

PENN STATE CENTER FOR EVALUATION & EDUCATION POLICY ANALYSIS

Research Brief 2025 – 1: Teacher Shortages? Examining Pennsylvania Teacher Vacancies in 2023-24 and 2024-25

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Introduction

At the beginning of the 2024-2025 school year, there were an estimated 49,000 [vacant positions](#) in U.S. public schools.

Schools serving [greater proportions of students receiving free- or reduced-price meals](#) as well as [greater proportions of students of color](#) tend to suffer most from teacher vacancies. Thus, students most in need of well-qualified teachers tend to be the least likely to have access to them.

In Pennsylvania, 44% of districts reported at least one vacant teacher position for the 2023-24 school year. That percentage declined to 38% of districts in the 2024-25 school year.

In 2023-24, there were about 2,154 reported vacant teaching positions. In 2024-25, that number either increased to about 2,477 or decreased very slightly to about 2,100 vacant teaching positions, depending on whether the data from the Philadelphia School District is accurate.ⁱ Thus, vacancies are either declining very slightly or increasing moderately.

With fewer districts reporting at least one vacancy, this means that vacancies are increasingly concentrated into a lower number of districts.

Further, consistent with prior research, **entities with greater percentages of students living in povertyⁱⁱ and students of colorⁱⁱⁱ and had greater than expected vacant teaching positions.**

This policy brief reviews some research about teacher vacancies, the effect of teacher vacancies on students, and the distribution of teacher vacancies in Pennsylvania.

In this brief, I assume the data from Philadelphia School District is inaccurate regarding the number of special education vacancies in the remainder of this report. The district reported nearly 700 vacancies in one category of special education in 2024-25. In the prior year, they had reported only about 350 in 2023-24. There was also a large discrepancy for early childhood education. If their data is accurate, the number of vacancies is greater, the number of vacancies and the vacancy rate in special education is greater by about 500 positions, and the vacancy rates for the districts in the highest

quintile of students of color and students living in poverty would be greater.

Why Do Teacher Vacancies Matter?

Teacher vacancies matter to student outcomes in two ways. First, some vacancies are left unfilled. This means students either do not have access to the class or are placed in a class with a greater number of students. Either outcome tends to have a negative effect on student outcomes.

Second, most vacancies are filled by under-qualified teachers. Some districts fill these positions with a series of short-term substitute teachers. This is the worst-case scenario because students will “pass” the class but likely will have learned substantially less than their peers in classes with teachers certified to be teaching the course. This lack of knowledge creates a large barrier to moving forward in that subject area, especially with respect to being able to major in that subject area when a post-secondary student.

Third, most entities respond to a vacancy by hiring a teacher on an emergency permit. On average, teachers on an emergency permit have lower student achievement growth than certified teachers. Again, students are harmed because they are likely to fall behind their peers academically and will have greater difficulty entering a post-secondary major in that field as well as a career in that field.

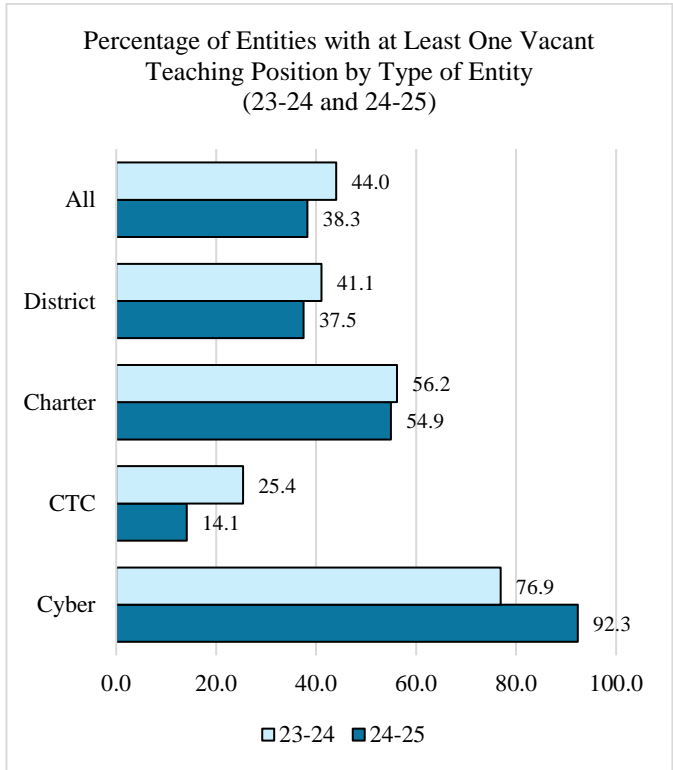
Vacancies are sometimes filled by a series of short-term substitutes who likely have no teaching experience and don’t stay long enough to build relationships with students. Second, under-qualified teachers are more likely to quit their positions. This teacher turnover often has a negative impact on the school climate and on student outcomes.

