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The Educational and Labor Market Impacts of Maryland's Grow-Your-Own Teacher Recruitment Program

An Essay for the Learning Curve by David Blazar, Seth Gershenson, and Ramon B. Goings

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"Grow-your-own" (GYO) programs seek to address teacher shortages by recruiting locally. Interest in these programs, which either implicitly assume or explicitly require that participants eventually teach in the school district from which they graduated, has ballooned over the past decade.[1] Prospective recruitment pools for GYO programs can include high school students, college students, and career changers (particularly individuals already working in or close to school systems).

In theory, GYO programs offer an attractive model because (1) teacher shortages are typically a local problem and (2) recruiting locally is more likely to yield teachers that are more sociodemographically representative of the student body. Both points are important for supporting student success, as local teacher shortages can create coordination problems in schools and increase the workload of current teachers,[2] while a representative teaching force can benefit students by having a teacher who looks like them and understands their background.[3]

Despite the growing interest in GYO programs from policymakers at the federal, state, and local levels, credible evidence of their effects is sparse.[4] Because education policy is littered with well-meaning, intuitive programs that failed to meet their potential, we set out to provide a rigorous, causal analysis of the effects of a state-run GYO program in Maryland. Specifically, we evaluate the Teacher Academy of Maryland (TAM), a GYO program that exposes high school students to teaching as a career through a four-course career and technical education sequence, as well as the opportunity to dually enroll in courses whose credits count toward high school graduation and a two- or four-year teaching degree.

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[1] Amaya Garcia, "Grow Your Own Teachers: A 50-State Scan of Policies and Programs" (Washington, DC: New America, 2020).

[2] Lieb Sutcher, Linda Darling-Hammond, and Desiree Carver-Thomas, *A Coming Crisis in Teaching? Teacher Supply, Demand, and Shortages in the US* (Palo Alto, CA: Learning Policy Institute, 2016).

[3] Seth Gershenson, Michael J. Hansen, and Constance A. Lindsay, *Teacher Diversity and Student Success: Why Racial Representation Matters in the Classroom* (Cambridge, MA: Harvard Education Press, 2021).

[4] Conra D. Gist, Margarita Bianco, and Marvin Lynn, "Examining Grow Your Own Programs across the Teacher Development Continuum: Mining Research on Teachers of Color and Nontraditional Educator Pipelines," *Journal of Teacher Education* 70, no. 1 (2018): 13, https://doi.org/10.1177/0022487118787504; and Danielle Sanderson Edwards and Matthew A. Kraft, *Grow Your Own: An Umbrella Term for Very Different Localized Teacher Pipeline Programs* (working paper, Annenberg Institute for School Reform at Brown University, 2024).

We examine how attending a high school that participated in TAM affected various student outcomes, including high school and college graduation rates, becoming a public school teacher in Maryland, and earnings. We find that attending a TAM high school significantly increased the likelihood that female students later taught in a Maryland public school, increased overall educational attainment, and led to higher wages.

Analysis and Key Findings

Because policymakers can only offer, but not require, participation in TAM, we focused on the effects of attending a participating high school, not on enrollment in or completion of the program. Primarily female students engaged with the TAM program, with relatively low uptake among boys and Hispanic and Asian students (appendix figure A.1). Our study does not directly address why this imbalance occurs but generally focuses on the effects of the TAM program on female students as a result.

For our analysis, we use data from the Maryland Longitudinal Data System Center that links person-level data from several distinct state agencies and includes information on K–12 records, postsecondary education, and employment outcomes. We study the five cohorts of entering ninth-graders between the 2008–09 and 2012–13 school years, which includes about 320,000 unique students. Students are then observed for at least 10 years (through 2023) from the time they first entered ninth grade.

We use a difference-in-differences (DD) strategy, exploiting variation across schools in the timing of TAM adoption. Across the five cohorts, some students were fully exposed to TAM because their high school adopted the program when students were in 9th or 10th grade, as the four-course sequence generally takes three to four years to complete. Older cohorts of students in these same schools did not have access to the program but are otherwise similar. We also compare students in these treated schools (N = 20) with students in other high schools that never offered TAM (N = 137).[5] TAM started in Maryland in 2004, and more than 50 schools adopted the program before the time frame of our data. We exclude these schools both because we do not know the exact year these schools adopted the program and because the DD literature suggests that early adopters may be poor comparisons for later adopters.

