

Variation in Mentoring Practices and Retention across New Teacher Demographic Characteristics under a Large Urban District’s New Teacher Mentoring Program

Appendix A. Supporting analyses

Appendix B. Other analyses

Appendix C. New Teacher Mentoring program survey for new teachers

See <https://go.usa.gov/xFzBK> for the full report.

Appendix A. Supporting analyses

This appendix provides documentation of findings included in the report, as well as additional analyses and descriptions of analytic and methodological decisions.

Table A1. Mentoring dosage characteristics, 2018/19

Group	Percent of new teachers (<i>N</i> = 222)	Average monthly mentoring meeting hours	Median monthly mentoring meeting hours	Standard deviation
Overall	100	7.8	5.0	7.7
Dosage group				
Low (fewer than 4 hours a month)	27.0	1.5	2.0	0.7
Moderate (4–9 hours a month)	30.6	4.8	4.0	1.2
High (10 or more hours a month)	42.3	13.9	10.0	8.3

Note: Percentages do not sum to 100 because of rounding.

Source: Authors’ analysis of data from the study district’s 2019 New Teacher Mentoring program survey for new teachers.

Table A3. Characteristics of new teachers and their alignment with mentors, by dosage, 2018/19

Teacher characteristic	Percent low dosage (fewer than 4 hours a month)	Percent moderate dosage (4–9 hours a month)	Percent high dosage (10 or more hours a month)	Number	Chi-squared test	p-value
Total	27.5	30.2	42.3	222		
Race/ethnicity					8.01	.43
White	23.6	29.3	47.2	106		
Black	25.9	31.5	42.6	54		
Hispanic	32.4	23.5	44.1	34		
Asian	33.3	47.6	19.1	21		
Gender					8.80	.07
Female	27.0	30.8	42.1	159		
Male	22.8	29.8	47.4	57		
Racial/ethnic alignment					1.33	.51
All same-race/ethnicity pairs	23.5	33.3	43.1	102		
All different-race/ethnicity pairs	30.0	28.3	41.7	120		
White teachers with a White mentor	20.2	31.7	48.1	79		
White teachers with a mentor of color	33.3	22.2	44.4	27		
Black teachers with a White mentor	19.4	32.7	48.4	31		
Black teachers with a Black mentor	42.9	28.6	28.6	14		
Hispanic teachers with a White mentor	36.4	14.6	50.0	22		
Hispanic teachers with a Hispanic mentor	14.3	57.1	28.6	7		
Gender alignment					0.47	.79
All same-gender pairs	26.4	31.9	41.7	163		
All different-gender pairs	28.8	27.1	44.1	59		
Female new teacher with a female mentor	27.8	31.9	42.3	144		
Female new teacher with a male mentor	13.3	26.7	60.0	15		
Male new teacher with a female mentor	26.3	29.0	44.7	38		
Male new teacher with a male mentor	15.8	31.6	52.6	19		

Note: *N* = 222 new teachers. The analysis excluded seven new teachers with unspecified race/ethnicity, three new teachers with unspecified gender, and six new teacher–mentor pairs for which gender alignment could not be discerned. Percentages might not sum to 100 because of rounding.

Source: Authors' analysis of data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A4. New teachers who reported spending substantial time with their mentor on a range of topics, by race/ethnicity, 2018/19 (percent)

Mentoring topic	White new teachers (<i>n</i> = 106)	Black new teachers (<i>n</i> = 54)	Hispanic new teachers (<i>n</i> = 34)	Asian new teachers (<i>n</i> = 21)	Two-tailed <i>t</i> -test of White-Black difference in means
Classroom management	59.4	33.3	58.8	76.2	**
Supporting English learner students	49.1	48.1	52.9	28.6	
Logistical issues	19.8	24.1	23.5	19.0	
Classroom observation	48.1	53.7	50.0	71.4	
Communication with colleagues and administration	46.2	51.9	58.8	57.1	
Instructional strategies	66.0	72.2	61.8	76.2	
Family engagement	34.9	42.6	44.1	38.1	
Social-emotional support	50.0	59.3	55.9	52.4	
Lesson and unit planning	50.9	63.0	58.8	61.9	
Supporting students with disabilities	57.5	70.4	52.9	38.1	
Maintaining accurate records	21.7	35.2	29.4	28.6	
Content knowledge	47.2	61.1	50.0	42.9	
Teacher evaluations	36.8	53.7	47.1	66.7	**
Differentiating instruction	52.8	72.2	64.7	52.4	**
Participating in a school community	17.0	37.0	26.5	9.5	**
Professional development	42.5	63.0	58.8	33.3	**
Collecting and analyzing student information/data	32.1	57.4	41.2	42.9	**

** Significant at $p < .01$.

Note: $N = 222$ new teachers. No two-tailed *t*-tests were significant for White-Hispanic differences in means.

