensions have relatively higher shares of EL underrepresentation. While schools that offer ECPs tend to serve higher shares of students along these dimensions than schools that do not offer ECPs, this analysis reveals important differences between schools offering ECPs in a direction that likely exacerbates existing inequality in postsecondary access. In contrast to the predictors of current EL underrepresentation in ECPs, Column 2 shows that there are no statistically significant predictors of former EL representation at the school level. However, as noted above, there is substantially less variation between schools in former EL representation (relative to current EL representation), suggesting that there is less scope for systematic predictors of between-school variation.

### **IHE-level Variation in Access**

Because each ECP is a partnership between a high school and at least one IHE, in this section, we examine whether the variation in ECP access at the IHE level mirrors the variation at the school level. It may be the case that some IHEs create formal or informal barriers to ELs' enrollment, which may result in even more variation at the IHE level. For example, four-year IHE partners may have more stringent enrollment criteria than two-year IHE partners, resulting in fewer ELs participating in the ECPs at high schools that have partnerships with four-year IHEs. To examine this distribution across IHEs, we create analogous versions of Figures 1 and 2, where each observation is an IHE instead of a high school. We present these results in Figures 4 and 5, both of which are largely consistent with the high-school-level patterns.

Figure 4 shows that – across the 27 IHEs presented in Panel A, two are above parity, two are exactly at parity, and 23 are below parity. Moreover, the line of best fit again is substantially below the line of parity, with a slope of 0.41, indicating that IHEs partnered with high schools serving greater shares of ELs have a representation gap that does not keep pace with the increases in ELs. As the share of ELs in the partner high schools increases, the share of ELs in the IHE’s ECP program increases by a factor of 0.4. In contrast, Panel B shows a line of best fit that is consistently above the line of parity, with a slope close to 1; this indicates that as the share of former ELs increases in the partner high schools, their representation in each IHE’s ECP roughly keeps pace.

Figure 5 presents the IHE-level distribution of  $Access_s$ , as described in Equation 1. Similar to the cross-school distribution in Figure 2, Panel A shows a wide range in representation across IHEs from a 31-percentage point underrepresentation to a 6-percentage point overrepresentation. However, most IHEs have substantial underrepresentation, and the average IHE has an underrepresentation of current ELs of more than 8 percentage points. In contrast, Panel B of Figure 6 shows that most IHEs have an overrepresentation of former ELs, with the average IHE having a modest overrepresentation of 1.4 percentage points.<sup>11</sup>

We also present an analogous version of Figure 3 at the IHE level in Appendix Figure A1, which again highlights a weak relationship between current and former EL representation at the IHE level. Unlike the school-level analysis, our data do not contain a robust set of IHE-level predictors, so we cannot create an analogous version of Table 3. However, we manually collected information on whether each IHE offering an ECP in Massachusetts was a two-year or

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<sup>11</sup> Like Figure 2, all summary statistics from Figure 6 are weighted by ECP enrollment. Many of the IHEs with the largest levels of overrepresentation also have low levels of ECP enrollment, making the enrollment-weighted means lower than a simple average that gave equal weight to all IHEs.

four-year college.<sup>12</sup> Of these 27 IHEs, 15 (56%) were four-year institutions and 12 (44%) were two-year institutions. Using an indicator of two-year or four-year as a predictor of representation, we find that current ELs are underrepresented in two-year institutions by 5.1 percentage points and underrepresented in four-year institutions by 11.0 percentage points. The difference is statistically significant at the 5% level.<sup>13</sup> However, we find no differences in representation among former ELs by two-year or four-year IHEs.

Finally, to better understand the extent to which under- or over-representation of ELs is more consistent with school or IHE factors, we conduct a variance decomposition. Because high schools can partner with multiple IHEs and IHEs can partner with multiple high schools, we use a crossed-random effects model to decompose the variation in between schools and IHEs. Specifically, we estimate the following mixed effects model:  $Access_{ijt} = \beta_0 + \mu_i + \nu_j + \varepsilon_{ijt}$ , where  $Access_{ijt}$  represents differences in access for each high school-IHE pair in year  $t$ ,  $\mu_i$  represents random effects for school  $i$ , and  $\nu_j$  represents random effects for IHE  $j$ . By comparing the variation at the school level ( $\mu_i$ ) to the variation at the IHE level ( $\nu_j$ ), we estimate the extent to which variation in representation is consistent with these two organizational factors. The results, presented in Appendix Table A1, show that the school-IHE-year variation for current EL access is roughly evenly split between schools and IHEs: High schools account for 10% of total variation across school-IHE-year pairings while IHEs account for 12%. In contrast, IHEs account for substantially more variation in former EL representation: High schools account for nearly no

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<sup>12</sup> We used the information available on the College Directory of the College Board to verify the type of institution of each partner IHE (<https://bigfuture.collegeboard.org/colleges>).

<sup>13</sup> We fit a simple bivariate regression similar to those presented in Table 3, where representation ( $Access_s$ ) is the outcome variable and an indicator variable for 4-year schools is included. The coefficient on this indicator variable is -.059, indicating a 5.9 percentage points difference between these schools in their representation of current ELs. The heteroscedasticity-robust standard error is .028.

variation while IHEs account for 19% of the variation across school-IHE-year pairings.<sup>14</sup> This suggests that high schools and IHEs both play important roles in ensuring access to ECPs, though IHEs exert a larger influence when it comes to former EL access.

### **Student-Level Variation in Access**

In this section, we turn to student-level data to examine differences in access to ECPs. Based on Equation 2, we compare participation in ECPs for ELs to their peers with similar observable characteristics. Table 4 presents results for current ELs (columns 1-3) and former ELs (columns 4-6). Column 1 shows that – across all schools in the state – current ELs are 2.3 percentage points less likely to participate in early college, compared to their 12<sup>th</sup> grade peers with similar background characteristics who are not classified as ELs. However, this analysis includes students in schools that do not offer ECPs, so Column 2 restricts the sample to only include schools that offer ECPs. The results in Column 2 show that – among schools offering ECPs – current ELs are 9.2 percentage points less likely to participate in early college than their peers with similar observable characteristics in ECP-offering schools. Column 3 adds school fixed effects to the ECP-school sample, and similarly shows that current ELs are 8.9 percentage points less likely to participate in early college than their English-proficient peers *in the same school*, who are otherwise similar in observable characteristics.

The participation gap expands substantially when going from column 1 (all schools) to columns 2 and 3 (ECP-offering schools) because schools that offer ECPs are more likely to serve higher concentrations of ELs. As a result, when comparing across all schools in the state, the participation gap between ELs and non-ELs is compressed. As we discuss below, this again

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<sup>14</sup> However, it is important to note that the overall variation for former ELs is lower, meaning that while IHEs account for a relatively large share of the former EL representation variation, it is a larger share of a smaller total.



highlights an important tension when attempting to target programs such as ECPs to underserved students: Even if disproportionately offered in schools that serve underrepresented students such as ELs, there is no guarantee that they will access those services at a rate equal to their peers in the same school.

In contrast to the results for current ELs, columns 4 through 6 show that former ELs are *more* likely to participate in early college than their peers. Column 4 shows that overall – across all schools in the state – former ELs are 2.7 percentage points more likely to participate in ECPs, relative to their non-former EL peers with similar observable characteristics across the state.

