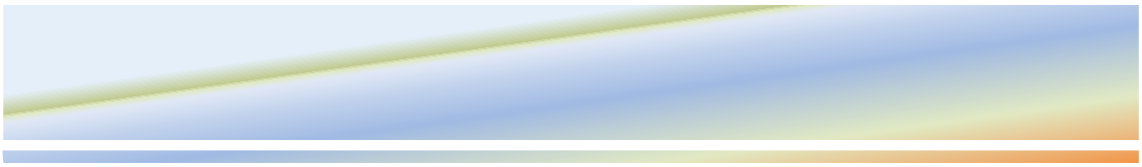
New Visions for Public Schools – Hunter College

Urban Teacher Residency Project

A Different, More Durable Model



Rockman et al

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We would especially like to thank those who helped us explore UTR's longer-term impact. Assembling data for studies such as these is as tough as it is critical, and we are grateful to all those who filled our raft of data requests—the New Visions data team, Hunter's Office of Institutional Research, the New York City Department of Education, and the Independent Budget Office. We also drew often on the expertise and experience of UTR partners, including Roberta Trachtman, New Visions' former Director of Teacher Certification; current Deputy Directors of Residencies, Marisa Harford and Rachelle Verdier; Sherryl Brown Graves, Acting Senior Associate Dean of Hunter College's School of Education; and Erin Shay, Director of the School of Education's Office of Partnership Programs. Our work benefitted immeasurably from their ideas, insights, and support.

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Table of Contents

UTR: A Different, More Durable Model

INTRODUCTION

This report shares findings from three longitudinal studies of the Urban Teacher Residency (UTR) Project, a partnership between New Visions for Public Schools, Hunter College, and the New York City Department of Education. From 2009 to 2014, with funding from the US Department of Education's *Teacher Quality Partnership* (TQP) Program, UTR placed over 150 new English, mathematics, science, and special education teachers in some of the city's highest-need secondary schools. In 2014, partners were awarded a three-year supplemental grant in support of the research shared here.

Funding for the longer-term research required evidence of shorter-term impact. For UTR, both internal program data and external evaluation data had shown promising results: Each cohort of UTR residents, selectively chosen, increasingly diverse, had completed all program requirements with only modest attrition, spending a year in a high-needs school under the guidance of a trained mentor, meeting benchmarks on a set of program assessments that included a demonstratration of effective practice, completing Hunter coursework, passing required New York state licensure exams, and obtaining jobs in high-needs schools.

Survey and focus group data, gathered at the end of each UTR cohort's clinical year by Rockman et al, UTR's external evaluator, confirmed that residents were entering classrooms confident in their skills and knowledge—and in their decision to become teachers. Year after year, Rockman's annual analyses of student achievement also showed that students taught by UTR teachers were performing as well as, often better than their peers. Perhaps most important, early retentention data indicated that UTR were staying, at rates that surpassed city-wide figures.

A selective admissions process, a skill- and confidence-building full year in the classroom, built-in accountability—all seemed to have paid off: UTR was increasing the numbers of teachers—effective teachers—in the pipeline.

What the early data couldn't confirm was whether the benefits were long-term, even increasing as teachers gained experience. To explore those questions, Rockman, in collaboration with UTR partners, designed three supplemental studies.

THE THREE STUDIES

The individual sections of this report explain the rationale and research design for the three studies. The summaries below describe the studies, and the questions that guided them, in brief.

Student Achievement

Student achievement warranted a separate study for two main reasons: first, at the end of UTR's five years, UTR's successive cohorts had been teaching four years or less, and a longer time frame was needed to gauge impact. Second, student performance remains an important indicator of teachers' effectiveness, and standardized test scores provide a common metric for a quasi-experimental design.

> Do UTR teachers improve student achievement?

Special Education

Special education merited its own study because close to half of all UTR residents were special educators. It also required a different kind of study: achievement data wasn't the right metric for special ed students, and a more qualitative study with site visits and interviews, anchored by analyses of school performance data, could probe what UTR special educators brought to schools—especially important as NYC DOE schools were adjusting to major changes in district special education policies.

> What impact do UTR special educators have on students and schools?

Teacher Retention

At the end of UTR's five-year funding period, the first cohort of teachers had been teaching only four years—the term of their program commitment. It was important to look beyond that, to see whether UTR teachers were staying—in high-need NYC DOE high schools—and how retention patterns compared to those of teachers trained in other programs. A separate study could also explore factors linked to teachers' decisions to stay, change schools, or leave the profession.

> Do UTR teachers stay, and why or why not?

THE KEY FINDINGS

Details about results and their significance appear in a *Summary of Findings* that accompanies each study. The bullets and conclusions below share the key takeaways from all three studies.

Student Achievement

- **UTR teachers have a positive impact on student achievement.** NY State Regents exam scores across all subject areas showed that UTR-trained teachers' students performed as well as or better than peers taught by teachers trained in other programs. We compared scores using analysis of covariance (ANCOVA), controlling for gender, English language learner status, special education status, ethnicity, and prior achievement.

- **The differences in performance that were statistically significant favor UTR.** In 27 comparisons of Regents scores where differences between students taught by UTR- and non-UTR-trained teachers were statistically significant, the UTR group's performance was higher 89% of the time.

- **UTR benefits increase over time in some subjects.** For Geometry, Algebra 2 – Trigonometry, and Earth Science become stronger as teachers gain classroom experience: a positive gap between UTR vs non-UTR was more evident in the group with three or more years or teaching experience.

Special Education

- **UTR special educators have a positive impact on factors that lead to student success.** 11th and 12th grade special education students in schools with UTR-trained special educators had higher attendance rates and earned more credits than special education students in schools with no UTR-trained teachers.

- **UTR special educators can benefit students of color.** Comparative analyses of attendance, credit accumulation, and graduation data suggested a similar predictive value or positive impact of UTR special educators on Hispanic and African-American students.

- **UTR training equipped residents not just to acclimate to urban schools but also contribute to them.** Teachers and administrators in placement schools praised this skillset around data and intervention, and credited residents with helping them meet the needs of special education students.

- **UTR special educators help schools manage change.** UTR special educators began teaching as NYC schools were adjusting to new policies, and feedback, especially from principals, indicated that UTR special educators helped schools adapt and carry out changes in ways that supported both students and teachers.

Retention

- **UTR teachers are staying in the classroom, at an overall retention rate of 91%.** UTR graduates had a lower rate of attrition—by half—than other new NYC DOE high school teachers. Retention rates decline slightly over time, but, after six years, close to three-fourths of UTR's first cohort are still teaching.

- **Retention rates are highest among special educators, at 93%.** These rates exceed rates among special educators city-wide, and rates for special educators trained in traditional and other alternative certification programs. Mobility data also indicate that special educators are less likely to change schools.

- **Background characteristics associated with retention include ethnicity and prior schooling.** Among UTR teachers, teachers of color have comparable or higher retention rates, and as do those with bachelors'—as opposed to advanced—degrees.

- **Residents' perceptions of efficacy and preparedness are related to the likelihood that they will remain in the classroom.** Residents' self-assessments of classroom management skills are a statistically significant factor when analyzing retention status.

- **A wide range of factors that merit further investigation can influence retention.** Hiring school culture and demographics may be factors, as are program service requirements influence teacher retention. Of the UTR and MASTER graduates who are no longer teaching, about a quarter left after the four-year commitment, compared to almost half of Teach for America teachers leaving after fulfilling the two-year service requirement.

CONCLUSIONS

These studies were designed to gauge UTR's success in reaching two key goals—improving student achievement and teacher retention—and to gain a broader perspective on the longer-term impact of the UTR model. Our findings are based on multiple data sources, including external evaluation survey, focus group, and interview data; program data from New Visions and Hunter College; annual student achievement data, including comparison group data; publicly available school performance and climate data from the NYC DOE; and reports from the New York City Independent Budget Office. We also consulted research in the field to see how UTR fared compared to other models, and what these studies might contribute to conversations about teacher preparation and quality.

Overall, our findings portray a teacher preparation model that, thus far, stands the test of time, and helps build the body of evidence called for in a recent Bellwether Education Partners report urging accountability for teacher residences.[1] Our Achievement Study, based on standardized Regents test scores from students taught by UTR teachers with between one and seven years' experience, show UTR-taught students performing as well as their peers, in some cases significantly higher. Findings also indicate that some UTR benefits become stronger over time.

The Retention Study similarly portrays a model with staying power. Retention rates among UTR graduates are high, and mobility rates are low. Rates decline slightly the longer teachers are in the classroom, but, after six years, close to three-fourths of UTR's first cohort are still teaching. Compared to peers prepared through other alternative certification pathways, UTR-trained teachers have lower rates of attrition by half or more.

Much school research, especially longitudinal research, involves a host of confounding variables, and these studies were no different. What may be most compelling is the consistency: the longitudinal achievement results mirror the results from our annual analyses, which, each year, show an overall advantage to being taught by a UTR-trained teacher compared to a non-UTR trained teacher. Findings also held steady in annual results for residents trained in the Mathematics and Science Teacher Education Residency (MASTER) project, a joint, NSF-funded effort for which UTR partners adapted the UTR model.[2] Findings from other alternative programs also indicate a positive impact, but chart peaks and valleys, where teachers either do less well than peers in their first year, but gradually show positive results, or have an initial positive impact that plateaus over time.[3]

The consistency in UTR findings may reflect the accountability built into the UTR model. Partners routinely assemble data, through the New Visions suite of performance assessments and placement and retention tracking, and Hunter's

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1 Ashley LiBetti and Justin Trinidad, "Trading Coursework for Classroom: Realizing the Potential of Teacher Residencies." Bellwether Education Partners (July 18, 2018).

2 See Rockman et al, "Measures of Success" (2015) and "The MASTER Model: Preparation through Partnerships" (2017). Because we lacked longer-term data from MASTER, no figures are included in the Achievement study; the Retention study does include MASTER figures.

3 John P. Papay, Martin R. West, Jon B. Fullerton, and Thomas Kane, "Does an Urban Teacher Residency Increase Student Achievement? Early Evidence from Boston," *Educational Evaluation and Policy Analysis* (2012). See also Linda Darling-Hammond, et al., "Does Teacher Preparation Matter? Evidence about Teacher Certification, Teach for America, and Teacher Effectiveness," *Education Policy Analysis Archives*, [S.l.], v. 13, (Oct. 2005): 42. Available at: <https://epaa.asu.edu/ojs/article/view/147>.

program completion and licensure requirements, that meet the need for "completer- and program-level data" encouraged in the Bellwether report to "measure the effects of their own improvement efforts."[4] The key may be that, providing ongoing feedback to residents and mentors, UTR partners hold the model and its participants to account during their residency year—successfully accelerating the learning curve of UTR graduates.

The Special Education study perhaps best tells the counter narrative proposed in the Bellwether report, providing evidence of "practices and processes" that lead to positive outcomes.[5] Like all UTR teachers, UTR special educators are trained in formative assessment and the use of data to diagnose and address students' learning needs. But for novice special educators, the demands of addressing multiple learning needs, teaching unfamiliar content, and writing detailed Individual Education Plans (IEPs) may exceed their training and experience.

These challenges are often the focus of UTR partners' continuous improvement efforts, but our case study findngs suggest that the key skill is knowing when to pivot if a strategy isn't working. This flexibility allows UTR special educators to try a different tack or put their heads together with co-teachers to devise new strategies. Ultimately, it helps them acclimate to urban schools and contribute to them—both of which contribute to job satisfaction and thus retention. Retention data seem to bear this out: UTR special educators tend not just to stay but to stay put: 73% are still teaching where they started. This can bring stability to schools, and may account for the fact that 11th and 12th grade special education students in schools with UTR-trained special educators had statistically significant higher attendance rates and earned more credits than special education students in schools with no UTR-trained teachers. This constellation of links between training, practice, and outcomes may be what makes UTR a viable, durable, and in many ways different model for teacher preparation.

What also sets UTR apart is that it was always about more than preparing residents. Its legacy is its influence on mentors as well, on the principals and teachers in host and hiring schools, on the partners who continue to revise and adapt the UTR model—and on their many colleagues deeply committed to preparing teachers and improving schools.

[4] LaBetti and Trinidad, 21, 25.

[5] LaBetti and Trinidad, 21.

Chapter 1
Training Teachers to Increase Student Performance

Our achievement study builds on research and focuses on the impact of UTR graduates, comparing the performance of their secondary students to that of students taught by other teachers with the same level of classroom experience. The study poses two guiding questions:

How do UTR-trained teachers compare to non-UTR teachers, based on their students' performance on the New York State Regents exams?

Does their impact change over time, as years of teaching experience increase?

The first question focuses on how UTR-trained teachers compare to other teachers in terms of their students' Regents exam performance. The second question explores whether the performance of students of UTR-trained teachers improves as teachers gain experience.

Organization of the Chapter

This chapter is organized into two sections, the first of which provides an analysis of how UTR-trained teachers' students' performance on subject-specific Regents tests compares to that of students taught by non-UTR-trained teachers with the same number of years of experience, teaching the same subject.[6] The second section examines interaction effects more closely, looking at whether student performance changes as UTR graduates gain experience, and whether similar links emerge between special education students' performance and content area teachers' experience.

METHODS

This study primarily relies on previously collected achievement data for UTR Cohorts 1–7, or Regents exam scores from 2010–11 through 2016–17, as applicable to each cohort. Previous analyses included UTR residents' students, whose

[6] Teachers in both the UTR and non-UTR samples were drawn from the 70+ schools in the New Visions network, one of the largest affinity groups supporting NYC DOE schools. Drawing the study sample from network schools expedited data access and ensured that in-school support was similar across teachers and thus not a confounding factor.

performance was compared to that of students taught by other first-year teachers; this study excluded residents, focusing only on graduates once they become teachers of record.

Previous analyses also compared UTR- versus non-UTR trained teachers within the New Visions network, but within a single year of achievement data and a single cohort. This study builds on that work by combining data across multiple years and examining the relative advantage of being a UTR-trained teacher across various time points (e.g., during the first year of teaching, during the second year, etc.). With this design, examining the "UTR effect" during their first year of teaching, analyses could potentially include teachers from *all seven* UTR cohorts and from *all years* of achievement data, thereby maximizing sample size and allowing us to synthesize findings across waves of data collection.

Unfortunately, relying on previously collected data has some drawbacks: any flaws in the earlier waves of data collection—unbalanced samples for Regents scores, teachers without matches, missing data, changes in the variables included in each file over the years—could continue to have an impact. While the general matching approach was the same across all waves of data collection, the extent to which the matching was successful and/or documented (in terms of specific IDs for matching "pairs" of teachers) varied. Each year, we used Mahalanobis Distance (MD) scores, based on school demographics (% economically disadvantaged, % Hispanic, % African American, % students with disabilities, % English language learners, % female, and total enrollment), to identify similar schools. We then matched UTR teachers within each school to other teachers in schools with similar MD scores, who had the same number of years of teaching experience and were teaching similar courses (excluding Advanced Placement, remedial, or Credit Recovery courses). We then examined Regents scores for the students in these courses to determine if there were significant differences between the performance of students of UTR-trained teachers versus non-UTR trained teachers. We compared scores using analysis of covariance (ANCOVA), controlling for gender, English language learner and special education status, status, ethnicity (Hispanic and African American), and prior achievement (8th grade reading and math scores).[7]

Overall, data from 71 UTR teachers were included in the study. Of these, 29 taught courses that led to English Regents exams; 19, courses that led to one or more math Regents exams (Algebra I, Geometry, or Algebra II-Trig); and 26, courses that led to science Regents exams (living environment, chemistry, or earth science). (Three teachers taught multiple subjects, which is why the counts add up to more than 71). The representation of UTR cohorts across the different analysis files is summarized in Table 1 below; Table 2 shows the number of students by subject and UTR teachers' year in the classroom. (The numbers of students in the comparison group varies, and are included in Tables 3–7.) An important caveat of our "longitudinal" analyses that becomes apparent in the table is that it is impossible to separate the effect of cohort from years of teaching experience—earlier cohorts have had time to accumulate more years of experience and therefore are the ones represented in those "experienced" files. Due to sample size constraints, the fifth through seventh years of teaching experience files were combined for analysis. We also created an overall file, combining all of the individual teaching year files, for a total of 166 UTR teacher/year instances (along with their non-UTR matches).

Not included in this study are teachers trained in the Mathematics and Science Teacher Education Residency (MASTER) program, a three-year, NSF-funded partnership between Hunter, New Visions, and the NYC DOE that overlapped with

[7] Our original analysis plan for this longitudinal study used HLM to model the effects of UTR over time. However, because we only have "within teacher" data over time for UTR teachers and not the matched sample (matches tended to be different each year), we were unable to construct a model where Level 1 represented the longitudinal data for each teacher in the full sample. Our revised plan was to use HLM to exam the UTR effect within a single year of teaching experience (e.g., data from only a teacher's 2nd year or teaching), unfortunately we found that our sample sizes for Level 2 (teacher level) within each subject area were not large enough in most instances. We thus determined that the best approach was to use Analysis of Covariance (ANCOVA) as we had in previous waves of analysis.

UTR and also employed the residency model. Because the MASTER project ended in 2016, it did not allow us to look at longitudinal effects. Excluding MASTER did reduce the number of math and science teachers in certain years, since those subjects were covered by MASTER rather than UTR, but the overlap complicated isolating a project effect. Our analyses do include two Cohort 7 English teachers participating in the Learning Partners Urban Teacher Residency (LP-UTR), a continuation of the residency model that added features of the NYC DOE's Learning Partners program. These two teachers are included only in analyses for teachers in their first year and in analyses for overall years.

Table 1. Achievement Analysis Sample—Number of Teachers by UTR Cohort

	Number of Teachers							
	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	All Cohorts
1st Year of Teaching	5	14	4	8	8	4	2	45
2nd Year of Teaching	6	8	7	5	7	1	0	34
3rd Year of Teaching	3	13	6	6	7	0	0	35
4th Year of Teaching	3	11	3	7	0	0	0	24
5th Year of Teaching	2	8	6	0	0	0	0	16
6th Year of Teaching	3	8	0	0	0	0	0	11
7th Year of Teaching	1	0	0	0	0	0	0	1
Total # of Teacher/Year Instances	23	62	26	26	22	5	2	166
Total # of Unique Teachers	9	21	11	12	12	4	2	71

Table 2. Achievement Analysis Sample—Number of Students by UTR Teachers' Year in the Classroom

	Number of Students				
	5th–7th Year	4th Year	3rd Year	2nd Year	1st Year
Integrated Algebra	0	159	108	171	235
Geometry	0	0	175	126	66
Alg 2 Trig	64	0	0	0	60
Living Environment	351	306	360	406	509
Chemistry	0	236	210	260	362
Earth Science	0	120	0	175	168
English	327	299	503	491	611

Sample sizes within each set of analyses (representing a particular year of teaching experience and Regents exam) varied greatly by year and subject area and are specified within the outcome tables in the results section. Only exams where data were available for at least two UTR and two comparison teachers with at least 30 students each were analyzed.

There are other subject-related factors that may affect student performance and thus findings, including New York's 2010 adoption of the Common Core Standards for Mathematics, and, during the two–four years afterward, the staggered shifts to the Common Core aligned state Regents exams for Algebra I, Geometry, and Algebra II-Trig. The math scores used in our analyses for the years prior to the changes refer to the old exams. There may have been a few cases where students took the old and new exams, but schools entered only one score, likely the higher one. In cases where the goal was to examine performance across years by subject, we combined scores.

Another factor that we considered in our analyses is the timing of exams: for example, students sometimes sit for the Regents exam in English in their junior year. For the study, we used scores only of Regents that were taken during the year of the "file," so if we happen to have 10th grade students with English Regents, it is because they took it that year. In the rare cases where multiple attempts were made during the same year, we used the highest score for that exam.

SUMMARY OF FINDINGS

TEACHERS' EXPERIENCE AND STUDENT ACHIEVEMENT

- **Regents exam scores across all subject areas showed that UTR training resulted in either a significant advantage or "no harm done."** Earlier findings indicated that UTR had a positive impact on student achievement, with students performing as well as or better than peers taught by other early career teachers. The results shared here confirm the earlier—positive— findings.

- **In comparisons where differences in students' Regents scores were statistically significant, the UTR group's performance was higher 89% of the time.** Overall, we conducted 27 comparisons, examining adjusted means of Regents scores of students taught by UTR- and non-UTR-trained teachers with the same number of years of classroom experience. Differences in student performance were not dramatic, but students taught by UTR-trained teachers outperformed peers in eight out of nine comparisons where the differences in scores were statistically significant.

- **There was only one instance where the performance of UTR teachers' students was significantly lower than that of students taught by non-UTR teachers with the same number of years of experience.** For teachers in their third year of teaching, students taught by the non-UTR group outperformed the UTR group on the Integrated Algebra Regents exam.

- **Students taught by UTR-trained teachers with varied years of experience performed significantly higher across multiple subject-specific Regents exams** compared to the performance of students of non-UTR teachers with the same number of years of teaching experience.

- **Students of UTR teachers performed significantly higher on the Regents geometry, living environment, earth science, and English exams,** based on comparisons of' the performance of students of UTR teachers across all available years of teaching experience,

INTERACTION EFFECTS

- **In some math and science subjects, the UTR benefit may become stronger over time.** For geometry, algebra 2 – trigonometry, and earth science, our longitudinal analyses of the interaction between the UTR effect and years of teaching experience, showed that, in some instances, UTR teachers may become more effective as they gain classroom experience: a positive gap between UTR vs. non-UTR was more evident in the group with three or more years or teaching experience in all three subjects. For chemistry, the analysis suggests that the initial UTR benefit may disappear over time.

- **Whether or not a UTR teacher is a career changer may affect student performance.** Our comparisons within the UTR group showed a statistically significant difference in the performance of students taught by UTR teachers who were "career changers, (those who began the UTR program six or more years after completing

their undergraduate degree, and the performance of students taught by "non-career changers," those who began UTR within five years. Students in the career changers group performed significantly lower on the Regents English exam than those who were taught by the "non-career changers."

- **Level of education may also factor into teachers' impact on student performance.** Again looking within the UTR group, our analysis found a statistically significant difference in the performance of students taught by UTR teachers who began the program with only an undergraduate degree, compared to UTR teachers with a Master's or Doctorate. Students in the "advanced degrees" group performed significantly lower on the Regents English exam and on the Regents Living Environment exam.

- **Results for the impact of UTR-trained teachers in Integrated Co-Teaching (ICT) classrooms were mixed.** Earlier analyses had suggested that UTR training may help narrow the achievement gap between special and general education students. The analyses conducted for this study did not show this effect, though the analyses did indicate a positive effect for general education students. In examining the interaction between Special Education and UTR, we found significant interaction for Living Environment in which the benefit of being taught by a UTR-trained content teacher working in an ICT classroom was evident only for students who did not have an IEP. Findings between Special Education and UTR across all other subject areas were not significant. (For additional insight on the impact of UTR trained special educators please see the Special Education Report, the second chapter in this series of supplemental studies.)

Section 1
Student Achievement by Years of Teaching

For each UTR cohort, from 2009—2015, we compared the performance of students taught by UTR-trained teachers to that of students taught by teachers matched by years of experience and course, gradually adding analyses of not only UTR residents' impact but also graduates'. And, each year, we found that students taught by UTR-trained teachers were doing as well as or better than their peers. Where differences between the two groups were statistically significant, results favored UTR.

Analyses conducted as part of our 2016 summative study, which examined UTR graduates' impact one, two, three, and four years beyond their residency, again indicated that UTR provided a significant advantage, or graduated teachers whose students performed on par with their peers. Adding data from three more years, the supplemental study allowed us to lengthen the time frame, merge annual findings, and broaden our view. While clear trends or results pointing to a definitive sweet spot remain elusive, the findings shared below confirm earlier findings, with UTR still holding its edge: About a third, or nine of the 26 comparisons we conducted showed statistically significant differences in the Regents scores of students taught by UTR-trained graduates and those taught by other early career teachers: in eight out of nine or 89% of those comparisons, the UTR group outperformed peers.

TEACHING EXPERIENCE AND STUDENT ACHIEVEMENT

1st Year of Teaching

Looking at the performance of students of UTR teachers during their first year of teaching and comparing it to the performance of students of non-UTR teachers during their first year of teaching, we found two statistically significant differences across the Regents exams.[8]

Students in the UTR group performed significantly higher on the Regents living environment exam (UTR adjusted mean=71.1, Non-UTR adjusted mean=65.3, $F(1,910)=62.2$, $p<.001$) and significantly higher on the Regents chemistry exam (UTR adjusted mean=66.1, Non-UTR adjusted mean=63.6, $F(1,544)=6.2$, $p=.01$). These analyses (ANCOVA) controlled for gender, special education status, English language learner status, ethnicity (Black or Hispanic) and 8th grade proficiency scores in reading and math.

[8] The shading in Tables 2–7 below highlight statistically significant differences, with p values at .05 or higher, between the UTR and non-UTR groups: green indicates the higher score or adjusted mean.

Table 3. 1st Year of Teaching

	UTR				Non-UTR				
Regents Exam	**N Teachers**	**N Students**	**Adjusted Mean**	***SE***	**N Teachers**	**N Students**	**Adjusted Mean**	***SE***	**Sig of Difference**
Integrated Algebra	6	235	63.0	0.7	5	180	61.2	0.8	p=.10
Geometry	5	56	55.8	1.7	5	124	59.6	1.1	p=.07
Alg 2 Trig	4	60	58.3	2.1	4	94	63.1	1.6	p=.11
Living Environment	10	509	**71.1**	0.5	11	418	**65.3**	0.5	p<.001
Chemistry	4	362	**66.1**	0.6	4	191	**63.6**	0.8	p=.01
Earth Science	2	168	60.2	1.0	2	70	59.1	1.8	p=.63
English	18	611	71.7	0.5	19	501	71.8	0.6	p=.89

2nd Year of Teaching

Comparisons of UTR teachers' students' performance to that of students of non-UTR teachers, during teachers' second year, showed only one statistically significant difference—close to 10 points—across the Regents exams. Students in the UTR group performed significantly higher on the Regents earth science exam (UTR adjusted mean=69.0, Non-UTR adjusted mean=59.7, $F(1,294)=33.7$, $p<.001$). Analyses (ANCOVA) again controlled for gender, special education status, English language learner status, ethnicity (Black or Hispanic) and 8th grade reading and math proficiency.

Table 4. 2nd Year of Teaching

	UTR				Non-UTR				
Regents Exam	**N Teachers**	**N Students**	**Adjusted Mean**	***SE***	**N Teachers**	**N Students**	**Adjusted Mean**	***SE***	**Sig of Difference**
Integrated Algebra	5	171	63.7	0.7	6	277	64.2	0.6	p=.62
Geometry	3	126	67.0	1.2	2	135	68.3	1.1	p=.45
Living Environment	7	406	69.4	0.5	8	421	69.1	0.5	p=.73
Chemistry	4	260	64.1	0.7	4	82	64.2	1.3	p=.96
Earth Science	2	175	**69.0**	1.0	3	128	**59.7**	1.2	p<.001
English	13	491	68.7	0.6	13	353	66.9	0.7	p=.10

3rd Year of Teaching

Results were similar after the third year of teaching, with no discernible trends. Comparisons of the performance of UTR-taught students during teachers' third year of teaching to the performance of students of non-UTR teachers, also during their third year, showed three statistically significant differences across the Regents exams—two with more favorable

outcomes for the UTR group and one with more favorable outcomes for the non-UTR group. This was the only outcome favoring the non-UTR group.

Students in the UTR group performed significantly higher on the Regents geometry exam (UTR adjusted mean=68.0, Non-UTR adjusted mean=57.3, F(1,320)=52.0, p<.001) and on the Regents living environment exam (UTR adjusted mean=73.6, Non-UTR adjusted mean=70.0, F(1,689)=14.9, p<.001). UTR students performed significantly lower than the non-UTR students on the integrated algebra exam (UTR adjusted mean=61.6, Non-UTR adjusted mean=64.2, F(1,185)=4.0, p=.048). These analyses (ANCOVA) controlled for gender, special education status, English language learner status, ethnicity (Black or Hispanic) and 8th grade proficiency scores in reading and math.

Table 5. 3rd Year of Teaching

	UTR				Non-UTR				
Regents Exam	**N Teachers**	**N Students**	**Adjusted Mean**	***SE***	**N Teachers**	**N Students**	**Adjusted Mean**	***SE***	**Sig of Difference**
Integrated Algebra	3	108	**61.6**	0.8	3	86	**64.2**	0.9	p=.048
Geometry	5	175	**68.0**	1.0	4	154	**57.3**	1.0	p<.001
Living Environment	9	360	**73.6**	0.6	8	340	**70.0**	0.6	p<.001
Chemistry	5	210	60.4	0.7	4	68	61.6	1.3	p=.39
English	15	503	69.9	0.7	14	408	68.5	0.7	p=.14

4th Year of Teaching

Fourth-year comparisons again showed fairly comparable performances, with two notable exceptions. Specifically, students in the UTR group performed significantly higher on the Regents earth science exam (UTR adjusted mean=69.8, Non-UTR adjusted mean=56.2, F(1,156)=31.4, p<.001). *This was the widest margin in all out comparisons, with a difference of 13.6 points.*

On the Regents English exam (UTR adjusted mean=75.6, Non-UTR adjusted mean=72.9, F(1,493)=4.6, p=.03), the UTR group also outperformed peers—*the only instance among all the comparisons of English Regents performance where differences between the two groups were statistically significant*. Again, these analyses (ANCOVA) controlled for gender, special education status, English language learner status, ethnicity (Black or Hispanic) and 8th grade proficiency scores in reading and math.

Table 6. 4th Year of Teaching

	UTR				Non-UTR				
Regents Exam	**N Teachers**	**N Students**	**Adjusted Mean**	***SE***	**N Teachers**	**N Students**	**Adjusted Mean**	***SE***	**Sig of Difference**
Integrated Algebra	4	159	63.0	0.8	3	110	62.5	1.0	p=.69
Living Environment	7	306	73.1	0.6	6	146	72.2	0.9	p=.44
Chemistry	5	236	60.3	0.8	4	108	61.5	1.2	p=.41
Earth Science	2	120	**69.8**	1.2	2	46	**56.2**	2.0	p<.001
English	8	299	**75.6**	0.8	7	203	**72.9**	1.0	p=.03

5th – 7th Year of Teaching

As mentioned earlier, our sample sizes for the sixth and seventh year of teaching were very small, so those data were combined with the data representing the fifth year of teaching, for a combined file representing the fifth through the seventh year of teaching.

The combined comparisons revealed only one statistically significant difference. Specifically, students in the UTR group performed significantly higher on the Regents algebra 2 – trigonometry exam (UTR adjusted mean=64.0, Non-UTR adjusted mean=53.8, F(1,132)=20.8, p<.001). These analyses (ANCOVA) controlled for the same factors as earlier ones.

Table 7. 5th – 7th Year of Teaching

	UTR				Non-UTR				
Regents Exam	**N Teachers**	**N Students**	**Adjusted Mean**	***SE***	**N Teachers**	**N Students**	**Adjusted Mean**	***SE***	**Sig of Difference**
Alg 2 Trig	2	64	**64.0**	1.6	2	77	**53.8**	1.4	p<.001
Living Environment	9	351	71.2	0.6	9	452	70.0	0.5	p<.16
English	13	327	72.1	0.8	14	336	72.8	0.8	p=.50

FINDINGS BY ALL YEARS COMBINED

In order to facilitate a synthesis of findings across all waves of data collection, representing all cohorts across multiple years of teaching, we created a combined file from the first through seventh year of teaching files. As seen across the single year results (Tables 3–7), the areas in which UTR students significantly outperformed their non-UTR peers varied. For example, for earth science, although the trend showed that the UTR group had a higher adjusted mean whenever measured, that advantage only reached statistical significance in the second and fourth years of teaching. During the first year, it was not statistically significant, and, in the third and first through seventh-year files, there weren't enough teachers/students to analyze the findings within that subject area.

Table 8 shows that when all files were combined, there was a clear overall advantage of being taught by a UTR-trained teacher compared to a non-UTR trained teacher. These analyses controlled for all of the previous covariates (gender,

special education status, English language learner status, ethnicity, and 8th grade proficiency scores in reading and math), as well as the additional covariate of years of teaching experience.[9]

Comparing the performance of students of UTR teachers across all available years of teaching experience to the performance of students of non-UTR teachers with matched years of teaching experience, we found that UTR training resulted in either a significant advantage or "no harm done" in terms of Regents exam scores across all subject areas. There were no instances in which the students of non-UTR teachers significantly outperformed the students of UTR teachers for this overall "all years combined" sample.

Specifically, students in the UTR group performed significantly higher on the Regents geometry exam (UTR adjusted mean=65.8, Non-UTR adjusted mean=59.9, $F(1,932)=42.0$, $p<.001$), on the Regents living environment exam (UTR adjusted mean=71.7, Non-UTR adjusted mean=68.7, $F(1,3685)=64.0$, $p<.001$), on the Regents earth science exam (UTR adjusted mean=67.5, Non-UTR adjusted mean=59.5, $F(1,929)=78.4$, $p<.001$), and on the Regents English exam (UTR adjusted mean=71.3, Non-UTR adjusted mean=70.3, $F(1,4015)=4.6$, $p=.03$).

Table 8. All Years Combined

	UTR				**Non-UTR**				
Regents Exam	N Teachers (unique teachers)	N Students	Adjusted Mean	SE	N Teachers (unique teachers)	N Students	Adjusted Mean	SE	Sig of Difference
Integrated Algebra	20 (13)	702	62.9	0.4	19 (19)	677	62.7	0.4	p=.66
Geometry	16 (10)	439	**65.8**	0.6	15 (13)	503	**59.9**	0.6	p<.001
Alg 2 Trig	9 (5)	227	58.9	1.0	9 (8)	244	59.1	1.0	p=.90
Living Environment	42 (20)	1932	**71.7**	0.3	42 (34)	1777	**68.7**	0.3	p<.001
Chemistry	19 (7)	1164	62.9	0.3	17 (13)	469	62.5	0.5	p=.49
Earth Science	8 (3)	607	**67.5**	0.5	9 (9)	333	**59.5**	0.7	p<.001
English	67 (29)	2231	**71.3**	0.3	67 (53)	1801	**70.3**	0.3	p=.03

[9] In this file, a teacher could be represented multiple times (during different years of teaching experience) and each combination is counted as a separate sample case for this analysis. The "unique" teacher count is represented in parentheses. In general, UTR teachers were matched with different non-UTR teachers each wave. For example, in earth science, there were three unique teachers: two were represented in two different years and one was represented in four different years for a total of eight teacher/year cases. Each year the "match" was different, and in one situation two separate teachers were used as matches in order to increase the student sample size for the non-UTR sample (resulting in a final non-UTR teacher sample of nine).

Section 2
Interaction Effects

As part of our summative evaluation, we looked for trends by subject area, finding that for certain subjects and Regents performances, UTR training appeared to have a more pronounced effect. Students taught by UTR-trained teachers, for example, seemed to be outperforming their peers on the Living Environment Regents exams with some consistency. Throughout UTR, as part of our efforts to detect any impacts on special education, not always apparent in standardized achievement measures, we also looked for indications that UTR training was helping to close the achievement gaps between special and general education students.

For the supplemental study, we again looked at differences by subject, but more specifically at the interactions between subject and years of teaching. What we found in some cases confirmed our earlier findings, but, perhaps more important, pointed to where initial UTR benefits seemed to disappear—or strengthen—over time. We also examined interactions based on prior experience and schooling, comparing the performance of students taught by UTR-trained teachers who were career changers to that of students taught by non-career changers, and the performance of students taught by UTR teachers who began the program with an undergraduate degree only versus those who held a Masters or Doctorate prior to the residency. We again explored UTR's impact on special education, through the lens of interactions.

DIFFERENCES OVER TIME AND BY SUBJECT

Years of Teaching Experience

We examined the interaction between the UTR effect and years of teaching experience, comparing those taught by teachers with one or two years of experience to those taught by teachers with three or more years. (See Figures 2 through 7 below.) We found significant interactions for geometry ($F(1,931)=62.6$, $p<.001$), algebra 2 - trig ($F(1,460)=8.4$, $p=.01$), chemistry ($F(1,1620)=6.2$, $p=.01$), and earth science ($F(1,928)=9.9$, $p=.01$). The results suggest that for geometry, algebra 2 - trigonometry and earth science, the UTR benefit may become stronger over time (a positive gap between UTR vs. non-UTR is more evident in three years or more group). The pattern for chemistry suggests that the initial benefit may disappear over time. The remaining subject areas did not have significant interaction effects but are still included for reference in the charts on the following pages.

Figure 1. Integrated Algebra: Interaction between Years Exp x UTR (not sig)

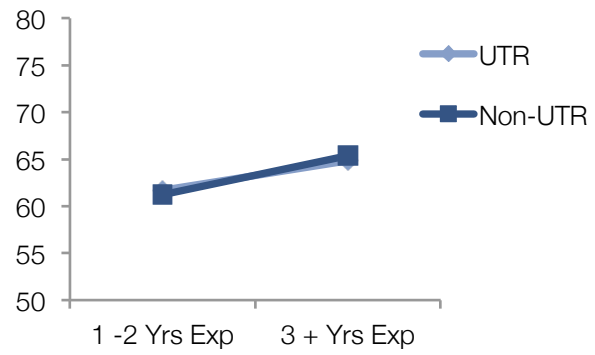


Figure 2. Geometry: Interaction between Years Exp x UTR

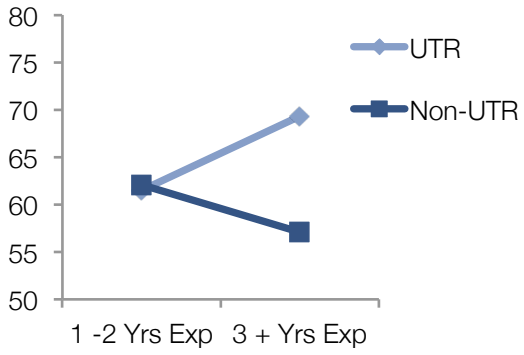


Figure 3. Algebra 2 Trig: Interaction between Years Exp x UTR

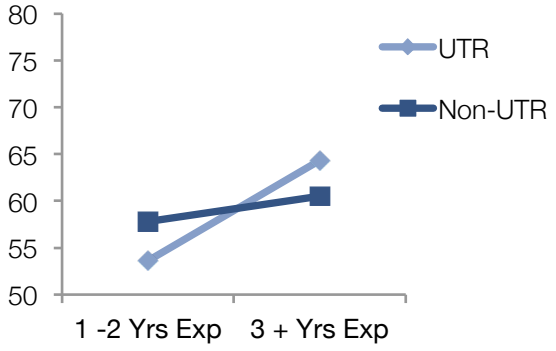


Figure 4. Living Environment: Interaction between Years Exp x UTR (not sig)

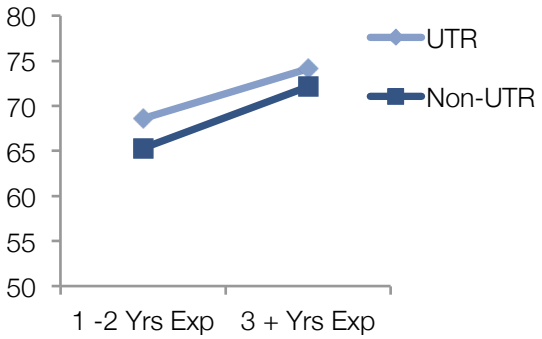


Figure 5. Chemistry: Interaction between Years Exp x UTR

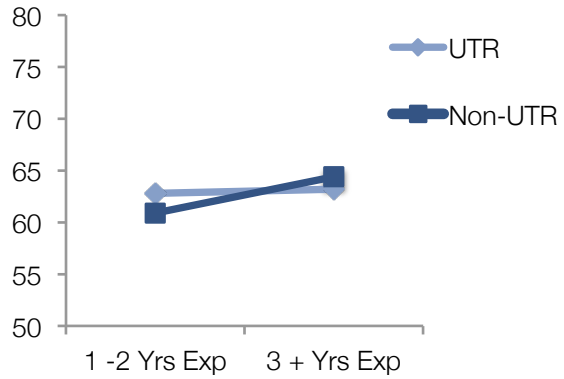


Figure 6. Earth Science: Interaction between Years Exp x UTR

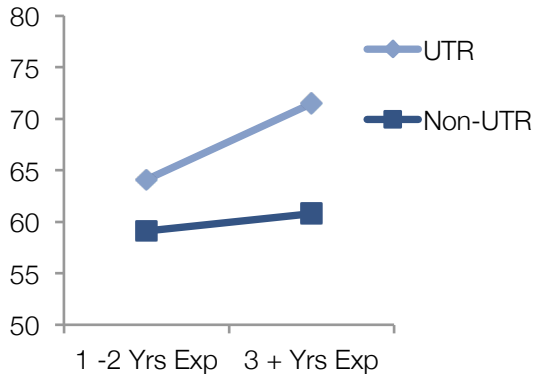
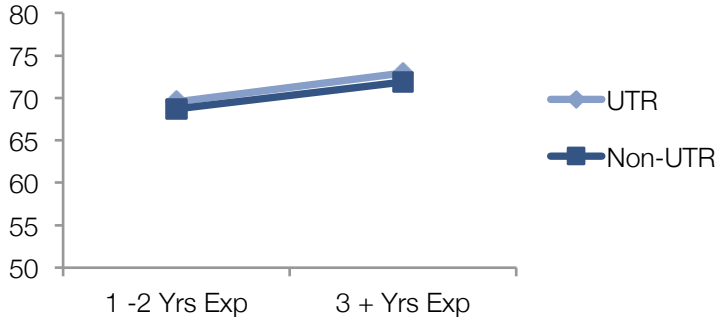


Figure 7. English: Interaction between Years Exp x UTR (not sig)



Career Changers vs. Recent Grads

Looking just within the UTR group, we compared the performance of students taught by UTR teachers who were "career changers," or those who began the UTR program six or more years after completing their undergraduate degree, to the performance of students taught by "non-career changers," those who began UTR within five years. Our analyses were limited to data for the first year of teaching due to sample size constraints in later years. We found one statistically significant difference across the Regents exams with sufficient sample size. Specifically, students in the "career changer" group performed significantly lower on the Regents English exam than those who were taught by the "non-career changers" (career changer adjusted mean=70.8, non-career changer adjusted mean=75.8, $F(1,600)=16.7$, $p<.001$). These analyses (ANCOVA) controlled for gender, special education status, English language learner status, ethnicity (Black or Hispanic) and 8th grade proficiency scores in reading and math.

