How Retention and Mobility Outcomes Differ for Teachers of Color in Washington State

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Introduction

A. Study Purpose

The purpose of this working paper is to provide community members, policy makers, and educators with information and analyses about teachers of color in Washington state. We examine the characteristics and distribution of teachers of color and look at factors associated with their retention and mobility. We pay special attention to beginning and novice teachers of color and conduct detailed analyses of their individual racial and ethnic groups. This inquiry incorporates and expands on data and analyses from a prior research report on the retention and mobility of beginning teachers and teachers of color in Washington state.[1]

Throughout this paper, we use the language "teachers of color" to refer to teachers who identify as Black or African-American, American Indian, Alaska Native, Indigenous tribal member (including federally- and non-federally recognized tribes), Asian, Native Hawaiian, and other Pacific Islander. A teacher of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race, are also included as teachers of color. We acknowledge that this terminology has limitations, and that other language is also sometimes used, including the term BIPOC (Black, Indigenous and People of Color). We note that there is no universal agreement on terminology, and we endeavor to use the most specific language (that is, identifying specific racial and ethnic identifies) whenever possible in our discussion.

B. Relevant Literature

For many years, scholars, policymakers, and practitioners across the nation have noted the lack of racial and ethnic diversity in the teacher workforce, especially when compared to the increasing diversity of students. Many states have undertaken specific policies aimed at attracting and retaining teachers of color, and there is a broad consensus that increasing their numbers is of vital importance. Research has documented the many strengths of a more diverse workforce, as teachers of color often serve as cultural translators, have a greater awareness of racial trauma, and are associated with more positive academic and social-emotional outcomes for students of color (Carver-Thomas, 2018; Philip & Brown, 2020).

A growing body of research has investigated efforts to diversify the profession and examine the retention and mobility rates of teachers of color (Villegas, et al., 2012). Often these studies have used national datasets and surveys to explore differences in retention rates for teachers of color as a group. Analyses of national data shows that over the past several decades, there has been a slow rise in the number and the proportion of public school teachers of color (US DOE, 2016b). For example, in 1987-88, teachers of color represented 13% of the workforce. By 2017-18 (28 years later), that percentage increased to only 21% (Hussar, et al., 2020). National data also indicates that teachers of color are two to three times more likely than White teachers to work in high-poverty schools, urban schools, schools with higher proportions of students of color, and schools with higher turnover rates (Ingersoll & Merrill, 2017). The percentage of teachers of color was highest in schools that had 90% or more students of color (55%) and was lowest at schools that had less than 10% students of color (2%) (deBrey, et al., 2019).

[1] See Elfers, A.M., Plecki, M.L., Bei, N., & Kim. Y. (2020). Examining the Beginning Teacher Workforce in Washington State: An Update with a Special Focus on Teachers of Color. A report prepared for the Office of the Superintendent of Public Instruction by the Center for the Study of Teaching and Policy, College of Education, University of Washington, Seattle.

The sluggish increase in the percentage of teachers of color is partly attributable to higher rates of attrition. Ingersoll and colleagues (2018) analyzed national teacher survey data regarding the reasons why teachers of color decide to stay or to leave. They found that school working conditions, especially regarding the level of classroom autonomy, individual discretion, and collective influence teachers have regarding school-wide decisions are very important to teachers of color in making decisions about whether to remain at a school. Other scholars have noted the presence of de-professionalizing and disrespectful working conditions for teachers of color, including racial discrimination, relegation to serving in disciplinary roles, and being overlooked for promotions. These factors contribute to a "push out" effect for teachers of color, thereby impacting retention (Carter Andrews et al., 2019).

While the population of teachers of color as a collective group is growing to some extent, several researchers have noted that increases are not consistent across racial and ethnic groups. In particular, the proportion of Black and Native American teachers has declined in recent years. Nationwide, Black teachers made up more than 8% of teachers in 1987 but made up only 6.7% in 2015. Similarly, the proportion of Native American teachers declined from 1.1% in 1987 to 0.4% in 2015. However, the percentage of Latinx teachers increased from 2.9% in 1987 to 8.8% in 2015 (Carver-Thomas, 2018).

This research calls for a more complex understanding of teacher diversity, particularly when it comes to examining the broader school culture and societal contexts in which teachers work and the structural and institutional barriers that exist for teachers of color (Philip & Brown, 2020; Carter Andrews et al., 2019). Scholars also acknowledge that contexts and conditions vary by individual racial and ethnic group and can impact teacher attrition, especially for Black teachers (Carter Andrews, et al., 2019; Sun, 2018). For example, there is a history of Black teachers being excluded and dismissed from teaching positions, particularly after the 1954 *Brown v Board of Education* decision (Philip & Brown, 2020). Furthermore, barriers to entry into the teaching profession (such as testing and licensure requirements and student debt) disproportionately impact teachers of color (especially Black teachers) and there is an increased likelihood of school closures where Black and Latinx teachers are located (Ahman & Boser, 2014; Petchauer, Bowe & Wilson, 2018; Philip & Brown, 2020). This disproportionality impacts teacher retention, mobility, and collegiality as teachers located in schools slated for closure must seek assignments elsewhere.

Recent literature about teachers of color also suggests strategies that can be adopted to increase supports for beginning teachers of color, including better induction supports, more supportive leadership, additional supports for teacher candidates, increased compensation, housing assistance, and the adoption of teacher residencies and loan forgiveness (Achinstein, 2012; Carver-Thomas, 2018; Carver-Thomas & Darling-Hammond, 2017).

This study examines retention and mobility outcomes for teachers of color through a critical and social justice lens, recognizing that organizational and political structures within states and districts are often resistant to equitable policies and practices, and that institutional racism and white privilege play out in various settings (Horsford, Scott, & Anderson, 2019; Ladson-Billings & Tate, 1995). A quantitative study such as this has policy implications that are not value neutral (Wright, Arnold & Khalifa, 2018), and attention to equity, adequacy and transparency in research can be a step toward educational justice.

Research Approach and Methods

A. Research Focus

This research explores the retention and mobility patterns of all teachers of color statewide, with a special focus on beginning and novice teachers. To accomplish this, we develop statistical models to identify factors that explain differences in retention and mobility rates. A focal question for this analysis is: What variables consistently explain the retention and mobility outcomes of teachers of color in Washington state? We also analyze the demographic characteristics of teachers of color and describe their distribution across regions and schools in Washington state.

B. Methodology and Data Sources

We use several data sources to conduct a statewide analysis of the retention and mobility patterns of teachers of color. The primary data source is personnel data from the state's administrative dataset. This dataset contains individual teacher level demographic and assignment information about all educators in Washington state. We link this data to other state databases, including school and district demographic data, to form a portrait of teacher retention and mobility. We have access to multiple years of data, enabling us to conduct longitudinal analyses that are comparable over time. After providing a portrait of the demographic characteristics of teachers of color, we examine their year-by-year retention and mobility rates for the time period from 2015-16 to 2019-20. We identify all teachers of color in a given year, and then examine their individual assignments in the workforce in the subsequent year. Descriptive statistics are also provided for all teachers of color and for beginning and novice teachers of color.

Logistic regression models were constructed using the *R stats software* packages which enabled us to investigate the relationship between the dependent nominal outcome variables (e.g., staying in the same school, moving within district, moving out of district, or exiting the workforce), and a number of continuous and categorical independent variables thought to influence teacher retention and mobility (e.g., district enrollment, school poverty, full or part-time teaching status). Since the number of teachers of color in Washington state is small, we used a logistic regression model with four ethnic/racial group comparisons, and Latinx teachers (as the single largest minority) served as the reference group: Asian/Pacific Islander vs Latinx, Black vs Latinx, and Multiracial vs Latinx. Native American and Alaska Native teachers were not included in this analysis because their total numbers were too small to run accurate models. Due to sample sizes we used two-dimensional outcomes: 1) stayers vs non-stayers, and 2) exiters vs non-exiters (stayers, movers in and movers out).

C. Definition of Terms

As noted above, we provide analyses of retention and mobility rates for all teachers of color statewide and for beginning and novice teachers of color. The criteria for the teachers included in these analyses are as follows:

- *Beginning Teachers* are defined as public school classroom teachers with less than one

year of experience.[2]

- *Novice Teachers* are defined as public school classroom teachers with less than five years of experience

- *Teachers of Color (Black, Indigenous and/or Persons of Color*) are defined based on federally mandated reporting of staff ethnicity and race data. Non-white racial categories include Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian, and other Pacific Islander. Individuals reporting in multiple racial categories are considered multiracial for purposes of this research. A person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race, are considered ethnically Latinx in this dataset.

To examine retention and mobility patterns, teachers are placed in one of four categories:

- Stayers – teachers assigned to the same school in the initial school year and also in the subsequent year.

- Movers in – teachers who moved to other schools in the same district or changed assignment (other than a classroom teacher) within the same district.

- Movers out – teachers who moved to other districts, either as a classroom teacher or in some other role.

