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Cultural Relevance at Scale: The Effects of an Ethnic Studies Expansion on Academic Outcomes*

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Abstract

Ethnic Studies is a culturally relevant curriculum designed to address the instructional needs of an increasingly diverse student population. However, evidence regarding its effectiveness at scale remains limited. This study evaluates the impact of district-wide implementation using a student-level difference-in-differences design with two-way-fixed effects. We find that enrollment increases overall GPA by 0.17 points (0.24 SD), with the largest gains observed in Math and Science, and reduces course failure by 5.6 percentage points (0.14 SD). These benefits extend to all student groups, with stronger effects among academically vulnerable, male, Black and Latine students, and those with individualized education plans. Our findings suggest that well-implemented Ethnic Studies can be scaled effectively and has the potential to reduce disparities in student outcomes.

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1 Introduction

For decades, researchers have documented persistent racial and ethnic gaps in student outcomes and unequal access to quality education (Coleman, 1966; Matheny et al., 2023). Despite numerous K-12 reforms, evidence of their effectiveness in improving outcomes for historically marginalized students remains mixed (Dee & Jacob, 2011; Bleiberg et al., 2024; Ladd, 2017). Scholars have long emphasized the need for culturally relevant approaches that draw on the strengths of increasingly diverse communities while addressing students' instructional and pedagogical needs (Ladson-Billings & Tate, 1995; Yosso, 2005). More recently, Polikoff (2021) argued that high quality curricula reflecting students' cultural backgrounds are essential for promoting both equity and excellence in education. Ethnic Studies (ES) has emerged as a prominent example of these values, offering curricula rooted in the experiences of students of color and increasingly used to promote educational equity (Tintiangco-Cubales et al., 2015). Although ES originated in higher education during the social movements of the 1960s, its presence in K-12 schools was limited, until recently, to local initiatives.

In recent years, ES has expanded beyond localized efforts as districts and states have formally adopted policies mandating its implementation, frequently amid significant political debate and resistance. Notably, California became the first state to require ES for high school graduation, beginning with the class of 2030, and several other states and districts have followed suit. By 2020, nearly half of California high school students were enrolled in schools offering ES (Penner & Ma, 2024; Kwon, 2021). Yet opposition to ES has persisted since its origins in the 1960s, as illustrated by Arizona's ban on Mexican American Studies (MAS) in 2010 and more recent restrictive policies (Kocivar, 2024; Medina, 2017). Even in California, the future of the graduation requirement remains uncertain, as its most recent state budget did not allocate funding for implementation (Jones, 2025). These developments highlight both the opportunities and challenges associated with the institutionalization of ES.

The growing prevalence of ES coursework raises important questions about its effects when implemented at scale. Although recent studies have highlighted the potential of ES to improve student outcomes—including course performance, graduation rates, and college enrollment (Bonilla et al., 2021; Cabrera et al., 2014; Dee & Penner, 2017)—existing research is limited in scope. For example, Cabrera et al. (2014) provided largely descriptive findings of Tucson's MAS program, while causal studies have focused on a small-scale Ethnic Studies pilot targeting academically struggling students in San Francisco Unified (Bonilla et al., 2021; Dee & Penner, 2017). This raises concerns about the generalizability

of ES's benefits to broader and more diverse student populations. Moreover, the scaling of promising education interventions frequently leads to diminished effectiveness (Al-Ubaydli et al., 2020; von Hippel & Wagner, 2018; Jepsen & Rivkin, 2009; Kraft et al., 2024). As ES becomes a core element of high school curriculum in California and elsewhere, rigorous evaluation of its impact at scale is essential for understanding its potential to improve academic trajectories for all students.

We provide the first causal evidence on the academic impacts of a districtwide expansion of high school ES in San Francisco Unified School District (SFUSD). Using longitudinal student-level data for ten cohorts followed from grades 6 through 12, we estimate the effects of ES enrollment on overall grade point average (GPA) and course failure. Our empirical strategy employs a student-level two-way fixed effects model to compare students' course performance before and after ES participation. We further use an event-study framework to assess the dynamic effects of ES enrollment over time and a synthetic difference-in-differences (SDID) approach to adjust for pre-existing differences between students who did and did not enroll in ES.

We find that ES enrollment improves academic outcomes, increasing GPA by 0.17 points (0.24 SD) and reducing course failures by 5.6 percentage points (0.14 SD). These effects translate into a roughly 15% increase in students meeting the 3.0 GPA threshold for UC admission and a 27% reduction in course failures, with gains especially pronounced in Math and Science. ES benefits students across all racial and ethnic groups, with particularly strong effects for lower performing students, male students, Black and Latine students, and students receiving special education services. Importantly, these effect sizes fall within the medium to large range for educational interventions and are both rare and substantively meaningful, as average effects in education research typically fall below 0.10 SD (Kraft, 2020). Results remain robust across model specifications, sensitivity checks for differential attrition, sample restrictions, and falsification tests, underscoring the credibility of these causal estimates.

This study makes three key contributions to the existing literature. First, it provides novel causal evidence on successfully scaling a promising curricular intervention district wide, extending prior research that primarily focused on a smaller, well-resourced pilot course (Bonilla et al., 2021; Dee & Penner, 2017). Second, it broadens the evidence base regarding ES' effectiveness across diverse student populations, including variation by academic preparedness, race and ethnicity, special education participation, and English language proficiency. Finally, it contributes to research on high school transitions by demonstrating how a race-conscious course can buffer students against the adverse effects of transitioning to high school during adolescence (Benner & Graham, 2009; Seidman et al.,

1996).

1.1 Theoretical Framework

Ethnic Studies (ES) is a curricular and pedagogical approach that centers the histories, cultures, and lived experiences of diverse communities in the classroom. Drawing on principles of culturally relevant pedagogy (Ladson-Billings, 1995), ES affirms student identities, promotes academic engagement through relevant content, and cultivates critical consciousness by enabling students to examine and challenge structural inequality. The curriculum fosters individual and collective agency by examining colonialism, racism, and power structures in the context of social movements (Reyes-McGovern & Buenavista, 2016; Sleeter & Zavala, 2020). By connecting academic learning to real-world civic involvement, ES fosters both individual empowerment and community action (Reyes-McGovern & Buenavista, 2016; Tintiangco-Cubales et al., 2015).

ES emerged from critical traditions, including Critical Race Theory, Latinx critical race theory, critical race structuralism, and other critical traditions, which emphasize how race, racism, and intersecting oppressions shape educational institutions and access to opportunity (Bell, 1995; Bernal, 2002; Delgado & Stefancic, 2001; Ladson-Billings & Tate, 1995; Solórzano & Yosso, 2002). These perspectives highlight how curricular omissions, race-evasive practices, and deficit-based narratives marginalize students from non-dominant groups, and position education as a means for social transformation (Wiggan et al., 2023). Rooted in student and community activism, ES was designed from its inception to reconstruct the histories of marginalized groups, centering their contributions to U.S. society as means of establishing democratic pluralism and achieving educational equity (Hu-DeHart, 1993).

ES is particularly well suited to engage students during the transition to high school—a period of rapid developmental change characterized by identity formation, heightened social awareness, and emerging civic orientation. Psychosocial and social identity theories show that identity development accelerates during this period, as students encounter new academic and social challenges as they enter high school (Benner & Graham, 2009; Lee & Smith, 2001). This transition often includes risks such as increased rates of grade retention (Pharris-Ciurej et al., 2012), declining achievement (Rice, 2001), heightened loneliness, and diminished self-esteem (Barber & Olsen, 2004; Benner & Graham, 2009; Eccles & Roeser, 2011). Racially minoritized students may also face bias and discrimination that further shape their school engagement and experiences (Benner et al., 2018; Eccles et al., 2006).

Given these risks, scholars emphasize that peer connection, sense of belonging, and positive teacher relationships are crucial protective factors for students' well-being (Barber

& Olsen, 2004; Benner, 2011; Weiss & Bearman, 2007). ES courses explicitly teach students the conceptual language and foster critical thinking skills to analyze inequality, examine social movements, and connect their identities to wider social issues. Introducing this content in early high school—when students are developmentally primed to question societal norms and consider their role in shaping them—may catalyze meaningful increases in academic engagement and motivation.

Multiple theoretical traditions suggest pathways through which ES can improve academic outcomes for historically marginalized students. Our framework draws from culturally relevant pedagogy, ethnic-racial identity development, critical consciousness, and social psychological mindsets. ES mirrors the tenets of "culturally relevant pedagogy" (CRP) and culturally responsive or sustaining teaching, which aim to support diverse learners by prioritizing academic development, affirming students' cultural and racial identities, and cultivating critical thinking about social issues and inequities (Gay, 2010; Ladson-Billings, 1994, 1995; Paris & Alim, 2017). ES curricula extend on these principles through deeper reflection and social action (Cuauhtin, 2019), with the aim of unlocking the educational potential of marginalized students by centering their, often overlooked, cultural knowledge, skills, and assets (Yosso, 2005).

ES also offers students a meaningful context for developing a positive ethnic-racial identity (ERI), a process of exploring and constructing the significance, centrality, and emotional meaning of group membership (Gillespie et al., 2025; Rivas-Drake et al., 2014; Umaña-Taylor et al., 2014). ERI is shaped by heritage, lived experiences, and broader sociohistorical contexts, reflecting the extent to which students affirm its personal significance in their lives (Umaña-Taylor et al., 2014; Umaña-Taylor, 2023). For youth of color navigating stereotypes, cultural differences, and identity-based tensions, a secure and positive ERI is linked to healthier adjustment and smoother transitions to adulthood (Eccles et al., 2006; Phinney & Kohatsu, 1999; Rivas-Drake et al., 2014). Research shows that interventions focused on ERI development foster psychosocial well-being and academic engagement in adolescents (Umaña-Taylor, 2023). In line with this, ES courses often invite students to reflect on their racial and cultural identities, consider their intersections with other aspects of self, and critically examine how they shape personal experiences and societal perceptions (Gillespie et al., 2025). Positive ERI development, in turn, may foster students' sense of belonging, motivation, and purpose in school, thereby contributing to academic success.

Another central aim of ES is to develop students' critical consciousness, defined as an awareness of structural inequality, the ability to reflect on its causes and consequences, and a belief in one's capacity to affect social change (Diemer et al., 2016; Freire, 2014; Pinedo et al., 2025). Adolescence is considered a critical period for this development, as it

coincides with other key developmental processes (Pinedo et al., 2024). ES courses create opportunities for students to examine historical and contemporary injustices, connect personal and community experiences, and learn about civic and political actions that can promote social change. Research suggests that cultivating sociopolitical efficacy and the skills to engage in activism supports reciprocal youth-context interactions and is linked to positive outcomes such as higher SAT scores, better GPAs, and increased intentions to vote (Heberle et al., 2020; Seider & Graves, 2020).

Developing critical consciousness promotes a range of positive outcomes across diverse groups. For students from marginalized communities, it strengthens academic engagement and promotes resilience in the face of discrimination (Diemer & Li, 2011; Seider & Graves, 2020). For students from more privileged backgrounds, critically examining inequality can reduce bias, build solidarity, and increase support for social change (Glasford & Johnston, 2018; Hughes et al., 2007; Nelsen, 2021). Together, the literature suggests that critical consciousness may serve as a key psychological mechanism through which ES builds inclusive, civically-oriented learning environments (Diemer et al., 2016; Pinedo et al., 2025).

ES also incorporates key active ingredients of mindset and social psychological interventions that enhance students' self-perception and learning capabilities. The course provided students with repeated opportunities to affirm their personal values, promote social belonging, cultivate a growth mindset, provide forewarning about stereotypes, and develop external attributions for challenges (Cohen et al., 2006; Walton & Cohen, 2011; Yeager et al., 2019). While mindset interventions typically offer these supports for students in isolated instances, ES sustains them throughout the duration of the course, often an entire year.

