Mathematica
Progress Together

Education Research Brief

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College Track Postsecondary Outcomes: Benchmarking the Performance of the 9th Grade Cohort of 2009

Fewer than one in six low-income youth in the United States complete a bachelor's degree, limiting their future potential earnings and social mobility (Kena et al. 2015). College Track's mission is to address this challenge by supporting students from underserved communities, many of whom will be the first students in their families to attend college.

College Track's approach encompasses a long-ranging commitment from early high school through college graduation. During high school, students participate in intensive study groups, dedicated summer programming, experiential education, and preparation for standardized college entrance exams. College Track maintains active partnerships with colleges to ensure continued support—academic, social, and financial—for students as they progress through college and achieve a four-year degree. The organization currently operates in several California cities, Colorado, New Orleans, and Washington, DC.

College Track and Mathematica have partnered to conduct a rigorous experimental evaluation of the College Track program. Results will not be available for several years, as students in the study progress through high school and college. In the meantime, Mathematica analyzed existing data to benchmark the postsecondary outcomes of College Track students relative to other students with similar backgrounds. Compared to similar students, were students served by College Track more likely to apply to, enroll in, or persist in college?

This brief benchmarks the postsecondary outcomes of College Track students in the 9th grade cohort of 2009 relative to other students in the same cohort with similar backgrounds. The following key findings emerged:

- **College Track completers were more likely than similar students to apply to multiple colleges.**
- **College Track completers enrolled in college at higher rates than similar students, and were much more likely to enroll in four-year colleges specifically.**
- **Persistence in college was similar among students who enrolled in college, although College Track uses a stricter and more rigorous definition of persistence.**

Analytic approach

The benchmarking analysis examines the post-secondary outcomes of College Track students who entered 9th grade in 2009 and remained in College Track through high school graduation in 2013.[1] Comparison students were drawn from a pool of nationally representative students from the High School Longitudinal Survey of 2009 (HSLS) developed by the National Center for Education Statistics (Rogers et al. 2018). The HSLS followed a cohort of students who entered 9th grade in 2009 until 2016—those students' expected third year of college enrollment. Thus, the study can compare College Track and similar students in the HSLS who entered 9th grade in the same school year.

We used an approach known as propensity-score matching to identify comparison students in the HSLS data with similar background characteristics as the students who completed College Track. Because students had to graduate from high school to complete College Track, we first restricted the pool of HSLS students to high school graduates only. We then matched each College Track student with students in the remaining HSLS sample who had similar demographic characteristics and baseline academic achievement. The final analysis sample consisted of 147 College Track students and 1,039 matched comparison students.[2]

After matching, comparison students had similar background characteristics as the College Track students based on the available data (Figure 2). Next, we compared the postsecondary outcomes of the College Track and comparison students using linear regression, which accounted for any small remaining differences on their baseline characteristics. However, as in any non-experimental analysis, other baseline differences that the available data did not capture are still possible. Further details on the sample selection, methodology, and results are available in the Technical Appendix.

