Experimentally Estimated Impacts of School Vouchers

On College Degree Attainment: An Update

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Abstract

Many low-income students do not earn their bachelor’s degree until two or more years later than the expected degree date. Yet voucher impacts on college attainment have been estimated experimentally before this much time has elapsed for younger cohorts of participants. We provide the first experimental estimates of impacts on college graduation rates of an offer of a voucher to low-income families that allow for three to seven years of delays in four-year degree attainment. We link data from a privately sponsored, lottery-based voucher initiative in New York City to degree attainment information maintained by the National Student Clearinghouse. A match is attempted for 99 percent of the sample. Overall, we find small, statistically insignificant effects on four-year degree attainment of the offer of a voucher. However, we find evidence of significant impacts for African American students, minorities. Non-immigrants, and those from families where parents have had some college. We also find that effects on minority and non-immigrant students are concentrated on those from somewhat higher socioeconomic backgrounds.

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1. Introduction

Although a high percentage of American young people enter college, only 60 percent complete a four-year degree within six years. The attainment rates are much lower for those from families of lower socioeconomic status (SES) and for disadvantaged minorities (Park & Hossler 2014). Many states have implemented school voucher programs with the goal of improving these long-term educational outcomes. But most evaluations of these programs estimate short-term effects of vouchers on academic achievement measured by performance on standardized tests (Shakeel et al. 2016). Only a handful of studies focus on other student outcomes, such as non-cognitive skills (Mills et al. 2016) or educational attainment (Foreman, 2017).

In one of the attainment studies, Chingos and Peterson (2015) experimentally estimate the effects of the School Choice Scholarships Foundation (SCSF) program on college enrollment and degree attainment. This privately-funded voucher initiative began in 1997 in New York City. The authors found that by the fall of 2013, the SCSF program had no statistically significant impacts on further education attainment, but found college enrollment and bachelor’s degree attainment rates among participants who were African American or came from non-immigrant families. Their estimates were made when the youngest cohort was three years past their expected high school graduation date. In this paper, we provide an updated analysis of the impact on educational enrollment and attainment as of fall 2017, thereby allowing for at least a three-year delay in four-year degree attainment for the youngest cohort and a seven-year delay for the oldest one. Among applicants assigned to the control group, both post-secondary enrollment and degree completion rates increased by five percentage points over this four-year period.
Enrollment rates increased from 47 percent to 52 percent, while degree completion rates increase from 11 percent to 16 percent, a near 50 percent increase.

We observe overall voucher impacts on further education similar to those observed in Chingos and Peterson (2015). Offers of a voucher have small positive, but statistically insignificant, average impacts on both college enrollment and degree completion. That finding, however, masks important heterogeneities. The voucher has positive impacts on four-year degree attainment of African Americans, non-immigrants, and those from families with parents who had attended college. We also find that effects on minority and non-immigrant students are concentrated on those who come from those of somewhat less disadvantaged socioeconomic backgrounds.

2. Literature Review

2.1 U.S. Postsecondary Attainment Patterns

In 2014, just 33 percent of adults ages 25 and older had acquired a baccalaureate degree (Ryan & Bauman, 2016). The percentages are much lower for students from lower SES families and students from disadvantaged minorities (Park & Hossler, 2014). Only 14 percent of white men, and 17 percent of white women born in 1973-74 completed college if their mothers and fathers had no more than a high school diploma (Buchmann and DiPrete, 2006, Table 4, p. 527).1 For black males, the situation appears to be especially dire. Among African American men born in 1973-74, only 4 percent of those in households where neither parent had attended college acquired a baccalaureate. Although the corresponding rate for African American women, at 22 percent, is higher but it remains half the rate among African American women whose mothers and fathers both attended college (Buchmann and DiPrete, 2006, Table 4, p. 527). Among

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1 This finding is taken from the National Educational Longitudinal Survey of the Eighth Grade Class of 1988 (NCES, NELS 1988).
students born in 1980-1982, only about half of those born into households at the 10th percentile of the income distribution ever enrolled in college by age 28. Yet enrollment rates were about 90 percent among students whose household incomes were at the 90th percentile (Chetty et al., 2017, Online Appendix Figure III).

Many students who enroll in postsecondary education immediately after high school completion take six years to earn their undergraduate degree. Forty percent of the 2008 freshman cohort entering college graduated within four years but 60 percent graduated within six years. The rates for black and Hispanic students are much lower. Only one-fifth of black college students earn a degree within four years, and only 41 percent earn a degree within six years. The four- and six-year graduation rates for Hispanic students are slightly higher but still lower than average at 31 and 54 percent (U.S. Department of Education, 2018).

In addition to taking longer to complete a bachelor’s degree, students from lower socioeconomic background experience delays in degree attainment because they do not enroll in college immediately after high school. Only about 35 percent of children born in 1980-82 from families at the tenth income decile of the distribution were even enrolled in college by age 22, but nearly 50 percent of them had enrolled by age 28. In contrast, about 90 percent children who belong to this same birth cohort, but had families at the 90th percentile of the income distribution, were enrolled in college by age 22. Nor do enrollment rates substantially change by age 32 for this population of students. (Chetty et al., 2017, online appendix, Figure III).

2.2 SES and Attainment

The many cultural and social threads connecting SES to disparities in academic preparation needed to obtain a college degree are tightly woven in home, school and community from the earliest days of childhood through elementary and secondary schooling to the very eve
of entry into college (Duncan and Murnane, 2011). Children exposed to lower socioeconomic environments are at greater risk of traumatic stress and other medical problems that can affect brain development (Nelson and Sheridan, 2011). Better educated mothers speak more frequently with their infants, use a larger vocabulary when communicating with their toddlers, and are more likely to use parenting practices that respect the autonomy of a growing child (Leibowitz, 1977; Guryan, Hurst, and Kearney, 2008; Bianchi and Robinson, 1997; Hart and Risley 1995; Hoff, 2006; Hoff-Ginsberg, 1991; Philipps, 2011; Philipps, et al., 1996). Better educated and higher income families have access to more enriched schooling environments (Vigdor and Ludwig, 2008), and are less likely to live in extremely impoverished communities burdened with high violent crime rates. (Burdick-Will et al, 2013). All these and other childhood and adolescent experiences create profound disparities in academic preparation by SES. In short, families from lower socioeconomic backgrounds have less access to economic, social, and cultural capital that are conducive to postsecondary success (Park & Hossler, 2014; Perna, 2006; Serna, 2015).

