

District Progress and Variance in Reducing Teaching Vacancies in Illinois:

A Second-Year Evaluation of the Teacher Vacancy Grant Pilot Program

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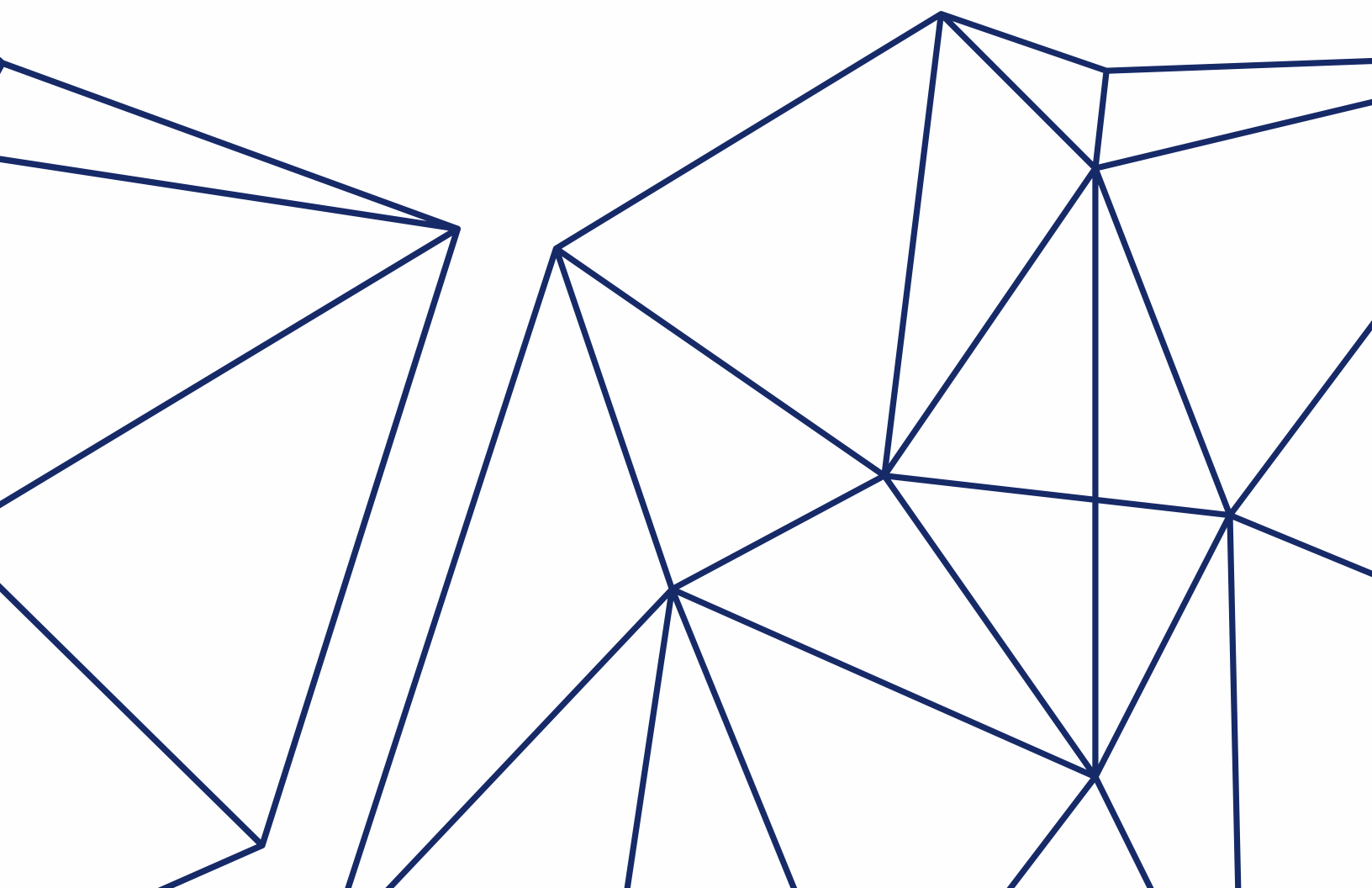
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External Review

To ensure that this report's contents are rigorous, accurate, and useful to educators and policymakers with varying levels of background knowledge, IWERC solicits feedback from experts.

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Executive Summary

The Teacher Vacancy Grant Pilot Program (TVGPP) is a three-year policy initiative that directs additional state funding to public school districts struggling to staff unfilled teaching positions, or teaching vacancies (Office of the Governor JB Pritzker, 2023). During the grant's first year of implementation in the 2023-24 school year (or SY24), the state distributed \$45 million to 170 districts with the highest numbers of teaching vacancies (ISBE 2023b, 2023c). Teaching vacancies in these districts amounted to 80% of all teaching vacancies statewide in SY23. For context, these districts serve approximately 870,000 students, which equates to about half of all students enrolled in Illinois.

A prior evaluation of the TVGPP found that the staffing challenges of program-participating districts were nuanced and localized (Beilstein & Bates, 2024b): Different districts had different types of unfilled teaching positions, and often these positions were in areas of high need, such as special education and bilingual education. In addition, findings suggested that the causes for shortages in individual TVGPP districts were also nuanced and localized, spanning the extent of the educator pipeline from preparation to retention.

Because of this variation in the causes of districts' teaching vacancies and their hiring needs, the TVGPP extends to districts wide latitude in devising and implementing programs to improve teacher recruitment and retention. In this report, we explore how districts allocated the first installment of grant funds to recruitment and retention programs. We also analyze how unfilled teaching positions change from one year prior to the launch of the grant, in SY23, to one year after, in SY25, by comparing districts that participated in the program (i.e., TVGPP districts) to districts that did not (i.e., non-TVGPP districts), using descriptive methods. And finally, we examine, separately, how reported causes of teaching vacancies and enacted spending strategies predict changes in unfilled teaching positions among participating districts.

We note, however, that the program is still in its early stages and that districts adopted many strategies that may have longer-term—rather than shorter-term—success in reducing teaching vacancies. Nevertheless, in this study, we monitor program outcomes in the second year of implementation to inform state stakeholders as they support and counsel districts (in and beyond the grant) in adopting strategies to address teacher shortages.

Key Findings

Popular strategies to address teaching vacancies emerged across participating districts. TVGPP districts prioritized strategies that developed staff credentials for vacant positions, provided professional learning to new and veteran teachers, and distributed direct compensation to new and returning teachers.