Table 9. UTR Teacher Performance by Prior Career Status

	Career Changer				**Non-Career Changers (Recent Graduates)**				
Regents Exam	N Teachers	N Students	Adjusted Mean	SE	N Teachers	N Students	Adjusted Mean	SE	Sig of Difference
English	7	189	70.8	0.97	11	420	75.8	0.60	p<.001
Integrated Algebra	3	63	62.9	1.31	2	117	64.5	0.91	p=.35
Living Environment	3	166	72.3	0.84	6	334	70.4	0.58	p=.06

Undergraduate Degree Only vs. Masters or Doctorate

Looking just within the UTR group, we compared the performance of students taught by UTR teachers who had previously earned advanced degrees (masters or doctorate) versus a bachelor's degree only prior to beginning the UTR program. Again, our analyses were limited to data for the first year of teaching due to sample size constraints in later years. We found that in both subject areas with sufficient sample size, students taught by those with advanced degrees had lower scores. Specifically, students in the "advanced degrees" group performed significantly lower on the Regents English exam (advanced degree adjusted mean=72.8, bachelor's degree adjusted mean=75.3, $F(1,560)=5.5$, $p=.02$) and

on the Regents Living Environment exam (advanced degree adjusted mean=66.6, bachelor's degree adjusted mean=72.1, F(1,491)=17.7, p<.001). These analyses (ANCOVA) controlled for gender, special education status, English language learner status, ethnicity (Black or Hispanic) and 8th grade proficiency scores in reading and math.

Table 10. UTR Teacher Performance by Educational Attainment

	Advanced Degree				Bachelor's Degree Only				
Regents Exam	N Teachers	N Students	Adjusted Mean	SE	N Teachers	N Students	Adjusted Mean	SE	Sig of Difference
English	6	279	72.8	0.73	11	290	75.3	0.71	p=.02
Living Environment	2	100	66.6	1.13	7	400	72.1	0.52	p<.001

Important Caveats Regarding Longitudinal Effects

While one of the primary research objectives was to examine the UTR effect over time, it is critical to note that we do not have the ideal sample from a statistical perspective. Ideally, the sample would consist of a set of UTR teachers and a matched set of non-UTR teachers, all of whom would be followed for several years with valid test data each and every year in the same subject area. That is not the type of data that UTR had available. Teachers typically had data in only two or three waves of data collection and the "match" differed by year (i.e., matches typically did not have longitudinal data). Also, as mentioned previously, earlier cohorts are over-represented in later years of teaching experience data, which confounds our results (e.g., if earlier cohorts had a less effective program experience, that could disproportionately affect the results seen for the 5th–7th year of teaching experience analyses). That said, as a way of graphically representing/summarizing the scores across the teaching years, Figures 8 through 14 below depict the adjusted mean scores from Tables 2–6, organized by subject area. Please note that not all subject areas had valid comparisons across all years, samples vary over time, and not all differences seen are statistically significant.

Figure 8. Integrated Algebra: UTR vs. Non-UTR Teachers over Time

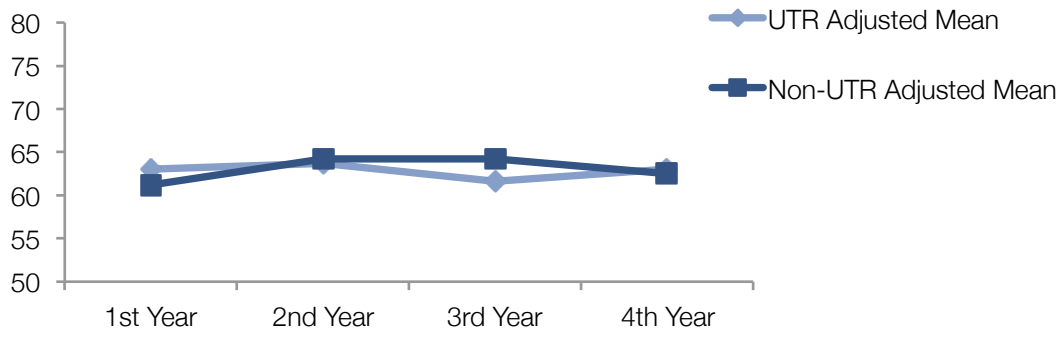


Figure 9. Geometry: UTR vs. Non-UTR Teachers over Time

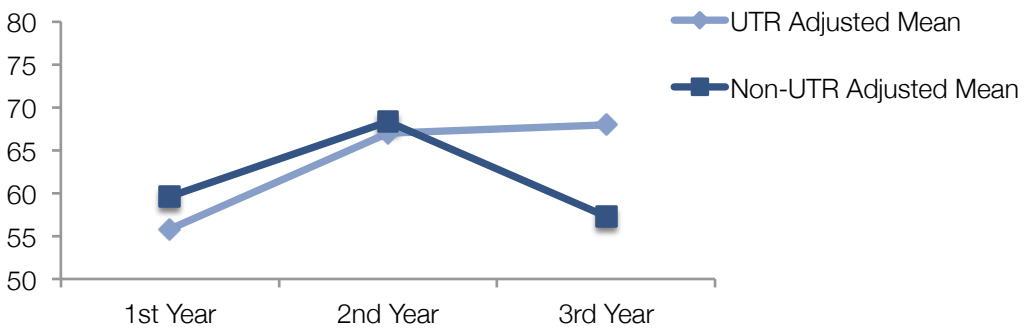


Figure 10. Algebra 2 / Trig: UTR vs. Non-UTR Teachers over Time

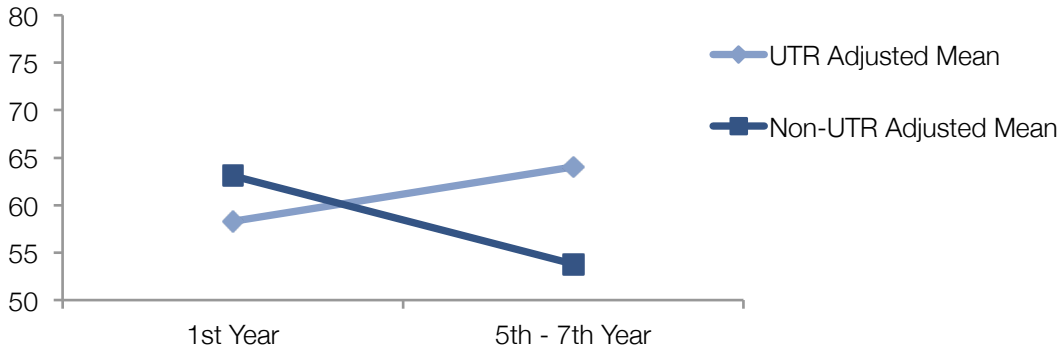


Figure 11. Living Environment: UTR vs. Non-UTR Teachers over Time

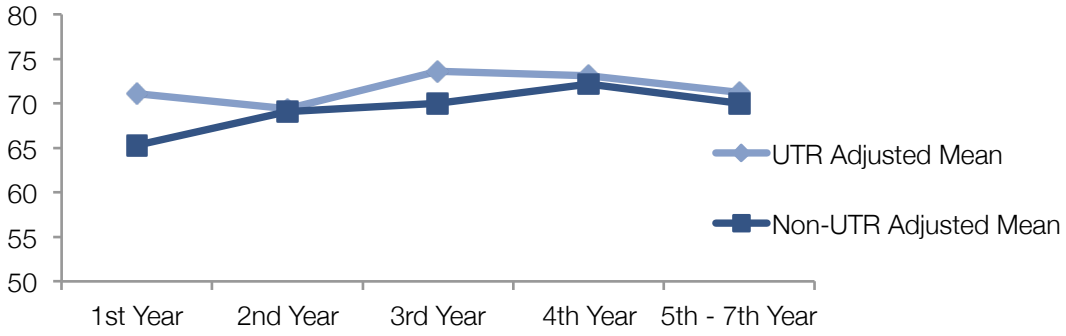


Figure 12. Chemistry: UTR vs. Non-UTR Teachers over Time

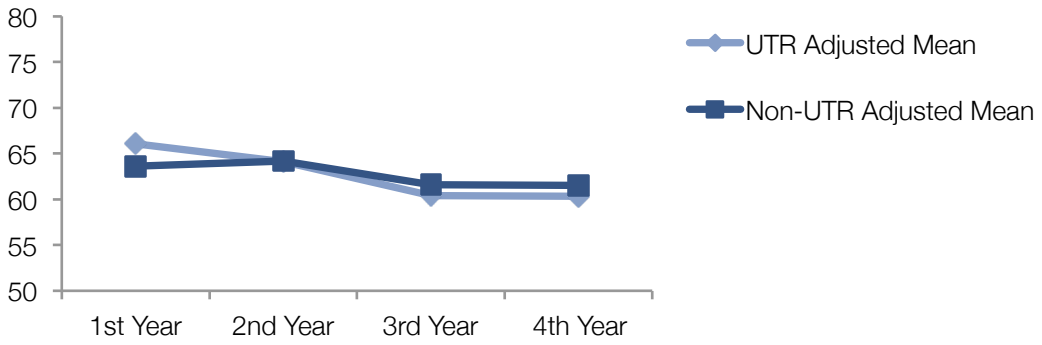


Figure 13. Earth Science: UTR vs. Non-UTR Teachers over Time

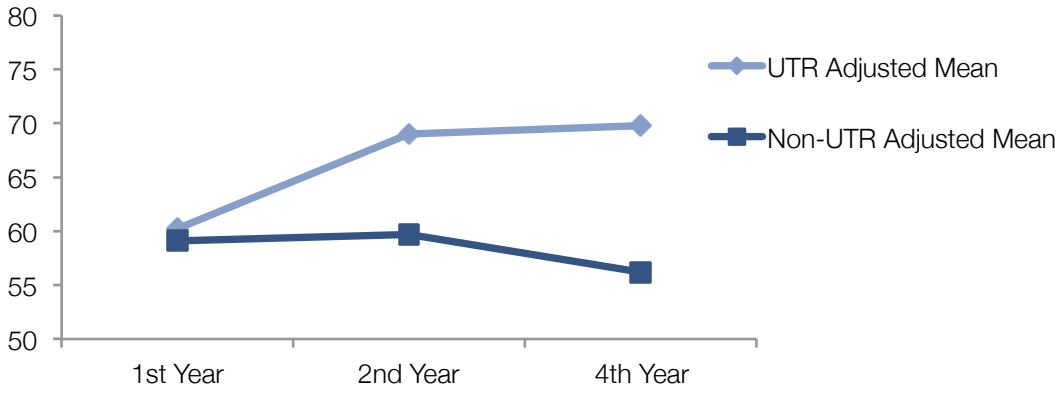
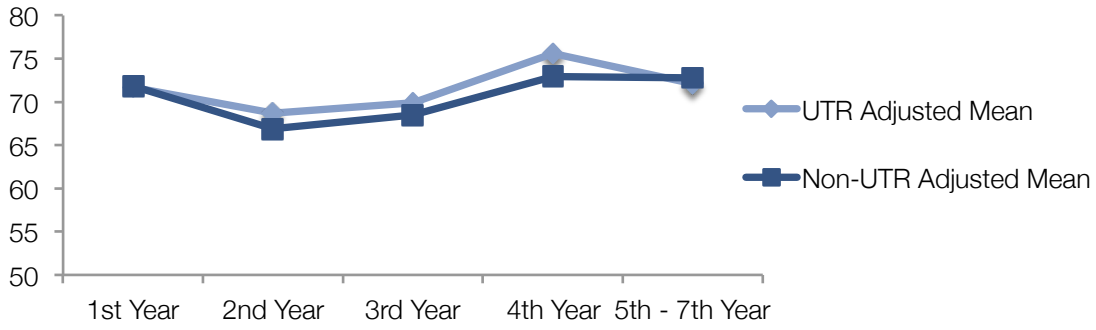


Figure 14. English: UTR vs. Non-UTR Teachers over Time



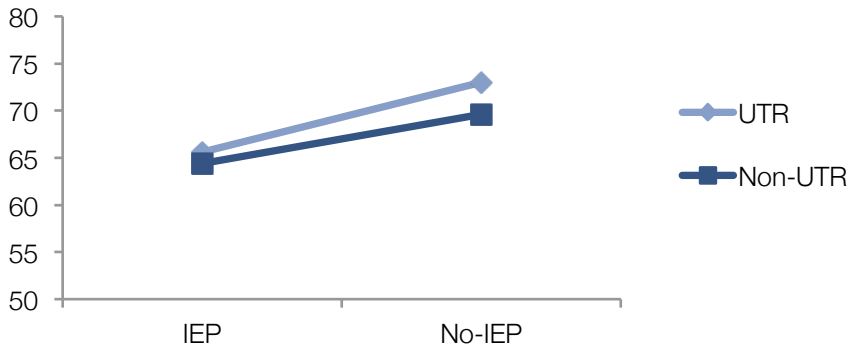
INTERACTIONS BETWEEN TRAINING AND SPECIAL EDUCATION

Combined Special Education Files

As noted above, for each UTR cohort, we examined the interactions between UTR training and special education to explore whether having a UTR-trained teacher helped narrow the gap between regular and special education students. We reported some positive effects each year, but findings were not consistent by subject area nor conclusive.

For this study, within the combined file, we also examined whether or not there was a significant interaction between Special Education and UTR. We found significant interaction for Living Environment in which the benefit of being taught by a UTR teacher was evident only for students who did not have an IEP. As illustrated in Figure 15 below, for students with an IEP, their exam scores were more similar to their peers (also with IEPs) taught by non-UTR teachers ($F(1,3684)=5.0$, $p=.03$). No significant interactions were found for the other subject areas.

Figure 15. Living Environment: Interaction between Special Education x UTR Status



Conclusions and Recommendations

Our analyses indicate that there is an overall advantage of being taught by a UTR-trained teacher compared to a non-UTR trained teacher. Comparing the performance of students of UTR teachers across all available years of teaching experience to the performance of students of non-UTR teachers with matched years of teaching experience, we found that UTR training resulted in either a significant advantage or "no harm done," based on Regents exam scores across all subject areas. These analyses controlled for covariates including gender, special education status, English language learner status, ethnicity (Black or Hispanic) and 8th grade proficiency scores in reading and math, as well as the additional covariate of years of teaching experience.

Looking at the interaction effects within the UTR group suggests that for some subject areas the benefits of the residency program are strengthened the longer residents are in the classroom (geometry, algebra 2-trig, and earth science while for another subject area (chemistry) the benefit may fade over time. Residents' prior career experience and educational attainment also significantly influence the achievement of their students when compared to their UTR peers. Our analysis indicated that more career experience and higher degrees may not lead to higher student achievement. This finding may have implications for recruiting for residencies.

Our recommendations focus on some additional analyses to consider as UTR program graduates gain more experience in the classroom, in tandem with some programmatic changes.

- Identify elements of the UTR residency that vary or are subject-dependent, perhaps isolating these differences to understand more about initial impacts, impacts that build or fade over time—and ways residency training and support might deepen, accelerate, or mitigate differences.

- Review the performance of career changers and residents who enter the program with a graduate degree to identify ways the residency program could be modified or training differentiated to leverage background and skills but still close a possible gap in how their students perform.

- Explore ways to assess the impact of UTR trained special educators on the performance of students in the ICT classrooms in which they serve.

- Continue to explore ways that UTR-trained educators, over time, have an impact not measured by test scores. These could include examining other institutional measures such as attendance or progress toward graduation, or gauging contributions to school communities, including participating on leadership or curriculum teams, or taking part in teacher-led staff development.

Chapter 2

Educating All Students

UTR's Educational Environment

The chapter's title comes from the New York State credentialing exam, *Educating All Students* (*EAS*), which requires all teachers licensed by the state to demonstrate that they are prepared to teach all students. *EAS* was created in response to an increasingly diverse student population—English learners, students newly eligible for services due to expanded definitions and awareness of special needs—and changes in state and city-wide special education policies. The most notable changes, piloted in 2009–2010 by the New York City Department of Education (NYCDOE) and launched city-wide in 2012 as part of *A Shared Path to Success* reforms, required a shift to Integrated Co-Teaching (ICT).[11] In the ICT model, students with disabilities are not consigned to separate classrooms, but learn alongside non-disabled peers in classrooms where content and special education teachers share responsibilities. The model, and the *EAS* exam, in many ways ask all teachers to do what has long been the charge to special educators: to meet the needs of all students.

If inclusion policies asked general education teachers to do what special educators do as a matter of course, other legislation did the reverse. The 2004 reauthorization of the *Individuals with Disabilities Education Improvement Act (IDEA*), the 1975 landmark legislation that defined disabilities and required public schools to provide all eligible students with "free and appropriate public education," brought *IDEA* into line with legislative mandates set by *No Child Left Behind (NCLB)* and the *Elementary and Secondary Education Act (ESEA)*: it mandated that special education teachers, like all public school elementary and secondary teachers, be "highly qualified." [12]

Efforts to put effective teachers in front of all children, mandated by IDEA and bolstered by research showing that teacher quality is the best school predictor of students' success,[13] also lent support to other school reform efforts. There was, for example, new federal funding to improve teacher training—including the US Department of Education's *Teacher Quality Partnership* program—along with large-scale research efforts designed to define quality and assess practice, such as the Gates Foundation's *Measuring Effective Teaching (MET)* project. The focus on quality also led states and local agencies to introduce ways to evaluate teachers, many patterned after the Danielson *Framework for Teaching*, adopted by the NYCDOE, and incorporated in UTR's third year as part of its resident assessment suite.

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[11] For a history and summary of the city's efforts, see NYC DOE's "Family Guide to Special Education Services for School-Age Children: A Shared Path to Success," available at http://schools.nyc.gov/NR/rdonlyres/DBD4EB3A-6D3B-496D-8CB2-C742F9B9AB5C/0/Parent_Guide_for_Students_with_Disabilites_Updated_Web.pdf.

[12] For a review of IDEA, ESEA, and NCLB legislation, see http://idea-b.ed.govIDEA] [20 U.S.C. 1401(10). See also www.understood.org/en/school-learning/your-childs-rights/basics-about-childs-rights/at-a-glance-free-and-appropriate-public-education.

[13] See Annie Lowery, "Big Study Links Good Teachers to Lasting Gain," *New York Times*, Jan. 6, 2012. See also Raj Chetty, John N. Friedman, and Jonah E. Rocko, "The Long-Term Impacts of Teachers." Working Paper 17699 (National Bureau of Economic Research, 2011), available at http://www.rajchetty.com/chettyles/value_added.pdf.

Though improving teacher quality would seem an unassailable goal, efforts were not without controversy. Some were related to ongoing controversies sparked by NCLB, some to new accountability metrics that teachers felt were punitive, and some to a belief that school staffing challenges were a matter not of quality, but of persistent inequality.[14] For some time, researchers and policymakers had called for more equitable distribution of teacher talent as a way to address teacher shortages and turnover in low-performing, under-resourced schools, many of them in urban areas. It was this acute need that had led to Teach for America, AmeriCorps programs, and other efforts to re-think and re-build the teaching corps. Schools of education also sought ways to attract talent to the profession by adding alternative paths to certification programs to their traditional programs.

Growing needs, a reform environment, funding opportunities, and a long-standing partnership led the country's largest school district, that district's largest school support organization, and an institution that had historically trained many of its teachers to create UTR. The NYCDOE, New Visions for Public Schools, and Hunter College took a path similar to other residency and alternative certification programs, but their UTR model also diverged in important ways: though it was a quicker fix than some traditional preparation programs, UTR's 14-month span stressed the critical importance of extended clinical practice, ongoing training and support, and acclimation to urban school environments. The goal was not only to place new, well-trained teachers in high-need schools and classrooms, but to keep them there. UTR also linked teacher certification to student achievement by evaluating residents often, guiding them through cycles of inquiry to assess student needs, and requiring those who graduate from the program to demonstrate that they can move learning forward. Emphasizing collaboration throughout the program, UTR also groomed teachers to use data-driven inquiry to lead school improvement.

Organization of the Chapter

Special education in many ways tests and amplifies these key aspects of the UTR model. This chapter shares findings on the preparation of 65 UTR special educators, and their impact on—and resilience and retention in—NYCDOE classrooms. It begins with a summary of findings; each section also includes a set of key points. Section 1 provides a profile of the UTR special educator and the program, examining what skills and dispositions Hunter and New Visions partners looked for or saw in aspiring special educators and fostered in their training. Drawing on records from Hunter and New Visions and from survey responses, Section 2 shares findings from residents' program performance and self-assessments of efficacy and practice, where possible noting differences between special educators and their peers. Section 3, based on three case studies, examines how UTR special educators' skills and dispositions translate into practice, and whether their practices differ from those of other special education teachers. Section 4 reports findings on UTR special educators' impact on students' success, based on school data and institutional metrics—attendance, credit accumulation, and graduation rates. The final section examines retention among UTR-trained special educators, compared to rates among their peers and other NYC DOE teachers, including those who entered the profession through different pathways.

[14] Dan Goldhaber, Lesley Lavery, and Roddy Theobald, June 2015. "Uneven Playing Field? Assessing the Teacher Quality Gap between Advantaged and Disadvantaged Students," *Sage Journals* 44, no. 5: 293-307. Available at http://journals.sagepub.com/doi/full/10.3102/0013189X15592622.

METHODS

For this study, we used a mixed methods approach that combined quantitative and qualitative data. Our quantitative data ranged from five years of UTR survey data, to data from the city's Independent Budget Office, to data from New Visions and Hunter records. We also cast a wider net than we had during UTR's five years to examine student performance, analyzing credit accumulation figures, Regents passage, and graduation rates among special education students. In addition to historical qualitative data collected over UTR's five special education cohorts, and more recent interviews with project partners, we also developed case studies of three schools—to explore what skills and practices UTR-trained special education teachers bring to schools and how they are received and incorporated into school practice and culture.

The following questions guided the study:

How well prepared are UTR special educators?

How do UTR special educators' practices differ from those of other special education teachers?

Do differences in preparation or practice emerge in students' performance?

Partner Reflections

As background for all our data collection, we interviewed New Visions and Hunter partners and faculty who designed the UTR program and the special education coursework and training. During initial interviews, we discussed how partners recruited and selected UTR special educators, what skills and dispositions they looked for, and what institutional and district policies defined the program. In a second round of interviews, we revisited the model's evolution, discussing specific programmatic changes linked to policy revisions or a growing understanding of how best to prepare special educators.

Resident Data

Resident Records

Data on program performance and completion came from Hunter College School of Education's Offices of Residency Programs, Partnership Programs, and Research. Additional data on recruitment and resident performance came from New Visions' Teacher Certification Data Team Warehouse and Process Monitoring System. The sample included all residents from five cohorts (those enrolling in 2010–2014) for whom we had data.

New Visions Assessment Suite

Scores generated by New Visions' suite of teacher assessment tools, provided by the New Visions UTR team or housed in their Process Monitoring System database, have been the ongoing source of the residents' performance data. These data include scores on the Defense of Learning (DoL), the lesson and unit design and professionalism rubrics, and the Danielson rubric (modified for special education). We looked at percentages of residents meeting benchmarks for each tool, differences by subject, and performance arcs or successive scores. The numbers of residents in the samples varied by tool and recording intervals.

Residency Year Surveys, 2011–2015 (Residents and Mentors)

Rockman surveyed UTR special education residents and mentors, along with their colleagues in other subject areas, throughout the UTR project. Although UTR formally ended in 2014, New Visions continued with a sixth cohort of residents, who completed surveys in Spring, 2015.[15] As part of our annual survey analyses, we created a set of scales on efficacy, classroom management and environment, instructional practices, assessment, and school culture, along with overall scales on efficacy, best practices, and professional engagement; scales were based on factor analyses and reviews of how survey items accounted for variance in survey data. We have used these same scales in this chapter to discuss how self-assessments of efficacy, practice, and professional engagement varied between special education residents and those in other content areas, and between residents and their mentors.

The historical survey sample includes 60 special education residents and 58 of their mentors, starting with the first special education cohort, in 2010–2011, and continuing through 2014–2015, with the fifth cohort. Table 1 on the following page shows responses for both groups, by cohort or year. The average response rate was high—at 89% for mentors and 92% for residents.

Table 1. Historical Survey Data: UTR Special Education Residents and Mentors

	Mentor	Resident
Cohort 2 (2010–2011)	3	12
Cohort 3 (2011–2012)	14	15
Cohort 4 (2012–2013)	14	14
Cohort 5 (2013–2014)	9	8
Cohort 6 (2014–2015)	18	11
*TOTALS/Response Rates	58 (89%)	60 (92%)

Source: REA Annual Surveys

Although some UTR special education residents taught middle school classes, most—and thus most of the historical survey data respondents, around 85%—were high school teachers. Among those, most taught 9th and 10th graders, in similar percentages of approximately 72% each; smaller percentages taught the upper high school grades, with 59% reporting that they taught 11th graders, and 43%, 12th graders. (Totals exceed 100% because respondents taught multiple grades.)

Where appropriate, we compared special education residents' survey responses to responses from approximately 70 residents in other subject areas.

[15] There were some differences between the UTR model for Cohorts 2–5 and that used for Cohort 6, also known as UTR 2.0. Resident and mentor stipends for Cohorts 1-5 were funded through the UTR grant from the US Department of Education's Office of Innovation and Improvement, while Cohort 6 resident funding came directly from New Visions schools, which helped interview and select Cohort 6 residents, who they then hired as part-time teachers of record. These residents were responsible for two class periods and required to be at their host schools five days a week, completing their Hunter coursework in evening classes. Residents in Cohorts 2-5, by contrast, taught one focus class, four days per week during the school year, and spent one-day taking classes at Hunter. These variations in the model may account for some SY 2014–15 differences noted in this report.

Comparison Hiring and Retention Data

Additional data on general and special education hiring and retention came from the Independent Budget Office (IBO) of the City of New York, a publicly funded agency that provides nonpartisan information. In addition to issuing annual publications on different topics, including those related to public schools, IBO also responds to requests for specific data, and, for this study, IBO supplied data that we combined with data from New Visions to explore retention among UTR-trained special educators, compared to city-wide rates.

Student and School Performance Data

The institutional data used in our analyses of UTR's impact on special education students, provided by New Visions, was drawn from the 70 high schools in the New Visions network. We sorted schools by concentrations of UTR-trained special education teachers, and, aggregating results to the school level, used this school-level concentration index as a predictor value. Focusing on 11th and 12th grades, as the most reliable points to assess student progress, we examined credit accumulation and graduation rates for IEP students. We examined two conditions—UTR vs. non-UTR schools, and by the concentration of UTR-trained teachers. We also explored publicly available data that, for example, compares graduation rates among special education students to overall school rates.

The sample sizes for our school and student-level analyses varied. Within grades, sample sizes were similar, and the non-UTR groups were typically somewhat smaller than the UTR groups. For the UTR vs. Non-UTR comparisons, there were, for example 374 11th graders and 346 12th graders in 11 schools in the UTR group, vs. 223 and 250 respectively in 13 schools in the non-UTR group. Tables 2 and 3 show the numbers of schools and students included in each condition for the analyses by concentration of UTR-trained teachers.

Table 2. UTR vs. Non-UTR

Condition	UTR (11 schools)		Non-UTR (13 schools)	
Students	11th grade	12th grade	11th grade	12th grade
by grade	374	346	223	250

Table 3. UTR Concentrations

Condition		UTR (13 schools)			Non-UTR (11 schools)
		Low (4 schools)	Medium (3 schools)	High (6 schools)	
Students	11th grade	91	95	188	250
by grade	12th grade	78	78	190	250

Case Studies

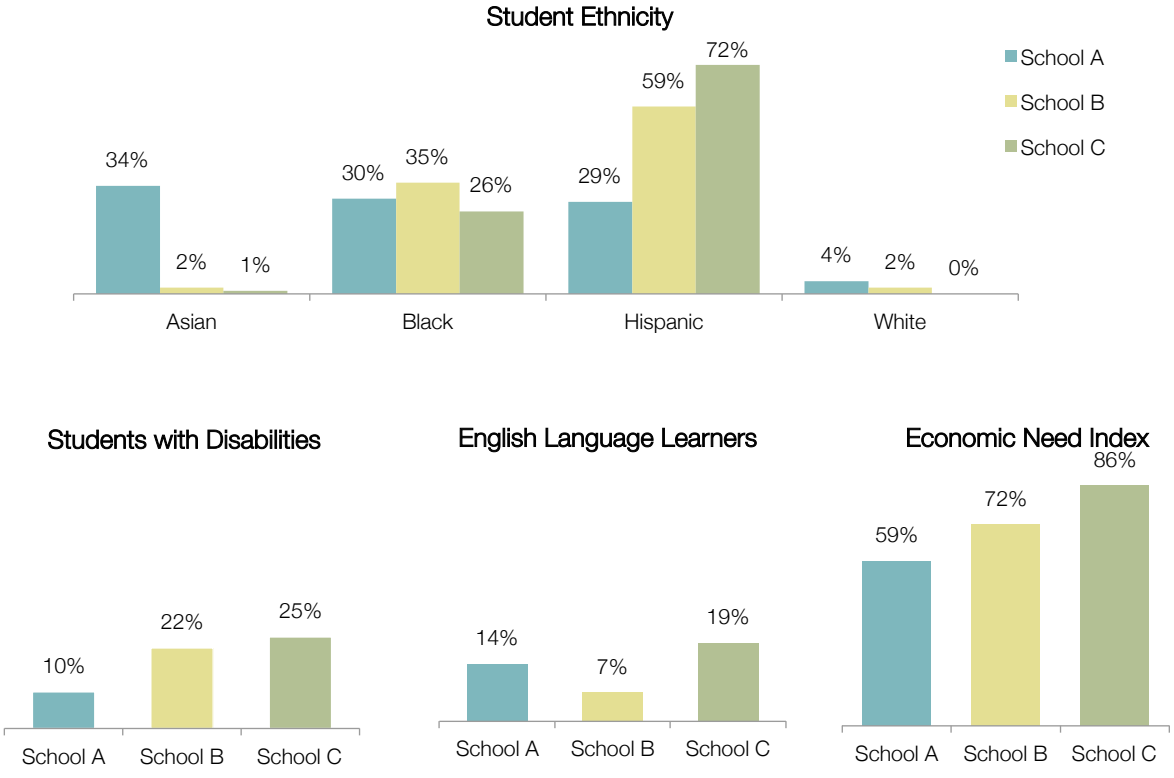
School Demographics

We developed three case studies to portray how UTR-trained special education teachers applied skills and

practices, what influence their training in diagnosing and meeting the needs of special education students had on ICT team teaching and levels of school collaboration, and how their approach to their work compared to that of teachers trained in other traditional or alternative certification programs.

Criteria for site selections included the configuration of special education services; the concentration of UTR-trained special educators and other subject-area teachers; and the school's demographic and performance profile, including the percentage of students with IEPs. All three schools have diverse student populations, though School A, the largest school, has a higher population of Asian students (34% vs. 2% at School B and 1% at School C). Percentages of Hispanic students at Schools B (59%) and C (72%) exceed that of School A (29%); there is less variation in the percentages of Black students, which ranges from 26% to 35%, and White students, at 4%, 2% and 0%. School A has around half as many students with disabilities—10% vs. 22% and 25% for School B and C; School A percentage of English Language Learners was similar to School C's (14% and 19%), both higher than School B's (7%). The economic need index for the three schools was 59% (A), 72% (B), and 86% (C). (See Figure 1. See also Section 3, starting on p. 37, for additional information on case study schools.)

Figure 1. Case Study Profiles at a Glance



UTR Concentration

One of the goals of the case studies was to see if UTR special educators brought demonstrably different skills to schools. In selecting sites, we looked at the concentration of UTR special educators to see if having more UTR-trained special educators made a difference. Because all UTR residents receive similar training, and bring a similar set of skills to schools, we also looked at the overall numbers of UTR residents hosted and hired by schools in our pool of possible case study candidates, all in the New Visions network. The three schools selected represented a

high, medium, and low concentration of UTR-trained special educators, and high, medium, and low concentrations of all UTR-trained teachers (see Table 4).

Table 4. UTR Concentration in Case Study Sites

School	# UTR Sped Residents Hosted	# UTR non-Sped Residents Hosted	# UTR Sped Grads Hired	# UTR non-Sped Grads Hired	UTR Concentration
School A	16	16	5	3	High
School B	1	1	2	1	Medium
School C	0	0	1	0	Low

- School A, the high concentration school, and the largest, had hosted 32 residents over Cohorts 1–5, half of whom were special education residents; they had hired five of those residents (Cohorts 3, 4, and 5).
- Over the same period, School B, the medium concentration school, had hosted 2 residents, 1 of whom was a special education resident, 1 of 2 special education residents hired by the school (Cohorts 3 and 5).
- School C, our low concentration school, had not hosted residents but had hired 1 special education resident (Cohort 2).

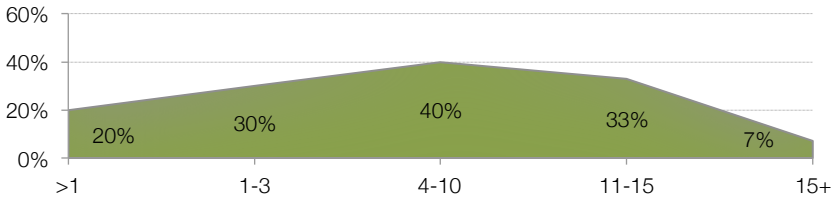
Interviews and Focus Groups

We visited each of the case study sites, interviewing administrators, special education coordinators, and pairs or groups of special education and content area teachers. Interview questions varied to some degree from site to site, but we used structured protocols for each site. We also observed classes at schools A and B, talking informally with teachers about their plans and collaborative activities. Some teachers also shared lesson plans and handouts.

Case Study Teacher Surveys, 2015–2016

We invited special education and content area teachers in the three case study sites to complete brief surveys. The surveys focused on areas we discussed in more depth with administrators, special education coordinators, and teachers: teachers' preparation for meeting the needs of special education students, schools' programs for students, and collaboration among teachers. The goal was to gather uniform data across sites, and invite feedback from a wider range of teachers, especially on team teaching, at each school. A total of 30 teachers from the three case study sites completed surveys; respondents included both UTR- and non-UTR-trained teachers. The majority of respondents, overall, taught 9th and 10th grade students (80% and 67%, respectively); 40% taught 11th and 12th graders (24 of the 30 respondents taught more than one grade level). Half of the respondents had been teaching at their current schools for three years or less—a fifth of those were new to their schools. Forty percent had four to 10 years' experience at the case study schools, and another third, 11–15 years (see Figure 2).

Figure 2. Case Study Survey Respondents' Years Teaching at Current School



Although we invited both special education and content area teachers to take the survey, the respondent group was not always balanced and groups varied by school. The overall respondent group included more special educators (73%, N=22) than content area teachers (27%, N=8), although the subjects taught by the latter group spanned the core high school subjects (1 math, 2 science, 3 English, and 2 social studies). At School A, no content area teachers completed the survey. (See Table 5.)[16]

Table 5. Case Study Survey Respondents by School

	Special Education Teachers	Content Area Teachers
School A (N=17)	17 (77%)	0
School B (N=3)	1 (5%)	2 (25%)
School C (N=10)	4 (18%)	6 (75%)
TOTALS	22 (73%)	8 (27%)

Percentages of traditionally trained teachers vs. those who entered the profession through alternative certification were similar, overall and by subject: of the 30 survey respondents, 16 entered the profession—nine, through the New York City Teaching Fellows program; six, through UTR; and one through another program. The other 14 teachers entered teaching through traditional preparation programs. (See Table 6.)

Table 6. Case Study Survey Respondents by Preparation

	Traditional	Alternative Certification
Special Education (N=22)	10 (46%)	12 (54%)
Content Area (N=8)	4 (50%)	4 (50%)
TOTAL	14 (47%)	16 (53%)

[16] The percentages in Tables 5 & 6 indicate the proportion of the survey sample, not the proportion of special education or content area teachers in the schools. Although a few resource room teachers did not complete surveys, we had a high response rate for those who teach in ICT classrooms. Those potential numbers can still vary some due to classroom needs, ICT assignments, and team pairings. The possible number of content area respondents can vary or shift even more, again depending on pairings and the fact that special education teachers may rotate depending on content-area needs or schedules.

Data Analysis

Survey Data

We used basic descriptives and frequencies to analyze teacher survey data, disaggregating data by cohort, subject area, or respondent group to examine differences between, for example, residents and mentors, special educators and content area teachers, or UTR-trained teachers and those trained in other programs. In most cases, the sample numbers were too small to make meaningful comparisons based on statistical significance.

Open-Ended Survey Items and Focus Group and Interview Data

For open-ended survey questions, we conducted content analyses, first reviewing responses for recurrent themes, then coding responses. We focused on categories or constructs in the survey items themselves, looking at confidence in preparation, confidence in and use of assessment strategies, collaborative activities, and school culture. To check for inter-rater reliability, we discussed coding strategies and categories and normed as needed. We also analyzed open-ended survey responses and focus group and interview data—for the case study sites and the interviews with project partners—by looking for recurrent themes, within and across groups.

Student Performance Data

As noted above, we drew our student and school samples from over 70 NYC DOE schools in the New Visions network and focused on grades 11 and 12 as the best gauge of students' high school progress. The numbers of students in each analysis varied. (See individual tables in Section 4, starting on p. 51.) Under two sets of conditions, we analyzed student- and school-level outcomes—attendance, credit accumulation rates, four- and five-year graduation rates, and the numbers of Regents, out of five, passed at 55 and 65.