- Exiters – teachers who exited the Washington education system, either temporarily or permanently.[3]

D. Study Limitations

While this study provides an analysis of the retention and mobility of teachers of color, including factors that may impact turnover rates, we do not examine some related issues. First, we do not address the reasons why teachers of color choose to move to other schools or districts, or why they decide to leave the profession, either temporarily or permanently. Issues such as systemic and structural inequities, increased workload, quality of school and district leadership, support from parents and community, and personal and family factors are all known to influence teachers' career decisions. We also do not distinguish between teachers of color who choose to make a change in their assignment or location, and those who have been involuntarily transferred or did not have their contracts renewed.

[2] As reported by the Office of the Superintendent of Public Instruction, classroom teachers are certificated instructional staff with a duty root designation of 31, 32, 33 or 34. Teachers whose full-time equivalent (FTE) designation was zero for the initial year were excluded from the analysis. Other teachers serving in specialist roles (e.g., reading resource specialist, library media specialist) were not included.
[3] Exiters may have retired, re-entered the system in subsequent years, left Washington to teach in another state, or completely left the profession. It is not possible to distinguish voluntary and involuntary departures. It is not possible to determine whether teachers who left the state continued to be employed as teachers elsewhere.

Findings

A. Characteristics and Distribution of Washington's Teachers of Color

As in other states, Latinx teachers in Washington represent the largest proportion of teachers of color and also have the largest growth rates over time (Carver-Thomas, 2018; Villegas, et al., 2012). Teachers who identify as Multiracial (more than one race) also are increasing at higher rates than other racial and ethnic groups. However, Black and Native American/Alaska Native teachers have made few or no gains over time proportional to the overall national workforce.

The most notable change over time in Washington state is found for Latinx teachers, increasing from 3.2% in 2010-11 to 5.1% in 2019-20. However, there is no change in the proportion of American Indian/Alaskan Native teachers, holding constant at less than 1% (either .8% or .7% in the last ten years). Additionally, the proportion of Black teachers has changed little over the past ten years, comprising 1.3% of the workforce in 2010-11 and 1.4% in 2019-20. There has been less than a one percentage point increase in the proportion of Asian, Pacific Islander and Native Hawaiian teachers, from 2.5% in 2010-11 to 3.2% in 2019-20. The proportion of White teachers decreased over the ten-year period, from 90.9% in 2010-11 to 87.9% 2019-20.

Changes in the racial and ethnic composition of the state's teacher workforce are most notable among new teachers. Over the ten-year period from 2010-11 to 2019-20, the percentage of beginning teachers of color (those with less than one year of experience) increased from 11.8% to 20.6%. As is the case for all Latinx teachers in the state, beginning Latinx teachers have experienced the greatest proportional increase from 2010 to 2019, rising from 5% to 9.2% of all beginning teachers. We also note that the proportion of beginning Black teachers increased from less than 1% to 2.9%, a trend that is different than for all Black teachers statewide. The proportion of beginning White teachers declined from 88% to 79.4% over the ten-year time period examined.

These incremental changes are occurring during a time when the number and proportion of students of color has far outpaced that of teachers of color. The demographic characteristics of teachers differ dramatically from that of the state's students. From 2010-11 to 2019-20, the percentage of students of color statewide increased from 39% to 47%. However, the percentage of all teachers of color increased at a much slower rate, from 9% to 12%. In 2019-20, students of color comprised 47% of all Washington students compared to only 12% of for teachers of color. Table 1 provides data about the racial/ethnic characteristics of students, all teachers, and beginning teachers for 2019-20.

Table 1: Student and Teacher Race/Ethnicity in 2019-20

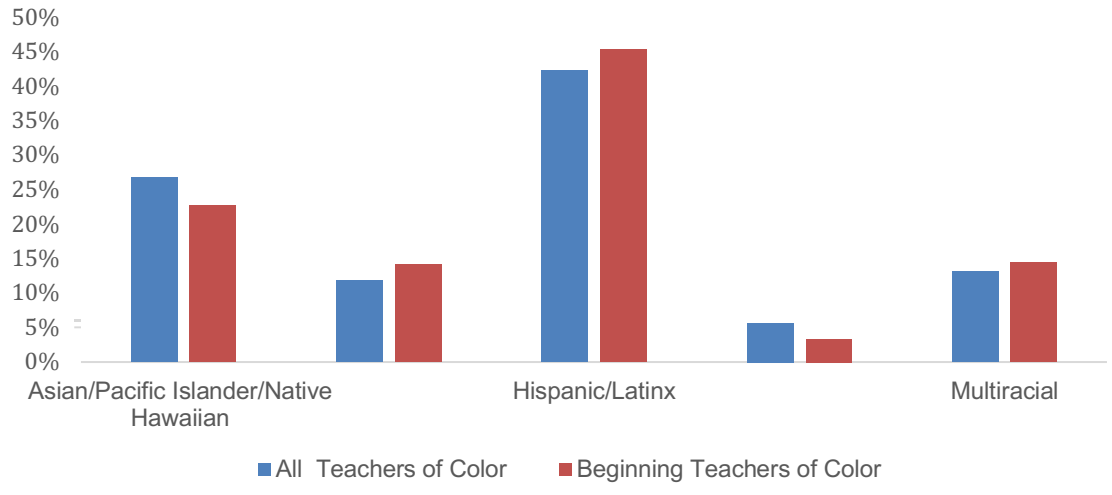
Race/Ethnicity	Students*	All Teachers	Beginning Teachers
American Indian/ Alaskan Native	1.3%	0.7%	0.7%
Asian/Pacific Islander/Native Hawaiian	9.2%	3.2%	4.6%
Black/ African American	4.4%	1.4%	2.9%
Hispanic/ Latinx of any race(s)	24.0%	5.1%	9.2%
Multiracial	8.6%	1.6%	2.9%
White	52.6%	87.9%	79.4%

**Student demographic data from the Office of the Superintendent of Public Instruction State Report Card 2019-20*

In Washington, students from some racial and ethnic groups are more concentrated in a small number of districts than students from other groups. In 2019-20, the ten districts with the greatest number of Black students served 60% of all Black students in the state, and there were 69 districts that did not serve any Black students. Similar concentration levels are found for Asian and Pacific Islander students. In contrast, the ten districts with the greatest number of Latinx students served only 29% of the total number of Latinx students in the state and only 6 districts in the state did not serve any Latinx students. Villegas and Irvine (2010) found that teachers of color often seek to teach in low-income and communities of color, and this was true particularly for beginning teachers of color in Washington, where we found higher proportions of beginning teachers of color are located in schools where the percent of students of color is 75% or more, and where the percentage of students who are low-income is 75% or more. Over the past five years, the proportion of beginning teachers of color in these low-income schools average ten percentage points higher than that for all beginning teachers.

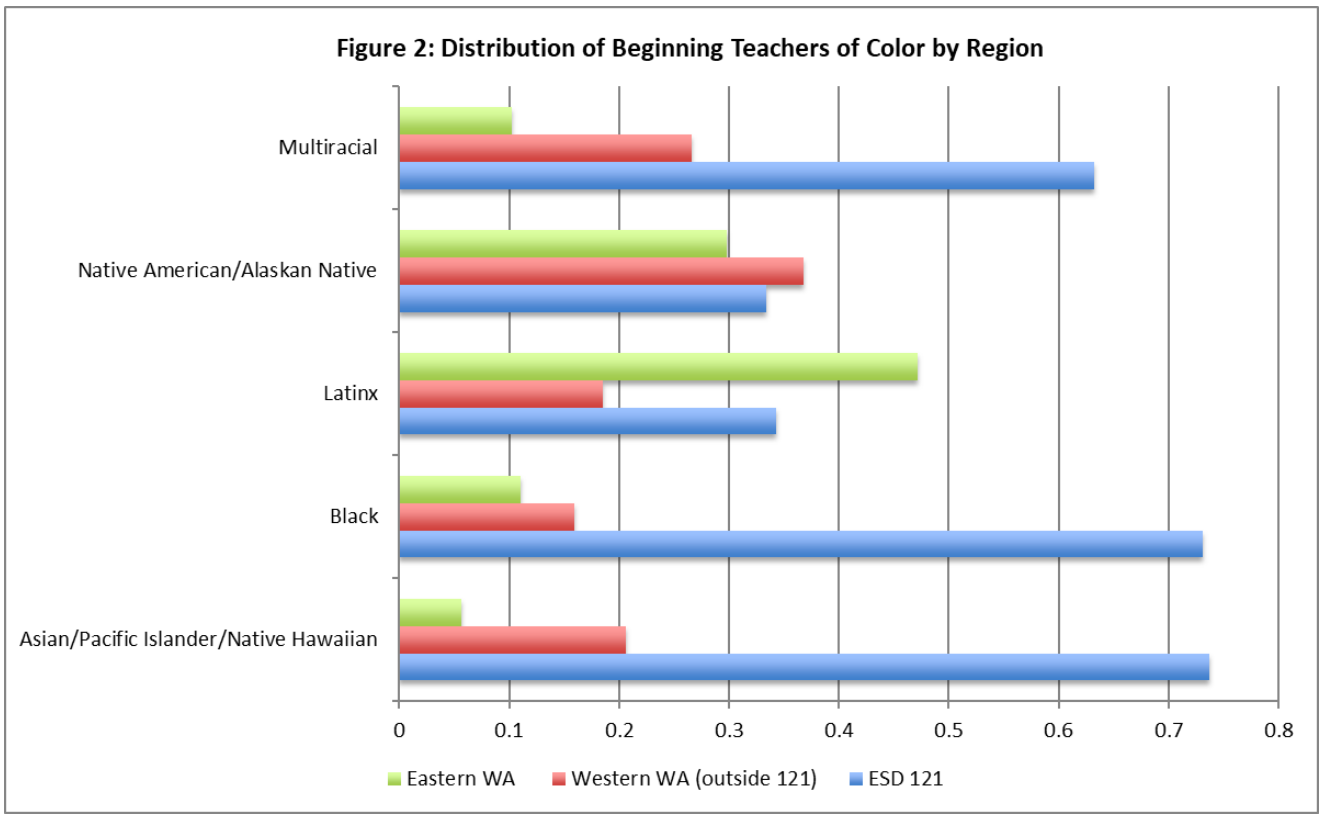
When comparing all teachers of color with beginning teachers of color, we find differences among racial and ethnic groups. For example, the percentage of beginning Latinx teachers in the state is consistently higher than for all Latinx teachers across the five most recent years of data (2015-16 to 2019-20). However, for Asian, Pacific Islander and Native Hawaiian teachers, the proportion of beginning teachers is consistently lower than for all teachers in this group. For example, in 2019-20, all Asian/Pacific Islander/Native Hawaiian teachers comprised 26.8% of all teachers of color but only 22.8% of all beginning teachers of color. For Black teachers, the percent of beginning teachers was lower than for all Black teachers in the years 2015-16 and 2016-17, but this pattern changed in subsequent years. In 2019-20, Black teachers represented 11.9% of all teachers of color, and 14.1% of all beginning teachers of color. Figure 1 depicts data for all teachers of color and beginning teachers of color by racial/ethnic group for 2019-20.

