



# South Carolina Teacher Retention Report for 2022–23

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EDUCATOR PIPELINE RESEARCH



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SC TEACHER provides comprehensive research about South Carolina's educator workforce. We are expanding a robust statewide data network to report results that will inform policy and practice.

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# Teacher Retention in South Carolina

## + HIGHLIGHTS

To better understand teacher retention in South Carolina, we investigated longitudinal trends, as well as the relationship between school-level factors and one-year and three-year average teacher retention rates at the start of the 2022–23 academic year. Results are based on analysis of data collected from 1,267 public schools in 80 school districts across South Carolina.

- High schools and elementary schools had higher teacher retention rates than middle schools.
- Teacher retention rates were significantly related to some aspects of school climate, such as satisfaction with the learning environment and satisfaction with the social and physical environment.
- Teacher retention rates were also strongly related to school poverty level. High-poverty schools had significantly lower teacher retention rates than low-poverty schools.
- Overall, principal tenure was positively related to teacher retention, but the relationship was not consistent across school organizational levels. Teacher retention rates were more strongly related to principal tenure in elementary schools. At the middle and high school levels, there were not many notable relationships.
- School locale (e.g., city, suburb) was not strongly related to retention rates overall. Across all levels, teacher retention rates were lowest among schools based in cities with the exception that the one-year average retention rate for town schools was lower than city schools.

## Recommendations to Improve Teacher Retention in South Carolina

- A positive school climate may help alleviate teacher stress, promote collegiality, and encourage teacher retention, especially for schools serving students at lower poverty levels.
- Longer principal tenure may add a sense of stability for the staff and increase teacher retention.
- Across the nation, teacher retention has largely decreased since schools returned to face-to-face instruction after the COVID-19 pandemic. In South Carolina, elementary and high school retention rates rebounded this last year, but middle school rates continued to decline. A deeper study of middle school teachers' working conditions in South Carolina may provide additional insight.
- High school and elementary school teachers in South Carolina demonstrated the highest retention rates. Investigating contributing factors and adapting those for middle schools could benefit their retention rates.



## + INTRODUCTION

It is difficult to overstate the importance of retaining well-trained and effective teachers. Teacher attrition negatively affects student learning and achievement (Boyd et al., 2007; Hanushek et al., 2016; Ronfeldt et al., 2013) and places increased demands on remaining teachers (Carver-Thomas & Darling-Hammond, 2017). Whether teachers are leaving the profession or transferring institutions, the effects on schools are the same. Schools losing teachers must invest a great deal of time, energy, and money into replacing them (Barnes et al., 2007; Sorensen & Ladd, 2020).

Estimates of the national annual costs of replacing teachers range from \$4.9 billion (Alliance for Excellent Education, 2005) to more than \$7 billion (National Commission on Teaching and America's Future, 2007). These dated values may even fall short of the current expenditures needed to recruit, hire, and train replacements. At the district level, research has shown that each new hire can cost more than \$20,000 to process (Learning Policy Institute, 2017). These expenditures and other factors, including declining enrollments in educator preparatory programs (King & James, 2022) and increasing K–12 student populations in states like South Carolina (National Center for Education Statistics, 2023), contribute to ongoing concerns about teacher turnover.





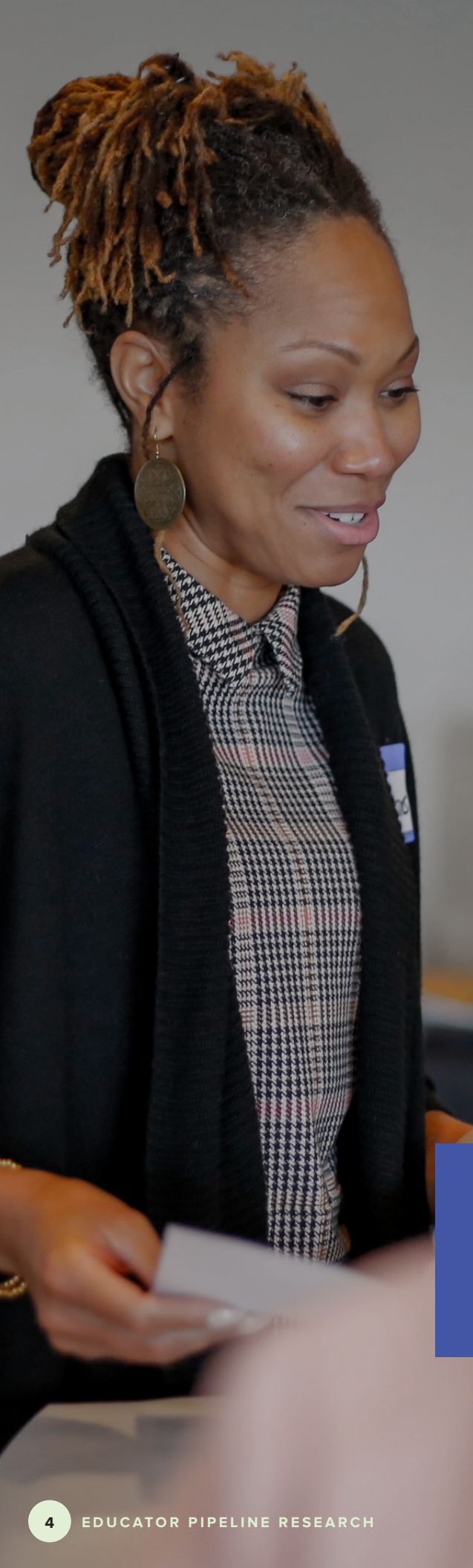
National rates of teacher turnover in the United States can be difficult to reconcile as the methods of data collection (e.g., teacher self-report, district leader estimation) and samples used vary.

The National Center for Education Statistics (NCES) reported a 16% turnover rate between the 2020–21 and 2021–22 school years. They found that 8% of teachers moved to a new school and 8% of teachers left the profession (Taie & Lewis, 2023). In comparison, the RAND Corporation found the turnover rate to be 10% over that same period. However, they reported a much lower pre-pandemic rate (i.e., 6%) than many other sources (cf. NCES, 2016), and the 10% reported was based solely on teacher retirements and resignations (Diliberti & Schwartz, 2023). Bryant et al. (2023), in their recent McKinsey & Company report, noted that nearly a third of K–12 teachers sampled were contemplating leaving their positions, though it is important to distinguish between contemplating and following through with the action. Additionally, some teachers leave their positions involuntarily (i.e., contract is not renewed, school closes), and these moves are not always distinguished from voluntary ones (Donaldson & Johnson, 2010; Singer & Willett, 1988). Taie and Lewis (2023), who did distinguish between voluntary and involuntary movement, found that almost 20% of teachers moving to new schools did so involuntarily, and 3% of those leaving the profession also had no option to stay in their old position. Teachers departing in these circumstances are likely not the most effective teachers (Grissom et al., 2013; Kersaint et al., 2007), so while replacing them may cost school districts the same amount of money, their loss is not as detrimental as higher quality teachers leaving voluntarily.

Despite differences in study methodologies and findings, investigations into teacher attrition and mobility have found important trends related to both school and teacher characteristics. At the school level, researchers have found teacher attrition is disproportionately greater in low-income schools and districts than in higher income contexts (Bryant, 2023; Garcia & Weiss, 2019b). It is also more of a problem for schools in urban settings compared to other locales (Diliberti & Schwartz, 2023). Lastly, turnover rates are greater in districts and schools with higher proportions of students of color (Bryant, 2023; Diliberti & Schwartz, 2023; Hanushek et al., 2016).







At the educator level, research has revealed that new and young teachers are more likely to leave their positions than more experienced educators (Guarino et al., 2006; Redding & Nguyen, 2020). This can be doubly problematic as districts likely fail to recoup their investment in training if teachers move out of the district or quit the profession in the first two years (Learning Policy Institute, 2017). Teachers who have graduate degrees leave more often than educators who only have undergraduate degrees or equivalent certification levels (Clotfelter et al., 2008; Imazeki, 2005). Scholars have found teachers in STEM fields and special education are also more likely to leave than teachers in other disciplines (Nguyen & Redding, 2018). The same is true for educators with alternative training (Redding & Smith, 2016), though this may be in part because of the contexts (e.g., high poverty) alternatively certified teachers often work within (Donaldson & Johnson, 2010).

These findings are all important, but they may not reveal contextual nuance. For example, Imazeki (2005) found that special education teachers in Wisconsin were more likely than other teachers to leave their positions, but STEM educators were not. Imazeki (2005) also noted no meaningful differences in attrition between high- and low-income districts in the Wisconsin sample of teachers. Recent studies on teacher attrition within different states like Arkansas (Camp et al., 2023), Massachusetts (Bacher-Hicks et al., 2023), Virginia (Katz & Miller, 2023), North Carolina (Bastian & Fuller, 2022), and Washington (Goldhaber & Theobald, 2022) have provided important information that may shed more light on regional differences. With such state-level nuances, it is critical to investigate attrition specifically within South Carolina. These investigations may be even more crucial now after the COVID-19 pandemic.

Examining these relationships and retention rates over time can inform the need for new or modified practices and policies in districts and schools throughout South Carolina.



## KEY QUESTIONS

Retaining a high proportion of teachers is essential to the success of any educational institution or system. Lower attrition rates lead to more experienced teachers and higher-quality educators (Brill & McCartney, 2008). More effective teachers lead to better student achievement (Rivkin et al., 2005). Higher retention rates can also be linked to a greater sense of community and better communication among staff (Brill & McCartney, 2008), characteristics of more effective schools (Ingersoll, 2003). Finally, high retention rates allow schools and districts to invest money in other areas of need (e.g., technology and facilities) instead of recruiting and hiring new teachers.

Given the importance of teacher retention, this study aims to explore the stability of teacher retention rates over time in South Carolina, as well as to investigate the relationship between school-level factors and teacher retention for the 2022–23 school year. We examined the following key questions:

1. What are the trends in teacher retention rates across all South Carolina schools over the last six years?
2. What are the relationships between South Carolina teacher retention rates and school-level variables?
3. How do South Carolina teacher retention rates differ by school organizational level, and how do these rates vary over time?
4. How do South Carolina teacher retention rates within organizational levels (elementary, middle, high) differ by:
  - a. school poverty level?
  - b. length of principal’s tenure?
  - c. geographical locale?

Through this study, we hope to gain insight into how certain school-level factors are related to teacher retention in South Carolina. Other SC TEACHER reports provide additional context, such as data around teacher-level factors and teachers’ reasons for leaving (e.g., Starrett et al., 2023). Altogether, these findings can be used to inform district- and school-level policies to address issues of teacher retention.





## **DATA, VARIABLES, AND ANALYSES**

This report's findings are based on an analysis of data collected from 1,267 public schools in 80 school districts in South Carolina. South Carolina School Report Cards are the data source. The South Carolina Department of Education prepares these report cards annually, and they are available to the public. Every effort was made to include as many schools as possible to provide a census of the state's teaching workforce.

The focal variable, teacher retention, was defined by the percentage of South Carolina educators renewing a teaching contract to return to the classroom for the 2022–23 academic year. For the one-year retention rate, the Compensation Report of SC Educator was used to determine the number of teachers teaching in the same school in 2021–22 and 2022–23. The one-year retention rate for each school represents the number of educators teaching at the same school during two consecutive school years (e.g., 2021–22 and 2022–23) divided by the total number of teachers assigned to the school in the first school year (e.g., 2021–22). The three-year average retention rate represents the school's retention rate for the current school year and the previous two years. The longitudinal retention rate trends analyzed in this report are based on South Carolina School Report Card data. Due to the COVID-19 pandemic, data from the 2019–20 school year was not available and, therefore, was not used in the analyses.

Eight report card variables were examined. Five variables reported characteristics of the school: 1) student enrollment (school size), 2) the principal's years at the school, 3) student-teacher ratio, 4) school poverty index, and 5) total per pupil expenditure. Three additional school climate variables provided an overview of teachers' level of satisfaction with: 1) the overall school environment, 2) home-school relationships, and 3) the social-physical school environment. For all variables, a larger value represented more of the characteristics being analyzed (e.g., more pupils-in-poverty, higher satisfaction, etc.). School locale was also included as a variable in the analysis. Locale was constructed by matching each school's physical address to a locale code used by the NCES (2006) to classify geographical locations as rural, town, suburban, or city. These classifications were determined by population densities and proximity to urban areas.

