Policy Brief
How Changes in Entry Requirements Alter the
Teacher Workforce and Affect Student Achievement[*]

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This policy brief is based on a paper by the same name, available at www.teacherpolicyresearch.org.

Research Questions We are in the midst of what amounts to a national experiment in how best to attract, prepare, and retain teachers, particularly for high poverty urban schools. A variety of forces have converged to substantially increase the demand for high quality teachers, especially in urban schools having high proportions of poor and non-white students. Many urban districts have begun to rely on new teacher preparation programs that greatly reduce the requirements for course work and experiences in schools prior to becoming a teacher. Little is known about the attributes and performance of these teachers. In this policy brief we consider three questions:

- *How have alternative routes altered the attributes of the teacher workforce?*
- *How do the achievement gains of the students of alternative route teachers compare to those of other teachers?*
- *What is the relative retention of these teachers?*

This analysis is part of a much larger project by our research team that is examining the attributes of teacher preparation pathways that are most effective in improving student outcomes and teacher retention. The goal is to provide evidence on what aspects of teacher preparation are most useful. This project includes the participation by 17 traditional teacher preparation programs, three alternative pathways, the New York City Department of Education and the New York State Education Department.

Teacher Pathways in New York City The paths through which teachers enter the profession in New York City have changed dramatically in recent years. In 1999-2000, 50 percent of new teachers in New York City were teaching on a temporary license. Traditional teacher preparation programs (college recommended) produced a third of new teachers and a certification route where transcripts are reviewed to insure compliance with requirements (individual evaluation) certified nearly 10 percent of new teachers. Beginning in 2001 the New York State Board of Regents began to phase out temporary license teachers. The Regents previously authorized alternative routes into teaching that allowed individuals to begin teaching prior to completing all pedagogical coursework and without traditional student-teaching experience, provided the individual had completed necessary certification exams, and was enrolled in a university-based program leading to teacher certification.

In response and because the City faced a chronic shortage of math, science and special education teachers, especially in low-performing schools, New York City developed an alternative certification program, the New York City Teaching Fellows. The Teaching Fellows program attempts to attract people with strong academic backgrounds into teaching. It offers tuition subsidies and also reduces the "opportunity cost" of teacher preparation by allowing participants to enter the classroom and begin earning a teaching salary early in the program.

By 2003-04 Fellows accounted for nearly a third of new teachers, while fewer than 10 percent of new teachers held any type of temporary license. Teachers entering through the college recommended route constituted about 30 percent and individual evaluation accounted for somewhat less than 10 percent.

### Number of New NYC Teachers by Pathway and Year
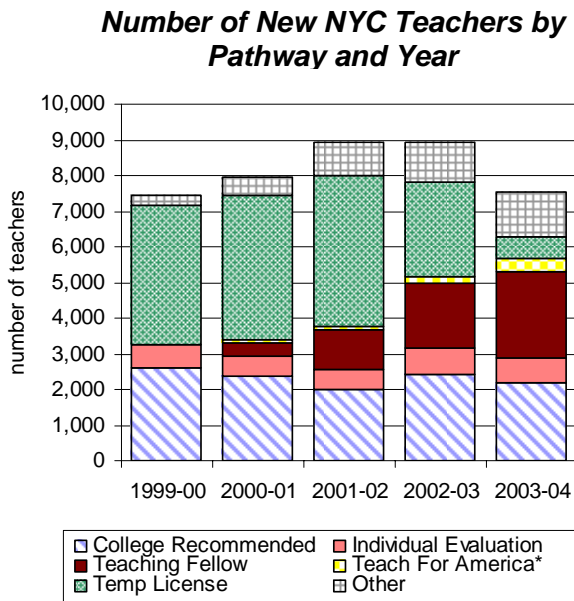
This dramatic shift in the pathways through which teachers enter public school teaching in New York City was accompanied by a substantial change in the academic qualifications of new teachers. For example, in 2000 more than 35 percent of temporary license teachers taking jobs in New York City public schools failed the New York State Liberal Arts and Science (LAST) certification exam. By 2004, fewer than 2 percent of the Teaching Fellows taking jobs had failed the LAST. A similar point is made in the next chart depicting the average LAST scores by pathway for 2001 and 2004. The quality of the colleges from which new teachers received their undergraduate degrees show similar differences.