Figure 1: All Teachers of Color and Beginning Teachers of Color by Racial/Ethnic Group: 2019-20



The regions of the state where teachers of color are located varies by individual racial and ethnic group. A majority of Black teachers, Asian/Pacific Islanders, and Multiracial teachers are located in the highly urban areas of Western Washington's Central Puget Sound. However, nearly half of all Latinx teachers are located in more rural and agricultural areas of Central and

Eastern Washington. Native American and Alaskan Native teachers are more evenly distributed across the geographic regions of the state (see Figure 2). This is an important distinction because differences exist in the proportion of students of color located in larger districts and by individual racial and ethnic group.



We find no notable differences in the proportion of beginning teachers of color working in elementary, middle and high schools as compared to all beginning teachers for the time period from 2015-16 to 2019-20. Additionally, there are no large differences in the distribution of beginning teachers of color across district enrollment size categories as compared to all beginning teachers.

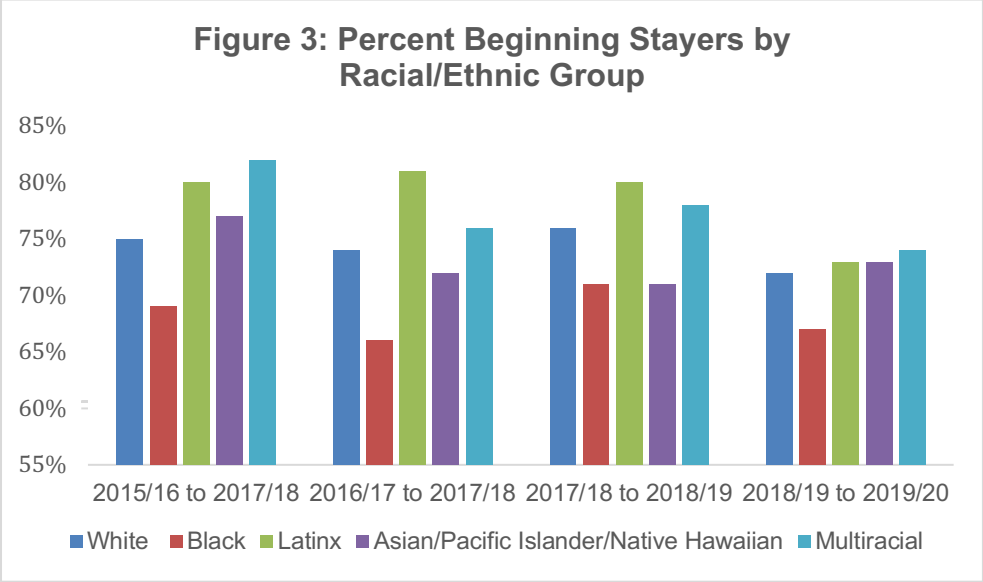
B. Retention and Mobility of Teachers of Color

1. Beginning teachers of color

Our descriptive statistics revealed that higher percentages of beginning stayers are found among Latinx teachers compared to White and to Black teachers. As a group, beginning Latinx teachers had higher percentages of stayers than beginning Asian/Pacific Islander/Native Hawaiian teachers in three of the four time periods examined. For example, from 2017-18 to 2018-19, 80% of beginning Latinx teachers were stayers, compared to lower percentages for Black (71%), Asian/Pacific Islander (71%), White (76%), and Multiracial beginning teachers (78%).[4]

[4] Appendix A provide additional details.

When we used the same data set to compare outcomes for beginning White teachers and all beginning teachers of color taken together (aggregated), no notable differences were found for any of the retention and mobility outcomes. In fact, in some cases, the percentages of beginning teachers of color who are stayers are slightly higher than that of beginning White teachers. This finding illustrates the importance of using disaggregated data for teachers of color by individual racial and ethnic group, as demonstrated in Figure 3.[5]



When examining differences in the percent of beginning teachers who exit the Washington state system from one year to the next, we find that in two of the years examined, beginning Black teachers had notably higher exit rates (19% and 15% from 2018-19 to 2019-20 and 2016-17 to 2017-18, respectively). This compares to exit rates of 12% and 10%, in the same years for beginning White teachers. Additionally, beginning Black teachers had higher rates of exiting than any other racial/ethnic group in three of the four time periods examined. Appendices G1-G4 provide additional descriptive statistics for beginning teachers, novice teachers and all teachers statewide.

2. Factors associated with retention and mobility for teachers of color with different levels of experience

We conducted logistic regression analyses to determine if there are statistically significant differences in the retention and mobility rates of teachers by individual racial/ethnic group and to examine factors associated with differences in these outcomes. Our focal question is: What variables consistently explain the retention and mobility outcomes of teachers of color in Washington state? We conducted these analyses for three groups: (1) all teachers of color, (2) novice teachers of color, and (3) beginning teachers of color. For all teachers of color and novice teachers of color, we had sufficient sample sizes to use 2-level logistic regression models by controlling district effect. We used a single-level logistic regression model with beginning teachers of color because the total number of teachers is small (around 500 to 600 in

[5] We note that data for Native American/Alaskan Native teachers are not included in Figure 3 due to much lower total numbers of beginning teachers in this group compared to all other groups. See Appendix A for data regarding Native American/Alaskan Native teachers.

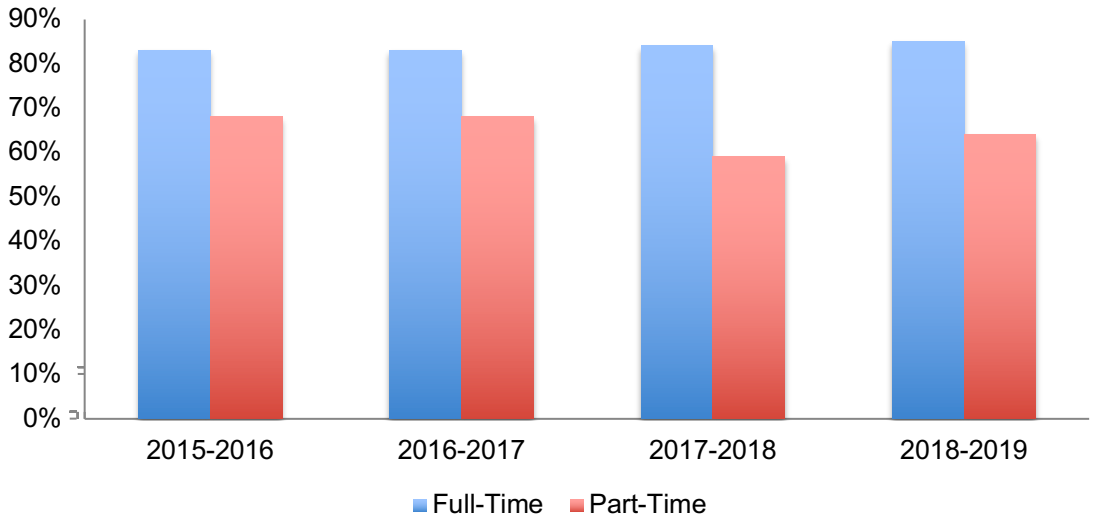
each year). These analyses were conducted for four year-by-year time periods, starting in the 2015-16 school year.