As many of the results reveal findings by school organizational level, it is helpful to gauge the number of schools within each level. South Carolina public schools are organized into levels, largely according to the grade levels taught. The organizational level of the school was determined according to guidelines used in the 2022–23 Accountability Manual for School Report Cards. Of the 1,267 South Carolina schools summarized here, results include 588 elementary schools (grades K through fifth), 233 middle schools (grades six through eighth), and 206 high schools (grades ninth through 12th). In addition, South Carolina public schools include 240 schools of unique organizational groupings: preschools/child development centers, virtual schools, charter schools, schools of combined levels (e.g., preschool through middle school), and schools serving students with special needs. Overall analyses presented in this report include all these schools. The unique school groups were removed from analyses conducted across different levels due to small sample sizes by category.

Descriptive statistics, correlation coefficients, and statistical tests of mean differences (i.e., analysis of variance) were used to examine the report's guiding questions. This report discusses the descriptive and statistical results. For each key question, we provide: 1) a summary of the current one-year and three-year retention rates; 2) a representation and discussion of results over time when appropriate (i.e., for questions 1, 3, and 4); and 3) a comparison of South Carolina results to published research findings. A detailed technical description of all research activities, including in-depth descriptions of statistical analyses, significance levels, and effect size coefficients, can be found at the end of this report.



A woman with short, dark hair, wearing glasses, a black blazer, a black top, a gold chain necklace, and large hoop earrings, is looking down at a stack of papers. She is holding a pen in her right hand. The background is blurred, showing other people in a meeting setting. The text "Our Key Questions" is overlaid in white on the image.

# Our Key Questions



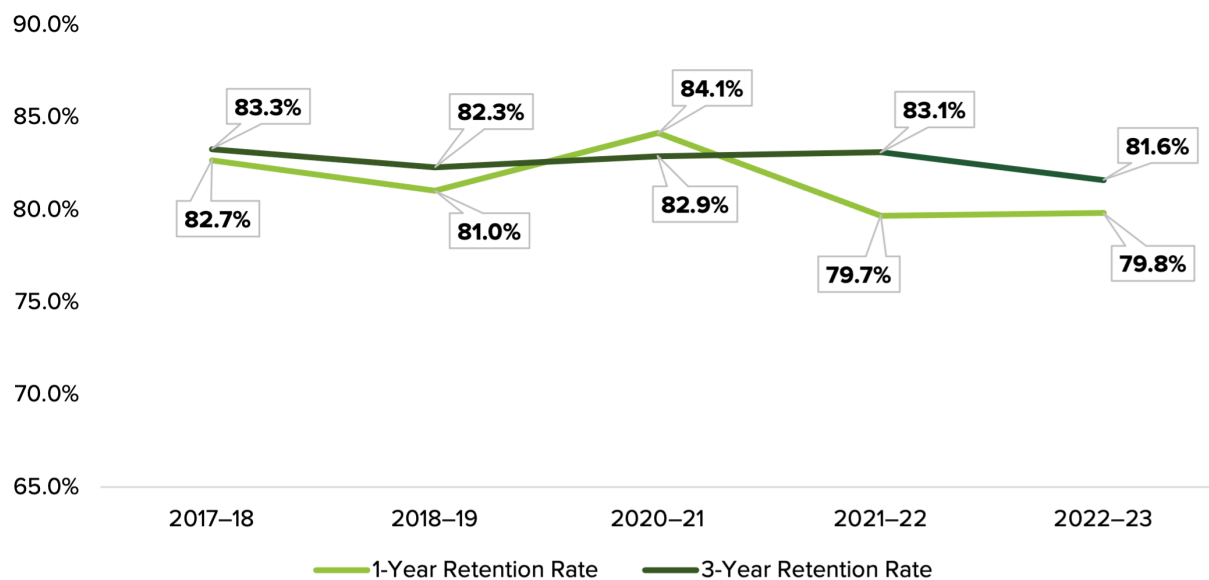


## + KEY QUESTION 1:

### What are the trends in teacher retention rates across all South Carolina schools over the last six years?

The teacher retention rates in all South Carolina public schools were examined over time to determine if there were any notable trends. The data from the 2019–20 school year was unavailable due to the pandemic, so the longitudinal analysis included rates from 2017–18 to give five distinct data points, making the overall analysis more reliable. The one-year and three-year retention rates from 2017–18 to 2022–23 can be seen in Figure 1.

Figure 1. Longitudinal Teacher Retention Rate Trends in South Carolina



Note. Data from 2019–20 was not available due to the COVID-19 pandemic.

One-year retention rates show more instability than the three-year rates, as should be expected. The one-year rates indicate that the retention rate was decreasing gradually before the pandemic (i.e., from 82.7% in 2017–18 to 81.0% in 2018–19), then increased during the first year of the pandemic (i.e., 84.1% in 2020–21). By 2021–22, it had fallen to just less than 80% (i.e., 79.7%) but remained largely the same this past year (79.8%). The three-year rates indicate relative stability, with the retention rate in 2017–18 (83.3%) less than two percentage points higher than the latest three-year rate (81.6%).

### Relationships Between Longitudinal Teacher Retention Rate Findings in South Carolina and Published Studies

There have not been many published studies regarding retention rate trends in the years immediately preceding the onset of COVID-19. Some of the few existing studies merely group these years together as pre-pandemic (e.g., Diliberti et al., 2023). Bastian and Fuller (2022) did find that the teacher retention rate rose a small amount in North Carolina public schools from 2017–19, but, similar to the findings presented here, there was not much of a difference.

There is evidence that teacher turnover stabilized or even dropped in some places during the beginning of the pandemic in the United States as schools shifted to remote, virtual instruction (Rosenberg & Anderson, 2021). This matches our findings from the 2020–21 school year. Studies published recently also mirror the trend in South Carolina that the teacher turnover rate is increasing as schools continue to emerge from the pandemic (Bacher-Hicks et al., 2023; Goldhaber & Theobald, 2022; Morton, 2022).

## + KEY QUESTION 2:

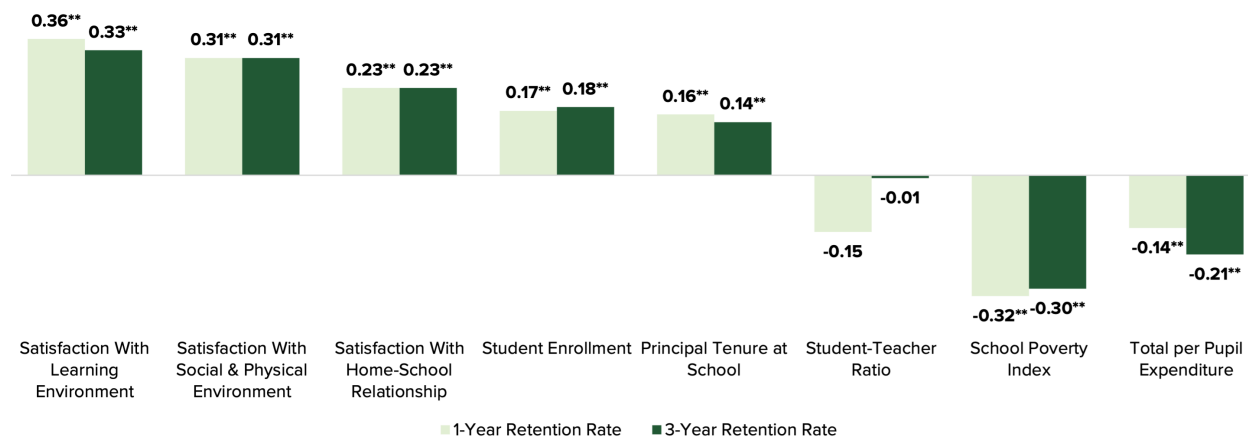
### What are the relationships between South Carolina teacher retention rates and school-level factors?

To address Key Question 2, we examined correlation coefficients between teacher retention and South Carolina School Report Card variables. For some of these variables, schools were placed into different categories for the sake of analysis. For example, schools were classified as either low, moderate, or high poverty, and principal tenure was categorized by years (i.e., less than four years, four to nine years, 10 or more years). Correlation values range from a low of 0 to a high of 1, with the sign of the coefficient (positive or negative) indicating the direction of the relationship. Given the large sample size, we focused on values of .30 or higher (irrespective of sign) as demonstrating a potentially important relationship between a given factor and teacher retention in South Carolina.

#### 2022–23 Teacher Retention Rates by School-Level Factors

The correlation coefficients were computed for the one-year and three-year retention rates from 2022–23. The results are shown in Figure 2 with the correlation above the bar. School poverty index and total per pupil expenditure yielded negative relationships with teacher retention, meaning that higher poverty and higher per pupil expenditures are each associated with lower retention. The relationship with student-teacher ratio was negative but not statistically significant. Relationships between teacher retention and all other variables were positive. Similar patterns were observed for one-year and three-year retention rates across all variables.

**Figure 2.** Correlations Between One-Year and Three-Year Teacher Retention Rates and School-Level Factors for All Organizational Levels



Note. \*\*Result is significant at the  $p < .05$  level.

Three sets of values met the established threshold (correlation values  $\geq .30$ ). Generally, increased satisfaction with both the learning environment and the social and physical environment was related to higher teacher retention rates. Conversely, increased levels of poverty were related to higher attrition rates. The other examined variables did not exhibit strong relationships with teacher retention.

Patterns were mainly similar at the individual organizational level (i.e., elementary, middle, and high) with a few notable differences. For elementary school teachers, only satisfaction with the learning environment and school poverty level had relationships with retention rates reaching the threshold. For middle schools, relationships between retention and four different school factors (i.e., satisfaction with learning environment, satisfaction with social and physical environment, satisfaction with home-school relationships, and school poverty level) exceeded the threshold. Finally, at the high school level, three variables (i.e., satisfaction with social and physical environment, school poverty level, and total per pupil expenditure) had notable relationships with retention rates.



## Relationships Between South Carolina Retention Rate Findings and Published Studies by School-Level Factors

Relationships between South Carolina teacher retention rates and school-level factors are largely similar to findings from studies conducted across the United States. Related research concerning two of these factors, principal tenure and school poverty level, is discussed later in the report in more detail. Relationships with the remaining factors (i.e., school climate, student enrollment, student-teacher ratio, and per student expenditures) are discussed here.

School climate has been defined in a variety of ways (Aldridge & Fraser, 2016), which can complicate comparisons to established literature. Broadly speaking, school climate has been frequently studied for its role in teacher job satisfaction and desire to stay in the position. Garcia and Weiss (2019b) reported that more than 20% of their national sample of teachers had been threatened and more than 12% had been physically attacked by a student. These researchers linked the lack of safety experienced by teachers in these environments to increased levels of stress and disappointment, which in turn, led teachers to consider leaving. Findings from other scholars (e.g., Johnson & Birkeland, 2003; Stockard & Lehman, 2004; Wynne et al., 2007) support the notion that undesirable working conditions (i.e., frequent student misbehavior, facilities in disrepair, lack of administrative support) lead to problems with teacher attrition. On a positive note, improving those facets of school climate and creating a safe, supportive environment has been found to promote retention (Kukla-Acevedo, 2009; Kraft et al., 2016), and aspects of a positive school climate (e.g., parent-teacher relationships) can help mitigate challenges and stressors teachers face (Grayson & Alvarez, 2008). In our data, the only school climate factor not reaching a .30 correlation was satisfaction with home-school relationships. However, this factor was still statistically significant and close to the threshold.

Student enrollment did not have a particularly notable relationship with teacher retention in our sample, though these factors were positively and statistically related. Previous studies have found student population size to have varying relationships with teacher retention. The results from several studies indicated that large schools, particularly those in urban settings, have higher teacher turnover rates (e.g., Borman & Dowling, 2006; Lankford et al., 2002). In contrast, Carver-Thomas and Darling-Hammond (2019) found that higher student enrollment related to higher retention rates, as did Geiger and Pivovarova (2018). These latter researchers found retention was higher in those larger schools in part because teachers expressed more satisfaction with school facilities and resources in comparison to teachers in smaller schools. Ingersoll (2001), though, did not find any meaningful relationship between enrollment and retention rates.

Student-teacher ratio, usually examined as class size in the research literature, has generally not been found to have significance regarding teacher retention (e.g., Carver-Thomas & Darling-Hammond, 2019; Nguyen et al., 2019; Sorsenson & Ladd, 2020). These findings are aligned with the data collected from South Carolina teachers. It is important to note, however, that there might be specific contexts in which smaller classes play a role in promoting retention (Isenberg, 2010).

