

---

# The Effectiveness of Secondary Math Teachers from Teach For America and the Teaching Fellows Programs

APPAM, November 8, 2013

Melissa Clark • Hanley Chiang • Sheena McConnell • Tim Silva  
Kathy Sonnenfeld • Anastasia Erbe • Mike Puma



**MATHEMATICA**  
Policy Research



# Overview of Presentation

---

- **Background**
- **Study design and data collection**
- **Characteristics of study teachers**
- **Effectiveness of TFA teachers**
- **Effectiveness of Teaching Fellows**

---

# Background



# Teacher Shortages in High-Poverty Schools

---

- **Alternative routes to teacher certification**
  - Seek to reduce barriers to entering the profession
  - Typically require less coursework than traditional certification programs, less or no student teaching
  - Vast majority no more selective than typical traditional certification program
  
- **TFA and Teaching Fellows Programs are highly selective alternative routes**
  - Admit less than 15 percent of all applicants
  - By far the largest highly selective alternative routes

# Overview of TFA and Teaching Fellows Programs

---

- **Follow similar models**
  - Recruit and select high-achieving individuals
  - Provide 5 to 7 weeks of training in summer
  - Place in high-poverty schools, hard-to-staff subjects
  - Provide ongoing training and support
- **Programs differ in some ways**
  - TFA recruits mainly recent college graduates; Teaching Fellows programs recruit mainly professionals
  - TFA requires two-year commitment; Teaching Fellows programs expect long-term commitment

# Common Criticisms of TFA and Teaching Fellows

---

- **TFA and Teaching Fellows teachers are under-prepared for teaching relative to teachers from traditional routes**
- **Because TFA requires only a two-year commitment, TFA teachers often leave the profession before gaining valuable experience**



# Research Questions

---

**Compared with other teachers teaching the same math courses in the same schools...**

- 1. How effective are secondary math teachers from TFA?**
- 2. How effective are secondary math teachers from the Teaching Fellows programs?**



# Rigorous Random Assignment Design

---

- **Randomly assigned students to teachers within same school and math course**
  - Class taught by TFA or Teaching Fellows teacher
  - Class taught by “comparison teacher” who entered teaching via either alternative or traditional route
  - **No limits on teacher experience**
- **Compare student math scores at end of year to estimate teacher effectiveness**
  - **Can’t compare effectiveness of TFA and Teaching Fellows teachers**



# Large Samples, Comprehensive Data Collection

---

- **TFA analysis sample**
  - 4,573 students, 136 teachers, 45 schools, 11 districts, 8 states
  
- **Teaching Fellows analysis sample**
  - 4,116 students, 153 teachers, 44 schools, 9 districts, 8 states
  
- **Data collection**
  - **Student math achievement**
    - State tests for middle school students
    - Study-administered, subject-specific tests for high school students (algebra I, II, geometry)
  - **Teacher characteristics**
    - Survey of background and preparation
    - Praxis II math scores to measure math content knowledge

---

# Characteristics of Study Teachers

# TFA and Teaching Fellows Programs Attract Different Types of Teachers into the Profession

---

- **Relative to comparison teachers, TFA and Teaching Fellows teachers:**
  - Younger and more likely to be white
  - More likely to have attended a selective college
  - Have less teaching experience
  - Less likely to have a math degree, but scored higher on Praxis II math assessment
  - More likely to have taken coursework during study year (TFA only)