Schools that offered TAM across some but not all of the five cohorts in our analyses (i.e., "sometimes treated schools") resemble the schools that never offered TAM (i.e., "never treated") with regard to gender (49 percent) and race and ethnicity (e.g., 37 percent Black and 42 to 43 percent white). Importantly, we observe that cohorts attending schools with and without TAM offerings were trending in similar fashion across several outcomes, which allows us to make a causal interpretation.[6] Intuitively, we use the cohorts without TAM offerings to illustrate what would have happened to the cohorts with

[5] An additional 53 schools started TAM before the time frame of our data panel. Following guidance in the DD literature about "forbidden comparisons," we exclude these "always treated" schools from our analyses.

[6] This is known as the parallel trends assumption. See appendix figure A.1, showing no pre-trends in the likelihood of becoming a teacher before TAM adoption.

TAM offerings had they not been treated. We then compare the actual outcomes of the treated cohorts with their "counterfactual" outcomes. In appendix figure A.2, we show that our setup meets the "parallel trends" assumption that is critical for DD analyses.

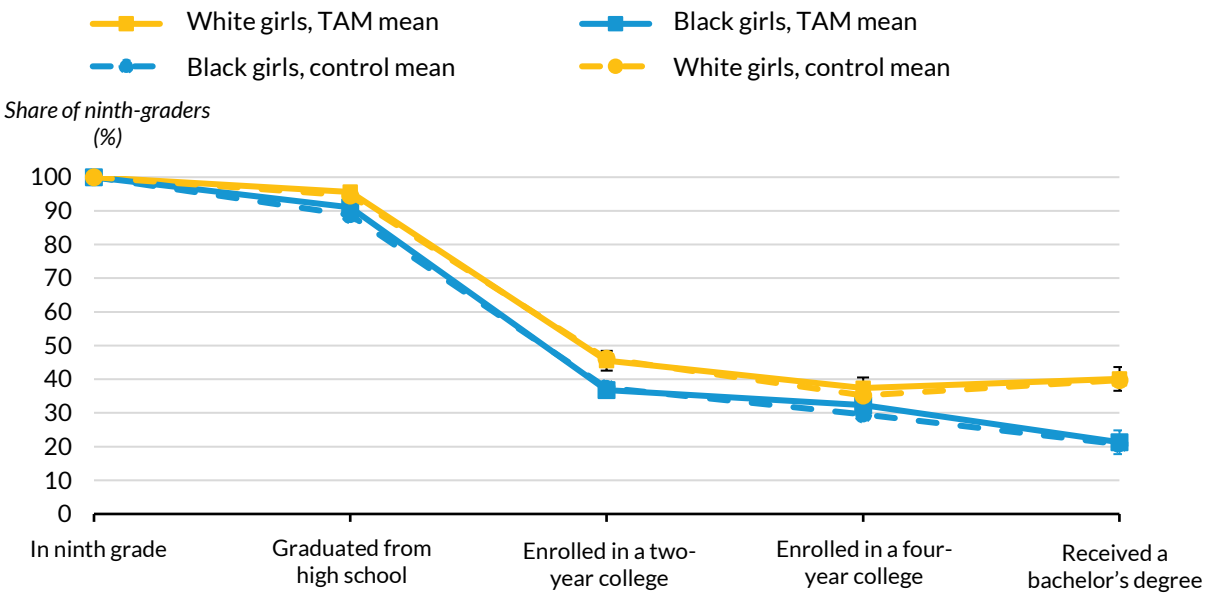
Key Finding 1. Entry into Teaching

Exposure to TAM increased the likelihood that both Black and white girls went on to become teachers. Figure 1 shows average rates of meeting educational attainment milestones (top panel) and career milestones (bottom panel) that are prerequisites for becoming a teacher, for the control group (solid line) and then for students exposed to TAM (solid lines with squares and 95 percent confidence intervals). Because teaching is a rare event observed for roughly 1.3 percent of public high school students, the bottom panel shrinks the *y* axis so that differences between students in TAM schools and in non-TAM schools in outcomes related to teaching can be observed visually.

