Race and Stratification in College Enrollment over Time

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ABSTRACT

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In this study we examine trends in segregation by race and ethnicity in higher education from 1985 to 2013. We have three key findings. Over the past 30 years, students from different groups have attended college at increasingly similar rates; gaps are decreasing. But these decreases have been driven largely by large increases in minority student enrollment at non-degree granting and two-year colleges. Once we condition on attendance at a degree granting school, we see *increasing* gaps over time. Finally, among only four-year colleges, attendance has been tilted in favor of White students and been relatively unchanged for nearly 30 years. The only exception to this has been for the very few minority students who are able to enroll at the most selective institutions.

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Americans have long recognized that education is one of the great drivers of social mobility; a Bachelor's degree provides one of the best chances for upward mobility (Torche, 2011). And the more selective the college a student attends, the higher the potential economic returns, particularly from students from disadvantaged backgrounds (Dale & Krueger, 2011; Hoekstra, 2009). However, access to selective colleges does not appear equal for the college-going population—minority and low income students attend selective colleges at disproportionately low rates (Alon & Tienda. 2007; Engberg, 2012; Posselt, Jaquette, Bielby, & Bastedo, 2012).

But because the American higher education system is diverse, and access may increase at colleges of some levels of selectivity and decrease at others, it has been difficult to say succinctly whether disparities in access have been increasing or decreasing over time. Although it has been easy to track race-based gaps in enrollment at individual levels of selectivity, or at two- versus four-year colleges, we have lacked the tools necessary to measure disparities in college enrollment in a way that is sensitive to the fact that it matters precisely *where* a student enrolls in college and that can be tracked over time.

As a result of the importance of earning a postsecondary degree for social mobility—and the selectivity of the school from which one earns this degree more specifically—as well as longstanding perceptions of unequal access, colleges and universities have employed race-conscious affirmative action policies in order to provide equitable access to selective higher education for racial and ethnic minority students. The controversy surrounding such policies has intensified over time (Long, 2007). Indeed, with the Supreme Court's second *Fisher* decision, it is clear that colleges have entered an era where they will have to continually study and justify their use of affirmative action.

As a college education has increasingly become the norm, the differentiation between various tiers of higher education institutions has become more pronounced and demand for spaces in selective colleges has grown (Labaree, 2013). This competition has increased hostility toward affirmative action

policies, as some members of threatened majority groups have come to believe that affirmative action policies cause the ostensibly meritocratic college admissions system to discriminate against otherwise-deserving students in favor of racial and ethnic minorities with lower academic credentials. This hostility has generated decades of legal cases challenging the continued use of affirmative action in college.

In its 2003 *Grutter* decision, the Supreme Court expected that race-conscious affirmative action, in its then-current form, would cease to be necessary after 25 years (*Grutter v. Bollinger*, 2003). Now, more than a decade into this 25-year timeline, our goal in this article is to quantify the extent to which Black and Hispanic students are under-represented at different levels of postsecondary selectivity and determine whether patterns of stratification have changed over time.

We examine the racial distribution of Americans enrolled in college to assess the Supreme Court's claim that the need for race-conscious affirmative action is receding. Specifically, we address the following research questions: (1) What does the racial distribution of students' postsecondary destinations look like? (2) How has this distribution changed over time? Our work tells three interrelated stories. The first is a story of decreasing gaps in college enrollment overall. Over the past 30 years, students from different race and ethnicity groups are attending college at increasingly similar rates. The second story is less sanguine. Decreases in gaps have been driven largely by disproportionately large increases in minority student enrollment at non-degree granting and two-year colleges. Once we condition on attendance at a degree granting school, we see *increasing* gaps over time; enrollment at degree granting colleges is increasingly tilted in favor of White students. The third is a story of stable segregation. Among only four-year colleges, attendance has been tilted in favor of White students and been relatively unchanged for nearly 30 years. The only exception to this stable trend has been for the very few minority students who are able to enroll at the most selective institutions.

The Importance of College Choice

In the United States, the economic returns to a college education are significant and impressive.

A college degree is associated with greater upward economic mobility, higher lifetime income, better odds of employment, higher levels of personal saving, improved health, a greater ability to pass down cultural capital to future generations, and a longer life (Hout, 2012). The American wage premium for a college degree is now the highest among OECD countries (Douglass, 2009). Despite the widely reported rising costs of college, earning a college degree pays off across the population: the college wage premium is large for both men and women and for all racial groups (Baum, Ma, & Payea, 2013). Moreover, the annual earnings premium for a college graduate has roughly doubled since the 1970s (Autor, 2010; Baum, Ma, & Payea, 2013; Zumeta, 2010).

While *in general* higher education provides real and impressive economic benefits for U.S. adults, the U.S. higher education system is enormously diverse and highly stratified (Labaree, 2013). Not all college degrees are the same; nor do all provide the same economic returns. The U.S. higher education system is distinctly hierarchical, with many low-status, broad-access institutions at the bottom and relatively few high-status, exclusive-access universities at the top (Labaree, 2013). Students who attend elite schools enjoy larger tuition subsidies, lavish college resources, and more faculty attention (Hoxby, 2009). Many researchers also now believe that selective college attendance is casually related to higher average earnings (Long, 2008; Black & Smith, 2004; Hoekstra, 2009), with evidence suggesting the largest benefits may accrue to minority and other disadvantaged students (Dale & Krueger, 2011).

The potential for these benefits is not lost on students. As college enrollment rates have grown, *where*—as opposed to *if*—a student attends college has become increasingly important (Hoxby, 2004). Over the past forty years, as travel and communication costs have decreased significantly, students have become more willing to travel long distances to go to highly-rated schools and less willing to attend schools that they perceive as being poorly resourced or having less academically-able peers (Hoxby, 2009). As competition for the few seats at elite colleges has intensified, students attending the elite schools are increasingly surrounded by peers with higher achievement, most of who come from affluent,

highly-educated families living in high-income neighborhoods.

These social network connections and the increasing prestige of elite schools mean that in addition to economic benefits, students attending highly selective schools also experience disproportionate increases in social and cultural capital. Elite graduate schools and top financial, consulting, and law firms recruit almost exclusively at highly selective colleges; likewise, evaluators at elite firms routinely use school prestige as a key factor when screening resumes (Rivera, 2009). Indeed, nearly half of all Fortune 500 CEOs have degrees from one of thirteen schools, twelve of which are highly selective (Wecker, 2012).

Affirmative Action and Admission to Highly Selective Schools

Historically, disproportionately few minority students have attended elite schools. This underrepresentation is in part due to patterns of segregation and legacies of discrimination, as well as lack of access to information about college and high quality primary and secondary education (Carter & Welner, 2013; Duncan & Murnane, 2011; Ferguson, 1998; Kane, 1998). Indeed, race-based achievement gaps persist, and gaps between White and non-White racial minorities are particularly large among high achievers, for whom academic performance is likely to play the greatest role in selective college admission (Neal, 2006; Reardon, Robinson-Cimpian, & Weathers, 2015). In part to address the disparities that arise from unequal access to educational opportunities, colleges and universities have turned to race-conscious affirmative action in their admissions process, giving under-represented racial and ethnic minorities additional weight as part of a holistic application review process.

These policies often receive the ire of the public and have come under heavy judicial scrutiny. Several U.S. Supreme Court cases in the past four decades have led to rulings on the issue of affirmative action, most of which recognize the need for proactive policies to achieve racial diversity on college campuses and allowing colleges to use race as one criterion in college admissions decisions. However, as Justice O'Conner famously wrote in the *Grutter* decision, the court did not expect that affirmative action

would be necessary in the future, which she defined as around 2028 (*Grutter v Bollinger*, 2003).

Higher Education Stratification

Researchers have long noted the underrepresentation of Black and Hispanic students in higher education (see for example, Berkner & Chavez, 1997; Kane, 1994). While race-based gaps in high school graduation and high school achievement have gradually closed, overall gaps in college enrollment grew in the late twentieth century (Kane, 2004). In addition to these general enrollment gaps, past work has also shown that conditional on *any* college enrollment, Black and Hispanic students are also much less likely than their White peers to be enrolled in four-year schools (Bozick & Lauff, 2007).

Only recently have scholars also noted "horizontal" gaps well. That is, within a given level of enrollment (four-year colleges, for example) there are racial gaps in terms of the selectivity of the colleges that students attend. Indeed, longitudinal studies of admission to selective colleges have shown increasing underrepresentation of minority students. This trend has been tied to an increased emphasis among admissions offices on test scores (Alon & Tienda 2007; Posselt et al., 2012) as well as on academic preparation more broadly and extracurricular leadership (Posselt et al., 2012).

The present study provides two important contributions to our understanding of racial stratification in postsecondary schooling. First, we use far larger data sets. Both Alon and Tienda (2007) and Posselt, et al. (2012) draw conclusions about the racial composition of colleges using samples of students from the National Longitudinal Survey of 1972, High School and Beyond 1980, National Educational Longitudinal Study of 1988, and Educational Longitudinal Study of 2002. These data sources contain relatively few students in some race groups. In contrast, we primarily use data from the Integrated Postsecondary Education Data System (IPEDS), which not only gives us a nearly complete picture of postsecondary enrollment, particularly at four-year colleges, but also provides annual data rather than the nearly-decennial data from the NCES surveys used in previous research. Our source thus gives us a much more complete picture of postsecondary stratification and its evolution over time,

freeing us from the pitfalls of having to extrapolate from potentially small subsample sizes or potentially anomalous cohorts of students.[1]

Second, our novel approach for describing race-based achievement gaps enables us to quantify the extent of racial stratification between different levels of postsecondary education. This technique is helpful because it is difficult to track changes in stratification across multiple levels of postsecondary type and selectivity. For example, if Black students made up 20 percent of students in community colleges, 15 percent of students in non-selective four year colleges, and 3 percent of students in the most selective colleges in 1990, but that five years later these percentages were 22, 11, and 5, respectively, what should we conclude about changes in the overall over- or under-representation of Black students in college? The answer is difficult because these students appear to gain ground in some areas, but lose it in others. The technique we use enables us to provide a precise answer to this question.

Data

We combine multiple sources of data to study the change in the racial distribution of students across colleges of different levels of selectivity over time. Our primary data source is the Integrated Postsecondary Education Data System (IPEDS)—a set of annual surveys conducted by NCES that collects data from every college, university, technical and vocational institution that participates in the federal student financial aid programs. Among other features, IPEDS contains information on basic institutional characteristics, tuition prices, enrollment, degree completions, and institutional resources. These data support the study of enrollment rates by race at nearly every college in the country for the 30 years from 1985 to 2013. The continuous nature of these data enable us to fill in many of the gaps in prior work.