Finally, we found a statistically significant inverse relationship between per pupil expenditure and teacher retention rate. The value failed to meet the threshold we held for practical significance, but still merits attention as the inverse nature of the relationship may seem counterintuitive. Prior research has identified the same phenomenon. Wheeler-Bass (2018), for example, found such a relationship at the district level in a sample of Mississippi schools, though it is important to recognize that poverty was a mediating factor in this study and that the higher per pupil expenditures largely resulted from increased federal funding. Other studies have also found this inverse relationship, including Imazeki's (2005) analysis of teachers and schools in Wisconsin and Hansen et al.'s (2004) investigation. These latter scholars noted that the inverse association between higher expenditures and lower retention might exist because schools with increased expenditures likely have "other, unobserved problems" (Hansen et al., 2004, p. 43).

### + KEY QUESTION 3:

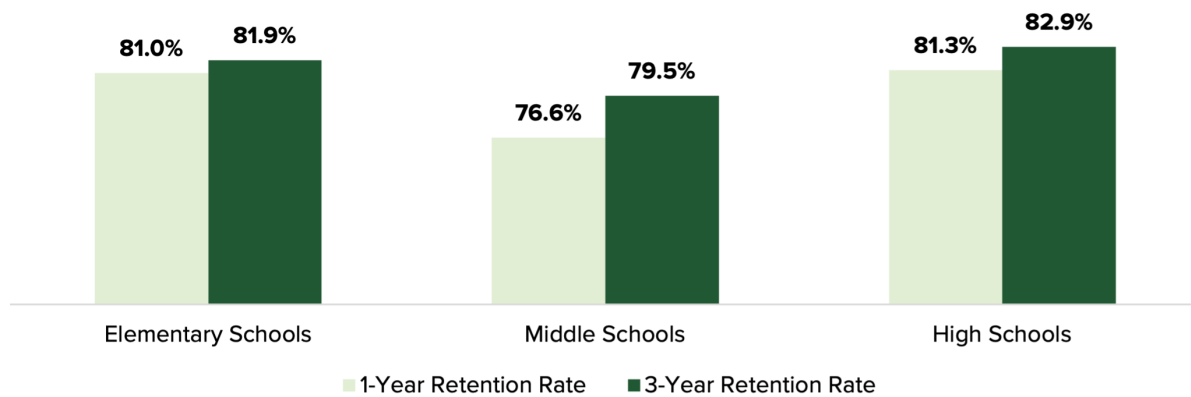
## How do South Carolina teacher retention rates differ by school organization level, and how do these rates vary over time?

The average one-year and three-year retention rates were compared across the three organizational levels (elementary, middle, and high school) using a one-way analysis of variance (ANOVA).

### 2022–23 Teacher Retention Rates by School Organizational Level

Figure 3 highlights significant differences across all three levels of schools, though the magnitude of these differences was small. This indicates that organizational level only accounted for a small amount of the variation in retention rates between schools. The different organizational levels were also compared in a pairwise fashion. This analysis revealed that middle school retention rates (one-year [76.6%] and three-year [79.5%]) were significantly lower than both elementary school retention rates (one-year [81.0%] and three-year [81.9%]) and high school teacher retention rates (one-year [81.3%] and three-year [82.8%]). No significant differences existed between rates at the elementary and high school levels. The three-year retention rates were higher than the one-year rates for all organizational levels.

Figure 3. Percentage of Teachers Retained by Organizational Level



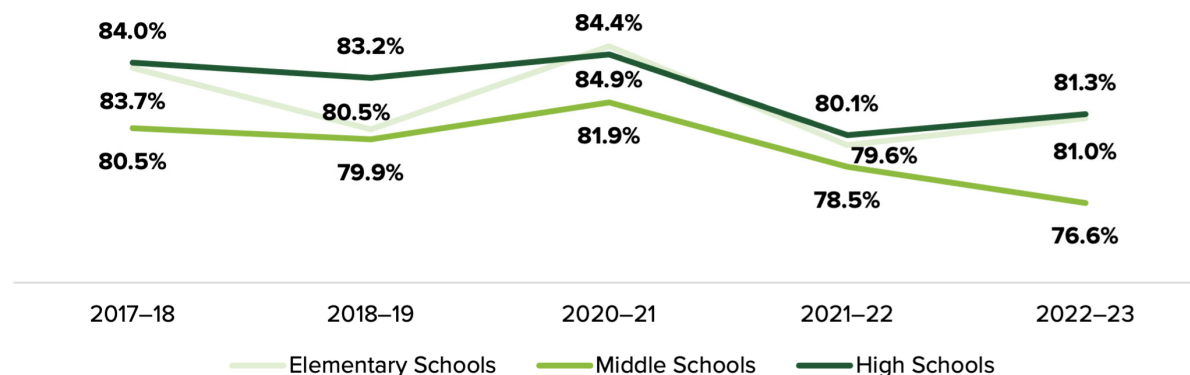
Note. The omnibus test is significant at the .05 level for one-year and three-year retention rates. See the appendix for pairwise comparisons between organization levels.



## Retention Rate Comparisons by Organizational Level Across Time

The one-year and three-year retention rates were also compared longitudinally across different organizational levels, as shown in Figure 4 and Figure 5, respectively. Middle schools have consistently had the lowest retention rates over the years studied. The one-year retention rates of elementary and high schools have largely followed the same patterns, with a drop from 2020–21 to 2021–22 and an increase over the past year (i.e., from 2021–22 to 2022–23). The middle school one-year retention rate has continued to decrease since schools resumed face-to-face instruction after the pandemic.

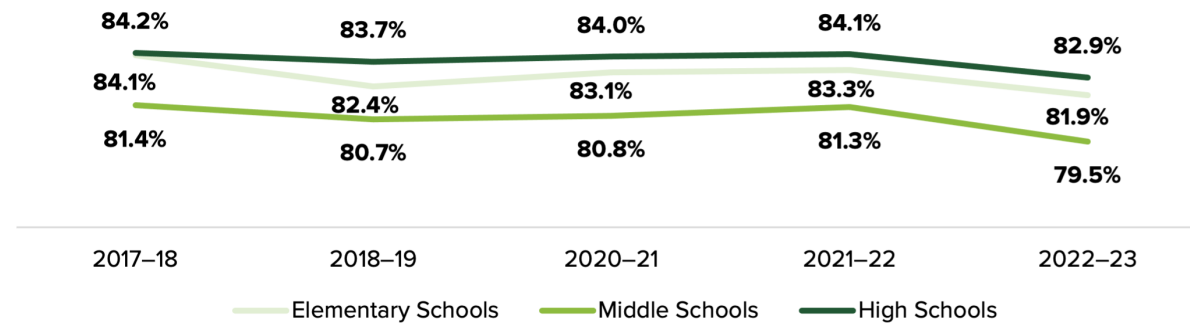
Figure 4. Longitudinal One-Year Retention Rates by Organizational Level



Note. Data from 2019–20 was not available due to the COVID-19 pandemic.

The three-year retention rate patterns are generally the same across all three organizational levels, with high schools having a slightly higher rate than elementary schools. The latest data reveals that middle school one-year and three-year retention rates have dipped below 80%.

Figure 5. Longitudinal Three-Year Retention Rates by Organizational Level



Note. Data from 2019–20 was not available due to the COVID-19 pandemic.

## Relationships Between South Carolina Teacher Retention Rate Findings and Published Studies by Organizational Level

There is a relative dearth of published work examining teacher retention rates across organizational levels. The statistically lower rates for middle school teachers found in this study do not appear to map onto the few existing investigations. For example, Efers et al. (2017) found that high school teachers exited at the highest rate in their Washington state sample, whereas in South Carolina, they appear the most likely to stay. In their national sample, Carver-Thomas and Darling-Hammond (2017) found elementary teachers were the most likely to stay. In contrast, there was not a statistically significant difference between the elementary and high school rates in our sample. Finally, in a study of Arkansas teachers, Hughes (2012) found no differences between high school and middle school teacher retention rates, unlike the results presented here. One of the difficulties of comparisons with the literature appears to be that prior studies generally include middle school and high schools in a secondary school category without clarifying a more specific level (e.g., Kukla-Acevedo, 2009).

## + KEY QUESTION 4A:

### How do South Carolina teacher retention rates differ by school poverty level within organizational levels, and what are the longitudinal trends?

One-way ANOVAs were conducted to examine teacher retention rates across organizational levels by categories of school poverty. As a school's poverty index is continuous, ranging from 0% (no students meet poverty criteria) to 100% (all students meet poverty criteria), the distribution was cut into quartiles. Schools with student poverty indices in the lowest quartile (ranked in the lowest 25%) were defined as low-poverty schools; schools with poverty indices in the highest quartile were defined as high-poverty schools. Schools in the middle 50% of the poverty index rankings were categorized as moderate-poverty schools.

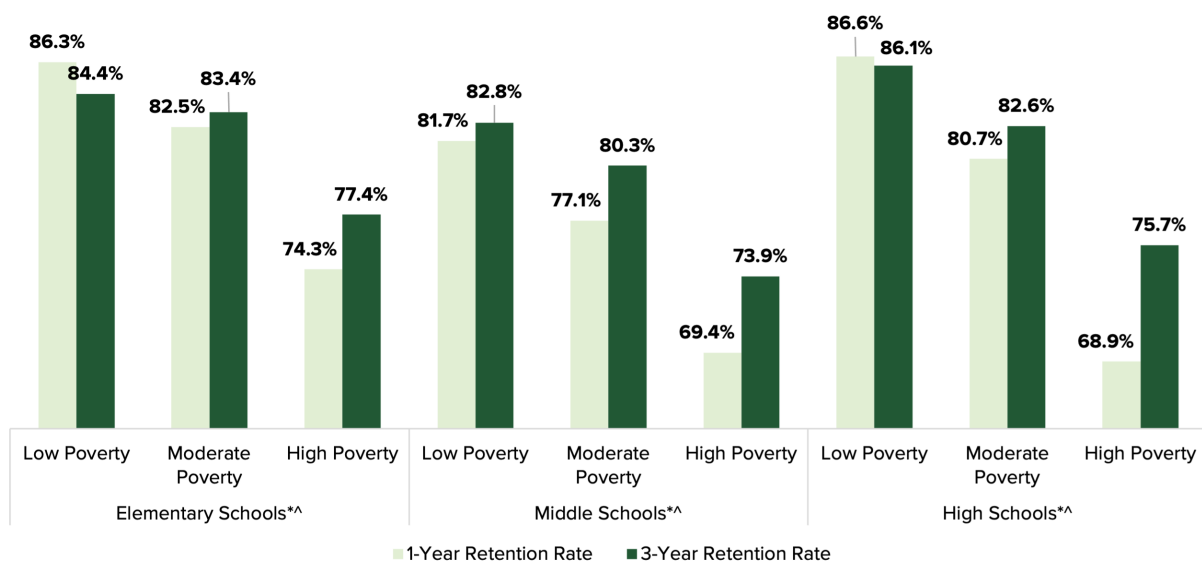
#### 2022–23 Teacher Retention Rates by School Poverty Level Within Organizational Levels

Figure 6 illustrates comparisons of one-year and three-year retention rates across school poverty within each organizational level. In examining data for 2022–23, most comparisons between poverty levels for elementary schools revealed statistically significant differences. All one-year retention rate comparisons were significant. High-poverty schools (74.3%) had a significantly lower average retention rate than moderate-poverty (82.5%) and low-poverty schools (86.3%). The retention rate of moderate-poverty schools was also significantly lower than low-poverty schools. The three-year average teacher retention rate at high-poverty schools (77.4%) was significantly lower than in moderate-poverty (83.4%) and low-poverty schools (84.4%), with the comparison between low- and moderate-poverty schools being nonsignificant.

For middle schools, all three pairwise comparisons were statistically significant for one-year retention rates. High-poverty schools (69.4%) had the lowest retention rate compared to moderate-poverty (77.1%) and low-poverty schools (81.7%), and moderate-poverty schools had a significantly lower average rate than low-poverty schools. The three-year teacher retention rate at high-poverty schools (73.9%) was significantly lower than that of moderate-poverty (80.3%) and low-poverty schools (82.8%). Again, there was not a statistical difference between the three-year rates for low- and moderate-poverty contexts.

For high schools, all sets of comparisons were statistically significant across one-year and three-year rates. High-poverty schools (68.9%) had the lowest one-year retention rate compared to moderate-poverty schools (80.7%) and low-poverty schools (86.6%), and moderate-poverty schools had lower retention rates than those categorized as low-poverty. This same pattern also applied to the three-year retention rates, with high-poverty schools (75.7%) having a significantly lower retention rate than both moderate-poverty (82.6%) and low-poverty contexts (86.1%).