1.2 Evidence on Ethnic Studies and Student Outcomes

A growing body of research has highlighted the social, behavioral, and academic benefits of ES for K-12 students (Bonilla et al., 2021; Cabrera et al., 2014; de los Ríos, 2013; Dee & Penner, 2017; Gillespie et al., 2024, 2025; Sleeter, 2011; Sleeter & Zavala, 2020). Qualitative and case-study research suggests that students enrolled in ES courses demonstrate increased school connectedness, motivation, ethnic identity, sense of empowerment, self-concept, critical thinking skills, and academic achievement (Lewis et al., 2006, 2012; Thomas et al., 2008; Wiggan & Watson-Vandiver, 2019; Halagao, 2012; Vasquez, 2005).

Larger-scale quantitative studies have explored the relationship between ES enrollment and student outcomes. For example, Cabrera et al. (2014) found that enrolling in the Tucson Mexican American studies program was associated with increases in graduation

rates among four cohorts of students. Quasi-experimental evidence from SFUSD's pilot ES program in a subset of district high schools indicated that students with an eighth-grade GPA below a 2.0 who were encouraged to take the course experienced increased cumulative ninth-grade GPA, attendance, and course credits (Dee & Penner, 2017). Furthermore, these benefits extended throughout and beyond high school, as these students were more likely to graduate and enroll in post-secondary education (Bonilla et al., 2021). However, it is unclear whether the effects would persist in different schools, when taught by different teachers, or with higher-performing students.

1.3 The Challenges of Scale-Up

Many initially promising educational interventions fail to scale successfully (Elmore, 2016; Domina et al., 2015; Jepsen & Rivkin, 2009; List et al., 2021). Maintaining effective practices becomes challenging when programs are replicated in new conditions that alter implementation depth, sustainability, spread, and ownership (Coburn, 2003; Peurach & Glazer, 2012). Additionally, treatment effects observed in small-scale programs may not accurately reflect outcomes when expanded to broader populations, different contexts, or taught by new educators (Al-Ubaydli et al., 2020). If districtwide expansion fails to preserve the core components that made initial implementations successful, lacks adequate support for new ES teachers, or involves students unrepresentative of the broader population, the program may not yield similar results. Therefore, assessing ES' effectiveness at scale and its impact across diverse demographic, instructional, and school contexts is crucial to understanding its broader potential.

Our study provides novel evidence of the effects of ES implemented district-wide, over more than a decade (from the 2007–08 to 2022–23 school years), and across a diverse and large group of students. We also test the effect of ES enrollment for students across the eighth grade GPA distribution, students from different racial and ethnic backgrounds, and among students participating in Special Education and English Learner programs. To accomplish this, we address the following research questions:

1. How does ES enrollment impact students' academic performance, specifically course grades and failure rates?

2. Does the effect of ES enrollment vary by students' demographic and academic characteristics?

2 Data and Methods

2.1 School District Context

We evaluate the district-wide implementation of high school ES in San Francisco Unified School District (SFUSD). SFUSD was an early leader in establishing a formal K-12 ES program and has roots in an early community-based iteration of the program (Tintiangco-Cubales et al., 2010). The year-long district course was developed and piloted by a core group of social studies teachers over several years with support from an ES professor from a local California State University. The school board subsequently voted to expand course availability across all district high schools and then adopted a two-semester ES graduation requirement, beginning with the graduating class of 2028. However, the course was not immediately available in all schools; instead, its availability gradually expanded at different rates across schools.

Assessing the impact of scaling up ES in SFUSD is ideal for several reasons. This program grew steadily over time but its initial pilot was widely regarded as successful (Bonilla et al., 2021; Dee & Penner, 2017). However, many interventions that show early success face challenges when scaled to new contexts or taught by different educators (Al-Ubaydli et al., 2020; Jepsen & Rivkin, 2009; List et al., 2021). By examining the impact of ES expansion across district high schools, we document whether its success in a highly resourced pilot, driven by self-selected, motivated teachers, is sustained as new educators teach the course in diverse instructional environments.

Second, we provide credible causal estimates of ES by leveraging rich panel data spanning sixteen years, documenting its gradual expansion. Rapid expansion at the expense of local control can undermine scale-up efforts (Peurach & Glazer, 2012). SFUSD's steady ES expansion offers a valuable opportunity to validate this approach and examine changes in program impact over time.

Finally, earlier studies were limited in examining heterogeneity across student populations due to small pilot sizes or student body composition (Bonilla et al., 2021; Cabrera et al., 2014; Dee & Penner, 2017). Our study provides critical insights into how ES' impact varies by students' prior academic achievement, language proficiency, special education participation, and racial or ethnic background, informing implementation efforts across California and beyond.

2.2 Data and Outcomes

We use student-level administrative data for students in grades 6 through 12 across nearly 40 middle and high schools in SFUSD, spanning the 2007–08 through 2022–23 school years. These data include information on student course enrollments, course-level grades, identifiers for student's race/ethnicity, gender, Emergent Bilingual (EB) (or English Learner) status, Special Education program participation, grade level, and school.

We examine two key indicators of students' academic progress as dependent variables in our analyses: student annual GPA and an indicator for whether they passed all of their classes (excluding ES and P.E.).[1] The GPA variable is a continuous measure and takes a value on a 4-point scale (4 = A, 3 = B, 2 = C, etc.). We also create an indicator for whether each student failed any of their courses. The indicator takes the value one if they receive any Ds or Fs across all graded courses. This course credit indicator specifies whether a student passed all their core courses with a C- or higher (i.e., the district policy and the UC/California State University system minimum admission requirements).

Research suggests that high schools have responded to federal accountability standards by increasing graduation rates through grade inflation, rather than real academic gains (Harris et al., 2023; Sanchez & Moore, 2022). Higher graduation rates have not been matched by improved standardized test scores (Bowden et al., 2023; Goldhaber & Goodman Young, 2024), prompting concerns that the high school diploma is being devalued (Northern & Petrilli, 2018). However, research consistently demonstrates that high school GPA is the strongest predictor of college performance, surpassing standardized tests like the ACT and SAT, across a variety of contexts (Allensworth & Clark, 2020; Koretz et al., 2016; Pattison et al., 2013). Given that GPA is an imperfect measure, we conduct robustness checks to test the sensitivity of our results.

Our primary independent variable of interest is a binary indicator of student enrollment in ES, which equals one for the first high school grade in which a student enrolls in ES. Since some students take ES in multiple years, we define this variable based on their first enrollment grade. A small share of students take ES as a brief six-week "elective wheel" during middle school.[2] Sensitivity analyses excluding these students yield qualitatively consistent results. Accordingly, for the purposes of this study, we define ES participation as the first enrollment in an ES course during high school.

2.3 Analytic Sample

Figure 1 illustrates the growth of ES enrollment in SFUSD high schools from the 2007–08 to 2022–23 school years. Since the program's official pilot in the 2010–11 school year,

enrollment in ES has quadrupled, despite overall high school enrollment remaining steady at around 16,000 students per year. In the first year of the ES pilot, only 3.5% of all high school students were enrolled in ES. However, by the 2022–23 school year, enrollment had increased to 13.4%. Enrollment in ES peaked at 15% in the 2021–22 school year.

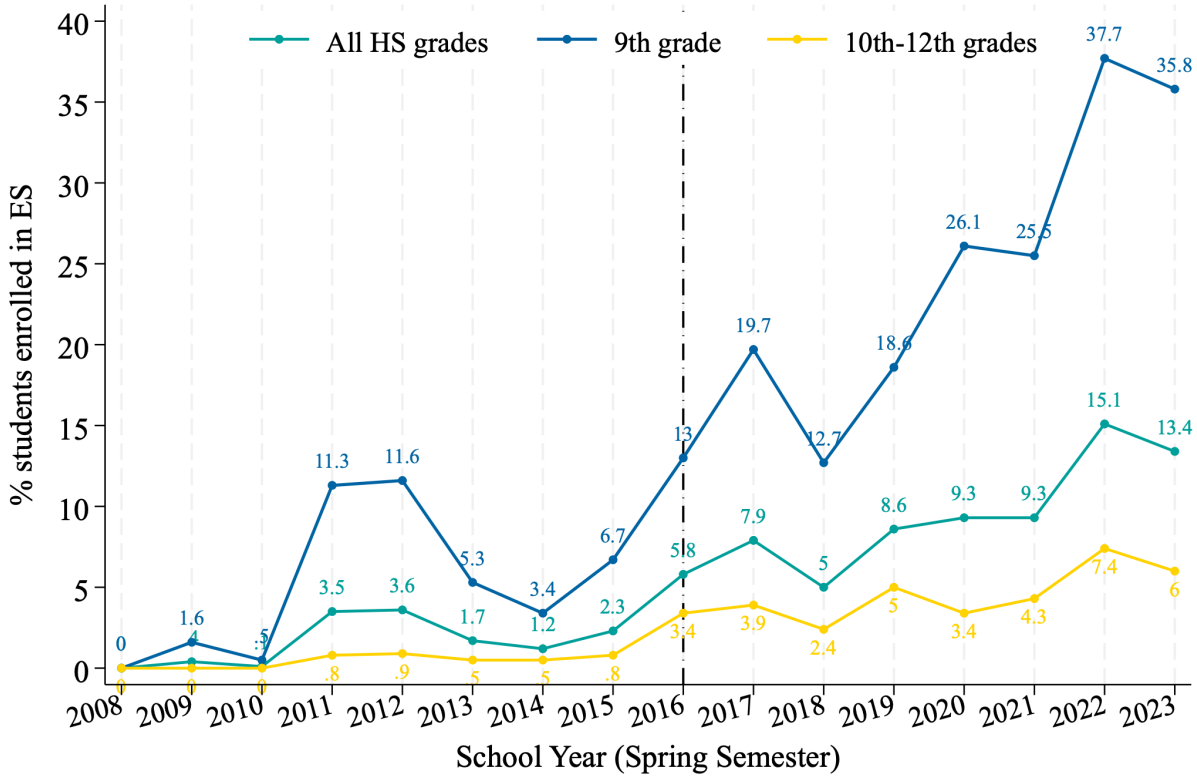

Figure 1: Proportion of high school students enrolled in ethnic studies by year.

Note. Trends in ethnic studies enrollment across school years. Sample includes all high school students who attend the SFUSD.

ES is most commonly taken in ninth grade, with nearly 36% of ninth graders enrolled in the 2022–23 school year. A smaller share—about six percent—of students take the course in Grades 10 through 12. Most students take ES for a full academic year, while fewer than 0.5% enroll for just one semester.

We constructed two analytic samples. Our main analytic sample was a balanced panel, which consisted of students observed continuously from grades 6 through 12 with complete 7-year enrollment records during our study period. It comprises 24,246 unique students—about 40% of all ninth graders during the study period in this sample—originating from 32 feeder middle schools and enrolled across 17 comprehensive and four alternative or continuation high schools, resulting in 169,722 student-year observations. Leveraging

this extensive dataset, we estimate effects for ten cohorts of sixth-grade students. For comparison, we also construct an unbalanced panel that includes students with at least two years of enrollment data, including the ninth-grade year, and have GPA data. For students who take ES, we included those who have GPA data from at least one year before and at the end of the year they enrolled in ES. This expanded sample includes 60,364 unique students, about 96% of all ninth graders during our study period. We use this larger sample to compare estimates from the balanced panel to ensure the robustness of our main results.

