Teaching and Leading

An Evaluation of the Impacts and Professional Trajectories of Teach For America Participants in Indianapolis

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About This Report

This report focuses on the impacts of Teach For America Indianapolis on student and school outcomes in the Indianapolis area. The report also examines data regarding professional trajectories of Teach For America Indianapolis alumni, including those who have left K–12 schools and moved on to other types of work. The intended audiences for this report are educators, policymakers, academics, the Richard M. Fairbanks Foundation, and the Teach For America organization.

RAND Education and Labor

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Summary

We evaluated the effectiveness, retention, and career trajectories of Teach For America (TFA) teachers from the Indianapolis, Indiana, chapter (TFA Indy) and compared them with other teachers hired during the same period.

Our key findings are as follows:

- TFA Indy teachers were, on average, more effective at increasing student achievement than non-TFA teachers. One year of instruction by a TFA Indy teacher was associated with around a 1- and 2-percentile-point increase in student performance in English language arts (ELA) and math, respectively (e.g., moving from the 50th percentile to the 52nd percentile in math).
- TFA Indy teachers who worked in schools with five or more peer TFA-affiliated teachers were substantially more effective at increasing student achievement than non-TFA teachers, both overall and relative to non-TFA peers within the same school. Instruction by these TFA Indy teachers was associated with around 2 and around 5 percentile points in student achievement gains in ELA and math, respectively.
- TFA Indy teachers were more likely to work in charter schools, in more-disadvantaged school contexts, and in schools serving more-diverse student populations than non-TFA teachers.
- TFA Indy teachers left teaching earlier in their careers than non-TFA teachers, often once their two-year TFA corps member commitment ended.
- Non-White TFA Indy teachers were more likely to remain in teaching than White TFA Indy teachers; however, among non-TFA teachers, the opposite trend was evident.
- Among alumni who left teaching, non-White TFA Indy alumni were more likely to continue working in education-related careers than White TFA Indy alumni.
- Overall, TFA Indy teachers were promoted to school and district leadership roles at similar rates as non-TFA teachers, but non-White TFA Indy teachers were less likely to be promoted than non-White non-TFA teachers.
- We estimate a net-positive effect on student achievement of hiring a TFA Indy teacher in comparison to a non-TFA teacher. This estimate accounts for negative effects from higher TFA Indy teacher turnover rates resulting in the need to hire more novice teachers who are initially less effective, as well as positive effects due to TFA Indy teachers' differential impacts on student achievement.

Contents

Figures and Tables

Figures

Tables

Introduction

Teach For America (TFA) is an organization that aims to address educational inequity in part through a program of training and placing teachers in U.S. K–12 public schools that have the highest proportions of high-poverty students (Turner et al., 2018). TFA endeavors to prepare its "corps members" both as teachers and as future leaders who can confront educational inequity, enlisting them to teach for two years in high-needs schools. TFA also supports alumni's contributions to society later in their careers as educators, advocates, entrepreneurs, policymakers, and community members (TFA, undated-b). In line with this mission, TFA established Teach For America Indianapolis (TFA Indy) in 2008 to support high-needs students in the diverse metropolitan area of Indianapolis, Indiana, whose public school student population is characterized by higher levels of household poverty and lower academic achievement than is typical statewide.

Since 2009, the Richard M. Fairbanks Foundation has contributed to TFA Indy's program. In 2021, to better understand how TFA influences student outcomes, the Fairbanks Foundation sponsored the RAND Corporation's independent evaluation of the impacts of TFA Indy corps members and alumni on students in Indianapolis. In this report, we present our findings regarding TFA Indy teachers' effects on student academic learning, the rate at which TFA Indy teachers remain in teaching, and their subsequent career trajectories.

Our evaluation primarily focuses on the experiences of TFA Indy participants during their time in K–12 public schools in the Indianapolis area, which we define as any school located within Marion County, Indiana. We focus on this geographic area because it is the primary focus of the Fairbanks Foundation's investments and because it has been the area in which the TFA Indy chapter has been most actively involved in supporting its corps members' and alumni's development. Although some TFA Indy teachers are initially placed and work in schools elsewhere in the state and region, they are not the focus of our analyses. We include analyses of TFA Indy participants' professional trajectories within the public school system and analyses of participants' impacts on student learning. We also include analyses of records from the TFA Indy organization about alumni's professional trajectories in roles outside K–12 schools.

We find that teachers recruited and trained through TFA Indy were more effective on average than other teachers hired in the same years and school environments but also more likely to leave teaching earlier than other teachers. A modeling analysis of the net effects of these two trends indicates that the overall effect of TFA Indy teachers on student achievement is positive. We also find evidence that TFA Indy teachers were much more effective when working in school contexts with larger numbers of TFA-affiliated peers.

In additional subgroup analyses, we identify differential patterns of TFA Indy teacher retention, promotion, and career progression as a function of whether teachers are White versus non-White. Non-White TFA Indy participants were more likely to remain in teaching and more likely to work in education-related careers in Indianapolis but less likely to be promoted to school leadership positions. However, an important limitation of our analyses is that some of the subpopulation samples are quite small, in particular when examining non-White TFA Indy teacher promotion rates.

The remainder of our report proceeds as follows. In Chapter 2, we first briefly summarize prior research about TFA teachers' professional trajectories and their impacts on student achievement. We then detail our research questions and briefly describe the available data and the methods we used to answer those ques-

tions. In Chapter 3, we present the results of our analyses, sequentially in the order of our research questions. In Chapter 4, we conclude with a discussion of the implications of our findings to date and next steps for the study. Finally, in supplemental appendixes, we provide additional details regarding our data and methods of analysis, as well as supplemental findings not included in the main body of the report.

Background and Research Questions

In this chapter, we summarize prior research about the impacts of the TFA program on student and school outcomes and provide a description of the TFA Indy program in particular. Then, we detail the research questions that are the focus of this study. Finally, we provide a brief overview of our methodological approach to answering those questions, with additional methodological details provided in Appendix A.

Prior Research About the Impacts of TFA

Substantial prior research has been conducted about the effectiveness of TFA teachers at enhancing student achievement, with most studies identifying a performance advantage of TFA teachers, including during their first two years as corps members in the TFA program itself and subsequently as alumni of the program. For example, a large-scale random-assignment study of secondary math teachers in TFA (Clark and Isenberg, 2020) found that TFA teachers were more effective at improving student achievement in math than non-TFA teachers. Other research has documented similar positive effects, including in both English language arts (ELA) and math and in elementary, middle, and high schools (Henry et al., 2014; Wright et al., 2019; Xu, Hannaway, and Taylor, 2011). There is also evidence that TFA programs are producing more-effective teachers over time across diverse contexts (Penner, 2021). Research further indicates that TFA teachers may have positive effects on nonacademic outcomes, such as student attendance (Backes and Hansen, 2018). Additionally, recent evidence suggests that TFA teachers who remain in teaching may also increase in effectiveness faster than other teachers (Lovison, 2022). However, some studies of the effects of TFA teachers on student achievement have shown mixed results or have failed to identify a TFA advantage relative to fully certified teachers (Penner, 2016; Ware et al., 2011).

Substantial research has also documented the tendency for TFA teachers to leave teaching at higher rates and much earlier in their careers than other teachers; they often leave after fulfilling their two-year commitment (Boyd et al., 2005; Donaldson and Johnson, 2011; Heineke, Mazza, and Tichnor-Wagner, 2014). This rapid turnover could negatively affect students because it increases the rates at which students may be taught by less experienced and therefore less effective replacement teachers. Moreover, increased turnover imposes other costs on schools, such as the financial costs of hiring and onboarding new teachers or the potential "brain drain" associated with having fewer veteran teachers available to share best practices with peers (Heilig and Jez, 2014; Sorensen and Ladd, 2018; Synar, 2010).

Less research has examined the extent to which TFA teachers or leaders may influence the performance of other teachers, either in general or specifically other TFA-affiliated teachers. However, peer effects among teachers and within teacher teams are well documented and are an important way in which teachers affect student outcomes (Jackson and Bruegmann, 2009; Opper, 2019; Sun, Loeb, and Grissom, 2017). Such effects can occur through informal collaboration among staff or more formally in the context of intentionally established teams (Woodland and Mazur, 2019). Only one recent study that we are aware of has examined peer effects among TFA teachers, exploring the effects of recruiting "clusters" of TFA teachers on school perfor-

mance. The authors found that individual TFA teachers contributed directly to student achievement gains but did not identify significant spillover effects on non-TFA teachers (Backes et al., 2019). Given the explicit emphasis that the TFA organization places on building connections among teachers in the TFA network (including peers in the same school and more broadly), it is possible that peer effects among TFA alumni and corps members could play an important role in determining the effectiveness of TFA teachers (TFA, undated-a).

TFA describes its participants as leaders who are contributing to the broader field of educational improvement, and alumni of its program are encouraged to remain active in the education sector even if they do not remain in teaching (TFA, undated-a). There is evidence that the experience of participating in TFA influences individuals' future career trajectories, including effects on participants' likelihood to work in education, ambition to engage on policy issues, and mindsets and perceptions (Dobbie and Fryer, 2015; Mo, Conn, and Anderson-Nilsson, 2019). Although it is difficult to measure any causal effects of the diffuse contributions of alumni who have participated in TFA programs, prior research has used network analyses and other methodologies to make the case that the TFA alumni exert influence on schooling and educational policies in a variety of ways even if they do not continue to work in schools directly (Kretchmer, Sondel, and Ferrare, 2014; Trujillo, Scott, and Rivera, 2017).

Overview of the TFA Indy Program

TFA Indy is a chapter of the national TFA organization and was established in 2008. Currently, TFA Indy has more than 800 alumni and corps members, and more than 100 schools in Indiana have some TFA teacher presence. Participants in the TFA Indy program primarily serve in public schools in the Indianapolis area and particularly Marion County, Indiana. Staff at TFA Indy describe their primary goal as one of greatly enhancing student academic proficiency and college readiness. They aim to do so by developing a pipeline of talented educational leaders through leadership development work and through local thought leadership and advocacy. The core components of the program are similar to TFA's programming nationwide, including selective recruitment, teacher preparation, and ongoing coaching and development of program participants, alongside efforts to ensure participants' engagement as part of an alumni professional network.

Study Research Questions and Samples

In Table 2.1 we detail our six research questions, the methodologies we use to address each question, the samples that we include in each analysis, and the categories of available data that we use. These research questions and samples were selected in collaboration with the Fairbanks Foundation and correspond to its primary areas of interest. Because the foundation has primarily invested in improving outcomes for students and communities in the Indianapolis area, our analyses examine alumni, students, teachers, and schools in that region, which we define as Marion County, Indiana.

Our study includes a range of descriptive and comparative analyses about the professional trajectories and impacts of TFA Indy participants. We consider such professional outcomes as teacher retention in K–12 schools, promotion within K–12 school contexts, and professional roles outside K–12 school contexts. We examine the impacts of TFA Indy teachers on learning outcomes for the students they teach. We also describe the characteristics of schools led or co-led by TFA Indy alumni. Finally, we consider the implications for student learning of the combined effects of TFA Indy teachers' differential effects on student achievement and differential retention as teachers.

From TFA itself, we obtained data about corps members from the initial 2008 cohort through to the 2020 cohort, including data from alumni surveys that include alumni of the program through the 2018 cohort. From the Indiana Department of Education (IDOE), we obtained administrative records of all teachers in the public school system from school year 2010–2011 through school year 2021–2022. These two data sources and how they overlap define the samples of data available to answer each research question. All analyses examine the full range of TFA Indy cohorts, but analyses that rely on IDOE data involve teachers (both TFA and non-TFA) only from school year 2010–2011 to school year 2021–2022, even if they began teaching prior to 2010.

Approach to the Research

As shown in Table 2.1, we used a variety of methods to answer our research questions. *Descriptive analyses* are summaries of the data, such as comparisons of the observable characteristics of TFA Indy teachers and non-TFA teachers. *Regression analyses* are statistical models in which we test for differences between TFA Indy and non-TFA teachers when controlling for other observable factors. *Value-added analyses* are a type of regression model used to estimate the effects of individual teachers on student achievement when controlling for each student's prior achievement, with comparisons then made between TFA Indy and non-TFA teachers. Finally, the modeling analysis used to answer research question 6 involved estimating the net effect of value-added on student learning over a five-year period of TFA Indy teachers while they are teaching, as well as the value-added of novice teachers likely hired to replace them when TFA Indy teachers leave at differential rates. We provide additional details about our analytic methods, as well as the breadth and limitations of our data, in Appendix A. We discuss key limitations of our methods in Chapter 4.

TABLE 2.1

Study Research Questions, Methods, and Primary Samples of Interest

Research Question	Method	Data and Date Range
What is the distribution of professional roles of TFA Indy alumni who have completed their two-year commitment and currently reside in the Indianapolis area?	Descriptive analyses	Data about TFA alumni as of school year 2021–2022
What are the characteristics and initial job placements of TFA Indy participants in K–12 public schools in Indianapolis, and how have they changed over time?	Descriptive analyses	TFA and data from IDOE from school year 2009–2010 through 2021–2022
How do the retention and promotion trajectories of TFA Indy teachers initially placed in the Indianapolis area compare with those of similar non-TFA teachers?	Descriptive and regression analyses	TFA and IDOE data from school year 2009–2010 through 2021–2022[a]
What are the characteristics of Indianapolis-area schools in which TFA Indy alumni are school leaders?	Descriptive analysis	TFA and IDOE data from school year 2009–2010 through 2021–2022[a]
What are the relative impacts of TFA Indy teachers in Indianapolis on student outcomes, and to what extent do these impacts vary across subgroups of TFA Indy teachers?	Value-added analyses	TFA and IDOE data from school year 2009–2010 through 2021–2022[a]
What are the implications for student learning of TFA Indy teachers' differential impacts on student learning and differential retention rates, when considered in combination?	Modeling analysis	Results from the prior analyses; research questions 3 and 5

[a] Data on school leaders' roles, used to study promotion, were available from IDOE only through school year 2020–2021. Value-added analyses do not include school year 2019–2020 due to the effects of pandemic closures on testing and student achievement records. Value-added analyses in high schools do not include school year 2021–2022 due to lack of data for that period.