Our logistic regression model used three ethnic/racial group comparisons (Asian/Pacific Islander vs Latinx, Black vs Latinx, and Multiracial vs Latinx). Native American and Alaska Native teachers are not included in this analysis because their total numbers are too small and we cannot run accurate models for these two groups. We designed two-dimensional outcomes as follows: 1) stayers vs non-stayers (e.g., movers in, movers out, and exiters), and 2) exiters vs the non-exiters (stayers, movers in, and movers out). In addition to racial/ethnic group and whether a teacher was a novice or beginner, other factors included in our predictive models were (1) school poverty, (2) district enrollment, (3) school level (e.g., elementary, middle, or high school), and (4) whether a teacher was full-time or part-time. Prior research on teacher retention and mobility in Washington state showed that school level was a significant factor for all teachers in the state and for beginning teachers (Elfers, Plecki & Van Windekens, 2017).

Results for all teachers of color

We begin by analyzing factors associated with teachers of color who stay in the same school from one year to the next. In all four time periods examined, we find that full-time status is a strong and significant predictor for all teachers of color staying in their school. Our statistical models provide predicted probabilities in each of our analytic categories for each year examined. For example, in 2015-16, the predicted probability of a full-time teacher of color staying in the same school is 83%, compared to a predicted probability of only 68% for a part-time teacher (a difference of 15 percentage points). In the three subsequent years, the difference in predicted probabilities range from 15 to 25 percentage points. There are a number of possible reasons why a teacher has a part-time assignment, including individual preference. However, other factors may also be at play, including a district's lack of ability to offer a full-time assignment, perhaps due to inadequate resources (see Figure 4 and Table 2 below).

Figure 4: Predicted Probabilities of Stayers of Color by Full-Time vs Part-Time Status



In three time periods, teaching at the middle school level is a significant and negative predictor of teachers of color who are stayers compared to the elementary level, but high school level is a uniquely positive predictor.

Black teachers are less likely to stay in the same school as compared to Latinx teachers in 2015-2016 and 2018-2019. In both time periods, there was a five-percentage point difference in the predicted probabilities of retention of Black teachers compared to Latinx teachers. See Table 2 and Appendix B for details.

Table 2: Logistic Regression Results for all Teachers of Color: Statewide Teacher Stayers vs. Non-Stayers

	2015-2016	2016-2017	2017-2018	2018-2019
	Coeff	*Coeff*	*Coeff*	*Coeff*
Intercept	1.17 ***	1.17 ***	1.01 ***	1.14 ***
School Poverty (FRL%)	-0.06	-0.01	-0.14 **	-0.08
Total District Enrollment	-0.04	-0.15 *	0.07	0.09
Grade Level (Middle School)	-0.20 **	-0.13 *	-0.02	-0.12 *
Grade Level (High School)	0.24 ***	0.08	0.19 **	0.17 **
Employment status (Full time)	0.42 ***	0.42 ***	0.63 ***	0.57 ***
Teaching Experience (Novice)	-0.14 ***	-0.13 ***	-0.17 ***	-0.26 ***
Ethnic (Asian/Pacific Islander)	0.07	0.10	0.03	0.07
Ethnic (Black)	-0.17 *	-0.11	-0.08	-0.20 *
Ethnic (Multiracial)	0.01	-0.01	-0.04	0.07
Random Effects	*Var*	*Var*	*Var*	*Var*
Districts	0.04	0.11	0.16	0.31

Note. N = 5280 teachers within 178 districts (2015-2016), 5684 teachers within 182 districts (2016-2017), 6080 teachers within 188 districts (2017-2018), 6440 teachers within 190 districts (2018-2019); School poverty (Free Reduced-Priced Lunch %) and district enrollment in z-score; Grade level (elementary as the reference group), Ethnic (Latinx as the reference group), and Employment status (part-time as the reference group) effect coded; *R lme4* package used to estimate models.

* $p < .05$, ** $p < .01$, *** $p < .001$.

We also examined factors associated with teachers of color exiting the Washington system. As is the case for stayers, full-time status is a significant predictor of exiters for all four time periods examined. Full-time teachers of color are less likely to be exiters as compared to part-time teachers of color. In three time periods, Black teachers were statistically more likely to exit the profession than Latinx teachers, with differences in predicted probabilities ranging from 5 to 8 percentage points (see Table 3). In one time period (2018-19), teachers of color identifying as being Multiracial was a significant and negative predictor of exiters for teachers of color, but the difference between Multiracial and Latinx teachers was just one percentage point. Table 3 presents details.[6]

[6] Detailed results for all exiters of color are provided in Appendix C.

Table 3: Logistic Regression Results for all Teachers of Color: Statewide Teacher Exiters vs. Non-Exiters				
	2015-2016	2016-2017	2017-2018	2018-2019
	Coeff	*Coeff*	*Coeff*	*Coeff*
Intercept	-2.16 ***	-2.17 ***	-1.94 ***	-2.09 ***
School Poverty (FRL%)	-0.06	-0.06	0.03	0.01
Total District Enrollment	0.01	0.14	-0.12	-0.07
Grade Level (Middle School)	0.12	0.09	-0.01	0.11
Grade Level (High School)	-0.15	-0.08	-0.06	-0.05
Employment status (Full time)	-0.52 ***	-0.51 ***	-0.82 ***	-0.57 ***
Teaching Experience (Novice)	0.19 ***	0.23 ***	0.23 ***	0.29 ***
Ethnic (Asian/Pacific Islander	-0.09	-0.11	0.04	0.04
Ethnic (Black)	0.30 **	0.09	0.36 **	0.35 ***
Ethnic (Multiracial)	-0.06	-0.08	-0.07	-0.29 *
Random Effects	*Var*	*Var*	*Var*	*Var*
Districts	0.02	0.04	0.07	0.24

Note. N = 5280 teachers within 178 districts (2015-2016), 5684 teachers within 182 districts (2016-2017), 6080 teachers within 188 districts (2017-2018), 6440 teachers within 190 districts (2018-2019); School poverty (Free Reduced-Priced Lunch %) and district enrollment in z-score; Grade level (elementary as the reference group), Ethnic (Latinx as the reference group), and Employment status (part time as the reference group) effect coded; *R lme4* package used to estimate models.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Results for novice teachers of color compared to all teachers of color

In all four time periods, novice teachers of color are statistically less like to stay in the same school compared to teachers of color with five or more years of experience. The difference in predicted probabilities of a novice teacher of color staying in the same school compared to all other teachers of color ranges from 5 to 9 percentage points. For example, in the most recent time period examined (2018-19 to 2019-20), the predicted probability of a novice teacher of color staying in the same school was 71% compared to 80% for teachers of color with 5 or more years of experience (see Table 2 and Appendix B).

Across all four time periods, we find that novice teachers of color are statistically more likely to exit as compared to teachers of color with at least five years of experience. The difference in predicted probabilities of a novice teacher of color exiting compared to all other teachers of color ranges from 3 to 5 percentage points (see Table 3 and Appendix C).

Results for novice teachers of color compared to one another

We also conducted separate analyses of only novice teachers of color using 2-level regression models. The results for novice teachers of color are similar to those for all teachers of color in that full-time status is a significant predictor of both stayers and exiters for all four time periods examined. Full-time novice teachers of color are more likely to stay in the same school and less likely to exit as compared to part-time novice teachers of color. However, unlike results for all teachers of color, school level is not a significant predictor for novice teachers of color in any of the time periods examined. Table 4 depicts results for novice teachers of color who are stayers.

