



Two Years Later: How COVID-19 has Shaped the Teacher Workforce

Andrew Bacher-Hicks
Boston University

Olivia L. Chi
Boston University

Alexis Orellana
Boston University

The unprecedented challenges of teaching during COVID-19 prompted fears of a mass exodus from the profession. We examine the extent to which these fears were realized using administrative records of Massachusetts teachers between 2015-16 and 2021-22. Relative to pre-pandemic levels, average turnover rates were similar going into the fall of 2020 but increased by 17 percent going into the fall of 2021. The fall 2021 increases were particularly high among newly hired teachers (31 percent increase), but were lower among Black and Hispanic/Latinx teachers (5 percent increases among both groups). Ethnoracial diversity of new hires increased during the pandemic, in part due to reduced professional licensure requirements. Together, these changes led to small increases in the overall ethnoracial diversity of Massachusetts teachers, but improvements to early-career retention will be needed to ensure long-term stability and diversity within the workforce.

VERSION: May 2022

Suggested citation: Bacher-Hicks, Andrew, Olivia L. Chi, and Alexis Orellana. (2022). Two Years Later: How COVID-19 has Shaped the Teacher Workforce. (EdWorkingPaper: 22-572). Retrieved from Annenberg Institute at Brown University: <https://doi.org/10.26300/t5h7-y366>

Two Years Later: How COVID-19 has Shaped the Teacher Workforce¹

Andrew Bacher-Hicks
(Boston University)

Olivia L. Chi
(Boston University)

Alexis Orellana
(Boston University)

April 2022

Abstract:

The unprecedented challenges of teaching during COVID-19 prompted fears of a mass exodus from the profession. We examine the extent to which these fears were realized using administrative records of Massachusetts teachers between 2015-16 and 2021-22. Relative to pre-pandemic levels, average turnover rates were similar going into the fall of 2020 but increased by 17 percent going into the fall of 2021. The fall 2021 increases were particularly high among newly hired teachers (31 percent increase), but were lower among Black and Hispanic/Latinx teachers (5 percent increases among both groups). Ethnoracial diversity of new hires increased during the pandemic, in part due to reduced professional licensure requirements. Together, these changes led to small increases in the overall ethnoracial diversity of Massachusetts teachers, but improvements to early-career retention will be needed to ensure long-term stability and diversity within the workforce.

¹ We thank John Fallon, Erika Lee, and Jesse Meredith for outstanding research assistance. We thank the Massachusetts Department of Elementary and Secondary Education (MADESE) for providing data, and we are particularly indebted to Elana McDermott, Aubree Webb, Claire Abbott, and Liz Losee at MADESE for providing timely and critical feedback. We thank the Wheelock Education Policy Center – and particularly Meagan Comb – for excellent assistance in disseminating the work to policy audiences. Finally, we are grateful for feedback from seminar participants at AAFP, APPAM, and Brown University’s Annenberg Institute. All remaining errors are our own.

I. Introduction

The COVID-19 crisis has created unprecedented disruption for school systems, educators, and the students they serve. The nationwide school closures in March of 2020 marked the beginning of a long series of pandemic-induced disruptions spread across three school years. During this time, teachers faced a wide range of additional pressures, including unexpected shifts in schooling mode, learning new technologies, and managing personal health concerns. These pandemic-related challenges had the potential to alter both the retention of the existing teacher workforce as well as the supply of new teachers willing to enter the profession.

While these challenges raise concerns about driving teachers out of the profession, additional contextual factors make the effects of the pandemic on the teacher workforce unclear. First, the supply of new teachers and retention of existing teachers depend on the availability and relative appeal of alternative careers. While the pandemic created additional burdens for teachers, it also created safety-related challenges for frontline workers and initiated job loss and economic challenges across a wide range of industries, particularly those requiring interpersonal contact (Montenovo et al., 2021; Coibion et al. 2020). Second, teaching typically requires substantial job-specific training and licensing. These investments of time and money may have insulated the teacher labor market from a mass exodus in the early stages of the pandemic, when uncertainty was high and teachers had less time to obtain training for alternative careers (Lazear, 2009). Third, many states also implemented measures to prevent a pandemic-induced shortage of new teachers, such as waiving licensure exams or student teaching requirements (Slay, Riley, & Miller, 2020).² For example, the Massachusetts Department of Elementary and Secondary Education (MADESE) created an emergency license with substantial reductions to the minimum requirements needed to

² These measures were, in part, implemented due to the prospective teachers' inability to complete portfolios, in-person assessments, and taking certification exams.

teach in Massachusetts (An Act Relative to Municipal Governance During the COVID-19 Emergency, 2020). Finally, the unequal pressures of the pandemic across age, race, and gender may also have resulted in compositional changes across the distribution of the teacher workforce (Milovanska-Farrington, 2021). These pressures have implications for states' strategic human capital initiatives, such as efforts to increase the ethnoracial diversity of the teacher workforce.³

To better understand the effects of the pandemic on the teacher workforce, we employ data from MADESE between the 2015-16 and 2021-22 school years. Using these data, we compare pre-pandemic levels of teacher turnover to turnover into the fall of 2020-21 (Year 1) and into the fall of 2021-22 (Year 2), which mark the starts of the first and second new school years during the pandemic. In doing so, we compare turnover six months into the pandemic and eighteen months into the pandemic to earlier rates. Using licensure and hiring records, we also compare pre-pandemic patterns in the supply of new teachers to the supply of new teachers at these two key points.

Three main results emerge from our analysis. First, we find that overall teacher turnover in Massachusetts remained stable in Year 1, but increased in Year 2 (the fall of 2021-22). The percentage of teachers who left their school increased from 15.0 in the fall of 2019-20 to 17.5 in Year 2, representing a 17 percent increase. The same patterns hold for newly hired teachers, though the overall levels – and the increases in Year 2 – are much higher. Among newly hired teachers, the percentage who left their schools increased from 34.1 in the fall of 2019-20 to 44.8 in Year 2,

³ In recent years, several states – including Massachusetts – have implemented policies to increase racial diversity among teachers and achieve greater parity between students and teachers of color. In addition to listing improvements to educator diversity as a key strategic priority, the state began offering grant funding to support local school and district efforts to strengthen and diversify existing teacher recruitment and retention programs. More detailed information on Massachusetts's efforts to diversify the teacher workforce are available here: <https://www.doe.mass.edu/csi/diverse-workforce/>

which represents a 31 percent increase. The sharp increase in turnover among new hires highlights the unique challenges of entering the profession during the pandemic.

Second, we document different trends during the pandemic in turnover by teacher race and experience. In Year 1, turnover declined for early-career teachers, but increased for senior teachers. In Year 2, turnover increased above pre-pandemic levels for all experience groups, suggesting more widespread concern about workforce stability. We find a similar evolution over the pandemic by race. In Year 1, turnover differed by race and ethnicity: while roughly stable for white teachers (the largest ethnoracial group), turnover declined for all other ethnoracial groups. In Year 2, turnover increased for all groups, though most notably among white teachers for whom turnover increased by roughly 20 percent over pre-pandemic levels.

Third, we find that ethnoracial diversity among newly hired teachers has increased in recent years in Massachusetts. The fraction of Black and Hispanic teachers increased from 8 percent in 2015-16 to 14 percent in 2020-21 and 2021-22. One factor that may support this trend during the pandemic is that Massachusetts began offering emergency licenses in the summer of 2020, which allowed teachers to enter the profession without satisfying the previously established minimal licensure requirements (e.g., passing licensure exams). In line with research showing that licensure exams act as a disproportionate barrier to prospective educators of color (e.g., Cowan et al., 2020), we find that teachers of color were substantially more represented among new hires with emergency licenses than those with traditional licenses. Among newly hired teachers during the pandemic, 30 percent of those who held emergency licenses were people of color, while only 10 percent to 15 percent of those who held traditional early-career licenses were people of color. Importantly, turnover rates among newly hired teachers holding emergency licenses were similar to those among new hires who held traditional licenses, suggesting that changes to licensure

requirements for entry into the profession may be a fruitful path toward diversifying the teacher workforce.

Collectively, these findings highlight how the effects of the pandemic on the teacher workforce evolved over time and across groups of teachers, which provides insights for policymakers moving forward. Together, the fairly large changes on the margins of entry and exit resulted in a small improvement in the ethnoracial diversity of the overall teacher workforce. Between 2019-20 and 2021-22, the share of all teachers who are teachers of color increased from 9 to 10 percent (roughly a 10 percent increase). This change is encouraging but also humbling, as the teacher workforce is still far from achieving ethnoracial parity with students. Moreover, the high turnover among teachers hired during the pandemic partially eroded the gains from the increased ethnoracial diversity of this group. The overall increase in turnover in Year 2 also raises concerns about the potential growing instability among the broader workforce. Increased retention, particularly among newly hired teachers, is necessary to sustain a more diverse and stable workforce after two years of disruption, a point we discuss further in the conclusion.