Source: Authors' analysis of data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A5. School characteristics, by new teachers' racial/ethnic background of and their racial/ethnic alignment with their mentor, 2018/19 (percent)

New teacher's race/ethnicity and racial/ethnic alignment with the mentor	School characteristics									
	High needs		Economically disadvantaged		English learner students		Students with disabilities		Black Students	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
White	80.4	13.4	58.5	14.4	35.2	19.2	23.2	11.5	31.6	20.7
Black	79.6	12.9	60.5	14.4	30.7	17.5	19.6	8.3	40.8**	19.4
Hispanic	83.8	11.5	64.9*	12.6	42.6*	15.9	19.2	6.6	26.1	16.2
White new teachers with a White mentor	79.9	13.6	58.0	13.6	35.1	19.2	23.3	11.9	30.0	20.2
White new teachers with a mentor of a different race/ethnicity	82.1	13.0	60.4	16.8	35.2	19.6	23.1	10.4	37.1	19.1
Black new teachers with a Black mentor	78.1	15.4	60.1	14.4	30.5	15.8	22.7	8.8	44.8**	18.8
Black new teachers with a mentor of a different race/ethnicity	80.1	11.9	60.6	13.8	30.7	18.2	22.8	8.4	39.3	19.7

* Significant at $p < .05$. ** significant at $p < .01$.

Note: $N = 210$ new teachers. School-level demographic data were missing for four schools (nine teachers), and three teachers were not assigned to a school. The analysis excluded seven new teachers with unspecified race/ethnicity. Two-tailed t -tests of differences in means were used to assess the statistical significance of differences in school characteristics between White teachers and Black teachers and between White teachers and Hispanic teachers.

Source: Authors' analysis of data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A6. New teachers who reported spending substantial time with their mentor on a range of topics, by gender, 2018/19 (percent)

Mentoring topic	Female new teachers (n = 159)	Male new teachers (n = 63)	Two-tailed t-test of female-male differences in means
Classroom management	52.4	55.3	
Supporting English learner students	50.3	44.4	
Logistical issues	21.4	22.2	
Classroom observation	52.4	52.8	
Communication with colleagues and administration	49.2	52.2	
Instructional strategies	67.9	69.8	
Family engagement	31.7	41.5	
Social-emotional support	59.1	41.2	*
Lesson and unit planning	55.3	61.9	
Supporting students with disabilities	62.9	49.2	
Maintaining accurate records	24.5	34.9	
Content knowledge	53.5	47.6	
Teacher evaluations	46.5	47.6	
Differentiating instruction	62.3	55.6	
Participating in a school community	22.0	28.6	
Professional development	50.9	47.6	
Collecting and analyzing student information/data	40.3	46.0	

* Significant at $p < .05$.

Note: $N = 222$ new teachers.

Source: Authors' analysis of data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A7. New teacher–mentor pairs aligned by race/ethnicity and gender, 2018/19

Alignment category	Percent	Number
Race/ethnicity	46.0	102
Gender	73.4	163

Note: $N = 222$ new teachers.

Source: Authors' analysis of data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A8. New teachers with a mentor of the same race/ethnicity, by new teacher race/ethnicity, 2018/19

New teacher race/ethnicity	Percent with a mentor of the same race/ethnicity		Percent with a White mentor	
	Percent	Number	Percent	Number
Asian teacher	9.5	2	71.4	15
Black teacher	25.9	14	57.4	31
Hispanic teacher	20.6	7	64.7	22
White teacher	74.5	79	74.5	79

Note: $N = 102$ new teachers with a mentor of the same race/ethnicity.

Source: Authors' analysis of 2020 administrative data provided by the study district and data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A9. Racial/ethnic demographics of new teachers, 2018/19

New teacher race/ethnicity	Percent	Number
Asian	9.5	21
Black	24.3	54
Hispanic	15.3	34
Not specified	3.2	7
White	47.8	106
Total	100	222

Note: Percentages do not sum to 100 because of rounding.
Source: Authors' analysis of administrative data provided by the study district.

Table A10. New teachers with a mentor of color, 2018/19

New teacher race	Percent of new teachers with a mentor of color	Distribution of mentors of color by new teacher race/ethnicity	
		Percent of all new teachers	Number
Asian	28.6	9.1	6
Black	38.9	31.8	21
Hispanic	35.3	18.2	12
Not specified	28.6	3.0	2
White	23.6	37.9	25
Total		100	66

Source: Authors' analysis of 2020 administrative data provided by the study district and data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A11. New teacher–mentor pairs aligned by gender, 2018/19

New teacher gender	Mentor gender	Number	Percent of all new teachers	Percent of all teachers of the same gender as the new teacher
Female	Female	144	66.7	91.7
Female	Male	13	6.0	8.3
Male	Female	37	17.3	66.7
Male	Male	19	8.8	33.9

Note: $N = 222$ new teachers. The results excluded six new teachers and three mentors with unspecified gender. Percentages might not sum to 100 because of rounding.