The method we employ utilizes the proportion of different race/ethnicity groups enrolled in different levels of postsecondary institutions. For this reason, we combined the IPEDS data with annual Census population estimates to determine the size of the entire cohort of students of each race/ethnicity group, regardless of their postsecondary enrollment status.[2] Specifically, we look at the estimated

population size of 18-year-olds—the age of the traditional first-year college student.

Because of the increasingly varied age of students at their first college entry, the decision to use 18-year-olds as the cohort denominator is complicated for a number of reasons that could bias measures of enrollment gaps. We are particularly concerned by the co-occurrence of uneven growth of racial/ethnic groups relative to each other, and a differential likelihood of these same groups to delay first college enrollment relative to other groups. For example, imagine that across all racial groups 75 percent of all high school graduates eventually enroll in college. If the population of Asians in the United States is growing significantly more quickly than other racial groups *and* Asians tend to delay college enrollment by 10 years, it will look like Asians enroll at much lower rates than other groups (75 percent of all 28-year-olds will be less than the 75 percent of 18-year-olds). We investigate the potential upper bound of this bias by using an average of 18-30 year-olds as the measure of the size of each cohort. These results are available upon request and are not qualitatively different from the main results we present here.

We combine all of this data with selectivity ratings of colleges and universities from Barron's Profiles of American Colleges. Barron's classifies four-year colleges and universities on a scale from 1-6, where 1 is the most selective and 6 is the least selective.[3] These ratings are based on the high school GPAs, high school class ranks, and SAT/ACT scores of enrolled students, as well as on the proportion of applicants the schools admit. Although Barron's rankings have changed over time, the discussion of our results uses the 2008 rankings so that the group of colleges in each selectivity category is constant over time.[4] We create separate categories for two-year colleges and non-degree granting postsecondary institutions, which Barron's does not rank.

Some 360 degree-granting four-year institutions are missing a Barron's rank. In these cases, we attempted to estimate the rating based on publically available data and Barron's criteria for determining college selectivity. To check the sensitivity of our results to this imputation, we repeat our analyses first by dropping these schools from the analysis and then by assigning them the highest (Barron's 1) and

lowest (Barron's 6) possible ratings. Our results are not sensitive to this imputation of data (results are available upon request).

We focus on the full-time and part-time enrollment of all first-time students. By capturing only first-time students we avoid double counting students over time: if students were to transfer or stop-out of college and then re-enter, their enrollment would count in the population proportions of two cohorts of students.[5] By focusing on all students, rather than just full-time ones, we avoid undercounting students in community colleges and less-selective four-year colleges, where part-time enrollment is common. Black and Hispanic students are more likely than their White peers to enroll in less selective schools and to enroll part time (NCES, Table 306.20; NCES, Table 306.10). The trade-off in using all, rather than only full-time, students is the potential to double count students who are enrolled at multiple institutions in their first term of attendance. However, it appears that relatively few students enroll in more than one college—somewhat less than 2 percent of all students enrolled in any postsecondary institution are likely to be enrolled in more than one institution (National Student Clearinghouse Research Center, 2015).[6]

Further, IPEDS may undercount students enrolled in for-profit institutions (Cellini & Goldin, 2012). This undercount will bias our results only if these institutions disproportionately undercount students in a way related to student race, or if schools that are more prone to undercount disproportionately serve students from particular racial groups. If, as is more likely the case, underreporting is essentially random across this sector, our results will not be biased because they rely only on the relative percentage of students from different race groups enrolled in each level of education.

Even with these limitations, we believe our description is valuable because it is much more comprehensive than previous attempts at quantifying enrollment gaps and because we expect it to faithfully capture enrollment at higher levels of selectivity where there tend to be more traditional students and where concerns over racial minority underrepresentation are greatest.

Method

We quantify the disparities in enrollment by race across different levels of college selectivity by using the v-statistic methodology first developed by Ho and Reardon (2012). This method was first used to measure achievement gaps on tests in which only categorical score thresholds (e.g. fail, low pass, pass, high pass), rather than continuous test scores, were available. Ho and Reardon recover test gaps by measuring the distribution of test scores implied by the percentage of students of each race group that score above certain fixed, ordinal proficiency thresholds. Here we use the method to quantify enrollment gaps using fixed, ordinal categorical levels of selectivity rather than test thresholds. This method produces a single gap measure, called a v-statistic, over an implied distribution of college selectivity that we use to explicitly measure trends in enrollment disparities over time.

The v-statistic method is described in more technical depth by Ho and Reardon (2012), but the general idea of the measure is as follows. Using data from the Census and IPEDS we can observe the proportion of students that are a given race and enrolled in different levels of postsecondary education (e.g. not enrolled in college, enrolled in a two-year college, enrolled in any Barron's selectivity level of four-year colleges). With this information, we create what is called a probability-probability (PP) plot by graphing the relative cumulative distribution functions of, for example, Black and White students enrolled at a given level of education or lower. An example of the PP plot for Black and White college enrollment in 2010 is given in Figure 1.

For the purposes of our study, there are three useful pieces of information contained in these plots. First, and most simply, each point of the plot represents the percentage of students from each of the two race groups that are enrolled in a given level of postsecondary education *or lower*. For example, in Figure 1 we see that 63 percent of White students are enrolled in a two-year college or lower, meaning they are enrolled in a non-degree granting school or not enrolled at all, while 74 percent of Black students are.

Second, the area under the curve of a PP plot gives the probability that a randomly chosen Black student is enrolled in a post-secondary destination at a lower level of selectivity than a randomly chosen White student. Note that if Black and White students were equally represented at all levels of postsecondary education, the PP plot would trace a 45-degree line and the area under the curve would be 0.5. That is, there would be a 50 percent chance that a randomly chosen Black student would be enrolled in a lower level of selectivity as a randomly selected White student. If the PP plot curve bows above this 45-degree line, the probability that this randomly chosen Black student is enrolled at a less selective institution than our randomly chosen White student is above 50 percent. The opposite is true if the curve bows below the 45-degree line. In Figure 1, the area under the curve is approximately .55, indicating that there is a 55 percent likelihood of seeing a White student enrolled in a higher level than a Black student.[7]

Finally, the relative shape of the curve (determined by the steepness of the line between any two points) indicates where in the distribution the relative enrollment rates between groups of students are the most different. For example, in Figure 1 most of the mass of the curve is below the portion indicating enrollment less selective four-year colleges (specifically those ranked 5 or 6 and by Barron's). Changes in the shape of curves over time give evidence for precisely *where* in the distribution enrollments are becoming different. By conditioning on a certain level of enrollment (that is, only examining the portion of the curve above a given point), we can gain more insight into which kinds of enrollment are driving gaps in enrollment (we return to this point below).

As detailed in Ho & Reardon (2012), if we define this area under the PP plot as $P_{a>b}$—the probability a random student from group *a* is observed higher than a random student from group *b*— then the following nonlinear, monotonic transformation of $P_{a>b}$ gives us an effect size for the difference in college enrollment between students from group a and group b:

$$V = \sqrt{2}\Phi^{-1}(P_{a>b})$$

Thus, we create a single measure of college enrollment gaps between students from different race groups that is able to take into account differences in representation across multiple, ordinal levels of college selectivity. This measure gives the enrollment gap in terms of an effect size on the scale of pooled standard deviation units of the implied distribution of college selectivity attended by both groups of students. As we noted above, in addition to examining enrollment gaps over the entire range of post-high school destinations, we also limit our analysis to students who attend destinations above a given level of selectivity. Specifically, we examine enrollment gaps: (1) conditional on enrollment in any postsecondary education (between 57 and 70 percent of all 18-year-olds in the years of study), (2) conditional on enrollment in a four-year college (between 29 and 33 percent), and (3) conditional on enrollment in any college that falls in any of the three most selective Barron's categories (between 13 and 14 percent). Like the informal visual analyses of the shapes of the curves in the PP plots, these additional analyses allow us to determine at which levels of college selectivity racial enrollment gaps are the largest. For example, small Black-White gaps for the entire population coupled with large Black-White gaps conditional on enrollment in a four-year college would indicate that Black and White students are *attending college* at similar rates but that they are attending very different four-year schools.[8]

Results

We first present the analysis of the PP plots of Black-, Hispanic-, and Asian-White college enrollment gaps. The visual analysis of these figures provides explicit evidence of changes in relative racial representation on campuses of varying levels over three decades. We then turn to overall trends in the v-statistic for each gap over time. This analysis distills the wealth of visual information in the PP plots into clear trends in overall changes in racial gaps in postsecondary enrollment.

Figures 2-4 present the PP plots of enrollment for Black, Hispanic, and Asian students relative to White students. As in Figure 1, each point in the plot represents the cumulative percentage of students enrolled in a given level of postsecondary institution or lower. These levels, from left to right are: (1) no

postsecondary enrollment, (2) enrollment in a non-degree granting program, (3) enrollment in a two-year

college, and (4) – (9) enrollment in each of the six levels of four-year colleges in increasing Barron's

selectivity. For simplicity, rather than plotting every year for which we have data, these figures give the

distribution of students in higher education for 1980, 1990, 2000, and 2010. Comparing the points

representing the same destination for each year (e.g. enrolled in a 2-year school or lower) gives us a

sense of enrollment patterns over time. For example, if the left-most point moves down over the years, it

is an indication that fewer Black (or Hispanic or Asian) students are not enrolling in any post-secondary

schooling. If that point moves to the left, it indicates that over time fewer White students are not

enrolling in any post-secondary schooling.

Figure 2 shows that, for both White and Black students, representation at any postsecondary

institution improved between 1980 and 2010. The proportion of students enrolling in no postsecondary

schooling (represented by the leftmost point for each year) has decreased for both groups—these points

moved both down and to the left. The relative representation of Black students enrolling in any

postsecondary institution, as compared to White students, has improved since an apparent nadir in

1990—the points move further down than they do to the left.

