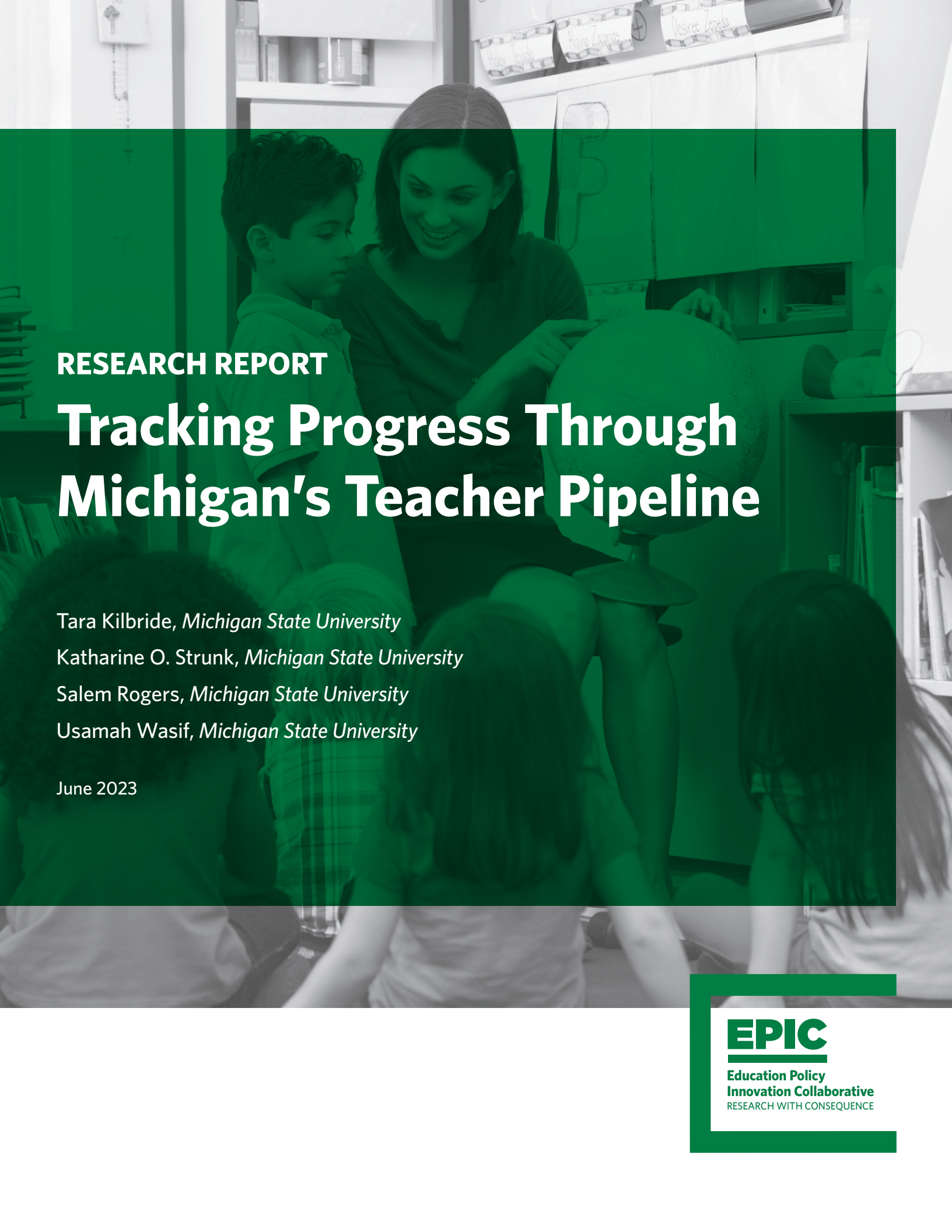




RESEARCH REPORT

Tracking Progress Through Michigan's Teacher Pipeline

Tara Kilbride, *Michigan State University*

Katharine O. Strunk, *Michigan State University*

Salem Rogers, *Michigan State University*

Usamah Wasif, *Michigan State University*

June 2023

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ACKNOWLEDGMENTS

The authors wish to acknowledge the many people who graciously gave of their time in support of this effort. We are especially grateful to our partners for their collaboration and thoughtful feedback.

In particular, we would like to thank Dr. Delsa Chapman, Dr. Sue Carnell, Dr. Michael Rice, Dr. Sarah-Kate LaVan, Kate Boswell-Gallagher, Kelli Brozanski, Ann Green, and Sean Kottke from the Michigan Department of Education and Heather Handley, Zohre Salehezadeh, Trina Anderson, and Tom Howell from the Center for Educational Performance and Information.

At Michigan State University, we thank Emily Mohr and Meg Turner for coordinating and facilitating the project. We also thank Michelle Huhn for her support developing graphics for and formatting the report, and Jeremy Anderson and Wei-Chu Chen for their help collecting and compiling data from course catalogs. Finally, we thank Bridgette Redman for her excellent copy-editing.

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EXECUTIVE SUMMARY

For more than a decade, enrollment and completion rates at teacher preparation programs across the country have declined (United States Department of Education, 2023). At the same time that interest in the teaching profession is declining (Bartanen & Kwok, 2022), states and districts are increasingly being called upon to diversify their teacher workforce to be more reflective of their student populations (Partelow et al, 2017). However, many districts have struggled to increase the number of teachers of color in their schools.

These challenges have been particularly pronounced in Michigan, where teacher preparation program enrollment declined by 67% between 2008-09 and 2016-17. This is far higher than the 35% decline nationally and exceeds decreases in all but one other state (Partelow, 2019). Although Michigan's teacher preparation program enrollment has begun to rebound between 2017-18 and 2020-21 (U.S. Department of Education, 2023), fewer candidates become certified to teach in Michigan each year, and many of those who do become certified do not go on to teach in a Michigan public school (Kilbride et al., 2023). Moreover, although the teacher workforce has become more diverse in recent years (Hopkins et al., 2021), there is substantial racial imbalance between Michigan's teaching and student populations, as 90% of the teacher workforce is White relative to 64% of Michigan's K-12 students.

In this report, we combine data about students in Michigan's K-12 public schools and public universities with educator certification testing, credentialing, and employment records to examine how the pool of prospective Michigan teachers changes as candidates progress through the pipeline and into the workforce.

Key Findings

Several important takeaways highlight where Michigan is losing potential teachers even before they enter the workforce, and the ways that these “leaks” in the teacher pipeline lead to a workforce that is less diverse than Michigan’s student population:

- **Enrollment in undergraduate teacher education courses has decreased over time and varies by demographic group.** The share of students taking at least one teacher education course within 5 years of starting college decreased from 15.1% for students who started college in 2010 to only 12.7% for students who started in 2017. These rates are far lower for male than for female students and for Asian students than for students of any other race/ethnicity.
- **Only a fraction of the students who take an initial education course become student teachers.** Of the students who take an initial education course, 77% continue their studies through at least a 200-level course. This decreases to 56% for 300-level courses and 38% for 400-level courses. Only about one-quarter reach the student teaching stage, which is a critical milepost in the journey to becoming a teacher, not only because it is a requirement for certification but also because candidates’ student teaching experiences influence their decisions about whether, where, and how long to teach after they graduate (Krieg et al., 2016; Goldhaber et al., 2022).
- **Prospective teachers of color are disproportionately likely to exit the pipeline during the advanced coursework, student teaching, and licensure testing stages.** Many students of color who are interested in teaching ultimately choose other career paths instead. While 30% of White students progress from initial education courses to student teaching, this is only true for 7% of Black students, 14% of Asian students, and 23% of Latino students. Low pass rates among Black candidates on Michigan’s teacher licensure test may contribute to additional losses of prospective Black teachers before they reach the certification stage.
- **Recent cohorts of teacher preparation graduates are more likely to work as public school teachers in Michigan.** Despite fewer students choosing to take education courses in recent years, those who complete a teacher preparation program and become certified are more likely to enter Michigan’s public school teaching workforce, and more likely to remain in the profession.
- **Black teacher preparation graduates are more likely to enter and stay in Michigan’s public school teaching workforce.** Despite high attrition during the coursework, student teaching, and licensure testing stages, Black candidates who become certified to teach in Michigan are more likely to start working as public school teachers and to continue teaching in Michigan for at least the next 5 years.
- **The pool of prospective Michigan teachers becomes less diverse as candidates progress between the coursework, licensure, and employment stages.** The differential attrition we observe at each stage of the pipeline ultimately shapes Michigan’s early career teacher workforce to be less diverse than the students it serves. The loss of diversity is most acute as candidates begin taking more advanced education courses and participate in student teaching placements.

