

Pennsylvania School Funding and School Staffing Disparities

May 2023

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Introduction

Pennsylvania operates one of the most inequitable public school systems in the nation. Research has found that the state has among the nation's largest disparities in school funding,¹ among the largest gaps in access to educational opportunities by student race and family income,² and subsequently among the largest student achievement gaps.³ Here we examine the relationship between school funding in Pennsylvania and one of the most critical indicators of educational opportunity—**student access to teachers, administrators, and professional support staff**.

We find that, despite serving more students with high-cost needs, Pennsylvania's inadequately funded school districts have fewer staff per student and pay them lower salaries than adequately funded districts. Inadequately funded districts would need to hire more than 11,000 additional teachers, 1,000 administrators, and 1,600 professional support staff and to spend an additional \$2.6 billion in salaries alone just to provide what students receive in Pennsylvania's adequately funded districts. We conclude that without reversing these staffing disparities, which are rooted in funding disparities, Pennsylvania policymakers are unlikely to reverse disparities in student achievement.

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School Funding Adequacy Shortfalls

In his expert witness report for the PA school funding lawsuit, Pennsylvania State University professor, Dr. Matthew Kelly, replicated the method outlined in the PA School Code to calculate school funding “adequacy targets” and “adequacy shortfalls” for the 2019-20 school year for each of PA's nearly 500 school districts.⁴

¹ Baker, B. (2022). The adequacy and fairness of state school finance systems. <https://www.schoolfinancedata.org/the-adequacy-and-fairness-of-state-school-finance-systems-2022/>; Farrie, D., & Sciarra, D. G. (2022). Making the Grade 2022. <https://edlawcenter.org/assets/files/pdfs/publications/Making-the-Grade-2022-Report.pdf>.

² Freeman, J., & Bamat, D. (2022). Persistent Unequal Access to Educational Opportunity in Pennsylvania for K-12 Students. Research for Action. Retrieved from <https://www.researchforaction.org/research-resources/persistent-unequal-access-to-educational-opportunity-in-pennsylvania-for-k-12-students/>.

³ See Stanford Center for Education Policy Analysis. “The Educational Opportunity Monitoring Project.” February 2015. <https://cepa.stanford.edu/educational-opportunity-monitoring-project/achievement-gaps/race/>; Nation's Report Card, available at <https://www.nationsreportcard.gov/>.

⁴ In 2008 Pennsylvania enacted in State law a methodology for the Pennsylvania Department of Education (PDE) to calculate school funding adequacy targets and adequacy shortfalls for each school district. The adequacy calculation method is largely

To accurately compare shortfalls between districts of different sizes, Kelly divided each district's adequacy shortfall by its number of students to calculate a **per pupil adequacy shortfall**.

Statewide, Kelly found a school funding adequacy shortfall of over \$4.6 billion and that 86% of PA students attend inadequately funded school districts. He found that districts with adequate (or more than adequate) school funding had significantly better student outcomes, particularly for students in poverty, compared to similar students in the most inadequately funded (largest shortfalls) districts. He also found that students in poverty, as well as Black and Latinx students, are concentrated in the most inadequately funded districts.⁵

Adequacy targets are based on a study to identify the funding that would allow each district to help students meet State standards.

Adequacy shortfall refers to the difference between a district's existing funding and its adequacy target.

Adequacy Shortfalls vs. Staffing Shortfalls

The largest portion of a school's budget is dedicated to personnel expenditures, including salaries and benefits for teachers and other staff. Researchers generally agree that providing access to quality staff, particularly teachers, is one of the most important school-based factors for student academic success and lifetime outcomes.⁶ Fuller has further found that rising teacher attrition is exacerbating teacher staffing shortages and that staffing is growing more challenging in Pennsylvania.⁷ RFA has reported Pennsylvania's acute lack of teacher diversity.⁸

In this report we expand on Kelly's analysis to examine the **relationship between disparities in school funding adequacy and disparities in the average number of staff (teachers, administrators, and support staff) per students employed by PA school districts**. Specifically, we group school districts by five levels of funding adequacy or shortfall (adequate, low shortfall, medium shortfall, high shortfall, and very high shortfall) and compare the average number of staff per 1,000 students in each group. The final section of the report details additional relationships between district funding adequacy and (1) salaries of teachers and other staff, (2) rates of students from low-income families, English learning students, and students with disabilities, and (3) shares of staff of color.