II. Literature Review and Massachusetts Context

A) Literature on Teacher Turnover and the Workforce

A large literature documents substantial turnover among teachers, particularly among novice teachers. Using nationwide survey data, Ingersoll (2003) reported that 14 percent of novices left teaching within one year, 33 percent within three years, and 46 percent within five years. Compared to the nationwide average, schools and districts in urban settings tend to have higher turnover rates (e.g., Marinell & Coca, 2013; Newton, Rivero, Fuller, & Dauter, 2011; Useem,

Offenberg, & Farley, 2007), though substantial variation exists even across urban districts (Papay et al., 2017). Turnover has also been documented to vary by race. Teachers of color, who are more likely to work in urban schools and with less advantaged students, tend to leave teaching at higher rates than white teachers (e.g., Ingersoll and May, 2011; Sun, 2018).

The onset and continuation of the pandemic, with its disproportionate impacts across age, race, and gender (e.g., Milovanska-Farrington, 2021), may have altered or exacerbated these existing patterns in teacher turnover. Recent evidence suggests that teacher turnover was relatively stable – or in some cases even lower – in the fall 2020-21, compared to historical trends (e.g., Aldeman et al., 2021; Bacher-Hicks et al., 2021; Bastian & Fuller, 2021). However, evidence from surveys collected during the 2020-21 year indicates that teachers’ stress-levels, as well as their considerations of leaving the profession, have increased during the pandemic (Diliberti et al., 2021; Zamarro et al., 2022).

The extent to which turnover will follow the reported increases in stress and considerations of leaving – in 2021-22 and beyond – remains an open question. Data from selected states and districts suggest that schools experienced an uptick in teacher turnover following the 2020-21 school year, as compared to the prior year (Barnum, 2022). For example, Goldhaber and Theobald (2022) find that teacher turnover in Washington state increased substantially after the 2020-21 school year, with a nearly 20 percent increase in the proportion of teachers who left teaching positions in public school districts compared to the prior year. Continuing to learn more about how turnover varies across geographies and teaching contexts will help policymakers determine to which schools and teachers to direct additional supports.

B) The Massachusetts Context

Covid Disruptions. Since the onset of the pandemic, Massachusetts schools have experienced a series of disruptions, upending notions of normalcy. In March of 2020, schools shifted to remote instruction with little planning, guidance, or support. When the 2020-21 school year began, Massachusetts' school districts varied widely in their modes of instruction; for example, roughly half of the state's 40 largest districts offered fully remote instruction while the other half offered hybrid instruction (Martin, 2020).

Then, in March 2021, state education officials mandated that districts reopen their elementary and middle schools for full-time in-person instruction by the end of April 2021, requiring many schools to again shift instruction modes on a short timeline (Toness & Russell, 2021).⁴ By the fall of the 2021-22 school year, Massachusetts school districts were required to provide fully in-person instruction, though the highly transmissible Delta variant continued to cause disruptions through the winter of 2021-22 (Murphey, 2021).

The challenging context faced by teachers in Massachusetts is not unique to the state, and the difficulty of teaching during the pandemic has been documented nationally. For example, using nationwide teacher survey data, Zamarro et al. (2022) find that pandemic-related health concerns and teaching in a hybrid model are associated with concerns about job burnout. In addition, teachers who switched instructional modalities during the year were more likely to report burnout and that they are considering leaving teaching. Their findings suggest that the trying circumstances that teachers faced over the span of three school years may play a major role in teachers' job satisfaction and career decisions.

Emergency Licenses. Typically, individuals seeking academic teacher roles in Massachusetts need to obtain a *provisional* or *initial* license.⁵ Provisional licenses require a

⁴ High schools followed with full-time in-person learning by mid-May 2021 (Gans, 2021).

⁵ Experienced out-of-state teachers may enter the state teaching workforce with a *temporary* license.

bachelor's degree and passing all required Massachusetts Tests for Educator Licensure (MTELEs). Initial licenses require the completion of an educator preparation program and obtaining required endorsements, in addition to a bachelor's degree and passing required MTELEs. Licensure testing requirements, such as the MTELEs, can act as a barrier to entry to the teaching workforce, particularly for teacher candidates of color (Cowan et al., 2020; Goldhaber et al., 2017; Rucinski & Goodman, 2019).

However, the onset of the pandemic in early 2020 prevented many license-seeking individuals from fulfilling licensure requirements, such as test-taking and student teaching. To prevent a sudden clog in the teacher pipeline, Governor Baker signed an order in June 2020 creating an emergency teaching license, for which individuals need only a bachelor's degree to qualify (An Act Relative to Municipal Governance During the COVID-19 Emergency, 2020).⁶

While emergency licenses allowed individuals to enter the teacher workforce amidst the pandemic, they are only intended to serve as short-term stopgaps. The validity period of most emergency licenses expires at the end of June 2023.⁷ To continue teaching after the expiration date, teachers must obtain initial or provisional licenses. Therefore, to the extent that reducing the minimum professional entry requirements altered the composition of new teachers, it may only be temporary if these teachers do not obtain new licenses and continue to teach in the state.

III. Data and Methods

We constructed a rich longitudinal dataset, based on administrative records from MADESE. These records include annual files of (a) human resource data for all teachers, including

⁶ Approximately 18% of new hires in 2020-21 and 2021-22 hold emergency licenses.

⁷ Emergency licenses in six license areas within special education and English as a Second Language (ESL) are valid through June 2022 and require additional demonstration of subject matter knowledge for an extension through June 2023. <https://www.doe.mass.edu/news/news.aspx?id=26639>

demographic information and their current school; (b) teacher licensure and preparation background; and (c) student demographic information.

Using these data, we constructed a teacher-year-level longitudinal dataset, spanning 7 school years (2015-16 to 2021-22) and including 116,760 unique teachers. In Appendix Table A1, we present summary statistics on a variety of characteristics for the teacher-years included in our study. On average, teachers in our sample have 10.7 years of experience, 10 percent are newly hired, and 76 percent of teachers are female. Ninety-two percent are white, 3 percent are Black, and 3 percent are Hispanic/Latinx.

Using this teacher-year-level longitudinal dataset, we derive two measures of turnover. To do so, we examine teachers employed in the spring semester of a given school year and then examine their employment status in the fall semester of the subsequent school year. This measure, which we refer to as “spring to fall” turnover, captures teachers who leave their teaching role during the summer months.⁸ We count a teacher as being retained even if they change grades or subjects, but not if they move to a non-teaching role. Our two primary measures of spring to fall turnover are as follows:

- *Transfer schools within Massachusetts:* A teacher in the spring semester of school year t transfers to a different Massachusetts public school in the fall of school year $t+1$ but remains in a teaching assignment.
- *Leaving teaching in Massachusetts:* A teacher in the spring semester of school year t is no longer in a teaching assignment at a Massachusetts public school in the fall semester of school year $t+1$.

⁸ Because end-of-year staffing data for the 2021-22 school year are not yet available, we focus on “spring to fall” turnover. This is a good measure of the largest form of turnover, which typically occurs between school years, but does not account for within-school year turnover.

In our analyses below, we present aggregate turnover rates as the percent of teachers who transfer schools within Massachusetts (“within state turnover rates”) and the percent of teachers who leave teaching in Massachusetts (“state-level turnover rates”). We refer to the sum of these two rates as the “total turnover rate.” In addition to the main turnover outcomes, we also examine differences in turnover by teaching experience and teacher race/ethnicity, which come from the teachers’ human resources (HR) records. Finally, we leverage student characteristics to examine turnover differences by the average composition of students by school.

Our analysis of hiring trends uses the same sample of teachers. We identify teachers as new hires if they were not employed in teaching positions in Massachusetts in the spring of the previous school year. We then use HR and licensure records, as well as student characteristics, to examine the race/ethnicity of these new hires as a whole and across license types and school composition.

IV. Results

A) Turnover Patterns

Figure 1 presents the spring to fall turnover rates among teachers in Massachusetts from spring 2016 through fall 2021. Each bar presents the percentage of teachers employed in the spring semester of the calendar year who left their teaching position by the fall semester of the same calendar year. Panel A presents turnover among all teachers and Panel B presents turnover among newly hired teachers.

Overall turnover was stable in the years before Covid, which is captured in the first four bars in Panel A. Over this four-year period, the percentage of Massachusetts teachers exiting the state teacher workforce ranged from 8.1 to 8.8 percent (presented in the blue bars). The percentage who remained teaching in Massachusetts, but moved to a new school ranged from 6.6 to 6.8

percent (presented in green bars). In total, between 14.8 and 15.5 percent of teachers transitioned out of teaching roles in their schools during the pre-pandemic time period.

From spring 2020 to fall 2020, these patterns largely remained stable. That is, we find no evidence of a mass exodus of teachers in Massachusetts in Year 1. The percentage of teachers leaving the state workforce (8.0 percent) was lower than any of the previous four years, and the percentage of teachers who moved to a new school within the state (6.8 percent) was consistent with prior years. Combining these two forms of turnover, we therefore find that the total turnover rate (14.8 percent) was equal to or lower than any of the pre-pandemic years examined in this study. Overall, these results confirm that teachers did not leave the profession during the onset of the pandemic in larger numbers than in prior years.⁹

The relative stability in Year 1 disappears when examining turnover in Year 2. From spring to fall of 2021, both forms of turnover increased. Compared to 2019, the state-level turnover rate increased by 15 percent (from 8.2 to 9.4), and the within-state turnover rate increased by 19 percent (from 6.8 to 8.1). Therefore, the total turnover rate increased by 17 percent (from 15.0 to 17.5). Overall, these results show that, despite holding relatively stable in Year 1, turnover in Year 2 was clearly above pre-pandemic levels.