Figure 1. Construction of the College Track analysis sample

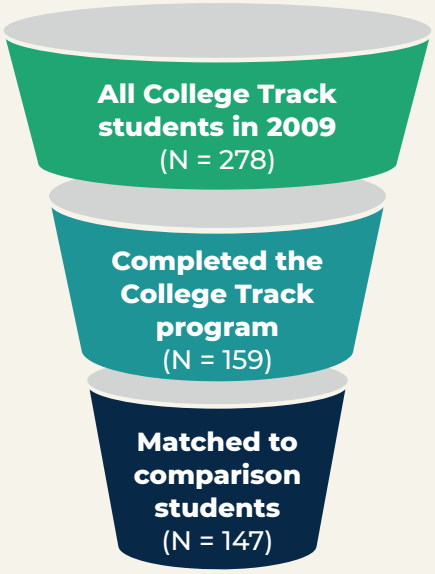
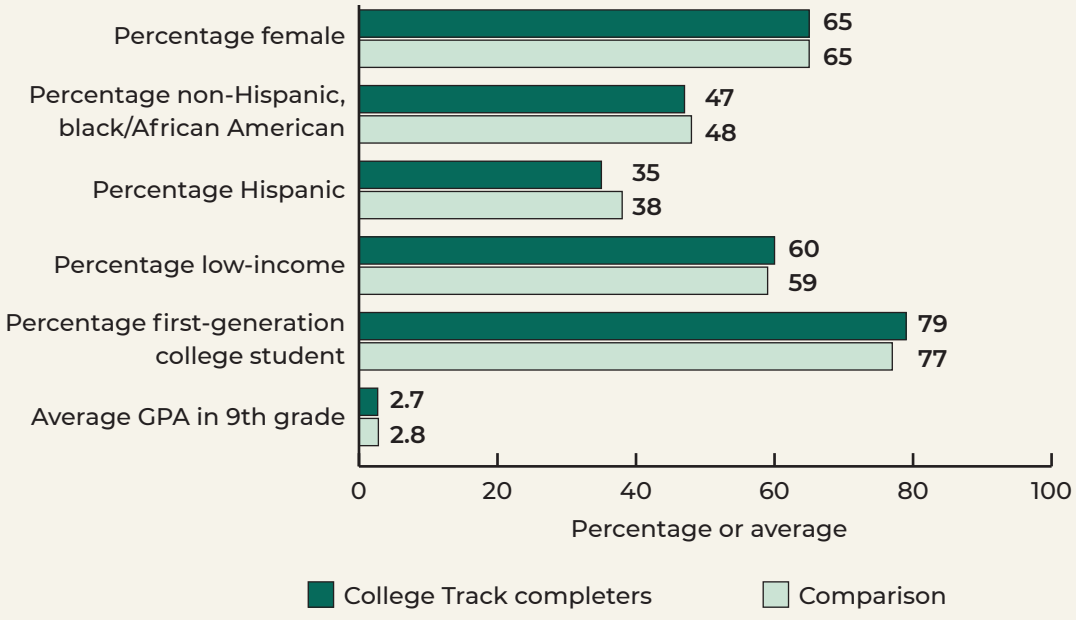


Figure 2. Student baseline characteristics after matching



Note: None of the differences are statistically significant at the 5 percent level.

GPA = grade point average.

Data sources

The benchmarking analysis uses administrative data collected by College Track, together with public-use data from the HSLS. Having different data sources for the College Track and comparison groups can present challenges in defining baseline and outcome measures comparably. Table 1 presents the definitions of each baseline and outcome measure used in the analysis.

Table 1. Baseline and outcome measures

	College Track definition	HSLS definition
Baseline measure		
Gender	Female or male	Female or male
Low-income status	Eligible for free or reduced-price lunch (FRPL)	Above or below 185% federal poverty level (FPL)†
First-generation college student	Neither parent has bachelor's degree or higher from a U.S. institution	Neither parent has a bachelor's degree or higher
GPA in 9th grade	Semester 1 GPA, unweighted	Cumulative year GPA, unweighted
Race or ethnicity	(1) Non-Hispanic, black/African American (2) Hispanic (3) Other	(1) Non-Hispanic, black/African American (2) Hispanic (3) Other
Outcome measure		
Ever applied to college	Number of applications > 0	Number of applications > 0
Applied to 3 or more colleges	Number of applications ≥ 3	Number of applications ≥ 3
Ever enrolled	Ever attended a 2-year or 4-year college	Ever attended a 2-year or 4-year college
First enrollment: College type	(1) 2-year college (2) 4-year college	(1) 2-year college (2) 4-year college
First enrollment: College selectivity‡	(1) 2-year college (2) 4-year college, inclusive (3) 4-year college, moderately selective (4) 4-year college, highly selective	(1) 2-year college (2) 4-year college, inclusive (3) 4-year college, moderately selective (4) 4-year college, highly selective
First enrollment: Student persisted to 2nd year	Student continuously enrolled in college of same or higher type (2-year versus 4-year) from fall of academic year through successive fall term	Student enrolled in college of same or higher type (2-year versus 4-year) in at least 2 calendar years

† 130% of the FPL is the threshold for free lunch eligibility. Students between 130% and 185% of the FPL are eligible for reduced-price lunch (Food and Nutrition Service 2009).

‡ Selectivity of colleges is determined by the Carnegie Classification of Institutions of Higher Education.

GPA = grade point average.