Overall, unfilled teaching positions are dropping in participating districts. Over the course of the grant program, comparing SY23 to SY25, unfilled positions have decreased in TVGPP districts (in both rural and urban areas) while increasing in non-TVGPP districts. Controlling for observable district characteristics, TVGPP districts have lowered teaching vacancies more than non-TVGPP districts, on average. However, this does not mean that the grant program caused these changes; an attempt to examine causal effects of the grant was inconclusive but should be repeated in later years when more data are available.

Some TVGPP districts reduced teaching vacancies more than other TVGPP districts. TVGPP districts with the greatest early success tended to be urban, larger in size, had higher average teacher salaries, and were in Evidence-Based Funding Tier 1, the tier of schools furthest from funding adequacy. Because they were larger in size, these districts also received higher amounts of grant funding.

In this early period of the grant, no statistically significant associations were found between districts' reported causes of teacher shortages and changes in teaching vacancies. This is likely related to the limited sample size of TVGPP districts (i.e., the small number of participating districts leads to low statistical

power to detect statistically significant relationships) and to the fact that some causes take longer to address than others. Importantly, districts' varied causes of teacher shortages dually highlight the complexity of the issue and emphasize the need for adaptable, multifaceted strategies to reduce vacancies. More time is needed for a comprehensive study as strategies to address root causes unfold.

While we caution that these findings are early, before all district strategies have had a chance to conclude, TVGPP districts with early success lowering teaching vacancies spent a greater percentage of grant funding on developing staff credentials, recruitment, teacher support, and hiring support staff. None of these strategies, however, were statistically significant in predicting reductions in unfilled positions. One potential reason could be due to the limited sample size (and low statistical power) and/or the early nature of the outcome variable, as unfilled positions for SY25 were collected after districts had one year to enact solution strategies.

In sum, these early findings suggest that the grant program may be a promising approach for reducing teaching vacancies and that some strategies undertaken by districts may be more successful than others. However, we caution that these findings are still early and that some strategies may take longer to unfold and produce results. Thus, all findings should be interpreted with care. We provide several methods that can be reproduced in subsequent years to continue to monitor program outcomes.

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Introduction

In the 2023-24 school year (SY24), Governor JB Pritzker and the Illinois State Board of Education (ISBE) introduced the Teacher Vacancy Grant Pilot Program (TVGPP), a three-year policy initiative that directs additional funding to public school districts struggling to staff unfilled teaching positions, or teaching vacancies (Office of the Governor JB Pritzker, 2023). During the grant’s first year of implementation, the state distributed \$45 million to 170 districts with the highest numbers of teaching vacancies (ISBE 2023b, 2023c). Despite serving about half of all students (approximately 870,000 students), teaching vacancies in these districts amounted to 80% of all teaching vacancies statewide in SY23.¹ In short, program-participating districts bear a disproportionate share of teacher shortages across the state.

From historical decrements in graduates of teacher preparation programs (Advance Illinois, 2023) to attrition resulting from insufficient compensation and heavy workloads, among other factors (Beilstein et al., 2023; IARSS et al., 2023; ISBE et al., 2024, 2025), the causes of teacher shortages in Illinois are wide-ranging, inhibiting districts’ abilities to effectively recruit and retain qualified teachers. Research also suggests that the staffing challenges of districts with teaching vacancies—program-participating districts, in particular—are nuanced and localized (Beilstein & Bates, 2024b): Different districts have different types of unfilled teaching positions. Often these positions are found in areas of high need, such as special education and bilingual education, and for some districts, these positions can be left vacant for multiple years. So, not only do the causes for teaching vacancies vary across program-participating districts, so do the hiring needs.

Due to the variation in districts’ hiring needs, the TVGPP extends to districts wide latitude in devising and implementing programs to improve teacher recruitment and retention, so long as district decisions are based on staffing data and strategies supported by research (ISBE, n.d.). Given the flexibility endowed by this initiative, in this report, we explore how districts allocated the first installment of grant funds to recruitment and retention programs. We also analyze how unfilled teaching positions change from one year prior to the launch of the grant, in SY23, to one year after, in SY25, by comparing districts that participated in the program (i.e., TVGPP districts) to districts that did not (i.e., non-TVGPP districts), using descriptive methods. And finally, we examine, separately, how reported causes of teaching vacancies and enacted spending strategies predict changes in unfilled teaching positions among participating districts.

Although the TVGPP began its third and final year this fall, at the start of SY26, we conceive this report to be an early measure of progress, a secondary step as part of a multi-year evaluation. We also caution that the majority of findings presented here are descriptive, and thus we do not know if the grant program is the cause of the changes we see. To that end, we do present a framework for conducting a causal analysis of the TVGPP when the program is more mature.

Background

Teacher shortages in Illinois, and across the country, are not ubiquitous. In fact, 40% (339 of 857) of public school districts in Illinois reported zero teaching vacancies in SY25 (ISBE et al., 2025b). By contrast, teaching vacancies are pronounced in different regions, such as remote rural and urban areas; specific content areas, such as special education, bilingual education, science, and mathematics; and specific grade bands (Advance Illinois, 2023; Bates & Beilstein, forthcoming; Bates et al., 2024; Beilstein & Withee, 2022a, 2022b; Bruno, 2025; ISBE et al., 2024, 2025b). Furthermore, districts with higher numbers of teaching vacancies tend to serve higher proportions of students from low-income families, Black students, students with individualized education programs (IEPs), and English learners (EL; see Bruno, 2025; Withee & Beilstein,

2023). These disparities translate to inequitable student access to high-quality education.

In response, the state implemented the TVGPP in SY24 to support the recruitment and retention efforts of those 20% of districts (170 districts) in most need (ISBE, 2023b). This additional funding provided to districts, however, is temporary. The policy initiative, which started its third and final year in fall 2025 (at the start of SY26), distributed \$45 million to participating districts in both SY24 and SY25 and \$30 million in SY26.

Numerous policies and programs directed toward mitigating teacher shortages in Illinois, and across the country, have set precedence for the TVGPP. Provision of financial incentives for new and current teachers to pursue positions in high-need areas has been associated with increased recruitment (Theobald et al., 2023) and decreased turnover (Clotfelter et al., 2008). Similarly, teacher pathway programs (e.g., Grow Your Own and teaching residencies) that offer prospective teachers financial support, experiential learning opportunities, and mentorship have been linked to higher rates of retention (Carl & Seelig, 2023; Espinoza et al., 2018; Gist et al., 2019; Goldhaber et al., 2017; Silva et al., 2015), though research on pathway programs has also produced mixed results (Edwards & Kraft, 2024). But consistent across many of these programs are two features: The program's scope can often focus on one or two aspects of the teacher workforce, whether preparation, recruitment, or retention, and the mechanisms, or strategies, are usually prescribed.