Panel B paints a similar picture for newly hired teachers, though the total turnover rates and the increase in fall 2021 are both notably higher than those for the overall workforce. Again, we see relative stability over the pre-pandemic period and in Year 1 of the pandemic. While the rates of turnover were consistent across years, they are more than twice as high compared to the full workforce. Over the pre-pandemic period, approximately 20 percent of newly hired teachers

⁹ Stability in teacher attrition during the onset of the pandemic has similarly been observed in other states and large districts (e.g., Aldeman et al., 2021; Bastian & Fuller, 2021).

left the state teaching workforce after just one year, and roughly 14 percent transferred to other schools.

The last bar of Panel B shows a dramatic increase in the turnover rates in the fall of 2021 (Year 2) among newly hired teachers. Among those who were hired in Year 1, 28.1 percent left the state teaching workforce by Year 2, corresponding to a 42 percent increase compared to 2019. There were also increases in the within-state movement, bringing the total turnover to 44.8 percent, which represents a 31 percent increase compared to 2019. The sharp increases in turnover in Year 2 among new hires (i.e., those hired in Year 1) highlight the unique challenges of entering the profession during the pandemic.

Figure 2 presents trends in teacher turnover by teacher experience (Panel A) and teacher race/ethnicity (Panel B). Panel A shows turnover for three experience groups: those with less than five years of teaching experience (early-career), those with five to nine years of experience (mid-career), and those with more than ten years of experience (senior teachers). In Year 1, turnover was below pre-pandemic rates for the early- and mid-career teachers. Most notably, the total turnover rate declined in fall 2020 by 9 percent (from 24.5 to 22.3) for early-career teachers. Meanwhile, it increased by 13 percent (9.9 to 11.3) for senior teachers in fall 2020, resulting in the overall stability noted in Figure 1. However, in Year 2, turnover increased above pre-pandemic levels for all experience groups. Compared to turnover rates in 2019, turnover in fall 2021 was 16 percent higher for early-career teachers, 19 percent higher for mid-career teachers, and 17 percent higher for senior teachers.

We present turnover trends by race in Panel B. Two results are striking from this figure. First, turnover rates declined in Year 1 of the pandemic for all racial/ethnic groups other than white teachers. White teachers, who comprise approximately 92 percent of the Massachusetts teacher

workforce, left at nearly identical rates to pre-pandemic years. In 2021 (Year 2), turnover increased for all racial/ethnic groups. Though turnover was elevated above pre-pandemic rates, the largest increase is among white teachers, for whom the total turnover rate increased by 17 percent relative to 2019 (from 14.3 to 16.8). In contrast, the turnover rates only increased by 5 percent among both Black and Hispanic/Latinx teachers, relative to 2019.¹⁰ The results in Figure 2 highlight the differential effects by experience and race during the pandemic.¹¹

B) Hiring Patterns

We now turn our attention to the supply of new teachers by focusing on teacher hiring patterns. Figure 3 shows the total number of new hires and their racial composition. In the years prior to the pandemic, between 7,000 and 8,800 teachers were hired per year, comprising 9 to 11 percent of the total teacher workforce in Massachusetts. This broadly corresponds to the overall percentage of teachers who leave the state each year (i.e., those in Figure 1), resulting in a fairly stable overall number of teachers in the state across years. In line with prior years, there were 7,838 new hires in 2020-21 and 7,884 in 2021-22, which represent 9.6 and 9.7 percent of the teacher workforce, respectively.

Despite the relative stability in the number of teachers in the state, there has been a shift in their composition: racial and ethnic diversity among newly hired teachers has increased. The percentage of newly hired teachers who are Black or Hispanic/Latinx steadily increased from 7.5

¹⁰ Appendix Figure A1 shows differential impacts of the pandemic on turnover based on the racial composition of students in a school. Turnover increased – both in 2020 and 2021 – among schools where less than half of the students identify as Black or Hispanic/Latinx. In contrast, turnover was below pre-pandemic levels – again both in 2020 and in 2021 – in schools where more than half of the students identify as Black or Hispanic/Latinx.

¹¹ Appendix Figure A2 shows differences in turnover at the intersection of experience and race/ethnicity. Consistent with the overall figures, we find that turnover decreases in Year 1 among Black and Hispanic/Latinx teachers in all three experience groups, and then subsequently increases in Year 2. Among white teachers, there is heterogeneity by experience. Among early- and mid-career white teachers, there are slight declines in Year 1 followed by increases in Year 2. Among the most experienced white teachers, there are increases in Year 1 that persist into Year 2.

percent in 2015-16 to 13.9 percent in 2020-21 and 14.1 percent in 2021-22. As shown in Appendix Figure A3, this trend is most prominent among schools serving high concentrations of Black or Hispanic/Latinx students. While the workforce is still overwhelmingly represented by teachers who are white, the improvement in the racial and ethnic diversity of the workforce – particularly in schools serving students of color – moves the teacher workforce towards being more representative of the students they serve.

One contributing factor to the increased racial and ethnic diversity among newly hired teachers was the offering of emergency teaching licenses. Among newly hired teachers in 2020-21 and 2021-22, approximately 18 percent held an emergency license. Figure 4 shows that newly hired teachers holding an emergency license were substantially more likely to be Black or Hispanic/Latinx than newly hired teachers holding initial or provisional licenses. Approximately 30 percent of newly hired teachers in 2020-21 and 2021-22 who held emergency teaching licenses identify as people of color. By contrast, approximately 10 percent and 15 percent of newly hired teachers who held initial and provisional licenses, respectively, identify as people of color in the same years.

Given that barriers to entry are lower for teachers with an emergency license compared to the greater investments required for an initial license, one concern is that teachers with emergency licenses may have higher rates of turnover than teachers with traditional certifications. For example, prior studies document that teachers with alternative certifications – such as Teach for America – are more likely to leave at the end of the school year than traditionally certified teachers (Redding & Smith, 2016; Redding & Henry, 2018).

Reassuringly, we find that teachers with emergency licenses have similar turnover rates compared to their peers holding provisional licenses. Figure 5 presents turnover rates among newly

hired teachers in the 2020-21 school year, where we focus on the three licenses that are most common for teachers with no prior teaching experience: initial (n=3,378), provisional (n=1,064), and emergency (n=1,382). Across these three types of licenses, total turnover ranges from 41.2 percent to 43.1 percent, with the lower end of this range corresponding to teachers with initial licenses. It is not surprising that turnover rates are somewhat lower among this group; initial license holders have fulfilled more requirements, such as the completion of an educator preparation program, than have provisional or emergency license holders. Initial license holders' higher levels of investment in their teacher training may signal stronger commitments to the profession. Despite the substantial differences between the licensure requirements across these three groups, the total turnover in fall 2021 is not markedly different across all three types of licenses. Though it is too soon to tell what the long-run implications are for turnover among teachers who enter the workforce with emergency licenses, these results suggest that the short-term turnover is in line with their peers with more traditional training and licensure.

V. Discussion and Conclusion

Overall teacher turnover rates remained relatively stable following the onset of the pandemic and into the fall of the 2020. Despite widespread fears of a mass exodus of teachers during the pandemic, these results show that those fears were largely not realized. However, teacher turnover did increase in the fall of 2021, most notably among newly hired teachers, for whom turnover increased by 31 percent compared to 2019. We also observed increases in turnover among all ethnoracial groups in the fall of 2021 compared to 2019, but the increases in turnover among Black and Hispanic/Latinx teachers were relatively lower than the increase in turnover for white teachers.

While not rising to the level of a mass exodus, these increases in teacher turnover – particularly among new hires – do raise concerns about potential instability among the teacher workforce and how it may impact students. As schools continue to combat students’ pandemic-induced learning losses, they now also need to prepare for the detrimental effects of higher teacher turnover on student achievement (Ronfeldt et al., 2013). This is particularly concerning for less-advantaged students who have been disproportionately affected by the pandemic (e.g., Kuhfeld, Soland, & Lewis, 2021), but also are typically more likely to be assigned to novice teachers (Lankford, Loeb, & Wyckoff, 2002).

In spite of the pandemic-related challenges, recruitment efforts to increase ethnoracial diversity among newly hired teachers did not appear to be impeded. Black and Hispanic/Latinx teachers represent 14 percent of new hires in Year 1 and Year 2 of the pandemic, compared to 12 percent of new hires in 2019-20. One factor supporting the increased ethnoracial diversity among new hires was the creation of emergency licenses, which reduced barriers to becoming a teacher in Massachusetts. New hires holding emergency licenses were substantially more likely to identify as people of color, as compared to new hires with initial or provisional licenses.

Taken together, these changes in turnover and hiring have increased ethnoracial diversity of the workforce. The percent of all Massachusetts teachers who are individuals of color increased from 9 to 10 percent between 2019-20 and 2021-22, a roughly 10 percent increase (see Appendix Table A2). While this change represents a step in the right direction, far greater measures will be necessary to mirror the ethnoracial diversity among students, of whom 44 percent are students of color (MADESE, n.d.). For example, if turnover among newly hired teachers remains high, much of the recruitment gains in ethnoracial diversity will be undone.