modeled on a [Costing Out Study](#) commissioned by the General Assembly two years prior to identify the budget allocation that would allow districts to help students meet State standards. Adequacy shortfall refers to the difference between a district's existing funding and its adequacy target. The law also created a funding formula that used adequacy targets and shortfalls to distribute part of the state's basic education fund (BEF) from 2008-2010. Following the Great Recession, state lawmakers [cut funding by nearly \\$1 billion dollars](#) and amended the School Code to abolish the formula that used adequacy targets and shortfalls. The 2010-11 school year was the last time PDE calculated adequacy. However, the method for calculating adequacy targets and shortfalls was not abolished and remains in the School Code in 24 P.S. § 25-2502.48.

⁵ Commonwealth Court President Judge Renée Cohn Jubelirer discussed Kelly's analysis in ruling that public education funding violates the Pennsylvania Constitution in [William Penn SD et al. v. Pa. Dept. of Education et al.](#).

⁶ Burroughs, N. et al. (2019). A Review of the Literature on Teacher Effectiveness and Student Outcomes. In: Teaching for Excellence and Equity. IEA Research for Education, vol 6. Springer, Cham. https://doi.org/10.1007/978-3-030-16151-4_2.

⁷ Fuller, E.J. (2023, May). Exacerbating the Shortage of Teachers: Rising Teacher Attrition in Pennsylvania from 2014 to 2023. University Park, PA. Center for Education Evaluation and Policy Analysis. <file:///C:/Users/dlapp/Downloads/ceepa-research-brief-2023-6--exacerbating-the-shortage-of-teachers-ed-fuller-1.pdf>; Fuller, E. (2022). Teacher Supply and Demand in Pennsylvania: Center for Evaluation and Education Policy Analysis. Pennsylvania State University. https://ed.psu.edu/sites/default/files/inline-files/CEEPA_report_V2.pdf.

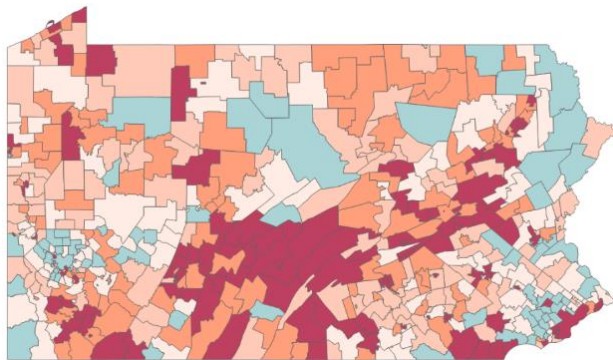
⁸ Cabral, L., Eddins, M., Lapp, D., & Nelson, S. (2022). The Need for More Teachers of Color. Research for Action. <https://www.researchforaction.org/research-resources/k-12/the-need-for-more-teachers-of-color/>.

Grouping School Districts by Per Pupil Funding Adequacy Shortfalls

For this analysis, school districts are grouped based on size of per pupil funding adequacy shortfall.⁹ As shown in Figure 1 the 73 school districts with a zero or less adequacy shortfall (meaning adequate or better than adequate funding) are grouped together in the *Adequate Funding* category. The remaining 426 districts were divided into quartiles based on the range of their per pupil adequacy shortfall. Figure 1 further maps each district by its per pupil funding adequacy shortfall category.

Figure 1: PA Districts by Per Pupil Funding Adequacy Shortfall Range, 2019-20

School District Category	Per Pupil Adequacy Shortfall Range	Number of Districts
Adequate Funding	\$0 or less	73
Low Shortfall	\$1 to \$1,527	107
Moderate Shortfall	\$1,528 to \$2,546	106
High Shortfall	\$2,547 to \$3,466	107
Very High Shortfall	\$3,467 to \$9,720	106



Professional Staff Per 1,000 Students: Teachers, Administrators, and Professional Support Staff

The Pennsylvania Department of Education (PDE) publishes detailed data on the individual professional staff employed by each public school in Pennsylvania.¹⁰ These data include each staff person’s salary, educational degree, years of experience, and assignment category and description. There are approximately 108,000 teachers, 7,000 administrators, and 14,000 other professional support staff in Pennsylvania’s school districts.¹¹ Below we analyze in turn the relationships between school districts’ funding adequacy and the number of teachers, administrators, and professional support staff per 1,000 students.¹²

⁹ Student counts for the per pupil adequacy shortfalls are based on each district’s [Average Daily Membership \(ADM\)](#) which is inclusive of all students for which a school district is financially responsible. For example, ADM includes districts and also charter school students of residence, because district revenues on which adequacy shortfalls are based include funding that passes through to the charter schools where those students are enrolled.

