



## Who's Matched Up? Access to Same-Race Instructors in Higher Education

**Taylor K. Odle**  
University of  
Wisconsin-Madison

**Michael A. Gottfried**  
University of  
Pennsylvania

**Trey Miller**  
University of Texas  
at Dallas

**Rodney J. Andrews**  
University of Texas at  
Dallas and NBER

Despite consistent evidence on the benefits of same-race instructor matching in K-12 settings and developing work in higher education, research has yet to conceptualize and document the incidence of same-race matching. That is, even if same-race matching produces positive effects, how likely are racially minoritized students to ever experience an instructor of the same race? Using administrative data from Texas on the universe of community college students and instructors over seven years, we document the rate of same-race matching overall and across racial/ethnic groups, the courses in which students are more or less likely to match, and the types of instructors who most commonly serve as matches. We also leverage student fixed effects models to show descriptive differences in credit accumulation, course pass rates, and course grades between matched and unmatched students and courses. We show that experiencing a same-race match is correlated with meaningfully higher course grades, pass rates, and credit hour accumulation particularly among racially minoritized students. However, we also show that there is substantial variation in the incidence of same-race matching across racial groups. This investigation expands our understanding of the relationship between same-race matching and students' outcomes in college while also offering a new framework for considering access to (or the "take-up" of) the benefits of same-race matching to guide future research and policy.

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Taylor K. Odle  
University of Wisconsin-Madison  
1000 Bascom Mall  
Education Building, Room 211  
Madison, WI 53706  
todle@wisc.edu

Michael A. Gottfried  
University of Pennsylvania  
mgottfr2@upenn.edu

Trey Miller  
University of Texas at Dallas  
tmiller@utdallas.edu

Rodney J. Andrews  
University of Texas at Dallas and NBER  
rodney.j.andrews@utdallas.edu

### Abstract

Despite consistent evidence on the benefits of same-race instructor matching in K-12 settings and developing work in higher education, research has yet to conceptualize and document the incidence of same-race matching. That is, even if same-race matching produces positive effects, how likely are racially minoritized students to ever experience an instructor of the same race? Using administrative data from Texas on the universe of community college students and instructors over seven years, we document the rate of same-race matching overall and across racial/ethnic groups, the courses in which students are more or less likely to match, and the types of instructors who most commonly serve as matches. We also leverage student fixed effects models to show descriptive differences in credit accumulation, course pass rates, and course grades between matched and unmatched students and courses. We show that experiencing a same-race match is correlated with meaningfully higher course grades, pass rates, and credit hour accumulation particularly among racially minoritized students. However, we also show that there is substantial variation in the incidence of same-race matching across racial groups. This investigation expands our understanding of the relationship between same-race matching and students' outcomes in college while also offering a new framework for considering access to (or the "take-up" of) the benefits of same-race matching to guide future research and policy.

*Keywords:* academic performance; community colleges; course completion; faculty diversity; higher education; inequality; same-race matching

JEL: H75, I21, I23, J15

## Who's Matched Up? Access to Same-Race Instructors in Higher Education

### Introduction

A robust body of research has documented several benefits of same-race matching between minoritized students and teachers in K-12 education.<sup>1</sup> Students matched with same-race teachers have higher academic achievement, stronger patterns of school attendance, lower high school dropout rates, higher college enrollment rates, and an increased likelihood of referral to gifted programs (Clotfelter et al., 2007; Dee, 2004; Delhommer, 2022; Egalite & Kisida, 2018; Egalite et al., 2015; Gershenson et al., 2016; Gottfried et al., 2022a; Grissom & Redding, 2016; Hart & Lindsay, 2024). Prior research has identified many possible mechanisms underlying these benefits, including same-race teachers having higher expectations of same-race students (Gottfried et al., 2022a), greater opportunities for student-teacher connections (Cherng & Halpin, 2016; Irvine, 1988; Ladson-Billings, 1995), the use of culturally relevant or sensitive practices by teachers of the same race (Egalite & Kisida, 2018), and the presence of shared cultural understanding between same-race students and teachers (Rimm-Kaufman et al., 2000; Wright et al., 2017). This body of existing research suggests that matching warrants consideration for any effort to improve student outcomes. However, less is known about same-race matching at the postsecondary level, including whether the benefits of same-race matching extend to racially minoritized students in college settings. Furthermore, and of particular importance, even less is known about the *incidence* of same-race matching. That is, even if same-race matching can positively influence students' outcomes, how likely are racially minoritized students to ever experience same-race matching?

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<sup>1</sup> Race and ethnicity are separate physical and social constructs (American Psychological Association, 2023; Smaje, 1997). In this study, we refer to same "race" matching consistent with prior works in this area. However, our study fully encompasses both concepts of race (e.g., Black or African American, Asian, and others) and concepts of ethnicity (e.g., Hispanic).

In this study, we leverage detailed transcript-level data on the universe of community college students and instructors in Texas across seven years to examine how same-race matching relates to students' course outcomes. In addition to expanding existing literature on the benefits of same-race matching in postsecondary settings, we further leverage data on the nearly 2.2 million student-instructor-course observations in our sample to quantify the incidence and descriptive outcomes of same-race matching overall and across racial groups—and to consider how matching varies across types of instructors and courses. In doing so, this investigation not only represents an empirical extension of existing work on same-race matching but is also a framework in and of itself for future studies investigating how *access to* the benefits of same-race matching varies across student groups, courses, levels of education, and other state and institutional contexts. Fundamentally, if same-race matching is an effective strategy for supporting students' outcomes—particularly those from racially minoritized backgrounds, in K-12 and higher education—then understanding *if* and *where* students experience same-race matching is a critical first consideration for any action guiding policy and practice in this domain.

In what follows, we first review the current stock of literature on the link between same-race matching in higher education and students' outcomes and offer three important conceptual extensions, including considerations for studying (1) the incidence of same-race matching, (2) the types of courses students are more or less likely to experience same-race matching, and (3) the features of instructors who provide same-race matches for students. We then discuss our study's specific research questions and summarize its insights. We follow with a discussion of our data, sample, and empirical strategy—and later conclude with our results, implications, and important considerations for future research, policy, and practice.

### **Literature Review and Guiding Framework**

Despite the robust body of work documenting the benefits of same-race matching for K-12 students, few studies have considered these effects at the postsecondary level. What studies do exist suggest that matching can yield positive outcomes for racially minoritized students by improving course performance and major choice. In the most comprehensive study to date, Fairlie et al. (2014) found that when Black, Hispanic, and Native American/Pacific Islander (“minority,” in their study) students at one California community college matched with a minority instructor, they earned higher grades on average and were 2-3 percentage points more likely to receive a B or higher, 1-3 points more likely to pass the course, and 2-3 points less likely to drop the course than non-matched peers. Matched students were also more likely to take another course and more likely to ultimately major in the same subject. Fairlie et al.’s (2014) work suggested that the racial composition of instructors a student was exposed to in their first quarter of school affected their ultimate persistence: A 1 standard deviation increase in the share of minority instructors was associated with a 2.5 percentage point increase in retention. Yet, these benefits did not accrue to their nonminority peers. In fact, white students who matched with minority instructors earned lower grades on average and were more likely to drop a course than their white peers who matched with white instructors (Fairlie et al., 2014). This suggested the potential of an opposite-race matching penalty for white students.

Other research, such as Lusher et al. (2018), found that students with a same-race teaching assistant (TA) earned higher course grades in current and subsequent courses and were again slightly more likely to major in the field. These benefits appeared to accrue from students’ increased propensities to engage with a same-race TA during office hours or discussion sections—and through an increased likelihood of a TA to share supplementary course materials

with their same-race students. Oliver et al. (2021) also found that minority TAs in science, technology, engineering, and mathematics (STEM) courses reduced same-race students' likelihood of dropping a course and increased their course pass rates, particularly among Hispanic students. Other applicable research includes Kofoed and McGovney (2017), who found that Black cadets at West Point paired with a Black officer were 6.1 points more likely to pick that officer's branch than if the student had been paired with a white officer, and Price (2010), who found that Black students at one public university in Ohio were more likely to persist in STEM majors if they took a STEM course taught by a Black instructor. Birdsall et al. (2020) also found support for an opposite-race match penalty where students at one elite law school were 3 percent less likely to earn an A when matched with an other-race instructor. Furthermore, same-race matching also appears to matter when considering students transitions from K-12 to higher education. For example, Black students are more likely to aspire to attend college when assigned to a same-race teacher (Clotfelter, 2007; Goldhaber & Hansen, 2010).

These existing works on same-race matching in higher education are intriguing but are each limited in scope, particularly given their focus on specific populations of students (often considering a single, homogenous "minority" group) at very specific types of institutions, such as a single community college or law school, West Point, and selective four-year universities. In this work, we broaden both the applicability and generalizability of this body of work by examining same-race matching in one of the nation's largest and most diverse higher education settings—all community colleges in Texas—while also including a specific focus on (1) the rates of same-race matching for college students, now and over time, including differences in match rates of across racial groups; (2) the courses in which students are more likely to experience

matching, including which are associated with higher descriptive outcomes; and (3) the types of instructors with which students same-race match, including their features and qualifications.

### *Access to Same-Race Instructors*

Virtually no prior research considers the incidence of same-race matching for students in either K-12 or higher education. That is, prior research focuses almost exclusively on the *outcomes* of same-race matching.<sup>2</sup> This reality paints an incomplete picture of same-race matching by failing to consider who has access to its potential benefits. Though many works now tout the descriptive or causal benefits of same-race matching, we still lack information on the prevalence of racially minoritized students actually having an instructor of the same race. Put plainly in terms of experimentation, we have developing evidence that the “treatment” (i.e., experiencing a same-race instructor) works, but we have an imperfect picture of who receives the “treatment.” Without knowledge of access to (or “take up” of) same-race instruction, research on its benefits will always remain incomplete—limiting the ability for policy decisions to be made, given the lack of full detail on the landscape of student access to same-race instruction. As discussed by Gottfried & Fletcher (2022b), prior work has identified “if” same-race matching makes a difference but has failed to consider the “for whom” and “how frequently.” We address these questions directly by documenting the incidence of same-race matching, including how same-race matching rates vary across student racial groups overall and over time.