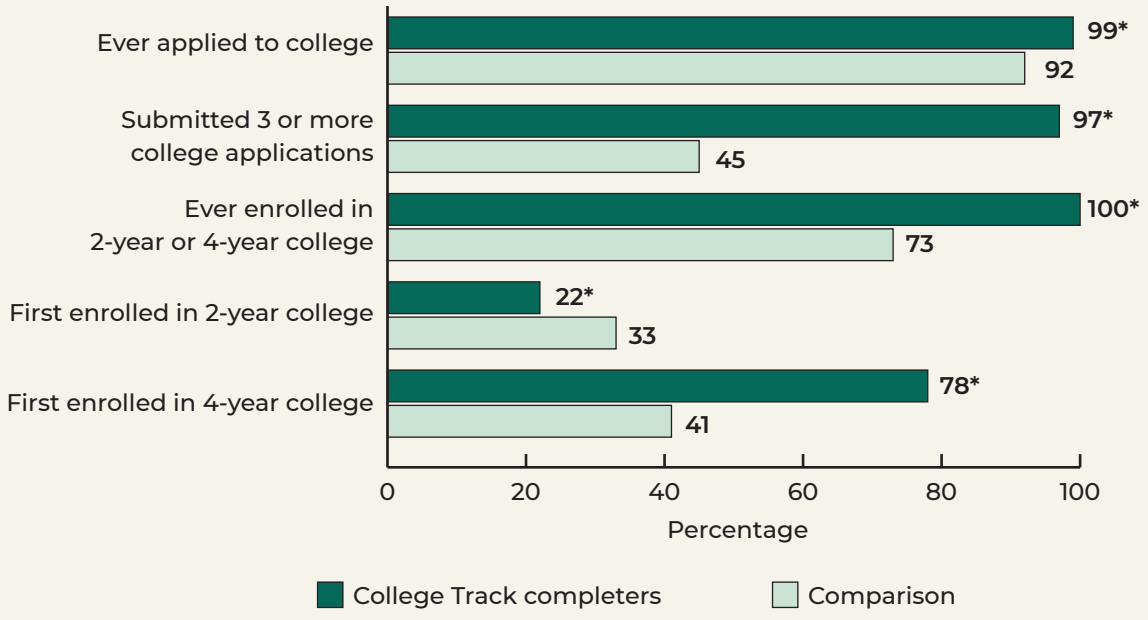
Findings

College Track completers were more likely than similar students to apply to multiple colleges. Students who completed College Track in 2013 applied to college at higher rates than comparable students in the HSLS. The difference in the percentage of students who submitted multiple applications is especially large—97 percent of College Track students submitted three or more applications, compared to 45 percent of comparison students.

College Track completers enrolled in college at higher rates than similar students, and were much more likely to enroll in four-year colleges specifically. All the students who completed College Track attended college, making them 27 percentage points more likely than comparison students to enroll in either a two- or four-year college. In addition, a much larger share of College Track students (78 versus 41 percent) enrolled in four-year colleges relative to comparable students in the HSLS, who were more likely to enroll in two-year colleges instead. Promoting enrollment in four-year colleges is an explicit mission of College Track.

Compared to similar students in the HSLS who also enrolled in college, College Track students were less likely to first enroll in a two-year college and more likely to first enroll in an inclusive four-year college (the lowest selectivity level of four-year colleges). In addition, College Track students were less likely than comparison students to first matriculate in a moderately selective four-year college and more likely to first matriculate in a highly selective four-year college (the highest selectivity level). These findings suggest that College Track may help students attend colleges in a higher selectivity level than they otherwise would.

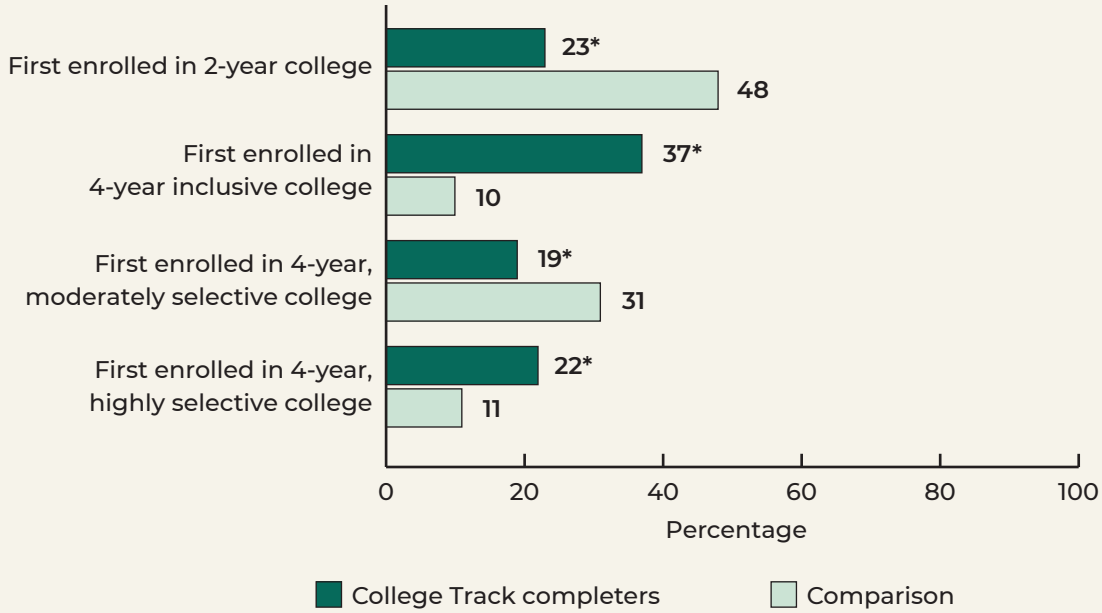
Figure 3. Comparison of college entry outcomes