For the workforce to more fully reap the benefits of increased diversity among newly hired teachers, policymakers and schools need to support these teachers so they: 1) remain in the teacher workforce, and 2) further develop their teaching abilities. Potential strategies for doing so may include focusing on working conditions, especially those that have changed during the pandemic (Kraft et al., 2021), and creating supportive professional environments that promote skill development (Kraft & Papay, 2014). These strategies may be particularly efficacious for teachers with emergency licenses, who may need additional support to obtain provisional or initial licenses when their emergency licenses expire.

As schools move forward beyond the first two years of the pandemic, policymakers will continue to benefit from research that examines the consequences of the pandemic on the teacher workforce. One limitation of our results is that the fall of the 2021-22 school year does not mark the end of Covid-related challenges to the teacher workforce. For example, the effects of the Omicron variant during the winter of 2021-22 are not captured in these data, potentially placing additional pressure on teachers. However, we now know that the stress of the pandemic is changing not only teachers' attitudes toward remaining in the profession (Zamarro et al., 2022), but also their actual decisions to leave. This suggests that researchers should continue examining turnover trends, and policymakers may want to prepare for the possibility of increased turnover in the coming years.

In addition, further research is needed to better understand the effects of pandemic-related policies on the teacher workforce. While we found that offering emergency licenses changed the composition of new hires in Massachusetts, future work may examine how these licenses relate to teacher quality and what supports are necessary to retain these teachers when their licenses expire.

Additional research-based insights about potential levers to improve the stability, diversity, and quality of the teacher workforce will help accelerate students' recovery from the pandemic.

VI. References

- Aldeman, C., Goldhaber, D., Theobald, R. (2021). Examining the Dimensions of Teacher Turnover. (CALDER Flash Brief No. 24-0421). Arlington, VA: *National Center for Analysis of Longitudinal Data in Education Research*.
- An Act Relative to Municipal Governance During the COVID-19 Emergency, Massachusetts Session Laws § 92-14 (2020).
- Bacher-Hicks, A., Chi, O., & Orellana, A. (2021). COVID-19 and the Composition of the Massachusetts Teacher Workforce. *Wheelock Educational Policy Center*.
<https://wheelockpolicycenter.org/effective-teachers/covid-19-and-ma-teacher-workforce/>
- Bastian, K. C., & Fuller, S. C. (2021). Teacher and Principal Attrition During the COVID-19 Pandemic in North Carolina. *Chapel Hill, NC: Education Policy Initiative at Carolina*.
- Barnum, M. (2022). Uptick but no exodus: Despite stress, most teachers stay put. *Chalk Beat*.
<https://www.chalkbeat.org/2022/3/9/22967759/teacher-turnover-retention-pandemic-data>
- Coibion, O., Gorodnichenko, Y., and Weber, M. (2020). Labor markets during the COVID-19 Crisis: A preliminary view. *National Bureau of Economic Research*.
- Cowan, J., Goldhaber, D., Jin, Z., & Theobald, R. (2020). Teacher Licensure Tests: Barrier or Predictive Tool? *Center for Analysis of Longitudinal Data in Education Research* Working Paper No. 245-1020
- Diliberti, M. K., & Schwartz, H. L., & Grant, D. (2021). Stress Topped the Reasons Why Public School Teachers Quit, Even Before COVID-19. *RAND Corporation*.
https://www.rand.org/pubs/research_reports/RRA1121-2.html.
- Gans, F. (2021, May 17). Most Mass. high schools reopen for full-time, in-person learning in final stage of state's school return. *The Boston Globe*.

<https://www.bostonglobe.com/2021/05/17/metro/most-mass-high-schools-reopen-full-time-in-person-learning-final-stage-states-school-return/>

Goldhaber, Cowan, J., & Theobald, R. (2017). Evaluating Prospective Teachers: Testing the Predictive Validity of the edTPA. *Journal of Teacher Education*, 68(4), 377–393.

<https://doi.org/10.1177/0022487117702582>

Goldhaber, D. & Theobald, R. (2022). Teacher Attrition and Mobility in the Pandemic. *Center for Analysis of Longitudinal Data in Education Research* Flash Brief No. 30-0322.

Ingersoll, R. (2003). Is There Really a Teacher Shortage?. *Center for the Study of Teaching and Policy*. <https://www.education.uw.edu/ctp/sites/default/files/ctpmail/PDFs/Shortage-RI-09-2003.pdf>

Ingersoll, R. M., & May, H. (2011). Recruitment, retention and the minority teacher shortage (CPRE Research Report No. RR-69). Philadelphia, PA: *Consortium for Policy Research in Education*

Kraft, M. A., & Papay, J. P. (2014). Can Professional Environments in Schools Promote Teacher Development? Explaining Heterogeneity in Returns to Teaching Experience. *Educational Evaluation and Policy Analysis*, 36(4), 476–500.

<https://doi.org/10.3102/0162373713519496>

Kraft, M. A., Simon, N. S., & Lyon, M. A. (2021). Sustaining a Sense of Success: The Protective Role of Teacher Working Conditions During the COVID-19 Pandemic.

(*EdWorkingPaper*: 20-279). <https://doi.org/10.26300/35nj-v890>

Kuhfeld, M., Soland, J., & Lewis, K. (2022). Test Score Patterns Across Three COVID-19 Impacted School Years. (*EdWorkingPaper*: 22-521). <https://doi.org/10.26300/ga82-6v47>

[6v47](https://doi.org/10.26300/ga82-6v47)Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher Sorting and the Plight of

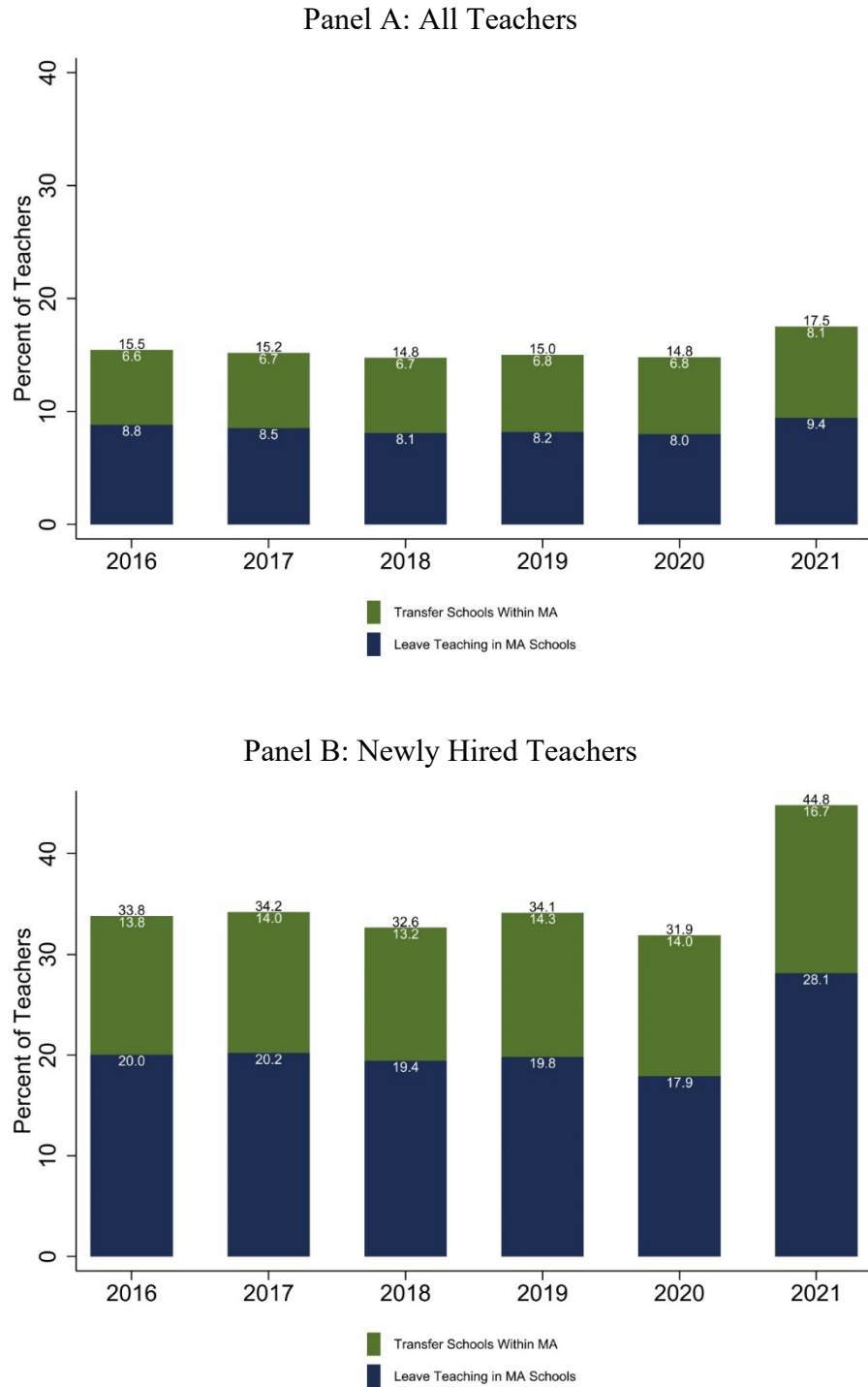
- Urban Schools: A Descriptive Analysis. *Educational Evaluation and Policy Analysis*, 24(1), 37–62. <https://doi.org/10.3102/01623737024001037>
- Lazear, E. (2009). Firm-specific human capital: a skill-weights approach. *The Journal of Political Economy*, 117(5), 914–940. <https://doi.org/10.1086/648671>
- Marinell, W. H., & Coca, V. M. (2013) Who Stays and Who Leaves? Findings from a Three-Part Study of Teacher Turnover in NYC Middle Schools. *The Research Alliance for New York City Schools*. <https://steinhardt.nyu.edu/research-alliance/research/publications/who-stays-and-who-leaves>
- Martin, N. (2020, November 8). Mass. school districts' plans vary widely on key practices for pandemic-era education, review finds. *The Boston Globe*.
- Massachusetts Department of Elementary and Secondary Education. (n.d.) *School and District Profiles*. Retrieved from <https://profiles.doe.mass.edu/>.
- Milovanska-Farrington, S. (2021). The Effect of a Health and Economic Shock on the Gender, Ethnic and Racial Gap in Labor Market Outcomes: Evidence from COVID-19. *Institute of Labor Economics*, IZA Discussion Paper no. 14272. <https://covid-19.iza.org/publications/dp14272/>
- Montenovo, J., Jiang, X., Rojas, L., Schmutte, I., Simon, K., Weinberg, B., & Wing, C. (2021). Determinants of Disparities in COVID-19 Job Losses. *National Bureau of Economic Research Working Paper 27132*. <https://www.nber.org/papers/w27132>
- Murphey, M. (2021, September 20). Parents Demand Remote Learning Option Amid Delta Spike. *WGBH*. <https://www.wgbh.org/news/local-news/2021/09/20/parents-demand-remote-learning-option-amid-delta-spike>