Our confirmatory questions are those related to measurable effects of TFA Indy teachers on schools and students in research questions 3 and 5 (as well as the follow-on analysis in question 6). These are comparisons of the relative job retention and impacts on student achievement of TFA Indy teachers and comparable non-TFA teachers. For both retention and achievement impacts, we were primarily interested in TFA Indy teachers' performance in their first two years of teaching when they are in the TFA program, as well as after they become alumni of the program. Then, in addition to examining these confirmatory questions, we performed a wide range of exploratory analyses, including examining variation in results across additional subgroups of TFA Indy teachers, as detailed in the next chapter. These exploratory questions were intended to generate additional hypotheses to help inform our understanding of our confirmatory findings.

In the next chapter, we detail the findings that emerged from each of our research questions.

Results

In this chapter, we address and share results for each research question in turn. Additional exploratory findings that were very similar to our primary results or that were not particularly noteworthy are referenced only in passing in this chapter, with results in those cases relegated to Appendix B.

Research Question 1: What Is the Distribution of Professional Roles of TFA Indy Alumni Who Have Completed Their Two-Year Commitment and Currently Reside in the Indianapolis Area?

Most TFA teachers leave teaching over time and take on a variety of other roles in K–12 education or other sectors. Using data provided to RAND by the TFA organization, which tracks alumni's careers through a combination of alumni surveys and desk research, we were able to summarize the current job positions held by TFA Indy alumni currently residing in the Indianapolis area. TFA Indy alumni make up the large majority (91 percent) of all TFA alumni in the Indianapolis area. The most-recent TFA alumni records available were typically as of school year 2021–2022, but in some cases records reflected information about alumni's most-recent known roles as of one or two years prior. These analyses include alumni from as early as the 2008 TFA Indy program cohort through to the 2018 cohort.

In Table 3.1 (the "Overall" column), we show the distribution of current TFA Indy alumni in Indianapolis according to the types of professional positions that the TFA organization has documented them holding in its most-recent records. We observe that 60 percent of TFA Indy alumni in the area are currently working in K–12 schools (some as teachers and some in other roles), while the remainder work in a variety of other sectors. Of these other sectors, approximately 15 percent are sectors that are explicitly related to education, while many others (such as consulting, nonprofit, business, and government) could potentially be indirectly related to education.

In the same table, we show results separately for TFA Indy alumni who are White versus non-White, for females versus males, and for those initially placed in charter schools during their corps program versus those placed initially in noncharter schools. These comparisons are descriptive; we have not conducted formal statistical tests of their significance. Across these characteristics, we observe that non-White TFA Indy alumni are more likely to be working in pre-K–12 schools (67 percent) than White TFA Indy alumni (57 percent) and that female alumni are also more likely (63 percent) than male alumni (52 percent) to be working in such schools. Moreover, more non-White TFA Indy alumni are in other fields directly related to education (20 percent) than their White counterparts (12 percent).

Next, in Table 3.2, we summarize the K–12 school leadership positions held by TFA Indy alumni in Indianapolis, as documented in TFA's records. To better understand the pace at which TFA Indy corps members assume leadership positions, we examine these data separately across four cohort bands, starting with the earliest cohorts through to the last cohorts for which we have data. As we would expect, earlier cohorts include more alumni who are now in positions as leaders or co-leaders of schools or school systems, whereas

TABLE 3.1

Alumni Positions by Subgroup, TFA Indy Alumni Residing in the Indianapolis Area, 2008–2018 Corps Members

Position	Overall	Non-White	White	Female	Male	Charter School	Noncharter School
Education—pre-K–12 (working in a school)	60% (185)	67% (68)	57% (117)	63% (141)	52% (42)	61% (121)	59% (60)
Education—nonprofit	6% (18)	10% (10)	4% (8)	6% (13)	6% (5)	5% (9)	9% (9)
Education—other	2% (7)	2% (2)	2% (5)	2% (4)	4% (3)	3% (6)	1% (1)
Education—college/ university	2% (6)	4% (4)	1% (2)	2% (4)	2% (2)	2% (4)	2% (2)
Education—pre-K–12 (working in a district)	2% (6)	2% (2)	2% (4)	1% (3)	4% (3)	2% (4)	2% (2)
Education—pre-K–12 (working in a charter network)	3% (9)	2% (2)	3% (7)	2% (5)	5% (4)	4% (7)	2% (2)
Full-time grad student	2% (5)	2% (2)	1% (3)	2% (4)	1% (1)	3% (5)	0% (0)
Government—state and local (IDOE)	0% (1)	0% (0)	0% (1)	0% (0)	1% (1)	1% (1)	0% (0)
Business	1% (4)	0% (0)	2% (4)	1% (2)	2% (2)	2% (4)	0% (0)
Nonprofit	3% (10)	2% (2)	4% (8)	3% (7)	4% (3)	4% (8)	1% (1)
Health	2% (5)	0% (0)	2% (5)	1% (3)	2% (2)	0% (0)	4% (4)
Law/legal services	1% (3)	1% (1)	1% (2)	0% (0)	4% (3)	1% (2)	1% (1)
Consulting	2% (5)	0% (0)	2% (5)	1% (3)	2% (2)	2% (4)	1% (1)
Sales/marketing	0% (1)	0% (0)	0% (1)	0% (1)	0% (0)	0% (0)	1% (1)
Stay-at-home parent/ homemaker	1% (4)	0% (0)	2% (4)	2% (4)	0% (0)	2% (3)	1% (1)
Other	7% (20)	3% (3)	8% (17)	7% (15)	6% (5)	6% (12)	8% (8)
No current employment record	6% (18)	5% (5)	6% (13)	7% (15)	4% (3)	5% (9)	8% (8)
Total	100% (307)	100% (101)	100% (206)	100% (224)	100% (81)	100% (199)	100% (101)

SOURCE: Features data from TFA records provided to RAND as of school year 2021–2022.

NOTE: *n*s are in parentheses. TFA collects gender information with three reported categories: another gender, female, and male. Because of the potentially identifiable small number of respondents selecting another gender, those data are not presented in this table. TFA collects school-sector information with three reported categories: charter, non-school-based early childhood education, and noncharter. Because of the small number of respondents selecting non-school-based early childhood education, those data are not presented in this table. For this reason, row totals might not equal the numbers reported in the "Overall" column.

alumni from later cohorts are more likely to be in teaching roles. Earlier cohorts are also more likely to no longer be working in K–12 school roles at all.

In Table B.1 we also examine the same TFA records for different subgroups of TFA Indy alumni, including White and non-White alumni, male and female alumni, and those initially placed in charter schools versus those not initially placed in charter schools. By and large, there were no noteworthy differences in K–12 positions across these alumni characteristics.

Collectively, these results provide some indication of TFA Indy alumni's characteristics and professional trajectories. In the following sections, we examine these questions in more depth for TFA Indy alumni who have worked in K–12 schools and thus appear in IDOE administrative records.

TABLE 3.2

Leadership Positions by Corps Years 2008–2018, TFA Indy Alumni Residing in the Indianapolis Area

Position	2008–2010 Cohort	2011–2013 Cohort	2014–2016 Cohort	2017–2018 Cohort
Midlevel school leader	8% (4)	10% (8)	1% (1)	0% (0)
Midlevel systems leader	2% (1)	0% (0)	0% (0)	0% (0)
School leader	8% (4)	5% (4)	0% (0)	0% (0)
School systems leader	2% (1)	2% (2)	0% (0)	0% (0)
Teacher (only)	14% (7)	39% (32)	54% (52)	73% (57)
Teacher and midlevel school leader	12% (6)	5% (4)	3% (3)	0% (0)
No known school positions	55% (28)	39% (32)	42% (40)	27% (21)
Total	100% (51)	100% (82)	100% (96)	100% (78)

SOURCE: Features data from TFA records provided to RAND as of school year 2021–2022.

NOTE: ns are in parentheses. Leadership positions are defined by TFA as follows. Midlevel school leader: serves in a school as a role reporting to the principal and typically part of the leadership team (e.g., assistant principal, dean). Midlevel systems leader: has at least one role working in a school system or charter management organization reporting to a member on the cabinet or leadership team of the district, charter management organization, or state educational agency. School leader: The alum has at least one role working in a school as the top person leading an individual school and has hiring/firing power over staff (e.g., principal or equivalent role). School systems leader: The alum has at least one role as the top person leading the district/network or as a member of the cabinet or leadership team (e.g., superintendent or equivalent).

Research Question 2: What Are the Characteristics and Initial Job Placements of TFA Indy Participants in K–12 Public Schools in Indianapolis, and How Have They Changed over Time?

Characteristics and Placements of First-Year Teachers

In this section we examine the characteristics and K–12 job placements of TFA Indy participants whose initial teaching positions were in public schools in the Indianapolis area. In Table 3.3 we compare TFA Indy participants as of their first year of teaching and non-TFA teachers who were also in their first year. We show results separately for cohorts that began teaching in the fall of 2010 through 2013, 2014 through 2017, and 2018 through 2021, respectively. Viewing results by cohort bands in this way provides some indication of changes over time in the characteristics and job and school placements of TFA Indy participants. We do not include cohorts 2008 or 2009 in this summary, since we lack administrative records about their initial placement schools.

The data from Table 3.3 inform our understanding of how TFA Indy participants contribute to the overall teacher recruitment in the Indianapolis area. First, across all cohorts, TFA Indy participants are substantially more likely to work in charter schools (between 65 percent and 83 percent) than non-TFA first-year teachers (between 16 percent and 24 percent), and TFA Indy teacher' schools tend to be smaller, with substantially fewer enrolled students. Second, TFA Indy teachers are more likely to work in schools with lower average achievement levels and higher proportions of families with low socioeconomic status (SES) and non-White students than non-TFA teachers; these differences tend to be larger for later TFA Indy cohorts. Third, TFA Indy teachers in earlier cohorts were not more racially diverse than non-TFA teachers, but their relative diversity increased among teachers placed in later years. Finally, TFA Indy teachers have generally included a relatively larger share of science, technology, engineering, and mathematics (STEM) teachers compared with non-TFA first-year teachers, a strategic focus for TFA Indy, given that these are often particularly hard-to-staff positions.

TABLE 3.3

Characteristics of First-Year Teachers and Their Initial Placement Schools, by Year

	Placed 2010–2013		Placed 2014–2017		Placed 2018–2021	
	TFA Indy	Non-TFA	TFA Indy	Non-TFA	TFA Indy	Non-TFA
Teacher characteristic						
White	82%	84%	70%	80%	62%	71%
Black	10%	10%	16%	14%	20%	18%
Hispanic	5%	2%	6%	2%	9%	6%
Asian	2%	1%	3%	1%	3%	2%
Other race	1%	2%	5%,	2%	6%	4%
Male	29%	25%	26%	26%	26%	26%
STEM teacher	10%	7%	15%	5%	NA	NA
SPED teacher	1%	3%	6%	4%	1%	2%
Characteristics of schools where teachers work						
Charter school	71%	16%	65%	21%	83%	24%
Elementary school	20%	49%	44%	46%	33%	44%
Middle school	23%	16%	18%	13%	7%	16%
High school	22%	18%	7%	17%	15%	22%
Elementary/middle school	12%	9%	19%	14%	24%	10%
Middle/high school	0%	0%	0%	0%	0%	0%
Elementary/middle/high school	18%	6%	12%	8%	19%	5%
Other school type	5%	1%	1%	2%	1%	2%
White students	18%	35%	10%	31%	9%	24%
Black students	62%	39%	64%	40%	64%	43%
Hispanic students	13%	18%	21%	21%	22%	24%
Low-SES students	76%	67%	79%	69%	81%	66%
SPED students	0%	0%	4%	5%	15%	16%
English-learner students	8%	13%	13%	14%	14%	17%
School enrollment (N)	540	980	459	949	542	1,004
School average math scores	−0.36	−0.30	−0.71	−0.40	−0.70	−0.55
School average ELA scores	−0.40	−0.34	−0.60	−0.36	−0.62	−0.49
Teachers (N)	108	1,672	147	1,861	155	2,366

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: School average test scores are the unweighted average of student test scores standardized within the tested subject, grade level, and year statewide in Indiana. Low-SES students are eligible for free or reduced-price lunch. IDOE administrative records for STEM are not available for teachers placed between 2018 and 2021, but data from TFA indicates that TFA Indy teachers' rates of STEM assignments have remained relatively consistent over the period of our study. SPED = special education; SES = socioeconomic status; NA = not applicable. Elementary grades span K–5, middle grades span 6–8, and high school grades span 9–12.

Because so many of these differences could be related to the higher rate at which TFA Indy teachers who work in charter schools, we also created a similar analysis comparing charter-placed TFA Indy and non-TFA teachers, by cohort band. These results are shown in Table B.2. Overall, restricting our descriptive analysis to charter school teachers increases the similarities between TFA Indy and non-TFA teachers in terms of school size, demographics, and achievement levels. Nevertheless, some differences are apparent; TFA Indy teachers in this sample still serve more-disadvantaged students than other early-career charter school teachers. Also, TFA Indy teachers from earlier cohorts at charters were less likely to be non-White, though over time the gap closed so that, in recent cohorts, TFA Indy teachers are equally likely to be non-White as non-TFA teachers.

Characteristics and Placements of TFA Indy Teachers over Time

Next, we explore how the characteristics of TFA Indy participants in K–12 schools change over time, for a fixed sample of teachers that we can observe over a full five-year period (i.e., from corps members cohorts 2010 through 2016). As before, we compare shifts in the characteristics of TFA Indy teachers to those of non-TFA teachers who began teaching at the same time. This analysis can provide insight into patterns of teacher retention for both groups by examining which teachers tend to stay or leave over time and the characteristics of schools in which they stay or leave.

