

SUMMARY OF FINDINGS AFTER TWO YEARS: TREATMENT-CONTROL DIFFERENCES IN TWO-YEAR DISTRICTS

Induction Services Received

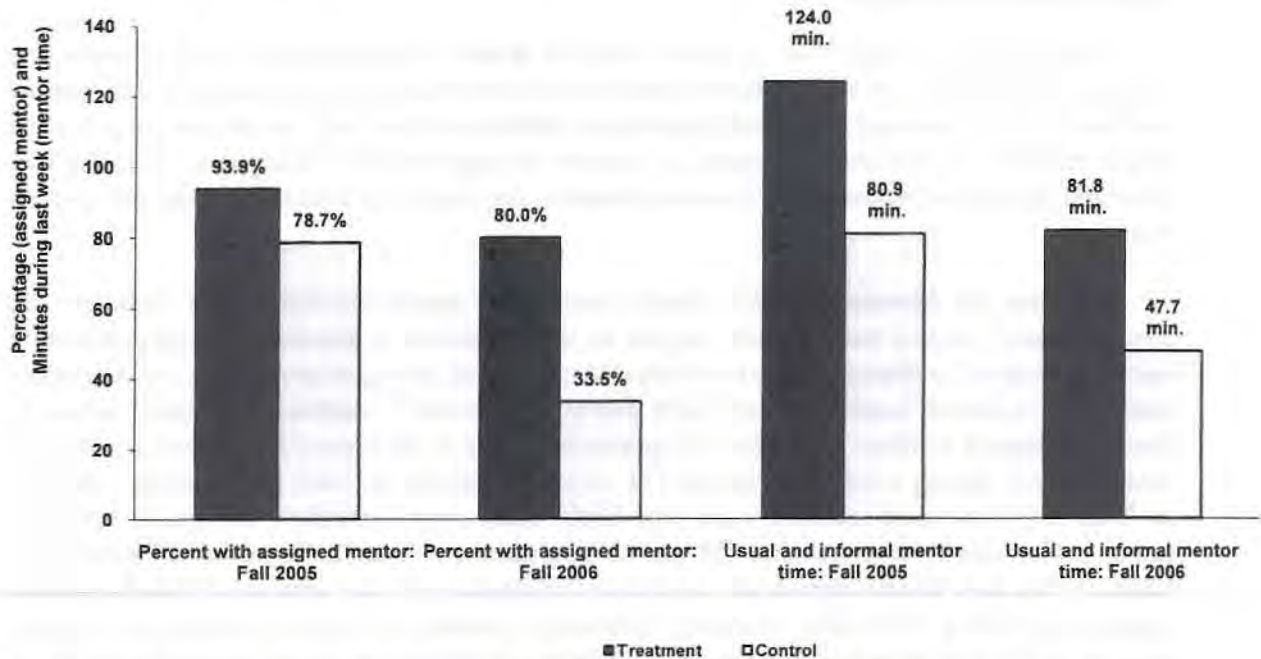
During Year 1 and Year 2, both years in which comprehensive teacher induction services were offered to the treatment group in the two-year districts, treatment and control teachers' reports showed statistically significant differences favoring the treatment group on many measures of the amount, types, or content of supports. For consistency with the way in which results are reported for one-year districts, we report on findings for the fall of each year.⁹

Amount of Mentoring. We found statistically significant differences between the treatment and control teachers with regard to the likelihood of teachers reporting having a mentor assigned to them, having a full-time mentor, and having a mentor who was another teacher. Treatment teachers were more likely than control teachers to report having a mentor assigned to them (94 versus 79 percent in Year 1; 80 versus 34 percent in Year 2), and to report having a full-time mentor (72 versus 16 percent in Year 1; 64 versus 7 percent in Year 2). Treatment teachers were less likely than control teachers to report having a mentor who was another teacher (38 versus 62 percent in Year 1; 12 versus 27 percent in Year 2). We also found statistically significant differences in the amount of time teachers reported spending with their mentors. Treatment teachers reported spending more time working with their mentors than control teachers did during the most recent full week of teaching. Treatment teachers reported spending more time on average in mentor meetings (124 minutes per week versus 81 minutes in Year 1; 82 minutes versus 48 minutes in Year 2). In both years, the differences were attributable primarily to differences in the duration of scheduled meetings. Figure ES.2 shows treatment-control differences for having an assigned mentor and time in mentor meetings in Year 1 and Year 2.