Teacher Vacancies

As shown in Figure 1, 44% of all district entities reported at least one vacant teaching position in 2023-24 while only 38% of entities reported at least one vacancy for 2024-25. Thus, the percentage of entities reporting at least one teacher vacancy declined.

A greater percentage of cyber charter schools reported at least one vacancy compared to other types of entities. Indeed, more than 75% of cyber charters reported at least one teacher vacancy in 2023-2024 and 92% did so in 2024-25.

About 55% of brick-and-mortar charter schools reported at least one teacher vacancy in both years. About 41% of school districts reported having at least one teacher vacancy in 2023-24 and just 37.5% did so in 2024-25.



Percentage of Entities Reporting Vacant Positions by Subject Area

Table 1 documents the percentage of entities reporting at least one vacant teaching position for both the 2023-24 and 2024-25 school year. Strikingly, about one out of every four entities reported at least one vacant teaching position for special education. This was, by far, the greatest percentage of entities reporting a vacancy in a specific area. Our most vulnerable students are children in special education.

These students deserve our very best, yet we cannot even ensure every special education teaching position is filled with a qualified teacher. The depth and breadth of vacancies in this important area should shock our Commonwealth and spur immediate action to rectify this issue.

The next highest percentages were for elementary school, mathematics, and science positions. Elementary school provides the foundation for all students and mathematics and science are two subject areas that tend to be barriers for students and are also areas that will help grow the economy.

Table 1: Percentage of Entities Reporting at Least One Teaching Position Vacant

Subject Area	Academic Year	
	23-24	24-25
Special Education	26.2	25.7
Early Childhood	2.1	9.5
Elementary	12.4	9.5
Math	7.3	7.3
English	6.6	6.9
Science	8.1	6.8
Fine Arts	6.3	4.7
World Languages	4.4	4.6
ELL	3.3	3.7
Social Studies	4.1	3.0
PE/Health	3.4	2.8
Business	3.0	2.7
Technology	2.6	1.9
Comp Science	1.5	0.9
TAG	0.4	0.4

Vacancy Rate by Subject Area

In this section, we examine the vacancy rates for the different subject areas. Because some of the numerators are small and we do not yet have the 2024-25 counts of teachers, we focus on the results for 2023-24.

As shown in Figure 2, the vacancy rate for special education was 3.2%, which was the highest rate of all subject areas. At 2.45%, English Language Learner (ELL) was the only other subject area with a vacancy rate greater than 2.0%. The two subject areas with the highest vacancy rates are the two that serve our most vulnerable children—students with disabilities and students whose first language is not English. While the Commonwealth has a responsibility to provide well-qualified teachers to all students, there is a special responsibility to these more vulnerable groups of children. The Commonwealth must do better for these learners.

There were six other subject areas with vacancy rates between 1.0% and 2.0%: Technology, Foreign Language, Computer Science, Science, Math, and Business.