Implications and Policy Recommendations

Based on these results, we recommend that Michigan policymakers and other stakeholders:

- **Prioritize programs that address the “leak” in the pipeline before candidates begin their student teaching internships.** The most substantial “leaks” in the pipeline take place before students finish their programs, as many of the candidates who complete advanced teacher preparation courses never become student teachers. Recent policy initiatives and program changes that are already underway in Michigan, such as the [MI Future Educator Stipend](#), [MI Future Educator Fellowship](#), and Michigan State University’s decision to shorten the length of its teacher preparation program (Knapp & Ward, 2022), aim to reduce financial barriers that may prevent some candidates from reaching this stage of the pipeline. Students’ early clinical experiences and the mentoring they receive during their pre-student teaching apprenticeships also likely play important roles in getting prospective teachers into student teaching placements and ultimately into the workforce.
- **Investigate the low pass rates for Black candidates on Michigan’s teacher licensure tests to ensure that Black students receive the support they need to succeed on these exams.** The reason for the vast discrepancies in pass rates for Black candidates and candidates of all other races/ethnicities is not clear and warrants investigation. To ensure that candidates are receiving adequate support to prepare for these exams, we recommend that teacher preparation providers offer test preparation courses and vouchers to cover the cost for students to take (or re-take) the Michigan Test for Teacher Certification (MTTC) or MTTC practice tests that more closely resemble the exam.
- **Promote alternative pathways to teaching that have been shown to help diversify the workforce, but also prioritize improving traditional pathways to better serve potential teachers of color.** We recommend that Michigan policymakers continue to emphasize alternative-route, grow-your-own, and other types of innovative programs that have been effective in helping to diversify the teaching workforce (Boyd, et al., 2005; Feistritzer & Haar, 2007), while still working to improve the traditional pathways that produce the vast majority of Michigan’s teacher workforce.

INTRODUCTION

Over the past decade and a half, teacher preparation programs have seen declines in both enrollment and completion rates (United States Department of Education, 2023). At the same time that interest in the teaching profession is declining (Bartanen & Kwok, 2022), states and districts are increasingly being called upon to diversify their teacher workforce to be more reflective of their student populations (Partelow et al., 2017). However, many districts have struggled to increase the number of teachers of color in their schools. This has broad implications for student well-being, as less exposure to teachers of color may negatively affect student achievement, especially for students of color (Todd & Wolpin, 2007; Fryer & Levitt, 2013; Lindsay & Hart, 2017; Harbatkin, 2021).

These challenges are particularly pronounced in Michigan, where teacher preparation program enrollment declined by 67% between 2008-09 and 2016-17, eventually starting to rebound between 2017-18 and 2020-21 (U.S. Department of Education, 2023). This initial decline was far higher than the 35% decline nationally and exceeds decreases in all but one other state during the same time period (Partelow, 2019). Despite recent increases in enrollment, fewer candidates became certified to teach in Michigan each year since 2019-20, and many of those who became certified did not go on to teach in a Michigan public school (Kilbride et al., 2023).

While Michigan's teacher workforce is becoming slightly more diverse over time (Hopkins et al., 2021), it remains far less diverse than the population of students it serves. In 2022-23, teachers of color made up about 10% of Michigan's teacher workforce, compared to 8% in 2015-16. At the same time, Michigan's K-12 student population remains and continues to grow even more diverse; students of color made up 33% of the K-12 student population in 2015-16, increasing to 36% by 2022-23. It is against this backdrop that we examine the attrition of potential teachers, with a special focus on differential effects among groups that are underrepresented in Michigan's teaching workforce.

This report examines how the pool of prospective Michigan teachers changes as candidates progress through the pipeline and into the workforce. We combine data about students in Michigan's K-12 public schools and public universities with educator certification testing, credentialing, and employment records to explore the following questions:

1. How likely are Michigan undergraduate students to show an early interest in the teaching profession by enrolling in introductory-level education courses?
2. How likely are students to continue pursuing teaching careers by progressing to more advanced coursework or participating in student teaching placements?
3. Does Michigan's pre-service teacher licensure testing influence the diversity of the teacher pipeline?
4. How likely are newly certified teachers to enter and persist in a teaching job in Michigan?

Our results highlight several "leaks" in Michigan's teacher pipeline that not only affect the size of the teaching workforce but also its diversity. Over time, fewer Michigan undergraduates have chosen to enroll in education courses, and only a fraction of those who do enroll in an initial course continue their studies through more advanced coursework or student teaching. Male and Black students are far less likely than their peers to become student teachers, even after completing upper-level education courses. Black teacher candidates are less likely than their peers to pass Michigan's teacher licensure test, however, those who do become certified to teach are more likely to work as public school teachers and to continue teaching in Michigan for at least the next 5 years.

DATA AND METHODS

The analyses in this brief draw from several data sources about students and teachers in Michigan. These include K-12 and postsecondary student data from the Michigan Student Data System (MSDS), test participation and performance data from the Michigan Test for Teacher Certification (MTTC), educator credential data from the Michigan Online Educator Certification System (MOECS), public school employment data from the Registry for Educational Personnel (REP), teacher preparation program information from Title II reports, and course catalogs from each university. Table 1 describes the specific data elements we use from each of these sources.

Michigan's student and educator data systems use different identification codes to link records belonging to the same person; this prevents us from linking students' postsecondary enrollment and course records to their later licensure testing, certification, or employment records.¹ Given this data constraint, we conduct three sets of analyses that each highlight a different portion of the teacher pipeline for which we can connect data for the same individuals longitudinally. The first analysis focuses on postsecondary students' progression through education coursework and student teaching, while the second focuses on the licensure testing stage, and the third examines newly certified teachers' rates of entry into the public school teaching workforce and their continued employment over a 5-year period.

TABLE 1. Data Sources		
Pipeline Stage	Data Source	Data Elements
Coursework & Student Teaching	Michigan Student Data System (MSDS)	High school graduation year (2010-2017)
		Enrollment in an institution of higher education
		Courses taken within 5 years of high school graduation
	University websites and course catalogs	Department/subject area names, codes, and abbreviations
		Course codes, titles, and section numbers
		Course descriptions
Licensure Testing	Michigan Test for Teacher Certification (MTTC)	Test date
		Subject area(s) tested
		Test score and pass/fail status
		Institution attended
Certification & Early Career	Michigan Online Educator Certification System (MOECS)	Type of credential
		Credential issue and expiration dates
		Endorsement area(s)
		Recommending institution
	Registry of Educational Personnel (REP)	Dates of employment
		District and school names/codes
All	Title II	Job assignment
		Institution of higher education name, code, and state
	MSDS/MOECS/REP	Types of teacher preparation programs offered
		Demographics (race/ethnicity, gender)

Coursework and Student Teaching

We examine course-taking data for eight cohorts of students who graduated from public high schools in Michigan between 2010 and 2017 and went on to study at one of the 15 in-state, public institutions of higher education in Michigan with teacher preparation programs.² We focus on these cohorts because we can follow these students through their postsecondary years. We use course enrollment data and university course catalogs from the 2010-11 through 2021-22 school years to identify students who enrolled in education courses,³ the levels of the courses in which they enrolled (e.g., 100-level, 200-level, 300-level, 400-level),⁴ and whether they enrolled in courses designated as student teaching internships. We include all courses that students completed within the first 5 academic years after they graduated from high school (e.g., 2010-11 through 2014-15 for the 2010 cohort, 2017-18 through 2021-22 for the 2017 cohort).

As comparison points to help contextualize these results, we also show patterns in progression through all types of courses and in nursing courses for students in the same cohorts who attended the same universities. The overall course-taking patterns allow us to discern how attrition from education coursework differs from overall attrition from students who drop out before taking higher-level courses in any subject area. Nursing courses provide a comparison point from a field of study that, like teacher education, is geared toward preparing students for a specific profession, is historically female-dominated, and has experienced shortages in recent years.

Licensure Testing

Next we examine the rates at which teacher candidates participate in and pass the MTTC. All teacher candidates must take the MTTC in their subject area as a condition of certification, though the timing of this requirement varies by preparation program, with some programs requiring it before students begin their student teaching internships while others do not require it until certification. Eighty-nine percent of candidates from the 15 universities in our sample had already completed at least 90% of their program requirements when they took the MTTC for the first time.⁵

Although we cannot connect MTTC testing records to postsecondary student records, we make several sample restrictions to align our samples as closely as possible across analyses. To align with the sample of first-time college students in our coursework analysis, we limit the MTTC sample to test-takers who attended one of the 15 public, in-state institutions of higher education with a teacher preparation program, had no prior test records from a different institution of higher education, and were 26 years old or younger at the time they were tested. While some of the students in the postsecondary sample may have taken the MTTC before 2018, we limit the sample to test records from the 2018 through 2021 calendar years due to concerns about data coverage in earlier years.⁶

Certification and Early Career

Our third set of analyses examines employment outcomes during the first 5 years after a teacher candidate earns their initial certification. We once again make several sample restrictions to align the sample for these analyses with those for the postsecondary coursework and licensure testing samples. We include educators who earned their initial certification from one of the 15 public, in-state institutions of higher education with teacher preparation programs during the 2012-13 through 2016-17 school years. We chose this time span to ensure that we can observe employment outcomes for the first 5 full school years after each cohort of new teachers earned their initial

teaching certificates.⁷ We additionally restrict our sample to those who were 26 years old or younger at the time they earned their initial certificate to align with the postsecondary analysis sample of first-time college goers.