Source: Authors' analysis of data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A12. New teachers who reported spending substantial time with their mentor on a range of topics, by new teacher and mentor race/ethnicity, 2018/19 (percent)

Mentoring topic	Mentor of the same race/ethnicity (n = 102)	Mentor of a different race/ethnicity (n = 120)	Two-tailed t-test	White teacher with a White mentor (n = 79)	White teacher with a mentor of color (n = 25)	Black teacher with a White mentor (n = 31)	Black teacher with a Black mentor (n = 14)
Classroom management	56.9	52.5		57.0	66.7	35.5	42.9
Lesson and unit planning	52.9	60.8		48.1	59.3	64.5	57.1
Collecting and analyzing student information/data	32.4	50.0	**	30.4	37.0	64.5	42.9
Logistical issues	20.6	22.5		21.5	14.8	35.5	14.3
Maintaining accurate records	22.5	31.7		19.0	29.6	48.4	28.6
Social-emotional support	50.0	57.5		50.6	48.1	58.1	57.1
Participating in a school community	19.6	27.5		17.7	14.8	41.9	28.6
Differentiating instruction	54.9	65.0		51.9	55.6	77.4	64.3
Supporting students with disabilities	59.8	58.3		60.8	48.1	71.0	64.3
Supporting English learner students	51.0	46.7		49.4	48.1	45.2	57.1
Professional development	38.2	60.0	***	36.7	59.3	80.6	28.6
Family engagement	31.4	45.0	**	29.1	51.9	45.2	42.9
Communication with colleagues and administration	47.1	55.0		43.0	55.6	54.8	64.3
Classroom observation	52.0	53.3		49.4	44.4	64.5	50.0
Teacher evaluations	35.3	56.7	***	32.9	48.1	67.7	35.7
Instructional strategies	64.7	71.7		62.0	77.8	80.6	71.4
Content knowledge	46.1	56.7		46.8	48.1	71.0	42.9

** Significant at $p < .01$; *** significant at $p < .001$.

Note: $N = 222$ new teachers.

Source: Authors' analysis of 2020 administrative data provided by the study district and data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A13. New teacher–mentor pairs spending substantial time on professional development, by new teacher and mentor race/ethnicity, 2018/19

Pair designation	Percent	Number
Black new teachers with a White mentor	80.7	31
White new teachers with a mentor of color	59.3	27
Hispanic new teachers with a White mentor	54.6	22
White new teachers with a White mentor	36.7	79
Black new teachers with a Black mentor	28.6	14

Note: $N = 173$ new teachers. The analysis excluded Asian new teachers and new teachers with unspecified race/ethnicity because of low sample size.

Source: Authors' analysis of data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A14. New teachers who reported spending substantial time with their mentor on a range of topics, by new teacher and mentor gender, 2018/19 (percent)

Mentoring topic	Mentor of the same gender (n = 163)	Mentor of a different gender (n = 53)	Two-tailed t-test	Female teacher with a female mentor (n = 144)	Female teacher with a male mentor (n = 15)	Male teacher with a female mentor (n = 38)	Male teacher with a male mentor (n = 19)
Classroom management	55.2	52.5		56.3	46.7	52.6	47.4
Lesson and unit planning	58.3	54.2		55.6	53.3	57.9	78.9
Collecting and analyzing student information/data	40.5	45.8		40.3	40.0	50.0	42.1
Logistical issues	22.7	18.6		22.9	6.7	21.1	21.1
Maintaining accurate records	27.6	27.1		26.4	6.7	34.2	36.8
Social-emotional support	60.1	37.3	**	62.5	26.7	39.5	42.1
Participating in a school community	25.2	20.3		23.6	6.7	26.3	36.8
Differentiating instruction	62.6	54.2		62.5	60.0	52.6	63.2
Supporting students with disabilities	61.3	52.5		63.2	60.0	47.4	47.4
Supporting English learner students	51.5	40.7		52.8	26.7	44.7	42.1
Professional development	52.8	42.4		51.4	46.7	42.1	63.2
Family engagement	40.5	33.9		41.7	40.0	34.2	31.6
Communication with colleagues and administration	52.8	47.5		53.5	40.0	50.0	47.4
Classroom observation	54.0	49.2		53.5	46.7	47.4	57.9
Teacher evaluations	48.5	42.4		47.2	40.0	42.1	57.9
Instructional strategies	71.2	61.0		69.4	53.3	63.2	84.2
Content knowledge	52.8	49.2		53.5	53.3	47.4	47.4

** Significant at $p < .01$.

Note: $N = 222$ new teachers. The analysis excluded six new teachers with unspecified gender.

