

Research Brief 2023 – 6: Exacerbating the Shortage of Teachers: Rising Teacher Attrition in Pennsylvania from 2014 to 2023

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Introduction

While media reports warned of dramatic increases in teacher attrition after the height of the pandemic in 2020-21, most states reported only slight changes in teacher attrition from 2020-21 to 2021-22. This was true for Pennsylvania, which experienced an increase in teacher attrition of just 0.8 percentage points—from 5.4% in 2021 to 6.2% in 2022.

Analyses of teacher attrition from 2021-22 to 2022-23, however, have shown large increases in teacher attrition across the US. For example, [Chalkbeat has reported](#) increases in teacher attrition of between two and three percentage points for a number of states.

In Pennsylvania, there was a 1.5 percentage point increase in teacher attrition in Pennsylvania. This was the largest increase on record for the Commonwealth led to 7.7% of all teachers in the Commonwealth leaving their positions as teachers in Pennsylvania—a total of 9,587. **This was the largest number of teachers leaving on record.** If the attrition rate had remained at the 2021-22 level, nearly 1,900 fewer teachers would have left the profession. If the attrition rate was the same as the average attrition rate over the prior five years, nearly 2,400 fewer teachers would have left the profession. Note that there were only 5,101 newly certified teachers in Pennsylvania in 2022.

Why Should We Care About Teacher Attrition?

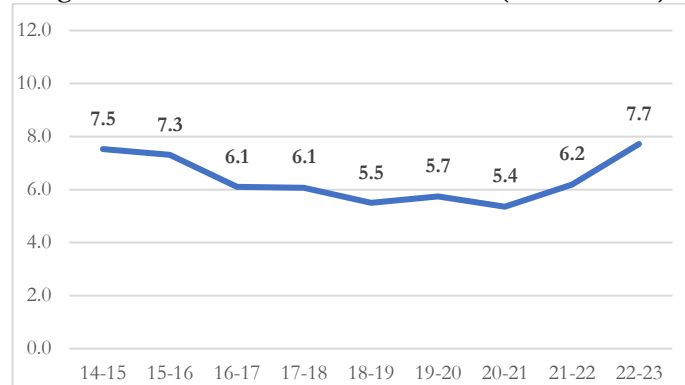
Research has consistently shown that teacher turnover has a [negative effect](#) on student outcomes, school climate, and [teacher quality](#). Further, teacher attrition is [financially costly](#) to districts. More specifically, high teacher turnover typically increases the number of inexperienced teachers, decreases teacher quality, impedes the development of a positive school climate, and makes teacher collaboration difficult.

Overall Attrition

Figure 1 displays the overall attrition rate for Pennsylvania teachers from 2014 through 2023. There was a steady decline in the overall attrition rate from 14-15 to 18-19 followed by a slight uptick from 18-19 to 19-20. For the first post-pandemic opportunity to leave the teaching profession, there was a 0.3 percentage point decline in the attrition rate to 5.3% in 2020-21. This was followed by an

increase of 0.8 percentage points in the attrition rate from 20-21 to 21-22. Finally, from 2022 to 2023, there was an increase of 1.5 percentage points in the attrition rate.

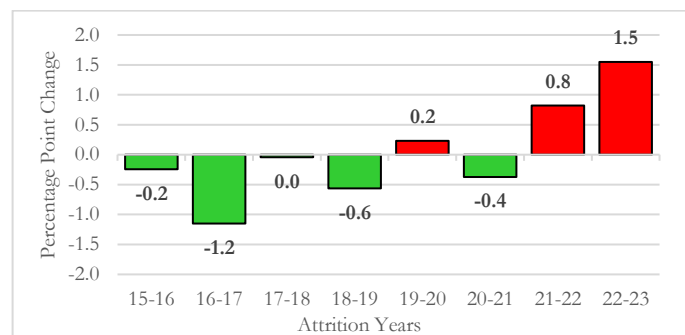
Figure 1: Annual Teacher Attrition Rates (14-15 to 22-23)



Data Source: PDE Educator Employment files; Author's analysis

As shown in **Figure 2**, the percentage point change from 2022 to 2023 was the largest change in teacher attrition in either direction since 2014-2015.