The results, shown in Table 3.4, indicate several trends related to TFA Indy teachers' retention patterns, comparing the same teachers at different points to observe who remains in the cohort. First, over time the populations shifted somewhat in their racial composition. Among non-TFA teachers, White teachers were less likely to leave than non-White teachers, and so the percentage of White teachers increased among more-experienced teachers (78 percent among first-year teachers versus 84 percent among fifth-year teachers). In contrast, among TFA Indy teachers, the percentage of White teachers was relatively unchanged across experience bands, and Black TFA Indy teachers in particular were more likely to remain in teaching. Second, among both groups of teachers (TFA Indy and non-TFA), the share of teachers in charter schools decreased over time, which suggests that charter school teachers tended to have shorter tenures in teaching. Both TFA Indy and non-TFA teachers were also more likely to leave schools that were lower achieving, had lower-SES students, or had a higher proportion of non-White students. Finally, TFA Indy teachers were substantially more likely to acquire advanced degrees over time, likely indicating preparation for more-senior roles and responsibilities either within or outside K–12 education.

In the following section, we build on these descriptive analyses to examine the relative retention and promotion rates of TFA Indy teachers in more depth.

Research Question 3: How Do the Retention and Promotion Trajectories of TFA Indy Teachers Initially Placed in the Indianapolis Area Compare with Those of Similar Non-TFA Teachers?

In this section, we examine teacher retention and promotion outcomes of TFA Indy participants relative to comparable teachers who began teaching in the Indianapolis area at the same time. We focus primarily on the broadest definition available to us for each outcome: retention in teaching in any school in Indiana and promotion to school or district leadership roles in any public school or district in Indiana. We also include a brief discussion of our (similar) findings for more-specific outcomes, such as rates of retention in teachers' initial placement school, retention within the Indianapolis area, and promotion to leadership roles within the Indianapolis area.

TABLE 3.4

Characteristics of a Fixed Sample of Teachers and Their Schools, by Experience Level

	First-Year Teachers		Third-Year Teachers		Fifth-Year Teachers	
	TFA Indy	Non-TFA	TFA Indy	Non-TFA	TFA Indy	Non-TFA
Teacher characteristic						
White	66%	78%	64%	81%	64%	84%
Black	18%	15%	23%	13%	26%	11%
Hispanic	7%	3%	5%	2%	4%	2%
Asian	4%	1%	3%	1%	3%	1%
Other race	5%	3%	5%	2%	3%	2%
Male	27%	26%	28%	24%	27%	25%
Without a bachelor's degree	0%	1%	0%	1%	0%	0%
Bachelor's degree	94%	85%	64%	83%	42%	79%
Master's degree	6%	13%	36%	15%	58%	20%
Other degree	0%	1%	0%	0%	0%	0%
Characteristics of schools where teachers work						
Charter school	68%	20%	67%	16%	55%	13%
Elementary school	29%	45%	37%	46%	29%	47%
Middle school	16%	15%	20%	15%	23%	14%
High school	16%	21%	14%	21%	20%	23%
Elementary/middle school	20%	12%	13%	10%	13%	8%
Middle/high	1%	1%	1%	0%	1%	1%
Elementary/middle/high	16%	6%	12%	6%	11%	6%
Other school type	1%	2%	2%	2%	3%	2%
White students	11%	32%	13%	34%	20%	36%
Black students	64%	39%	61%	36%	53%	33%
Hispanic students	19%	20%	20%	21%	20%	20%
Low-SES students	80%	66%	77%	64%	70%	62%
SPED students	7%	8%	9%	9%	10%	11%
English-learner students	12%	14%	13%	15%	12%	14%
School enrollment (*N*)	532	966	559	1052	638	1152
School average math scores	−0.65	−0.42	−0.60	−0.35	−0.53	−0.32
School average ELA scores	−0.59	−0.39	−0.52	−0.33	−0.45	−0.29
Teachers (*N*)	427	6,180	165	3,841	73	2,541

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: School average test scores are the unweighted average of student test scores standardized within the tested subject, grade level, and year statewide in Indiana. Low-SES students are eligible for free or reduced-price lunch. IDOE administrative records for STEM are not available for teachers placed between 2018 and 2021, but data from TFA indicates that TFA Indy teachers' rates of STEM assignments have remained relatively consistent over the period of our study. Elementary grades span K–5, middle grades span 6–8, and high school grades span 9–12.

Retention in Teaching

We begin our analysis of retention by illustrating the raw differential retention of TFA Indy teachers in comparison with non-TFA teachers, without any statistical adjustments for the characteristics of teachers' initial school placements. We examine retention for varying tenures, or the time since initial placement. The longer the tenure, the smaller the sample size because fewer teachers graduated from the program sufficiently long ago. In this descriptive analysis of retention, we measure the rate at which teachers leave for the first time, even if they may subsequently return in a future period. Later, we present regression findings that account for teachers who return to teaching.

As shown in Figure 3.1, TFA Indy teachers remained in teaching at similar rates in their first two years, but after the end of the TFA program commitment, substantially more TFA Indy teachers left teaching than comparison teachers who initially began teaching in the same school year. The gap between TFA Indy and non-TFA teacher retention is about 27 percentage points at three years of tenure and widens to about 37 percentage points at four years of tenure; the gap stabilizes at about 37 percentage points for the remaining years of tenure we are able to observe.

As shown in Figure 3.2, non-White TFA Indy teachers typically taught longer than White TFA Indy teachers. In contrast, non-White non-TFA teachers remained in teaching at lower rates than White non-TFA teachers. White non-TFA teachers are the group that remained in teaching at the highest rates.

Next, we evaluated relative teacher retention rates using statistical models that control for the characteristics of teachers' initial placement schools and for teachers' characteristics as of their first year of teaching. For these regression analyses, we defined retention based on teacher cumulative years of experience and therefore include teachers who left their position but then returned to teaching later. The results are shown in Table 3.5. Because characteristics such as teachers' race/ethnicity and the conditions at their schools can influence

FIGURE 3.1

Retention in Teaching for Teachers Initially Hired in Indianapolis-Area Public Schools, by Tenure and Group
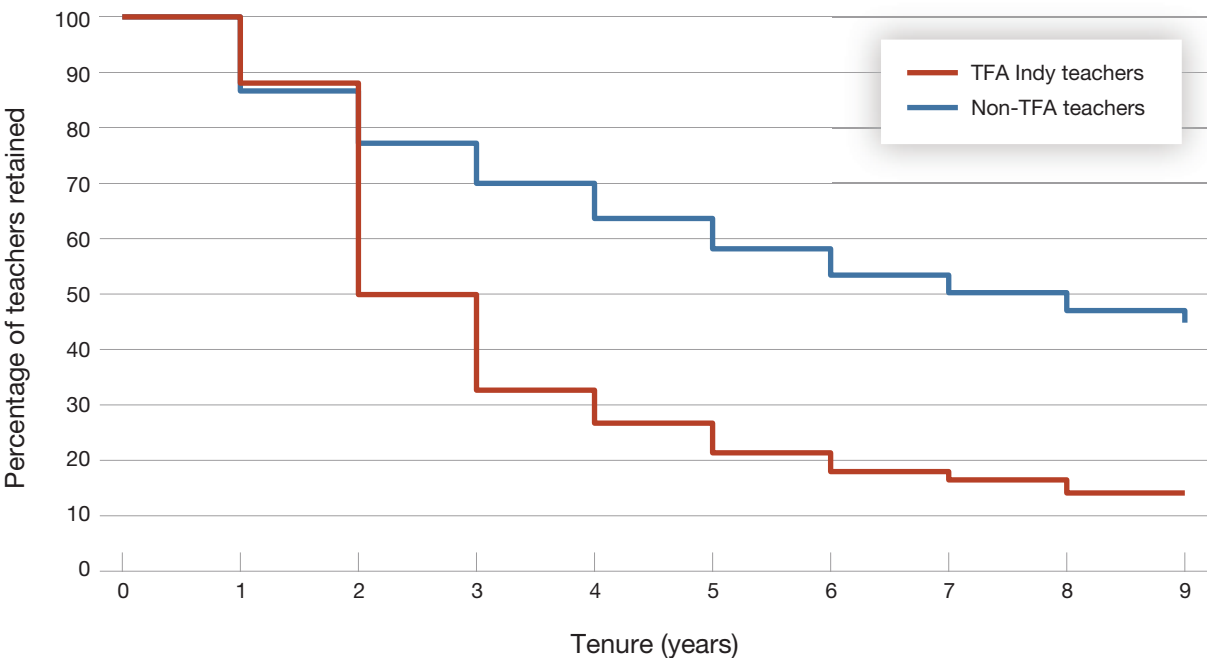
SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

FIGURE 3.2

Retention in Teaching for Teachers Initially Hired in Indianapolis-Area Public Schools, by Year, Group, and Teacher Race
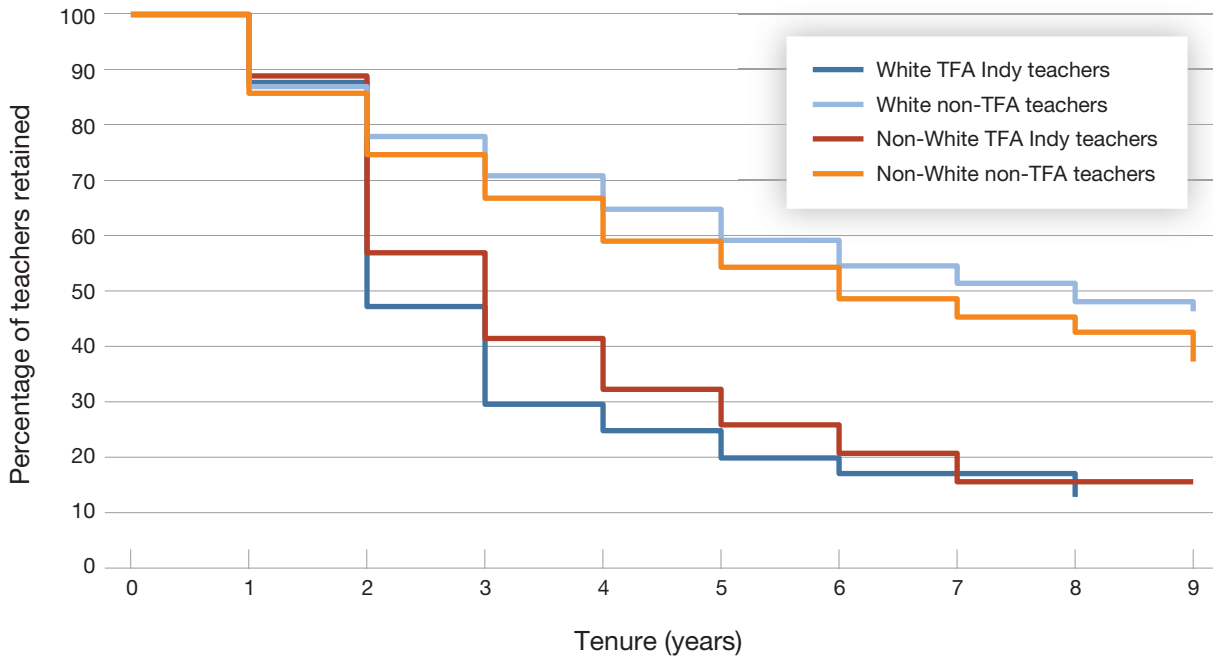
SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

retention outcomes, these statistical adjustments can help to ensure a fairer comparison across groups. In practice, we find that because TFA Indy teachers tend to be placed in lower-achieving schools and in charter schools, adjusting for these factors improves teachers' relative retention rates somewhat but does not change the big picture. We describe our retention models in more detail in Appendix A.

Table 3.5 displays the results of analysis of the overall retention rates of TFA Indy teachers, relative to comparison teachers. With the statistical adjustments for both school characteristics and initial teacher characteristics, TFA Indy teachers are estimated to have retention rates that are approximately 6 percentage points higher entering their second year of teaching. However, as of their third year of tenure, they are estimated to have been retained at rates significantly lower than non-TFA teachers, by approximately 24 percentage points. This result is unsurprising considering that the TFA program requires a two-year commitment. In their fourth year, TFA Indy teachers' retention disadvantage peaks, estimated at 34 percentage points lower than comparison teachers. Cumulative differences in retention remain high as of teachers' fifth year. These results are consistent with the unadjusted retention figures shown in Figure 3.1 and were fairly similar whether we controlled for just school characteristics or for both school and teacher characteristics in our models. Overall, schools would have to initially hire around 130 TFA Indy teachers to staff the same number of classrooms as 100 newly hired non-TFA teachers cumulatively over their first five years.

We also separately examined whether the difference in retention for non-White TFA Indy teachers observed in Figure 3.2 is statistically significant. To do this, we included an interaction term between the overall TFA Indy indicator and the non-White indicator, with results shown in Table 3.6. In addition, to help make our results easier to interpret, we present the predicted probability of retention for each of the four groups in Figure 3.3. We found that, by their third year, non-White TFA Indy teachers were 13 percentage points more likely to be retained than White TFA Indy teachers. The differential TFA Indy non-White

TABLE 3.5

Adjusted Relative Retention Rates for TFA Indy Teachers, by Years of Teaching

	Entering Second Year	Entering Third Year	Entering Fourth Year	Entering Fifth Year
TFA Indy overall	0.059***	−0.241***	−0.341***	−0.335***
	(0.024)	(0.031)	(0.036)	(0.041)
Observations (*N*)	4,288	3,747	3,215	2,724

SOURCE: Features data from TFA records provided to RAND as of school year 2021–2022.

NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Models estimate teacher retention up to a specific year of experience (e.g., for the third year, the outcome measure is an indicator for whether the teacher was retained up to three years of experience). Models compare TFA Indy with non-TFA teachers and control for the characteristics of teachers' initial placement schools, including student demographics, poverty status, achievement levels, SPED and English-learner status, and whether the school was a charter school. Models also include controls for teacher demographics, initial education level, and initial-placement job roles.