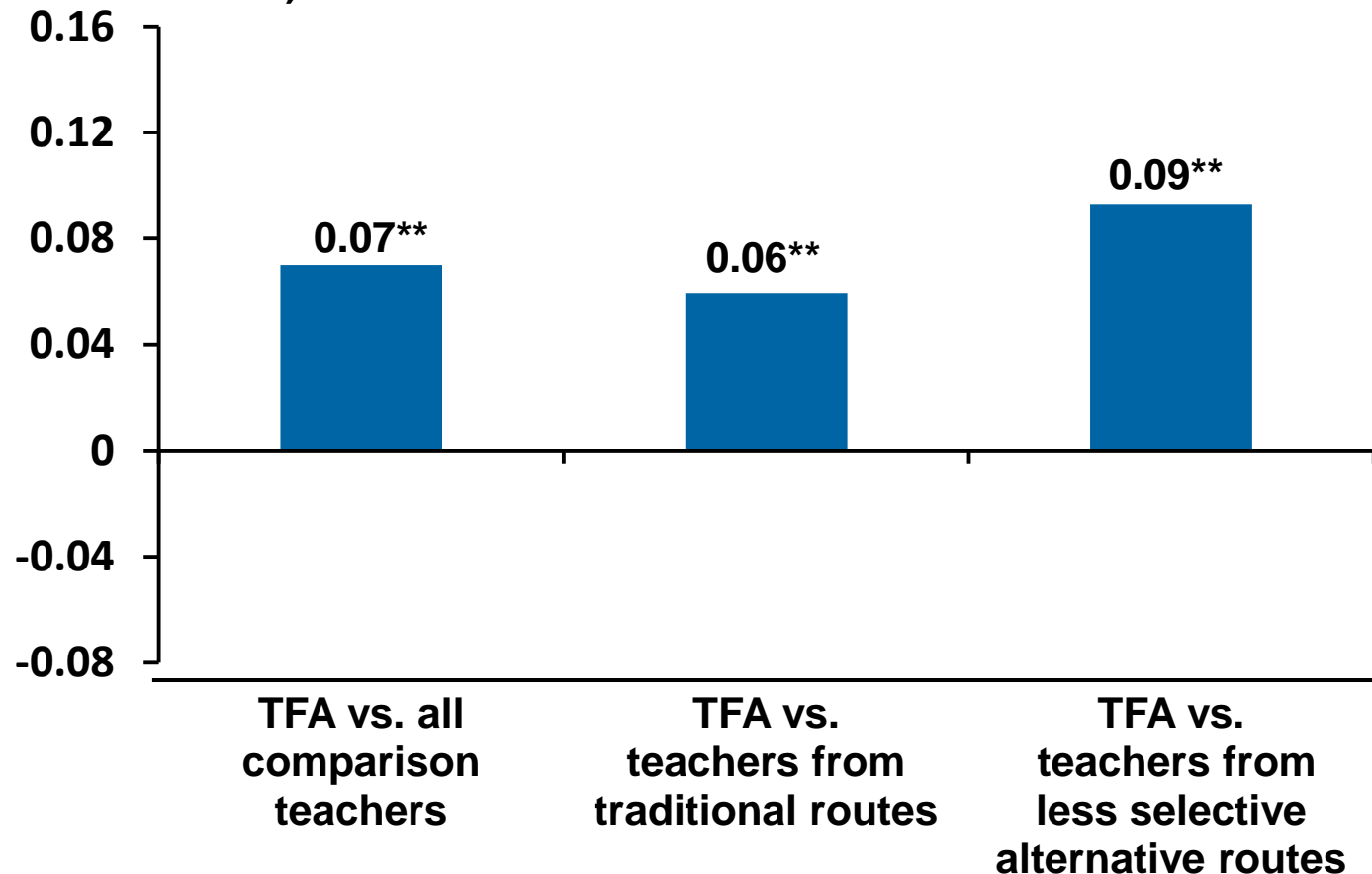
---

# Effectiveness of TFA Teachers



# TFA Teachers More Effective Than Comparison Teachers

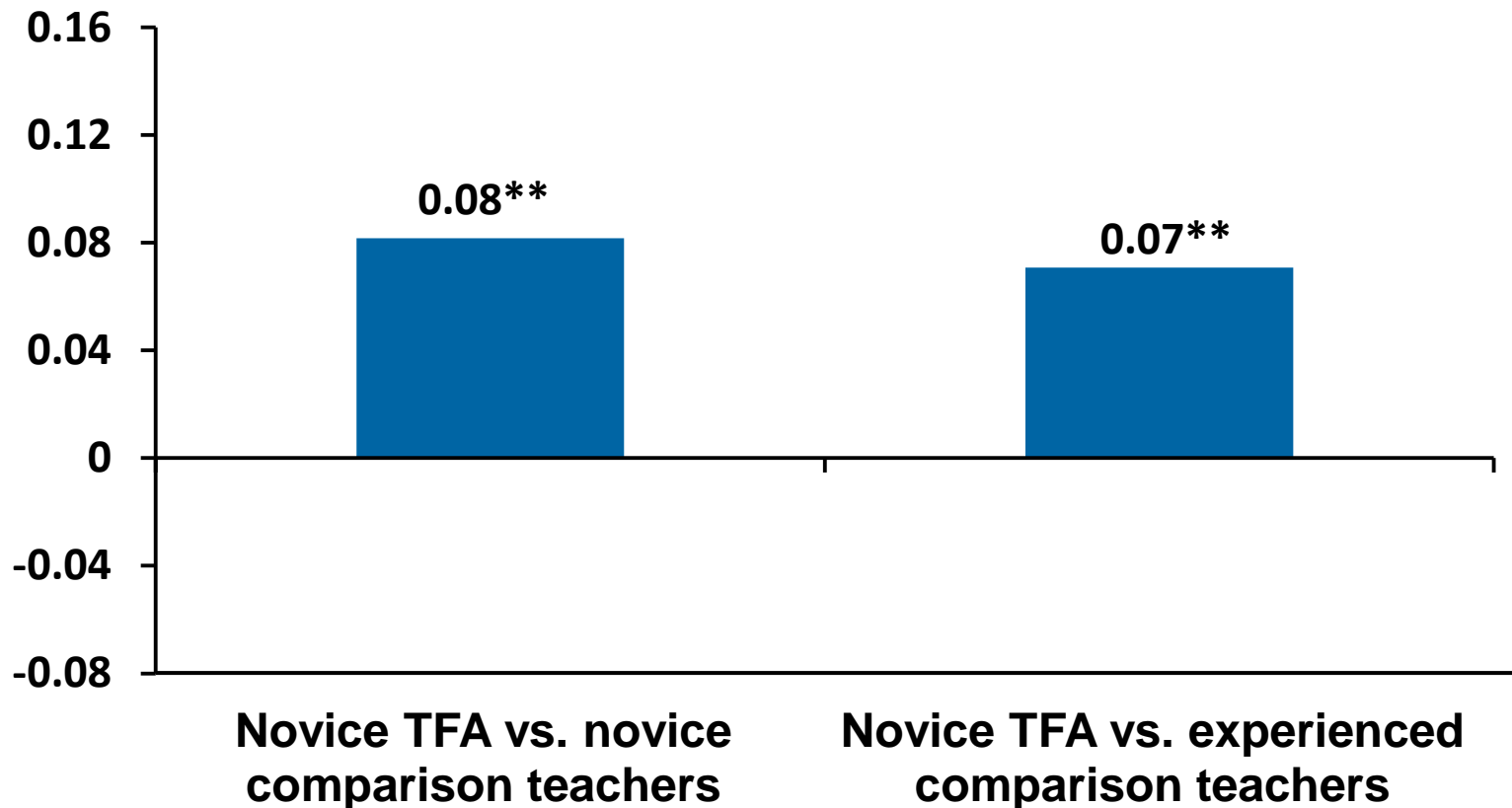
Difference in effectiveness  
(in standard deviations  
of test scores)



Difference is statistically significant at 5% (\*) or 1% (\*\*) level.

# Novice TFA Teachers More Effective Than Both Novice and Experienced Comparison Teachers

Difference in effectiveness  
(in standard deviations  
of test scores)