Note that these six subject areas are critical to the economic well-being of the Commonwealth and the nation. *Continued vacancies (as well as the hiring of teachers on emergency permits) ensure that not every child will have an adequate level of preparation in these areas, thus locking them out of the very types of careers that will be the economic engine of the Commonwealth in the foreseeable future.*

**Table 2: Vacancy Rates
by Subject Area (2023-24)**

Subject Area	Vacancy Rate
Special Education	3.2
ELL	2.4
Technology	1.6
World Languages	1.3
Comp Science	1.3
Science	1.2
Math	1.1
Business	1.1
Fine Arts	0.9
Elementary	0.9
English	0.8
PE/Health	0.7
Social Studies	0.5
Early Childhood	0.4
TAG	0.2

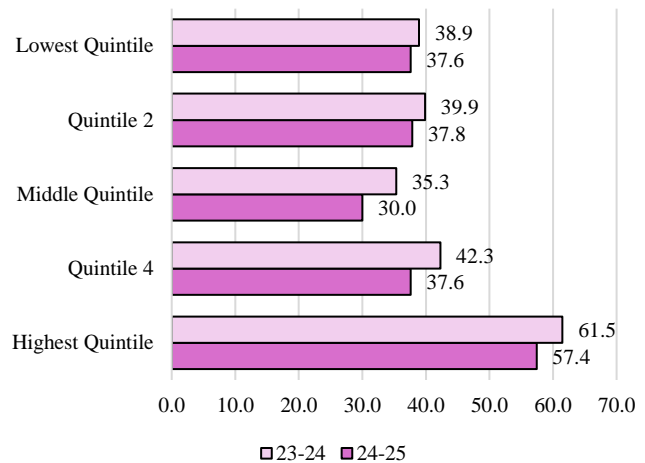
Percentage of Entities Reporting Teacher Vacancies by Student Characteristics

In Figures 2 and 3, we divide educational entities (school districts, charter schools, cyber charter schools, and CTCs) into quintiles based on the percentage of students living in poverty and the percentage of students of color. The percentage of students living in poverty is defined as the percentage of students participating in the federal free-/reduced- price meals as included in Pennsylvania’s Future Ready Index. The percentage of students of color is defined as the percentage of students identified as Black, Hispanic, American Indian, Alaskan Native, Pacific Islander, Asian, or multi-race as included in Pennsylvania’s Future Ready Index.

As shown in Figure 2, a much greater percentage of entities with the highest percentage of students living in poverty (Quintile 5) than entities in the other quintiles reported at least one teacher vacancy. The percentages of entities reporting at least one vacancy was roughly equal across the other four quintiles—especially for 2024-25.

There was a decline in the percentage of entities reporting at least one vacant position for all quintiles from 2023-24 to 2024-25. However, the declines were generally small but noteworthy for the top three quintiles with the greatest percentages of students living in poverty.

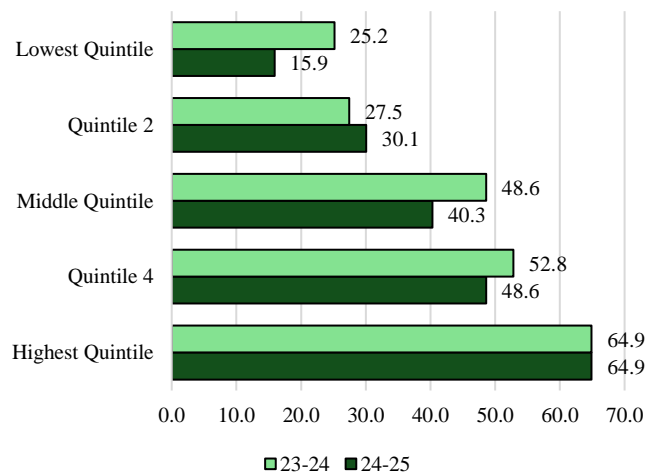
Figure 2: Percentage of Entities Reporting at Least One Teacher Vacancy by Quintiles of Students Living in Poverty (23-24 & 24-25)



As shown in Figure 3, as the percentage of students of color enrolled in the entity increases (from Lowest Quintile to Highest Quintile), the percentage of entities reporting at least one vacant position increases. In 2024-25, only 15% of entities with the lowest percentages of students of color reported at least one vacancy. **Strikingly, 65% of entities with the greatest percentages of students of color reported at least one vacant position.**

There were declines in the percentage of entities reporting at least one vacant position for the Lowest Quintile, Middle Quintile, and Quintile 4. The decline for Quintile 1 was very large—10 percentage points. The decline for the Middle Quintile was large—8 percentage points. The decline for Quintile 4 was 4 percentage points. There was a small 3 percentage point increase for Quintile 2 and there was no change across years for the Highest Quintile.