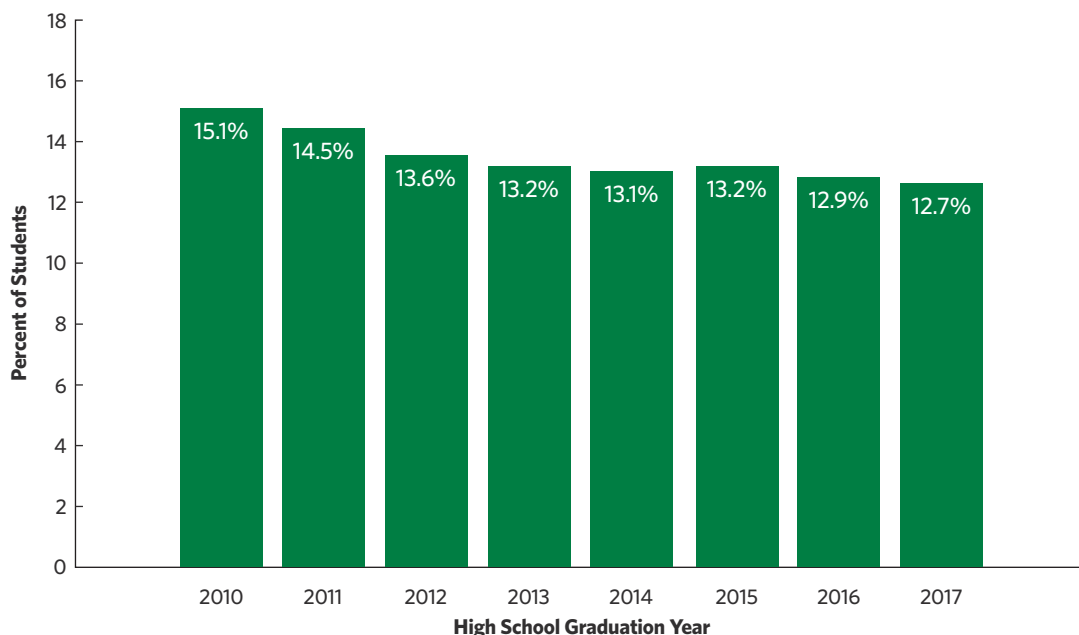
FINDINGS

In this section, we show patterns of attrition from Michigan's teacher pipeline, beginning with early stages as students enter and progress through teacher preparation programs, followed by teacher licensure testing, and finally early career outcomes. We then show how the diversity of Michigan's pool of teachers and teacher candidates changes across all of these stages of the pipeline.

Enrollment in Undergraduate Teacher Education Courses Has Decreased Over Time and Varies by Demographic Group

Fewer Michigan undergraduate students have been enrolling in education courses in recent years, which could be a sign of declining interest in the teaching profession. Figure 1 shows the percentage of students from each cohort who took at least one course offered through a teacher education department. This likely includes some students who have not yet committed to a field of study and are considering teaching as a possible career path, students who have already decided to pursue teaching, and potentially students who already know they do not want to be teachers but are interested in the course content. As the figure shows, the percentage of students who take an initial teacher education course declined by 2.4 percentage points—representing a 15.9% decrease—from 2010 to 2017.

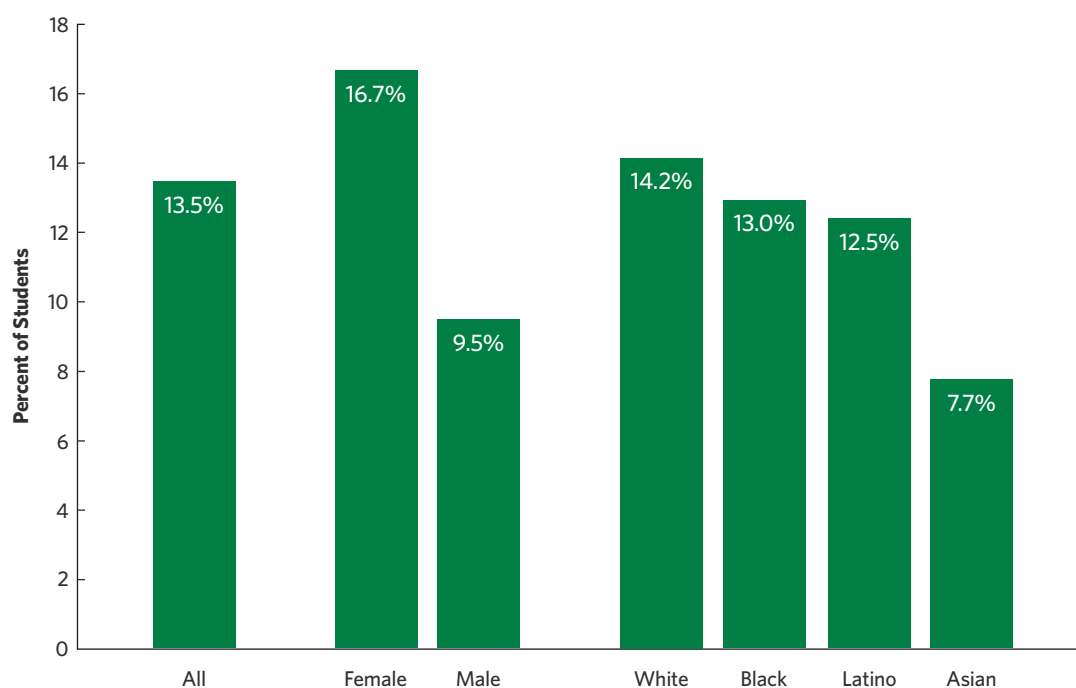
FIGURE 1. Percent of Students Who Take an Education Course Within 5 Years of Starting College



Note: We include all postsecondary course records from the first 5 years after a student graduated from high school (e.g., courses from the 2017-18 through 2021-22 school years for 2017 graduates).

Even at this early stage in the pipeline, we see varying levels of interest in teaching across subgroups. As Figure 2 shows, interest in teaching is highest among female and White students with 16.7% and 14.2% taking an education course, respectively. Meanwhile, male and Asian students displayed the lowest rates of interest at 9.5% and 7.7%, respectively.

FIGURE 2. Percent of Students Who Take an Initial Teacher Education Course Within 5 Years, by Subgroup



Notes: We include all course records from the first 5 years after a student graduated from high school (e.g., courses from 2017-18 through 2021-22 for 2017 graduates). We cannot show rates for students who are Native American, Hawaiian or Pacific Islander, or two or more races due to low sample sizes.

Few of the students who enroll in an initial education course continue on to complete more advanced education courses.

Only a Fraction of the Students Who Take an Initial Education Course Become Student Teachers

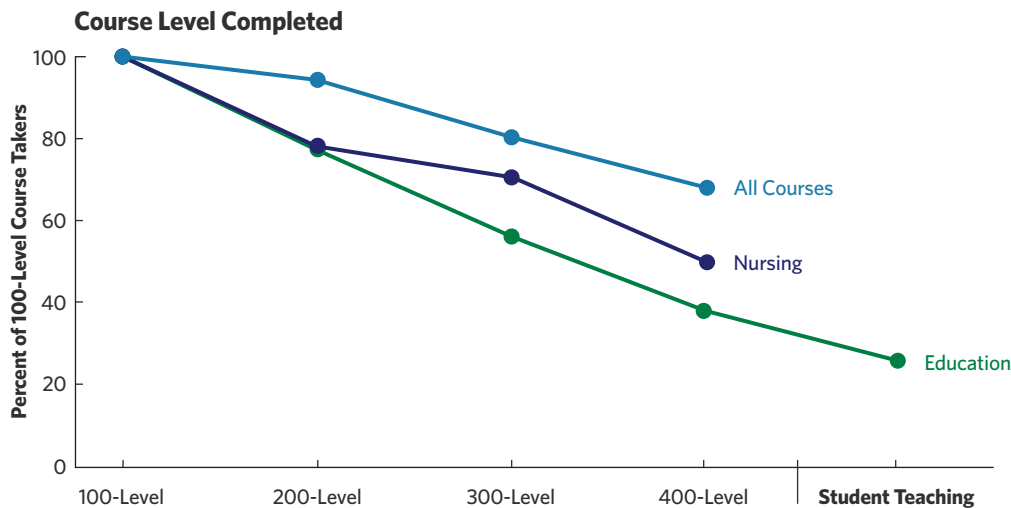
Relatively few of the students who enroll in an initial education course continue on to complete more advanced education courses, and even fewer become student teachers. Figure 3 shows the percentage of students who reach each level of education coursework, conditional on having demonstrated an early interest in teaching by taking at least one course offered through a teacher education department. Approximately 34,000 students across the eight cohorts express such an interest in teaching, or 14%

of students. However, this represents the highwater mark of interest in teacher preparation. By the student teaching internship stage, just over 8,800 students remain, representing just 26% of those who expressed an initial interest through their course-taking.

