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The Cost of Improvement

How Districts Spend on Teacher Professional Learning

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Executive Summary

Effective teacher professional learning (PL) is one of the most promising levers we have for supporting student learning and addressing persistent problems of unequal access to educational opportunity.

Using data from the National Center for Education Statistics F-33 district survey, we explore national trends in PL spending from 2001 to 2022 and compare these trends to estimated PL costs. We highlight the following key findings::

1. **On average, changes in PL spending have largely kept pace with other expenditures, increasing by $2,000 per teacher while remaining at around 3.5% of total expenditures between 2001–2022.**
2. **There is substantial variation across regions, states, and districts in spending patterns and in the allocation of spending between personnel and non-personnel costs.**
3. **Larger districts and districts in cities tend to spend more on PL in both relative and absolute terms.**
4. **On average, PL spending is highest in high-poverty districts serving mostly students of color and lowest in high-poverty districts serving mostly white students.**
5. **Cost estimates suggest that providing sustained access to high-quality instructional coaching for all teachers would cost far more than what most districts currently spend.**

National spending patterns suggest that the broad landscape of PL has stayed relatively stable over the last 25 years. While there has been increased attention on PL as a critical lever to support instructional improvement, districts are not investing more than they were 25 years ago. Despite the growing role that external organizations have played in the broader PL landscape and the growing evidence about the value of personnel-intensive models like instructional coaching and teacher collaboration, the allocation of PL expenditures between internal personnel and non-personnel costs has hardly changed.

Underneath these national trends, we see substantial variation across the country. Districts are making very different choices about the amount they spend on PL. States also appear to play an important role in shaping PL expenditures. However, even with this variation and the increases to spending over time, few districts spend enough to enable universal access to the kinds of PL structures for which there is the strongest evidence of impact. Ultimately, realizing the promise of PL at scale may require substantially greater investment.

Using scarce PL dollars effectively is likely to become even more important in the post-ESSER era when district budgets are increasingly constrained. The current data infrastructure and evidence base is largely insufficient to guide these choices. This brief and our accompanying interactive maps take a first step toward addressing this gap, providing policymakers with a comprehensive look at PL spending trends nationally, alongside the opportunity to zoom into specific states and districts, make comparisons, and estimate costs.

Introduction

Effective teacher professional learning (PL) is one of the most promising levers we have for supporting student learning and addressing persistent problems of unequal access to educational opportunity. However, the PL models with the strongest evidence-base also tend to be the most resource intensive, requiring a cadre of experienced educators who can dedicate sufficient time to facilitate intensive and ongoing work with teachers through 1-1 coaching and small-group collaborative learning opportunities. In the current climate of fiscal uncertainty, policymakers need a better understanding of current PL spending patterns and costs in order to shape effective PL and fiscal policy.

A growing body of robust evidence shows that PL can lead to large shifts in instructional quality and improvements to student learning as a result (Hill & Papay, 2022; Hill et al., 2022; Kraft et al., 2018). However, not all PL is equally effective (Arens et al., 2012; Garet et al., 2011; Hill et al., 2013). More traditional and less expensive one-shot workshops, where teachers are passive recipients of information, rarely lead to sustained improvements in instruction (Darling-Hammond et al., 2009; Desimone et al., 2002; Garet et al., 2001; Hill, 2015; Harris & Sass, 2011; Jacob & McGovern, 2015; Knight & Skrtic, 2021). Even using more resource-intensive structures like coaching and facilitated group learning does not guarantee impact. Program effects tend to be smaller at scale and vary based on the details of the coaching model, who coaches are, and other aspects of implementation (Blazar & Kraft, 2015; Blazar et al., 2024; Kraft et al., 2018). Nonetheless, when it is effective, PL remains one of the primary strategies districts have for influencing the teaching and learning that happens in their classrooms.

Despite its importance, PL is on the chopping block in many districts. Many districts used ESSER dollars—which have now ended—to fund PL (Benitez et al., 2023; Schwartz et al., 2023; U.S. Department of Education, 2023). High inflation, local policy changes, delayed federal payments, and federal funding uncertainty have all contributed to tight district budgets. These potential federal cuts include Title II-A, which provides targeted funding for PL (Jang & Bailes, 2025). Unlike teacher salaries, spending on PL is not a direct instructional cost and is not embedded in multi-year contracts. Unlike transportation, cutting PL spending will not have an obvious and immediate impact on students' day-to-day experience. As a result, PL may be a particularly vulnerable line item when budgets tighten.

To effectively navigate the current fiscal climate, policymakers need a strong understanding of PL costs and historical spending patterns. **Yet, our current knowledge of trends in PL costs and spending is quite limited.** Existing research has focused almost exclusively on individual districts in a single school year, providing little information about national trends and no sense of how PL spending patterns have changed over time (Miles et al., 2017; Jacob & McGovern, 2015). Different choices about what counts as a PL cost means that we cannot make apples-to-apples comparisons across studies and districts (Alexander & Tang, 2019; Killion & Hirsh, 2012).

In this brief, we take on this challenge. **Using data from the National Center for Education Statistics F-33 district survey, we explore national trends in PL spending from 2001 to 2022**. We show that while per-teacher PL spending has increased substantially over time, it has remained fairly constant as a share of district budgets. We also highlight substantial variation across the country, with clear differences between states and districts, including by district size, urbanicity, and student population. We conclude by comparing national spending trends to specific PL costs based on the Edunomics Lab's recently published PL calculator.

What counts when it comes to PL spending?

Prior work has attempted to calculate PL spending and costs in a variety of different ways, and there is still no consensus on what should count as PL spending. For example, including the cost of the time teachers spend in PL is important for understanding what teachers must give up in order to participate in PL programming, but isn't useful when considering budgetary allocations. Teacher salary lanes and evaluation structures are clearly conceptually linked to PL, but they are not core PL programming costs.

Different studies have counted different elements as PL, making direct comparisons difficult. In Table 1, we compare 3 studies—TNTP's *The Mirage*, a 2017 study by Miles and colleagues, and our analysis. For example, we do not include teacher evaluation costs as PL, while both other studies do.

Our study uses data from a national panel called the F33, which offers the only nationally available data using a consistent definition of PL spending to allow comparison across districts and states. Data are also available over time, allowing us to explore change over more than 20 years.

The data are not perfect, though. Alongside PL costs, they include additional spending categories such as library and media services. However, our main findings are unlikely to be sensitive to the specific definitional quirks of the F33. We validate our findings using detailed financial data from both Texas and Rhode Island. In these states, we can separate out more clearly defined PL spending from additional categories like library spending.

We find that:

- State PL spending estimates are highly correlated with F33 estimates (r=0.70-0.98) and that library and media spending explains much of this difference.
- Library and media spending has also decreased somewhat over time, meaning that the increases we see in the F33 per-teacher estimate over time are likely to be driven by true increases in PL spending rather than the inclusion of library and media services.
- As a result, while F33 may not provide a pure estimate of PL spending in total, we are much more confident about trends over time and differences across districts. Indeed, when we replicate our analyses using the sample of districts where both F33 and state PL estimates are available, we see similar trends over time and across districts across both estimates.

Different studies include different spending categories when they calculate the costs of PL

	Study			
Cost Category	This Brief (F33)	TNTP Mirage	Miles et al., 2017	Ideal*
Direct costs of formal PL activities (e.g. workshops, PL days, coaching, PLCs)				
External services (e.g. consultant and vendor fees) fees and tuition for external workshops, courses, and conferences	●	●	●	●
Salaries and stipends for PL leaders	●	●	●	●
Training and support for PL leaders	●	●	●	●
Stipends paid to teachers for attending PL	●	●	●	●
Substitute coverage while teacher is attending PL	●	●	●	●
Materials and facilities	●	●	●	●
Other, indirect costs				
Opportunity cost of formal PL activities incluing administrator time and teacher costs	●	●	●	○
Curriculum development and planning	●		●	●
District-wide student assessment	●		●	
Library and media services and non-classroom technology	●			
Teacher salary lanes		●	●	○
Teacher evaluation		●	●	○

*This would be the ideal definition based on synthesis of prior literature

● yes ○ unclear from available documentation

Table 1. Comparison of costs included in prior calculations of PL spending.

Finding 1: On average, changes in PL spending have largely kept pace with other expenditures, increasing by $2,000 per teacher while remaining at around 3.5% of total expenditures between 2001–2022.

Several trends in education policy over the last 25 years might lead us to expect to see increases in PL spending. Research has increasingly emphasized the value of resource-intensive PL structures, such as ongoing 1-1 coaching and professional learning communities (Knight, 2012; Kraft & Blazar, 2018). Using PL to improve teaching effectiveness was also a key focus of federal policy initiatives throughout this period, with NCLB, RTT, ESSA, and ESSER funding all including funding and provisions to support PL (Benitez et al., 2023; Chambers et al., 2009; Davis, 2016; Massachusetts Department of Elementary and Secondary Education, 2014; Rhode Island Department of Education, 2013; Riley, 2010; Schwartz et al., 2023; U.S. Department of Education, 2013; U.S. Department of Education, 2023). States have also pushed new initiatives, including legislation requiring high-quality instructional materials and the science of reading, which have required additional investments in PL.

Between 2001 and 2022, we do see an increase in per-teacher PL spending. However, PL spending increased only at the rate of overall educational expenditures, staying constant as a share of total district budgets.