### *Courses with Same-Race Instructors*

Considering the incidence of same-race instruction also compels an investigation into the courses within which students experience same-race matching. Virtually no works have considered this context, including specific courses of interest beyond a broad “STEM” category

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<sup>2</sup> Three known exceptions include Gottfried & Fletcher (2022b), Egalite & Kisida (2015), and Gershenson et al. (2021), but each of these studies focuses exclusively on the K-12 setting.

(see Oliver et al., 2021; Price, 2010). It is highly plausible that (1) students are more or less likely to experience same-race matching in some courses than others (e.g., Algebra versus English Composition versus a developmental education course) and that (2) the benefits of same-race matching vary across these courses. We address these questions directly by both documenting the incidence of same-race matching in a variety of course subjects and designations, as well as by documenting descriptive course outcomes for students in matched versus unmatched courses by subject and various course designations (e.g., first college-level course, remedial or developmental, student success, reading and writing). Understanding patterns of same-race matching within specific courses or fields not only helps us understand if, when, and where students experience same-race matching but also helps identify areas may be oases or deserts of same-race matching for students on a college campus.

#### *Features and Qualifications of Same-Race Instructors*

When considering the relationship between matching and student outcomes, if we believe that (1) the incidence of matching matters and (2) the features of courses within which students experience matching matter, then we must also believe (3) the qualifications and standing of teachers and instructors who serve as those same-race matches for students matter as well. That is, research should ask: If students do match with a same-race teacher, what are the relative teaching and instructional qualifications of the teacher? Or, for postsecondary instructors, what ranks or positions do they hold when providing same-race instruction—and might these moderate the benefits of same-race matching for students' outcomes? No study to our knowledge has considered this question in a K-12 or higher education setting. Instructors' qualifications are paramount to promoting student success. This is true in the K-12 literature (Hanushek & Rivkin, 2012; Rockoff, 2004; Wayne & Youngs, 2003), as well as in higher education (Bettinger &



Long, 2010; Carrell & West, 2010; Figlio et al., 2015; Xu & Jaggars, 2019). Even though the qualifications of instructors may be a key driver of increased student success, a discussion around the qualifications of teachers and instructors is nonexistent in the same-race matching literature other than as covariate controls in causal models. For example, Joshi et al. (2018) argue that teacher quality, years of experience, age, and degrees are important moderators of same-race impacts in K-12 settings, yet little is known about the profile of instructors students ultimately match two or if same-race effects truly vary along these dimensions. Our study addresses this gap by examining not simply *whether* a student has access to a same-race instructor but also provides details on the *position* and *training* of that instructor.

### **Research Questions and Insights**

Prior research in the higher education context provides an early foundation for the exploration of same-race matching in postsecondary education. Still, there is a dearth of information on the incidence and outcomes of same-race matching in college to guide future research and policymaking. That is, even if same-race matching provides benefits to college students, we do not know what students ever experience same-race matching—and to what degree—while in college. We have little information on (1) how the descriptive outcomes of same-race matching vary across all (rather than a select few) racial groups and course types; (2) the rates of same-race matching for college students, now and over time; (3) differences in the rates of same-race matching across racial groups; (4) an understanding of the courses in which students are more likely to experience matching; and (5) the type of instructors with which students same-race match. Understanding the outcomes and incidence of same-race matching and its variability across student groups is a critical first step in considering how same-race matching may benefit college students and how policy and practice efforts may support its

expansion and targeting. Our work addresses each of these gaps, and, in doing so, both lays a foundation for future research and provides actionable insights for policymakers and practitioners. Specifically, we ask:

1. **Outcomes:** Expanding upon prior works, do students in our sample descriptively (a) perform better in courses and (b) accumulate more credits in their first semester when they experience a same-race match? Are these differences statistically significant and practically meaningful? Do they vary across student race and/or course subject?
2. **Access:** Who has access to same-race matching in higher education? What is the overall prevalence of same-race matching and how does this rate vary across racial groups? How have these rates changed over time? How does this incidence vary across colleges?
3. **Coursework:** In what courses are students more or less likely to experience a same-race match, including across important first-year, gateway, first college-level, or remedial and developmental education courses?
4. **Instructors:** When students do experience same-race matching, do they match to same-race instructors in part-time or contingent roles (e.g., adjuncts or instructors) or to same-race faculty with more permanent appointments (e.g., tenured or tenure-track)? What are these instructors' relative ages, degrees and qualifications, and course loads?

Leveraging detailed administrative data on student transcripts from Texas, we map student-by-course and course-by-instructor records to demographic data on the universe of community college students and postsecondary instructors from 2013-14 through 2019-20. This allows us to observe the pre-COVID incidence of same-race matching overall and across racial groups, as well as how matching varies across types of instructors. We further pair these data with information on course-level subjects and classifications alongside records on students'

course outcomes to observe how same-race matching descriptively varies across course types and levels, and how students' course performance and credit accumulation varies across matched and unmatched courses.

Research has demonstrated the importance of students' first year in college for determining ultimate success and completion of relevant credentials (Belfield et al., 2019; Miller et al. 2022). In tandem, existing research on same-race matching in K-12 and higher education shows that *early* exposure to same-race instructors matters (e.g., Fairlie et al., 2014; Gershenson et al., 2022). Thus, we focus on the incidence and outcomes of same-race matching for first-year, first-time-in-college students during their first (fall) semester. If same-race matching matters for college students, then it is particularly important in a student's first year.

Our focus on first-year community college students specifically is further motivated not only by the fact that it represents an important extension of existing work (e.g., Fairlie et al., 2014) but also the fact that the first-year experience of a community college student is quite different from what is experienced by the modal student attending a four-year university, graduate school, or military academy (e.g., Birdsall et al., 2020; Kofoed & McGovney, 2017; Oliver et al., 2021). Students in these latter categories are likely to enroll directly into advanced college-level coursework and take one or more courses within a chosen major. However, upon entry to a community college, students often take a placement exam that determines their "college readiness" and need for developmental education or remediation. Students who test "below college ready" are required to successfully complete sequences of semester-length developmental education courses in Math, Reading, and/or Writing prior to taking a college-level course requiring those skill areas. Given poor success rates with this historical model (Meiselman & Schudde, 2022), colleges have increasingly shifted towards accelerated models of

developmental education that place students into college-level courses sooner and that condense developmental education support by offering it concurrently with the college-level course (Xu & Dadgar, 2018). With this in mind, the first year for community college students typically consists of taking developmental or key gateway college level courses in Math, Reading, and/or Writing. Thus, we not only consider the relationship between same-race matching and students' outcomes in courses across various subjects, but also in courses identified as gateway, first college-level, and remedial or developmental courses.

Furthermore, many community colleges also offer “student success” courses (such as Learning Frameworks) to help students learn how to “learn” and succeed in college. These courses frequently cover study skills, time management, and introduce students to a range of available supports, including academic and social resources, and have been shown to positively affect students' outcomes (Kimbark et al., 2017). We additionally consider the incidence of same-race matching in these course types, as well as how same-race matching relates to students' outcomes when they experience same-race matching in a student success course *concurrent to* other course enrollments.

In all, given both the differences in student populations and the nature of the first year of college between two-year and four-year institutions, this study focuses explicitly upon first-year community college students given its ability to extend the existing body of work—by also incorporating a larger and more diverse sample over a longer time period—but also its ability to consider the interaction between same-race matching and other course-level academic supports common to community college students, such as co-requisite and Learning Frameworks courses.

By focusing our study on public two-year colleges a single state, we sacrifice the ability to generalize our findings to contexts including other states, levels of higher education,

institutions of different control, and states and regions with policy contexts that differ from that of Texas. While this is a major limitation, we view Texas as an ideal state to study the incidence of same-race matching for first-year community college students given the diversity of the state and its institutions. While Texas has large community college systems that serve the incredibly diverse urban centers of the state and predominantly low-income students from underrepresented backgrounds, the state also has small rural community colleges and systems that serve suburban areas and medium sized cities. Since 2011, the Texas Higher Education Coordinating Board (THECB) has collected transcript-level information from all students attending community college in the state, which allows us to identify the incidence of same-race instructor matching across colleges and types of courses during the first year of college. Importantly, the state also requires community colleges to use a common course-numbering system for all core courses at community colleges, allowing us to easily compare courses across colleges in a manner not possible for universities (or even most other states). Texas has also been a forerunner in national efforts to reform developmental education, allowing us to observe changes in same-race matching for first-year students at community colleges during a time of rapid flux in the nature of the types of courses students take during the first year.

In all, while we have rich data on a particular population of students and instructors (community colleges in Texas), our study and its rich microdata allow us to still make important contributions, including by estimating the relationship between same-race matching in a much larger and more racially diverse setting than prior studies, and well as by allowing us to consider the incidence of same-race matching and the features of courses and instructors that facilitate same-race matching in higher education in ways not possible in other settings.