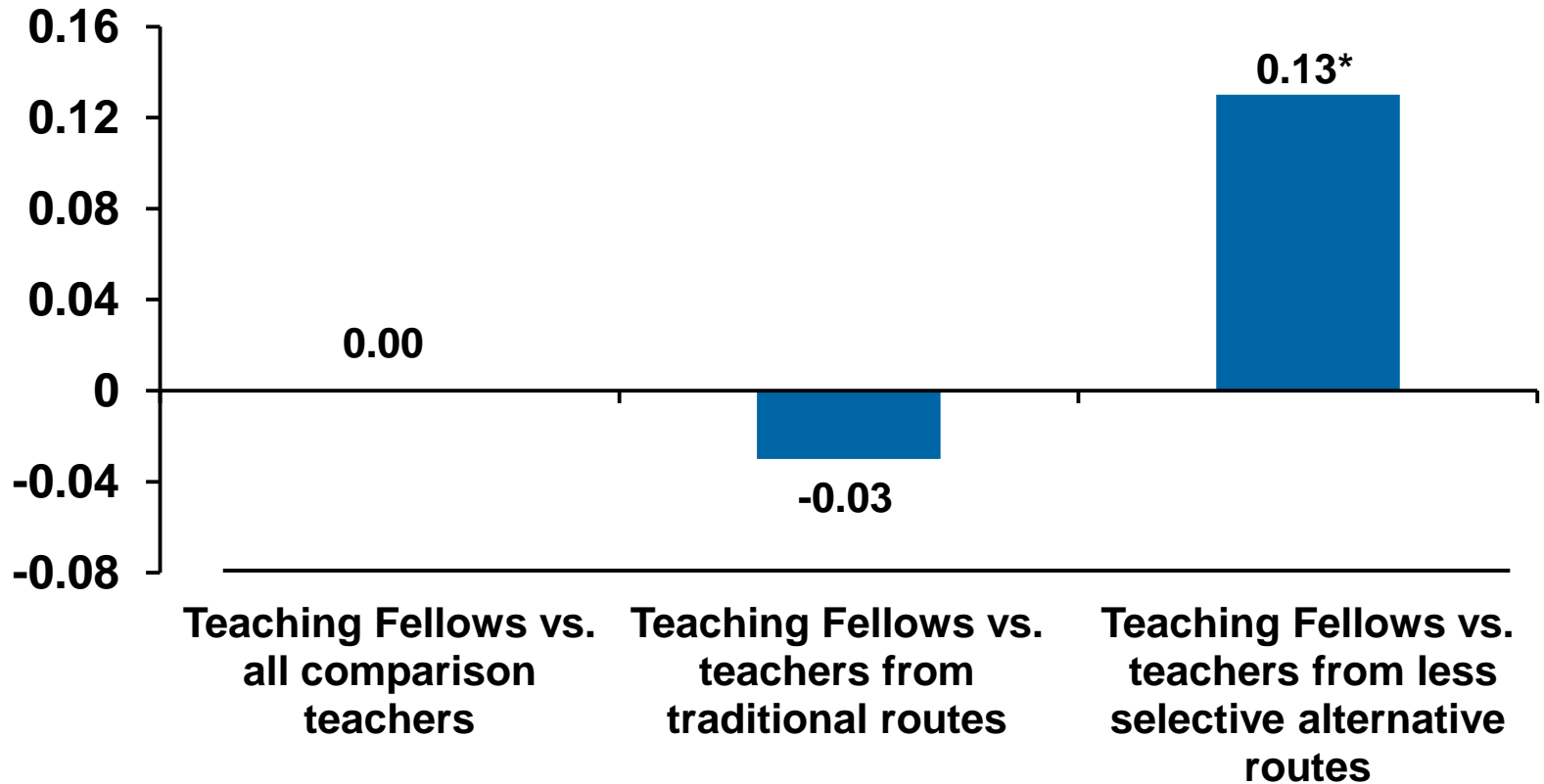
Difference is statistically significant at 5% (\*) or 1% (\*\*) level.