Conversely, the relative representation of Black students among four-year colleges has worsened

consistently across the four decades of the figure. We see this in the points representing representation

at non-selective four-year colleges (Barron's 5 and below). These points move further to the left than

they do down. This indicates that the proportion of White students attending more selective four-year

schools grew faster than the proportion of Black students attending these elite schools.[9]

By examining the area under the curve, we see that, on balance, the relative representation of

Black and White students has improved overall across this time as the likelihood that a White student is

observed in a higher level institution than a Black student has decreased from of peak of 69 percent in

1990 to 55 percent in 2010 (that is, the area under the curve has gotten smaller). However, the shape of

the curve has also changed over time. The bulk of the mass of the curve is further to the right in later

years. We examine this changing shape in more detail below.

In Figure 3, we see a somewhat similar story for Hispanic students. First, because of the

consistent upward bowing of the plot, we know that in every time period Hispanic students have, on

average, attended less selective post-secondary destinations than White students. While representation

at any level of postsecondary institution has improved for both groups, until 2010 the improvement was

more pronounced for White students than Hispanic ones (the left-most point moved more to the left

than down between 1980 and 2000). As with relative Black-White representation, 1990 appears to be a

high point in terms of the likelihood that a random White student was enrolled in a higher level institution

than a random Hispanic student (71 percent). By 2010, this likelihood had decreased to 64 percent.

Finally, Figure 4 gives the relative representation of Asian and White students. Asian students

have been over-represented relative to White students for the four decades in the figure (the curve bows

below the 45-degree line). Figure 4 shows that since 1980 this over-representation has increased at the

most selective four-year colleges (above Barron's 3)—the mass of the curve shifts to the right. The net

result, however, is that in contrast to Black and Hispanic students the gap shrank—the likelihood of

observing a random Asian student enrolled in a higher level postsecondary institution than a random

White student decreased between 1980 to 2010 from roughly 64 percent to about 59 percent.

From these figures it is difficult to know exactly how overall enrollment gaps have changed

overall over time. First, looking at decadal intervals may obscure more nuanced trends or lead us to draw

conclusions from outlying years. Second, it is somewhat difficult to envision the changing size of the

enrollment gap based on the relative likelihoods of seeing a student from one group enrolled in a higher

level than a student from another group. For these reasons we transform the area under the PP plots into

an effect size, or v-statistic. This number, expressed roughly in terms of standard deviation units of

institutional selectivity, gives the average difference in enrollment between White students and minority

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students. A v-statistic of 0 indicates that there is no gap—students are attending, on average, schools of the same selectivity.

We plot these gap values from 1985-2013 in Figure 5 for all US residents of traditional college-going age, including those for whom their postsecondary destination is "no college." Over this population, Black-White and Hispanic-White enrollment gaps were the largest in the mid-80s, but have been more or less shrinking since the early 90s. During this entire period, the Black-White gap has been consistently smaller than the Hispanic-White gap. The Black-White gap has shrunk from roughly -0.6 to roughly -0.1, while the Hispanic-White gap has shrunk from about -0.8 to -0.3. The negative v-statistics indicate that across all 18-year olds at this time, White students were consistently enrolled in a higher level of postsecondary education than either Black or Hispanic students. During this same time period, the enrollment gap between White and Asian students increased modestly from about 0.4 to a peak of 0.7 in the mid-1990s, before returning to roughly .5 by 2013. Overall, White and minority students attended increasingly similar post-secondary destinations between 1985 and 2013.

Although college enrollment gaps are decreasing overall, changes in gaps may be driven by changes in enrollments at different levels of postsecondary education and so may vary depending on which population of students we consider. Indeed, the trend in gaps changes dramatically if we consider just those students who enroll in *degree-granting institutions*. Figure 6 captures these trends. Figure 5 included changes in enrollment gaps that resulted from changes on the extensive margin (attending vs. not attending). However, Figure 6 focuses on changes on the intensive margin (conditional on attending college, are students attending increasingly similar or dissimilar schools?). As recently as 1990, the enrollment gap between Black and White students, conditional on enrolling in a degree-granting institution was essentially zero. Since then, however, the gap conditional on enrollment has grown to nearly -0.5. Hispanic students saw a similar minimum to their gap in 1990, but over the nearly 30 years covered by the figure, their enrollment gap with White students has remained relatively unchanged at

roughly -0.5—just slightly larger than the most recent Black-White gap. On the other hand, the Asian-White gap, conditional on enrollment in a degree granting college, began negative in the mid-1980s, but has reversed and modestly grown to roughly 0.2 indicating that while White students in college used to enroll at modestly more selective colleges than Asian students, Asian students now have the enrollment advantage.

The only difference between Figures 5 and 6 is the inclusion in Figure 5 of students who did not enroll in college at all and students who enrolled in non-degree granting schools. The fact that the trends in enrollment gaps changes so dramatically between the two figures indicates that the improvements in enrollment gaps described in Figure 5 result almost entirely from improvements in the rates Black and Hispanic students enrolling in two-and four-year institutions rather than any amount of increased parity in terms of their actual college destinations. Thus most of the decrease in gaps we observed in Figure 5 was due to relatively more Black and Hispanic than White students attending degree-granting institutions. Indeed, while in 1990 55 percent of first time students in non-degree granting schools were White, and 16 percent were Black, by 2010 38 percent of students in non-degree granting schools were white and 23 percent were Black.[10] In Figure 6, in which we remove non-enrollees and students who enrolled in these non-degree granting schools, college enrollment gaps are worsening.

If we further restrict the gap calculations to just students enrolled four-year institutions, we obtain the trends illustrated in Figure 7. This subset of our data gives more clarity to where exactly enrollment changes have driven changes in enrollment gaps. In contrast to the prior two graphs, Figure 7 shows that among four-year institutions, enrollment differences with White students are larger for Black students than Hispanic students. Further, the Black-White gap has remained relatively unchanged at roughly -0.5 for nearly the entire span of 1985-2013. In fact, trends in enrollment gaps between White students and Hispanic, Asian, or Black students conditional on enrollment in a four-year college have all been relatively constant over the time frame of the figure. The Asian-White gap has stayed at roughly 0.5,

while the Hispanic-White gap has hovered between -0.2 and -0.3. The findings illustrated in this graph show that *among the students attending four-year schools*, Black and Hispanic students attend less selective schools than White students, and Asian students attend more selective schools. This trend has not changed substantially in the past 30 years.

We finally consider the enrollment gaps for those students who enroll in colleges ranked "very," "highly," or "most" competitive (Barron's 3, 2, and1). We focus on this group both because it is the smallest and most selective group of colleges for which we are able to calculate gaps and because it is in this subset of schools that scholars believe affirmative action policies have the most noticeable effect on admissions decisions (Backes, 2012; Brown & Hirschman, 2006; Long, 2007). Captured in Figure 8, at this level of institution, there are virtually no negative enrollment gaps. Black and White students enroll fairly consistently at the same level of institution on average—the gap is fairly consistently around zero. There does appear to be a recent negative trend in the Black-White gap, but it is unclear if this is noise, or indicative of increasing underrepresentation of Black students at selective colleges. The positive Hispanic-White and Asian-White gaps indicate that, of the Hispanic and Asian students enrolled in these selective colleges, they are enrolled on average at slightly more selective institutions than White students.

Conclusion

The work presented in this paper contributes to prior work on college enrollment patterns in several important ways. First, it uses the complete set of IPEDS enrollment data to examine enrollment gaps annually, rather than just for particular samples of students. Second, it quantifies gaps in college enrollment across a full spectrum of college levels and college selectiveness, rather than considering each level one at a time. This method provides an easy way to track trends in race- and ethnicity-based enrollment gaps over time and presents a novel opportunity to assess whether enrollment gaps are improving.

Taken together, our analysis highlights notable trends in college enrollment. Overall race gaps in college attendance shrunk considerably between 1985 and 2013. White students attended, on average, more selective post-secondary destinations than their Black and Hispanic peers and less selective destinations than their Asian peers. However, the magnitude of these gaps decreased over the observed time period for each of these comparisons.

However, gaps in enrollment appear to decrease only when enrollment at non-degree granting schools are counted among postsecondary destinations. Enrollment gaps between Black/Hispanic and White students, conditional on enrollment in a degree-granting school, are widening and gaps conditional on four-year college enrollment are relatively constant. So although overall enrollment levels in postsecondary education have been increasing for all race/ethnicity groups, most of this growth has been limited to non-degree granting and two-year colleges for Black and Hispanic students.

Among these findings, perhaps the most troubling is the fact that enrollment gaps for students enrolled in degree-granting programs have been growing since the early 1990s. There are a number of possible explanations for this trend including changes in high school graduation rates, achievement gaps, competition for limited seats in college, or changes in postsecondary options or admissions practices. We explore each of these explanations and briefly discuss their empirical merit, in turn.

It could be that the shrinking overall gaps are due to narrowing racial high school graduation or high school achievement gaps. If Black/Hispanic and White students are achieving at increasingly similar rates, or are graduating from high school at increasingly similar rates, we might expect to see these trends reflected in decreasing college attendance gaps. However, there does not seem to be empirical support for either of these hypotheses. Black-White and Hispanic-White gaps in high school graduation were generally constant between 1985 and 2000, and both shrank rather considerably between 2000 and 2010 (Murnane, 2013). These trends are the inverse of the trends in overall gaps in college attendance, which shrank most considerably between 1985 and 2000 and then remained relatively flat (as shown in

Figure 5). These changing college enrollment gaps do not seem to be due to changes in high school graduation rates between races.

Trends in racial achievement gaps also do not seem to be a viable explanation for the trends in college enrollment that we observe. Hispanic-White and Black-White high school reading and math gaps remained relatively steady or shrank slightly between 1985 and 2010, (authors' calculations using National Assessment of Educational Progress (NAEP) Long-Term Trend data), though the Black-White math gap increased through the early 2000s. Thus, if these trends were to explain any changes in racial college enrollment gaps, they would have to be working through different mechanisms—the small decrease in the Hispanic-White achievement gaps would be having an effect on the margin of enrollment, while the slight increase in the Black-White achievement gap would be having an effect on the destinations of students attending degree-granting schools. The magnitudes of these changes in achievement gaps and the divergent mechanisms through which they would be working make this explanation unlikely.

Another explanation for the gaps we see may come from the fact that competition for seats in four-year colleges has increased over the time period we examine. There are two main reasons why this is so. First, the early 1990s was a relative low-point in the size of the college-age cohort, resulting in less overall competition for limited seats in selective colleges. Second, the returns to college continued to increase over this period (Autor, 2010; Baum, Ma, & Payea, 2013; Zumeta, 2010), and third, the market for selective colleges has become national as the cost of transportation and communication have decreased (Hoxby, 2012). All of these factors suggest that competition for seats in four-year colleges, and particularly selective schools, has increased over this time period.