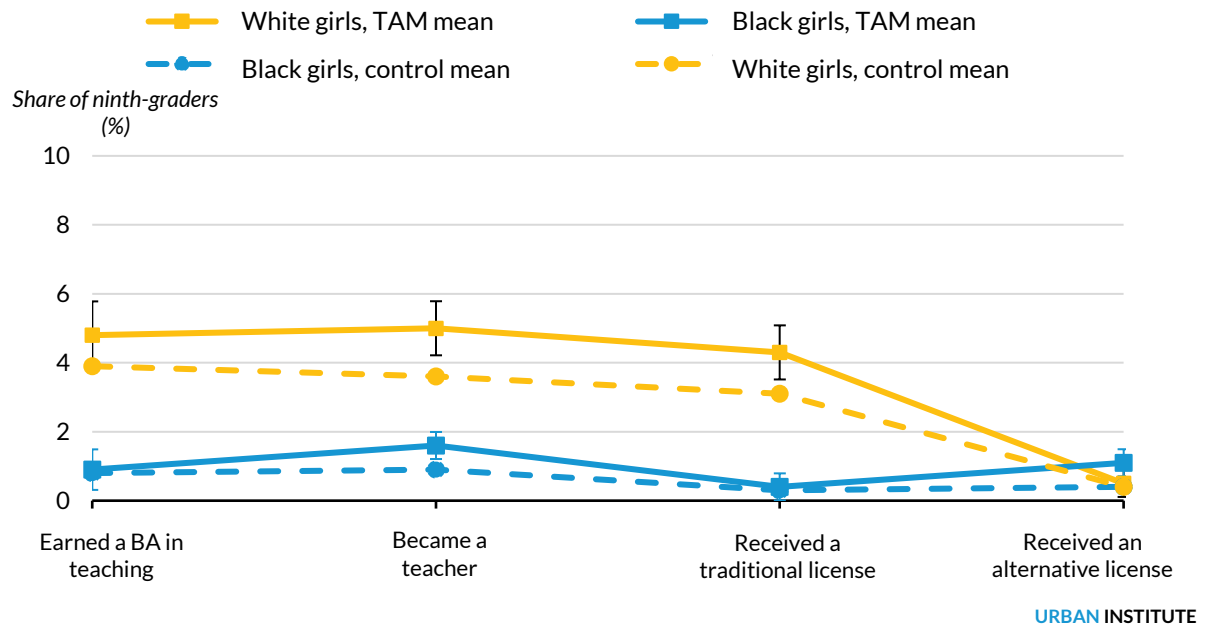
FIGURE 1

Effects of TAM Exposure at Multiple Stages on the Pathway from High School to Career

Effect of TAM on educational attainment



Effect of TAM on college major and teaching



Source: Authors' calculations.
Note: TAM = Teacher Academy of Maryland.

After TAM was adopted, the likelihood of becoming a teacher increased significantly in those schools by 0.6 percentage points, on average, across students. Relative to the baseline rate of becoming

a teacher in the control group (1.3 percent), the small percentage-point increase represents a large percentage change (47 percent). TAM's effect on becoming a teacher had a larger absolute effect for white girls (1.4 percentage points) than for Black girls (0.7 percentage points), but the reverse is true when effects are captured in percentage changes (39 percent for white girls and 80 percent for Black girls). This is because white girls in the control group were already roughly four times as likely as Black girls to become teachers.

The pathways into teaching notably vary between Black and white girls. White girls induced by TAM to become teachers do so almost exclusively on traditional teaching licenses (1.2 percentage points; 39 percent). Similarly, TAM increased white girls' likelihood of earning a bachelor's degree in teaching (0.9 percentage points; 23 percent). In contrast, we find no effect of TAM on earning a bachelor's degree in teaching for Black girls. Instead, TAM's effects on Black girls run almost exclusively through alternative pathways into the profession, which rely on conditional licenses (0.7 percentage points; 165 percent). Conditional licenses require a bachelor's degree (not necessarily in teaching) and allow individuals to work as full-time teachers while pursuing requirements for full certification (i.e., coursework, testing).

From these patterns, we infer that TAM likely benefited white girls by making becoming a teacher easier, vis-à-vis dual-enrollment credits that transferred into college. For Black girls, the effects likely are driven by exposure to teaching and information transmission.

Key Finding 2. Educational Attainment

Engaging with a program like TAM may increase educational attainment for at least two reasons. First, earning a high school diploma and college degree are prerequisites for entering the teaching profession. Second, even students who do not complete TAM or choose not to pursue a teaching career may nevertheless be encouraged to think about future career prospects because of TAM.