In summary, the introduction of new pathways into teaching that reduced both the tuition and time costs of pre-service preparation attracted many new teachers.

These new teachers primarily replaced temporary license teachers, a group that had been growing in the years prior to the introduction of the new programs.

Average Liberal Arts and Sciences Scores by Pathway, 2001 and 2004
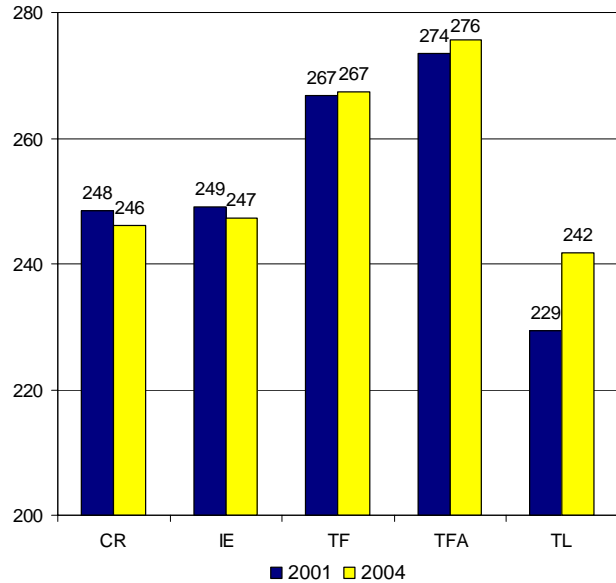
The alternative route teachers have stronger measures of academic qualifications than do teachers entering through any other route and especially stronger than the temporary license teachers they largely replaced. While the presence of the alternative routes is likely to have drawn some teachers away from traditional preparation because they are less costly for students to complete, the change has not led to a substantial drop in numbers, nor in the average measured educational achievement, of new college-recommended teachers. In recent years, placements of Teaching Fellows have largely targeted difficult-to-staff subjects, such as middle and high school math and science and special education – subjects that attract very few traditionally prepared applicants.

Methods We address the questions regarding student achievement and teacher attrition by pathway by employing data for teachers in New York City public schools

and the students they teach in grades 4 through 8 from 2000 through 2004. Math and English language arts achievement scores are observed for individual students over time, implying achievement gain scores. The statistical models of achievement include current and previous year/grade scores, individual and class variables, teacher experience and the preparation paths of teachers. Individual student attributes include race/ethnicity, poverty status, absences from school and measures of behavioral problems. The models also include controls for grade, year and the school the student attends, so that the comparisons for each teacher are with other teachers in the same school. Models are estimated with about 1 million student test scores in both math and ELA. In addition to the results discussed below, we estimate a variety of alternative models that typically yield estimates very similar to those presented.

Student Achievement Gains The estimates indicate that the non-poor, white and Asian students who have fewer absences or fewer behavior problems are more likely to improve their achievement in math and ELA than are poor, black and Hispanic students, or students having behavioral problems and more absences. In addition, the attributes of a student's classmates also appear to be influential in the student's achievement, e.g., a student in a class with a higher proportion of poor students performs less well than one with a lower proportion of poor students, other things equal.