¹⁰ Available at <https://www.education.pa.gov/DataAndReporting/ProfSupPers/Pages/default.aspx>. According to staff at PDE’s Office of Data Quality, Professional Support Staff include those holding assignments listed in the [PIMS Manual, Appendix B](#) and most “professional” staff hold state certification. Meanwhile, districts also employ many *other* support staff who are not categorized as “professional” by PDE. The focus of this brief is on professional staff; however, we include additional discussion of these other support staff in a call-out on page 7.

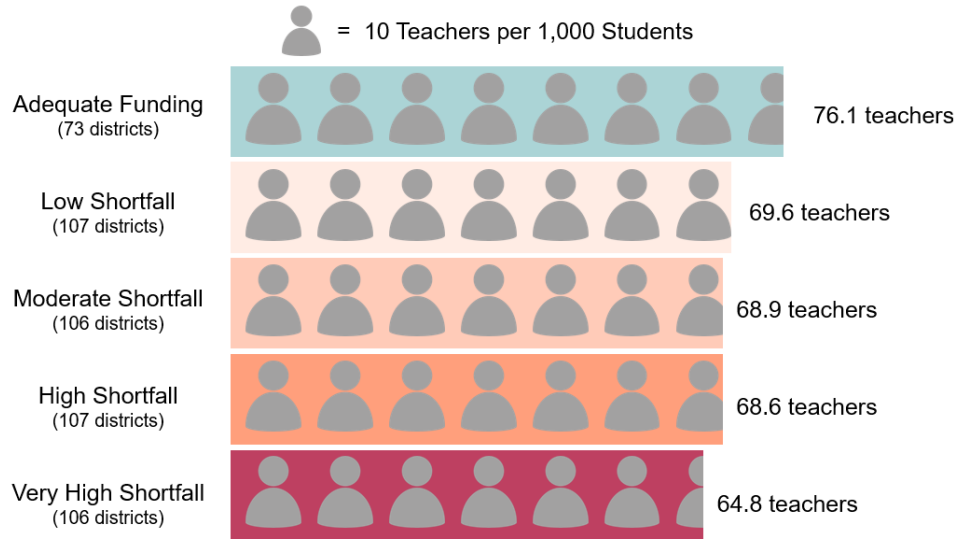
¹¹ Note, because the State’s school funding adequacy targets are only calculated for school districts, this analysis is limited to staff employed by school districts and excludes staff employed by charter schools, intermediate units, career and technical education centers, or juvenile justice facilities.

¹² Staffing rates were calculated by totaling the number of full-time-equivalent (FTE) staff in each district from the individual staffing files from PDE’s [Professional and Support Personnel](#) data. These totals were divided by the number of students enrolled in each district from PDE’s [Future Ready PA](#), and multiplied by 1,000. A full spreadsheet with each district’s adequacy shortfall and staffing ratios is available for download at <https://www.researchforaction.org/research-resources/k-12/pennsylvania-school-funding-and-school-staffing-disparities/>.

Classroom Teachers

As shown in Figure 2, we find that, on average, the larger a district's adequacy shortfall, the fewer teachers it provides to students. School districts with the highest funding shortfalls had on average over 11 fewer teachers per 1,000 students as compared to districts with adequate funding.

Figure 2. Teachers per 1,000 Students in Districts by Funding Adequacy Category, 2019-20



Of course, classroom teachers teach many different subjects. In Table 1, we display rates of teacher staffing per 1,000 students by type of teacher and the percentage difference in the rates for shortfall districts compared to adequately funded districts.