The top panel of figure 1 shows that TAM increased high school graduation rates. The effect is largest for Black girls (2.2 percentage points), though the effect on white girls is also significant (1 percentage point). Because six-year high school graduation rates were already high (89 percent or higher), the effects are small relative to graduation rates in the comparison group (3 percent and 1 percent for Black and white girls, respectively). Exposure to TAM also increased the likelihood of enrolling in a four-year college by 1.7 percentage points, or 6 percent, on average. The uptick in four-year college enrollment is seemingly driven both by students who otherwise would have attended a two-year college and by students who would not have enrolled in any postsecondary institution.

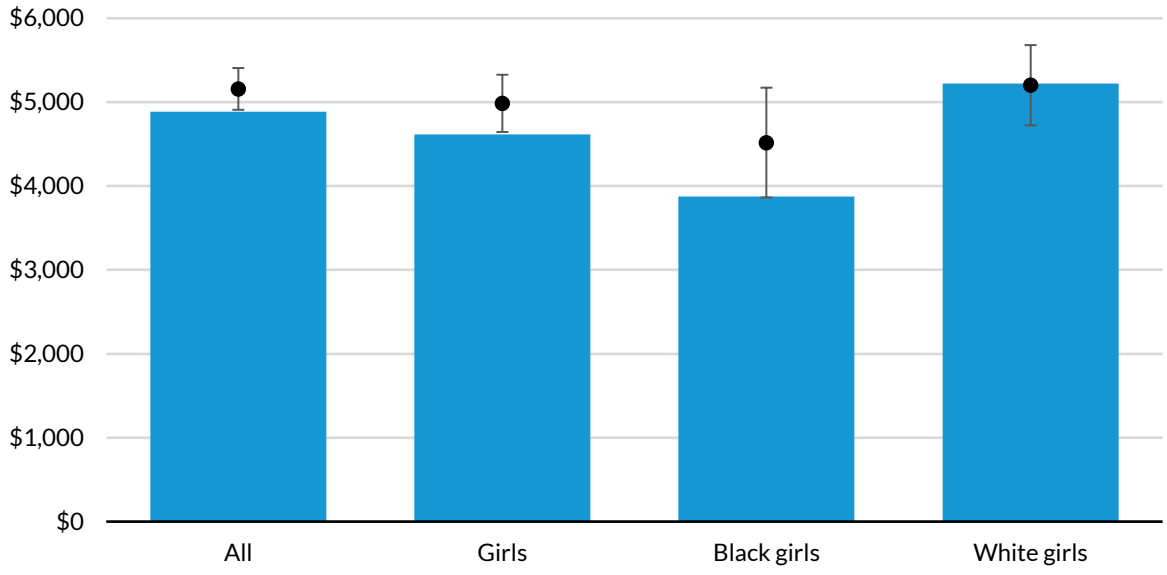
Key Finding 3. Higher Earnings

GYO programs, calls to diversify the teaching workforce, and teacher induction programs more generally all share the same concern: that they may harm earnings by causing people to leave or forgo more lucrative professions for teaching. Contrary to these concerns, we see that exposure to TAM actually increased wages. In figure 2, we document average quarterly earnings (in 2023 dollars), where the bars represent mean quarterly earnings for the comparison group and circles represent mean

earnings for the treated group. The error bar shows the 95 percent confidence interval for TAM's estimated effect. We extend these patterns to additional groups (to all students and to girls) because TAM's effects on educational attainment could drive effects on earnings even for students who did not go into teaching.

FIGURE 2

Effects of TAM Exposure on Quarterly Earnings at Age 25



Source: Authors' calculations.
Note: TAM = Teacher Academy of Maryland.

Average wages increased with exposure to TAM, with the largest gains accruing to Black girls ($643 per quarter, an 18 percent increase). Exposure to TAM did not significantly reduce the average earnings of any demographic group. These wage gains are similar for girls overall and for girls who entered teaching, which, again, counters the prevailing narrative that teaching leaves one worse off financially relative to other job opportunities. More broadly, this finding suggests that TAM increased earnings generally, even for students who did not enter teaching, likely through increased educational attainment.

Policy Implications

These results are encouraging along several dimensions. TAM induces exposed high school students to become teachers in Maryland public schools at markedly higher rates than their counterparts, with a 47 percent increase, on average, across students. Our estimates provide insight into how school-level adoption of the TAM program influences long-run outcomes, recognizing that only a few students

participate. Given perennial concerns about teacher shortages[7] and more recent concerns that interest in teaching is rapidly declining,[8] GYO programs like TAM can be a fruitful avenue for building pathways into the profession.