However, research has shown that the causes of shortages are interconnected, involving teacher preparation, recruitment, and retention; concentrated in specific geographic locales, content areas, districts, and schools within districts; and affected by local, state, and federal policy (Darling-Hammond et al., 2023; Edwards et al., 2025; García & Weiss, 2020; Sutchter et al., 2019). Our prior analysis of district applications to receive TVGPP funding lends additional support to this body of work: The causes of shortages among participating districts are not only complex and interconnected, but also—and importantly—localized to each district's context (Beilstein & Bates, 2024b). Some TVGPP districts cited difficulty staffing special education teachers or bilingual/English as a Second Language teachers at rates that match rising numbers of students with specialized needs. Others disclosed problems with teacher turnover due to uncompetitive salaries, suboptimal professional growth and learning opportunities, or lack of teacher support. Many districts cited both reasons and more, revealing issues that extend from preparation to retention.

The TVGPP model, by design, grants participating districts discretion to develop individualized spending plans to meet their varying and nuanced staffing needs—the ultimate goal of which is reducing the specific teaching vacancies faced by their schools. Such discretion is unique among policy initiatives to address teaching vacancies, and, because of this flexibility, the state oversees and approves how TVGPP dollars are spent. Each year of the initiative, the state reviews and approves district applications and amendments to receive grant funding, which include written descriptions of perceived causes of and solutions for teaching vacancies as well as budgets that detail spending strategies. Our prior analysis of TVGPP applications found a high level of alignment between districts' causes of and solutions for teaching vacancies, which was due to participation requirements set by the state (Beilstein & Bates, 2024b).

In the current study, we examine program application narratives and budget details from TVGPP districts as well as annual data on unfilled full-time equivalent teaching positions to assess the program's outcomes in the second year of district participation. In doing so, we emphasize that the program is still in its early stages, and that districts adopted many strategies that may have longer-term—rather than shorter-term—success in reducing teacher shortages. Nevertheless, it is both important and possible to monitor program outcomes along the way, so that we can inform state stakeholders as they support and counsel districts (in and beyond the grant) in implementing strategies that reduce teaching vacancies. Towards this goal, our research questions are divided into two main parts.

Part 1 – Overall Outcomes from the Grant Across All Districts

Here, we look overall at the grant’s use and outcomes across all participating districts. We also provide a framework for understanding the causal relationship between TVGPP participation and changes in teaching vacancies. Findings from the causal analysis were inconclusive at this time. Nevertheless, this framework can be used to analyze grant outcomes in the future. In Part 1, we ask the following questions:

1. How did TVGPP districts, overall, allocate grant funding to various strategies aimed at mitigating teaching vacancies?
2. How have unfilled teaching positions changed for all TVGPP districts (and non-TVGPP districts) from prior to the start of the program, in SY23, to after the first year of the program, in SY25?
3. What is the overall relationship between participating in the TVGPP and changes in unfilled teaching positions?

Part 2 – Variability in Outcomes by Participating Districts

TVGPP districts used different strategies to address teacher shortages, and some may have been more effective than others in the short term (i.e., after the first year of grant participation). Here, we look at how district participation in the program’s first year is related to early changes in unfilled teaching positions. Our analysis is correlational, seeking to understand how different types of causes and different types of strategies are associated with decreases in teaching vacancies. The following questions guide our analysis in Part 2:

4. How did different TVGPP districts perform in reducing unfilled positions, and what did the highest-performing districts do with their grant funds?
5. How did districts’ reported *causes* of teaching vacancies predict changes in unfilled teaching positions?
6. How did districts’ spending on *strategies* to reduce teaching vacancies predict changes in unfilled teaching positions?

About the Teacher Vacancy Grant Pilot Program

The TVGPP, a three-year policy initiative, began in SY24 and will conclude at the end of the current school year, SY26. In total, the state invested \$120 million into this program, distributing \$45 million to participating districts in both SY24 and SY25 and \$30 million in SY26. Program eligibility, as determined by ISBE, was based on the following criteria: (1) Districts that reported the highest numbers of teaching vacancies in SY23 were prioritized; (2) Sixty percent of awards were reserved for rural districts (102 districts), and 40% for urban districts (68 districts); and (3) Districts with more than adequate funding (classified as Tier 4, according to Illinois’ Evidence-Based Funding, or EBF, formula) were ineligible (see ISBE, 2023b).² In SY24, ISBE selected 170 districts to participate in the program across all three years. The amount of program funding allocated to individual districts was based on numbers of unfilled teaching positions in SY23, with higher total vacancies resulting in larger awards (ISBE, 2025a; for ISBE’s TVGPP funding formula, please refer to Appendix A). The award each district received was the same in SY24 and SY25. In SY26, awards were reduced by one-third (i.e., districts received two-thirds of their previous yearly award amount). There was no option for non-participating districts (i.e., the non-TVGPP districts) to join in later years, as the entire three-year grant was based on SY23 unfilled positions data.

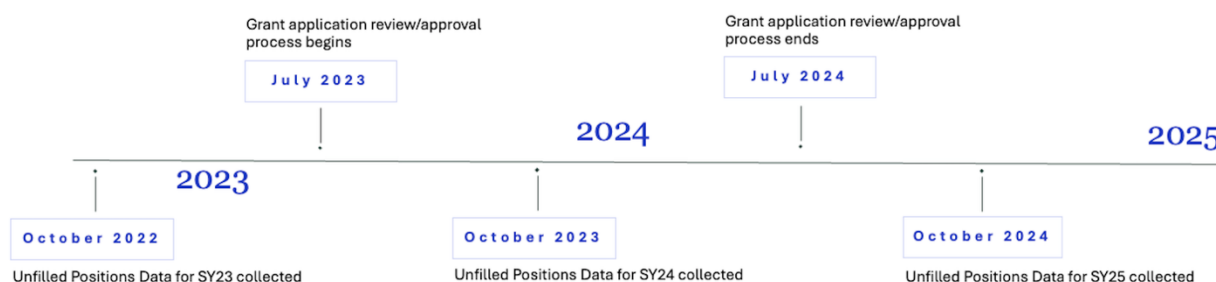
In this study, we examine early outcomes from the first year of the TVGPP. Figure 1 provides a timeline of key data sources used. The main outcome of interest is unfilled teaching positions, which is collected by ISBE annually in October for that current school year (e.g., data collected in October 2024 reflect unfilled positions for the 2024-25 school year, or SY25). As mentioned previously, program eligibility was based on unfilled teaching positions in October 2022 for SY23. Thus, SY23 data serve as the baseline for the analyses that follow.