Again, restricting the sample to only ECP-participating schools, we see this gap change substantially. Column 4 shows that former ELs are 9.1 percentage points more likely to participate in early college than otherwise similar non-former ELs in ECP-participating schools.

When comparing only to their non-former EL peers within the same school, Column 6 shows that former ELs are 9.6 percentage points more likely to participate in early college. While the previous sections found that former ELs are represented at rates close to parity, these results suggest that former ELs are overrepresented once baseline differences are taken into account.

In addition to the differences in ECP participation by EL status, Table 4 also highlights differences along a range of other characteristics. For instance, across all six columns, Black and Latinx students are all more likely than their White peers to enroll in ECPs, after controlling for other factors. Male students are less likely to enroll than otherwise similar female students. Students with disabilities and those coming from low-income households are less likely to participate in ECPs than comparable students without disabilities or from higher-earning households. Finally, when examining patterns by baseline test scores, students who were meeting expectations prior to high school are typically the most likely group to participate in ECPs,

though we urge caution when interpreting results of test scores due to high levels of missingness.<sup>15</sup> These patterns of participation are consistent with those of other ECPs documented in prior research (e.g., Berger et al., 2010; Edmunds et al., 2017).

### **Discussion**

In this study, we examined ELs' participation in ECPs, drawing on Massachusetts as an example. In a program designed to promote historically underrepresented students' enrollment and degree attainment in higher education, our results show that ELs have limited access despite the fact that they constitute one of the most acutely underrepresented subgroups in higher education. In this section, we discuss two salient themes that emerged from the findings: (a) distinct participation patterns of current and former ELs and (b) variation of EL participation by high schools and IHEs.

#### **Distinct Participation Patterns of Current and Former ELs**

The patterns of current ELs' participation in ECPs and that of former ELs' were distinct, and we found no relationship between the two. Current ELs were underrepresented in 48 out of 55 ECPs across the state. Moreover, as the share of current ELs in schools increased, they were less—not more—likely to participate in ECPs. In contrast, former ELs were, on average, slightly overrepresented in ECPs, and as the share of former ELs increased in schools, they were slightly more likely to participate in ECPs. It is important to bear in mind, however, that the ratio of former ELs versus current ELs is small (1,491 former ELs versus 6,113 current ELs), and that, therefore, the slight overrepresentation of former ELs in ECPs does not make up for the severe underrepresentation of current ELs.

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<sup>15</sup> We use 7<sup>th</sup> grade test scores as a measure of baseline ability because it was offered to the cohorts examined in this study prior to the pandemic. 8<sup>th</sup> grade test scores, for instance, are largely missing for the 2023-24 cohort of 12<sup>th</sup> grade students.

But why would two groups that were both classified ELs at the point of entry into high school show such distinct patterns of participation? The fact that there is little relationship between current ELs' and former ELs' representation in ECPs indicates that schools are not systematically dismissing students who are learning English as not good candidates for ECPs. Instead, one possible explanation is that students who remain ELs in 12<sup>th</sup> grade enter high school at lower English language proficiency levels (as ACCESS composite scores in Table 2 indicate). As such, large portions of their schedule are occupied by English language development (ELD) courses and other EL-related courses, leaving little room for an elective program such as ECPs. Hooker et al. (2020), in a qualitative study of various subgroups' underrepresentation in California's dual enrollment programs, noted this trend: "Many high schools . . . require English learners to take multi-period, standalone English language development (ELD) and 'support' courses, leaving limited time for enrichment or electives" (p. 19). Similar constraints are likely at play in reducing ELs' participation in Massachusetts ECPs. Also, students who are still ELs in 12<sup>th</sup> grade are more likely to be relative newcomers who arrive after 9<sup>th</sup> grade: Fifty-six percent of current ELs at schools offering ECPs arrived in the United States after ninth grade compared with 35% of former ELs (Table 2). Thus, schools may prioritize these students taking core courses required for high school graduation in the limited amount of time they have. Also, if students arrive in the middle of high school, they miss out on the opportunity to take part in various on-ramping programs and activities in ninth grade that would lead to later enrichment opportunities such as career and technical education and ECPs. Finally, there is a widespread assumption in K-12 education that ELs must first learn English before they are ready for advanced level academic instruction, which may also negatively affect educators' perception of ELs' readiness for ECPs (e.g., Hooker et al., 2020; Mantil et al., 2023; Rodriguez & Cruz, 2009).

In contrast, students who are ELs at entry into high school but who are reclassified as English-proficient by 12<sup>th</sup> grade (i.e., former ELs) are likely to begin high school at higher English language proficiency levels than those who remain classified as ELs in 12<sup>th</sup> grade. Therefore, their schedule is likely to be less encumbered by ELD and other support courses. Also, since the Massachusetts state’s reclassification of ELs involves not only reaching a specific threshold in English language proficiency but also meeting certain academic standards,<sup>16</sup> students who are reclassified may be perceived by educators as not only students who are more fluent in English but also academically higher achievers and more motivated students than those who stay in the EL services. Such students, then, may be seen as ideal candidates for ECPs: They have not had the same opportunity as non-EL students during middle and high school to take rigorous academic courses because they were ELs (e.g., Callahan, 2005; Umansky, 2016; Winters & Kanno, 2023); but now that they are proficient in English, they may be perceived as exactly the type of students who will rise to the challenge if they are given access to advanced level academic content.

Considering heterogeneity among ELs (Le et al., 2024; Umansky et al., 2020), it is also possible that classified ELs and former ELs constitute two distinct subgroups. As Table 2 indicates, former ELs are more likely to be Asian, female, and non-low-income students with relatively higher 7th-grade MCAS scores than current ELs. Asian ELs are known to get reclassified more quickly than Latinx ELs (Umansky et al., 2020). Female students are more likely to enroll in ECPs *and* tend to benefit more from ECPs than male students in terms of

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<sup>16</sup> Since fall 2024, Massachusetts has changed its EL reclassification criteria, and reclassification decisions are now made solely on students’ English language proficiency levels. However, previously, reclassification involved ensuring that students have met not only set benchmarks in oral and written English but also certain academic standards, such as reaching at least “Needs Improvement” levels in the state academic assessment scores (MADESE, 2024)

postsecondary outcomes (Berger et al., 2013). Further, relatively higher family income levels and higher MCAS scores suggest that they constitute a comparatively privileged subgroup within the EL group. The intersection of these identities may contribute to both earlier reclassification *and* a higher likelihood of being encouraged to participate in an ECP.

### **Variation of EL Participation by High Schools and IHEs**

Another major theme in our findings was substantial school-level variations in ELs' participation in ECPs, both among high schools and IHEs. While current ELs were, on average, underrepresented in ECPs, they were either fairly represented or even slightly overrepresented at a small fraction of high schools. Among the schools where ELs were underrepresented, the degree of underrepresentation varied widely. Similarly, although former ELs were overall slightly overrepresented, their representation varied from underrepresentation to parity to overrepresentation across schools—though the range was smaller and much closer to parity than that of current ELs.