Note: The sample for the college entry outcomes is limited to high school graduates.

* Difference is statistically significant at the 5 percent level.

Figure 4. Comparison of college selectivity outcomes

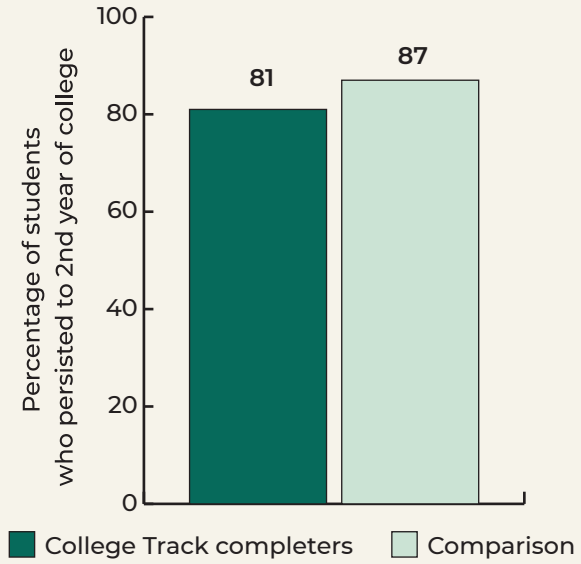


Note: The sample for all college selectivity outcomes is limited to students who enrolled in college.

* Difference is statistically significant at the 5 percent level.

Persistence in college was similar among students who enrolled in college, although College Track uses a stricter and more rigorous definition of persistence. College Track students persisted at a similar rate to comparable students in the HSLS who also enrolled in college (81 versus 87 percent). The small difference between the two groups is not statistically significant. This result is at least partially explained by the different definitions of persistence, as College Track requires that students be continuously enrolled for at least three semesters. In contrast, students in the HSLS only had to be enrolled in at least two calendar years, which could include time off (see Table 1). In addition, a higher share of College Track students enrolled in four-year rather than two-year colleges. When we examined college persistence among students in four-year colleges only as a secondary analysis, we found no difference between College Track and comparison students (see Table A.3 in the Technical Appendix).

Figure 5. Comparison of college persistence



Note: The differences is not statistically significant at the 5 percent level. The sample for the college persistence outcome is limited to students who enrolled in college.

Limitations

This analysis offers a useful benchmark for assessing the outcomes of students who completed College Track, but has several limitations and thus is not intended to evaluate the impacts of the program.

Some limitations stem from using a different source of data to identify the comparison group. First, the two data sources define certain measures somewhat differently. The only measure of baseline achievement available—9th grade GPA—was measured over a different time span (first semester for College Track versus end of 9th grade in the HSLS).[3] Most notably, College Track defined the persistence outcome more strictly than is possible in the HSLS public-use data, requiring continuous enrollment for three semesters rather than enrollment in two calendar years. Second, geographic locations are not available in the public-use HSLS data and thus could not be used in matching, which means comparison students could have experienced different environments from College Track students, who attended high school in the San Francisco Bay Area and New Orleans.