Mentor Activities and Assistance. Treatment and control teachers' reports showed statistically significant differences in the amount of time in various mentor activities and in the kinds of assistance teachers reported receiving from their mentors. Treatment teachers reported spending more time being observed by mentors (38 versus 17 minutes in Year 1; 22 versus 7 minutes in Year 2), meeting one-on-one with mentors (43 versus 23 minutes in Year 1; 25 versus 12 minutes in Year 2), meeting together with mentors and other first-year teachers (38 versus 11 minutes in Year 1; 25 versus 6 minutes in Year 2), and having mentors model lessons (16 versus 10 minutes in Year 1; 12 versus 5 minutes in Year 2). During the most recent full week of teaching, treatment teachers were more likely than control teachers to report receiving mentors' assistance in each of the topic areas covered by the survey: effects ranged from 14 to 28 percentage points in Year 1 and 28 to 44 percent in Year 2.

⁹ For two-year districts, findings from spring of Year 1 were consistent with the findings from fall of Year 1. Likewise, findings from spring of Year 2 were consistent with the findings from fall of Year 2.

Figure ES.2. Treatment-Control Differences in Percent Assigned a Mentor and Total Minutes Spent in Mentoring Per Week: Two-Year Districts, Fall 2005 and Fall 2006



Note: All treatment-control differences are significantly different from zero at the 0.05 level, two-tailed test (N=395 teachers in Fall 2005 and 360 teachers in Fall 2006).

Professional Development. We did not find statistically significant differences between treatment and control teachers' reported attendance in professional development, except that treatment teachers were more likely than control teachers to report having attended sessions focused on classroom management techniques (61 versus 48 percent) in fall 2005 (Year 1).

Student Achievement

We found no evidence of statistically significant impacts on student test scores in two-year districts. The benchmark impacts on math and reading scores in the second year of the study were not significantly different from zero (Table ES.5). The data confirm that the impacts on reading and math in the second year were not statistically significant when we re-estimated the impacts using different samples, different sets of covariates, or different estimation techniques.

Table ES.5. Impacts on Test Scores: Two-Year Districts, 2006-2007 School Year

Subject	Adjusted Mean Test Scores		Difference	Effect Size	P-value	Unweighted Sample Sizes		
	Treatment	Control				Students	Teachers	Districts
Reading	0.00	0.00	0.00	0.00	0.967	1,732	100	7
Math	-0.03	-0.01	-0.02	-0.02	0.746	1,736	99	7

Source: MPR analysis of data from 2005-2006 and 2006-2007 school years provided by participating school districts.

Notes: Data are regression-adjusted to account for pretest, district-by-grade fixed effects, and clustering of students within schools. For Reading, there were 856 students and 52 teachers in the treatment group, and 876 students and 48 teachers in the control group. For Math, there were 780 students and 50 teachers in the treatment group, and 956 students and 49 teachers in the control group.

None of the differences is statistically significant at the 0.05 level, two-tailed test.

Teacher Retention

We found that comprehensive teacher induction had no statistically significant impact on teacher retention after two years. Table ES.6 shows the result of the three hypothesis tests specifically focused on retention in the school, in the district, and in the profession as binary outcomes. For each of the outcomes, there was no statistically significant impact. The same result was obtained when we expanded the number of outcomes to differentiate between moving to a school in another public school district and moving to a private, parochial, or other school, and expanded the outcomes for leaving to include leaving to stay at home, leaving to attend school or take a new job, and other reasons for leaving.

We also examined the reasons that teachers who left their districts (movers) or left the teaching profession (leavers) gave for leaving and found no statistically significant impacts of treatment. When we asked leavers whether they expected to return and if so, when they would do so, we did not find evidence of a treatment-control difference. In addition, we found that treatment teachers did not report feeling more satisfied with or prepared for their jobs than control teachers.

