

Racial Diversity in the Teacher Pipeline: Evidence from Massachusetts

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Overview: We construct a data set tracking Massachusetts teaching candidates from their initial licensure exam to their potential employment in schools. The pipeline loses most of its diversity between the point of enrolling in college and the decision to take the teacher licensure test. Conditional on passing the exam, there are few racial differences in rates of final licensure, initial teaching employment, or retention. This suggests that efforts to improve teacher workforce diversity should focus on diversifying the initial pool of licensure exam takers and improving pass rates on the exam.

Background: Research shows that minority students benefit on a range of outcomes from having teachers of their same race (e.g., Dee, 2004; Egalite, Kisida, & Winters, 2015; Holt & Gershenson, 2015; Gershenson et al., 2018). Partly driven by this work, policymakers—including several presidential candidates—have expressed interest in growing a teacher workforce that better reflects the increasingly diverse student body of US public schools. Prior studies have found that Black and Hispanic college graduates are less likely to enter teaching than their White peers, a gap exacerbated by certification assessments and GPA cutoffs that disproportionately impact minority teaching candidates, as well as racial disparities in hiring and retention.¹ However, little research to date has tracked individual teachers through the application pipeline to determine where policy intervention would be most effective in increasing diversity.

Research Question: We describe racial diversity at various stages of the teacher development pipeline in Massachusetts to guide interventions to improve teacher workforce diversity. We begin with all of Massachusetts' prospective teachers, defined as those who take the state's required certification exam, and follow such teachers through the certification and licensure process up to their potential employment in schools. We ask where minority teachers are most likely to leave the teacher pipeline, and therefore where the state can target interventions for maximum potential impact.

Setting: In Massachusetts, all K-12 teachers are required to take the Massachusetts Tests for Educator Licensure (MTEL) Communications and Literacy test (Comm/Lit). Teachers must meet multiple other requirements to receive a license, such as completing student teaching hours and taking additional grade- and subject-specific MTEL tests. Not all licensed teachers receive a teaching position, and not all those who teach are retained. We define four stages of the pipeline after teachers take the Comm/Lit MTEL: (1) passing the test, (2) receiving a license, (3) appearing in a teaching position, and (4) remaining in teaching for at least three years (the state's time to tenure).

¹ Lindsay, Blom, & Tilsley (2017): <https://www.urban.org/features/diversifying-classroom-examining-teacher-pipeline>

Putnam, Hansen, Walsh, & Quintero (2016): <https://www.brookings.edu/research/high-hopes-and-harsh-realities-the-real-challenges-to-building-a-diverse-teacher-workforce/>

Barnum (2017): <https://www.chalkbeat.org/posts/us/2017/09/12/certification-rules-and-tests-are-keeping-would-be-teachers-of-color-out-of-americas-classrooms-heres-how/>

Data: We use three main datasets: first, our MTEL data contains the demographics and birthdate of each prospective teacher who took the MTEL, as well as the date and score of each time they took any MTEL test. The state’s Educator Licensure and Recruitment system (ELAR) contains the issue and expiration date of all licenses a teacher received. Finally, the Education Personnel Information Management System (EPIMS) maintained by the state allows us to identify whether teaching candidates are placed in schools, where they are placed, and what their position is in each year from 2007-08 through 2016-17.

Methods: Our main analysis is a simple regression measuring racial gaps in the likelihood that prospective teachers reach each stage of the pipeline. We run a baseline regression of the form:

$$y_{it} = \alpha_t + \gamma_{rw} + \sum_{k=1}^5 \beta_k \text{race}_k_i + \varepsilon_i$$

where y_{it} is an indicator for whether teacher i who took the Comm/Lit test in year t reached a specific following stage of the pipeline; α_t is a test-year fixed effect; γ_{rw} is an interacted fixed effect for teachers’ reading and writing scores the first time they took the Comm/Lit test, and the race_k variables index whether a teacher was recorded as Black, Hispanic, Asian, a different non-White category, or missing race. In all our regressions, White teaching candidates are the omitted category. Our first regression measures the raw gap in Comm/Lit passing with test-year fixed effects, but no score fixed effects.

Results: While the student body in Massachusetts has shifted from nearly 80% White to just over 60% White in the last two decades, the fraction of Comm/Lit takers who were White decreased only slightly, from about 90% in 1998 to 83% today (Figure 1). The teacher pipeline in Massachusetts loses most of its diversity early on, between the point of enrolling in college and the decision to take the teacher licensure test (Table 1, Table 2). About 66% of four-year college students in Massachusetts are White, compared to 87% of licensure test-takers. Black, Hispanic, and Asian teaching candidates are less likely to pass the Comm/Lit exam than White candidates, and are subsequently less likely to earn a license. These results are partially driven by racial gaps in retaking rates among teachers who fail one or both sections of the Comm/Lit test on their first take.

In contrast to other settings, however, we find essentially no racial gaps in the likelihood of teacher employment or retention conditional on receiving a license (Table 3). Our results suggest that in Massachusetts, efforts to diversify the teacher workforce should focus on recruiting more diverse college students into the teaching profession. In ongoing work, we plan to explore potential explanations for the relatively similar rates of hiring and retention we observe between White and minority teachers, which can inform other states’ efforts to close racial gaps at these later stages of the pipeline.