Thus, within the past 30 years, the representation of Black and Hispanic students within higher education was the most equitable when competition for seats was at its lowest. Black-White gaps in college enrollment in particular have increased as cohort size and competition for seats has increased.

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These concurrent trends support existing theories about how privileged groups likely use their advantage to maintain their relative position in society, particularly in the face of competition (see, for example, Lucas 2001). These gaps are consistent with a story in which there is absolute mobility for all groups but little relative mobility—privileged groups stay one-step ahead.

Rather than explanations based on changes in the composition or behavior of students, it could be that these changing gaps could be due to changes in institutions themselves. Indeed, the non-degree granting and for-profit sectors changed appreciably over the time period of this study. Many large for-profit (degree-granting and non-) institutions appeared and some small non-degree granting schools closed. For-profit colleges have been the fastest growing sector in higher education for the past few decades and they play an especially large role in the non-degree granting market and their online offerings have grown at a particularly fast rate. Students at for-profit colleges are much more likely than their peers at public two- and four-year schools to be Black and much less likely to be White (Deming, Goldin, & Katz, 2012). For-profit colleges are also quicker than non-profit schools to enter new markets— open new schools, and add programs in growing fields and locations (Deming, Goldin, & Katz, 2012; Turner, 2006). Thus, these important compositional changes could account for some of the changes in attendance that we find in this study, particularly with respect to our findings that gaps have been closing mainly due to enrollment at non-degree granting schools.

Institutional behavior could also offer a partial explanation for trends in enrollment gaps. The mid-1990s marked the beginning of state efforts to ban the use of race-conscious affirmative action in public college admissions. While Black and Hispanic representation at American colleges were already decreasing when these bans started to go into effect, it is unlikely the bans did much to slow the trend. For example, some research on the bans of affirmative action have shown that they may reduce racial diversity on college campuses by discouraging racial minorities from submitting applications to selective

colleges (Brown & Hirschman, 2006). Further, the effects of state bans on affirmative action tend to spill over into neighboring states, even if those states allow affirmative action (Blume & Long, 2014).

However, we do not see evidence at the national level that state bans did much to affect overall college enrollment gaps. Evidence of the use of affirmative action is primarily documented at the most selective colleges (Backes, 2012; Brown & Hirschman, 2006; Hinrichs, 2012; Long, 2007). It may in part be *because* of race-conscious affirmative action that we see essentially no Black-White enrollment gap and a Hispanic-White gap that favors Hispanic students for students enrolled in colleges in the top three levels of Barron's selectivity. These findings appear to provide evidence that these policies may be working as intended.[11] There is no evidence, however, that these gaps grew (or shrank in the case of Hispanic students) during the 90s. However, enrollment gaps do start to shift in the mid-2000s—increasing for Asian students, and decreasing for Black and Hispanic students—perhaps indicative of the national power of the *Grutter v. Bollinger* and *Gratz v. Bollinger* Supreme Court decisions. It is too early to know if these trends are indicative of some larger shift in college enrollment patterns, but the fact that they all start at around the same time suggests they are more than just noise in the data.

These findings come at an important juncture given the debate over the use of affirmative action in higher education. While the hope, originally articulated in the *Bakke* decision and reaffirmed in *Grutter*, was that by taking affirmative action the enrollment of minority students on college campuses would increase, after several decades that hope is belied by subsequent patterns of enrollment. At a time when many are calling for the end to affirmative action, ostensibly based on the theory that these policies are no longer needed to achieve diversity in enrollments, we find no evidence that the under-representation of racial minorities on postsecondary campuses is improving.

While access to college may be increasing *in general*, the Black and Hispanics students who are gaining this access are enrolling in levels of postsecondary education well below those of White and Asian students. As such, there is far more work to be done to increase the representation of Black and Hispanic

students on college campuses, particularly in terms of enrolling them in more selective colleges. Access to postsecondary education alone—which has largely been to mostly open-access institutions—has not been enough to shrink enrollment gaps and has likely only increased income inequality as a result of the connection between college selectivity and income. Thus, there is still a clear need for policies to increase diversity at selective colleges and universities. We see evidence that such policies have worked for those few students who are able to enroll at the most selective colleges and doubt even this modest parity would be maintained in the face of a nationwide ban on race-conscious affirmative action.

Notes

[1] For example, the NELS data is anomalous because it followed a cohort of students that was among the smallest of any since the mid-60s (NCES, 2014). Given the relative rarity of universities deciding to shrink their enrollment, this small cohort faced less competition for existing seats at selective colleges, making it more likely that students with lower academic credentials could gain admission to these selective schools. As a result, we may see increases in representation of racial and ethnic minorities in this cohort at more selective schools separate from any underlying change in access to educational opportunity or changes in university policies.

[2] To maintain consistency, both across data sets and over time, we combine Asians and Pacific Islanders.

[3] Barron's also assigns a ranking of 7, which indicates "specialty" schools—such as divinity schools or the military academies. Because these schools use different admissions criteria and draw specialized applicant pool, we exclude these schools from our analysis.

[4] In the analyses we present in this paper, we use the 2008 Barron's rankings for all years. In reality, in the years of our analyses, the Barron's selectivity increases for a small subset of institutions in our data, but the relative selectivity of schools is largely stable. We conducted sensitivity analyses using time varying (2004, 1992, and 1982, as opposed to constant 2008) measures of selectivity and find no appreciable changes in results (these results are available upon request). We thus present only findings using 2008 Barron's rankings, consistent with the decisions of past researchers (e.g. Bastedo & Jaquette, 2011).

[5] To the extent the college from which one graduates is more important than the school(s) at which one took classes (an argument that signaling is more important than human capital development), and the extent to which students from different racial groups exhibit significantly different patterns of transfer, using first school of enrollment could produce biased results. If anything, we are likely understating potential graduation gaps, as, conditional on attendance, White and Asian students are more likely to transfer from 2-year schools to 4-year schools than Black and Hispanic students (NCES, 2011 Community College Student Outcomes (2012-253), Table S1-B).

[6] We repeat our analyses using IPEDS counts of only full-time first-time students and present results from these analyses in Appendix A. The general trends and relative magnitudes of gaps do not change.

[7] Note that the calculation of this probability doesn't depend on interval scaling. That is, it does not matter that the difference in selectivity between Barron's 3 and a Barron's 2 schools isn't necessarily the same as the difference between Barron's 2 and Barron's 1 schools. All that matters are the rank orderings of types of colleges

[8] Although it is possible to calculate confidence intervals for v-statistics, we chose not to present them for two reasons: (1) our data is not a sample, it captures the full population of interest, so the interpretation of confidence intervals is not clear and (2) our large number of observations generates confidence intervals that are quite small (and not visible when graphed). Indeed, if we were to consider our population as a sample, these minute standard errors mean that even the very small changes that we report are "statistically significant." Though not presented, confidence intervals are available from the authors upon request.

[9] Part of the explanation for this interesting shape and the unique movement for the Black-White gap (as compared to the Hispanic-White and Asian-White gaps shown in Figures 3 and 4) likely lies in the fact that most Historically Black Colleges and Universities fall into the Barron's 5 and 6 categories. There is thus a noticeable concentration of Black students in these two categories.

[10] Examples of non-degree granting schools are Central Mass School of Massage & Therapy, Rob Roy Academy, and Giumenta School of Real Estate.

[11] We want to emphasize that these results are for the small group of students enrolling at these levels of colleges and although representation seems to be relatively even, this parity obscures the fact that such a small number of racial minority students enroll at this level of schooling at all.