An additional data source was TVGPP grant applications for the first year of funding, which included narratives that explained the causes of and strategies for teaching vacancies as well as detailed budgets that

described and itemized all program-related expenditures. During the first year, districts submitted applications to ISBE for approval from July 2023 through April 2024.³ After approval, districts could amend applications, including spending plans, through July 2024.⁴ Because the period to approve, amend, and enact strategies during the TVGPP's initial year ended in July 2024, unfilled positions from October 2024 for SY25 represent the first opportunity to examine early outcomes potentially related to the program. Unfilled positions data for SY24 are too early to use as an outcome, as staffing information was collected in October 2023, toward the beginning of the year-long window when the state was approving original and amended spending plans. A report on early outcomes provided last year (Beilstein & Bates, 2024a) used the October 2023 data, but—importantly—noted the synchronous timeline of program enactment and outcomes reporting, making the findings more of a starting point than a true evaluation of the grant program.

We note that many TVGPP districts also implemented retention-oriented programs, in addition to those focused on recruitment. The current evaluation does not analyze changes in teacher retention, a metric included in ISBE's Illinois Report Card, because only one year of data are available after the program took effect (i.e., the metric is publicly available for SY23, or baseline, and SY24). Future studies would be better positioned to evaluate the relationship between the TVGPP and teacher retention.⁵

Figure 1. Timeline of key data sources related to the first year of the TVGPP.



Data Sources

District Applications

We examine two pieces of information from district applications to receive TVGPP funding, updated for amendments: (1) district narratives, which explain reported causes of teaching vacancies and proposed strategies to fill needed positions and (2) budget details, which describe and itemize all program-related costs that were expensed during the first and second years of the program.⁶

Unfilled Positions Data

To analyze changes in teaching vacancies, we use ISBE's annual unfilled positions data from SY23 to SY25 (ISBE 2023c, 2024, 2025b), filtering these data to one *position type*, teaching, and pulling district-level totals of unfilled and filled full-time equivalents (FTEs) as well as vacancy rates. Because program eligibility was determined by unfilled positions data from SY23, SY23 serves as the baseline. The dataset includes 859 districts (170 TVGPP and 689 non-TVGPP districts) with complete information for unfilled teaching positions in SY23, SY24, and SY25.

For most of the analyses conducted in this report, we use district-level totals of unfilled teaching positions, as opposed to vacancy rates, for several reasons. (Vacancy rates are calculated as the number of unfilled positions in a given year, divided by the sum of unfilled positions plus the total filled positions from the previous year.) First, district-level totals of unfilled teaching positions, and not vacancy rates, were a main criterion for selection into the program. Second, as a measure, vacancy rates are more sensitive to fluctuation in small districts with smaller staff sizes and less sensitive in large districts with larger staff sizes. Because participating districts range in size from small to large, we sought to use a more appropriate

measure that is less prone to wide variance. And third, vacancy rates are calculated with filled FTEs from the prior school year because current school year information is not available when the unfilled positions report is published (i.e., vacancy rates for SY25 use unfilled positions from SY25 and filled positions from SY24). Consequently, vacancy rates may not necessarily reflect the true staffing needs of a given school year.

Of note are federal emergency funds related to the COVID-19 pandemic: This infusion of funding could have supported new teaching positions in SY23 and SY24, but with the expiration of these funds in fall 2024, filled teaching positions may have possibly decreased in SY25. It follows that the SY25 vacancy rate could be deflated due to the calculation using filled teaching positions from SY24 in the denominator. Final staffing numbers for SY25 will not be publicly available until fall 2025. We acknowledge, however, that using numbers of unfilled positions has limitations as well. This measure is related to district size and can be more sensitive to changes in larger districts. Thus, when appropriate, we control for district size using student enrollment at baseline in SY23.

Illinois Report Card

To understand how district characteristics may be associated with outcomes such as changes in unfilled teaching positions, we incorporate relevant data elements (e.g., EBF funding tiers, student enrollment, student demographics, average teacher salary, etc.) from the SY23 Illinois Report Card, version 5.0 (ISBE, 2023a), again using SY23 as a baseline.

Locale Classifications

We apply locale classifications from the National Center for Education Statistics (NCES) to our district-level data (NCES, 2021). Following ISBE (2023b), we categorize TVGPP districts into two overarching groups: *Rural* districts are those that meet NCES rural and town criteria (locale classifications 41, 42, 43, 31, 32, and 33), and *urban* districts meet suburban and city criteria (locale classifications 21, 22, 23, 11, 12, and 13).

Methods

Sample

One hundred and seventy districts, composed of 102 rural and 68 urban districts, were selected by ISBE into the TVGPP. For a comparison of TVGPP and non-TVGPP districts by key district characteristics, please see Table 1 (ISBE, 2023a; NCES, 2021).

Table 1. District characteristics of TVGPP and non-TVGPP districts.

District characteristics	TVGPP districts (170 districts)	Non-TVGPP districts (689 districts)
<i>Evidence-Based Funding</i>		
Tier 1	51.8% (88 districts)	35.1% (242 districts)
Tier 2	42.9% (73 districts)	27.4% (189 districts)
Tier 3	5.3% (9 districts)	8.7% (60 districts)
Tier 4	0.0% (0 districts)	27.0% (186 districts)
<i>Locale</i>		
Rural	60.0% (102 districts)	54.6% (376 districts)
Urban	40.0% (68 districts)	45.4% (313 districts)

Note: EBF funding tier information is not available for 12 non-TVGPP entities (ISBE, 2023a).

Analytical Approach

For Research Question (RQ) 1, we conduct a descriptive analysis that examines how districts allocated TVGPP funding to various strategies aimed at reducing unfilled teaching positions during the first year of the program in SY24. For RQ2, we explore differences in changes in unfilled teaching positions from baseline in SY23 to SY25 for all districts statewide ($N = 859$) and for non-TVGPP ($n = 689$) and TVGPP districts ($n = 170$). Because these data comprise the entire population of districts, the results observed are not subject to occurring by sampling error alone. Thus, we did not perform significance testing to compare differences in unfilled positions across subgroups (e.g., TVGPP and non-TVGPP districts).

