

Three Leaks in the Massachusetts Teacher Pipeline

An Essay for the Learning Curve by Melanie Rucinski

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In Massachusetts, as is true nationally, teachers are less racially diverse than students. As of the 2021–22 school year, 87 percent of teachers in the state were White, compared with only 54 percent of students.¹ In response to this disparity, Massachusetts lawmakers have proposed legislation targeting the shortage of teachers of color. Research shows that some of the shortage can be attributed to “leaks” in the teacher pipeline, or places where teachers of color are less likely to persist than White teachers. This essay identifies three of those leaks: certification test passing, college graduation among certification test takers, and licensure among candidates who pass the certification test. Targeting racial disparities at each of these stages could substantially increase the racial diversity of the teacher workforce in Massachusetts.

In recent years, evidence demonstrating the benefits of having teachers of the same race or ethnicity for students of color has prompted several states to pass legislation to increase the racial and ethnic diversity of the K–12 teacher workforce. These legislative initiatives often include funding for the recruitment and retention of teachers of color and “Grow Your Own” programs, which aim to support students beginning when they are in high school to enter a career in teaching.²

The proposed legislation in Massachusetts has two main components (as of this writing): first, it will create an alternative certification pathway that accounts for such measures as out-of-state certification, graduate degrees, and portfolio measures as substitutes for existing certification test requirements. Second, the legislation requires districts to set educator diversity goals and would establish a grant program to support schools and districts in establishing new teacher diversity initiatives.³ In addition to the proposed legislation, the state’s 2023 budget includes \$15 million in scholarships and loan forgiveness for prospective and current teachers.⁴

¹ Data from the Massachusetts Department of Elementary and Secondary Education are available at “School and District Profiles,” Massachusetts Department of Elementary and Secondary Education, accessed June 13, 2023, <https://profiles.doe.mass.edu/statereport/>.

² Raven DeRamus-Byers, “Grow Your Own and Teacher Diversity in State Legislative Sessions: What We Can Learn from Successfully Passed Bills,” New America blog, July 12, 2021, <https://www.newamerica.org/education-policy/edcentral/grow-your-own-teacher-diversity-state-legislative-sessions/>.

³ S.311, 193rd Gen. Assemb. (Mass. 2023); and H.549, 193rd Gen. Assemb. (Mass. 2023).

⁴ “FY 2023 Final Budget,” 193rd General Court of the Commonwealth of Massachusetts, accessed June 13, 2023, <https://malegislature.gov/Budget/FY2023/FinalBudget>, section 7061-9805.

In this essay, I use data on Massachusetts K–12 public school students and teachers to provide evidence on three leaks in the teacher pipeline that policies could target to support teaching candidates of color. My sample consists of Massachusetts public school students from the high school graduating classes of 2003 to 2013 who indicated an interest in teaching by taking the state’s Communications and Literacy Skills Test (CLST), which is required for teacher licensure.⁵

Research on racial and ethnic diversity in the teacher pipeline in Massachusetts shows that it will be difficult to substantially increase the racial and ethnic diversity of the teacher workforce without addressing systemic gaps in educational attainment between White students and students of color, especially Black and Hispanic/Latino students.⁶ Even so, racial and ethnic gaps persist throughout the pipeline as teaching candidates progress through taking the certification test and earning a license. At each of the three steps highlighted in this essay—passing the certification test, graduating from college, and earning a license—the state loses qualified students of color with a demonstrated interest in teaching. If policymakers could intervene to retain even half of these lost teaching candidates, the share of new teachers of color could increase by as much as 40 percent.

1. Passing the CLST

To earn a teaching license in Massachusetts, all candidates must pass the Massachusetts Tests for Educator Licensure CLST. Pass rates on the test are relatively high. Although only 70 percent of teaching candidates pass the test on the first try, candidates may retake the test until they pass. Most candidates who fail the test the first time do retake it, and many eventually pass the test, resulting in an overall pass rate of 90 percent.