In particular, we found that high schools with larger shares of Latinx, low-income, and EL students (both current and former ELs) had a larger underrepresentation of ELs in their ECPs. In other words, while high schools that have higher concentrations of underserved students are more likely to be designated as ECPs (reflecting the original mission of the Massachusetts Early College Initiative), these schools do not always prioritize ELs' access to the program. One might assume that schools that regularly receive ELs might be better poised to promote equitable educational opportunities for them, yet our results suggest the opposite is true. One possible explanation is that many of such high schools have a disproportionately high newcomer EL population. A recent report by the Annenberg Institute (Mantil et al., 2023) on the rise of the newcomer EL population in Massachusetts high schools has found that half of the newcomer

students in Massachusetts are concentrated in only 14 high schools across the state (the state has 414 public secondary schools in total). Nine of these 14 schools offer ECPs, and our analysis shows that six of them have more than 10 percentage-point EL underrepresentation. For all the reasons we have outlined above in the previous section, such newcomer ELs may be perceived as not ready for ECPs, *and* their high school graduation may be prioritized over an opportunity to participate in an elective program.

At the IHE level, our results show underrepresentation of ELs at both two-year and four-year IHEs, but the underrepresentation is more severe at four-year IHEs. In other words, when a high school partners with a four-year college, ELs are less likely to enroll in its ECP than when a school partners with a two-year college. It also suggests that when a high school has partnerships with two IHEs, one a four-year college and the other a two-year college, ELs are more likely to be steered into the two-year-college ECP than the four-year-college ECP. It is as if there is a tracking system *within* ECPs, and even when ELs manage to enroll in ECPs, they are more likely to be tracked into two-year-college ECPs. Since ECPs in other states partner predominantly with two-year colleges (Berger et al., 2013; Edmund et al., 2017; Song et al., 2021), we currently have little understanding of how the types of partner IHEs (two-year versus four-year) might shape participating students' postsecondary trajectories.<sup>17</sup> Nevertheless, the pattern of ELs being streamed into the two-year-college ECP is strongly reminiscent of the general trend of ELs' postsecondary access, wherein those ELs who do go to college are far more likely to enroll in two-year colleges than four-year colleges (Jiang, 2021; Kanno & Cromley, 2015; Schudde et al.,

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<sup>17</sup> Berger et al. (2013), in response to the criticism that "Early College may funnel students primarily into two-year colleges and away from educational pathways that would lead to bachelor's degree" (p. 36), found that participation in ECPS resulted in higher rates of enrollment in *both* two-year and four-year colleges. In other words, their study found no evidence that two-year-college ECPs would necessarily lead to two-year college enrollment. In contrast, Johnson and Mercado-Garcia (2022) found that participation in a two-year-college ECP steered ELs away from four-year college enrollment.

2024). In a program that is supposed to expand the college access of historically underrepresented students, ELs may be once again exposed to lower expectations and implicitly positioned as not four-year-college material.

### **Conclusions and Implications**

This study contributes to the early college literature in several important ways. First, this is one of the first systematic analyses of ELs' participation in ECPs. Although the core mission of ECPs across the United States is to expand postsecondary opportunities for historically underrepresented students, research thus far has focused on Black, Latinx, low-income, and first-generation college students, leaving ELs' participation out of the picture. Our analysis reveals that students who remain ELs throughout high school are severely underrepresented in ECPs, whereas those reclassified as English-proficient during high school are slightly overrepresented. This is consistent with several past studies that have also found that former ELs' educational trajectories are distinct from those of current ELs (e.g., Carlson & Knowles, 2016; Kanno & Cromley, 2013, 2015; Holzman et al., 2020; Jiang, 2021).

Second, Massachusetts ECPs are unique in that most are housed in regular high schools as elective programs whereas ECPs in other states are school-wide programs in which all students participate. Thus, if ELs are eliminated from participating in ECP schools, the elimination happens at the point of enrollment in high school, making ELs' representation in ECPs hard to estimate precisely. That is, the only available comparison would be the share of ELs in the district in which the ECP school is located, but such a comparison lacks accuracy because even within a district, some schools often have a larger share of ELs than other schools. In our study, because ECPs are housed in larger schools and selection into the program takes place after students are already enrolled in the school, we can provide a direct comparison of the

share of ELs in an ECP against the share of ELs in the school. This way, we can provide a more accurate picture of ELs' equitable access to an ECP compared with that of their peers in the same school.

Third, the fact that in Massachusetts ECPs, IHE partners include both two-year and four-year colleges enabled us to document different patterns of ELs' participation depending on the types of IHEs with which high schools partner. We found that ELs have less access to four-year-college ECPs than two-year-college ECPs. This is a concerning trend if the mission of ECPs is to promote greater access not only to two-year colleges but also to four-year colleges.

### **Implications**

Despite ELs' currently limited access to ECPs, we continue to believe that ECPs could be a powerful driver for increasing college access for ELs, especially access to four-year colleges, which hitherto has been highly restricted for this population. With that vision in mind, we offer three research and policy implications.

First, while a statistical analysis such as ours can provide the overall patterns of ELs' participation in ECPs, it does not tell us the causes of these patterns (Mavrogordato & White, 2017; Umansky et al., 2020). Investigation of the underlying mechanisms of unequal participation must take the form of qualitative research. For instance, it would be helpful to conduct case studies of several ECPs across Massachusetts, comparing sites that have shown a severe underrepresentation of current ELs to those that have achieved parity—or even an overrepresentation—of ELs. In addition to investigating factors that explain why current ELs are so severely underrepresented in ECPs, it would be important to better understand why former ELs are favored in ECPs, considering that they too were classified ELs upon entry into high



school. Such case studies would shine a light on the barriers that are limiting ELs' participation as well as some ideas for how to widen access for this population.

Second, just as there has been little research on ELs' access to ECPs, there has been little investigation of the impact of ECPs on those ELs who participate in the programs. Thus far, Johnson and Mercado-Garcia (2022) has been the only impact study available, and the results were not as positive, especially in terms of widening access to postsecondary education. However, it is a study of one ECP in California, and as such, its generalizability is limited. We need to investigate the impact of ECPs on ELs more widely to examine whether ECPs are just as beneficial for this population as other populations or there is something unique about ELs that reduces the effectiveness of the current model of ECPs in facilitating their college access.

Finally, states and districts must start making a commitment to equitable participation of ELs in ECPs. Given that ELs indisputably constitute one of the underrepresented student populations in higher education and, therefore, should be a target group for recruitment for ECPs, the lack of attention to this population thus far is puzzling. As a starting point, states should count the number of ELs who participate in their ECPs, as they have with Black, Latinx, and low-income students. In places where ELs are underrepresented, states should identify and try to remove the barriers that limit ELs' access to ECPs. Precisely because the ECP has a high potential to change the educational trajectories of underserved groups of students, we must ensure that all such groups, not just a select few, benefit from the program.

