



**GEORGIA
POLICY LABS**



Appendix to:

The Effect of The Scholarship Academy's College Bound Initiative FAFSA Events on FAFSA Completion

Monica Mogollon Plazas, Za Eng Mawi, and
Thomas Goldring

Metro Atlanta Policy Lab for Education

June 2023

This appendix accompanies the report to describe the data and methodology and provide supplementary results.

Data

We use school-level data in our analysis. We assemble data on all public high schools from seven metro-Atlanta districts: Atlanta Public Schools, Clayton County Public Schools, Cobb County School District, DeKalb County School District, Fulton County Schools, Gwinnett County Public Schools, and Marietta City Schools. The high schools' demographic characteristics include the distribution of students by race and ethnicity, the share of students from families experiencing low income, Title I status, the share of English learners, and students with identified disabilities. Demographic characteristics for school year (SY) 2020–21 and SY 2021–22 come from the Georgia Department of Education (GaDOE) data reports.

The high school's graduation class size, number of graduates, and graduation rates were obtained from the GaDOE Four-Year Graduation Rates reports for SY 2018–19 to SY 2021–22. Following guidelines from the U.S. Department of Education, the Four-Year Graduation Rate is the number of graduating students over the adjusted cohort of students who enter Grade 9, correcting for transfers in and out during Grade 9 through Grade 12. We also use the adjusted graduating class to calculate the high school FAFSA completion rate.

We obtain HOPE scholarship eligibility and postsecondary enrollment rates by school from the Georgia Governor's Office of Student Achievement (GOSA). GOSA calculates the percentage of graduates enrolled in college/university using the statewide longitudinal data system, GA•AWARDS, which links state school information with the state's university and technical colleges systems.

The U.S. Department of Education Federal Student Aid (FSA) office releases the number of FAFSA forms received and processed by high school for first-time filing applicants who will graduate by the start of the school year for which they want to receive financial aid. We collected the number of end-of-year submissions, corresponding to the total FAFSA submitted applications processed by June 30. For the end-of-the-year count, we gathered data from SY 2014–15 to SY 2021–22. We also use the weekly releases containing cumulative processed FAFSA submissions until Friday of the prior week. The NCAN FAFSA tracker shared historical weekly FAFSA data from SY 2020–21 and SY 2021–22 with us.

Evaluation Methodology

Descriptive Analysis

We produce descriptive statistics comparing the FAFSA completion rate for schools in which TSA held a FAFSA event (for four participant schools) with the schools that did not hold a FAFSA event. For this descriptive comparison, we use Title I schools since only these schools met the criteria to be invited to participate in the College Bound Initiative during SY 2021–22. Graphically, we show weekly average FAFSA completion rates by participant and non-participant schools over the past three FAFSA cycles. In Figure 2, we present the comparison separately for each participant school.

Synthetic Control Method

We use a synthetic control method (SCM) as the quantitative evaluation approach. Simple descriptive statistics offer an incomplete picture if we want to determine whether the College Bound Initiative events are effective in boosting FAFSA completions. Not all Title I high schools in the non-participant school group are most comparable to the four participant schools. The SCM is designed to create a closely matched comparison group with the purpose of eliminating or accounting for other factors that may influence FAFSA completions in non-participant schools. Specifically, the SCM assigns greater importance to schools that have FAFSA completion rate trends most like the participant schools. The SCM creates a synthetic comparison school by taking a weighted average of comparable schools.

In the following steps, we describe our procedure to implement the SCM and the sensitivity analyses that help to gauge the validity of the method.

Period and frequency of analysis: We evaluate the program using two different frequencies: yearly and weekly completion. The first model uses the schools' end-of-year FAFSA completion rate from SY 2014–15 to SY 2021–22. The main results presented in Figure 3 use only yearly FAFSA completion rates in the pre-intervention period as predictor variables to fit the SCM. We also estimate SCM models using high school characteristics in SY 2021: race and ethnicity composition, class size, graduation rate, HOPE scholarship eligibility, and postgraduate enrollment.

The second model uses the weekly cumulative FAFSA completion rate for SY 2021–22. We estimate this model with no covariates, only matching on the pre-intervention trend in completion rates. This model is estimated separately for two

participant schools (Tri-Cities and Banneker High Schools) because they held their first FAFSA event after the start of the FAFSA cycle in SY 2021–22 (i.e., February 2022), and we have sufficient pre-intervention weekly data to estimate the pre-intervention trend.

The advantage of the weekly model is that we have more pre-intervention periods to fit the SCM and more post-treatment periods to estimate the impact. However, the program might have had counselors engage with the students before the FAFSA event date. With the yearly model, we have pre-intervention periods where the TSA initiative was not yet implemented, allowing us to include school characteristics and estimate an aggregate effect of the program that includes all schools. The disadvantage to the yearly model is having only one post-intervention period to estimate the impact. Our primary result comes from the yearly model, but we present the weekly model results to show the post-event dynamics and their variation across schools that we cannot measure using the yearly model.

Model specification: The main results in the report are estimated with models using only FAFSA completion rates from all the pre-intervention periods as matching variables with no covariates. We estimate a model with covariates as a robustness check for the SCM model with yearly data.

A key principle in applying an SCM is to obtain a good match in the pre-intervention trends between the participant units and the synthetic control units. We use the Augmented SCM model (Ben-Michael et al., 2021) for the main results. The Augmented SCM improves the balance compared to the SCM by introducing an outcome model to correct bias due to imperfect pre-intervention fit of the time series. As a robustness check, we also present the results from the Classic SCM. We produce all the estimates using the augsynth R Package (Ben-Michael, 2021).