1. The first condition, with only special education students, included two categories: UTR and Non-UTR.
2. The second condition, with special and general education students, designated schools as having low, medium, and high concentrations of UTR special educators, or no UTR-trained teachers. Our concentration index used the number and percentage of UTR-trained teachers at schools as well as length of involvement.

For student-level analyses, students in the UTR group had to be attending a school with at least one UTR-trained special education teacher during SY 2014–2015. To be included in the non-UTR group, students had to be attending a school where there were no UTR-trained teachers—special or general education—at any point over the past four years. (The rationale was that UTR-trained teachers use similar strategies to diagnose and meet students' needs, so a UTR-trained content area teacher could have an effect on special education students.)

For the school-level analyses, schools in the UTR group had to have at least one UTR-trained special education teacher in 2014–2015 *and* at least 10 special education students in the specified grade level. For the non-UTR designation, the school could have *no* UTR-trained teachers of any kind (special ed or general ed) at any point over the past four years, and had to have at least 10 special education students in the specified grade level.

For both sets of conditions, we conducted school-level analyses to explore whether having UTR teachers on staff narrows the gap in institutional outcomes between special education students and their general education peers.

SUMMARY OF FINDINGS

RESIDENT AND PROGRAM PROFILES

- **Crafting a special education model required dialogue, balance, and continuous improvement, all of which ultimately strengthened both the model and the Hunter-New Visions partnership.** As UTR partners created their special education model, schools were adjusting to the NYC DOE's new special education policies and ICT configurations. This required ongoing conversations to ensure that Hunter coursework and New Visions support focused on the skills and knowledge residents needed. Clinical experience gave residents a context for coursework, and the experience they brought to Hunter classrooms helped build a bridge between theory and practice. In designing preparation and defining best practices, it was also important that partners keep the pace of change in schools in mind and not get ahead of where schools were.

- **The mindsets residents brought to UTR—and further developed during their clinical year—helped them acclimate to urban schools.** UTR special education residents have been described having an idealistic outlook and social justice slant, tempered by an understanding of what they can and cannot change—all invaluable skills for urban school educators. Though UTR special educators share an idealism and humanitarian outlook with many who go into the field, their extended clinical experience grounded that idealism in real classroom experience. Compared to other special educators and residents in other subjects, they see more quickly "that rigid doesn't work," which can make acclimation to urban classrooms easier.

- **UTR training leveraged this idealism coupled with flexibility, equipping residents not just to acclimate to urban schools but also contribute to them.** UTR training built on the flexibility often spotted during candidate screening, helping residents learn how to assemble data and what to do with it as they operationalized instructional strategies. Teachers and administrators in placement schools praised this skillset around using data for interventions, and credited residents with helping them meet the needs of special education students.

- **Other demographic factors also made UTR special educators a good fit for urban schools.** Research suggests that backgrounds or ethnicities similar to students' and a familiarity with their urban environment can strengthen teacher-students bonds. Twenty-nine percent of the 65 residents trained in Cohorts 2–6 are African-American or Hispanic, groups often underrepresented in the teacher corps but the predominant populations in schools. Close to half of the UTR special educators also attended universities in New York City.

- **Continuing to emphasize collaboration helped mitigate the challenges of content-area pairings and gave residents more parity.** There are school factors that can make UTR special educators feel less effective. An ongoing challenge is that they may co-teach in content areas that do not align with their strengths. Schools typically need math, perhaps science teachers, but special educators are more likely to have humanities backgrounds. As the program matured, an increased focus on collaboration helped address the challenge.

PREPARATION & PERFORMANCE

- **Attrition rates that are higher during the residency but lower in early career years may suggest that special educators, or program staff, realize earlier that the profession is not the right fit.** Special

education is a challenging path for any novice teacher, and the requirements for special educators, including certification requirements, can present additional challenges. The demands may be reflected in the fact that, over five cohorts, five special education residents withdrew from the program and nine were counseled out, for an attrition rate of 17 percent, compared to 10 percent among other subject-area residents. Retention data, however, trends in the opposite direction, suggesting that it may be obvious sooner rather than later that special educators have made the right career decision.

- **On other measures, special education residents' performance was on par their UTR and Hunter peers.** Degree completion rates among special education residents were high, and on par with those of residents in other subjects. UTR special education residents' Hunter GPAs were also high, and within a few tenths of a percentage point of other residents and Hunter graduate students. (This was true of special education residents who chose to leave the program and those who were counseled out.) Placement rates were at 100%, similar to rates for math residents, also a high-need subject.

- **UTR special education residents' performance on the New Visions assessment suite, and self-assessments for related skills, followed trends, with a few notable exceptions.** Special education residents' Danielson ratings were similar to subject-area peers'—slightly higher for domains related to classroom environment, slightly lower for assessment and questioning domains. Survey responses showed a similar inverse relationship in self-assessments and Danielson scores: like subject-area peers, special educators felt more confident in the skills for which Danielson ratings edged down. Variations in both trends included higher Danielson scores overall for Cohort 6 (whose program model, as described earlier, differed somewhat) but lower self-assessments for certain skills.

- **Rising Danielson ratings and residents' and mentors' self-reports of professional engagement suggest a maturing program.** In addition to the higher Danielson scores for Cohort 6, disaggregating data by special education cohort showed an increase in levels of school collaboration across years, along with higher means on a professional engagement scale that clustered activities related to work with colleagues and shared decision-making. The trends may reflect an increased emphasis on collaboration in special educators' training and the evolution of the UTR special education model.

- **Special education graduates and school coordinators agree that more training in writing and monitoring IEPs could help UTR special educators during their residency and induction.** Case study survey responses and feedback from interviewees indicated that UTR residents, like most new teachers, find it challenging to tend to the IEP work increasingly required of special educators and require specific IEP training during their residency year.

PRACTICES AND SCHOOL IMPACT

- **We found no differences between UTR-trained special educators and teachers prepared in other programs in their commitment to serving students and making ICT classrooms work.** In the three case study sites, where numbers of UTR-trained teachers and special education programs varied, the devotion to serving students—and reports of the challenges involved in doing so—varied very little. As a whole, special education teachers (both UTR trained and others) did not feel prepared to teach in resource setting and to

develop IEPs or 504 plans. UTR special educators felt more prepared than peers to co-teach in ICT classes, but like their peers indicated some reservations about preparation.

- **Where we did find differences were in how prepared UTR special educators feel to meet the needs of students and use formative assessment strategies to do so.** Compared to special educators prepared in other programs, UTR special educators felt better equipped to: create formative assessments, plan instruction around them, and tailor instruction to students' needs. This confidence combined with a toolkit of formative skills and strategies seemed to set UTR-trained group apart.

- **Specific skills emphasized in preparation show up clearly in practice.** Case studies A and B provide evidence that the inquiry, formative assessment, leadership, and collaboration skills that UTR special educators gain in their training are visible in their practice as in-service teachers. Content area teachers, for example, allude to UTR special educators' "inquiry mindset," and say that, compared to differently trained teachers, UTR special educators are "better at driving instruction," and "not timid about making decisions." Administrators observe that they are "willing not just to collaborate, but to try things, back it up." Interviewees' comments and the case study observations indicate that UTR special educators are able to operationalize pedagogy.

- **UTR special educators not only contribute to shared decision-making but also proactively foster it.** The case studies suggest that the influence that UTR special educators can have is not limited to special education classrooms. In part because some assume leadership roles, or, again, are not timid about being proactive, UTR special educators can encourage school-wide changes in how teachers view students with special needs and how teachers think about assessment. Although our evidence is limited to a handful of schools, it suggests that a concentration of UTR special educators or a few UTR trained teachers can have an impact.

IMPACT ON STUDENTS

- **UTR special educators may positively affect special education students' success and progress in school.** Although we cannot show clear correlations, data suggested that the instruction and interventions UTR special educators bring to schools, and the relationships they forge, may affect student behaviors and school performance and progress. Comparisons showed that 11th and 12th grade special education students in schools with UTR-trained special educators had higher attendance rates and earned more credits than special education students in schools with no UTR-trained teachers. The differences were statistically significant.

- **There were also indications of an effect for students of color**. Findings from similar comparative analyses with attendance, credit accumulation, and graduation data suggested a similar predictive value or positive impact of UTR special educators on Hispanic and African-American students, though the differences were not statistically significant.

- **Comparisons of institutional data in schools with varying concentrations of UTR-trained special educators also suggested a positive effect, but no clear trends emerged.** Having UTR-trained teachers

may lead to higher attendance, credit accumulation, and 5-year graduation rates. What the data did not confirm was that the higher the concentration the greater the effect.

- **Results from analyses designed to explore whether UTR-trained special educators closed the gaps between special and general education students were mixed.** Using the same gauges of school progress, our final analyses looked at differences between the two groups of students. Although some gaps narrowed, indicating that special education students were catching up to their peers in credit accumulation and graduation rates, there were instances in the schools without UTR-trained special educators as well as in those with UTR teachers, in different concentrations, where the gaps narrowed.

RETENTION

- **UTR-trained special education teachers have a 93 percent retention rate, just above the overall UTR rate of 91 percent.** In line with our previous examinations of retention data, the rates remain high. Sixty of the 64 trained teachers are still teaching. (One of the original 65 is deceased.) Two have left the classroom, and the status of two others is classified as "unknown." Of the 60 still teaching, 58 or 97 percent are teaching in a NYC DOE public or New Visions Charter school.

- **Retention for UTR special educators after one year is higher than rates for special educators trained in traditional and other alternative certification programs.** Data from the NYC IBO indicate that, after one year, UTR had higher retention and no declines. The UTR rate for special educators in their second year was 93% compared to 49% for Teach for America, 72% for Teaching Fellows, and 77% for traditional pathways.

- **Retention rates among UTR special educators exceed rates among special educators city-wide.** Attrition rates for special educators hired in New York City's public schools are actually lower than rates among high school teachers overall, but attrition for both groups increase year by year in teachers' first years in the classroom. Rates for UTR special educators increase slightly after two and three years, but by smaller margins.

- **UTR special educators, compared to their UTR peers, tend not just to stay but to stay put.** Although all retention figures are high, mobility data indicate that special educators are less likely to change schools. Thirty-two of the 44 special educators for whom we have data—73%—are still teaching where they started. Of the 12 teachers (27%) who changed schools, all did so only once. We do not have sufficient data for attribution, but stability among special educators may be due to skills and characteristics that are part and parcel of their training and chosen field: more experience working—and succeeding—with a wide range of students; adaptability; and a better understanding of how novice teachers might advocate for certain practices.

- **UTR special educators engage in and foster activities linked to higher teacher retention.** Feedback from the case studies indicate that when UTR special educators apply their training in inquiry methods and assessment strategies the benefits accrue not just to their special education students but also to other special educators, the content teachers they team with, and the school as a whole. They can foster collaboration, a positive school climate, leadership among teachers, and accountability for students' success—all of which contribute to retention.

- **On a broader level, UTR special educators can have a positive effect on how schools manage change.** Although there were challenges, the timing of the launch of the UTR special education program was fortuitous: Because UTR special educators began teaching in NYC schools as those schools were adjusting to new policies, partners could target training, and newly trained special educators could employ skills that helped schools adapt and carry out changes in ways that supported both students and teachers.

Section 1
Profiles & Preparation

By training 65 new special educators, UTR helped fill critical needs in New York City's public high schools. Teacher shortages were due in part to attrition—special education is a demanding subject, perhaps more so in urban school environments—but attrition wasn't the usual suspect or sole factor. The overall numbers of special education teachers in the city's schools were actually increasing, even as the overall numbers of teachers were still on the decline.[17] What had also increased were the numbers of students requiring special education services. There wasn't a sudden, inexplicable uptick in the numbers of children with disabilities, but new findings and heightened awareness about attention deficit and autism spectrum disorders, and socio-emotional problems that can affect learning meant that more children were being identified as having special needs. The rolls also grew because of demographic changes, which increased the numbers of students with language and literacy needs, and economic downturns, which put already vulnerable students at greater risk of failing in school.

- At 47%, special education residents were UTR's largest single contingent among the 138 residents completing UTR training in Cohorts 2 through 6.
- 61% of the UTR special education residents in Cohorts 2–6 were career changers; 45% of those brought 1–5 years of experience to the program.
- 30% were from underrepresented groups; their undergrad institutions were more often private, but more likely to have been in NY, with 42% in NYC.
- Hunter faculty members say UTR special educators are idealistic but grounded, & learn sooner than their peers that "rigid doesn't work."
- Adapting the special education model to changing NYC DOE policies, student populations, & schools adjusting to both required & strengthened dialogue between partners.
- A focus on collaboration can help prepare special educators for the challenges of ICT classrooms.

The NYC DOE had responded to growing needs by revising policies and hiring more special educators, in some cases issuing temporary or provisional licenses. The district had also extended outreach to parents, with information and invitations to work with school teams to develop Individualized Education Programs (IEPs), the legal document that spells out a child's educational goals and services. Still, according to a 2005 NYC DOE report, schools were not meeting the needs of students with disabilities.[18] As the district continued to revamp programs, federal policies also changed, as the 2006 IDEA reauthorization required all public elementary and secondary special education teachers be "highly qualified"; in addition, the legislation described alternative routes to certification.[19]

UTR partners added special education to its list of subjects in 2010–2011, with its second cohort of residents. They entered a field that presented opportunities—increases in funding,[20] and the newly launched ICT model, which

[17] Over the 12-year period studied, as the number of general education teachers fell by more than 9,100 to 54,778, the number of special education teachers grew by more than 5,400 to 18,595. The NYC IBO figures and review available at: http://www.ibo.nyc.ny.us/iboreports/2014teacherdemographics.pdf.

[18] Thomas Hehir, et al. "Comprehensive Management Review and Evaluation of Special Education" (Sept. 2005). Available at https://www.uft.org/files/attachments/hehir-report.pdf.

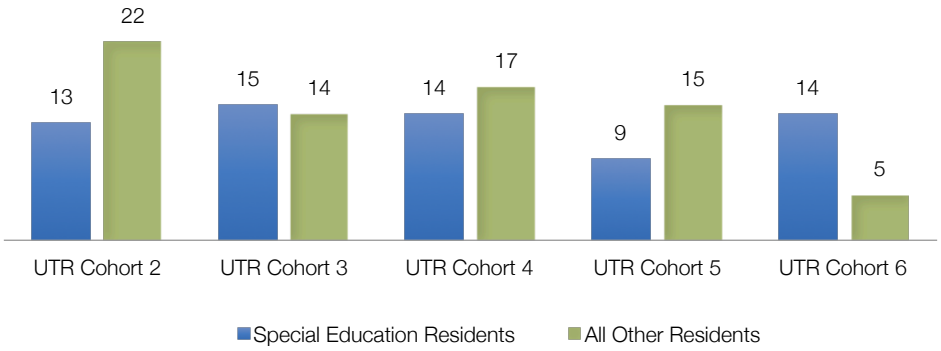
[19] See http://idea.ed.gov/explore/view/p/%2Croot%2Cdynamic%2CQaCorner%2C2%2C.

moved many students with disabilities out of restrictive, pullout classrooms into general education ones—a change praised by a second 2012 study of the new city-wide policies.[21] There were also challenges, as schools adjusted to new policies, procedures, and faculty configurations. This section looks at the 65 special educators trained, credentialed, and placed through UTR, and program's adaptation to a changing and challenging environment.

RESIDENT PROFILES

At 47%, special education residents were UTR's largest single contingent among the 138 residents who completed UTR training in Cohorts 2 through 6. Percentages ranged from 37%, or 13 out of 35 residents in Cohort 2, to 74%, or 14 out of 19 residents in Cohort 6.[22] (See Figure 3.)

Figure 3. Special Educators and Other Residents, Cohorts 2–6



Who Are UTR Special Educators?

The selective UTR screening and admissions process was designed to identify the most promising candidates. Like all those aspiring to become UTR residents, special education applicants had to clear several hurdles, including meeting the requirements for New York City Teaching Fellows and Hunter's graduate school entrance requirements, which stipulated that applicants have a bachelor's degree from an accredited institution with a GPA of at least 3.0, or a master's degree with a GPA of at least 3.5. In additional rounds of screening, New Visions looked for talent, diversity, and a combination of the experience, idealism, and grit that would equip candidates to work with teachers and students in high-need urban schools and ICT classrooms. There were also efforts, based in part on research suggesting that teachers form stronger bonds with students when their backgrounds and ethnicities are similar, to attract residents already familiar with urban environments.

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[20] NYCDOE spent $1.26 billion on special education instruction in 2009–10; $1.3 billion in 2010–11; $1.5 billion in 2011–12; and $1.6 billion in 2012–13. See IBO Report, 2014.

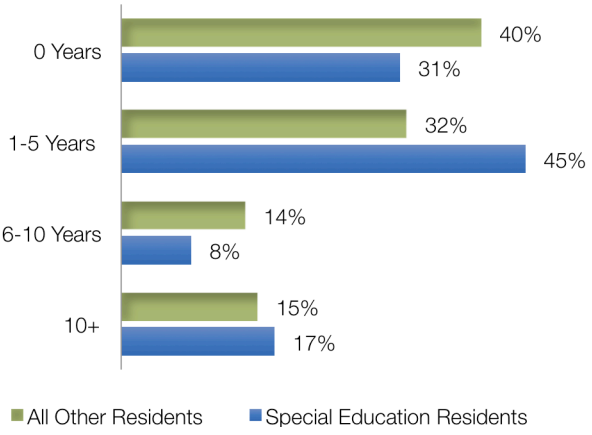
[21] "Educating All Students Well: Special Education Reform in New York City Public Schools," Fund for Public Advocacy (August 31, 2012).

[22] In 2012, a Cohort 3 resident was tragically killed during Hurricane Sandy. In this report, when we refer to the numbers of special educators trained, we use the total figure of 65. In the discussions of attrition and retention, we use a total of 64.

Background and Demographics

Across the five cohorts (2–6), the professional experience that UTR special educators brought to classroom differed only in small ways from that of their cohort peers. Compared to residents in other subject areas, a smaller percentage of special educators—31% vs. 40%—came to the program straight out of college. Similar percentages, with proportions reversed, had five years' experience or less. In addition to career changers with limited time in other pursuits, there were those in both groups with more experience under their belts, including at least one resident in the first four cohorts with over 10 years of experience (17% for special education and 15% for other subjects). (See Figure 4.) Prior experience figures deviated more sharply between subjects for Cohort 6, which included only English language arts and special education residents: while the figures for the latter followed earlier patterns—four, or 29% of the special education residents had no prior professional experience—all English language arts residents had at least one year of prior professional experience.

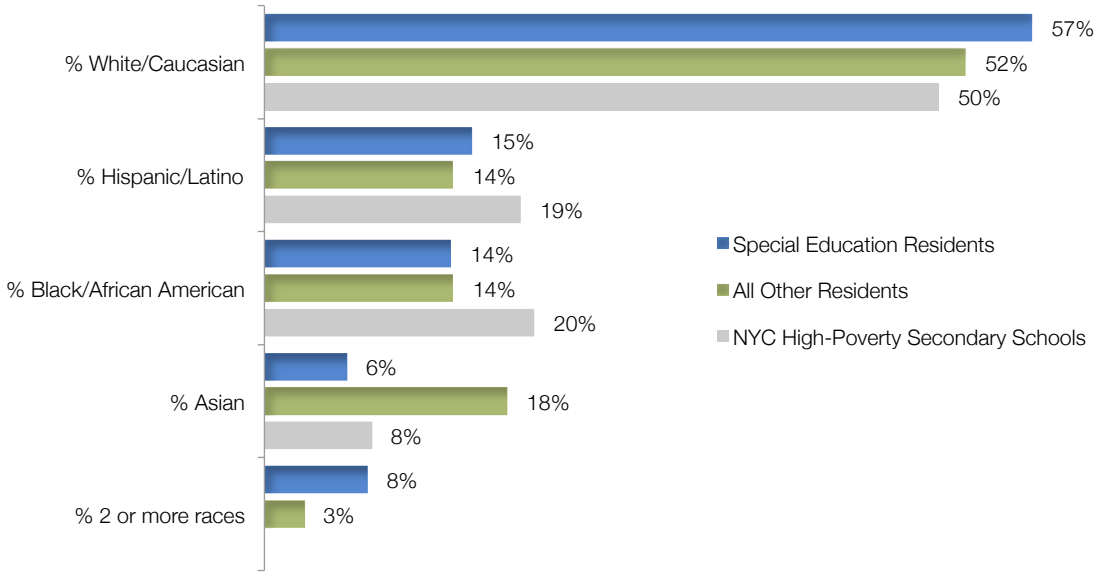
Figure 4. Years of Professional Experience, UTR Cohorts 2–6



The ethnicity of special education residents also largely mirrored that of UTR cohorts as a whole, with over half of all residents—57% of special education residents and 52% of all other residents—identifying as White/Caucasian. Similar percentages of special educators and all other residents identified as Hispanic/Latino and Black/African American, for totals of 28% and 29% respectively from underrepresented groups. The only ethnicity category that had notably lower representation among special education residents compared to all others was Asian. The percentages for African- American and Hispanic teachers in the city's high-poverty secondary schools exceeded UTR figures by four to six percentage points; figures for Asian teachers were higher in the UTR group than in the broader city population. (See Figure 5.)[23]

[23] IBO Schools Brief: A Statistical Portrait of New York City Public School Teachers, p. 5. Available at: http://www.ibo.nyc.ny.us/iboreports/2014teacherdemographics.pdf,NYC

Figure 5. Ethnicity: UTR Special Educators vs. Other Residents & NYC DOE High-Poverty Secondary Teachers



Other demographic data pointed to some differences between UTR special education residents and those who chose other subject areas. Although there were, for example, more female residents than males in other subjects, as there are in the profession as a whole, the gender division was more striking for special educators, with over a 20 percentage-point difference. Across the five cohorts, 82% of special education residents were female, compared to 60% of residents in all other subject areas. The percentages for residents in other subject areas were more similar to citywide figures for teachers in high-poverty secondary schools. (See Figure 6.)[24]

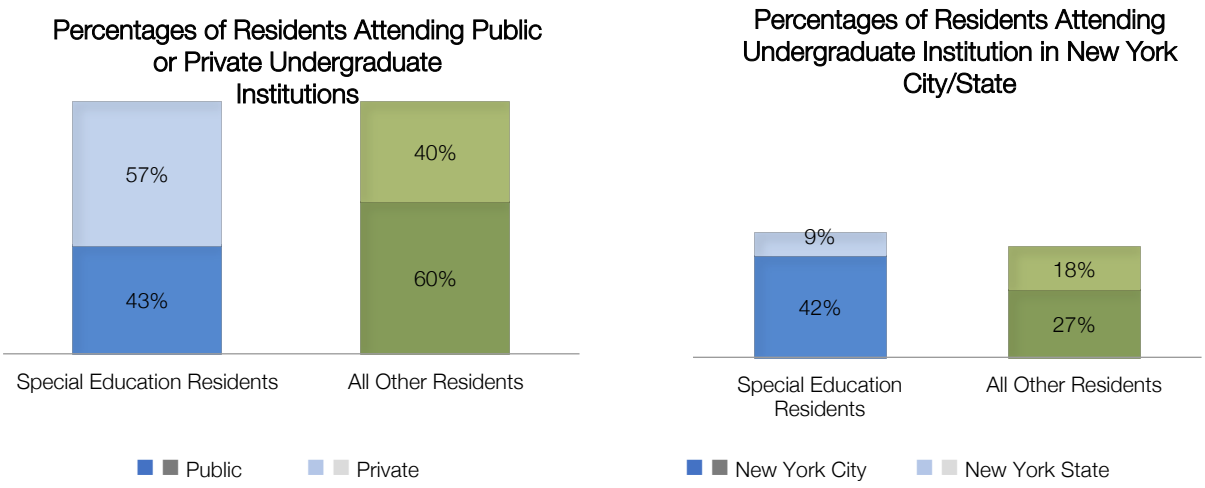
Figure 6. Gender Breakdowns: UTR Special Educators vs. Other Residents & NYC DOE High-Poverty Secondary Teachers

UTR special educators were also more likely than other residents to have obtained their undergraduate degrees from a private institution—in nearly inverse proportion. The margins were smaller, but special education residents

[24] IBO Schools Brief: A Statistical Portrait, p. 5.

were also more likely to be educated locally: 51% of special education residents, vs. 45% of all other residents, earned their undergraduate degrees in New York. Of these, 42% of the special education residents and 27% of all other residents obtained their undergraduate degree from an institution in New York City. (See Figure 7.)

Figure 7. Educational Backgrounds of Residents



Skills and Dispositions

Hunter faculty members observe certain characteristics they say UTR special education residents share. In addition to being "high-caliber students," they are, by and large, "very committed, interested, dedicated." They "know themselves socially and emotionally," and possess an "ability to empathize far above others," a "heightened sensitivity to meeting students' needs," and a "social justice slant."

These traits may point to some finer distinctions between UTR special educators and other aspiring teachers, but they don't necessarily set UTR special educators apart from other special educators—those who choose the field are typically a dedicated, empathetic group. What does seem to set UTR special education residents apart, according to one faculty member, is that they seem "more grounded," more "clear-eyed" about "what they can and can't fix." It may be that they gain these skills or dispositions from their extended clinical experience—and acquire them more quickly, out of necessity. Residents have often been described as being high achievers, as one Hunter faculty member observed, "grieving about B's." Even compared to UTR peers, special educators, he also observed, tend to learn sooner that "rigid doesn't work."

PROGRAM PROFILE

How Are UTR Special Educators Prepared?

Initial Screening and Partnership Efforts

Residents' year-long clinical experience in real schools and ICT classrooms gives them a head start on skills more typically acquired during novice teachers' induction years, but other parts of their training are specifically designed

to give them both skills and flexibility. Through the collaborative inquiry work that is paramount in New Visions training, all UTR residents learn to cycle through a process whereby they assess students' needs, design or adapt instruction based on feedback, retry, and reassess. In an ICT setting where special educators collaborate with content teachers to adapt lessons to a range of students' needs, they may learn to pivot easily, quickly, and often.

According to New Visions current Director of Teacher Residencies, Marisa Harford, as the project team refined a screening process, they focused on these skills earlier, requiring aspiring special educators reflecting on demo lessons what they would *do* with feedback to "reach students" and "make content accessible." An additional skill that became part of their screening criteria involved not just the skills needed to adjust lessons, but also "initiative taking": screeners looked for candidates who would also be "pro-active," likely to "advocate for themselves."

"Quality" was one operative word in the TQP program; "partnership" was the other. Getting more teachers in urban classrooms, keeping them there, ensuring they could be highly effective—this required a collective effort, which was not without its own challenges as partners responded to research on best practices, new city policies, and feedback from residents and mentors.

Incorporating the "needs and obligations" of all partners was, according to David Connor, Director of Hunter's Special Education program, a "dialogic" process. Needs changed as the city's policies took shape and special educators assumed residencies in schools that were adjusting to new policies. As a group, partners engaged in an ongoing conversation about what special educators needed to know, and when, and whether they needed to experience all facets of special education to be effective. Sometimes stakeholders varied and agendas differed: there could, for example, be a conversation between partners and the NYC DOE about ICT requirements, between faculty and New Visions about shared and proprietary responsibilities, or between Hunter faculty devising a new course and state- level approval boards. As the model evolved, the goals remained lofty and practical: for Hunter, to "arrange coursework and training in a matrix that makes sense," and, for New Visions, to figure out "what's working" and "what needs to be worked on more."

Hunter Coursework

The course map for Hunter's graduate Adolescent Special Education Program is similar to those for other aspiring teachers. The program, through which residents earn a generalist degree for grades 7–12, and, upon graduating, are eligible for New York state certification in Students with Disabilities, Grades 7–12, is built around methods, adolescent development, assessment, classroom management, and practicum experience. Coursework includes:

Issues and Practices in Educating Students with Disabilities
Assessment of Students with Disabilities
Classroom Management in Special Education and Inclusive Settings
Inclusive Instruction in General Education Classrooms for Students with Learning and Behavior Disorders
Issues in Teaching English Second Language Learners with Special Education Needs
Methods of Teaching Reading for Adolescents with Learning Disabilities
Supervised Clinical Teaching of Adolescents with Disabilities: Part I
Adolescent Development and Learning: Grades 7-12

According to Department Chair Connor, the special education program is in some ways an "artifact of the shortages" and the need to train teachers to work with an increasingly diverse student population. No one

questioned that residents' preparation should reflect the special needs of the students they would eventually serve. But covering the possible learning disabilities and disorders called for a "large umbrella," and determining, for example, what should—or could—be included in a course entitled "Diverse Learners" required negotiation.

One aspect of what Connor called a "dialogic" process was the proverbial division between theory and practice. Hunter's program, he explained, has always been "predominately practitioner focused," with emphasis on "how to plan the lesson, how to base lessons on assessment, how to conduct formative and summative evaluations." In some ways a residency program fit well with Hunter's approach. Unlike other graduate students, residents could share actual school experiences with practicum faculty. There was also some natural overlap, as that between reading and literacy courses. Professors had traditionally worked together, and when classes were largely composed of UTR ELA teachers or special educators who shared a common need—for example, to learn about vocabulary practices—it was possible to change a syllabus accordingly. Hunter's Learning Lab, in which novice special educators worked one-on-one with students, provided another opportunity to blend theory and practice.

Defining best practices required more dialogue. Not only were schools adapting to new policies, but the field of special education itself was in flux, each area, according to Connor, had its own "little pots of thinking." Hunter Special Education Professor Kate Garnett worked with then Director of Teacher Residencies, Roberta Trachtman, Harford, and the New Visions team to design a framework for the UTR special education program around ideas of best practices in special education. The challenges didn't end with defining best practices, but continued with enacting them and setting realistic timeframes and expectations for residents.

New Visions Training and Support

The first part of readying residents was deciding how to start and sequence residents' clinical year training. As the UTR special education model evolved, New Visions' asked the same set of questions: What should be prioritized in summer training? What should be included in the residency essentials? What kinds of "turnkey" information do residents need on that first day? Questions also arose about whether to differentiate training for special education. All novice teachers need certain essentials and instructional strategies, but those, says New Visions' current Deputy Director of Residencies, Rachelle Verdier, may look different when viewed through a special education lens. In learning about small group work, for example, special educators may take different needs into account in grouping or proctoring students. All residents need guidance in how to liaise with parents, but for special educators interactions may involve creating IEPs, demanding for even experienced teachers. To address these needs, New Visions scheduled breakout sessions during the summer training that focused on IEP writing, the city's web-based Special Education Student Information System (SESIS), and ICT co-planning and co-teaching. There were also considerations related to synching New Visions support with Hunter coursework and finding natural synergies.

Other responsibilities that fell to New Visions involved determining how to support residents in schools where special education configurations varied. Even though partners aligned preparation to new policies, schools needed time to adjust and comply. According to Harford, at the start, most schools were "on the cusp," just beginning to shift to ICT classrooms and team-teaching. Over UTR's five years, residents experienced challenges right along with schools. Some were a matter of school structures: teachers who needed to plan together lacked common planning time. Serving more students strained schools already under-resourced, under-staffed. Even as the city increased resources with the launch of SESIS, teachers worried that bookkeeping took time away from students.

Other challenges came from defining roles and responsibilities. Both mentors and content area teachers were trying to learn new roles and, according to Verdier, get a sense of "what collaboration looks like." While the UTR program was advocating for special education residents to take on a co-teaching role, some schools were still in a "one teach, one assist" mode, expecting special education residents to be that extra set of hands.

Harford and Verdier say that team teaching has become more routine. What still complicates resident/mentor pairing is that mentors are special educators but residents team-teach with content teachers—and not always in classes where their mentors team-teach. Although, to be admitted to Hunter, residents have to have an undergraduate liberal arts or sciences degree and an appropriate distribution of content courses, they may be co-teaching in an area they don't feel strong in, or that doesn't "play to their strengths." Special education residents tend to have backgrounds in the humanities, but the need is in science and math. In an ideal situation, residents have the support of two teachers during their apprenticeship. If that is not the case, or if the content area teacher is unaccustomed or even averse to planning ahead, co-teaching can be challenging; more important, adds Verdier, it is "hard to feel effective."

Ongoing Partnership Challenges and Opportunities

Case study findings and retention data suggest that special educators' training helps them succeed—and stay—in the classroom. Partners continue to explore ways to ensure both. According to Trachtman, the focus is on collaboration and other ways to embed ICT practices in residency essentials, or adding a course on team-teaching to Hunter coursework. Connor also alluded to more "dialogic negotiations" about ways to give special educators more "standing and parity" in content collaborations. Partners continue to blend Learning Lab work, school practice, and the Defense of Learning, part of the New Visions assessment suite that requires residents to demonstrate that they can successfully address students' learning needs, mid-year, with a single or small group of students, and again at the end of the year with larger groups. At the writing of this report, dialogic negotiations have achieved the assessment trifecta of the DoL. Learning Lab, and EdTPA, the new state-mandated certification exam.

Section 2

Performance & Readiness

This section shifts to how well UTR's special educators measure up as "high-quality" instructors. Findings are based largely on program measures, including residents' completion and placement rates, Hunter College GPAs, and performance on the assessment suite developed by New Visions to gauge residents' growth over the course of their clinical year. The section also shares residents' self-reports of readiness.

Here, as elsewhere, we have looked for points of comparison: how special educators' completion and placement rates, across five cohorts (2011–2015), compare to those of UTR content-area peers; how their graduate school performance compares to other Hunter students'; and how their self-assessments compare to self-reports from their mentors and peers.

The discussion of the New Visions assessment suite data is based on benchmarks and common metrics, including the Defense of Learning, the professionalism and unit and lesson design rubrics, and the Danielson Framework. We looked for ways to triangulate these findings, through self-reports of confidence in practices assessed by the suite of tools, and through comparisons to levels of confidence reported by peers and mentors. We also referenced trends we had noted in past analyses, and ways self-reports from special educators mirrored or departed.

- Over 5 cohorts, 82%, or 65 of the 79 UTR special educators who enrolled completed their residencies.
- Attrition rates among special educators were a little higher than peers', or 17% vs. 10%: 9 special education residents were counseled out; 5 withdrew.
- UTR special educators' on time degree completion rates & GPAs were on par with their UTR peers & other Hunter special education grads.
- Special education, along with math & science, the 3 areas where demand was highest, had the highest placement rates—all at 100%; English rates were still high, but 13 percentage points below other subjects.
- Special educators performed on par with peers on the New Visions assessment tools. Most met benchmarks, with percentages increasing from Cohort 4 to Cohort 6. Special education residents across cohorts had high rates of professionalism throughout the school year.
- Like other residents, special educators tended to score highest on Danielson domains related to classroom environment—engaging students, creating a culture of learning, managing behavior—& lowest for instructional domains—using assessments & questioning.
- Cohort 6's Danielson scores were higher than previous cohorts, though self-reports of confidence were lower. Their self-reports of collaboration showed an increase over previous cohorts', with levels of professional engagement that matched Cohort 6 mentors'.

Our final set of comparisons included a look at how UTR special educators' self-reports of professional engagement and confidence in collaborative practices, which provided an additional lens through which to view their readiness for ICT classrooms.

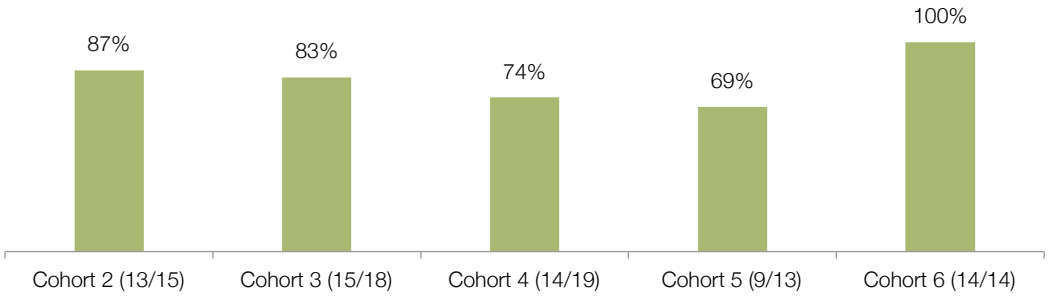
How Do UTR Special Educators Compare to Peers?

UTR partners agreed that special education attracts a certain kind of aspiring teacher—and that special educators need certain kinds of skills and resilience to succeed. Average residency and degree completion rates, on par with peers' rates, suggest that the program's screening, training, and support mechanisms worked well. Data may also suggest that, with special educators, it is easier to see, sooner rather than later, if the fit is right.

Residency Completion and Attrition, by Cohort

From Cohort 2 (2010–2011), with the first special education cohort, through Cohort 6 (2014–2015), 65 or 82% of the 79 special education residents who enrolled in the residency program completed it. Completion rates ranged from 69% in Cohort 5, to 100% in Cohort 6. (See Figure 8.)[25]

Figure 8. Special Education Residency Completion By Cohort



Source: New Visions Data Warehouse

Residents sometimes choose to withdraw from the program when the fit is not right, but, as UTR evolved, project partners also developed intervention strategies through which struggling residents received extra support, coaching, and plans to address specific problems. In some cases, problems are remedied; in others, residents are counseled out. Over five cohorts, five of the 14 special education residents who did not complete the program withdrew, and nine were out-counseled. Cohort 4 had four residents out-counseled, the largest number of residents in any Cohort; Cohort 5, with 3 of the 13 residents being counseled out, had the highest rate, at 23%. Residents withdrew at similar rates across Cohorts 2 through 5, with one or two residents withdrawing from each cohort. (See Table 7.)

Table 7. Special Education Residency Completion by Cohort, 2–6

	Completed Residency		Out-counseled		Withdrew		Total
UTR Cohort 2	13	87%	1	7%	1	7%	**15**
UTR Cohort 3	15	83%	1	6%	2	11%	**18**
UTR Cohort 4	14	74%	4	21%	1	5%	**19**
UTR Cohort 5	9	69%	3	23%	1	8%	**13**
UTR Cohort 6	14	100%	0	0%	0	0%	**14**
TOTAL	**65**	**82%**	**9**	**11%**	**5**	**6%**	**79**

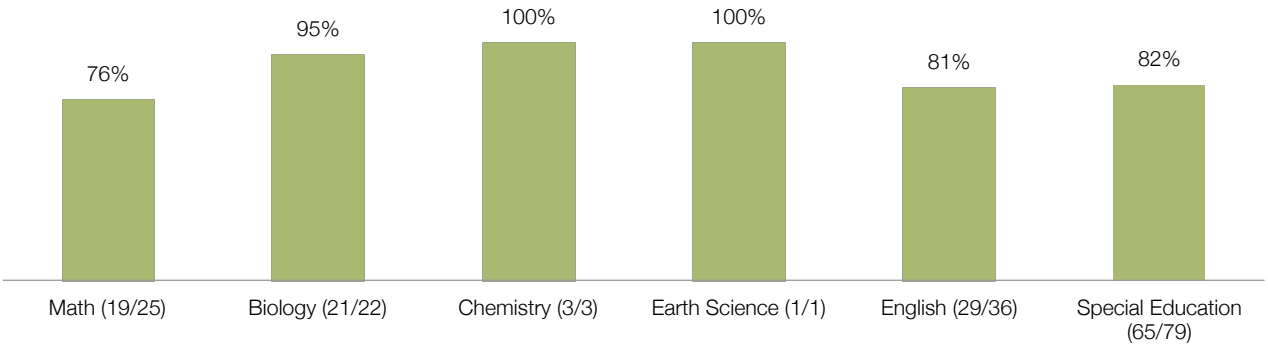
Source: New Visions Data Warehouse

[25] The residency model for Cohort 6 varied somewhat from the model for Cohorts 1–5.

Completion and Attrition, by Subject

Overall completion figures, across five cohorts, did not vary significantly by subject. Their numbers were small, but 100% of the chemistry and earth science residents completed all program requirements. Biology had the next highest completion rate at 95%, followed by special education (82%) and English (81%); math residents had the lowest completion rates, at 76%. Rates for special education were six percentage points higher than mathematics, 16 percentage points lower than combined science rates, and on par with English language arts. (See Figure 9.)