Figure 2: Annual Percentage Point Change in the Overall Teacher Attrition Rate (14-15 to 22-23)



Data Source: PDE Educator Employment files; Author's analysis

Attrition by the Intersection of Race and Sex

Figure 3 presents the 2022-2023 attrition rates by the intersection of race and gender. Darker shading identifies males and lighter shading identifies females. As shown at the top of the graph, 18.1% of Black male teachers in 2022 were no longer employed as a teacher in Pennsylvania in 2023. **Thus, nearly one of every five Black male teachers disappeared from the Pennsylvania teaching profession.** Black female teachers also had an extraordinarily high attrition rate of 16.4%. Both Hispanic and multi-racial males had attrition rates greater than 15%.

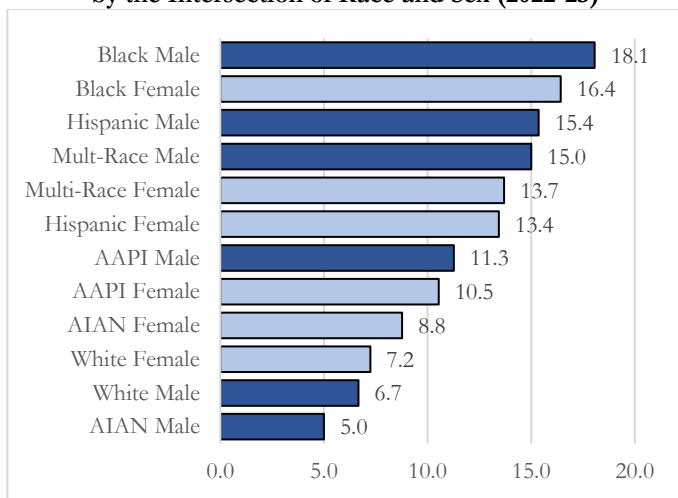
Four other groups of teachers had attrition rates greater than 10%: multi-racial females (13.7%), Hispanic females (13.4%), Asian American/Pacific Islander (AAPI) males (11.3%), and AAPI females (10.5%).

At the other end of the continuum, American Indian/Alaskan Native (AIAN) males had an attrition rate of only 5.0% while white males (6.7%) and white females (7.2%) had attrition rates lower than 7.5%.

Two trends are evident:

- (1) Teachers of color—especially Black, Hispanic, and multi-racial teachers—have the greatest attrition rates while white teachers have substantially lower attrition rates; and,
- (2) Male teachers tend to have greater attrition rates than female teachers except for white and AIAN males.

Figure 3: Teacher Attrition Rate by the Intersection of Race and Sex (2022-23)

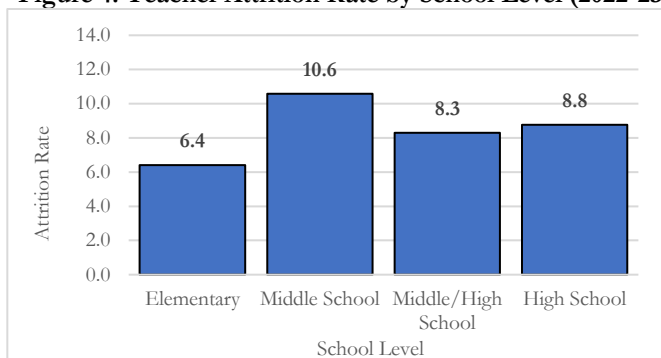


Data Source: PDE Educator Employment files; Author's analysis

Attrition by School Level

Figure 4 shows the average teacher attrition rate by school level. The attrition rate was lowest for elementary schools (6.4%) and highest for middle schools (10.6%). Both high schools and combined middle- and high- schools had similar attrition rates—8.8% and 8.3% respectively.