Figure 1 shows how per-teacher PL spending changed over this period for the average district. **Over the past two decades, the average district's PL spending increased by 33% (or $2,100), from $6,200 per teacher in 2001 to $8,300 in 2022.** PL spending has also remained relatively stable during economic downturns. Even during the 2008 Great Recession, we see only very modest declines in PL spending. However, the end of pandemic recovery dollars, which many districts used for PL, may have larger negative impacts on spending (Santelli et al., 2025).

Per-teacher spending has increased by about $2,000 from 2001-2022.

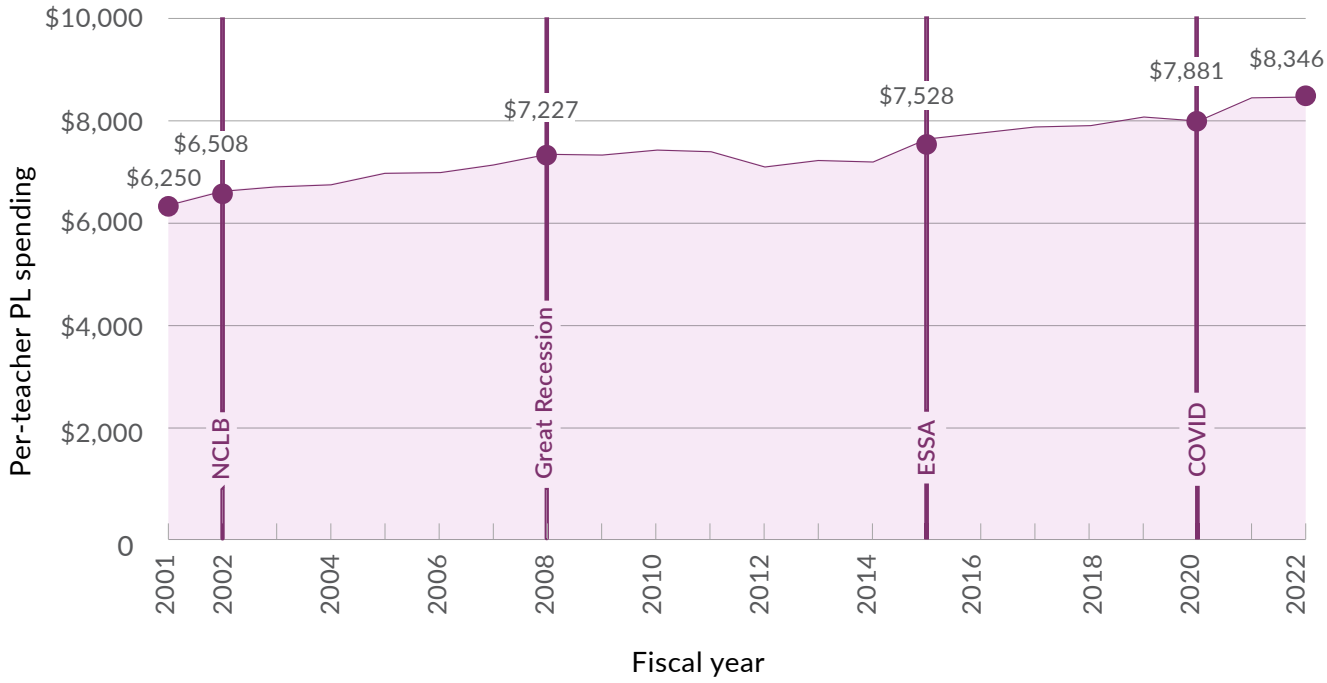


Figure 1. Change in per-teacher spending from 2001-2022.

In Figure 2, we show the average change over time in PL spending as a percentage of a district's total expenditures (bottom), expenditures on salaries and benefits for all staff (middle), and expenditures on salaries and benefits for instructional staff (top). These figures provide a sense of districts' relative investment in PL, compared with other expenditures. Throughout the past two decades, **PL spending has hovered around 3.5% of total expenditures, 5% of all staff salaries and benefits, and 7% of instructional staff salaries and benefits with minor rises and dips.** As with per-teacher spending, we see essentially no decline during the Great Recession and a modest uptick in recent years with ESSER funds.

Relative investment in PL compared with other educational expenditures has remained stable between 2001-2022.

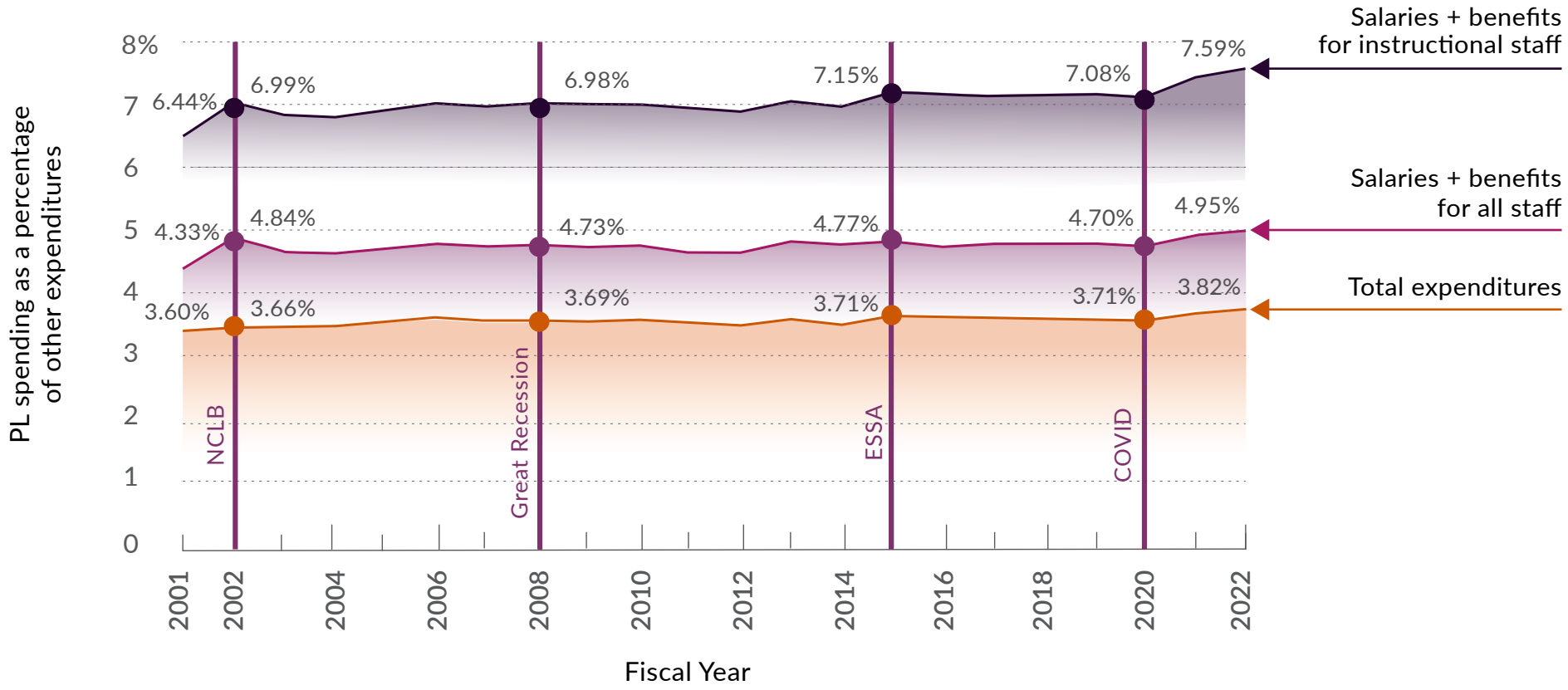


Figure 2. Change in PL spending as a percentage of total expenditures, staff expenditures, and instructional staff expenditures, 2001–2022.

Where does the money spent on PL actually go?