---

# Effectiveness of Teaching Fellows

# Teaching Fellows Just as Effective as Comparison Teachers, and in Some Cases More Effective

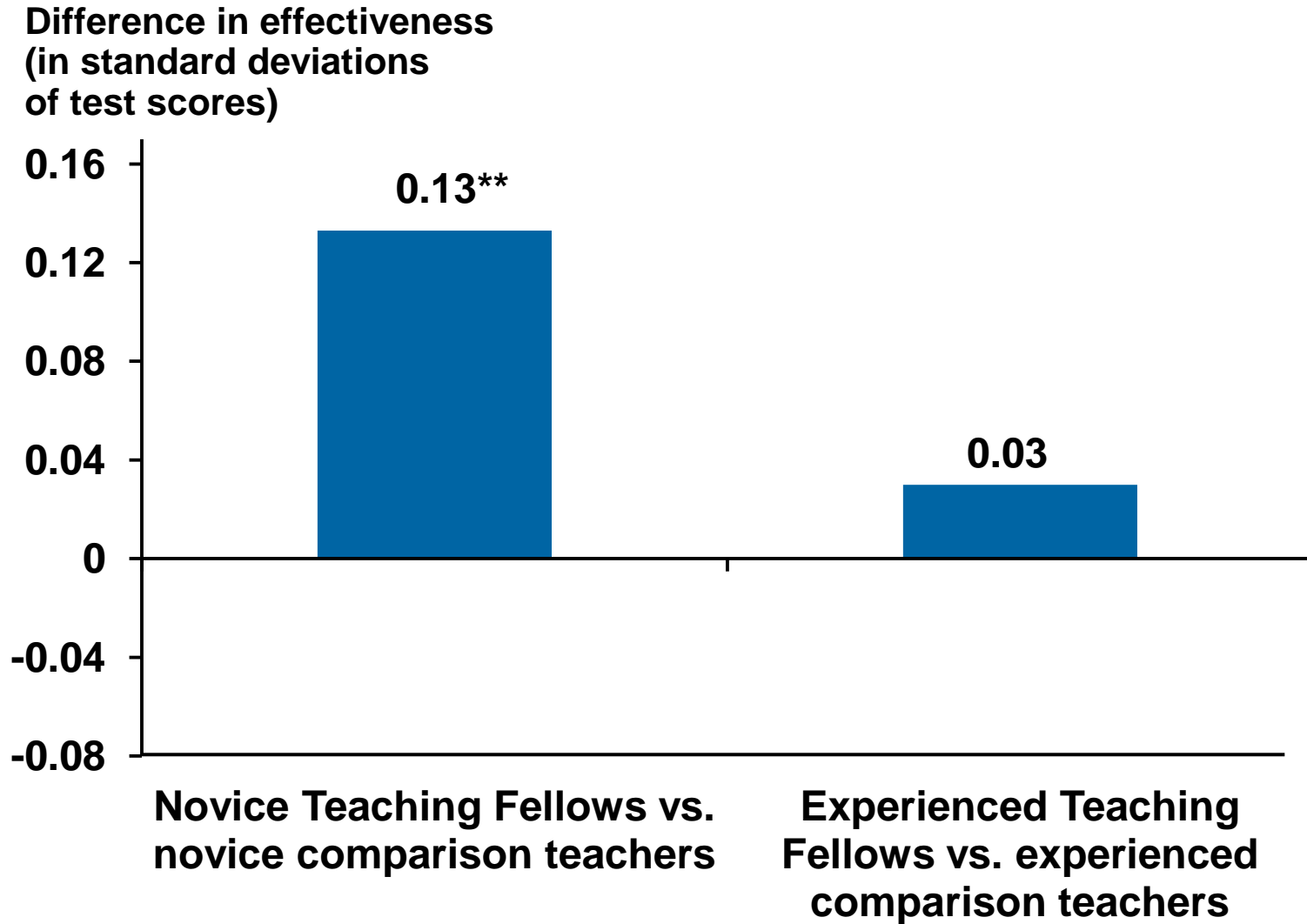
Difference in effectiveness  
(in standard deviations  
of test scores)



Difference is statistically significant at 5% (\*) or 1% (\*\*) level.



# Novice Teaching Fellows More Effective Than Novice Comparison Teachers



Difference is statistically significant at 5% (\*) or 1% (\*\*) level.

# Summary of Findings

---

- **TFA and Teaching Fellows programs can increase the supply of effective secondary math teachers in high-poverty schools**
  - **TFA teachers outperformed comparison teachers even when the comparison teachers were more experienced**
  - **Teaching Fellows were at least as effective as comparison teachers, and in some circumstances more effective**

# For More Information

---

- See the study report on the IES website:  
<http://ies.ed.gov/ncee/pubs/20134015/>
- Contact Melissa Clark:  
[mclark@mathematica-mpr.com](mailto:mclark@mathematica-mpr.com)

---

# Additional Slides

# Demographics and Experience

	TFA Sample		Teaching Fellows Sample	
	TFA Teachers	Comparison Teachers	Teaching Fellows	Comparison Teachers
Average Age	25	38**	33	41**
% Female	61	79*	54	57
% White	89	30**	71	43**
Years of Work Experience				
Non-teaching	0	3**	5	3
Teaching	2	10**	4	13**

Difference between TFA and comparison teachers or Teaching Fellows and comparison teachers statistically significant at the 1% (\*\*) or 5% (\*) level, two-tailed test.

# Education and Content Knowledge

	TFA Sample		Teaching Fellows Sample	
	TFA Teachers	Comparison Teachers	Teaching Fellows	Comparison Teachers
% from Selective College	81	23**	72	34**
% with Math Major	8	26*	25	43*
% with Graduate Degree	41	70**	83	80
# College-Level Math Courses	5	8**	10	11
Average Praxis Score				
Middle School Math	180	158**	187	170**
High School Math	162	140*	158	139**

Difference between TFA and comparison teachers or Teaching Fellows and comparison teachers statistically significant at the 1% (\*\*) or 5% (\*) level, two-tailed test.