For RQ3, we first use regression analysis to examine the relationship between participation in the grant program and changes in unfilled teaching positions, controlling for observable district characteristics. We calculate change directly for each district by subtracting unfilled positions in SY23 from unfilled positions in SY25. We also present results from a lagged dependent variable (LDV) approach in Appendix D, Table D2. These results are similar, albeit less precise. We discuss advantages of each approach (i.e., calculating change directly vs. LDV) in the Results and endnote 10. We then offer a framework for understanding the causal relationship between grant participation and changes in unfilled positions using a regression discontinuity approach (see Calonico et al., 2014). We explain each of these approaches further in the results section at point-of-use, to clarify what each approach helps us understand about the success of the grant program.

For RQ4, we compare TVGPP districts' performance in reducing unfilled teaching positions using a scatterplot. We then describe how districts with better early success lowering teaching vacancies differed from districts with less success by their characteristics and the strategies they used to address teacher shortages. For RQ5, we examine the relationship between the causes of vacancies reported by districts and changes in unfilled teaching positions over time. To do this, we regress changes in unfilled teaching positions, using the same change calculation from RQ3, on the causes reported, while controlling for district characteristics. Finally, for RQ6, we use a similar approach to understand the relationship between districts' spending on specific strategies to address teacher shortages and changes in unfilled teaching positions. We regress changes in unfilled teaching positions on district expenditures, in dollars, on each spending strategy, while controlling for district characteristics, and omit one spending strategy (location) from the regression (i.e., location is used as the reference category).

Categorizing Districts' Causes of Teaching Vacancies and Solution Strategies

In a previous report, we qualitatively analyzed the narratives included in district applications for funding during the program's first year (SY24) along two dimensions—districts' reported *causes* of teaching vacancies and proposed *solutions* to reduce these vacancies (see Beilstein & Bates, 2024b). The codes corresponding to each dimension were not mutually exclusive, so districts could, and often did, cite multiple causes of and solutions for teaching shortages in their narratives (e.g., districts reported 4.7 causes and 4.1 solutions, on average). For more information about the methodological framework and process that guided the qualitative analysis of district narratives and budget descriptions, please refer to Beilstein & Bates (2024b).

To analyze the relationship between districts' reported causes of teaching vacancies and changes in unfilled teaching positions (RQ5), we incorporated 14 different cause codes from that prior report. Cause codes with abridged definitions can be found in Table 2, and full definitions can be found in Appendix B, Table B1. For this analysis only, the TVGPP sample drops to 156 districts because these districts' applications were approved by ISBE in January 2024 and thus were the available data for our prior analysis (Beilstein & Bates, 2024b).

Table 2. Codebook for reported causes of teaching vacancies found in district narratives (from Beilstein & Bates, 2024b).

Cause Category	Definition
Compensation	District offers noncompetitive salary, benefits, healthcare.
Student Characteristics	District points to perception that their specific student population poses unique challenges.
Student Behaviors	District points to specific student behaviors as a concern (e.g., low achievement, behavioral problems, socioemotional/trauma).
Location	The area surrounding the district deters recruitment and retention (e.g., area is too rural, no housing).
Neighboring Districts	District lost applicants and/or current teachers due to competition from neighboring districts' salary or other amenities.
Growth Opportunity	District does not provide financial support for teachers to further their education or licensure/credentials.
Lack of Qualified Teachers	District receives small number of qualified applicants.
Teacher Preparation	District cites issues with teacher preparation programs (e.g., district is too far from such programs, cannot place student teachers).
Recruitment Practices	District reports issues during the recruitment process (e.g., lack of places to advertise, need more staff to recruit).
Working Conditions	District cites untenable working conditions as a problem (e.g., high stress, heavy workload, burnt-out or underappreciated staff).
Classroom Resources	District curriculum is insufficient; district does not provide needed classroom supplies; classroom furniture, technologies need updating.
Professional Learning	District does not provide teachers needed coaching, mentoring, or professional learning.
Attrition	Teachers left the district due to personal choices (e.g., moving closer to home), changing professions, or retired.
Leadership	District points to leadership as an area of concern (e.g., underdeveloped leadership, leadership turnover, vacancy in key leadership positions).

To examine the relationship between district spending of program funds and changes in unfilled teaching positions (RQ6), we coded all 170 TVGPP districts' end-of-year budget descriptions of expenses, updated for amendments, into nine spending categories, which are briefly defined in Table 3 and fully defined in Appendix B, Table B2. These spending categories were based on our prior analysis of grant application narratives, wherein districts proposed strategies to reduce unfilled teaching positions, that yielded 13 different solutions codes. In presenting the prior analysis (Beilstein & Bates, 2024b), ISBE and TVGPP districts saw a few different categories as related. In response to their feedback, we combined codes with thematic overlap into larger categories, following the process from our previous report. For example, the strategy of subsidizing educational costs for non-licensed staff to pursue licensure, initially coded as one type of *growth opportunity*, often works in conjunction with another code, *teacher preparation*. For the sake of parsimony, these two codes are now subsumed under a higher-level code, *developing staff credentials*. In the current study, our original 13 codes were consolidated and refined into nine spending codes.

Table 3. Codebook for spending strategies found in budget details (adapted from Beilstein & Bates, 2024b).

Spending Strategy Category	Definition
Special Compensation	Implementation of short-term or one-time stipends (e.g., hiring and retention bonuses), often in hard-to-fill areas, including special education, bilingual education, science, and mathematics.
Development of Staff Credentials	Provision of formal growth opportunities for non-licensed and licensed staff to fulfill staffing needs, often in hard-to-fill areas.
Professional Learning	Provision of expanded teacher professional learning that includes instructional coaches and induction and mentoring programs.
Recruitment	Investing in recruitment practices such as advertising, hiring recruitment staff, attending/hosting recruitment fairs, and distributing referral bonuses, among other practices.
Teacher Support	Implementing self-care programs, affinity groups, staff celebrations, promotional apparel, facility improvements, activities to improve school climate (e.g., climate/culture surveys).
Classroom Resources	Distribution of stipends for classroom supplies (e.g., curriculum, technology, supplies for teachers and students, furniture, etc.).
Location	Distribution of stipends for relocation, housing, commute, general living costs, daycare.
Standard Compensation	Investments to increase teacher salary by improving healthcare coverage, covering full-time teachers' salaries (e.g., special education teachers), amending salary scales to recognize teachers' prior years of experience.
Support Staff	Hiring more staff, such as school support personnel, paraprofessionals, and substitutes, to provide additional support to teachers.