Figure 6. Percentage of Teachers Retained Across School Poverty Categories Within Organizational Level



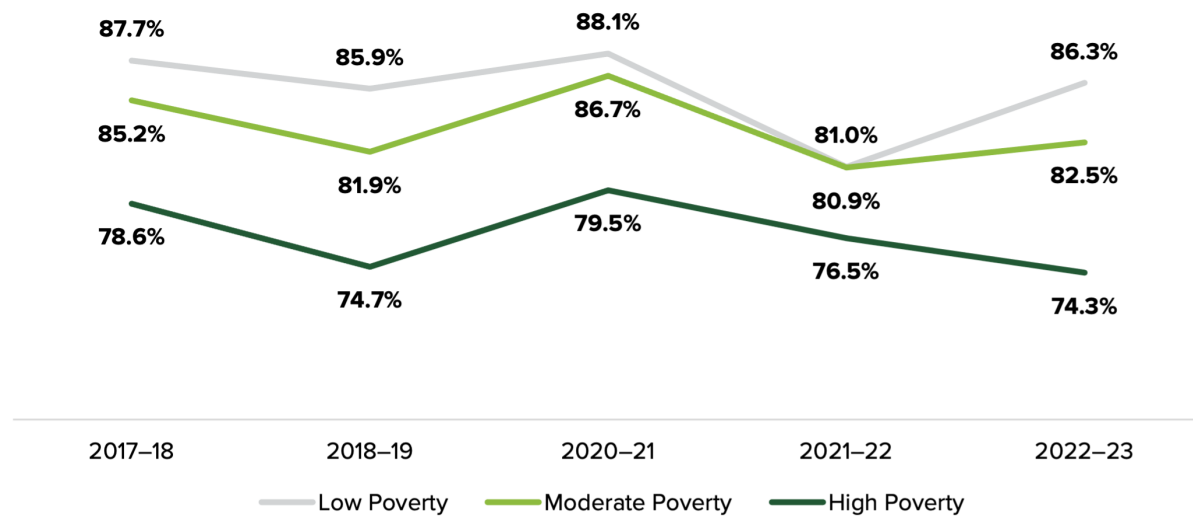
Note. \*The omnibus test is significant at the .05 level for the one-year retention rate. ^The omnibus test is significant at the .05 level for the three-year average retention rate. See the appendix for pairwise comparisons.



## Retention Rate Comparisons by School Poverty Level Within Organizational Levels Across Time

In addition to analyzing this past year's data, it was deemed important to examine the retention rate data for longitudinal trends related to school poverty level. For this analysis, we used only one-year retention rates. Figure 7 shows retention rates for elementary schools across poverty levels from 2017–18 to 2022–23.

Figure 7. Longitudinal Comparison of Elementary School Teacher Retention Rates Across School Poverty

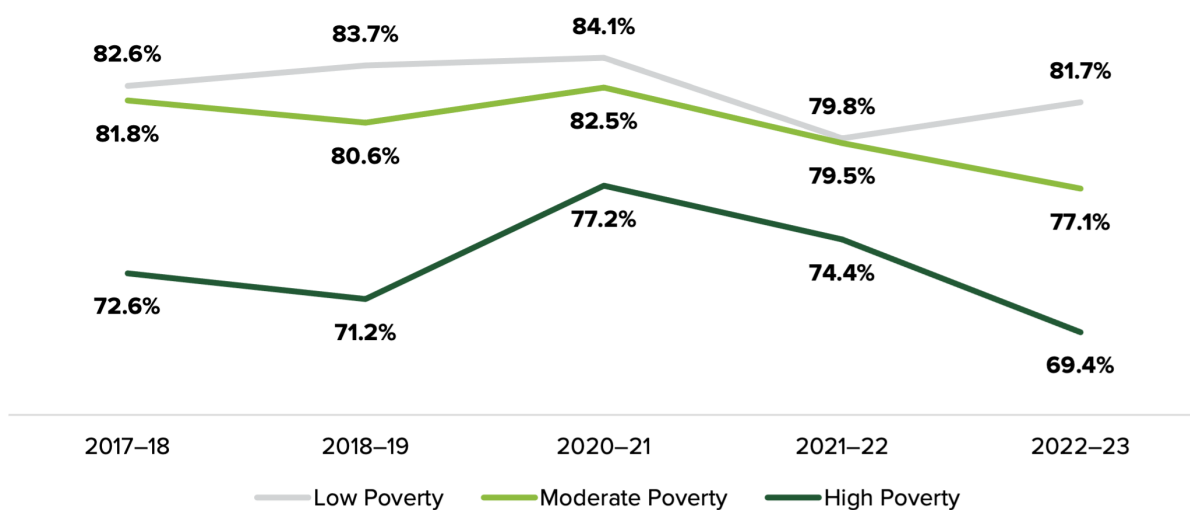


Note. The data points are one-year retention rates. Data from 2019–20 was not available due to the COVID-19 pandemic.

For each category, the patterns appear to be largely the same across the years. However, this past year, as retention rates of low-poverty and moderate-poverty elementary schools both increased, the rate at high-poverty schools continued on a downward trend. High-poverty schools have the lowest retention rates throughout the period examined.

Longitudinal trends for middle schools are shown in Figure 8. High-poverty middle schools, like elementary schools, consistently have had the lowest retention rates. In this last year, low-poverty middle schools' retention rates increased, but those in moderate- and high-poverty contexts continued to decrease following a bump during the COVID-19 quarantine.

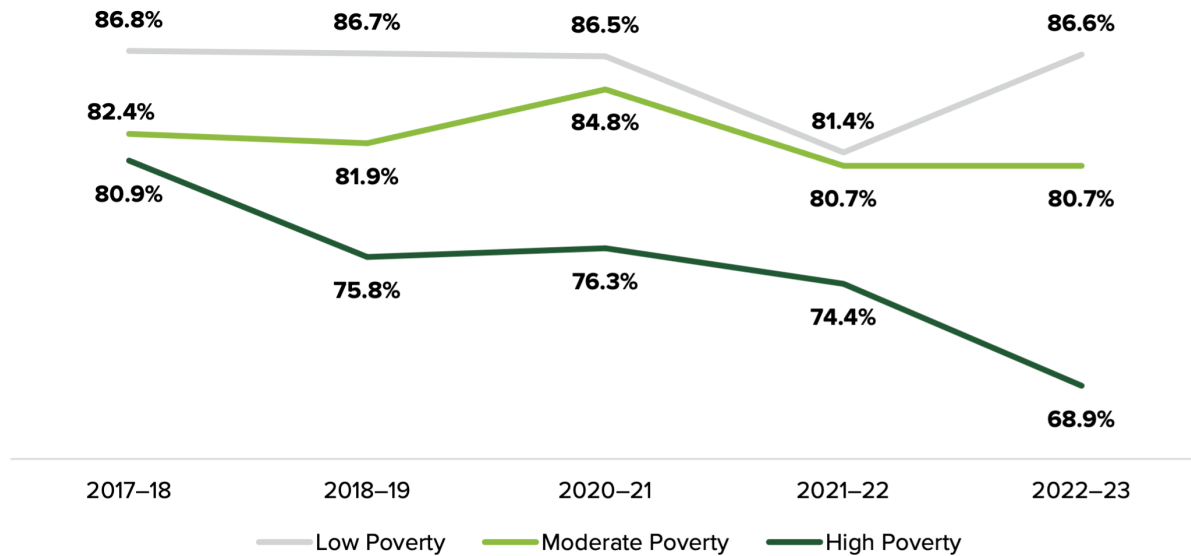
Figure 8. Longitudinal Comparison of Middle School Teacher Retention Rates Across School Poverty



Note. \*The data points are one-year retention rates. Data from 2019–20 was not available due to the COVID-19 pandemic.

High school trends, as shown in Figure 9, seem to be largely similar to middle school trends, except that high-poverty high schools did not experience as much of an increase in the 2020–21 teacher retention rate. High-poverty high schools have the lowest retention rates throughout the time period.

**Figure 9. Longitudinal Comparison of High School Teacher Retention Rates Across School Poverty**



*Note.* The data points are one-year retention rates. Data from 2019–20 was not available due to the COVID-19 pandemic.

### Relationships Between South Carolina Teacher Retention Rate Findings and Published Studies by School Poverty Level

Findings observed in South Carolina teacher retention rates across poverty levels are consistent with some findings from other studies. These studies (e.g., Allensworth et al., 2009; Garcia & Weiss, 2019a; Ingersoll, 2004) have shown that teachers leave high-poverty schools at a faster rate than they leave other schools. Notably, other investigations, including both case studies (e.g., Dillon, 2010; Johnson & Birkeland, 2003) and larger-scale quantitative studies (e.g., Borman & Dowling, 2008; Geiger & Pivovarova, 2018; Ladd, 2011; Loeb et al., 2005), have not detected differences in retention rates based on poverty levels. The inconsistencies between these findings indicate there may be other related factors affecting the results. In line with this idea, Simon and Johnson (2015), who did find such differences in their review of six previous studies, noted that teachers were likely not “fleeing their students” (p. 3) but leaving because working conditions were negatively affecting their capacities to teach and their students’ abilities to learn.



**+ KEY QUESTION 4B:**

**How do South Carolina teacher retention rates differ by principal tenure within organizational levels, and what are the longitudinal trends?**

**2022–23 Teacher Retention Rates by Principal Tenure Within Organizational Levels**

One-way ANOVAs were conducted on the 2022–23 data to examine teacher retention rates across organizational levels by principal tenure. As noted in Figure 10, the length of principal tenure was positively associated with higher teacher retention rates, though the patterns were not consistent across school organizational levels.

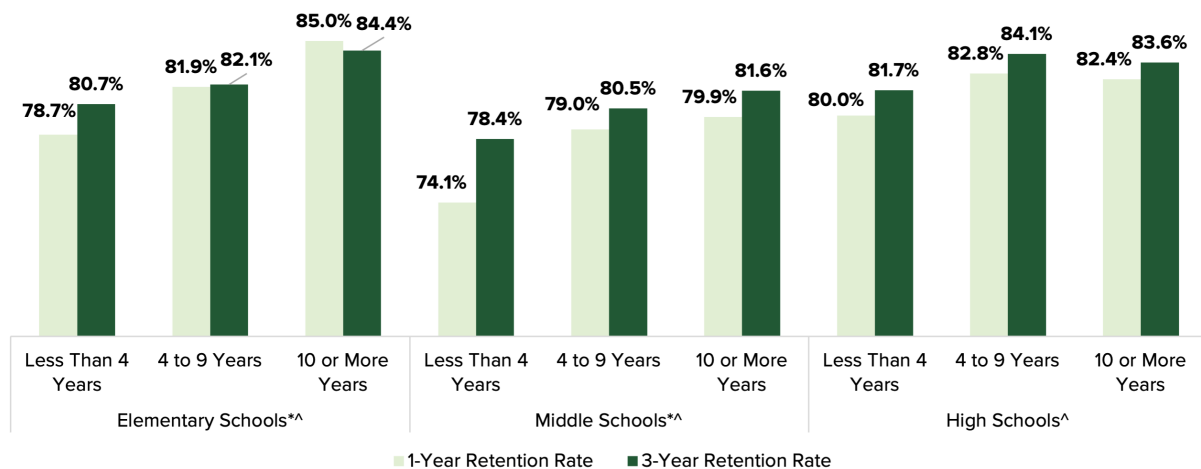
For elementary schools, the one-year teacher retention rate average of schools with a principal tenure greater than ten years (85.0%) was significantly higher than that of schools with a principal tenure of less than four years (78.7%) and schools with a principal tenure between four and nine years (81.9%). The one-year teacher retention rate for schools with a principal tenure between four and nine years was also significantly higher than that of schools with principal tenure of less than four years. In analyzing three-year average retention rates, those elementary schools with principals in the longest tenure category measured significantly higher (84.4%) than those with a principal tenure of four to nine years (82.1%) and those with the shortest principal tenure (80.7%), but these last two categories were not statistically different.

In middle schools, there were fewer significant differences. The only statistical differences were that schools with principals with the shortest tenures (i.e., less than four years) had a lower one-year average retention rate (74.1%) than schools in the other two categories (i.e., 79.0% for those with four to nine years and 79.9% for those with more than ten years). No differences in three-year rates emerged.

For high schools, in comparison, no one-year retention rate differences were detected based on principal tenure. The only statistically significant finding for high schools was that the three-year retention rate was lower for schools with the shortest principal tenure (81.7%) compared to schools with principal tenures between four and nine years (84.1%).