- Newton, X. A., Rivero, R., Fuller, B., & Dauter, L. (2011). Teacher Stability and Turnover in Los Angeles: The Influence of Teacher and School Characteristics. Los Angeles School Infrastructure Project. *Policy Analysis for California Education*.
<https://edpolicyinca.org/publications/teacher-stability-and-turnover-los-angeles-influence-teacher-and-school>
- Papay, Bacher-Hicks, A., Page, L. C., & Marinell, W. H. (2017). The Challenge of Teacher Retention in Urban Schools: Evidence of Variation From a Cross-Site Analysis. *Educational Researcher*, 46(8), 434–448. <https://doi.org/10.3102/0013189X17735812>
- Redding, C., & Henry, G. T. (2018). New Evidence on the Frequency of Teacher Turnover: Accounting for Within-Year Turnover. *Educational Researcher*, 47(9), 577–593.
<https://doi.org/10.3102/0013189X18814450>
- Redding, C., & Smith, T. M. (2016). Easy in, Easy out: Are Alternatively Certified Teachers Turning Over at Increased Rates? *American Educational Research Journal*, 53(4), 1086–1125. <https://doi.org/10.3102/0002831216653206>
- Ronfeldt M., Loeb, S., & Wyckoff, J. (2013). How Teacher Turnover Harms Student Achievement. *American Educational Research Journal*. 50(1), 4-36.
<https://doi.org/10.3102/0002831212463813>
- Rucinski, M. & Goodman, J. (2019). Diversity in Massachusetts' Teacher Pipeline. *Rappaport Institute for Greater Boston Policy Brief*.
- Slay, L. E., Riley J., & Miller K. (2020). Facilitating a Path to New Teacher Certification Amid the COVID-19 Pandemic: Unpacking States' "Unchanged-New Flex" Guidelines. *Frontiers in Education*, 5. <https://doi.org/10.3389/educ.2020.583896>

- Sun, M. (2018). Black Teachers' Retention and Transfer Patterns in North Carolina: How Do Patterns Vary by Teacher Effectiveness, Subject, and School Conditions? *AERA Open*, 4(3), 233285841878491. <https://doi.org/10.1177/2332858418784914>
- Toness, B. V. & Russell, J. (2021, March 12). 'It feels like whiplash': After state mandate, districts work to reopen schools. *The Boston Globe*.
- Useem, E., Offenber, R., & Farley, E. (2007). Closing the Teacher Quality Gap in Philadelphia: New Hope and Old Hurdles. *Research for Action*.
<https://www.researchforaction.org/research-resources/closing-the-teacher-quality-gap-in-philadelphia-new-hope-and-old-hurdles/>
- Zamarro, G., Camp, A., Fuchsman, D., & McGee, J. B. (2022). Understanding how COVID-19 has Changed Teachers' Chances of Remaining in the Classroom. *University of Arkansas Department of Education Reform*. <https://scholarworks.uark.edu/edrepub/132>