Table 1. Teachers by Type Per 1,000 Students in Districts by Funding Adequacy Category, 2019-20

Type of Teacher	Number of Teachers per 1,000 Students With Percent Difference from Level in Adequate Funding Districts				
	Adequate Funding (73 districts)	Low Shortfall (107 districts)	Moderate Shortfall (106 districts)	High Shortfall (107 districts)	Very High Shortfall (106 districts)
All Teachers	76.1	69.6 -9%	68.9 -9%	68.6 -10%	64.8 -15%
General Ed	39.9	37.2 -7%	37.8 -5%	37.6 -6%	37.3 -7%
STEM	11.8	11.2 -5%	11.0 -7%	10.9 -8%	9.3 -21%
Special Ed	10.7	9.6 -10%	9.4 -12%	9.5 -11%	8.8 -18%
Arts	5.1	4.4 -14%	4.4 -14%	4.2 -18%	3.4 -33%
Health, Phys Ed	3.7	3.2 -14%	3.2 -14%	3.2 -14%	3.5 -5%
Foreign Language	2.9	2.2 -24%	1.7 -41%	1.5 -48%	1.1 -62%
Specialist	1.8	1.7 -6%	1.3 -28%	1.7 -6%	1.4 -22%

Note: Numbers may not sum to totals due to rounding.

We find that school districts with adequate funding had the most teachers in each category of teachers, while districts with very high shortfalls had the least teachers in most categories. Compared to districts with adequate funding, districts with very high shortfalls in funding provide, per 1,000 students: 21% fewer STEM teachers, 18% fewer Special Education teachers, 33% fewer Art teachers, 62% fewer Foreign Language teachers, and 22% fewer Specialist teachers. Pennsylvania’s shortfall districts would collectively need to hire more than 11,000 additional teachers to provide equivalent rates of teachers as provided in adequately funded districts.

Administrators

In PDE’s professional staffing files, Administrators include superintendents and assistant superintendents, principals, vice-principals, and other supervisory personnel. While administrators comprise a smaller share of the overall staff, research has found that quality administrative leadership, particularly for principals, is critical to high functioning schools.¹³ Data in Table 2 demonstrate that administrators are also employed at higher rates in Pennsylvania’s adequately funded school districts. The gap in administrators between adequately funded districts and very high shortfall districts is even greater proportionately than for teachers. Very high shortfall districts provide 23% fewer administrators compared to adequately funded districts.

Table 2. Administrators per 1,000 Students in Districts by Funding Adequacy Category, 2019-20

	Number of Administrators per 1,000 Students With Percent Difference from Level in Adequate Funding Districts				
	Adequate Funding (73 districts)	Low Shortfall (107 districts)	Moderate Shortfall (106 districts)	High Shortfall (107 districts)	Very High Shortfall (106 districts)
All Administrators	5.2	4.4 -15%	4.8 -8%	4.7 -10%	4.0 -23%

We calculate that Pennsylvania’s shortfall districts would collectively need to hire more than 1,000 additional administrators to provide equivalent rates of administrators as provided in adequately funded districts.

¹³ Grissom, Jason A., Anna J. Egalite, and Constance A. Lindsay. 2021. “How Principals Affect Students and Schools: A Systematic Synthesis of Two Decades of Research.” New York: The Wallace Foundation. Available at <http://www.wallacefoundation.org/principalsynthesis>.

Professional Support Staff

Along with teachers and administrators, schools are staffed by additional professional staff who provide critical services to students. The data in Table 3 below show that adequately funded districts had the most professional support staff per 1,000 students while districts with low, moderate, or high shortfalls had the fewest. The very high shortfall districts had the second highest rate of professional staff.¹⁴

Table 3. Professional Support Staff per 1,000 Students in Districts by Funding Adequacy Category, 2019-20