Yet even within lower SES families, distinctions need to be made. William Julius Wilson (1989) distinguishes between those who are somewhat disadvantaged and those living in urban ghettos who are truly disadvantaged. Summarizing his theory of the urban underclass, Wilson (1991) says the following:

The ghetto features a population, the underclass, whose primary predicament is joblessness reinforced by growing social isolation. Outmigration has decreased the contact between groups of different class and racial backgrounds and thereby concentrated the adverse effects of living in impoverished neighborhoods. These concentration effects, reflected, for example, in the residents’ self-limiting social dispositions, are created by inadequate access to jobs and job networks, the lack of
involvement in quality schools, the unavailability of suitable marriage partners, and the lack of exposure to informal mainstream social networks and conventional role models (p. 462)

In other words, Wilson’s analysis implies a distinction between those who are quite poor and the truly disadvantaged, that is, those who suffer from extreme deprivation. For the quite poor, poverty is a challenge; for the truly disadvantaged urban underclass, it is debilitating (Peterson, 1991). It remains to be seen whether a school voucher has the same impact on students coming from both kinds of low SES families.

2.3 Vouchers and Attainment

A number of quasi-experimental and high-quality observational studies have estimated longer-term impacts of choice systems. Early studies describe larger private sector benefits for disadvantaged minority students than for other students. As Ladd (2002) says in a literature review, “the benefits seem to be the largest for urban minorities” (p. 9). Similarly, Neal (2002) concludes that “the most compelling evidence that private schools yield real benefits comes from data on the experiences of minority students in cities, especially African American students, who gain access to Catholic schools” (p. 31). Ordinarily, positive impacts, when identified, tend to be larger on educational attainment than on achievement (Foreman, 2017; McShane et al. 2018).

Recent studies yield mixed results. Using a propensity score matching technique, Chingos and Kuehn (2017) find that participation in the Florida tax-credit program, which gives scholarships to low-income students to attend private schools, increases enrollment rates at Florida public colleges by six percentage points. They identify no significant impacts on two-year degree attainment at Florida colleges but are unable to estimate impacts on four-year degree attainment. Chingos (2018) finds no voucher impact on college enrollment in the Washington,
D.C. voucher program, but he is unable to estimate impacts on B.A. degree acquisition.\(^2\) Wolf et al. (2018) report that voucher students in Milwaukee were more likely to enroll in college but no more likely to complete college than a matched comparison group. However, the study was unable to follow students for a long enough time period to take into account potential interruptions and delays in the postsecondary education experience.

Chingos and Peterson (2015) report experimentally estimated impacts on college graduation rates of the New York City School Choice Scholarship Program, a privately-funded voucher program initiated in 1997. Using data collected in Fall 2013, they find only small, statistically insignificant impacts of a voucher offer on applicants overall, but they estimate large, significant impacts for black students and for children whose mothers were born in the United States.

In this paper we update Chingos and Peterson (2015) by providing experimentally estimated impacts on graduation rates as of Fall, 2017, four years later than previously reported. Our new results provide estimates of voucher impacts on bachelor degree attainment that allow for delays in further education for the youngest cohort of as long as three years. For older cohorts, the results allow for delays of up to seven years beyond the on-time college graduation date.

3. Methodology

3.1 New York School Choice Scholarships Foundation Program

In the spring of 1997, SCSF offered three-year scholarships worth up to $2,340 (in 2018 dollars) annually\(^3\) to 1,000 low-income families with children who were entering first through

\(^2\) An earlier iteration of an evaluation of the voucher program in Washington D.C. found impacts on high school graduation rates. Students who were awarded a voucher by random lottery were 12 percentage points more likely to complete high school than students who were not awarded a voucher (Wolf et al., 2013).

\(^3\) $1,500 in current dollars.
fifth grades. Program eligibility was limited to those who came from “families with incomes such that they qualified for the U. S. government’s free school lunch program (Peterson, Myers, and Howell, 1998, 6).” A recipient could use the voucher to attend a private school in New York City. Because the number of applications for a voucher exceeded the available number of vouchers being offered, random lotteries were held to determine which students received a voucher. Additional details of the program and evaluation procedures associated with the program can be found in Chingos and Peterson (2015).

3.2 Data

We link individual-level lottery data from SCSF to college enrollment and completion data provided by the National Student Clearinghouse (NSC). The enrollment status for every academic term and postsecondary institution that a student attended as well as whether the student earned a degree is reported in the NSC. Among the 2,666 students in the study population, 2,634 students are matched to NSC data. In the analytic sample, 1,356 students were assigned to the treatment group and 1,278 students were assigned to the control group.

3.3 Baseline Covariate Balance

Table 1 shows summary statistics for the analytic sample by treatment status. The students who applied for a voucher were socioeconomically disadvantaged, which is unsurprising given the income eligibility requirements of SCSF. Almost all of the children were born to mothers who were of African American or Hispanic backgrounds and came from families with an income of less than $30,000 (about $47,000 in 2018 dollars). Nearly half of

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4 Although the initial voucher offer was for three years, scholarships continued through the end of eighth grade to students who remained continuously in the private sector.
5 The 99 percent match rate makes differential attrition bias highly unlikely.
students came from families in which neither parent attended college. These students also performed at the 17th to 25th percentile on nationally-normed tests.

As is shown in Table 1, the characteristics of the treatment and control groups are similar, as is expected given the random assignment of students to receive a voucher. Treatment students are less likely to be of Hispanic descent and less likely to have parents who only complete high school or earn a GED. With nearly 20 different statistical tests, these two differences may have occurred at random, and a joint significant test of the variables listed in Table 1 in a regression of treatment status on these variables and randomization group dummies yields a p-value of 0.20. These results provide evidence of the fidelity of the random assignment. As discussed in the next section, we also control for the full set of observed covariates.

3.4. Empirical Strategy

3.4.1 Intent to Treat. We begin by focusing on the effect of the offer of a voucher, the intent-to-treat (ITT) effect, which is the impact of being assigned to the treatment group on college enrollment or degree attainment. We estimate the following linear probability model:

$$\text{Attain}_i = \beta_0 + \beta_1 \text{Treat}_i + \beta_2 \mathbf{X}_i + \delta_i + \epsilon_i, \quad (1)$$

where \(\text{Attain}_i\) is an indicator for either whether student \(i\) enrolled in postsecondary education or completed a postsecondary degree. \(\text{Treat}_i\) is a dummy variable identifying students assigned to the treatment group (i.e., offered a scholarship), and \(\mathbf{X}_i\) is the vector of student demographic characteristics shown in Table 1. Students were randomized in blocks that were formed based upon family size, the verification and testing session, and whether their baseline school had an average test score above or below the city median. To capture the experimental design in our

\[\text{ITT results based on probit models are not substantively different from results based on linear probability models and are reproduced in the Appendix.}\]
model, we include $\delta_i$, a vector of randomization block indicators. Finally, $\epsilon_i$ is the error term. We use weights in the regressions to make the sample representative of those who originally applied for a scholarship. We also cluster standard errors by randomization block.