Construction of the synthetic comparison school: In the SCM, the donor pool is the set of comparison schools that closely resembles the trend for the participant schools. In this evaluation, the donor pool includes all the Title I public high schools from seven metro-Atlanta districts, which TSA targeted in the College Bound Initiative. It is plausible to expect that participant and donor pool schools that have Title-I status have a similar pattern in their demographic characteristics, college readiness, and FAFSA completion rates.

Moreover, the potential pool should include schools that do not have similar interventions during the period of analysis. Many high schools and districts could have held independent FAFSA events for which we are not accounting. If this is

the case, we are providing a lower bound of the impact of the FAFSA events in the TSA College Bound Initiative. We present the sensitivity of the results using different donor pool definitions in the robustness analysis section.

The SCM produces a weight for each school in the donor pool so that the weighted average of the FAFSA completion rates closely matches the trend in FAFSA completion rates in the participant schools before the event occurred. This weighted combination of schools in the donor pool is called the synthetic school. Table A1 presents the schools that received the highest weights per participant school using the yearly data. Table A2 presents summary statistics for pre-intervention school characteristics for the participant and the synthetic school.

Aggregate analysis: To get an aggregate effect of the College Bound Initiative, we use the partially pooled SCM (Ben-Michael et al., 2022). Pooling all participant schools into one single treated unit could have yielded a poor synthetic comparison school for each participant school. Estimating separate SCM for each participant school also does not provide the program's overall effect. The partially pooled SCM provides weights that improve the fit of pre-intervention trends for both the individual schools and the overall intervention. Figure 1 in the report presents the aggregate effect estimated with the partially pooled SCM using the yearly data.

Robustness checks: In Figure A3, we show the robustness of our main estimate to different specifications using yearly data. The first sensitivity analysis is to change the restrictions on the donor pool. The baseline donor pool has 64 schools. Reducing the size of the donor pool might reduce the risk of over-fitting. We restrict the donor pool using combinations of the following criteria: schools with FAFSA completion rates between 35% and 60% in SY 2020–21, schools with class size above the fiftieth percentile, and schools in the same district.

The second sensitivity analysis is to present the results from different model specifications, aiming to improve the fit of pre-intervention trends. We present results for Classic SCM with covariates and no covariates, Augmented SCM with covariates, and Augmented SCM fully pooled and fully separated for the aggregation of estimates. The third sensitivity analysis maintains the baseline donor pool but excludes the schools that received the highest weights.

Finally, we conduct two placebo tests using placebo periods and placebo schools. In Figure A6, we take the year 2019 as the intervention period, use the same participant high schools, and re-estimate the SCM using the yearly data. We

expect no difference for those high schools in 2019 since the College Bound FAFSA Initiative was not held at the time.

For the placebo schools test, the goal is to compare the magnitude of the effect for the participant schools with the magnitude of the effect estimated for placebo schools. If the effect is larger for the participant schools than most placebo schools, this is supportive evidence that the College Bound FAFSA Initiative had a distinctive effect. Figures A7 and A9 provide the results of the school placebo test.

As part of the school placebo test, we also calculate the pre- and post-intervention RMSPE (root-mean-squared prediction errors) in Figures A8 and A10. The RMSPE pre-intervention is a measure of how well the synthetic unit matches the trend for the participant schools. After the intervention, the trend of the participant school should diverge substantially from the synthetic school, thus the post-RMSPE and the pre- and post-RMPSE ratio should be large when SCM is estimated for a participant school.

Supplemental Results

Model with Yearly Data: Synthetic Comparison Schools

Table A1. Weights for the First Five Schools in the Synthetic Unit for Each Participant Schools

School Name	District	Weights
Banneker High School		
Martin Luther King, Jr. High School	DeKalb County	0.503
Charles R. Drew High School	Clayton County	0.194
DeKalb Early College Academy	DeKalb County	0.161
Cross Keys High School	DeKalb County	0.112
Elizabeth Andrews High School	DeKalb County	0.026
Tri-Cities High School		
Martin Luther King, Jr. High School	DeKalb County	0.325
Jonesboro High School	Clayton County	0.211
South Cobb High School	Cobb County	0.149
Osborne High School	Cobb County	0.142
Frederick Douglass High School	Atlanta Public Schools	0.117
Creekside High School		
McNair High School	DeKalb County	0.287

Table A1. Weights for the First Five Schools in the Synthetic Unit for Each Participant Schools

School Name	District	Weights
Stone Mountain High School	DeKalb County	0.255
Martha Ellen Stilwell School for The Performing Arts	Clayton County	0.154
North Clayton High School	Clayton County	0.119
Druid Hills High School	DeKalb County	0.077
Lakeside High School		
Druid Hills High School	DeKalb County	0.372
Arabia Mountain High School	DeKalb County	0.209
Stone Mountain High School	DeKalb County	0.175
North Clayton High School	Clayton County	0.117
Booker T. Washington High School	Atlanta Public Schools	0.082