*Insights and Implications of our Study*

We first show that race-matching does matter across our large and diverse population of community college students. Whether we define course success as simply “passing” (earning a grade of A, B, C, or Pass) or more specifically earning a grade of A or B, we show that students who experience same-race matches are roughly 1.6-percentage points more likely to pass a course and 1.9-percentage points more likely to earn an A or B when compared to courses where they do not experience a same-race match. We also show that this benefit is particularly large for students from racially minoritized groups, where Black students are 6.0 points more likely to pass and 6.1 points more likely to earn an A or B, and Hispanic students are 1.8 points more likely to pass and 2.7 points more likely to earn an A or B overall. For Black students specifically, we also show that having a same-race instructor is associated with higher course completion rates in first-college-level Math (5 points) and Reading (3 points); gateway courses (4 points), including Business Math (14 points) and Non-STEM Math (10 points); and remedial and developmental education courses (6 points). For all students, we also show that this descriptive benefit of same-race matching is roughly consistent across course subjects, ranging from a roughly 1.0-percentage point boost in pass rates in Business courses to 2.6 points in the likelihood of earning an A or B in STEM-related courses. Beyond course pass rates, we also show that students who ever experience same-race matching in their first semester earn almost one more credit hour (0.85 credits) than students who never experience same-race matching. This benefit again varies across groups, ranging from 0.67 more credits for Black students to 1.2 more credits for Hispanic students.

However, we also show that the incidence of same-race matching (i.e., considering which student populations have access to these benefits) varies widely across racial groups, where

students in racially minoritized groups are substantially less likely to experience a same-race match in any given course. Across all first-year courses, 42% of student-by-course enrollments are a same-race match. That is, among all student-instructor pairs, 42% are same-race matches. However, this ranges from 77% for white students to 29% for Hispanic students and 14% for Black students. This suggests that, even if same-race matching yields benefits for racially minoritized students, they are unlikely to ever experience these matches in their first year of study, and, when they do, they experience them at substantially lower rates than their white peers. We show that these lower match rates largely reflect the population of instructors, where 63% are white, 16% are Hispanic, and 10% are Black. But this is not reflective of the current student population, where only 33% are white compared to 48% Hispanic and 11% Black. Same-race matching for Black and Hispanic students has increased slightly from fall 2013 to fall 2019—up from 14% to 16% for Black students and from 27% to 30% for Hispanics—while matching rates for whites fell from 79% to 75% over the same period.

For Black students, rates of same-race matching are even lower in important first-year academic courses such as first-college-level Math, Reading and Writing courses (e.g., the first course that students take that provide college credit in those subjects) and gateway courses (e.g., college-level courses that students fail at high rates, such as College Algebra and other first-college-level math courses, and English Composition). Research has demonstrated the important role that passing these courses play in determining persistence and degree completion (Jenkins et. al. 2018). For these courses, we observe same race match rates as low as 9% in first-college-level Math and 4% in first-college-level Reading and Writing for Black students. These rates are also particularly low in gateway coursework, where Black students match at 11% in College Algebra and 6% in both Business Math and Non-STEM Math.

Black and Hispanic students have the highest same-race matching rates in remedial and developmental education courses (34% for Hispanic students and 17% for Black students) and student success courses (34% each). These higher-than-average rates appear positive given that these courses are important opportunities to supplement students' learning and can improve longer-term success (Cho & Karp, 2013). However, when students do match in these courses, the instructor composition is only 8-10% tenured or tenure-track; 50% and 60% respectively are classified as temporary or adjunct instructors. This suggests that, while Black and Hispanic students may experience strong matches in some early momentum courses, they do so with instructors who hold precarious positions with less access to resources and potentially less knowledge about relevant student supports available at their institutions, which may limit the longer-run benefits of same-race matching, particularly if matching improves students' outcomes through sustained mentoring and role modeling (Gershenson et al., 2022; Lusher et al., 2018). Moreover, while these instructors that serve as same-race matches for students across important first-year courses in our sample teach fewer courses on average, they are substantially less likely to hold a graduate degree than our overall population of community college instructors.

Understanding who may be exposed to a same-race instructor, how often this occurs, where (i.e., in which courses) they may be exposed, and to what type of instructor is critical to begin conceptualizing the mechanisms and outcomes of same-race matching in higher education. In this way, we not only generate new knowledge by documenting these differences across groups, instructors, course types, and over time but we also provide a foundation for future work that should consider how *access to* the benefits of same-race matching (or the "take-up" of same-race matching) varies across student groups, courses, levels of education, and other state and institutional contexts. Understanding groups' differential exposure to same-race matching across



their courses in their critical first year of community college has important implications for policy and practice. Particularly, these findings are important to frame our understanding of the diversity of the professoriate and how its composition facilitates or hinders same-race matching (and its potential benefits) in higher education.

### **Data, Sample, and Setting**

We leverage data from the THECB, whose records cover the universe of public higher education students in the state. We first identify all first-year, first-time community college students and observe their demographic profiles, including race, age, and gender.<sup>3</sup> Given that these are only first-year, first-time students, each record is unique; a student cannot appear consecutively.<sup>4</sup> We merge these records with course-level enrollment records by year, allowing us to isolate our population's coursetaking and course completion outcomes in their first (fall) semester. We limit our sample to students who had any positive-credit-hour enrollment record in their first semester and focus on enrollments from fall 2013 through fall 2019.<sup>5</sup> These course files include course-level subjects and special course designations (e.g., first college-level, gateway), students' final course grades and cumulative credit hours, and a unique identifier for the instructor of record. This allows us to additionally merge a faculty report file to our dataset which captures several instructor-level demographics, including race, gender, appointment/rank, age, degrees, and employment status. From this course file, we can also recover instructors' average course loads by term. In all, combining these three files covering the universe of

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<sup>3</sup> THECB records capture races in the following categories: Asian, Black, Hispanic, International, Native American, Two or More Races, Unknown (or unreported), or white. Our analysis is constrained by this reality but still represents a considerable improvement in granularity and specificity over prior works.

<sup>4</sup> If students enroll at multiple community colleges in their first semester, we are still able to observe all enrollments, course details, and outcomes. Our analysis does not rely on students' being situated within a single college.

<sup>5</sup> While more recent cohorts of students are observable, we end our panel in 2019-20 to remove any possible impacts of the COVID-19 pandemic on students' enrollment and completion outcomes.

community college students, instructors, and courses allows us to fully observe our population of interest, the incidence of same-race matching (overall and across various groups and course types), and how same-race matching may relate to course completion and credit accumulation outcomes. Our unit of observation is the student-instructor-course combination. Because our analysis relies on basic directory information and course files that are necessary for the administration of financial aid programs, we have a trivial amount of missingness ( $n=31$ ). We exclude those cases. Our final analytic dataset covers 2,184,349 student-instructor-course observations, representing 580,184 unique students and 32,062 unique instructors.

Table 1 presents descriptive statistics for these populations overall (students, instructors, and courses, respectively), and Table 2 presents the racial composition for a sample of unique student and instructor records. Nearly 60% of students that ever appear in our sample are Hispanic or Black; 33% are white (Table 2). Conversely, over 63% of instructors are white, and only 16% are Hispanic and 10% are Black. The average age of students in our sample is 20 compared to an average age of 50 among instructors. Most (70%) instructors are classified as “full-time,” though only 12% are in a tenured or tenure-track role (Table 1). The vast majority (88%) are “instructors” or have an unranked or other-classified position, and the average instructor teaches roughly 4 courses (or course-sections) per semester. A little more than 82% hold a master’s degree or higher. The average course pass rate is 69%, with nearly 52% of grades being an A or B. The average student accumulates roughly 10.5 credits in their first semester. Among all courses, 60% are designated as first college-level, 24% are gateway courses, 16% are classified as remedial and developmental education, and 5% are considered supplementary or complementary student success courses.

### **Empirical Strategy**

To document the prevalence of same-race matching and explore how its incidence and potential effects vary across student groups, we use a variety of descriptive tools, including documenting averages, counts, proportions, and mean differences alongside regression-based tools for efficient comparisons across groups. Descriptive designs are preferred techniques for exploratory analyses like ours that seek to “identify phenomena or patterns in data that have not previously been recognized,” particularly when applied to new populations or empirical questions (Loeb et al., 2017, p. 1; Odle & Magourik, 2023). In this way, effectively leveraging descriptive techniques can “identify the characteristics of a population, help researchers understand a phenomenon of interest, generate hypotheses and intervention strategies, diagnose problems for practitioners and policymakers to address, and identify new issues to study” (Loeb et al., 2017, p. 1). Our study seeks to achieve each of these aims while both laying a foundation for future research and providing actionable insights for policymakers.

We begin our analysis by identifying the incidence of same-race matching. We create an indicator variable that assumes a value of 1 if a student and instructor share the same race within a given course and 0 otherwise. This definition allows students to experience same-race matching in some courses and not in others, rather than discretely identifying a student as *ever* experiencing a same-race match.<sup>6</sup> We then compute means to recover the overall rate of same-race matching in our sample and a series of conditional means, including within racial groups (e.g., Among all Black students, what is the rate of same-race matching?) and within race-by-course groups (e.g., Among all Black students in any first college-level course, what is the rate of

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<sup>6</sup> A measure of “ever-same-race matched” would artificially inflate the incidence of same-race matching and mask important variability in exposure to a same-race instructor across students’ entire course histories.

same-race matching?). This allows us to both observe the overall incidence of same-race matching and identify how matching varies across student groups and course types.

We also consider a host of student outcomes that could be descriptively related to same-race matching, including passing a course, earning an A or B in a course, and accumulating credit hours across their first semester. While we can directly observe students earning A or B grades, as well as students' cumulative credit hours, we identify students as "passing" a course if they earned a grade of A, B, C, or Pass (equal to 1). From this analysis, we exclude no-credit courses, courses taken for no credit (e.g., audit), and ungraded courses ( $n=23,474$  or 1% of our sample).