Source: Authors' analysis of 2020 administrative data provided by the study district and data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A15. New teachers who agreed that the New Teacher Mentoring program influenced their decision to stay in the district, 2018/19

Pair designation	Percent	Number	Percent of all new teachers
All new teachers	54.1	222	100
White new teachers	55.7	106	47.7
Black new teachers	44.4	54	24.3
White new teachers with a White mentor	59.5	79	35.6
Black new teachers with a Black mentor	21.4	14	6.3
White new teachers with a mentor of color	44.4	27	12.2
Black new teachers with a White mentor	54.8	31	14.0
Female new teachers	53.5	159	71.6
Male new teachers	56.1	57	25.7
Female new teachers with a female mentor	54.1	144	64.9
Female new teachers with a male mentor	46.7	15	6.8
Male new teachers with a female mentor	63.2	38	17.1
Male new teachers with a male mentor	42.1	19	8.6

Note: *N* = 222 new teachers. There were no significant differences between groups by race/ethnicity, gender, or demographic alignment.
Source: Authors' analysis of data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A16. New teachers retained in the district from 2018/19 to 2019/20

New teacher characteristic	Percent	Number	Percent of all new teachers	Chi-square test
Overall	90.5	201	90.5	
Race/ethnicity				5.98
White	92.5	106	47.7	
Black	92.6	54	24.3	
Hispanic	91.2	34	15.3	
Asian	81.0	21	9.5	
Gender				0.75
Female	93.1	159	71.6	
Male	89.5	57	25.7	
Mentor demographic alignment				
Teachers with a mentor of the same race/ethnicity	94.1	102	45.9	2.82
Teachers with a mentor of a different race/ethnicity	87.5	120	54.1	
White teachers with a White mentor	94.9	79	35.6	
White teachers with a mentor of color	85.2	27	12.2	
Teachers of color with a mentor of the same race/ethnicity	91.3	86	38.7	
Teachers of color with a mentor of a different race/ethnicity	89.5	23	10.4	
Teachers with a mentor of the same gender	93.3	163	73.4	5.26*
Teachers with a mentor of a different gender	88.7	59	26.6	
Female teachers with a female mentor	93.1	144	64.9	
Female teachers with a male mentor	93.3	15	6.8	
Male teachers with a male mentor	94.7	19	8.6	
Male teachers with a female mentor	86.8	38	17.1	

* Significant at $p < .05$

Note: $N = 212$ new teachers. The analysis by race/ethnicity excluded seven teachers with unspecified race/ethnicity, and the analysis by gender excluded Six teachers with unspecified gender.

Source: Authors' analysis of 2020 administrative data provided by the study district and data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A17. New teacher retention in the district, by mentoring dosage and content, 2018/19–2019/20

Dosage group	Percent retained	Percent not retained	Number	Chi-square test
Dosage				***
Low dosage	78.3	21.7	61	
Moderate dosage	97.0	3.0	67	
High dosage	93.6	6.4	94	

Mentoring topic	Retention among those who reported spending substantial time on the topic	Retention among those who did not report spending substantial time on the topic	Number of new teachers who reported spending substantial time on the topic	Two-tailed t-test difference of means
Classroom management	86.5	96.0	121	**
Lesson and unit planning	93.7	86.3	127	*
Collecting and analyzing student information/data	93.6	88.4	93	
Logistical issues	87.5	91.4	48	
Maintaining accurate records	90.2	90.7	61	
Social-emotional support	89.2	92.2	120	
Participating in a school community	90.6	90.5	53	
Differentiating instruction	91.8	88.6	134	
Supporting students with disabilities	91.6	89.0	131	
Supporting English learner students	91.7	89.5	108	
Professional development	91.0	90.1	111	
Family engagement	89.5	91.2	86	
Communication with colleagues and administration	87.7	93.5	114	
Classroom observation	88.0	93.3	117	
Teacher evaluations	86.5	94.1	104	*
Instructional strategies	90.1	91.4	152	

* Significant at $p < .05$; ** significant at $p < .01$; significant at $p < .001$.

Note: $N = 222$ new teachers.

Source: Authors' analysis of 2020 administrative data provided by the study district and data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table A18. Odds of new teachers being retained in the district, 2019/20