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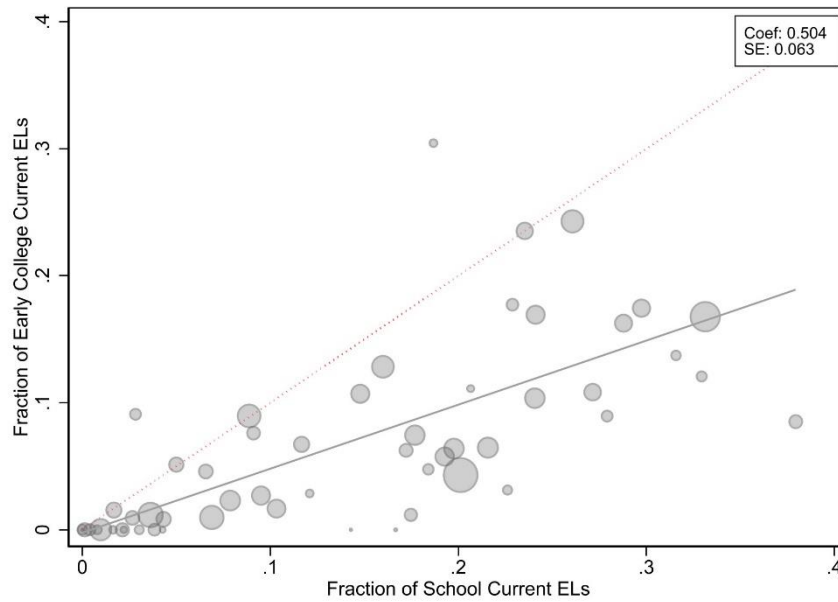
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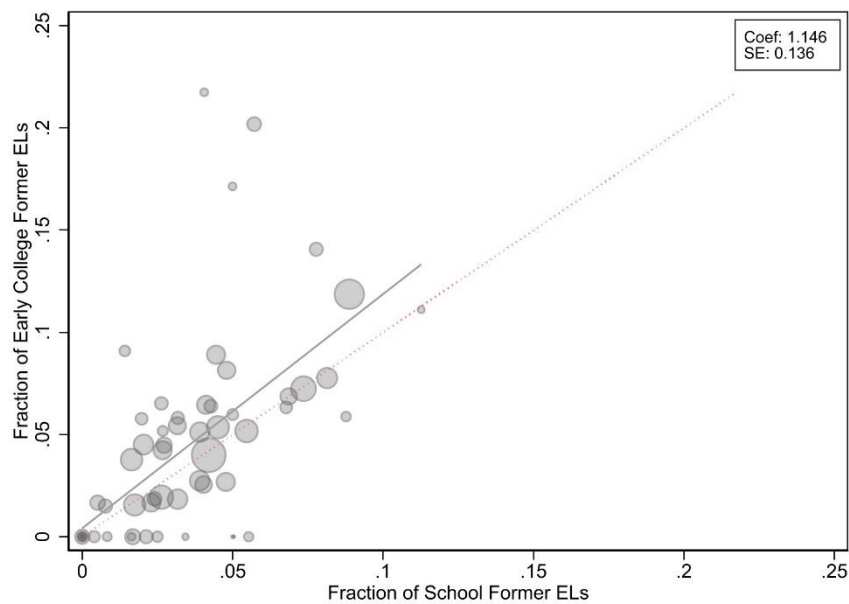
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**Tables and Figures**

Panel A: Current ELs



Panel B: Former ELs

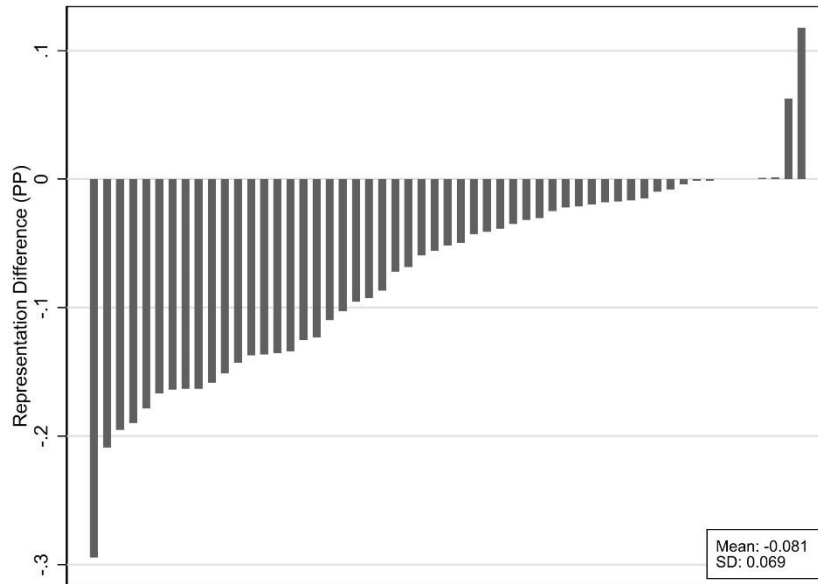


**Figure 1. School-level relationship between EL composition and ECP participation.**

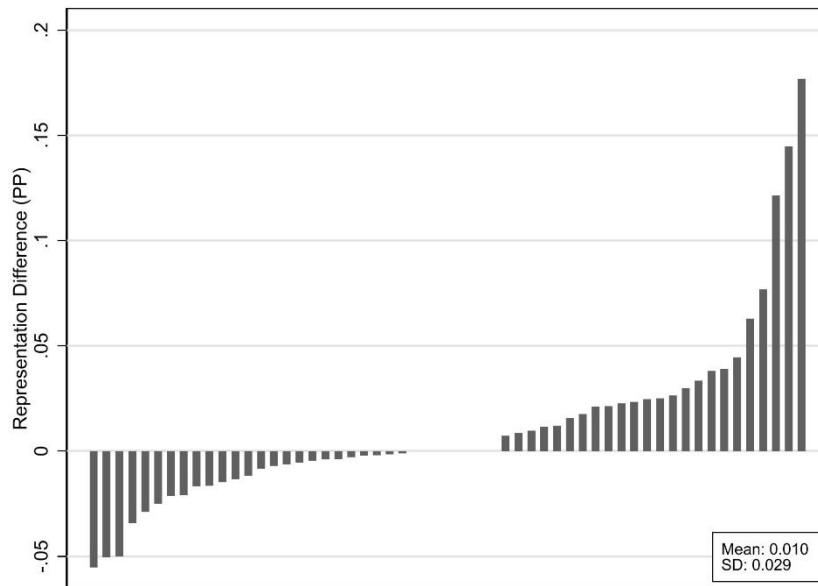
Notes: Each dot represents a high school. The x-axis presents the fraction of students in each high school who are current ELs (Panel A) or former ELs (Panel B). The y-axis presents the share of students enrolled in early college who are current ELs (Panel A) or former ELs (Panel B). The red dotted line represents the line of parity (i.e., equal representation of ELs in early college) and the solid grey line represents the line of best fit. The size of the dots is weighted to corresponds to each school’s early college enrollment and the regression uses the same weights.