3.4.2 Treatment on the Treated. We then provide a treatment-on-the treated (TOT) estimate of effects of attendance at a private school. We use a two-stage least squares framework where the offer of a voucher serves as an instrument for whether or not the student attended private school. We estimate

$$\text{Private}_i = \alpha_0 + \alpha_1 \text{Treat}_i + \alpha_2 X_i + \delta_i + \nu_i$$  \hspace{1cm} (2)

$$\text{Attain}_i = \gamma_0 + \gamma_1 \text{Private}_i + \gamma_2 X_i + \delta_i + \mu_i,$$ \hspace{1cm} (3)

where $\text{Private}_i$ is an indicator equal to 1 if student $i$ ever attended private school throughout the three-year duration of SCSF. The other variables are as they are in equation (1), and $\nu_i$ and $\mu_i$ are the error terms. Again, we use sampling weights and cluster standard errors by randomization block.7

First-stage results are displayed in Appendix Table 3. Receiving a voucher through the lottery clearly influences private-school attendance. Students who win a lottery are about 66 percentage points more likely to attend a private school. As another check for a strong first stage, we use the receipt of a voucher to predict whether or not a student uses the voucher to attend a private school. As shown in column 2 of Appendix Table 3, students who are awarded a lottery spend 1.7 additional years in private school.

3.4.3 Effect Heterogeneity Analysis. Chingos and Peterson (2015) found the strongest effects of the SCSF program among African American children and children from non-immigrant families. In light of these findings, we examine the effect of the program on these

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7 The second stage is estimated using ordinary least squares. Conclusions are unchanged whether one uses probit or linear probability models to estimate equation 3.
groups using our updated postsecondary attainment data by rerunning equations (1) through (3)
while restricting the analytic sample to members of the respective subgroup.

As discussed, postsecondary attainment outcomes are highly correlated with a student’s
socioeconomic background. Given the durability of these findings, we interact disadvantaged
minority background and immigrant status with parent educational attainment and household
income. In each of these subgroup analyses, we restrict the sample to disadvantaged minorities
and those from non-immigrant status.

5. Results

5.1 Intent to Treat Estimates

The four-year degree attainment results are of particular interest, because they can now
be estimated for students who attain the degree even if they have experienced an educational
delay of three to seven years. We then look at impacts on college enrollment.

5.1.1 Post-secondary Degree Attainment. As shown in Table 2, the offer of a voucher
increase the percentage of students who obtain a four-year degree by statistically insignificant
1.4 percentage points, an effect that is slightly larger than the 1.0 percentage point effect
estimated as of 2013. For African Americans the offer of a voucher is a statistically significant
4.8 percentage points, a larger impact larger than the 3.7 percentage-point impact estimated in
2013. The Hispanic impact is 1.4 percentage points, essentially the same as the 1.1 impact
observed four years earlier. The combined impact for African and Hispanic Americans is 2.9
percentage points, a marginally significant impact that is slightly larger than the 2.4 percentage
point effect observed in 2013. No significant impacts are observed for the small number of non-
minority participants in the program.
For those who had U.S.-born mothers, the impact of an offer is a significant 4.5 percent, a larger magnitude than the 3.2 percentage point impact observed in 2013. For those born of immigrant mothers the impact is a negative, but statistically insignificant, 2.3 percentage points. Among those whose parents had attended college, the offer of a voucher increased four-year degree attainment by a marginally significant 4.5 percentage points.

«Table 2»

The heterogeneity by parent education status suggests that a voucher offer may have a more positive impact if the recipient is not extremely disadvantaged. The SES-minority and SES-immigrant interactions displayed in Table 3 are consistent with this interpretation. Among minority students with college-educated parents the offer of a voucher has an impact of 6.8 percentage points. Among those with higher incomes, the offer of a voucher is quite similar (5.8 percentage points). If a student has a mother born in the United States and parents who had attended college, the impact is 7.7 percentage points. The impacts on these students from non-immigrant families are roughly the same if the family is of higher income. Conversely, both immigrant and minority students from families with levels of earned income of less than $16,000 (about $25,000 in 2018 dollars) and with parents who lack any college-education, the impacts of the voucher opportunity are not significantly different from zero. In other words, we were unable to detect benefits for those truly disadvantaged students who suffer extreme deprivations.

No significant impacts on two-year degree attainment were observed except for marginally significant effects on non-immigrants of higher income.

«Table 3»

5.1.2 Postsecondary Enrollment. In Columns 1 and 3 of Table 4 are displayed the ITT impact estimates on two-year and four-year post-secondary enrollment. Among the full sample
of students, those who received a voucher are 1.6 percentage points more likely to enroll in a
two-year college and are 1.5 percentage points less likely to enroll in a four-year college. Neither
effect is statistically distinguishable from a zero impact.

«Table 4 Here»

As can be seen in Table 5, somewhat higher levels of SES may be a pre-condition for
positive voucher impacts. Impacts on two-year enrollments are positive for minorities with
parents who attended college, and impacts on four-year enrollments are positive for minority
students from higher income families and for those from non-immigrant families of higher
income and higher education statuses. Impacts on enrollment in four-year colleges are observed
for higher income minority students and non-immigrant families of higher education and income
status. Once again, positive impacts are concentrated among those who are not suffering such
extreme deprivations that they constitute the urban underclass that Wilson (1991) characterized
as the truly disadvantaged.

«Table 5 Here»

5.2 Treatment on the Treated Estimates

TOT estimates are presented in Tables 6 through 9. The coefficients in these tables are
properly interpreted as changes in the percentages of degree attainment and postsecondary
enrollment that occur if students ever attended a private school during the three years of its
existence. No distinction is drawn as the length of time a student was in a private school. It may
be for as little as a day or as long as nine years, because the initial promise of three years was
extended through eighth grade for all those who continuously used the voucher. The average
length of time a private school was attended is 1.74 school years. Since TOT estimates are
statistically significant only if ITT estimates presented in the prior tables are significant, the
overall pattern results are the same as discussed above, except for the fact that the size of the estimated TOT effects are substantially larger than the ITT effects.

6. Discussion

Voucher impacts on enrollment and degree attainment of all program participants as of 2017 do not differ substantially from those observed in fall 2013 (Chingos and Peterson, 2015). The offer of a voucher has a small, but not statistically significant, average impact on both four-year college degree attainment and college enrollment. This update breaks new ground, however, by reporting new heterogeneous effects of the voucher, which illuminate the conditions under which private school attendance is beneficial.