Covariate	Model 1	Model 2	Model 3	Model 4
Dosage (reference group is low dosage)				
Moderate	10.28** (8.378)	12.38** (10.78)	12.18** (10.63)	8.075* (7.019)
High	3.591* (1.956)	2.902 (1.760)	2.838 (1.723)	1.908 (1.230)
Race/ethnicity (reference group is White)				
Asian	0.280 (0.207)	0.350 (0.296)	0.426 (0.391)	
Black	1.191 (0.795)	0.551 (0.427)	0.612 (0.492)	
Hispanic	0.868 (0.645)	0.800 (0.687)	0.950 (0.870)	
Gender (reference group is male)				
Female	2.825* (1.449)	3.580* (2.094)	3.477* (2.037)	3.837* (2.289)
Substantial time on content				
Lesson and unit planning		5.467* (3.623)	5.287* (3.503)	7.020** (4.901)
Differentiating instruction		2.707 (1.750)	2.793 (1.826)	2.282 (1.511)
Classroom management		0.138* (0.107)	0.136* (0.106)	0.113** (0.0891)
Teacher evaluations		0.254* (0.170)	0.273 (0.187)	0.324 (0.219)
Mentor of the same race/ethnicity			1.649 (1.053)	
Racial/ethnic alignment by person of color status				
White teacher # White mentor				2.265 (1.919)
Teacher of color # Mentor of different race/ethnicity				0.713 (0.546)
Teacher of color # Mentor of the same race/ethnicity				0.767 (0.810)

* Significant at $p < .05$, ** significant at $p < .01$. # indicates an interaction term.

Note: $N = 222$ new teachers. Coefficients reported in the table are odds ratios. Numbers in parentheses are standard errors. A least absolute shrinkage and selection operator logistic regression was used to select topic-related variables for inclusion in the model. Race/ethnicity, alignment, and dosage variables were included in various models for hypothesis testing.

Source: Authors' analysis of 2020 administrative data provided by the study district and data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Appendix B. Other analyses

Although teacher induction and mentoring are gaining in popularity as promising strategies for improving teacher quality and retention, the results of empirical studies are mixed, and gaps in the evidence base remain. In a review of 15 empirical studies of teacher induction and mentoring programs, Ingersoll and Strong (2011) found that these supports were generally related to greater teacher commitment and higher retention, as well as with improved classroom practices. Standing apart from the other 14 studies in Ingersoll and Strong’s review because of its strong causal design, Glazerman et al.’s (2010) randomized controlled trial of comprehensive teacher induction and mentoring found no impact of mentoring programs on teacher retention. Across that and other studies the link between specific mentoring practices and outcomes for new teachers remains poorly understood. Features of mentoring programs vary considerably from state to state (Bullough, 2012) and even program to program (Long et al., 2012), and different programs yield different results in terms of teacher outcomes (Ingersoll & Strong, 2011). Most research on the subject is correlational and unable to identify the effect of mentoring on teacher and student outcomes.

Creation of dosage variable

The study team made several assumptions in assigning new teachers to dosage categories. Table B1 summarizes the assignment of new teachers’ meeting length and frequency responses to mentoring dosage categories and documents the distribution of new teachers across meeting length and frequency combinations. New teachers and mentors most commonly held weekly one-hour meetings (reported by 19 percent of teachers). Roughly as many new teachers met less than weekly with their mentor, and slightly more reported meeting daily (22 percent). The distribution of new teachers across the matrix of dosage groups and meeting frequency/length reveals that the dosage of mentoring meetings that new teachers received through the New Teacher Mentoring (NTM) program varied considerably.

Table B1. Distribution of new teachers across dosage groups, 2018/19 (percent of new teachers reporting meeting length/frequency)

Meeting length	Daily	More than once a week	Weekly	Every other week	Monthly	Total
30 minutes or less	13.5	5.0	9.5	2.7	5.0	35.6
1 hour	5.9	15.8	18.5	5.9	2.7	48.7
1.5 hours	0.5	3.2	4.1	0.5	0.5	8.6
2 hours	0.5	1.4	2.7	0.0	0.0	4.5
More than 2 hours	1.4	0.0	0.5	0.5	0.5	2.7
Total	21.6	25.2	35.1	9.5	8.6	100.0

Note: *N* = 222 new teachers. Green cells indicate high dosage, yellow cells indicate moderate dosage, and red cells indicate low dosage. Components might not sum to totals because of rounding.

Source: Authors’ analysis of 2020 administrative data provided by the study district and data from the study district’s 2019 New Teacher Mentoring program survey for new teachers.

To explore variation in new teachers’ reports about how they spent time with their mentor, the proportion of new teachers who reported spending substantial time with their mentor on various topics was calculated separately for each dosage group (table B2). Across almost all mentoring topics a higher percentage of new teachers in the moderate- and high-dosage groups reported spending substantial time with their mentor on the topic. The average proportion of new teachers in the low-dosage group who reported spending substantial time on a given topic was 36 percent compared with 52 percent of new teachers in the moderate-dosage group and 55 percent of new teachers in the high-dosage group. This indicates that new teachers who reported spending substantial

time with their mentor on a given topic were more likely to have spent more time overall on mentoring activities, lessening the concern that spending substantial time on a topic correlates with dramatically different amounts of time across dosage groups in the study sample.