TAM Can Help Diversify the Teacher Workforce

GYO programs like TAM may also help diversify the profession, which is a central goal of many program designers and policymakers. Unsurprisingly, TAM's effects are largest among white female students, who already are overrepresented in teaching. These findings are consistent with patterns of intergenerational transmission of teaching from parents to children,[9] which tends to reproduce the existing demographic makeup of the teaching force.

But Black girls benefit too, with an 80 percent relative increase of becoming a teacher. TAM's effects on Black girls are not enough to outpace the rate at which white girls become teachers, but gaps are reduced. Absent TAM, white girls become teachers at four times the rate of Black girls (3.6 percent versus 0.9 percent). With TAM, rates increase to 5 percent and 1.6 percent for white and Black girls, respectively, or a threefold difference.

For GYO programs to close this gap entirely, effects for Black girls would need to be substantially larger, or effects for white girls would need to be substantially smaller. It is unrealistic to expect a state-sponsored GYO program like TAM to solely benefit Black or other students of color. That said, program expansion efforts could target schools and districts with large populations of students of color not already offering TAM. Indeed, the schools in our sample that never offered TAM include larger shares of Black students (37 percent) compared with schools that started offering TAM early on (29 percent). Further, we find suggestive evidence that the positive effects on Black girls are driven by large, urban school districts that implement TAM in a subset of high schools and where there is substantial room for expansion.

Addressing Low Take-Up among Boys and Hispanic and Asian Students

Despite the positive effects of TAM for some groups, few boys or Hispanic and Asian students enroll in the program (appendix figure A.1). By speculating on prior literature, we find that one potential solution may be to improve the demographic representation among TAM teachers, who are largely white women. There is a "chicken and egg" problem here, to be sure.

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[7] Leib Sutcher, Linda Darling-Hammond, and Desiree Carver-Thomas, "Understanding Teacher Shortages: An Analysis of Teacher Supply and Demand in the United States," *Education Policy Analysis Archives* 27, no. 35 (April 2019): 1.

[8] Matthew A. Kraft and Melissa Arnold Lyon, *The Rise and Fall of the Teaching Profession: Prestige, Interest, Preparation, and Satisfaction over the Last Half Century* (working paper, Annenberg Institute for School Reform at Brown University, 2022).

[9] Alberto Jacinto and Seth Gershenson, "The Intergenerational Transmission of Teaching," *American Educational Research Journal* 58, no. 3 (June 2021): 635, https://doi.org/10.3102/0002831220963874.

Another solution may be to refine the TAM program and curriculum to focus on cultural relevance,[10] which includes addressing the historical reasons people of color are underrepresented in teaching.[11] The low numbers of teachers of color is not happenstance but a manufactured problem that resulted, in large part, from systematically pushing Black teachers and other teachers of color out of the profession following school integration efforts.[12]

Reframing the Narrative on Teaching as a Financially Viable Career

There is a prevailing societal perception that teaching is not a financially rewarding career, which can deter potential candidates and potentially lead to equity problems if people of color are pushed into less lucrative careers.[13] But we find that exposure to TAM did not significantly reduce the average earnings of any demographic group and that it significantly increased earnings for Black women. These findings align with other literature that notes that employment in education (as well as in government) can offer more equitable access to upward mobility for Black and Hispanic individuals than most other job sectors.[14]

Teaching is not among the highest-wage, highest-growth industries, but it taps into social and interpersonal skills that have increasing value in the labor market.[15] Ultimately, there are perennial teacher shortages that need filling, and our analysis shows that GYO programs could offer an avenue to expand the teacher labor force while increasing educational attainment and potential earnings.

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[10] Ayana Allen, Stephen D. Hancock, Tehia Starker-Glass, and Chance W. Lewis, "Mapping Culturally Relevant Pedagogy into Teacher Education Programs: A Critical Framework," *Teachers College Record* 119, no. 1 (January 2017): 1, https://doi.org/10.1177/016146811711900107.