Across school organizational levels, the association between one-year teacher retention rates and principal tenure years was the strongest in middle schools, indicating that principal tenure had a greater impact on middle school teacher retention rates than elementary or high schools. In general, the number of years a principal held their position was, at most, a small contributor to explaining retention rates.

**Figure 10. Percentage of Teachers Retained Across Principal Tenure Categories Within Organizational Level**

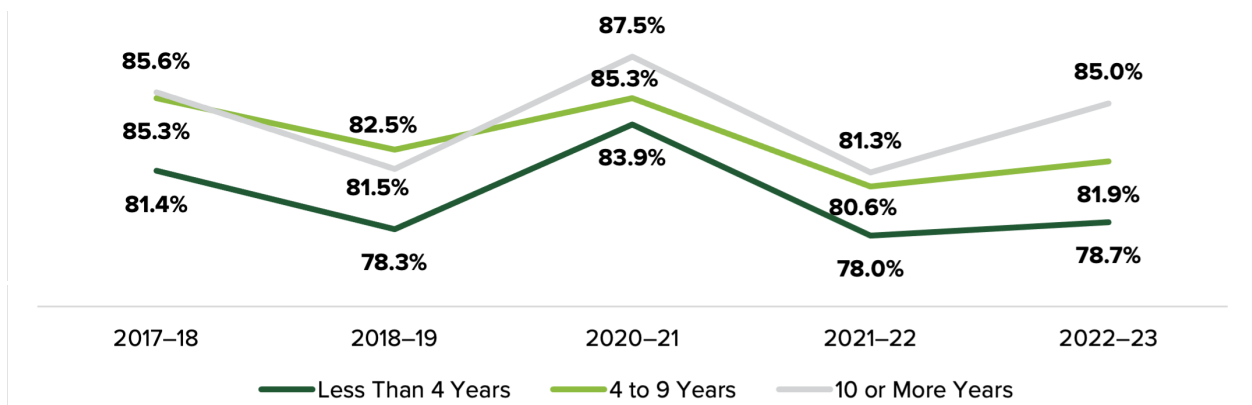


Note. \*The omnibus test is significant at the .05 level for the one-year retention rate. ^The omnibus test is significant at the .05 level for the three-year average retention rate. See the appendix for pairwise comparisons.

## Retention Rate Comparisons by Principal Tenure Within Organization Levels Across Time

In addition to analyzing this past year's data, longitudinal trends of retention rate and principal tenure were examined. For this analysis, only one-year retention rates were employed. Figure 11 shows retention rates for elementary schools across principal tenure categories from 2017–18 to 2022–23. The patterns for all three categories of principal tenure are similar. Elementary schools with the lowest-tenured principals have the lowest retention rates throughout the period.

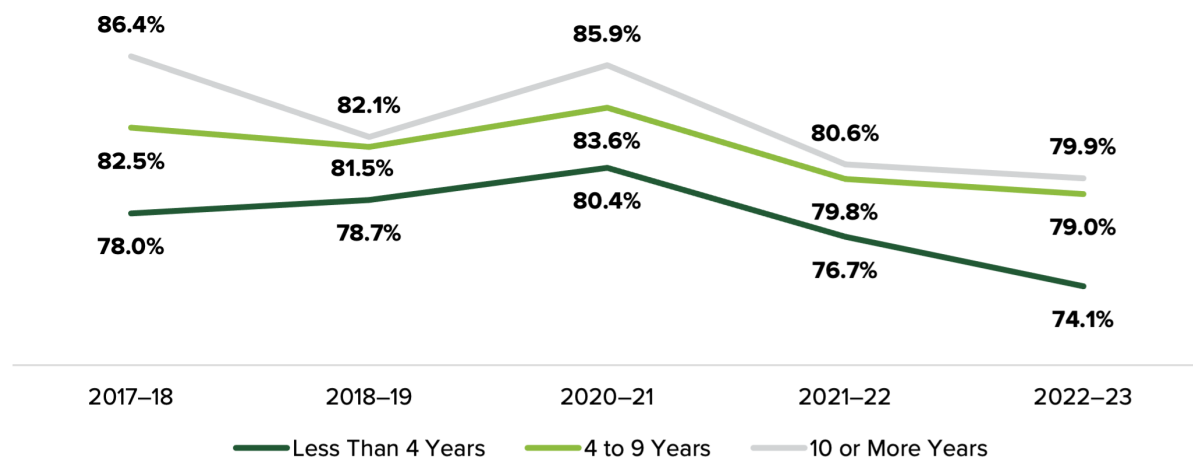
Figure 11. Longitudinal Comparison of Elementary School Teacher Retention Rates Across Principal Tenure



Note. The data points are one-year retention rates. Data from 2019–20 was not available due to the COVID-19 pandemic.

Similar longitudinal data for middle schools is shown in Figure 12. The pattern is similar throughout middle schools, regardless of principal tenure. Principals with the least time at their current schools once again have the lowest teacher retention rates. All three levels show a decrease in teacher retention since returning from virtual schooling during the pandemic. This matches the overall decline in retention seen in middle schools.

Figure 12. Longitudinal Comparison of Middle School Teacher Retention Rates Across Principal Tenure

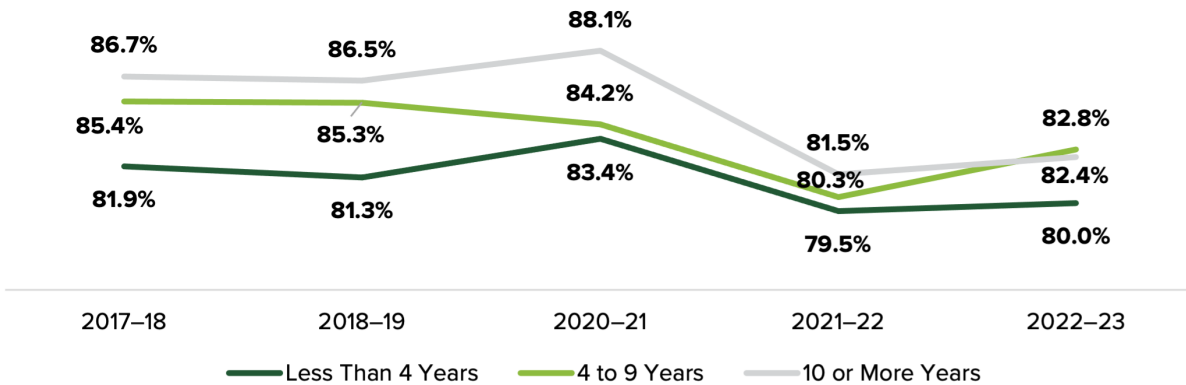


Note. The data points are one-year retention rates. Data from 2019–20 was not available due to the COVID-19 pandemic.



High school longitudinal data is shown in Figure 13. Trends across all three categories of principal tenure show largely the same pattern. High schools with principals in the lowest tenure category had the lowest retention rates throughout the years examined.

**Figure 13. Longitudinal Comparison of High School Teacher Retention Rates Across Principal Tenure**



*Note.* The data points are one-year retention rates. Data from 2019–20 was not available due to the COVID-19 pandemic.

### Relationships Between South Carolina Teacher Retention Rate Findings and Published Studies by Principal Tenure

Previous research has shown that the relationship between educators and administration is important to teacher retention. Some of these studies have looked specifically at administrative support and its relationship to teacher retention (e.g., Carver-Thomas & Darling-Hammond, 2019; Kukla-Acevedo, 2009). Studies specifically examining principal tenure and its relationship to teacher retention are relatively few, but Guthery and Bailes (2021) did find a positive relationship between these two variables in their sample of Texas schools. Guthery and Bailes (2021) also noted that these increased rates did not appear to be particularly portable. That is, if principals moved to a different school, the teacher retention rates at the new school did not maintain the advantage experienced at the previous one. Other researchers (e.g., Buckman, 2021) have found that promoting principal retention can attenuate teacher turnover.

## + KEY QUESTION 4C:

### How do South Carolina teacher retention rates differ by locale within the organizational level, and what are the longitudinal trends?

#### 2022–23 Teacher Retention Rates by School Locale Within Organizational Levels

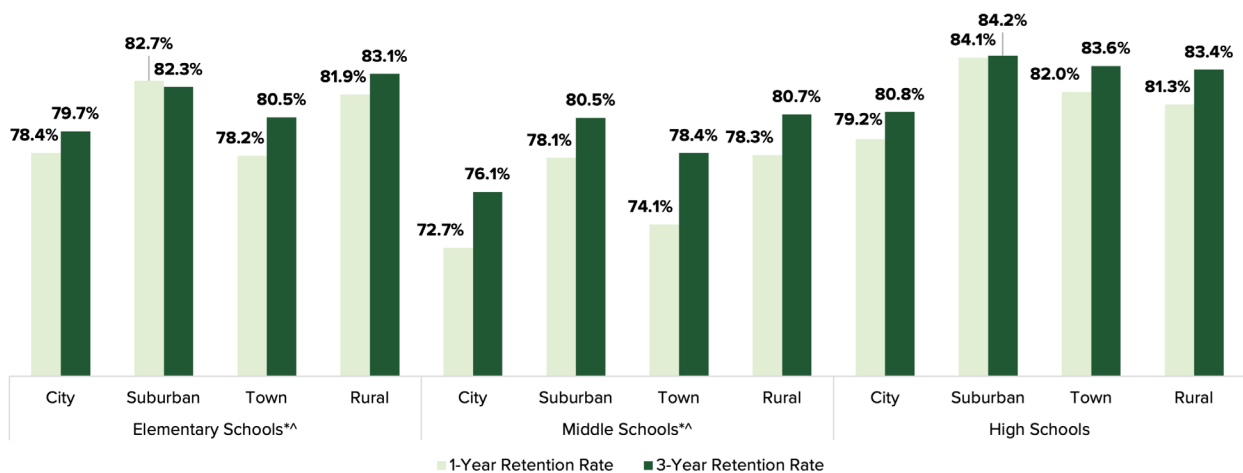
Using the 2022–23 one-year and three-year retention rates, one-way ANOVAs were conducted to examine South Carolina teacher retention rates by the NCES school locale designations (city, suburban, town, or rural). As displayed in Figure 14, average teacher retention rates were examined among school locales within each organizational level.

Overall, teacher retention rates were similar when comparing schools in different geographical locales across organizational levels. In elementary schools, the average one-year teacher retention rate of schools in the city (78.4%) was lower than that of schools in suburbs (82.7%) or rural areas (81.9%). The one-year teacher retention rate of schools in town (78.2%) was also lower than in suburban areas. The three-year teacher retention rate of schools in the city (79.7%) was lower than that of schools in suburbs (82.3%) or rural areas (83.1%). There were more significant differences noted in three-year teacher retention averages at elementary schools than in one-year rates.

In middle schools, the one-year teacher retention rate of schools in the city (72.7%) was statistically lower than in rural areas (78.3%). The three-year teacher retention rate of schools in the city (76.1%) was lower than in the suburbs (80.5%) or rural areas (81.7%).

In high schools, one-year and three-year average teacher retention rates did not demonstrate a significant relationship with school locales. In the overall analysis, school locale did not explain much of the differences in teacher retention rates.

Figure 14. Percentage of Teachers Retained Across School Locale Within Organizational Level

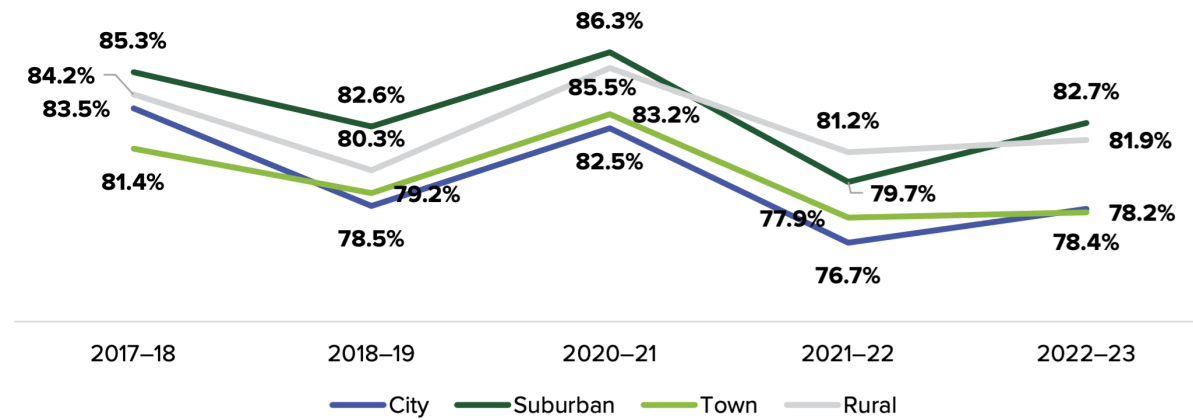


Note. \*The omnibus test is significant at the .05 level for the one-year retention rate. ^The omnibus test is significant at the .05 level for the three-year average retention rate. See the appendix for pairwise comparisons.