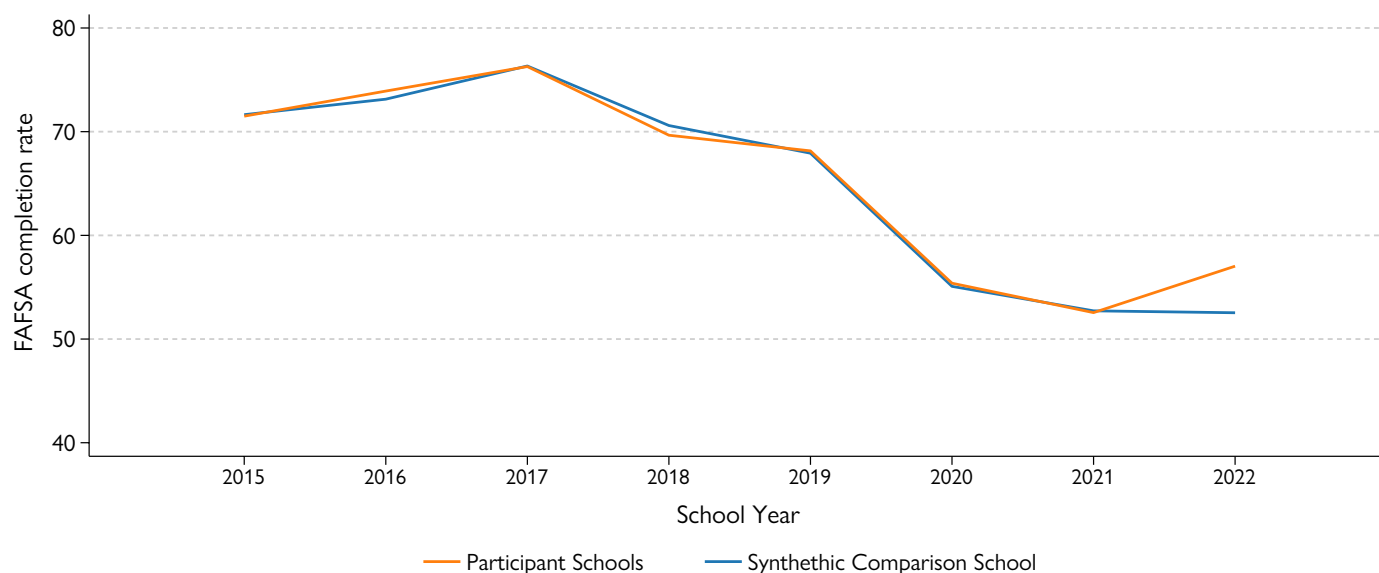
Notes. Weights come from a separate SCM model for each participant school using a specification with no covariates and yearly data from SY 2014–15 to SY 2021–22.

Table A2. Summary Statistics for the Participant Schools and Synthetic Unit

Average SY 2020-21	Participant Schools (1)	Synthetic comparison school (2)
High school class size	401	340
High school graduation rate	83.7	78.1
Share of Black students	66.9	69.2
Share of Hispanic students	20.6	20.0
Share of FRPM-eligible students	75.8	87.6
Share of English learners	6.9	11.3
Share of HOPE eligible students	36.9	39.6
Share of students enrolled in postsecondary	52.6	49.4
FAFSA completion rate, SY 2019–20	55.4	55.1
FAFSA completion rate, SY 2020–21	52.5	52.7
FAFSA completion rate, SY 2021–22	57.0	52.5

Notes. The synthetic comparison school comes from the weights assigned in the aggregate SCM model using a specification with no covariates and yearly data from SY 2014–15 to SY 2021–22. Participant schools are listed in Table A1. FRPM is free or reduced-price meals. The HOPE Scholarship is Georgia's primary merit-based financial aid program. Participant and non-participant schools are Title-I-eligible high schools from seven metro-Atlanta districts: Atlanta Public Schools, Clayton County Public Schools, Cobb County School District, DeKalb County School District, Fulton County Schools, Gwinnett County Public Schools, and Marietta City Schools.

Figure A1. FAFSA Completion Rates from SY 2015 to SY 2022



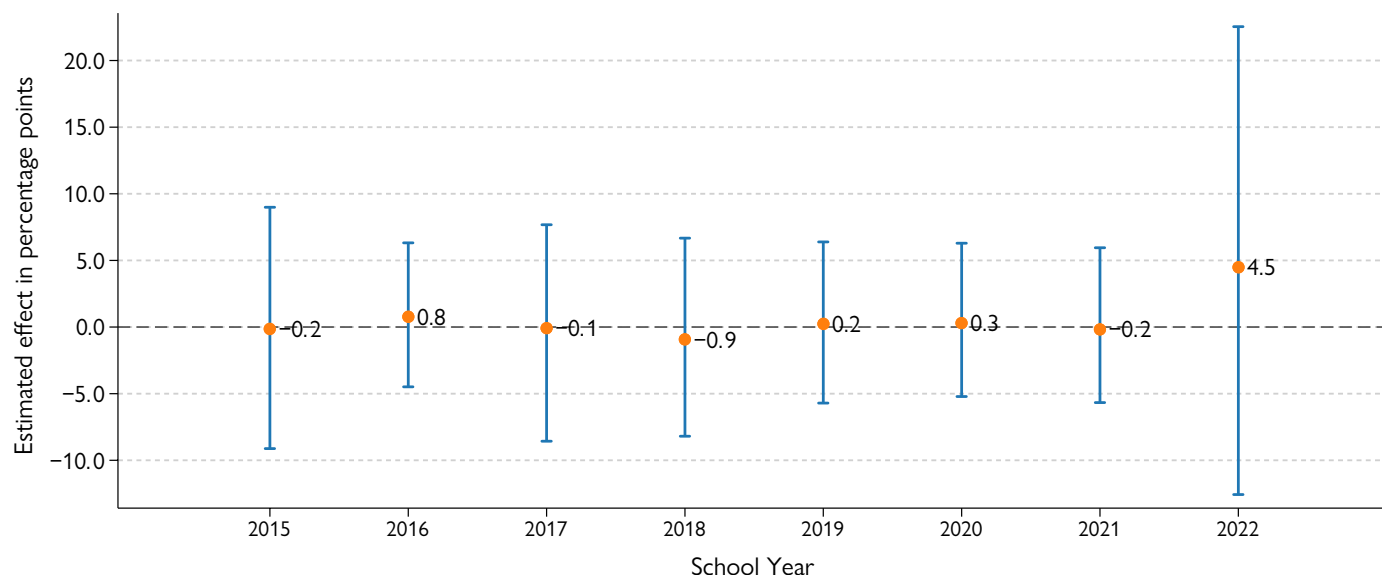
Notes. The intervention year is SY 2021–22. This figure shows the FAFSA completion rates series resulting from the aggregate SCM model using yearly data. The FAFSA completion rate for participant schools is the average from Banneker High School, Creekside High School, Lakeside High School, and Tri-Cities High School. The synthetic comparison school comes from the weights assigned in the augmented SCM model, partially pooled, using a specification with no covariates and yearly data from SY 2014–15 to SY 2021–22.