Figure 9. Program Completion by Subject, Cohorts 2–6



Source: New Visions Data Warehouse

Attrition figures show that most of the 14 special education residents who did not complete their residencies were counseled out, at somewhat higher rates than residents in other subjects. Of the 12 residents out-counseled from Cohorts 2–6, nine or 75% were special educators; one biology and two math residents were also out-counseled. Six percent of special education residents withdrew from the program, a rate lower than the rate of English (19%) and math (16%) residents; no science residents withdrew. (See Table 8.)

Table 8. Residency Completion by Subject, Cohorts 2–6

	Total Enrolled	Completed Residency		Out-counseled		Withdrew	
Biology	22	21	95%	1	5%	0	0%
Chemistry	3	3	100%	0	0%	0	0%
Earth Science	1	1	100%	0	0%	0	0%
English	36	29	81%	0	0%	7	19%
Math	25	19	76%	2	8%	4	16%
Special Education	**79**	**65**	**82%**	**9**	**11%**	**5**	**6%**
TOTAL	**166**	**138**	**83%**	**12**	**7%**	**16**	**10%**

Source: New Visions Data Warehouse

Degree Completion and GPA, by UTR Cohort and Subject

Hunter records indicate that almost all special education residents in Cohorts 3–5 (the cohorts for which data were available) completed their degrees on time, and at slightly higher rates than some of their cohort peers (see Table 9). Records also show some slight variations in grade point averages—overall, math GPAs were a few tenths of a

grade point lower, and chemistry GPAs were the highest overall—but all residents posted GPAs of 3.7 or higher. The average across four cohorts for special educators was 3.85. (See Table 10.)

Table 9. On-Time Degree Completion by Subject Area

	2010-2011	2011-2012	2012-2013	2013-2014
Special Education		**96%**	**100%**	**100%**
English (UTR)	100%		100%	100%
Math (UTR/MASTER)	91%	83%	100%	100%
Biology (UTR/MASTER)	80%		80%	50%
Chemistry (UTR/MASTER)	100%	100%	100%	100%
Earth Science (UTR/MASTER)		100%	100%	100%

Source: Hunter College Data

Table 10. GPA by Subject Area

	2010-2011	2011-2012	2012-2013	2013-2014
Special Education (UTR)	**3.82**	**3.83**	**3.84**	**3.92**
English (UTR)	3.89		3.79	3.93
Math (UTR/MASTER)	3.74	3.69	3.89	3.66
Biology (UTR/MASTER)	3.77	3.78	3.71	3.68
Chemistry (UTR/MASTER)		3.94	3.8	3.93
Earth Science (UTR/MASTER)		4.00	3.66	3.84

Source: Hunter College Data

GPAs: UTR vs. Other Hunter Special Education Graduate Students

Special education residents trained through UTR performed similarly to students trained through Hunter's traditional special education programs. The GPAs for the two groups were within a tenth of a point of each other in almost every year data were available. The widest difference was in 2013–2014, when UTR special education residents' average GPAs were a tenth of a point higher than those earned by students in the traditional program, or 3.92 vs. 3.82. (See Table 11. SE7–12 refers to other graduate students in Hunter's Adolescent Special Education programs.)

Table 11. Special Education Adolescent Generalist Degrees by Cohort

Program	Year	Number	GPA
SE7–12	ND	ND	ND
UTR Cohort 2	**2010–2011**	**13**	**3.82**
SE7–12	2011–2012	105	3.83
UTR Cohort 3	**2011–2012**	**14**	**3.83**
SE7–12	2012–2013	100	3.82
UTR Cohort 4	**2012–2013**	**15**	**3.84**
SE7–12	2013–2014	102	3.82
UTR Cohort 5	**2013–2014**	**10**	**3.92**

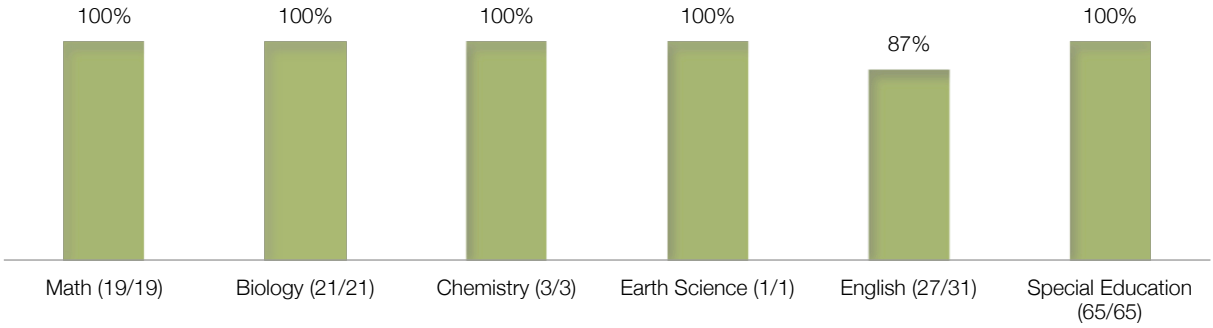
Source: Hunter College Data

Placement

Teacher shortages was one of the reasons partners created UTR, so obtaining jobs is not a major obstacle for special education residency completers. Figure 10 below, which includes overall numbers, across Cohorts 2–6, of

residency completers who obtained jobs, shows that special education, along with math and science, all three areas where demand was highest, had the highest placement rates—all at 100%; English rates were still high, but 13 percentage points below other subjects.

Figure 10. Induction Year Hiring by Subject Cohorts 2 through 6



NEW VISIONS ASSESSMENT TOOLS AND RATINGS

How Do UTR Special Educators Perform Compared to Peers?

In 2011–2012, or UTR's third year, and second year with special education residents, New Visions began developing a suite of assessment tools that allowed program staff to examine residents' performance as well as the effectiveness of program elements and supports. This performance-based system incorporated the Charlotte Danielson *Framework for Teaching*, mandated in New York City and used by NYCDOE principals to assess teachers. New Visions staff set benchmarks appropriate for novice teachers, and along with mentors, observed residents four times a year, often debriefing together. Project staff also created an addendum to the Danielson tool for special education, which special education mentors helped draft and pilot, to capture what happens in ICT classrooms.

Other tools in the New Visions assessment system included the Defense of Learning (DoL), successful completion of which was required for graduation, and lesson and unit design and professionalism rubrics. As the assessment system evolved, New Visions staff incorporated additional features into the DoL and lesson and unit design tools to ensure that they were instructional as well as evaluative—and that residents could use the feedback to revise their work. A mid-year DoL gave residents a scaled down, practice run to show how they used inquiry to support student learning; residents could also use initial feedback to submit lessons and unit designs for a second review.

Defense of Learning

The DoL was an opportunity for all residents to show how they had used the inquiry cycle and student data to diagnose students' needs, design instruction, and assess learning. There were variations by cohort, but, on the whole, special educators performed on par with their peers, and most met or came close to meeting the benchmarks, with percentages increasing from Cohort 4 to Cohort 6.

- The percentage of special education residents meeting the defense of learning benchmark in Cohort 4 significantly increased from 56% in January to 93% in June.
- In Year 5, 89% of the Special Education residents met benchmarks for the first, mid-year DoL, and 100% did so for their final end-of-year DoL presentations.
- 100% of special education residents in Cohort 6 met the benchmark both in January and in June.

Lesson and Unit Design

Benchmark data was sometimes uneven for special education residents, but show that, overall, the percentage of special education residents who met the lesson design benchmark as rated by their mentors increased from November to February.

- The rates of Cohort 5 special education residents rose from 22% meeting the benchmark in November to 75% in February. The percentage of special education residents in Cohort 6 meeting the benchmark started higher in November, at just over half or 54%, and grew to 64% in February.
- Past reviews have shown that mentors' ratings often tend to be higher than those posted by program staff, but in the case of the lesson design ratings for special educators, staff ratings topped mentors'.

Professionalism

Professionalism had been an implicit expectation from the start, but it became clear that residents needed explicit direction about school responsibilities such as participating in meetings, responding to feedback, and respecting school hierarchies and norms. New Visions introduced the professionalism rubric with Cohort 4. Data show that:

- Special education residents across cohorts had high rates of professionalism at the various rating points—including those who eventually withdrew or were counseled out.
- Of the 41 special education residents in Cohorts 4, 5, and 6 who received professionalism ratings early on in the school year, only two did not meet the benchmark.
- 100% of the residents in the three cohorts met the professionalism benchmark by the end of the year.

Danielson Framework

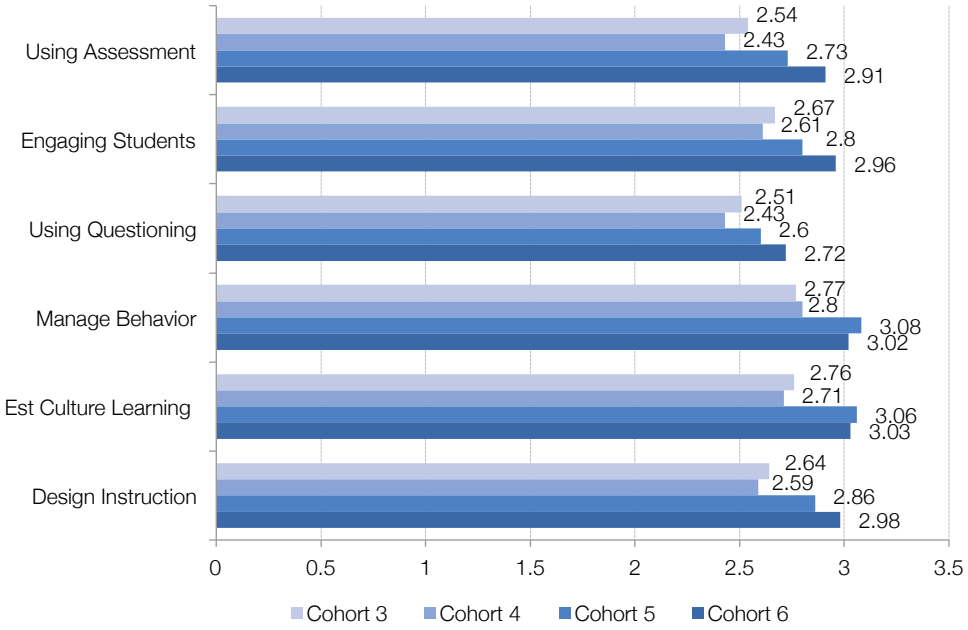
UTR special educators' Danielson performance indicated that residents, like their peers, were performing at levels appropriate for novice teachers—or between two and three ("developing" and "effective") on a four-point scale ranging from "unsatisfactory" to "distinguished" or "exemplary." Benchmark ratings show some variation across special education cohorts:

- 100% of Special Education and English Residents in Cohorts 5 and 6 met both the December and May Danielson benchmarks, based on ratings by both mentors and New Visions program officers.
- The percentage of special education residents in Cohort 4 who met the Danielson benchmarks varied widely by subject area and by rater (mentor vs. program officer). The percentage of Cohort 4 special education residents who met the Danielson benchmark as rated by their mentor declined from 39% in December to 28% in May. However, the percentage of Cohort 4 special education residents who met the benchmark as rated by their PO increased from 17% in December to 44% in May.

Reviews of special educators' performance on each of the six individual domains (see Figure 11) also show scores generally comparable to ratings for residents in science, math, and English. Mean scores were lowest for Cohort 4—likely because the Danielson Framework was new and norming and inter-rater reliability mechanisms were not in place—but edged up for Cohort 5, and Cohort 6 had the highest average scores across all six domains. As noted earlier, mentors, typically, have scored residents a little higher than New Visions staff, especially in the earlier observations, but, by the end of the year, scores have usually converged. The trend was not as clear for special educators, and both mentors and program officers tended to score them a little higher than their peers.

Like residents in other subject areas, special educators tended to score highest on Danielson domains related to classroom environment—engaging students, creating a culture of learning, and managing behavior. Conversely, residents have tended to score lowest on the domains that relate more directly to instruction—using assessments and questioning. Although differences were small, in Cohorts 5 and 6, this trend did not hold true for special educators, which may simply reflect differences in residents—or the evolution of the program and a deepening emphasis on diagnosing learners' needs and more practice as special educators cycle through assessments and framing—or re-framing—questions for special needs students. For Cohorts 5 and 6, residents' scores on Using Assessment and Questioning ticked up enough from previous cohorts to move them from "developing" status to "effective" teacher. Other differences in early and later cohorts may be due to the change in the model for Cohort 6, but the fact that these differences applied to Cohort 5 as well as Cohort 6 may also signal a maturing project.

Figure 11. Special Education Residents' Danielson Averages, Cohorts 3–6

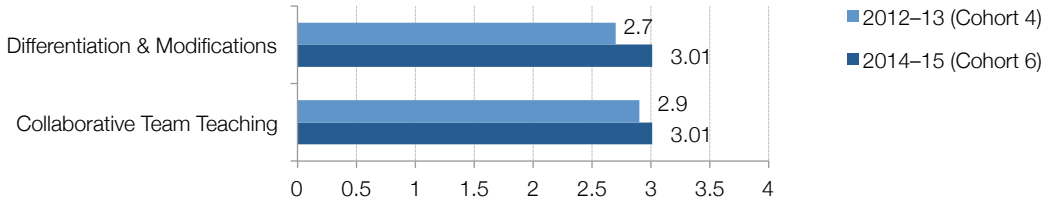


Performance on Special Education Addendum

In UTR's fourth year (SY2012–13), and second year of using the *Danielson Framework*, New Visions created an addendum to better capture the developing skills and practice of special education residents. Program staff and mentors rated, over four successive observations, collaborative team teaching and differentiation and modifications for special education students in ICT classes, along with small-group instruction in resource rooms (program staff

only). Ratings show special education resident achieving average ratings just under 3 on the 4-point scale. We do not have the 2013–2014 or Cohort 5 scores, but Cohort 6 average scores were slightly higher, at 3.01. (See Figure 12.)

Figure 12. Special Education Residents' Danielson Addendum Averages, Cohorts 4 & 6



How Do UTR Special Educators Assess Their Own Readiness?

Residents vs. Peers

Past reports have described two trends in residents' self-assessments. First was an inverse relationship between residents' self-assessments of particular skills and their Danielson scores. Across subjects, residents were typically less confident in areas where Danielson ratings showed strengths—in the classroom environment and management domains—and more confident in the instructional domains of assessment and questioning, where they received somewhat lower ratings. Second was a tendency for residents to assign higher ratings for how often they employ certain practices than for how confident they feel doing them.

We observed this second trend in our summative analyses of survey data across cohorts and subjects, for which we created a set of scales based largely on the constructs that had framed our data collection: confidence, practice, engagement, learning environment, assessment, professional engagement, and support and school climate.[26] We also created three sets of overall scales:

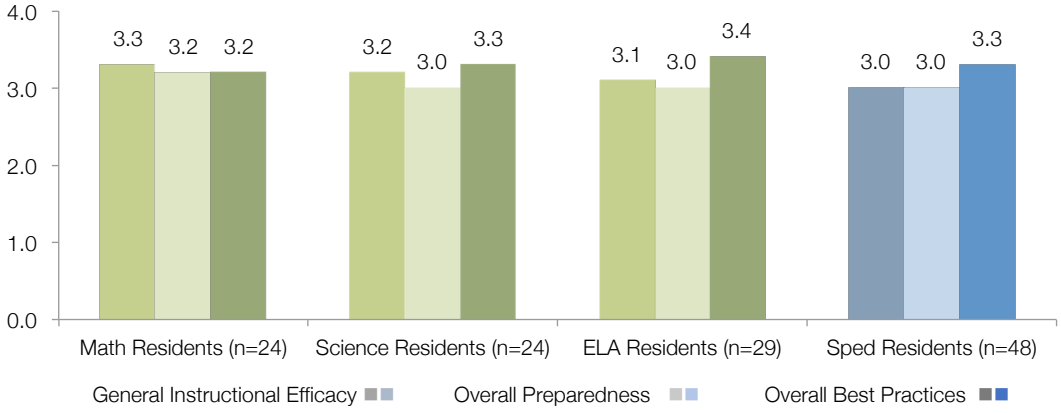
- General instructional efficacy, with items related to teaching subject matter and improving student achievement;
- Overall preparedness, which included confidence-level items about handling classroom management challenges, differentiating instruction, and using data to inform instruction.
- Overall best practices, with items about the frequency with which teachers checked for understanding, asked thought-provoking questions, or created opportunities for students to work independently and collaborative.

Survey responses overall indicated that residents felt generally confident, and that they engaged in practices encouraged in their training frequently. However, as Figure 13 shows, for all except the math residents, ratings for

[26] All scales were based on four-point response options, and all examined for reliability, using Cronbach's alpha, which showed that reliability for most scales was fairly high, within acceptable ranges (α ranged from .702 to .935).

what residents in Cohorts 1 through 5 *did* in the classroom—on the best practices scale—were a few tenths of a point higher than ratings for how prepared they felt doing them. The respective means for the special education group were 3.0, 3.0, and 3.3.[27]

Figure 13. Scale Means, Special Ed vs. Peers



Source: REA Annual Teacher Surveys, 2010–2014

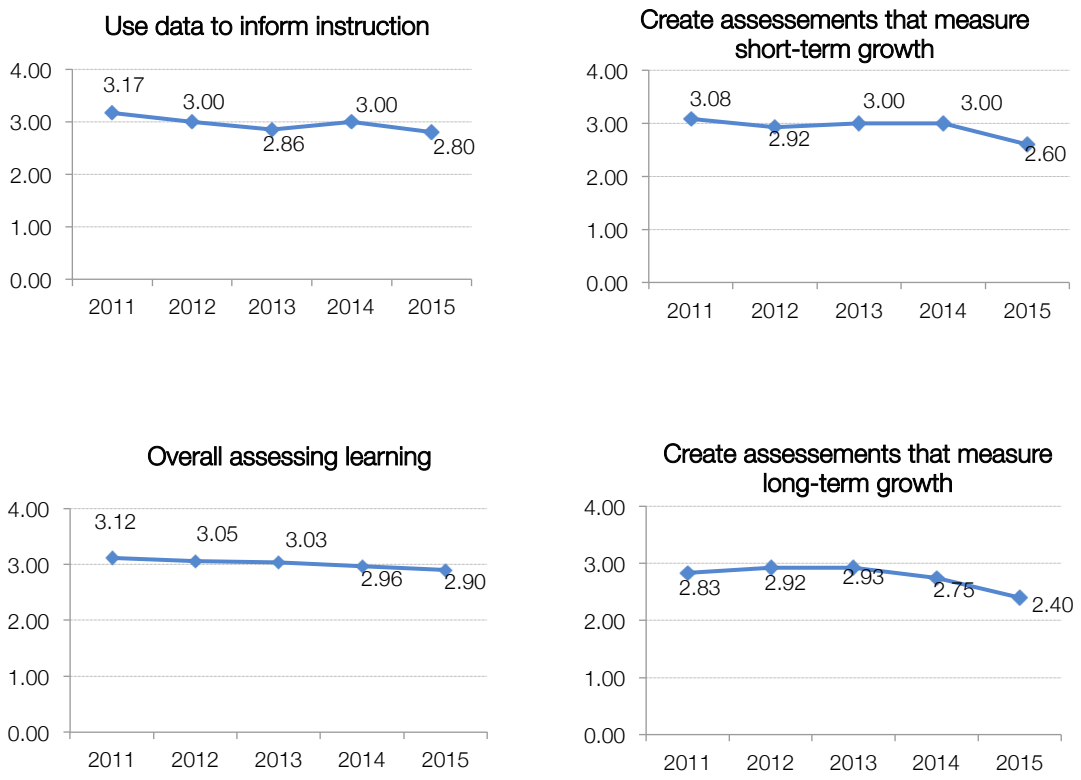
Some interesting differences emerged when we added Cohort 6 special educators' data to the mix: the second trend continued, but with wider margins: the mean for overall best practices was 3.16, and for overall preparedness, 3.10, while the mean for general instructional efficacy edged down to 2.89.

Some gaps also widened when we looked at the second trend. Cohort 6 scored highest on all the Danielson domains, but, compared to other subjects and previous special education peers, they tended to rate their confidence and practice lower. As noted earlier, the Cohort 6 model departed some from the Cohort 2–5 model, with differences in the selection of residents, the support they received, and fact that these were part-time teachers of record, with more school responsibilities, and possibly students, classes, or co-teaching situations with more challenges, all of which could explain the slight downturns.

We should also note that these means are not necessarily low: the Cohort 6 special educators' ratings consistently hover around the "prepared" or "confident" mark, or the 3.0 level. The slight declines could reflect that phenomenon where higher performers are the more self-critical. It may also be that refinements in the special education program and the inquiry and formative assessment training, and more conversations during which residents unpacked their practice with mentors, led residents to assess their own skills differently. Figure 14 shows the trend lines across cohorts for the assessment scale.

[27] Means are based on responses from Cohorts 2–5, since there were no special education residents in the first cohort.

Figure 14. Special Educators' Self-Reported Confidence in Assessment Skills, Cohorts 2–6



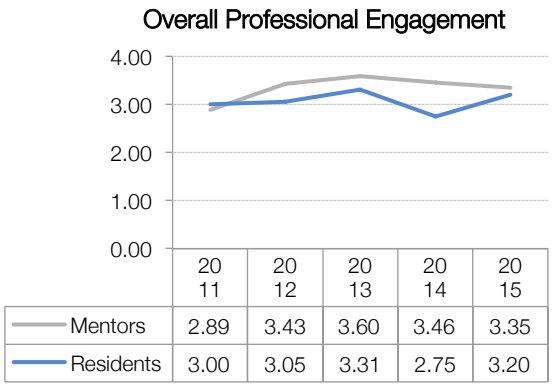
Special Education Residents vs. Special Education Mentors

A final set of comparisons may lend some credence to the fact that conversations and debriefings with mentors affected residents' self-assessments—and point to other facets of the evolution of the UTR special education model. In preparing special educators for the range of challenges and school configurations they might encounter, according to New Visions staff, they have tried to "cover as much ground as possible," and focused residency preparation increasingly "around collaboration." When we reviewed special education residents' and mentors' survey responses, across cohorts, we discovered that for a subset of items, ratings converged with Cohort 6. What was, with the first cohorts, a margin of seven to nine tenths of a point on a four-point scale narrowed to four to six tenths. In some cases, the margins stayed the same but ratings for both groups ticked up or down in sync.

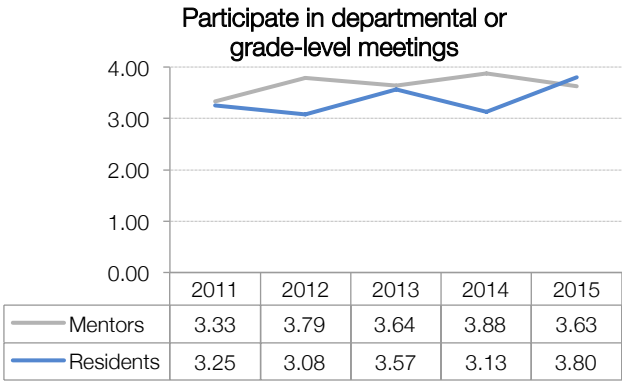
What we saw in special education residents' and mentors' ratings on the professional engagement scale was that they converged in 2015, with Cohort 6. For the overall scale average, mentors' ratings were just above residents' (M=3.35 vs. 3.20); for the frequencies with which they reported collaborating with other teachers, means met at 3.70, and for the frequency with which they participated in departmental or grade-level meetings, means for residents' self-reports (M=3.80) rose above mentors (M=3.63). Means were lower, and the gap wider, for collaboration on school-wide decisions. (See Figure 15.)

Convergence may, again, reflect the fact that Cohort 6 residents were part-time teachers of record were more involved in the school community. It may also signal a maturing project, and the fact that the program succeeded in grooming proactive novice teachers ready to take on leadership roles. It may also suggest that the program pushed mentors' development as well as residents. The next section explores each of these in the context of actual schools.

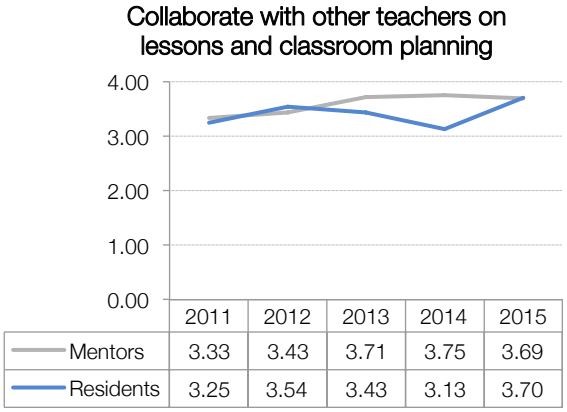
Figure 15. Special Education Residents vs. Special Education Mentors, Cohorts 2–6



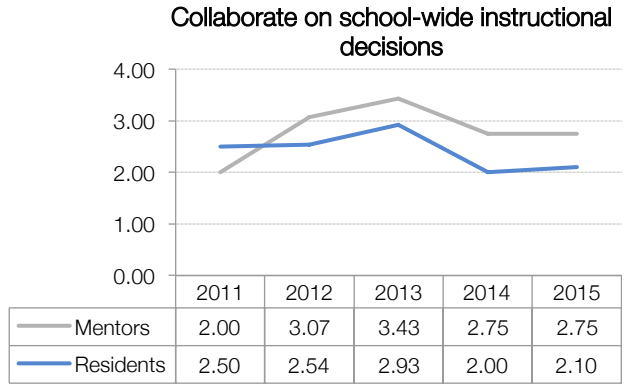
	2011	2012	2013	2014	2015
Mentors	2.89	3.43	3.60	3.46	3.35
Residents	3.00	3.05	3.31	2.75	3.20



	2011	2012	2013	2014	2015
Mentors	3.33	3.79	3.64	3.88	3.63
Residents	3.25	3.08	3.57	3.13	3.80



	2011	2012	2013	2014	2015
Mentors	3.33	3.43	3.71	3.75	3.69
Residents	3.25	3.54	3.43	3.13	3.70



	2011	2012	2013	2014	2015
Mentors	2.00	3.07	3.43	2.75	2.75
Residents	2.50	2.54	2.93	2.00	2.10

Section 3
Impact on Schools

The two previous sections suggest that the 65 UTR special educators who entered classrooms from 2011–2015 did so with skills and confidence. This section looks at how that readiness translated into practice.

The findings are based on case studies in three schools that provided a range of special education configurations, percentages of students with IEPs, and numbers of UTR-trained special educators teaching there. Two big questions guided the data collection:

- *How do the practices of UTR-trained special educators differ from those of other special education teachers?*
- *To what extent do UTR-trained special education teachers collaborate and team with students' classroom teachers?*

As part of the data collection, we surveyed both special education and content teachers. Our survey sample was small so results are not definitive or statistically significant, but, along with other data collection, helped delineate the differences—and similarities—between UTR special educators and their peers. The differences were not in commitment to students: all the special educators we talked with expressed the same deep commitment to serving students, and all feel the strains of serving students whose needs and numbers continue to grow. There was also broad acceptance of the new city policies and a belief that inclusion classrooms were better for students. Most special educators acknowledged that some content-area teachers are more collaborative than others; both groups also acknowledged the challenges of making an ICT classroom work.

- Compared to special educators from other programs, UTR-trained special educators say their programs better prepared them to assess & meet students' needs.
- They also feel better prepared to teach in ICT settings.
- Like other special educators, they feel least prepared to write or monitor IEPs.
- A concentration of UTR special educators with an inquiry mindset & knowledge of how to operationalize inquiry & target students' needs helps define & balance co-teaching. (School A)
- A "skillset around intervention" can have a broader effect, changing how resource rooms work & how sped students are assessed & perceived. (School A)
- Collaboration skills & a focus on relationships can help make team-teaching "seamless," with no distinction between content & sped teachers. A focus on relationships can also remove labels for students & the stigma attached to special education. (School B)
- High numbers of students qualifying for special services requires "sped responsibilities" of all staff, & underscores the challenges of preparing special educators to meet diverse needs. (School C)

What differs is the skills UTR-trained special educators bring to schools and the way in which they undertake their roles, in team-taught classrooms and in the school as a whole. The case studies not only gave us insights into what UTR training looks like in practice, but also into how schools have managed change and how the UTR special education model has supported their efforts.

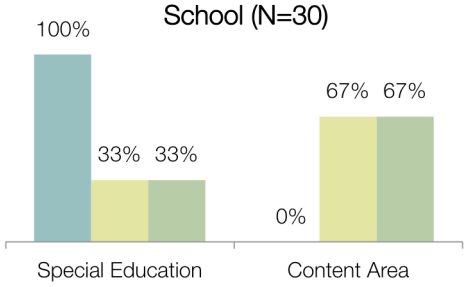
OVERALL FINDINGS

Visits to schools, which included interviews with principals and special education coordinators, interviews or focus groups with teachers, and observations of ICT classrooms, were the main focus of our case data collection, but to gather additional and uniform data, we also invited special education and content area teachers to complete surveys. The surveys included a series of scaled questions about teachers' views on their preparation or readiness, along with open-ended questions that asked teachers to characterize their special education program and describe its strengths, along with the challenges they faced in meeting the needs of special education students.

Survey Respondent Profile

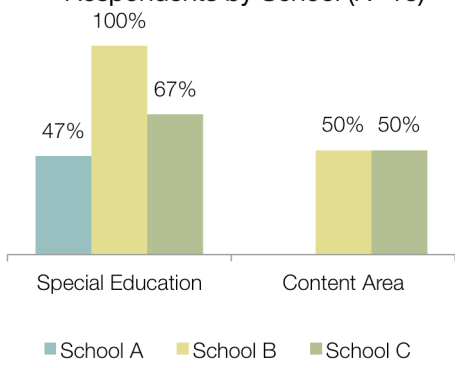
As noted in the Methods section, the survey sample was small, at 30 teachers, and there was some imbalance in responses across sites. The special education (N=22) contingent represented most special educators are the three schools, but and content area (N=8) groups did not include the full contingent of either group at the three schools, and groups were not evenly represented; at School A, for example, no content area teachers submitted responses. Figure 16 shows the percentages of special education and content area teachers, by school, who made up the sample.

Figure 16. Survey Respondents by School (N=30)



Teachers' responses to background items showed that the majority taught 9h or 10th graders (80% and 67%, respectively); 40% taught 11th or 12th graders; 24 of the 30 respondents taught more than one grade level. The survey also asked teachers to indicate how they entered the profession. The breakdown was fairly even: 16 (53%) of the 30 respondents received their training in an alternative certification program, and 14 (47%), in a traditional program. Representation within groups was generally even as well: 10 of the 22 special education respondents (46%) entered teaching through traditional programs; 12 (54%), through alternative programs (6 through UTR and 6 through Teaching Fellows). Among the eight content area teachers, the breakdown was half and half, with three content area teachers prepared through Teaching Fellows and one through Teach for America. Figure 17 shows the representation by group and by school.

Figure 17. Alt. Cert. Respondents by School (N=16)



Although the sample limited what we could say definitively, teachers' views on preparation created a valuable backdrop for the more descriptive case study findings.

Teachers' Views on Preparation

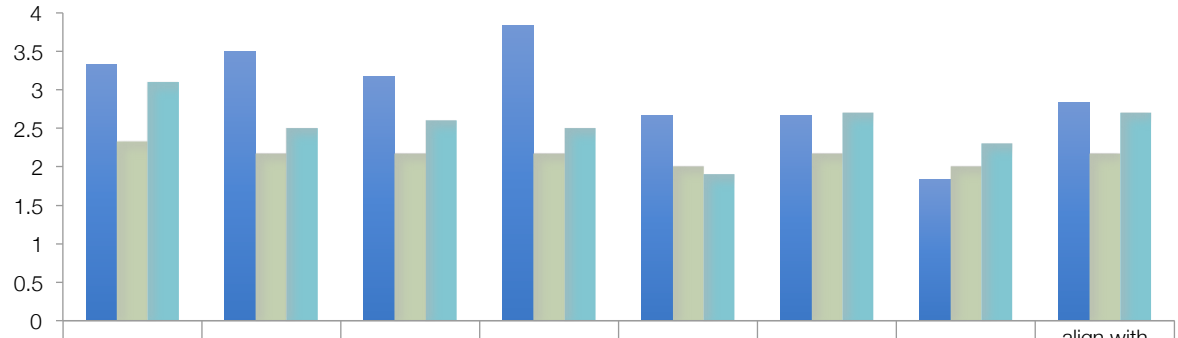
The survey included scaled items asking teachers how well their preparation programs prepared them to:

- Create formative assessments for special education students
- Plan instruction based on formative assessment and feedback from students
- Meet students' needs
- Tailor instruction to individual students' needs
- Co-teach or work in an ICT setting
- Work in a resource setting
- Develop, implement, or monitor IEP or 504 plans

Special Educators Only

Responses showed that, compared to other special educators, UTR-trained teachers felt that their program better prepared for every practice except developing IEP plans. All six of the UTR special educators, compared to 40 percent of those prepared in traditional programs (4 out of 10) and a third of those (2 out of 6) prepared in other alternative certification programs reported that they felt "prepared" or "very well prepared" to use formative feedback (*M*=3.83 vs. 2.50 and 2.17, on a 4-point scale where 1="not very well prepared" and 4="very well prepared"). The UTR group also felt better prepared to meet and tailor instruction to special education students' needs, and create formative assessments for them. They—like their peers—felt less prepared to teach in an ICT or resource setting and develop IEPs or 504 plans. (See Figure 18 and Table 12, which shows percentages, by group, and UTR means in descending order.)

Figure 18. Special Educators' Views on Preparation, by Program



	meet needs of sped students	tailor instruction to sped students' needs	create formative assessments for sped students	plan instruction based on formative assessment	co-teach in an ICT setting	work in a resource setting	dev., monitor IEP or 504 plans	align with school approach to meeting sped students' needs
UTR (n=6)	3.33	3.5	3.17	3.83	2.67	2.67	1.83	2.83
Teaching Fellows (n=6)	2.33	2.17	2.17	2.17	2	2.17	2	2.17
Traditional (n=10)	3.1	2.5	2.6	2.5	1.9	2.7	2.3	2.7

Source: Case Study Teacher Survey

Table 12. Case Study Special Educators' View on Preparation (N=22)

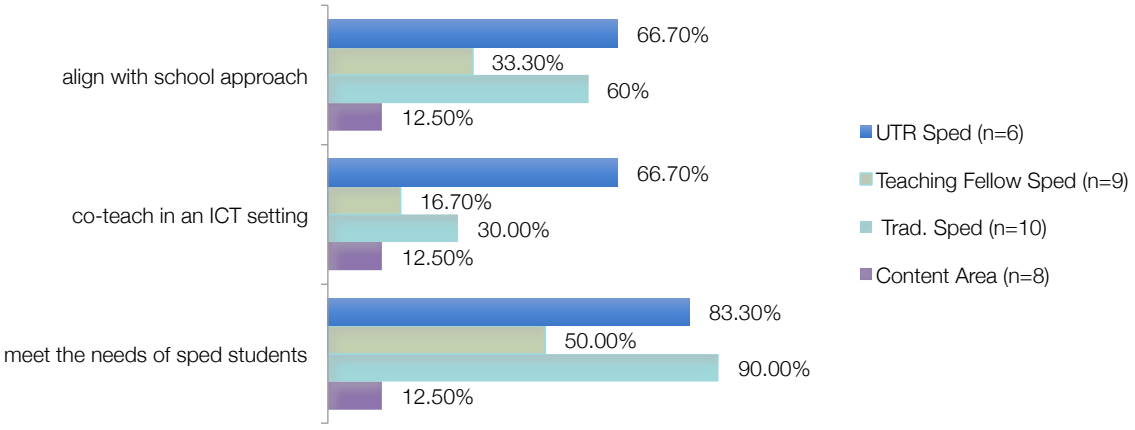
Practices	UTR (N=6)		Teaching Fellows (N=6)		Traditional (N=10)	
	M	% prepared/very well prepared	M	%	M	%
Plan instruction based on formative assessments & feedback from special ed students?	3.83	100%	2.17	33.3%	2.50	40%
Tailor instruction to special ed students' individual learning needs?	3.50	100%	2.17	33.3%	2.50	70%
Meet the needs of special ed students?	3.33	88.3%	2.33	50%	3.10	90%
Create formative assessments for special education students?	3.17	83.3%	2.17	33.3%	2.60	70%
Co-teach or work in an ICT setting?	2.67	66.7%	2.0	16.7%	1.90	30%
Work in a resource setting?	2.67	50%	2.17	50%	2.70	70%
Develop, implement, or monitor IEP or 504 plans?	1.83	33.3%	2.0	33.3%	2.30	50%

Source: Case Study Teacher Survey

Special Educators and Content Area Teachers

We also examined special education and content area (general education) teachers' responses to three items: how well their programs prepared them to teach in an ICT setting and meet the needs of special education students, and how well the program aligned to their current school's approach. Figure 18 below shows the percentages of both groups who said they felt prepared or very prepared, or that their program was aligned or very well aligned; the special educators are divided by individual preparation program (UTR, Teaching Fellows, and traditional). Results indicated that UTR special educators and those prepared in traditional program felt their programs served them best, although the traditional group felt less prepared to teach in an ICT setting. Percentages of teachers from both these two groups indicated that their preparation program aligned with their school's approach to special education were similar, and relatively high. (See Figure 19.)

Figure 19. Special Educators' & Content Area Teachers' Views on Preparation



Case Studies

The following three cases describe more about how special education and content area teachers' work in ICT settings, and their own and school wide efforts to meet the needs of special education students. Although one criterion for selecting schools was their concentration of UTR-trained special educators, these are not necessarily comparative cases: School A, with the highest concentration, is an example of how a concentration of similarly trained UTR special educators can affect practice and mesh with school policies. School B is less an example of how fewer UTR special educators affect practice, than how they adapt and apply skills to existing school structures and policies. The case for School C is not as fully developed as the others because the UTR-trained special educator took on a new position in the school, then had to take a leave due to an unexpected illness. We have included the case because the school, with the highest economic index and number of students with disabilities, provides an example of the high-need environment all special educators encounter, and the approaches taken by special education and content area teachers to meet all students' needs.[28]

[28] The enrollment numbers and school demographic and performance data are based on 2015 figures, which may be slightly different from current figures.

School A

BACKGROUND

School A's motto—"Supporting All Students, Each and Every Day"—echoes the name of the state credentialing exam and the commitment that special educators make when they sign up for the job.

That's no small task for a school that enrolls over 3,300 students. As in many other NYC schools, that population is diverse: 34% of the students are Asian; 30%, Black: 29%, Hispanic; and 4%, White. Ten percent of the students are English Language Learners, and 10% have disabilities that qualify them for special services. The school's economic needs index stands at 59%.

Unlike many large public schools, School A was not broken up into smaller schools as part of the NYC DOE's 2002 reforms. Instead, the school was reconfigured into eight small learning communities (SLCs), with fewer than 500 students each. Designed around students' interests and needs, the theme-based SLCs now include Health Sciences, Freshman Academy, Newcomers, Business/Technology, Pre-Med, Theatre, Public Service & Law, and Teachers of Tomorrow. Teacher leaders, called "directors," run the SLCs, and each has its own counselor.

According to the principal, these small schools create a "unique environment" in which students can pursue particular interests from a "menu of options for teens." Students still see each other, at lunch, or during P.E. classes and extra-curricular activities, which include girls' and boy's basketball, bowling, and handball teams, as well as co-ed cricket and golf.

The school can boast of some impressive sports victories and stats. But it's other successes that they take special pride in, such as the Blue Ribbon School of Excellence award from the NY State Department of Education, or a graduation rate that is now 74%, 15 points higher than the city-wide rate—and 15 points higher than it was when, along with their schools within a school initiative, they embarked on other big changes that affected special education.

SPECIAL EDUCATION POLICIES

Starting around 2005, the school had undergone what the principal, then the Assistant Principal, described as a "wall-to-wall transformation." The changes were designed to address some critical academic performance shortcomings—including a 50–60% graduation rate—and ensure that they were doing all they could to support *all* students.