Figure 3: Percentage of Entities Reporting at Least One Teacher Vacancy by Quintiles of Students of Color (23-24 & 24-25)



Teacher Vacancy Rates by Student Characteristics

In this section, we compare teacher vacancy rates in 2023-24 and 2024-25 by the quintiles of students living in poverty and students of color. If teacher vacancies are not related to student characteristics, then the vacancy rates should be roughly equal for each quintile.

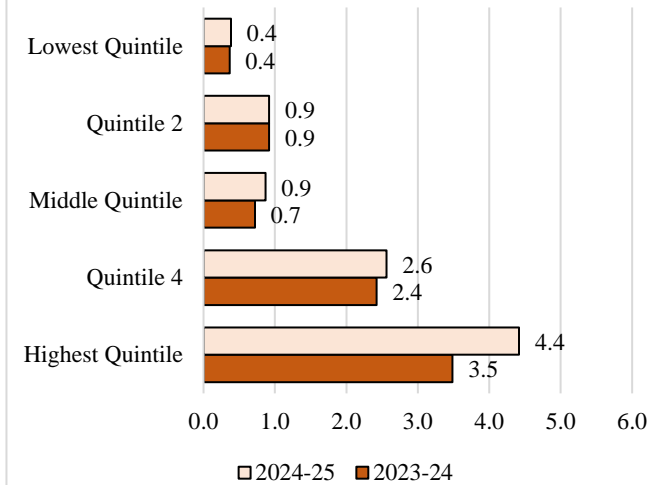
As shown in Figure 4, Quintile 4 and the Highest Quintile have the greatest teacher vacancy rates while the remaining quintiles have vacancy rates of less than 1.0%. Thus, less than 1 out of every 100 teaching positions in entities with the lowest percentages of students living in poverty were identified as vacant.

The vacancy rates for Quintile 4 were 2.6% in 2023-24 and 2.4% in 2024-25. The vacancy rates for the Highest Quintile were 4.4% in 2023-24 and 3.5% in 2024-25.

Thus, entities with the greatest percentages of students living in poverty had substantially greater teacher vacancy rates in both years.

One positive data point is that the vacancy rate for the Highest Quintile decreased by almost one full percentage point from 2023-24 to 2024-25. Hopefully this trend will continue.

Figure 4: Teacher Vacancy Rates in 2023-24 and 2024-25 by Quintiles of the Percent of Students Living in Poverty



However, this analysis may heavily be influenced by the large number of entities in Philadelphia County with high percentages of students living in poverty. To examine this potential effect, we removed Philadelphia County from the analysis. The results are shown in Figure 5.

The pattern shown in Figure 5 is very similar to the pattern shown in Figure 4. In fact, the disparity between the first four quintiles and the Highest Quintile was greater when

Philadelphia County was excluded from the analysis. Thus, there are disparities for entities across the state.

Figure 5: Teacher Vacancy Rates in 2023-24 and 2024-25 by Quintiles of the Percent of Students Living in Poverty

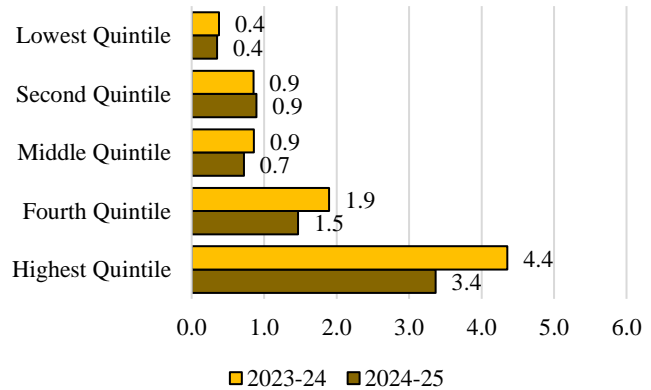


Figure 6 replicates the analysis in Figure 3, but places entities into five quintiles based on the percentage of students of color enrolled in the entity. The Highest Quintile, that includes entities with the highest percentages of students of color, had substantially greater teacher vacancy rates in both 2023-24 and 2024-25 than all other quintiles. The first three quintiles had negligible teacher vacancy rates.