Table 1: Baseline Descriptive Statistics, Balanced Panel

	Overall sample		Ever enrolled in ethnic studies	Never enrolled in ethnic studies
Factor	Mean	SD	Mean	Mean
Demographics				
Female	0.490	0.50	0.486	0.491
Special education	0.120	0.33	0.137	0.117*
Emergent bilingual	0.686	0.46	0.664	0.691*
Black	0.055	0.23	0.102	0.044*
Latine	0.203	0.40	0.351	0.168*
Asian	0.591	0.49	0.410	0.634*
White	0.087	0.28	0.070	0.091*
Other	0.064	0.24	0.067	0.063
Academic performance				
Grade 8 overall GPA	3.279	0.77	2.939	3.359*
Grade 8 course failure rate	0.251	0.43	0.398	0.216*
Grade 8 GPA <2.0	0.087	0.28	0.166	0.069*
Grade 8 GPA 2.0–3.0	0.227	0.42	0.324	0.204*
Grade 8 GPA >3.0	0.686	0.46	0.511	0.727*
Ethnic studies enrollment rate				
ES in grade 9	0.519			
ES in grade 10	0.054			
ES in grade 11	0.115			
ES in grade 12	0.311			
Ever enrolled in ES	0.190			
No. of students	24,246		4,615	19,631

Note: Measures for demographic characteristics and academic performance from eighth grade for students in the balanced panel.

*$p < .05$.

In our primary (balanced panel) sample, 19% (n = 4,615) of SFUSD high school students across ten cohorts ever enrolled in ES (Table 1). In our unbalanced panel, 19.2% (n = 11,578) of SFUSD high school students ever enrolled during the same period (Appendix Table A1). Appendix Table A2 details the differences between the balanced and unbalanced samples. We use the balanced panel as our primary estimation sample as it allows us to examine dynamic effects of the program on enrolled students over time.

Table 1 provides baseline (Grade 8) descriptive statistics for the students in the balanced panel.[3] The group of SFUSD students who enroll in ES (*Ever ES*) includes higher shares of Latine students (35%), Black students (10.2%), and students who are eligible for Special Education services (13.7%) compared with students who never enroll in ES (*Never ES*). Additionally, the *Ever ES* group includes lower shares of Emergent Bilingual (66.4%), Asian (41.0%), and White students (7%), and has a lower average Grade 8 GPA (2.94) compared to students who never enroll in ES (3.36). The majority of students who take ES do so in Grade 9 (52%), while 31.1% are in Grade 12, 11.5% are in Grade 11, and 5.4% are in Grade 10.

Due to our partner district's policy on student data privacy protection, individual measures of student poverty are not available. However, the district publicly reports school level share of students classified as socioeconomically disadvantaged. Across SFUSD high schools, approximately 60% of students fall into this category, with rates of socioeconomic disadvantage at the school level ranging from 20% to 75% for the 2022–23 school year.

2.4 Identification Strategy

Student selection into ES presents a potential source of bias if students who enroll in ES differ systematically. To address this concern, we used a difference-in-differences (DID) design with two-way fixed effects (TWFE) that leveraged the longitudinal nature of our student panel data. This approach allows us to estimate within-student changes in academic performance (e.g., GPA, course failure) before and after ES enrollment while accounting for time-invariant characteristics that may influence academic trajectories (e.g., motivation, prior achievement). Prior studies have used similar student-fixed effects models to evaluate the effects of special education programs on academic performance and economic returns to earning postsecondary credentials (Schwartz et al., 2021; Meyer et al., 2022; Xu & Trimble, 2016).

Specifically, we estimate a TWFE event-study approach as follows:

$$y_{ig} = \alpha + \sum_{j=-6}^{-2} \beta_j (ESEnroll_{ig}) + \sum_{k=0}^{3} \beta_k (ESEnroll_{ig}) + \theta_i + \pi_g + \varepsilon_{ig} \quad (1)$$

where y_{ig} represents the academic outcome of interest (GPA or course failures) for student i in grade g. The key independent variable, $ESEnroll_{ig}$, is a set of indicator variables denoting the number of years before or after a student first enrolls in ES. We omit the year before enrollment ($j = -1$) and use it as the reference category to capture baseline differences between treated and untreated students. The student fixed effect, θ_i, captures idiosyncratic time-invariant individual characteristics such as race/ethnicity, gender, and other unobserved attributes (e.g., motivation). Additionally, π_g is a grade fixed effect that captures systematic differences in enrollment and outcomes across grades. The error term ε_{ig} is clustered at the school level to account for within-school correlation; with 53 schools, the number of clusters is sufficient, and results are robust to clustering at alternative levels. The number of pre- and post-enrollment observations varies by student based on the grade of first ES enrollment in high school. We examine heterogenous treatment effects by investigating whether the impact of ES enrollment varies by baseline student characteristics including eighth-grade student GPA, race/ethnicity, gender, emergent bilingual status, and special education enrollment. We also explore variation in student outcomes based on the timing of ES adoption across schools.

While the event-study specification provides a dynamic representation of the ES effect over time, we also estimate a more parsimonious within-student fixed-effects model to assess the average treatment effect over a student's secondary school career. In this alternative specification, we substitute the event-study indicators with a binary treatment variable that takes the value of one for all post-ES enrollment years. For example, a student enrolling in ES in ninth grade would carry a value of one for Grades 9 through 12. Formally, we estimate this second specification:

$$y_{ig} = \beta(ES_{ig}) + \theta_i + \pi_g + \varepsilon_{ig} \tag{2}$$

where ES_{ig} is an indicator that equals one if student i enrolled in ES in grade g or any prior grade, and zero otherwise. The student and grade fixed effects remain as specified above. Therefore, β captures the overall effect of ES participation averaged across all post-enrollment years. To examine heterogeneity, we interact ES_{ig} with key demographic variables to provide estimates of the treatment effect for each student group.

Because our TWFE analysis indicated potential pre-trend differences—particularly among ninth-grade ES takers, who exhibited declining GPA trajectories relative to non-takers prior to enrollment—we also implemented a synthetic difference-in-differences (SDID) estimator (Arkhangelsky et al., 2021; Candelaria et al., 2024). SDID addresses these concerns by constructing a weighted comparison group that closely matches ES enrollees' pre-treatment trajectory. It does so by incorporating unit- and time-specific weights that

minimize pre-treatment imbalances in outcomes, effectively relaxing the parallel trends assumption. Formally, the SDID objective function is:

$$\left(\hat{\tau}^{sdid}, \hat{\alpha}, \hat{\theta}, \hat{\pi}\right) = \underset{\tau,\alpha,\theta,\pi}{\operatorname{argmin}} \left\{ \sum_{i=1}^{N} \sum_{g=6}^{12} \left(y_{ig} - \alpha - \theta_i - \pi_g - \tau(ES_{ig})\right)^2 \hat{w}_i^{sdid} \hat{\lambda}_g^{sdid} \right\} \quad (3)$$

where $\hat{w}_i^{sdid}$ and $\hat{\lambda}_g^{sdid}$ denote the student- and grade-specific weights selected to minimize the pre-treatment differences (during middle school) between ES takers (i.e., treatment group) and non-takers (i.e., comparison students). This weighting procedure strengthens the internal validity of our estimates by ensuring that pre-treatment trajectories of treated and comparison groups are closely aligned. SDID achieves this alignment by solving a constrained optimization problem that assigns unit and time weights (Arkhangelsky et al., 2021; Clarke et al., 2024). By improving pre-treatment fit and differencing out systematic variation, SDID can reduce estimator variance and, in some cases, yield narrower confidence intervals relative to traditional DID. We estimate the SDID model using Stata's "sdid" commands and computed standard errors using a clustered bootstrap procedure (Clarke et al., 2024). Additional robustness checks, including alternate weighting specifications (i.e., substituting calendar year in place of grade, and using both year and grade), are presented in the appendix (Figure A5) and are qualitatively similar.

3 Results

3.1 Trends in GPA Across Secondary Grades

Figure 2 presents unconditional mean GPA over time for students in the balanced panel, grouped by ES enrollment. Students who eventually enroll in ES show declining GPAs during middle school, and by eighth grade, future ninth-grade ES enrollees have a GPA that is 0.5 points lower, on average, than students who never enroll. At the transition to ninth grade, students who never take ES (roughly 80% of the sample) exhibit a noticeable GPA decline, whereas those who enroll in ES in ninth grade do not, suggesting that ES enrollment may mitigate ninth-grade transition effects. By contrast, students who first enroll in ES in grades 10–12 have higher middle school GPAs than ninth-grade ES enrollees.

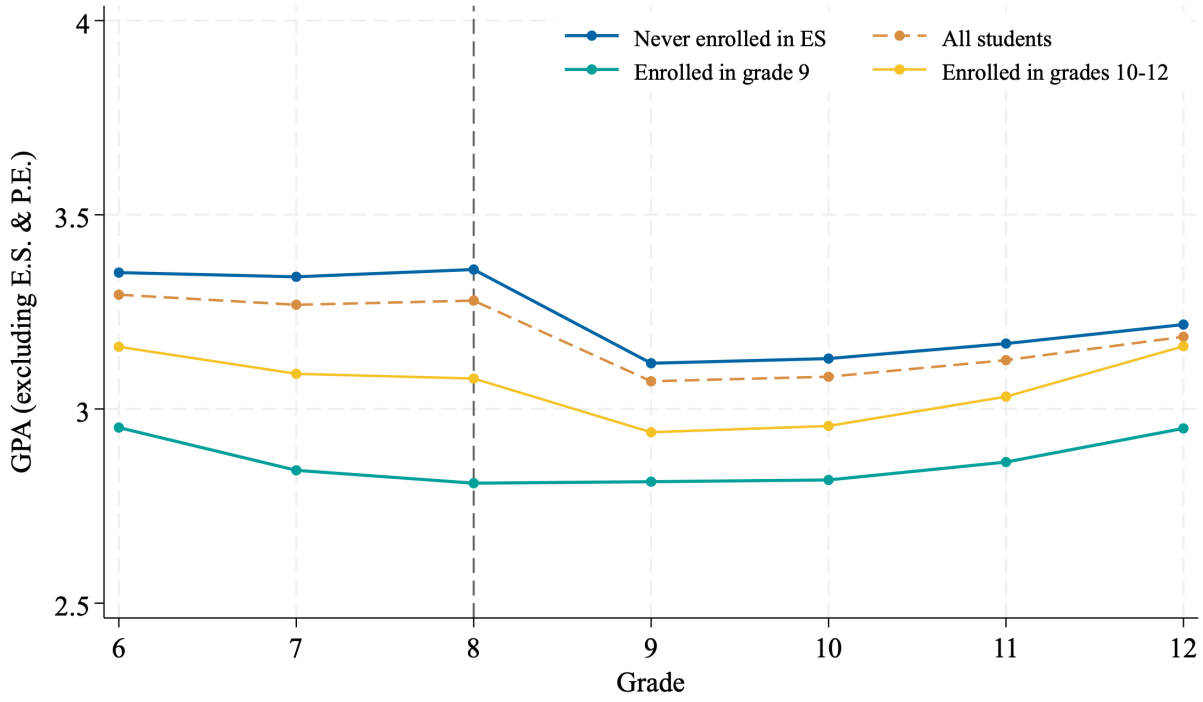

Figure 2: Grade Point Average trajectories by student enrollment in ethnic studies.

Note. Trends in mean GPA by grade levels and ethnic studies enrollment based on a balanced panel of students attending the SFUSD from grades 6 through 12.

These descriptive comparisons underscore the selection into ES courses by prior GPA as well as other student characteristics (Appendix Table A2). This selection into ES courses likely biases the observed GPA differences in Figure 2. To address this concern, our main analyses rely on a student fixed effects model, which accounts for time-invariant observed and unobserved traits and allows for stronger causal inference regarding the impact of ES enrollment.

3.2 Main Estimates

Next, we explore the effects of ES enrollment on annual GPA and course failures using a student fixed-effects event study design. The x-axis in our event study plots (Figures 3–6) represents grades relative to ES enrollment. The point estimate for year 0 represents the effect for the grade level in which students enroll in ES relative to students who never enroll. Accordingly, the vertical lines represent confidence intervals, using robust standard errors clustered at the school level.