Type of Professional Support Staff	Number of Professional Support Staff per 1,000 Students With Percent Difference from Level in Adequate Funding Districts				
	Adequate Funding (73 districts)	Low Shortfall (107 districts)	Moderate Shortfall (106 districts)	High Shortfall (107 districts)	Very High Shortfall (106 districts)
All Professional Support Staff	9.9	8.6 -13%	8.1 -18%	7.5 -24%	9.7 -2%
Guidance Counselors	3.1	2.8 -10%	2.7 -13%	2.6 -16%	2.4 -23%
Library Sciences	1.4	1.1 -21%	1.1 -21%	1.0 -29%	0.6 -57%
School Nurses	1.4	1.1 -21%	1.2 -14%	1.1 -21%	1.4 0%
Psychologists, Social Workers, Home/ School Visitors	1.2	1.1 -8%	1.0 -17%	0.9 -25%	1.1 -8%
Support Supervisors, Coordinators, Specialists	0.9	0.8 -11%	0.7 -22%	0.7 -22%	0.4 -56%
Physical/Occupational Therapists, Dental Hygienists	0.1	0.1 0%	0.1 0%	0.1 0%	0.1 0%
Unspecified Professional Student Support Staff	1.8	1.6 -11%	1.4 -22%	1.1 -39%	3.7 +106%

Note: Numbers may not sum to totals due to rounding.

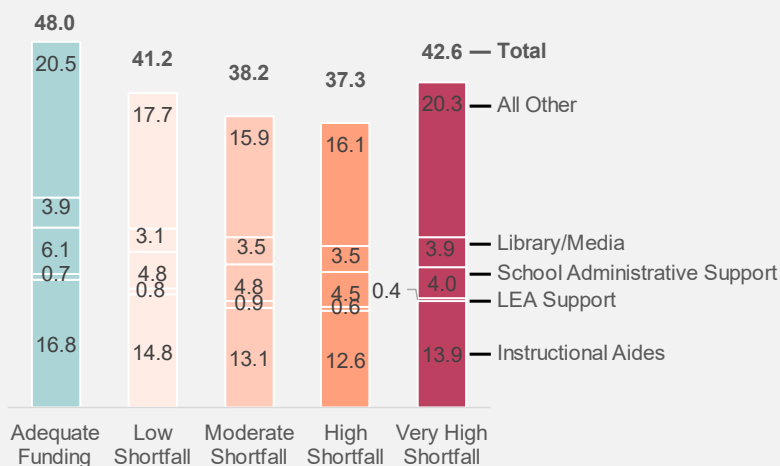
Pennsylvania's shortfall districts would collectively need to hire more than 1,600 additional professional support staff to provide equivalent rates of administrators as provided in adequately funded districts.

¹⁴ Among Professional Support Staff, districts with very high shortfalls had the highest rate of *unspecified professional student support staff*, a category that is used when a staff person's assignment does not fall into any of the codes designated in the PIMS Manual, Appendix B, according to staff at the PDE Office of Data Quality.

Other Support Staff

In addition to the *Professional Support Staff* discussed in this brief, school districts rely on many additional support staff to serve students and keep school buildings operational, including teacher aids, maintenance staff, and administrative assistants.* These staff play critical roles to support both students and professional staff, though many do not hold certification and are paid much less. In Figure 3 we compare rates of these support staff whom PDE does not classify as professional by district funding adequacy shortfall categories.

Figure 3. Other Support Staff per 1,000 Students in Districts by Funding Adequacy Category



Consistent with teachers, administrators, and professional support staff, we find that adequately funded districts employ nonprofessional support staff at the highest rates. However, just as with *professional* support staff, the highest shortfall districts have more other support staff than the low, moderate, or high shortfall districts. This suggests that the highest shortfall districts

may rely heavily on support staff (professional and other) to provide services to students that are typically provided by credentialed teachers or administrators in adequately funded districts.

* These other support staff are reported by PDE in [different datasets](#) and only reported by full-time and part-time status in the aggregate. PDE does not report salary, degree, or years of experience for nonprofessional support staff. Some school districts contract out additional staffing roles, such as bus drivers or other contractors, and these individuals are not captured in the staffing reports from PDE.