Thus, entities with very high percentages of White students had very low teacher vacancy rates while entities with the highest percentages of students of color had the greatest teacher vacancy rates. In fact, *the teacher vacancy rates for the entities in the Highest Quintile was more than ten times the teacher vacancy rates for entities in the lowest three quintiles.*

Figure 6: Teacher Vacancy Rates in 2023-24 and 2024-25 by Quintiles of the Percent of Students Living in Poverty

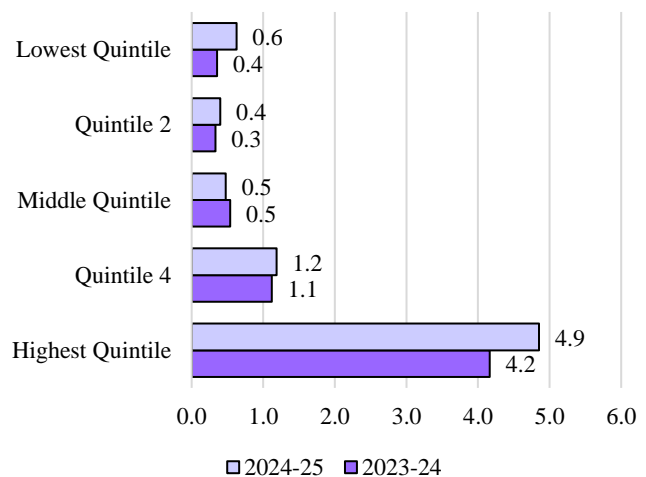
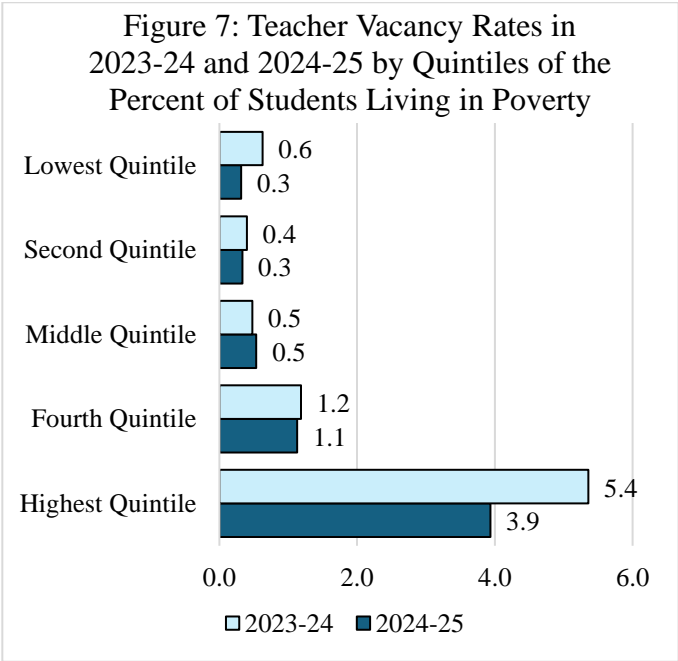


Figure 7 also examines the vacancy rates by the quintiles of the percentages of students of color but does not include entities from Philadelphia County in the analysis. As with the analysis presented in Figure 6, the entities in the Highest Quintile had substantially greater teacher vacancy rates in both 2023-24 and 2024-25 than all other quintiles. The first three quintiles had negligible teacher vacancy rates.

Note that the disparities between the first four quintiles and the Highest Quintile were greater for counties other than Philadelphia than Philadelphia County in 2023-24. However, the disparities were slightly lower for 2024-25.

Importantly, the removal of Philadelphia County from the analysis does not change the overall conclusions. With or without Philadelphia County included in the analysis, entities in the Highest Quintile of students of color had a significantly greater teacher vacancy rate. Moreover, entities in the lowest three quintiles had only marginal teacher vacancy rates.