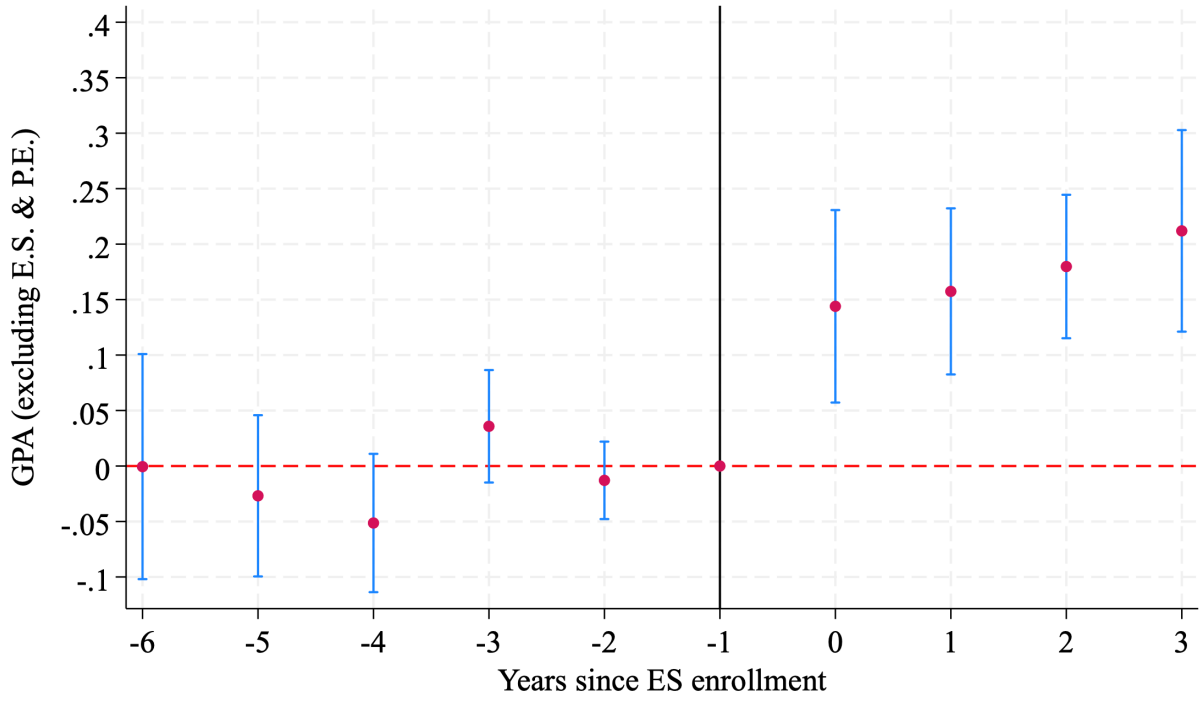

Figure 3: Effects of ethnic studies enrollment on overall GPA.

Note. Event-study estimates of ethnic studies enrollment in high school (see Equation 1) based on a balanced panel of students attending the SFUSD from grades 6 through 12.

Figures 3 and 4 pool students who first enrolled in ES between grades 9 and 12, which produces varying lengths of pre- and post-enrollment periods. For example, ninth-grade enrollees contribute up to three pre- and four post-enrollment years, while twelfth-grade enrollees contribute six pre- and only one post-enrollment period. As a result, estimates at the far ends of the event-study window (e.g., year -6 or year $+3$) are identified from a narrower subset of students. Across the pre-enrollment years, coefficients are small and statistically indistinguishable from zero, providing supporting evidence for the parallel trends assumption that, absent ES enrollment, academic trajectories would have evolved similarly for enrollees and non-enrollees.

In Figure 3, estimates to the right of the vertical line at period -1 are positive with confidence intervals that exclude zero, suggesting statistically significant gains in overall GPA following ES enrollment. By the end of the year immediately after ES enrollment, GPA increases by about 0.15 grade points relative to students who never enroll, and this improvement persists through high school, including three years after initial enrollment. On average, GPA rises from 3.3 to 3.45 in the first year following ES enrollment, corresponding to an effect size of approximately 0.21 standard deviations.

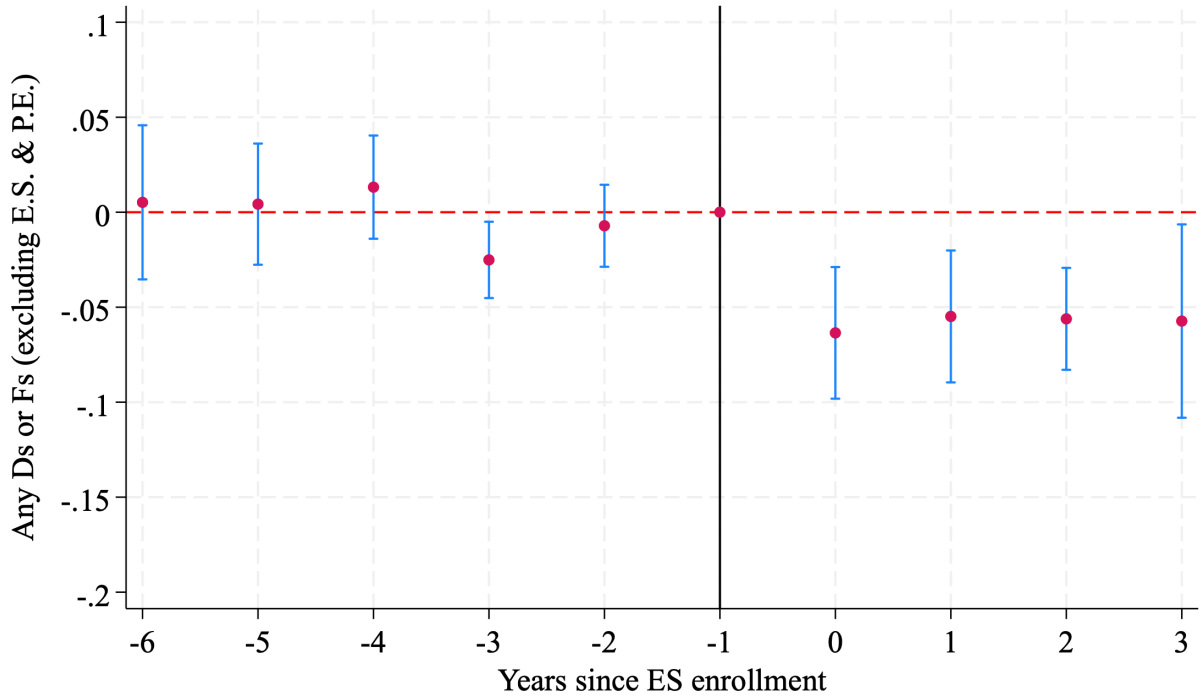

Figure 4: Effects of ethnic studies enrollment on course failures.

Note. Event-study estimates of ethnic studies enrollment in high school (see Equation 1) based on a balanced panel of students attending the SFUSD from grades 6 through 12. Course failure is defined as receiving a D or F during the school year.

Figure 4 shows that ES enrollment also reduces course failures. By the end of the year immediately after enrollment, the likelihood of failing any course decreases by 6.6 percentage points, a 31% reduction relative to the baseline failure rate of 21% (0.17 SD). This effect persists throughout high school, even three years after enrollment, providing compelling evidence that ES improves students' likelihood of passing their classes.

Given that ES is most often taken in ninth grade, and enrollment outside of this typical timing may introduce selection bias, we also estimate the event-study models limited to ninth grade enrollees. This restriction also ensures consistency in the number of pre- and post-enrollment periods in Figures 5 and 6. Figure 5a shows that ninth grade ES enrollment increases GPA by nearly 0.25 grade points in the year of enrollment, with effects persisting through subsequent high school years. Similarly, Figure 6a shows that course failure drops by 10 percentage points the year of enrollment—a 34% reduction relative to the mean failure rate of 30%.

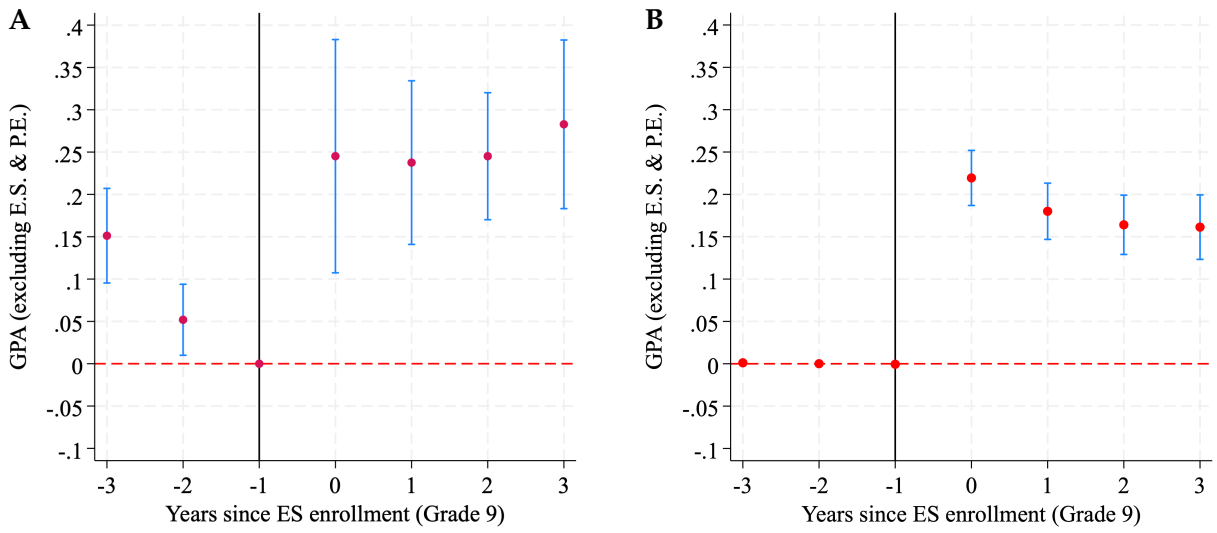

Figure 5: Effects of ethnic studies enrollment in grade 9 on grade-point average: (A) two-way fixed-effects model; (B) synthetic difference-in-differences model.

Note. Part A shows event-study estimates of grade 9 ethnic studies enrollment effects (Equation 1) based on a balanced student panel. Part B shows synthetic difference-in-differences event-study estimates (Equation 3)

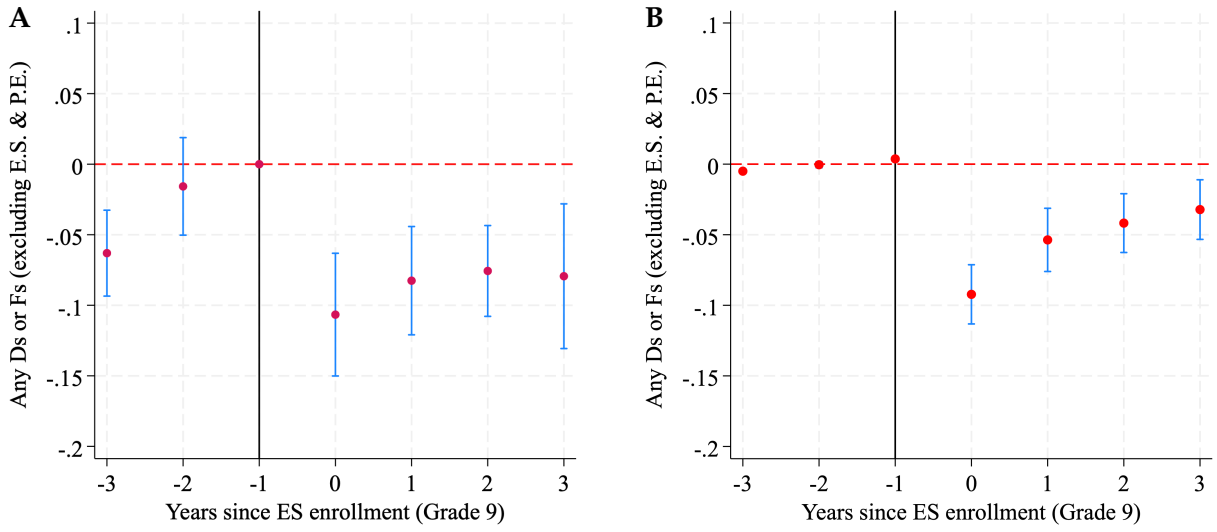

Figure 6: Effects of ethnic studies enrollment in grade 9 on course failure: (A) two-way fixed-effects model; (B) synthetic difference-in-differences model.