Importantly, it is not the case that most of these students simply chose not to continue after taking an introductory-level course. Of the 34,000 who took an initial education course, 77% continued their teacher preparation studies up through at least a 200-level course. This decreases to 56% for 300-level courses and 38% for 400-level courses. Nearly one-third of the students who completed advanced (400-level) teacher education courses did not continue on to the student teaching stage.

These decreases exceed the overall rate of attrition from the universities in our sample and the rate of attrition from similar pre-professional areas of study. We would expect to see some attrition across course levels in any content area, as many students take introductory courses to fulfill general education requirements or explore different subject areas before choosing a major and some drop out before taking any advanced courses at all. However, we show in Figure 3 that the high rate of attrition from teacher education courses is not merely a reflection of the overall attrition rate at Michigan universities, nor is it analogous to attrition in another similarly female-dominated profession (nursing). While only 4% of students take at least one nursing course, compared to 14% in education, 50% of students who take a nursing course eventually progress to advanced (400-level) courses, compared to 38% of students who take an education course.

FIGURE 3. Course Progression Rates for Undergraduates in All Courses, Nursing, and Education



Notes: We include all postsecondary course records from the first 5 years after a student graduated from high school. Each point represents the number of students who enrolled in a course at or above a given level divided by the total number of students who took at least a 100-level course.

Both male and female students contribute to the high overall rates of attrition from education courses. The top panel of Figure 4 shows that men are not only less likely than women to enroll in an initial education course but also less likely to progress to each subsequent level of education coursework. Only 16% of men who take an initial education course become student teachers. The remaining two panels of the figure show that male students are also less likely to continue

taking any higher-level courses at all and less likely to progress to advanced nursing courses. However, these gender differences in course attrition rates are larger for education than for nursing or overall course progression. Female students' attrition from education courses also contribute greatly to the low rate of course progression completion in education. Only 43% of women who take an initial education course progress to 400-level courses, compared to 51% of women in nursing courses and 69% for overall course-taking. Only 31% of women who take an initial education course become student teachers.

Prospective Teachers of Color are Disproportionately Likely to Exit the Pipeline During the Advanced Coursework, Student Teaching, and Licensure Stages

Attrition rates are higher for students of color than for White students. Although Black, Latino, and White students enroll in initial education courses at similar rates (shown in Figure 2), the top panel of Figure 5 shows that White students are slightly more likely than Latino students and far more likely than Black students to continue on to more advanced teacher preparation

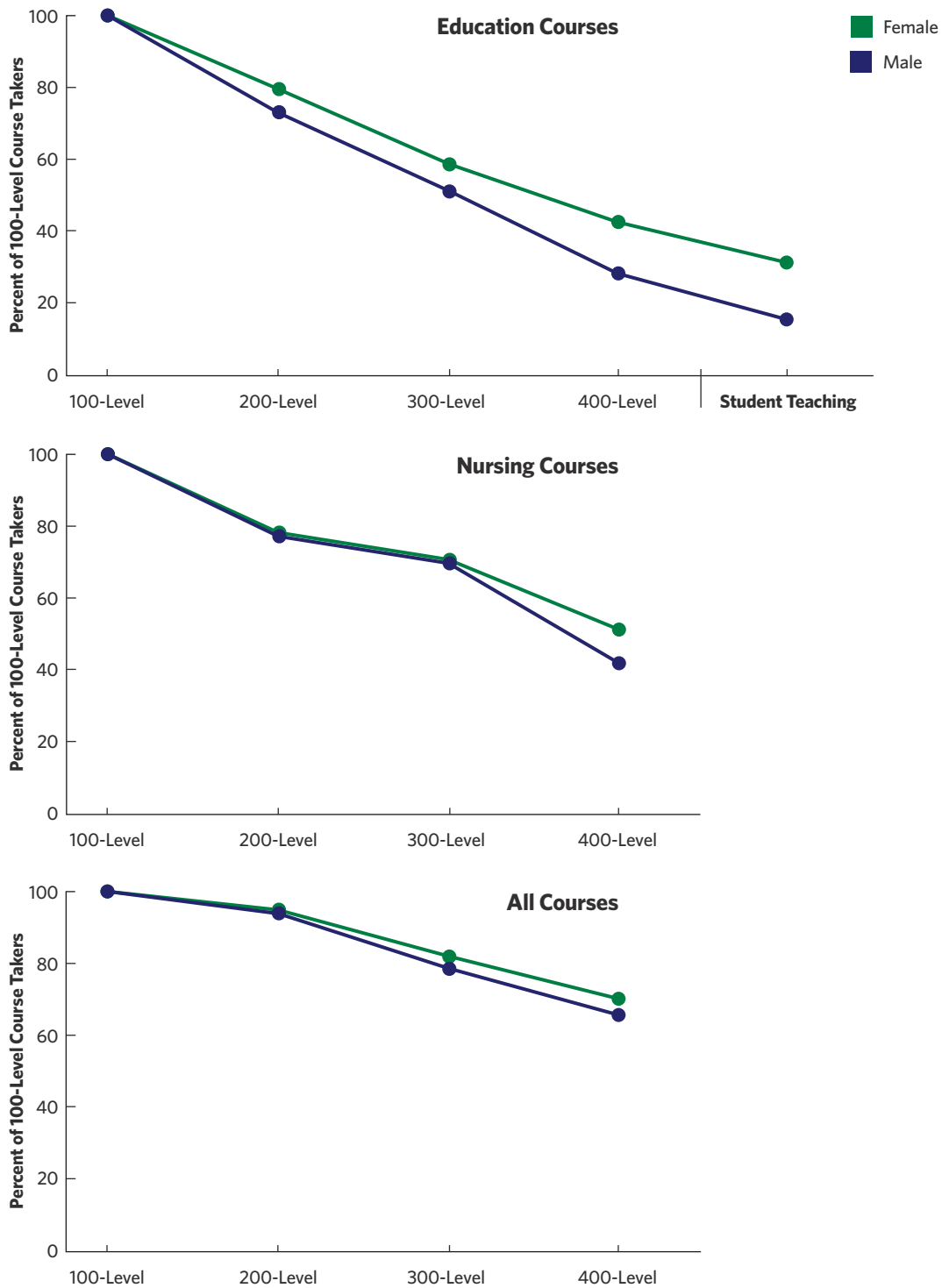
coursework. Indeed, 23% of Latino students and just 7% of Black students who take an initial education course eventually become student teachers, compared to 30% of White students. Asian students are not only less likely than any other group to enroll in an initial education course, but those who do take an initial course are less likely to progress to student teaching (14%), compared to White and Latino students.

These patterns of attrition across race/ethnicity subgroups in education courses are somewhat different than those for other types of courses. The bottom two panels of Figure 5 show even more variation in progression rates in nursing than in education, with 55% of White students and 16% of Black students continuing on to 400-level nursing courses (a 39 percentage-point difference), compared to 41% and 7%, respectively, (a 34 percentage-point difference) for education courses. The gap between White and Black teacher candidates becomes even larger at the student

teaching stage. Asian students are less likely than White students to take 400-level education courses or become student teachers, despite being about equally likely as White students to take 400-level nursing courses, and more likely to take any 400-level courses at all. Gaps in course progression rates between White and Latino students, on the other hand, are smaller in education than in nursing or overall course-taking.