[11] Dorinda J. Carter Andrews, Eliana Castro, Christine L. Cho, Emery Petchauer, Gail Richmond, and Robert Floden, "Changing the Narrative on Diversifying the Teaching Workforce: A Look at Historical and Contemporary Factors That Inform Recruitment and Retention of Teachers of Color," *Journal of Teacher Education* 70, no. 1 (January/February 2019): 6, https://doi.org/10.1177/0022487118812418.

[12] Leslie T. Fenwick, *Jim Crow's Pink Slip: The Untold Story of Black Principal and Teacher Leadership* (Cambridge, MA: Harvard Education Press, 2022); and Owen Thompson, "School Desegregation and Black Teacher Employment," *Review of Economics and Statistics* 104, no. 5 (September 2022): 962, https://doi.org/10.1162/rest_a_00984.

[13] Seth Gershenson, Cassandra M. D. Hart, Joshua Hyman, Constance A. Lindsay, and Nicholas W. Papageorge, "The Long-Run Impacts of Same-Race Teachers," *American Economic Journal: Economic Policy* 14, no. 4 (November 2022): 300.

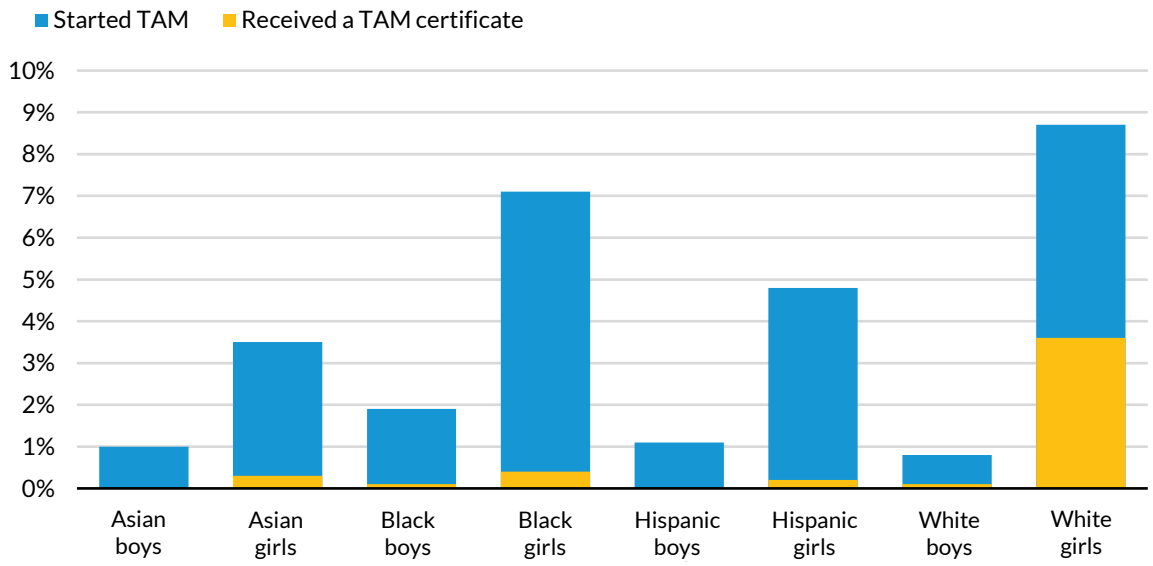
[14] Marcela Escobari, Ian Seyal, and Carlos Daboín Contreras, *Moving Up: Promoting Workers' Upward Mobility Using Network Analysis* (Washington, DC: Brookings Institution, 2021).

[15] David J. Deming, "The Growing Importance of Social Skills in the Labor Market," *Quarterly Journal of Economics* 132, no. 4 (November 2017), 1593, https://doi.org/10.1093/qje/qjx022.

Appendix

FIGURE A.1

TAM Take-Up and Completion Rates, by Gender, Race, or Ethnicity

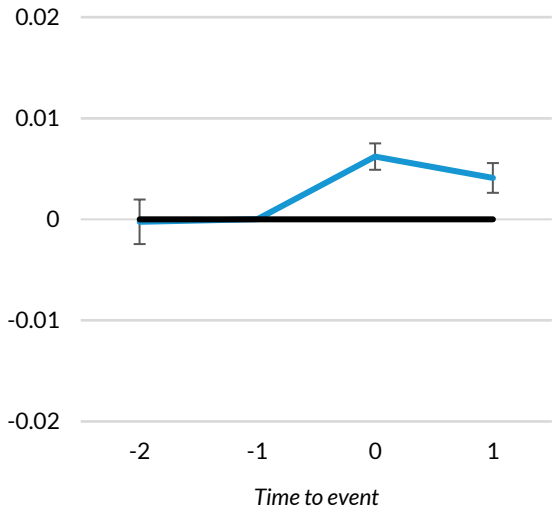


Source: Authors' calculations.
Note: TAM = Teacher Academy of Maryland.