To explore the relationship between same-race matching and students' course and credit outcomes, we first compute conditional means within same-race matched and unmatched conditions by race (e.g., What is the mean pass rate for Black students in a matched course, and what is the mean pass rate for Black students in an unmatched course?). We then use a standard *t*-test to compare mean differences in students' course pass rates between matched and unmatched courses overall and within a series of specific courses. Additionally, while generating causal estimates of the impact of same-race matching on students' course and credit outcomes is beyond the scope of this paper, we do estimate a series of student fixed effects models to easily and efficiently document differences between groups or courses. Our primary strategy is given by:

$$(1) \quad y_{ict} = \alpha_0 + \alpha_1 \text{Match}_{ict} + \phi_i + \varepsilon_{ict},$$

where we leverage within-student variation in course outcomes. Here,  $y_{ict}$  is an indicator for whether student  $i$  passed (or earned an A or B) in course  $c$  in year-semester  $t$ , and  $\text{Match}$  takes the value of 1 when the student-instructor pair in that given course  $c$  is a same-race match (or 0

otherwise).  $\phi_i$  is a student fixed effect that allows us to compare students' performance to themselves in the same term across courses when they experienced a same-race match to courses when they did not.<sup>7</sup>  $\alpha_1$  is thus the average difference in students' course outcomes across their same-race-matched and unmatched courses. In subsequent models, we replace student fixed effects with college and year-semester fixed effects in Equation (1). Results are robust across these specifications (see Appendix Table 1).

Similarly, to explore the relationship between same-race matching and students' credit accumulation across their first year, we estimate:

$$(2) \quad y_{ijt} = \beta_0 + \beta_1 \text{EverMatch}_{ijt} + \gamma_j + \pi_t + \varepsilon_{ijt},$$

where  $y_{ijt}$  is the cumulative credit hours accumulated by student  $i$  in college  $j$  in year-semester (or cohort)  $t$ , and  $\text{EverMatch}$  identifies students who did (=1) and did not (=0) experience a same-race match in that first year-semester.  $\beta_1$  thus represents the average difference in credit hours accumulated between ever-same-race matched and never-same-race matched students. This is also conditioned on college ( $\gamma_j$ ) and semester-year ( $\pi_t$ ) fixed effects to restrict all comparisons between credit-hour outcomes to students within the same institution and in the same year (entering fall cohort).

Again, estimating causal impacts is beyond the scope of this paper, but our fixed effects strategies in equation (1) and (2) allow for efficient computation of mean differences between matched and unmatched students (or matched and unmatched courses). We also leverage these models to explore how the descriptive relationship between same-race matching and students'

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<sup>7</sup> Recall, students only appear in one semester/year in our dataset: their first fall semester. Thus, semester-year-term fixed effects are not necessary in this within-student model.

course and credit outcomes varies across racial groups and course types by interacting the Match and EverMatch indicators with dummies for race and course type, respectively.

## Results

Table 3 reports estimates from our fixed effects regression models. Column 1 reports the relationship between same-race matching and students' course pass rates overall; column 2 reports how this relationship varies by race; and column 3 reports how this relationship varies by course subject. Columns 4-6 follow this same design for the outcome of earning an A or B in the course, while columns 7-8 report the estimated relationship between same-race matching and students' cumulative first-semester credit hours overall and by race. Baseline means for all outcomes are provided at the bottom of the table. Overall, we estimate that experiencing a same-race match in a given course is associated with a 1.6 percentage point increase in the likelihood a student passes that course (column 1), which higher descriptive increases for Black (6.0 points) and Hispanic (1.8 points) students (column 2). Same-race matching also appears to be descriptively associated with higher pass rates across virtually all course types, ranging from a 1.0-percentage point increase in Business to a 2.1-point increase in STEM-related courses (column 3).

Appendix Table 2 provides further detail comparing course pass rates (by race) across same-race-matched and unmatched courses, including by a host of course designations: first-college-level (overall and by subject), gateway (overall and by subject), remedial/developmental, career and technical education, and student success. Overall, students in our sample have higher course pass rates when they experience same-race matching: 71% compared to 68% in unmatched courses. Even with unconditional means, this three percentage-point difference is statistically significant and practically meaningful. This benefit is again particularly large for

Black and Hispanic students, whose outcomes are 4 and 2 percentage points higher, respectively. That is, Black students were 4 percentage points more likely to pass a course with a same-race instructor; Hispanic students were 2 percentage points more likely. This benefit is even higher when a student is concurrently enrolled in a student success course that has a same-race instructor: up to 6 percentage points for Black students and 4 percentage points for Hispanics (last panel of Table A2). Descriptive benefits for Black students are even larger in some first-year courses, including 5 percentage points in first college-level Math, 4 percentage points across gateway courses, and 6 percentage points in remedial and developmental education coursework. Suggestive evidence points to even greater gains in Business Math (14 percentage points) and Non-STEM Math (10 percentage points). For Hispanic students, having a same-race instructor is associated with a 2.5 percentage point higher pass rate in any first-level course; 5 percentage point higher rate in Elementary Statistics; 4 percentage points higher rate in College Algebra and Business Math; and 3 percentage points higher in gateway courses and Non-STEM Math. Conversely, white students performed equivalently across matched and unmatched courses, providing no evidence of a “minority-matching” (or opposite-race matching) penalty for white students in our sample.

Table 3 additionally shows the relationship between same-race matching and other important student outcomes: earning an A or B in a course (panel 2) and accumulating credits across their first semester (panel 3). Descriptively, experiencing a same-race match in a given course was associated with a 1.9-percentage point higher likelihood of earning an A or B in that course for students compared to courses when they did not experience a same-race match (column 4). This increased likelihood was again larger in magnitude for Black (6.1 points) and Hispanic (2.7 points) students (column 5)—and was again consistently positive across course

subjects, ranging from 1.0 points in Business to 2.6 points in STEM-related courses (column 6). Table 3 also suggests that *ever* experiencing a same-race match was associated with the accumulation of nearly one more credit hour (0.848 credits) in their first semester when compared to students who never experienced a same-race match (column 7). Our estimates also suggest that every racial group descriptively benefitted from same-race matching by way of earning more credits by the end of their first semester, ranging from 1.814 more credits for Asian students to 0.674 more credits for Black students.

One interesting finding consistent across our within-student and across-course comparisons is that Asian students have descriptively lower course pass rates and a reduced likelihood of earning an A or B in courses when they have an Asian instructor. Students were predicted to be 2.8-percentage points less likely to pass and 4.9 points less likely to earn an A or a B (Table 3), which is consistent when comparing unconditional means, where Asian students' pass rates are roughly 80% in unmatched courses and 78% in matched (Appendix Table 2). This overall lower likelihood appears to be driven by substantial differences in a few gateway courses. For example, the average pass rate for Asian students in Business Math is 5.5-percentage points lower in same-race-matched compared to unmatched courses.

After now showing that same-race matching does matter for students in our sample, we turn to our exploration of how the incidence of same-race matching varies across groups. That is, who has access to these descriptive benefits matching yields? Figure 1 shows the incidence of same-race matching overall and across racial groups. Across all first-year courses, approximately 42% of student-instructor pairs are same-race matches. However, this ranges from over 77% for white students to less than 29% for Hispanic students and 14% for Black students. Students with an unknown race and Asian students experience low rates of same-race matching (7% and 6%,



respectively), and students with Two or More races virtually never experience same-race matching across their first year of coursework (<1%). Figure 2 (left panel) shows the distribution of same-race matching overall and by race across our sample of 50 community colleges. While the modal institution has somewhere between 25% and 50% of student-instructor pairs occurring as a same-race match, many institutions have substantially higher and lower average incidences of same-race matching, suggesting there is substantial variation in same-race matching across colleges. Furthermore, when consider how same-race matching for students in a given racial group varies across colleges, Figure 2 (right panel) additionally shows that while median rates of same-race matching are substantially higher across colleges for white students and substantially lower for all other groups, there is again considerable heterogeneity across colleges. In fact, some colleges exhibit near-zero levels of same-race matching for white students while some colleges have greater than 75% match rates for Black and Hispanic students.

Appendix Table 3 provides greater detail on how the incidence of same-race matching varies across racial groups and course types. Rates of same-race matching within course types generally reflect overall rates of same-race matching. For example, white students match 77% across all courses, 78% in first college-level courses, and 76% in gateway courses. However, Black and Hispanic students are even less likely to match with a same-race instructor across many important first-year courses than their overall match rates (14% and 29%, respectively) suggest. Black students match at a rate of 12% in any first college-level course, including only 4% in Reading and Writing and 9% in Math. This is also true for Black students' experiences in gateway courses, where they are slightly more likely to experience a match (17%), but not in select important courses: College Algebra (11%), Business Math (6%), Non-STEM Math (6%), Elementary Statistics (10%), or English Composition (12%). Black students are slightly *more*

likely to match in Reading (16%). Like their Black peers, Hispanic students match at lower-than-expected rates across first college-level courses (24%), driven by lower matching in heavily-enrolled Math coursework (23%). Hispanic students are particularly more likely to match in Reading and Writing coursework (39%). However, across gateway courses, Hispanic students are less likely to experience a match (26%), particularly in College Algebra (23%), Non-STEM Math (21%), Elementary Statistics (20%), and English Composition (24%). These differences are visually depicted in Figure 3, which shows how rates of same-race matching vary by course types for all students, as well as for Black and Hispanic students specifically.

While Black and Hispanic students are, on average, less likely to experience same-race matching overall and within first college-level and gateway courses, Table 4 shows they are substantially more likely to match with an instructor in a remedial or developmental education course (34% for Hispanic and 17% for Black) or a student success course (34% for both) than in their other courses. When matched in these courses, Black and Hispanic students also have considerably higher course pass rates in their *other* courses: 6.4 points higher for Black students and 3.7 points higher for Hispanic students.<sup>8</sup> However, when Black and Hispanic students do experience matches in these important courses, they are more likely to match with non-tenured/tenure-track and contingent faculty. 92% of instructors in matched pairs across remedial and developmental education courses are categorized as instructors (42%) or as adjuncts, visiting instructors, other/no rank, or hold a special appointment (50%); only 8% are assistant, associate, or full professors (Table 4). The same is true for same-race instructors in student success courses, where only 10% are either tenured or on the tenure-track. Instructors in these courses are similar

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<sup>8</sup> Recall, remedial/developmental and student success courses are designed to complement other courses and provide students with foundational knowledge, skills, and resources for success. Therefore, it would be expected that students have higher overall pass rates when co-enrolled in a remedial or success course and that same-race matching in this co-enrolled course could further raise success rates.

in age to the population of all community college instructors in our sample but teach substantially fewer courses per semester [roughly 3 sections compared to an average of 4], likely a feature of the intensive instructional nature of remedial/developmental and student success courses. Additionally, instructors' academic qualifications vary widely across these courses. Roughly 82% of the full population of instructors holds a master's degree or higher (Table 1). However, this figure is as high as 93% across student success courses and as low as 75% in remedial/developmental courses (Table 4). In all, while Black and Hispanic students are more likely to experience same-race matches in these particular courses, they are more likely to match with instructors who hold non-tenured/tenure-track and contingent roles—and, in remedial coursework, who are substantially less likely to hold a graduate degree.