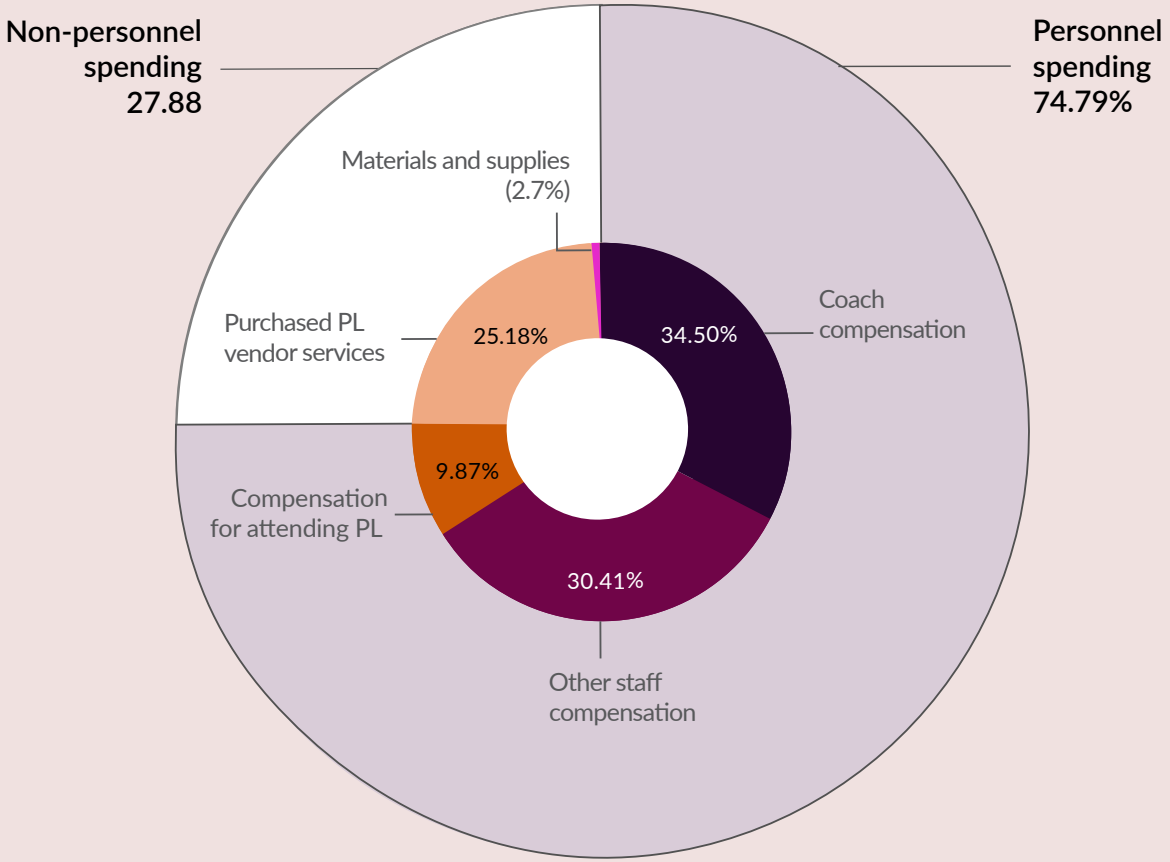
In the F33, we can see how districts allocate their PL spending between personnel and non-personnel costs. By personnel costs, we mean salaries, stipends, and benefits for district employees, such as instructional coaches. By non-personnel costs, we mean payments to external vendors that provide PL services, tuition or conference fees, and costs for any materials, supplies, or venues.

The average district allocates about 70% of its PL budget to personnel costs and 30% to non-personnel costs, a pattern that has remained strikingly stable over the past two decades despite the growing prominence of personnel-intensive models like coaching and PLCs (Archer, 2012; Kraft & Blazar, 2018; Ng, 2024).

While we can't decompose PL spending any further using national F33 data, we can use state-specific data to make finer-grained distinctions in PL. We focus our analysis on Rhode Island, which offers detailed spending breakdowns in the state's publicly available Uniform Chart of Accounts (UCOA). In addition to differentiating personnel from non-personnel costs, Figure 3 also shows key components of each of these categories. Compensation for coaches and other staff who facilitate or support PL is by far the largest share.[1] The average district in Rhode Island also spends about 25% of its PL budget on PL services purchased from external vendors and 10% on teacher compensation for attending PL. Costs for materials and supplies make up less than 1%.

[1] Costs for substitute coverage incurred when teachers miss class to attend PL are primarily included in compensation for other staff. Occasionally, these costs are included under purchased vendor services, when substitutes are externally contracted.

The majority of PL spending goes to personnel costs.



We can't directly explore how well the patterns in RI generalize to other states. However, we can see that the breakdown between personnel costs and non-personnel costs in Rhode Island echoes the national patterns shown above, suggesting that patterns in Rhode Island are a reasonable starting point.

Figure 3. Percent of PL spending by category in Rhode Island.

Finding 2: There is substantial variation across regions, states, and districts in spending patterns, and in the allocation of spending between personnel and non-personnel costs.

While the average trends in PL demonstrate long-term consistency in national spending, they also hide substantial variation across districts, states, and regions. We illustrate this variation through an interactive map available on our website.

We also map three things in the following figures: per-teacher spending (Figure 4), percent of spending allocated to personnel costs (Figure 5), and change in per-teacher spending over time (Figure 6). We focus on data from 2022 to provide the most up-to-date view of national patterns, estimating the change in spending levels from 2014–2022 to maximize our sample of districts.

We see regional differences across all three maps, but the patterns differ by outcome. Figure 4 shows that per-teacher spending tends to be the highest for states in the East Coast, Pacific Northwest, and a few of the Mountain states. Per-teacher spending is adjusted using the Comparative Wage Index for Teachers (CWIFT) to ensure that patterns we see aren't simply a function of differences in the local cost-of-living. Regional patterns in PL spending as a percentage of total expenditures are also nearly identical, indicating that these regions spend more on PL in both absolute and relative terms. In other words, these differences do not just reflect higher overall spending in these regions.

Districts also differ in the ways they spend on PL and how they have shifted their PL investments over time. While some districts allocate less than 50% of spending to personnel costs, others allocate nearly 100% to personnel costs, especially in the South (Figure 5). When we look at the inflation-adjusted change in per-teacher spending between 2014–2022 (Figure 6), we see more variation across districts within the same state, and weaker regional patterns. Nonetheless, we can see some concentration of districts that decreased spending between 2014–2022 in the middle of the country

Spending patterns, and allocation of spending between personnel and non-personnel costs vary substantially across regions, states, and districts.

Visit the interactive map to explore data »

Or check out **Appendix B** for enlarged figures.

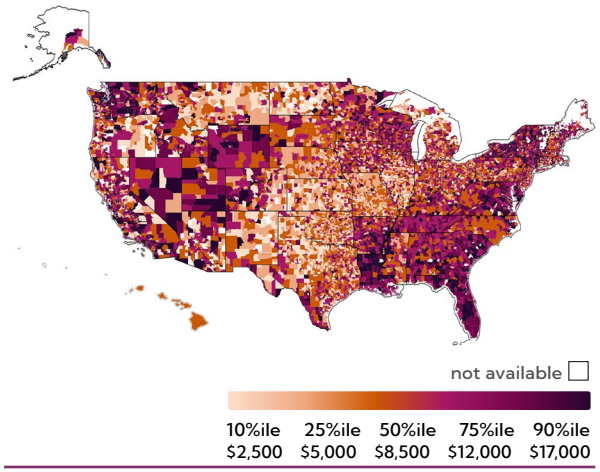


Figure 4. Map of per-teacher spending in 2022 (in dollars, adjusted for inflation).

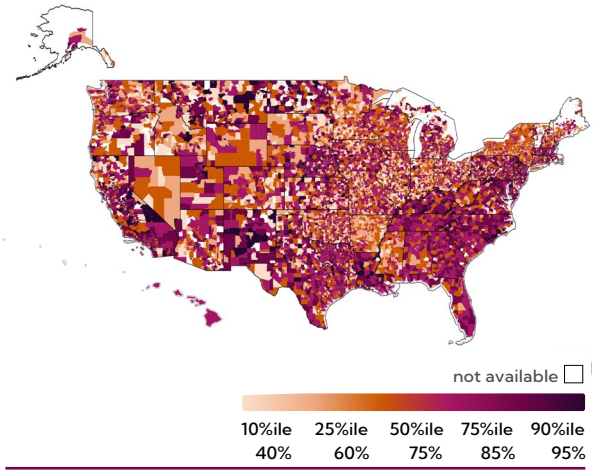


Figure 5. Map of % of per-teacher spending allocated to personnel costs between 2014 and 2022.

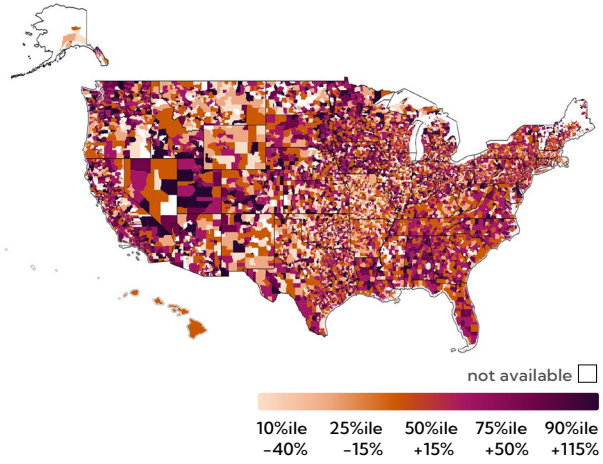


Figure 6. Map of % change in per-teacher spending between 2014 and 2022.

In Figure 7, we select a few states and districts that illustrate state and district-level variation in spending outcomes. We highlight three main points.

First, there are substantial differences across state lines. For example, districts in Texas spend $6,258 per teacher on average, while those in Florida spend more than twice as much ($15,366). At the same time, Texas has increased its investment in PL substantially over the past decade, while Florida has seen more modest growth. Finally, Massachusetts, which has an average spending level in between Texas and Florida, has experienced almost no growth in spending.

Second, even within the same state there are substantial differences across districts. For example, Boston and Worcester are two of the largest districts in Massachusetts, but they have made strikingly different choices in PL spending, with Boston spending more than three times as much. Note that these differences do not only reflect recent choices about ESSER spending because both districts saw substantial declines in PL spending over the past decade.

Third, the combination of differences across states and within states means that districts across the country are spending substantially different amounts on PL. For example, while Bridgeport ISD in Texas spent $2,519 per teacher, Orange County in Florida spent more than seven times more ($18,300).

Districts across the country spend very different amounts on PL.