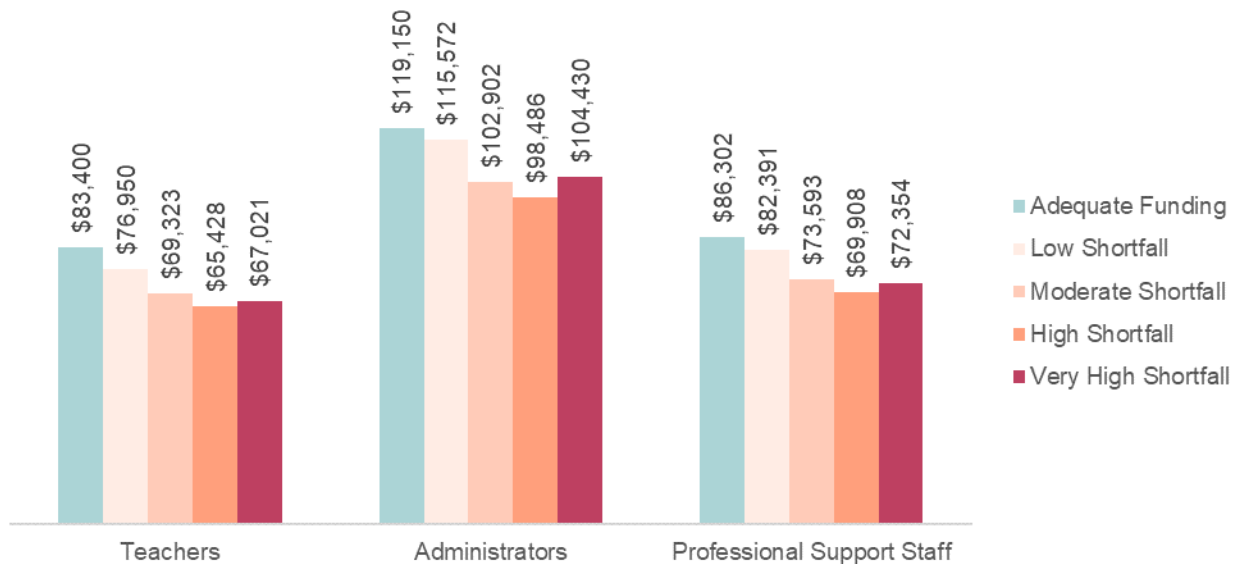
District Characteristics by Funding Adequacy Shortfall Category

In this section we further examine disparities in (1) average salaries for full-time teachers and professional staff, (2) the share of students with additional needs, and (3) the share of staff of color across districts grouped by the level of funding adequacy.

Average Salaries for Full-Time Teachers, Administrators, and Professional Support Staff

Figure 4 shows that, on average, districts with adequate funding paid higher salaries to their teachers, administrators, and other professional staff, compared to districts with funding adequacy shortfalls. The very high shortfall districts have slightly higher average salaries than the high shortfall districts.

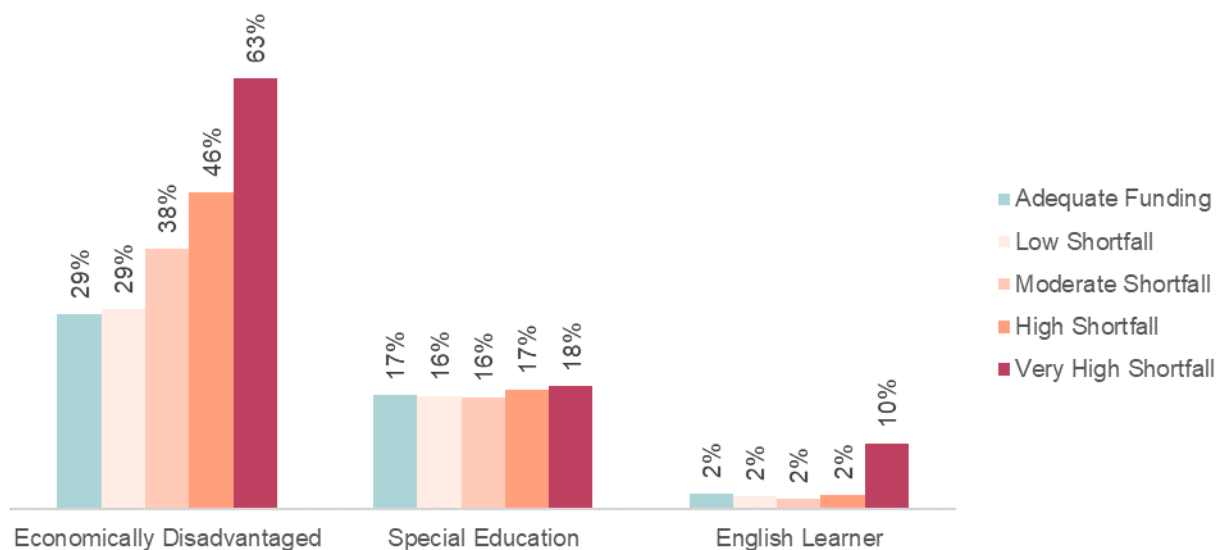
Figure 4. Average Professional Staff Salaries by District Funding Adequacy per Pupil, 2019-20