In addition, the benchmarking analysis was based on a subset of all College Track students—those who completed the program and thus participated in outcome data collection. These students, who represent 57 percent of the 9th-grade cohort who entered College Track in 2009, had higher academic achievement at the start of the program, as measured by 9th-grade GPA. Therefore, the students in the analysis might have better postsecondary outcomes than other College Track students. Moreover, we were unable to examine whether College Track might help students graduate from high school because that information was available only for the subset of College Track students who graduated from high school.

It is also important to note that this analysis focused on a single cohort of students who attended high school from 2009 to 2013. Since then, College Track has made changes to staffing, geographic reach, and programmatic characteristics as subsequent cohorts have progressed through the program.

Looking ahead

College Track students in the 9th-grade cohort of 2009 performed favorably on many postsecondary outcomes relative to a comparison group of similar students drawn from the HSLS. For example, College Track completers were 37 percentage points more likely to enroll in a four-year college. Although these initial findings are encouraging, the rigorous experimental evaluation Mathematica and College Track are conducting will contribute more robust evidence of the program's impacts in the years to come. Final results from the experimental evaluation are expected to be available in 2024.

References

Food and Nutrition Service, U.S. Department of Agriculture. "Child Nutrition Programs: Income Eligibility Guidelines." *Federal Register*, 74 F.R. § 13410, 2009.

Kena, G., L. Musu-Gillette, J. Robinson, X. Wang, A. Rathbun, J. Zhang, S. Wilkinson-Flicker, A. Barmer, and E. Dunlop Velez. "The Condition of Education 2015." NCES 2015-144. Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2015.

Rogers, J., E. Ritchie, and L.B. Fritch. "HSLS:09 Base Year to Second Follow-Up Restricted-Use Data File." NCES 2018-141. Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2018.

Technical appendix

Sample selection

The College Track analysis sample was restricted to 147 of 268 students in the 9th-grade cohort of 2009 who completed the program because outcome data were available only for this portion of the cohort. We constructed the HSLS analysis sample to maximize its comparability with the College Track sample. We first excluded any students who did not respond to all of the relevant survey instruments. We also restricted the HSLS sample to students in similar schooling environments as College Track students—those enrolled in public high schools in a city or suburb. Next, we removed HSLS students who were missing postsecondary outcome data. We then limited the sample to high school graduates for all outcomes, resulting in 5,161 potential comparison group students. To analyze college selectivity and persistence, we additionally restricted this sample to college enrollees, creating a potential comparison group of 4,061 students. For a secondary analysis of college persistence, we further limited the sample to four-year college enrollees, creating a potential comparison group of 2,625 students.

Methodology

We estimated a propensity score for each eligible College Track and HSLS student using a logistic regression model. The propensity score indicates the likelihood of completing the College Track program, given a student's baseline characteristics. After generating propensity scores, we matched each College Track student with up to 20 comparison students who had the most similar propensity scores within a given threshold or radius of their propensity score.[4] If there were no eligible comparison students within the matching radius for a given College Track student, we excluded that student from the benchmarking analysis.

Table A.1. Construction of the analysis sample

	Sample size		
	College entry outcomes	College selectivity and persistence outcomes	Secondary persistence outcome
College Track			
All records	278	278	278
Completed the College Track program	159	159	159
4-year college enrollees			110
Matched to comparison students	147	148	110
HSLS			
All records with responses to relevant survey instruments†	13,442	13,442	13,442
Enrolled in public high school located in a city or suburb	6,617	6,617	6,617
Had complete outcome data	5,762	5,762	5,762
High school graduates	5,161	5,161	5,161
College enrollees		4,061	4,061
4-year college enrollees			2,625
Matched to College Track students	1,039	847	497

† Instruments used in the analysis include Base-year, 2013 Update, High School Transcript, and Second Follow-Up.

After removing College Track students without appropriate matches, the final analysis sample for college entry outcomes included 147 of 159 College Track completers. These students were matched with 1,039 comparison students from the HSLS data. For the analyses of selectivity and persistence, which were restricted to students who enrolled in college, we successfully matched 148 College Track students with 847 comparison students from the HSLS data. The analysis sample restricted to four-year college enrollees used for the secondary college persistence outcome is composed of 110 College Track students and 497 comparison students. Table A.2 compares the baseline characteristics of the matched groups for each analysis sample. The remaining differences between the College Track and comparison students in the analysis samples are small and not statistically significant.