## Retention Rate Comparisons by School Locale Within Organization Levels Across Time

Longitudinal trends in teacher retention rates at different organizational levels were also examined regarding locale. For this analysis, only one-year retention rates were employed. Figure 15 shows retention rates for elementary schools across locales from 2017–18 to 2022–23. The patterns for all locales appear to be similar. Elementary schools in rural and suburban settings consistently had the highest retention rates throughout the period.

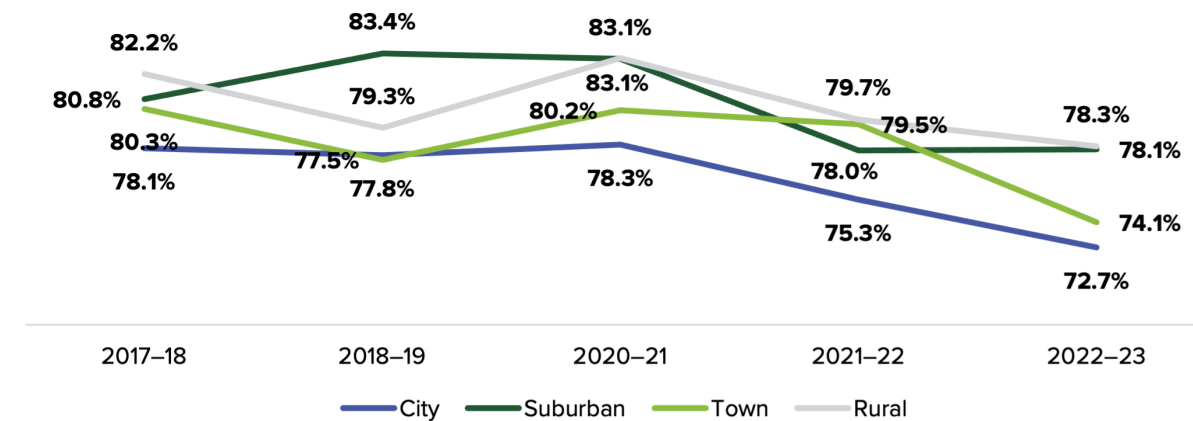
Figure 15. Longitudinal Comparison of Elementary School Teacher Retention Rates Across Locales



Note. The data points are one-year retention rates. Data from 2019–20 was not available due to the COVID-19 pandemic.

In a similar fashion, Figure 16 shows longitudinal retention rates for middle schools across different locales. There is not a discernable overall pattern as there was with elementary schools. Middle schools in city settings generally had lower retention rates throughout the time period examined.

Figure 16. Longitudinal Comparison of Middle School Teacher Retention Rates Across Locales

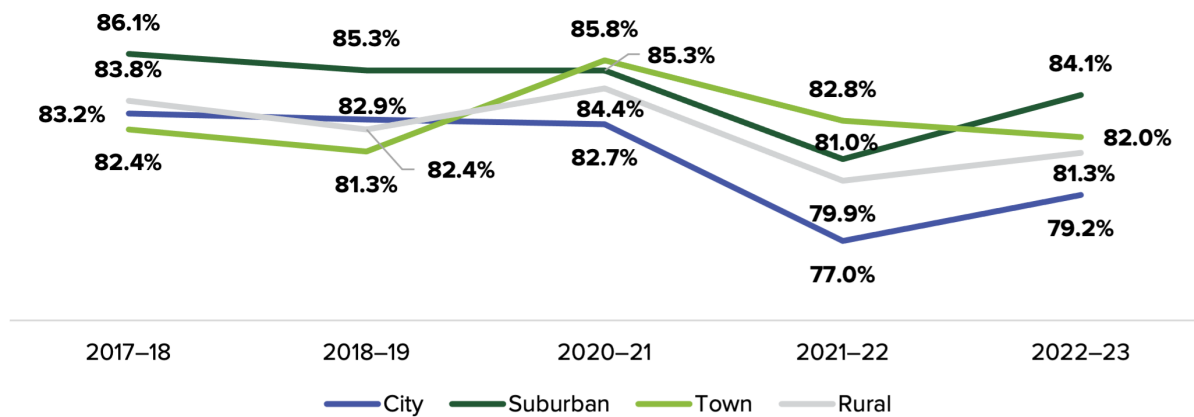


Note. The data points are one-year retention rates. Data from 2019–20 was not available due to the COVID-19 pandemic.



The longitudinal trends for high school teacher retention across different locales, shown in Figure 17, indicate slightly more overall variability than elementary and middle schools. This variability seems to be largely due to changes in town schools, though, as trends across cities, suburbs, and rural areas are largely stable.

Figure 17. Longitudinal Comparison of High School Teacher Retention Rates Across Locales



Note. The data points are one-year retention rates. Data from 2019–20 was not available due to the COVID-19 pandemic.

### Relationships Between South Carolina Teacher Retention Rate Findings and Published Studies by School Locale

The finding that South Carolina suburban schools have the highest teacher retention rate largely matches results from previous research. The same is true for city or urban schools having the lowest rate. For example, in a recent study using national data, Ingersoll and Tran (2023) found that rural and suburban schools had turnover rates slightly more than 15%, but urban schools had an average rate approaching 18%. Diliberti and Schwartz (2023) also found that urban districts and schools in their national sample had the lowest teacher retention rates, results that echoed findings by Lankford et al. (2002) with New York schools. However, for studies on regional teacher retention, local context also seems to play a large role. For example, Miller’s (2012) study of New York teachers indicated that more experienced teachers tended to transfer from rural schools to suburban schools, but that does not appear to be a major issue affecting South Carolina schools as those two contexts had the highest retention rates. As Papay et al. (2017) pointed out, retention can vary significantly across states and even across districts. It might be helpful to dig even deeper into differences across locales. In many studies (e.g., Papay et al., 2017), town schools are combined with rural schools in retention analysis, but there are likely important differences between those two contexts. There may even be significant distinctions in finer-grained analyses, such as comparing rural schools in fringe (i.e., closer to urban or suburban areas) and remote locales (Starrett, Dmitrieva, Raygoza et al., 2023).

## + RECOMMENDATIONS TO ADDRESS TEACHER RETENTION

Based on these analyses of South Carolina teachers, we provide the following suggestions, which could contribute to ideas for school-level teacher retention programs, as well as educational policies and practices.

### **1. Support efforts to enhance teacher working conditions to promote teacher satisfaction and retention, especially in middle schools.**

Analysis of South Carolina School Report Card variables showed that school climate characteristics were significantly related to teacher retention rates. This finding mirrors results from the 2023 SC Teacher Working Conditions Survey (SCTWCS). There, survey data showed administrative support, communication with the principal, and influence over school policy and decision-making to be moderately correlated with teachers' job satisfaction and intention to stay in the profession (Starrett, Barth et al., 2023). Additionally, this report highlights middle school retention rates as recurrently lower than other organizational levels. Results from SCTWCS demonstrated that middle school teachers perceived higher demands than teachers at other organizational levels, particularly in student behavior and engagement (Starrett, Barth et al., 2023). Strategies to provide more intentional resources to middle school faculty, promoting balance with student demands, could bolster job satisfaction and retention rates.

### **2. Consider keeping effective principals in place.**

Successful principals are sometimes moved with hopes they will turn around struggling schools. Principal tenure was found to have a statistically significant relationship with teacher retention in South Carolina public schools (even if this relationship was not the strongest of those examined). However, this measurement of tenure was limited to the principal's time at their current school, not overall experience as a principal. The benefit in many of these contexts may be the principal's fit with the particular school and the stability that longer-tenured principals bring. This stability and familiarity may help some school administrators demonstrate more effective leadership, which in turn may lead to lower teacher turnover (Hipp 1997; Oyen & Schwinle, 2020). Transferring effective principals to new contexts may forfeit this advantage, at least regarding teacher retention, as found by Guthery and Bailes (2021).

### **3. Consider a variety of school characteristics (e.g., organizational level, poverty level, principal tenure, school locale) in decisions regarding funding allocation, interventions, and school programs.**

According to a broad level evaluation and more granular analyses, middle schools consistently exhibited the lowest retention rates. Poverty, as well, was significantly related to lower teacher retention. These characteristics could be used to guide policymaking and practice. In that vein, it might be useful to examine combinations of school characteristics beyond those presented in this report. For instance, Ingersoll and Tran (2023) found notable differences in teacher retention rates when comparing locale and poverty level, like that of low-poverty rural schools (88.7%) and high-poverty rural schools (72.1%). Examining multiple school factors together may reveal more nuanced pictures of school conditions that can be addressed to increase teacher retention.

## + FUTURE INVESTIGATIONS

There are some important limitations to acknowledge in this study. One major limitation was that we only examined school-level variables and their relationships with teacher retention. Teachers' decisions to stay, to move schools, or to leave the profession entirely are influenced by many factors. Working conditions play a large role in such decisions (Geiger & Pivovarova, 2018; Hanushek & Rivkin, 2007). School-level variables may be related to teacher working conditions in important ways, but they are not equivalent to each other. Studying teachers' perceptions of these conditions (e.g., Starrett, Barth et al., 2023) in conjunction with these school-level variables is critical to building a more accurate and nuanced understanding of teacher retention and attrition. Teachers' personal traits (e.g., age) and professional characteristics (e.g., teaching specialty area) are also related to their decisions to stay (Borman & Dowling, 2008). Examining teachers' reasons for leaving their positions by analyzing responses to exit surveys (e.g., Starrett, Dmitrieva, Cartiff et al., 2023) may shed additional light on teacher attrition and mobility. Studies that allow teachers to elaborate in further detail about their decisions (e.g., focus groups, interviews) may also provide greater depth of understanding that could then be leveraged into strategies to increase retention.

Examining teachers' perceptions of working conditions and their movements over time will also provide valuable information about what facets of schools attract teachers and lead to higher retention. The retention rates examined in this report are helpful when looking at staffing trends at the school level, but they do not provide much detail about trajectories within the teacher workforce. Determining whether teachers are leaving the profession entirely or just moving to new districts or schools (i.e., demonstrating mobility) is key to understanding whether the state is experiencing or heading toward teacher shortages.

This South Carolina Teacher Retention Report for 2022–23 and the Proviso 1.114 Task Force Report offer critical insights for policymakers. Each underscores the influence of school climate on teacher retention, highlighting the lower retention rates in middle schools and the varied impact of principal tenure across school levels. These findings, alongside those of the SC Teacher Working Conditions Survey, suggest a need to prioritize improving teacher working conditions, particularly in middle schools. The comprehensive strategies and recommendations of the Task Force, together with detailed analyses from the SC Teacher Working Conditions Survey (Starrett, Barth et al, 2023), provide a focused framework for enhancing teacher satisfaction and retention in South Carolina.



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## + APPENDIX: DETAILED TECHNICAL ANALYSIS RESULTS

This appendix details the research study and data analysis using a statistical lens. All relevant hypothesis tests, tests of assumptions, and measures of results are described.

### Data Sources

This study used South Carolina School Report Card data from the 2022–23 school year; all data sources are publicly available on the South Carolina Department of Education (SCDE) website. The analyses included teacher retention rates data from the school report cards of 1,267 public schools. The schools were categorized as five types: preschools ( $n = 130$ , 10.3% of the sample), elementary schools ( $n = 588$ , 46.4%), middle schools ( $n = 233$ , 18.4%), and high schools ( $n = 206$ , 16.3%). There are also 110 (8.7% of the sample) combined level schools that span more than one organizational level. Schools with combined levels include the following subgroups: 63 (57.3%) schools with both elementary and middle school grades, 26 (23.6%) schools with both middle and high school grades, 20 (18.2%) schools with elementary, middle, and high school grades, and 1 (0.9%) school with preschool, elementary, and middle school grades.

### School-Level Factors

This study investigated the associations between teacher retention rates and school-level variables. Teacher retention rates, available in the South Carolina School Report Card data, were calculated as the percentage of teachers returning from the previous year at each school. As part of accountability related to the Every Student Succeeds Act (ESSA), a school climate survey is administered annually to teachers in South Carolina public schools. School report cards include climate survey data showing percentages of teachers who reported satisfaction with the school learning environment, the school's social and physical environment, and school-home relationships. For these three climate items, teachers report their level of agreement on a 4-point scale: Strongly Disagree, Disagree, Agree, and Strongly Agree.