Model with Yearly Data: Aggregate Analysis Results

In the main report, we present the estimated post-intervention impact using the yearly data (Figure 3). Here, we provide the trends and estimated differences pre- and post-intervention. Figure A1 shows the yearly series of FAFSA completion rates for participating schools and the synthetic school, providing a visual check for the match in the pre-intervention years. Figure A2 provides the estimated difference between the participant schools and the synthetic comparison schools by year along with the confidence interval.

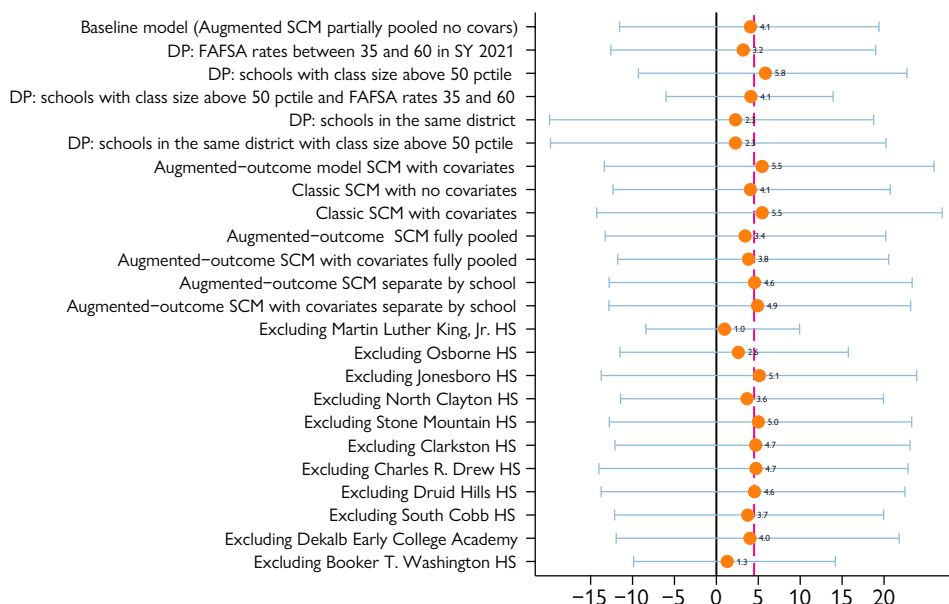
Figure A3 shows the results from the sensitivity checks for the estimated impact of participating in TSA FAFSA events. First, the figure presents the effect estimated from our preferred specification (the Aggregate SCM model using yearly data, partially pooled with no covariates) that is also reported in Figure 3 and Figure A2 in SY 2021–22. The next rows present the sensitivity results that change the donor pool before applying the SCM. Next, the sensitivity results focus on changes in the SCM specification by including covariates, the pooling model, and the weights estimation method. The last rows show how sensible

Figure A2. Estimated Average Treatment Effect of TSA's FAFSA Events Across Four Participant Schools, Using Yearly FAFSA Data