Panel A: Current ELs

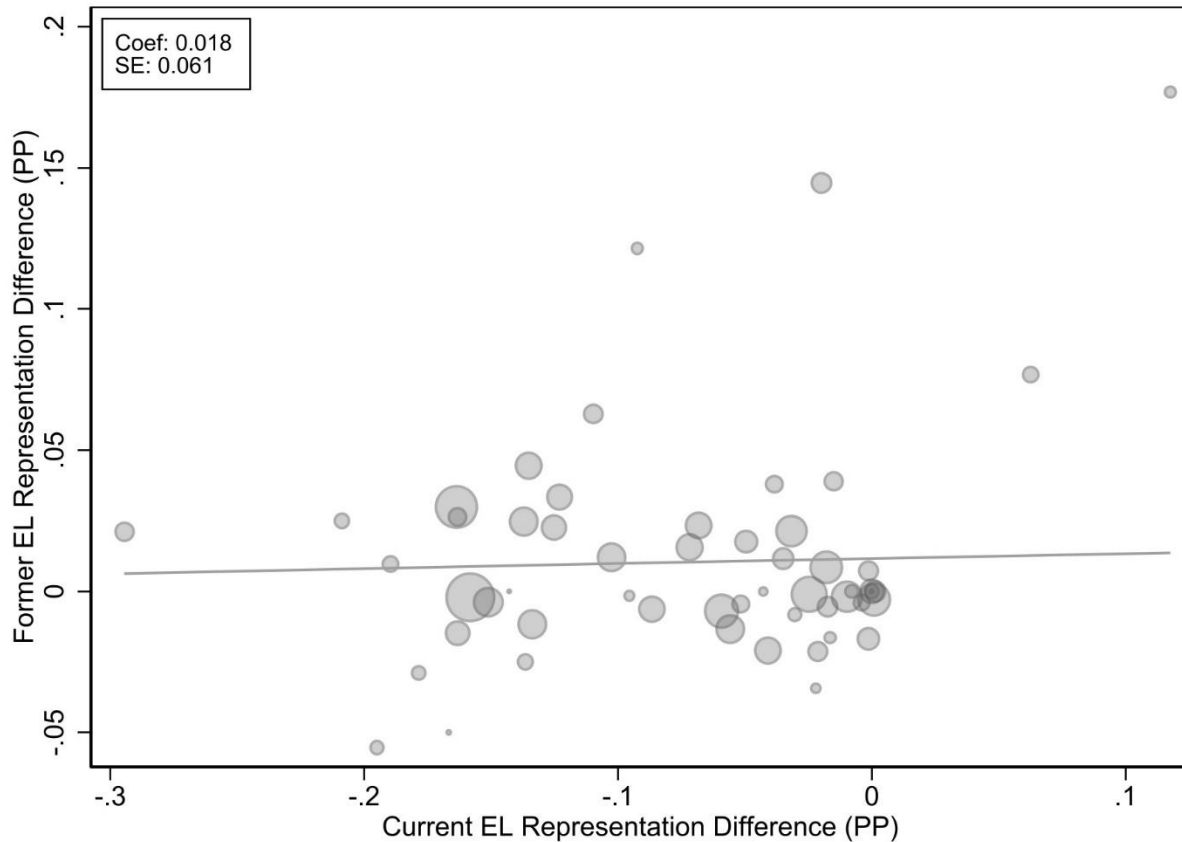


Panel B: Former ELs



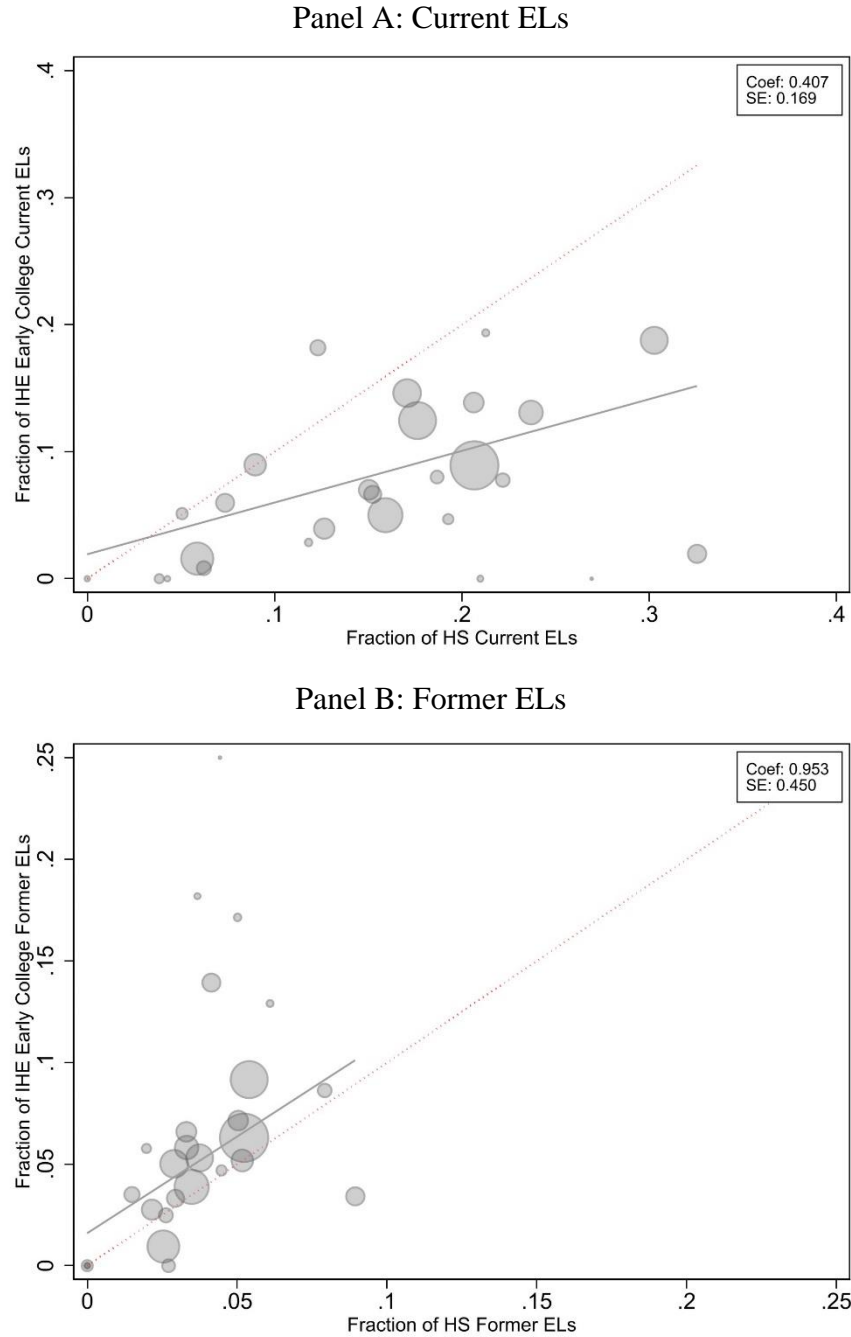
**Figure 2. School-level distribution of ECP access**

Notes: Each bar represents a high school. The y-axis presents the difference between the share of current ELs (Panel A) or former ELs (Panel B) who participate in early college relative to the share of current ELs (Panel A) or former ELs (Panel B) in each school. The mean (presented in the bottom right corner) is weighted by the number of students enrolled in early college in each school.