Table ES.6. Impacts on Teacher Retention Rates after Two Years (Percentages): Two-Year Districts

Outcome	All Teachers	Treatment	Control	Difference	P-value
Retained in the same school	64.1	62.2	66.2	-4.0	0.386
Retained in the same district	72.3	69.6	75.3	-5.7	0.208
Retained in the teaching profession	88.8	86.9	90.8	-3.9	0.241
Unweighted Sample Size (Teachers)	364	203	161		
Unweighted Sample Size (Schools)	151	81	70		

Source: MPR Second Mobility Survey administered in 2007-2008 and Teacher Background Survey administered in 2005-2006 to all study teachers.

Note: Data are regression-adjusted using a logit model with robust standard errors to account for baseline characteristics and clustering of teachers within schools.

None of the differences is statistically significant at the 0.05 level, two-tailed test.

Composition of the District Teaching Force

We found that the treatment had no statistically significant impacts on the student achievement outcomes or professional background characteristics of district stayers. Table ES.7 presents the impacts on student achievement outcomes for district stayers. Table ES.8 shows the background characteristics of teachers by mobility status.

Table ES.7. Impacts on Test Scores, District Stayers Only: Two-Year Districts, 2005-2006 School Year

Outcome	Treatment	Control	Difference	Effect Size	P-value
Reading scores (all grades)	0.03	-0.03	0.06	0.06	0.591
Unweighted Sample Size (Students)	745	558	1,303		
Unweighted Sample Size (Teachers)	45	30	75		
Unweighted Sample Size (Schools)	31	24	55		
Math scores (all grades)	-0.04	0.07	-0.11	-0.11	0.162
Unweighted Sample Size (Students)	693	549	1,242		
Unweighted Sample Size (Teachers)	43	30	73		
Unweighted Sample Size (Schools)	29	24	53		

Source: MPR analysis of data from 2004-2005 and 2005-2006 school years provided by participating school districts; MPR Second Mobility Survey administered in 2007-2008 to all study teachers.

Notes: Data are regression-adjusted to account for pretest, district-by-grade fixed effects and clustering of students within schools.

None of the differences is statistically significant at the 0.05 level, two-tailed test.

Table ES.8. Characteristics of District Stayers, Movers, and Leavers after Two Years by Treatment Status (Percentages Except Where Noted): Two-Year Districts

Teacher Characteristic	Treatment			Control			Difference		
	Stayers	Movers	Leavers	Stayers	Movers	Leavers	Stayers	Movers	Leavers
College entrance exam scores (SAT combined score or equivalent)	916	1,006	1,095	967	1,040	1,081	-51	-34	14
Attended highly selective college	23.4	28.6	59.9	25.1	37.1	52.4	-1.7	-8.5	7.5
Major or minor in education	67.0	70.9	38.9	66.6	70.8	74.7	0.4	0.0	-35.8
Student teaching experience (weeks)	12.2	14.1	6.2	11.9	11.7	9.3	0.3	2.4	-3.1
Entered the profession through traditional four-year program	61.5	76.8	25.2	66.0	61.3	56.1	-4.5	15.5	-30.9
Certified (regular or probationary)	93.3	91.0	88.7	93.5	91.8	80.1	-0.2	-0.7	8.6
Unweighted Sample Size (Teachers)	143	35	25	121	25	15			
Unweighted Sample Size (Schools)	71	28	20	62	21	13			

Source: MPR calculations using data from the College Board and ACT, Inc.; MPR Teacher Background Survey administered in 2005-2006, MPR Second Mobility Survey administered in 2007-2008; MPR First and Second Induction Activities Surveys administered in fall/winter 2005-2006 and spring 2006 to all study teachers.

Notes: Data are weighted to account for the study design. Sample sizes vary due to item nonresponse. The analysis of college entrance exam scores relied on a smaller sample of teachers (143/35/25 treatment stayers/movers/leavers and 121/25/15 control stayers/movers/leavers) and schools (71/28/20 treatment and 62/21/13 control).