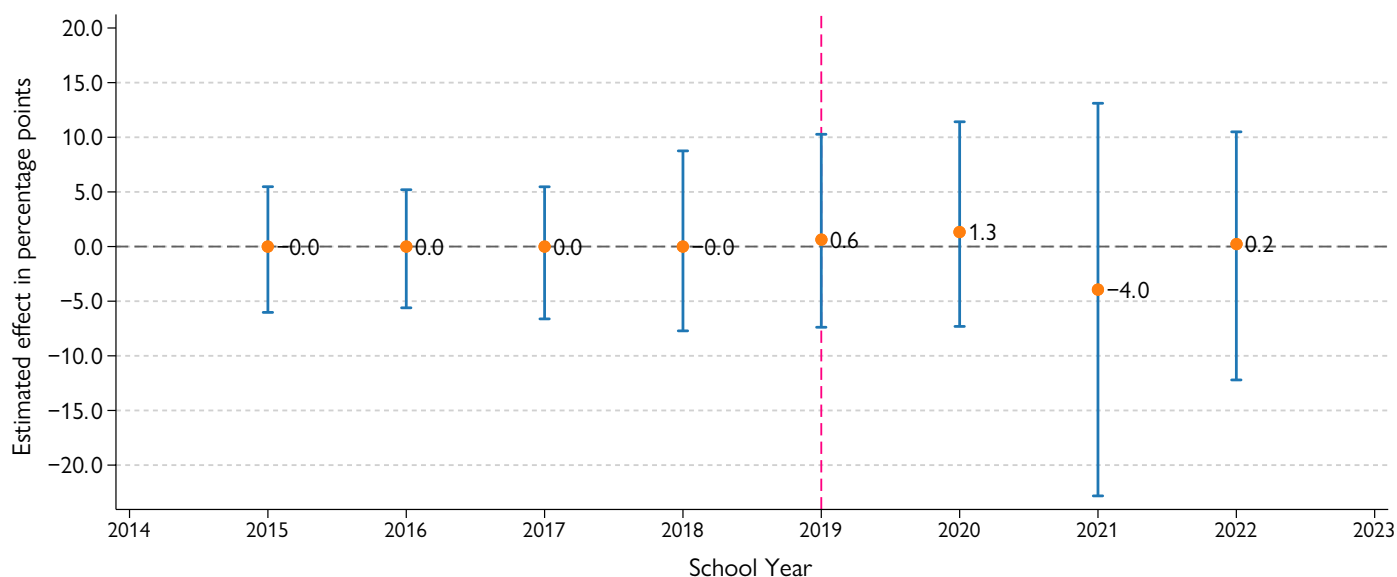
Notes. The intervention year is SY 2021–22. Estimated effects using the cumulative FAFSA completion rate by year from the augmented SCM model, partially pooled, using a specification with no covariates and yearly data from SY 2014–15 to SY 2021–22. Estimated effects are the percentage point difference in the yearly FAFSA completion rates between participant schools and synthetic comparison schools. Blue lines represent the 95% confidence interval for the estimated effect using conformal inference.

Figure A3. Sensitivity Analysis for SCM Aggregate Model with Yearly Data



Notes. Sensitivity checks for the results of the aggregate SCM model using yearly data, using different donor pool (DP) samples and model specifications. Estimated effects are the percentage point difference in the yearly FAFSA completion rates in SY 2021–22 between participant schools and synthetic comparison schools. Each row presents the results from a separate model using the change in the donor pool or the change in the model specification described. Blue lines represent the 95% confidence interval for the estimated effect using conformal inference.

Figure A4. Placebo Year Test for SCM Aggregate Model with Yearly Data



Notes. The placebo intervention year is SY 2018–19. Estimated effects using the cumulative FAFSA completion rate by year from the augmented SCM model, partially pooled, using a specification with no covariates and yearly data from SY 2014–15 to SY 2021–22. Estimated effects are the percentage point difference in the yearly FAFSA completion rates between participant schools and synthetic comparison schools. Blue lines represent the 95% confidence interval for the estimated effect using conformal inference.

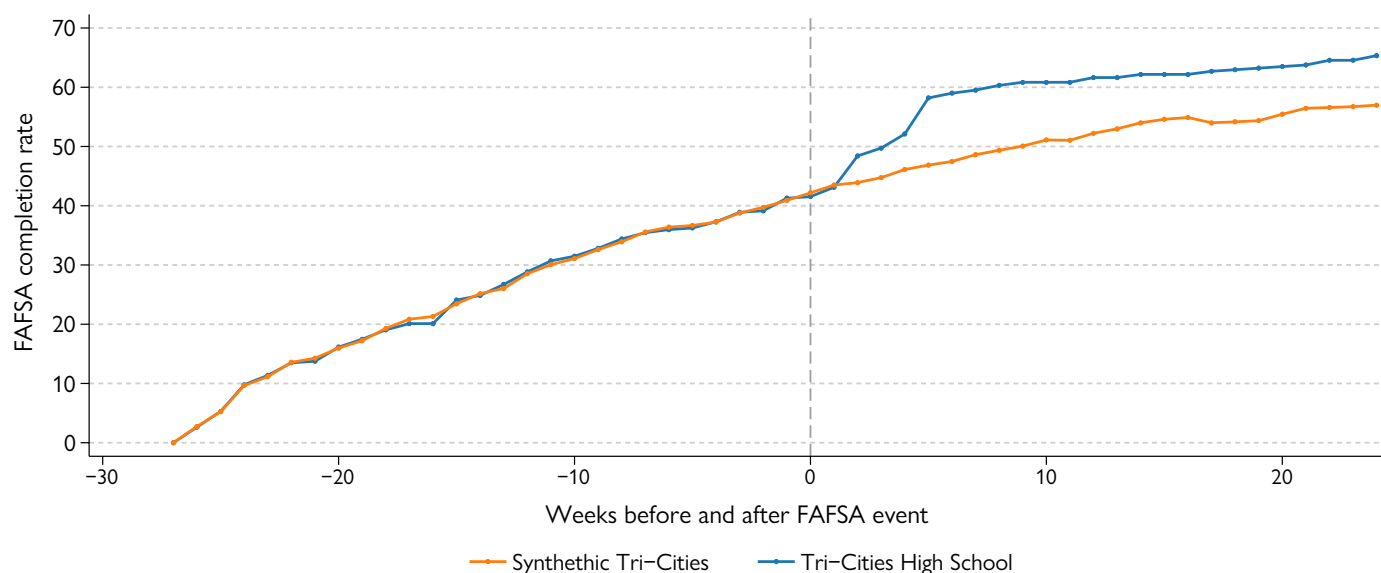
the main result changes are once we eliminate the high schools receiving the highest weights in the donor pool by dropping one high school at a time.