Conclusion: Our research provides a starting point for policymakers to act on prior work showing the benefits of having a more diverse teacher workforce. Our results are consistent with prior research finding that Black and Hispanic college graduates are less likely than their White peers to enter the teaching profession, and that these racial gaps at the start of the teacher pipeline are compounded by racial gaps in performance on certification assessments. Massachusetts diverges

from other settings, however, in its relatively small gaps in hiring and retention once earlier gaps in the pipeline have been taken into account. This provides avenues for future work and demonstrates the importance of attending to state-specific contextual factors when designing policy interventions.

Figure 1: Diversity of Comm/Lit MTEL takers and MA students over time

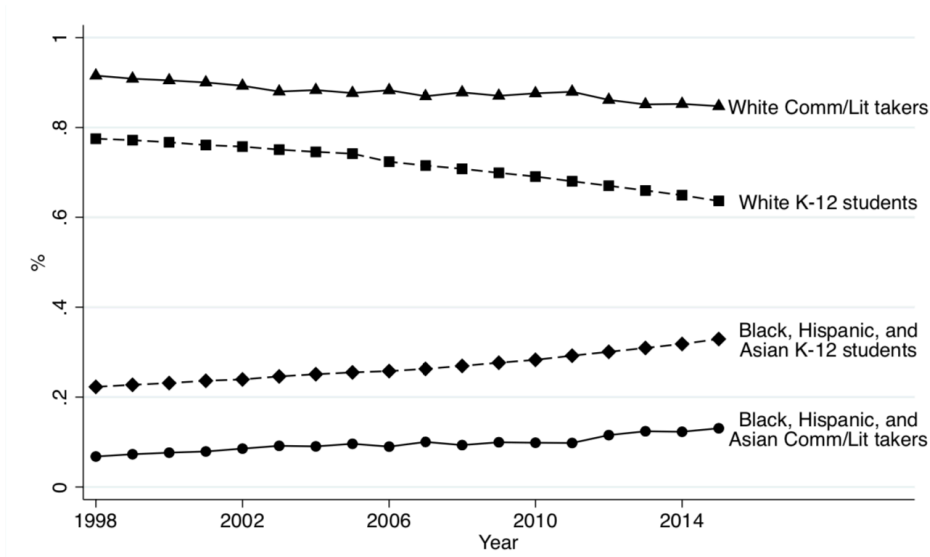


Table 1: Diversity at Each Stage of the Teacher Pipeline

	Public school students (1)	4-year college students (2)	Took Comm/Lit MTEL (3)	Ever passed Comm/Lit (4)	Earned teaching license (5)	Hired as teacher (6)	Taught for 3+ years (7)
% White	68.5	66.4	87.0	88.8	89.4	89.0	89.4
% Black	8.3	7.1	3.7	2.8	2.5	2.7	2.7
% Hispanic	15.2	7.4	3.7	3.2	3.1	3.5	3.5
% Asian	5.4	7.7	2.9	2.7	2.6	2.4	2.3
% Other	2.7	11.4	2.7	2.5	2.4	2.4	2.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes: Column 1 data comes from the NCES Common Core of Data and represents a weighted average of enrollment from the 2007-08 through the 2012-13 school year. Column 2 data comes from IPEDS for the 2007-08 through the 2012-13 school year. Columns 3-7 use data from the 2007-2013 cohorts of Comm/Lit takers. Columns 3-5 draw on data retained by Pearson and DESE on Comm/Lit takers and licensure. Columns 6-7 come from Massachusetts' Education Personnel Information Management System (EPIMS). Appendix table A.1 shows diversity within different types of teacher licenses.

Table 2: Comm/Lit-Takers' Persistence Rates through Teaching Pipeline

	Initial count	Ever passed Comm/Lit	Earned teaching license	Hired as teacher	Taught for 3+ years	Final count
	(1)	(2)	(3)	(4)	(5)	(6)
White	61,145	92.0	66.8	34.4	20.8	12,690
Black	2,615	68.4	43.7	24.6	14.5	379
Hispanic	2,619	76.4	53.3	31.6	18.7	491
Asian	2,025	83.7	58.3	28.2	15.9	321
Other	1,868	84.4	58.8	30.2	16.9	316

Notes: Data on Comm/Lit-takers, teacher licensure, and teaching personnel come from Pearson and DESE. The sample comprises those who took the Comm/Lit exam for the first time between 2007 and 2013 (because 2007 is the earliest year we observe teachers' first year in the classroom and 2013 is the latest year for which we observe retention for at least three years).

Table 3: Conditional Rates of Persistence through the Pipeline

	Passed Comm/Lit (N)	% of MTEL passers who earned license	% of licensed hired as teacher	% of teachers retained 3+ years	Final count
	(1)	(2)	(3)	(4)	(5)
White	56,254	72.6	51.5	60.4	12,690
Black	1,789	63.9	56.1	59.0	379
Hispanic	2,001	69.7	59.3	59.4	491
Asian	1,695	69.7	48.4	56.1	321
Other	1,576	69.7	51.5	55.9	316

Notes: Data on Comm/Lit-takers, teacher licensure, and teaching personnel come from Pearson and DESE. The sample comprises those who took the Comm/Lit exam for the first time between 2007 and 2013 (because 2007 is the earliest year we observe teachers' first year in the classroom and 2013 is the latest year for which we observe retention for at least three years).

Works Cited

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