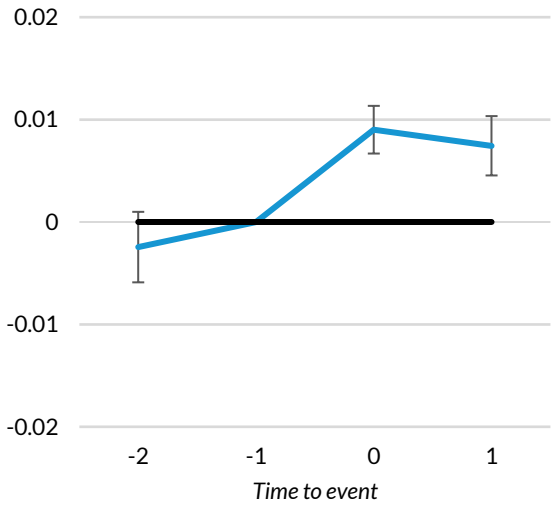
FIGURE A.2

Event Study Analysis of the Effect of TAM on Becoming a Teacher within 10 Years of Ninth-Grade Enrollment

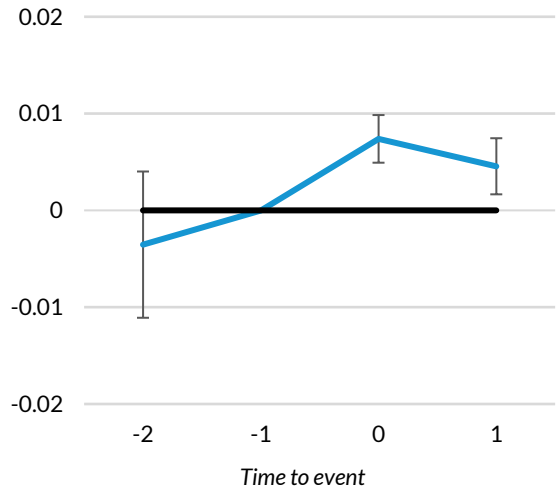
All (N = *225,843*; N *schools* = *157*)



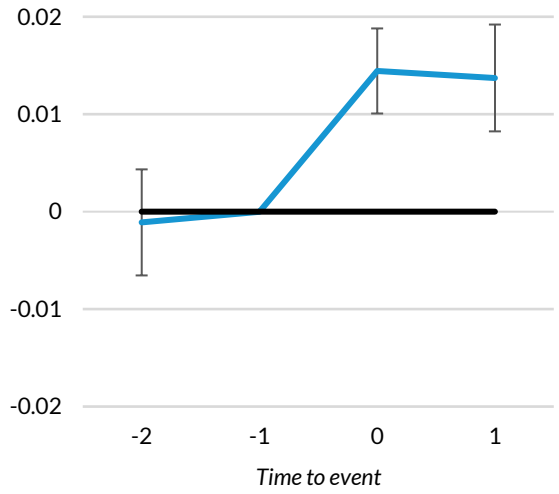
Girls (N = *110,245*; N *schools* = *156*)



Black girls (N = *40,142*; N *schools* = *155*)



White girls (N = *47,092*; N *schools* = *153*)



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Source: Authors' calculations.

Notes: TAM = Teacher Academy of Maryland. This figure reports event study point estimates and 95 percent confidence intervals from regression specifications that include lead and lag indicators for access to TAM, as well as school and cohort fixed effects. Student and school-year covariates are excluded. Results are shown using the two-way fixed effects estimator. The event time variable on the *x* axis is a continuous variable. Zero identifies students who were in 9th or 10th grade (or their first or second year of high school) when TAM was first adopted, meaning they were exposed to TAM for three or four years. Positive values represent postadoption cohorts, while negative values represent preadoption cohorts (i.e., students who were in 11th or 12th grade or had graduated when TAM was first adopted). Because of limited sample size and precision, we pool event time period 2 with period 1 and event time period −3 with −2. Standard errors used to compute confidence intervals are clustered at the high school level.

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