Figure 4: Teacher Attrition Rate by School Level (2022-23)

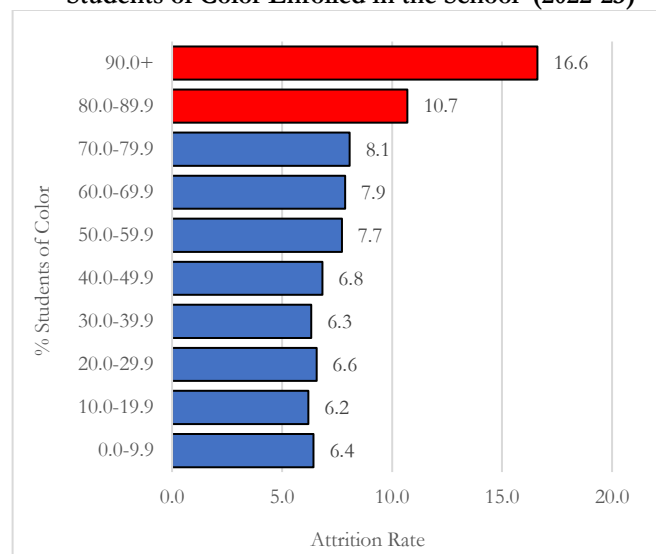


Data Source: PDE Educator Employment files; Author's analysis

Attrition by School Demographics

Figure 5 documents the teacher attrition rate by the deciles of the percent of students of color enrolled in the school. Clearly, the greater the percentage of students of color, the greater the teacher attrition rate. Schools with 90% or greater students of color had an average attrition rate of 16.6% while schools with fewer than 10% students of color had an average attrition rate of 6.4%. In fact, the average attrition rates for all the deciles with fewer than 50% of students of color were less than 7.0%. Thus, students of color tend to be enrolled in schools with greater teacher attrition. Given the negative effect of teacher attrition on student achievement and other outcomes, stemming teacher attrition in schools serving high proportions of students of color would help increase the achievement of students of color.

Figure 5: Teacher Attrition Rate by Deciles of the Percent Students of Color Enrolled in the School (2022-23)



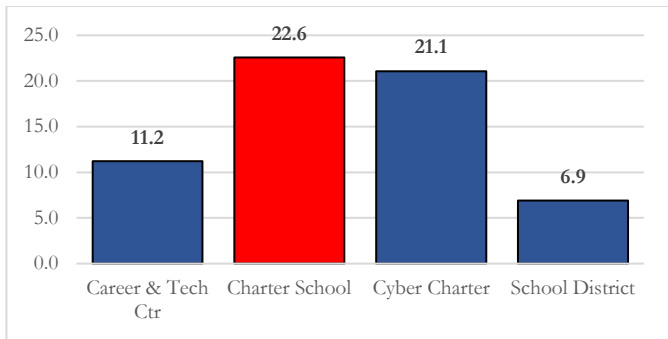
Data Source: PDE Educator Employment files; Author's analysis

Attrition by School Type

Figure 6 documents the school-level average teacher attrition rates by school type. The four school types are school district schools, charter schools, cyber charter schools, and career and technical centers (CTCs). Both types of charter schools had extraordinarily high attrition rates—greater than 20%. Thus, more than one in five charter school teachers left the teaching profession in Pennsylvania. In comparison, only about one in ten teachers left CTCs and just 1 out of 16 district school teachers left the profession.

If charter schools and CTCs had the same teacher attrition rate as district schools, at least 1,000 fewer teachers would have left the teaching profession in Pennsylvania in 2022-23. Addressing the high turnover of teachers in charter schools would certainly help address the shortage of teachers in Pennsylvania.

Figure 6: Teacher Attrition Rate by School Type (2022-23)



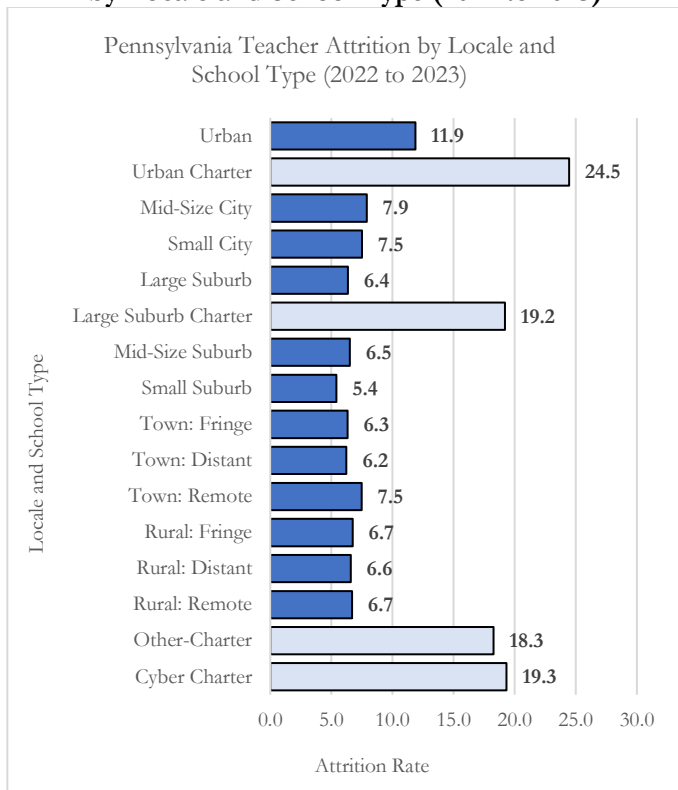
Data Source: PDE Educator Employment files; Author's analysis