Florida

	Florida Statewide	Orange County	Broward County
Per-teacher spending, 2022*	$15,366	$19,806	$12,943
Percent change in per-teacher spending 2014–2022	↑ 27%	↑ 13%	↑ 53%
Percent spend on personel, 2022	79%	77%	79%

Texas

	Texas Statewide	San Antonio ISD	Bridgeport ISD
Per-teacher spending, 2022*	$6,258	$19,948	$2,519
Percent change in per-teacher spending 2014–2022	↑ 41%	↑ 65%	↓ 35%
Percent spend on personel, 2022	74%	90%	83%

Massachusetts

	Massachusetts Statewide	Worcester	Boston
Per-teacher spending, 2022*	$11,202	$6,917	$25,037
Percent change in per-teacher spending 2014–2022	↑ 2.7%	↓ 62%	↓ 11%
Percent spend on personel, 2022	85%	98%	93%

**adjusted for cost of living differences*

Figure 7. Estimates of spending levels, change over time, and allocation of spending between personnel and non-personnel costs for select states and districts.

Finding 3: Larger districts and districts in cities tend to spend more on PL in both relative and absolute terms.

One possible explanation for the patterns we see in per-teacher spending (Figure 4) relates to basic characteristics of the district, such as size and urbanicity. Larger or more urban districts may choose to invest differently in PL, or there could be other differences driving costs. For example, even after adjusting for cost of living, larger districts might benefit from economies of scale in PL (enabling less spending) or have increased costs because of additional complexities related to their size. While the comparison between Boston and Worcester shows that differences in PL spending come from other sources as well, here we explore systematically how district size and urbanicity relate to spending.

In Figure 8, we show the relationship between per-teacher spending, urbanicity, and district size (measured by the number of students served). We focus on data from 2022 as the most recent year available and adjust per-teacher spending for cost-of-living differences using the CWIFT.

Regardless of size, cities tend to spend much more per teacher. **On average, districts in cities spend $2,600 more than rural districts, controlling for size.** Larger districts also tend to spend more per teacher than smaller districts. For example, **an average suburban district with less than 250 students spends $6,863 per teacher, while an average suburban district with 15,000–20,000 students spends nearly twice as much, or $12,564.** This pattern is similar across levels of urbanicity.

PL spending is higher in cities and higher in districts that serve more students.

Figure 8. Per-teacher spending by urbanicity and district size.

In general, these trends also hold when we use percent of total expenditures instead of per-teacher spending, indicating that larger districts and districts in cities invest more in teacher PL both in relative and absolute terms.

These patterns in spending by district size also explain some of the regional patterns in spending seen above. Larger districts are particularly concentrated in the Southeast, Pacific Northwest, Mountain States, and California (U.S. Department of Education, National Center for Education Statistics, n.d.)—the first three of which also exhibit the highest PL spending levels. Cities are also concentrated in these four regions, as well as the East Coast (Glimpse, 2014).

The limitations of our data and prior research make it difficult to confidently explain why larger and more urban districts tend to spend more. One possibility is that these districts just spend more overall. But, again, we see similar patterns when we look at PL spending as a share of total expenditures. In particular, while PL spending increases with district size, overall expenditures stay largely flat.

An alternative is that larger and more urban districts tend to invest more in coaching, which prior literature suggests is more resource-intensive than other forms of PL and potentially less amenable to economies of scale (Barrett & Pas, 2020; Knight, 2012; Knight & Skrtic, 2021). Indeed, in Rhode Island, where we have more granular data about PL spending, we see that both larger districts and more urban districts tend to spend more per teacher and employ more coaches per teacher, suggesting a more intensive investment in coaching. We also see in our data that larger districts tend to allocate a larger share of their PL spending to personnel costs, which could reflect a greater investment in coaches or other dedicated PL roles.

Finding 4: On average, PL spending is highest in high-poverty districts serving mostly students of color and lowest in high-poverty districts serving mostly white students.

Researchers have dedicated substantial effort to exploring how overall school spending relates to student characteristics like race and poverty status. While findings differ based on analytic methods, it is clear that money is not always distributed equally, particularly when taking differences in student needs into consideration (Bifulco & Souders, 2024; Blagg et al., 2022; Gordon & Reber, 2023; Griffith & Burns, 2025; Rauscher & Fiel, 2025; Learning Policy Institute, 2025; Morgan, 2022; Weathers & Sosina, 2019).

Patterns in PL spending, however, tell a somewhat different story. In Figure 9, we show the relationship between per-teacher PL spending, the share of students of color, and the share of students eligible for Free & Reduced-Price Lunch (FRPL)[2], adjusted for differences in cost of living, district size, and urbanicity. **Districts serving more students of color tend to spend more per-teacher on PL, particularly in districts serving a majority (50% or more) students of color.**

However, the relationship between PL spending and student poverty rates is complex. **Specifically, we see that districts with higher FRPL rates spend more on PL, but only in districts serving a majority of students of color.** In majority-white districts, PL spending decreases as FRPL rates increase, in line with the patterns in overall expenditures. Thus, the average high-poverty district (>80% FRPL) serving a majority of students of color spends more than $12,000 per teacher, while the average high-poverty district serving few students of color spends less than $6,000.

These patterns may reflect a greater need for PL in districts serving more students of color and more students in poverty. These districts tend to serve more Multilingual Learners, for whom general education teachers report needing more professional learning and support to teach effectively (Bifulco & Souders, 2024; Lee et al., 2025; Samson & Collins, 2012). These districts also tend to employ teachers with less experience, who are often targeted for additional and often more expensive PL supports, such as 1–1 coaching and mentoring (Booker & Russell, 2022; García & Weiss, 2019; Knight, 2012). Higher rates of teacher turnover may also require repeated investment in the same PL for the teachers replacing those who left. **This is particularly true with curriculum-based professional learning, where one-time investments in supporting all teachers to learn a curriculum need to be repeated for new teachers**.

In addition to having a greater need for PL, districts serving more students of color and more students in poverty may also face particular economic and political conditions that promote greater relative investment in PL. In the face of poor student outcomes and accountability pressures, investments in teacher PL may be a particularly attractive lever for improvement. At the same time, lower staff costs[3] may also mean these districts have more money available to invest in PL.

[2] While recent work has highlighted challenges with using FRPL as a measure of student poverty (Fazlul et al., 2023), we employ this measure in our analyses because it captures characteristics of districts' specific student population rather than the broader school-age population in the geographic area and because of its direct link to district eligibility for Federal funding through Title I. Patterns in spending are similar when we use SAIPE estimates in place of FRPL.

[3] In our data, districts serving more students of color and more students in poverty also tend to spend a lower percentage of their budget on salaries and benefits for instructional staff. This is likely due to the fact that less experienced teachers tend to have lower salaries and these districts also tend to employ less experienced teachers (Tran & Buckman, 2020).

PL spending is highest in high-poverty districts serving mostly students of color.

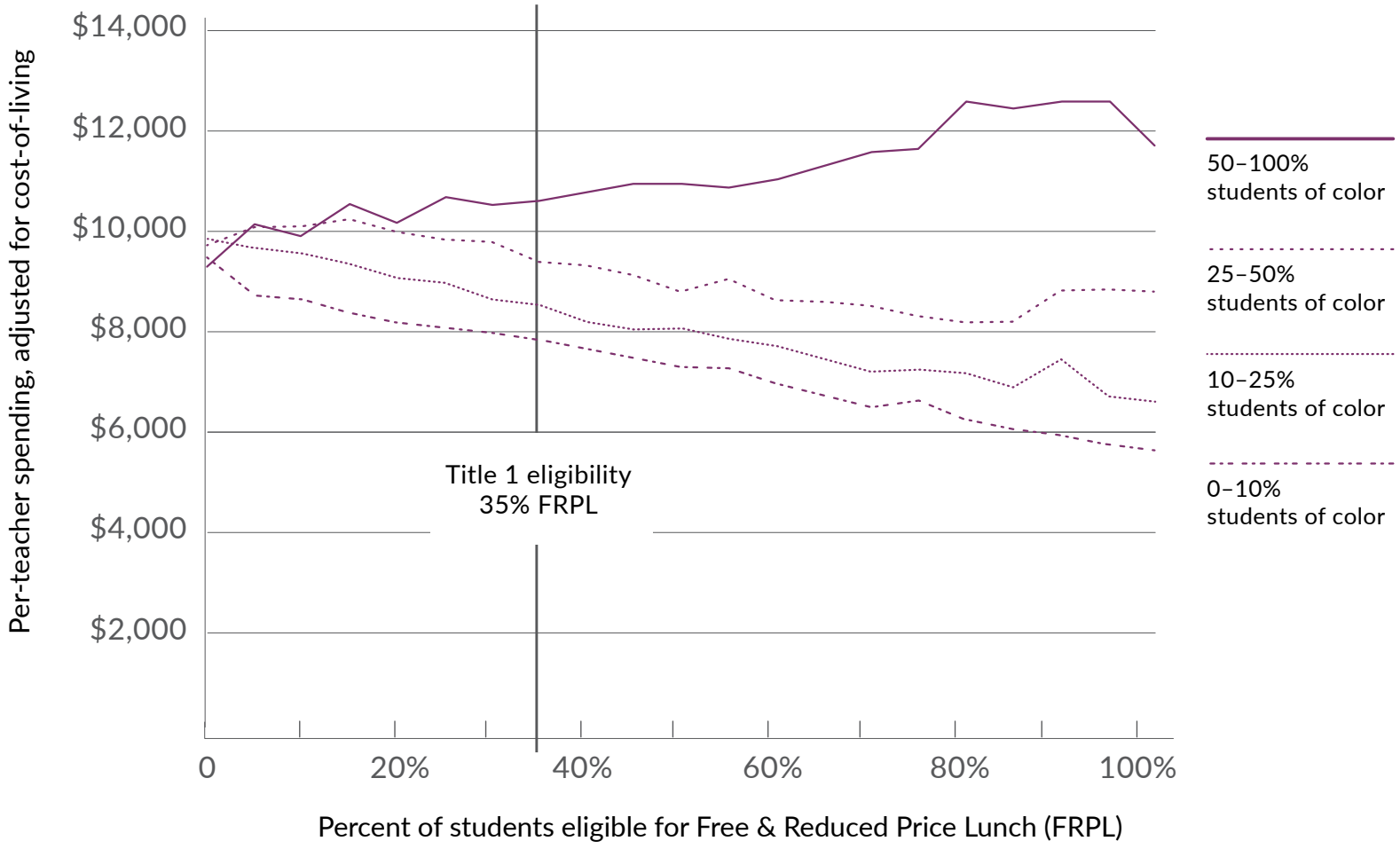


Figure 9. Per-teacher spending by the percentage of students of color and percentage of students eligible for Free & Reduced-Price Lunch (FRPL).