It was because of these changes that the NYC DOE's special education mandates did not require major overhauls at the school. According to the principal and the special education coordinator, changes were already underway.

School A's size allows it to offer a variety of classes, which special education teachers say is one of the key strengths of their program. It allows teachers to "cater to student needs." The school offers not just variety, but also flexibility, latitude, and the "least restrictive environment for students." The size of the school doesn't limit interactions with individual students—sped teachers say the "student to teacher rapport" is strong. The teachers, they say, are "strong," "caring," "collaborative," and support each other. The changes brought about by new policies, mandated by the NYCDOE and supported by school efforts, included new ways for special educators to work in the resource room. Team teaching was new for most teachers, so ICT classrooms evolved as changes were put in place, and both the principal, special education coordinator, and teachers say that UTR played a key role in that evolution.

WHAT UTR SPECIAL EDUCATORS BRING

Both the principal and special education coordinator believe the skills and dispositions that UTR special educators bring to ICT classrooms not only support

but often "inspire" changes. UTR-trained special educators, they say:

- arrive familiar with "the latest methodology." They know how, for example, to use and interpret the Danielson rubric.
- have a solid "skill set around intervention." The principal has seen former residents demonstrate these skills in Defense of Learning presentations.
- are able to target specific skill needs, and "build" that skill. The Special Education coordinator has seen UTR-trained teachers do this with "a student they haven't been able to support in other ways." These kinds of skills, she says, "really benefit" the special education students.
- are "more active" in ICT classes, including the four core Regents classes. Even the reluctant content area teachers are "sold" once a UTR-trained teacher has been able to "move" two or more students that the content area teacher "hasn't been able to move."

Content area teachers' preparation may not have focused on instructional strategies that work with special education students, and, according to the principal, although they agreed with the philosophy behind inclusion, when schools shifted to ICT classes it was not as if they could "open up their suitcases" and pull out appropriate strategies.

UTR teachers did, in a sense, "arrive with those suitcases." They know the strategies and are ready to use them, a readiness that, according to the principal, distinguishes them not just from content area teachers, but also from other novice special educators with less training, and "less initiative," and less certainty about "what the next step is."

Content area teachers who team with UTR special educators appreciate that they have an "inquiry mindset." Compared to differently trained teachers, they are "better at driving instruction," and "not timid at making decisions." They are "willing not just to collaborate, but to try things, back it up."

A former UTR mentor notes similar skills, describing how a resident "brought new strategies from Hunter," plus a certain exactitude about strategies: "everything has a reason," ideas are "not flukes." The special education coordinator sees a collective value in having multiple "UTRs," who not only know how to reach this population," and the knowledge to do, say, an "Item analysis of what kids need," a preference for "using Google docs for planning and sharing," but also a "willingness," an "edge and desire."

WHAT UTR SPECIAL EDUCATORS SAY

UTR-trained special educators say that assuming this role in their first induction year, after their residency, is not always easy: Even though their suitcases are stocked with a series of "do now's, exit tickets, lots of informal assessment," and they've "learned about groupings and learning style surveys," and the value of "a good co-teaching relationship"—as a resident, right up until the school year starts, "you don't really know what content area you'll be working in."

Asked, on the survey, about the school's special education program and their own ICT classes, some residents described ICT classes and relationships that worked well:

- *Flexible-Equal among the two teachers [who] provide differentiated instruction, grouping, small group instruction, one-on-one instruction and maintenance of focus.*
- *We co-design almost all assessments, for both special and general ed students*
- *My co-taught classes have a beautifully balanced dynamic that includes shared responsibilities.*

One UTR-trained special educator also described the full range of relationships:

In the most effective class, we operate as a true partnership, both of us responsible for each student in the room. We co-plan for five minutes after each class about the next few days' activities. We also do a lot of collaborating via email after hours. She writes the LPs and I differentiate them. She invites a constant dialogue about how to structure assessments and class activities. We trade lead-teaching responsibilities informally and often. We discuss specific students who we think require attention. We routinely engage in reflective practice.

In the least effective classroom, the content teacher dictates what we're going to do and allows little room for discussion or, for that matter, differentiation. Co-planning with this teacher involves mostly just nodding my head. When this teacher complains about how much slower this class is than other classes with the same content, I explain that the other classes are not ICT classes. I am educating my colleague about special needs learners but it's slow-going and difficult to implement change in classroom procedure….

The other co-taught class is somewhere between these two extremes: the content teacher provides lesson plans and powerpoints, I provide differentiation and support for struggling students. Sometimes, we split the class into two groups and parallel teach using different methods of instruction.

There are also logistical and operational challenges. some that are part of the job: it is, they say, difficult to manage high and low performing special education students in the same class. Time is always at a premium: there's rarely enough "time in the day" to coordinate activities, develop and monitor IEPs, and "balance the needs of all students." There is unanimous agreement that one of the biggest challenges is finding a common time to meet with the different content area teachers with whom they co-teach. How much planning and teaming go into lessons varies. With a large number of special education teachers working with many different content area teachers, there are "pockets" of teachers who are more collaborative than others.

OBSERVING AN ICT CLASS

During the observation, we saw collaboration between content area and special education teachers at work. We observed a Regents prep Global History class—with just 21 days left before a high-stakes exam often described as one of the hardest Regents.

The content area teacher's first question to the whole class reflected the hard task ahead, and the task at hand: "How can we review all the themes for our thematic essay exam?" Referring to previous assignments, he reminded students that the day would begin with a gallery walk of posters created by student teams for each theme, each one big, complex: Change & Ideas: Mao/Song; Scientific Revolution & French Revolution, Communism & Democracy. For the Do Now, students had to grapple with another question: Which problem faces many of the least developed nations today? The task, which provided fodder for much of the subsequent classroom discussion, was to annotate the seven posters using a template.

As students started their walk, they talked, with both teachers reminding them of the task, the template. Students were then invited to contribute to a white board display and discussion of the Neolithic Revolution. Volunteers helped create a cause/effect diagram and worked on paraphrasing as both teachers reinforced key vocabulary words, such as "surplus" and "abundance," and tackled tough questions: What is technology? What would qualify as technology in the Neolithic Era? What changes with land expansion? With technology + warfare?

With about 10 minutes left in the class, students practiced for the exam with a multiple-choice hand-out. The special education teacher provided scaffolded practice for a group of five students, providing examples to discuss cause and effect; reviewing the multiple choice practice sheet; and using flash cards with images and key words—Industrial Revolution, inventions, urbanization, unions, and imperialism.

BROADER IMPACT

Comments from the principal, cited earlier, about the fact that UTR special educators tend to be more comfortable than some novice teachers to take the initiative suggest that they are not just collaborative, but also proactive. One UTR special educator described her own process, "I have to be assertive to implement a change but it can be done." The special education coordinator described some results of UTR special educators' proactive, leadership activities:

- It has changed the way teachers work in the resource rooms, now supporting students with test preps, etc., and taking a more skills-based approach rather than memorizing.
- Gen Ed has "learned, too," and "added to their "tool belt" for ICT classes and even non-ICT classes.
- More teachers are using assessment strategies that require multiple levels of thinking, rather than just recall.

Even if all the practices of UTR special educators haven't transferred to the larger school teams, there is, says the principal a "bigger benefit" in "how embedded they and their skills are in school culture" and the ways they "inspire" other teachers. UTR special educators have, he believes,

- Helped increase the communication between teachers and the special education coordinator, including "early morning texting" and "sharing on Google."
- Supported residents in other cohorts.
- Changed the "perception of kids."

"Even some students," he says, "have taught their gen ed teachers what their sped teachers taught them."

School B

BACKGROUND

School B is a relatively new school that opened in 2009, and, in 2012, expanded to a full high school with all four grades. It is based on a Career & Technical Education (CTE) model, created in response to a call to find new ways to prepare students for 21st Century careers. With a focus on sports business and enterprise, the school offers students not only a business entrepreneurship curriculum but also Industry partners and mentors.[29]

School B's student population of around 400 students, made up of students historically under-represented in the corporate world, do not typically have access to this kind of professional network: 59% are Hispanic; 35%, Black; and 2%, White, and 2%, Asian. Over a fifth, or 22% of the students qualify for special education services, and 7% are English Language Learners. The school's Economic Need Index stands at 72%.

Even though the school focuses on workplace skills and career success, it also places a good deal of emphasis on college readiness. According to the principal, the "high level" curriculum and work expected of students is closer to "what kids are doing in college. When the school considers new programs or school reform initiatives, one of the first things he looks is "the strength of the curriculum."

BUILDING RELATIONSHIPS

Over half of the students—58%—who have IEPs, and thus qualify for special education services, spend over 60% of the school week in ICT classes. The goal of those classes, and co-teaching model at School B is, according to the UTR-trained special education coordinator, is to make lesson planning and delivery "seamless." That she says, isn't so much a matter of skills, as relationships—with teachers and with students.

Those relationships are, she says, "different now," as schools have adjusted to the NYC DOE's inclusion requirements. It didn't happen immediately, she says—and a content area teacher notes that some are still sometimes "uneven"—but both agree that the teams have "grown over time."

All this has, she believes, "revolutionized" instruction and classroom environments; content area teachers "feel the same way." Almost all content-area courses are ICT paired. The content is different, but "routines" are similar: "We co-design almost all assessments, for both special and general education students." The content-area teacher may create most of the class assessments, the special education teacher reviews or adapts, and they plan content delivery together.

PREPARING STUDENTS

On a broader level, teachers work together to blend the CTE and academic curriculum and find innovative ways to help special needs students who are struggling with the demands of both. They focus on those skills needed for the business workplace and college—especially communication skills that include presenting, synthesizing research, and writing persuasively. For teachers, it is, again, all about relationships and shared instructional routines such as a school-wide focus on literacy and Socratic seminars, where students research issues and mount evidence to make their case to teachers and peers.

Relationships with students extend beyond the classroom, to tutoring in After-School and Saturday Academies. Tutoring has been re-branded—again to remove any stigma. They use cell phones apps to Google homework and check assignments, which has, according to the coordinator, resulted in a higher turn-in rate for homework.

The sped coordinator has worked hard with the content area teachers to "remove the stigma" of special education students. Teachers assist students in Advisories, and steer them toward other support mechanisms, including internships in sports,

[29] School information from school website, https://www.nycboss.org.

journalism, and business; “Exposiums”—events used by high schools, universities, and organizations to expose students to new ideas and careers; and power lunches with business, media, and entrepreneurship guest speakers.

CLASSROOM OBSERVATION

There are three teachers in the Global History class: the content (social studies) and special education teacher, and a special education resident. The co-teachers work as a team, both circulating around the room, guiding students through an online curriculum, while the special education resident works with a small group of students at the back of the large room. These students are not necessarily those with IEPs, but those who, based on previous day’s activities and assignments, need extra support for the day’s lesson.

The objective of that lesson—reviewed at the start of the class with students—is to analyze documents to identify origins of the world’s moral and legal codes and principles, dating back to the second century B.C. and the Code of Hammurabi, the King of Babylon. It’s a hefty subject, and the teachers guide students through skills and content together. The class starts with a Do Now, which takes about 7 minutes, followed by a quick share out—a way to see if students grasp the concept. To provide some reinforcement and additional background for the day’s work, the social studies teacher takes students through a five-minute mini lesson.

Much of the remaining class period is devoted to pair work, combined with activities projected on the white board, which shows passages, maps, and teachers’ comments. Locating Babylon and Mesopotamia as modern-day Iraq, the special education teacher reminds students of the map skills they learned the previous day. The sped teacher walks students through the map skills review, refreshing their memories on the title, key, compass rose, etc.”

In keeping with the school-wide focus on literacy skills, as they walk around the room both teachers encourage students—individually and as a group—to use strategies such as annotating passages or highlighting key words, which can make answering the questions easier.

Teachers direct students’ attention to the dictionary feature—another way to rely on tools. Next is a vocabulary review of terms: polytheism and monotheism. Both teachers recognize students who are “on point,” also reminding students about earning “above-and-beyond points”—credit awarded for extra effort.

As students are working on activities, they get immediate, real-time feedback, in the form of Google comments. The pair work is broken up by a video and individual work. Students can also ask questions online—or do it the old-fashioned way, by raising their hands. They do both. The period ends with a wrap up and exit ticket work. The assignment is due—at 5pm, after many students are home or on their way somewhere else on a train. They turn in the assignment using their phones.

At School B, it’s all about relationships. Special education and content area teachers work together to create seamless lessons that make it hard to tell which teacher is which. Students also move in and out of groups, willing to work with their peers in pairs, in small groups, or as a whole class—seamlessly.

School C

BACKGROUND

School C is one of five small schools housed on one of New York City's most historic campuses. Built in 1897, the castle-like structure, with its high ceilings and stained-glass windows, still stands. It was home to the first high school in the Bronx, named after one of the signers of the U.S. Constitution—and author of the Preamble—and also the alma mater of some well-known Americans, including former Secretary of State Colin Powell and playwright Clifford Odets.

There is not just history here, but a history of reform: The original high school was the product of the NYC School Reform Act of 1896. Over a hundred years later, after the school, beset by challenges facing many large schools in the city's high-poverty areas, had fallen into decline, the NYC Department of Education closed the original school as part of its 2002 restructuring and downsizing reforms. What was once a single school became five smaller schools, including School C.

The history of reform has continued, and School C can now add to the building's storied past and famous graduates its recent selection as a Community School. These schools, a partnership between the NYC partners the Center for Supportive Schools, offer financial education, sports and arts education, computer training, socio-emotional support—to serve all students, and serve the diverse needs of all students.

Of the three case study sites, school A, with a student population of 471, has the economic needs index, at 86%, and the highest percentages of English Language Learners (19%) and students with disabilities (25%). Close to three-fourths of the students are Hispanic (72%); 26%, Black; and 1%, Asian. The school's Economic Need Index stands at 85%.

The school's atmosphere reflects its student-centered focus: Samples of student work line hallways that feature original wood trim. Another prominent feature in the hallways is the principal, more often out of his office than in it. The family-like atmosphere extends beyond the school day: Students can get extra help on Saturday, and some participate in a mentoring program with professional adult volunteers. The principal, the signs and posters, the teachers—all point out that the school "offers students the opportunity to take charge of their lives."

SHARED RESPONSIBILITIES

Implementing the school district's new special education policies did not change the collective sense of support for all students, but it did bring about new staff configurations. There are currently six special education teachers on the faculty, each of whom has some self-contained and some ICT classes. According to the special education coordinator, the ratio is about 15:1 in the self-contained classes, and 12:1 in ICT classes, which typically have around 24 students. The coordinator also stresses the whole school's involvement in supporting all students: all staff members, she says, have what might be termed "sped responsibilities." A School Implementation Team (SIT), made up of special education and content area teachers, guidance counselors, and administrators, reviews both academic and social support, for transition, behavioral, guidance, and instruction. Parents, she says, are now more formally involved—staff members often talk with them on the phone, and parents "know sped teachers by their first names."

The transition included some efforts to "raise the consciousness of content area teachers," but "good

relationships" provided a foundation for that. In fact, says the coordinator, ICT collaboration—the "pre-planning, de-briefing, work during common planning times"—is "built on relationships." Even those "on the sped team go to departmental meetings, often reporting back to the sped team."

In response to survey items about how the special education program works, special education and content area teachers described the "dynamics" and "division of responsibilities" as "good," "collaborative":

- *The ICT pairs work closely with the Gen ed teachers, aligning with what's expected of all students.* (Special Ed)
- *We have a good rapport with one another and the students.* (Content)
- *Equal shares of the work.* (Content)

Teachers also described collaborative lesson development, which can vary some based on pairings and teacher preferences:

- *Special education teacher generally takes the lead; content-area teacher reviews.* (Content)
- *The content area does the bulk of the planning. The special education teacher, when they get the opportunity, modifies the instruction.* (Special Ed)
- *The Gen Ed teacher creates the work and the SPED teacher adds modifications.* (Content)
- *I prepare the lessons with the science content to be taught and the Sped teacher will contribute by grouping students accordingly, taking daily attendance, reviewing Do Now and/or Summary with students as a whole class, perambulating as students work independently and/or collaboratively.* (Content)

PREPARATION AND PROBLEM-SOLVING

The special education coordinator believes that it's hard for new teachers to be, or feel, "fully prepared" because "the population is so diverse." She notes that teachers' preparation often tends to be theory-based, not quite in sync with the realities of serving a population for whom "literacy is a huge problem, but so are behavioral needs." Teachers need to know how to help students with, for example, "basic measuring skills—how to use rulers, calculators"—and at the same time be able to diagnose needs, find "entry points" for students, develop "scaffolding for gaps in knowledge." They need to know how to help students with "study skills, life skills": how to complete a task, how to meet deadlines, how to do citations "All around," she says, it's a matter of coming up with "problem-solving strategies" and "creating flexible, responsive programs for students."

Especially with freshmen, the focus is on "transitions: getting them to the next level." The special education coordinator sees 9th grade as a time to "get real." The staff sees part of their role as "re-education about school is," and helping students understand that "what you've done before won't work." It's not just about messaging, but, from that point on, creating and sharing intervention plans, and "keeping very close track of these 120 students."

ICT TEAMS AND STUDENT PERFORMANCE

One particular challenge for ICT teams is providing the support and monitoring that involves "crossover," with division of labor switching depending on students' needs.

- *Content-area teacher creates most class assessments; special education teacher reviews or adapts.*
- *We co-design almost all assessments, for both special and general ed students.* (Special Ed)

According to special education and content area teachers (gathered for a focus group), the special education teacher might add to a test "with diagrams, pictures," "not to simplify lessons, but give students ways to access them." They may also reduce the number of questions on a worksheet or assessments for students with IEPs.

To help students with the reading skills needed for various tasks and assessments, the school is planning to offer extra reading help three days a week, using the Wilson Reading System, a highly structured, remedial program where students are taught in small groups.

At the same time, there is, say teachers and the special education coordinator, "constant monitoring, cycles of inquiry, baseline testing," and ongoing efforts to design appropriate assessments for all students. These may range from school-wide units, to "less formalized" formative assessments. Teachers

often look for that "hinge point" using self-evaluation, such as the red/green/yellow strategy, where, as a class, students let the teacher know what they understand, what they don't understand, or don't quite get.

For standardized tests, says the special education coordinator, they try to achieve a sort of "rhythm," helping students with reading materials matched to levels, practice with writing, analysis, long-form essays—especially needed for high-stakes Regents exams in Global History and English Language Arts.

As beneficial and necessary as the wide-ranging support for students is, this level of student support asks a lot of teachers. The issue is not that content area teachers and special education teachers are not collaborative, supportive of an "equitable division of duties," but they are pulled in many different directions. A special education teacher is stretched, monitoring 40 kids who have individual educational plans, in addition to teaching a small group of special needs kids. Teachers may be asked to attend to other duties during co-teaching time—for "coverages, testing, meetings, PD's." Again, teachers are committed to coordinating, co-planning, but often the collaboration, like the support for students, extends beyond the school day, with "email, telephone, Google sharing."

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TAKEAWAYS ACROSS CASES

- The skills that UTR special educators develop during their training transfers to—and is evident in—their work as teachers of record.
- The clearest transfer of skills is in formative assessment activities, what the School A principal called a "skillset around intervention," but other skills and dispositions—knowing when to advocate, when to pivot, when "rigid doesn't work"—are also apparent.
- The roles they play in ICT classrooms may vary, depending on school size, structures, and previously defined team-teaching roles. School size, existing structures, and numbers of special education teachers and ICT teams vary between schools A and B, but UTR special educators have come to play instrumental roles in both. The division and equity of teaching duties may not be the same from teacher to teacher, but in both settings UTR special educators have helped steer changes, setting the standards for collaboration and defining the role of special education teachers. Team-teaching in School C, without a UTR presence, is still collaborative, but with more variation from team to team.
- What may be apparent in School A, with a larger corps of UTR special educators, is the important role they play in educating other teachers about the needs of learners with IEPs and strategies for supporting them.
- The emphasis on relationships with students may not only build students' skills, confidence, trust, and interest in school: it may also help them stay in school. If UTR special educators' efforts are also changing attitudes school wide; this, too, has the potential to improve special education students' success and progress.

Section 4
Impact on Students

Findings thus far suggest that a sense of accountability for students' learning is an important part of what UTR special educators bring to schools. All UTR-trained teachers are well versed in the inquiry cycle and formative assessment strategies, but, as the case study feedback made clear, special educators' use of those skills—diagnosing needs, adapting team teachers' lesson designs, targeting students or skills with on-the-spot scaffolding—can have a demonstrable impact on how ICT classrooms work. What UTR special educators bring to schools can also have a positive impact on how teachers, school-wide, meet—and view—special education students' needs.

The impact of these skills and practices on student performance is a little harder to confirm. Although many special education students sit for Regents exams and other end-of-course assessments, they may have waivers or accommodations, and, perhaps more important, the team-teaching model makes it hard to distinguish the impact of the special educator from that of the content area teacher.

- 11th & 12th grade special education students in schools with UTR sped teachers had higher attendance rates than sped students in schools with no UTR-trained teachers. Differences were statistically significant.
- Students in UTR schools also earned credits & passed Regents at higher levels; differences were not statistically significant.
- Data also indicates a positive impact on attendance, credits, & graduation rates for African-American & Hispanic students, for some comparisons, at significant levels.
- Some evidence indicated that concentrations of UTR-trained teacher mattered, but higher concentrations did not increase the effect.
- Gap analysis results were mixed: in half of the comparisons, having UTR teachers helped close the gap between special & general education students, with the narrowest gaps for credits earned.

We have previously looked for other ways to explore student impact, examining, for example, whether having a UTR-trained content area teacher narrowed the achievement gap between students with IEPs and their peers. Although findings did not show a consistent, positive impact by subject, we did find encouraging instances, in multiple subject areas, where IEP students' Regent's scores and grades neared those of general education students. For the supplemental research, we focused on schools with and without UTR-trained special education teachers, examining attendance, credit accumulation, and graduation rates—all institutional metrics that a shift toward a more nimble, granular approach to meeting special education students' needs—and educating other teachers about meeting those needs—could affect. We also tested the concentration hypothesis guiding the case studies, to see if having more special educators, trained the same way, using similar strategies to meet students' needs across content areas might collectively—and positively—affect these same outcomes. As a final metric, we again explored whether UTR-trained special educators helped schools close gaps between special education students and peers.

Samples and Research Design

The findings discussed here are based on samples drawn from successive reviews of institutional data from close to 2000 students and 70 NYC DOE schools in the New Visions affinity network. We assembled data from grades 11 and 12 only because our focus was on students' high school progress. The tables below include the numbers of students in the UTR and non-UTR designations, and in the UTR concentrations.

We analyzed student- and school-level outcomes—attendance, credit accumulation rates, four- and five-year graduation rates, and the numbers of Regents, out of five, passed at 55 and 65—under two sets of conditions,

1. Special education students only, UTR vs. Non-UTR.
2. UTR concentration, special education and general education students, in schools with low, medium, and high numbers of UTR special educators, or no UTR-trained teachers. Our UTR concentration index used both the number and percentage of UTR-trained teachers at a school as well as the length of involvement.

For the student-level analyses, students in the UTR group had to be attending a school at which there was at least one UTR-trained special education teacher during the 2014–2015 school year. Students in the non-UTR group had to be attending a school in which there were no UTR-trained teachers of any kind. Our rationale was that all UTR-trained teachers use similar strategies to diagnose and meet students' needs, so a UTR-trained content area teacher could also have an effect on special education students.

For the school-level analyses, schools in the UTR group had to have at least one UTR-trained special education teacher in 2014–2015 *and* at least 10 special education students in the specified grade level. To be designated as a non-UTR school, there could be *no* UTR-trained teachers of any kind (special ed or general ed) at any point over the past four years, and had to have at least 10 special education students in the specified grade level.

For both conditions in the Gap Analyses, we examined school-level data for evidence that having UTR teachers on staff narrows the gap between special education students and their general education peers, based on attendance, credit accumulation, or graduation rates.

The questions guiding the research were:

- *Do differences in teachers' preparation emerge in special education students' attendance, progress toward graduation (credit accumulation), or graduation rates?*
- *Does a concentration of UTR-trained teachers in the school predict special education students' success, as measured by these outcomes?*

UTR VS. NON-UTR

Student-Level Comparisons

Full Sample, All Special Education Students

The first set of student-level analyses compared attendance, credit accumulation, and graduation rates among special education students only, in two conditions: those in schools with UTR-trained special education teachers, and

those in schools with no UTR-trained teachers (and no teachers trained through MASTER, an NSF-funded initiative using the New Visions–Hunter residency model to prepare STEM teachers).

Though the differences were small, our comparisons indicated a positive impact. In each of the six comparisons, the scores were higher for the special education students in the UTR group (see Table 13). The differences were statistically significant ($p<.01$) for attendance data, for both 11th and 12th graders.

- 11th grade special education students at schools with UTR-trained special educators, compared to 11th grade special education students at schools with no UTR-trained teachers, had higher attendance rates (86% vs. 81%) and accumulated more credits (35.79 vs. 35.04).
- In 12th grade, special education students in the UTR condition again had higher attendance and earned more credits.
- 12th graders in the UTR group passed 4.45 out of 5 Regents exams with a score of 55, compared to 4.22 exams for the non-UTR group. Passing rates at the 65-point level ticked down, but the UTR group's rates were again higher, with 3.19 vs. 2.96 exams passed, out of 5.

Table 13 shows the results for each grade level and each measure for the UTR and non-UTR group. The blue shading indicates the higher UTR figures; the darker blue indicates which differences—listed in the next to last column—were statistically significant. The sample sizes for both groups and grades are in italics just below the table.

Table 13. UTR- vs. Non-UTR:
Special Education Students Only

Grade Level	Measure	UTR	Non-UTR	Difference	Significance
11th Grade	Attendance Rate	0.86	0.81	0.05	**p<.01**
	Credits Earned	35.79	35.04	0.75	p=.30
12th Grade	Attendance Rate	0.87	0.80	0.07	**p<.01**
	Credits Earned	49.35	47.54	1.81	p=.01
	Regents Passed out of 5 at 55	4.45	4.22	0.23	p=.05
	Regents Passed out of 5 at 65	3.19	2.96	0.23	p=.14

UTR sample size: 374 (11th), 346 (12th); Non-UTR sample size: 223 (11th), 250 (12th)

Source: New Visions Network School Databases

Students of Color

Large percentages of students at many NYCDOE schools are students of color, and may make up a disproportionate percentage of students eligible for special education services. Given that students of color likely make up a significant percentage of populations who could be affected by the efforts of UTR special educators, we disaggregated data by race or ethnicity. The results showed that:

- Attendance rates were higher among African-American special education students taught by UTR-trained special education teachers, compared to rates among African-American special education students in schools with no UTR-trained teachers. The same was true for Hispanic special education students.

- Differences were statistically significant for African-American students in 11th grade, and for Hispanic students in 11th and 12th grade.
- Both the African-American and Hispanic special education students also had higher Regents passing rates, though differences were not significant.
- Results varied for credit accumulation. African-American 12th graders earned more credits than their peers, and differences were statistically significant. Hispanic 12th graders, however, earned fewer credits.

Again, the blue shading indicates that rates or numbers of credits earned or Regents passed were higher for the UTR group, and the darker blue means that the differences between figures for the two groups were statistically significant.

Table 14. UTR vs. Non-UTR
AFRICAN AMERICAN Special Education Students

Grade Level	Measure	UTR	Non-UTR	Difference	Significance
11th Grade	Attendance Rate	0.85	0.80	0.05	*p*=.18
	Credits Earned	34.04	33.22	0.82	*p*=.53
12th Grade	Attendance Rate	0.87	0.81	0.06	***p*<.01**
	Credits Earned	48.68	48.95	-0.27	*p*=.78
	Regents Passed out of 5 at 55	4.47	4.15	0.32	*p*=.08
	Regents Passed out of 5 at 65	2.99	2.69	0.30	*p*=.23

UTR sample size: 125 (11th), 124 (12th); Non-UTR sample size: 81 (11th), 106 (12th), special education students only

Table 15. UTR vs. Non-UTR
HISPANIC Special Education Students

Grade Level	Measure	UTR	Non-UTR	Difference	Significance
11th Grade	Attendance Rate	0.87	0.80	0.07	***p*<.01**
	Credits Earned	36.91	35.80	1.11	*p*=.24
12th Grade	Attendance Rate	0.84	0.77	0.07	***p*<.01**
	Credits Earned	49.43	45.17	4.26	***p*<.01**
	Regents Passed out of 5 at 55	4.40	4.12	0.28	*p*=.12
	Regents Passed out of 5 at 65	3.12	2.81	0.31	*p*=.19

UTR sample size: 186 (11th), 171 (12th); Non-UTR sample size: 123 (11th), 112 (12th)

Source: New Visions Network School Databases

School-Level Comparisons

Graduation Rates

We used school aggregates to compare 4- and 5-year graduation rates for special education students in UTR vs. non-UTR schools. The rates were similar, but four-year rates among special education students in the non-UTR condition were higher; 5-year rates reversed, with the same margin of difference (0.05).

Table 16. UTR- vs. Non-UTR Schools:

Special Education Students Only

	Measure	UTR (n=13)	Non-UTR (n=11)	Difference	Significance
12th Grade	4-year Graduation Rate (class of 2015)	0.55	0.60	-0.05	p=.54
	5-year Graduation Rate (class of 2014)	0.68	0.63	0.05	p=.57

Source: New Visions Network School Databases

UTR CONCENTRATIONS

Student-Level Comparisons

We also examined student- and school-level data based on concentrations, exploring whether the numbers of UTR-trained special educators had an impact on student outcomes. We used the same metrics—attendance rates, credits earned, and Regents passed—and clustered schools with low, medium, and high concentrations of UTR special education teachers, and with no UTR-trained teachers, special education or otherwise.

While the findings overall favored the UTR groups, they were mixed, and sometimes counter-intuitive. We found, for example, that in some cases the figures were higher for the low UTR concentration group than for the high concentration group, or that the non-UTR group was higher than the medium concentration group, which, in several cases, had the lowest figures.

In Table 17 below, the darker blue indicates the highest attendance or credit accumulation figures, the medium blue the second highest, and the gray the lowest. The diagonal-patterned column shows the average figures across the UTR concentrations (low, medium, and high). The significance levels in the last column refer to the ANOVA with all four groups (non-UTR and low-, medium-, & high- concentrations). The p values in bold indicate that there are significant differences in the "set" rather than individual pairs.

The results suggest that:

- On average, attendance rates and credit accumulation rates were higher in UTR vs. non-UTR schools, in both 11th and 12th grades.
    - In 11th grade, attendance rates were higher in the low UTR concentration group than in the high concentration group; credit accumulation rates were reversed. For both, the medium concentration group had lower rates than the non-UTR group.
    - 12th grade attendance rates were similar across UTR groups, but lower for the non-UTR group. Figures for credits earned increased from low to medium to high concentrations, and the UTR average was a few percentage points higher than the figures for the non-UTR group.
- 12th grade Regents passage figures were, again, higher for the UTR group, but, again, figures were lowest for the medium UTR concentration group. For both the 55- and 65-levels, number of Regents that the low UTR concentration group passed exceeded the number passed by the high UTR concentration group, though only by a few tenths of a percentage point.

Table 17. Students at Schools with Different Concentrations UTR-Trained Special Ed Teachers vs. Students at Schools with No UTR-Trained Teachers:
Special Education Students Only

		Low Concentration of UTR Special Ed Teachers (n=91)	Medium Concentration (n=95)	High Concentration (n=188)	**UTR Average**	Non-UTR (n=223)	*Sig. of ANOVA (not individual comparisons)
11th Grade	Attendance Rate	0.92	0.76	0.89	**↑0.87**	0.81	**p<.01**
	Credits Earned	36.03	34.29	36.44	**↑35.59**	35.04	p=.16

		Low Concentration of UTR Special Ed Teachers (n=78)	Medium Concentration (n=78)	High Concentration (n=190)	**UTR Average**	Non-UTR (n=250)	*Sig. of ANOVA (not individual comparisons)
12th Grade	Attendance Rate	0.88	0.85	0.87	**↑0.87**	0.80	**p<.01**
	Credits Earned	47.37	49.11	50.27	**↑48.9**	47.54	**p<.01**
	Regents Passed out of 5 at 55	4.65	4.08	4.51	**↑4.41**	4.22	p=.01
	Regents Passed out of 5 at 65	3.36	2.67	3.34	**↑3.13**	2.96	p=.02

** The significance levels refer to the ANOVA with 4 groups (non-UTR & low-, medium-, & high- concentration). The p values in bold indicate that there are significant differences in the "set" rather than individual pairs.*

Source: New Visions Network School Databases

Results of our analysis of 12th grade graduation rates were also inconclusive, with no significant differences. Compared to rates in schools with no UTR-trained teachers, four- and five-year rates were higher in schools with a low concentration of UTR special educators; five-year rates were higher for the high-concentration group. The medium concentration group, again, had lower rates than the other concentration group and the non-UTR group.

Closing the Gaps

Aggregating results to the school level and using this school-level concentration index as a predictor value, we examined the credit accumulation (by grade level) and graduation rates for IEP students.

The findings of our gap analyses did not show marked or significant differences. Narrower differences between general education and special education students did suggest that:

- UTR sped teachers may be helping close the gaps for credits earned—as other findings suggest as well—for both 11th and 12th graders.
- The gaps also narrowed for 11th graders, for attendance, and for 12th grade 5-year graduation rates.

The blue shading in Table 18 indicates where difference favored the UTR group; the gray shading indicates a smaller gap—or difference between general education and special education performance—for the non-UTR group. The values in the next to the last column show the differences in gaps, which are slight. A minus indicates how much smaller the UTR gap between special education and general education students was; a plus, by how much it exceeded the non-UTR gap.

Table 18. Gap Analysis between Special Education and General Education Students: UTR vs. Non-UTR

		UTR			Non-UTR			**Diff in Gaps: UTR minus Non-UTR**	Sig.
		Gen Ed (n=13)	Sp Ed (n=13)	Gap: Gen Ed vs. Sp Ed	Gen Ed (n=11)	Sp Ed (n=11)	Gap: Gen Ed vs. Sp Ed		
11th Grade	Attendance Rate	0.89	0.86	0.02	0.90	0.85	0.05	**-0.03**	p=.37
	Credits Earned	39.09	36.42	2.67	39.75	35.90	3.85	**-1.18**	p=.38
12th Grade	Attendance Rate	0.89	0.85	0.03	0.83	0.81	0.02	+0.01	p=.66
	Credits Earned	52.46	48.78	3.68	51.91	47.78	4.13	**-0.45**	p=.77
	Regents Passed out of 5 at 55	4.95	4.37	0.58	4.83	4.33	0.50	+0.08	p=.71
	Regents Passed out of 5 at 65	4.78	2.98	1.80	4.59	3.14	1.45	+0.35	p=.29
	4-year Graduation Rate (class of 2015)	0.81	0.55	0.26	0.75	0.60	0.15	+0.11	p=.11
	5-year Graduation Rate (class of 2014)	0.84	0.68	0.16	0.81	0.63	0.18	**-0.02**	p=.76

Source: New Visions Network School Databases

Section 5
Retention

UTR equipped novice teachers to succeed and stay in the classroom. This final section examines retention among UTR special educators, compared to their UTR peers in other subject areas and to trends citywide. (The third chapter in the supplemental series takes a closer look at retention across all UTR subjects and cohorts.)

One important trend in New York City's public schools during the period just prior to UTR, and during its early years, was an increase in both the number and share of special education teachers, who made up only 17 percent of all teachers in 2000–2001, but close to 25 percent a decade later. In addition, the share of teachers leaving the classroom early in their careers began to edge down. Of the nearly 9,000 teachers hired in 2000–2001, 41 percent had left within three years. Of the 6,000 teachers hired in 2008–2009, that figure dropped to 30 percent.[30] Recent research on retention also suggests that attrition rates nationwide were improving and perhaps not as severe as portrayed in earlier studies.[31]

Thus, as UTR partners crafted their residency model, they weren't necessarily bucking the citywide trends—the numbers of special education teachers and retention rates were on the upswing—but UTR was above the curve.

- 93% retention rates among UTR special educators are a few percentage points higher than rates among peers, which stands at 91%.
- UTR-trained teachers in general are staying in the profession, but special educators are more likely to stay in initial placement schools.
- Citywide retention rates & rates among special educators ticked up over the period examined here, but UTR rates were still higher.
- Attrition among special educators in NYC high schools increased from teachers' first & third years, while UTR rates held steady.
- Retention rates for UTR special educators exceed rates among teachers from alternative certification programs. Again, attrition among other early career teachers ticks up from year to year, but UTR rates hold steady.
- UTR special educators practice & foster skills & dispositions linked to retention: focusing on accountability & knowing what to do with data, collaborating with peers & being proactive—both can help special educators acclimate to schools & contribute to a positive climate school wide

[30] See NYC Independent Budget Office, "A Statistical Portrait of New York City's Public School Teachers." Available at: http://www.ibo.nyc.ny.us/iboreports/2014teacherdemographics.pdf.

[31] Susan Headden, "Beginners in the Classroom: What the Changing Demographics in the Classroom Mean for Schools, Students, and Society," Carnegie Foundation for the Advancement of Teaching (March 2014). See also, Emma Brown, "Far Fewer New Teachers Are Leaving the Profession than Previously Thought," *Washington Post*, April 30, 2015. https://www.washingtonpost.com/news/local/wp/2015/04/30/study-new-teacher-attrition-is-lower-than-previously-thought/?utm_term=.6f3c36725378.

This section ends with a look at how UTR special educators' training might have played a role in their high rates of retention. Included are residents' survey responses about factors generally believed to be related to retention—administrative support, positive school climate, opportunities to collaborate, opportunities for leadership.[32] The section also revisits findings and insights from the case studies, discussing how the skills and malleability UTR special educators bring to schools might not only support their own integration and job satisfaction but also contribute to school-wide stability and retention.

RETENTION RATES FOR UTR SPECIAL EDUCATORS

How Do UTR Special Educators Compare to their UTR Peers?

Retention Rates across Subject and Cohorts

At 94 percent, retention rates for special educators are a few percentage points higher than the overall rate of 91%. Data for Cohorts 2–6 show that 60 of the 64 UTR-trained special educators are still teaching: two have left the classroom, and the status of two others is classified as "unknown." Of the 60 still teaching, 58 or 97% are teaching in a NYC DOE public or New Visions Charter school. (See Table 19.)[33]

[32] See, for example, Richard Ingersoll and Lisa Merrill, "Seven Trends: The Transformation of the Teaching Force: A CRPE Working Paper," Consortium for Policy Research in Education (November 2012); Richard Ingersoll and Michael Strong, "The Impact of Induction and Mentoring Programs for Beginning Teachers: A Critical Review of the Research," University of Pennsylvania, (February, 2004). See also, William H. Marinell and Vanessa M. Coca with the Research Alliance for New York City Schools, "Who Stays and Who Leaves: Findings from a Three-Part Study of Teacher Turnover in New York City Public Schools," Steinhardt School of Culture, Education and Human Development, New York University, (March 2013); and David Perda, "Transitions into and out of Teaching: A Longitudinal Analysis of Early Career Teacher Turnover" (2013). Dissertations available from ProQuest. AAI3594959. http://repository.upenn.edu/dissertations/AAI3594959.

[33] This section shares data on 64 special educators and 73 other UTR teachers prepared in Cohorts 2–6. It uses a total of 64 UTR special educators, rather than the 65 used in other reporting, because one Cohort 3 resident did not leave the classroom because of dissatisfaction or other reasons linked to attrition, but was tragically killed during Hurricane Sandy. The overall total used here is therefore 137, not the total of 138 used earlier.