TABLE 3.6

Adjusted Relative Retention Rates for TFA Indy Teachers, by Years of Teaching and Race

	Entering Second Year	Entering Third Year	Entering Fourth Year	Entering Fifth Year
TFA Indy overall	0.052**	−0.280***	−0.391***	−0.376***
	(0.028)	(0.036)	(0.040)	(0.046)
TFA Indy non-White teachers	0.022	0.133*	0.193**	0.188**
	(0.052)	(0.068)	(0.081)	(0.094)
Non-TFA non-White teachers	−0.027*	−0.043**	−0.060***	−0.098***
	(0.015)	(0.022)	(0.029)	(0.026)
Observations (*N*)	4,288	3,747	3,215	2,724

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Models estimate teacher retention up to a specific year of experience (e.g., for the third year, the outcome measure is an indicator for whether the teacher was retained up to three years of experience). Models compare TFA Indy and non-TFA non-White teachers with White non-TFA teachers. Models control for the characteristics of teachers' initial-placement schools, including student demographics, poverty status, achievement levels, SPED and English-learner status, and whether the school was a charter school. Models also include controls for teacher demographics, initial education level, and initial-placement job roles.

teacher retention persists in teachers with more years of experience. This advantage in retention for non-White TFA Indy teachers stands in contrast to a typical retention disadvantage for non-White non-TFA teachers relative to White non-TFA teachers. However, in absolute terms, TFA Indy non-White teachers still tended to have lower adjusted retention rates than non-TFA non-White teachers.

Promotion to School or District Leadership

Next, we examined the rate at which TFA Indy teachers were promoted to any leadership roles, with results shown in Figure 3.4. Teacher promotions to principal, assistant principal, and superintendent roles are rare early in teachers' careers, which is the period in which we have the most observations of the TFA Indy alumni. As a result, we observe a total of only 15 promotions of TFA Indy alumni to these positions across all of our administrative records, most of these from earlier cohorts. To maximize our statistical power, we grouped the three types of promotions into a single outcome variable when assessing whether there were differential rates of promotion among TFA Indy teachers relative to comparison teachers. We focused on whether teachers were ever promoted at any time within our sample window (while controlling for teachers' experience levels and other factors).

We do not find evidence that TFA Indy teachers as a whole were more or less likely to be promoted than comparable non-TFA teachers when adjusting for other factors, including teacher characteristics and initial-school-placement characteristics (the coefficient is 0.009, and the standard error is 0.023, so this is not statis-

FIGURE 3.3

Regression-Adjusted Teacher Retention Rates, by Years of Teaching and Race
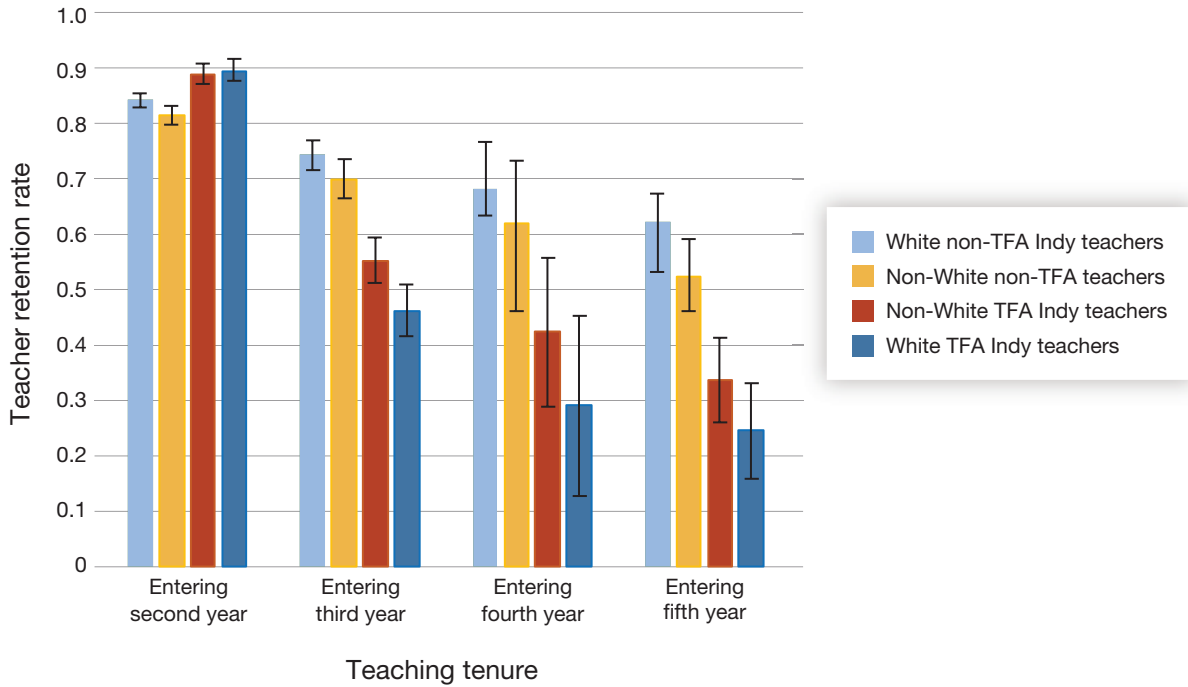
SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.
NOTE: The vertical bars represent 95 percent confidence intervals.

FIGURE 3.4

Regression-Adjusted Promotion Rates, by Race
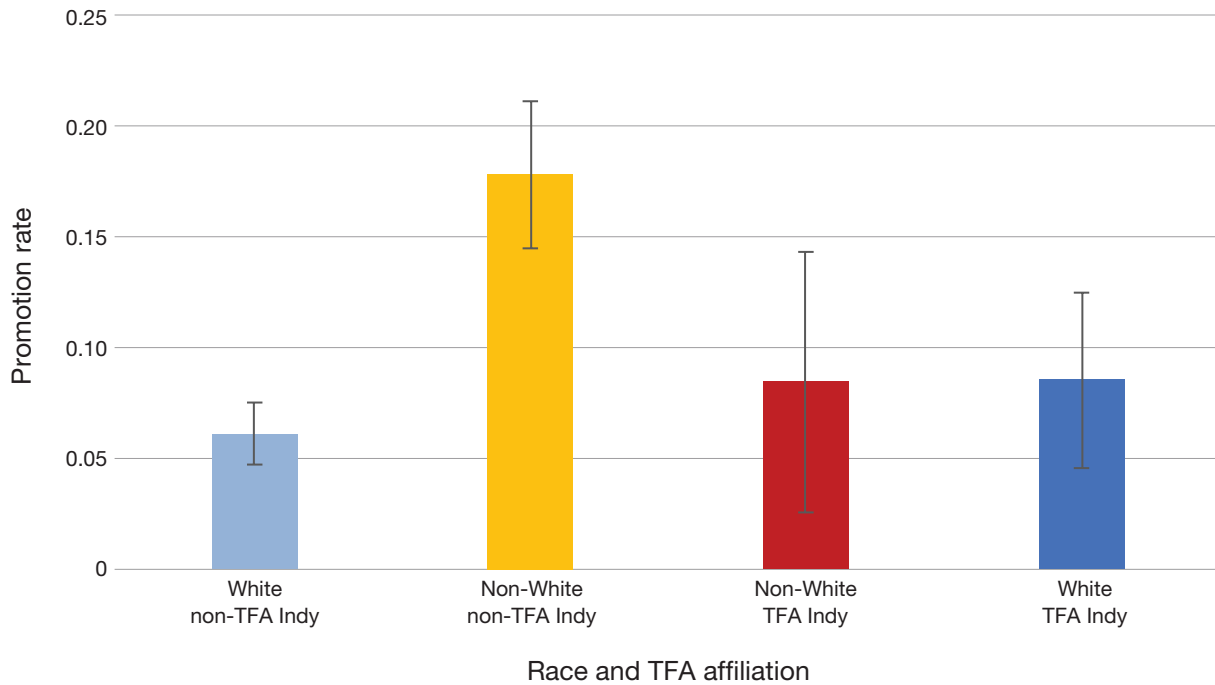
SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.
NOTE: The vertical lines represent 95 percent confidence intervals.

tically significant). However, when separately analyzing trends by racial group, we find that non-White non-TFA Indy teachers were significantly more likely to be promoted to leadership positions than other teacher groups. Promotion rates did not differ for TFA Indy teachers by race.

Retention and Promotion Using More-Specific Outcome Measures

In addition to estimating retention and promotion effects inclusive of outcomes statewide in Indiana, we examine additional more specific outcomes:

- how long teachers were retained in their initial placement school
- how long teachers were retained in any school in the Indianapolis area
- how many teachers were ever promoted to any leadership position in the Indianapolis area.

Our findings related to these additional questions tracked our findings for overall retention and promotion fairly closely; therefore, we do not separately discuss them in this report. However, we do include samples of these findings in Appendix B for reference. Specifically, Figure B.1 shows retention rates by TFA Indy and non-TFA teachers in their initial-placement school, while Figure B.2 shows retention rates by teachers in any school in the Indianapolis area. Table B.3 shows relative promotion rates for TFA Indy teachers, overall and by race, with promotion outcomes limited to leadership roles within the Indianapolis area.

Research Question 4: What Are the Characteristics of Indianapolis-Area Schools in Which TFA Indy Alumni Are School Leaders?

In total, we observe 22 schools that were either led or co-led by TFA Indy alumni (i.e., as principals or assistant principals) at any point during the period of our study. Although we lack a sufficient sample size to rigorously assess the impacts of these leaders on schoolwide outcomes, in this section we summarize the characteristics of schools in the years in which they are led by TFA Indy alumni, in comparison with all other schools in the Indianapolis area. Our results are shown in Table 3.7.

Overall, we find that TFA Indy leaders disproportionately led charter schools, which is consistent with our earlier observations of TFA Indy teachers being disproportionately placed in charter schools. Schools in which TFA Indy leaders work tend to have more Black students, and these schools' students tend to be somewhat more disadvantaged on other dimensions, including SES and average math test scores. Where we can estimate measures of schools' value-added in terms of student achievement (33 out of 59 total school-year observations of TFA Indy–led schools), the TFA Indy–led schools appear to perform similarly or perhaps slightly worse than other schools. However, we do not know whether any differences in school performance predate TFA Indy leaders entering those schools; all other things being equal, we would expect schools that more recently received new leaders to have slightly lower performance (Gates et al., 2014) due to disruptive effects associated with leader transitions.

Research Question 5: What Are the Relative Impacts of TFA Indy Teachers in Indianapolis on Student Outcomes, and to What Extent Do These Impacts Vary Across Subgroups of TFA Indy Teachers?

Next, we present our findings regarding the impacts of TFA Indy teachers on student achievement. When evaluating the impacts of TFA Indy teachers relative to comparison teachers, we first estimated the value-

TABLE 3.7

Characteristics of Indianapolis Schools Led or Co-Led by at Least One TFA Indy Leader, Relative to Schools with No TFA Indy Leaders

Characteristic	TFA Indy–Led Schools	Other Schools
Charter	59%	15%
White students	18%	34%
Black students	60%	37%
Hispanic students	16%	20%
Low-SES students	70%	66%
SPED students	9%	8%
English-learner students	11%	14%
School enrollment (N)	450	729
Average math scores	−0.403	−0.347
Average ELA scores	−0.331	−0.335
Average VAM in math	−0.025	−0.001
Average VAM in ELA	−0.003	−0.001
School-year observations (N)	59	2,294
Unique schools (N)	22	246

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: School average test scores are the average of student test scores standardized within the tested subject, grade level, and year statewide in Indiana. Low-SES students are eligible for free or reduced-price lunch. IDOE administrative records for STEM are not available for cohorts 2018–2021, but data from TFA indicate that TFA Indy teachers' rates of STEM assignments have remained relatively consistent over the period of our study. VAM = value-added model. The estimation methodology explained in Appendix A.

added impact of all teachers on their students in each year in which they taught. We considered a range of different grade levels and subjects, as shown in Table 3.8. Of these outcomes, student achievement in math and ELA in grades 4–8 were our primary outcomes of interest, since student learning could be more precisely estimated in these grades and subject areas by controlling for test scores in the immediately prior year. We describe our methodology for estimating value-added effects in greater detail in Appendix A.

For each outcome of interest, we separately considered two distinct subquestions related to teachers' value-added in terms of student achievement. First, we examined the extent to which TFA Indy teachers were more or less effective than other teachers *within their same school* by adjusting their value-added estimates relative to the mean value-added of all teachers in the same school and school year. Second, we examined the extent to which TFA Indy teachers were more or less effective than *other similarly situated teachers across the Indianapolis area* by estimating value-added by comparing TFA Indy and non-TFA teachers and controlling for the characteristics of their schools. Although this estimate is more subject to biases related to teacher-placement patterns than a comparison of teachers who are teaching in the same school, it can provide some insight into whether TFA Indy teachers were more or less effective than non-TFA teachers district-wide. Although we controlled for observable characteristics of the schools, this approach allowed for the possibility that TFA Indy teachers might have been placed in schools that are, or that subsequently become, either more or less effective overall than schools where non-TFA teachers work.

TABLE 3.8

Overview of VAM Analyses and Key Considerations

Sample	Designation	Key Analytic Considerations
Value-added to math outcomes in grades 4 through 8	Confirmatory analyses	These models control for student achievement as of the prior school year, as well as student background characteristics. Students may be linked to more than one math teacher in a specific school year.
Value-added to ELA outcomes in grades 4 through 8	Confirmatory analyses	These models control for student achievement as of the prior school year, as well as student background characteristics. Students may be linked to more than one ELA teacher in a specific school year.
Value added to high school outcomes in grade 10 math and English	Exploratory analyses	Models control for prior achievement measured in eighth grade, often two years or more prior to taking these high school exams.