Teacher Vacancy Rates by Subject Area and Student Characteristics

In this section, we examine the vacancy rates for 2023-24 by the percentages of students living in poverty and the percentages of students of color for selected subject areas. Because of limited space, we present the vacancy rates for the Lowest Quintile and the Highest Quintile.

As shown in Table 3, entities in the Highest Quintile (the greatest percentages of students living in poverty) had substantially greater vacancy rates than did entities in the lowest Quintile. In fact, the only subject with a vacancy rate of at least 1.0% for the Lowest Quintile entities was special education. But the vacancy rate was only 1.6%, which is lower

than the rate for every single subject area (including those not listed) for entities in the Highest Quintile.

For entities in the Highest Quintile, the vacancy rates ranged from 3.6% for math to 9.4% for Technology related classes.

Thus, students most in need of access to well-qualified teachers are substantially more likely to be in entities who have difficult filling all teaching positions, much less providing a well-qualified teacher in each subject area.

Table 3: Vacancy Rates by the Percentage of Students Living in Poverty for Selected Subject Areas (2023-24)

Subject Area	Lowest Quintile	Highest Quintile
Special Education	1.6	4.4
ELL	0.8	8.6
Technology	0.4	9.4
World Languages	0.1	7.0
Comp Science	0.7	5.3
Science	0.4	4.3
Math	0.0	3.6
Business	0.3	6.7

The teacher vacancy rates were substantially greater for entities in the Highest Quintile than entities in the Lowest Quintile for each of the eight selected subject area. The vacancy rates were greater than 1.0% for only two subject areas for entities in the Lowest Quintile—Technology and Foreign Language. In comparison, the vacancy rates were at least 2.3% for all eight of the subject areas for entities in the Highest Quintile. The disparity between quintiles for special education was stunning—the vacancy rate was 11.2% for entities in the Highest Quintile while the vacancy rate was only 0.5% for entities in the Lowest Quintile.

Table 4: Vacancy Rates by the Percentage of Students of Color for Selected Subject Areas (2023-24)

Subject Area	Lowest Quintile	Highest Quintile
Special Education	0.5	11.2
ELL	0.0	2.3
Technology	1.6	6.7
World Languages	2.5	5.7
Comp Science	0.0	3.8
Science	0.3	4.2
Math	0.4	4.3
Business	0.2	6.8

Conclusion

As shown above, teacher vacancies are a concern in certain subject areas and for certain types of districts.

Seven subject areas have greater vacancies than other subject areas. These include Special Education, ELL, Math, Science, Technology, Computer Science, and World Languages. The first two subject areas are critically important to providing an opportunity to learn for our most vulnerable students—those with disabilities and those with a primary language other than English.

The other five areas are critical to the economic vitality of the Commonwealth. Educated workers are necessary to attract new business to Pennsylvania. Businesses look for well-educated students, especially in the areas of math, science, and technology.

Policy Proposals

While policies have been proposed and some have been adopted, we lack a full understanding of the shortage of teachers in Pennsylvania, including the underlying factors that affect the shortage in the different contexts throughout the Commonwealth. We also do not appear to have a systemic evaluation plan that will inform policymakers about which policies work and which ones do not and the reasons why they work or do not work.

Policy #1: Invest in and Improve the Student Teacher Stipend Program

The Student Teacher Stipend effort holds great promise to increase the supply of teachers, reduce the attrition of beginning teachers, and keep a greater percentage of new teacher preparation program graduates in Pennsylvania.

One change would be to add a component that provided additional money to those choosing to teach in designated subject areas. These would include special education, ELL, Math, Science, and World Languages.

Policy #2: Initiate a Review of the System of Teacher Certification

Convene a working group of educators and researchers to review the current system of teacher certification. There are likely ways to streamline the process while not affecting the quality of teachers obtaining certification.

Policy #3: Support Grow Your Own Programs Focused on Shortage Areas

Grow Your Own programs can help increase the supply of teachers, something we desperately need in the Commonwealth. Support could be provided to programs that (a) are located in areas with a shortage of teachers, (b) focus on designated shortage areas (Special Education, ELL, Math,

Science, and World Languages), and/or (c) help diversify our teaching force.