Among minority and non-immigrant students with some educational and financial resources, private school attendance can yield important long-term educational benefits. Students with U.S.-born mothers constitute 61 percent of all those for whom immigrant status is known. Scaling up the ITT estimate using private school attendance rates reported in Table A4 implies a TOT impact on graduation rates for this group of students of 5.8 percentage points (see Table 6) on a base B.A. attainment rate of 8.9 percent for the control group, a 65 percent increase. If minority students attend private school, their four-year degree attainment rate increases by 4.2 percentage points on a base attainment rate of 14.4 percent for the control group, an increase of 29 percent.

These benefits are concentrated on those with some fiscal and educational resources. Among minorities from families with higher incomes, impacts of private school attendance on four-year degree completion are 7 percentage points (see Table 7) on a base of 16.5 percent, an increase of 42 percent. Among those from families with parents who had attended college, the

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8 However, a zero effect implies higher productivity in the private sector than in the public sector, given the much higher costs in the public sector (Chingos and Peterson, 2015; Wolf & McShane, 2013).
increase is 68 percent. The gains are roughly the same for students from non-immigrant families who had somewhat better socioeconomic backgrounds than the truly disadvantaged. These gains are substantial, especially considering the fact that the SCSF program initially promised only half-tuition, three-year scholarships.

In sum, we now not only find that private school attendance increases four-year degree attainment for African Americans, non-immigrants, and those whose parents attended college. We also find that the gains in four-year attainment are concentrated among minorities and non-immigrants who come from families with more educated parents and have relatively higher incomes. The general pattern of results indicates that private schools in a large urban setting is most beneficial for minorities and non-immigrants who are poor but who are not suffering from extreme deprivation. If a student is from a non-immigrant or a minority family with an earned-income stream of less than $25,000 (in 2018 dollars), or if the parents do not have some college education, then no long term educational benefits can be detected from the intervention.

The size of the scholarship may help explain the effect heterogeneity by household income as it covered just half the costs of tuition up to $2,340. Families with minimal resources may not have been able to have paid the balance. Indeed, our first stage estimates of equation (2) suggest that private school attendance was higher among the relatively wealthier families in this sample. Those of low income seldom attended private school, while those of higher income went to a private school for well over two years, on average (see Appendix Table A3).

The results raise policy questions about the size of a school voucher that is necessary for a program targeted to the most disadvantaged families to be effective. It also raises questions about a related program design issue: Must schools take the voucher as full payment of tuition for families who are unable to top up their voucher to cover the remaining cost of tuition?
Effect heterogeneity by parent’s educational attainment also suggests that there are non-pecuniary factors at play. Scholars have repeatedly documented that access to the human, social, and cultural capital of college-educated parents is strongly correlated with college-degree completion (Bowen et al., 2009; Park & Hossler, 2014; Perna, 2006; Serna, 2015). Voucher interventions seem to be most successful when these resources are at hand.

Our findings identify the difficulties that private schools — and public schools for that matter — face when working with the truly disadvantaged. Improving the lot of children from minority and non-immigrant families of very low income or with parents that lack any education beyond high school is a perennial challenge. There is no silver bullet ready at hand to provide a ready solution.

For those from moderately disadvantaged families, vouchers may provide access to an environment that shelters students from some of the most debilitating influences of inner-city neighborhoods. That may be more important than the academic instruction available at a private school. Chingos and Peterson (2015) suggest that positive impacts on college attainment for African Americans and non-immigrants of the SCSF program are not solely a function of improved academic performance as measured by performance on standardized tests. If so, impacts on college degree attainment might be due to private schooling impacts on non-cognitive factors, such as safety, character, socio-emotional learning, and grit. All these may have played a role in the long-term success of the SCSF intervention for those students with parents who had the educational and financial resources necessary to take advantage of the private schooling opportunity. If so, policy makers need to be particularly attentive to the long-term impacts of voucher interventions, which may be altogether different from test-score outcomes measured in the short run.
Acknowledgments

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References


National Center for Education Statistics, Digest of Education Statistics, 2018. NEED MORE.


Table 1: Summary Statistics

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Notes: Weighted averages shown. P-values for a test that there are no differences in demographic characteristics between control and treatment groups are shown. A joint significance test also fails to reject the null hypothesis that variables are not jointly different across treatment and control conditions (p=0.200).
### Table 2: Intent-to-Treat Estimates for Postsecondary Degree Attainment

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<td></td>
<td>Treatment Group Difference</td>
<td>Control Group Mean</td>
<td>Treatment Group Difference</td>
<td>Control Group Mean</td>
<td>Sample Size</td>
</tr>
<tr>
<td>Full Sample</td>
<td>0.001 (0.013)</td>
<td>0.093</td>
<td>0.014 (0.016)</td>
<td>0.157</td>
<td>2,634</td>
</tr>
<tr>
<td>Results by Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>-0.001 (0.019)</td>
<td>0.108</td>
<td>0.048* (0.023)</td>
<td>0.104</td>
<td>1,097</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.005 (0.019)</td>
<td>0.067</td>
<td>0.014 (0.025)</td>
<td>0.180</td>
<td>1,216</td>
</tr>
<tr>
<td>Minority</td>
<td>-0.003 (0.014)</td>
<td>0.092</td>
<td>0.029+ (0.017)</td>
<td>0.144</td>
<td>2,313</td>
</tr>
<tr>
<td>Non-Minority</td>
<td>0.036 (0.039)</td>
<td>0.097</td>
<td>-0.066 (0.060)</td>
<td>0.253</td>
<td>321</td>
</tr>
<tr>
<td>Immigrant Family</td>
<td>0.014 (0.022)</td>
<td>0.117</td>
<td>-0.023 (0.032)</td>
<td>0.274</td>
<td>997</td>
</tr>
<tr>
<td>Non-Immigrant Family</td>
<td>0.004 (0.015)</td>
<td>0.079</td>
<td>0.045** (0.017)</td>
<td>0.089</td>
<td>1,576</td>
</tr>
<tr>
<td>Lower Income</td>
<td>-0.013 (0.020)</td>
<td>0.094</td>
<td>0.010 (0.017)</td>
<td>0.130</td>
<td>1,255</td>
</tr>
<tr>
<td>Higher Income</td>
<td>0.018 (0.019)</td>
<td>0.090</td>
<td>0.036 (0.022)</td>
<td>0.187</td>
<td>1,158</td>
</tr>
<tr>
<td>First Generation College Student</td>
<td>-0.004 (0.019)</td>
<td>0.102</td>
<td>-0.021 (0.022)</td>
<td>0.151</td>
<td>1,237</td>
</tr>
<tr>
<td>Parents Attended College</td>
<td>0.005 (0.017)</td>
<td>0.085</td>
<td>0.045+ (0.024)</td>
<td>0.162</td>
<td>1,397</td>
</tr>
</tbody>
</table>

Notes: Sample weights included. Estimates based on linear probability models. Standard errors clustered by randomization block.