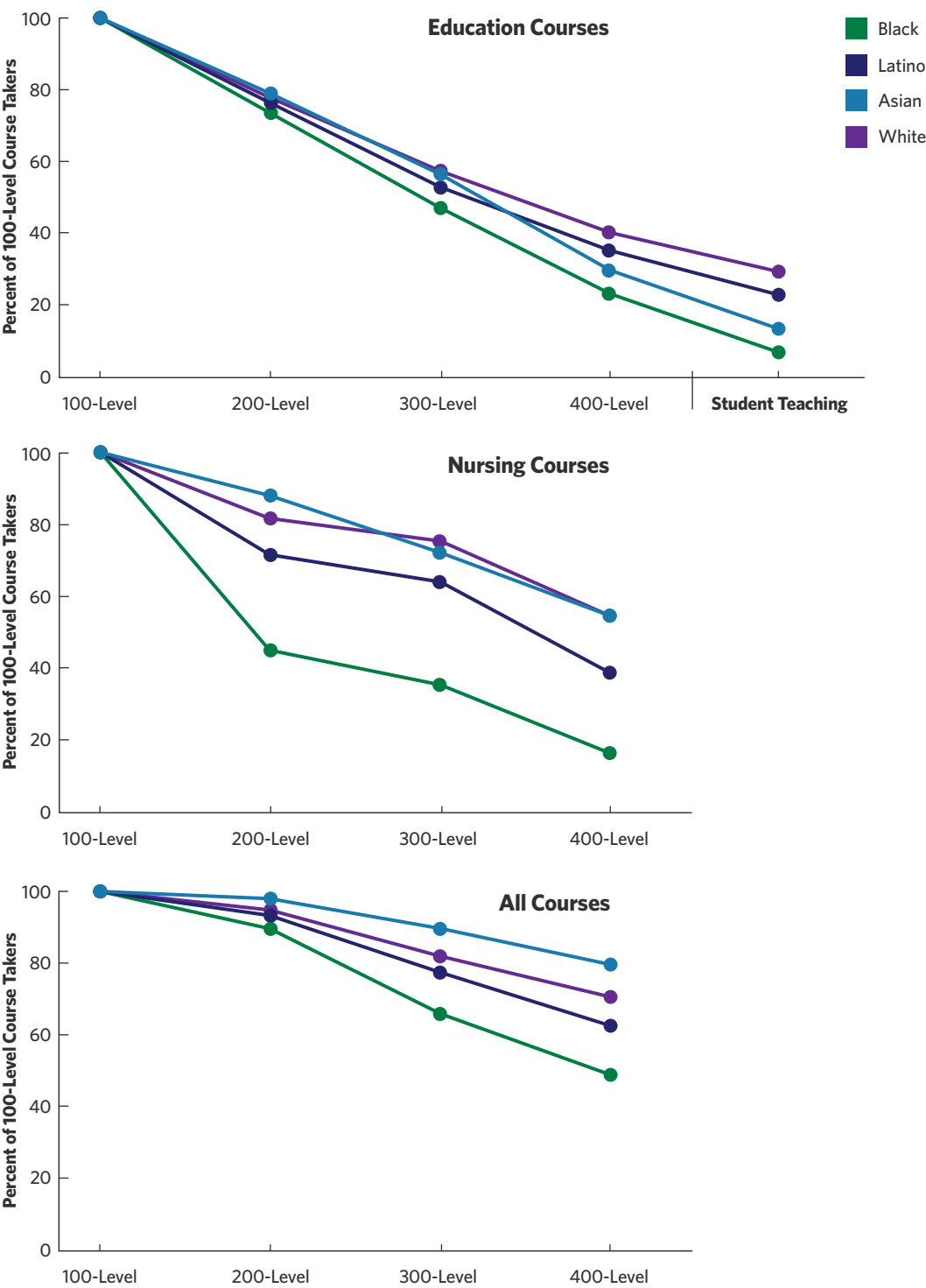
Attrition rates are higher for students of color — 23% of Latino students and just 7% of Black students who take an initial education course eventually become student teachers.

FIGURE 4. Course Progression Rates for Undergraduates in Education, Nursing, and All Courses by Gender



Notes: We include course records from the first 5 years after a student graduated from high school. Each point represents the number of students who enrolled in a course at or above each level divided by the total number of students who took at least a 100-level course.

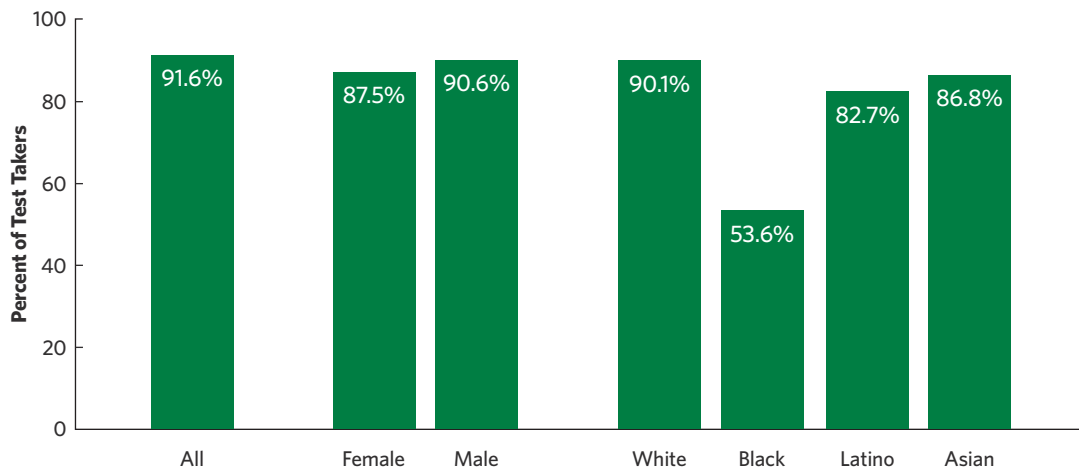
FIGURE 5. Course Progression Rates for Undergraduates in Education, Nursing, and All Courses by Race/Ethnicity



Notes: We include course records from the first 5 years after a student graduated from high school. Each point represents the number of students who enrolled in a course at or above each level divided by the total number of 100-level or above course-takers. We cannot show trends for students who are Native American, Hawaiian or Pacific Islander, or two or more races due to low sample sizes.

Michigan's teacher pipeline also becomes less diverse at the MTTC milestone. As Figure 6 shows, Black teacher candidates have the lowest pass rate on the MTTC of any demographic subgroup.⁸ Only 54% of Black test-takers pass the MTTC, compared to 90%, 87%, and 83% of their White, Asian, and Latino counterparts, respectively. Pass rates vary slightly by gender as well, with women achieving an 88% pass rate compared to men's 91%. While the MTTC alone cannot explain the attrition we see in education course-taking, it may contribute to the differential rate we see across race and ethnicity, particularly for Black teachers.

FIGURE 6. MTTC Pass Rates by Demographic Subgroup



Notes: MTTC pass rates only include test-takers from public, in-state institutions of higher education with traditional-route teacher preparation programs who were 26 or younger and had no prior MTTC records from other institutions of higher education at the time they were tested. We cannot show rates for test-takers who are Native American, Hawaiian or Pacific Islander, or two or more races due to low sample sizes.

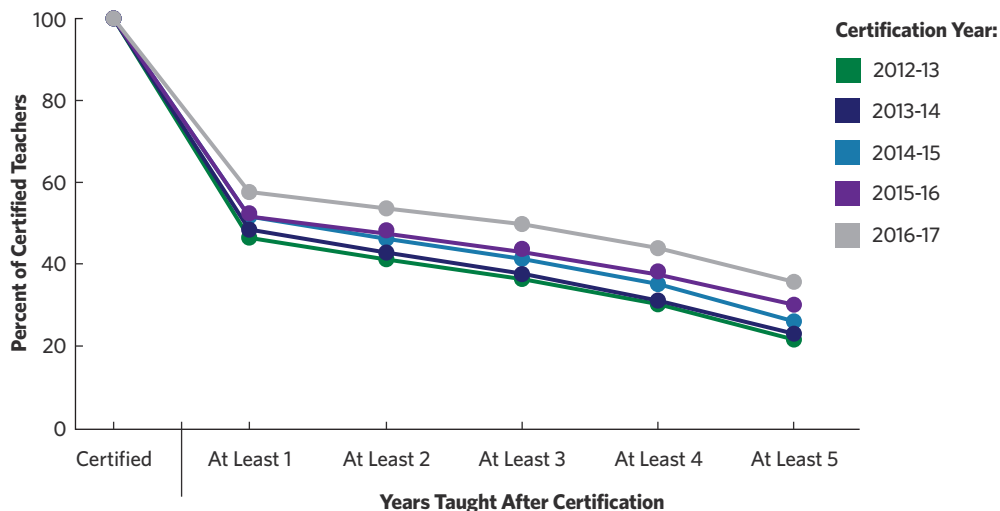
This is particularly concerning given that results from research examining licensure tests' predictiveness of future teaching performance vary substantially across different studies, states, and subgroups of teachers (Putman & Walsh, 2021), with some finding that the predictive validity varies by examinees' race/ethnicity (Goldhaber & Hansen, 2010) and that, even after controlling for undergraduate GPA, institution selectivity, and parents' education level, Black test-takers still score lower than their White peers (Nettles et al., 2011). Researchers point to several possible factors that may contribute to these patterns, including bias inherent in the test itself, examinees' interactions with proctors and other test-takers at the testing site, and access to test preparation resources and peers who have successfully completed the exams in the past (Steele & Aronson, 1995; Petchauer, 2012; Petchauer, 2014). While it is not clear what is driving these results in Michigan, the vast discrepancy in pass rates warrants further investigation to ensure that Black teacher candidates are tested fairly and receive the necessary support to succeed on the MTTC.

Michigan's teacher pipeline also becomes less diverse at the MTTC milestone.