Note. Part A shows event-study estimates of grade 9 ethnic studies enrollment effects (Equation 1) based on a balanced student panel. Part B shows synthetic difference-in-differences event-study estimates (Equation 3).

Although the results for ninth grade enrollees indicate improvements in GPA and reductions in course failure, both figures show a statistically significant trend in the outcome prior to enrollment in ES. Pre-existing trends are often seen as problematic because they

can suggest that post-treatment effects merely reflect prior trajectories, potentially biasing estimates. In our case, the reversal of pre-treatment trends in the post-treatment estimates suggests that the estimates likely represent a lower-bound effect of ES enrollment. The pre-enrollment downward trend may also reflect program dynamics, as teachers and guidance counselors may recommend ES to students with declining academic performance. Conversely, it is also plausible that high performing students with other curricular interests (e.g., music, language, or AP/Honors courses) may defer or forego ES enrollment altogether.

We use a third approach, the synthetic difference-in-differences (SDID) method, to test the robustness of our main estimates and correct for pre-trend violations. Results are shown in Figures 5b and 6b. All pre-enrollment estimates are centered on zero following the weighting procedure. Figure 5b shows that ninth grade ES enrollment increases GPA by about 0.2 points. Estimates for the three subsequent years remain positive and statistically significant, with modest attenuation over time. SDID estimated effects are slightly smaller than the TWFE estimates in Figure 5a but remain similar in sign and overall magnitude. Similarly, Figure 6b shows comparable results for course failure. SDID estimates suggest slightly smaller reductions in course failure and modest attenuation over time; however, both approaches demonstrate a positive effect on the academic trajectories of ninth-grade ES enrollees.[4]

We further examine the pooled effect of ES on GPA and course failure across the high school years using a TWFE specification (Eq. 2). Each cell in Table 2 reports estimates from a separate regression, with the first row representing estimates for all students who took the course in any high school grade. Subsequent rows show estimates from regressions estimated separately for student subgroups defined by students' prior academic performance, demographic characteristics, or academic program participation.

As shown in the first row of Table 2, TWFE estimates indicate that ES enrollment in any high school grade improves academic performance. On average, GPA increases by 0.17 grade points (0.24 SD) relative to a Grade 8 GPA mean of 3.3 for students who never enroll. Among our sample of ES takers, this translates to an additional 400 students having GPAs that meet or exceed the University of California (UC) GPA eligibility threshold of 3.0 (a 15% increase).[5] Course failures decline by 5.6 percentage points (0.14 SD) relative to a mean failure rate of 21%, representing a 27% reduction, a particularly meaningful improvement for lower-performing students most at risk of falling behind or not graduating.

These pooled effects are comparable in magnitude to the dynamic estimates presented in Figures 3–6 and underscore the practical significance of ES enrollment.

3.3 Treatment Effect Heterogeneity

Our primary treatment effect estimates may mask important differences across student subgroups. The impact of ES course enrollment could vary by demographic characteristics and academic preparation, several of which have not been explored in prior research. Previous studies using regression discontinuity designs focused only on students near the eligibility threshold (eighth-grade GPA of 2.0), limiting evidence for higher GPA students (Bonilla et al., 2021; Dee & Penner, 2017). We extend this work by estimating effects across levels of prior academic achievement, racial/ethnic background, gender, and among students in special education and emergent bilingual programs. Each coefficient in Table 2 reports estimates from separate regressions for each subgroup. We formally test for differences in ES impact across subgroups using interaction terms (Appendix Table A4).

As shown in Table 2, students across the grade 8 GPA distribution experience positive, statistically significant GPA gains following ES enrollment, though the magnitude varies by prior academic performance. Students with the lowest eighth-grade GPA (<2.0) benefit most, with a 0.17-point increase. Students with GPAs between 2.0–3.0 and above 3.0 show gains of 0.12 and 0.11, respectively. Gains for the lowest (<2.0) and middle (2.0–3.0) GPA groups are larger and statistically significant using the highest (>3.0) as the reference group (see Appendix Table A4). Lower GPA groups (<2.0 and 2.0–3.0) also see the greatest reductions in course failure rates, as higher-performing students are less likely to receive Ds or Fs initially. The lower GPA groups experience larger and statistically significant reductions in failure rates compared to those with the highest GPA (>3.0). Notably, even students with the highest grade 8 GPAs demonstrate a positive and statistically significant GPA gain of 0.12 (Table 2).

We also find positive effects across gender and racial/ethnic subgroups. Academic gains are observed for both male and female students, with larger impacts for males. Male students gain 0.19 in GPA and reduce course failures by 0.07, while female students gain 0.15 in GPA and reduce failures by 0.04; these gender differences are statistically significant (Appendix Table A4). All racial and ethnic groups show improvements in GPA and reductions in course failures after ES enrollment. Black and Latine students have the largest gains, with GPA increases of 0.23 and 0.25 points, and reductions in course failures of 0.10 and 0.12, respectively. Black students show significantly larger gains than Asian students[6] (the reference group, Appendix Table A4), while Latine students' gains are not significantly different. Across all groups, ES enrollment produces statistically significant improvements in GPA and course failures, with no evidence of negative effects. Although ES courses center the experiences of communities of color, students from all racial and ethnic backgrounds benefit.

Table 2: Effect of Ethnic Studies on GPA and Course Failures by Student Characteristics

	GPA	Any Ds or Fs
Overall (N = 24,210)	0.174**	−0.056**
	(0.040)	(0.016)
Grade 8 GPA Categories		
GPA below 2.0 (N = 1,826)	0.167**	−0.049**
	(0.032)	(0.016)
GPA 2.0–3.0 (N = 5,343)	0.122**	−0.081**
	(0.044)	(0.023)
GPA above 3.0 (N = 17,041)	0.117**	−0.013
	(0.028)	(0.011)
Gender		
Male (N = 12,345)	0.192**	−0.068**
	(0.044)	(0.017)
Female (N = 11,865)	0.151**	−0.042**
	(0.035)	(0.015)
Race/Ethnicity		
Black (N = 1,335)	0.228**	−0.104**
	(0.042)	(0.021)
Latine (N = 4,904)	0.248**	−0.117**
	(0.046)	(0.023)
Asian (N = 14,329)	0.124**	−0.029*
	(0.035)	(0.014)
White (N = 2,098)	0.188**	−0.065**
	(0.041)	(0.016)
Other (N = 1,544)	0.225**	−0.063**
	(0.055)	(0.023)
Special Education		
SPED (N = 2,734)	0.185**	−0.109**
	(0.041)	(0.019)
Not SPED (N = 21,476)	0.170**	−0.049**
	(0.040)	(0.016)
Emergent Bilingual		
EB (N = 16,589)	0.163**	−0.051**
	(0.040)	(0.017)
Not EB (N = 7,621)	0.194**	−0.066**
	(0.043)	(0.016)

Note: Point estimates are from within-student two-way fixed-effects models of ethnic studies enrollment in high school (see Equation 2). Each estimate is from a separate regression using the balanced panel of students in SFUSD. Robust standard errors clustered at the school level are in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.

Table 2 shows that ES benefits students regardless of Special Education or Emergent Bilingual program participation. Gains are larger for students receiving Special Education services (0.19 vs. 0.17 for GPA; 0.11 vs. 0.05 for failures), and these differences are statistically significant (Appendix Table A4). Across core subjects, ES enrollment increases GPA in all areas, with the largest improvements in math (0.27 points) and science (0.20 points) (see Table 3). These results suggest that ES supports academic outcomes beyond the course itself.

Table 3: Effect of Ethnic Studies on GPA by Subject Area

	(1) Overall GPA	(2) Core Subjects	(3) English	(4) Math	(5) Science	(6) Social Science
ES enrollment	0.174**	0.186**	0.154**	0.266**	0.199**	0.199**
	(0.040)	(0.039)	(0.035)	(0.049)	(0.049)	(0.049)
No. of students	24,246	24,246	24,246	24,246	24,246	24,246

Note: Point estimates are from within-student two-way fixed effects models of ES enrollment on subject-specific GPA (see Equation 2). Column 2 shows GPA for core subjects: English, Math, Science, and Social Science. Robust standard errors clustered at the school level are in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.

3.4 Robustness

Given the consistent findings across diverse student subgroups, we next examine robustness beyond the main specifications. A potential threat to identification is the exclusion of students not continuously enrolled in the district from Grades 6–12, which could bias estimates through district attrition. To address this, we re-estimate models with the unbalanced sample and find similar results. Appendix Figure A1 shows GPA effects ranging from 0.14 to 0.22 points in the year following ES enrollment, while Appendix Figure A2 presents comparable findings showing reduction in course failures.

Another potential threat is bias from unequal attrition between ES enrollees and non-enrollees, which we observe to some extent, varying by GPA. To assess its impact, we implement several imputation strategies for missing GPA values: (1) replace with zero, (2) with 4.0, and (3) imputing the mean of a student's two most recent available years (Table 4). The "extreme imputation" approaches in columns 1 and 2 have been used in prior research to address missing high school outcomes (Gershenson et al., 2022). We also re-estimate our

main model with our unbalanced panel. Across all approaches, ES enrollment continues to increase GPA, though the effect sizes vary somewhat by prior academic performance.

An important alternative explanation for our findings is that ES may attract teachers whose overall quality—not just the course itself—drives student success across subjects. Interviews with ES educators and district leaders indicate that while many teachers are recruited for their ES content expertise, others have varied backgrounds and interest in the subject (Penner et al., 2025). Thus, ES teachers may be selected for qualities that persist across courses.

Most ES teachers also teach additional non-ES subjects, most commonly World History, U.S. History, Economics, English, Algebra I, and College/Career Readiness, with other courses taught less frequently. To test whether ES teachers produce similar gains in other subjects, we conduct a falsification test on these six non-ES courses. Using an event-study design analogous to our main approach, we treated the first assignment to an ES teacher in a non-ES course as the "treatment," comparing students who had never been taught by an ES teacher to those who were, excluding students who took ES with the same teacher. Results (Appendix Figure A3) show no significant changes in GPA after this first non-ES course with an ES teacher. This suggests that the positive effects observed in ES courses are attributable to the course itself or the course content as enacted by these teachers, rather than the teacher alone.

An additional alternative explanation is that taking the ES course might replace a more challenging or particularly relevant class, potentially boosting their observed GPA. We examine these counterfactual courses and formally test changes in enrollment associated with ES in Appendix Tables A5 and A6. We find that ninth-grade students who take ES primarily replace World History while postponing courses such as World Languages, Visual and Performing Arts, and other electives.

They typically take these courses in 10th or 11th grade. There is no evidence that ES students reduce the total number of courses in core subjects such as math, science, English, or social studies. Although they take fewer World Languages courses overall, they still meet graduation requirements. ES students are equally as likely as their peers to fulfill required courses for graduation (Appendix Table A6, Panel A), and we observe no significant decline in enrollment in advanced courses, such as Honors or AP classes (Appendix Table A6).