** p<0.01, * p<0.05, + p<0.1
Table 3: Intent-to-Treat Subgroup Estimates for Postsecondary Degree Attainment by Socioeconomic Status

<table>
<thead>
<tr>
<th></th>
<th>Two Year Degree</th>
<th>Four Year Degree</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Treatment Group Difference</td>
<td>(2) Control Group Mean</td>
<td>(3) Treatment Group Difference</td>
<td>(4) Control Group Mean</td>
<td>(5) Sample Size</td>
</tr>
<tr>
<td>Minority, Lower Income</td>
<td>-0.006</td>
<td>0.091</td>
<td>0.013</td>
<td>0.123</td>
<td>1,147</td>
</tr>
<tr>
<td></td>
<td>(0.021)</td>
<td></td>
<td>(0.022)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority, Higher Income</td>
<td>0.006</td>
<td>0.103</td>
<td>0.058*</td>
<td>0.165</td>
<td>1,010</td>
</tr>
<tr>
<td></td>
<td>(0.021)</td>
<td></td>
<td>(0.026)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority, First Generation College Student</td>
<td>-0.013</td>
<td>0.103</td>
<td>-0.015</td>
<td>0.144</td>
<td>1,094</td>
</tr>
<tr>
<td></td>
<td>(0.020)</td>
<td></td>
<td>(0.023)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority, Parents Attended College</td>
<td>0.009</td>
<td>0.082</td>
<td>0.068**</td>
<td>0.144</td>
<td>1,219</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td></td>
<td>(0.025)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Immigrant Family, Lower Income</td>
<td>-0.024</td>
<td>0.091</td>
<td>0.032</td>
<td>0.085</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>(0.024)</td>
<td></td>
<td>(0.023)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Immigrant Family, Higher Income</td>
<td>0.039+</td>
<td>0.067</td>
<td>0.062*</td>
<td>0.099</td>
<td>678</td>
</tr>
<tr>
<td></td>
<td>(0.023)</td>
<td></td>
<td>(0.027)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Immigrant Family, First Generation College Student</td>
<td>-0.023</td>
<td>0.094</td>
<td>-0.004</td>
<td>0.091</td>
<td>731</td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td></td>
<td>(0.024)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Immigrant Family, Parents Attended College</td>
<td>0.021</td>
<td>0.067</td>
<td>0.077**</td>
<td>0.087</td>
<td>845</td>
</tr>
<tr>
<td></td>
<td>(0.020)</td>
<td></td>
<td>(0.024)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Lower (higher) income parents have household incomes less (greater) than $16,334. Sample weights included. Estimates based on linear probability models. Standard errors clustered by randomization block. ** p<0.01, * p<0.05, + p<0.1
### Table 4: Intent-to-Treat Estimates for Postsecondary Enrollment

<table>
<thead>
<tr>
<th></th>
<th>Two Year College</th>
<th>Four Year College</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Treatment Group Difference</td>
<td>(2) Control Group Mean</td>
<td>(3) Treatment Group Difference</td>
<td>(4) Control Group Mean</td>
<td>(5) Sample Size</td>
</tr>
<tr>
<td>Full Sample</td>
<td>0.012 (0.020)</td>
<td>0.288</td>
<td>-0.015 (0.021)</td>
<td>0.388</td>
<td>2,634</td>
</tr>
<tr>
<td>Results by Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>0.018 (0.030)</td>
<td>0.258</td>
<td>-0.008 (0.031)</td>
<td>0.358</td>
<td>1,097</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.009 (0.030)</td>
<td>0.317</td>
<td>-0.002 (0.030)</td>
<td>0.390</td>
<td>1,216</td>
</tr>
<tr>
<td>Minority</td>
<td>0.007 (0.022)</td>
<td>0.290</td>
<td>0.000 (0.022)</td>
<td>0.375</td>
<td>2,313</td>
</tr>
<tr>
<td>Non-Minority</td>
<td>-0.013 (0.059)</td>
<td>0.276</td>
<td>-0.095 (0.075)</td>
<td>0.489</td>
<td>321</td>
</tr>
<tr>
<td>Immigrant Family</td>
<td>-0.012 (0.036)</td>
<td>0.352</td>
<td>-0.069+ (0.036)</td>
<td>0.518</td>
<td>997</td>
</tr>
<tr>
<td>Non-Immigrant Family</td>
<td>0.023 (0.025)</td>
<td>0.255</td>
<td>0.029 (0.025)</td>
<td>0.317</td>
<td>1,576</td>
</tr>
<tr>
<td>Lower Income</td>
<td>-0.032 (0.031)</td>
<td>0.304</td>
<td>-0.046 (0.031)</td>
<td>0.383</td>
<td>1,255</td>
</tr>
<tr>
<td>Higher Income</td>
<td>0.051+ (0.030)</td>
<td>0.283</td>
<td>0.037 (0.030)</td>
<td>0.399</td>
<td>1,158</td>
</tr>
<tr>
<td>First Generation College Student</td>
<td>-0.003 (0.028)</td>
<td>0.268</td>
<td>-0.046 (0.029)</td>
<td>0.360</td>
<td>1,237</td>
</tr>
<tr>
<td>Parents Attended College</td>
<td>0.026 (0.030)</td>
<td>0.306</td>
<td>0.013 (0.030)</td>
<td>0.413</td>
<td>1,397</td>
</tr>
</tbody>
</table>

Notes: Sample weights included. Estimates based on linear probability models. Standard errors clustered by randomization block.

** p<0.01, * p<0.05, + p<0.1
## Table 5: Intent-to-Treat Subgroup Estimates for Postsecondary Enrollment by Socioeconomic Status