Finally, we present the placebo test results for the yearly data. Figure A4 presents the results for the placebo test using 2019 as the year of intervention, keeping the same participant schools and applying the preferred SCM specification. We take 2019 as the year where TSA events happened and analyze the impact of participating in TSA events if they were to happen in 2019. As the TSA events did not happen in 2019, we should not see any effect in 2019, which Figure A4 confirms.

Model with Weekly Data: Results for Two High Schools

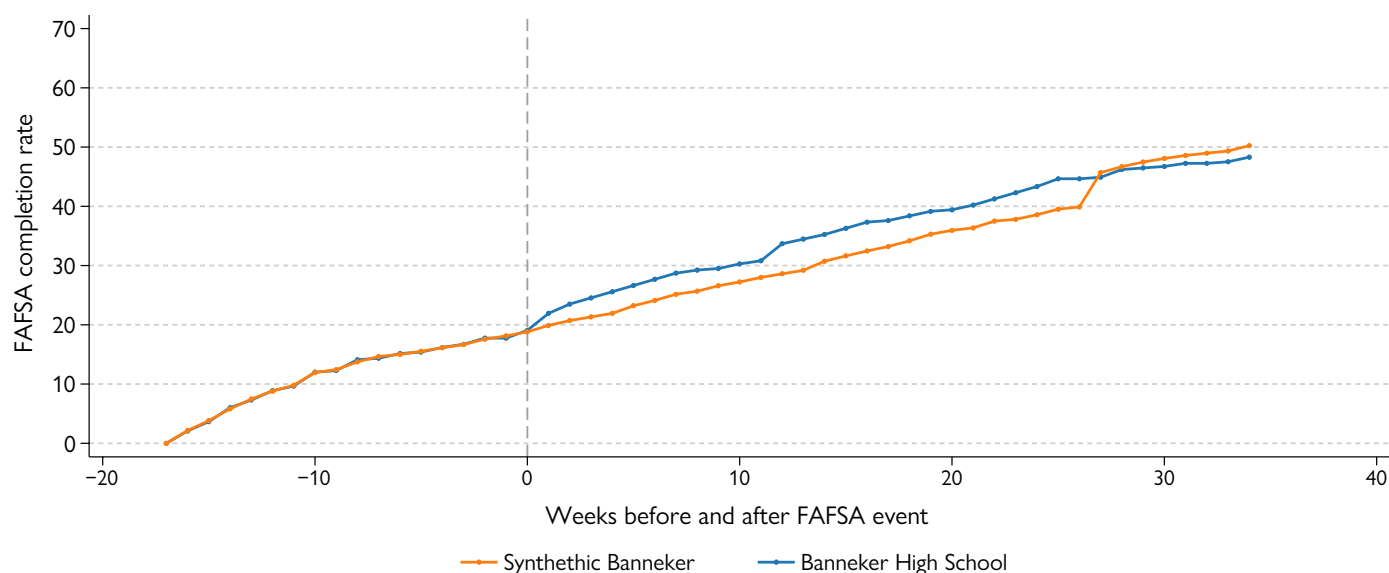
In the main report, we present the estimated effect of TSA's FAFSA completion events for participant schools using weekly data for SY 2021–22 (Figure 4). Here, we provide the trend of cumulative weekly FAFSA completion at a participating school and its synthetic counterpart in Figures A5 and Figures A6. Observing both figures, we can see that the synthetic school matches the trend closely in the weeks before the event.

Figure A5. Trends in Weekly FAFSA Completion Rates for Tri-Cities High School



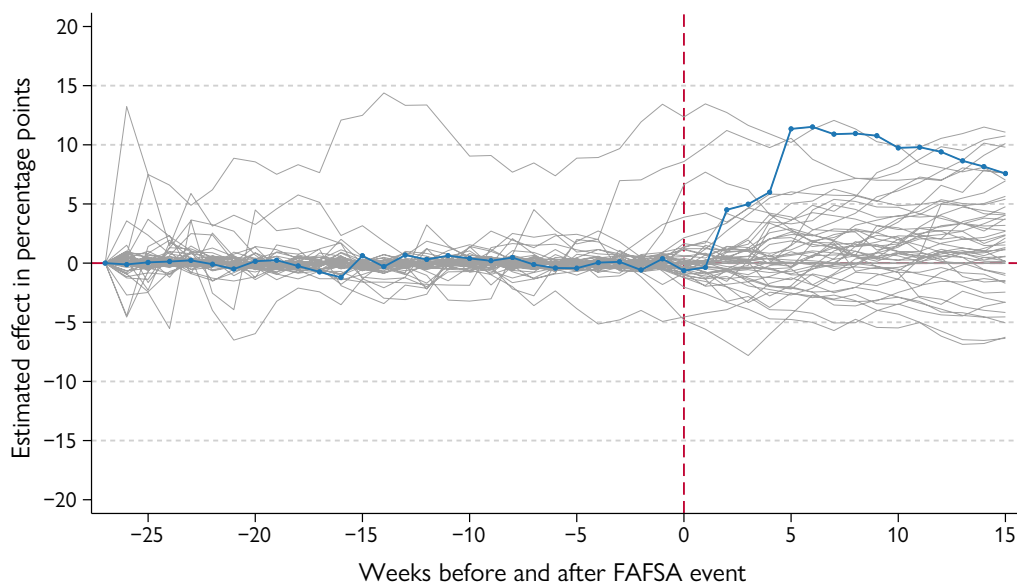
Notes. This figure shows the FAFSA completion rates series resulting from the aggregate SCM model using weekly data in SY 2021–22. The synthetic comparison school comes from the weights assigned in the augmented SCM model using a specification with no covariates for the weekly data. The FAFSA completion rate comes from the cumulative high school count of FAFSA submissions processed by Friday of that week.