Methodological Caveats

It is important to note several caveats when interpreting findings from this study. First, although we examine changes in unfilled teaching positions, we caution that these findings are descriptive and not causal. Because districts receiving the grant had a higher number of unfilled positions, they are not comparable to those that did not: They have more unfilled positions in SY23 and SY25 and they enroll more students who are from low-income families and who identify as Black or Hispanic/Latino. Thus, changes in unfilled positions in non-TVGPP districts are not necessarily an adequate counterfactual for changes in the TVGPP districts had they not received the grant.⁷ In presenting results for RQ3, we propose a causal identification framework to better make an appropriate comparison in the future. We also note that this evaluation considers early outcomes after the first full year of districts participating in the program. Because the TVGPP is a multi-year initiative, it is necessary to assess how key outcomes, like unfilled positions, not only change over time, but also are sustained. Accordingly, we conceive this report to serve as a secondary step in a multi-year study.

Next, we acknowledge several alternative explanations for observed changes in unfilled teaching positions among TVGPP and non-TVGPP districts. One hypothesis, based on the idea that teacher staffing is *zero-sum*, asserts that decreases in teaching vacancies among TVGPP districts may occur at the expense of non-TVGPP districts. Under such accounting, if TVGPP districts are successful in recruiting teachers, this would come at the expense of attrition in non-TVGPP districts. We discuss three pieces of evidence that suggest such a trade-off, or redistribution, of staff between TVGPP and non-TVGPP districts may not be occurring at a large scale.

For one, data on filled teaching positions (available through SY24), show that the size of the teaching staff in non-TVGPP districts has grown over time (Bates & Beilstein, forthcoming). In contrast, the size of the teaching staff in TVGPP districts (outside of Chicago Public Schools) has slightly declined during this same time frame, suggesting that non-TVGPP districts are successfully recruiting new hires, even as TVGPP districts reduce their vacancies.

For another, our prior analysis found that many TVGPP districts invested in long-term solutions, like pathway programs for non-licensed and licensed staff (i.e., development of staff credentials; Beilstein & Bates, 2024b). These investments should lead to a larger teacher workforce that specializes in the specific areas that districts need to fill, not a zero-sum game for a static workforce.

And finally, our prior analysis also found that special compensation was a common strategy among TVGPP districts. It is difficult to determine whether hiring bonuses, which amounted to roughly \$3,000 per teacher on average, may provide enough incentive to draw active teachers away from non-TVGPP districts to TVGPP districts. On the contrary, hiring bonuses may incentivize new teachers to select TVGPP districts at a higher rate than previously, but that would not be zero sum; that would in fact be the kind of market correction, or leveling, this grant seeks to promote. Future work that examines the migration of teachers across districts (from non-TVGPP to TVGPP districts and from TVGPP to non-TVGPP districts) could more closely answer questions about staff redistribution.

A second hypothesis considers the possibility of changes in how districts report unfilled teaching positions. However, there have been no substantive procedural changes to the reporting expectations for unfilled positions since the launch of the grant. Furthermore, the grant provides no incentive for TVGPP or non-TVGPP districts to adjust their reporting, as the 170 districts selected in SY23 are eligible throughout the duration of the pilot grant based on SY23 numbers, and no new districts can become eligible based on post-SY23 reporting during the pilot.

A third hypothesis relates to the infusion of federal emergency funds during the pandemic. As noted previously, the distribution of such funding could have led to new teaching positions in SY23 and SY24. These funds expired in fall 2024, and with less emergency funding, districts may have closed open positions offered in prior years. However, the distribution of federal emergency funds to districts followed the Title I funding formula, which is based on the proportion of students who are classified as low income. Thus, when appropriate, analyses that control for the proportion of students who are classified as low income should account for differences in emergency funding (e.g., see regression analyses for RQs 3, 5, and 6).

Results

Part 1 – Overall Outcomes from the Grant Across All Districts

This section examines TVGPP districts as a group to understand broadly how the grant was used by districts and how it influenced changes in districts' unfilled teaching positions. The grant, by design, gave districts flexibility in devising and enacting individualized spending plans, allowing districts to adopt different cause-aligned strategies to address their teacher shortages. Nevertheless, different strategies may yield different results, both in the short and long term. For example, many districts invested in long-term solutions, like pathway programs for non-licensed and licensed staff (i.e., development of staff credentials). It can take a few years for non-licensed staff to obtain licensure and for licensed staff to earn additional endorsements. It follows then that we may not yet see the impact of such a strategy in reducing teaching vacancies after the first year of grant participation. However, it is important to monitor outcomes overall, so that districts can be further supported and so that policymakers understand the grant's progress towards its goal of reducing teaching vacancies. As such, this section provides early findings on the use and outcomes of the grant.

RQ1: How did TVGPP districts, overall, allocate grant funding to various strategies aimed at mitigating teaching vacancies?

Before examining the outcomes of grant funding, we must first establish how the grant funding was used. Table 4 provides an overview of TVGPP district spending in the first year of the program (SY24) on the nine spending categories introduced in the Methods section (for definitions, see Table 3 or Appendix B, Table B2). Table 4 serves several purposes, and so, we highlight a few features. First, the total amount that districts spent on each strategy can be found in row three. These dollar amounts convey the magnitude of program-wide investments on each strategy. Second, we examine percentage of spending in two ways. In row four, readers will find the overall percentage of TVGPP funds allocated to each strategy, across all districts. In row five, readers will find the average percentage spent on a strategy by only those districts that used a specific strategy. Both measures represent the concentration of spending allocated to each strategy.

In total, TVGPP districts spent approximately \$43.1 million in the first year of the program.⁸ The most common strategies were developing staff credentials, professional learning, and special compensation. Each of these strategies were used by over 64% of TVGPP districts, while all other strategies were used by under half of those districts. These three strategies also accounted for the largest amounts of grant dollars spent across all solution strategies. However, professional learning (\$4.8 million total) amounted to much less of an expenditure than developing staff credentials (\$16.1 million total) or special compensation (\$10.9 million total).

Table 5 provides an overview of TVGPP district spending in the second year of the program (SY25). Spending patterns in the second year remained consistent when compared to the first year with a few slight adjustments. In the second year of the grant, developing staff credentials, classroom resources, and standard compensation saw slightly higher investments from TVGPP districts in terms of use (i.e., total percentage of funds spent across all districts) and amount (i.e., total amount spent across all districts). Whereas special compensation saw slightly lower investments from TVGPP districts in terms of use and amount.

Table 4. TVGPP expenditures for all participating districts by spending category during the first year of the program, SY24.