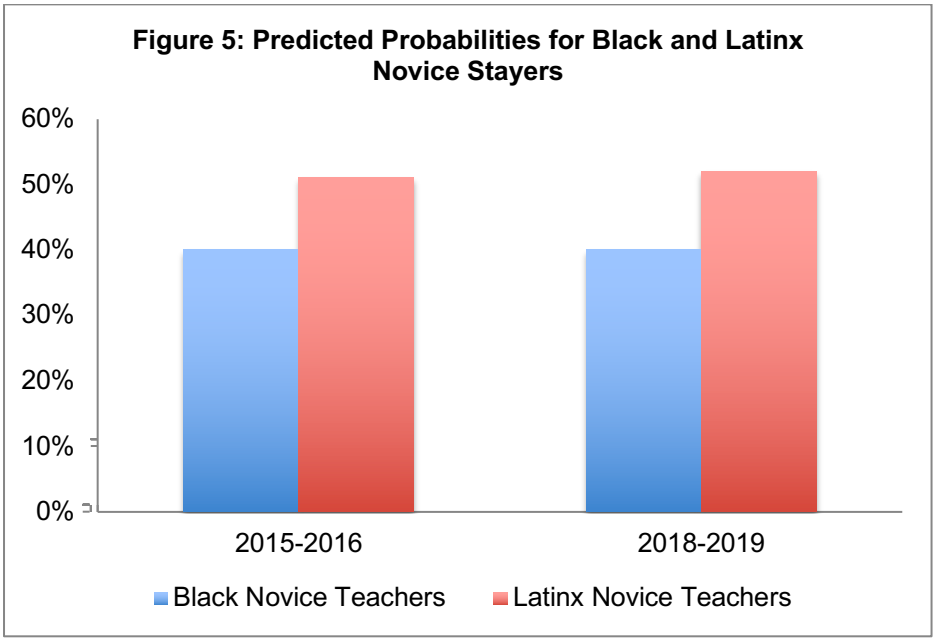
Table 4: Logistic Regression Results for Novice Teachers of Color: Statewide Novice Stayers vs Non-Stayers				
	2015-2016	**2016-2017**	**2017-2018**	**2018-2019**
	Coeff	*Coeff*	*Coeff*	*Coeff*
Intercept	1.03 ***	1.01 ***	0.72 ***	0.89 ***
School Poverty (FRL%)	-0.07	0.02	-0.13	-0.04
Total District Enrollment	-0.01	-0.03	0.01	0.11
Grade Level (Middle School)	-0.17	-0.07	-0.10	-0.17
Grade Level (High School)	0.07	-0.01	0.15	0.17
Employment Status (Full time)	0.33 **	0.39 **	0.67 ***	0.47 ***
Ethnic (Asian/Pacific Islander)	0.06	0.05	0.00	0.08
Ethnic (Black)	-0.36 **	-0.17	-0.17	-0.36 **
Ethnic (Multiracial)	0.17	-0.04	0.05	0.16

Note. N = 1765 teachers (2015-2016), 2061 teachers (2016-2017), 2282 teachers (2017-2018), 2515 teachers (2018-2019); School poverty (Free Reduced-Priced Lunch %) and district enrollment in z-score; Grade level (elementary as the reference group), Ethnic (Latinx as the reference group), and Employment status (part time as the reference group) effect coded; *R lme4* package used to estimate models.

* $p < .05$, ** $p < .01$, *** $p < .001$.

As is depicted in Table 4 and Figure 5, Black novice teachers are statistically less likely to stay in the same school as compared to Latinx novice teachers in two of the four time periods examined, with notable differences in predicted probabilities. For example, in 2018-19, Black novice teachers had a 40% predictive probability of staying in the same school, compared to a 52% predicted probability for Latinx novice teachers, a difference of 12 percentage points. In the other time period, the difference in predicted probabilities was 11 and 8 percentage points[7] (see Figure 5).

Figure 5: Predicted Probabilities for Black and Latinx Novice Stayers



[7]Detailed results for novice teachers of color who are stayers are presented in Appendix D.

Our analyses also revealed that Black novice teachers were statistically more likely to be exiters compared to Latinx novice teachers in two of the four time periods examined. In 2017-18 and 2018-19, the difference in predicted probabilities between Black and Latinx novice teachers was 15 and 13 percentage points, respectively. For example, in 2017-18, the predicted probability of a Black novice teacher exiting the system was 58%, compared to 43% for a Latinx novice teacher. Finally, in only one year (2018-19), novice teachers who identify as Multiracial were less likely to exit as compared to Latinx teachers, with a difference in predicted probabilities of 11 percentage points. Table 5 presents results for novice teachers of color who were exiters.[8]

Table 5: Logistic Regression Results for Novice Teachers of Color: Statewide Novice Exiters vs Non-Exiters

	2015-2016	2016-2017	2017-2018	2018-2019
	Coeff	*Coeff*	*Coeff*	*Coeff*
Intercept	-2.01 ***	-1.97 ***	-1.71 ***	-1.92 ***
School Poverty (FRL%)	0.03	-0.01	-0.03	0.02
Total District Enrollment	-0.03	-0.01	-0.13	-0.15
Grade Level (Middle School)	0.03	-0.03	0.12	0.15
Grade Level (High School)	0.03	-0.06	-0.15	-0.09
Employment Status (Full time)	-0.41 **	-0.48 ***	-0.76 ***	-0.43 ***
Ethnic (Asian/Pacific Islander)	0.06	-0.08	0.06	0.09
Ethnic (Black)	0.20	0.07	0.37 *	0.48 **
Ethnic (Multiracial)	0.00	-0.03	-0.18	-0.51 **

Note. N = 1765 teachers (2015-2016), 2061 teachers (2016-2017), 2282 teachers (2017-2018), 2515 teachers (2018-2019); School poverty (Free Reduced-Priced Lunch %) and district enrollment in z-score; Grade level (elementary as the reference group), Ethnic (Latinx as the reference group), and Employment status (part time as the reference group) effect coded; *R lme4* package used to estimate models.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Results for beginning teachers of color

Finally, we looked at the retention and mobility of beginning teachers of color in relation to teachers of color statewide with one or more years of experience. As we would expect, teacher's status as a beginning teacher of color is a negative predictor for staying in the same school compared to teachers of color with more experience. We found this to be the case in all years except in 2015-2016 (see Appendix F).

In a separate analysis looking only at beginning teachers of color, we found a statistically significant difference for beginning teachers staying in the same school in a full-time rather than a part-time assignment in three of the four years examined. This is a similar finding to all teachers of color and novice teachers of color. In 2015-16, we also found that beginning Latinx teachers are more likely to stay in the same school as compared to beginning Black teachers. Beginning Black teachers had a 63% predicted probability of staying in the same school compared to 75% for Latinx teachers (see Appendix G).

[8] See Appendix E for detailed results for novice teachers of color who are exiters.

Discussion and Implications

In this study, we uncovered important differences in the distribution, retention, and mobility for teachers of color by individual racial and ethnic groups. These differences are consistent with national findings that educator diversity has increased but not in all non-white racial and ethnic groups, and that same-school retention rates are lower for Black teachers (US DOE, 2016). In this paper, we discuss differences in how students of color are distributed across the state and corresponding teachers of color by racial/ethnic group. Students who are Black or Asian/Pacific Islanders are more concentrated in a smaller number of districts compared to Latinx or white students. These differences highlight the importance of using disaggregated data to examine outcomes for each unique racial and ethnic group, in addition to analyzing outcomes for all teachers and students of color.

The findings from this study have implications for efforts to diversify the teacher workforce. Since opportunities to further diversify the workforce begin with the recruitment and training of prospective teachers of color, state agencies and teacher preparation institutions must continue their efforts to support and extend opportunities to these prospective new teachers. Some teacher education programs have engaged in transforming their approaches by incorporating critical reflection, and transformative learning with community-based organizations to improve preparation and support teacher candidates of color (Zygmunt et al., 2017; Liu & Ball, 2019; Kohli, 2019). Other approaches include increasing the prevalence of teacher residencies and "grow your own" approaches to teacher preparation to attract a more diverse group of teacher candidates (Guha, Hyler, & Darling-Hammond, 2017; Gist, Bianco, & Lynn, 2019). Consideration is also being given to structural barriers to entry into the profession in the forms of testing, licensure requirements, and student debt that disproportionately impact candidates of color, especially Black teacher candidates (Phillip & Brown, 2020; Gist, Bianco, & Lynn, 2019). In Washington state, recruitment efforts to increase the diversity of the teacher workforce, such as funding for alternative pathways and other supports, have been in place for some time but progress has been slow.

For new teachers of color, various policies could be considered including attention to induction supports and improving the racial and ethnic diversity of the mentor teacher cadre. Most beginning teachers in Washington state are now receiving induction supports (Elfers, et al., 2020), but it may also be important to examine the quality of those supports. As DeAngelis et al. (2103) found, simply being assigned a mentor is no guarantee of effective support for new teachers. Evidence suggests that the quality of the mentoring matters, and that may start with highly skilled mentors working with new teachers (Achinstein, 2012). The quality of the training of mentor teachers and mentors' ability to provide helpful instructional feedback and build collaborative relationships within the school are also crucial. New teachers often need targeted support as they learn how to plan, execute, evaluate, and adjust content-specific instruction for heterogeneous groups of learners, and learn to navigate the particular state, district, and school cultures and contexts in which they find themselves (Achinstein, 2012; Feiman-Nemser, 2003; Achinstein & Barrett, 2004). Achinstein notes the assumptions and challenges for both mentors and new teachers of color: "Mentors need to know that new teachers of color are navigating not only their new profession (challenge enough for all novices) but are also consciously or unconsciously managing the persistence of societal, historical and negative mantle [of institutional racism] generally placed on all people of color" (2012, p. 299).

Induction supports are particularly important for new teachers in Washington given that the majority are now located in schools with increasing socioeconomic and ethnic/racial diversity.