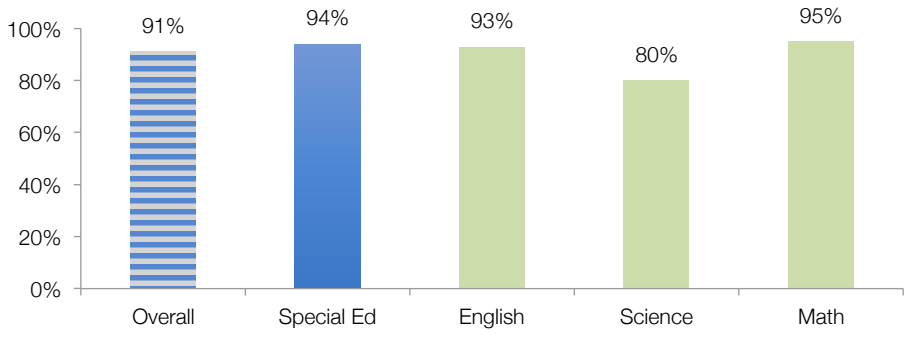
Table 19. Residents' Current Teaching Status, Cohorts 2–6

	Residents	Not Teaching	Teaching in NYC DOE or NV Charter School	Teaching outside NYC DOE or NV Charter School	Retention Rates	Unknown/ No data
UTR Cohort 2	**34**	**5**	**25**	**3**	**82%**	**1**
Biology	8	1	6	1	88%	0
English	9	2	7	0	78%	0
Math	4	1	3	0	75%	0
Special Education	**13**	**1**	**9**	**2**	**85%**	**1**
UTR Cohort 3	**29**	**3**	**25**	**1**	**90%**	**0**
Biology	7	2	5	0	71%	0
Math	8	0	7	1	100%	0
Special Education	**14**	**1**	**13**	**0**	**93%**	**0**
UTR Cohort 4	**31**	**2**	**27**	**1**	**93%**	**1**
Biology	6	1	5	0	88%	0
Chemistry	3	1	2	0	67%	0
Earth Science	1	0	1	0	100%	0
Math	7	0	6	1	100%	0
Special Education	**14**	**0**	**13**	**0**	**93%**	**1**
UTR Cohort 5	**24**	**0**	**22**	**2**	**100%**	**0**
English	15	0	13	2	0	0
Special Education	**9**	**0**	**9**	**0**	**100%**	**0**
UTR Cohort 6	**19**	**0**	**19**	**0**	**100%**	**0**
English	5	0	5	0	100%	0
Special Education	**14**	**0**	**14**	**0**	**100%**	**0**
TOTAL	**137**	**10**	**118**	**7**	**91%**	**2**

Source: New Visions Data Warehouse: Teacher Certification Program Retention Data Accessed March 23, 2017.

Overall retention rates by subject (with sciences combined) show the highest rates among math graduates, followed closely by special education and English graduates; the combined rate for biology, chemistry, and earth science graduates is 80 percent. (See Figure 20.)

Figure 20. UTR Retention Rates by Subject, Cohorts 2–6



Source: New Visions Data Warehouse: Teacher Certification Program Retention Data Accessed March 23, 2017.

Mobility among UTR Teachers Who Stayed in the Classroom

Records show that, of the 99 UTR graduates teaching in a New Visions network or New Visions charter school (those for whom we have mobility data), 64, or 65 percent are currently teaching at the same school where they began. Among the 35 remaining teachers, 33 changed school once; and two, twice.[34]

Among the 64 graduates still teaching, stability rates are 15 percentage points higher for the 44 UTR special educators than for the 55 graduates of other subjects, or 73 percent vs. 58 percent. Records also show that:

- 32 of the 44 special educators—73%—are still teaching at the school where they started. Of the 12 teachers (27%) who changed schools, all did so only once.
    - Cohort 2 special educators had the highest rate of mobility, compared to their special education peers: 44%, or 4 out of 9 UTR changed schools once. The rates for other cohorts are 23%, 31%, and 1%, for Cohorts 3, 4, and 5 respectively. Corresponding retention rates are: 56%, 77%, 69%, and 89%.
    - As noted in the Conclusions section of this chapter, some program revisions seem to have led to positive results, and less mobility after Cohort 2 may be explained by more emphasis in the training, for mentors and residents, on school integration of residents.
    - Teaching at the same schools, hired by residency schools, training sites.

Table 20 shows mobility rates among UTR graduates, and mobility patterns, i.e., how many times teachers, by cohort and subject, changed schools. Table 21 shows how many years UTR graduates remained in the classroom before leaving.

[34] Only one year of hiring data is currently available for Cohort 6.

Table 20. Mobility among UTR-Trained Teachers, Cohorts 2–6

Residents Teaching in NYC DOE or NV Charter School SY2015-2016		Teaching at Same School		Changed Schools Once		Changed Schools Twice	
		Number	Percent	Number	Percent	Number	Percent
UTR Cohort 2	**25**	**11**	**44%**	**12**	**48%**	**2**	**8%**
Biology	6	1	17%	4	67%	1	17%
English	7	4	57%	2	29%	1	14%
Math	3	1	33%	2	67%		
Special Education	**9**	**5**	**56%**	**4**	**44%**	**0**	**0%**
UTR Cohort 3	**25**	**15**	**60%**	**10**	**40%**	**0**	**0%**
Biology	5	1	20%	4	80%		
Math	7	4	57%	3	43%		
Special Education	**13**	**10**	**77%**	**3**	**23%**	**0**	**0%**
UTR Cohort 4	**27**	**20**	**74%**	**7**	**26%**	**0**	**0%**
Biology	5	2	40%	3	60%		
Chemistry	2	2	100%				
Earth Science	1	1	100%				
Math	6	6	100%				
Special Education	**13**	**9**	**69%**	**4**	**31%**	**0**	**0%**
UTR Cohort 5	**22**	**18**	**82%**	**4**	**18%**	**0**	**0%**
English	13	10	77%	3	23%		
Special Education	**9**	**8**	**89%**	**1**	**11%**	**0**	**0%**
TOTAL, 4 Cohorts	**99**	**64**	**65%**	**33**	**33%**	**2**	**2%**

Source: New Visions Data Warehouse: Teacher Certification Program Retention Data Accessed March 23, 2017.

Mobility after Commitment Period

UTR-trained teachers commit to four years of teaching in NYC DOE public schools or New Visions charter schools, and there are financial consequences for not meeting that commitment. Records show that, as of SY 2015–2016, 10, or seven percent of the 137 UTR graduates trained in Cohorts 2–6 are not currently teaching. Of those, five left the classroom after four years. Of the other five, three left after one year, and two, after two years.

Of the 10 UTR graduates who are no longer teaching, two are special education teachers. One left after four years, and one after two years. As noted above, data are missing for two other residents.

Table 21. Mobility among UTR-Trained Teachers Who Started Careers in NYC Schools, Cohorts 2–6

	Residents	Residents Who Began Teaching in NYC Schools, not teaching in NYC Schools as of SY 2015-2016	0 Years	1 Year	2 Years	3 Years	4 Years
UTR Cohort 2	**34**	**5**		**1**			**4**
Biology	8	1					1
English	9	2					2
Math	4	1		1			
Special Education	**13**	**1**					**1**
UTR Cohort 3	**29**	**3**	**1**	**1**	**1**		**1**
Biology	7	2		1			1
Math	8	0					
Special Education	**14**	**1**			**1**		
UTR Cohort 4	**31**	**2**		**1**	**1**		
Biology	6	1		1			
Chemistry	3	1			1		
Earth Science	1	0					
Math	7	0					
Special Education	**14**	**0**					
UTR Cohort 5	**24**	**0**					
English	15	0					
Special Education	**9**	**0**					
UTR Cohort 6	**19**	**0**					
English	5	0					
Special Education	**14**	**0**					
TOTAL	**137**	**10**		**3**	**2**		**5**

Source: New Visions Data Warehouse: Teacher Certification Program Retention Data Accessed March 23, 2017.

UTR SPECIAL EDUCATORS vs. OTHER NYC TEACHERS

How Do UTR Special Educators Compare to Teachers Citywide?

Hiring and Retention Trends Citywide, 2011–2014

A look at the numbers of teachers who joined and left the New York City Public Schools system as UTR's special education residency program got underway, and began placing teachers, provides some context for UTR retention and turnover. According to New York City Independent Budget Office (IBO) data, over the decade prior to the beginning of UTR, the numbers of special education teachers increased, even as the numbers of teachers overall declined: in 2011–2012, there were 54,778 teachers in the system, almost 10,000 fewer than a decade earlier. In the same year, the number of special education teachers increased by around 5,000 teachers, from 13,183 to 18,595.[35]

[35] New York City Public School Indicators: Demographics, Resources, Outcomes. IBO. Available at: http://www.ibo.nyc.ny.us/iboreports/new-york-city-public-school-indicators-demographics-resources-outcomes-october-2015.pdf.

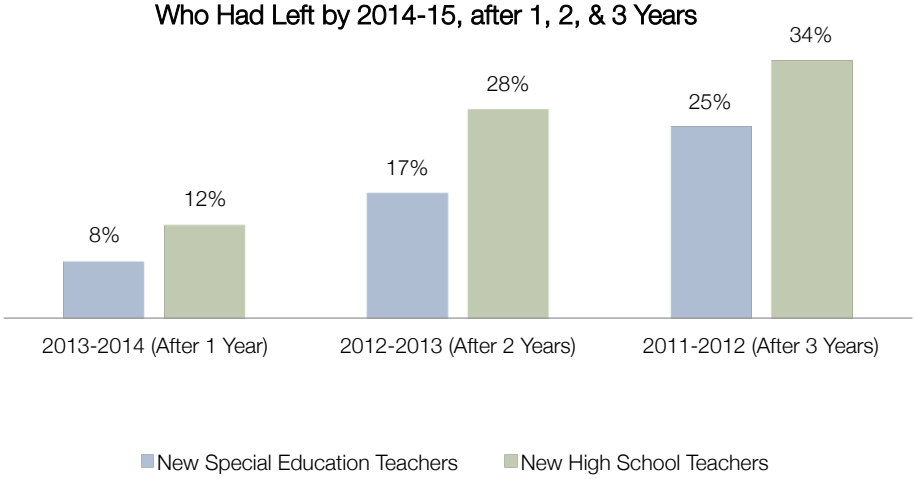
Breakdowns show some fluctuation in high school figures—which increased between 2011 and 2012, decreased between 2012 and 2013, then ticked up again in 2013–2014.[36]

A snapshot of attrition figures for SY 2014–2015 shows two trends in New York City schools:

1. Attrition was lower among special educators hired in New York City's public schools, compared to that among high school teachers overall.

2. Attrition among both groups increased from year to year. For both, attrition rates more than double from one year to two years. From their first or induction year to their third year, special educators post a 17 percentage-point increase; high school teachers, a 22 percentage-point increase.

Figure 21. Percentage of NYC Teachers (Hired in 2011–12, 2012–2013, 2013–14) Who Had Left by 2014-15, after 1, 2, & 3 Years



Source: NYC IBO

UTR vs. other NYC High-School Special Educators

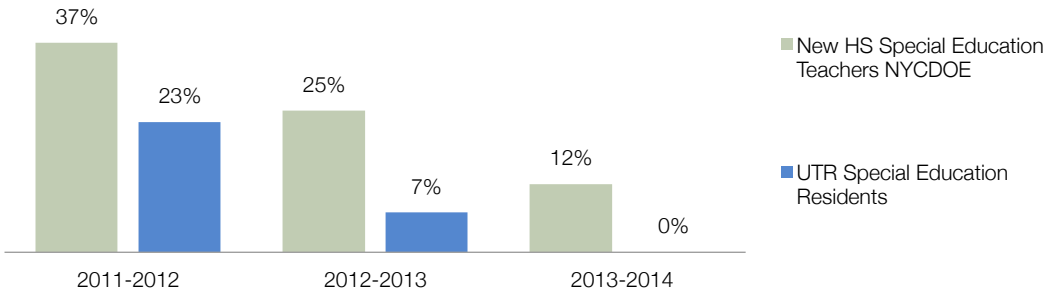
For a closer comparison, we also looked at retention rates among high school special educators in NYC schools, again taking a snapshot of SY 2014–2015. We found attrition rates rose for UTR special educators over their first three years—as they did for other special educators newly hired in NYC high schools—but at a slower pace. Figure 22 shows the percentages of UTR and other special education teachers hired between SY 2011–12, SY 2012–2013, and SY 2013–2014 who had left NYC schools by SY 2014–2015, after their first, second, and third year of teaching.

- Compared to 37% of their special education peers in NYC high schools, 23% of the UTR special educators who began teaching in 2011–12 (3 out of 13), were no longer teaching in NYC classrooms in SY 2014–15, after their third year. (This includes the one special educator no longer teaching and the 2 teaching elsewhere.)

[36] The NYC data reported in the following discussion and figures—including the comparisons to retention among UTR special educators—provides a snapshot for the last school year for which we have IBO data, or SY 2014–2015. In addition to providing additional UTR data, from Cohorts 1–6, the retention report provides further citywide retention data.

- After their second year, the margins widened: 25% of the NYC group had left, compared to 7% of the UTR group (1 teacher).
- No UTR-trained special educators had left after their first year, compared to 12% of their NYC high school special education peers.

Figure 22. Special Educators Hired from 2011–12 through 2013–14 Who Had Left NYC High Schools by SY 2014–15



Source: NYC IBO; New Visions Teacher Data Warehouse

Which Teachers Leave?

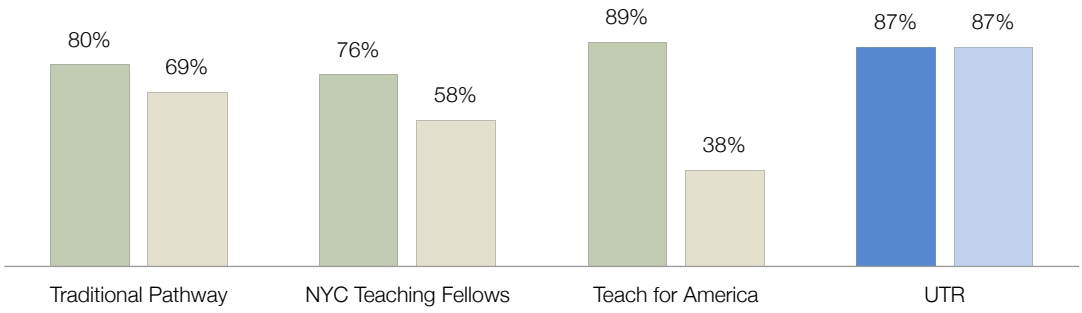
UTR was one of several alternative certification programs created in response to teacher shortages and the need to staff all classrooms with effective teachers. A study based on data from the national Schools and Staffing Survey (SASS) shows that those programs significantly increased the proportions of alternatively certified teachers in the workforce. In a little over a decade, from 2000 to 2012, the share of teachers prepared in alternative certification programs nearly doubled, growing from 13 percent to 24 percent.[37]

The study, like some others, also reports that teachers prepared in alternative certification programs are more likely to leave. Data from the IBO, which tracks NYC DOE teacher hiring and retention by preparation pathway, includes traditional programs, the NYC Teaching Fellows Program, and Teach for America. We added UTR rates, compared to general education figures and those for special education—taking a snapshot of retention rates for teachers hired in 2013, after one year (2014), and after two years (2015). (See Figures 23 and 24 below.) Comparisons showed that:

- Among non-UTR teachers, retention was relatively high after one year, then began to drop off. Retention was in most cases a little higher for special education, and declines were a little sharper for general education.
- The biggest drop after two years in the classroom was for Teach for America teachers, which fell from 89% to 38% for general ed teachers and from 86% to 49% for special ed—a not surprising drop because their commitment is two years.
- UTR had higher retention and no declines. The UTR rate for general ed held steady at 87%; the UTR rate for special educators in their second year was 93% compared to 49% for Teach for America, 72% for Teaching Fellows, and 77% for traditional pathways.

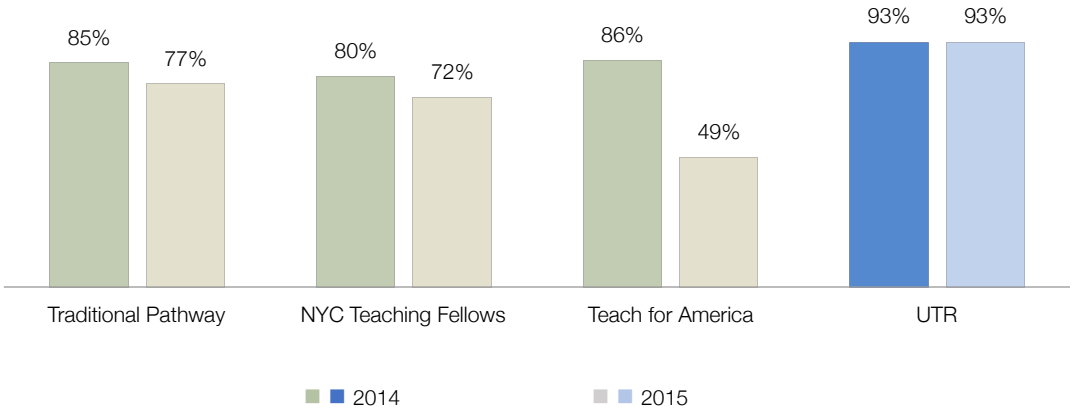
[37] Report available at https://nces.ed.gov/pubs2015/2015337.pdf.

Figure 23. General Education Hired in 2013, Still Teaching in 2014 & 2015



Source: NYC IBO; New Visions Teacher Data Warehouse

Figure 24. Special Education Hired in 2013, Still Teaching in 2014 & 2015



Source: NYC IBO; New Visions Teacher Data Warehouse

WHY TEACHERS STAY OR LEAVE

Researchers studying teacher retention generally agree on the factors that encourage teachers to stay in the classroom and in the profession: 1) a positive school climate, 2) opportunities for collaboration and shared decision-making, 3) support from administrators, and 4) available professional development and resources for teaching and learning. Some lists also include "high-stakes accountability systems."[38] Recent research also suggests that teachers with more training in teaching methods and pedagogy, especially training that has included having feedback on their teaching are less likely to leave, especially early on in their careers.[39] In some instances, salary plays a role.

[38] Ingersoll, 2012.

[39] Education First, "Ensuring High-Quality Teacher Talent: How Strong, Bold Partnerships between School Districts and Teacher Preparation Programs are Transforming the Teacher Pipeline" (2016), available at http://education-rst.com/wp-content/uploads/2016/01/Ens. See also Richard Ingersoll, Lisa Merrill, and Henry May, "What Are the Effects of Teacher Education and Preparation on Beginning Teacher Attrition?" Philadelphia: Consortium for Policy Research in Education, University of Pennsylvania Research Report #RR-82 (2014)s. http://www.cpre.org/sites/default/files/researchreport/2018_prepeffects2014.pdf.

On surveys administered throughout UTR's six cohorts we asked residents and mentors what might affect their decision to leave or stay in the classroom. Their feedback maps closely to research findings: both groups assigned the highest ratings to "Support from School Administrators," "Positive School Climate," "Time to Collaborate with Colleagues," and "Ongoing, Relevant Professional Development." (In general, teachers assigned lower ratings to "Higher Salaries," although, interestingly, mentors' ratings decreased over time, but residents' ratings increased.)

Findings shared in Section 2 of this chapter indicated that, as the UTR special education model matured, residents were more likely to attend departmental meetings and collaborate with colleagues, and rates rose in tandem with mentors, ticking up to levels just above those for subject-area residents. The professionalism scale that clustered these items reflected the same trends. This integration into school activities and culture—sometimes the result of proactive efforts—may have set the precedent for how UTR special educators viewed and even ensured their involvement in decision-making as they became teachers of record. These actions and dispositions may, in turn, have helped ensure retention.

The case studies provided further evidence of the collaborative skills and dispositions UTR special educators bring to schools, not only contributing to shared decision-making but also proactively fostering it, and in the process helping schools manage the changes and challenges involved in shifting to an ICT model, making teams work, serving increasing numbers of special needs students—and adding to school stability.

Although we did not specifically ask about accountability systems in reference to UTR special educators' acclimation to and impact on schools, it may well be that their emphasis on accountability in the form of inquiry and formative assessment also contributes to school stability—not just because it can improve student performance, but because it can shift the accountability focus from outputs or summative assessment to inputs, or the formative work that targets students' needs and improves their chance of success. A final factor, which the case study work hinted at, was the importance of administrator support in teacher retention: when principals like the one at the high-concentration school, which had hosted and hired multiple residents, seek out UTR teachers for the skills they bring to schools, they are likely to support those novice teachers, and advocate for school structures and practices that support collaboration and a meaningful role for special education teachers.

Conclusions and Recommendations

This chapter drew on multiple data sources, including five years of survey responses from mentors and residents, resident background and performance data from Hunter and New Visions, interview and survey data from case studies, student performance data from schools that have hired UTR-trained special education and content-area teachers and schools that have not, and retention data from UTR teachers and teachers city-wide.

Combined, the data indicate that UTR partners crafted an effective, versatile model, born out of a need not just to add teachers to the pipeline but also to ensure that they could meet the needs of students whose numbers were expanding and of schools shifting to new special education policies designed to meet those needs.

As schools adjusted, so did UTR partners. As mentors and content-area teachers in host schools shifted to team teaching and took on new roles in inclusion classrooms, New Visions increasingly stressed collaboration and encouraged mentors, and residents, to add leadership to school roles. As the city adopted the *Danielson Framework*, New Visions adapted the rubric for their assessment suite, adding a special education addendum. Hunter revised courses and course maps to introduce residents to redefined disability categories and emerging best practices, and ensure that they could pass the EAS and other credentialing exams. They coordinated their practitioner-focused Learning Lab experiences and assessment training with New Visions' Defense of Learning requirements, and together they helped residents combine the two with new EdTPA performance assessment for teachers.

Sixty-five special educators over five cohorts met the requirements and challenges, with only a few concluding that either the program or profession wasn't a good fit. Those who completed residencies maintained high GPAs, and, by the end of their clinical year, had passed that midway mark on the Danielson four-point scoring rubric, transitioning from "developing" to "effective" teachers. They continued to meet the challenges as teachers of record, exhibiting the adaptability that characterized the model itself. They didn't just adapt to changes, but introduced changes, and helped schools manage change. And they stayed, with higher retention and lower mobility rates than their peers.

The case studies confirmed that UTR special educators successfully transferred formative assessment and inquiry skills from training to practice—and these should remain at the core of special educators' training:

- A skillset around intervention, with deliberate but nimble assessment of needs and targeted strategies;
- An emphasis on collaboration and shared decision-making, combined with
- Leadership that is proactive and practical;
- Efforts to play an advocacy role, and educate others about the learning needs of students with IEPs.

Perhaps the bigger takeaway—and chief recommendation of this chapter—is that residents can and should be influential and adaptable at the same time. What this means for the UTR special education model is that the above practices should continue, with attention to the specific, often competing demands facing special education residents, and the likely variations in their clinical and placement schools. Two of the "Improvement Principles" laid

out by Anthony Bryk and co-authors in their work in improvement science are to make the work "problem-specific" and focus on "variability," because change ideas may work in some places or under certain conditions, but not others.[40]

- Clarify expectations for new residents about the different school scenarios they might encounter. Consider including former residents, mentors, and content-area teachers in an orientation or residency essentials panel or open discussion, to give residents concrete examples of the "variability" in team-teaching.
- Include short sessions to introduce residents to team-teaching configurations and strategies—including team IEP writing—to give them an overview without overwhelming them. Binders or an online go-to/contact site might also reassure novices that they don't have to absorb everything at once.
- To avoid focusing just on problems or likely challenges, balance sessions or conversations with examples of what worked, in what context: again, concrete examples can help residents and mentors anticipate what might work in their school structures, and what may require that they be adaptable before, being influential.
- As residents begin their clinical experience, continue, in formal or informal interactions, to address specific needs or problems:
    - if a resident is placed in a content area where they don't feel strong, set up a conversation (virtual, phone, face-to-face) with residents, mentors, or content-area team teachers who have faced similar challenges.
    - It may be possible to have mini-tutorials, where residents get a quick review of, for example, an Algebra I or Global History curriculum.
    - If there are specific student populations or skill needs, examples of assessment strategies that could relieve novice teachers of having to come up with new strategies out of whole cloth. The Hunter liaison could also provide examples of best practices around specific student needs, along with reassurance.
    - Similarly, shared lesson-plan adaptations, for specific content areas or skills, could help stock toolkits.
- Consider similar activities for mentor training, where current or former mentors share mentoring or team-teaching experiences and real examples of challenges they've encountered and met.
- Extend the focus on possible configurations and school structures during hiring sessions. Invite former special education residents and mentors to provide lists of questions for residents to ask during job fairs or hiring interviews. Providing examples of workable structures and strategies may also be helpful during induction support, for graduates experiencing challenges with team-teaching.
- Although it is valuable for special educators to feel like a community, and have training and support that acknowledges and addresses their unique needs, cross-subject, joint training and sharing sessions with content area residents that focus on teaming and variability could be valuable as well. Residents in other subject areas will be co-teaching with special educators, and they are all, in the end, committed to educating all students.

[40] Anthony S. Bryk, Louis Gomez, Alicia Grunow, and Paul LeMahieu, *Learning to Improve: How America's Schools Can Get Better at Getting Better (*Cambridge: Harvard Education Press, 2015), 12–14.

Chapter 3

Training and Retaining Good Teachers

The retention study posed three key questions. The central one is whether UTR and MASTER teachers are staying in the classroom. The other two explore what aspects of the residency models affect retention, and whether they are making a difference.

How do retention rates among UTR- & MASTER-trained teachers compare to rates among peers prepared through other pathways?

Do the teachers trained in UTR and MASTER stay in NYC DOE classrooms?

What resident characateristics or programmatic factors seem to play a role in retention?

Organization of the Chapter

The purpose of this chapter is to place these questions in context—of both program- and city-wide retention data, and in the larger landscape of staffing New York City's high-needs schools. To this end, the chapter is organized into two parts: Part 1 discusses the retention status of UTR and MASTER graduates, examining trends by cohort and subject area and comparing resident retention rates with those of teachers trained through other preparation programs and teaching in New York City. Drawing on retention data, background data about residents, survey data from residents' clinical year, and publicly available data about residents' initial hiring schools, Part 2 examines the factors that might affect teacher retention and mobility, including personal characteristics, programmatic components, and school environments. A summary of findings follows the methods section, and a set of conclusions follows Part 2.

METHODS

For this study we used largely quantitative data, from multiple sources. To analyze the data, we used descriptive statistics, analysis of variance (ANOVA), chi-square analysis, and logistic regressions. Our data sources included:

- **New Visions Data Warehouse and Teacher Certification Program Retention Data.** These two datasets provided detailed information on UTR and MASTER resident characteristics and retention status. To build this dataset, New Visions drew in large part on the NYC DOE Pedagogue records, which include

demographic and employment data about all NYC DOE staff. Where holes, gaps, or inconsistencies were evident, or in cases where the graduates were no longer teaching in the NYC DOE (and thus would not appear in the Pedagogue records), the program relied on induction coaching reports and resident self-reports provided in surveys or personal outreach to complete the dataset.

- **Data from the Rockman et al administered UTR Teacher Surveys.** Between the 2011–2012 and 2014–2015 school years, UTR residents completed a survey about their preparation for and experiences during their first year teaching. Only items that were represented in all three waves of the survey (2011, 2012, and 2013) were included in the scales to allow for a valid longitudinal comparison. *(NOTE: Because we did not have MASTER data from 2011 and 2012, the survey analyses and Part 2 findings include only UTR residents.)*

  We analyzed resident responses by their retention status as of the 2015-2016 school year. We also conducted a cross-walk between survey versions to ensure that only identical and/or very similar items were compared across waves. For our analysis, we grouped related survey items into thematic scales; our analysis also examines individual survey items that are particularly relevant to teachers' decisions to stay in the field. A list of the survey items included in each scale, as well as the ratings and statistical significance for each scale and survey item is provided in the Appendix F.

- **Independent Budget Office of the City of New York Public School Indicators Data and Retention Data Requests.** Hiring and retention data for teachers in NYCDOE is publicly available through the Independent Budget Office (IBO), which tracks, among other trends, NYC DOE teacher hiring and retention data. Findings shared in this report are based on the IBO School Indicators Data Set. Additional retention data by preparation pathway was made available through a data request from Rockman specific to this study.

- **New York City Department of Education School Quality Reports and School Performance Dashboard.** This publicly available dataset provided detailed information on the characteristics of residents' initial hiring schools.

SUMMARY OF FINDINGS

OVERALL FINDINGS

- **Retention rates among both UTR and MASTER graduates are high, and mobility rates are low.** Across six UTR cohorts and two MASTER cohorts, 89% of UTR residents and 94% of MASTER residents were still teaching, as of the 2015–2016 school year. The data indicate that although there is some mobility among UTR- and MASTER-trained teachers, overall stability is high. Graduates are not only staying but staying put, in encouraging numbers: During the 2015–2016 school year, 67%, or 84 of the 126 UTR and MASTER graduates still teaching in NYC DOE or New Visions Charter schools, were teaching at the same school where they were originally hired.

- **Retention rates decline slightly the longer teachers are in the classroom, but, after six years, close to three-fourths of UTR's first cohort are still teaching.** Cohort 6 UTR and MASTER Cohort 2 teachers had 100% retention rates in 2015–2016, the first year those residents served as teachers of record. UTR's first cohort of teachers, who completed their residency in 2009–2010 and became teachers of record during the 2010–2011 school year, had a retention rate of 72%, in 2015–2016, after five years in the classroom.

- **Aggregate data across programs and cohort years show that retention rates vary some by subject, as do the numbers of residents in each subject.** Earth science had the highest retention rate with all four of the residents trained still in the classroom, though, when all science subjects are averaged, the overall retention rate in science is 87%, the same as the rate among English Language Arts residents. Special education and math had the second highest retention rates, at 94%.

UTR RETENTION VS. CITY-WIDE RATES AND RATES FOR PREPARATION PROGRAMS

- **UTR graduates had a lower rate of attrition—by half—compared to new NYC DOE high school teachers.** After three years in the classroom, 34% of NYC DOE high school teachers new to the classroom had left, compared to 15% of UTR-trained teachers.

- **UTR-trained teachers also had lower rates of attrition, compared to peers prepared through other alternative certification pathways.** After two years in the classroom, attrition rates among UTR teachers were lower—by half or more—than those among teachers prepared through the NYC Teaching Fellows Program, TeachNYC Select Recruits, and Teach for America. UTR also had less attrition than traditional programs, but rates were similar, with differences of a few percentage points (11% for UTR vs. 16% for traditional programs). These comparisons are for overall NYC DOE attrition rates. Disaggregated data for secondary school teachers by preparation pathway was not available.

- **Preparation program service requirements influence teacher retention, but have less of an effect in the UTR and MASTER programs.** Of the UTR and MASTER graduates who are no longer teaching in NYC DOE or New Visions charter schools, 24% left after four or more years teaching, thereby fulfilling the program's service requirement. In comparison, almost half, or 49% of all teachers trained through Teach for America exited after fulfilling the program's two-year service commitment.

TEACHER CHARACTERISTICS AS FACTORS IN RETENTION

- **A resident's highest level of education has a statistically significant correlation with their teaching status.** Of the residents who entered the program with only a Bachelor's degree, 90% were teaching as of the 2015–2016 school year, compared to 83% of residents with a Master's degree, and 68% with a doctorate or equivalent degree.

- **Background data for UTR and MASTER teachers also suggest that personal characteristics are associated with retention.** Being Hispanic, female, having only a Bachelor's degree, or focusing on special education are associated with above average retention rates. There of course may be other extenuating factors, including those related to school context and sense of community.

- **Correlation analyses based on survey data suggest that residents' perceptions of efficacy and preparedness are related to the likelihood that they will remain in the classroom.** At the end of their clinical year, residents complete a survey with questions about their confidence or preparedness. Analyses of scales based on clusters related to efficacy and instruction show that UTR and MASTER graduates who eventually left the classroom rated themselves lower compared to graduates who were still teaching.

- **Residents' confidence in handling classroom management challenges may be an important predictor of later retention.** Residents' ratings on the classroom management scale are a statistically significant factor when analyzing retention status. Our comparisons between those no longer teaching and those still teaching in NYC DOE schools showed that the largest gaps between the two groups, based on the residency-year self-assessments, were on the classroom management scale and the general classroom efficacy scales.

SCHOOL CHARACTERISTICS AS A FACTOR IN RETENTION

- **Data also indicate a connection between residents' sense of the school climate—during their clinical year—and the likelihood that they will continue in the teaching profession.** Again, analyses of ratings on the UTR teacher surveys, provided by residents reflecting on their clinical year, indicated that their host school experience and environment can play a role in future retention. Differences between those no longer teaching and those still teaching in NYC DOE schools, by current retention status, were statistically significant.

- **The demographic composition of a UTR graduate's initial hiring school influences retention and contradicts predominant trends.** The percentage of white students in the school population and percentage of economic need at the initial hiring school are statistically significant indicators of UTR graduates' teaching status. The greater the percentage of white students and the lower the economic need index, the more likely a graduate was to stop teaching within two years post residency.

- **School safety is a statistically significant factor in retention among UTR-trained teachers.** A one-unit increase in the Safety index of a resident's initial hiring school results in 3.6 times the overall odds of

retention. This finding indicates that the safer a resident's hiring school is rated to be, the more likely the resident is to continue teaching at that school.[41]

- **Mobility data suggest that school culture affects teachers' decisions to switch schools.** Factors such as school location, demographics, and student achievement ratings appear to play less of a role.

[41] The safety index is a composite of the five safety related questions from the annual school survey the NYC DOE administers to parents, students and teachers. Findings from the survey, including the safety index, are available through the NYC DOE School Quality Guide.

Section 1
Resident Retention Trends

A goal of both UTR and MASTER was to accelerate the learning curve for new teachers, making them more effective on their first day in the classroom and equipping them with the skills necessary to not only succeed but also *stay* in the classroom, contributing to school performance and stability. This chapter examines retention as well as mobility among the 155 UTR teachers and 32 teachers from MASTER's first two cohorts. As a point of comparison, the discussion also includes citywide retention data from the city's Independent Budget Office.

INTERNAL COMPARISONS

Retention Rates by Cohort

Data thus far indicate that UTR and MASTER are achieving the goal of retaining teachers. Since the first cohort of UTR residents became teachers of record during the 2010–2011 school year, retention rates have been consistently high. Across the six UTR cohorts, 138 of the 155 residents, or 89%, were currently teaching as of the 2015–2016 school year. Of those, 130 were teaching in NYC DOE or New Visions charter schools. (See Table 1.)

Table 1. Residents' Current Teaching Status, UTR Cohorts 1–6

	Residents	Not Teaching	Teaching in NYC or NV Charter School	Teaching outside NYC or NV Charter School	Retention Rates	Unknown
UTR Cohort 1	18	2	12	1	72%	3
UTR Cohort 2	34	5	25	3	82%	1
UTR Cohort 3	29	3	25	1	90%	0
UTR Cohort 4	31	2	27	1	90%	1
UTR Cohort 5	24	0	22	2	100%	0
UTR Cohort 6	19	0	19	0	100%	0
Total	**155**	**12**	**130**	**8**	**89%**	**5**

Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

MASTER rates look positive as well, overall just a few percentage points below the UTR rates for the two years when the programs overlapped. Among the 32 MASTER residents in Cohorts 1 and 2, 30 or 94%, were teaching as of the end of the 2015–2016 school year. As illustrated in Table 2, 28 residents were teaching in a NYC DOE or New Visions charter school. MASTER's first cohort of teachers, who became teachers of record during the 2014–2015 school year, had an 89% retention rate, and Cohort 2, a 100% retention rate, as of the 2015–2016 school year.

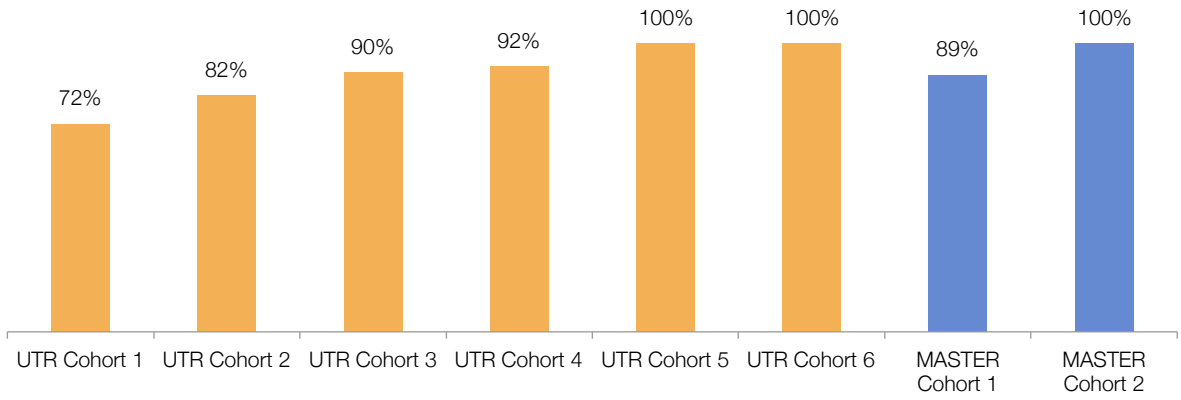
Table 2. Residents' Current Teaching Status, Master Cohorts 1 - 2

	Residents	Not Teaching	Teaching in NYC DOE or NV Charter School	Teaching outside NYC DOE or NV Charter School	Retention Rates	Unknown
MASTER Cohort 1	19	2	15	2	89%	0
MASTER Cohort 2	13	0	13	0	100%	0
Total	**32**	**2**	**28**	**2**	**94%**	**0**

Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017

Retention rates across cohorts do decrease slightly as the number of years since residents entered the classroom increases, or the longer teachers are in the classroom. As shown in Figure 1 below, UTR Cohort 1, who completed their residency in the 2009–2010 school year and became teachers of record during SY2010–2011, had a retention rate of 72%, the lowest of the six UTR cohorts and two MASTER Cohorts. UTR Cohorts 5 and 6 and MASTER Cohort 2 had 100% retention rates in SY2015–2016, the first or second year that residents in those cohorts served as a teacher of record.[42]

Figure 1. Resident Retention Rates, SY2015–2016

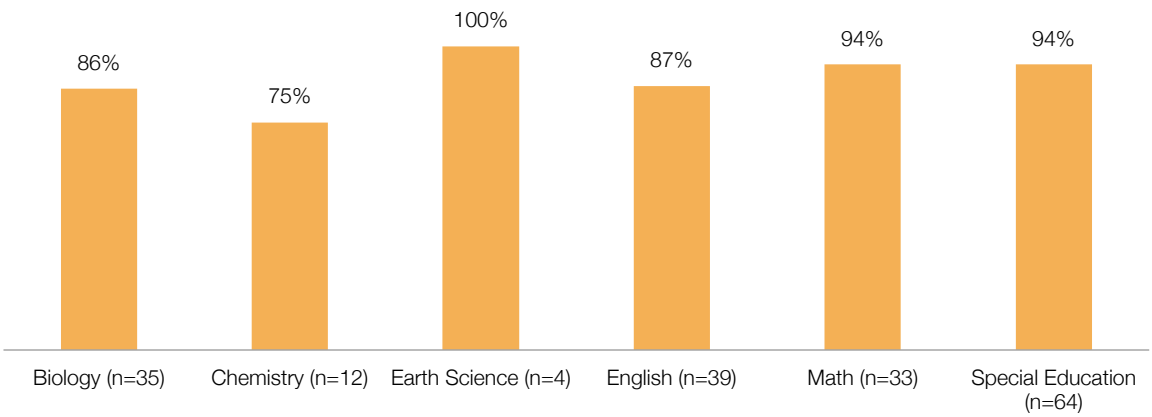


Retention Rates by Subject Area

Aggregating data across programs and cohort years showed some variation in retention rates by subject. As shown in Figure 2 below, chemistry had the lowest retention rate with, 75%, or nine of the 12 residents trained still teaching as of the 2015–2016 school year. Earth science had the highest retention rate, with all four of the residents trained either in UTR or MASTER still in the classroom. Special education (n=64) and math (n=33) had the second highest retention rates, all at 94%.