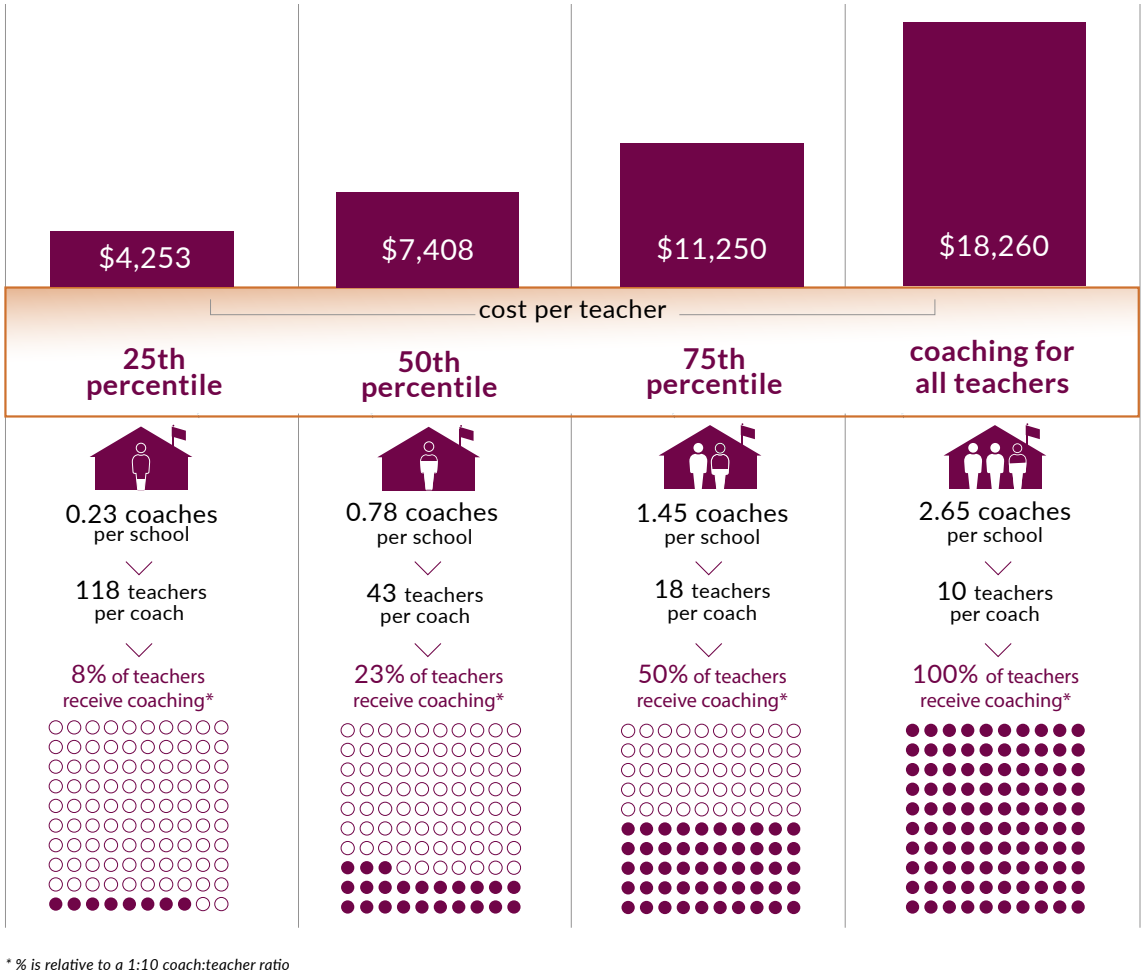
Finding 5: Cost estimates suggest that providing sustained access to high-quality instructional coaching for all teachers would cost far more than what most districts currently spend.

It is difficult to interpret the trends in PL spending without having some sense of what different spending levels allow districts to offer and how that compares to the characteristics of high-quality, evidence-based PL. Fortunately, Edunomics has recently released a professional development cost calculator that enables us to estimate the costs of providing different levels of PL (Edunomics Lab, Georgetown University, n.d.).

In Figure 10, we present back-of-the-envelope estimates of the purchasing power different levels of PL spending afford, based on the Edunomics calculator. For all estimates, we assume that teachers participate in 3 districtwide PL days.[4] Across estimates, we focus on varying the number of coaches employed by the district as the main driver of costs and the key personnel required to facilitate more intensive and evidence-aligned PL structures, such as coaching and professional learning communities. We also include costs for district-level administrators to lead and supervise PL activities, which we scale by the number of coaches as well.

[4] To allow apples-to-apples comparison with the F33 spending data we exclude costs related to the opportunity cost of teacher time. We base the number of PL days per year on prior work on PL costs and a recent report on the landscape of PL in Rhode Island (Education Resource Strategies, 2023; Santelli et al., 2025).

Few districts spend enough on PL to provide sustained access to high-quality instructional coaching for all teachers.



** % is relative to a 1:10 coach:teacher ratio*

Figure 10. Estimated purchasing power for different levels of PL spending (cost per teacher).

In addition to calculating the overall coach-teacher ratio, we also estimate the percentage of teachers who could receive coaching under a preferred 1:10 coach-teacher ratio.[5] We note that we provide these estimates to contextualize our findings about spending patterns, not as a recommendation about what districts should spend on PL.

Based on these calculations, most districts do not spend enough on PL to provide sustained access to coaches for all teachers. At median spending levels, a district could hire only 1 coach per 35 teachers or provide coaching to 29% of teachers at a 1:10 coach-teacher ratio. Even at the 75th percentile, a district could only provide coaching to 50% of teachers at a 1:10 coach-teacher ratio. Districts in the bottom quartile of spending, on the other hand, can only provide coaching to 8% of teachers at a 1:10 ratio, or 1 coach per 118 teachers. **Providing all teachers with access to a coach under a 1:10 coach-teacher ratio would require increasing spending to $18,260 per teacher.** These estimates are consistent with RAND's findings from a nationally-representative sample of teachers that around 50% received no coaching in 2022 (Zuo et al., 2023).

[5]While this ratio is likely somewhat low relative to common practice (Education Resource Strategies, 2024), it reflects prior literature suggesting that relatively low ratios are needed to ensure that coaches can provide the kind of consistent, ongoing, and thoughtfully-planned coaching and professional learning opportunities that are aligned with the evidence-base and provide the greatest promise of impact (Atteberry & Bryk, 2011; Bean et al., 2010; Blazar & Kraft, 2015; Cohen et al., 2025).

Conclusion

Districts invest billions of dollars each year on PL—over $8,000 per teacher and 7.5% of total spending on teacher salaries and benefits. **While the dollars spent on teacher PL have increased over the past two decades, the share of district budgets that goes to PL has remained remarkably stable.** Thus, districts across the country have not, on average, increased their relative investment in teacher learning.

Underneath these national trends, we see substantial variation. **Districts are making very different choices about the amount they spend on PL. In some cases, these differences may stem from differences in their resources, constraints, and needs.** We see similar variation when we look at what share of total budgets districts are choosing to invest in PL. For example, high-poverty districts with large shares of students of color spend a great deal more on PL than other districts, both overall and relative to their total expenditures. These districts also spend substantially less on teacher salaries and have more rapidly shifting student populations, including Multilingual Learners, with attendant PL needs. But the variation also suggests that districts have substantial scope in determining how they will choose to support teacher development.

We note that states appear to play an important and not-well-understood role in shaping PL expenditures. Even as a share of local budgets, there are clear differences in PL spending across state lines. Not only do states dictate the policy context under which instruction and instructional support happen, but they appear to influence the resources invested in teacher PL.

Where PL resources go is somewhat less variable across districts and over time. On average, around 70% goes toward internal personnel and 30% to non-personnel expenditures. This pattern has not changed over time despite the growing role that external organizations have played in the broader PL landscape and growing evidence about the value of personnel-intensive models like instructional coaching and teacher collaboration. In most districts, the bulk of PL spending still goes to district personnel who provide PL rather than to external provider organizations. **Any improvements in the quality and effectiveness of PL, then, likely need to be driven at the district level, with support from states.**

Using scarce PL dollars effectively is likely to become even more important in the post-ESSER era when district budgets are increasingly constrained. Districts are likely to face difficult choices in coming years around the kinds of PL that are likely to provide the greatest return on investment (ROI). The current data infrastructure and evidence base is insufficient to guide these choices. We still need better, more consistent data about how much districts are spending on PL and what they are investing in. We also need better, more nuanced evidence to support a deeper understanding of the benefits of different types of PL and ROI in this space. **RPPL seeks to build some of this evidence base in partnership with individual PL organizations, states, and districts. But comprehensive and more detailed national data on specific PL expenditures here would help shape future investment decisions.**

Though current investments in PL are substantial, our back-of-the-envelope cost estimates suggest that they may not be sufficient to provide all teachers with access to the types of high-quality opportunities, including robust instructional coaching, that many districts are prioritizing. For most districts, these structures are likely either limited to a subset of teachers or provided to a wider group of teachers at low frequency (Zuo et al., 2023).