Appendix Table 4 shows that overall rates of same-race matching have been relatively stable over time. Same-race matching rates for Black and Hispanic students have increased slightly from fall 2013 to 2019—up from 14% to 16% for Black students and from 27% to 30% for Hispanics—while rates of matching for white students fell from 79% to 75% over the same period. Matching rates for Asian and International students slightly increased over this time, up 2.5 and 0.6 percentage points respectively, but the already-low rates of matching for Native American, Two or More Race, and Unknown race students fell.

## **Discussion**

Despite consistent evidence on the benefits of same-race matching in the K-12 arena and developing evidence in higher education contexts, existing research has failed to document the overall prevalence of same-race matching and how its incidence varies across student racial groups. That is, we lack basic knowledge on who has access to a same-race instructor, and, for students who do, we lack information on the types of instructors they match to, the types of

courses they are more or less likely to match in, and the descriptive outcomes of this matching. Our study fills each of these gaps, and, in doing so, not only extends existing literature across the K-12 and postsecondary landscapes but also provides policymakers and practitioners with clear information on the incidence and outcomes associated with same-race matching in the state of Texas. We descriptively show how same-race matching relates to students' course outcomes in a substantially larger and more diverse higher education context over a multi-year period. We improve upon the precision of prior works by leveraging within-student variation in outcomes and additionally consider how experiencing a same-race match relates to important course and first-year outcomes across many racial groups and course types. In addition to this empirical contribution, we offer a conceptual expansion of this body of work for future studies and policy considerations of how access to the benefits of same-race matching (or “take-up” of same-race matching) varies across student groups, courses, levels of education, and other state and institutional contexts.

Leveraging data on the universe of first-year, first-time-in-college students in Texas community colleges over seven academic years, we show that same-race matching varies widely across racial groups, where students in racially minoritized groups are substantially less likely to experience a same-race match in any given course. White students experience same-race matching in 77% of student-instructor-course combinations, but this rate is only 29% for Hispanics and 14% for Blacks. Rates of same-race matching are especially low for Black students in important first-year courses, including Math- and Reading/Writing-related coursework, as well as in gateway College Algebra. This suggests that, even though same-race matching yields meaningful benefits for racially minoritized students, they are unlikely to ever experience such matches in their first year of study—or to experience matching at rates even half

that of their majority peers. While we observe that same-race matching for Black and Hispanic students has increased slightly since fall 2013, it remains significantly lower than that of white students. Black and Hispanic students have the highest same-race matching rates in remedial and developmental education courses and in student success courses, but this is predominantly driven by students matching to temporary or adjunct instructors who commonly teach in these sections and who are substantially less likely to hold a graduate degree. One mechanism with regards to matching is that matching improves students' outcomes through the quality of interactions between student and instruction—namely, sustained mentoring and role modeling as suggested in prior work (Gershenson et al., 2022; Lusher et al., 2018). A concern then is that our findings would suggest that students in our setting may have a lower likelihood of receiving these benefits if instructors occupy precarious or shorter-term contracts—or may be less likely to hold influence over resources to support students or to themselves possess training and experiences that could further propel students. A next step might be to inquire about whether instructional quality and mentoring (and access to resources) differ in this regard.

Our results also show that virtually all students have higher descriptive course pass rates and credit accumulation outcomes when they experience a same-race match—but that this benefit is particularly large for students from underrepresented groups, where pass rates descriptively increase by 4 to 6 percentage points in our setting. Our overall findings that same-race matching is associated with 1.6 to 1.9 point higher course pass (or A or B grades) are consistent with many prior works (e.g., Fairlie et al., 2014; Lusher et al., 2018), but we show there is important variation across racial groups, course types, and institutions, where higher outcomes in our sample among “minority” students (as defined in prior works) are driven predominantly by Black students' course outcomes (where they are 6.1 points more likely to earn

an A or B) and Hispanic students' credit accumulation outcomes (where same-race-matched students earn roughly 1.2 more credits in their first semester compared to students who never experience a match)—and that these outcomes are especially high in STEM and STEM-related coursework; courses traditional sources of gender and racial inequality (Freeman et al., 2024; Gottfried et al., 2023). Equipped with our findings that same-race matching is associated with higher course grades and pass rates, including across our within-student models that hold students' individual academic ability constant, future studies should seek to identify whether these higher descriptive outcomes could be attributable to students' individual course motivations and effort, instructors' features and actions, or some combination of both.

We also find that white students perform equivalently across matched and unmatched courses, providing no evidence of a minority-matching or “opposite-race” matching penalty for white students in our sample as has been observed in other settings (Birdsall et al., 2020; Fairlie et al., 2014). However, we do observe that Asian students who experience a same-race match are *less* likely to pass (or earn an A or B) in matched courses. Consistent with theories of same-race matching for Black students, where same-race teachers often have higher expectations of same-race students (Gottfried & Fletcher, 2022b), it is plausible that Asian teachers hold Asian students to higher standards—which persist through grading practices. Though our study cannot pinpoint the direction of this mechanism, this merits further research in the higher education space. What is necessary to conduct this work would be instructor perceptions to students in their classes, which can be accomplished through survey work, as it has been done in K-12 spaces on teacher perceptions (e.g., Gottfried et al., 2024).

These findings have important implications for policy and future research. Equipped with this information on unequal access to same-race instructors in Texas (alongside current and prior

evidence on the positive benefits of same-race matching), policymakers and institutional administrators should work to reduce inequalities in same-race matching rates across racial groups. We show that existing matching rates in Texas community colleges largely reflect the population of instructors, where 63% are white, 16% are Hispanic, and 10% are Black. This reality does not reflect the current student population in Texas community colleges, where only 33% of students are white compared to 48% Hispanic and 11% Black. Actions to increase same-race matching for racially minoritized students likely includes actions to both diversify the professoriate broadly and help ensure that racially minoritized faculty provide instruction in important courses where the benefits of same-race matching are likely most pronounced for first-year students. That is, policymakers and institutional administrators may not only consider raising the overall share of faculty that are racially minoritized but also work to ensure that those faculty instruct courses where racially minoritized students are well represented. Furthermore, given evidence that the benefits of same-race matching for racially minoritized students may be even greater when students have access to complementary and supplementary supports (e.g., student success coursework), institutional administrators could use this knowledge to guide students into these courses, consider which instructors offer these courses, or provide more tailored and targeted student supports.

Our investigation also compels the extension of existing work on same-race matching in K-12 and higher education. Principally, equipped with our descriptive findings, future research should work to credibly estimate the causal effects of same-race matching in the postsecondary space (1) on a variety of short- and long-term outcomes [e.g., retention and persistence, transfer, degree completion; Odle & Russell, 2023] (2) in this and other contexts [e.g., different institutional settings, sectors, and states] and additionally consider how these impacts vary with

the intensity of same-race matching (e.g., students who experience matching in one course versus students who experience matching in many courses) or across more features of postsecondary instructors beyond age, rank, degree, and teaching load. Furthermore, given a growing body of work on peer effects in K-12 and higher education (e.g. Griffith & Rask, 2014; Zimmerman, 2003), as well as recent works on the relationship between the racial composition of K-12 and college classrooms and student outcomes (Bowman et al., 2023; Lau, 2022; Mickelson, 2013), future work should also consider how the combination of same-race matching and exposure to same-race peers influences student outcomes. This is particularly important given the fact the incidence of same-race matching varies substantially across colleges in our setting. The potential of students' positively selecting same-race instructors and/or sorting into courses that facilitate same-race matches could be an important mechanism through which same-race matching influences outcomes (or moderator of this relationship). Extensions of this work could also include considerations for the interaction between same-race and same-socioeconomic status or same-gender matching (e.g., Cleveland & Scherer, 2024). Future research could also use mixed and qualitative approaches to better explicate the mechanisms via which same-race matching produces positive academic outcomes and to contextualize the experiences of college students who experience same-race matching, particularly across different institutional contexts and students' academic and occupational expectations (Odle, 2022). In all, there is rich opportunity for a deeper exploration of same-race matching in K-12 and higher education that not only estimates the magnitude of its benefit but also considers how access to that benefit is distributed and how its benefits vary.