These patterns, however, look different among teaching candidates of different races and ethnicities (figure 1). Although White and Asian candidates have similar first-time pass rates of 72 percent and 70 percent, respectively, only around 56 percent of Black and Hispanic/Latino teaching candidates pass the test on their first attempt. Black, Hispanic/Latino, and Asian test takers are all less likely than White test takers to retake the test if they fail on the first try. The racial gap in retaking is largest for Black teaching candidates, who are more than 10 percentage points less likely than White candidates to retake if they fail the first time.

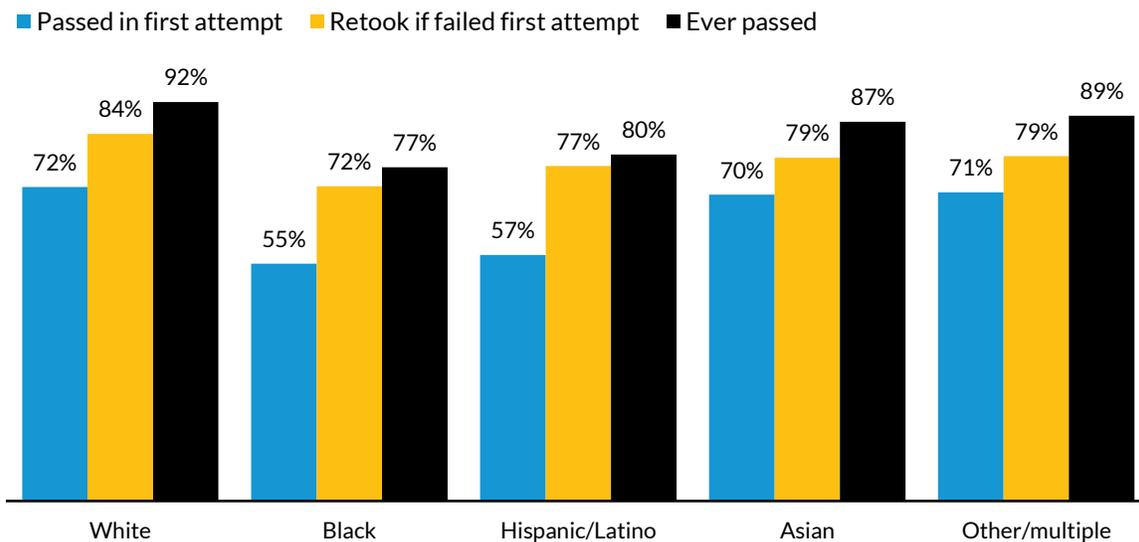
Racial and ethnic gaps in first-time test performance and in retaking result in the loss of more than 10 percent of Asian candidates and 20 percent of Black and Hispanic/Latino candidates at this first step in the certification pipeline: while 92 percent of White candidates ultimately pass the CLST, only 87

⁵ “Homegrown” teachers, who completed their K–12 schooling in Massachusetts public schools, make up about 60 percent of the state’s teachers. I focus on these students because I can observe their college enrollment and graduation data. Because more than half of teaching candidates begin the certification process while still enrolled in college, observing students at this stage provides a more complete picture of how students are progressing through the teacher pipeline and where obstacles arise.

⁶ Melanie Rucinski, “Who Becomes a Teacher? Racial Diversity in the K–12 to Teacher Pipeline” (Cambridge, MA: Harvard Kennedy School, 2023).

percent of Asian test takers, 77 percent of Black test takers, and 80 percent of Hispanic/Latino test takers ultimately pass.