We find that student performance increases as a result of increased experience of the teacher over the first three or four years of experience, with little or no difference thereafter. The differences over the first few years of teaching in part reflect the increased performance resulting from improved teaching, but also result from the higher attrition of weaker teachers. Improved teaching performance could result

from knowledge and skills gained from masters coursework required of all new alternatively certified teachers or from on-the-job learning.
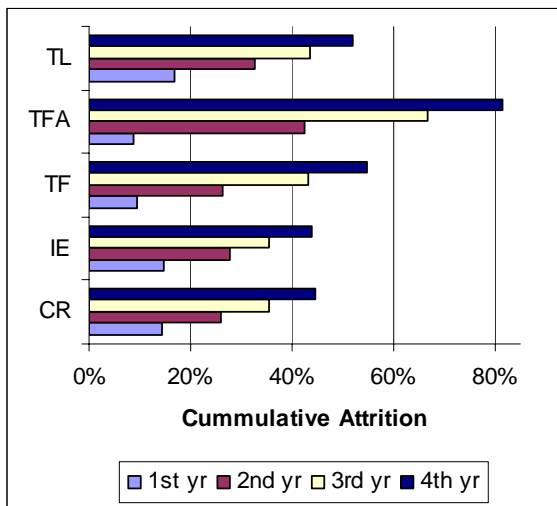
Our research is particularly concerned with the effect of the pathway by which a teacher enters teaching on the performance of her students. The pathway by which a teacher enters teaching bundles together many factors, some reflecting choices by individuals and preparation programs that determine who pursues a particular pathway, and some reflecting the education received in that preparation pathway.

We find that in many cases a teacher's pathway makes little difference in the achievement of students but that when the grade level and the experience of the teacher are considered some differences exist. In some instances Teaching Fellows and TFA members provide higher student achievement gains than the temporary license teachers they replace. For example, Fellows in their third year of teaching in middle schools outperform temporary license teachers in both math and ELA. More typically, alternate route teachers are no worse than the temporary license teachers they replace. When compared to college recommended teachers, alternate route teachers often provide smaller gains in student achievement, at least initially, but often catch up by their second or third year of teaching. In general, Fellows and TFA teachers do relatively better in Math compared to ELA and better in grades 6 through 8 compared to grades 4 and 5. Many of these measured differences are not large in magnitude, typically about 2 to 5 percent of a standard deviation, and the variation in effectiveness within pathways is far greater than the average differences between pathways.

Teacher Attrition Attrition of teachers is important for a variety of reasons, not least is that more experienced teachers produce somewhat better student achievement

gains. Teacher attrition varies by pathway, as shown in the chart below. Teaching Fellows are least likely to leave following their first year (about 10%). In contrast temporary license teachers have the highest attrition rate (exceeding 15%). However, over the next several years, the relative rate of attrition for Teaching Fellows increases, so that attrition following their third year of teaching is roughly equal to that for temporary license teachers and greater than that for either college recommended or individual evaluation teachers. Teach for America teachers experience the highest attrition of any pathway after two or more years of teaching. A part of TFA recruitment is for a two year commitment which as observed here has an effect on teacher turnover.

Cumulative Grades 4-8 Teacher Attrition by Pathway and Years of Teaching

Cummulative Attrition

☐ 1st yr ■ 2nd yr ☐ 3rd yr ■ 4th yr

teachers. They also suggest that teachers entering the profession through a particular pathway may be better suited to teaching in particular grades and subjects.

The current analysis does not address a number of important policy questions. We find substantial variation within pathways of teachers' ability to increase student achievement. What accounts for these differences? How do the measures of teacher qualifications, such as certification exams scores, quality of institution and performance in undergraduate and graduate education as well as area of certification affect teachers' ability to enhance student learning? From the perspective of teacher preparation, what attributes of preparation are most important in increasing student achievement? One can imagine that the gross aggregations by pathways mask potentially strong effects of specific preparation attributes. We want to understand what accounts for the substantial differences among teachers, even within pathways, in their abilities to influence student achievement. We are in the process of exploring answers to these questions.

Summary In the end, this is not a story about which pathway is best, nor should it be. Without alternative routes to teaching it is unlikely New York City could meet New York State and federal requirements to have a qualified teacher in every classroom. Based on this analysis, we believe that different pathways bring different strengths to teaching. These differences in pathways provide a means to discuss potential improvements in how all pathways prepare