Figure A6. Trends in Weekly FAFSA Completion Rates for Banneker High School



Notes. This figure shows the FAFSA completion rates series resulting from the aggregate SCM model using weekly data in SY 2021–22. The synthetic comparison school comes from the weights assigned in the augmented SCM model using a specification with no covariates for the weekly data. The FAFSA completion rate comes from the cumulative high school count of FAFSA submissions processed by Friday of that week.

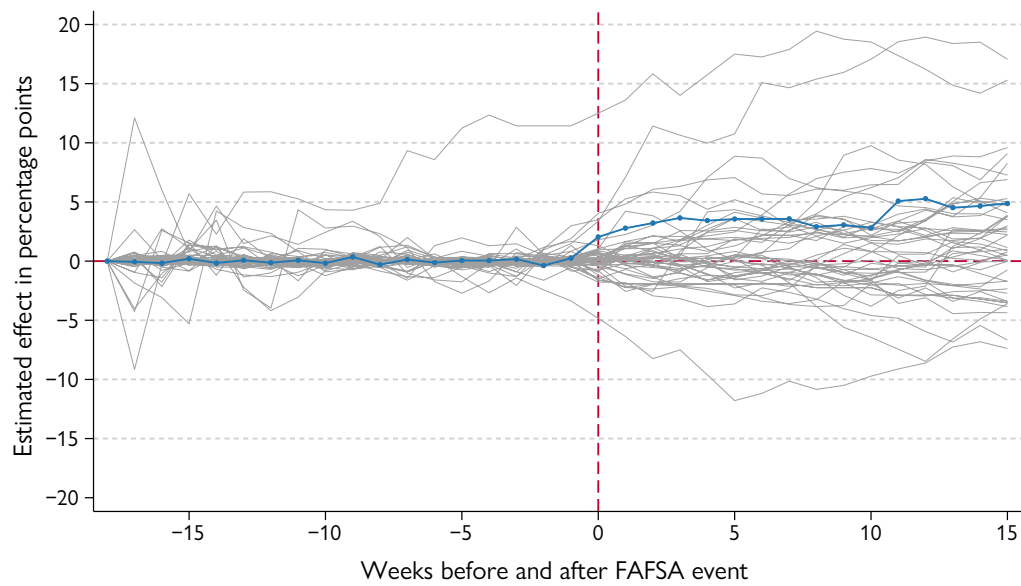
Figure A7. School Placebo Test for SCM Model with Weekly Data for Tri-Cities High School



Notes. The lines represent point estimates in percentage points. Each gray line represents the results for a separate model for each non-participant school taken as placebo school using the same week that Tri-Cities received the FAFSA event. The blue line represents the results for Tri-Cities High School. The FAFSA completion rate corresponds to the weekly cumulative high school count of FAFSA submissions processed by Friday of that week. Effects are estimated using an augmented SCM model with no covariates and weekly data from SY 2021–22.

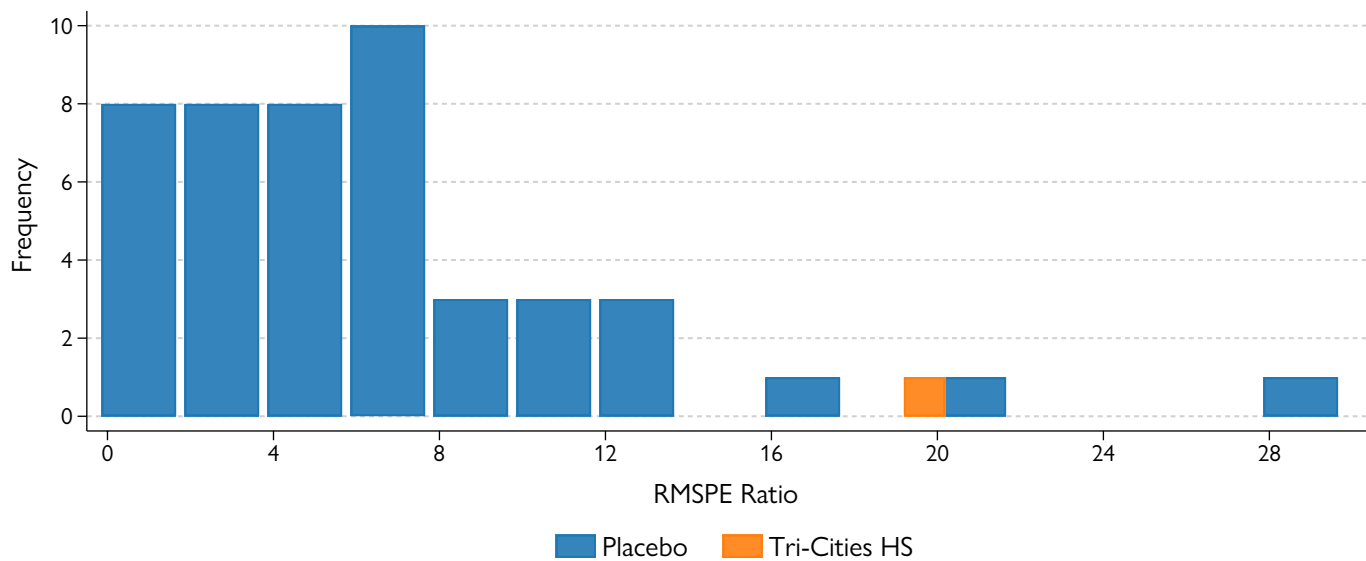
We also provide the results for the school placebo test using the weekly data, in Figure A7 for Tri-Cities High School and Figure A9 for Banneker High School. In this test, we estimated the difference in cumulative weekly FAFSA completion rates for the participant school. Then, we estimate separate models taking each non-participant school in the donor pool as if it were to participate in FAFSA events in the same week as the participant school. We plot the results for each of these models together with the main result that was presented in Figure 4 of the main report. Accompanying this placebo test, we provide histograms with the calculated pre-/post-RSMPE ratios in Figure A8 for Tri-Cities High School and Figure A10 for Banneker High School.