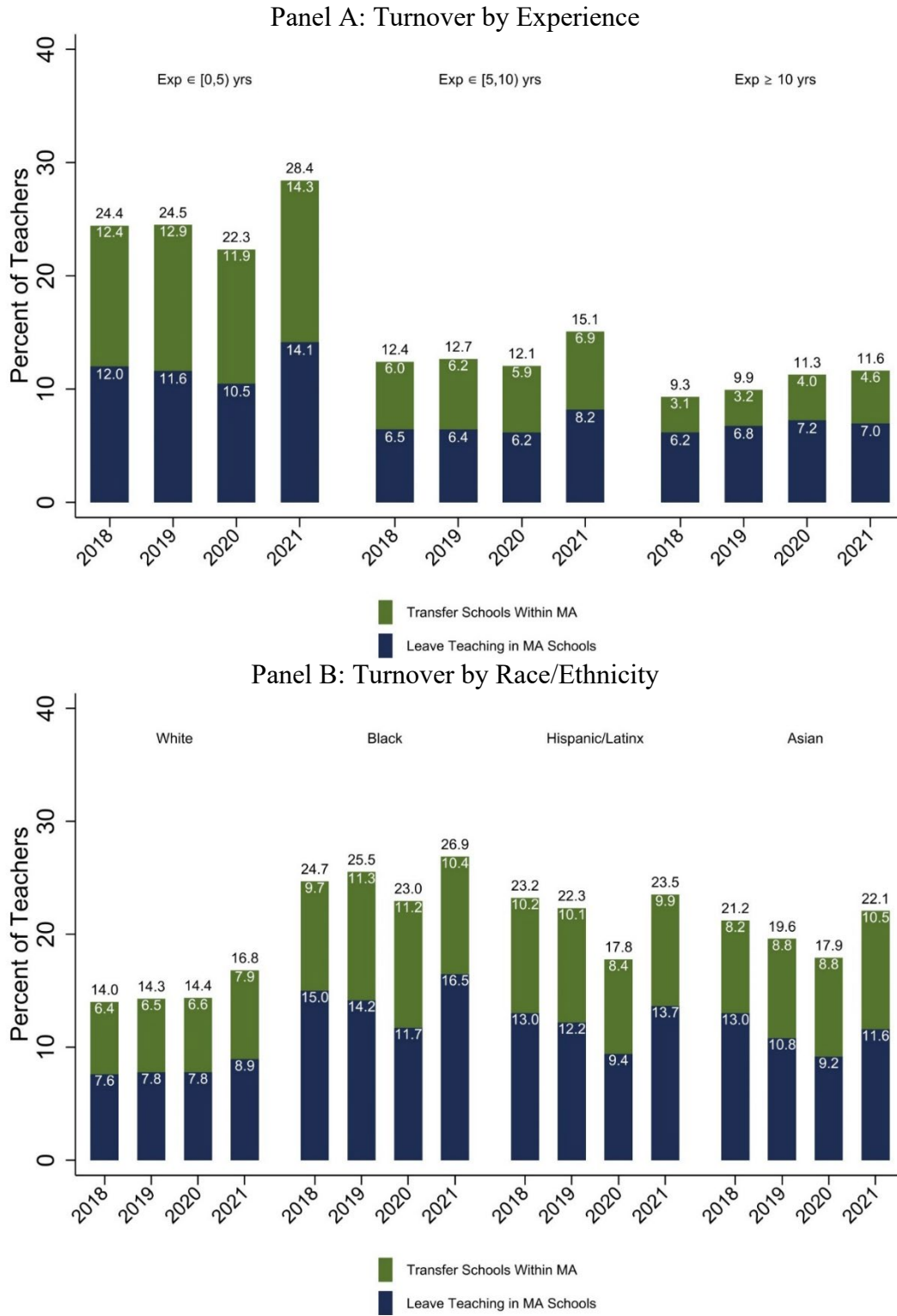
Figures

Figure 1: Teacher Turnover Patterns Over Time



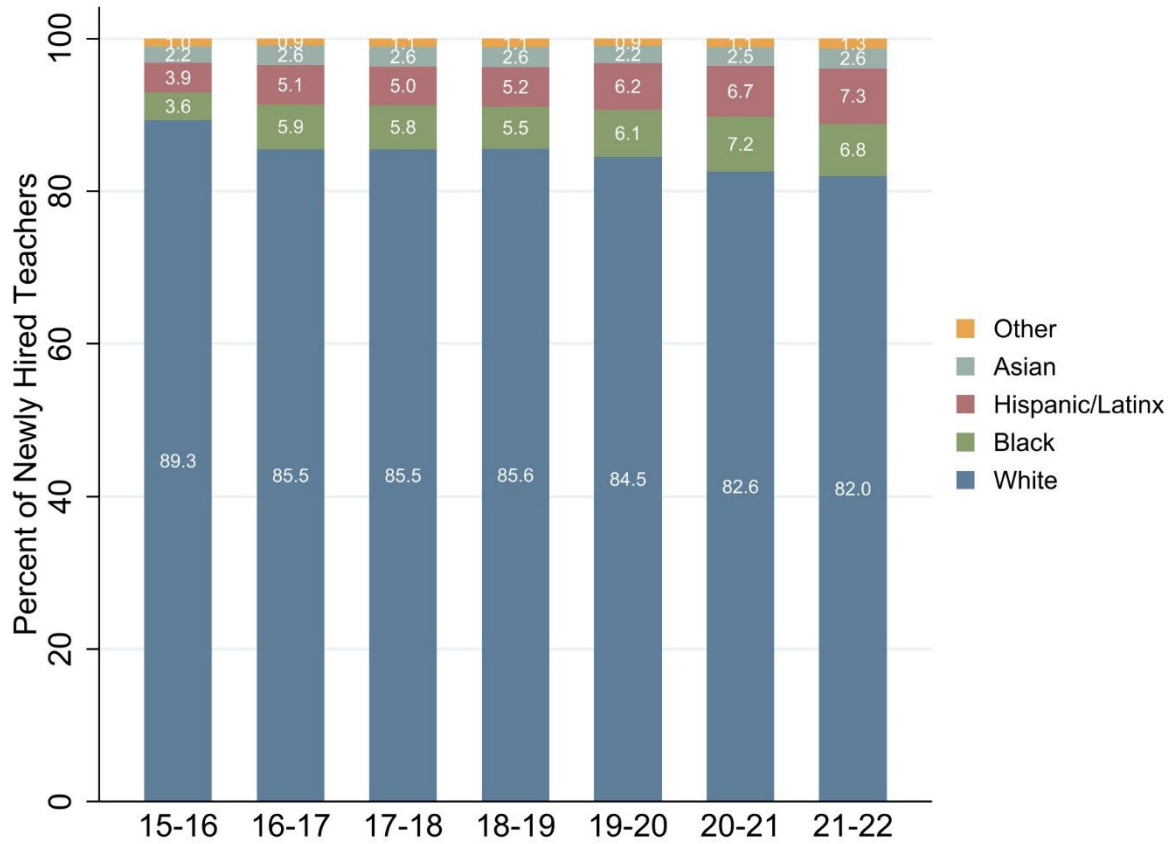
Notes: All data are from MA DESE. Turnover is measured between the spring semester and fall semester of each calendar year (e.g., turnover in 2021 is measured as the turnover from spring 2021 to fall 2021). Number of Observations by Year, Panel A: (2016) 76,670, (2017) 76,517, (2018) 78,114, (2019) 79,784, (2020) 80,236, (2021) 81,639; Panel B: (2016) 8,305, (2017) 8,198, (2018) 9,429, (2019) 8,782, (2020) 7,929, (2021) 8,898.

Figure 2: Turnover by Teacher Characteristics



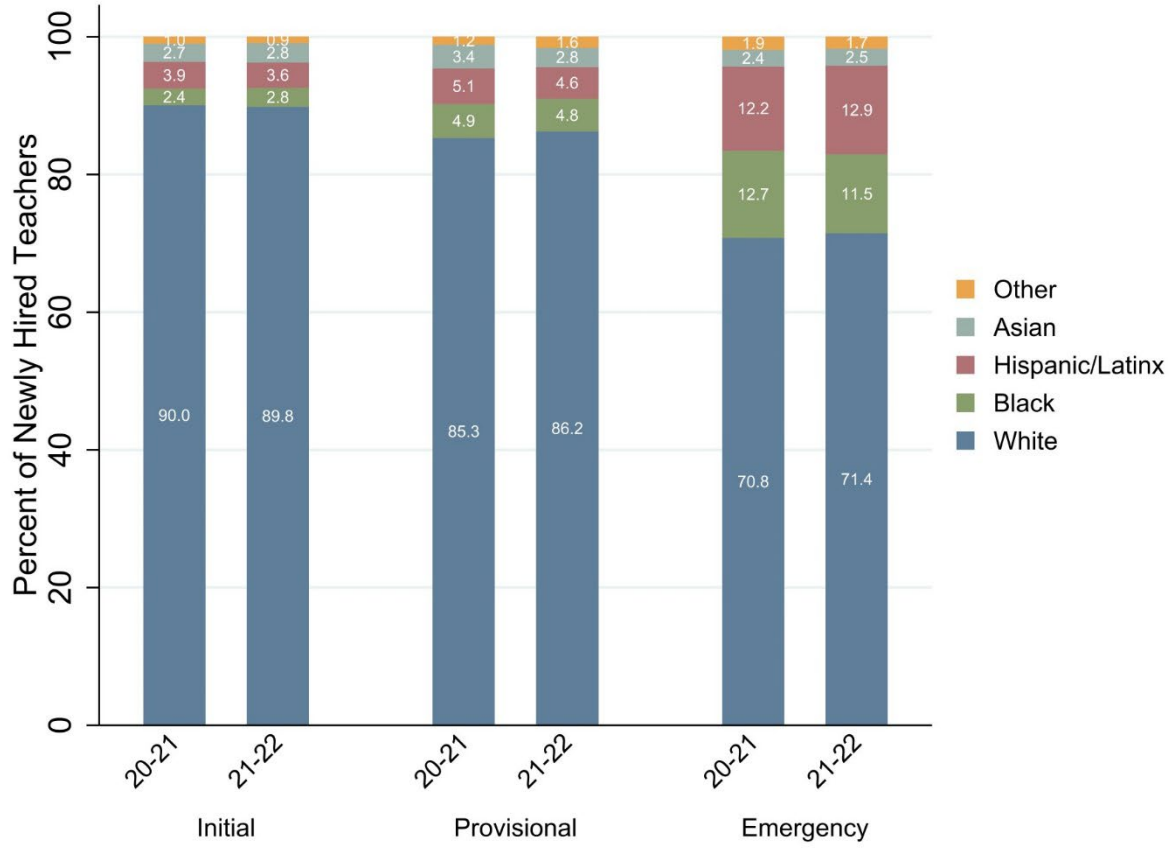
Notes: All data are from MA DESE. Turnover is measured between the spring semester and fall semester of each calendar year (e.g., turnover in 2021 is measured as the turnover from spring 2021 to fall 2021).

Figure 3: Trends in the Race/Ethnicity of Newly Hired Teachers



Notes: All data are from MA DESE .The category 'Other' includes American Indian, Hawaiian/Pacific Islander, and multiracial teachers.
 Number of Observations by Year: (15-16) 6,988, (16-17) 7,605, (17-18) 8,754 ,(18-19) 7,700 , (19-20) 7,482 , (20-21) 7,838 ,(21-22) 7,884.

Figure 4: Race/Ethnicity of Newly Hired Teachers by License Type



Notes: All data are from MA DESE . The category ‘Other’ includes American Indian, Hawaiian/Pacific Islander, and multiracial teachers.

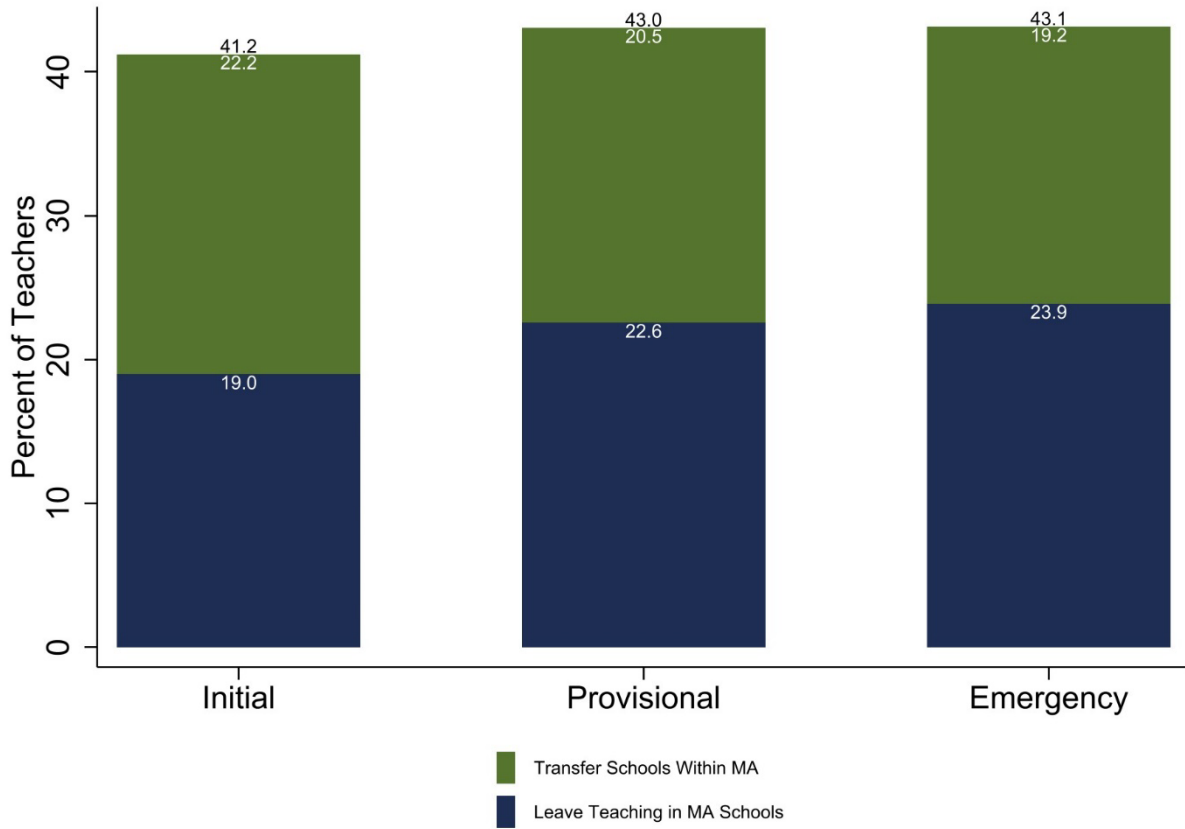
Number of Observations by Year and License Type:

(Initial)[(20-21) 3,027 , (21-22) 2,393];

(Provisional)[(20-21) 933 , (21-22) 820];

(Emergency)[(20-21) 1,156 , (21-22) 1,667].