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**Table 1. Descriptives.**

<b>Same-Race Match</b>					
41.6%					
<b>Student</b>		<b>Instructor</b>		<b>Course</b>	
Race: African American	11.5%	Race: African American	8.3%	First College Level	59.9%
Race: Asian	3.0%	Race: Asian	3.2%	First College Level: Math	34.7%
Race: Hispanic	46.5%	Race: Hispanic	17.6%	First College Level: Reading & Writing	0.5%
Race: International	0.5%	Race: International	0.1%	First College Level: Reading	24.6%
Race: Native American	0.4%	Race: Native American	0.5%	Gateway	23.5%
Race: Two or More Races	2.4%	Race: Two or More Races	0.6%	Gateway: College Algebra	5.0%
Race: Unknown	1.7%	Race: Unknown	3.9%	Gateway: Business Math	1.1%
Race: White	34.1%	Race: White	65.7%	Gateway: Non-STEM Math	0.7%
Age [mean]	19.7	Sex: Female	53.0%	Gateway: Elem. Statistics	0.7%
Sex: Female	51.1%	Sex: Male	47.0%	Gateway: English Composition	11.2%
Sex: Male	48.9%	Rank: Assistant	4.2%	Developmental/Remedial Ed.	15.6%
Course Pass Rate	68.5%	Rank: Associate	3.6%	Career & Technical Ed.	12.3%
Course Grade A or B	51.5%	Rank: Full	4.2%	Student Success/Learning Course	4.9%
Cumulative Credit Hours [mean]	10.5	Rank: Instructor	39.6%	Mode: Face-to-Face	91.9%
		Rank: No Rank	35.4%	Mode: Hybrid	2.2%
		Rank: Other	12.9%	Mode: Online	5.9%
		Status: Full-Time	70.3%		
		Status: Part-Time	29.7%		
		Age [mean]	50.2		
		Course-Section Load [mean]	4.1		
		Degree: None or Unknown	2.4%		
		Degree: Certificate or Less	0.9%		
		Degree: Associate	5.2%		
		Degree: Bachelor's	9.4%		
		Degree: Master's	66.3%		
		Degree: Doctorate	15.8%		

Source: Texas ERC

Notes: N=2,184,349; Data include universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges. Percentages may not add to 100 due to rounding.



**Table 2. Student and instructor populations.**

	Student		Instructor	
	n	%	n	%
African American	66,208	11.4%	3,141	9.8%
Asian	18,692	3.2%	1,339	4.2%
Hispanic	277,837	47.9%	5,149	16.1%
International	2,681	0.5%	76	0.2%
Native American	2,329	0.4%	138	0.4%
Two or More Races	13,584	2.3%	239	0.7%
Unknown	9,911	1.7%	1,706	5.3%
White	188,942	32.6%	20,274	63.2%
<b>Total</b>	<b>580,184</b>	<b>100.0%</b>	<b>32,062</b>	<b>100.0%</b>

Source: Texas ERC

Notes: Notes: Table reports unique counts of students and instructors from universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges.



Semester-Year FE

X

X

Source: Texas ERC

Notes: \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ . Table reports coefficients and robust standard errors clustered at student level. Course Pass and Grade models (columns 1-6) use student fixed effects; Credit Hours models (columns 7-8) use college and year fixed effects. (Columns 1-6 with college and year fixed effects shown in Appendix Table 1.) Pass is defined as earning A, B, C, or Pass. Credit Hours are all cumulative credits earned by end of students' first semester. All samples are drawn from universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges. Course Pass models captures all student-course-instructor pairs; Grade models capture only credit-bearing/graded courses where letter grades were awarded; Credit Hours model captures ultimate outcome per student (thus, only one observation per student). Baseline Outcome Mean captures mean Pass Rate, Grade A or B incidence, or Credit Hours for counterfactual populations (i.e., Pass Rate and Grades in unmatched courses and Credit Hours for never-matched students). International and Native American coefficients masked from table as each comprise less than 0.5% of the total student population.

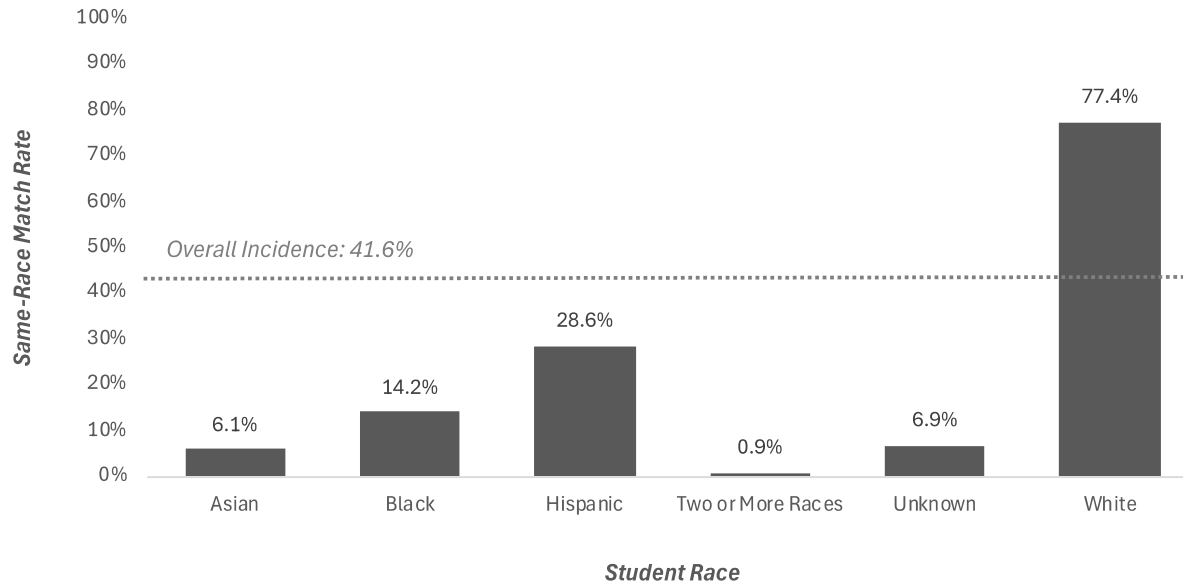
**Table 4. Same-race matched instructors in select courses.**

	<b>Developmental/Remedial Ed.</b>		<b>When same-race matched, instructor features:</b>	
	<b>Yes</b>	<b>No</b>		
African American	16.9%	13.5%	Age [mean]	51.5
Asian	5.9%	6.1%	Course-Section Load [mean]	3.3
Hispanic	33.8%	27.5%	Rank: Tenured or Tenure-Track	8.0%
International	0.3%	0.3%	Rank: Instructor	41.7%
Native American	0.3%	0.7%	Rank: Adjunct, Visiting, or Special	14.1%
Two or More Races	1.5%	0.8%	Rank: Other or No Rank	36.2%
Unknown	8.0%	6.6%	Degree: Associate or Less	2.3%
White	72.5%	78.0%	Degree: Bachelor's	22.4%
<b>Overall</b>	<b>38.2%</b>	<b>42.3%</b>	Degree: Master's	69.5%
			Degree: Doctorate	5.7%
	<b>Student Success/Learning Course</b>		<b>When same-race matched, instructor features:</b>	
	<b>Yes</b>	<b>No</b>		
African American	33.9%	13.1%	Age [mean]	50.0
Asian	1.6%	6.3%	Course-Section Load [mean]	3.0
Hispanic	33.9%	28.3%	Rank: Tenured or Tenure-Track	9.5%
International	0.2%	0.3%	Rank: Instructor	29.9%
Native American	0.3%	0.6%	Rank: Adjunct, Visiting, or Special	30.6%
Two or More Races	0.8%	0.9%	Rank: Other or No Rank	30.1%
Unknown	6.5%	6.9%	Degree: Associate or Less	1.6%
White	65.8%	77.8%	Degree: Bachelor's	5.0%
<b>Overall</b>	<b>40.1%</b>	<b>41.7%</b>	Degree: Master's	77.6%
			Degree: Doctorate	15.7%

Source: TX ERC.

Notes: N=2,184,349; Data include universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges. Left panel shows same-race matching rates by race and overall in Developmental/Remedial Education courses (top) and Student Success/Learning Frameworks courses (bottom). Right panel provides descriptive features of instructors in these courses that served as same-race matches for students, including age, degree, rank, and average course-section course load in that year-semester.

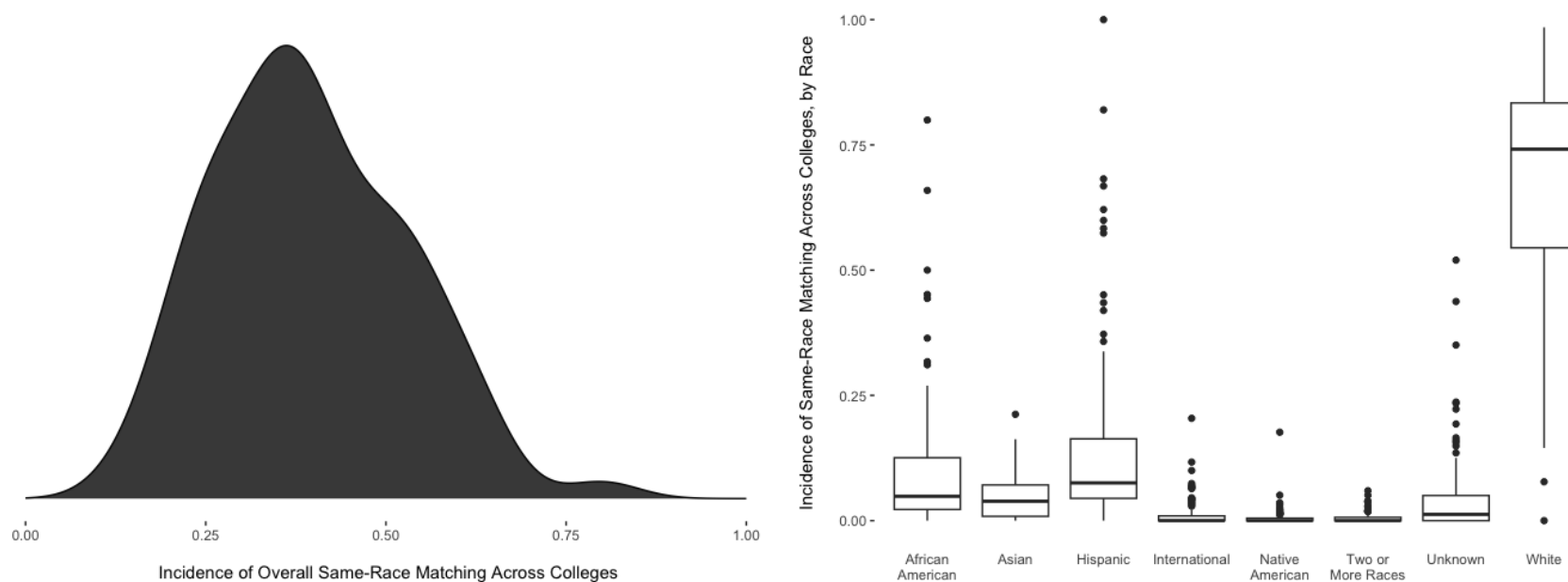
**Figure 1. Same-race match incidence by race.**



Source: Texas ERC.