<table>
<thead>
<tr>
<th></th>
<th>Two Year College</th>
<th></th>
<th>Four Year College</th>
<th></th>
<th></th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Treatment Group Difference</td>
<td>(2) Control Group Mean</td>
<td>(3) Treatment Group Difference</td>
<td>(4) Control Group Mean</td>
<td>(5)</td>
<td></td>
</tr>
<tr>
<td>Minority, Lower Income</td>
<td>-0.045</td>
<td>0.293</td>
<td>-0.043</td>
<td>0.372</td>
<td></td>
<td>1,147</td>
</tr>
<tr>
<td></td>
<td>(0.031)</td>
<td></td>
<td>(0.031)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority, Higher Income</td>
<td>0.048</td>
<td>0.286</td>
<td>0.067*</td>
<td>0.369</td>
<td></td>
<td>1,010</td>
</tr>
<tr>
<td></td>
<td>(0.033)</td>
<td></td>
<td>(0.033)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority, First Generation College Student</td>
<td>-0.034</td>
<td>0.285</td>
<td>-0.022</td>
<td>0.345</td>
<td></td>
<td>1,094</td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td></td>
<td>(0.031)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority, Parents Attended College</td>
<td>0.053+</td>
<td>0.294</td>
<td>0.026</td>
<td>0.402</td>
<td></td>
<td>1,219</td>
</tr>
<tr>
<td></td>
<td>(0.031)</td>
<td></td>
<td>(0.031)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Immigrant Family, Lower Income</td>
<td>-0.038</td>
<td>0.263</td>
<td>-0.022</td>
<td>0.324</td>
<td></td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td></td>
<td>(0.034)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Immigrant Family, Higher Income</td>
<td>0.061</td>
<td>0.253</td>
<td>0.074+</td>
<td>0.313</td>
<td></td>
<td>678</td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
<td></td>
<td>(0.040)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Immigrant Family, First Generation College Student</td>
<td>0.018</td>
<td>0.235</td>
<td>-0.043</td>
<td>0.300</td>
<td></td>
<td>731</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td></td>
<td>(0.037)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Immigrant Family, Parents Attended College</td>
<td>0.031</td>
<td>0.272</td>
<td>0.077*</td>
<td>0.332</td>
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<td>845</td>
</tr>
<tr>
<td></td>
<td>(0.035)</td>
<td></td>
<td>(0.036)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Notes: Lower (higher) income parents have household incomes less (greater) than $16,334. Sample weights included. Estimates based on linear probability models. Standard errors clustered by randomization block. ** p<0.01, * p<0.05, + p<0.1
<table>
<thead>
<tr>
<th></th>
<th>Two Year Degree</th>
<th>Four Year Degree</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Treatment Group</td>
<td>(2) Control Group</td>
<td>(3) Treatment Group</td>
</tr>
<tr>
<td></td>
<td>Difference</td>
<td>Mean</td>
<td>Difference</td>
</tr>
<tr>
<td>Full Sample</td>
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<td>0.016</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td></td>
<td>(0.026)</td>
</tr>
<tr>
<td>Results by Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>0.014</td>
<td>0.078</td>
<td>0.091**</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td></td>
<td>(0.034)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.007</td>
<td>0.105</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td></td>
<td>(0.037)</td>
</tr>
<tr>
<td>Minority</td>
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<td>0.042+</td>
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<td>(0.019)</td>
<td></td>
<td>(0.025)</td>
</tr>
<tr>
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<td>(0.080)</td>
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<td>(0.117)</td>
</tr>
<tr>
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<td>0.117</td>
<td>0.027</td>
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<tr>
<td></td>
<td>(0.034)</td>
<td></td>
<td>(0.034)</td>
</tr>
<tr>
<td>Non-Immigrant Family</td>
<td>0.003</td>
<td>0.079</td>
<td>0.058*</td>
</tr>
<tr>
<td></td>
<td>(0.023)</td>
<td></td>
<td>(0.026)</td>
</tr>
<tr>
<td>Lower Income</td>
<td>-0.016</td>
<td>0.094</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
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<td>(0.035)</td>
</tr>
<tr>
<td>Higher Income</td>
<td>0.020</td>
<td>0.090</td>
<td>0.037</td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td></td>
<td>(0.038)</td>
</tr>
<tr>
<td>First Generation College Student</td>
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<td>0.102</td>
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</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td></td>
<td>(0.035)</td>
</tr>
<tr>
<td>Parents Attended College</td>
<td>0.008</td>
<td>0.085</td>
<td>0.065+</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td></td>
<td>(0.037)</td>
</tr>
</tbody>
</table>

Notes: Sample weights included. Estimates based on linear probability models. Standard errors clustered by randomization block.

** p<0.01, * p<0.05, + p<0.1
Table 7: Treatment on the Treated Subgroup Estimates for Postsecondary Degree Attainment by Socioeconomic Status

<table>
<thead>
<tr>
<th></th>
<th>Two Year Degree</th>
<th></th>
<th>Four Year Degree</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td></td>
<td>Treatment Group</td>
<td>Control Group Mean</td>
<td>Treatment Group</td>
<td>Control Group Mean</td>
<td>Sample Size</td>
</tr>
<tr>
<td></td>
<td>Difference</td>
<td></td>
<td>Difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Minority, Lower Income</strong></td>
<td>-0.011</td>
<td>0.091</td>
<td>0.027</td>
<td>0.123</td>
<td>1,147</td>
</tr>
<tr>
<td></td>
<td>(0.031)</td>
<td></td>
<td>(0.034)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Minority, Higher Income</strong></td>
<td>0.009</td>
<td>0.087</td>
<td>0.070+</td>
<td>0.165</td>
<td>1,010</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td></td>
<td>(0.036)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Minority, First Generation College Student</strong></td>
<td>-0.020</td>
<td>0.103</td>
<td>-0.018</td>
<td>0.144</td>
<td>1,094</td>
</tr>
<tr>
<td></td>
<td>(0.031)</td>
<td></td>
<td>(0.034)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Minority, Parents Attended College</strong></td>
<td>0.017</td>
<td>0.082</td>
<td>0.098**</td>
<td>0.144</td>
<td>1,219</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td></td>
<td>(0.037)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-Immigrant Family, Lower Income</strong></td>
<td>-0.047</td>
<td>0.091</td>
<td>0.040</td>
<td>0.082</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>(0.037)</td>
<td></td>
<td>(0.037)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-Immigrant Family, Higher Income</strong></td>
<td>0.042</td>
<td>0.067</td>
<td>0.079*</td>
<td>0.099</td>
<td>678</td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
<td></td>
<td>(0.038)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-Immigrant Family, First Generation College Student</strong></td>
<td>-0.033</td>
<td>0.094</td>
<td>-0.014</td>
<td>0.091</td>
<td>731</td>
</tr>
<tr>
<td></td>
<td>(0.035)</td>
<td></td>
<td>(0.040)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-Immigrant Family, Parents Attended College</strong></td>
<td>0.028</td>
<td>0.067</td>
<td>0.110**</td>
<td>0.087</td>
<td>845</td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td></td>
<td>(0.034)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Lower (higher) income parents have household incomes less (greater) than $16,334. Sample weights included. Estimates based on linear probability models. Standard errors clustered by randomization block. ** p<0.01, * p<0.05, + p<0.1
<table>
<thead>
<tr>
<th></th>
<th>Two Year College</th>
<th></th>
<th>Four Year College</th>
<th></th>
<th>(5) Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Treatment Group Difference</td>
<td>(2) Control Group Mean</td>
<td>(3) Treatment Group Difference</td>
<td>(4) Control Group Mean</td>
<td></td>
</tr>
<tr>
<td>Full Sample</td>
<td>0.010 (0.031)</td>
<td>0.288</td>
<td>-0.032 (0.033)</td>
<td>0.388</td>
<td>2,634</td>
</tr>
<tr>
<td>Results by Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>0.051 (0.042)</td>
<td>0.258</td>
<td>0.027 (0.046)</td>
<td>0.358</td>
<td>1,097</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.005 (0.045)</td>
<td>0.317</td>
<td>-0.008 (0.046)</td>
<td>0.390</td>
<td>1,216</td>
</tr>
<tr>
<td>Minority</td>
<td>0.012 (0.031)</td>
<td>0.290</td>
<td>0.001 (0.032)</td>
<td>0.375</td>
<td>2,313</td>
</tr>
<tr>
<td>Non-Minority</td>
<td>0.018 (0.132)</td>
<td>0.276</td>
<td>-0.256+ (0.145)</td>
<td>0.489</td>
<td>321</td>
</tr>
<tr>
<td>Immigrant Family</td>
<td>-0.013 (0.054)</td>
<td>0.352</td>
<td>-0.128* (0.056)</td>
<td>0.518</td>
<td>997</td>
</tr>
<tr>
<td>Non-Immigrant Family</td>
<td>0.024 (0.037)</td>
<td>0.255</td>
<td>0.028 (0.038)</td>
<td>0.317</td>
<td>1,576</td>
</tr>
<tr>
<td>Lower Income</td>
<td>-0.039 (0.048)</td>
<td>0.304</td>
<td>-0.072 (0.048)</td>
<td>0.383</td>
<td>1,255</td>
</tr>
<tr>
<td>Higher Income</td>
<td>0.049 (0.044)</td>
<td>0.283</td>
<td>0.043 (0.048)</td>
<td>0.399</td>
<td>1,158</td>
</tr>
<tr>
<td>First Generation College Student</td>
<td>-0.006 (0.042)</td>
<td>0.268</td>
<td>-0.060 (0.046)</td>
<td>0.360</td>
<td>1,237</td>
</tr>
<tr>
<td>Parents Attended College</td>
<td>0.031 (0.044)</td>
<td>0.306</td>
<td>0.003 (0.046)</td>
<td>0.413</td>
<td>1,397</td>
</tr>
</tbody>
</table>