Share of Students with Additional Educational Needs

Figure 5 shows that school districts with very high funding adequacy shortfalls also have the highest shares of students from economically disadvantaged families and English learner students—over twice the rate as in districts with low shortfalls or adequate funding. Very high shortfall districts also serve slightly higher rates of students receiving special education.

Figure 5. Students Characteristics by District Funding Adequacy per Pupil, 2019-20

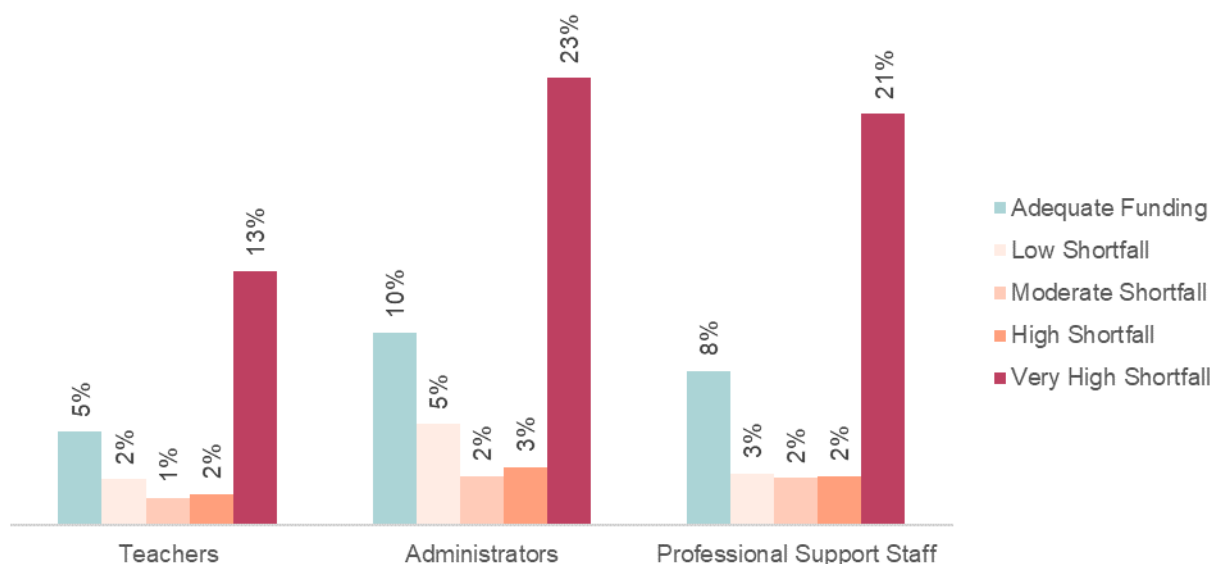


Both research and Pennsylvania’s funding formulas recognize that students from low-income families, students with disabilities, and students learning English often have educational needs that require additional resources to serve effectively.¹⁵

Educator Diversity

RFA’s prior research has found that, relative to student race and ethnicity demographics, Pennsylvania has among the least diverse educator workforces in the nation.¹⁶ Figure 6 shows that districts with very high funding adequacy shortfalls employ higher shares of teachers, administrators, and other professional staff of color compared to districts with lower or no funding adequacy shortfalls.

Figure 6. Percent Teachers and Staff of Color by District’s Funding Adequacy per ADM, 2019-20



This finding, that teachers, administrators, and other professional staff of color are concentrated in the most inadequately funded and understaffed Pennsylvania school districts that pay less and have greater student needs, aligns with research findings that teachers of color are often assigned to the most challenging working conditions.¹⁷

¹⁵ Ferdig, Richard E., and Yijing Zhang. "The Challenge of Meeting the Needs of English Language Learners in the US." *Journal of Technology and Teacher Education*, vol. 16, no. 1, 2008, pp. 75-100; Pennsylvania House of Representatives, Appropriations Committee. BEF Primer. Pennsylvania House of Representatives, Appropriations Committee, 28 October 2020, https://www.houseappropriations.com/files/Documents/BEF_Primer_102820.pdf; Southern Education Foundation. *A New Majority: Low Income Students in the South and Nation*. Southern Education Foundation, 2015.