FIGURE 1
CLST Pass and Retake Rates



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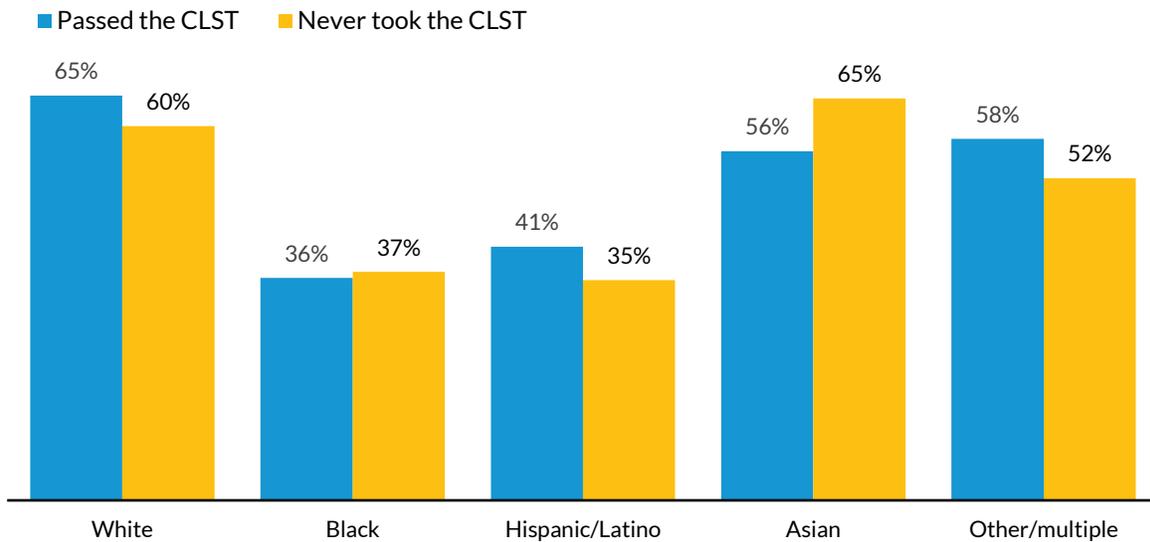
Source: Author’s calculations based on data provided by the Massachusetts Department of Elementary and Secondary Education.
Notes: CLST = Communications and Literacy Skills Test. The figure shows the share of CLST takers of different races and ethnicities who passed the test on their first attempt, retook the test if they failed on the first attempt, and ever passed the test (including on the first attempt). The sample is restricted to CLST takers who were enrolled in Massachusetts public schools in the K–12 graduating classes of 2003 to 2013.

2. College Graduation

Among students who do pass the CLST, many cannot earn a teaching license because they do not graduate from college. Of Massachusetts K–12 public school students who pass the CLST, about 50 percent do so before earning a four-year college degree (appendix figure A.1). College graduation rates among candidates who do not have a college degree when they pass the test differ dramatically by race and ethnicity (figure 2): 65 percent of White teaching candidates who pass the CLST before earning a college degree ultimately earn a four-year degree, compared with 56 percent of Asian candidates and only 41 percent and 36 percent of Hispanic/Latino and Black candidates, respectively.

Racial and ethnic gaps in college graduation among those who pass the CLST mirror gaps within the full population of four-year enrollees: more than 60 percent of White and Asian four-year enrollees eventually earn a degree, compared with just 36 percent of Black and Hispanic/Latino four-year enrollees. Although addressing overall racial and ethnic disparities in college graduation should also be a policy goal, students who take the CLST while enrolled but who do not earn a degree are an easily observable group policymakers could target to expand the pool of teachers of color.

FIGURE 2
Four-Year Degree Attainment



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Source: Author’s calculations based on data provided by the Massachusetts Department of Elementary and Secondary Education.
Notes: CLST = Communication and Literacy Skills Test. The figure shows four-year degree attainment rates for students in the Massachusetts public school K-12 graduating classes of 2003 to 2013 who passed the CLST before earning a four-year degree, compared with four-year degree attainment rates for four-year enrollees from the same K-12 graduating classes who never took the CLST. Eighty-five percent of students who took the CLST before earning a four-year degree also passed the test before earning their degree.