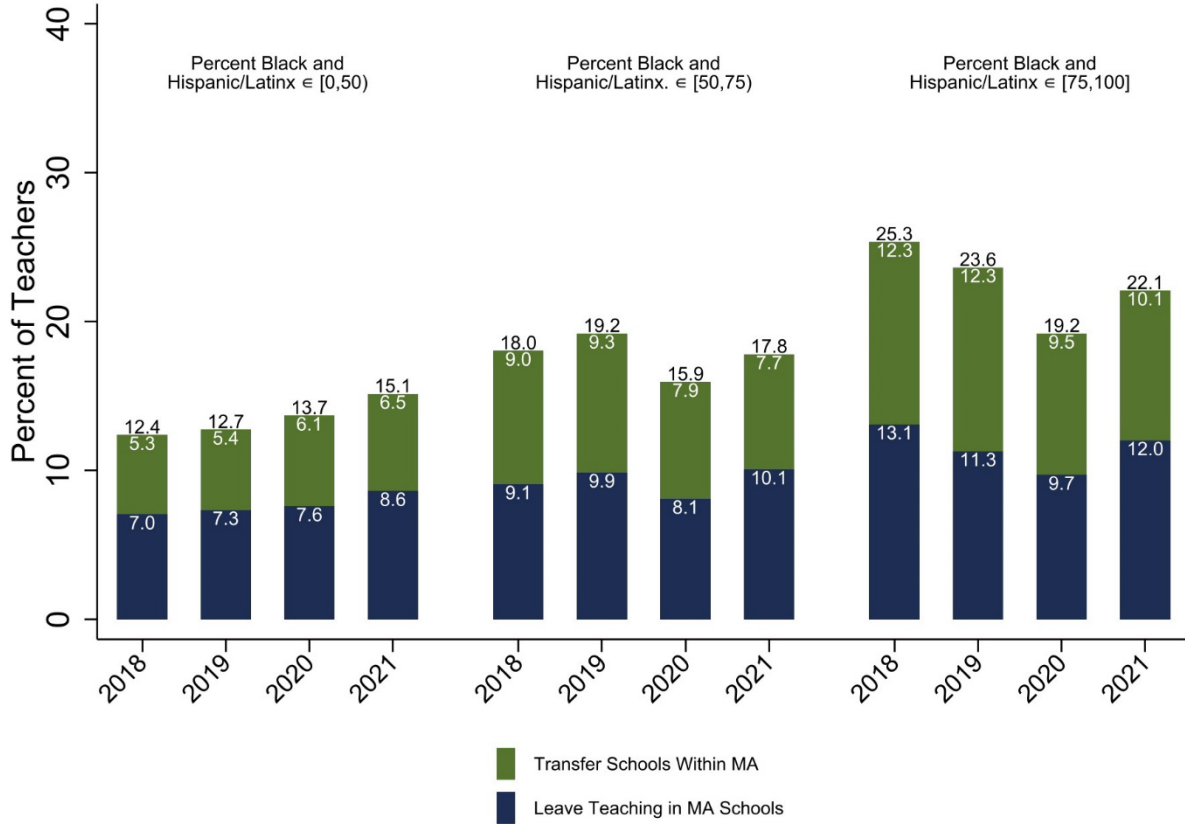
Figure 5: Turnover of Newly Hired Teachers by License Type



Notes: All data are from MA DESE. Turnover is measured between the spring semester and fall semester of each calendar year (e.g., turnover in 2021 is measured as the turnover from spring 2021 to fall 2021). Number of observations by License Type: (Initial) 3,378, (Provisional) 1,064, (Emergency) 1,382.

Appendix

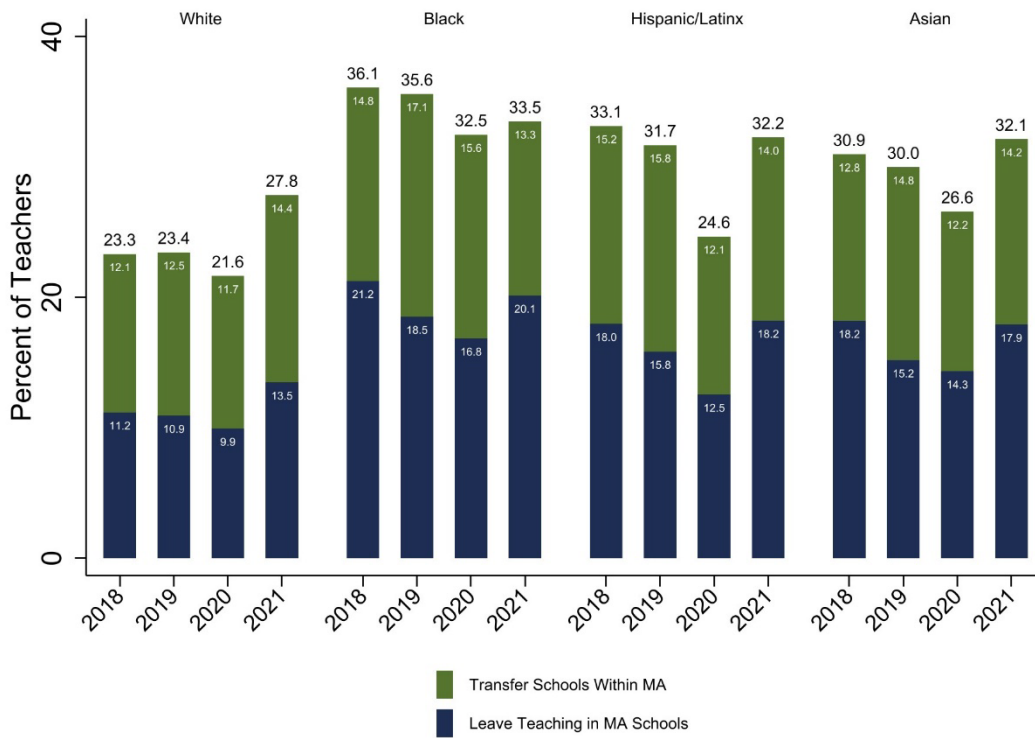
Figure A1: Trends in Turnover by School Ethnoracial Composition



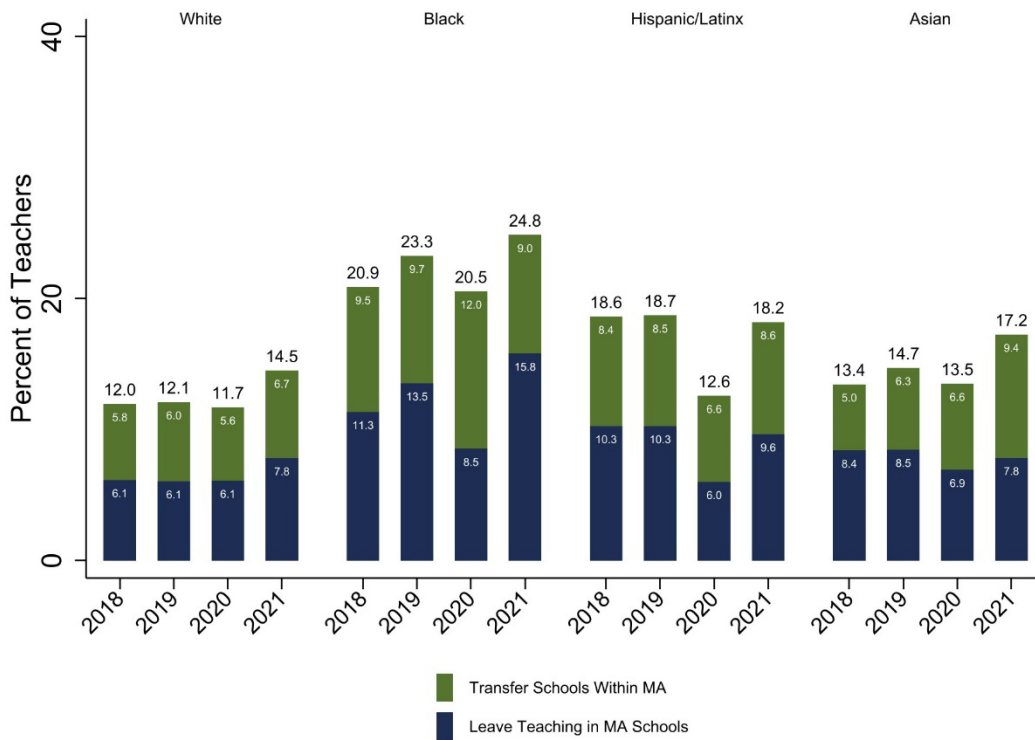
Notes: All data are from MA DESE. Turnover is measured between the spring semester and fall semester of each calendar year (e.g., turnover in 2021 is measured as the turnover from spring 2021 to fall 2021). Number of Observations by Year and Percent Black and Hispanic/Latinx:
 [0,50][(2018) 59,225, (2019) 59,834, (2020) 59,884,(2021) 59,889];
 [50,75][(2018) 8,190, (2019) 8,551, (2020) 8,591,(2021) 8,572];
 [75,100][(2018) 10,404, (2019) 10,682, (2020) 10,624,(2021) 10,892].