¹⁶ Cabral, L., Eddins, M., Lapp, D., & Nelson, S. (2022). *The Need for More Teachers of Color*. Research for Action. <https://www.researchforaction.org/research-resources/k-12/the-need-for-more-teachers-of-color/>

¹⁷ Cabral, L., Wawhinney, L., Pierce, J., & Hachenberg, C. (2022). *Worn & Weary: Black Teachers’ Storied Experiences and Recommendations around their Attrition and Retention in Philadelphia Schools*. Research for Action. https://www.researchforaction.org/wp-content/uploads/2022/12/RFA_Black_Teachers_Storied_Experiences_1122.pdf.

Conclusion

Pennsylvania's school children do not receive equitable or even equal access to teachers or other professional staff. This analysis shows a clear relationship between disparities in school funding adequacy and disparities in the number of teachers and other staff that school districts provide their students. Districts with adequate funding provide the most teachers and staff per 1,000 students and pay them higher salaries, even as they serve fewer students in poverty, English learning students, and students with disabilities. In contrast, despite greater need, the most inadequately funded districts provide the fewest teachers, administrators, and support staff per 1,000 students and pay them lower average salaries.

In sum, we calculate that **Pennsylvania's 426 inadequately funded districts would collectively need to hire more than 11,000 additional teachers, 1,000 additional administrators, and 1,600 additional professional support staff** just to provide their students the same share that students receive in Pennsylvania's adequately funded districts. Further, if these districts were to pay these staff, both current and additional staff, on par with the adequately funded districts, we estimate **it would cost more than \$2.6 billion additional dollars just to cover the difference in salaries.**¹⁸ Yet due to the higher level of student need, particularly for the most inadequately funded (very high shortfall) school districts, it is likely that these districts would actually require staffing at even greater levels than what is provided in the currently adequately funded districts.

All these findings—that adequately funded districts have more staff and pay them more, even while serving fewer students with the greatest needs—are consistent with Kelly's findings that Pennsylvania's adequately funded school districts produce significantly better educational outcomes, particularly for vulnerable student groups, in comparison to Pennsylvania's most inadequately funded districts. Without reversing these trends in staffing disparities, which are rooted in trends in funding disparities, Pennsylvania policymakers are unlikely to reverse the trends in student achievement disparities.

Pennsylvania's inadequately funded districts would collectively need to hire more than **11,000 additional teachers, 1,000 administrators, and 1,600 professional support staff** and spend an additional **\$2.6 billion** in salaries alone just to provide what students receive in Pennsylvania's adequately funded districts.

¹⁸ Estimate is based on difference between (1) current spending on salaries of teachers, administrators, and professional support staff in shortfall districts and (2) spending if both salaries and staffing rates in shortfall districts matched those in the adequately funded districts. Of course, to match total spending in the adequately funded districts, the shortfall districts would have additional costs, including costs of pensions and other benefits for professional staff, higher salaries and benefits for other nonprofessional support staff, and costs for differences in facilities or other expenditures. This increased spending would also result in significantly higher tuition payments for students outside the district, including students in charter schools, for which districts would continue to be responsible.

About Research for Action

Research for Action (RFA) is a Philadelphia-based nonprofit education research organization. We seek to use research to improve equity, opportunity, and outcomes for students and families. Our work is designed to strengthen early education, public schools, and postsecondary institutions; provide research-based recommendations to policymakers, practitioners, and the public; and enrich civic and community dialogue. This brief is a project of RFA's Pennsylvania Clearinghouse for Education Research (PACER) project, which seeks to inform state education policy discussions through rigorous objective research. For more information, please visit our website at www.researchforaction.org.

Acknowledgements

This PACER report was funded with generous support from the **William Penn Foundation** and **The Heinz Endowments**. The opinions expressed in this report are those of the authors and do not necessarily reflect the views of the funders. Thank you to additional members of the RFA team who contributed to this report, including Dae Kim and Kate Callahan.