Rather than representing a true paradigm shift in the PL landscape, spending patterns over the last 25 years suggest more incremental change. As RAND's 2022 report suggests, some teachers do have access to the kinds of PL structures and expert facilitators that are most likely to be impactful, but many do not.

In the context of these PL spending patterns, it is perhaps not surprising that the effectiveness of more intensive PL structures like instructional coaching tends to be weaker when we move beyond boutique, researcher-led programs to programs that districts implement at scale (Kraft et al., 2018). **Realizing the promise of instructional coaching and collaborative PL at scale may require substantially greater investment.** This does not mean that all districts should now start investing substantially more on PL or providing coaching to all teachers. Rather, it highlights that strategic investment in cost-effective PL efforts may, in some cases, require increased rather than decreased investment.

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Appendix A: Methodology

Data

We use district-level spending data from the National Center for Education Statistics (NCES) F-33 district survey for the years 2000-2001 through 2021-2022. Our main PL spending outcome variables were created using the variable E07, which reflects current expenditures on Instructional Staff Support. We calculated PL spending as a percentage of total expenditures by dividing E07 by Current Expenditures, which excludes capital outlay and expenditures that fall outside of Elementary or Secondary programming. We calculated per-teacher PL spending by dividing E07 by the number of FTE teachers employed by each district, which we obtained from the Urban Institute's Common Core of Data (CCD) Education Data Portal. We adjusted per-teacher PL spending for inflation over time using the Consumer Price Index. We also used NCES's Comparable Wage Index for Teachers (CWIFT) to adjust per-teacher spending for differences in cost-of-living across districts.

We merged our spending data with additional data about district characteristics from the Urban Institute's CCD Education Data Portal, including the number of students, local poverty rates from the Small Area Income and Poverty Estimates (SAIPE) Program, student enrollment by race, and student enrollment by Free-and-Reduced-Price Lunch (FRPL) status. For each district, we calculated the percentage of students of color by dividing the total number of students identifying as Black, Hispanic, Asian, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, or multi-racial by the total number of students across all racial and ethnic categories, including those classified as unknown. We calculated district FRPL rates as a weighted average by aggregating school level data, summing the number of students eligible for free or reduced lunch and dividing that by total enrollment.

[6][Common Core of Data], Education Data Portal (Version 0.19.0), Urban Institute, accessed October, 31, 2023, https://educationdata.urban.org/documentation/, made available under the ODC Attribution License.

[7] We summed spending values (e.g. total expenditures, PL spending) and calculated averages for percentage-based variables (e.g., CWIFT, CPI, % students of color, and FRPL%). Because of the categorical nature of urbanicity and aggregated observations often included districts with multiple urbanicity categories, we re-coded this variable as missing for all aggregated observations.

Sample

For all analyses, we make the following sample restrictions. First, we focus on traditional elementary and secondary public school districts, restricting our sample to operating local school districts in each year. In some states multiple local school districts make up a single entity called a supervisory union that manages administrative functions, which may include PL programming, across districts. These supervisory unions exist in the F33 data separate from their component districts and typically consist of separate elementary and secondary districts or multiple small, local districts in close geographical proximity. Where possible, we aggregate these districts to the supervisory union level by aggregating district-level spending information within each year and assigning one district identifier from the union as a new district ID. Several states including California, Indiana, Maine, Vermont, Massachusetts, and Nebraska had missing or inconsistent supervisory union numbers across years. In general, we addressed these issues by carrying forward supervisory union numbers from previous years to address missing or inconsistent data. Final determinations were made individually by state, tailoring aggregation decisions to the local context. This ensures that we account for any PL spending recorded at the supervisory union level and provides a more robust sample for tracing changes in within-district spending over time.[8]

Second, we exclude all district-by-year observations where the E07 spending variable is flagged as not applicable. Third, we exclude district-by-year observations with extreme PL spending values. Specifically, we exclude any observation where a district reports PL spending of more than $40,000 per teacher, less than $50 per teacher (including spending that is missing or equal to zero), or more than 40% of total expenditures. These cutoffs reflect round numbers informed by the underlying spending distribution and our judgment of reasonable spending levels. Both upper limits are above the 99th percentile and the lower limit is below the 1st percentile.

We further restrict our sample in different ways depending on the specific analytic goals in order to maximize the sample size and national representation while also attending to issues of missing data and internal validity.

[8] We observe a number of cases, particularly in Massachusetts, where the same districts appear as multiple observations in some years of data but are combined into one observation in other years, reflecting district consolidation or division over time. Aggregating these districts together in years where they are independent ensures that we can make an apples-to-apples comparison in spending levels across years and prevents these districts from being dropped from our sample for analyses that use district fixed effects to estimate within-district change over time.

For analyses focused on spending patterns in 2022, we include all districts present in our data in 2022 for whom we have non-missing CWIFT-adjusted per-teacher PL spending. This requires non-missing data for raw PL spending, CWIFT adjustment, and number of FTE teachers.[9] To address the missing number of FTE teachers for all districts in Nevada in 2022, we impute using the data from 2021 for this state. We examine the representativeness of our 2022 non-missing sample by comparing average district spending and characteristics variables to the full set of districts in F-33. We find no notable differences between the two samples, suggesting that missing spending information is not systematically related to observed district characteristics, though it may still be associated with unobserved factors.

For analyses focused on changes in spending over time, our primary sample consists of all districts present in any number of consecutive years within the panel (either 2001 through 2022 or 2014-2022) and missing spending data in less than 25% of observations. This approach maximizes sample size, accounts for the fact that districts may open or close over time so we would not expect all districts to be present in all years of the panel, and attends to concerns about bias from missing data. Findings are similar when we restrict our sample to only districts that are present in any number of consecutive years within the panel, without any missing spending data in any year they are present. We do not conduct our analyses with a truly balanced panel, where all districts are present and have non-missing data in all years, because of how dramatically it limits our sample size and national representation.

[9] We also exclude observations with missing total current expenditures to ensure consistency in samples when testing the sensitivity of our results when using percent PL expenditures in place of per-teacher spending.

Analysis

Change Over Time (Finding 1)

To understand national trends in how PL spending has changed over time we use Ordinary Least Squares (OLS) regression to estimate the average within-district change over time. Specifically, we estimate the following model for each of the four PL spending outcome variables shown in Figures 1-2:

$$\gamma_{it} = \alpha_t + \phi_i + \epsilon_{it}$$

Here Υ_{it}, it represents PL spending for district i in year t and is modelled as a non-parametric function of the year in the panel (α_t) and district fixed effects (ϕ_i). The inclusion of district fixed effects allows us to focus specifically on how individual district spending changes over time. We then plotted Figures 1-2 using the results from these regressions.

Mapping Variation (Finding 2)

Figures 4-6 plot three PL spending outcomes in 2022 on the map of the United States by merging our district-level 2022 spending data with district boundaries and shapefiles from NCES's Education Demographic and Geographic Estimates (EDGE) School District Composites SY 2021-22 TL 22 data file. The cutpoints used to colorcode each map reflect the 10th, 25th, 50th, 75th, and 90th percentiles, with some rounding for ease of interpretation.

We test the sensitivity of our results in Figure 4 to two modifications. First, we use raw per-teacher PL spending in place of CWIFT-adjusted per-teacher spending. Second, we adjust raw per-teacher spending using the district's average teacher salary in place of CWIFT. In both cases, patterns are similar to those observed in Figure 4.

Predictors of PL Spending Levels (Findings 3–4)

Figures 7-8 plot estimates from two OLS regressions exploring the relationship between per-teacher spending in 2022 and four district characteristics: district size in number of students, urbanicity, percentage of students identified as students of color, and percentage of students identified as eligible for FRPL.

To create Figure 7 and explore the relationship between district size, urbanicity, and per-teacher spending we estimate the following model:

$$\gamma_i = \sum_{n=1}^{20} (\beta_n Size_i^n) + \sum_{k=1}^{4} (\beta_k Urbanicity_i^k) + \epsilon_i$$

Here, Υi represents CWIFT-adjusted per-teacher PL spending for district i in 2022 and is modelled as a non-parametric function of indicator variables for 20 district size categories $\gamma_i = \sum_{n=1}^{20} (\beta_n Size_i^n)$ and 4 urbanicity categories $\sum_{k=1}^{4} (\beta_k Urbanicity_i^k)$

The 20 district size categories we used are shown in Figure 7 and were selected to reflect the non-linear shape of the relationship we observe visually between district size and PL spending. The urbanicity categories reflect the four basic locale types included in the CCD data for years 2005-2022: urban, suburban, town, and rural. For data from years 2001-2004, we re-code the original local types to align with later years.