Recent Cohorts of Teacher Preparation Graduates are More Likely to Work as Public School Teachers in Michigan

Despite fewer students choosing to take education courses in recent years (as we showed in Figure 1), those who complete a teacher preparation program and become certified are more likely to enter Michigan's public school teaching workforce. As Figure 7 shows, the percentage of new certificate-holders employed as Michigan public school teachers in the first 5 years after earning their certification increased for each successive cohort of teacher preparation graduates from 2012-13 to 2016-17. The labor market conditions in recent years are likely among the factors contributing to this pattern. In the entry years for the early cohorts, the number of candidates who became certified to teach in Michigan exceeded the number of new teachers employed in schools, indicating a surplus, whereas the opposite was true for the later cohorts (Stackhouse, 2017). We cannot say whether the increasing rates of employment are due to greater interest in the profession among those certified or the greater availability of teaching positions.

FIGURE 7. Percent of Candidates Who Taught in a Michigan Public School Within 5 Years of Certification, by Certification Year



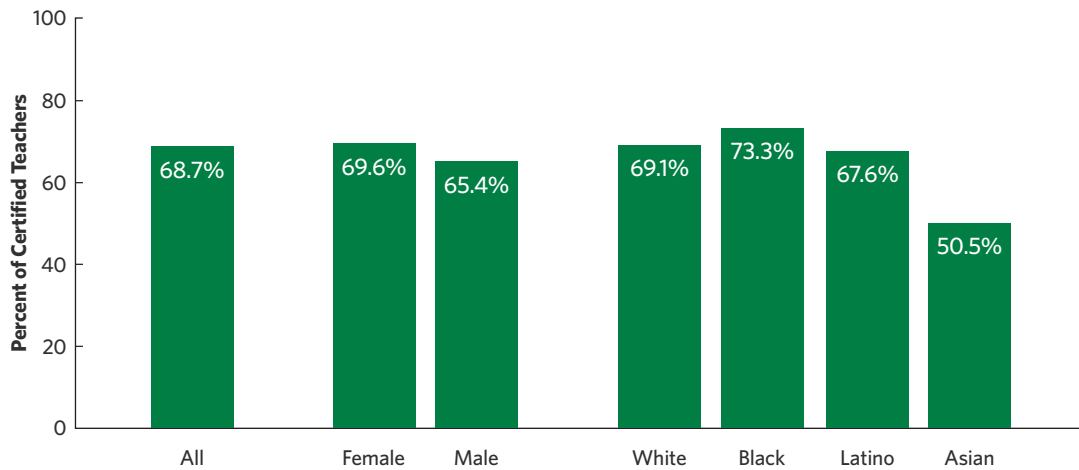
Note: We include employment records from the first 5 school years after a candidate became certified to teach in Michigan (e.g., employment during the 2017-18 through 2021-22 school years for the 2016-17 certification cohort).

Black Teacher Candidates are More Likely to Enter and Stay in Michigan's Public School Teaching Workforce

Despite having far lower passing rates on the MTTC, Black teachers who do become certified are more likely than any other demographic group to work as public school teachers in Michigan within 5 years of earning their initial certificates. Figure 8 shows that nearly three-quarters of newly certified teachers who are Black end up working in a Michigan public school, compared to approximately two-thirds of those who are White or Latino, and only about half of those who are Asian.

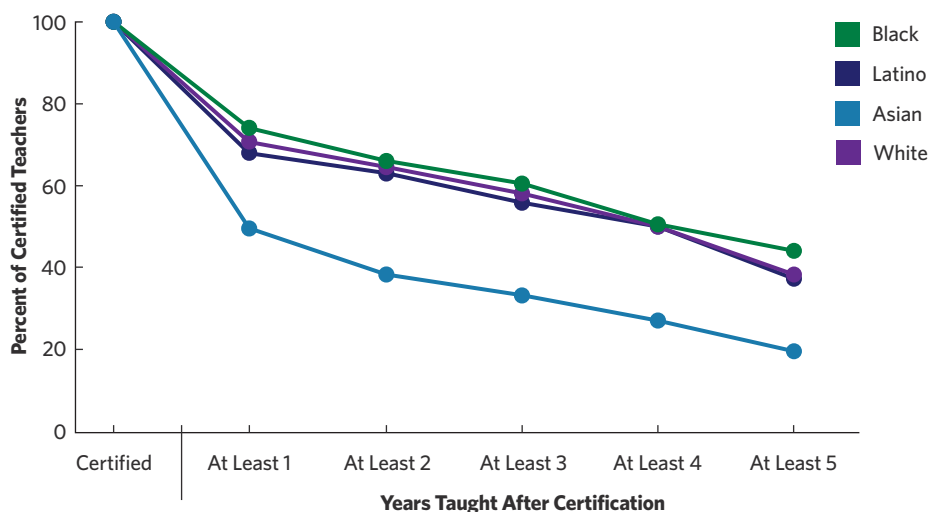
Black teachers also have the highest rates of continued employment over the first 5 years after becoming certified to teach. As Figure 9 shows, nearly half (44%) of all newly certified Black teachers taught for all 5 years, compared to 38% of White and Latino teachers and only about 20% of newly certified Asian teachers.

FIGURE 8. Percent of Candidates Who Taught in a Michigan Public School Within 5 Years of Certification, by Demographic Subgroup



Notes: We include employment records from the first 5 school years after a candidate became certified to teach in Michigan (e.g., employment during the 2017-18 through 2021-22 school years for the 2016-17 certification cohort). We cannot show rates for teachers who are Native American, Hawaiian or Pacific Islander, or two or more races due to low sample sizes.

FIGURE 9. Percent of Candidates Who Taught in a Michigan Public School Within 5 Years of Certification, by Race/Ethnicity

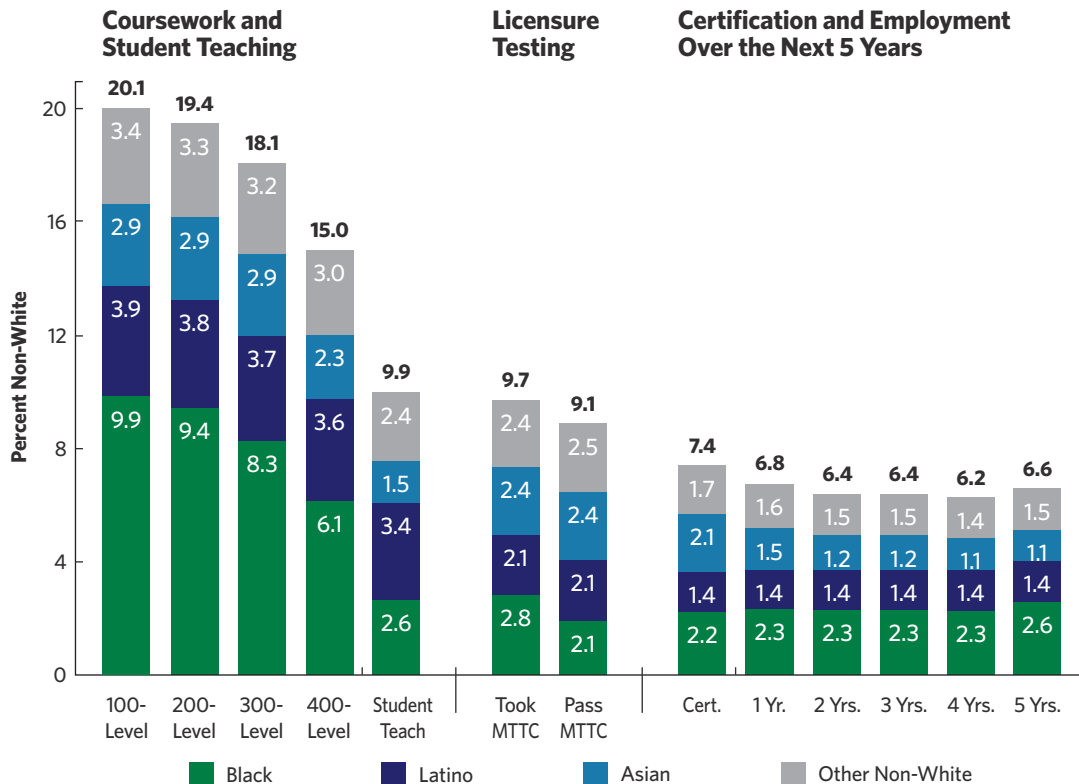


Notes: We include employment records from the first 5 school years after a candidate became certified to teach in Michigan (e.g., employment during the 2017-18 through 2021-22 school years for the 2016-17 certification cohort). We cannot show rates for teachers who are Native American, Hawaiian or Pacific Islander, or two or more races due to low sample sizes.

The Pool of Prospective Michigan Teachers Becomes Less Diverse as Candidates Progress Between the Coursework, Licensure, and Employment Stages

As a result of the differential rates of attrition for teachers of color at many stages of the pipeline, the pool of prospective Michigan teachers becomes less diverse as candidates progress further through their preparation programs and into the workforce. Figure 10 shows changes in the racial/ethnic composition of Michigan's teacher pipeline across each of the postsecondary, licensure, and employment stages in our attrition analyses. The combined height of each stacked bar represents the percentage of teachers or teacher candidates at a particular stage of the pipeline who are of any non-White race or ethnicity. The share of non-White teachers begins at 20% for introductory level classes, but declines at each successive stage, reducing to about 10% by the student teaching stage and less than 7% for early career teachers working in Michigan public schools.