Notes: N=2,184,349. Figure plots incidence of same-race matching by race across universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges. Matching rates for International and Native American students masked from figure because each represent less than 0.5% of the total student population.

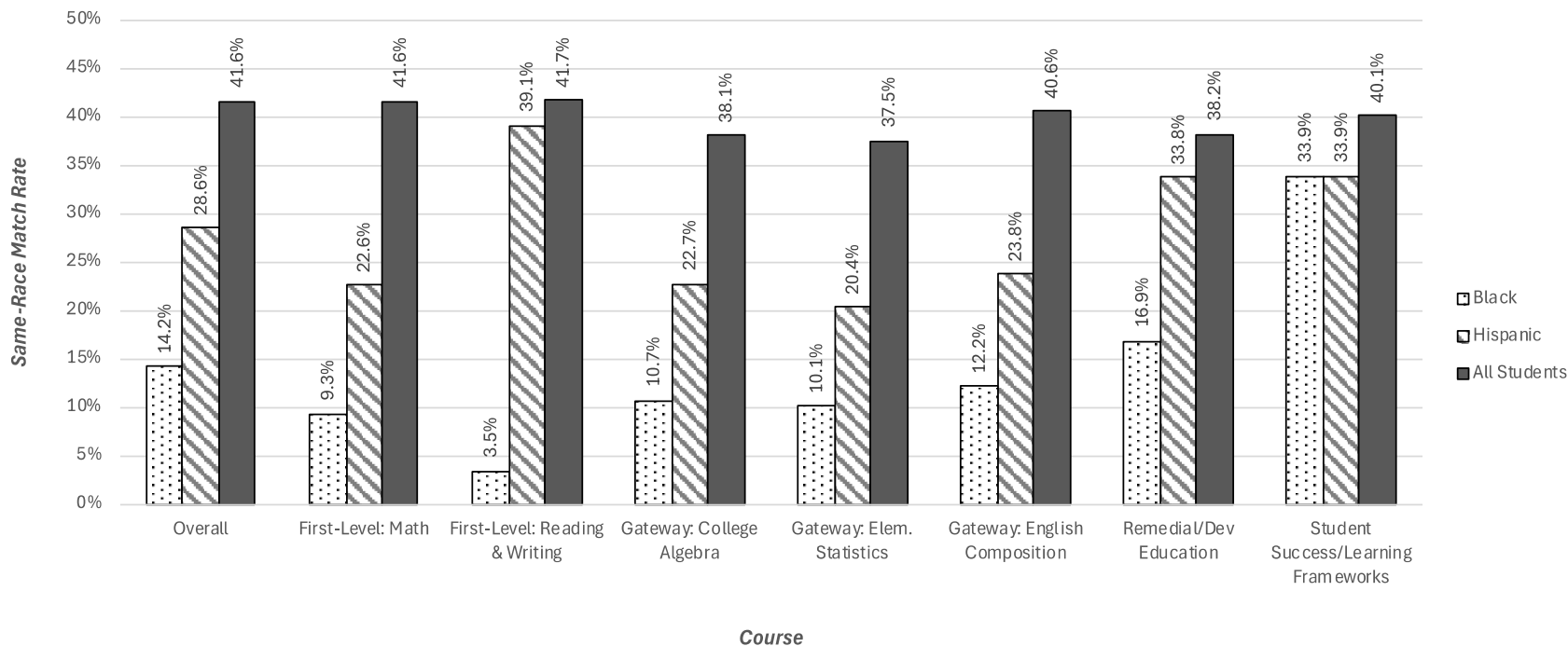
**Figure 2. Across-college variation in same-race matching incidence, overall and by race.**



Source: Texas ERC.

Notes: N=2,184,349. Histogram plots distribution of overall same-race matching incidence across colleges (unweighted by enrollment), and boxplots show across-college variation in match-rates within race. Here, the college-wide overall incidence of matching or race-within-college incidence of matching is the unit of analysis, not the student-instructor-course record, thus means/medians here are not equivalent to means/medians in other tables/figures. Data include universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges.

**Figure 3. Same-race match incidence by course for all students, Black students, and Hispanic students.**



Source: Texas ERC.

Notes: N=2,184,349. Figure plots overall incidence of same-race matching by course designation across universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges. Figure plots incidence for all students, Black students, and Hispanic students.

## **APPENDIX**



**Appendix Table 1. Same-race matching outcomes with altered specifications.**

	Course Pass			Grade: A or B		
	(1)	(2)	(3)	(4)	(5)	(6)
Same-Race Match	0.038*** (0.007)			0.051*** (0.006)		
Match x African American		0.076*** (0.011)			0.083*** (0.011)	
Match x Asian		-0.094*** (0.006)			-0.107*** (0.008)	
Match x Hispanic		0.017* (0.009)			0.026*** (0.005)	
Match x Two or More Races		-0.004 (0.023)			0.013 (0.034)	
Match x Unknown		0.032 (0.030)			0.028 (0.029)	
Match x White		0.054*** (0.007)			0.071*** (0.007)	
Match x Business			0.015* (0.009)			0.026*** (0.008)
Match x Communications			0.035*** (0.012)			0.055*** (0.012)
Match x Education			0.054*** (0.008)			0.071*** (0.008)
Match x Liberal Arts			0.033*** (0.010)			0.047*** (0.009)
Match x Other			0.068*** (0.007)			0.082*** (0.008)
Match x Psychology			0.030*** (0.008)			0.048*** (0.009)
Match x Social Sciences			0.016 (0.016)			0.031* (0.018)
Match x STEM			0.053*** (0.011)			0.065*** (0.012)
Match x STEM-Related			0.024*** (0.007)			0.039*** (0.007)
N	2,184,349	2,184,349	2,184,349	2,138,659	2,138,659	2,138,659
Baseline Outcome Mean	0.679	0.679	0.679	0.497	0.497	0.497
Student FE						
College FE	X	X	X	X	X	X
Semester-Year FE	X	X	X	X	X	X

Source: Texas ERC

Notes: \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ . Table reports coefficients and robust standard errors clustered at the college level. All models use college and semester-year fixed effects. Pass is defined as earning A, B, C, or Pass. All samples are drawn from universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges. Course Pass models captures all student-course-instructor pairs; Grade models capture only credit-bearing/graded courses where letter grades were awarded. Baseline Outcome Mean captures mean Pass Rate or Grade A or B incidence (i.e., Pass Rate and Grades in unmatched courses). International and Native American coefficients masked from table as each comprise less than 0.5% of the total student population.

Appendix Table 2. Same-race matching outcomes: Course pass rate detail.

Overall			
	Match	No Match	p
African American	60.7%	56.4%	<0.001
Asian	77.9%	79.9%	0.003
Hispanic	71.0%	69.3%	<0.001
International	40.0%	78.1%	0.001
Native American	46.4%	67.1%	0.004
Two or More Races	66.0%	66.3%	0.891
Unknown	72.8%	68.9%	<0.001
White	71.7%	71.9%	0.104
<b>Overall</b>	<b>71.1%</b>	<b>67.9%</b>	<b>&lt;0.001</b>

COURSE	First College Level Course														
	Any First-Level			Math			Reading & Writing			Reading			Writing		
	Match	No Match	p	Match	No Match	p	Match	No Match	p	Match	No Match	p	Match	No Match	p
African American	59.1%	54.7%	<0.001	57.5%	52.6%	<0.001	50.0%	49.3%	0.939	60.2%	57.2%	<0.001	57.1%	60.9%	0.863
Asian	77.9%	79.3%	0.057	77.4%	77.8%	0.651	83.3%	80.2%	0.640	79.5%	81.7%	0.185	33.3%	84.3%	0.264
Hispanic	69.9%	67.4%	<0.001	66.8%	64.6%	<0.001	67.7%	67.7%	0.984	73.5%	71.3%	<0.001	66.0%	64.4%	0.643
International	37.5%	77.4%	0.006	20.0%	76.2%	0.002	-	83.3%	-	66.7%	78.9%	0.588	-	60.0%	-
Native American	45.5%	65.3%	0.032	50.0%	62.8%	0.280	-	71.4%	-	38.5%	68.5%	0.054	-	72.2%	-
Two or More Races	65.4%	66.3%	0.747	64.2%	64.3%	0.986	100.0%	65.0%	-	66.7%	69.4%	0.553	-	66.1%	-
Unknown	68.8%	66.8%	0.126	69.0%	65.1%	0.030	41.7%	65.1%	0.041	70.0%	69.0%	0.652	100.0%	69.1%	-
White	70.9%	71.6%	<0.001	68.9%	68.7%	0.406	71.1%	70.2%	0.529	74.2%	75.6%	<0.001	76.1%	75.3%	0.840
<b>Overall</b>	<b>70.3%</b>	<b>66.8%</b>	<b>&lt;0.001</b>	<b>68.3%</b>	<b>64.5%</b>	<b>&lt;0.001</b>	<b>69.7%</b>	<b>66.1%</b>	<b>&lt;0.001</b>	<b>73.3%</b>	<b>70.1%</b>	<b>&lt;0.001</b>	<b>73.0%</b>	<b>66.8%</b>	<b>0.002</b>