3. Licensure

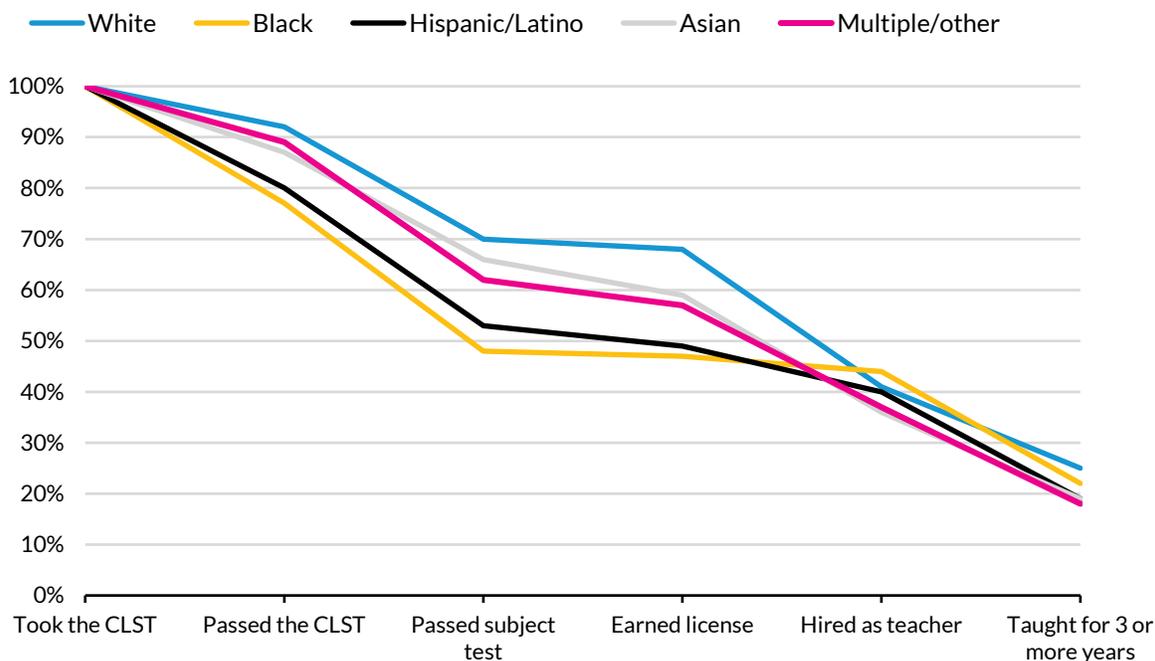
The CLST, which is required of all teachers in Massachusetts, presents a barrier to both individual candidates and teacher diversity writ large. In addition to taking the CLST, first-time teaching candidates must pass one or more subject tests and complete a state-approved teacher preparation program.⁷ Among candidates who pass the CLST, 74 percent of White candidates earn a teaching license, but only 67 percent of Asian candidates and 61 percent of Black and Hispanic/Latino candidates ultimately earn a license.

There are several reasons why teaching candidates who pass the CLST may not ultimately earn a license, arising from the certification process and external factors. Further research is needed to determine the primary factors driving the drop-off between passing the CLST and earning a license, but figure 3 shows that the additional required subject tests act as a barrier to candidates of all races and ethnicities. They particularly affect Black and Hispanic/Latino teaching candidates: only 63 percent of Black and Hispanic/Latino candidates who pass the CLST also pass any subject tests, compared with 75

⁷ For more information on teacher licensure in Massachusetts, see “Educator Licensure and Preparation Program Approval Regulations,” Massachusetts Department of Elementary and Secondary Education, last updated February 28, 2023, <https://www.doe.mass.edu/lawsregs/603cmr7.html?section=05>.

percent of White and Asian candidates. Among those who do pass at least one subject test, 83 percent of Black and Hispanic/Latino candidates earn a license, compared with 84 percent of Asian candidates and 88 percent of White candidates.