FIGURE 10. Diversity at Each Stage of the Teacher Pipeline



Notes: The combined height of each stacked bar represents the overall percentage of teachers or candidates who are of a non-White race/ethnicity at a given stage of the pipeline. The "Other Non-White" category includes teachers/candidates who are Native American, Hawaiian or Pacific Islander, or two or more races; we cannot show separate bars for each of these groups due to low sample sizes.

The largest decline in the share of non-White teacher candidates (and Black candidates in particular) takes place in between the advanced coursework and student teaching stages. We see an additional drop in diversity after students take the MTTC, driven almost entirely by the low pass rate for Black teachers (shown in Figure 6). After candidates become certified and

enter the workforce, we see yet another decrease in the share of non-White teachers, largely driven by attrition among Asian teachers who do not become employed in Michigan public schools after certification. The share of Black teachers increases after initial certification, due to the comparatively high rates of initial and continued employment among Black teachers.

IMPLICATIONS AND POLICY RECOMMENDATIONS

This report makes clear that Michigan loses prospective teachers at every stage of the pipeline and that these “leaks” contribute to a lack of diversity in Michigan’s teacher workforce. Based on these findings, we offer several recommendations to strengthen and diversify the supply of Michigan teachers. The Michigan Department of Education, state legislature, and governor have made substantial efforts and investments in recent years toward these same goals. As we discuss our key findings and their implications, we also note some of the existing initiatives in Michigan that align with our recommendations.

Prioritize Programs that Address the “Leak” in the Pipeline Before Candidates Begin Student Teaching

The most substantial “leaks” in the pipeline take place before candidates begin student teaching, as many of the candidates who complete advanced teacher preparation courses never become student teachers. These results underscore the importance of policy initiatives and programs that can reach prospective teachers earlier in the pipeline, focusing on students’ postsecondary experiences, if they are to build and diversify the supply of teachers. In particular, it will be critical to understand and remove barriers preventing candidates who have completed advanced teacher preparation coursework from continuing their training through the student teaching stage. Recent policy initiatives and program changes that are already underway in Michigan, such as the [MI Future Educator Stipend](#), [MI Future Educator Fellowship](#), and Michigan State University’s decision to shorten the length of its teacher preparation program (Knapp & Ward, 2022), aim to reduce financial barriers that may have prevented some candidates from reaching this stage of the pipeline.

Students’ early clinical experiences and the mentoring they receive during their pre-student teaching apprenticeships may also play important roles in getting prospective teachers into student teaching placements and ultimately into the workforce. In 2018, the MDE implemented [new requirements](#) for supervised clinical experiences in teacher preparation programs, which provide flexibility for teacher preparation programs to choose how to allocate some of the state-required hours. For instance, some programs may prioritize early “exploratory” experiences for students to observe classrooms or allocate extra time to pre-student teaching apprenticeships to better prepare candidates for student teaching. As the first cohorts of teacher candidates affected by these new guidelines begin to complete their programs and enter the workforce, it will be important to understand how teacher preparation programs are structuring students’ clinical experiences and how these decisions have affected candidates’ transitions into student teaching

placements and eventually into the workforce.

Investigate the Low Pass Rates for Black Candidates on Michigan's Teacher Licensure Tests

Pass rates on the MTTC are far lower for Black test-takers than for those of any other race/ethnicity. It will be critical to understand why these discrepancies exist and what role they play in the high rate of attrition for Black teacher candidates before reaching the student teaching stage of their preparation programs.

To help support Black candidates succeed on Michigan's teacher licensure exam, teacher preparation providers should consider providing resources like test preparation courses, study guides, and practice tests for candidates who are preparing to take the MTTC. Providers should also consider offering [vouchers](#) not only for first-time test-takers but also to encourage students to re-take the MTTC if they do not receive a passing grade on the first try, as well as vouchers for [practice tests](#) that closely resemble the actual exam.

Promote Alternative Pathways to Teaching that Have Been Shown to Help Diversify the Workforce, but Also Prioritize Improving Traditional Pathways to Better Serve Potential Teachers of Color

The analyses in this report highlight ways that attrition from Michigan's traditional-route teacher preparation programs contributes to a lack of diversity in the teaching workforce. In addition to working to understand and improve how traditional programs serve potential teachers of color, it will also be important to continue promoting evidence-based strategies, innovative programs, and alternative pathways that have shown to be effective for recruiting and retaining teachers of color (Boyd, et al., 2005; Feistritzer & Haar, 2007). Michigan's [Grow-Your-Own](#) grants and [Future Proud Michigan Educator Explore Program](#) are both examples of state efforts to draw from broader pools of prospective teachers.

However, these types of programs only account for a very small percentage of the new teachers becoming certified to teach in Michigan each year, while the overwhelming majority come through traditional teacher preparation programs (United States Department of Education, 2023). Thus, it is critically important that Michigan's traditional-route teacher preparation programs are also set up in ways that give prospective teachers, particularly those from groups that are underrepresented in the workforce, the best possible chance at success.

ENDNOTES

1. EPIC researchers have been working with Michigan's Center for Educational Performance and Information (CEPI) to establish and validate a link between these datasets. This will enable us to study individuals' progression throughout the pipeline from their time as students to their later credentialing and employment outcomes in future research.
2. To ensure the accuracy and completeness of the data, we restrict our analysis to public universities, as private and for-profit institutions are not required to report course enrollment data for all of their students.
3. We identify "education courses" based on the subject area abbreviation for each course on a student's transcript. As a result, it is possible that our definition includes some courses that are offered through education departments but are not specifically geared toward teacher preparation students or excludes some courses offered through other departments that are geared toward prospective teachers.
4. Not all teacher preparation programs require or even offer education courses at every possible undergraduate level (i.e., 100-, 200-, 300-, and 400-level courses), and some students may take a higher-level course before a lower-level one. To account for these differences, we classify students based on the *highest level* of education coursework they completed within 5 years of beginning their undergraduate studies. For example, we include students who only took 200-, 300-, and 400-level courses in our counts of those who reached the "100-level course" stage.
5. The annual performance ratings that MDE calculates for teacher preparation providers only include MTTC data for students whose institutions indicated they are "eligible," meaning that they completed at least 90% of their program requirements before they took the test. The MTTC dataset we use for our analysis includes both "eligible" and "non-eligible" students, but does not specify which students fall into each category. To estimate the proportion of students in our sample who completed 90% of their program requirements before taking the test, we compared student counts and pass rates for test-takers in this dataset to those that MDE reported in their [MTTC three-year cumulative report for 2018-2021](#). We found that discrepancies between the counts in our dataset and MDE's report were primarily driven by institutions that require some or all candidates to take the MTTC before they can begin student teaching. However, it is also possible that our sample also includes some students who simply chose to take the test before completing the appropriate coursework. Overall pass rates for the teacher preparation providers in our sample are about 2 percentage points lower than those in the MTTC report, as students who have not completed 90% of their program requirements are less likely to pass the test.
6. The MTTC dataset only includes records for test-takers with ID numbers in Michigan's educator data systems. As a result, records for some test-takers who never went on to earn a teaching credential or work in a public school are missing from the dataset, particularly in earlier years. We limit our analyses to test records from 2018 through 2021, as the coverage rate is about 97% for individuals who took the MTTC in these years, compared to only 88% for those who tested between 1992 and 2017. The records that are missing from the dataset for 2018-2021 test-takers include a disproportionate number of students from institutions that are not in our analysis sample. Thus, it is unlikely that our results would change substantially based on the students who are missing from the dataset due to how few of them would meet the criteria for our analysis sample.
7. We place teachers into cohorts based on the school year during which they earned their initial teaching certificates, where each school year begins on September 1st of a given year and ends on August 31st of the following year (e.g., teachers certified between September 1st, 2012 and August 31st, 2013 belong to the 2012-13 certification cohort). We then examine their employment outcomes (i.e., whether they worked as public school teachers in Michigan) in each of the next 5 school years after their certification year (e.g., 2013-14 through 2017-18 for the 2012-13 certification cohort).
8. This disparity is more pronounced for our analysis sample of younger teacher candidates from public institutions of higher education in Michigan than it is for the full population of MTTC test-takers.

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APPENDIX

Table A1. Percent of Students Who Take an Initial Teacher Education Course Within 5 Years, by Cohort

High School Graduation Year	Percent of Students
2010	15.1%
2011	14.5%
2012	13.6%
2013	13.2%
2014	13.1%
2015	13.2%
2016	12.9%
2017	12.7%

Notes: We include all postsecondary course records from the first 5 years after a student graduated from high school (e.g., courses from the 2017-18 through 2021-22 school years for 2017 graduates).