Stayer: retained in the same school district.

Mover: retained in the teaching profession, but not in the same school district.

Leaver: no longer teaching.

None of the differences between treatment and control stayers, between treatment and control movers, or between treatment and control leavers is statistically different from zero. P-values are suppressed to make the table easier to read.

CORRELATIONAL ANALYSES

Given the prevalence of supports reported by control teachers, we explored the relationship between induction supports and outcomes independent of group assignment (treatment or control) and district type (one-year or two-year). Using data from the first three Induction Activities surveys, we created a variable that reflects the number of years (0, 1, or 2) the beginning teacher had an assigned mentor and constructed three other new measures¹⁰:

- The Induction Services Index measuring breadth of services received by the beginning teacher,
- The Instructional Support Index measuring suggestions, guidance, and feedback on teaching, and
- The Induction Intensity Index measuring program duration and intensity.

The analyses use the same methods as the experimental analyses, but instead of assignment to treatment status, which was randomly determined, the key explanatory variables are the number of years the beginning teacher had an assigned mentor and the three indices, included jointly in a regression model. The results should be interpreted with caution because the analyses are correlational and not causal. In particular, a nonexperimental estimate of the relationship of induction services with outcomes may be spurious, as it will confound the true (causal) impact of mentoring with the effect of the teacher's own ability or motivation.

Overall, we found that induction measures were not significantly related to math test scores (p-value of F-test = 0.068) or reading scores (p-value of F-test = 0.651). However, we found that the association between the years the beginning teacher had a mentor and math test scores was statistically significant (regression coefficient = 0.12, p-value = 0.015). For measures of teacher retention, there was a statistically significant relationship between the induction activities variables and retention (p-value of F-test = 0.016 for remaining in the

¹⁰ The variable that reflects the number of years the beginning teacher had an assigned mentor is constructed using three items: the indicator variables at fall 2005, spring 2006, and fall 2006, on whether the beginning teacher had an assigned mentor. This variable has the values 0, 1, and 2 years. The Induction Services Index is the sum of nine indicator variables at fall 2005, spring 2006, and fall 2006, on whether the beginning teacher: (1) met with a literacy or math coach, (2) met with a study group, and (3) observed others teaching. The Induction Services Index has values in the range 0 to 9. The Instructional Support Index is constructed similarly using eight indicator variables on whether the beginning teacher received: (1) suggestions from a mentor to improve his/her teaching, (2) at least a moderate amount of guidance in subject area content, and (3) feedback on teaching. The Instructional Support Index has values in the range 0 to 8. The Induction Intensity Index is the sum of the average number of hours per week at fall 2005, spring 2006, and fall 2006 (3 items) that beginning teachers reported spending: (1) in mentoring sessions, (2) being observed teaching by mentor, (3) in professional development learning instructional techniques and strategies, and (4) in professional development learning content area knowledge, specifically language arts, math, and science. The Induction Intensity Index has values in the range 0 to 20.8.

district; p -value of F -test = 0.001 for remaining in teaching). One measure—the Induction Services Index—was positively related and no measures were negatively related to teacher mobility for both remaining in the district and remaining in teaching. The estimate of the regression coefficient on the Induction Services Index for remaining in the district was 0.02; for remaining in teaching, it was 0.01. This implies that, for example, if the retention rate in a district were 80 percent, then an additional induction service, such as meeting with a study group in one semester, would be associated with a district retention rate of 82 percent, all else equal. All results were robust to alternate methods of constructing the indices and alternate model specifications.

SUMMARY OF FINDINGS

The report presents findings from an experimental test of the impact of comprehensive teacher induction on student achievement in beginning teachers' classrooms and on the teachers' retention rates in urban elementary schools. In ten of the study districts, a comprehensive induction program was implemented during beginning teachers' first year in the classroom. In the remaining seven study districts, comprehensive induction was implemented during beginning teachers' first two years in the classroom. This design does not allow for and should not be used to make direct comparisons between the districts that received one year of treatment and districts that received two years of treatment, but instead allows us to investigate the effectiveness of one-year programs separately from that of two-year programs. The main findings are summarized below.