Differences across dosage groups were much smaller for two topics: logistical issues and classroom management. Across dosage groups few new teachers reported spending substantial time with their mentor on logistical issues (21 percent of new teachers in the low-dosage group, 22 percent in the moderate-dosage group, and 22 percent in the high-dosage group), suggesting that new teacher–mentor relationships are not used to work out logistical challenges even when new teachers have ample time with their mentor. The proportion of new teachers who reported spending substantial time on classroom management was almost as evenly distributed across dosage groups: 51 percent of new teachers in the low-dosage group, 56 percent in the moderate-dosage group, and 57 percent in the high-dosage group. This suggests that classroom management is a common focus for new teacher mentoring, regardless of the amount of time new teachers spend with their mentor. Thus, it is critical that the NTM program and other mentorship or induction programs craft strong tools that develop and support new teachers’ classroom management skills.

Table B2. New teachers who reported spending substantial time with their mentor on a range of topics, by dosage group, 2018/19 (percent)

Mentoring topic	Low dosage	Moderate dosage	High dosage
Logistical issues	21	22	22
Participating in a school community	14	28	30
Maintaining accurate records	19	29	35
Family engagement	24	41	53
Collecting and analyzing student information/data	22	50	53
Teacher evaluations	35	49	58
Supporting English learner students	39	53	53
Communication with colleagues and administration	36	59	58
Professional development	38	48	68
Content knowledge	29	61	65
Classroom observation	44	57	57
Social-emotional support	40	61	60
Classroom management	51	56	57
Lesson and unit planning	39	67	65
Supporting students with disabilities	53	60	65
Differentiating instruction	53	61	68
Instructional strategies	53	79	72

Note: *N* = 222 new teachers.

Source: Authors’ analysis of data from the study district’s 2019 New Teacher Mentoring program survey for new teachers.

The study team collaborated with the district to categorize topics as instructional and noninstructional based on whether they were deemed to support students directly. Thus, classroom observation was classified as instructional because it could presumably have a direct and immediate impact on student learning, while teacher evaluations were deemed noninstructional because they are oriented toward administrative tasks and human resource processes.

Analysis of demographic alignment between new teachers and mentors

A total of 222 surveys were collected from new teachers. Nearly 200 completed mentor surveys were returned, resulting in complete new teacher–mentor survey data for 194 pairs. The analyses of new teacher–mentor pairs were thus based on data for 194 pairs with completed survey data.

Race/ethnicity data were self-reported for both new teachers and mentors. When self-reported data were missing, administrative data supplied by the school district were used. Racial/ethnic matches were coded if pairs reported the same racial/ethnic category, and new teachers and mentors were coded as a person of color if they self-identified as a race/ethnicity other than White.

Testing relationships between mentoring content and retention with mentor perceptions of new teacher performance

New teachers who reported spending substantial time with their mentor on classroom management were less likely to be retained than teachers who did not report spending substantial time with their mentor on classroom management. However, the relationships between mentoring topics and retention are not necessarily causal. Instead, the topics that new teachers reported spending substantial time on with their mentor could be related to an underlying likelihood or could be leading indicators of attrition. For example, spending substantial time on classroom management itself will not necessarily decrease a teacher’s odds of retention, but there might be an underlying relationship between the two attributes. New teachers who struggle with classroom management and thus spend substantial time with their mentor on it, might be more likely to leave than new teachers who are proficient in this domain. New teachers who have mastered classroom management and other fundamentals might both be more likely to stay and have more time to devote to other topics, such as lesson and unit planning. Another possible explanation is that chance assignments to more challenging classes both prompt some new teachers to ask more about classroom management and discourage them from returning. Similarly, new teachers are not necessarily more likely to leave the district because they spend time with their mentor on teacher evaluations. Rather, spending time on teacher evaluations might indicate that a teacher felt anxious about and wanted to prepare for the evaluation or that the evaluation showed substantial room for growth. Both explanations could be related to a greater underlying likelihood of leaving the district.

To try to address the degree to which new teachers’ proficiency drives both mentoring content and retention, an additional regression model was run that included a measure of mentors’ perceptions of new teachers’ performance (table B3). The inclusion of this measure, which is drawn from the mentor survey, reduced the sample size in the regression from 219 observations to 192 because not all new teacher surveys had linked mentor surveys. The coefficient on perceived performance was positive and significant, suggesting that new teachers perceived as higher performing by their mentor were more likely to stay in the district. The planning coefficient retained its significance and magnitude. This suggests that some aspects of how new teachers reported spending time with their mentor and their overall perceived performance are independently related to retention. The coefficient on classroom management was no longer significant, suggesting that mentors’ perceptions of teachers’ performance might be as accurate an indicator of new teachers’ retention as time spent on classroom management.