	Developing Staff Credentials	Professional Learning	Special Compensation	Recruitment	Teacher Support	Classroom Resources	Support Staff	Standard Compensation	Location
Number of districts using code	123	117	110	84	81	58	21	17	16
Percentage of districts using code	72.4%	68.8%	64.7%	49.4%	47.6%	34.1%	12.4%	10.0%	9.4%
Total amount spent across all districts	16,082,898	4,845,103	10,910,823	3,234,555	4,175,254	1,656,005	878,664	909,720	412,293
Average expense by district (only among districts using code)	130,755	41,411	99,189	38,507	51,546	28,552	41,841	53,513	25,768
Total percentage of funds spent across all districts	37.3%	11.2%	25.3%	7.5%	9.7%	3.8%	2.0%	2.1%	1.0%
Average percentage spent by districts using strategy	29.2%	23.6%	45.9%	12.4%	24.3%	20.3%	20.8%	50.9%	6.8%

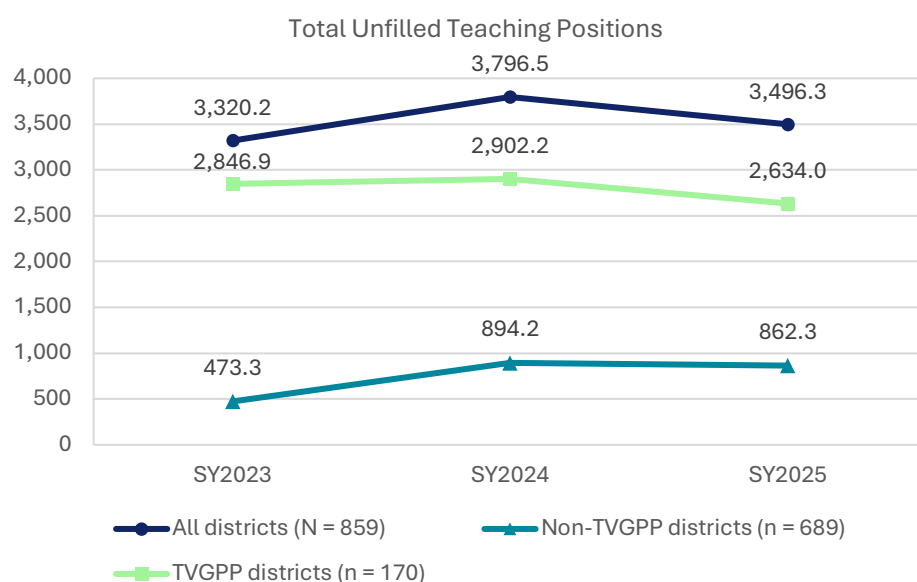
Table 5. TVGPP expenditures for all participating districts by spending category during the second year of the program, SY25.

	Developing Staff Credentials	Professional Learning	Special Compensation	Recruitment	Teacher Support	Classroom Resources	Support Staff	Standard Compensation	Location
Number of districts using code	128	118	96	85	83	65	22	25	20
Percentage of districts using code	75.7%	69.8%	56.8%	50.3%	49.1%	38.5%	13.0%	14.8%	11.8%
Total amount spent across all districts	17,651,934	4,407,145	9,151,831	3,200,949	3,775,542	2,299,599	792,875	1,637,954	222,125
Average expense by district (only among districts using code)	137,906	37,349	95,332	37,658	45,488	35,378	36,040	65,518	11,106
Total percentage of funds spent across all districts	40.9%	10.2%	21.2%	7.4%	8.8%	5.3%	1.8%	3.8%	0.5%
Average percentage spent by districts using strategy	33.1%	22.1%	42.7%	11.7%	21.8%	22.2%	21.0%	46.7%	3.8%

RQ2: How have unfilled teaching positions changed for all TVGPP districts (and non-TVGPP districts) from prior to the start of the program, in SY23, to after the first year of the program, in SY25?

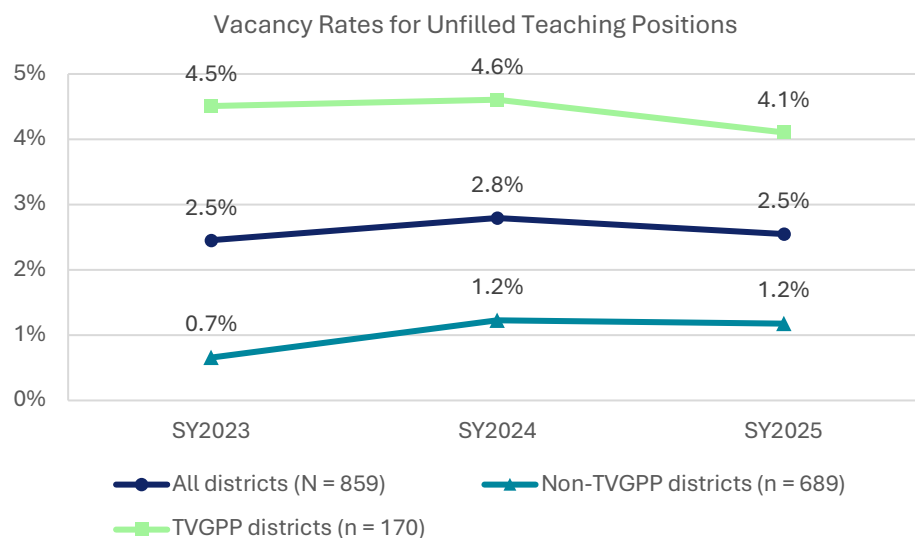
Having established how grant funds were spent by participating districts, we now turn to descriptive outcomes for those districts that participated in the grant program (TVGPP districts) versus those that did not (non-TVGPP districts). Figure 2 shows the change in unfilled teaching positions from SY23, the year prior to the program and used to determine program eligibility, through SY24 and SY25, the years in which the grant program was active. Again, we note that SY25 is the first time point when we might expect to see outcomes related to the TVGPP. This figure establishes that unfilled positions have decreased in TVGPP districts (from 2,846.9 to 2,634.0, or -7%) but increased in non-participating districts (from 473.3 to 862.3, or +82%). In other words, unfilled positions have risen in non-participating districts more than they have dropped in participating districts.

Figure 2. Total unfilled teaching positions in SY23 to SY25 across districts statewide and by non-TVGPP and TVGPP districts.



Using unfilled teaching positions alone, however, does not account for new teacher hiring or overall district size (for which the number of filled teaching positions is a proxy). As such, examining changes in vacancy rates is also important. Vacancy rates are calculated as the number of unfilled positions in a given year, divided by the sum of unfilled positions plus the total filled positions from the previous year. As noted in the Methods, the use of filled positions from the previous school year in the vacancy rate metric presents challenges in interpreting the results of this grant. However, it's still an important indicator to examine descriptively. Figure 3 shows changes in vacancy rate for TVGPP and non-TVGPP districts.