Particular attention should be paid to multiple types of induction supports for beginning teachers of color. We know that most beginning teachers are located in high poverty schools where students of color are in the majority. Villegas and Irvine (2010) found that teachers of color often seek to teach in low-income and communities of color. In their national study of Black women teachers, Carver and Darling-Hammond (2017) found that three-quarters of these new Black teachers were certified through an alternative route program with less preparation and student teaching experience. While these women were just as likely to receive a mentor as White teachers, they met with their mentor less frequently and found their mentoring experiences to be less effective. For the state's Beginning Educator Support Team program, attention should be paid to improving the racial and ethnic diversity of the mentor teacher cadre. It may be beneficial to consider how the mentor selection process can help ensure an appropriate match for new teachers of color. This will require a willingness to recognize and acknowledge racial and ethnic differences in supporting staff and students. Mentoring is perhaps the most obvious form of support for beginning and novice teachers of color, but there are areas, such as curricular resources, relationships with families and communities, and school leadership where a recognition of racial and ethnic differences is necessary (Phillip & Brown, 2020; Zygmunt et al., 2017; Liu & Ball, 2019).

Furthermore, there are other aspects of support for new teachers that can help them provide high quality instruction and motivate them to stay in the profession. Novice teachers' professional success and satisfaction is tied to the particular school site and working conditions found to support their teaching include collegial interaction, opportunities for growth, appropriate assignments, adequate resources and school-wide structures to support student learning. These issues may be particularly acute for new teachers in low-income schools (Johnson et al., 2004). Additional factors include effective school and district leadership, access to high quality curricular supports, and strong relationships with families and the local community.

For both beginning and novice teachers of color and all teachers of color statewide, our inquiry found that one of the strongest and most consistent predictors of increased teacher retention was having a full-time assignment. There are a number of potential reasons why a teacher has a part-time assignment, including the individual preference of the teacher. However, other factors may also be at play, including a district's lack of ability to offer a full-time assignment, perhaps due to inadequate resources. Examination of the reasons why part-time status negatively impacts teacher retention and mobility is warranted, as this represents a circumstance that could potentially be changed in order to improve teacher retention.

In our descriptive data, we found a proportional loss of Black and Native American/Alaska Native teachers over the years, highlighting a need to develop a clear understanding of the factors involved, particularly if these teachers are leaving for reasons other than retirement. Studies have shown that educators of color often face the burden of "representing their race" and responsibilities for solving problems for students of color who have experienced the failure of schools to appropriately support them (e.g., Achinstein, 2012). As found in ours and other studies, beginning and novice Latinx teachers have better retention and mobility outcomes than other new teachers of color. A better understanding of factors influencing these differential outcomes among individual racial/ethnic groups is needed if progress is to be made towards the goals of a more diverse, stable, and well-supported teacher workforce.

Since 2018-19, there have been significant changes in the state's funding model for teacher salaries, and perhaps this is one factor contributing a substantial decline in the number of beginning teachers in Washington in 2019-20. Changes in teacher salaries present budgetary challenges for districts, and can restrict the number of new teachers districts can afford to hire.

These dramatic changes in the compensation system may also cause some districts to re-assign certificated staff serving in instructional coaching, mentoring, and other support roles to classroom teaching responsibilities, thereby reducing demand for beginning teachers. The capacity for districts to hire and support new teachers of color may also be impacted by future budgetary challenges related to COVID-19.

Typically, policy conversations about teacher diversity use data about all teachers of color grouped together. Our analyses demonstrate the importance of using disaggregated data about the retention and mobility of teachers of color because the outcomes for individual racial/ethnic groups vary significantly, and policy responses need to become more targeted to address these differences.

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Appendix A: Teacher Retention and Mobility Comparison by Race/Ethnicity: 2018-19 to 2019-20									
	Number Teachers	Stayers in School		Movers in District		Movers out District		Exiters from WA system	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Statewide Teachers of Color	7565	6280	83%	503	7%	222	3%	560	7%
Statewide Novice Teachers of Color	2,893	2256	78%	226	8%	122	4%	289	10%
Statewide Beginning Teachers of Color	771	559	73%	78	10%	28	4%	106	14%
Asian/Pacific Islander/Native Hawaiian									
Statewide	2080	1737	84%	133	6%	49	2%	161	8%
Novice	753	592	79%	62	8%	23	3%	76	10%
Beginning	196	143	73%	22	11%	6	3%	25	13%
Black/African American									
Statewide	902	710	79%	60	7%	35	4%	97	11%
Novice	337	234	69%	30	9%	22	7%	51	15%
Beginning	108	72	67%	13	12%	3	3%	20	19%
Hispanic									
Statewide	3155	2655	84%	214	7%	85	3%	201	6%
Novice	1320	1,054	80%	98	7%	46	3%	122	9%
Beginning	347	255	73%	35	10%	14	4%	43	12%
Native American/Alaskan Native									
Statewide	452	369	82%	29	6%	15	3%	39	9%
Novice	120	88	73%	8	7%	8	7%	16	13%
Beginning	39	29	74%	2	5%	1	3%	7	18%
More than one race									
Statewide	976	809	83%	67	7%	38	4%	62	6%
Novice	363	288	79%	28	8%	23	6%	24	7%
Beginning	81	60	74%	6	7%	4	5%	11	14%
White									
Statewide	56,971	48,358	85%	3466	6%	1438	3%	3709	7%
Novice	14,580	11,348	78%	1145	8%	650	4%	1,437	10%
Beginning	3,160	2,264	72%	327	10%	180	6%	389	12%

Appendix B: Logistic Regression Results for All Teachers of Color: Statewide Teacher Stayers vs. Non-Stayers

Fixed Effects	**2015-2016** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	1.17	(0.08)	***	**0.76**	**0.76**
School Poverty (FRL%)	-0.06	(0.04)		0.75	0.77
Total District Enrollment	-0.04	(0.06)		0.76	0.77
Grade Level (Middle School)	-0.20	(0.06)	**	**0.73**	**0.75**
Grade Level (High School)	0.24	(0.06)	***	**0.80**	**0.75**
Employment status (Full time)	0.42	(0.07)	***	**0.83**	**0.68**
Teaching Experience (Novice)	-0.14	(0.04)	***	**0.74**	**0.79**
Ethnic (Asian/Pacific Islander)	0.07	(0.06)		0.78	0.78
Ethnic (Black)	-0.17	(0.08)	*	**0.73**	**0.78**
Ethnic (Multiracial)	0.01	(0.08)		0.76	0.78
Random Effects	*Var*				
Districts	0.04				
Model Information					
AIC	4760				

Note. N = 5280 teachers within 178 districts.

Fixed Effects	**2016-2017** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	1.17	(0.09)	***	**0.76**	**0.76**
School Poverty (FRL%)	-0.01	(0.05)		0.76	0.76
Total District Enrollment	-0.15	(0.07)	*	**0.73**	**0.79**
Grade Level (Middle School)	-0.13	(0.06)	*	**0.74**	**0.77**
Grade Level (High School)	0.08	(0.06)		0.78	0.77
Employment status (Full time)	0.42	(0.07)	***	**0.83**	**0.68**
Teaching Experience (Novice)	-0.13	(0.04)	***	**0.74**	**0.79**
Ethnic (Asian/Pacific Islander)	0.10	(0.06)		0.78	0.77
Ethnic (Black)	-0.11	(0.08)		0.74	0.77
Ethnic (Multiracial)	-0.01	(0.08)		0.76	0.77
Random Effects	*Var*				
Districts	0.11				
Model Information					
AIC	5172				

Note. N = 5684 teachers within 182 districts.

Fixed Effects	2017-2018 (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	1.01	(0.09)	***	**0.73**	**0.73**
School Poverty (FRL%)	-0.14	(0.05)	**	**0.70**	**0.76**
Total District Enrollment	0.07	(0.08)		0.75	0.72
Grade Level (Middle School)	-0.02	(0.06)		0.73	0.70
Grade Level (High School)	0.19	(0.06)	**	**0.77**	**0.70**
Employment status (Full time)	0.63	(0.06)	***	**0.84**	**0.59**
Teaching Experience (Novice)	-0.17	(0.03)	***	**0.70**	**0.76**
Ethnic (Asian/Pacific Islander)	0.03	(0.06)		0.74	0.75
Ethnic (Black)	-0.08	(0.08)		0.72	0.75
Ethnic (Multiracial)	-0.04	(0.08)		0.73	0.75
Random Effects	*Var*				
Districts	0.16				
Model Information					
AIC	5601				

Note. N = 6080 teachers within 188 districts.