TFA Indy Teachers' Value-Added to Student Achievement in Math and English in Grades 4–8

We examined TFA Indy teacher effectiveness separately for teachers still in their first two years of teaching and for more-experienced teachers who remained in teaching after their first two years. We hypothesized that, in their first two years, the sample of TFA Indy teachers may be substantively different from the sample that remains after two years. In Figures 3.5 and 3.6, we detail our results for math and ELA teachers, respectively. Models 1 and 2 correspond to our two subquestions of interest.

FIGURE 3.5

Value-Added Effects of Grades 4–8 TFA Indy Teachers in Math Relative to Comparison Teachers, by Experience Levels
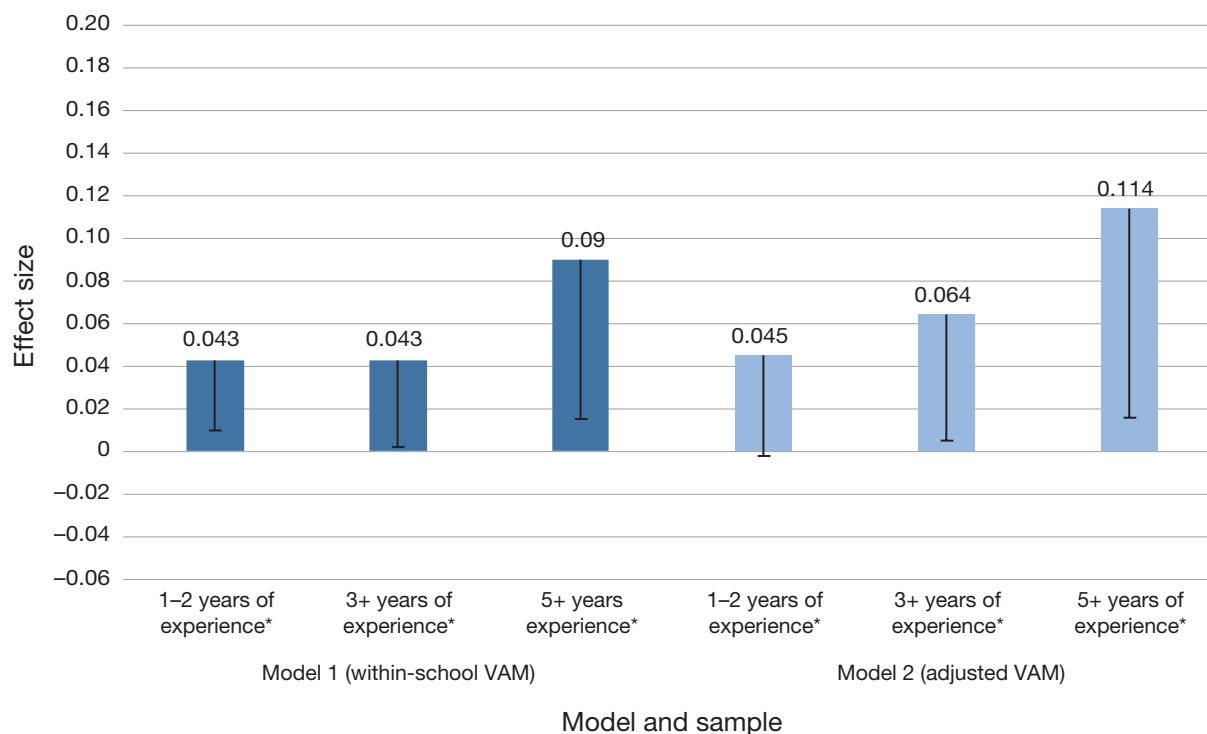
SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The vertical lines represent 95 percent confidence intervals. Sample sizes and model details are included in Table B.4.

FIGURE 3.6

Value-Added Effects of Grades 4–8 TFA Indy Teachers in ELA Relative to Comparison Teachers, by Experience Levels
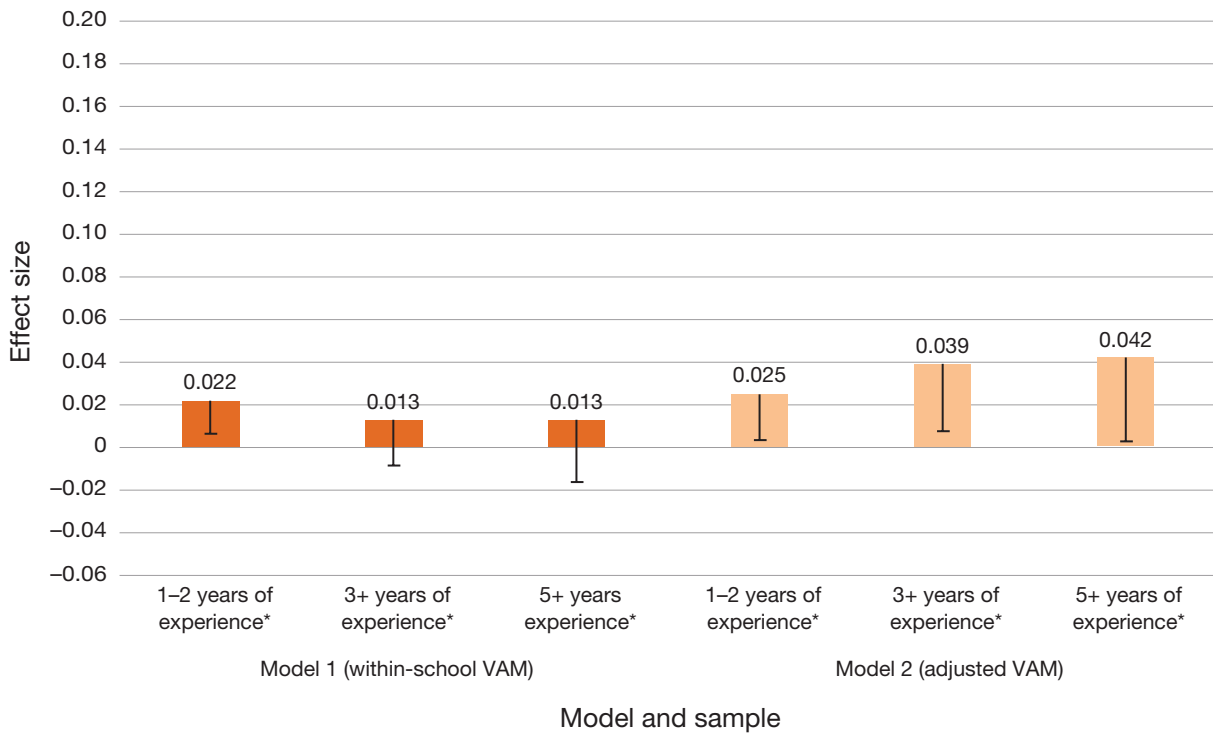
SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.
NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The vertical lines represent 95 percent confidence intervals. Sample sizes and model details are included in Table B.4.

We found evidence that, on average, TFA Indy teachers were somewhat more effective at improving math test scores than similarly experienced non-TFA teachers, with results that are fairly consistent whether their performance was measured relative to non-TFA teachers in the same school or to non-TFA teachers across the Indianapolis area. By way of reference, a 0.043 standard-deviation effect size corresponds to increasing an average student's performance from the 50th percentile to around the 52nd percentile in math achievement in a single school year as a consequence of receiving instruction in math from a TFA Indy teacher, relative to receiving instruction from a non-TFA teacher at the same school. The estimated TFA Indy advantage was smaller for ELA. TFA Indy effect sizes were larger for teachers with five or more years of experience, relative to effect estimates for teachers with one or two years of experience or three or more years of experience, which is consistent with some other recent research on TFA teacher effectiveness (Lovison, 2022).

Results related to TFA Indy teachers' impacts on high school test scores are presented in Tables B.5 and B.6 and include results for high school outcomes in grade 10 math and English. Across these additional exploratory outcome measures, we found some evidence of differential effects, with a small TFA Indy advantage apparent in some model specifications and samples with respect to high school achievement impacts but not in others. Overall, those additional results are inconclusive, reflecting perhaps our limited sample size and statistical power to detect effects in high school.

Subgroup Analyses of TFA Indy Teachers' Value-Added for Student Achievement

In additional exploratory analyses, we examined whether TFA Indy teachers' effectiveness varied across a variety of different subgroups of teachers in grades 4 through 8. In particular, we explored the following:

- whether TFA Indy teachers who worked in schools with five or more peers who were also TFA-affiliated (i.e., from any TFA chapter) teachers were more effective than TFA Indy teachers who work in schools with fewer TFA-affiliated peers[1]
- whether TFA Indy teachers who worked in schools where a TFA alum was in a leadership position as a school principal or school assistant principal were more effective than other TFA Indy teachers
- whether TFA Indy teachers who ultimately stayed in teaching longer were initially more effective during their first two years of teaching
- whether male or female TFA Indy teachers were differentially effective
- whether TFA Indy teachers of different races or ethnicities were differentially effective.

Some of these exploratory analyses reflect specific preexisting hypotheses regarding TFA Indy teachers' performance. In particular, TFA staff theorized—drawing on their on-the-ground experiences and corps members' reports—that TFA teachers might be more effective in contexts in which more peer TFA teachers were available to learn from and collaborate with, and they described intentionally encouraging concentrating teacher placements in schools with practices more compatible with TFA's approach to instruction.[2] They further hypothesized that TFA Indy teachers might be more effective working within organizations that were led by TFA alumni and that were thus more likely to have a TFA-aligned professional culture. Separately, our exploration of whether TFA Indy teachers who ultimately stayed in teaching were differentially effective as novices compared with those who ultimately left teaching is based on the hypothesis that more-effective TFA teachers might have been more motivated to stay in teaching longer.

We did not find that new TFA Indy teachers' effectiveness differed significantly as a function of whether they subsequently remained in teaching. Therefore, we do not include those results in this report (they are available upon request). The lack of difference in the performance of TFA Indy teachers who stayed or left does, however, suggest that veteran TFA Indy teachers' relatively higher performance is not a function of initial differences in their ability but instead reflects an increase in their performance over time. We also did not find any substantively important or statistically significant differential effects as a function of TFA Indy teachers' gender or race/ethnicity.

However, we did identify large differences in TFA Indy teachers' effectiveness associated with exposure to other TFA-affiliated peer teachers in a given school and year. Because exposure to more TFA-affiliated peer teachers and to TFA alumni leaders are correlated, we examined a variety of models to better distinguish between these two potential factors. Our key results from these exploratory analyses are detailed in Figure 3.7 for math and Figure 3.8 for ELA, with additional findings included in Tables B.7 and B.8.

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[1] Only 34 percent of schools with teachers in grades 4–8 in the Indianapolis area ever have more than five TFA corps members or alumni among their staff; however, around 42 percent TFA Indy teachers work at these schools. We chose the threshold of five TFA-affiliated teachers because it corresponded to a qualitatively meaningful concentration of TFA alumni in a school organization. Our results are not particularly sensitive to the specific cutoff threshold for number of peers that we use (e.g., more than four or more than six).

[2] We shared preliminary results with leaders from the TFA Indy and TFA national offices, and they offered their hypotheses regarding potential drivers of the results we had observed.

FIGURE 3.7

Value-Added Effects of Grades 4–8 TFA Indy Teachers in Math Relative to Comparison Teachers, by Exposure to TFA-Affiliated Peers
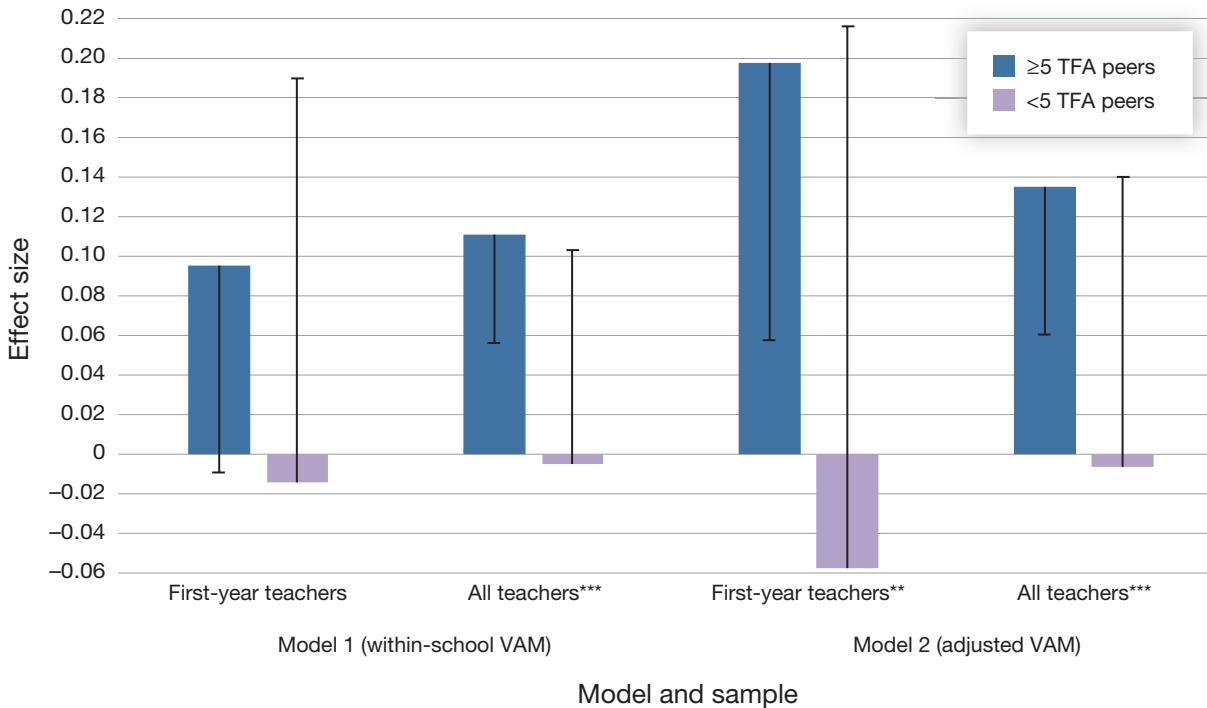
SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.
NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The vertical lines represent 95 percent confidence intervals. Sample sizes, model details, and additional results are included in Table B.7.