FIGURE 3
Persistence through the Teacher Pipeline



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Source: Author’s calculations based on data provided by the Massachusetts Department of Elementary and Secondary Education.
Notes: CLST = Communication and Literacy Skills Test. The figure shows the share of CLST takers who passed the CLST, passed any subject tests, earned a teaching license, were hired as a public school classroom teacher in Massachusetts, and taught for at least three years (the time to tenure in the state). The sample is restricted to CLST takers who were public school students in Massachusetts in the K–12 graduating classes of 2003 to 2013.

For Black teaching candidates, most of the gap in passing subject tests among CLST passers is explained by gaps in performance on the tests (appendix figure A.2). For Hispanic/Latino teaching candidates, on the other hand, the gap is about equally explained by gaps in taking subject tests and gaps in passing them. Asian teaching candidates who take subject tests perform nearly as well as White candidates: 80 percent of the White-Asian gap in passing subject tests is explained by Asian candidates’ lower rate of taking the tests. These differences across racial and ethnic groups suggest that several interventions may be needed to address disparities in information or access that may prevent teaching candidates from taking the subject tests and differences in preparation that result in performance gaps.

Comparing Potential Solutions

Addressing the leaks identified in this essay could be a first step toward closing the gap in racial and ethnic diversity between teachers and students in Massachusetts. Figure 4 illustrates how the racial and ethnic diversity of the pool of “homegrown” license holders in Massachusetts might change as a result of policies targeting the disparities discussed here. Figure 4A shows how racial and ethnic diversity would change if policymakers could intervene to close racial and ethnic disparities, so that candidates of color would have the same persistence rates as White candidates at each stage. Figure 4B instead shows how racial and ethnic diversity would change if *all* teaching candidates of color lost at each stage were retained. In other words, while figure 4A compares the relative importance of racial and ethnic disparities at different points along the pipeline, figure 4B compares the relative importance of each stage in terms of the overall share of candidates lost. In practice, less than 70 percent of CLST takers across all races and ethnicities ultimately earn a license, and retaining 100 percent of CLST takers is likely infeasible. But the figure illustrates an upper bound on the racial and ethnic diversity of the teacher workforce that the state might achieve through interventions along the teacher pipeline alone.

FIGURE 4A

Simulations of Racial and Ethnic Diversity If All Races and Ethnicities Matched White CLST Takers' Persistence at Each Stage

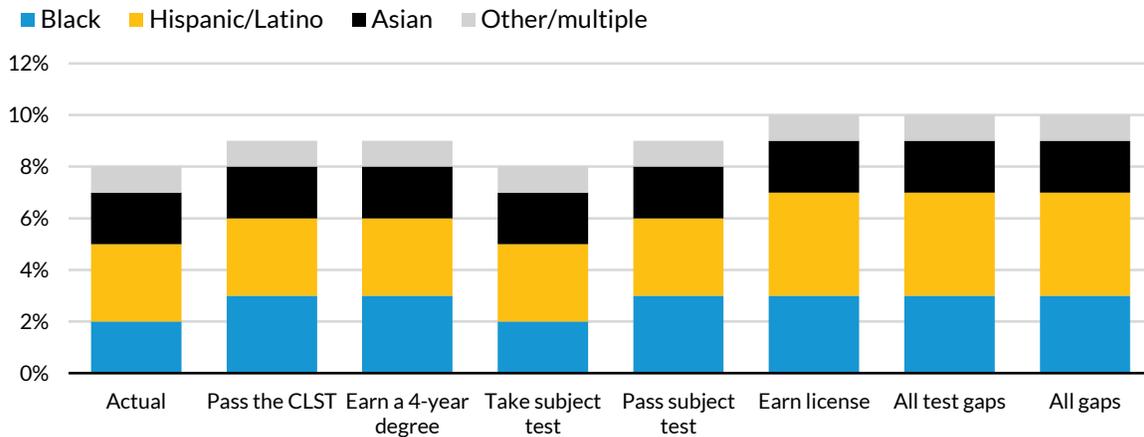
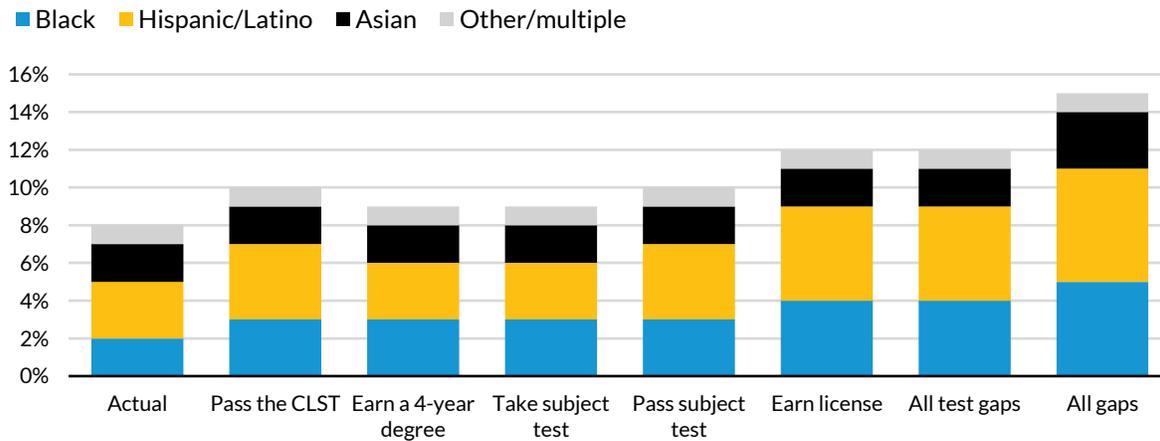