Attrition by Locale and District Type

Teacher attrition can also vary by the geographic locale of the school--urban, suburban, town, and rural. Because school type has such a profound influence on attrition rates, I present the school-level average attrition rates by the intersection of locale and school type.

Figure 7 shows that charter schools have the highest attrition rates regardless of where they are located. Charter schools in urban areas have the highest attrition of all with 25% of their teachers not returning to the teaching profession. This means that, **on average, about one out of every four urban charter school teachers left the teaching profession in Pennsylvania between 2021-22 and 2022-23.** Charter schools in other locations have average attrition rates between 18% and 20%.

Figure 7: Teacher Attrition by Locale and School Type (2022 to 2023)



Data Source: PDE Educator Employment files; Author's analysis

For district schools, the highest average attrition rate was

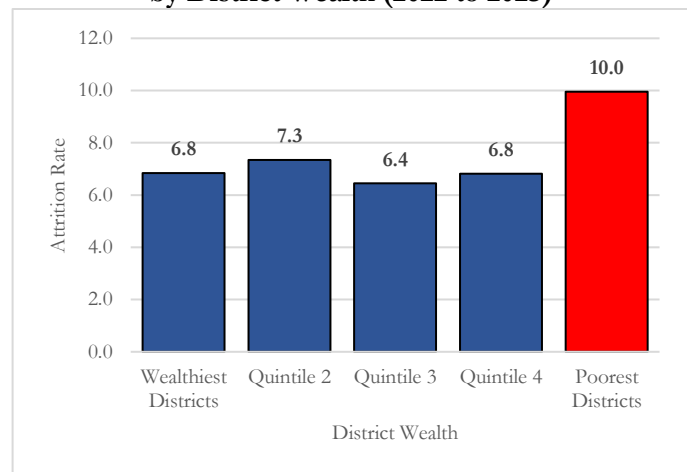
for urban schools with an attrition rate of about 12%--far greater than the attrition rates for schools in other locales. District schools located in mid-size cities, small cities, and remote towns had teacher attrition rates greater than 7%. District schools in all the other locales had attrition rates lower than 7%. District schools in small suburbs had the lowest average attrition at just 5.4%.

Attrition by District Wealth

In this analysis, I compare teacher attrition rates by district wealth which is based on the Market Value/Personal Income (MVPI) measure provided by PDE. Districts were divided into five groups with approximately equal numbers of students. The first quintile is labeled as the "Wealthiest" districts and the fifth quintile is labeled as the "Poorest" districts. This is the same measure used in the school finance court case in Pennsylvania. Charter schools and CTCS are not included in the analysis as there is no MVPI measure for such schools.

As shown in **Figure 8**, teacher attrition was substantially higher in the poorest districts compared to teacher attrition for the districts in the other quintiles of wealth. Specifically, the teacher attrition for the poorest districts was 10.0% while the teacher attrition rates for teachers in the other quintiles was 7.3% or lower. This finding is not surprising given that poorer districts tend to offer lower salaries which, in turn, are associated with higher attrition rates. In fact, teachers tend to migrate from these lower paying districts to higher paying districts

Figure 8: Teacher Attrition by District Wealth (2022 to 2023)



Data Source: PDE Educator Employment files; Author's analysis

Attrition by County

Because of the size of **Figure 9**, I have placed the map of teacher turnover by county in the appendix. As shown in the map, Philadelphia County had, by far, the highest attrition rate at 16.4%. This is primarily due to the very high attrition rates of the numerous charter schools in

Philadelphia County and, to a lesser extent, the greater numbers of teachers of color. Another four counties had attrition rates of 10% or greater: Clinton County, Mifflin County, Northampton County, and Delaware County.