**Figure 3. School-level relationship between former EL and current EL representation.**

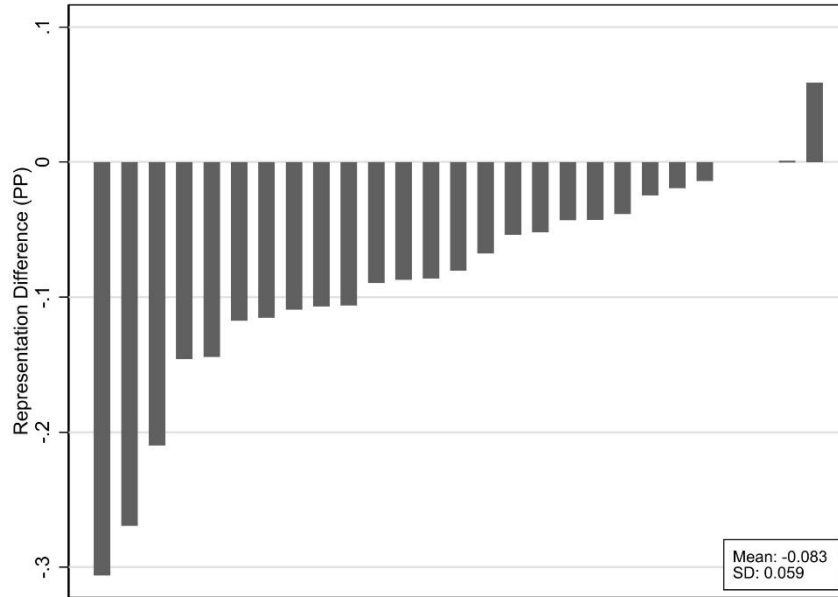
Notes: Each dot represents a high school. The x-axis presents representation difference for current ELs in each school (i.e., share of current ELs participate in early college relative to the share of current ELs in each school). The y-axis presents the representation difference for former ELs. The solid grey line represents the line of best fit. The size of the dots is weighted to correspond to each school's early college enrollment and the regression uses the same weights.



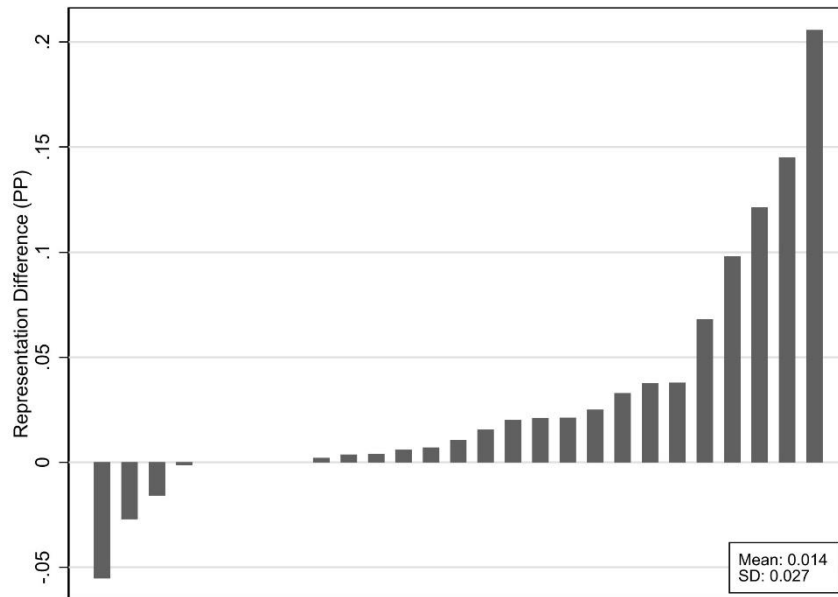
**Figure 4. IHE-level relationship between EL composition and ECP participation.**

Notes: Each dot represents an IHE. The x-axis presents the average fraction of students who are current ELs (Panel A) or former ELs (Panel B) across the high schools partnered with each IHE. The y-axis presents the share of students enrolled in each IHE’s early college program who are current ELs (Panel A) or former ELs (Panel B). The red dotted line represents the line of parity (i.e., equal representation of ELs in early college) and the solid grey line represents the line of best fit. The size of the dots is weighted to corresponds to each IHE’s early college enrollment and the regression uses the same weights.

Panel A: Current ELs



Panel B: Former ELs



**Figure 5. IHE-level distribution of ECP access**

Notes: Each bar represents an IHE. The y-axis presents the difference between the share of current ELs (Panel A) or former ELs (Panel B) who participate in early college relative to the share of current ELs (Panel A) or former ELs (Panel B) in high schools partnered with that IHE. The mean (presented in the bottom right corner) is weighted by the number of students enrolled in early college in each IHE.

**Table 1. Five Design Principles of Massachusetts Early College Programs**

	Principles	Policies and Practices
1	Equitable Access	<ul style="list-style-type: none"> <li>• Prioritized recruitment of student populations historically underrepresented in higher education</li> <li>• Open access to enrollment without any selection criteria</li> <li>• No cost to students, including tuition, books, and transportation</li> <li>• Multiple entry points</li> </ul>
2	Guided Academic Pathways	<ul style="list-style-type: none"> <li>• At least 12 transferrable college credits by high school graduation</li> <li>• Intentional sequencing of courses on clear academic pathways leading to a postsecondary credential (associate's or bachelor's degree or a postsecondary certificate)</li> <li>• Opportunities for exposure to occupations in high demand</li> <li>• Opportunity to take at least one course on a college campus</li> <li>• Development of a college-going identity</li> </ul>
3	Enhanced Student Supports	<ul style="list-style-type: none"> <li>• Wraparound support for students' academic and nonacademic needs</li> <li>• Differentiated support for ELs and students with disabilities</li> <li>• Designated support staff person</li> </ul>
4	Connection to Career	<ul style="list-style-type: none"> <li>• Opportunities for career exploration, skill development, and experiential learning</li> <li>• Cultivation of awareness between academic pathways and career opportunities</li> <li>• Development of foundational work skills</li> <li>• Availability of college and career counseling</li> <li>• Partnerships with local employers for student exposure to career options and internship opportunities</li> </ul>
5	Effective Partnerships	<ul style="list-style-type: none"> <li>• A formal partnership between a public high school and at least one institution of higher education</li> <li>• A comprehensive plan of local leadership team, cost, and program of studies</li> <li>• An MOU articulating the terms of collaboration and a joint vision statement</li> </ul>

Sources: Massachusetts Department of Elementary and Secondary Education & Massachusetts Department of Higher Education (2023)

**Table 2. Descriptive Statistics**

	ECP Schools			All Schools		
	Current ELs	Former ELs	All Students	Current ELs	Former ELs	All Students
<b>Panel A: High School Variables</b>						
ECP Participant	9%	25%	19%	4%	8%	3%
Asian	6%	11%	8%	6%	12%	7%
Black	10%	13%	11%	16%	18%	9%
Hispanic/Latinx	76%	65%	43%	69%	56%	21%
Other Race	1%	1%	3%	1%	1%	4%
Male	55%	48%	51%	55%	51%	51%
Low Income	83%	76%	58%	81%	72%	37%
Student with Disability	16%	11%	15%	18%	13%	16%
New to U.S. (Grades 9-12)	56%	35%	11%	52%	33%	5%
<b>Panel B: Baseline Test Scores</b>						
Failing Math	20%	23%	14%	20%	20%	9%
Failing ELA	23%	26%	13%	23%	24%	9%
Needing Improvement Math	11%	36%	38%	13%	36%	35%
Needing Improvement ELA	7%	30%	36%	9%	29%	34%
Meeting Expectations Math	0%	3%	24%	0%	5%	34%
Meeting Expectations ELA	0%	2%	26%	0%	3%	37%
Exceeding Expectations Math	0%	0%	4%	0%	0%	8%
Exceeding Expectations ELA	0%	0%	4%	0%	0%	6%
Avg. ACCESS Scale Score	347	361	-	349	365	-
Missing Math Test	69%	38%	20%	66%	39%	14%
Missing ELA Test	70%	43%	21%	68%	44%	14%
Missing ACCESS Test	57%	31%	88%	56%	31%	94%
Number of Students	6,113	1,491	38,540	13,948	4,635	209,279