FIGURE 4B

Simulations of Racial and Ethnic Diversity If Candidates of Color Lost at Each Stage Were Instead Retained



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Source: Author's calculations based on data provided by the Massachusetts Department of Elementary and Secondary Education.

Notes: The first bar in each figure shows the racial and ethnic makeup of licensed teaching candidates from the Massachusetts K-12 public school graduating classes of 2003 to 2013. Figure 4A simulates how the racial and ethnic diversity of this group could change if CLST takers of each race or ethnicity were as likely as White CLST takers to (1) pass the CLST, (2) earn a four-year college degree, (3) take additional subject tests, (4) pass additional subject tests, (5) earn a license, (6) pass the CLST and take and pass additional subject tests, and (7) persist at each stage from passing the CLST through earning a license. Simulations 2 through 5 are conditional on passing the CLST. Figure 4B illustrates analogous simulations of how racial and ethnic diversity could change if all candidates of color lost at each stage were retained. The White share of candidates is equal to the difference between 100 and the combined share of Black, Hispanic/Latino, and Asian candidates and candidates of other or multiple races.

The proposed legislation in Massachusetts has two key components. The first expands alternative routes to certification. Figure 4A shows that racial and ethnic disparities in CLST passing and in earning a license conditional on passing the CLST have the largest individual effects on the diversity of license holders compared with CLST takers, suggesting that expanding pathways to certification could have significant effects on teacher racial and ethnic diversity. Figure 4B, which compares the effects of potential interventions in terms of the share of candidates lost at each stage, shows similar results. The last two bars in figure 4B show that the candidates lost in passing the CLST, taking subject tests, and passing subject tests represent a large share of the overall number of candidates lost between taking the CLST and earning a license. Supporting this evidence, Bacher-Hicks, Chi, and Orellana⁸ show that Massachusetts teaching candidates who earned emergency licenses, which did not require any Massachusetts Tests for Educator Licensure tests, during the COVID-19 pandemic were more than twice as likely to be Black or Hispanic/Latino as their peers licensed through traditional pathways.