Two counties had extremely low attrition rates: Beaver County (4.3%) and Greene County (2.1%). Another seven counties had attrition rates of more than 2.5%, but less than 5.3%: Mercer, Jefferson, Armstrong, and Jefferson counties in western Pennsylvania; Northumberland County in Central Pennsylvania; and Wayne and Pike counties in the northeastern area of Pennsylvania.

In terms of patterns, county attrition rates are highest in the Philadelphia metro area, the Centre County area, and some counties in the northwestern area of the Commonwealth. The counties with the lowest attrition rates tend to be in the southwestern and northeastern areas of the Commonwealth.

Conclusions

There was a substantial increase in teacher attrition in Pennsylvania from 2022 to 2023. This increase will exacerbate the existing difficulties schools are encountering in finding enough teachers to fill vacant positions.

Teachers of color—already in short supply in Pennsylvania—had the highest attrition rates. These continued high attrition rates—coupled with lower numbers of individuals of color entering the teaching profession—will reduce the percentage of teachers of color in Pennsylvania.

Relatedly, students in schools serving high proportions of students of color have the highest attrition rates. Thus, schools serving children who are often most in need of an experienced and stable cadre of teachers are the least likely to provide children with this resource. This is partially, but not completely, explained by charter schools enrolling high proportions of students of color.

Charter schools tend to have extraordinarily high attrition rates and account for a disproportionate percentage of the teacher attrition in Pennsylvania. In fact, the higher attrition rates for charter school teachers added more than an additional 1,000 vacant positions to be filled.

Middle schools also have higher attrition rates than schools at the other levels and urban schools tend to have higher attrition rates than schools in other geographic locales.

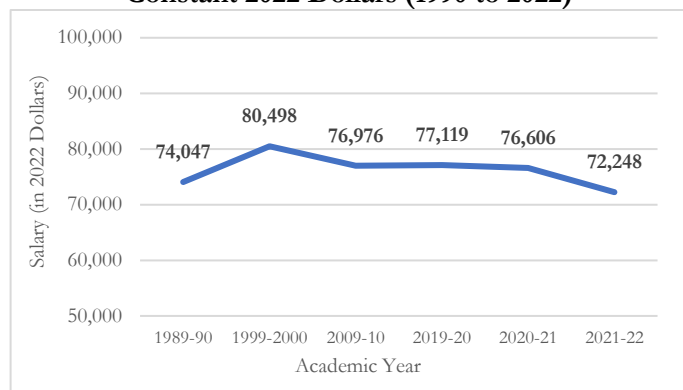
Finally, teacher attrition was substantially greater in the poorest districts compared to all other districts. This means that districts with arguably the most students in need of a well-qualified and stable cadre of teachers are the least able to offer children this valuable resource.

Implications

Identifying the attrition rate is only the first step. We now need to understand the reasons why more teachers are leaving the teaching profession than before. Research suggests teacher salaries and working conditions are two of the primary reasons why teachers quit.

We know that average teacher salaries in Pennsylvania have declined over the past 30 years. Changes in the age and experience distribution of teachers explain some, but not all, of this decline in average teacher salaries. We also know that many beginning teacher salaries are quite low in Pennsylvania and don't provide beginning teachers the ability to earn a wage that will allow them to have a middle-class lifestyle.

Figure 10: Average Teacher Salaries for Pennsylvania in Constant 2022 Dollars (1990 to 2022)



Data Source: National Center for Education Statistics Table 211.60

Research consistently shows that teacher working conditions have a profound impact on teacher attrition—rivaling the impact of salaries. These working conditions include measures of school climate, teacher involvement in decision-making, and leadership behaviors among other areas. Unfortunately, we do not have any information on teacher working conditions in Pennsylvania.

Economic conditions can also affect teacher attrition. When unemployment is low and when salaries and working conditions in competing occupations compare favorably to teaching, then the teacher attrition rate will often increase. When unemployment is high and salaries and working conditions in other fields compare unfavorably to the teaching profession, teacher attrition rates will decline.