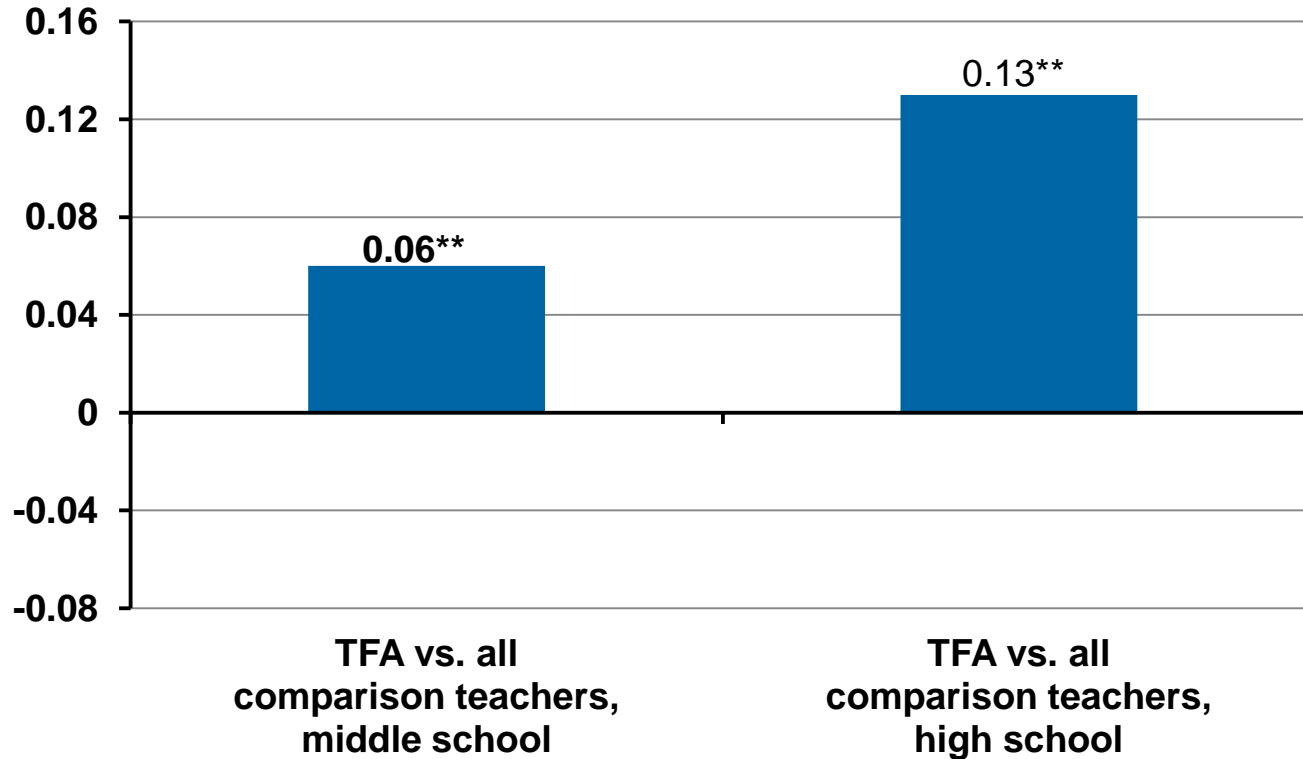
# Training and Support

	TFA Sample		Teaching Fellows Sample	
	TFA Teachers	Comparison Teachers	Teaching Fellows	Comparison Teachers
Days Student Teaching	18	25	11	38**
Hours Math Pedagogy	35	37	49	48
Took Coursework During Study Year (%)	50	21**	29	23
Had Mentor During Study Year (%)	67	29**	23	17

Difference between TFA and comparison teachers or Teaching Fellows and comparison teachers statistically significant at the 1% (\*\*) or 5% (\*) level, two-tailed test.