[42] In tables and figures, UTR results are in orange, MASTER results in blue, combined results in scarlet.

Figure 2. Retention Rates by Subject, UTR and MASTER



It should be noted, as illustrated in Table 3, that there is wide variability in the size of cohorts across subject areas. Earth science, which has the overall highest retention rate, has the smallest cohort size with only one resident trained in each of the four cohorts. Chemistry, which has the second smallest cohort size with three residents trained each cohort year, has the lowest overall retention rate. In the case of Chemistry, one of the three residents trained is no longer teaching from three of the four cohorts. This brings the retention rate down to 67% in those three years. In the most recent Chemistry cohort, MASTER cohort 2, all residents are still teaching resulting in a 100% retention rate and bringing the overall rate for Chemistry to 75%. For subject areas with a small number of residents, one resident can have a significant impact on the reported retention rate. Conversely, for subject areas with a large number of residents, the impact of one resident on the retention rate for the group is less substantial.

Table 3. Residents' Current Retention Rates by Cohort and Subject

	Biology	Chemistry	Earth Science	English	Math	Special Education
UTR Cohort 1	75% (n=4)	67% (n=3)	100% (n=1)	100% (n=10)	N/A	N/A
UTR Cohort 2	88% (n=8)	N/A	N/A	78% (n=9)	75% (n=4)	85% (n=13)
UTR Cohort 3	71% (n=7)	N/A	N/A	N/A	100% (n=8)	93% (n=14)
UTR Cohort 4	83% (n=6)	67% (n=3)	100% (n=1)	N/A	100% (n=7)	93% (n=14)
UTR Cohort 5	N/A	N/A	N/A	100% (n=15)	N/A	100% (n=9)
UTR Cohort 6	N/A	N/A	N/A	100% (n=5)	N/A	100% (n=14)
MASTER Cohort 1	100% (n=6)	67% (n=3)	100% (n=1)	N/A	89% (n=9)	N/A
MASTER Cohort 2	100% (n=4)	100% (n=3)	100% (n=1)	N/A	100% (n=5)	N/A

Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017

Tables 4 and 5 below provide a detailed profile of UTR and MASTER residents' teaching status by cohort year and subject area.

Table 4. Residents' Current Teaching Status, UTR Cohorts 1–6

	Residents	Not Teaching	Teaching in NYC DOE or NV Charter School	Teaching outside NYC DOE or NV Charter School	Retention Rates	Unknown
UTR Cohort 1	**18**	**2**	**12**	**1**	**72%**	**3**
Biology	4	1	2	1	75%	0
Chemistry	3	0	2	0	67%	1
Earth Science	1	0	1	0	100%	0
English	10	1	7	0	70%	2
UTR Cohort 2	**34**	**5**	**25**	**3**	**82%**	**1**
Biology	8	1	6	1	88%	0
English	9	2	7	0	78%	0
Math	4	1	3	0	75%	0
Special Education	13	1	9	2	85%	1
UTR Cohort 3	**29**	**3**	**25**	**1**	**90%**	**0**
Biology	7	2	5	0	71%	0
Math	8	0	7	1	100%	0
Special Education	14	1	13	0	93%	0
UTR Cohort 4	**31**	**2**	**27**	**1**	**90%**	**1**
Biology	6	1	5	0	83%	0
Chemistry	3	1	2	0	67%	0
Earth Science	1	0	1	0	100%	0
Math	7	0	6	1	100%	0
Special Education	14	0	13	0	93%	1
UTR Cohort 5	**24**	**0**	**22**	**2**	**100%**	**0**
English	15	0	13	2	100%	0
Special Education	9	0	9	0	100%	0
UTR Cohort 6	**19**	**0**	**19**	**0**	**100%**	**0**
English	5	0	5	0	100%	0
Special Education	14	0	14	0	100%	0
Total	**155**	**12**	**130**	**8**	**89%**	**5**

Source: New Visions Data Warehouse Teacher Certification Program Retention Data, accessed March 23, 2017.

Table 5. Residents' Current Teaching Status, MASTER Cohorts 1–2

	Residents	Not Teaching	Teaching in NYC DOE or NV Charter School	Teaching outside NYC DOE or NV Charter School	Retention Rates	Unknown
MASTER Cohort 1	**19**	**2**	**15**	**2**	**89%**	**0**
Biology	6	0	5	1	100%	0
Chemistry	3	1	2	0	67%	0
Earth Science	1	0	1	0	100%	0
Math	9	1	7	1	89%	0
MASTER Cohort 2	**13**	**0**	**13**	**0**	**100%**	**0**
Biology	4	0	4	0	100%	0
Chemistry	3	0	3	0	100%	0
Earth Science	1	0	1	0	100%	0
Math	5	0	5	0	100%	0
Total	**32**	**2**	**28**	**2**	**94%**	**0**

Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

Of the 155 UTR residents and 32 MASTER residents, only eight (5%) and two (6%) respectively were teaching outside of the district (see Tables 4 and 5 above). (Anecdotally, we know that some of these teachers moved out of state rather than moving to schools in New York City suburbs or to private schools in NYC.)

Resident Mobility between Schools

In addition to retaining teachers in the classroom, a secondary component to the challenge of staffing high needs schools is teacher mobility among schools. A guiding tenant of the UTR and MASTER residency programs is to ensure that students who attend hard-to-staff schools have access to highly qualified teachers, year after year. But as teachers gain experience and confidence in their skills, they may be more selective in choosing where they want to teach,[43] and some data indicate that, as they progress through their teaching careers, teachers tend to move away from schools that serve large concentrations of low-performing students, low-income students, and/or students of color—i.e., higher-need schools.[44]

Mobility by Program and Years Teaching

The data indicate that although there is some mobility among UTR- and MASTER-trained teachers, overall there is relatively high stability. Table 6 on the following page displays teacher mobility between schools by UTR and MASTER cohorts and subject areas. (Only one year of hiring data is available for UTR Cohort 6 and MASTER Cohort 2; they therefore have been omitted from this analysis.) During the 2015–2016 school year, 126 residents from UTR Cohorts 1 through 5 and MASTER Cohort 1 were teaching in NYC DOE or New Visions Charter schools. Sixty-seven percent or 84 of those residents were teaching at the same school where they began their teaching career. Forty residents, or 32%, had changed schools once, while only two residents had changed schools twice. Both residents who changed

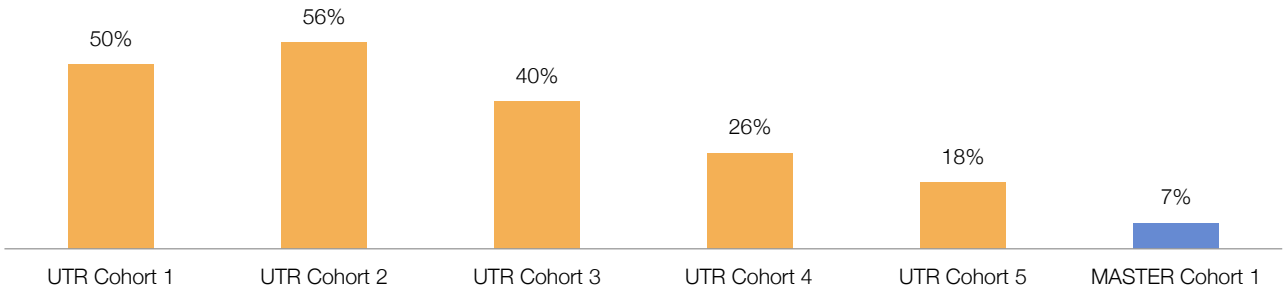
[43] "Recruiting Quality Teachers to Hard-to-Staff Schools," Southeast Center for Teacher Quality. Retrieved from: http://www.nea.org/assets/docs/HE/mf_HuntHardtoStaff.pdf.

[44] Eileen Horng, "Poor Working Conditions Make Urban Schools Hard-to-Staff" (UC Berkeley: University of California All Campus Consortium on Research for Diversity, 2005). Retrieved from: http://escholarship.org/uc/item/0269b641.

schools twice were in UTR Cohort 2—one, a math resident and the other a biology resident. No residents had changed schools three or more times.

The picture changes some as teachers' time in the field grows. The percentage of teachers who switch schools generally increases, in part following the trend for teachers to change schools as they gain experience. To illustrate, of the residents in UTR Cohort 1 who became teachers of record during the 2010–2011 school year, 50% had changed schools by the 2015–2016 school year. In comparison, fewer, or 18% of residents in Cohort 5 and 7% of residents in MASTER Cohort 1, both entering the classroom in 2014–2015, changed schools the following year.

Figure 3. Percent Of Residents Who Changed Schools at Least Once, by Cohort

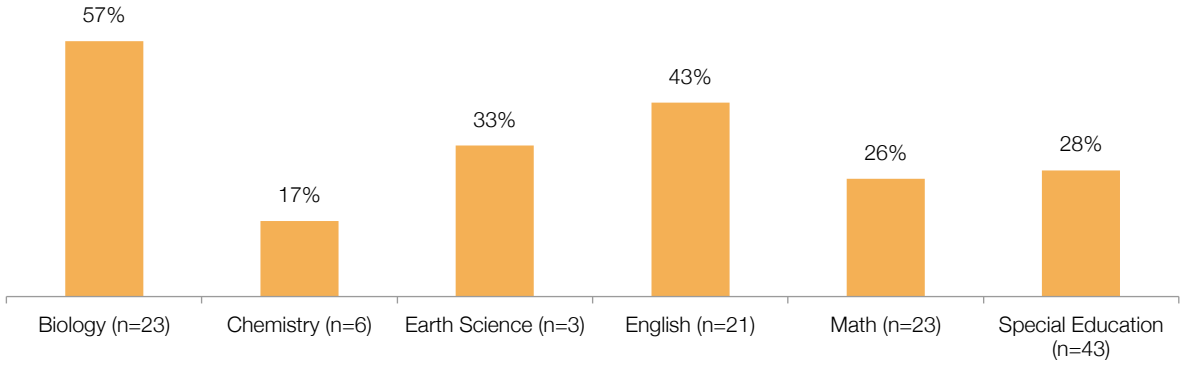


Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

Mobility by Subject

Across subject areas, mobility was greatest for biology, with 57% of residents changing schools at least once by the 2015–2016 school year. English/Language Arts had the second highest rate of mobility, at 43%. Chemistry had the lowest rate, at 17%, with only one of the six residents changing schools. Mobility by subject area is illustrated in Figure 4 below.

Figure 4. Percentages Of Residents Who Changed Schools at Least Once, by Subject



Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.
Tables 6 below details residents' teaching status by cohort, subject, and mobility between schools.

Table 6. Resident Teaching Status, UTR Cohorts 1– 5 & Master Cohort 1

	Residents Teaching in NYC DOE or NV Charter School SY2015-2016	Teaching at Same School	% Teaching at Same School	Changed Schools Once	% Changed Schools Once	Changed Schools Twice	% Changed Schools Twice
UTR Cohort 1	**12**	**6**	**50%**	**6**	**50%**	**0**	**0%**
Biology	2	1	50%	1	50%		
Chemistry	2	1	50%	1	50%		
Earth Science	1	0	0%	1	100%		
English	7	4	57%	3	43%		
UTR Cohort 2	**25**	**11**	**44%**	**12**	**48%**	**2**	**8%**
Biology	6	1	17%	4	67%	1	17%
English	7	4	57%	2	29%	1	14%
Math	3	1	33%	2	67%		
Special Education	9	5	56%	4	44%		
UTR Cohort 3	**25**	**15**	**60%**	**10**	**40%**	**0**	**0%**
Biology	5	1	20%	4	80%		
Math	7	4	57%	3	43%		
Special Education	13	10	77%	3	23%		
UTR Cohort 4	**27**	**20**	**74%**	**7**	**26%**	**0**	**0%**
Biology	5	2	40%	3	60%		
Chemistry	2	2	100%				
Earth Science	1	1	100%				
Math	6	6	100%				
Special Education	13	9	69%	4	31%		
UTR Cohort 5	**22**	**18**	**82%**	**4**	**18%**	**0**	**0%**
English	13	10	77%	3	23%		
Special Education	9	8	89%	1	11%		
MASTER Cohort 1	**15**	**14**	**93%**	**1**	**7%**		
Biology	5	5	100%				
Chemistry	2	2	100%				
Earth Science	1	1	100%				
Math	7	6	86%	1	14%		
Total	**126**	**84**	**67%**	**40**	**32%**	**2**	**2%**

NOTE: Only one year of hiring data is currently available for UTR Cohort 6 and MASTER Cohort 2.
Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

Mobility Trends

Our sample is too small and our data too limited to determine whether the UTR- and MASTER-trained teachers who do switch schools move in search of a different school environment or a school that is not high-need. We did, however, examine the publicly available data to see if any general mobility trends emerged.

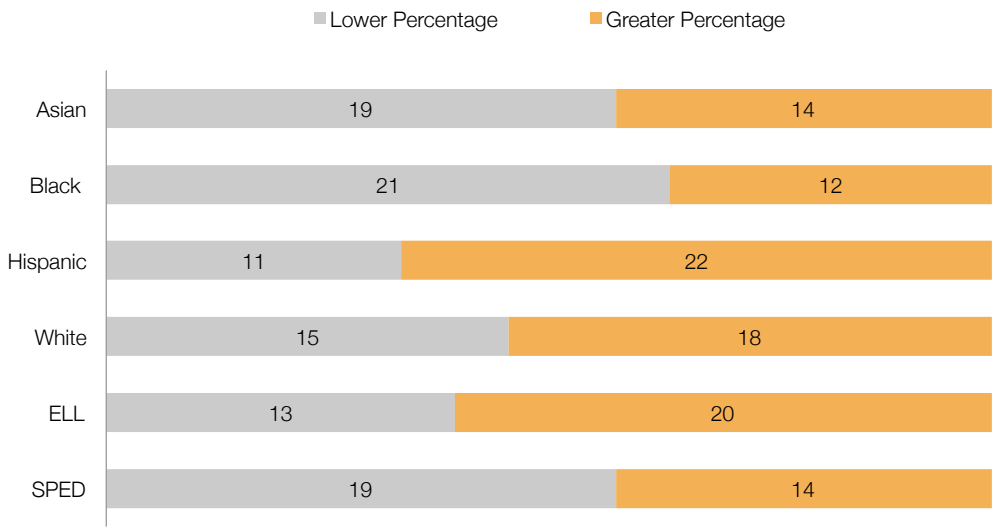
Complete School Quality Snapshot data was available for UTR and MASTER teachers' initial hiring and change school for 33 of the 40 teachers who changed schools once. A review of this data did not indicate a uniform trend in mobility patterns. Averaging ratings across the seven School Quality Snapshot categories—rigorous instruction, collaborative teachers, supportive environment, effective school leadership, strong family and community ties, trust and student achievement—revealed no consistent mobility patterns. Eighteen teachers moved to a school with a higher average rating, 13 moved to schools with lower average ratings, and two teachers went to schools with the same average rating. There was also no clear trend for how student achievement might determine teachers' mobility decisions.

We also explored other data and variables that might indicate trends or shed light on why teachers change schools. Teachers were evenly divided in their choices about location, or whether to teach at a school in the same borough or a different borough, and there was also no one borough that teachers favored over others. Seventeen of the 33 residents who switched schools once continued to teach in the same borough. Of the 16 teachers who changed boroughs, five switched to Manhattan, five to Brooklyn, four to the Bronx, and two to Queens.

Though examining the mobility patterns of teachers' based on the student demographic composition of their previous and current schools was also inconclusive, reviews did indicate some differences. Figure 5 below indicates, in gray and orange bars, whether UTR- and MASTER-trained teachers moved to schools with a lower or greater percentage of students in each category. For example, more teachers went to schools with lower percentages of Asian students and Black students, than to schools with higher percentages: 19 vs. 14, and 21 vs. 12. By contrast, twice as many teachers—22 vs. 11—moved to schools with more Hispanic students; the pattern was the same for White students, though figures were more similar.

More teachers switched to schools with higher concentrations of ELL students than lower concentrations (20 vs.13); that pattern was reversed for Special Education students (14 vs. 19). These counts may suggest that the percentage of ELL and Special Education students at a school influence a teacher's decision about where to teach.

Figure 5. Count of Residents and Mobility by Student Demographics



Source: New York City Department of Education, 2015-2016 School Quality Snapshot

Part 2 of this chapter examines factors that might influence teacher retention, chief among them a range of factors related to school culture. Our reviews of staff experience and student and teacher attendance—comparing statistics for teachers' initial schools to those for the schools they switched to—suggested that these proxies for stability may be influential factors in teachers' mobility decisions. We found that more teachers switched from schools with lower student and teacher attendance rates to schools with higher attendance rates. Specifically, 21 out of 31, or 68% of teachers switched to schools with higher rates of student attendance; even higher numbers, or 24 out of 31, or 77%, switched to schools with higher rates of teacher attendance.

We also saw a somewhat counterintuitive trend related to another measure of school stability: While teachers appear to be moving in greater numbers to schools with higher rates of attendance, they are moving to schools where staff members have *fewer* years. Sixty five percent or, 20 of 31, teachers moved to a school with a principal with fewer years of experience than the principal at their previous school. Similarly, 21 of the 31 teachers, or 68%, moved to schools with a lower percentage of teachers who have at least three or more years of experience. This suggests that teachers may be looking for younger schools or schools that have new leadership and newer teaching staffs.

Retention and Program Commitment Period

UTR- and MASTER-trained teachers commit to four years of teaching in NYC DOE public schools or New Visions charter schools, and there are financial consequences for not meeting that commitment. Of the 187 residents in UTR Cohorts 1 through 6 and MASTER Cohorts 1 and 2, 29 were not teaching in NYC DOE or New Visions Charter Schools, as of the 2015–2016 school year. (Residents identified as not teaching, teaching in schools outside of NYC DOE or New Visions, and those whose status is unknown are counted as no longer teaching in NYC DOE or New Visions Charter Schools.)

Seven or 24% of these 29 residents left after four or more years teaching, thereby fulfilling their service requirement. The remaining 22 residents left before satisfying their service requirement. Six residents left prior to completing their initial year of service, nine left after their first year in the classroom, and six residents left after two years. Only one resident left after three years of service, one year short of satisfying the program's teaching requirement.

Table 7. Years of Post-Residency Service for Residents No Longer Teaching in NYC DOE or NV Charter Schools, UTR Cohorts 1–6 & MASTER Cohorts 1–2

	Number of Residents	Number No Longer Teaching in NYCDOE or NV charter school as of SY 2015-2016	0 Years	1 Year	2 Years	3 Years	4 Years	5 Years
UTR Cohort 1	**18**	**6**		**2**	**2**		**1**	**1**
Biology	4	2		1	1			
Chemistry	3	1						1
Earth Science	1	0						
English	10	3		1	1		1	
UTR Cohort 2	**34**	**9**	**1**	**3**		**1**	**4**	
Biology	8	2	1				1	
English	9	2					2	
Math	4	1		1				
Special Education	13	4		2		1	1	
UTR Cohort 3	**29**	**4**		**2**	**1**		**1**	
Biology	7	2		1			1	
Math	8	1		1				
Special Education	14	1			1			
UTR Cohort 4	**31**	**4**		**1**	**3**			
Biology	6	1		1				
Chemistry	3	1			1			
Earth Science	1	0						
Math	7	1			1			
Special Education	14	1			1			
UTR Cohort 5	**24**	**2**	**2**					
English	15	2	2					
Special Education	9	0						
UTR Cohort 6	**19**	**0**						
English	5	0						
Special Education	14	0						

	Number of Residents	Number No Longer Teaching in NYCDOE or NV charter school as of SY 2015-2016	0 Years	1 Year	2 Years	3 Years	4 Years	5 Years
MASTER Cohort 1	**19**	**4**	**3**	**1**				
Biology	6	1	1					
Chemistry	3	1	1					
Earth Science	1	0						
Math	9	2	1	1				
MASTER Cohort 2	**13**	**0**						
Biology	4	0						
Chemistry	3	0						
Earth Science	1	0						
Math	5	0						
Total	**187**	**29**	**6**	**9**	**6**	**1**	**6**	**1**

Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

EXTERNAL COMPARISONS

Reviews of findings from the Independent Budget Office (IBO), which tracks NYC DOE teacher hiring and retention data, suggest that retention rates improved over the period when UTR partners joined other educators and policymakers to tackle the problem. The NYC DOE made changes to keep teachers in the classroom longer, with salary increases and bonuses for teachers who take on leadership positions and accept positions in high-need schools, but teacher turnover remained a problem.[45]

This section examines how retention rates among UTR-trained teachers compare to rates of other NYC DOE teachers, including those who entered the profession through different pathways. The comparison data comes from the IBO, and the ways in which the IBO reports figures to a large extent determined how UTR and MASTER data are parsed and reported.[46]

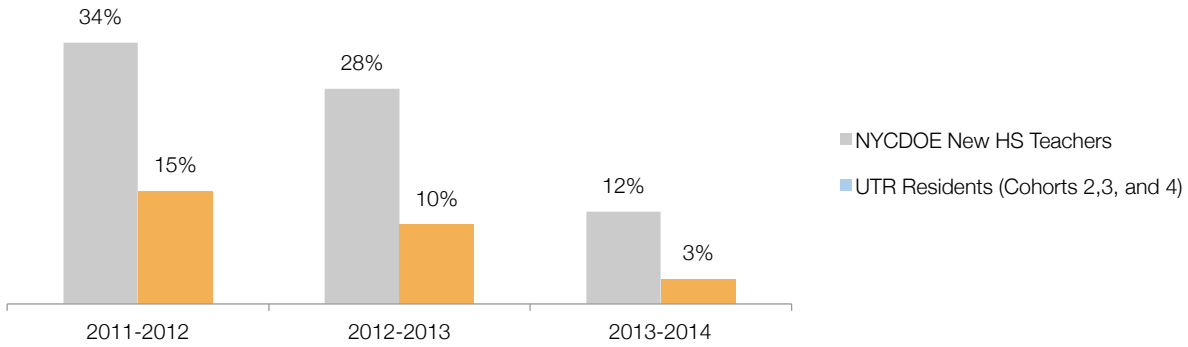
UTR Retention Rates vs. Rates Citywide

Findings are again positive, and favor UTR. Data from the IBO and UTR program data show that UTR residents leave NYC schools at lower rates than other new high school teachers hired by NYC DOE in the same year, by fairly large margins. As illustrated in Figure 6 below, 34% of the new high school teachers hired by NYC DOE in 2011–2012 had left by the 2014–2015 school year, or after three years, compared to only 15% of the UTR trained residents. UTR residents hired in 2012–2013 and in 2013–2014 continued the trend. Although attrition in both groups increased each year, fewer UTR teachers than other high school teachers left the classroom, with 10% vs. 28% vs. leaving after two years, and 3% vs. 12% leaving after just one year.

[45] Geoff Decker, "Five Data Points that Illustrate Challenges New York City Schools Face," *Chalkbeat*, Oct. 6, 2015. Available at Cityhttps://www.chalkbeat.org/posts/ny/2015/10/06/five-data-points-that-illustrate-challenges-new-york-city-schools-face/

[46] Because of the time periods for which NYC DOE/IBO data are available, MASTER graduates are not included in this discussion.

Figure 6. High School Teachers Hired from 2011–12 through 2013–14, Still Teaching In SY2014–15



Source: IBO teacher retention data.

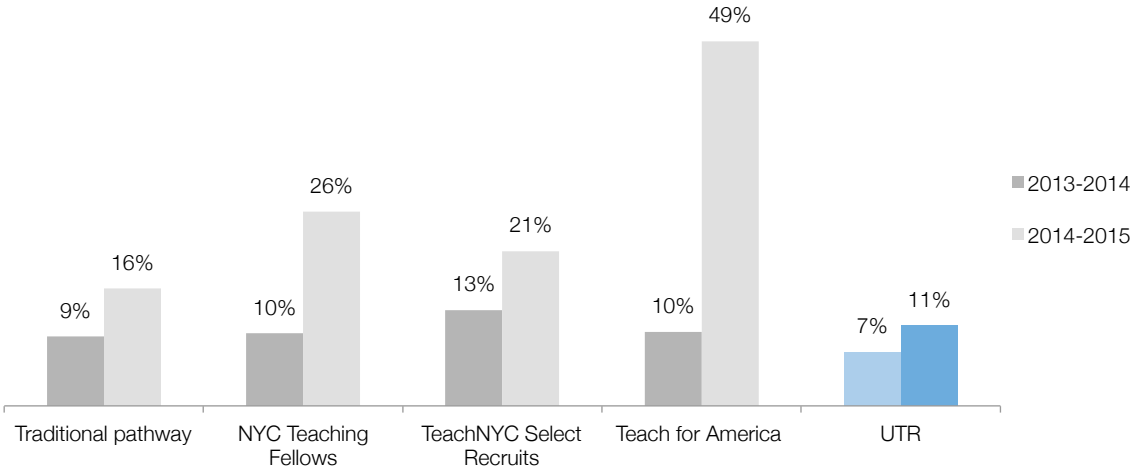
Retention Rates by Teacher Preparation Pathway

The IBO tracks NYC DOE teacher hiring and retention by preparation pathway, including traditional programs, the NYC Teaching Fellows Program, TeachNYC Select Recruits, and Teach for America. Comparisons of the IBO data and UTR program data show that UTR-trained teachers had lower rates of attrition from NYC public schools after one and two years of teaching, compared to their peers prepared through other pathways.

Attrition rates after the first year of teaching varied across preparation pathway, with a high of 13% leaving from the Teach NYC Select Recruits preparation pathway, compared to a low of 7% for UTR-trained teachers. The second lowest attrition rate, after UTR, is the traditional pathway; the IBO data show that 9% of teachers prepared through traditional programs exited NYC DOE schools after one year.

Attrition rates increase across all preparation pathways after teachers' second year in the classroom, but UTR attrition rose by fewer percentage points. The UTR attrition rate increased from 7% after the first year to 11% after the second. Teach for America had the largest increase, with attrition rates rising sharply from 10% leaving NYC traditional schools after one year in the classroom to 49% leaving after two years. This finding suggests that there is a direct link between Teach for America's two-year service commitment and the almost 50% attrition rate for teachers prepared under this pathway after their second year. Again, attrition among teachers prepared in traditional programs were the second lowest behind UTR's rates. (See Figure 7.)

Figure 7. Teachers Hired In 2012–13, Percentage Who Left NYC's Public Schools by 2013–14 & 2014–15



Source: IBO teacher retention data.

Section 2
Factors Influencing Retention

The research literature points to a consistent set of factors related to teacher retention, most centered on working conditions or job satisfaction: teachers benefit from, and tend to remain in schools where there is administrative support, a positive school climate, opportunities to collaborate, and opportunities for leadership.[47] Some research also indicates that teachers' sense of success in the classroom—their sense of safety, their confidence in classroom management and ability to meet students' learning needs—can also affect their decision to stay or leave.[48] Program records allowed us to track retention and mobility trends for UTR and MASTER graduates, but except for interviews with a sample of MASTER residents in their induction years, we did not follow residents into placement schools or gather longer-term feedback about job satisfaction or sense of success. What we did have were four other sets of pertinent data.

- The first data source was background data we drew on to examine links between personal characteristics—gender, ethnicity, education level—and mobility and retention.
- The second source was feedback from residents at the end of their clinical year, as they prepared to enter NYC DOE classrooms as full-time teachers of record. These data allowed us to examine links between residents' sense of efficacy and preparation, and mobility and retention.
- We also had survey feedback about residency-year school environments—or residents' sense of community and support throughout their clinical years—which, similarly, allowed us to explore whether the environment in which a resident gained clinical experience had any bearing on subsequent mobility and retention.
- The fourth data set is drawn from publicly available information about residents' placement schools. We assembled a set of school factors that included school demographics; economic need index; student achievement levels; and ratings for safety, support, collaboration, and family and community ties.

As noted earlier, UTR and MASTER preparation is designed to build residents' instructional, management, and collaboration skills, help them acclimate to urban environments, and give them the fortitude to weather environments that fall short of expectations or differ from residency-year schools. This section speaks to the success of that training, or how the recruitment, training, and support mechanisms in the residency model might anticipate and mitigate attrition, especially attrition in urban schools.

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[47] Richard Ingersoll, Lisa Merrill, and Henry May, "What Are the Effects of Teacher Education and Preparation on Beginning Teacher Attrition?" (Philadelphia: Consortium for Policy Research in Education, University of Pennsylvania, 2014), *Research Report* #RR-82. Available at: http://www.cpre.org/sites/default/files/researchreport/2018_prepeffects2014.pdf.

[48] Karen J. DeAngeles, Andrew F. Wall, and Jing Che, "The Impact of Preservice Preparation and Early Career Support on Novice Teachers' Career Intentions and Decisions," *Journal of Teacher Education* 64, no. 4 (2013): 338–55.

SUMMARY OF TEACHING STATUS

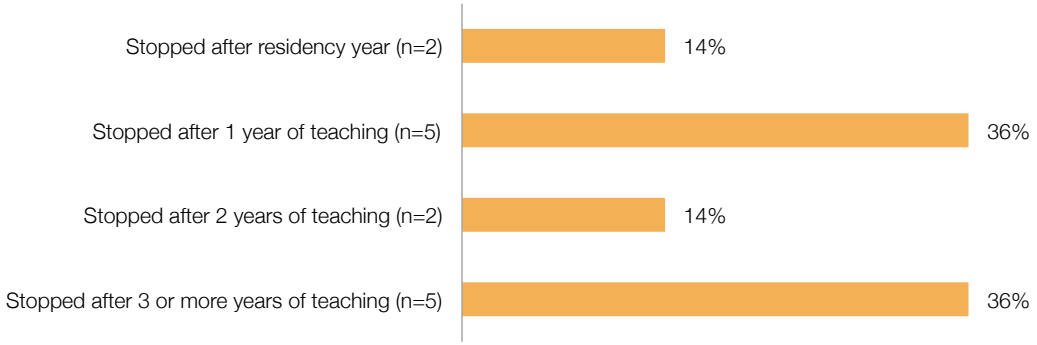
The analysis in this section excludes any residents with incomplete retention data and those whose teaching status was unknown as of the 2015–2016 school year. Therefore, the counts of residents here may differ from those cited earlier in the chapter. Complete retention data was available for 182 residents trained in UTR Cohorts 1–6 and MASTER Cohorts 1 and 2. Table 8 below provides a breakdown of counts by cohort included in this analysis.

Table 8. Residents with Complete Retention Data, by Cohort

	N	%
MASTER Cohort 1	19	10.4
MASTER Cohort 2	13	7.1
UTR Cohort 1	15	8.2
UTR Cohort 2	34	18.7
UTR Cohort 3	28	15.4
UTR Cohort 4	30	16.5
UTR Cohort 5	24	13.2
UTR Cohort 6	19	10.4
Total	**182**	**100**

Of the UTR and MASTER graduates included in the analysis, 86.8% were teaching in NYC DOE or NV Charter Schools as of the 2015–2016 school year. Ten residents, or 5.5%, were teaching outside of NYC DOE or NV Charter Schools, and 14, or 7.7%, were no longer teaching. The group of 14 graduates who are no longer teaching was divided based on the length of their tenure in the classroom. Five teachers stopped after one year of teaching, and another five after three or more years. For those no longer teaching, the mean number of years in the classroom was 2.1 years. (See Figure 8.)

Figure 8. Residency Graduates No Longer Teaching

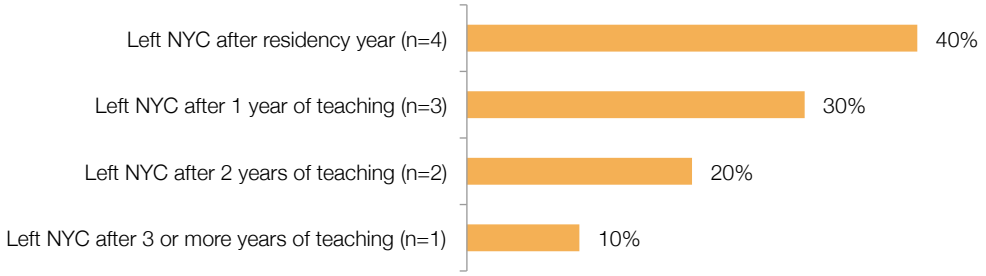


Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

Of the 10 residents who were teaching outside of the NYC DOE as of the 2015–2016 school year, four exited the NYC DOE after their residency year, three left after one year of teaching, two left after two years, and only one left after three years. This finding suggests that the initial years are critical, and that the longer they teach the less likely teachers are to

exit from the NYC DOE. The average number of years taught in NYC DOE before leaving to teach elsewhere is one. (See Figure 9.)

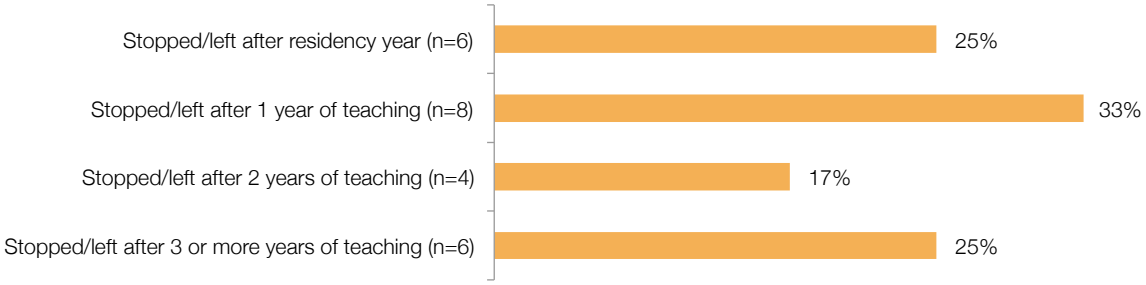
Figure 9. Residency Graduates Teaching Outside NYC DOE



Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

For the combined group of 24 teachers who are either no longer teaching or who have left the NYC DOE to teach elsewhere, the average time spent teaching in NYC DOE schools was 1.6 years. A third of those who stopped teaching or left the NYC DOE did so after their first year of teaching. (See Figure 10.)

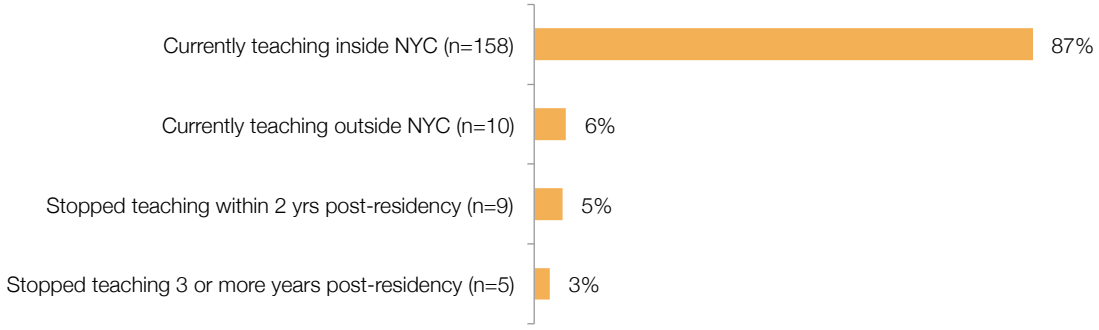
Figure 10. Residency Graduates No Longer Teaching or Left NYC DOE



Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

For this analysis, UTR residents in Cohorts 1 through 6 and MASTER Cohorts 1 and 2 with complete retention data were grouped into the following four categories—currently teaching inside NYC, currently teaching outside NYC, stopped teaching within two years post residency, and stopped teaching three or more years post-residency. The number of residents in each of these categories is summarized in Figure 11.

Figure 11. Teaching Status Summary



Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

RESIDENCY CHARACTERISTICS AND RETENTION

We explored a number of programmatic, school, and teacher characteristics that might play a role in UTR and MASTER teachers' acclimation to schools as teachers of record, and thus in retention. Using program data and survey data collected during residents' clinical year, we selected and examined the impact of 22 different program and teacher characteristics on a resident's retention and teaching status (as of the 2015-2016 school year). We used three different analysis methods to measure impact: Chi Square, ANOVA, and Logistical Regression. Findings from these analyses are organized according to characteristic types. Complete tables detailing all characteristics by each analysis method are available in Appendix A.

Programmatic Factors

Mentors and Host Schools

Our first analysis was of programmatic factors that might influence whether teachers stay in the classroom, which revealed interesting but not marked differences. We found, for example, that while not statistically significant, 90.9% of the UTR and MASTER graduates who, during their clinical year, had a returning mentor—a teacher had served as a mentor previously and thus brought experience to the role—were teaching in NYC DOE schools as of the 2015–2016 school year, compared to 85% of the graduates who had a new mentor. There was little difference (0.4%) in the teaching status of residents who did their residency at a new or returning host school. There was also a negligible difference (0.8%) in the percentage of residents teaching in NYC DOE schools of UTR residents compared to percentages of MASTER residents. (See Table 9.)

Table 9. Teaching Status Distribution by Mentor and Host School

Teacher Characteristics	Stopped teaching within 2 yrs post-residency	Stopped teaching 3 or more yrs post-residency	Currently teaching outside NYCDOE	Currently teaching inside NYCDOE	Sig Chi-Square
Returning Mentor (n=55)	3.6%	5.5%	0.0%	90.9%	ns
New Mentor (n=127)	5.5%	1.6%	7.9%	85.0%	
Returning Host School (n=120)	5.0%	2.5%	5.8%	86.7%	ns
New Host School (n=62)	4.8%	3.2%	4.8%	87.1%	
UTR (n=150)	4.7%	3.3%	5.3%	86.7%	ns
MASTER (n=32)	6.2%	0.0%	6.2%	87.5%	

Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

Subject Area

Analyses of teaching status by subject showed that earth science (100%), followed by Special Education (93.5%), had the two highest rates of UTR and MASTER graduates teaching in NYC DOE schools; biology had the lowest rate (77.1%). Subject area was not, however, found to be a statistically significant variable in retention status. (See Table 10.)

Table 10. Teaching Status Distribution by Subject Area

Teacher Characteristics	Stopped teaching within 2 yrs post-residency	Stopped teaching 3 or more yrs post-residency	Currently teaching outside NYC DOE	Currently teaching inside NYC DOE	Sig Chi-Square
Special Education (n=62)	1.6%	1.6%	3.2%	93.5%	ns
Math (n=33)	6.1%	0.0%	9.1%	84.8%	
English (n=37)	2.7%	5.4%	5.4%	86.5%	
Earth Science (n=4)	0.0%	0.0%	0.0%	100.0%	
Chemistry (n=11)	18.2%	0.0%	0.0%	81.8%	
Biology (n=35)	8.6%	5.7%	8.6%	77.1%	

Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

Resident Characteristics

We also explored a number of resident characteristics or factors that may play a role in retention, again using Chi Square, ANOVA, and Logistical Regression analyses, as appropriate. In these analyses, there were some significant, if somewhat counterintuitive differences.

Level of Education

Our analyses suggest that the level of education with which a resident enters the program can affect their likelihood of remaining in the teaching profession—and remaining in the NYC DOE and likely in a higher-need school. Although retention rates were relatively high for all three groups, whether a resident's highest level of education was a Bachelor's,

Master's, or Professional/Graduate/Doctorate Degree prior to beginning the residency program was found to have a statistically significant ($p<.001$) correlation with their teaching status, and there was an inverse relationship between level of education and retention *inside the NYC DOE*. Of the 140 residents whose highest level of education was a Bachelor's degree, 90% were currently teaching inside the NYC DOE as of the 2015–2016 school year. Progressively fewer, or 82.6% of the residents with a Master's degree and 68.4% of the residents with a professional, graduate or doctorate degree were currently teaching inside the NYC DOE as of the 2015–2016 school year. (See Table 11.)