Table 4: Effect of Ethnic Studies Enrollment on GPA, Various Imputation Methods for Missing GPA Values

	(1) Balanced Panel	(2) Imputed GPA: 0	(3) Imputed GPA: 4.0	(4) Imputed GPA: Mean	(5) Unbalanced Panel
Overall	0.174**	0.130**	0.211**	0.160**	0.146**
	(0.040)	(0.031)	(0.042)	(0.034)	(0.036)
No. of students	24,246	27,748	27,748	27,748	36,010
Grade 8 GPA Categories					
GPA below 2.0	0.167**	0.214**	0.121**	0.221**	0.250**
	(0.032)	(0.036)	(0.033)	(0.036)	(0.038)
GPA 2.0–3.0	0.122**	0.163**	0.125**	0.158**	0.154**
	(0.044)	(0.042)	(0.039)	(0.042)	(0.048)
GPA above 3.0	0.117**	0.103**	0.121**	0.118**	0.096**
	(0.028)	(0.024)	(0.029)	(0.027)	(0.026)

Note: Point estimates are from within-student two-way fixed effects models of ES enrollment on GPA (Equation 2). Columns 2–4 use different imputation methods for missing GPAs: replacing with 0, 4.0, or the mean of the student's two most recent GPAs. Robust standard errors clustered at the school level are in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.

While ES enrollment shifts the timing of some courses, school and district leaders report that most schools have expanded their schedule from six to seven periods to accommodate ES alongside other requirements. This scheduling change appears to have mitigated constraints on students' access to other courses. Taken together, the falsification tests, course substitution analysis, and district implementation suggest that academic impacts are unlikely to be explained by teacher spillovers or displaced coursework.

4 Discussion

This study provides the first districtwide causal evidence of ES effectiveness, reaching thousands of students. Using longitudinal student-level data and a student fixed-effects design, we find consistent improvements in academic performance measured by GPA and course failure across multiple robustness checks, including attrition adjustments, sample restrictions, and falsification tests. Unlike many interventions that show limited effects for older students (Cullen et al., 2013; Heckman & Kautz, 2012), ES demonstrates sustained benefits at scale for high school students. Importantly, ES enrollment produces a 15% increase in students meeting the 3.0 GPA threshold for UC admission eligibility—equivalent to 400 additional students in our sample. Moreover, our estimated effect size of 0.24 SD from ES enrollment exceeds the average pooled effect size of large-scale tutoring programs serving 400 to 999 students (0.21 SD) and those serving more than 1,000 students (0.16 SD) as reported by Kraft et al. (2024). Furthermore, following Kraft's (2020) framework, the effect sizes we observe qualify as large for education interventions.

Notably, our study provides new, broader evidence that benefits of ES extend across all student groups—regardless of race, ethnicity, academic preparation, gender, special education status, or emergent bilingual status. Effects are strongest for Black and Latine students, students in Special Education, those with lower prior GPAs, and male students. These results show that districtwide ES implementation can drive substantial academic gains across a diverse student population. Previous studies (e.g., Cabrera et al., 2014; Dee & Penner, 2017) found strong effects in small pilot settings, typically among lower-achieving or specific racial/ethnic groups. Our observed effect on grades is smaller than the treatment-on-the-treated pilot estimate (1.4 GPA points) from Dee & Penner (2017), but more closely aligns with their intent-to-treat estimate (0.27 GPA points). Importantly, our findings show that districtwide implementation delivers benefits for both higher- and lower-achieving students, even in the presence of possible ceiling effects.

These results reinforce the role of ES in improving educational outcomes across diverse student populations. While we cannot pinpoint a single mechanism, qualitative evidence

suggests the program maintained key hallmarks of ES pedagogy and curriculum throughout the scale-up (Penner et al., 2025). The course provides students opportunities to affirm their identities, learn about other cultures, and build relationships with peers, community, and teachers. SFUSD's locally initiated curriculum also evolved to reflect student demographics and classroom needs, consistent with research showing that successful replication depends on how practical knowledge is developed and applied (Peurach & Glazer, 2012).

Beyond documenting academic gains, our findings also point to the importance of understanding why ES matters. Theoretical perspectives help explain how ES content and pedagogy support students' development and resilience, particularly as they navigate school transitions and experiences of discrimination. ES courses are well-positioned to engage students during this critical developmental stage, as life-course theory identifies adolescence as a key period for identity formation and civic development (Erikson, 1968). They foster critical consciousness—a combination of awareness of structural inequality, reflection on its causes and consequences, and belief in one's ability to effect change (Diemer et al., 2016; Freire, 2014; Pinedo et al., 2025)—by encouraging students to examine injustice, connect personal and community experiences, and learn about civic action. ES also supports ethnic-racial identity development, through which students make meaning of their racial and cultural group membership, fostering belonging, motivation, and purpose in school (Umaña-Taylor et al., 2014; Rivas-Drake et al., 2014). In sum, ES leverages the developmental opportunities of adolescence while providing tools for critical analysis and academic engagement, thereby strengthening both academic and socioemotional outcomes.

Grounding ES in these theoretical traditions highlights both its educational value—supporting identity, equity, and critical engagement—and its vulnerability in today's politically contested landscape. Public education is increasingly shaped by debates over diversity, equity, and inclusion (DEI), with anti-DEI policies and efforts to censor curricula on race and inequality spreading across states. Decisions about whether, when, and how ES courses are offered often hinge on district politics, resource allocation, and community advocacy. In our partner district, for example, teachers and students repeatedly mobilized to expand ES opportunities, facing organized opposition throughout the scale-up process. These dynamics underscore that sustaining ES is not solely an academic or pedagogical challenge but also a political and structural one.

Despite these challenges, our study demonstrates that ES delivers measurable academic benefits and remains effective even when scaled districtwide. In the context of 2025, ES courses represent a vital tool for advancing educational equity. Affirming students' identities and fostering culturally responsive schooling are equity practices that challenge structural exclusion (Neal et al., 2023). Our findings extend this tradition by showing

that ES improves academic outcomes even at scale, strengthening the case for continued investment in culturally responsive education. In this sense, ES coursework not only supports individual achievement but also provides a systemic, scalable strategy for promoting equity across diverse school contexts and an entire school system.

4.1 Limitations

These findings suggest that ES can produce substantial academic gains as it scales. However, despite providing one of the most generalizable evaluations of ES to date, our study has important limitations. While our sample is larger and includes a broader range of students than previous studies, it remains limited to a single district context where the pilot program was initially successful, and to students who either selected the course or were placed into it by a counselor. Moreover, our study measures the program's impact during a period of expansion, rather than under a graduation mandate; although in some schools and years, enrollment was universal or nearly so. Importantly, the scaled-up course in SFUSD was primarily yearlong, whereas California's upcoming graduation requirement mandates only one-semester ES course. Thus, it remains uncertain whether similar effects would occur under a mandated, one-semester requirement in this or other districts. Future research should evaluate ES in other districts and identify supports necessary to sustain its impact under statewide implementation.

It is also important to consider differential effects by prior achievement. Students with higher eighth-grade GPAs show smaller gains than lower-achieving peers. While this may suggest more limited benefits for higher-achieving students, it could also reflect ceiling effects, as these students have less room for improvement.

Finally, academic outcomes like GPA and course failures are likely secondary effects of taking an ES course. Students in ES and other courses that embed culturally responsive pedagogy may first experience affirmation of their cultural and ethnic identity, critical consciousness, and civic engagement before seeing measurable academic gains (Seider & Graves, 2020; Nelsen, 2021). Our current work cannot assess these first-order outcomes, as they are typically not included in administrative data. Future research should measure such psychological and developmental processes to better understand the mechanisms through which ES influences academic outcomes.

4.2 Conclusion

Our study provides large-scale evidence that Ethnic Studies can improve academic outcomes and reduce disparities when implemented with fidelity and support. Using a

difference-in-differences design, we find that enrollment in ES courses increases GPA and reduces course failure rates, with especially strong effects for academically vulnerable students, Black and Latine students, male students, and those with individualized education plans. These benefits extend across the entire student population, suggesting that ES can serve as a broadly impactful intervention while also advancing equity.

At the same time, we are cautious about generalizing beyond the studied district, an early adopter that invested significant resources in staffing, professional development, and curriculum development. These conditions likely contributed to the success of the program and may not yet exist in all districts as California moves toward broader implementation. Ensuring that the expansion of ES is community-driven, adequately resourced, and research-informed will be critical for realizing its full potential.

Taken together, our findings highlight both the potential and the responsibility of scaling Ethnic Studies. At a moment when debates about race, identity, and curriculum have intensified, our results show that ES coursework can foster belonging, engagement, and academic success across diverse student groups. Far from being a source of division, ES represents a powerful tool for equity and learning, and continued investment in thoughtful, community- and research-based expansion offers a promising path forward for districts in California and beyond.

Notes

[1]We currently lack indicators of school engagement. We cannot examine high school graduation and other non-dynamic outcomes of interest with our current identification strategy.

[2]The analytic sample includes a small share of students (approximately 3%) who took a 6-week middle school Ethnic Studies elective, which differed substantially in depth and content from the year-long high school course.

[3]We use the most recent pre-high school data as the baseline year, typically eighth grade, since it precedes their first opportunity to take ES. If eighth grade data are unavailable, we use information from seventh or sixth grade.

[4]We also implement an approach using inverse-propensity score weights to condition on pre-treatment covariates correlated with selection into treatment (Roth et al., 2023). Results, shown in Appendix Figure A6, are largely consistent with the TWFE and SDID estimates. As Callaway & Sant'Anna (2021) note, in the case of the grade-9 treatment comparison, differences in observed characteristics create non-parallel pre-trends, meaning unconditional DiD strategies may not recover sensible causal parameters (Heckman et al., 1997, 1998; Abadie, 2005). We thus use inverse propensity score weights to balance the observations by their conditional treatment probability using observable baseline characteristics and estimating the effect of ES as a weighted difference in means. Propensity score approaches minimize the importance of cases outside of the area of common support, so that only cases that could plausibly be in either treatment or control influence estimates.

[5]Models estimated using the sample of 9th grade ES takers suggest the increase is even larger, with up to 18% increase in students meeting the UC minimum GPA threshold.

[6]Asian students are the reference group both because they are the largest racial/ethnic subgroup in the district and to de-center White students as the norm. For comparability, alternate results are provided in the appendix.

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A Appendix Tables

Table A1: Baseline Descriptive Statistics, Unbalanced Panel

	Overall		*Ever ES*	*Never ES*
	Mean	Std. Dev.	Mean	Mean
Demographics				
Female	0.483	(0.50)	0.481	0.483**
Special Education	0.122	(0.33)	0.125	0.121
Emergent Bilingual	0.648	(0.48)	0.646	0.649
Black	0.081	(0.27)	0.114	0.073
Latine	0.253	(0.43)	0.413	0.215**
Asian	0.501	(0.50)	0.314	0.545**
White	0.093	(0.29)	0.077	0.097**
Other	0.073	(0.26)	0.083	0.070**
Academic Performance				
Grade 8 Overall GPA	3.097	(0.90)	2.830	3.163**
Grade 8 Course Failure Rate	0.340	(0.47)	0.418	0.321**
Grade 8 GPA below 2.0	0.149	(0.36)	0.218	0.132**
Grade 8 GPA 2.0–3.0	0.246	(0.43)	0.307	0.230**
Grade 8 GPA above 3.0	0.605	(0.49)	0.475	0.637**
Ethnic Studies Enrollment				
ES in Grade 9			0.673	
ES in Grade 10			0.064	
ES in Grade 11			0.084	
ES in Grade 12			0.179	
Ever Enrolled in ES	0.192			
No. of students	60,364		11,591	48,773

Note: Measures for demographic characteristics and 8th grade academic performance for students in the unbalanced panel. Stars indicate the statistical significance of the difference between *Ever ES* and *Never ES* means.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.