Overall, we found a consistent positive relationship between TFA Indy teachers' effectiveness and working in schools alongside five or more TFA-affiliated peers (across all grades and subject areas).[3] Exposure to these peers was associated with substantially higher teacher value-added performance in math and somewhat higher teacher value-added performance in ELA. The magnitude of the estimated effects corresponds to increasing the average student's math achievement from the 50th percentile to approximately the 55th percentile in math and the 52nd percentile in ELA in a single school year. In contrast, the roughly 50 percent of TFA Indy teachers who do not work in these contexts are not more effective than their non-TFA peers.

These findings are consistent regardless of whether we accounted for the potential separate effects of exposure to a TFA alumni school leader. Effects are large in either model specification but are directionally smaller when making within-school VAM comparisons than when comparing across Indianapolis schools. This makes sense given that other teachers, especially TFA-affiliated teachers, within these schools may also be benefiting from any peer effects. We do not identify a clear difference in results for first-year TFA Indy teachers versus more-experienced TFA Indy teachers—all TFA Indy teachers show evidence of higher performance when they have more TFA-affiliated peers.

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[3] The distribution of TFA teachers' years of experience is a little different in schools with more TFA teachers and in schools with fewer TFA teachers. Across all years, in schools with more TFA staff, 75 percent of TFA teachers are in their first three years of teaching, while in schools with fewer TFA staff, 65 percent of TFA teachers are in their first three years.

FIGURE 3.8

Value-Added Effects of Grades 4–8 TFA Indy Teachers in ELA Relative to Comparison Teachers, by Exposure to TFA-Affiliated Peers
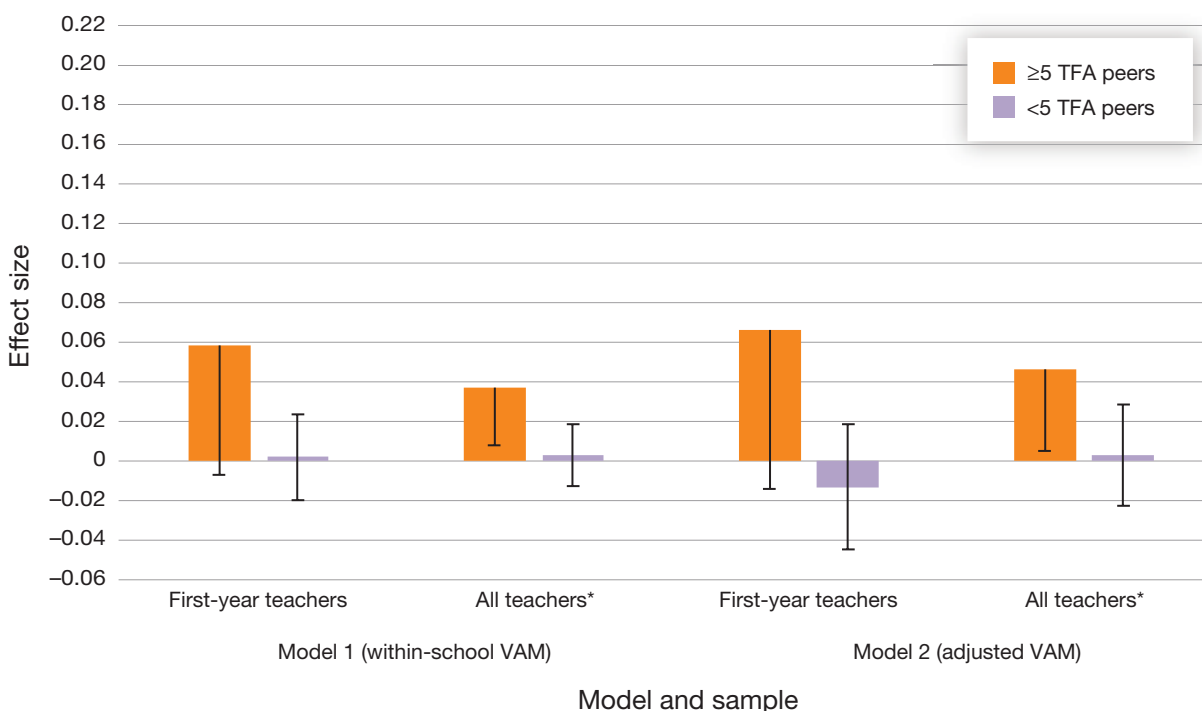

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.
NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The vertical lines represent 95 percent confidence intervals. Sample sizes, model details, and additional results are included in Table B.8.

Exposure to a TFA alumni leader was not significantly associated with TFA Indy teacher performance when controlling for the separate effects of exposure to TFA-affiliated peers. However, as shown in Table B.7 and B.8, there is some directional evidence suggesting that exposure to TFA alumni leaders might be beneficial for first-year teachers.

The greater effectiveness of TFA Indy teachers when working among peer alumni is in contrast to the measured effectiveness of non-TFA teachers working in the same schools. In supplemental analyses (not shown), we found that non-TFA teachers in these schools appeared significantly less effective than other teachers district-wide. These schools appear to have difficulty finding and retaining effective teachers. But TFA Indy teachers who are among their program peers appear to be uniquely well positioned to excel relative to other teachers at the same schools.

Research Question 6: What Are the Implications for Student Learning of TFA Indy Teachers' Differential Impacts on Student Learning and Differential Retention Rates, When Considered in Combination?

The results presented earlier in this report have demonstrated that TFA Indy teachers were more likely to leave teaching after their second year on the job, after they completed their two-year commitment to the program, but that they also tended to be more effective than other teachers teaching in similar contexts in

Indianapolis. To evaluate the combined effect of these two findings, we used a simple mathematical model to assess the implications for students' achievement. In this model, we estimated the cumulative effects on student achievement outcomes over a five-year period of the introduction of a hypothetical TFA Indy cohort of teachers (or of a single TFA teacher), relative to the alternative of having recruited the same number of non-TFA teachers.

The model used as inputs our adjusted retention coefficients for TFA Indy versus non-TFA teachers to populate differences in retention across the two cohorts (shown in Table 3.5). We estimate that hiring TFA Indy teachers (rather than non-TFA teachers) contributes to additional novice teachers needing to be hired in subsequent years, and these novice teachers decrease student achievement during their first several years on the job. We also used the results of our analyses of TFA Indy teachers' differential achievement impacts (detailed in Table B.4). According to our estimates, hiring TFA Indy teachers results in increased student achievement in each year in which those teachers are still present and teaching in the school, relative to the alternative of students being taught by non-TFA teachers. Each step of the model and the calculations we conducted are described in greater detail in Appendix A, and our results are shown in Table B.9.

Overall, we estimate that the effects on student achievement of hiring TFA Indy teachers are net positive over each of their first five years. On average across the first five years of teaching, each TFA Indy teacher initially hired yields a 0.030 standard-deviation net increase in student achievement per year, which is the equivalent of raising student achievement by about 1 percentile point in each of the five years.[4]

In the first year on the job, using our estimates of the average TFA Indy performance advantage across ELA and math, the average TFA Indy teacher has a 0.035 positive effect on the students. As of their second year, TFA Indy teachers stay in teaching at somewhat higher adjusted rates relative to non-TFA teachers, leading to benefits from hiring fewer replacement teachers, as well as from the instructional contributions of the remaining TFA Indy teachers. However, with fewer TFA Indy teachers remaining in absolute terms we calculate a 0.032 standard deviation net positive effect on average per originally hired teacher.

In their third year, the high rate of TFA Indy teacher departures contributes to a differential number of replacement hires who reduce student learning, but the TFA Indy teachers who have not yet departed again contribute positively, yielding a net positive effect of 0.022. In teachers' fourth year, the net effects of fewer remaining TFA Indy teachers and all the replacement teachers still in the system yield a still-positive 0.020. In the fifth year, net effects are 0.041; the bulk of the additional TFA Indy–induced replacement teachers are by now in their third year of teaching and have less of a negative impact on student achievement, while remaining veteran TFA Indy teachers have further increased their performance advantage relative to non-TFA teachers with the same level of experience. In future years, we would expect net effects to continue to be positive as replacement effects are no longer a factor and veteran TFA Indy teachers' differential performance advantage continues to enhance student learning.

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[4] As a specification check, we estimated the same numbers using unadjusted retention rates for TFA Indy versus non-TFA teachers. Our results were very similar, with a cumulative average TFA Indy advantage of 0.028 per year over five years in that specification.

Conclusions and Limitations

Conclusions

Our findings offer several insights into how TFA Indy participants have contributed to student outcomes in the Indianapolis area over more than a decade. First, our findings reinforce much of the prior research about the effects of TFA program chapters elsewhere in the United States. As expected, we find that TFA Indy teachers were much less likely to remain in teaching than other teachers after the two-year commitment ended. Also, in line with most prior research, we find that TFA Indy teachers were somewhat more effective at raising student achievement in math than other teachers, on average. This TFA Indy advantage may reflect the selectivity of the program, as well as the ways in which TFA Indy teachers are trained and supported over time.

Second, we expand on these results by modeling the implications of TFA Indy teachers' lower rates of retention and their differential effectiveness while they are teachers. This exercise indicates that any negative effects on student achievement due to greater teacher turnover induced by the TFA Indy program were smaller than the benefits of students' exposure to TFA Indy teachers. That said, it is important to keep in mind that there may be additional negative externalities associated with TFA Indy teacher turnover that we do not explore in this study, such as the potential for increased costs to schools associated with the need to more frequently hire replacement teachers or reduced human capital because fewer veteran teachers are available at a given time to mentor new teachers in high-needs schools (Heilig and Jez, 2014; Sorensen and Ladd, 2018; Synar, 2010). Higher rates of turnover can also hurt the performance of peer teachers who stay (Ronfeldt, Loeb, and Wyckoff, 2013). However, since TFA Indy teachers are a relatively small portion of teachers in their schools (even in schools with large numbers of TFA Indy teachers), their contributions to school-wide turnover rates and the scale of corresponding negative effects on peer teachers as estimated in prior research are likely to be small. Separately, former TFA Indy teachers may also contribute in other ways to educational outcomes in their subsequent careers outside K–12 schools.

Third, we identify meaningful heterogeneity in the career trajectories and impacts of TFA Indy teachers. Non-White TFA Indy teachers were more likely to stay in teaching, although they were less likely to be promoted to leadership roles than other non-White teachers. TFA Indy teachers who left teaching and still reside in Indianapolis were also more likely to be working in education-related jobs. At this time, the underlying drivers of this variation in White and non-White TFA Indy teachers' professional trajectories are unclear. It is possible that non-White TFA Indy teachers are more likely to be committed to supporting schools and communities that serve predominantly non-White students, or they may be more likely to have preexisting roots in the communities in which they are teaching. It is also possible that non-White TFA Indy teachers differ in their access to career opportunities both inside and outside K–12 teaching, potentially for different reasons. Additional data are needed to generate informed hypotheses regarding the underlying factors that may be at play. The implications are important both for the students who may benefit from more-sustained exposure to non-White TFA Indy teachers and for non-White alumni who may be experiencing different professional opportunities from their peers.

Finally, and most strikingly, TFA Indy teachers who work in schools alongside five or more TFA-affiliated peers were substantially more effective at improving student achievement, while those who did not work among as many TFA-affiliated peers did not outperform non-TFA comparison teachers. This finding reinforces hypotheses raised by TFA Indy staff at the outset of our research study about where corps members appear to be most successful. It has important implications for the conditions in which TFA teachers can best support student and school outcomes. If providing the right conditions for TFA corps members and alumni to maximize their effectiveness is related to their success, TFA and education leaders writ large would benefit from better understanding the nature of those conditions.

Staff at TFA Indy reported placing more teachers in some school environments in part because those schools use many of the same data-tracking, coaching, and lesson-planning systems that are emphasized in TFA's own teacher training and development work. In light of our results, staff at TFA Indy hypothesized that TFA Indy teachers at these schools may be encountering school leaders and coaches who share familiar mindsets and instructional strategies aligned with TFA teachers' training. TFA Indy teachers in these schools also tend to be part of larger incoming cohorts of novice teachers, which may present opportunities to learn from or be motivated by collaboration with like-minded colleagues sharing a common experience as novice teachers (very few TFA teachers in these schools are veterans of four years or more). Schools that hire more TFA teachers might also be more successful at recruiting the most-skilled TFA Indy corps members. Alternatively (or additionally), the presence of high concentrations of TFA-affiliated staff might have led to greater engagement with the broader TFA Indy alumni network, and that could be contributing to TFA Indy teachers' effectiveness.

Limitations

Our study has several important limitations. First, our comparisons of teacher retention, promotion, and effectiveness at enhancing student learning are nonexperimental. Any effects we observe could be biased by systematic unobserved differences in the types of students that TFA Indy teachers are assigned to in schools. Although we are reasonably confident that our analytic methods should yield a fair comparison between TFA Indy and non-TFA teachers—particularly when comparisons are made within the same school—we cannot be certain that the differential effectiveness of TFA Indy teachers that we observe is in fact a causal impact of the program-affiliated teachers. We also do not have clarity as to the underlying drivers of the apparent TFA-affiliated peer effects that we observe and whether they represent effects of teachers, school environments, the TFA organization and its social networks, or some other influencing factor not directly observable in our data.

Second, as is common in many studies using K–12 school administrative data, our data are not ideally suited to linking student learning outcomes to individual teachers. Although we can observe which teachers are assigned to teach which students and in which courses, many teachers teach overlapping groups of students (more so in ELA than in math). Moreover, we have limited information about which courses under the broad umbrella of math and ELA are best aligned in content with the types of learning assessed on student standardized tests or which teachers may be most responsible for curricular or instructional decisions among teams of teachers. For these reasons, it is difficult to accurately attribute student learning precisely to individual teachers; this likely attenuates our ability to precisely measure teachers' true contributions to student learning.