# TFA Teachers More Effective in Both Middle and High School

Difference in Effectiveness  
(in standard deviations of test scores)

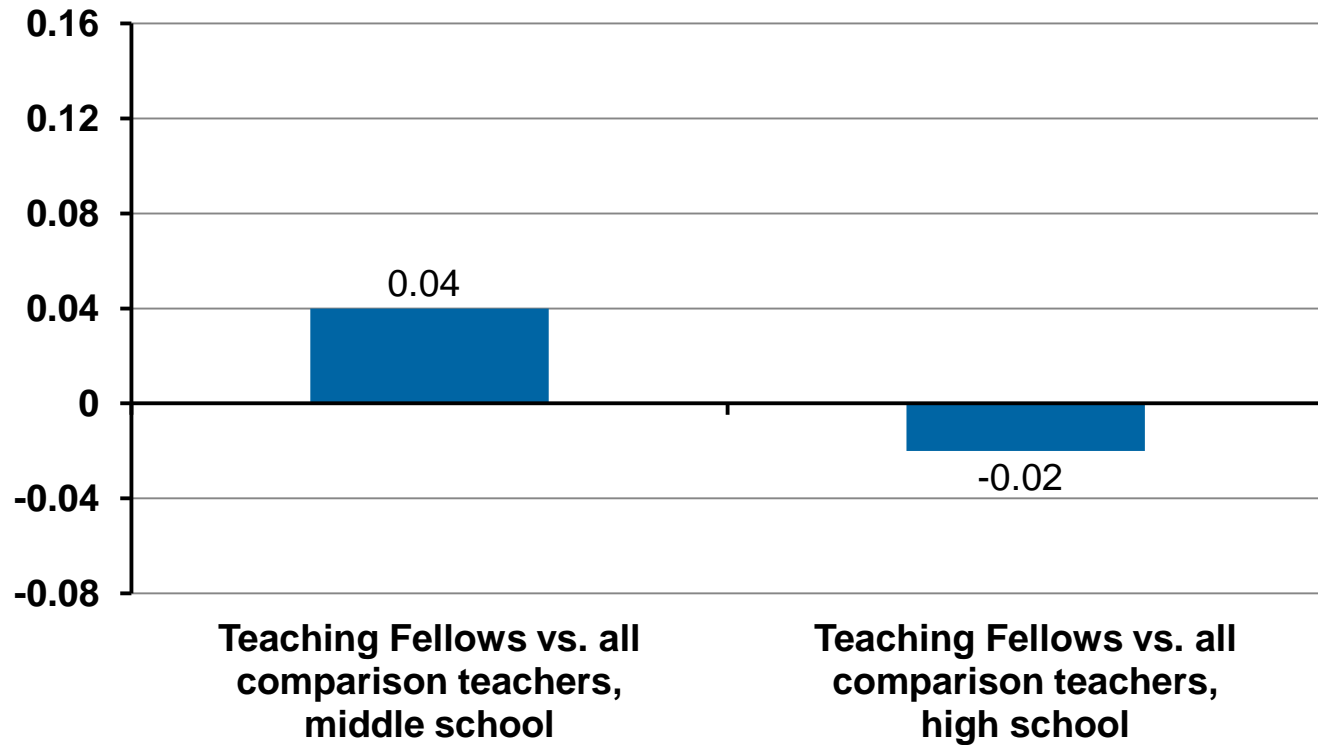


Difference is statistically significant at the 5 percent (\*) or 1 percent (\*\*) level



# Teaching Fellows No More Effective Than Comparison Teachers in Either Middle or High School

Difference in Effectiveness  
(in standard deviations of test scores)



Difference is statistically significant at the 5 percent (\*) or 1 percent (\*\*) level

# Difficult to Predict Teacher Effectiveness

---

- **Examined a range of teacher characteristics**
  - **Selectivity of college, college courses taken, math content knowledge, student teaching experience, coursework**
- **With a few exceptions, none of the characteristics examined predicted teacher effectiveness**
  - **Teaching experience and content knowledge at high school level associated with increased effectiveness**
  - **Coursework taken while teaching associated with decreased effectiveness**

# Observed Factors Do Not Explain TFA Impact

---

- **Math content knowledge**
  - Accounts for only 16 percent of impact
- **Coursework taken during school year**
  - Coursework negatively associated with effectiveness, but TFA teachers took *more* coursework
  - Cannot explain TFA impact
- **Teaching experience**
  - Positively associated with effectiveness, but TFA teachers had *less* experience
  - Cannot explain TFA impact