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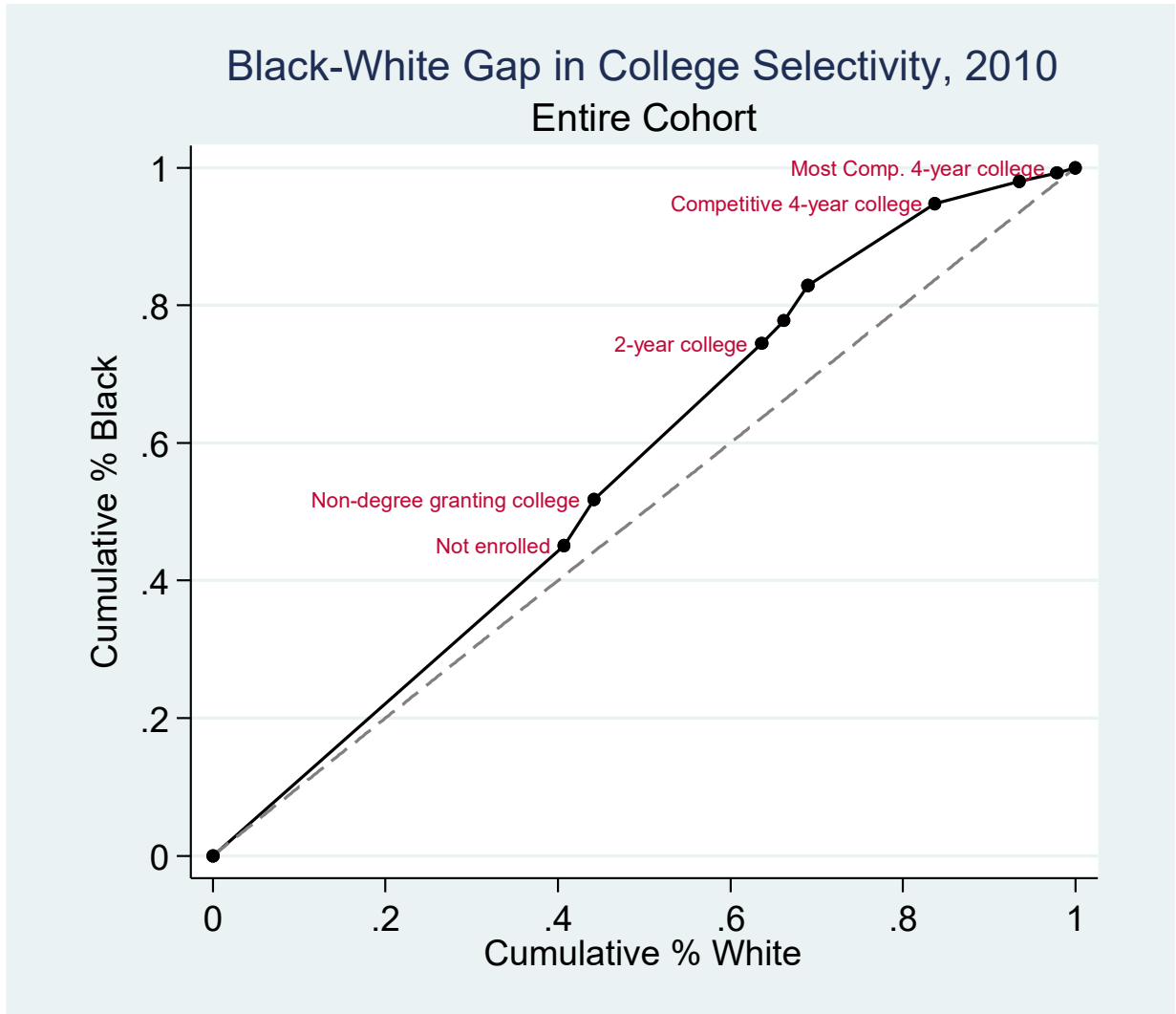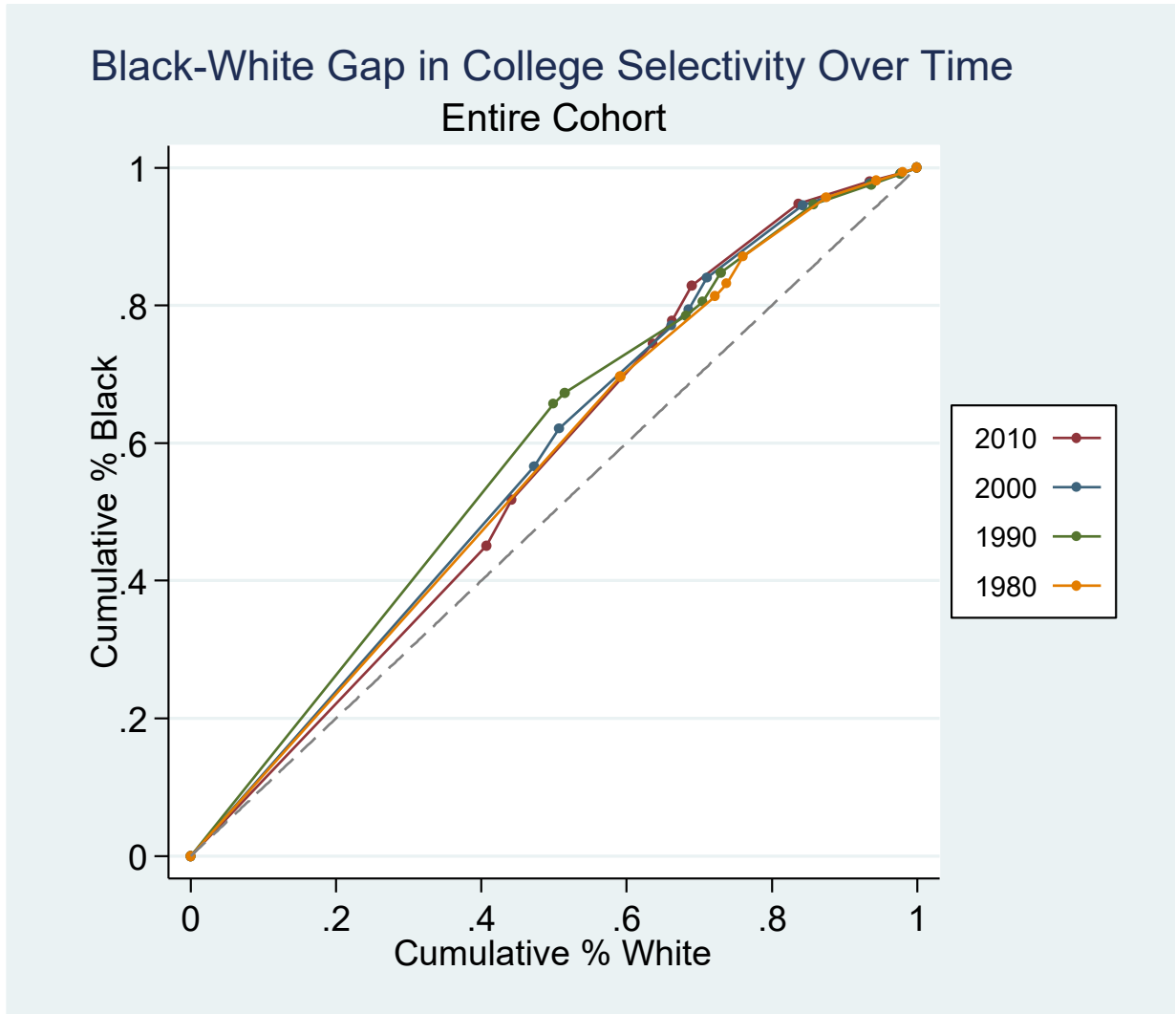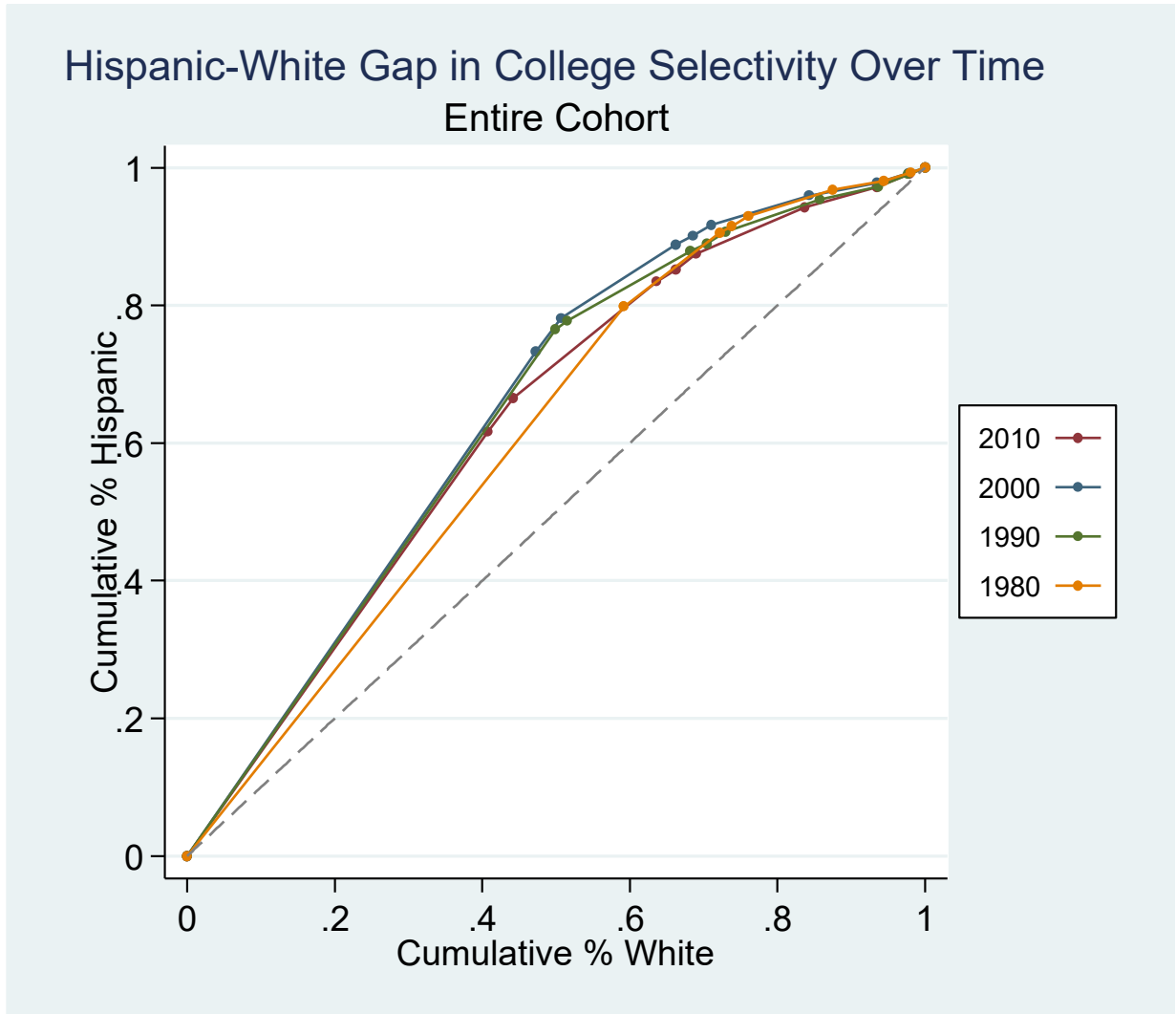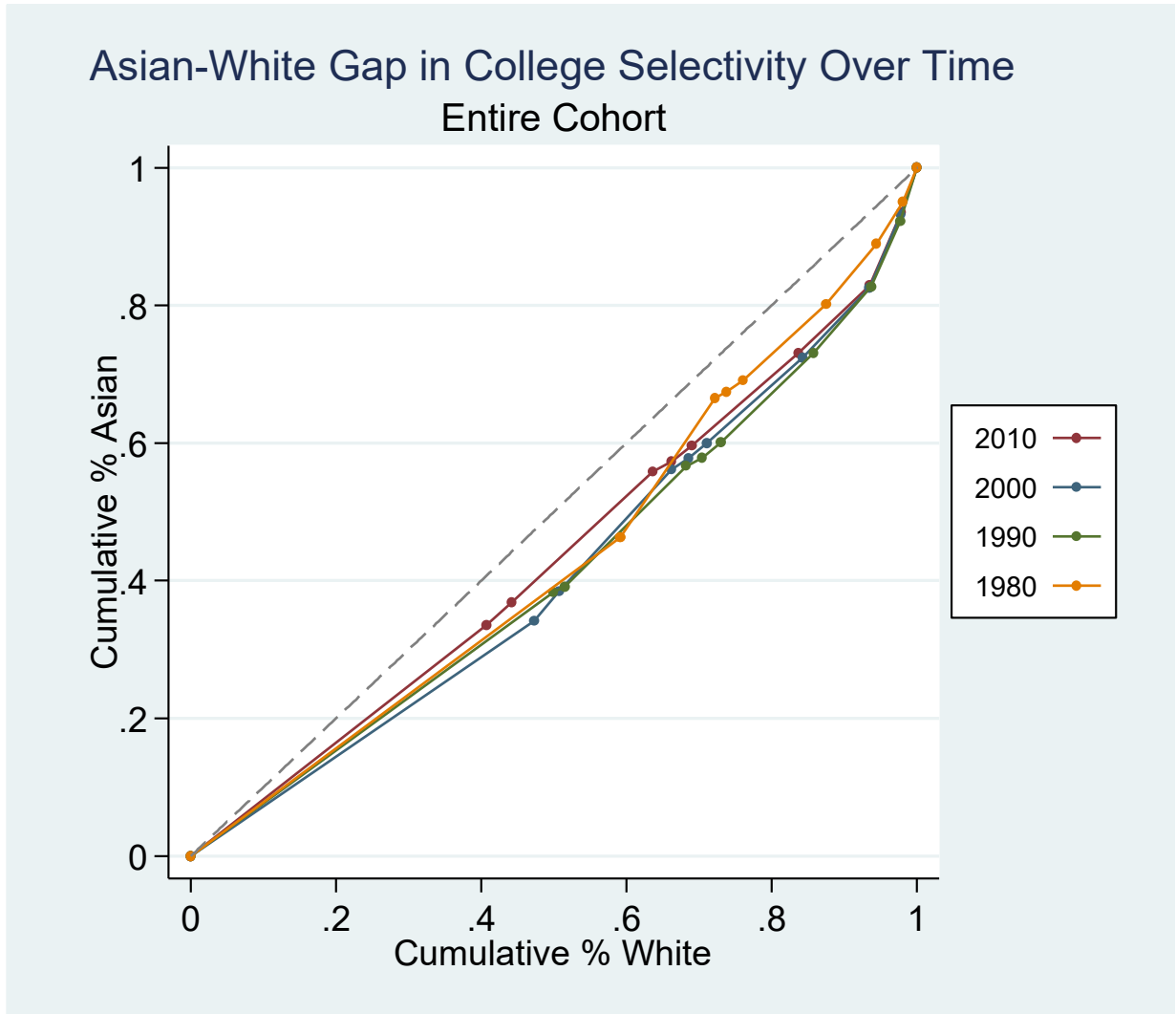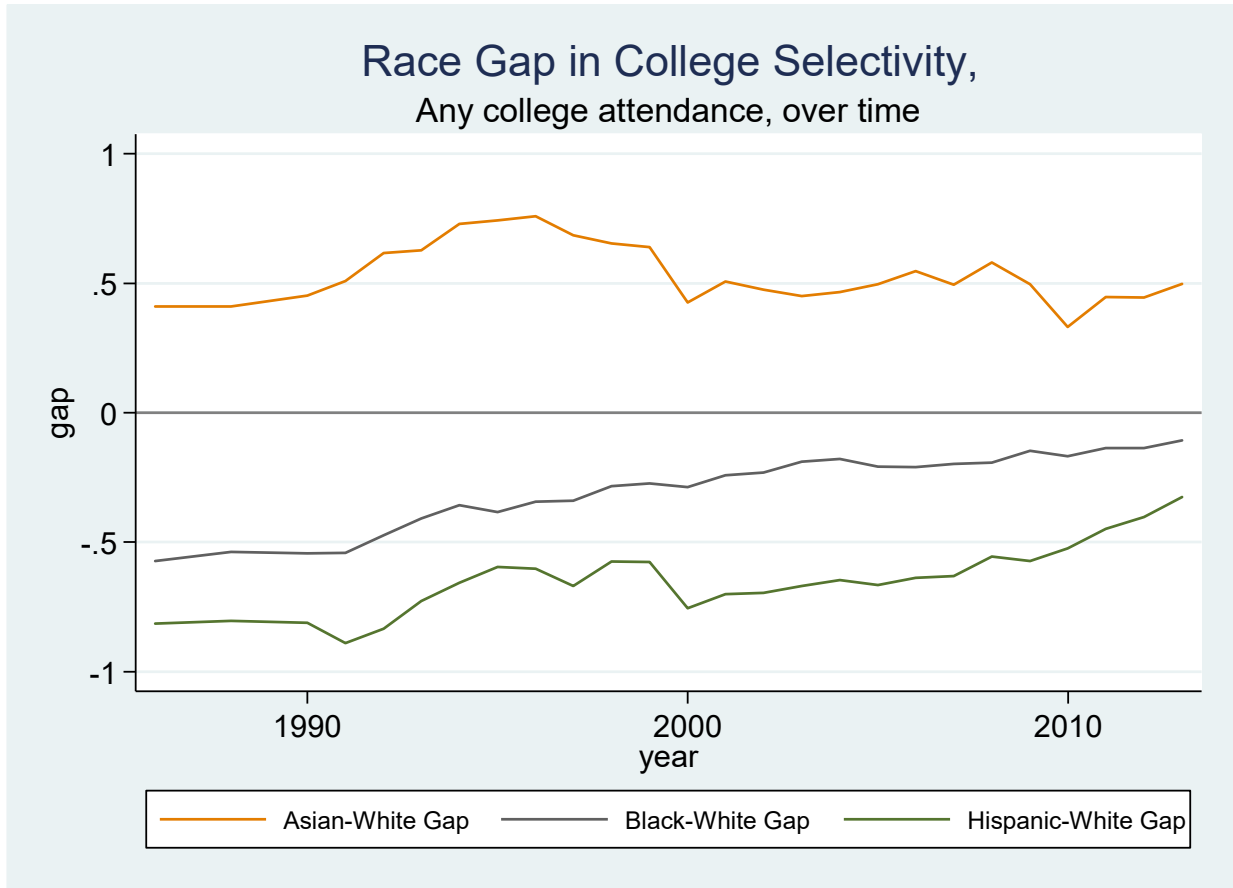
Figure 1