Table A2: Baseline Descriptive Statistics, Comparing Balanced and Unbalanced Panels

	Balanced Panel		Unbalanced Panel Only†		Difference (mean)
	Mean	Std. Dev.	Mean	Std. Dev.	
Demographics					
Female	0.490	(0.50)	0.478	(0.50)	−0.012**
Special Education	0.120	(0.33)	0.123	(0.33)	0.003**
Emergent Bilingual	0.686	(0.46)	0.623	(0.48)	−0.063**
Black	0.055	(0.23)	0.098	(0.30)	0.042*
Latine	0.203	(0.40)	0.286	(0.45)	0.083
Asian	0.591	(0.49)	0.440	(0.50)	−0.152**
White	0.087	(0.28)	0.098	(0.30)	0.011*
Other	0.064	(0.24)	0.079	(0.27)	0.015*
Academic Performance					
Grade 8 Overall GPA	3.279	(0.77)	2.897	(0.98)	−0.382**
Grade 8 Course Failure Rate	0.251	(0.43)	0.400	(0.49)	0.149
Grade 8 GPA below 2.0	0.087	(0.28)	0.215	(0.41)	0.128
Grade 8 GPA 2.0–3.0	0.227	(0.42)	0.265	(0.44)	0.038*
Grade 8 GPA above 3.0	0.686	(0.46)	0.519	(0.50)	−0.166**
Ethnic Studies Enrollment					
Ever Enrolled in ES	0.190	(0.39)	0.193	(0.39)	0.003**
No. of students	24,246		36,118		

Note: Measures for demographic characteristics and 8th grade academic performance for students in the balanced and unbalanced panels. †To test sample differences, columns 3 and 4 present statistics for students only in the unbalanced panel, excluding those in both samples. Robust standard errors clustered at the school level are in parentheses.

$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.

Table A3: Effect of Ethnic Studies Enrollment by Student Characteristics, Unbalanced Panel

	ES Enrollment in Grade 9		ES Enrollment in Grades 9–12	
	GPA	Any Ds or Fs	GPA	Any Ds or Fs
Overall	0.172**	−0.059**	0.144**	−0.048**
	(0.044)	(0.015)	(0.037)	(0.015)
Grade 8 GPA Categories				
GPA below 2.0	0.223**	−0.053*	0.232**	−0.057**
	(0.045)	(0.019)	(0.040)	(0.012)
GPA 2.0–3.0	0.136*	−0.069**	0.140**	−0.066**
	(0.045)	(0.023)	(0.045)	(0.021)
GPA 3.0–4.0	0.122**	−0.019	0.099**	−0.009
	(0.038)	(0.013)	(0.029)	(0.012)
Gender				
Male	0.191**	−0.079**	0.164**	−0.058**
	(0.048)	(0.017)	(0.041)	(0.016)
Female	0.144**	−0.031*	0.122**	−0.036*
	(0.042)	(0.015)	(0.035)	(0.015)
Race/Ethnicity				
Black	0.240**	−0.100**	0.222**	−0.094**
	(0.043)	(0.022)	(0.037)	(0.017)
Latine	0.267**	−0.126**	0.246**	−0.097**
	(0.053)	(0.025)	(0.047)	(0.019)
Asian	0.152**	−0.045**	0.112**	−0.024*
	(0.042)	(0.013)	(0.029)	(0.011)
White	0.248**	−0.081**	0.144**	−0.042**
	(0.044)	(0.018)	(0.041)	(0.015)
Other	0.233**	−0.047	0.157**	−0.052*
	(0.066)	(0.028)	(0.049)	(0.022)
Special Education				
SPED	0.221**	−0.114**	0.230**	−0.106**
	(0.039)	(0.021)	(0.036)	(0.015)
Not SPED	0.173**	−0.051**	0.140**	−0.041**
	(0.047)	(0.015)	(0.039)	(0.015)
Emergent Bilingual				
EB	0.174**	−0.058**	0.140**	−0.041*
	(0.046)	(0.017)	(0.038)	(0.016)
Not EB	0.200**	−0.062**	0.180**	−0.065**
	(0.046)	(0.016)	(0.043)	(0.016)

Note: Point estimates are from within-student two-way fixed-effects models of ethnic studies enrollment (see Equation 2). Each estimate uses a distinct specification and sample, using the unbalanced panel of students in SFUSD. Robust standard errors clustered at the school level are in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.

Table A4: Effects of ES Enrollment on GPA and Course Failure, Interactions

	GPA						Course Failure					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ES	0.059*	0.124**	0.136**	0.168**	0.159**	0.191**	0.001	−0.036*	−0.042**	−0.074**	−0.051**	−0.068**
	(0.029)	(0.035)	(0.037)	(0.041)	(0.039)	(0.044)	(0.010)	(0.015)	(0.014)	(0.017)	(0.015)	(0.017)
ES × Gr. 8 GPA <2.0	0.374**						−0.157**					
	(0.040)						(0.014)					
ES × Gr. 8 GPA 2.0–3.0	0.144**						−0.088**					
	(0.033)						(0.021)					
ES × Male		0.095**						−0.038**				
		(0.017)						(0.008)				
ES × Black			0.108**	0.076+					−0.039+	−0.007		
			(0.036)	(0.045)					(0.022)	(0.023)		
ES × Latine			0.051	0.019					−0.016	0.016		
			(0.036)	(0.044)					(0.022)	(0.024)		
ES × Asian			0.000	−0.032					0.000	0.032+		
			(.)	(0.033)					(.)	(0.017)		
ES × White			0.032	0.000					−0.032+	0.000		
			(0.033)	(.)					(0.017)	(.)		
ES × Other			0.081*	0.050					−0.025	0.007		
			(0.035)	(0.050)					(0.022)	(0.026)		
ES × Special Ed.					0.111**						−0.042*	
					(0.037)						(0.017)	
ES × Emergent Bil.						−0.026						0.017
						(0.023)						(0.012)

Note: Point estimates are from within-student two-way fixed-effects models of ES enrollment on GPA (see Equation 2), including interaction terms, using the balanced panel. Robust standard errors are clustered at the school level. Asian students are the reference group for race/ethnicity categories in columns (3) and (9); White students are the reference in columns (4) and (10); students with Grade 8 GPA >3 are the reference for GPA categories in columns (1) and (7). A joint hypothesis test for Grade 8 GPA categories (columns 1 and 7) was highly significant ($p < 0.001$). A similar test for race/ethnicity categories is significant for GPA (columns 3 and 4, $p < 0.05$), but not for Course Failure (columns 9 and 10).
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.

Table A5: Course Substitution and Ethnic Studies Enrollment, by Subject Area and Grade Level

	(1) Total Courses	(2) Math	(3) Lab Science	(4) English	(5) World Languages	(6) Visual & Perf. Arts	(7) UC Approved Electives	(8) Non-UC Electives
9th grade	0.081	0.052	−0.076	−0.083	−0.843**	−0.498*	1.678**	−0.191*
	(0.451)	(0.451)	(0.451)	(0.451)	(0.451)	(0.451)	(0.451)	(0.451)
10th grade	0.636	0.010	0.040	0.048	0.124	0.116	−0.300	−0.101
	(0.427)	(0.062)	(0.061)	(0.048)	(0.110)	(0.177)	(0.343)	(0.066)
11th grade	0.620+	−0.045	−0.041	−0.030	0.185+	0.459**	−0.329	0.033
	(0.314)	(0.070)	(0.062)	(0.052)	(0.109)	(0.138)	(0.303)	(0.108)
12th grade	−0.102	−0.075	−0.178	0.110	0.142	0.183	−0.652*	−0.041
	(0.481)	(0.073)	(0.138)	(0.083)	(0.091)	(0.167)	(0.293)	(0.070)
Grades 9–12	0.416*	−0.005	−0.075	0.000	−0.236**	0.002	0.371**	−0.120*
	(0.174)	(0.037)	(0.046)	(0.038)	(0.062)	(0.054)	(0.079)	(0.052)

Note: Point estimates are from within-student two-way fixed-effects models of ES enrollment on the number of courses taken by subject area (similar to Equation 2). Robust standard errors clustered at the school level are in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.

Table A6: Course Requirement Met for High School Graduation

	Math	Lab Science	English	World Languages	Visual & Perf. Arts	Social Science
Panel A: Graduation Requirement Met by Subject Area						
Ethnic Studies	0.025*	0.017*	0.003	−0.002	−0.012	−0.029
	(0.011)	(0.007)	(0.034)	(0.033)	(0.015)	(0.025)

	Grade 9	Grade 10	Grade 11	Grade 12	Grades 9–12
Panel B: Number of Advanced Placement and Honors Courses by Grade Level					
Ethnic Studies	0.016	−0.016	−0.100	−0.076	−0.166
	(0.017)	(0.105)	(0.150)	(0.120)	(0.314)

Note: Panel A shows estimates from a linear probability model of meeting graduation requirement by subject. Panel B shows estimates from an OLS model of the difference in the number of AP and Honors courses between ES and non-ES students. Robust standard errors clustered at the school level are in parentheses. $^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.

B Appendix Figures

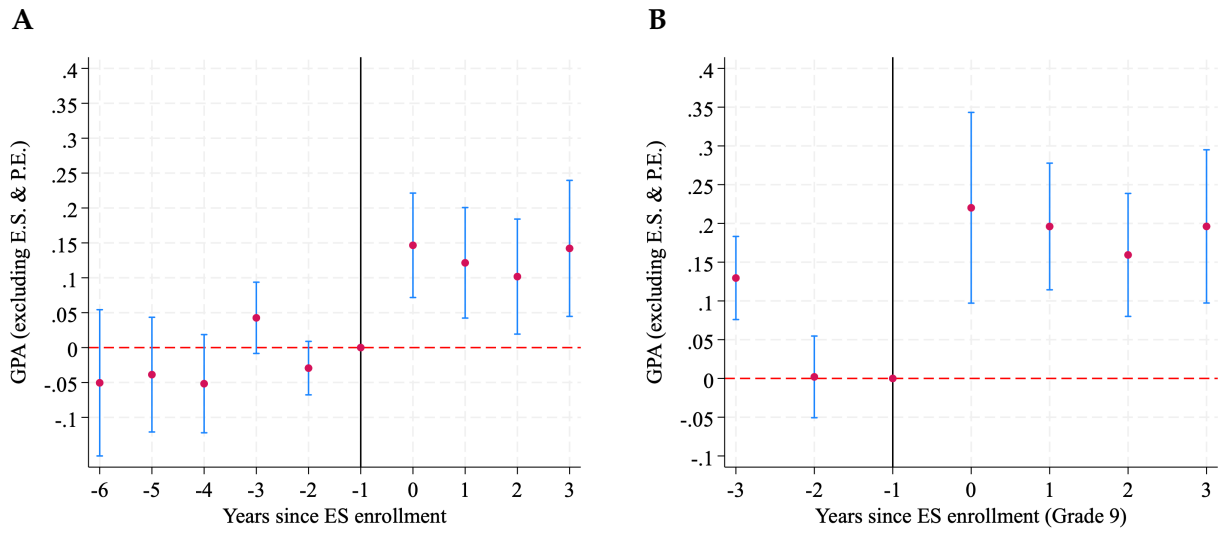

Figure A1: Effects of ethnic studies enrollment on overall GPA, unbalanced panel: (A) ethnic studies in any high school grades; (B) ethnic studies in grade 9.

Note. Event-study estimates of ethnic studies enrollment in high school (see Equation 1) based on the unbalanced panel of students who attended the district for at least 2 years.