COURSE	Gateway Course																	
	Any Gateway			College Algebra			Business Math			Non-STEM Math			Elem. Statistics			English Composition		
	Match	No Match	p	Match	No Match	p	Match	No Match	p	Match	No Match	p	Match	No Match	p	Match	No Match	p
African American	61.1%	56.8%	<0.001	49.3%	46.9%	0.176	51.2%	37.5%	0.019	60.2%	50.8%	0.062	43.0%	48.5%	0.198	61.4%	59.1%	0.020
Asian	75.9%	79.9%	0.001	73.9%	73.9%	0.971	73.3%	78.8%	0.179	84.2%	78.5%	0.384	70.2%	72.6%	0.623	82.4%	80.6%	0.501
Hispanic	70.2%	67.4%	<0.001	60.9%	56.7%	<0.001	65.3%	61.7%	0.001	68.7%	65.7%	0.037	60.2%	55.7%	0.003	68.8%	68.8%	0.884
International	50.0%	77.8%	0.270	50.0%	69.6%	0.546	0.0%	71.1%	-	-	75.8%	-	-	63.0%	-	-	80.2%	-
Native American	45.5%	64.7%	0.251	100.0%	50.3%	-	-	66.3%	-	-	66.7%	-	-	63.3%	-	33.3%	67.9%	0.072
Two or More Races	54.5%	66.0%	0.025	38.5%	57.8%	0.059	25.0%	61.9%	0.059	50.0%	66.5%	0.798	100.0%	54.6%	-	69.8%	67.3%	0.734
Unknown	68.5%	67.2%	0.528	55.3%	56.7%	0.805	37.5%	55.7%	0.175	100.0%	65.3%	-	83.3%	55.7%	0.009	67.0%	69.3%	0.462
White	69.9%	70.5%	0.019	61.0%	60.5%	0.409	69.3%	69.6%	0.803	68.6%	69.3%	0.643	61.7%	60.0%	0.311	72.0%	72.6%	0.119
<b>Overall</b>	<b>69.6%</b>	<b>67.1%</b>	<b>&lt;0.001</b>	<b>60.9%</b>	<b>57.4%</b>	<b>&lt;0.001</b>	<b>68.1%</b>	<b>62.1%</b>	<b>&lt;0.001</b>	<b>68.6%</b>	<b>64.1%</b>	<b>&lt;0.001</b>	<b>61.0%</b>	<b>56.4%</b>	<b>&lt;0.001</b>	<b>70.8%</b>	<b>68.6%</b>	<b>&lt;0.001</b>

COURSE	Developmental/Remedial Ed.			Career & Technical Ed.			Student Success/Learning Course			Other Courses, When Enrolled in Student Success/Learning Course		
	Match	No Match	p	Match	No Match	p	Match	No Match	p	Match	No Match	p
	African American	62.1%	56.4%	<0.001	57.6%	57.0%	0.522	64.1%	64.9%	0.361	63.2%	56.8%
Asian	78.6%	81.2%	0.141	86.8%	78.2%	0.032	90.0%	87.7%	0.594	79.1%	81.8%	0.090
Hispanic	68.6%	68.2%	0.138	76.1%	75.9%	0.471	79.4%	78.3%	0.002	73.3%	69.6%	<0.001
International	50.0%	77.7%	0.271	-	79.5%	-	100.0%	83.8%	-	0.0%	79.0%	-
Native American	50.0%	63.2%	0.678	36.8%	73.0%	0.005	100.0%	72.3%	-	40.0%	59.9%	0.254
Two or More Races	63.6%	60.4%	0.540	69.0%	69.4%	0.957	52.6%	75.3%	0.070	72.8%	68.9%	0.411
Unknown	65.6%	67.1%	0.499	85.9%	74.4%	<0.001	83.3%	77.0%	0.092	68.2%	68.6%	0.879
White	65.1%	66.9%	<0.001	76.3%	76.8%	0.138	77.5%	79.2%	0.001	71.1%	73.0%	<0.001
<b>Overall</b>	<b>66.5%</b>	<b>66.1%</b>	<b>0.041</b>	<b>75.7%</b>	<b>72.0%</b>	<b>&lt;0.001</b>	<b>77.0%</b>	<b>77.0%</b>	<b>0.810</b>	<b>71.6%</b>	<b>68.4%</b>	<b>&lt;0.001</b>

Source: TX ERC.  
 Notes: N=2,160,877; Data include universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges. Sample excludes no/non-credit and ungraded courses. Pass rate is share of students earning A, B, C, or Pass. p value is on t-test of mean differences of outcomes between matched and non-matched groups. Course pass rates cannot be computed if there are no same-race matches; p-values cannot be computed if there is only 1 same-race match (evidenced here by a 100% or 0% pass rate).

**Appendix Table 3. Same-race matching occurrence detail.**

	<b>Overall</b>	
African American	14.2%	
Asian	6.1%	
Hispanic	28.6%	
International	0.3%	
Native American	0.6%	
Two or More Races	0.9%	
Unknown	6.9%	
White	77.4%	
<b>Overall</b>	<b>41.6%</b>	

	<b>First College Level Course</b>					
	Any First-Level	Math	Reading & Writing	Reading	Writing	Non First-Level
African American	12.4%	9.3%	3.5%	15.8%	5.6%	15.9%
Asian	6.4%	8.1%	10.2%	3.4%	5.6%	5.3%
Hispanic	24.4%	22.6%	39.1%	26.5%	28.1%	34.6%
International	0.3%	0.3%	0.0%	0.3%	0.0%	0.2%
Native American	0.6%	0.7%	0.0%	0.6%	0.0%	0.6%
Two or More Races	0.7%	0.7%	0.3%	0.8%	0.0%	1.1%
Unknown	6.0%	6.3%	12.6%	5.5%	1.8%	7.8%
White	78.2%	79.4%	61.5%	76.6%	81.1%	75.9%
<b>Overall</b>	<b>41.1%</b>	<b>41.6%</b>	<b>41.7%</b>	<b>40.4%</b>	<b>45.7%</b>	<b>42.4%</b>

	<b>Gateway Course</b>						
	Any Gateway	College Algebra	Business Math	Non-STEM Math	Elem. Statistics	English Composition	Non-Gateway
African American	17.3%	10.7%	6.3%	6.0%	10.1%	12.2%	13.4%
Asian	7.3%	15.8%	13.3%	11.8%	14.3%	2.8%	5.6%
Hispanic	26.0%	22.7%	31.3%	21.1%	20.4%	23.8%	29.5%
International	0.3%	0.9%	1.3%	0.0%	0.0%	0.0%	0.2%
Native American	0.6%	0.2%	0.0%	0.0%	0.0%	0.9%	0.6%
Two or More Races	0.8%	0.9%	1.3%	0.4%	0.2%	0.7%	0.9%
Unknown	6.0%	4.5%	5.2%	0.3%	8.2%	6.8%	7.1%
White	76.0%	72.7%	76.0%	75.3%	76.7%	80.9%	77.8%
<b>Overall</b>	<b>40.2%</b>	<b>38.1%</b>	<b>48.3%</b>	<b>39.2%</b>	<b>37.5%</b>	<b>40.6%</b>	<b>42.1%</b>

	<b>Developmental/Remedial Ed.</b>		<b>Career &amp; Technical Ed.</b>		<b>Student Success/Learning Course</b>	
	Yes	No	Yes	No	Yes	No
African American	16.9%	13.5%	13.4%	14.3%	33.9%	13.1%
Asian	5.9%	6.1%	2.6%	6.2%	1.6%	6.3%
Hispanic	33.8%	27.5%	36.3%	27.6%	33.9%	28.3%
International	0.3%	0.3%	0.0%	0.3%	0.2%	0.3%
Native American	0.3%	0.7%	1.3%	0.5%	0.3%	0.6%
Two or More Races	1.5%	0.8%	0.9%	0.9%	0.8%	0.9%
Unknown	8.0%	6.6%	6.7%	6.9%	6.5%	6.9%
White	72.5%	78.0%	81.4%	76.7%	65.8%	77.8%
<b>Overall</b>	<b>38.2%</b>	<b>42.3%</b>	<b>49.5%</b>	<b>40.5%</b>	<b>40.1%</b>	<b>41.7%</b>

Source: TX ERC.

Notes: N=2,184,349; Data include universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges.

**Appendix Table 4. Same-race matching occurrence over time.**

	Fall	2013	2014	2015	2016	2017	2018	2019	Three-Year Change (%)	Six-Year Change (%)
African American		13.6%	13.3%	10.1%	14.4%	15.2%	16.0%	16.0%	11.2%	18.1%
Asian		4.5%	6.2%	5.3%	6.0%	6.1%	7.0%	7.0%	16.6%	55.1%
Hispanic		26.5%	25.7%	29.6%	29.2%	29.7%	29.1%	30.1%	3.0%	13.3%
International		0.1%	0.1%	0.0%	0.2%	0.3%	0.2%	0.7%	285.0%	371.4%
Native American		1.1%	0.1%	0.5%	0.5%	0.8%	0.3%	1.0%	94.3%	-4.4%
Two or More Races		1.0%	0.8%	0.8%	0.6%	0.8%	0.9%	1.1%	95.3%	5.7%
Unknown		6.0%	13.0%	13.8%	3.7%	1.8%	4.2%	2.2%	-41.0%	-63.7%
White		79.0%	77.4%	78.1%	76.9%	77.8%	76.8%	75.3%	-2.0%	-4.6%
<b>Overall</b>		<b>42.6%</b>	<b>41.3%</b>	<b>43.0%</b>	<b>41.8%</b>	<b>41.9%</b>	<b>41.3%</b>	<b>39.7%</b>	<b>-5.0%</b>	<b>-6.8%</b>

Source: TX ERC.

Notes: N=2,184,349; Data include universe of courses for first-time-in-college freshmen who enrolled from fall 2013 through fall 2019 in Texas community colleges.