Figure 2.

Figure 3

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Figure 5.
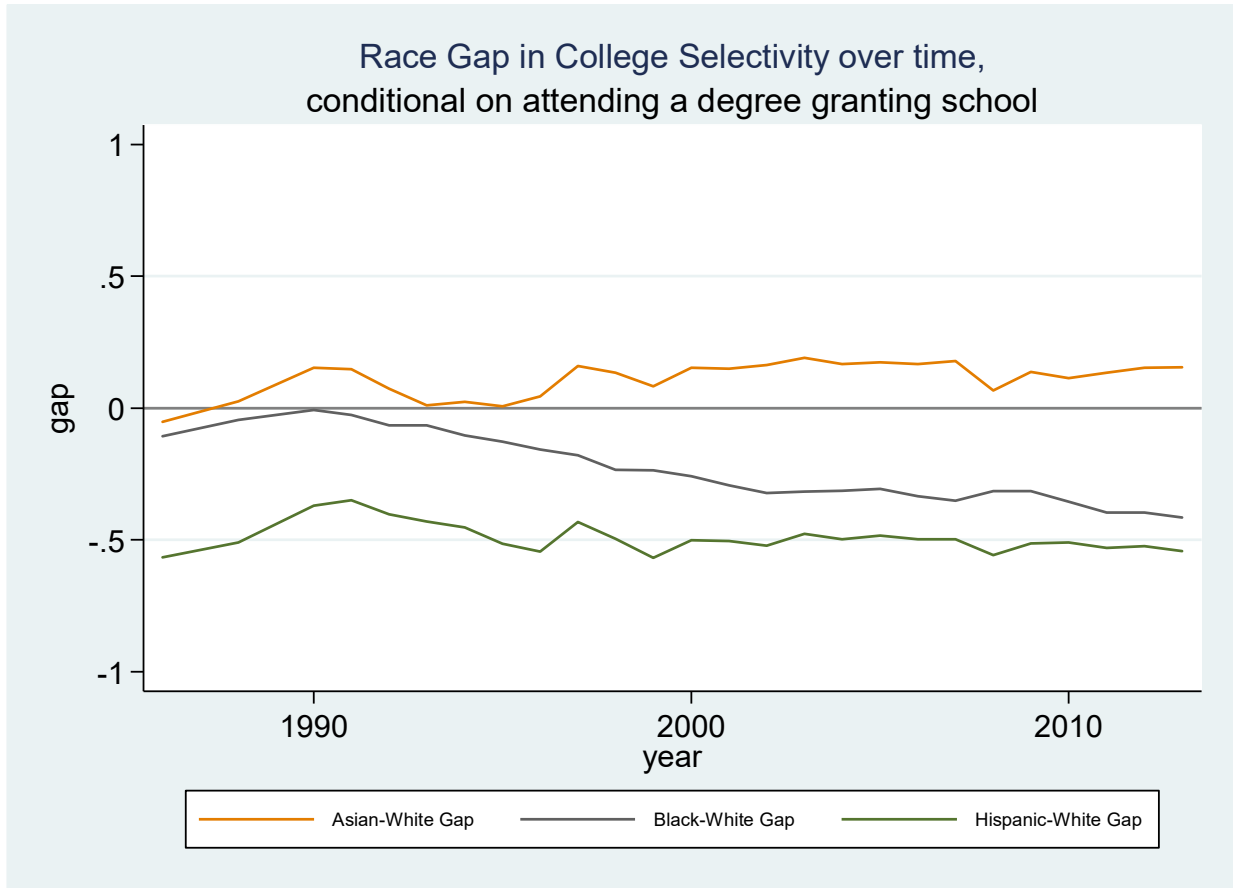
Figure 6.

Figure 7.

Figure 8.