We test the sensitivity of our results by estimating the same model and creating the same figure using percent PL spending instead of per-teacher spending. We also explored other modeling approaches, including replacing district size categories with the number of students as a continuous variable alongside higher-order terms to account for the non-linear relationship with spending. Finally, we replace CWIFT-adjusted per-teacher spending with per-teacher spending adjusted for actual average teacher salaries.

In all cases, patterns are similar to those shown in Figure 7. We also added an interaction between urbanicity and district size, but these results were statistically insignificant and appeared to add unnecessary complexity.

To create Figure 8 and explore the relationship between student characteristics and per-teacher spending we estimate the following model:

$$\gamma_i = \delta_1 \%StudentsofColor_i + \delta_2 \%FRPL_i + \delta_3 \%StudentsofColor_i * \%FRPL_i + \delta_4 f(NumberofStudents_i) + \sum_{k=1}^{4} (\beta_k Urbanicity_i) + \epsilon_i$$

Here, Υi represents CWIFT-adjusted-per-teacher PL spending for district$i$ in 2022 and is modelled as a function of the percentage of students of color in district i $\delta_1 \%StudentsofColor_i$, the percentage of students eligible for FRPL in district i, $\delta_2 \%FRPL_i$ and the interaction between these two continuous variables. ($\delta_3 \%StudentsofColor_i * \%FRPL$) Here, the interaction terms are statistically significant and differences in slopes are clearly visible in binned scatterplots of the raw data. We also include controls for the district size $\delta_4 f(NumberofStudents_i)$ and urbanicity ($\sum_{k=1}^{4} (\beta_k Urbanicity_i)$) in this model given the relationships with spending we observe in Figure 7. For the purposes of parsimony, district size is modelled as a quartic polynomial ($f(NumberofStudents_i)$), but results are similar when we use indicator variables representing the 20 district-size categories instead. To summarize these complex relationships clearly, Figure 8 plots predicted spending from this model by quartile for percent students of color and decile for percent of students eligible for FRPL.

We test the sensitivity of our results by estimating the same model with several variations. First, we replace per-teacher spending with percent of total spending devoted to PL. Second, we replace the percent of students eligible for FRPL with the percent of children in poverty from the SAIPE data. Third, we address missing FRPL rates in several states by infilling with FRPL rates in the same district for 2021. Finally, we replace CWIFT-adjusted per-teacher spending with per-teacher spending adjusted for actual average teacher salaries. In all cases, findings are consistent with the patterns observed in Figure 8.

Cost Estimates (Finding 5)

We draw on the cost-estimation formulas from the Edunomics Professional Development Calculator to explore the purchasing power of different PL spending levels. While the Edunomics calculator includes formulas for estimating a variety of PL costs, our estimates exclude costs related to the opportunity cost of teacher time, limiting our analysis to the cost of external facilitators for district PL days and personnel spending on coaches. We also create our own formula to estimate PL administration costs, modelled after the calculations used in the Edunomics calculator.

Following the formula in the Edunomics calculator, we estimate costs of external facilitators as $3000 multiplied by the number of PL days. Here, we assume 3 districtwide PL days per year as a lower bound based on prior literature (Education Resource Strategies, 2023; Santelli et al., 2025). Similarly, following the Edunomics formula, we calculate coach salaries as:

$$Coach\ Costs\ =\ Coaches\ *\ AvgTeacherSalary\ *\ 1.55$$

Here, coach costs are calculated as a function of the number of coaches and the average teacher salary in the state, with a 35% premium for benefits and 20% premium on base pay.

Per the Edunomics calculator, the number of coaches is determined by multiplying the number of schools by the number of desired coaches per school. Though not included in the Edunomics calculator, we use an analogous formula to calculate costs for the administration of PL:

$$Admin\ Costs\ =\ (Coaches\ *\ 0.02)\ +\ 1))\ *\ AvgTeacherSalary\ *\ 1.65$$

There are two notable differences between the formula for coach costs and admin costs. First, we multiply the number of coaches by 0.02 and add one such that every district has one PL administrator plus an additional administrator for every 50 coaches. Second, instead of a 20% premium on base pay, we include a 30% premium on base pay, under the assumption that those involved in administering PL at the district level are paid more than school-based personnel.

Using these formulas, we can estimate total per-teacher PL costs for each district in our 2022 analytic sample, as well as average costs across all districts in our sample. While the Edunomics calculator includes district-level data for average teacher salary[10], number of teachers, and number of schools, we use the 2022 values already present in our data for these calculations to allow apples-to-apples comparisons with the 2022 PL spending data[11]. To generate the first three cost estimates in Figure 10, we vary the number of coaches

per school and calculate the average per-teacher PL cost until we identify the number of coaches per school that on average costs what districts in the 25th, 50th, and 75th percentile of our sample spend. To aid with interpretability, we use the number of teachers in each district to also estimate the average number of teachers per coach and, based on this, the percentage of teachers that would receive coaching if each coach worked with 10 teachers. For the final cost estimate in Figure 10, we vary the number of coaches per school until the average number of teachers per coach is equal to 10.

Validating the F33 Data

As noted in the first sidebar, "What counts when it comes to PL spending?," the F33 data that we use to estimate district PL spending includes additional spending categories, such as library and media services. We explore how these additional categories affect our estimates of spending levels and trends by comparing the F33 data with state financial records from Rhode Island and Texas. Specifically, we use data from Rhode Island's Uniform Chart of Accounts (UCOA) and Texas's Public Education Information Management System (PEIMS), where we can separate out more clearly defined PL spending from additional categories like library spending.

We conduct several analyses to better understand the implications of the F33's inclusion of additional spending categories like library and media services. First, we estimate the correlation between the F33 estimates and the more clearly defined state PL spending data for total spending, per teacher spending, and spending as a percentage of total expenditures. Second, we demonstrate that much of the difference between the F33 and state estimates is explained by library and media spending by calculating the percentage of the difference between F33 estimates and the state PL estimates represented by state library and media spending. We also investigate trends in library spending over time by replicating our analysis for Finding 1 using the state library and media spending estimates. Finally, we replicate all of our analyses from Findings 1-4 using 1) the more clearly defined state PL estimates and 2) the F33 data in TX and RI to examine whether findings differ when PL spending is more clearly defined. In all cases, we find nearly identical patterns using these estimates. F33's inclusion of additional spending categories like library and media services means that districts' true PL spending is even less likely to be sufficient to provide all teachers with sustained access to high-quality instructional coaching.

[10] Whereas the Edunomics data uses the average teacher salary for a given state, our estimates use each district's actual average teacher salary, calculated from the F33 data.

[11] We could not find a reference to the source year for the data included in the Edunomics calculator, but given its 2025 release, we assume it comes from later than 2022.

Appendix B: Full–size Maps

In this appendix we provide full-scale versions of the maps shown in Figures 4–6 to enable closer review. You can also visit our **interactive map** to explore in greater detail and lookup specific districts.

Spending patterns, and allocation of spending between personnel and non-personnel costs vary substantially across regions, states, and districts.

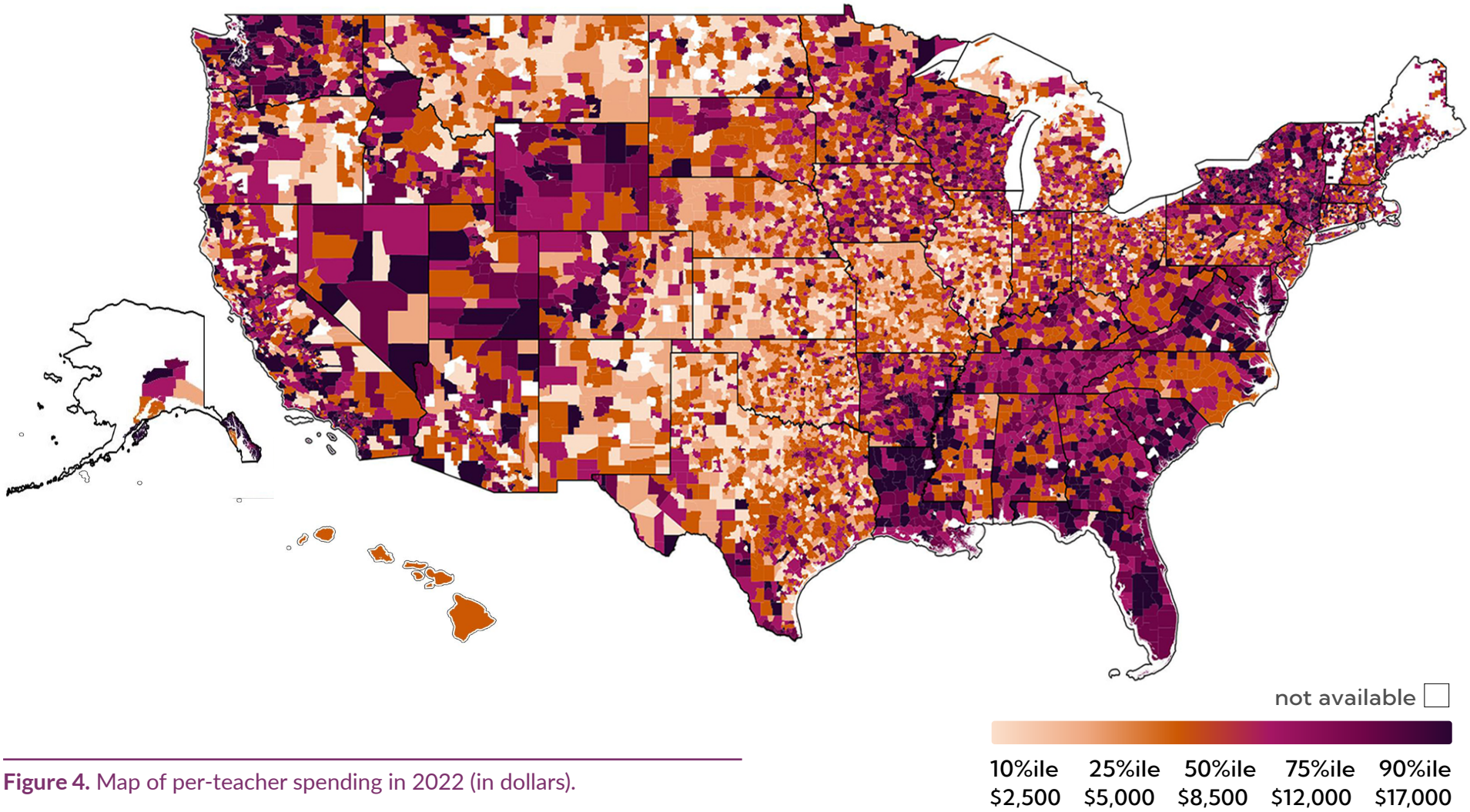

Figure 4. Map of per-teacher spending in 2022 (in dollars).