Cowan and coauthors⁹ find that certification test scores in Massachusetts are weakly predictive of teacher value-added, potentially raising concerns that the state might lose valuable information about preservice teacher quality by reducing reliance on the CLST and subject tests in the certification process. Racial and ethnic disparities in retaking, however, mean that teachers of different races or ethnicities who have similar first-time performance on the CLST are differentially likely to become teachers. Importantly, having a more racially and ethnically diverse teacher workforce also has benefits for students, particularly students of color, that may outweigh and extend beyond the effects of teachers' certification test performance on student test scores. Reexamining the role of certification tests in teacher licensure might therefore yield significant benefits for students at minimal cost.

The second component of the legislation provides support to schools and districts for teacher diversity initiatives, including “Grow Your Own” programs that create pathways beginning in K–12 for students to become teachers in their home district or state. Figures 4A and 4B both illustrate that interventions along the teacher pipeline alone will likely be unable to make significant progress toward closing the gap in racial and ethnic diversity between teachers and students. Even if all CLST takers of color were retained to the point of licensure, licensed teaching candidates in the state would remain more than 85 percent White, almost 60 percent more likely to be White than students in the state. This persistent gap illustrates the necessity of earlier interventions to increase the racial and ethnic diversity of CLST takers, a goal that may be supported by the second prong of the legislation through “Grow Your Own” programs or district supports for paraprofessionals and other school staff members to become certified teachers.

Closing the gap in racial and ethnic diversity between students and teachers in Massachusetts will not be easy. Black and Hispanic/Latino K–12 students in the state are only 66 percent and 43 percent as likely as their White and Asian peers to ever attend a four-year college and are only 40 percent and 25

⁸ Andrew Bacher-Hicks, Olivia L. Chi, and Alexis Orellana, *Two Years Later: How COVID-19 Has Shaped the Teacher Workforce* (working paper, Boston University Wheelock Educational Policy Center, Boston, 2022).

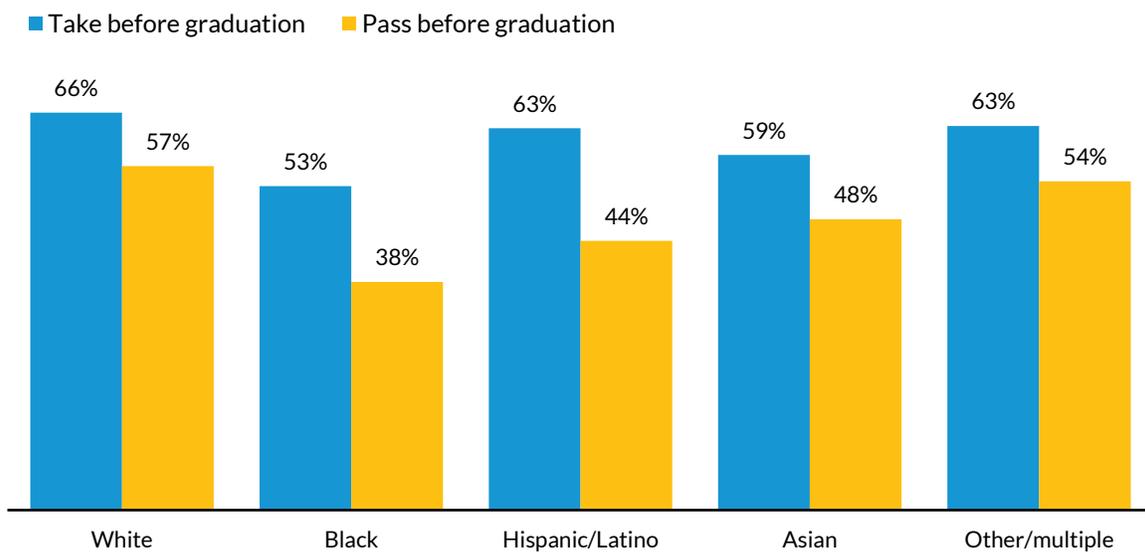
⁹ James Cowan, Dan Goldhaber, Zeyu Jin, and Roddy Theobald, *Teacher Licensure Tests: Barrier or Predictive Tool?* (working paper, National Center for Analysis of Longitudinal Data in Education Research, Arlington, Virginia, 2020).

percent as likely to earn a four-year college degree. Given that a bachelor’s degree is the minimum requirement to become a teacher in Massachusetts, these racial and ethnic gaps in educational attainment are a significant barrier to increasing teacher racial and ethnic diversity through postsecondary or later interventions.