- During their first year in the classroom, in both one- and two-year districts, treatment and control teachers' reports showed statistically significant differences in the amount and types of support received. Treatment teachers were more likely than control teachers to report having an assigned mentor (90 versus 70 percent of teachers reported having an assigned mentor in one-year districts; 94 versus 79 percent in two-year districts) and reported spending more time per week with a mentor (87 versus 67 minutes in one-year districts; 124 versus 81 minutes in two-year districts). Treatment teachers reported spending more time being observed by mentors (34 versus 10 minutes during the most recent full week of teaching in one-year districts; 38 versus 17 minutes in two-year districts) and meeting with mentors together with other first-year teachers (29 versus 9 minutes in one-year districts; 38 versus 11 minutes in two-year districts).
- During their second year in the classroom, treatment teachers in one-year districts received less support than did control teachers. During Year 2, we found a statistically significant difference favoring the control group in teachers' likelihood of having an assigned mentor and in the amount of time teachers spent per week with a mentor. Treatment teachers were less likely than control teachers to report having an assigned mentor (20 versus 29 percent) and reported spending less time per week with a mentor (19 versus 39 minutes).

- During their second year in the classroom, treatment teachers in two-year districts received more support than did control teachers. During Year 2, we found a statistically significant difference favoring the treatment group in teachers' likelihood of having an assigned mentor and in the amount of time teachers spent per week with a mentor. Treatment teachers were more likely than control teachers to report having an assigned mentor (80 versus 34 percent) and reported spending more time per week with a mentor (82 versus 48 minutes).
- No impacts of comprehensive teacher induction were found on student achievement during teachers' second year in the classroom. In both one- and two-year districts, we did not find statistically significant impacts on student achievement across all elementary grade levels in reading or math during the teachers' second year.
- No impacts of comprehensive teacher induction were found on teacher retention rates after two years. There was also no evidence that comprehensive teacher induction induced a change in the kind of teachers retained within the district. In both one- and two-year districts, we did not find statistically significant impacts of comprehensive teacher induction on teacher retention rates in the school, district or profession after two years. In both one- and two-year districts, we did not find statistically significant impacts on the composition of the district teaching workforce after two years, whether measured by district stayers' impacts on student achievement or by their professional background characteristics (for example, SAT/ACT scores or whether the teacher attended a highly selective college).
- In a correlational (nonexperimental) analysis of induction and student test scores, the relationship between four composite induction measures (considered jointly) and test scores was statistically insignificant for both math and reading. When we tested the variables individually, one of the four measures of beginning teacher support (years had a mentor) was positively related to math scores (coefficient = 0.12, p-value = 0.015) and none were related to student achievement in reading. The significant result can be interpreted as a student scoring 12 percent of a standard deviation higher on the math test for each year the beginning teacher had a mentor. The nonexperimental results should be interpreted with caution because the analyses are correlational and not causal.
- In the correlational analysis of induction and teacher mobility, there was a positive relationship between the four composite induction measures and retention that was statistically significant for both retention in the district (p-value=0.016) and retention in the profession (p-value=0.001). When we tested the induction indices one at a time, one of the four explanatory variables was positively related to retention in the district, none were positively related to retention in the profession, and none were negatively related to either type of teacher retention. The estimate of the regression coefficient on the Induction

Services Index for remaining in the district was 0.02. This implies that, for example, if the retention rate in a district were 80 percent, then an additional induction service, such as meeting with a study group in one semester, would be associated with a district retention rate of 82 percent, all else equal. As mentioned above, the nonexperimental results should always be interpreted with caution because the analyses are correlational and not causal.

FUTURE RESEARCH

This report focused on the second year of findings, updating an earlier report (Glazerman et al. 2008) that presented results after one year of implementation for one-year and two-year districts combined. The research team is conducting a follow-up analysis that will include a third and final year of test score and teacher mobility data in one-year and two-year districts.