Notes: Sample weights included. Estimates based on linear probability models. Standard errors clustered by randomization block.  
** p<0.01, * p<0.05, + p<0.1
<table>
<thead>
<tr>
<th>Socioeconomic Status</th>
<th>Two Year College</th>
<th>Four Year College</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Treatment Group Difference</td>
<td>Control Group Mean</td>
<td>Treatment Group Difference</td>
</tr>
<tr>
<td>Minority, Lower Income</td>
<td>-0.051 (0.047)</td>
<td>0.293</td>
<td>-0.056 (0.048)</td>
</tr>
<tr>
<td>Minority, Higher Income</td>
<td>0.055 (0.043)</td>
<td>0.286</td>
<td>0.092* (0.045)</td>
</tr>
<tr>
<td>Minority, First Generation College Student</td>
<td>-0.045 (0.044)</td>
<td>0.285</td>
<td>-0.022 (0.046)</td>
</tr>
<tr>
<td>Minority, Parents Attended College</td>
<td>0.068 (0.042)</td>
<td>0.294</td>
<td>0.034 (0.045)</td>
</tr>
<tr>
<td>Non-Immigrant Family, Lower Income</td>
<td>-0.057 (0.057)</td>
<td>0.263</td>
<td>-0.052 (0.056)</td>
</tr>
<tr>
<td>Non-Immigrant Family, Higher Income</td>
<td>0.071 (0.051)</td>
<td>0.253</td>
<td>0.098+ (0.056)</td>
</tr>
<tr>
<td>Non-Immigrant Family, First Generation College Student</td>
<td>0.003 (0.052)</td>
<td>0.235</td>
<td>-0.061 (0.057)</td>
</tr>
<tr>
<td>Non-Immigrant Family, Parents Attended College</td>
<td>0.042 (0.051)</td>
<td>0.272</td>
<td>0.097+ (0.052)</td>
</tr>
</tbody>
</table>

Notes: Lower (higher) income parents have household incomes less (greater) than $16,334. Sample weights included. Estimates based on linear probability models. Standard errors clustered by randomization block. ** p<0.01, * p<0.05, + p<0.1
Table A1: Intent-to-Treat Probit Estimates for Postsecondary Degree Attainment

<table>
<thead>
<tr>
<th></th>
<th>(1) Two-Year Degree</th>
<th>(2) Four-Year Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Sample</td>
<td>0.006</td>
<td>0.022</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.015)</td>
</tr>
<tr>
<td>Subgroup Results</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority</td>
<td>0.000</td>
<td>0.033*</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.015)</td>
</tr>
<tr>
<td>Non-Minority</td>
<td>0.047</td>
<td>-0.083</td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td>(0.055)</td>
</tr>
<tr>
<td>Lower Income</td>
<td>-0.016</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.020)</td>
</tr>
<tr>
<td>Higher Income</td>
<td>0.030+</td>
<td>0.049*</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.022)</td>
</tr>
<tr>
<td>First Generation College Student</td>
<td>0.001</td>
<td>-0.008</td>
</tr>
<tr>
<td></td>
<td>(0.020)</td>
<td>(0.022)</td>
</tr>
<tr>
<td>Parents Attended College</td>
<td>0.017</td>
<td>0.048*</td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.020)</td>
</tr>
<tr>
<td>Immigrant Family</td>
<td>0.020</td>
<td>-0.013</td>
</tr>
<tr>
<td></td>
<td>(0.021)</td>
<td>(0.032)</td>
</tr>
<tr>
<td>Non-Immigrant Family</td>
<td>0.013</td>
<td>0.047**</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.014)</td>
</tr>
<tr>
<td>Minority, Lower Income</td>
<td>-0.014</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.020)</td>
</tr>
<tr>
<td>Minority, Higher Income</td>
<td>0.019</td>
<td>0.070**</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>Minority, First Generation College Student</td>
<td>-0.008</td>
<td>-0.010</td>
</tr>
<tr>
<td></td>
<td>(0.021)</td>
<td>(0.023)</td>
</tr>
<tr>
<td>Minority, Parents Attended College</td>
<td>0.019</td>
<td>0.067**</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.020)</td>
</tr>
<tr>
<td>Non-Immigrant Family, Lower Income</td>
<td>-0.017</td>
<td>0.036+</td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Non-Immigrant Family, Higher Income</td>
<td>0.058**</td>
<td>0.074**</td>
</tr>
<tr>
<td></td>
<td>(0.020)</td>
<td>(0.022)</td>
</tr>
<tr>
<td>Non-Immigrant Family, First Generation College Student</td>
<td>-0.017</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td>(0.027)</td>
</tr>
<tr>
<td>Non-Immigrant Family, Parents Attended College</td>
<td>0.039*</td>
<td>0.072**</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.018)</td>
</tr>
</tbody>
</table>