For geographic locale, schools were categorized according to census-defined geographic designations (i.e., city, suburb, town, or rural) assigned by the National Center for Educational Statistics (NCES, 2006). For the 1,157 South Carolina schools with school location information that could be matched, 206 (17.8%) schools were in cities, 361 (31.2%) schools were in suburbs, 138 (11.9%) were in towns, and 452 (39.1%) were in rural areas. Concerning student poverty status, the SCDE classifies a child as living in poverty if the student is enrolled in Medicaid, Temporary Assistance for Needy Families (TANF), and/or enrolled in the Supplemental Nutrition Assistance Program (SNAP) or the foster system. Using these markers, the SCDE identified the percentage of pupils-in-poverty (PIP) at the school level. Using the SCDE PIP designation, all schools in South Carolina were then ranked, and quartiles were obtained to create a poverty designation. Teachers in the upper 25% of South Carolina schools in terms of PIP were categorized as teaching in high-poverty schools, and teachers in the lowest quartile of PIP were categorized as teaching in low-poverty schools. Teachers at schools in the middle (25%–75% of PIP rankings) were categorized as teaching at moderate-poverty schools.

This study also includes the following variables: school enrollment, defined as the total number of students who enrolled in the school (2022–23); principal tenure, defined as the number of years that a principal has served as a principal at the current school; student-teacher ratio in core subjects (i.e., mathematics, English/language arts, science, and social studies); and total per pupil expenditure, defined as the total dollars spent per pupil (across federal, state, and local sources). Teacher salary was not included in this report as the data was not available.

For the 1,215 South Carolina schools that provided tenure information for their current school principals, this variable was categorized into three groups: less than four years ( $n = 555$ , 45.7%), four to nine years ( $n = 487$ , 40.1%), and ten or more years ( $n = 173$ , 14.2%).



## Data Analysis

We employed a quantitative analysis to investigate variables related to the focal outcome variable: teacher retention in South Carolina. First, we used Pearson correlations to explore the overall associations of one-year (2022–23) or three-year average retention rates (from 2020–21 to 2022–23) with school-level variables, including school climate variables (i.e., teachers' satisfaction with the school learning environment, the social-physical environment, school-home relationships), school size, school poverty, principals' tenure at the school, student-teacher ratio, and total per pupil expenditure. Correlation rates can range from a low of 0 to a high of 1, with the sign of the coefficient (positive or negative) indicating the direction of the relationship. The relatively large sample size led us to focus on values of .30 or higher (irrespective of sign) as demonstrating an important relationship.

Second, we conducted a descriptive study and an analysis of variance (ANOVA) to examine the differences in one-year or three-year average retention rates by school organizational levels (i.e., elementary, middle, high). We also examined the differences in one-year or three-year average retention rates by school poverty, principals' years of leadership, and geographical locale for each school organizational level (i.e., elementary, middle, high). ANOVA is used when examining the difference between multiple categories on a variable of interest, defined here as teacher retention rate. Before conducting ANOVAs, we examined the assumptions required for the analysis, including normality and homogeneity of variances. The homogeneity of variance assumption was checked with Levene's test, and the normality assumption was checked with skewness and kurtosis values. Nonparametric tests were conducted if the normality assumptions did not appear to hold.

Overall differences in one-year or three-year average retention rates across the three organizational levels were initially examined. Then, analyses of the associations between one-year or three-year average teacher retention rates by school poverty (i.e., low, moderate, and high poverty), principals' tenure at the current school (i.e., less than four years, four to nine years, ten or more years), and school geographical locale (i.e., city, suburb, town, and rural) were conducted for each school level respectively. As data from the entire state were used in the investigations (i.e., census), effect size measures were calculated in lieu of significance testing to measure the magnitude of the differences in one-year or three-year average retention rates.

## Associations of School-Level Factors and Teacher Retention

The associations between the school-level factors and one-year or three-year average retention rates are shown in Table 1 for all schools and per organizational level: elementary schools, middle schools, and high schools. Results are provided for the 2022–23 one-year and three-year average retention rates (from 2020–21 to 2022–23).

**Table 1.** Relationships Among Teacher Retention Rates and School Factors by Organizational Level

Factors	All PK–12 schools <sup>a</sup> (N = 1,267)		Elementary schools (N = 588)		Middle schools (N = 233)		High schools (N = 206)	
	Retention rate (1 year)	Retention rate (3 years)	Retention rate (1 year)	Retention rate (3 years)	Retention rate (1 year)	Retention rate (3 years)	Retention rate (1 year)	Retention rate (3 years)
Satisfaction with learning environment	<b>0.36**</b>	<b>0.33**</b>	<b>0.31**</b>	0.29**	<b>0.46**</b>	<b>0.46**</b>	0.29**	0.29**
Satisfaction with social and physical environment	<b>0.31**</b>	<b>0.31**</b>	0.24**	0.24**	<b>0.41**</b>	<b>0.44**</b>	<b>0.32**</b>	<b>0.36**</b>
Satisfaction with home-school relationship	0.23**	0.23**	0.18**	0.20**	<b>0.31**</b>	<b>0.34**</b>	0.17**	0.20**
Student enrollment	0.17**	0.18**	0.26**	0.20**	0.21**	0.18**	0.20**	0.27**
Principal tenure at school	0.16**	0.14**	0.14**	0.11**	0.20**	0.15**	0.10	0.13
Student-teacher ratio	-0.15	-0.01	-0.10	-0.03	-0.06	-0.04	-0.05	-0.21**
School poverty index	<b>-0.32**</b>	<b>-0.30**</b>	<b>-0.38**</b>	<b>-0.32**</b>	<b>-0.38**</b>	<b>-0.41**</b>	<b>-0.46**</b>	<b>-0.43**</b>
Total per pupil expenditure	-0.14**	-0.21**	-0.22**	-0.25**	-0.23**	-0.25**	<b>-0.38**</b>	<b>-0.45**</b>

*Note.* Effect sizes of .30 or higher are in bold. <sup>a</sup>All schools included elementary, middle, and high schools, as well as other combined-level schools and preschools. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Overall, elementary, middle, and high schools demonstrated significant relationships with most school-level factors. Based on the minimum threshold value of .30, higher teacher satisfaction with the learning environment was related to an increased teacher retention rate for elementary and middle schools. Higher teacher satisfaction with the social and physical environment was related to an increased teacher retention rate for middle and high schools. Higher teacher satisfaction with home-school relationships was related to an increased teacher retention rate for middle schools. Lower school poverty was related to increased teacher retention across elementary, middle, and high schools. Lower total per pupil expenditure was related to an increased teacher retention rate for high schools. Overall, the magnitude of the relationships was generally stronger with three-year retention rates than one-year retention rates, likely due to the random fluctuations represented by the one-year rates.

Based on the threshold correlation value of .30, teacher satisfaction with the learning environment was important for improving preschool teachers' one-year retention rate. Total per pupil expenditure was negatively associated with preschool teachers' three-year retention rate.

Correlations for other combined-level schools (e.g., K–12) and preschools are not shown in Table 1 because of concerns about sample size, but the calculations were performed. For schools with combined levels, only teacher satisfaction with the learning environment was positively related to one-year teacher retention rates. Principal tenure at schools was not related to teachers' three-year retention rate at any organization level (i.e., elementary, middle, high, combined, preschool), based on the threshold value.

Table 2 provides descriptive results of teacher retention rates for preschools and combined-level schools across varying levels of school poverty, school locale, and principal tenure.

**Table 2.** Descriptive Information for Preschools and Schools With Combined Levels

School type		Retention rate (1 year)	Retention rate (3 years)
Preschool	<b>All preschools</b>	<b>82.25</b>	<b>84.86</b>
	<i>School poverty level</i>		
	Low (25% or lower)	88.60	87.23
	Moderate (25% < PIP < 75%)	79.84	85.56
	High (75% or higher)	79.58	82.00
	<i>Principal years at the school</i>		
	Less than 4 years	79.69	83.98
	4–9 years	84.64	85.44
	10 or more years	84.99	85.58
	<i>School locale</i>		
	City	76.46	80.00
	Suburb	82.72	84.47
	Town	81.44	84.11
	Rural	81.20	86.36
	Schools with combined levels	<b>All combined level schools</b>	<b>74.70</b>
<i>School poverty</i>			
Low (25% or lower)		75.79	79.24
Moderate (25% < PIP < 75%)		73.43	76.09
High (75% or higher)		75.38	79.35
<i>Principal years at the school</i>			
Less than 4 years		73.75	75.28
4–9 years		73.93	78.71
10 or more years		82.05	83.63
<i>School locale</i>			
City		75.09	79.38
Suburb		76.20	76.75
Town		71.57	76.70
Rural		75.36	78.45

### Teacher Retention by Organizational Level

Before running the ANOVAs, we examined appropriate assumptions. The normality assumptions were met for both analyses: skewness values < |2| and kurtosis values < |7|. The homogeneity of variance assumption was met only for the one-year average teacher retention rates across school types, which prompted the use of Tukey’s honestly significant difference (HSD) test for pairwise differences between the school types. We conducted a Welch one-way ANOVA for the three-year retention rate across organizational levels and then used Games-Howell post hoc tests for pairwise comparisons. Tukey’s HSD test and Games-Howell post hoc tests both adjust *p*-values to control for Type I errors.

To understand similarities and differences in teacher retention for elementary, middle, and high schools, the average teacher retention rates by school organizational level were calculated as shown in Table 3. An omnibus ANOVA test of variance was conducted for each of the one-year and three-year retention rates to determine if these mean rates differed significantly between organizational levels. Partial  $\eta^2$  was calculated to measure the magnitude of the overall differences in rates due to organizational level for both the one- and three-year retention rates. Cohen (1988) defined effect sizes as small ( $\eta^2 = .01$ ), medium ( $\eta^2 = .06$ ), and large ( $\eta^2 = .14$ ).

**Table 3. Teacher Retention Rates by School Type**

School type	Retention rate (1 year)			Retention rate (3 years)		
	N	Mean	p-value effect size	N	Mean	p-value effect size
Elementary schools	588	81.04 <sup>a</sup>	$p < .001$ $\eta^2 = .030$	576	81.93 <sup>a</sup>	$p < .001$ $\eta^2 = .027$
Middle schools	233	76.57 <sup>a,b</sup>		231	79.49 <sup>a,b</sup>	
High schools	206	81.26 <sup>b</sup>		199	82.87 <sup>b</sup>	

<sup>a</sup>This is a significant result between elementary and middle schools. <sup>b</sup>This is a significant result between middle and high schools.

Both omnibus tests were significant ( $p < .001$ ), indicating there was a difference in the one-year and three-year teacher retention rates between the school organizational levels. However, the magnitude of these differences was small, indicating that organizational level accounts for a small portion of the variance in retention rates. Pairwise comparisons between organizational levels revealed that middle school retention rates were significantly lower than elementary school retention rates (one-year retention rate:  $p < .001$ ,  $d = 4.47$ ; three-year retention rate:  $p < .001$ ,  $d = 2.44$ ) and high school teacher retention rates (one-year retention rate:  $p < .001$ ,  $d = 4.69$ ; three-year retention rate:  $p < .001$ ,  $d = 3.38$ ). This pattern was consistent for one-year and three-year retention rates.

### Teacher Retention by School Poverty

To gain a greater understanding of how poverty at the school level is associated with teacher retention rates, the average teacher retention rates were calculated for three categories of school poverty: schools in the highest quartile of school PIP (high-poverty), schools in the middle 50% of school PIP (moderate-poverty), and schools in the lowest quartile of school PIP (low-poverty). One-year and three-year average teacher retention rates by poverty level were examined across school organizational levels to see if the association between poverty rates and retention rates differed across school organization levels. Table 4 provides the teacher retention rates by school poverty level across each organizational level.

Before running the ANOVAs, we examined the necessary assumptions. For all the analyses, the assumption of normality was met. The homogeneity of variance assumption was met to analyze the three-year average teacher retention rate in middle schools. When the homogeneity of variance was satisfied, we used Tukey's honestly significant difference (HSD) test for pairwise differences. For the analyses that did not meet the equal variance assumption, we conducted Welch one-way ANOVA tests and utilized Games-Howell post hoc tests for pairwise comparison.

An omnibus ANOVA test of variance was conducted for one-year and three-year retention rates to determine if the retention rates were significantly associated with school poverty and how the association differed between school organizational levels. Partial  $\eta^2$  was calculated to measure the magnitude of the overall differences in rates due to school poverty level for both the one and three-year retention rates.