Table 11. Teaching Status Distribution by Level of Education

Teacher Characteristics	Stopped teaching within 2 yrs post-residency	Stopped teaching 3 or more years post-residency	Currently teaching outside NYCDOE	Currently teaching inside NYCDOE	Sig Chi-Square
Prof/Grad/Doct Degree (n=19)	10.5%	10.5%	10.5%	68.4%	X2=28.1, df=6,p<.001
Master's Degree (n=23)	4.3%	0.0%	13.0%	82.6%	
Bachelor's Degree (n=140)	4.3%	2.1%	3.6%	90.0%	

Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

Of the 182 residents included in this analysis, 92.3% were retained as teachers, with 86.8% teaching in NYC DOE schools. Residents with a Bachelor's degree were retained at higher than average rates in NYC DOE schools (90%) and at a higher rate when including residents teaching outside of NYC DOE (93.6%). Having a Master's degree is associated with an above average retention rate (95.6%) if those retained outside of NYC DOE are included. See Appendix A for details on the average retention rates by teacher characteristic.

The regression analysis showed that residents with a doctorate or professional degree equivalent have a statistically significant decreased likelihood ($p=.020$) of being retained in the classroom—a resident with a doctorate or the equivalent professional degree is .09 times less likely to be retained in the classroom.

While our analysis indicates that a resident's level of education prior to entering the program is linked to their retention, the data does not provide a reason why this relationship exists. UTR or MASTER graduates with advanced degrees may have additional employment opportunities available to them not available to someone with a Bachelor's degree, and those opportunities may have become increasingly available as the economy improved. Residents with advanced degrees may also have more work and/or life experiences and thus may be able to discern earlier in their teaching career whether the profession is a good fit. Compared to peers who began their residencies with a Bachelor's degree, residency graduates with advanced degrees may be older and have family commitments that would influence their decision to stay in the classroom or pursue more lucrative jobs.

Gender and Ethnicity

Although not statistically significant in the chi square analysis, the teaching status of UTR and MASTER graduates varied based on their ethnicity. All, or 100% of the Hispanic residents were currently teaching as of the 2015–2016 school year, with 95.8%, or all but one resident, teaching inside NYC DOE schools. Rates among Black and White residents were similar and also high, with 87% of both groups teaching in NYC DOE schools as of the 2015–2016 school year.

There were slight differences by gender, with a higher percentage of female graduates (88%) teaching in NYC DOE schools, compared to male graduates of the two programs (84.2%). (See Table 12.)

Table 12. Teaching Status Distribution by Ethnicity and Gender

Teacher Characteristics	Stopped teaching within 2 yrs post-residency	Stopped teaching 3 or more years post-residency	Currently teaching outside NYCDOE	Currently teaching inside NYCDOE	Sig Chi-Square
Multiracial (n=10)	0.0%	10.0%	10.0%	80.0%	
Asian (n=23)	8.7%	4.3%	4.3%	82.6%	
White (n=97)	4.1%	3.1%	6.2%	86.6%	ns
Hispanic (n=24)	0.0%	0.0%	4.2%	95.8%	
Black (n=23)	8.7%	0.0%	4.3%	87.0%	
Male (n=57)	8.8%	3.5%	3.5%	84.2%	ns
Female (n=125)	3.2%	2.4%	6.4%	88.0%	

Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

Being Hispanic or female is associated with above average retention rates both within and outside of NYC DOE schools. Being Black or African-American is associated with a slightly higher rate of retention within the district, while being White is associated with a marginally higher than average retention rate when schools inside and outside of the NYC DOE are included. Being Asian or multiracial is associated with lower than average retention rates. (See Figures 12 and 13 below.)

Figure 12. Retention Within or Outside NYC DOE Schools

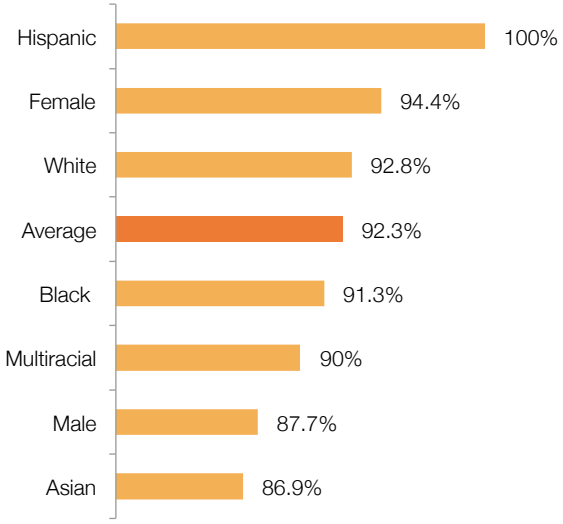
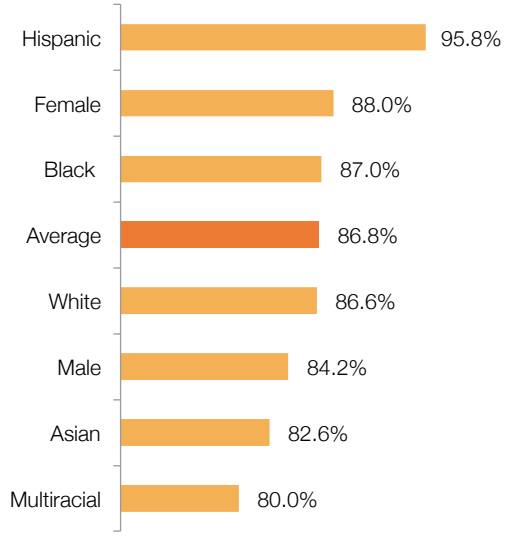


Figure 13. Retention in NYC DOE Schools



Source: New Visions Data Warehouse, Teacher Certification Program Retention Data, accessed March 23, 2017.

While being female was not found to be a significant variable in the Chi-Square analysis, being female was significant in the regression analysis. In the regression analysis, female residents have a statistically significant (p=.035) increased likelihood of being retained in the classroom. The odds of a female resident being retained are 6.7 times the overall odds of retention.

RETENTION AND RESIDENTS' SENSE OF EFFICACY

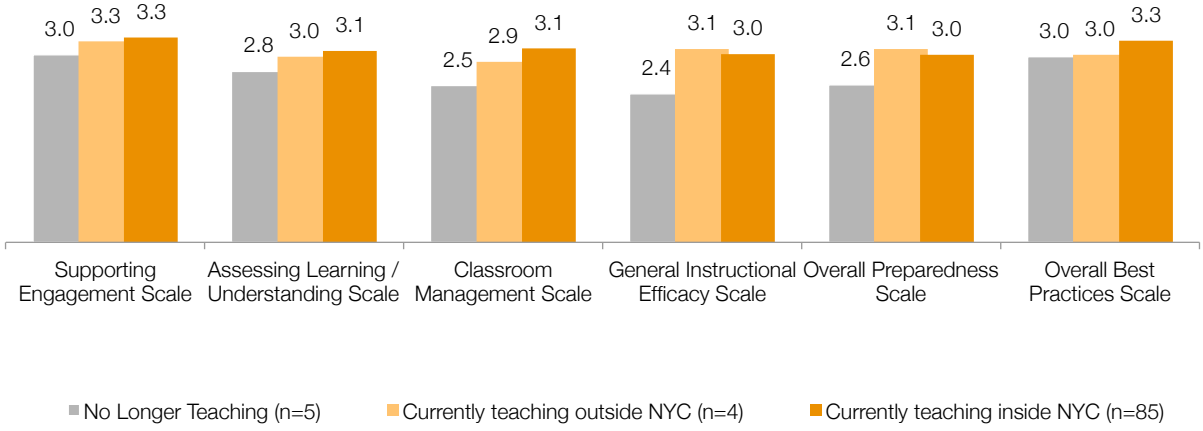
As part of our previous UTR survey analyses, we created a set of scales based on residents' responses and a series of factor analyses. The scales included such constructs as general preparedness and efficacy, management, and engagement, discussed below. Appendix D includes all the scale constructs and survey questions that formed each one.

Preparation, Practice, and Efficacy

Growing evidence demonstrates that attrition is higher for those who enter the profession without adequate preparation. First-year teachers who feel they are well prepared for teaching are much more likely to plan to stay in teaching than those who feel poorly prepared.[49]

On the survey scales related to instruction, as shown by Figure 14, UTR graduates no longer teaching rated themselves *lower* in terms of preparation and instructional practices compared to residents who were still teaching. The largest gaps between those no longer teaching and those still teaching in NYC DOE schools were on the classroom management and the general classroom efficacy scales. UTR graduates no longer teaching had a rating of 2.5 on the classroom management scale and 2.4 on the general classroom efficacy scale, compared to ratings of 3.1 and 3.0 for residents currently teaching in NYC DOE schools. An ANOVA test found the differences in ratings on the classroom management scale between the three retention groups to be significant at the p=.031 level. This finding indicates that a resident's perception of their preparedness to handle the challenges of classroom management is related to their likelihood of remaining in the classroom.

Figure 14. Survey Scales Related to Teacher Efficacy



Source: REA Annual Teacher Surveys, 2011–2013. Means calculated on a 4-pt. scale, where 1=not at all prepared/confident, and 4=very confident.

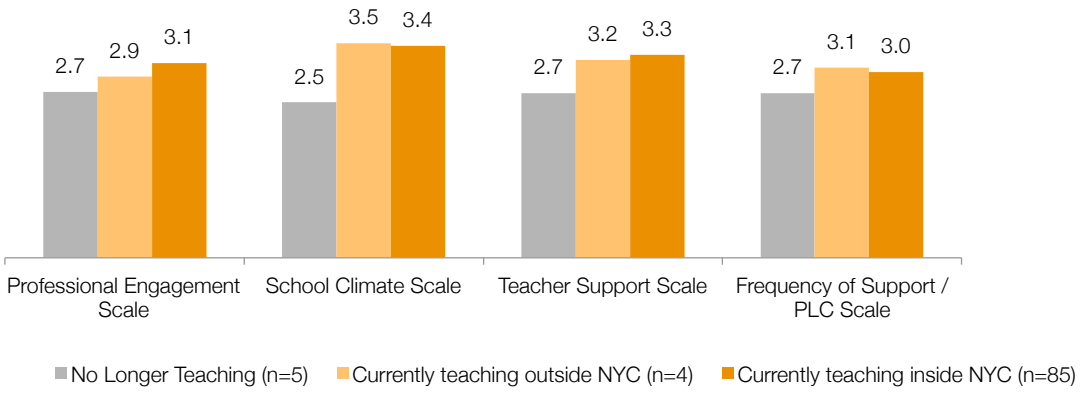
[49] Karen J. DeAngeles, Andrew F. Wall, and Jing Che, "The Impact of Preservice Preparation and Early Career Support on Novice Teachers' Career Intentions and Decisions," *Journal of Teacher Education* 64, no. 4 (2013): 338–55.

Residents' Assessments of School Environment during their Clinical Year

School environment ratings imply that there may be a connection between UTR residents' sense of a positive school climate during their clinical year and the likelihood that they will remain in the teaching profession. On the survey scales related to engagement and support, Figure 15, residents no longer teaching again had *lower* scores on all four scales—professional engagement, school climate, teacher support, and frequency of support—compared to residents who remained in the classroom. The largest difference between groups was on the school climate scale. Residents not currently teaching had an average rating of 2.5 (on a Likert scale, where 1=strongly disagree and 4=strongly agree), compared to an average rating among those currently teaching outside of NYC DOE of 3.5, and those currently teaching inside NYC DOE of 3.4. These differences between retention groups' school climate ratings were statistically significant at the p=.026 level, based on the ANOVA test.

Differences in individual survey items related to school climate and professional development, while not statistically significant, reveal some interesting distinctions between residents who are no longer teaching, those currently teaching outside of the NYC DOE, and those currently teaching inside NYC DOE schools. As illustrated in Figure 15, residents currently teaching inside or outside of NYC DOE schools had similar ratings—within one-tenth of a point on four out of the six survey items related to school climate and professional engagement.

Figure 15. Survey Scales Related to Engagement and Support



Source: REA Annual Teacher Surveys, 2011–2013. Means calculated on a 4-pt. scale, where 1=not at all prepared/confident, and 4=very confident.

Residents' Thoughts on Retention

As part of the survey completed at the end of their clinical year, residents are asked to reflect on their decision to become—and remain—teachers. One item asked UTR graduates if they would still become a teacher if they could start over again. On a five-point scale, where 1=definitely would become a teacher, 2=probably would, 3=chances even for and against, 4=probably wouldn't, and 5=definitely wouldn't become a teacher, interestingly, the five residents who left teaching, and the 85 residents who have remained in the classroom, within the NYC DOE, had the most positive ratings, at 1.2 and 1.4.

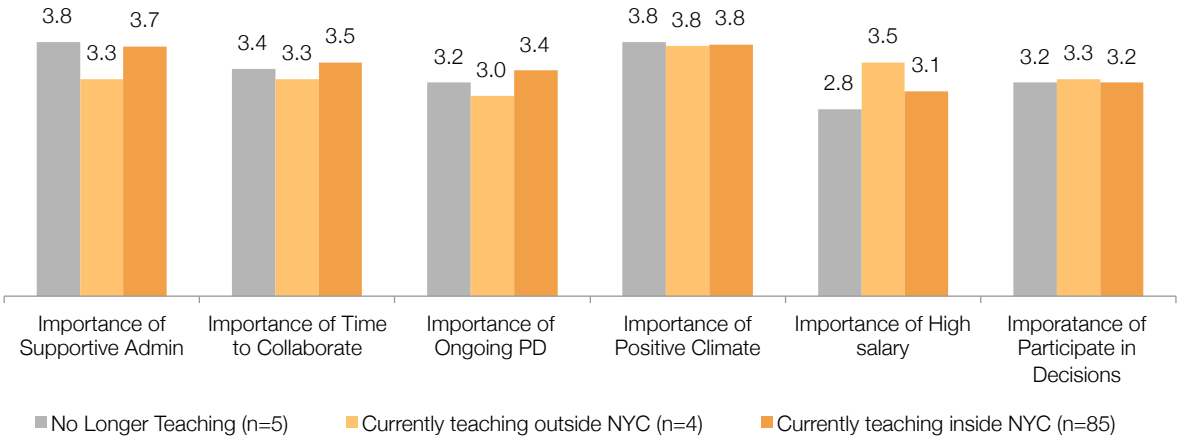
Those teachers currently teaching *outside* of NYC were a little more ambivalent, with ratings between "probably would" and even odds (*M*=2.3). All three groups of residents had the same response—a "Yes"— when asked if they planned to continue teaching.

An additional set of survey items asked UTR residents about the relative importance of factors related to retention—or what might affect their decision to stay or leave. For those not teaching and those teaching within the NYC DOE, support factors—support from administrators, opportunities to collaborate, ongoing PD—were more important than they were for UTR graduates teaching outside the city. The widest gap in survey item scores between the three retention groups was in regard to the importance of a high salary. Of the three groups, those currently teaching outside NYC DOE indicated salary had a high importance, with an average rating of 3.5 (on a 4=point scale, where 1=not at all important and 4=essential). Those currently teaching inside the NYC DOE indicated that a high salary was of moderate importance, with a rating of 3.1. A high salary was the least important to those residents who were no longer teaching, with an average rating of 2.8. These findings suggest that while salary may not have been an important factor in the decision of residents to leave the profession, it may be an influential factor for residents who choose to move to schools outside of the city, a little less important than time to collaborate, ongoing PD, and administrative support. (See Figure 16.)

Residents in all three retention groups rated the importance of a positive school climate the highest, with each group having an average rating of 3.8 out of four for this item. A supportive administration received the second highest ratings from those no longer teaching (3.8) and those currently teaching inside NYC DOE schools (3.7). Those teaching outside of NYC DOE rated the importance of this category as 3.3. The importance of participating in decisions and time to collaborate were rated similarly across the three groups.

This feedback about school climate corroborates the results of the survey scales and other research in the field: the consensus seems to be that school conditions have direct implications for teacher attitudes about their work and their decisions to remain at their school or in the profession.

Figure 16. Factors Related to Retention



Source: REA Annual Teacher Surveys, 2011–2013. Means calculated on a 4-pt. scale, where 1=not at all prepared/confident, and 4=very confident.

RETENTION AND INITIAL HIRING SCHOOL DEMOGRAPHICS

School demographic data for 163 UTR graduates also suggests that an initial hiring school may play an important role in a graduate's transition to becoming a full-time teacher of record, and one that has some bearing on placement and retention in high-need schools.

The environment in hiring schools can vary widely, and in our analyses, we included a set of pertinent variables based on the available data. Table 13 below provides the mean value for the demographic variable categories for four teaching status categories: teachers who stopped teaching within three years, post-residency, and four years; those currently teaching outside the NYC DOE, and those teaching within the NYC DOE.

Conducting an analysis of variance (ANOVA) test indicated that the percentage of white student population *(p*=.011) and the percentage of economic need (*p*=.003) at the initial hiring school are statistically significant indicators of residency graduates' teaching status. This finding, however, may be contrary to what would be expected: the *greater* the percentage of white students at the initial hiring school, the more likely a resident was to stop teaching within two years post residency. Also contradicting expected outcomes, the *lower* the economic need index of a school, the more likely a resident was to stop teaching within two years post residency.

These findings may point to other recent findings about retention trends in high-poverty schools, which indicate that teachers are leaving these schools not because they do not want to teach high-need students. Again, the research points to factors related to teaching conditions and climate, not to the students or the particular instructional challenges they may present.[50]

[50] Richard M. Ingersoll, "Teacher Turnover and Teacher Shortages: An Organizational Analysis," *American Educational Research Journal* 38, no. 3 (2001): 499-534. See also Susanna Loeb, Linda Darling-Hammond, and John Luczak, "How Teaching Conditions Predict Teacher Turnover," *Peabody Journal of Education* 80, no. 3 (2005): 44–70.

Table 13. Initial Hiring School Demographic Variables and Teaching Status

Initial Hiring School Demographic Variables (mean)	Stopped teaching within 2 yrs post-residency (n=7)	Stopped teaching 3 or more yrs post-residency (n=5)	Currently teaching outside NYC (n=5)	Currently teaching inside NYC (n=146)	Sig ANOVA
Enrollment	917	780	438	735	ns
% Asian Student Population	14%	9%	2%	10%	ns
% Black Student Population	35%	20%	48%	29%	ns
% Hispanic Student Population	30%	46%	47%	50%	ns
% White Student Population	18%	7%	2%	7%	f(3,159)=3.8, p=.011
% Students with Disabilities	17%	20%	20%	19%	ns
% Self-contained Students	2%	3%	2%	2%	ns
% ELL Students	5%	10%	12%	9%	ns
% Economic Need	52%	70%	76%	70%	f(3,159)=4.8, p=.003
Avg 8th Math	2.4	2.3	2.2	2.4	ns
Avg 8th ELA	2.6	2.4	2.3	2.4	ns
Effective School Leadership	3.4	4.0	3.8	3.6	ns
Rigorous Instruction	3.4	3.0	3.6	3.5	ns
Trust	3.4	3.9	3.6	3.7	ns
Supportive Environment	3.6	3.7	3.6	3.7	ns
Collaborative Teachers	3.9	4.3	4.2	4.0	ns
Strong Family Community Ties	3.3	3.2	3.6	3.4	ns
Student Achievement	3.8	3.4	3.5	3.7	ns
Safety	2.9	3.4	3.2	3.5	ns

Source: NYCDOE School Quality Reports and School Performance Dashboards

Using an analysis of variance (ANOVA) test to examine initial hiring school demographic variables and those retained in or out of NYC DOE schools and those not retained yields similar results to the ANOVA analysis above. The percentage of white student population (p=.021) and the percentage economic need (p=.009) are statistically significant indicators of whether or not a resident is retained in the classroom. (See Table 14 below.) Again, our analysis indicated that the lower the percentage of white students and the higher the percentage of economic need at a resident's initial hiring school, the more likely a resident is to be retained. Additionally, this analysis found the percentage of the Hispanic student population to be significant (p=.036) with the greater the percentage of Hispanic students at a resident's initial hiring school, the more likely the resident was to be retained in the classroom. School safety ratings were nearing significance (p=.17) and suggest that a resident's initial hiring school's safety rating may be linked to a greater likelihood of a resident being retained.

The regression analysis further supports the claim that school climate can affect teachers' retention decisions, more so than students' economic status. In our analysis, the economic need index of a graduate's initial hiring school was found to only be marginally significant. The regression analysis found a statistically significant correlation (p=.007) between the safety index of a UTR graduate's initial hiring school and the likelihood of being retained. A one-unit increase in the Safety index of a graduate's initial hiring school results in 3.6 times the overall odds of retention. The safety index is a composite

of the five safety related questions from the annual school survey the NYC DOE administered to parents, students and teachers. Findings from the survey, including the safety index figures, are available through the NYC DOE School Quality Guide.

When considered in a separate logistic regression, not controlling for the other variables associated with school climate, safety was not a significant predictor of retention. It becomes significant only when also accounting for the effect of economic need (see above regression analysis results). However, these findings aren't necessarily counter-intuitive or contradicting the demographic analysis. High economic need is still a positive predictor of retention, but the regression results for safety run separately suggest that within high economic need schools, the level of safety may also contribute to retention. An extension of this finding could be that residents who were initially hired at well-functioning NYC high-need schools had a good model of how to succeed ("I see them doing it, so I can do it"), whereas those initially hired in lower need schools where this modeling was not available might not have been so convinced that they could really do what they needed to do to be effective in a higher need setting.

Table 14. Initial Hiring School Demographic Variables and Retention

Initial Hiring School Demographic Variables (mean)	% /mean Among Those Not Retained (n=12)	% /mean Among Those Retained (in or out of NYC) (n=151)	Sig diff Not Retained vs Retained	FOR REFERENCE (FROM ABOVE) % /mean among Those Retained in NYC (n=146)
Enrollment	860	725	ns	735
% Asian Student Population	12%	10%	ns	10%
% Black Student Population	28%	29%	ns	29%
% Hispanic Student Population	37%	50%	f(1,161)=4.5, p=.036	50%
% White Student Population	14%	6%	f(1,161)=6.4, p=.021	7%
% Students with Disabilities	18%	19%	ns	19%
% Self-contained Students	2%	2%	ns	2%
% ELL Students	7%	9%	ns	9%
% Economic Need	60%	70%	f(1,161)=7.0, p=.009	70%
Avg 8th Math	2.4	2.4	ns	2.4
Avg 8th ELA	2.5	2.4	ns	2.4
Effective School Leadership	3.6	3.6	ns	3.6
Rigorous Instruction	3.2	3.5	ns	3.5
Trust	3.6	3.7	ns	3.7
Supportive Environment	3.7	3.7	ns	3.7
Collaborative Teachers	4.0	4.0	ns	4.0
Strong Family Community Ties	3.3	3.4	ns	3.4
Student Achievement	3.6	3.7	ns	3.7
Safety	3.1	3.5	f(1,161)=1.9, p=.17	3.5

Significant

Approaching significance

CORRELATIONS BETWEEN SCHOOL LEVEL FACTORS AND SELF-EFFICACY

We also explored any links between school-level factors—economic need index, effective school leadership, rigorous instruction, trust, supportive environment, collaborative teachers, strong family community ties, student achievement, and safety—and residents' perceptions of preparedness or self-efficacy. Our analysis of the full sample, as well as separate analyses of those teaching and those no longer teaching in NYC DOE, revealed no significant correlations between residents' perceptions, as captured on the survey scales, of their general instructional self-efficacy or overall preparedness and any of the school-level factors.

Conclusions and Recommendations

Our analyses indicate that UTR and MASTER graduates are staying in New York City classrooms, and that the New Visions–Hunter residency model has had a positive impact on retention—a key goal of the joint initiatives. Due to the timelines of the two projects, and the fact that later cohorts have fewer years in the classroom, we were not able to look too far beyond residents' commitment period of four years—but, so far, signs are good. Not only are retention rates high, but mobility rates are low. The large majority of UTR and MASTER graduates—84% and 88% respectively—are teaching in the NYC DOE and New Visions Charter schools they committed to when they became residents. Moreover, they are remaining in the classroom longer than other high school teachers in the NYC DOE, and longer than teachers who entered the profession through different preparation pathways.

Our analyses also indicate that a number of factors that may influence teachers' retention decisions and the likelihood that they will continue year after year. Personal characteristics, hiring school characteristics, residency experiences and confidence—the data suggest some links between these variables and retention and mobility. Retention rates, for example, are higher among Hispanic teachers trained through UTR and MASTER; rates are also higher among females than males. Both sets of findings may have something to do with teachers' tendency to stay where faculty profiles are similar to their own, but we don't know that for sure. Data also suggest that safety and salary may both play a role in teachers' decisions to move, and move to schools outside the city, but other personal or economic factors, on which we have little data, likely also enter into the equation.

The demographics of hiring schools, along with ratings for school culture and stability also seem to play a role in teachers' decisions to stay or leave, though not always the role one might assume: an older, more experienced faculty or administrator may be a positive indicator of school stability that draws teachers to schools, but our data on the characteristics of schools UTR teachers move to indicates that schools with younger faculties and administrators, which may connote new ideas and fresh leadership, may be more attractive or a better fit for teachers early in their careers.

The data also show that teachers are not leaving schools on the basis of a high economic need index or a lower percentage of white students—proxy measures for the perceived challenges or advantages at a school. These findings align with other research on retention trends, which indicates that teachers don't leave the classroom because of challenges with students. That research, like ours, suggests that school climate plays greater role.

The critical role of school climate and support is a consistent theme in our findings, from our retrospective analyses of resident survey data and our correlational analyses of program data. On annual surveys, completed as they were finishing their clinical year and looking ahead to entering classrooms as full-time teachers of record, residents in successive cohorts agreed that school climate would be the number one factor in decisions to stay or leave the profession. Perhaps more interesting, the residents who assigned lower survey ratings to school climate factors—including levels of support and collaboration—for their host schools were more likely to be among the program graduates

who later left their hiring schools. The data also show a correlation between residents' sense of preparation and confidence, again as self-reported on year-end surveys, and the likelihood that they will remain in the classroom.

These findings are important because they involve retention factors that project partners have some influence over, unlike hiring school demographics and culture, personal characteristics, life changes, or other post-residency factors over which they have less sway.

The recommendations in some cases relate more to communication and awareness than programmatic changes.

- In reviewing the factors and findings that pertain specifically to the residency and induction year, consider where best allocate resources to improve retention among future residents.

- Explore ways to differentiate support—for residents, mentors, and host or induction year schools—based on data about personal or school characteristics that may play into teachers' job satisfaction and eventual retention.

- There will inevitably be variability in both host and placement schools. In residents' orientation, training, and ongoing conversations between mentors and residents—and as residents begin their job search and make decisions—it may be helpful to talk explicitly about school environment, and what's important, comfortable, and fungible for them, to ensure that they look at the challenges—and rewards—of teaching in urban environments and high-need schools with a clear eye.

- While it may not be possible or advisable to create uniform host-school environments, candidly discuss the value of variation and the non-negotiables.

- As residents and mentor/resident relationships evolve and mature, devote conversations or reviews to the level of satisfaction among groups the data suggest may be less likely to persevere in the profession—i.e., those with advanced degrees, males, etc. It may be helpful for mentors to reach out to previous mentors in similar situations or settings, or residents to previous residents, to discuss acclimation, application of unique skills sets, etc.

- Continue to monitor the retention and mobility data for trends that may inform training and support.

Appendix A: Teaching Status Distribution by Teacher Characteristics

Table A.1. Teaching Status Distribution by Teacher Characteristics

Teacher Characteristics	Stopped teaching within 2 yrs post-residency	Stopped teaching 3 or more years post-residency	Currently teaching outside NYCDOE	Currently teaching inside NYCDOE	Sig Chi-Square
Professional/Graduate/Doctorate Degree (n=19)	10.5%	10.5%	10.5%	68.4%	X2=28.1, df=6,p<.001
Masters Degree (n=23)	4.3%	0.0%	13.0%	82.6%	
Bachelor's Degree (n=140)	4.3%	2.1%	3.6%	90.0%	
Returning Mentor (n=55)	3.6%	5.5%	0.0%	90.9%	ns
New Mentor (n=127)	5.5%	1.6%	7.9%	85.0%	
Returning Host School (n=120)	5.0%	2.5%	5.8%	86.7%	ns
New Host School (n=62)	4.8%	3.2%	4.8%	87.1%	
Multiracial (n=10)	0.0%	10.0%	10.0%	80.0%	ns
Asian (n=23)	8.7%	4.3%	4.3%	82.6%	
White (n=97)	4.1%	3.1%	6.2%	86.6%	
Hispanic (n=24)	0.0%	0.0%	4.2%	95.8%	
Black (n=23)	8.7%	0.0%	4.3%	87.0%	
Special Education (n=62)	1.6%	1.6%	3.2%	93.5%	ns
Math (n=33)	6.1%	0.0%	9.1%	84.8%	
English (n=37)	2.7%	5.4%	5.4%	86.5%	
Earth Science (n=4)	0.0%	0.0%	0.0%	100.0%	
Chemistry (n=11)	18.2%	0.0%	0.0%	81.8%	
Biology (n=35)	8.6%	5.7%	8.6%	77.1%	
Male (n=57)	8.8%	3.5%	3.5%	84.2%	ns
Female (n=125)	3.2%	2.4%	6.4%	88.0%	
UTR (n=150)	4.7%	3.3%	5.3%	86.7%	ns
MASTER (n=32)	6.2%	0.0%	6.2%	87.5%	
Overall (n=182)	4.9%	2.7%	5.5%	86.8%	

Figure A. 1. Teaching Status by Teacher Characteristic

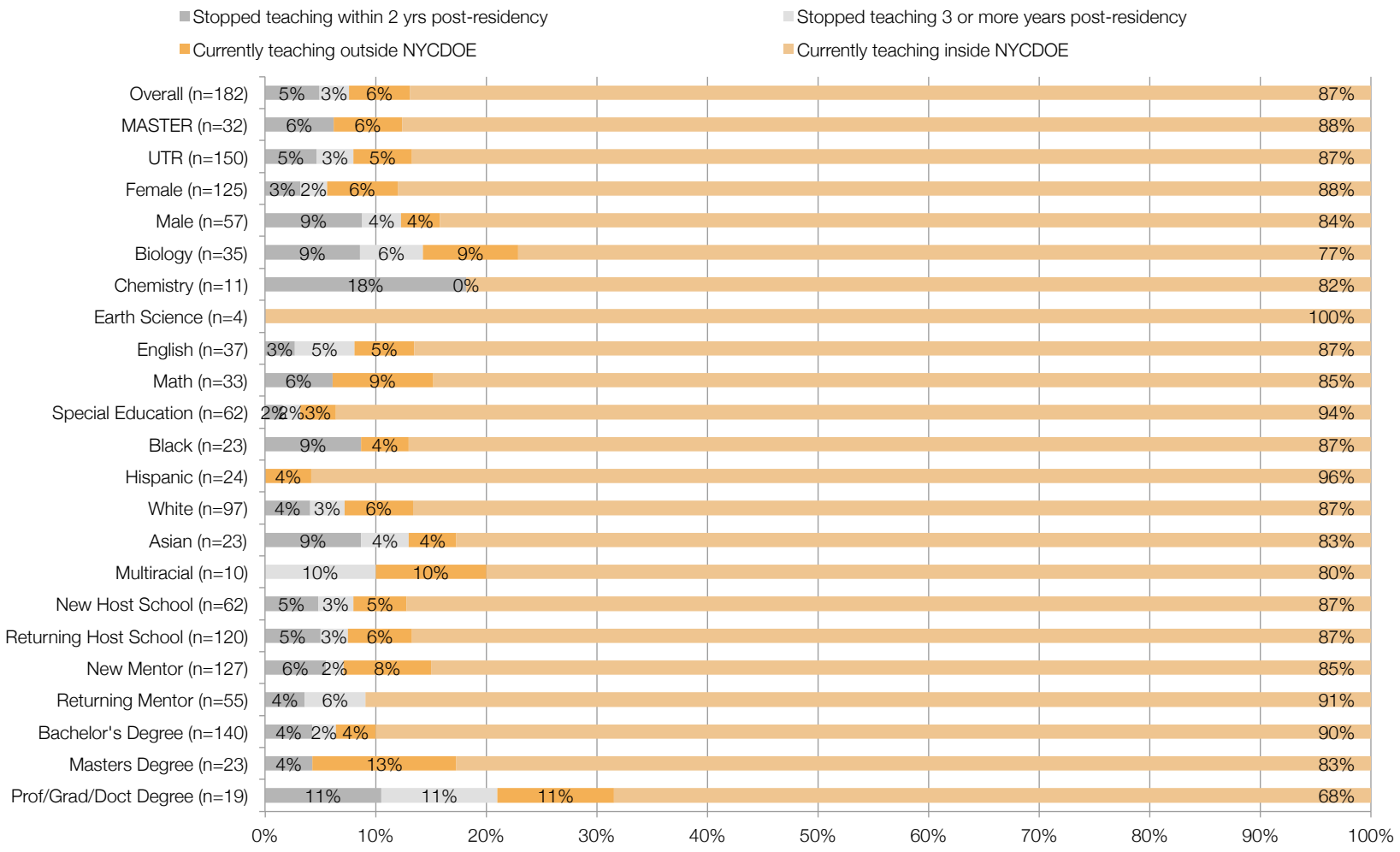


Table A.2. Percent Teaching Status Distribution by Teacher Characteristics

Teacher Characteristics	Not Retained	Retained (in or out of NYC)	Retained in NYC	Notes
Professional/Graduate/Doctorate Degree (n=19)	21.0%	78.9%	68.4%	
Biology (n=35)	14.3%	85.7%	77.1%	
Multiracial (n=10)	10.0%	90.0%	80.0%	
Chemistry (n=11)	18.2%	81.8%	81.8%	
Asian (n=23)	13.0%	86.9%	82.6%	
Masters Degree (n=23)	4.3%	95.6%	82.6%	
Male (n=57)	12.3%	87.7%	84.2%	
Math (n=33)	6.1%	93.9%	84.8%	
New Mentor (n=127)	7.1%	92.9%	85.0%	
English (n=37)	8.1%	91.9%	86.5%	
White (n=97)	7.2%	92.8%	86.6%	
UTR (n=150)	8.0%	92.0%	86.7%	
Returning Host School (n=120)	7.5%	92.5%	86.7%	
Overall (n=182)	7.6%	92.3%	86.8%	
Black (n=23)	8.7%	91.3%	87.0%	
New Host School (n=62)	8.0%	91.9%	87.1%	
MASTER (n=32)	6.2%	93.7%	87.5%	Data for shorter duration
Female (n=125)	5.6%	94.4%	88.0%	
Bachelor's Degree (n=140)	6.4%	93.6%	90.0%	
Returning Mentor (n=55)	9.1%	90.9%	90.9%	
Special Education (n=62)	3.2%	96.7%	93.5%	
Hispanic (n=24)	0.0%	100.0%	95.8%	
Earth Science (n=4)	0.0%	100.0%	100.0%	Small sample

=above average in one retention category (or in both but limited data)

=above average in both retention categories

Appendix B: Safety Logistic Regressions

Table B.1. Logistic Regression for Safety
Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[s]	Female	1.898	.900	4.448	1	0.35	6.672
	Professional Doctorate Degree	-2.398	1.028	5.443	1	0.20	0.91
	Economic Need Index	5.307	3.227	2.706	1	.100	201.770
	Safety	1.276	.477	7.151	1	.007	3.583
	Constant	-5.083	2.925	3.020	1	.082	.006

a. Variable(s) entered on step 1: Female, Professional Doctorate Degree, Economic Need Index, Safety.

Table B fou.2. Logistic Regression for Overall Safety
Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Safety	.457	.333	1.880	1	.170	1.579
	Constant	1.028	1.090	.890	1	.346	2.796

a. Variable(s) entered on step 1: Safety.

Appendix C: Teacher Survey Data Scores

Table C. 1. Teacher Survey Data Scores

		No Longer Teaching (n=5)	Currently teaching outside NYC (n=4)	Currently teaching inside NYC (n=85)	Sig ANOVA
Scales	Supporting Engagement Scale	3.0	3.3	3.3	ns
	Assessing Learning / Understanding Scale	2.8	3.0	3.1	ns
	Classroom Management Scale	2.5	2.9	3.1	f(2,91)=3.61, p=.031
	General Instructional Efficacy Scale	2.4	3.1	3.0	ns
	Overall Preparedness Scale	2.6	3.1	3.0	ns
	Overall Best Practices Scale	3.0	3.0	3.3	ns
	Professional Engagement Scale	2.7	2.9	3.1	ns
	School Climate Scale	2.5	3.5	3.4	f(2,90)=3.80, p=.026
	Teacher Support Scale	2.7	3.2	3.3	ns
	Frequency of Support / PLC Scale	2.7	3.1	3.0	ns
Individual Items	Start Over Would Become a Teacher	1.2	2.3	1.4	ns
	Plan to Continue Teaching	1.0	1.0	1.0	ns
	Plan to Continue Teaching at this School	1.5	1.0	1.4	ns
	Importance of Supportive Admin	3.8	3.3	3.7	ns
	Importance of Time to Collaborate	3.4	3.3	3.5	ns
	Importance of Ongoing PD	3.2	3.0	3.4	ns
	Importance of Positive Climate	3.8	3.8	3.8	ns
	Importance of High salary	2.8	3.5	3.1	ns
	Importance of Participate in Decisions	3.2	3.3	3.2	ns

Significant

Lower than other two groups

Appendix D: Survey Scale Composition

NOTE: Only items that were represented in all three waves of the survey (2011, 2012, and 2013) were included in the scales to allow for a valid longitudinal comparison.

Supporting Engagement Scale

How prepared are you to motivate and engage students

How often do you provide opportunities for students to process information by writing or talking

How often do you ask questions that push students toward higher-level thinking

How often do you create opportunities for students to work both independently and collaboratively

Assessing Learning / Understanding Scale

How prepared are you to use data to inform instruction

How prepared are you to create assessments that measure short-term growth

How prepared are you to create assessments that measure long-term growth

How often do you check for understanding during lessons or use in the moment assessments

How often do you check for understanding at the end of the lesson

How often do you involve students in assessing their own learning

Classroom Management Scale

How prepared are you to handle a range of classroom management or discipline situations

How often do you maintain class routines and ensure that discipline problems don't interfere with lessons

How often do you keep students on task from bell to bell

General Instructional Efficacy Scale

How prepared are you to teach your subject matter

How prepared are you to improve student achievement

NOTE: Items in the scales listed above are also represented in the general / overall scales below.

Overall Preparedness Scale

How prepared are you to:

Teach your subject matter

Handle a range of classroom management or discipline situations

Motivate and engage students

Use data to inform instruction

Differentiate Instruction based on students' needs

Create assessments that measure short-term growth

Create assessments that measure long-term growth

Improve student achievement

Overall Best Practices Scale

In your teaching, how often do you:

Check for understanding during lessons or use "in the moment" assessments

Provide opportunities for students to process information by writing or talking
Assess individual student needs
Involve students in assessing their own learning
Ask questions that push students toward higher-level thinking
Create opportunities for students to work both independently and collaboratively
Maintain class routines and ensure that discipline problems don't interfere with lessons
Keep students on task from bell to bell
Check for understanding at the end of the lesson

Professional Engagement Scale

How often do you engage in the following:
Collaborate with other teachers on lessons and classroom planning
Participate in departmental or grade-level meetings
Collaborate with colleagues on school-wide instructional decisions

School Climate Scale

School leaders communicate a clear vision for this school
School leaders encourage open communication on important school issues
Curriculum, instruction, and assessment are aligned within and across grade levels
School leaders invite teachers to play a meaningful role in setting goals and making important decisions
There is a great deal of collaboration among staff members
Most of my colleagues share my beliefs and values about the central mission of the school
Teachers are recognized for their efforts
Teachers at this school like being here
Teachers are reflective and think critically about their practice
Teachers see themselves as members of a professional learning community

Resident Support Scale

To what extent do you feel supported by:
Your principal
Assistant principals or other administrators
Other teachers; Outside groups

Frequency of Support Scale

How often is the following kind of support made available to you:
Common planning time with teachers in your subject
Time for inquiry teams, reflective seminars, PLCs, critical friends
Coaching from your UTR site director
Regular supportive communication with your principal or other administrators

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