Appendix Figure A2: Turnover by Experience and Race/Ethnicity

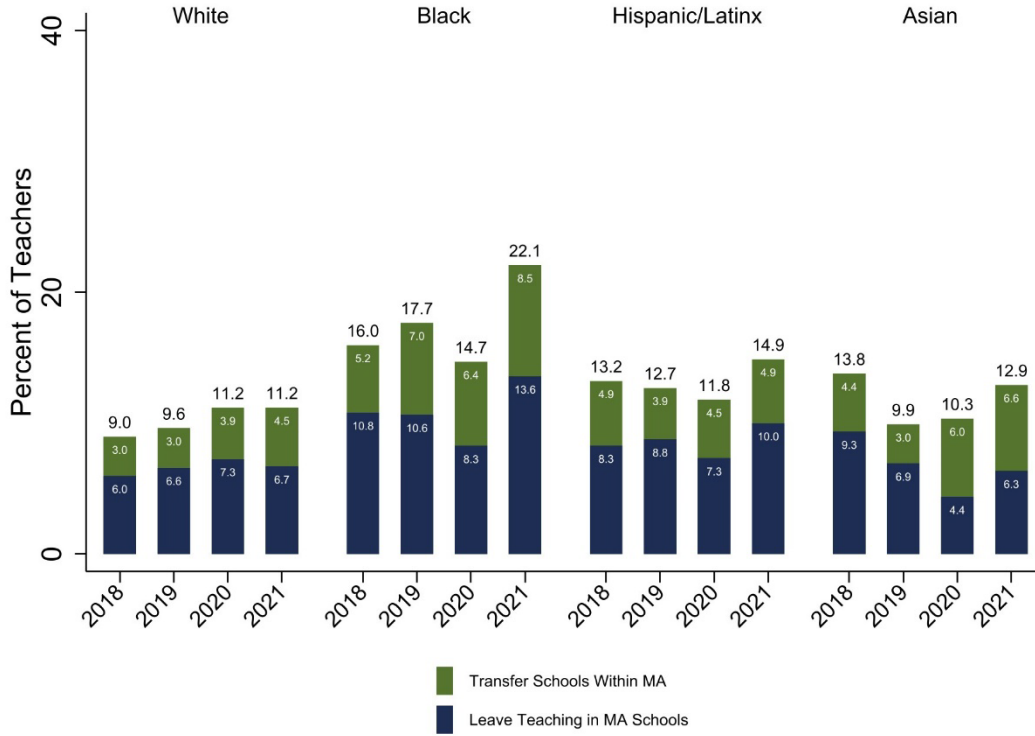
Panel A: Early-Career teachers



Panel B: Mid-Career Teachers

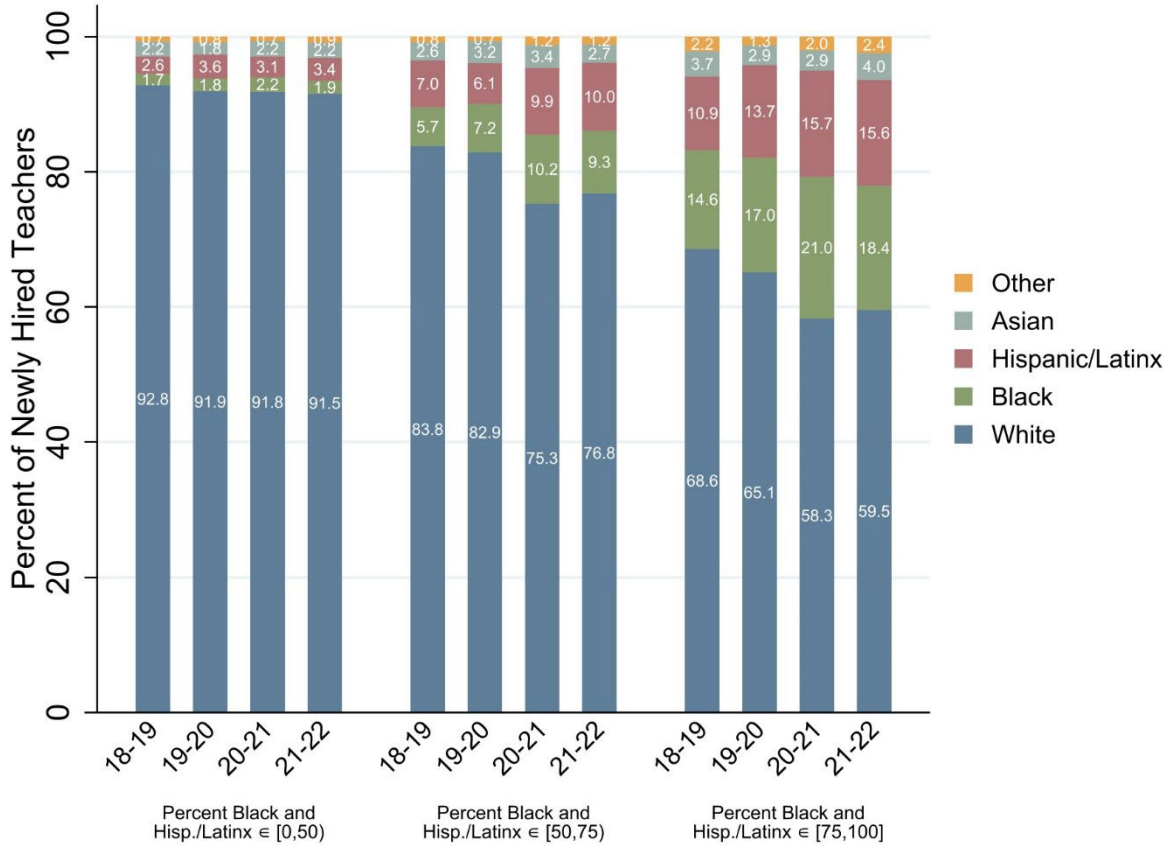


Panel C: Senior Teachers



Notes: All data are from MA DESE. Turnover is measured between the spring semester and fall semester of each calendar year (e.g., turnover in 2021 is measured as the turnover from spring 2021 to fall 2021). Early-Career, mid-career, and senior teachers are those with 0-4, 5-9, and 10 or more years of experience, respectively.

Figure A3: Race/Ethnicity of Newly Hired Teachers by School Composition



Notes: All data are from MA DESE . The category ‘Other’ includes American Indian, Hawaiian/Pacific Islander, and multiracial teachers.

Number of Observations by Year and Percent Black and Hispanic/Latinx:

[0,50][(2018) 4,710 , (2019) 4,391 , (2020) 4,677 ,(2021) 4,580];

[50,75][(2018) 1,062 , (2019) 1,005 , (2020) 821 ,(2021) 1,035];

[75,100][(2018) 1,878 , (2019) 1,691 , (2020) 1,709 ,(2021) 1,713].

Table A1: Summary Statistics

Mean Experience (Years)	10.7
Std. Dev. of Experience (Years)	8.2
Newly Hired (%)	9.9
Female (%)	76.3
Black (%)	2.9
Asian (%)	1.5
Hispanic/Latinx (%)	3.2
White (%)	91.8
Other Race/Ethnicity (%)	0.6
Unique teachers	116,760
N (teacher-years)	550,877

Notes: Sample includes MADESE teachers from 2015-16 through 2021-22.

Table A2: Summary Statistics for 2019-20 to 2021-22

	2019-20	2020-21	2021-22
Mean Experience (Years)	10.8	10.9	11.1
Std. Dev. of Experience (Years)	8.3	8.3	8.4
Newly Hired (%)	9.3	9.6	9.7
Newly Hired w/ Emergency License (%)	N/A	1.4	2.0
Female (%)	76.4	76.4	76.1
Black (%)	3.1	3.3	3.4
Asian (%)	1.6	1.6	1.7
Hispanic/Latinx (%)	3.3	3.6	3.8
White (%)	91.4	90.8	90.4
Other Race/Ethnicity (%)	0.6	0.7	0.7
N (teachers)	80,402	81,438	81,458

Notes: Sample includes MADESE teachers from 2019-20 through 2021-22.