**Table 4. Teacher Retention Rates by School Poverty**

School type	School poverty	Retention rate (1 year)	p-value effect size	Retention rate (3 years)	p-value effect size
Elementary schools	Low	86.28 <sup>a,b</sup>	$p < .001$ $\eta^2 = .174$	84.44 <sup>b</sup>	$p < .001$ $\eta^2 = .159$
	Moderate	82.52 <sup>a,c</sup>		83.38 <sup>c</sup>	
	High	74.26 <sup>b,c</sup>		77.44 <sup>b,c</sup>	
Middle schools	Low	81.71 <sup>a,b</sup>	$p < .001$ $\eta^2 = .139$	82.76 <sup>b</sup>	$p < .001$ $\eta^2 = .176$
	Moderate	77.09 <sup>a,c</sup>		80.27 <sup>c</sup>	
	High	69.42 <sup>b,c</sup>		73.85 <sup>b,c</sup>	
High schools	Low	86.61 <sup>a,b</sup>	$p < .001$ $\eta^2 = .244$	86.07 <sup>a,b</sup>	$p < .001$ $\eta^2 = .240$
	Moderate	80.67 <sup>a,c</sup>		82.58 <sup>a,c</sup>	
	High	68.91 <sup>b,c</sup>		75.66 <sup>b,c</sup>	

<sup>a</sup>This is a significant result between low and moderate poverty levels. <sup>b</sup>This is a significant result between low and high poverty levels. <sup>c</sup>This is a significant result between moderate and high poverty levels.



For elementary schools, all three pairwise comparisons were statistically significant for one-year retention rates. The one-year teacher retention rate at high-poverty schools was significantly lower than those in moderate-poverty schools ( $p < .001$ ,  $d = 8.26$ ) and low-poverty schools ( $p < .001$ ,  $d = 12.02$ ). The one-year teacher retention rate at moderate-poverty schools was significantly lower than that of low-poverty schools ( $p < .001$ ,  $d = 3.76$ ). The three-year average teacher retention rate at high-poverty schools was significantly lower than those in low-poverty ( $p < .001$ ,  $d = 7.00$ ) and moderate-poverty schools ( $p < .001$ ,  $d = 5.94$ ).

For middle schools, all three pairwise comparisons were statistically significant for one-year retention rates. High-poverty schools showed the lowest retention rates compared to low-poverty schools ( $p < .001$ ,  $d = 12.29$ ) and moderate-poverty schools ( $p < .001$ ,  $d = 7.67$ ). The one-year teacher retention rate at moderate-poverty schools was significantly lower than that of low-poverty schools ( $p = .006$ ,  $d = 4.62$ ). The three-year average teacher retention rate at high-poverty schools was significantly lower than those in low-poverty ( $p < .001$ ,  $d = 8.91$ ) and moderate-poverty schools ( $p < .001$ ,  $d = 6.42$ ).

For high schools, all three pairwise comparisons were statistically significant for the one-year and three-year retention rates, with high-poverty schools having the lowest retention compared to low-poverty schools (one-year retention rate:  $p < .001$ ,  $d = 17.70$ ; three-year retention rate:  $p < .001$ ,  $d = 10.40$ ) and moderate-poverty schools (one-year retention rate:  $p < .001$ ,  $d = 11.75$ ; three-year retention rate:  $p < .001$ ,  $d = 6.92$ ). Low-poverty schools had a significantly higher retention rate than moderate-poverty schools (one-year retention rate:  $p < .001$ ,  $d = 5.94$ ; three-year retention rate:  $p < .001$ ,  $d = 3.49$ ).

These patterns were consistent for both the one-year average and the three-year average retention rates. The school poverty level accounted for a large amount of variability in both one-year and three-year average retention rates at all school organizational levels. High-poverty schools displayed the lowest one-year and three-year teacher retention rates in all the analyses conducted for this study. Across school organizational levels, the association between one-year or three-year teacher retention rates and school poverty level was the strongest in high schools, indicating that school poverty had a greater impact on high school teacher retention rates than elementary or middle school teacher retention rates.

### **Teacher Retention by Principals Tenure**

The relationship between the length of a principal's tenure at a school and teacher retention rates was also examined. The average teacher retention rates were calculated for three categories of principal tenure: principals with less than four years served at their current schools, principals with four to nine years in that position at their current schools, and principals who had served in that role for 10 or more years at their current schools. The association between principal tenure and one-year or three-year average teacher retention rates was examined within each school level, as provided in Table 5.

Before running the ANOVAs, we examined the necessary assumptions. For all the analyses, the assumption of normality was met. The homogeneity of variance assumption was met to analyze the one-year or three-year average teacher retention rates across principal tenure years in high schools; however, the homogeneity of variance assumption was not met for measuring one-year or three-year average retention rates by principal tenure years in elementary or middle schools. When the homogeneity of variance was satisfied, we used Tukey's honestly significant difference (HSD) test for pairwise differences. For the analyses that did not meet the equal variance assumption, we conducted Welch one-way ANOVA tests and utilized Games-Howell post hoc tests for pairwise comparison.

An omnibus ANOVA test was conducted to examine whether principal tenure was significantly associated with one-year or three-year retention rates and how the association differed between school organizational levels. Partial  $\eta^2$  was calculated to measure the magnitude of the overall differences in rates due to principals' years at the school for both the one- and three-year retention rates.

**Table 5.** *Teacher Retention Rates by Principal Tenure*

School type	Principal years at the school	Retention rate (1 year)	p-value effect size	Retention rate (3 years)	p-value effect size
Elementary schools	Less than 4 years	78.66 <sup>a,b</sup>	$p < .001$ $\eta^2 = .047$	80.73 <sup>b</sup>	$p < .001$ $\eta^2 = .032$
	4–9 years	81.91 <sup>b,c</sup>		82.07 <sup>c</sup>	
	10 or more years	85.00 <sup>a,c</sup>		84.35 <sup>b,c</sup>	
Middle schools	Less than 4 years	74.07 <sup>a,b</sup>	$p = .002$ $\eta^2 = .056$	78.36	$p = .038$ $\eta^2 = .029$
	4–9 years	79.01 <sup>a</sup>		80.45	
	10 or more years	79.85 <sup>b</sup>		81.64	
High schools	Less than 4 years	79.95	$p = .193$ $\eta^2 = .017$	81.68 <sup>a</sup>	$p = .038$ $\eta^2 = .034$
	4–9 years	82.81		84.14 <sup>a</sup>	
	10 or more years	82.43		83.55	

<sup>a</sup>This is a significant result between .5–3.5 years and 4–9 years. <sup>b</sup>This is a significant result between .5–3.5 years and 10 or more years. <sup>c</sup>This is a significant result between 4–9 years and 10 or more years.

Overall, the length of principal tenure was positively associated with higher teacher retention rates, though the patterns were not consistent across school organizational levels.

For elementary schools, principal tenure only accounted for a small amount of the variance in teacher retention rates. The one-year teacher retention rate at schools with a principal tenure of more than ten years was significantly higher than that of schools with a principal tenure of less than four years ( $p < .001$ ,  $d = 6.34$ ) and schools with a principal tenure between four to nine years ( $p = .019$ ,  $d = 3.09$ ). The one-year teacher retention rate at schools with a principal tenure between four and nine years was significantly higher than that of schools with a principal tenure of less than four years ( $p = .003$ ,  $d = 3.25$ ). The three-year average teacher retention rate at schools with the longest principal tenure (more than ten years) was significantly higher than those with a principal tenure of four to nine years ( $p = .007$ ,  $d = 2.27$ ) and those with the shortest principal tenure (less than four years;  $p < .001$ ,  $d = 3.62$ ).

In middle schools, the one-year retention rate was lower for schools with the shortest principal tenure (less than four years) compared to schools with a principal tenure between four and nine years ( $p = .003$ ,  $d = 4.94$ ) and schools with a principal tenure of more than ten ( $p = .011$ ,  $d = 5.79$ ). The principal tenure showed a small amount of variance in teacher retention rates for the one-year retention rates. The post-hoc comparison did not identify differences in three-year retention rates across principal tenure years.

In high schools, principal tenure was significantly related to three-year average teacher retention rates but not one-year retention rates. The three-year retention rate was lower for the shortest tenure (less than four years) compared to schools with a principal tenure between four and nine years ( $p = .032$ ,  $d = 2.46$ ).

Across school organizational levels, the association between one-year teacher retention rates and principal tenure years was the strongest in middle schools, indicating that principal tenure years had a greater impact on middle school teacher retention rates than on elementary or high school teacher retention rates. In general, the number of years that a principal held their position was, at most, a small contributor to explaining the retention rate.

## Teacher Retention by School Locale

To investigate teacher retention rates for schools in different locales, we calculated the mean one-year and three-year average teacher retention rates by the school's census-defined geographic designation: city, suburb, town, or rural. These retention rates by locale were further categorized by school organizational level to see if the association between school locale and retention rates differed by school type. Table 6 provides the teacher retention rates by school locale at different organizational levels.

Before running the ANOVAs, we examined the necessary assumptions. For all the analyses, the assumption of normality was met. The homogeneity of variance assumption was met for all organizational levels to analyze the one-year teacher retention rates across school locales; however, for the three-year retention rates, the variance assumption was not met for high schools. When the homogeneity of variance was satisfied, we used Tukey's honestly significant difference (HSD) test for pairwise differences. For the analyses that did not meet the equal variance assumption, we conducted Welch one-way ANOVA tests and utilized Games-Howell post hoc tests for pairwise comparison.

An omnibus ANOVA test of variance was conducted to examine the association between school locale and one-year or three-year retention rates, as well as whether the association differed between school organizational levels. Partial  $\eta^2$  was calculated to measure the magnitude of the overall differences in rates due to school locale for both the one- and three-year retention rates.

**Table 6.** Teacher Retention Rates by School Locale

School type	School locale	Retention rate (1 year)	<i>p</i> -value effect size	Retention rate (3 years)	<i>p</i> -value effect size
Elementary schools	City	78.38 <sup>a,c</sup>	<i>p</i> < .001 $\eta^2 = .029$	79.68 <sup>a,c</sup>	<i>p</i> < .001 $\eta^2 = .033$
	Suburb	82.71 <sup>a,d</sup>		82.33 <sup>a</sup>	
	Town	78.20 <sup>d</sup>		80.52	
	Rural	81.88 <sup>c</sup>		83.12 <sup>c</sup>	
Middle schools	City	72.69 <sup>c</sup>	<i>p</i> = .024 $\eta^2 = .041$	76.05 <sup>a,c</sup>	<i>p</i> = .006 $\eta^2 = .055$
	Suburb	78.09		80.49 <sup>a</sup>	
	Town	74.09		78.37	
	Rural	78.26 <sup>c</sup>		80.69 <sup>c</sup>	
High schools	City	79.23	<i>p</i> = .145 $\eta^2 = .028$	80.83	<i>p</i> = .242 $\eta^2 = .033$
	Suburb	84.10		84.21	
	Town	82.04		83.59	
	Rural	81.29		83.37	

<sup>a</sup>This is a significant result between city and suburb categories. <sup>b</sup>This is a significant result between city and town categories. <sup>c</sup>This is a significant result between city and rural categories. <sup>d</sup>This is a significant result between suburb and town categories.

Overall, teacher retention rates were similar when comparing schools in different geographical locales within elementary, middle, and high school levels. In elementary schools, both one-year and three-year retention rates were significantly associated with school locale. The one-year teacher retention rate of schools in the city was lower than those of schools in suburbs ( $p = .005$ ,  $d = 4.33$ ) or rural areas ( $p = .032$ ,  $d = 3.50$ ). The one-year teacher retention rate of schools in town was lower than that of schools in suburban areas ( $p = .018$ ,  $d = 4.51$ ). The three-year teacher retention rate of schools in the city was lower than those of schools in suburbs ( $p = .014$ ,  $d = 2.64$ ) or rural areas ( $p < .001$ ,  $d = 3.44$ ). There were more significant differences noted in three-year teacher retention averages at elementary schools than at middle or high schools.

For middle schools, the one-year teacher retention rate of schools in the city was lower than the rate of schools in rural areas ( $p = .045$ ,  $d = 5.56$ ). The three-year teacher retention rate of schools in the city was lower than those of schools in suburbs ( $p = .013$ ,  $d = 4.44$ ) or rural areas ( $p = .006$ ,  $d = 4.64$ ). In high schools, one-year and three-year average teacher retention rates did not demonstrate a significant relationship with school locales. School locale did not explain much of the differences in teacher retention rates in this analysis.



## EDUCATOR PIPELINE RESEARCH