Race Gap in College Selectivity,
Full-time attendance, over time
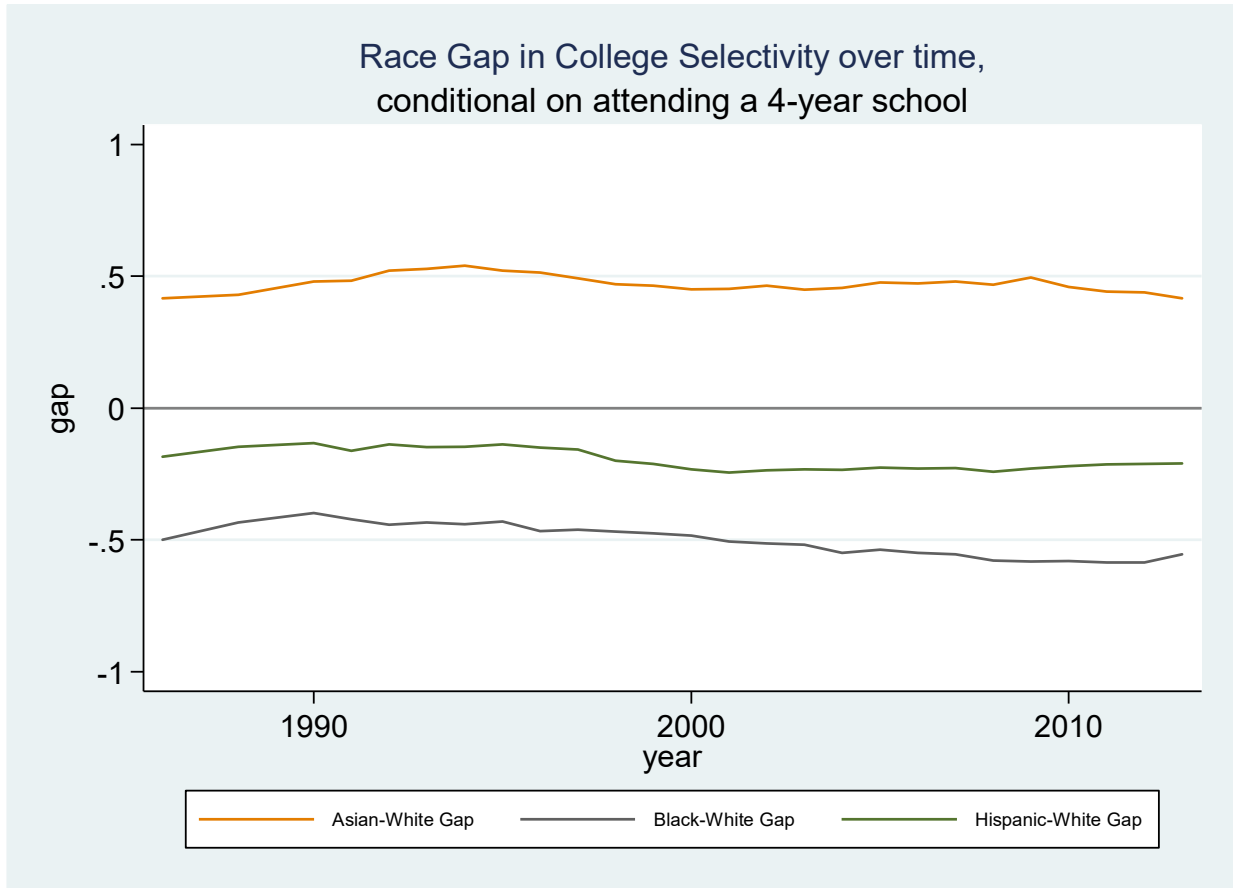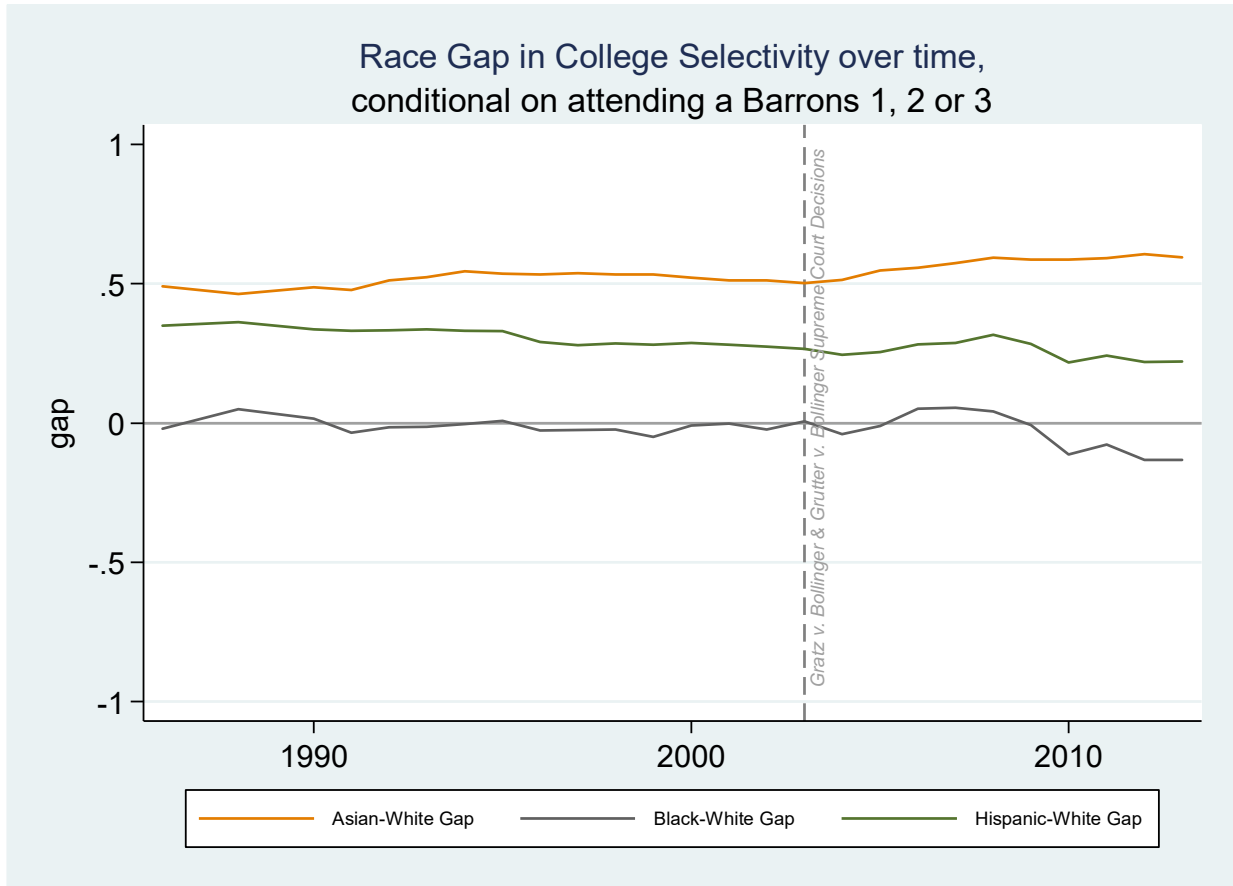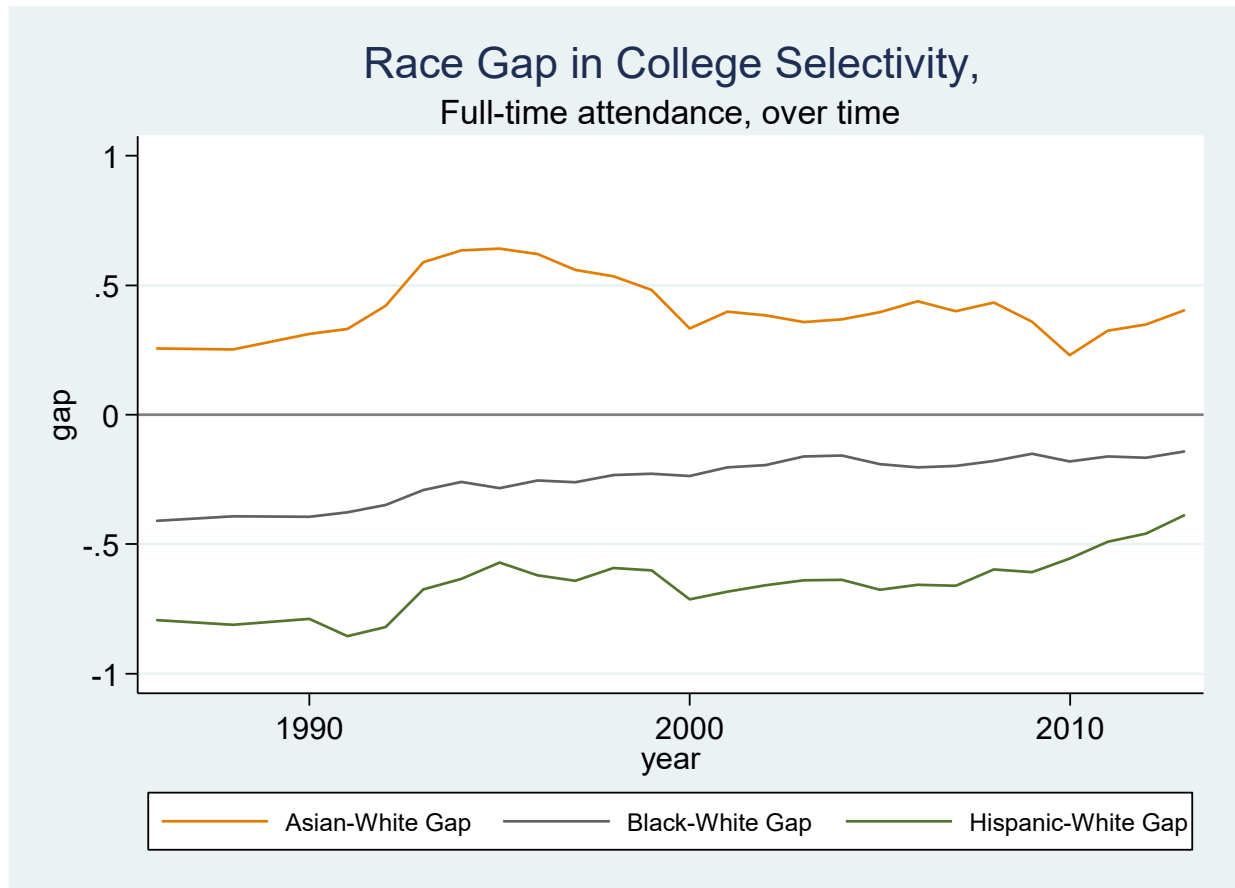
Appendix Figure A1. College Selectivity Gaps, Full-Time students only
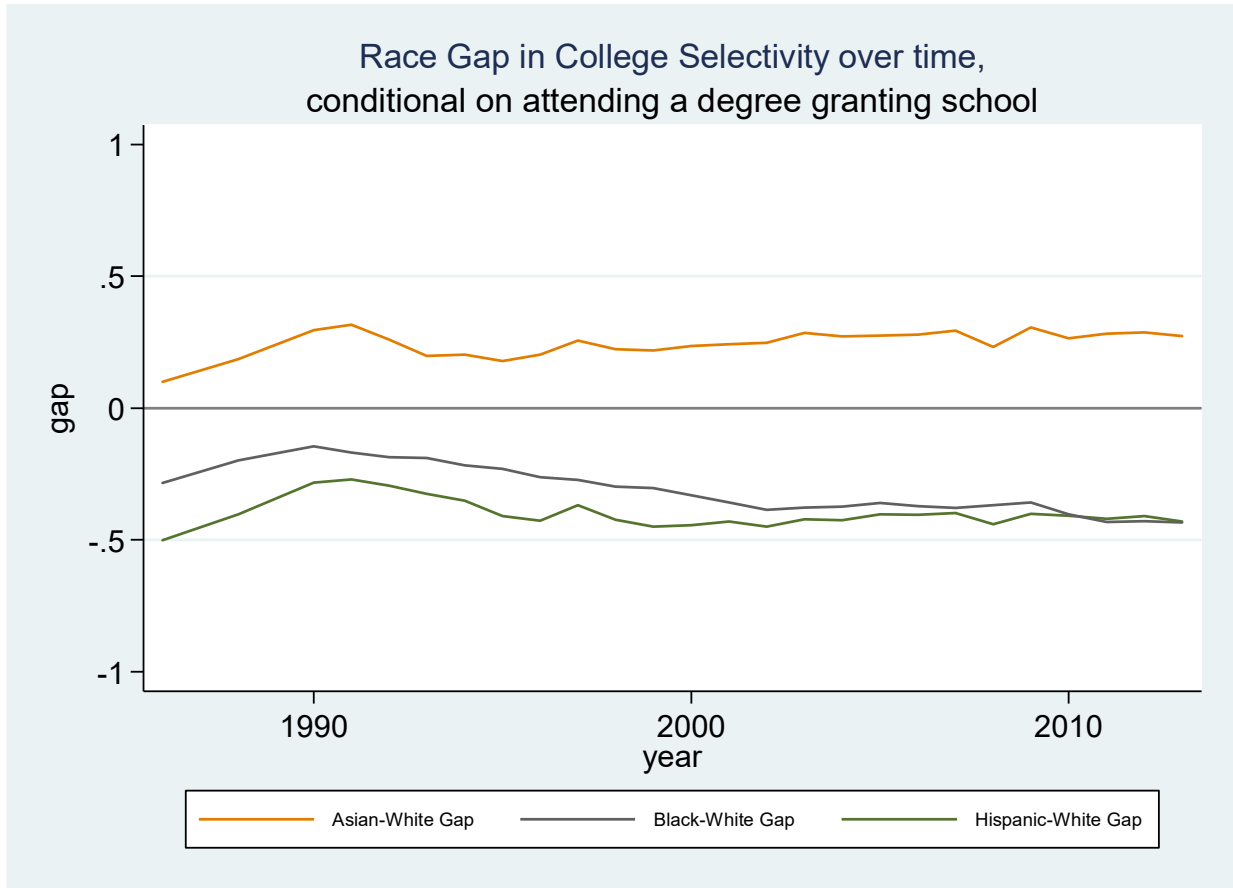