Notes: Table includes all 12<sup>th</sup> grade students in the 2021-02 through the 2023-04 school years. The first three columns include students in schools offering early college programs in Massachusetts; the last three columns include students in all schools in Massachusetts. Panel A includes indicators from 12<sup>th</sup> grade, with the exception of New to U.S., which we calculate as an indicator of whether the student entered the U.S. school system in any high school grade (9-12). Panel B includes measures of baseline test scores before high school. Specifically, we use 7<sup>th</sup> grade standardized test scores in math and English Language Arts (ELA) since 8<sup>th</sup> grade test scores are missing in 2020-21 (the 8<sup>th</sup> grade year for the 2023-24 cohort of 12<sup>th</sup> graders) due to the Covid-19 pandemic. However, ACCESS scores were administered in 2020-21 (before the onset of the pandemic), so our baseline measure of English language proficiency is ACCESS score in 8<sup>th</sup> grade.

**Table 3. Bivariate Analysis of School-Level Predictors of ELs' access to ECPs**

	<b>Current ELs</b>	<b>Former ELs</b>
Asian	-0.004 (0.119)	0.134 (0.106)
Black	-0.086 (0.104)	-0.020 (0.027)
Latinx	-0.122*** (0.035)	-0.013 (0.029)
Other Race	0.293 (0.522)	-0.124 (0.269)
Male	-0.034 (0.179)	-0.025 (0.081)
Low Income	-0.269*** (0.054)	-0.035 (0.039)
Disability	-0.031 (0.147)	-0.056 (0.051)
Current EL	-0.438*** (0.097)	-0.005 (0.046)
Former EL	-0.854** (0.307)	0.376 (0.303)
Average Share Proficient or Advanced in Math and ELA	11.030 (6.602)	7.161 (5.510)
Years Participating in ECP	-5.036 (3.659)	0.022 (1.925)
Total Enrollment (00s)	-1.873*** (0.465)	0.046 (0.299)
<b>Number of School-Year Observations</b>	<b>145</b>	<b>145</b>

Notes: Robust standard errors in parentheses clustered at the school level. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**Table 4. Student-level analysis of ELs' access to ECPs**

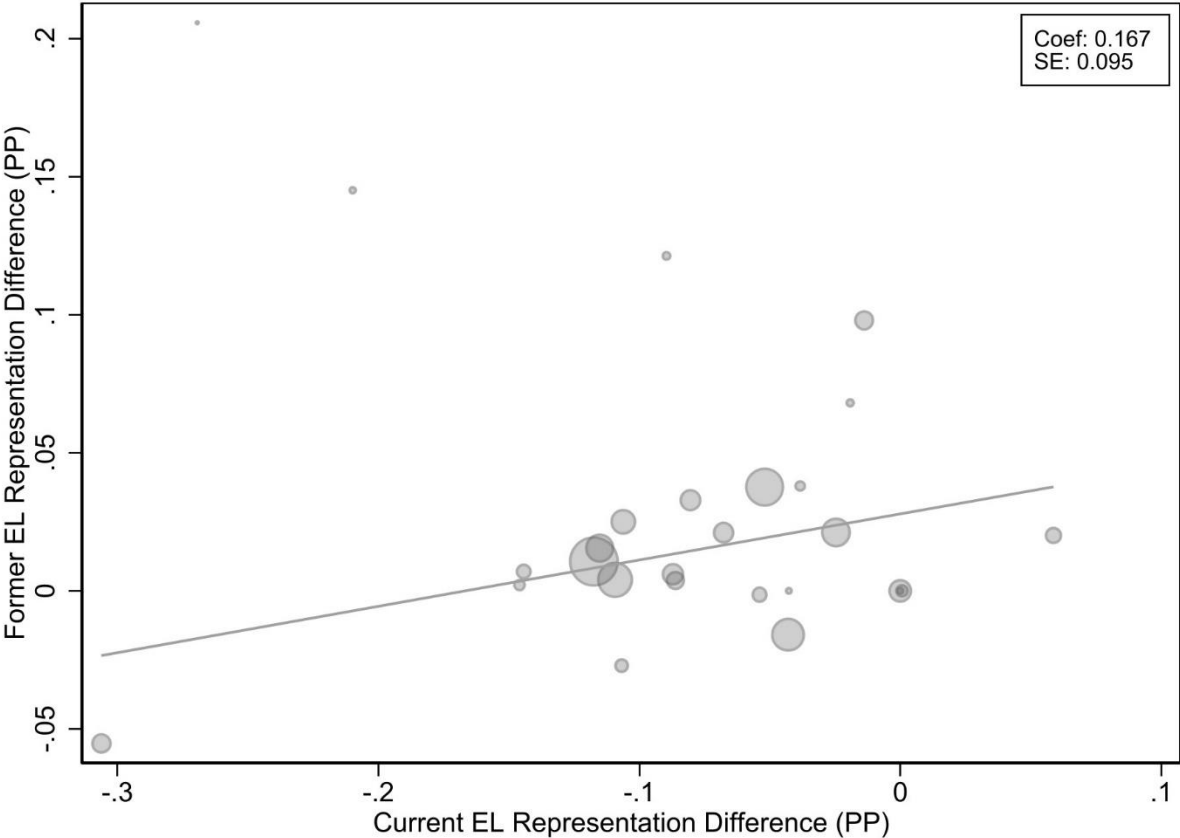
	Current EL			Former EL		
	All Schools	EC Schools	EC School FE	All Schools	EC Schools	EC School FE
Current EL	-0.0234*** (0.00634)	-0.0921*** (0.0115)	-0.0892*** (0.0121)			
Former EL				0.0274** (0.00846)	0.0909*** (0.0162)	0.0958*** (0.0163)
Asian	0.0282 (0.0160)	0.0576 (0.0445)	0.0558*** (0.0153)	0.0269 (0.0158)	0.0502 (0.0445)	0.0496** (0.0153)
Black	0.0424** (0.0152)	0.121*** (0.0323)	0.0877*** (0.0126)	0.0409** (0.0152)	0.119*** (0.0323)	0.0874*** (0.0129)
Latinx	0.0453*** (0.0106)	0.0545** (0.0176)	0.0217* (0.00817)	0.0414*** (0.00998)	0.0405* (0.0172)	0.00879 (0.00828)
Other Race	0.0116*** (0.00333)	0.0277 (0.0147)	0.0186* (0.00901)	0.0119*** (0.00337)	0.0306* (0.0147)	0.0218* (0.00896)
Male	-0.0163*** (0.00314)	-0.0856*** (0.00972)	-0.0847*** (0.00922)	-0.0164*** (0.00315)	-0.0856*** (0.00969)	-0.0846*** (0.00921)
Low Income	0.0123*** (0.00268)	-0.0254* (0.0118)	-0.0381*** (0.00898)	0.0110*** (0.00256)	-0.0303* (0.0117)	-0.0425*** (0.00908)
Disability	-0.0259*** (0.00435)	-0.0927*** (0.00950)	-0.0697*** (0.00947)	-0.0240*** (0.00407)	-0.0823*** (0.00944)	-0.0599*** (0.00983)
Math Missing	0.00221 (0.00528)	0.0148 (0.0200)	0.0119 (0.0195)	0.00441 (0.00533)	0.0171 (0.0199)	0.0152 (0.0196)
Math Partial Meet	0.00648** (0.00230)	0.0303*** (0.00566)	0.0305*** (0.00543)	0.00823** (0.00257)	0.0413*** (0.00588)	0.0409*** (0.00580)
Math Meeting	0.00729 (0.00532)	0.0866*** (0.0225)	0.0912*** (0.0193)	0.00901 (0.00557)	0.0983*** (0.0234)	0.102*** (0.0206)
Math Exceeding	-0.00245 (0.00519)	0.0720 (0.0421)	0.0914* (0.0366)	-0.000907 (0.00534)	0.0820 (0.0430)	0.101** (0.0378)
ELA Missing	0.0104 (0.00602)	0.0319 (0.0233)	0.0668** (0.0210)	0.00580 (0.00575)	0.0140 (0.0237)	0.0485* (0.0212)
ELA Partial Meet	0.00534* (0.00222)	0.0126 (0.00707)	0.0284*** (0.00693)	0.00903*** (0.00268)	0.0346*** (0.00736)	0.0495*** (0.00735)
ELA Meeting	0.00532 (0.00335)	0.0417** (0.0155)	0.0731*** (0.0129)	0.00932* (0.00389)	0.0662*** (0.0168)	0.0968*** (0.0147)
ELA Exceeding	-0.000290 (0.00362)	-0.00176 (0.0218)	0.0566*** (0.0152)	0.00349 (0.00381)	0.0209 (0.0223)	0.0787*** (0.0155)
Year FE	Y	Y	Y	Y	Y	Y
School FE			Y			Y
Observations	208339	38540	38540	208339	38540	38540