Spending patterns, and allocation of spending between personnel and non-personnel costs vary substantially across regions, states, and districts.

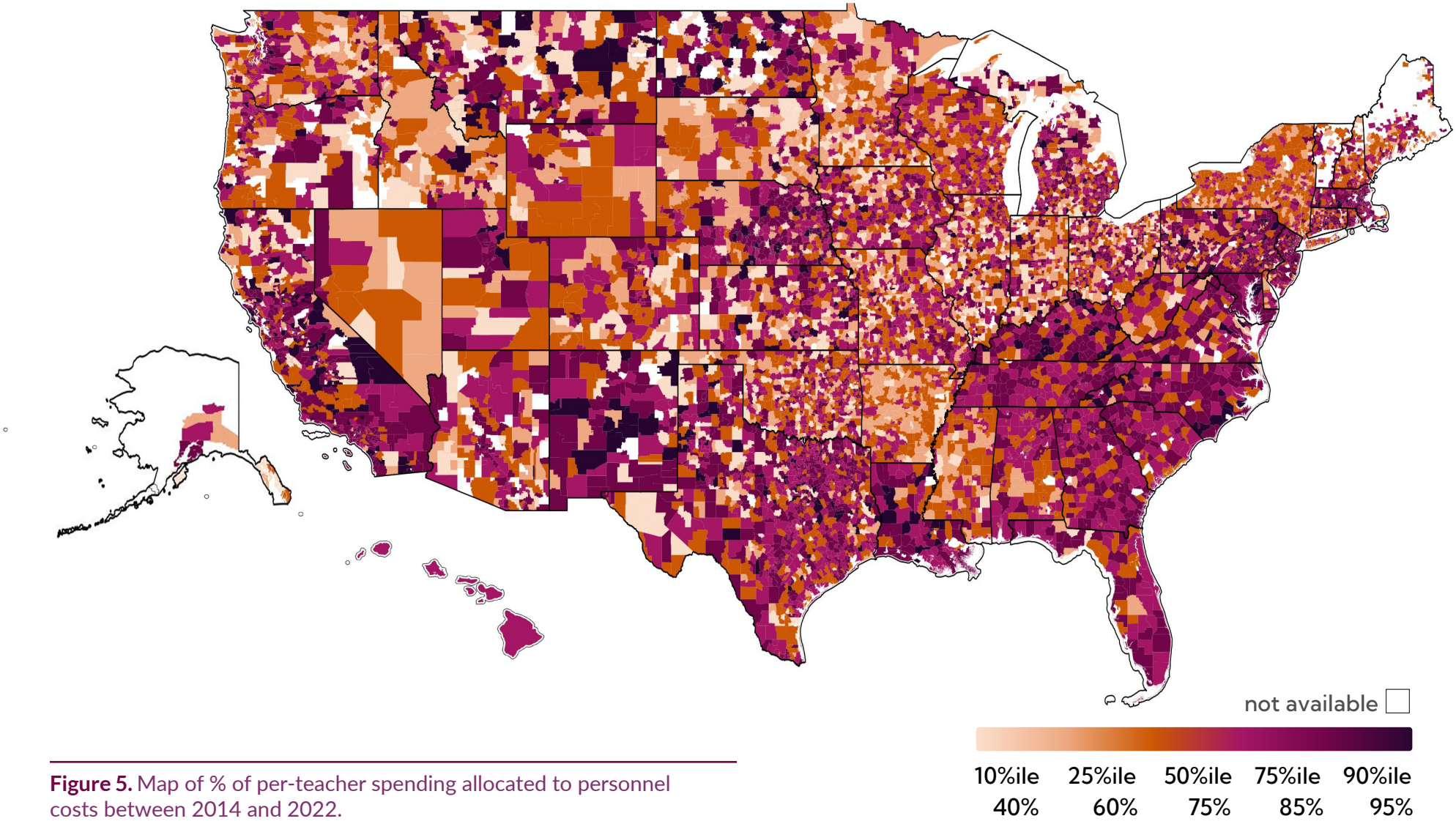

Figure 5. Map of % of per-teacher spending allocated to personnel costs between 2014 and 2022.

Spending patterns, and allocation of spending between personnel and non-personnel costs vary substantially across regions, states, and districts.

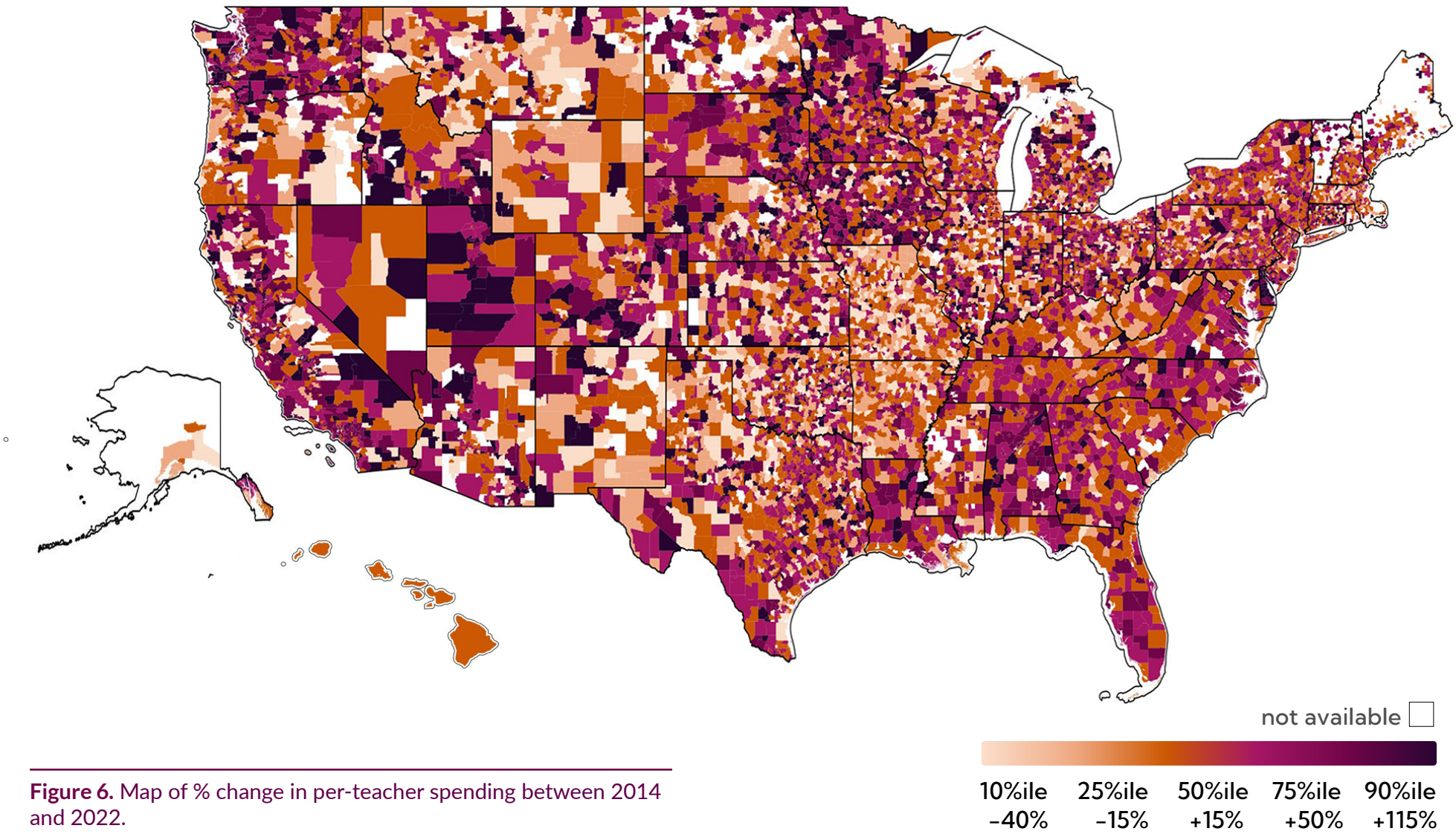

Figure 6. Map of % change in per-teacher spending between 2014 and 2022.

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