Table B3. New teachers' odds of retention based on mentoring content and mentor perceptions of performance

Variable	Model 2	Model 7
Number of observations	222	194
Dosage (reference group is low dosage)		
Moderate	12.38** (10.78)	13.00** (12.21)
High	2.902 (1.760)	2.050 (1.465)
Race/ethnicity (reference group is White)		
Asian	0.350 (0.296)	0.202 (0.201)
Black	0.551 (0.427)	0.948 (0.896)
Hispanic	0.800 (0.687)	0.603 (0.633)
Gender (reference group is male)		
Female	3.580* (2.094)	4.334* (3.005)
Substantial time on content		
Lesson and unit planning	5.467* (3.623)	7.734* (6.303)
Differentiating instruction	2.707 (1.750)	1.336 (0.992)
Classroom management	0.138* (0.107)	0.235 (0.205)
Teacher evaluations	0.254* (0.170)	0.237 (0.185)
New teacher performance		3.251** (1.214)

* Significant at $p < .05$, ** significant at $p < .01$.

Note: $N = 222$ new teachers. Coefficients reported in the table are odds ratios. Numbers in parentheses are standard errors. A least absolute shrinkage and selection operator logistic regression was used to select topic-related variables for inclusion in the model. Race/ethnicity, alignment, and dosage variables were included in various models for hypothesis testing.

Source: Authors' analysis of 2020 administrative data provided by the study district and data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Analytic decisions in predicting relationships between mentoring and retention

Variables were selected for regression models predicting the relationships between dosage, content, the demographic alignment between new teachers and mentors, and retention based on theoretical and empirical importance. Variables of theoretical importance included those that previous research has linked to improved teacher and student outcomes. Dosage, race/ethnicity, and new teacher–mentor racial/ethnic alignment were among the variables selected for inclusion based on their theoretical importance. A separate least absolute shrinkage and selection operator logistic regression predicting the relationship between retention and substantial

time spent on all 17 topics was used to identify the mentoring topics of greatest importance for predicting retention. These topics were subsequently included in models 2–7.

Models 1–4 can generally be represented as follows:

$$\log\left[\frac{\text{Retained}}{(1-\text{Retained})}\right]=n$$

$$n=\beta_0+\beta_1\text{Dosage} + \beta_2\text{NewTeacherDemographics} + \beta_3\text{MentoringContent} + \beta_4\text{Alignment} + \varepsilon.$$

Models 5 and 6 consider whether different types of demographic alignment might have different relationships with retention. For example, does having a mentor of the same race/ethnicity and the same gender matter compared with having a mentor of the same race/ethnicity? And is it related to retention in the same way for White women and for Black women? Interaction terms in these models were employed to explore differences across race/ethnicity and gender in the relationship between racial/ethnic and gender alignment and retention. This is important because new teachers’ experiences of having a mentor of a different race/ethnicity might not be generalizable across new teachers of different racial/ethnic and gender backgrounds. Overarching social dynamics and entrenched racial/ethnic hierarchies make it important to consider teachers’ intersectional identities.

The interaction terms in models 5 and 6 produce the following equation:

$$\log\left[\frac{\text{Retained}}{(1-\text{Retained})}\right]=n$$

$$n=\beta_0+\beta_1\text{Dosage} + \beta_2\text{MentoringContent} + \beta_3\text{NewTeacherDemographics} X \beta_4\text{Alignment} + \varepsilon.$$

Virtual mentoring in the time of COVID-19

The COVID-19 pandemic emerged while analyses for this report were under way. During the 2018/19 school year 95 percent of new teachers reported that they often or almost always communicated with their mentor through face-to-face encounters (table B4). The district under study faced the reality that new teachers could not be mentored in person or observed in their classrooms during most of the 2019/20 school year. Instead, the district needed to identify virtual approaches to help new teachers reflect on and improve their practice. Some virtual mentoring strategies were used during the 2018/19 school year. The following analyses explore that use in order to offer recommendations to the district on how to implement effective virtual mentoring.

Virtual modes of mentoring show some promise but were underutilized—most contact between new teachers and mentors occurred face to face. The NTM program sponsors the use of the ClassForward video coaching platform, which allows mentors to view and provide feedback on recordings of new teachers’ instructional practice. Only 41 percent of new teachers reported having used the ClassForward platform. Among users, 35 percent agreed or strongly agreed that their experience was positive, and 55 percent were neutral on the subject (table B5). During the 2018/19 school year only 3 percent of new teachers reported that they often or almost always communicated with their mentor virtually (see table B4). Yet virtual approaches to mentoring are increasingly important as schools consider ways to limit personal contact in their buildings in efforts to slow the spread of COVID-19. Tools exist to facilitate this type of exchange between new teachers and mentors.

Table B4. New teachers who reported often or almost always using various modes to communicate with their mentor, 2018/19

Mode of communication	Percent	Number
Face-to-face	94.6	210
Email	45.9	102
Text	39.2	36
Phone	16.2	87
Virtual	2.7	6
Chat	2.7	6

Note: *N* = 222 new teachers.

Source: Authors' analysis of data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

Table B5. New teachers' use and perceptions of ClassForward video coaching platform

Item: My experience with the ClassForward video coaching platform has been positive.