Another factor is the respect and prestige accorded to teachers. Recent research strongly suggests that the prestige and respect for teachers has declined dramatically in recent years. In 2011, 77% of teachers reported feeling respected by community members. By 2022, the percentage had fallen to just 46%. Declining respect and prestige create unfavorable working conditions that increase the odds that a teacher will quit the profession.

Possible State Policy Solutions

What, then, can state policymakers do to address this situation? Below are some research-based suggestions that can help address teacher attrition as well as the shortage of teachers.

1) Increase teacher salaries

Research consistently concludes that increasing teacher salaries tends to increase the odds of a teacher remaining in the profession. While increasing all salaries across the state resonates with the public, a more efficient and effective approach is to use a comparable wage index to help set salaries in each labor market so that all districts are on a level playing field.

2) Provide Stipends for Teaching in Hard-to-Staff Schools

Teacher attrition is consistently greater in a subset of schools. This high attrition is one of a handful of indicators that identify hard-to-staff schools. Research has shown that providing stipends to effective teachers who choose to work in hard-to-staff schools leads to an increase in teacher effectiveness, a decrease in teacher attrition, and an increase in student achievement.

3) Adopt and Implement a Statewide Teacher Working Conditions Survey

A number of states have used statewide teacher working conditions surveys to help school and district leaders identify areas of concern and develop strategies to address the areas of need identified by teachers. The state- and district-level results could be made public while the results for individual schools should be kept confidential to ensure that teachers respond truthfully.

4) Fund and Support a Statewide Campaign to Elevate Teaching

To counteract teacher perceptions of a lack of respect and prestige, the state should fund a statewide advertising and marketing campaign to elevate teachers and teaching.

5) Require Leadership Programs to Teach about Working Conditions

Principal and superintendent certification programs should be required to teach aspiring leaders about the importance of teacher working conditions and strategies to improve teacher working conditions.

Data and Methods

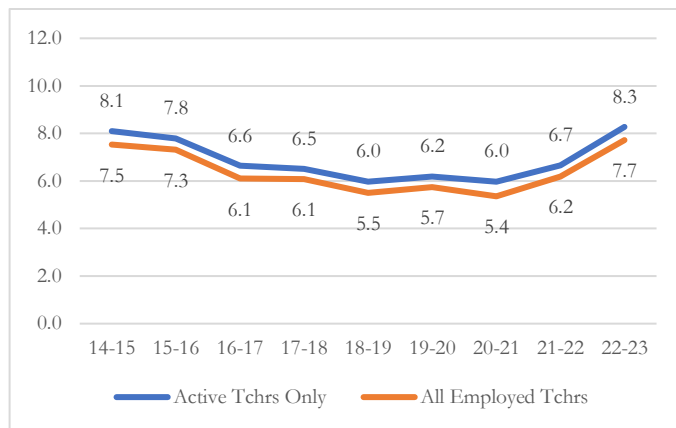
Different researchers can arrive at different teacher attrition rates by using different groups of teachers and different methods. Thus, it is important to document the data and methods used in making the calculations in this report.

In this study, I started my analysis by using all employed teachers in the employment files located on the Pennsylvania Department of Education website. For the calculation of the overall attrition rate, I removed teachers without a unique personal identifier. These teachers are employed through a sub-contract or teachers employed as dual-enrollment or college-level instructors.

For school-level analyses, I removed all the above teachers as well as teachers employed in a school without a PDE school number. In addition, I removed all teachers employed in 10 or more schools.

If we restrict the analysis to only those teachers designated as active, the attrition rate increases by 0.05 percentage points each year as shown in Figure 10.

Figure 10: Annual Teacher Attrition Rates for All Employed Teachers and Active Teachers Only(14-15 to 22-23)



Data Source: PDE educator employment files; Calculations and graph by author.