To measure differences in the outcomes of College Track and comparison students, we estimated an ordinary least squares regression model:

$$(A1) \qquad y_i = \alpha + X_i\beta + \delta T_i + \varepsilon_i$$

where y_i is the outcome of interest for student i; X_i is a vector of baseline characteristics for student i; T_i is a binary variable indicating whether student i is a College Track completer; ε_i is a random error term that reflects the influence of unobserved factors on the outcome; and δ and β are parameters or vectors of parameters to be estimated, with δ representing the difference of interest. Because each comparison student could be matched to multiple College Track students, we used a weighting scheme in which each student participating in College Track received a weight of one, and each comparison student received a weight representing the fraction of the number of College Track students to whom they were matched. Thus, among matched students the sum of the weights for the College Track students is equivalent to the sum of the weights for the comparison students.

Results

Table A.3 shows the detailed results for each outcome, in which the College Track percentage represents the actual share of students achieving that outcome and the comparison percentage is regression-adjusted using the estimated difference obtained from Equation (A1), also displayed in the table.

Table A.2. Baseline characteristics after matching

	High school graduates		College enrollees		4-year college enrollees	
	College Track	HSLS	College Track	HSLS	College Track	HSLS
Female (%)	64.63	65.11	64.19	62.69	64.55	63.74
Non-Hispanic, black/African American (%)	46.94	48.20	47.30	47.44	57.27	59.29
Hispanic (%)	35.37	37.59	35.14	34.79	25.45	22.81
Low income (%)	59.86	58.84	58.11	59.43	60.91	63.62
First-generation college student (%)	78.91	77.10	79.05	77.30	78.18	77.88
Average GPA in 9th grade	2.73 (0.70)	2.77 (0.87)	2.72 (0.70)	2.67 (0.78)	2.81 (0.64)	2.76 (0.66)

Note: None of the differences are statistically significant at the 5 percent level. Standard deviations are in parentheses for continuous baseline characteristics.

GPA = grade point average.

Table A.3. Comparison of outcome measures

	Mean					Sample size	
	College Track	HSLS	Difference	Standard error	*p*-value	College Track	HSLS
High school graduates sample							
Ever applied to college	98.64	91.94	6.70*	1.65	0.000	147	1,039
Submitted 3 or more college applications	96.60	45.19	51.41*	2.75	0.000	147	1,039
Ever enrolled in 2-year or 4-year college	100.00	73.41	26.59*	2.16	0.000	147	1,039
First enrolled in 2-year college	21.80	33.39	-11.59*	3.86	0.003	133	1,039
First enrolled in 4-year college	78.20	40.74	37.45*	4.07	0.000	133	1,039
College enrollees sample							
First enrolled in 2-year college	22.56	48.28	-25.72*	4.20	0.000	133	847
First enrolled in 4-year, inclusive college	36.84	10.10	26.75*	4.15	0.000	133	847
First enrolled in 4-year, moderately selective college	18.80	30.57	-11.77*	4.16	0.005	133	847
First enrolled in 4-year, highly selective college	21.80	10.71	11.09*	3.82	0.004	133	847
Enrolled in college and persisted to 2nd year	81.08	87.36	-6.28	3.45	0.069	148	847
4-year college enrollees sample							
Enrolled in 4-year college and persisted to 2nd year	88.18	88.45	-0.27	3.76	0.943	110	497

* Difference is statistically significant at the 5 percent level.

Endnotes

[1] College Track collects postsecondary outcome data only for students who complete the College Track program through high school graduation. As a result, the benchmarking analysis focuses on high school graduates. In the 9th-grade cohort of 2009, 159 of 278 students (57 percent) completed College Track.

[2] Of the 159 College Track students who completed the program, 12 could not be matched because no HSLS students resembled them sufficiently. Analyses of college selectivity and persistence were further restricted before matching to students who enrolled in college, resulting in an analysis sample size of 148 College Track students and 847 comparison students. See the Technical Appendix for additional details.

[3] Prior academic achievement is a strong predictor of postsecondary outcomes and is thus an important baseline measure for this analysis. However, in addition to being measured over a different time span in the two data sources, our 9th-grade GPA measure has two other limitations. First, it is not a true baseline, in that students started participating in College Track the summer before starting 9th grade. Second, it is not very proximate to the outcomes we analyzed, which other academic experiences students had after 9th grade could influence.

[4] The threshold value is 0.027 for the high school graduate sample, 0.017 for the college enrollee sample, and 0.042 for the four-year college enrollee sample. These thresholds were selected to maximize the baseline equivalence of the matched samples.