Our data on teacher experience levels are also somewhat imprecise. A comparison of TFA records with IDOE records suggests that as many as 10 percent of teachers that TFA indicates are new to teaching in a given year are not identified as new by IDOE (in these cases, experience records typically differ by a year or two). These discrepancies suggest that the IDOE data, which are aggregated across many school districts,

may in some cases be incorrect. We have done our best to triangulate accurate experience information for all teachers in our data using IDOE records available for both TFA and non-TFA teachers. Although we have no reason to expect that any inaccuracies will differentially influence TFA Indy or non-TFA teacher records, even random errors in the data fields could be attenuating our findings.

Finally, it is important to keep in mind that we conducted a large number of exploratory investigations for this study, which greatly increases the chances of identifying false-positive results. Fortunately, most of our findings tell a consistent story, and, in many cases, the effects we observe are highly statistically significant. Even so, some caution is warranted when interpreting our findings, particularly those with smaller effect sizes.

Additional Information About Methods and Data

Approach to Generating and Analyzing Value-Added Measures

The VAM used the following equation:

$$Y_{it} = Y_{i(t-1)} + YALT_{i(t-1)} + \sum_{j=1}^{J} \gamma_j X_i + \theta_t + \varepsilon_{it},$$

where Y_{it} is the achievement score for student i at time t in a given subject, $Y_{i(t-1)}$ is the prior-year achievement score for that student in the given subject, $YALT_{i(t-1)}$ is the prior-year achievement score for that student in the other subject, X_i represents student demographic characteristics, and θ_t is a teacher indicator (fixed effect). We estimated a VAM using the *felsdvregdm* command in Stata (Mihaly et al., 2010), restricting the sample to a given school year and to students who have test scores for the current and prior year in the subject of interest. We were able to estimate teacher value-added in this way for around 12 percent of TFA Indy teachers in math and around 13 percent in ELA. In contrast, districtwide, only around 3 percent of non-TFA teachers in each subject have value-added estimates, although this number is higher (around 6 percent) in charter schools, which is where most TFA teachers work. The higher proportion of TFA teachers with value-added estimates may be a function of the subject areas they tend to teach in.

After creating measures of teachers' value-added effectiveness, we compared TFA Indy and non-TFA value-added performance in two ways, as discussed in Chapter 3. First, we examined whether TFA Indy teachers were more effective than comparison teachers in the same school and year by de-meaning teacher value-added estimates within each school and year and then conducting regression analysis for the differential performance of TFA Indy teachers relative to non-TFA teachers. In these models, we controlled for teacher experience levels to adjust for any potential imbalance across these two groups on that important dimension. In all of our models comparing TFA and non-TFA teacher effectiveness, we clustered our standard errors at the level of the individual teachers in our sample, since some teachers' effects are observed in more than one year.

Second, we examined whether TFA Indy teachers were more effective than comparison teachers across Indianapolis, not just those in the same school. In this instance, we compared value-added measures that were not centered within school and year, but we included in our regression models controls for observable school characteristics, including schools' prior achievement levels, school demographics, and the percentages of students in each school who were eligible for free or reduced-price lunch, were English learners, or in SPED. We also controlled for whether schools were charter schools. We included these control variables to help account for the nonrandom sorting of teachers to schools that may vary in terms of their organizational effectiveness at improving student achievement in ways that might not be attributable to the contributions of individual teachers within those schools.

When estimating teacher effectiveness on high school test scores, we considered both math and English outcomes. From school years 2011–2012 through 2017–2018, our data came from end-of-course exams in algebra and grade 10 English and are linked to courses related to those subjects. From 2018–2019 through 2020–2021 our data came from the Indiana Statewide Testing for Educational Progress-Plus (ISTEP+) exams

in English and math, which cover a somewhat larger variety of topics and associated courses. In all cases, students could take these exams in any grade—9 through 12—although most took them in grade 10. As a consequence, our key variables controlling for students' prior achievement in grade 8 were usually from two years prior to students' taking the high school exams but could be from as much as four years prior. This reduced the precision of our estimates of individual teachers' contributions to student achievement. Separately, our sample size is quite small for high school teachers.

To ascribe student outcomes to the contributions of individual teachers, we relied on course data (which were by semester and could include repeated courses with the same or different teachers) and identified based on names the courses that are most likely related to achievement outcomes in math or ELA. Value-added for teachers of those courses was then computed, giving all teachers who taught a math or ELA-related course credit for any students they taught. Because IDOE does not specify which teachers may be primary versus assistant teachers, or which courses may be more or less aligned with state standards, this approach represents a relatively imprecise way of attributing student learning gains to teachers' contributions, which may attenuate our findings about the relative performance of different groups of teachers. However, we have no reason to expect that this method to be biased systematically against either TFA Indy or non-TFA teachers.

Finally, to calculate school value-added measures as a descriptive statistic (referenced in Table 3.8), we allocated students to schools that they attended most in a given year. We then used the same Stata code used in our teacher-level model, except with school fixed effects instead of teacher fixed effects. We use the standard errors to compute empirical Bayes "shrinkage" estimates of VAM scores.

Approach to Analyzing Teacher Retention and Promotion Outcomes

Our descriptive analysis of teacher retention used survival analysis techniques and presented the raw retention rates using Kaplan-Meier estimates of survival (Goel, Khanna, and Kishore, 2010). The survival curve shows the probability of staying in teaching up to a given length of time, regardless of when the teacher enters the sample. There were three assumptions used in this analysis: (1) We assumed that teachers who were censored (no longer observed) had the same retention prospects as those who continued to be followed, (2) we assumed that the retention probabilities were the same for teachers entering the sample early and late in the study, and (3) we assumed that them leaving the study happened at the time specified and could be measured by teachers' years of experience reported in their last year in the sample. Given the short time frame in which we observed teachers, these were reasonable assumptions for the descriptive analysis.

The regression analysis for retention and promotion outcomes uses the following linear probability model:

$$P\left(Y_{is} = 1\right) = \beta_0 + \beta_1 TFI_i + \sum_{j=1}^{J}\gamma_j X_i + \sum_{k=1}^{K}\delta_k Z_s + \varepsilon_{is},$$

where $P\left(Y_{is} = 1\right)$ is the probability that outcome Y is true for teacher i in school s, TFI is an indicator for whether teacher i is a TFI Indy teacher (and 0 for non-TFI Indy teachers), X_i represents teacher characteristics, Z_s represents school composition measures. The coefficient of interest is β_1, and it represents the differential probability that a TFI Indy teacher attains outcome Y_{is}. In alternative specifications, we include an interaction term between the TFI Indy indicator and the indicator for whether the teacher is non-White. The models are estimated using ordinary least squares with the *regress* command in Stata.

Method for Estimating the Combined Effects of TFA Indy Teacher Effectiveness and Teacher Retention on Student Outcomes

In Table B.9, we detail the inputs and the calculations that we used to estimate the net contributions of hiring a TFA Indy teacher relative to hiring a non-TFA teacher. First, we estimated the differential positive effects of TFA Indy teachers using a simple average of our estimates of these teachers' differential effects across ELA and math in each of their first five years on the job. We then estimated the differential negative effects of replacement teachers in their first five years on the job based on our estimates of the typical lower effectiveness of novice teachers (on average in the district across both TFA and non-TFA) who might replace TFA Indy teachers who leave teaching at higher rates.

Next, for ease of interpretation, we arbitrarily illustrated differential teacher retention impacts assuming a cohort of 100 incoming TFA Indy teachers relative to a cohort of 100 incoming non-TFA teachers. Using our adjusted retention rates for TFA Indy and non-TFA comparison teachers, we calculated how many additional (or fewer) turnover events per year were expected from the TFA Indy cohort relative to the non-TFA cohort, with corresponding differences in the number of replacement teachers hired in each year.

We then calculated the differential positive effects (in standard deviation terms) of the presence of all remaining TFA Indy teachers from the cohort in each year, as well as the differential effects of the replacement teachers enlisted in the same or prior years in this scenario. We summed these two effects to generate the net effect of the TFA Indy cohort in each year. By dividing these values by 100, we quantified net effects for a single TFA Indy teacher in each year. This provides us with the expected benefit in each year from the introduction of a single TFA Indy teacher in year 1 relative to the alternative of hiring a non-TFA teacher in the Indianapolis area. Summing these showed the cumulative net effects across multiple years of hiring a single TFA teacher.

Additional Results

TABLE B.1

Leadership Positions by Alumni Characteristics and Initial Placements, TFA Indy Alumni Residing in Indianapolis Area, 2008–2018

Position	Overall	Non-White	White	Female	Male	Charter	Noncharter
Midlevel leader	4% (13)	1% (1)	6% (12)	4% (8)	5% (5)	4% (10)	4% (3)
Midlevel systems leader	0% (1)	0% (0)	0% (1)	0% (0)	1% (1)	0% (0)	1% (1)
School leader	3% (8)	3% (3)	2% (5)	2% (4)	4% (4)	1% (3)	6% (5)
School systems leader	1% (3)	0% (0)	1% (3)	2% (3)	0% (0)	0% (0)	4% (3)
Teacher	48% (148)	55% (56)	45% (92)	4% (94)	50% (50)	50% (113)	41% (33)
Teacher and midlevel school leader	4% (13)	4% (4)	4% (9)	5% (9)	4% (4)	5% (12)	1% (1)
None	39% (121)	37% (37)	41% (84)	41% (81)	37% (37)	38% (86)	43% (35)
Total	100% (307)	100% (101)	100% (206)	100% (199)	100% (101)	100% (224)	100% (81)

SOURCE: Features data from TFA records provided to RAND as of school year 2021–2022.

NOTE: *n*s are in parentheses. Leadership positions are defined by TFA as follows. Midlevel school leader: serves in a school as a role reporting to the principal and typically part of the leadership team (e.g., assistant principal, dean). Midlevel systems leader: has at least one role working in a school system or charter management organization reporting to a member on the cabinet or leadership team of the district, charter management organization, or state educational agency. School leader: The alum has at least one role working in a school as the top person leading an individual school and has hiring/firing power over staff (e.g., principal or equivalent role). School systems leader: The alum has at least one role as the top person leading the district/network or as a member of the cabinet or leadership team (e.g., superintendent or equivalent).

TABLE B.2

Characteristics of First-Year Teachers and Their Initial Placement Schools, by Cohort Band, for Teachers in Charter Schools Only

	Cohort 2010–2013, TFA Indy	Cohort 2010–2013, Non-TFA	Cohort 2014–2017, TFA Indy	Cohort 2014–2017, Non-TFA	Cohort 2018–2020, TFA Indy	Cohort 2018–2020, Non-TFA
Teacher characteristic						
White	83%	75%	67%	73%	61%	61%
Black	12%	18%	19%	21%	19%	28%
Hispanic	3%	1%	8%	2%	9%	6%
Asian	1%	1%	1%	2%	4%	2%
Other race	1%	4%	4%	2%	6%	3%
Male	36%	30%	27%	25%	24%	28%
STEM teacher	9%	9%	12%	3%	0%	1%
SPED teacher	1%	1%	3%	1%	1%	1%
Characteristics of schools where teachers work						
Charter	100%	100%	100%	100%	100%	100%
Elementary	12%	3%	38%	19%	33%	31%
Middle school	12%	2%	13%	2%	7%	3%
High school	30%	22%	11%	12%	12%	16%
Elementary/middle	16%	35%	20%	31%	25%	24%
Middle/high	0%	0%	0%	1%	0%	2%
Elementary/middle/high	25%	31%	19%	31%	22%	19%
Other school type	6%	7%	0%	5%	1%	6%
White students	16%	29%	5%	21%	9%	16%
Black students	72%	51%	75%	54%	66%	53%
Hispanic students	7%	12%	15%	18%	19%	25%
Low-SES students	74%	71%	81%	75%	84%	75%
SPED students	0%	0%	5%	4%	14%	15%
English-learner students	3%	7%	10%	12%	13%	15%
School enrollment (*N*)	465	680	413	731	496	594
School average math scores	−0.35	−0.42	−0.62	−0.42	−0.69	−0.66
School average ELA scores	−0.34	−0.36	−0.50	−0.35	−0.61	−0.58
Teachers (*N*)	77	267	95	390	134	572

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: School average test scores are the average of student test scores standardized within the tested subject, grade level, and year statewide in Indiana. Low-SES students are eligible for free or reduced-price lunch. IDOE administrative records for STEM are not available for teachers placed between 2018 and 2021, but data from TFA indicates that TFA Indy teachers' rates of STEM assignments have remained relatively consistent over the period of our study. Elementary grades span K–5, middle grades span 6–8, and high school grades span 9–12. *Cohorts* refer to placement as of the fall of each school year.