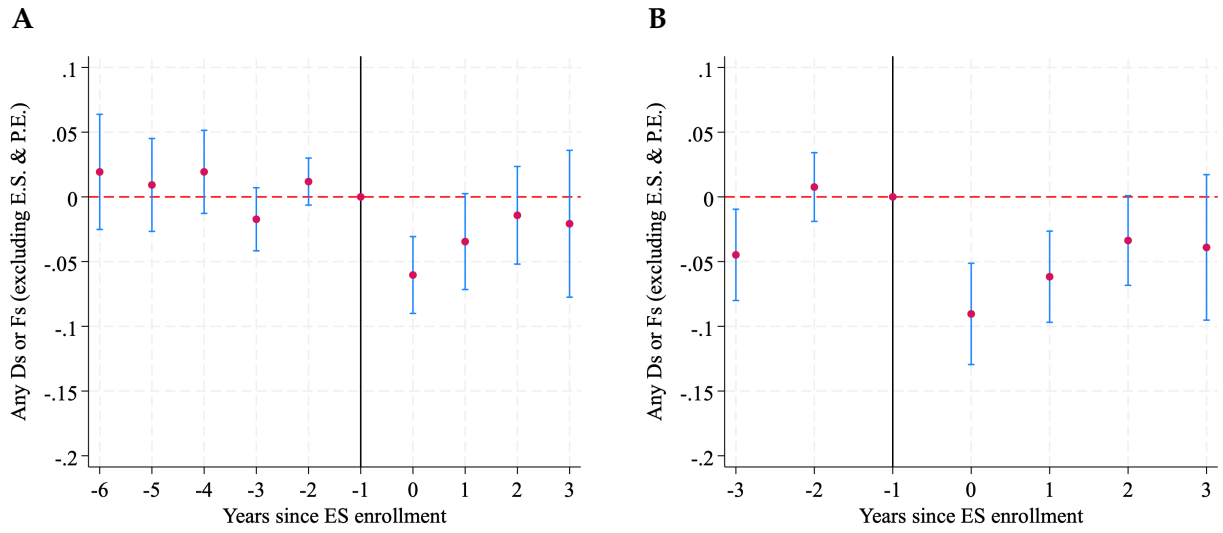

Figure A2: Effects of ethnic studies enrollment on course failures, unbalanced panel: (A) ethnic studies in any high school grades; (B) ethnic studies in grade 9.

Note. Event-study estimates of ethnic studies enrollment in high school (see Equation 1) based on the unbalanced panel of students who attended the district for at least 2 years.

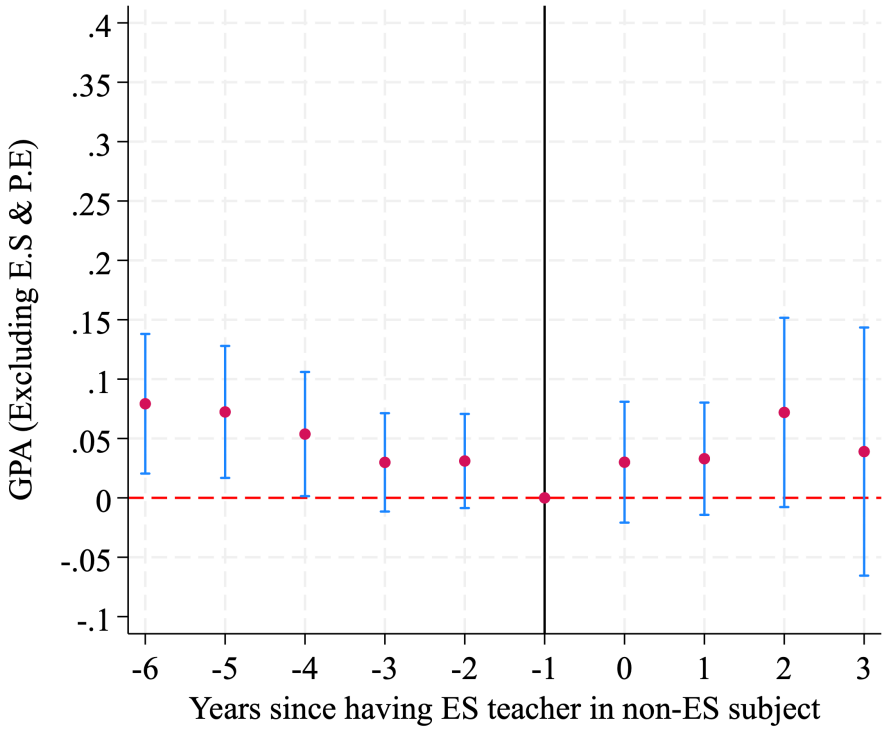

Figure A3: Effects of having an ethnic studies teacher in a non-ethnic studies subject on GPA.

Note. Event-study estimates of the effect of first assignment to an ethnic studies teacher in a non-ethnic studies course on GPA (see Equation 1). Students who took ethnic studies with the same teacher are excluded. Estimates are based on the balanced panel of students attending the SFUSD.

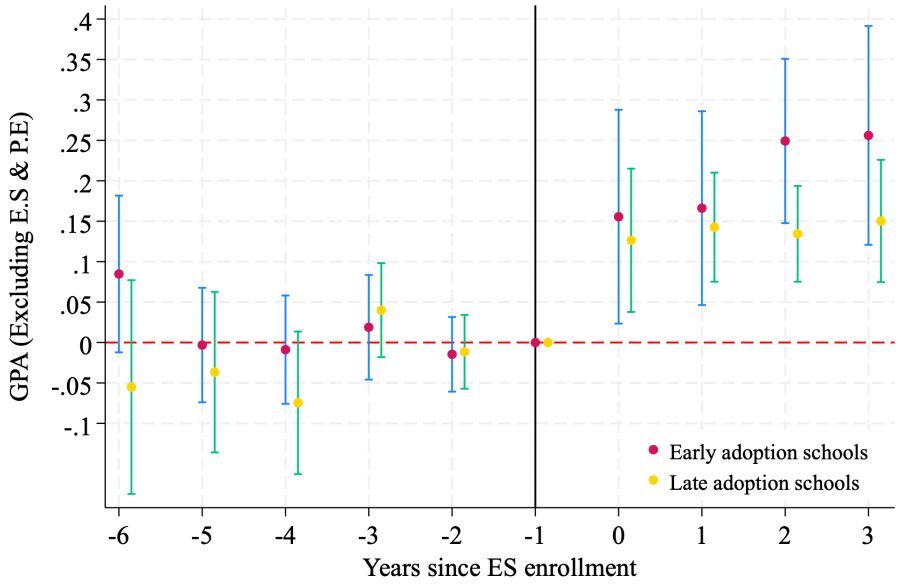

Figure A4: Effects of ethnic studies enrollment on GPA by timing of school adoption.

Note. Event-study estimates of grade 9 ethnic studies enrollment effects on GPA (see Equation 1) estimated separately by whether the school adopted ethnic studies during the pilot period or later. Estimates are based on the balanced panel of students attending the SFUSD.

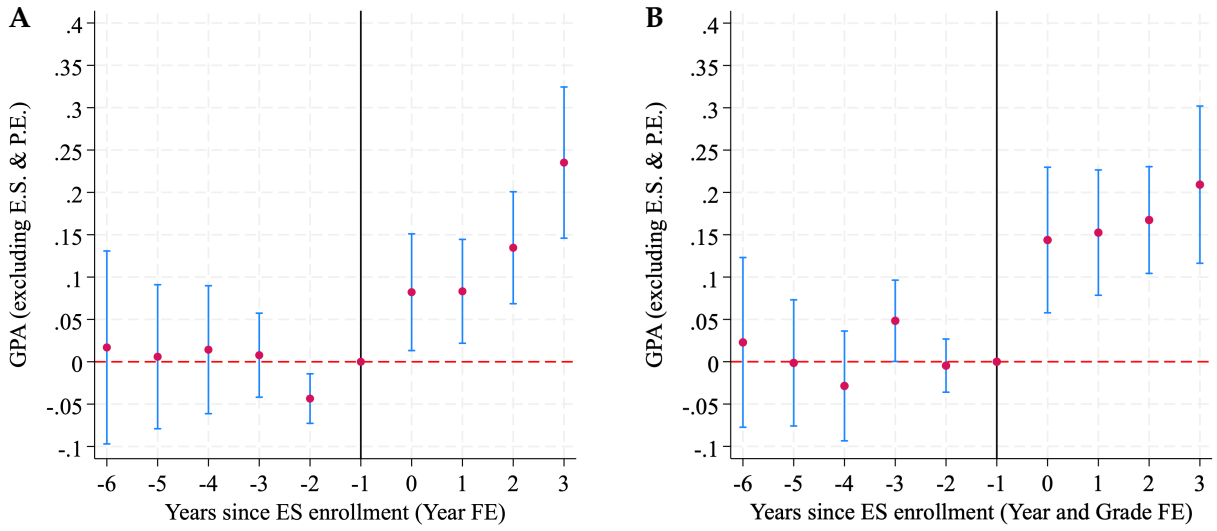

Figure A5: Effects of ethnic studies enrollment in grade 9 on GPA, alternate fixed-effects specifications: (A) year fixed effects; (B) year and grade fixed effects.

Note. Event-study estimates of grade 9 ethnic studies enrollment effects on GPA (see Equation 1) based on the balanced panel of students attending the SFUSD. Part A substitutes calendar year fixed effects for grade fixed effects; Part B includes both year and grade fixed effects.

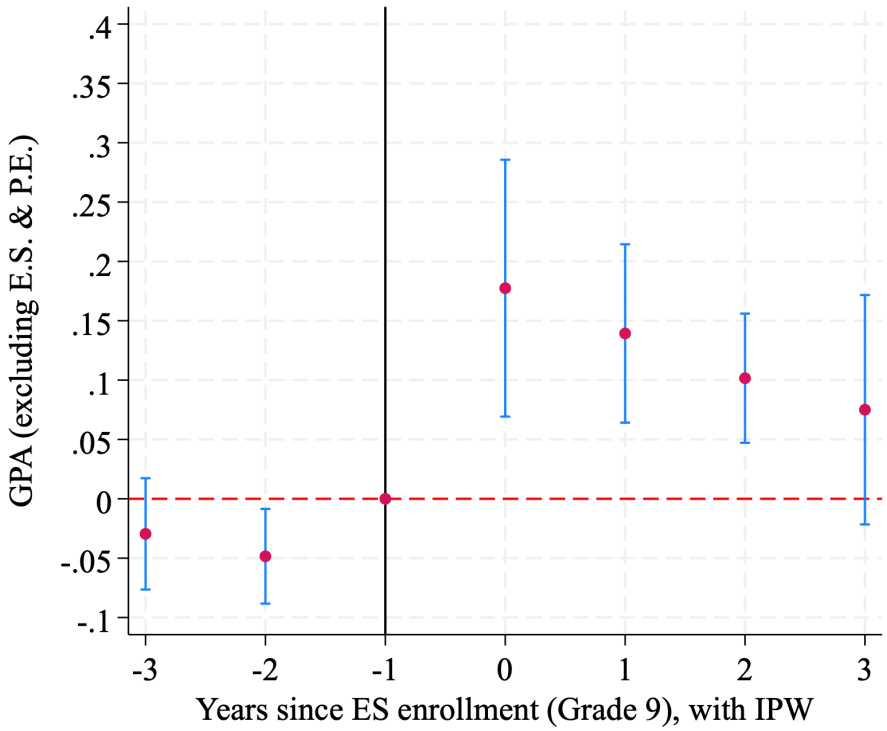

Figure A6: Effects of ethnic studies enrollment in grade 9 on GPA, inverse-propensity-score weighted.

Note. Inverse-propensity-score weighted event-study estimates of grade 9 ethnic studies enrollment effects on GPA (see Equation 3). Propensity scores are estimated using baseline demographic and academic characteristics. Estimates are based on the balanced panel of students attending the SFUSD.