Fixed Effects	**2018-2019** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	1.14	(0.11)	***	**0.76**	**0.76**
School Poverty (FRL%)	-0.08	(0.05)		0.74	0.77
Total District Enrollment	0.09	(0.10)		0.77	0.74
Grade Level (Middle School)	-0.12	(0.06)	*	**0.74**	**0.75**
Grade Level (High School)	0.17	(0.06)	**	**0.79**	**0.75**
Employment status (Full time)	0.57	(0.07)	***	**0.85**	**0.64**
Teaching Experience (Novice)	-0.26	(0.04)	***	**0.71**	**0.80**
Ethnic (Asian/Pacific Islander)	0.07	(0.06)		0.77	0.77
Ethnic (Black)	-0.20	(0.08)	*	**0.72**	**0.77**
Ethnic (Multiracial)	0.07	(0.08)		0.77	0.77
Random Effects	*Var*				
Districts	0.31				
Model Information					
AIC	5582				

Note. N = 6440 teachers within 190 districts

School poverty (Free Reduced-Priced Lunch %) and district enrollment in *z*-score; Grade level (elementary school as the reference group), Ethnic (Latinx as the reference group), and Employment status (part time as the reference group) effect coded; *R lme4* package used to estimate models.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Appendix C: Logistic Regression Results for Retention & Mobility of all Teachers of Color: Statewide Teacher Exiters vs. Others

Fixed Effects	**2015-2016** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	-2.16	(0.10)	***	**0.10**	**0.10**
School Poverty (FRL%)	-0.06	(0.06)		0.10	0.11
Total District Enrollment	0.01	(0.07)		0.10	0.10
Grade Level (Middle School)	0.12	(0.10)		0.12	0.11
Grade Level (High School)	-0.15	(0.09)		0.09	0.11
Employment status (Full time)	-0.52	(0.09)	***	**0.06**	**0.16**
Teaching Experience (Novice)	0.19	(0.06)	***	**0.12**	**0.09**
Ethnic (Asian/Pacific Islander)	-0.09	(0.10)		0.10	0.09
Ethnic (Black)	0.30	(0.12)	**	**0.14**	**0.09**
Ethnic (Multiracial)	-0.06	(0.12)		0.10	0.09
Random Effects	*Var*				
Districts	0.02				
Model Information					
AIC	2502				

Note. N = 5280 teachers within 178 districts.

Fixed Effects	**2016-2017** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	-2.17	(0.10)	***	**0.10**	**0.10**
School Poverty (FRL%)	-0.06	(0.06)		0.10	0.11
Total District Enrollment	0.14	(0.07)		0.12	0.09
Grade Level (Middle School)	0.09	(0.09)		0.11	0.10
Grade Level (High School)	-0.08	(0.09)		0.10	0.10
Employment status (Full time)	-0.51	(0.09)	***	**0.06**	**0.16**
Teaching Experience (Novice)	0.23	(0.05)	***	**0.13**	**0.08**
Ethnic (Asian/Pacific Islander)	-0.11	(0.09)		0.09	0.11
Ethnic (Black)	0.09	(0.12)		0.11	0.11
Ethnic (Multiracial)	-0.08	(0.12)		0.10	0.11
Random Effects	*Var*				
Districts	0.04				
Model Information					
AIC	2815				

Note. N = 5684 teachers within 182 districts.

Fixed Effects	**2017-2018** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	-1.94	(0.09)	***	**0.13**	**0.13**
School Poverty (FRL%)	0.03	(0.06)		0.13	0.12
Total District Enrollment	-0.12	(0.08)		0.11	0.14
Grade Level (Middle School)	-0.01	(0.09)		0.12	0.13
Grade Level (High School)	-0.06	(0.09)		0.12	0.13
Employment status (Full time)	-0.82	(0.08)	***	**0.06**	**0.25**
Teaching Experience (Novice)	0.23	(0.05)	***	**0.15**	**0.10**
Ethnic (Asian/Pacific Islander)	0.04	(0.09)		0.13	0.09
Ethnic (Black)	0.36	(0.11)	**	**0.17**	**0.09**
Ethnic (Multiracial)	-0.07	(0.12)		0.12	0.09
Random Effects	*Var*				
Districts	0.07				
Model Information					
AIC	2853				

Note. N = 6080 teachers within 188 districts.

Fixed Effects	**2018-2019** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	-2.09	(0.12)	***	**0.11**	**0.11**
School Poverty (FRL%)	0.01	(0.06)		0.11	0.11
Total District Enrollment	-0.07	(0.10)		0.10	0.12
Grade Level (Middle School)	0.11	(0.08)		0.12	0.10
Grade Level (High School)	-0.05	(0.08)		0.11	0.10
Employment status (Full time)	-0.57	(0.08)	***	**0.07**	**0.18**
Teaching Experience (Novice)	0.29	(0.05)	***	**0.14**	**0.09**
Ethnic (Asian/Pacific Islander)	0.04	(0.08)		0.11	0.10
Ethnic (Black)	0.35	(0.10)	***	**0.15**	**0.10**
Ethnic (Mutliracial)	-0.29	(0.12)	*	**0.09**	**0.10**
Random Effects	*Var*				
Districts	0.24				
Model Information					
AIC	3240				

Note. N = 6440 teachers within 190 districts

School poverty (Free Reduced-Priced Lunch %) and district enrollment in *z*-score; Grade level (elementary school as the reference group), Ethnic (Latinx as the reference group), and Employment status (part time as the reference group) effect coded; *R lme4* package used to estimate models.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Appendix D: Logistic Regression Results for Retention & Mobility of Novice Teachers of Color: Statewide Novice Stayers vs. Others

Fixed Effects	**2015-2016** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	1.03	(0.12)	***	**0.74**	**0.74**
School Poverty (FRL%)	-0.07	(0.07)		0.72	0.75
Total District Enrollment	-0.01	(0.08)		0.74	0.74
Grade Level (Middle School)	-0.17	(0.11)		0.70	0.76
Grade Level (High School)	0.07	(0.10)		0.75	0.76
Employment Status (Full time)	0.33	(0.11)	**	**0.80**	**0.67**
Ethnic (Asian/Pacific Islander)	0.06	(0.11)		0.50	0.51
Ethnic (Black)	-0.36	(0.13)	**	**0.40**	**0.51**
Ethnic (Multiracial)	0.17	(0.13)		0.53	0.51
Random Effects	*Var*				
Districts	0.05				
Model Information					
AIC	1764				

Note. N = 1765 teachers.

Fixed Effects	**2016-2017** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	1.01	(0.12)	***	**0.73**	**0.73**
School Poverty (FRL%)	0.02	(0.07)		0.74	0.73
Total District Enrollment	-0.03	(0.09)		0.73	0.74
Grade Level (Middle School)	-0.07	(0.10)		0.72	0.75
Grade Level (High School)	-0.01	(0.10)		0.73	0.75
Employment Status (Full time)	0.39	(0.10)	***	**0.80**	**0.65**
Ethnic (Asian/Pacific Islander)	0.05	(0.10)		0.52	0.54
Ethnic (Black)	-0.17	(0.13)		0.46	0.54
Ethnic (Multiracial)	-0.04	(0.12)		0.49	0.54
Random Effects	*Var*				
Districts	0.10				
Model Information					
AIC	2049				

Note. N = 2061 teachers.

Fixed Effects	**2017-2018** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	0.72	(0.12)	***	**0.67**	**0.67**
School Poverty (FRL%)	-0.13	(0.07)		0.64	0.70
Total District Enrollment	0.01	(0.10)		0.68	0.67
Grade Level (Middle School)	-0.10	(0.10)		0.65	0.66
Grade Level (High School)	0.15	(0.09)		0.71	0.66
Employment Status (Full time)	0.67	(0.10)	***	**0.80**	**0.51**
Ethnic (Asian/Pacific Islander)	0.00	(0.09)		0.47	0.50
Ethnic (Black)	-0.17	(0.12)		0.43	0.50
Ethnic (Multiracial)	0.05	(0.12)		0.48	0.50
Random Effects	*Var*				
Districts	0.17				
Model Information					
AIC	2349				

Note. N = 2282 teachers.

Fixed Effects	**2018-2019** (2-level Model)			Predicted Probability	
	Coeff	*(SE)*		*Yes/More*	*No/Less*
Intercept	0.89	(0.13)	***	**0.71**	**0.71**
School Poverty (FRL%)	-0.04	(0.07)		0.70	0.72
Total District Enrollment	0.11	(0.10)		0.73	0.68
Grade Level (Middle School)	-0.17	(0.09)		0.67	0.71
Grade Level (High School)	0.17	(0.09)		0.74	0.71
Employment Status (Full time)	0.47	(0.10)	***	**0.80**	**0.60**
Ethnic (Asian/Pacific Islander)	0.08	(0.09)		0.51	0.52
Ethnic (Black)	-0.36	(0.11)	**	**0.40**	**0.52**
Ethnic (Multiracial)	0.16	(0.12)		0.53	0.52
Random Effects	*Var*				
Districts	0.24				
Model Information					
AIC	2572				

Note. N = 2515 teachers.