Response	Percent overall	Percent of users	Number
Strongly agree	4.1	9.8	9
Agree	10.4	25.0	23
Neutral	23.0	55.4	51
Disagree	1.4	3.3	3
Strongly disagree	2.7	6.5	6
I have not used ClassForward	58.6	na	130

na is not applicable.

Note: *N* = 222 new teachers. Percentages might not sum to 100 because of rounding.

Source: Authors' analysis of data from the study district's 2019 New Teacher Mentoring program survey for new teachers.

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Appendix C. New Teacher Mentoring program survey for new teachers

New teacher participants in the New Teacher Mentoring (NTM) program completed the survey online between April and June of the 2018/19 school year.

Box C1. New Teacher Mentoring program survey for new teachers

Please select your DISTRICT ID # from the list below (*If you do not see your DISTRICT ID #, please alert a member of the NTM team.)

Is this your first year as a DISTRICT teacher?

Please indicate the extent to which you agree with the following statements. My NTM mentor gives me direct feedback regarding my performance that allows me to have a clear picture of my development areas. [Strongly agree, Agree, Disagree, Strongly disagree]

Please indicate the extent to which you agree with the following statements. My NTM mentor has an accurate understanding of my instructional strengths and development areas.

Please indicate the extent to which you agree with the following statements. My NTM mentor is able to direct me to development or practice opportunities aligned to my needs.

Which best describes the frequency of coaching you have received from your NTM mentor?

How often do you and your NTM mentor use the DISTRICT Essentials for Instructional Equity to support your growth as a new teacher?

How much of your time with your NTM mentor is on the following areas: [No time at all, A little time, Some time, Quite a bit of time, A great deal of time/all of our time].

- Classroom management (including routines and discipline)
- Lesson and unit planning
- Collecting and analyzing student information/data (including creating assessments and grading)
- Logistical issues (district forms, payroll, email, etc.)
- Maintaining accurate records (attendance, parent contact, behavior logs, etc.)
- Social-emotional support (including work-life balance)
- Participating in a school community (clubs, committees, extracurriculars)
- Differentiating instruction
- Supporting students with disabilities
- Supporting English Language Learners
- Participating in professional development (PD training, PLCs, grade-level or team meetings)
- Family engagement
- Communication with colleagues and administration
- Classroom observation (pre-meeting/observing/debrief)
- Teacher evaluations
- Instructional strategies
- Content knowledge

I meet with my NTM mentor... [daily, more than once a week, weekly, every other week, monthly]

On average, how long are your meetings with your NTM mentor? [30 minutes or less, 1 hour, 1.5 hours, 2 hours, more than 2 hours]

On average, how frequently do you use the following modes of communication when interacting with your NTM mentor?
[No time at all, A little time, Some time, Quite a bit of time, A great deal of time/all of our time]

- Face-to-face
- Email
- Phone
- Text
- Virtual (i.e., ClassForward, Skype)
- Online chat

Please enter the number of times that your NTM mentor has observed your classroom in person.

The support that my NTM mentor gives me improves my teaching practice. [Strongly agree, Agree, Disagree, Strongly disagree]

The support that my NTM mentor provides has an impact on my students' learning.

My experience with the ClassForward video coaching platform has been positive.

Do you intend on returning as a teacher at DISTRICT for the next school year (2019-2020)?

Please indicate which of the following reasons are associated with your intention to not return to DISTRICT next year.

The support I have received through the NTM mentoring program has influenced whether or not I plan to stay at DISTRICT next year.

The district-provided onboarding and support I received prepared me for my first year as a classroom teacher.

Please indicate the extent to which you agree with the following statements. I feel supported by my grade-level chair/department chair/administrator in my work as a first-year teacher.

Please indicate the extent to which you agree with the following statement: I feel supported by my school (e.g., principal, grade-level chair, department chair) in my work as a first-year teacher.

Please indicate the extent to which you agree with the following statement: My school is committed to improving my instructional practice.

Please indicate the extent to which you agree with the following statement: The support I am receiving from my grade-level chair/department chair/administrator is helping me become a better classroom teacher.

Please indicate the extent to which you agree with the following statement: Overall, my school year is going well.

Please indicate the extent to which you agree with the following statement: I can be an effective teacher in my current school.

Please indicate the extent to which you agree with the following statement: I can be an effective teacher in my current grade level.

Please indicate the extent to which you agree with the following statement: I can be an effective teacher in my current subject area.

Please indicate the extent to which you agree with the following statement: If I could do it all over again, I would still become a teacher in my school.

Not including this year, how many years of experience have you had as a classroom teacher?

Did you teach in a different district prior to beginning your career as a DISTRICT teacher?

Please select the DISTRICT partner/pipeline program(s) for which you are a cohort member or alumnus/a.

Which type of STATE teaching license do you hold?