Policy #4: Create and Support Retain Your Own Programs

In some areas of the Commonwealth and in some districts, teacher attrition is a major factor in a shortage of teachers. This program could offer an opportunity to districts or consortiums of districts to develop a research-based strategy to increase teacher retention, especially in hard-to-staff schools. Proposals that address those needs identified by data analyses and supported by research would be funded.

Policy #6: Reduce Tuition in Hard-to-Staff Areas

Some of the subject areas are persistently hard to staff. The numbers of graduates are insufficient for the number of positions needed, thus creating vacancies and employing teachers on an emergency permit. Thus, receiving reduced tuition would have to commit to teaching in a Pennsylvania public school for at least three years or be required to return some of the tuition money.

Obtaining a special education teaching certificate should be free. We have a massive shortage of special education teachers, and we have a moral and ethical duty to ensure every child with a disability has a properly prepared and well-qualified teacher.

Policy # 7: Fund Data Collection and Analysis

The first step is to invest in a robust system of data collection and analysis that helps policymakers fully understand the underlying issues, evaluate the efficacy of new strategies, and suggests where to invest resources wisely. While our legislature has mandated data collection and analysis efforts, the basic legislative requirements around data collection, analysis, and communication of results have not been met. The Commonwealth should explore various new strategies, including more robust funding of such efforts by the Pennsylvania Department of Education or invest in University-based efforts to meet the legislative mandates and assist the legislature with making the most effective and fiscally efficient choices possible.

Data and Methods

Data used in this study are from the Pennsylvania Department of Education (<https://www.pa.gov/agencies/education/data-and-reporting/school-staff/professional-and-support-personnel.html>) and <https://futurereadypa.org/>)

For the quintile analysis, we placed entities in one of five quintiles based on either their percentage of students living in poverty or the percentage of students of color. We ranked all districts in ascending order based on the percentage of students living in poverty or students of color. We then divided all districts into five equal groups. Thus, each quintile has approximately the same number of entities.

We aggregated the number of teachers and number of vacant positions across all entities within each quintile. The vacancy rate was calculated as $100 * (\text{number of vacant positions in the quintile} / \text{number of teachers in the quintile})$. This method means that large districts have a greater influence on the calculation than small districts. The alternative method would be to average the vacancy rates for each entity within each quintile. The issue with this alternate methodology is that there are many small rural districts with no vacant positions and

there are many charter schools with very high numbers of vacancies. Moreover, most charter schools are in the Highest Quintile of students of color and in the highest two quintiles for the percentage of students living in poverty.

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. The Executive Director is Dr. Ed Fuller. His email address is ejf20@psu.edu. He is a Professor in the Education Policy Studies Department at Penn State University. The Center is supported by Dr. Kim Lawless, the Dean of Penn State's College of Education.

<https://ceepablog.wordpress.com/>

ⁱ Philadelphia SD reported 357 vacant teaching positions in 2023-24 but reported 897 vacant positions in 2024-25. Of these 897 vacancies, 690 were for "Special Ed, Life Skills, Autistic and Multiple-Disability Support." This was substantially greater than the prior year. If this number is accurate, then the number of vacant teacher positions increased from 2023-24 to 2024-25 for the Commonwealth. However, the reported number of vacancies does not seem plausible. The increase from one year to the next is incredibly large. Moreover, the number of reported special education vacancies would translate into about 50% of all Philadelphia SD special education teaching position being vacant. Because the number does not seem plausible, I reduced the number of special education vacancies in Philadelphia SD by 500. This brings their total for 2024-25 in alignment with their 2023-24 total. Numerous people reached out to Philadelphia SD, but the district did not reply with an answer about the accuracy of the data.

ⁱⁱ "Students living in poverty" is defined as the percentage of students participating in the federal free-reduced price- meals program.

ⁱⁱⁱ Students of color is defined as the percentage of American Indian/Alaskan Native, Asian, Pacific Islander, Black, Hispanic, and Multi-Race students.