Suggested Citation

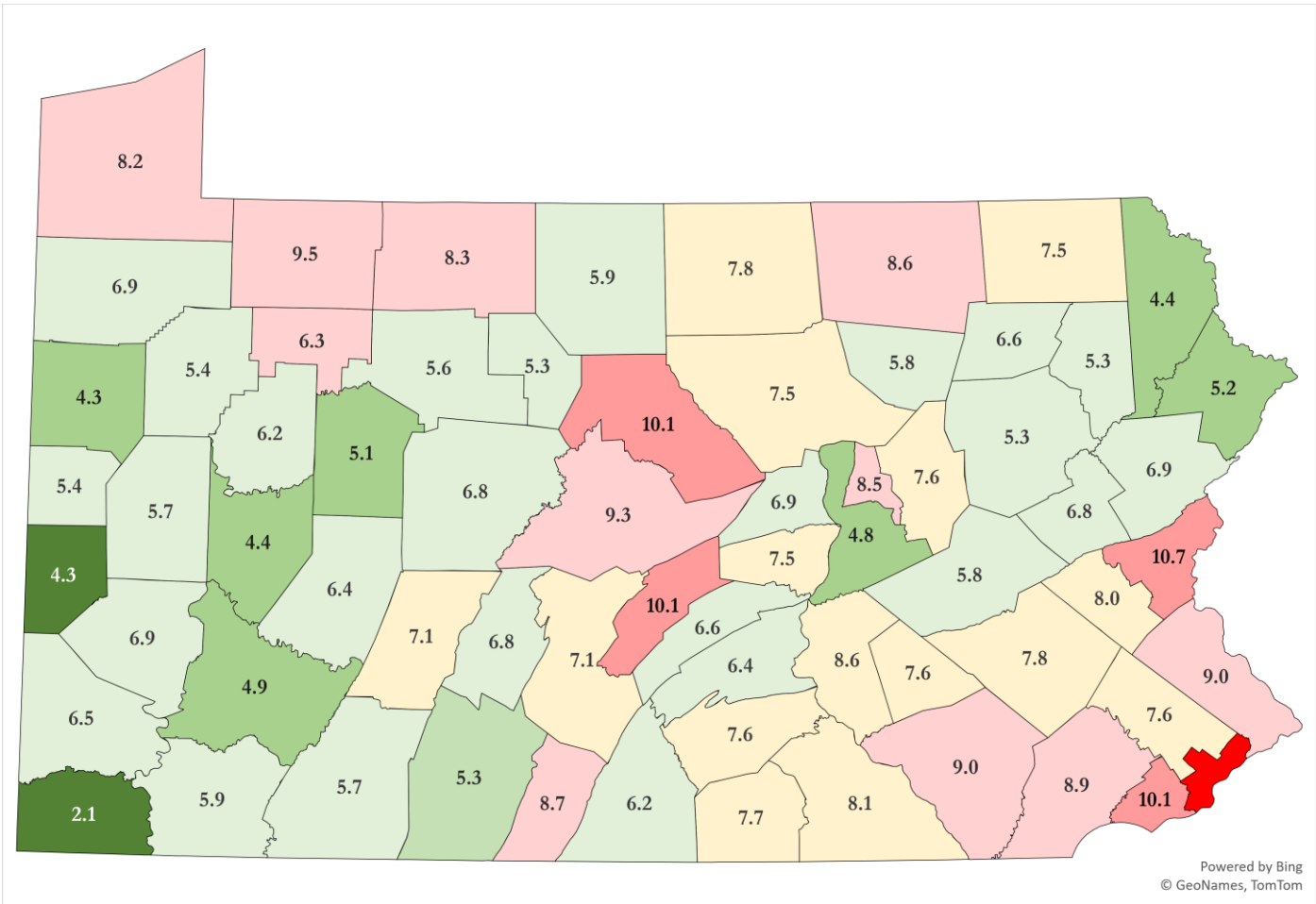
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Center for Education Evaluation and Policy Analysis

This brief is part of the CEEPA Research and Policy Brief Series that provides evidenced-based, peer-reviewed analysis of important educational issues in Pennsylvania and across the US. Dr. Ed Fuller is the Executive Director.

Figure 8: Teacher attrition by County from 2022 to 2023



Data source: PDE educator enrollment files; Calculations and map by author and Zane LeMay

Philadelphia County has an attrition rate of 16.4%

Key

Color	Attrition Rate
Red	15+
Light Red	10.0 to 14.9
Light Pink	8.2 to 9.9
Yellow	7.1 to 8.1
Light Green	5.3 to 7.0
Medium Green	2.5 to 5.2
Dark Green	< 2.5