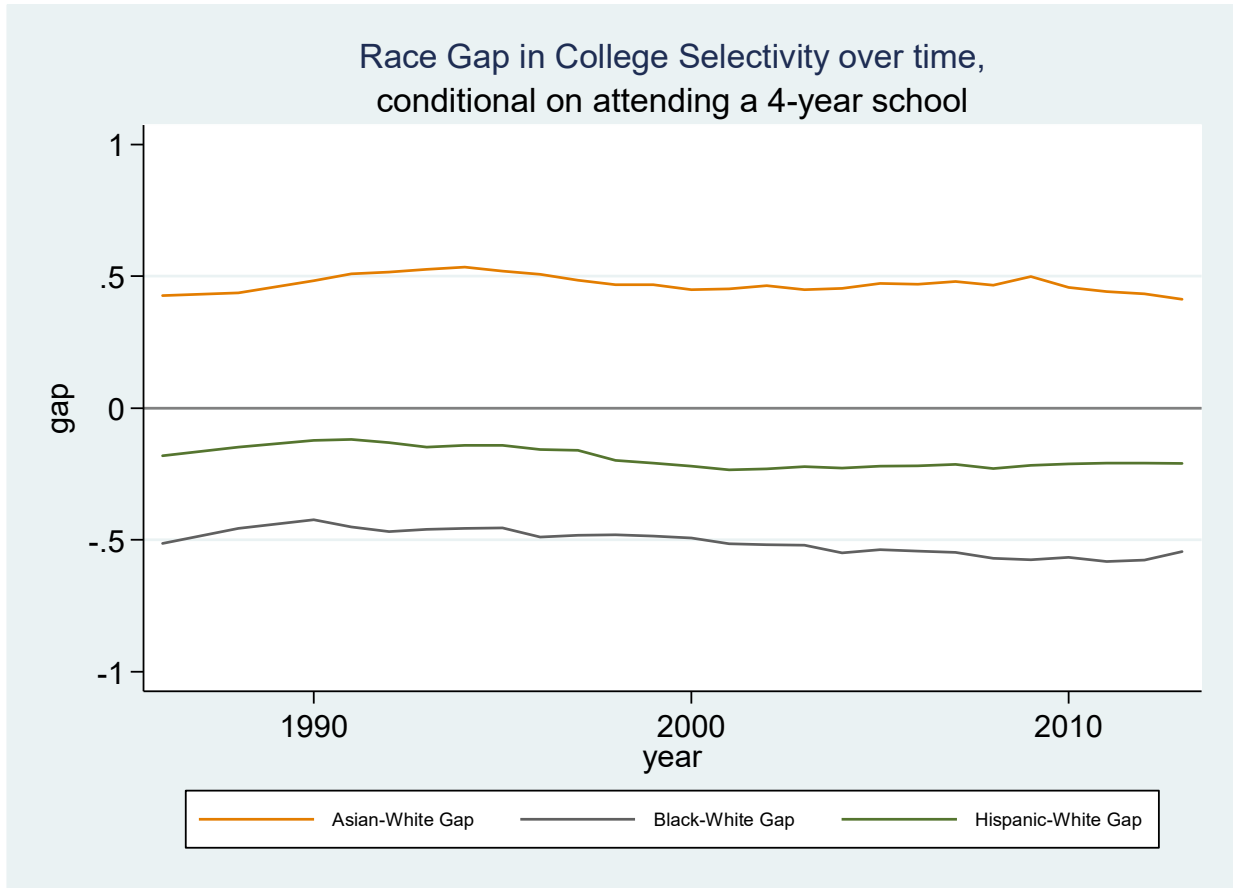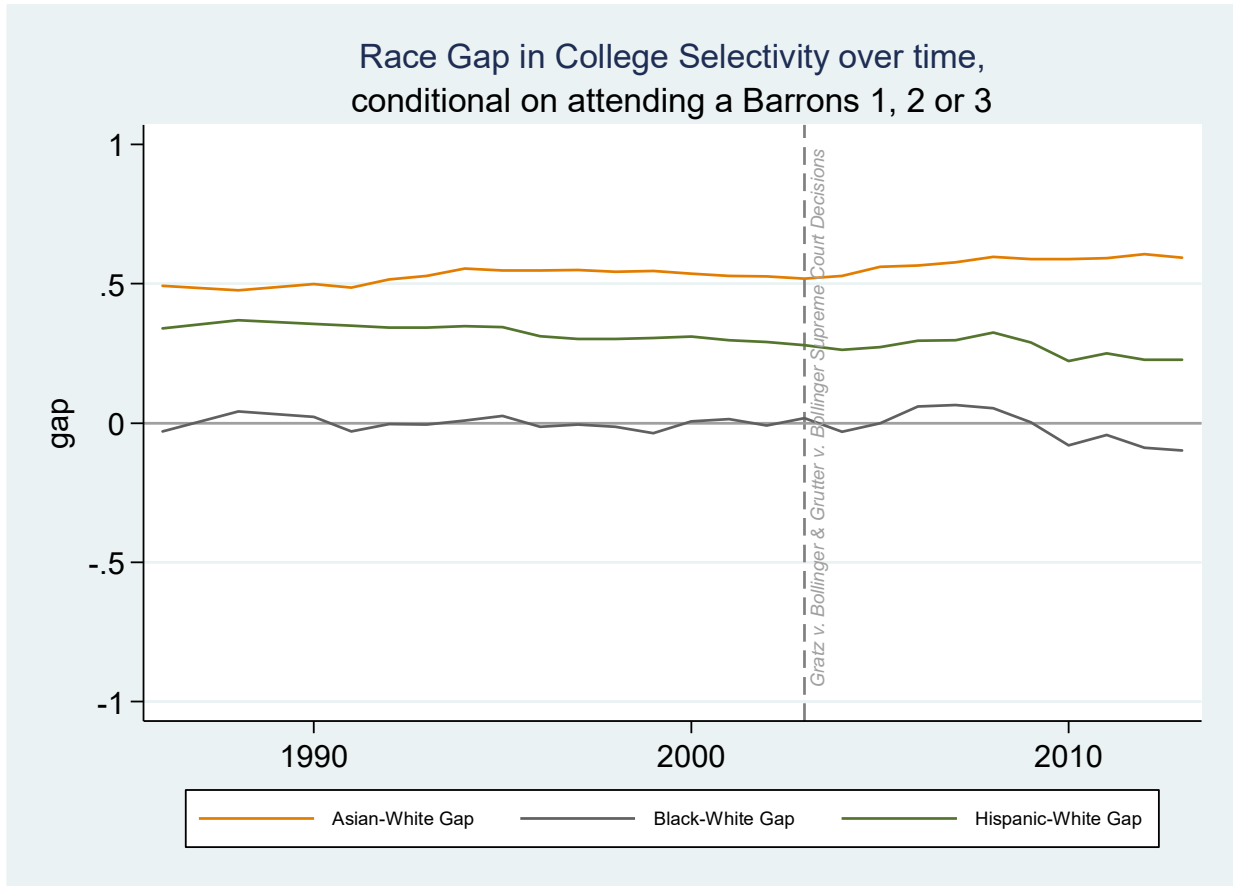Appendix Figure A2. College Selectivity Gaps, Full-Time students only

Appendix Figure A3. College Selectivity Gaps, Full-Time students only

Appendix Figure A4. College Selectivity Gaps, Full-Time students only