School poverty (Free Reduced-Priced Lunch %) and district enrollment in *z*-score; Grade level (elementary school as the reference group), Ethnic (Latinx as the reference group), and Employment status (part time as the reference group) effect coded; *R lme4* package used to estimate models.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Appendix E: Logistic Regression Results for Retention & Mobility of Novice Teachers of Color: Statewide Novice Exiters vs. Others

Fixed Effects	**2015-2016** (2-level Model)		Predicted Probability	
	Coeff	*(SE)*	*Yes/More*	*No/Less*
Intercept	-2.01	(0.15) ***	**0.12**	**0.12**
School Poverty (FRL%)	0.03	(0.10)	0.12	0.12
Total District Enrollment	-0.03	(0.09)	0.12	0.12
Grade Level (Middle School)	0.03	(0.16)	0.12	0.11
Grade Level (High School)	0.03	(0.14)	0.12	0.11
Employment Status (Full time)	-0.41	(0.14) **	**0.08**	**0.17**
Ethnic (Asian/Pacific Islander)	0.06	(0.15)	0.52	0.44
Ethnic (Black)	0.20	(0.19)	0.56	0.44
Ethnic (Multiracial)	0.00	(0.18)	0.51	0.44
Random Effects	*Var*			
District	<.001			
Model Information				
AIC	1000			

Note. N = 1765 teachers.

Fixed Effects	**2016-2017** (2-level Model)		Predicted Probability	
	Coeff	*(SE)*	*Yes/More*	*No/Less*
Intercept	-1.97	(0.15) ***	**0.12**	**0.12**
School Poverty (FRL%)	-0.01	(0.08)	0.12	0.12
Total District Enrollment	-0.01	(0.10)	0.12	0.12
Grade Level (Middle School)	-0.03	(0.15)	0.12	0.13
Grade Level (High School)	-0.06	(0.14)	0.12	0.13
Employment Status (Full time)	-0.48	(0.13) ***	**0.08**	**0.18**
Ethnic (Asian/Pacific Islander)	-0.08	(0.14)	0.48	0.50
Ethnic (Black)	0.07	(0.19)	0.52	0.50
Ethnic (Multiracial)	-0.03	(0.18)	0.49	0.50
Random Effects	*Var*			
District	0.20			
Model Information				
AIC	1243			

Note. N = 2061 teachers.

Fixed Effects	**2017-2018** (2-level Model)		Predicted Probability	
	Coeff	*(SE)*	*Yes/More*	*No/Less*
Intercept	-1.71	(0.12) ***	**0.15**	**0.15**
School Poverty (FRL%)	-0.03	(0.08)	0.15	0.16
Total District Enrollment	-0.13	(0.08)	0.14	0.17
Grade Level (Middle School)	0.12	(0.14)	0.17	0.16
Grade Level (High School)	-0.15	(0.13)	0.13	0.16
Employment Status (Full time)	-0.76	(0.11) ***	**0.08**	**0.28**
Ethnic (Asian/Pacific Islander)	0.06	(0.13)	0.51	0.43
Ethnic (Black)	0.37	(0.17) *	**0.58**	**0.43**
Ethnic (Multiracial)	-0.18	(0.18)	0.45	0.43
Random Effects	*Var*			
District	<.001			
Model Information				
AIC	1302			

Note. N = 2282 teachers.

Fixed Effects	**2018-2019** (2-level Model)		Predicted Probability	
	Coeff	*(SE)*	*Yes/More*	*No/Less*
Intercept	-1.92	(0.15) ***	**0.13**	**0.13**
School Poverty (FRL%)	0.02	(0.09)	0.13	0.13
Total District Enrollment	-0.15	(0.10)	0.11	0.15
Grade Level (Middle School)	0.15	(0.12)	0.15	0.12
Grade Level (High School)	-0.09	(0.12)	0.12	0.12
Employment Status (Full time)	-0.43	(0.12) ***	**0.09**	**0.18**
Ethnic (Asian/Pacific Islander)	0.09	(0.13)	0.53	0.49
Ethnic (Black)	0.48	(0.15) **	**0.62**	**0.49**
Ethnic (Multiracial)	-0.51	(0.19) **	**0.38**	**0.49**
Random Effects	*Var*			
District	0.16			
Model Information				
AIC	1572			

Note. N = 2515 teachers.

School poverty (Free Reduced-Priced Lunch %) and district enrollment in *z*-score; Grade level (elementary school as the reference group), Ethnic (Latinx as the reference group), and Employment status (part time as the reference group) effect coded; *R lme4* package used to estimate models.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Appendix F: Results Predicting Teachers of Color Retained at Same School in the Following Year																
	2015-16				2016-2017				2017-18				2018-19			
	Coeff		*(SE)*	*OR*	*Coeff*		*(SE)*	*OR*	*Coeff*		*(SE)*	*OR*	*Coeff*		*(SE)*	*OR*
Intercept	1.10	***	(0.08)	3.01	1.01	***	(0.08)	2.76	0.87	***	(0.08)	2.38	0.87	***	(0.08)	2.38
School Poverty (FRL%)	-0.06		(0.04)	0.94	-0.02		(0.04)	0.98	-0.15	***	(0.04)	0.86	-0.05		(0.04)	0.96
Total District Enrollment	-0.05		(0.04)	0.95	-0.09	**	(0.04)	0.91	0.02		(0.04)	1.02	0.02		(0.04)	1.02
Grade Level (Middle School)	-0.19	**	(0.06)	0.83	-0.11		(0.06)	0.90	-0.03		(0.06)	0.97	-0.12	*	(0.06)	0.89
Grade Level (High School)	0.24	***	(0.06)	1.27	0.07		(0.06)	1.07	0.18	**	(0.06)	1.2	0.19	**	(0.06)	1.21
Employment Status (Full time)	0.42	***	(0.07)	1.52	0.41	***	(0.07)	1.51	0.62	**	(0.06)	1.85	0.54	***	(0.07)	1.71
Experience (beginning teacher)	-0.11		(0.06)	0.90	-0.17	**	(0.06)	0.85	-0.14	**	(0.05)	0.87	-0.34	***	(0.05)	0.71
Ethnic (Asian/Pacific Islander)	0.05		(0.06)	1.05	0.08		(0.06)	1.08	0		(0.06)	1	0.04		(0.06)	1.04
Ethnic (Black)	-0.19	*	(0.08)	0.83	-0.14		(0.08)	0.87	0.11		(0.08)	0.9	-0.23	**	(0.08)	0.79
Ethnic (Multiracial)	0.00		(0.08)	1.00	-0.03		(0.08)	0.97	-0.05		(0.07)	0.95	0.06		(0.08)	1.06

Note. N = 5527 teachers (2015-16), 6007 teachers (2016-17), 6458 teachers (2017-18), 7023 teachers (2018-19); School poverty (Free Reduced-Priced Lunch %) and district enrollment in z-score; Grade level (elementary school as the reference group), Ethnic (Latinx as the reference group), Employment status (part time as the reference group), and Experience (non-beginning teacher as the reference group) effect coded; R lme4 package used to estimate models.

*p < .05, **p < .01, ***p <.001.

Appendix G: Results Predicting Beginning Teachers of Color Retained at Same School in the Following Year																
	2015-16				2016-2017				2017-18				2018-19			
	Coeff		*(SE)*	*OR*	*Coeff*		*(SE)*	*OR*	*Coeff*		*(SE)*	*OR*	*Coeff*		*(SE)*	*OR*
Intercept	1.04	***	(0.20)	2.82	0.69	***	(0.17)	1.99	0.50	**	(0.17)	1.65	0.54	***	(0.16)	1.72
School Poverty (FRL%)	0.08		(0.12)	1.08	-0.03		(0.12)	0.97	0.01		(0.12)	1.01	-0.07		(0.10)	0.94
Total District Enrollment	0.08		(0.12)	1.08	-0.10		(0.11)	0.91	0.12		(0.11)	1.13	0.02		(0.09)	1.02
Grade Level (Middle School)	-0.25		(0.20)	0.78	-0.03		(0.18)	0.97	-0.19		(0.19)	0.83	0.15		(0.17)	1.16
Grade Level (High School)	0.25		(0.20)	1.29	-0.05		(0.18)	0.95	0.09		(0.18)	1.10	0.05		(0.16)	1.05
Employment Status (Full time)	0.33		(0.20)	1.39	0.56	***	(0.16)	1.74	0.67	***	(0.15)	1.96	0.56	***	(0.15)	1.76
Ethnic (Asian/Pacific Islander)	0.19		(0.21)	1.21	-0.18		(0.18)	0.83	-0.28		(0.19)	0.76	0.09		(0.17)	1.10
Ethnic (Black)	-0.50	*	(0.25)	0.62	-0.23		(0.24)	0.79	-0.29		(0.22)	0.75	-0.33		(0.19)	0.72
Ethnic (Multiracial)	0.25		(0.23)	1.29	0.00		(0.24)	1.00	0.15		(0.23)	1.16	0.08		(0.22)	1.08

Note. N = 497 teachers (2015-16), 544 teachers (2016-17), 557 teachers (2017-18), 656 teachers (2018-19); School poverty (Free Reduced-Priced Lunch %) and district enrollment in z-score; Grade level (elementary school as the reference group), Ethnic (Latinx as the reference group), and Employment status (part time as the reference group) effect coded; R lme4 package used to estimate models.

*p < .05, **p < .01, ***p <.001.