Table A2. Percent of Students Who Take an Initial Teacher Education Course Within 5 Years, by Subgroup

Student Group	Percent of Students
Overall	
All Students	13.5%
By Gender	
Female	16.7%
Male	9.5%
By Race/Ethnicity	
White	14.2%
Black	13.0%
Latino	12.5%
Asian	7.7%

Notes: We include all course records from the first 5 years after a student graduated from high school (e.g., courses from 2017-18 through 2021-22 for 2017 graduates). We cannot show rates for students who are Native American, Hawaiian or Pacific Islander, or two or more races due to low sample sizes.

Table A3. Course Progression Rates for Undergraduates in All Courses, Nursing, and Education

Percent of 100-Level Course-Takers	All Courses	Nursing Courses	Education Courses
100-Level or Higher	100%	100%	100%
200-Level or Higher	94.3%	77.9%	77.4%
300-Level or Higher	80.4%	70.7%	56.3%
400-Level or Higher	68.1%	50.0%	38.1%
Student Teaching	n/a	n/a	26.3%

Notes: We include all postsecondary course records from the first 5 years after a student graduated from high school. Each percentage represents the number of students who enrolled in a course at or above a given level divided by the total number of students who took at least a 100-level course.

Table A4. Course Progression Rates for Undergraduates in All Courses, Nursing, and Education by Gender			
Percent of 100-Level Course-Takers	All Courses	Nursing Courses	Education Courses
Female Students			
100-Level or Higher	100%	100%	100%
200-Level or Higher	94.7%	78.0%	79.5%
300-Level or Higher	81.8%	70.9%	58.6%
400-Level or Higher	70.0%	51.3%	42.6%
Student Teaching	n/a	n/a	31.3%
Male Students			
100-Level or Higher	100%	100%	100%
200-Level or Higher	93.9%	77.1%	73.0%
300-Level or Higher	78.5%	69.8%	51.3%
400-Level or Higher	65.7%	42.0%	28.3%
Student Teaching	n/a	n/a	15.5%

Notes: We include course records from the first 5 years after a student graduated from high school. Each percentage represents the number of students who enrolled in a course at or above each level divided by the total number of students who took at least a 100-level course.

Table A5. Course Progression Rates for Undergraduates in All Courses, Nursing, and Education by Race/Ethnicity			
Percent of 100-Level Course-Takers	All Courses	Nursing Courses	Education Courses
White Students			
100-Level or Higher	100%	100%	100%
200-Level or Higher	94.8%	81.8%	78.0%
300-Level or Higher	82.1%	75.5%	57.7%
400-Level or Higher	70.5%	54.8%	40.6%
Student Teaching	n/a	n/a	29.6%
Black Students			
100-Level or Higher	100%	100%	100%
200-Level or Higher	89.7%	44.7%	73.7%
300-Level or Higher	66.0%	35.4%	47.3%
400-Level or Higher	49.0%	16.4%	23.7%
Student Teaching	n/a	n/a	7.1%
Latino Students			
100-Level or Higher	100%	100%	100%
200-Level or Higher	93.3%	71.5%	76.7%
300-Level or Higher	77.5%	64.4%	53.2%
400-Level or Higher	62.7%	39.0%	35.5%
Student Teaching	n/a	n/a	23.2%
Asian Students			
100-Level or Higher	100%	100%	100%
200-Level or Higher	98.1%	88.2%	78.9%
300-Level or Higher	89.8%	72.4%	56.7%
400-Level or Higher	79.8%	54.5%	30.2%
Student Teaching	n/a	n/a	13.7%

Notes: We include course records from the first 5 years after a student graduated from high school. Each percentage represents the number of students who enrolled in a course at or above each level divided by the total number of 100-level or above course-takers. We cannot show trends for students who are Native American, Hawaiian or Pacific Islander, or two or more races due to low sample sizes.

Table A6. MTTC Pass Rates by Demographic Subgroup

Group of Test-Takers	Percent of Test-Takers Who Received a Passing Score
Overall	
All Test-Takers	91.6%
By Gender	
Female	87.5%
Male	90.6%
By Race/Ethnicity	
White	90.1%
Black	53.6%
Latino	82.7%
Asian	86.8%

Notes: MTTC pass rates only include test-takers from public, in-state institutes of higher education with traditional-route teacher preparation programs who were 26 or younger and had no prior MTTC records from other institutes of higher education at the time they were tested. We cannot show rates for test-takers who are Native American, Hawaiian or Pacific Islander, or two or more races due to low sample sizes.

Table A7. Percent of Candidates Who Taught in a Michigan Public School Within 5 Years of Certification, by Certification Year

Years Taught After Certification	Certification Year				
	2012-13	2013-14	2014-15	2015-16	2016-17
At Least 1	46.3%	48.2%	51.6%	52.6%	57.6%
At Least 2	41.5%	43.4%	46.5%	48.6%	54.0%
At Least 3	36.7%	38.0%	41.6%	44.2%	50.0%
At Least 4	30.6%	32.0%	35.6%	38.6%	44.4%
At Least 5	22.0%	23.3%	26.5%	31.1%	36.0%

Notes: We include employment records from the first 5 school years after a candidate became certified to teach in Michigan (e.g., employment during the 2017-18 through 2021-22 school years for the 2016-17 certification cohort).

Table A8. Percent of Candidates Who Taught in a Michigan Public School Within 5 Years of Certification, by Demographic Subgroup

Group of Newly Certified Teachers	Percent of Certified Teachers Who Were Employed in a Michigan Public School for at Least 1 Year
Overall	
All Certified Teachers	68.7%
By Gender	
Female	69.6%
Male	65.4%
By Race/Ethnicity	
White	69.1%
Black	73.3%
Latino	67.6%
Asian	50.5%

Notes: We include employment records from the first 5 school years after a candidate became certified to teach in Michigan (e.g., employment during the 2017-18 through 2021-22 school years for the 2016-17 certification cohort). We cannot show rates for teachers who are Native American, Hawaiian or Pacific Islander, or two or more races due to low sample sizes.

Table A9. Percent of Candidates Who Taught in a Michigan Public School Within 5 Years of Certification, by Race/Ethnicity

Years Taught After Certification	Race/Ethnicity			
	White	Black	Latino	Asian
At Least 1	70.4%	73.7%	67.6%	49.6%
At Least 2	64.7%	66.2%	63.1%	38.4%
At Least 3	58.2%	60.4%	55.9%	33.4%
At Least 4	50.1%	50.7%	50.3%	27.1%
At Least 5	38.3%	44.2%	37.4%	19.8%

Notes: We include employment records from the first 5 school years after a candidate became certified to teach in Michigan (e.g., employment during the 2017-18 through 2021-22 school years for the 2016-17 certification cohort). We cannot show rates for teachers who are Native American, Hawaiian or Pacific Islander, or two or more races due to low sample sizes.

Table A10. Diversity at Each Stage of the Teacher Pipeline

	Percent of Teachers/Candidates Who are Non-White				
	Black	Latino	Asian	Other Non-White	Total Non-White
COURSEWORK AND STUDENT TEACHING					
100-Level or Higher	9.9%	3.9%	2.9%	3.4%	20.1%
200-Level or Higher	9.4%	3.8%	2.9%	3.3%	19.4%
300-Level or Higher	8.3%	3.7%	2.9%	3.2%	18.1%
400-Level or Higher	6.1%	3.6%	2.3%	3.0%	15.0%
Student Teaching	2.6%	3.4%	1.5%	2.4%	9.9%
LICENSURE TESTING					
Took MTTC	2.8%	2.1%	2.4%	2.4%	9.7%
Passed MTTC	2.1%	2.1%	2.4%	2.5%	9.1%
CERTIFICATION AND EMPLOYMENT OVER THE NEXT 5 YEARS					
Certified	2.2%	1.4%	2.1%	1.7%	7.4%
Taught at Least 1 Year	2.3%	1.4%	1.5%	1.6%	6.8%
Taught at Least 2 Years	2.3%	1.4%	1.2%	1.5%	6.4%
Taught at Least 3 Years	2.3%	1.4%	1.2%	1.5%	6.4%
Taught at Least 4 Years	2.3%	1.4%	1.1%	1.4%	6.2%
Taught at Least 5 Years	2.6%	1.4%	1.1%	1.5%	6.6%

Notes: The last column shows the combined total across the first four columns. This represents the total percentage of teachers/candidates at each stage of the pipeline who are non-White. The "Other Non-White" category includes teachers/candidates who are Native American, Hawaiian or Pacific Islander, or two or more races; we cannot show separate bars for each of these groups due to low sample sizes.



Education Policy Innovation Collaborative

MICHIGAN STATE UNIVERSITY
236 Erickson Hall | 620 Farm Lane
East Lansing, MI 48824

(517) 884-0377
EPICedpolicy@msu.edu
www.EPICedpolicy.org