FIGURE B.1

TFA Indy and Non-TFA Retention Rates in Teachers' Initial-Placement School, by Year
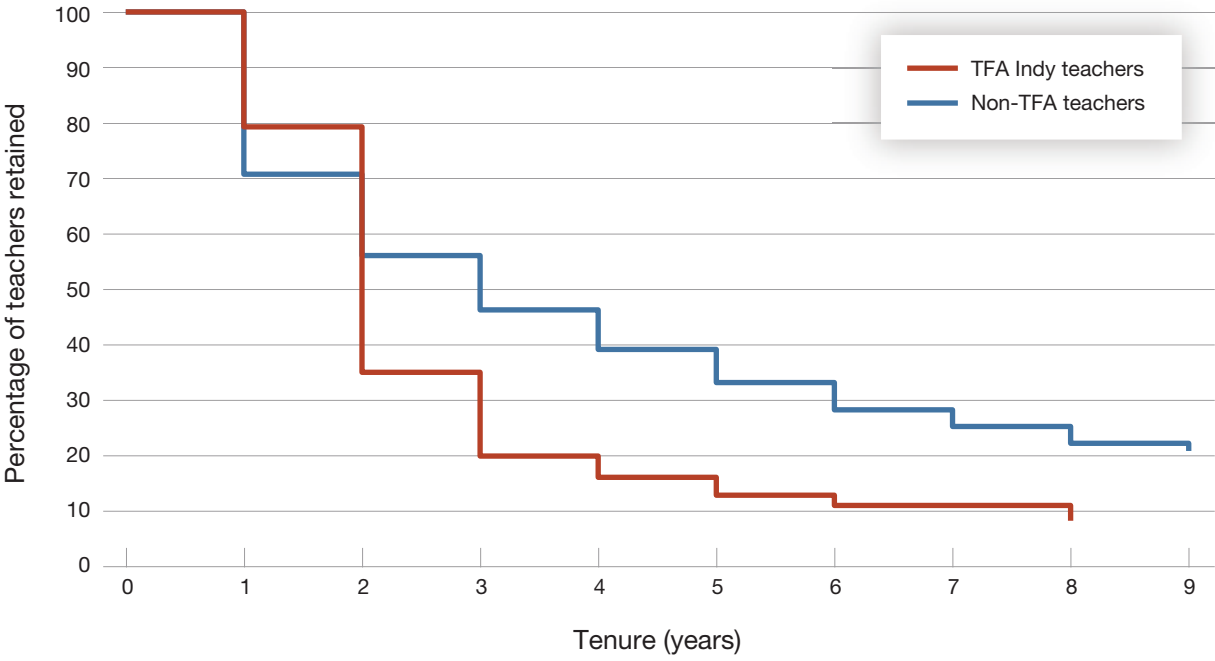
SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

FIGURE B.2

TFA Indy and Non-TFA Retention Rates Within Any Indianapolis-Area School, by Year
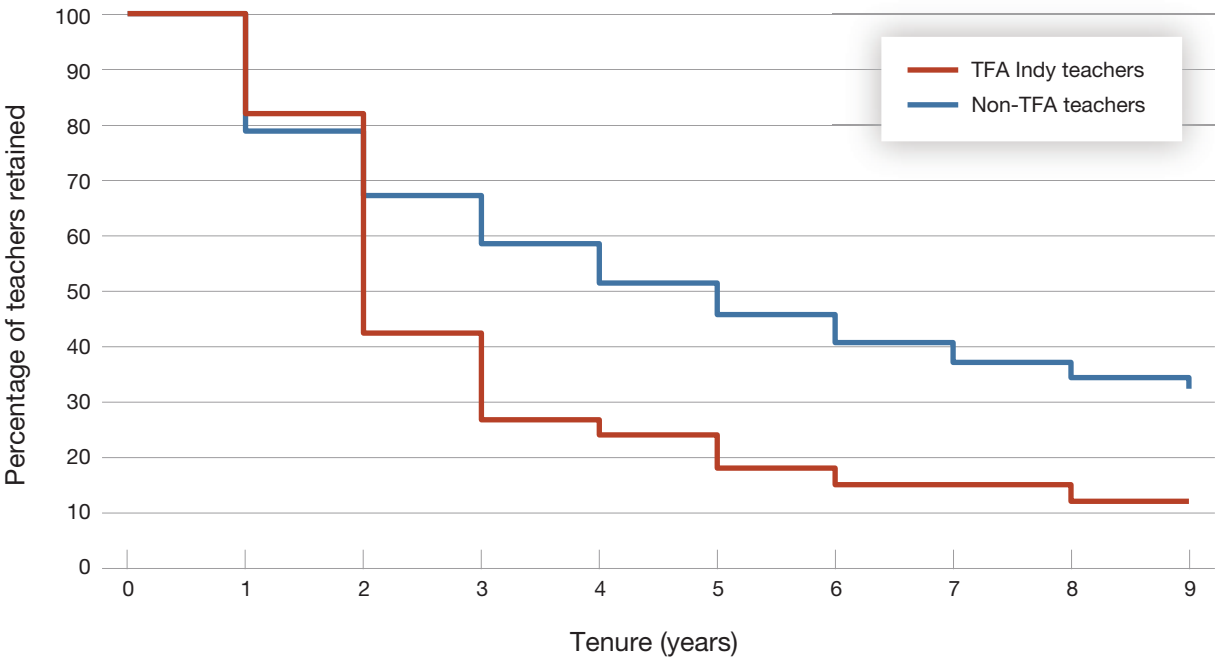
SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

TABLE B.3

Relative Rates of Promotion Within the Indianapolis Area for TFA Indy Teachers, Overall and by Race

	Ever Promoted	
	Model 1	**Model 2**
TFA Indy overall	−0.006 (0.020)	0.014 (0.014)
TFA Indy, non-White		−0.096*** (0.030)
Observations (N)	2,394	2,394

SOURCE: Features data from TFA records provided to RAND as of school year 2021–2022.

NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Model 1 shows differential promotion for TFA Indy overall, while model 2 distinguishes between White and non-White TFA Indy teachers. Models include controls for teacher demographics and experience levels, for their initial-placement job roles, and for the characteristics of their initial-placement schools including student demographics, poverty status, achievement levels, SPED and English-learner status, and whether the school was a charter school.

TABLE B.4

Value-Added Effects of Grades 4–8 TFA Indy Teachers Relative to Comparison Teachers, by Experience Levels

Sample	Model 1 (within-school VAM)			Model 2 (adjusted VAM)		
	Coefficient	**SE**	**N (TFA)**	**Coefficient**	**SE**	**N (TFA)**
Math						
1–2 years of experience	0.043*	(0.017)	1,858 (124)	0.045	(0.024)	1,858 (124)
3+ years of experience	0.043*	(0.021)	12,509 (104)	0.064*	(0.030)	12,509 (116)
5+ years of experience	0.090*	(0.038)	10,951 (48)	0.114*	(0.050)	10,951 (48)
ELA						
1–2 years of experience	0.022*	(0.008)	2,111 (126)	0.025*	(0.011)	2,111 (126)
3+ years of experience	0.013	(0.011)	14,312 (103)	0.039*	(0.016)	14,312 (103)
5+ years of experience	0.013	(0.015)	12,512 (40)	0.047*	(0.020)	12,512 (40)

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. SE = standard error. All models include controls for individual teacher experience levels. Model 2 includes controls for schools' average characteristics, including average prior achievement, student demographics, and whether the school is a charter school. The teacher observations are shown, overall and separately, for TFA Indy teachers. SEs are clustered at the teacher level.

TABLE B.5

Value-Added Effects of High School TFA Indy Teachers in Math Relative to Comparison Teachers, by Experience Levels

Sample	Model 1 (within-school VAM)				Model 2 (adjusted VAM)			
	Coefficient	SE	*p*-Value	*N* (TFA)	Coefficient	SE	*p*-Value	*N* (TFA)
1–2 years of experience	0.064	0.034	0.063	186 (16)	0.165	0.090	0.068	186 (16)
3+ years of experience	−0.013	0.037	0.717	1,391 (12)	0.126	0.079	0.113	1,387 (12)
5+ years of experience	0.029	0.077	0.710	1,217 (3)	0.045	0.106	0.670	1,213 (3)

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All models include controls for individual teacher experience levels. Model 2 includes controls for schools' average characteristics, including average prior achievement, student demographics, and whether the school is a charter school. The teacher observations are shown, overall and separately, for TFA Indy teachers. SEs are clustered at the teacher level.

TABLE B.6

Value-Added Effects of High School TFA Indy Teachers in ELA Relative to Comparison Teachers, by Experience Levels

Sample	Model 1 (within-school VAM)				Model 2 (adjusted VAM)			
	Coefficient	SE	*p*-Value	*N* (TFA)	Coefficient	SE	*p*-Value	*N* (TFA)
1–2 years of experience	0.014	0.016	0.372	172 (5)	0.071	0.048	0.143	172 (5)
3+ years of experience	−0.012	0.013	0.356	1,406 (17)	0.040	0.033	0.233	1,406 (17)
5+ years of experience	0.003	0.013	0.797	1,190 (6)	0.053	0.033	0.110	1,190 (6)

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All models include controls for individual teacher experience levels. Model 2 includes controls for schools' average characteristics, including average prior achievement, student demographics, and whether the school is a charter school. The teacher observations are shown, overall and separately, for TFA Indy teachers. SEs are clustered at the teacher level.

TABLE B.7

Value-Added Effects of Grades 4–8 TFA Indy Teachers in Math Relative to Comparison Teachers, by Experience Levels and Exposure to TFA-Affiliated Peers

	Model 1 (within-school VAM)				Model 2 (adjusted VAM)			
	All TFA Indy Teachers		First-Year TFA Indy Teachers		All TFA Indy Teachers		First-Year TFA Indy Teachers	
Model	(A) Peers or Leaders	(B) Peers	(C) Peers or Leaders	(D) Peers	(E) Peers or Leaders	(F) Peers	(G) Peers or Leaders	(H) Peers
>5 TFA peers	0.097*** (0.027)	0.111*** (0.028)	0.067 (0.045)	0.095 (0.053)	0.129** (0.040)	0.135*** (0.038)	0.159* (0.070)	0.197** (0.071)
TFA-led	0.034 (0.026)		0.066 (0.062)		0.014 (0.038)		0.118 (0.092)	
Neither >5 peers nor TFA-led	−0.007 (0.0156		−0.019 (0.032)		−0.007 (0.020)		-0.071 (0.039)	
≤5 TFA peers		−0.005 (0.015)		−0.014 (0.028)		−0.006 (0.019)		−0.057 (0.037)
N (TFA)	13,073 (219)	13,073 (219)	920 (58)	920 (58)	13,073 (219)	13,073 (219)	920 (58)	920 (58)

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Models that include all TFA teachers include controls for teacher experience levels. Model 2 includes controls for schools' average characteristics, including average prior achievement, student demographics, and whether the school is a charter school. The teacher observations are shown, overall and separately, for TFA Indy teachers. SEs are clustered at the teacher level.

TABLE B.8

Value-Added Effects of Grades 4–8 TFA Indy Teachers in ELA Relative to Comparison Teachers, by Experience Levels and Exposure to TFA-Affiliated Peers

	Model 1 (within-school VAM)				Model 2 (adjusted VAM)			
	All TFA Indy Teachers		First-Year TFA Indy Teachers		All TFA Indy Teachers		First-Year TFA Indy Teachers	
Model	(A) Peers or Leaders	(B) Peers	(C) Peers or Leaders	(D) Peers	(E) Peers or Leaders	(F) Peers	(G) Peers or Leaders	(H) Peers
>5 TFA peers	0.035** (0.013)	0.037* (0.015)	0.043 (0.034)	0.058 (0.033)	0.041 (0.022)	0.046* (0.021)	0.044 (0.041)	0.066 (0.041)
TFA-led	0.006 (0.016)		0.042 (0.038)		0.017 (0.022)		0.062 (0.046)	
Neither >5 peers nor TFA-led	0.003 (0.009)		−0.002 (0.017)		0.002 (0.013)		−0.019 (0.021)	
≤5 TFA peers		0.003 (0.008)		0.002 (0.011)		0.003 (0.013)		−0.013 (0.016)
N (TFA)	13,073 (213)	13,073 (213)	1,031 (60)	1,031 (60)	13,073 (213)	13,073 (213)	1,031 (60)	1,031 (60)

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Models that include all TFA teachers include controls for teacher experience levels. Model 2 includes controls for schools' average characteristics, including average prior achievement, student demographics, and whether the school is a charter school. The teacher observations are shown, overall and separately, for TFA Indy teachers. SEs are clustered at the teacher level.

TABLE B.9

Implications for Student Achievement of Hiring a TFA Indy Teacher or Cohort of Teachers, Relative to Hiring Non-TFA Teacher(s), over a Five-Year Period

Input and Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
Estimated average TFA Indy teacher effects across subjects (average of ELA and math TFA advantage in grades 4–8)	0.035	0.035	0.052	0.052	0.081
Estimated average replacement teacher effects across subjects, in each of their first five years on the job	−0.058	−0.033	−0.017	0	0
Non-TFA teachers in cohort over time (year-to-year change) (N)[a]	100	81 (−19)	73 (−8)	67 (−6)	61 (−6)
TFA Indy teachers in cohort over time (year-to-year change) (N)	100	87 (−13)	49 (−38)	33 (−16)	27 (−6)
Turnover events in each year that occur due to hiring TFA Indy teachers rather than non-TFA teachers[b]	0	−6	30	10	0
1st-year replacement teachers due to TFA cohort (N)	0	−6	30	10	0
2nd-year replacement teachers due to TFA cohort (N)[c]	0	0	−6	30	10
3rd-year replacement teachers due to TFA cohort (N)[c]	0	0	0	−6	30
Effects of TFA total cohort performance advantage (sum of TFA teacher effects)	3.500	2.835	3.760	3.451	4.911
Effects of additional/fewer replacement teachers due to TFA cohort	0	0.348	−1.542	−1.468	−0.840
Estimated net effect in each year of the original TFA cohort	3.500	3.183	2.218	1.983	4.071
Estimated effect in each year per each individual TFA Indy teacher originally hired	0.035	0.032	0.022	0.020	0.041
Estimated cumulative net effect per individual TFA Indy teacher originally hired	0.035	0.067	0.089	0.109	0.150

SOURCES: Features data from TFA and IDOE records provided to RAND as of school year 2021–2022.

[a] To reflect our regression-adjusted retention estimates, we decreased the remaining numbers of the non-TFA cohort while retaining the unadjusted TFA Indy cohort attrition pattern observed in our raw data. In this way we compare non-TFA teachers who are similarly situated to the TFA Indy teachers and who would have been retained at lower rates than typical non-TFA teachers.

[b] The difference between TFA Indy and non-TFA retention rates determines how many turnovers and thus how many additional replacement teachers are present. Differential turnover effects contribute to the adverse effects of TFA-induced replacement teachers over time. That includes their lower performance in their first year on the job and their lower performance in subsequent years.

[c] We make the simplifying assumption that all replacement teachers remain in teaching for at least three years.

Abbreviations

ELA   English language arts
IDOE   Indianapolis Department of Education
SE   standard error
SES   socioeconomic status
SPED   special education
STEM   science, technology, engineering, and mathematics
TFA   Teach For America
TFA Indy   Teach For America Indianapolis
VAM   value-added model

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