Figure A8. Post/Pre-Treatment RMSPE Ratios for School Placebo Estimates for Tri-Cities High School



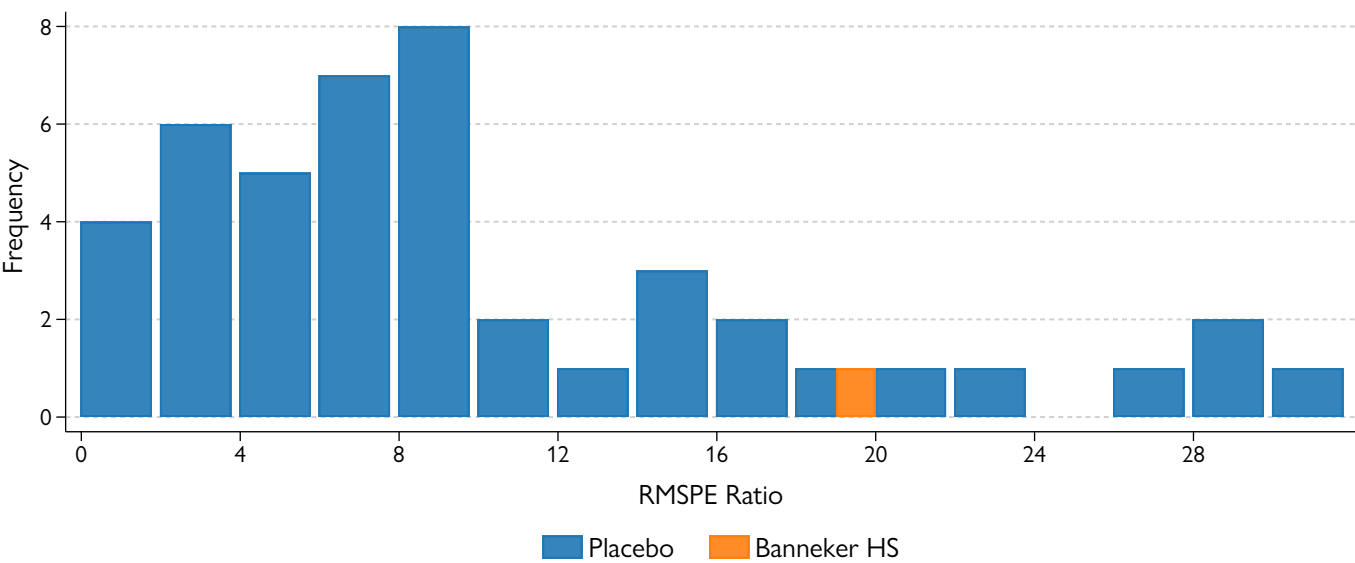
Notes. For each separate SCM model, we compute the root mean square prediction error (RMSPE) for the pre-intervention fit and for the post intervention fit. Then we compute the ratio between the pre and post intervention RMSPE. We plot the ratios for these models; the ratios for models taking non-participant schools in the donor pool as a placebo school are shown in blue.

Figure A9. School Placebo Test for SCM Model with Weekly Data for Tri-Cities High School



Notes. The lines represent point estimates in percentage points. Each gray line represents the results for a separate model for each non-participant school taken as placebo school using the same week that Tri-Cities received the FAFSA event. The blue line represents the results for Tri-Cities High School. The FAFSA completion rate corresponds to the weekly cumulative high school count of FAFSA submissions processed by Friday of that week. Effects are estimated using an augmented SCM model with no covariates and weekly data from SY 2021–22.

Figure A10. Post/Pre-Treatment RMSPE Ratios for School Placebo Test for Banneker High School



Notes. For each separate SCM model, we compute the root mean square prediction error (RMSPE) for the pre-intervention fit and for the post intervention fit. Then we compute the ratio between the pre and post intervention RMSPE. We plot the ratios for these models, the ratios for models taking non-participant schools in the donor pool as a placebo school are shown in blue.

References

- Ben-Michael, E. (2021). Augsynth R package for augmented synthetic controls and synthetic controls with staggered adoption. <https://github.com/ebenmichael/augsynth>
- Ben-Michael, E., Feller, A., & Rothstein, J. (2021). The augmented synthetic control method. *Journal of the American Statistical Association*, 116(536), 1789–1803. doi.org/10.1080/01621459.2021.1929245
- Ben-Michael, E., Feller, A., & Rothstein, J. (2022). Synthetic controls with staggered adoption. *Journal of the Royal Statistical Society Series B: Statistical Methodology*, 84(2), 351–381. doi.org/10.1111/rssb.12448