Notes: Robust standard errors in parentheses clustered at the school level. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .



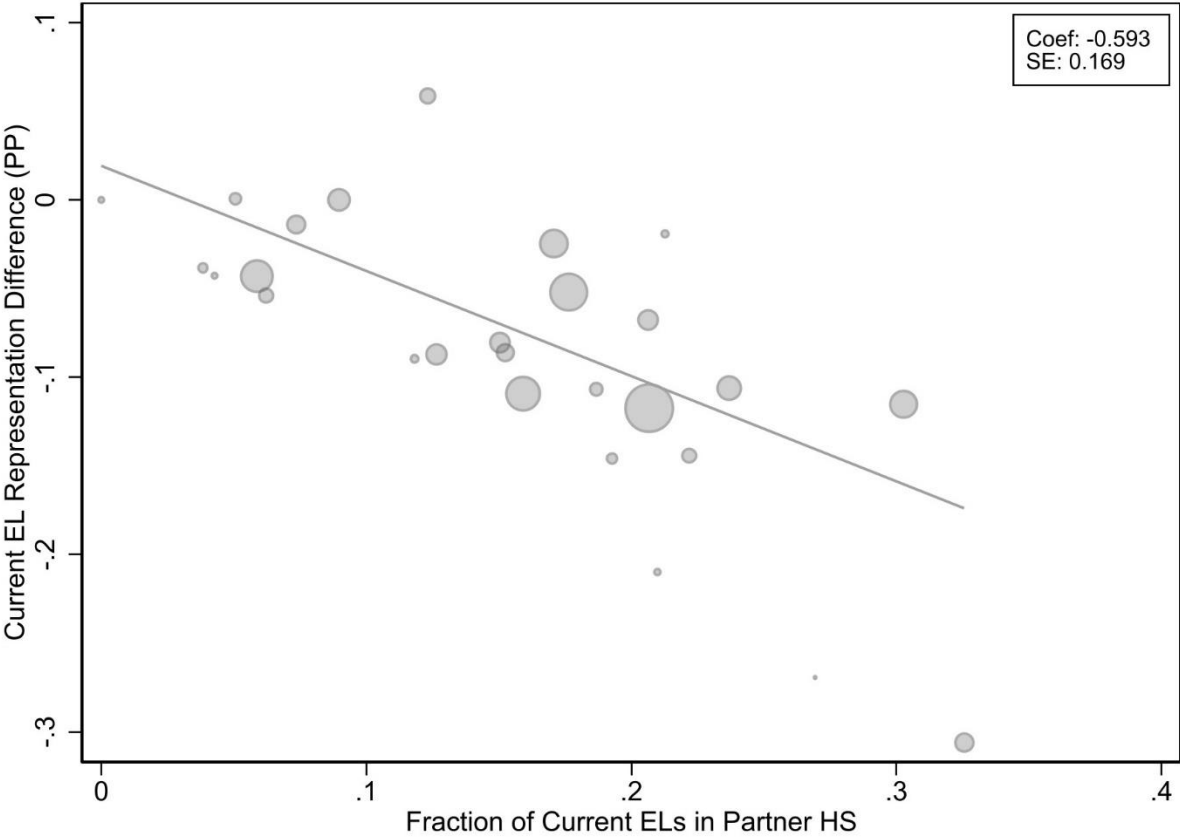
### Appendix

#### Tables and Figures



**Appendix Figure A1. IHE-level relationship between former EL and current EL representation.**

Notes: Each dot represents an IHE. The x-axis presents representation difference for current ELs in IHE (i.e., share of current ELs participating in early college relative to the share of current ELs in each partner high school). The y-axis presents the representation difference for former ELs. The solid grey line represents the line of best fit. The size of the dots is weighted to corresponds to each IHE's early college enrollment and the regression uses the same weights.



**Appendix Figure A2. IHE-level EL representation in ECPs compared to school EL composition**

Notes: Each dot represents an IHE. The x-axis presents the share of current ELs in on average across each IHE’s partner high schools. The y-axis presents the representation difference for current ELs in IHE (i.e., share of current ELs participating in early college relative to the share of current ELs in the IHE’s partner high schools). The solid grey line represents the line of best fit. The size of the dots is weighted to corresponds to each school’s early college enrollment and the regression uses the same weights.

**Table A1. Variance Decomposition in EL Representation across Schools and IHEs**

	<b>Current ELs</b>		<b>Former ELs</b>	
	<b>SD</b>	<b>% of Variance</b>	<b>SD</b>	<b>% of Variance</b>
School level	0.055	10%	0.000	0%
IHE level	0.061	12%	0.033	19%
Residual	0.155	78%	0.069	81%
Total	0.176	100%	0.076	100%

Notes: This table presents the results of a variance decomposition of EL representation using a crossed random effect model. The unit of observation is 194 high school-IHE-year combinations.

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