Still, my analysis indicates that the proposed legislation may lead to some progress: the expansion of alternative certification can address racial and ethnic gaps in passing the CLST and earning a license, while college tuition scholarships for prospective teachers may help close racial and ethnic gaps in college graduation, and grants to districts can aid in starting students on the teacher pipeline and supporting them through the certification process. In Massachusetts, Black and Hispanic/Latino license holders are 10 percent *more* likely than White license holders to get a teaching job. This illustrates high demand for such teachers and points to the importance of intervening early on to build a pool of licensed teachers more reflective of the diversity of students in the state.

Appendix

FIGURE A.1
Timing of CLST Taking and Passing



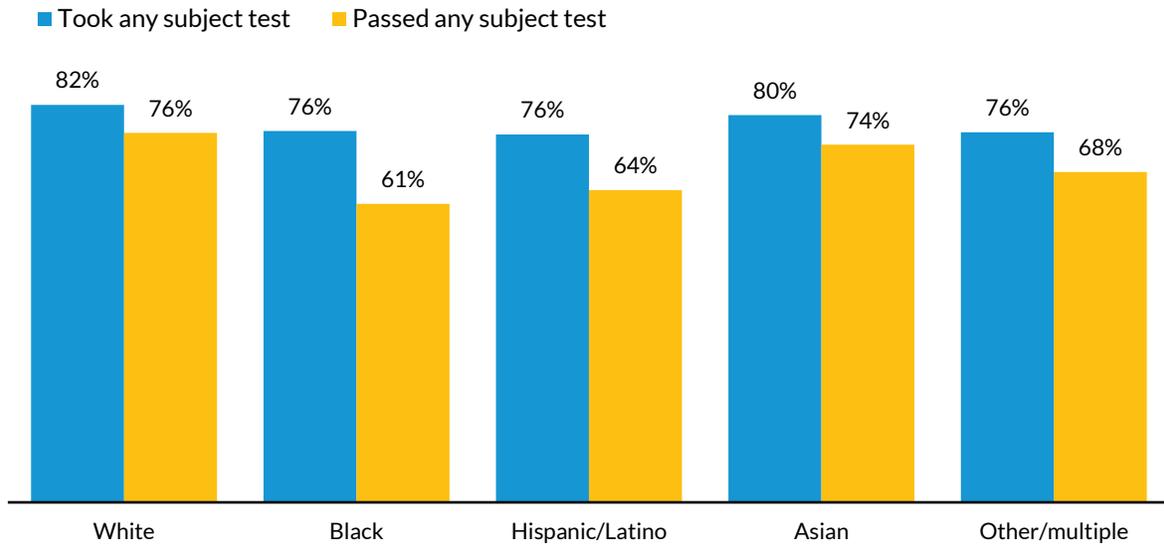
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Source: Author’s calculations based on data provided by the Massachusetts Department of Elementary and Secondary Education.

Notes: CLST = Communication and Literacy Skills Test. The figure shows the share of CLST takers from the Massachusetts K–12 public school graduating classes of 2003 to 2013 who took and passed the test before earning a four-year college degree. CLST takers and passers who had not earned a four-year degree by spring 2020 are counted as having taken and passed the test before earning a degree.

FIGURE A.2

Subject Test Taking and Passing



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Source: Author's calculations based on data provided by the Massachusetts Department of Elementary and Secondary Education.

Notes: CLST = Communication and Literacy Skills Test. The figure shows subject test taking and passing rates. The sample is restricted to CLST takers from the Massachusetts K-12 public school graduating classes of 2003 to 2013 who passed the CLST.

Melanie Rucinski is a PhD candidate in public policy at the Harvard Kennedy School.

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