Notes: Sample weights included. Marginal effect estimates displayed. Standard errors clustered by randomization block. ** p<0.01, * p<0.05, + p<0.1
Table A2: Intent-to-Treat Probit Estimates for Postsecondary Enrollment

<table>
<thead>
<tr>
<th>Subgroup Results</th>
<th>(1) Enrollment in Two Year College</th>
<th>(2) Enrollment in Four Year College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Sample</td>
<td>0.014 (0.020)</td>
<td>-0.014 (0.021)</td>
</tr>
<tr>
<td>Subgroup Results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority</td>
<td>0.010 (0.021)</td>
<td>0.000 (0.022)</td>
</tr>
<tr>
<td>Non-Minority</td>
<td>0.026 (0.050)</td>
<td>-0.089 (0.062)</td>
</tr>
<tr>
<td>Lower Income</td>
<td>-0.017 (0.027)</td>
<td>-0.049+ (0.027)</td>
</tr>
<tr>
<td>Higher Income</td>
<td>0.051+ (0.028)</td>
<td>0.041 (0.031)</td>
</tr>
<tr>
<td>First Generation College Student</td>
<td>0.010 (0.027)</td>
<td>-0.042 (0.028)</td>
</tr>
<tr>
<td>Parents Attended College</td>
<td>0.030 (0.028)</td>
<td>0.014 (0.029)</td>
</tr>
<tr>
<td>Immigrant Family</td>
<td>-0.009 (0.034)</td>
<td>-0.070* (0.035)</td>
</tr>
<tr>
<td>Non-Immigrant Family</td>
<td>0.028 (0.023)</td>
<td>0.030 (0.024)</td>
</tr>
<tr>
<td>Minority, Lower Income</td>
<td>-0.034 (0.029)</td>
<td>-0.055+ (0.029)</td>
</tr>
<tr>
<td>Minority, Higher Income</td>
<td>0.055+ (0.030)</td>
<td>0.073* (0.032)</td>
</tr>
<tr>
<td>Minority, First Generation College Student</td>
<td>-0.025 (0.030)</td>
<td>-0.019 (0.030)</td>
</tr>
<tr>
<td>Minority, Parents Attended College</td>
<td>0.055+ (0.029)</td>
<td>0.028 (0.030)</td>
</tr>
<tr>
<td>Non-Immigrant Family, Lower Income</td>
<td>-0.010 (0.031)</td>
<td>-0.026 (0.032)</td>
</tr>
<tr>
<td>Non-Immigrant Family, Higher Income</td>
<td>0.077* (0.035)</td>
<td>0.081* (0.036)</td>
</tr>
<tr>
<td>Non-Immigrant Family, First Generation College Student</td>
<td>0.041 (0.034)</td>
<td>-0.050 (0.037)</td>
</tr>
<tr>
<td>Non-Immigrant Family, Parents Attended College</td>
<td>0.038 (0.031)</td>
<td>0.079* (0.033)</td>
</tr>
</tbody>
</table>

Notes: Sample weights included. Marginal effect estimates displayed. Standard errors clustered by randomization block. ** p<0.01, * p<0.05, + p<0.1
Table A3: First Stage Regression Estimates

<table>
<thead>
<tr>
<th></th>
<th>(1) Ever Attended</th>
<th>(2) Years Attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lottery Winner</td>
<td>0.655***</td>
<td>1.74***</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.048)</td>
</tr>
<tr>
<td>Baseline Math Test Score</td>
<td>-0.000</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Baseline English Test Score</td>
<td>0.000</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Parent Educational Attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School Grad or GED</td>
<td>0.011</td>
<td>0.047</td>
</tr>
<tr>
<td></td>
<td>(0.033)</td>
<td>(0.068)</td>
</tr>
<tr>
<td>Some College</td>
<td>0.051</td>
<td>0.101</td>
</tr>
<tr>
<td></td>
<td>(0.033)</td>
<td>(0.069)</td>
</tr>
<tr>
<td>BA degree or more</td>
<td>0.065</td>
<td>0.133*</td>
</tr>
<tr>
<td></td>
<td>(0.041)</td>
<td>(0.080)</td>
</tr>
<tr>
<td>Family Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$7,425-11,879</td>
<td>0.027</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.051)</td>
</tr>
<tr>
<td>$11,880-16,334</td>
<td>-0.018</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(0.033)</td>
<td>(0.067)</td>
</tr>
<tr>
<td>$16,335-22,274</td>
<td>0.095***</td>
<td>0.260***</td>
</tr>
<tr>
<td></td>
<td>(0.036)</td>
<td>(0.072)</td>
</tr>
<tr>
<td>$22,275-29,699</td>
<td>0.103**</td>
<td>0.266***</td>
</tr>
<tr>
<td></td>
<td>(0.046)</td>
<td>(0.094)</td>
</tr>
<tr>
<td>$29,700 or more</td>
<td>0.136***</td>
<td>0.347***</td>
</tr>
<tr>
<td></td>
<td>(0.041)</td>
<td>(0.086)</td>
</tr>
<tr>
<td>Mother born in U.S.</td>
<td>-0.047*</td>
<td>-0.075</td>
</tr>
<tr>
<td></td>
<td>(0.027)</td>
<td>(0.054)</td>
</tr>
<tr>
<td>Racial/Ethnic Background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>-0.021</td>
<td>0.073</td>
</tr>
<tr>
<td></td>
<td>(0.065)</td>
<td>-0.118</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.001</td>
<td>0.140</td>
</tr>
<tr>
<td></td>
<td>(0.069)</td>
<td>(0.130)</td>
</tr>
<tr>
<td>Mother Works</td>
<td>0.007</td>
<td>-0.032</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td>(0.048)</td>
</tr>
<tr>
<td>Father Absent</td>
<td>0.008</td>
<td>0.021</td>
</tr>
<tr>
<td></td>
<td>(0.021)</td>
<td>(0.043)</td>
</tr>
<tr>
<td>English main language</td>
<td>-0.011</td>
<td>-0.053</td>
</tr>
<tr>
<td></td>
<td>(0.033)</td>
<td>(0.068)</td>
</tr>
<tr>
<td>Female</td>
<td>0.015</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.035)</td>
</tr>
</tbody>
</table>

Notes: Model includes controls for randomization blocks. Omitted category for parent education consists of parents who did not complete high school. Omitted category for family income consists of families who make less than $7,425. Sampling weights included. Standard errors clustered by randomization block. ** p<0.01, * p<0.05, + p<0.1