Figure 3. Vacancy rates for unfilled teaching positions in SY23 to SY25 across districts statewide and by non-TVGPP and TVGPP districts.



Note: To calculate vacancy rates for districts statewide and for non-TVGPP and TVGPP districts, we took the total unfilled teaching positions and divided by the sum of total unfilled (given school year) and filled (previous school year) teaching positions for all districts in each group.

Mirroring the finding above, vacancy rates have decreased in TVGPP districts and increased in non-TVGPP districts from SY23 to SY25. TVGPP districts dropped their vacancy rate by 0.4 percentage points, from 4.5% to 4.1%. In contrast, the vacancy rate rose in non-participating districts by 0.5 percentage points, from 0.7% to 1.2%. Despite a downward trending vacancy rate, TVGPP districts still bear a large share of teaching vacancies statewide. Because unfilled teaching positions and vacancy rate data tell similar stories, we use unfilled teaching positions only for the remainder of these descriptive findings.

Although we noted in a previous report that districts in rural and urban contexts have different challenges with teacher shortages, including different root causes and suggested solutions (see Beilstein & Bates, 2024b), a separate analysis of changes in unfilled teaching positions for rural and urban districts (see Appendix C) indicate similar trends as seen above. Unfilled teaching positions in both rural and urban TVGPP districts have dropped from SY23 to SY25. For rural and urban non-TVGPP districts, however, unfilled positions have risen during this timeframe.

In sum, the descriptive data tell a consistently positive story for TVGPP districts, one in which all types of participating districts, whether rural or urban, have seen decreases in unfilled positions—the goal of the grant—while non-participating districts have seen increases. However, these descriptive data do not necessarily mean that the grant “worked.” It is possible that there could be other causes for the changes we see, or it could reflect some sort of “regression to the mean” that districts with high vacancies during some period would decrease them, while districts with low vacancies would do the opposite.

A few points, however, suggest that a regression to the mean may not be the explanation for these findings. First, a large proportion of TVGPP districts would have qualified for participation in the program using SY22 data, indicating that the number of unfilled positions in TVGPP districts is relatively stable.⁹ Second, the correlation between districts’ unfilled positions during the years before (SY23) and during the grant (SY24 and SY25) is very strong, standing at $r = 0.99$ (among the full sample and among TVGPP districts only). This suggests that unfilled positions are stable across years and that regression to the mean may not explain the results. And third, as readers will find in RQ4 below, the most successful districts were larger in size. Larger districts tend to also report higher numbers of unfilled positions, which can translate to lower variance and less susceptibility to regression to the mean. In the next section, we explore how statistical models can be

used to understand the relationship between the grant program and changes in unfilled positions.

RQ3: What is the overall relationship between participating in the TVGPP and changes in unfilled teaching positions?

To understand how the TVGPP may have influenced changes in unfilled teaching positions, we must fairly compare changes in unfilled positions for districts that participated in the TVGPP and districts that did not. However, we know that participating districts were selected precisely because they were different than other districts—they had more unfilled positions and were systematically different in other ways (see Table 1).

One way to account for these differences is to use a multiple regression approach. With this method, we examine how participation in the grant predicts changes in unfilled teaching positions, controlling for the dimensions along which participating and non-participating districts are known to be different. In this case, our outcome variable is calculated as the change in unfilled positions between SY23 and SY25, wherein we subtract unfilled teaching positions in SY23 from that of SY25 for each district.¹⁰ Table 6 shows the results of this regression for two models. The top row, TVGPP District, shows the estimated change in unfilled positions for a TVGPP district, relative to a non-TVGPP district, controlling for the variables with “x” beside them. While it is important to note that these controls cannot account for regression to the mean, we offer several different arguments to suggest this was not the main cause of the changes we observe. Model 1 controls only for whether the district is Chicago Public Schools, given how large this district is and how differently this district behaves from all others. Model 2 controls for additional factors such as student enrollment (size), district urbanicity, district demographics, and EBF tier, which are dimensions whereby participating and non-participating districts varied. We also estimate robust standard errors in all our regressions to assuage concerns about possible heteroskedasticity, non-normal errors, or model misspecification. We provide additional specifications and robustness checks in Appendix D, Table D1.

Table 6. The output of two regression models for the relationship between participation in the TVGPP program and changes in unfilled teaching positions.

Variables	Model 1 Change in Unfilled Positions (SY25 – SY23)	Model 2
TVGPP District	-1.201** (0.584)	-1.961*** (0.517)
Observations	660	660
R-squared	0.616	0.631
Chicago Public Schools	X	X
Student Enrollment		X
District Urbanicity		X
District Demographics		X
EBF Tier		X

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Note: EBF Tier 4 districts were excluded from this regression because they were not eligible for participation in the TVGPP, but results do not change with their inclusion (see Appendix D, Table D1). We include student enrollment as a measure of district size. District demographic controls include student composition (% of students in the district) by race/ethnicity, low-income status, EL status, and IEP status. Appendix D, Figure D1 shows regression diagnostics.

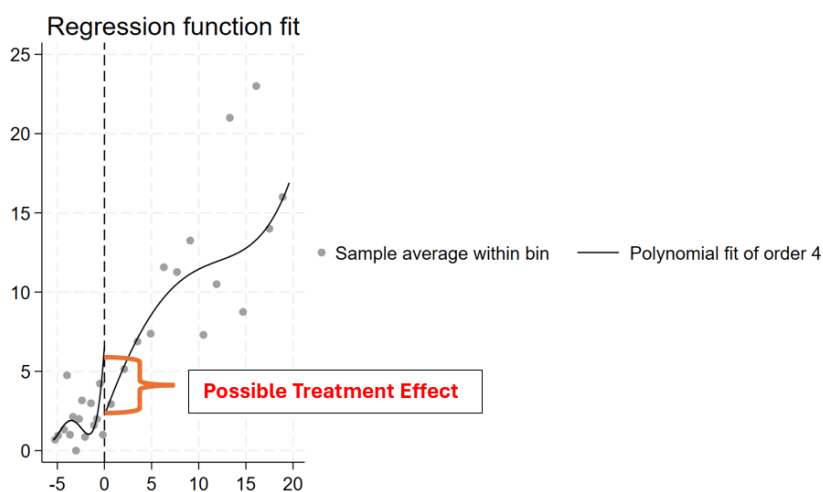
The results show that both models are statistically significant at the 5% level, which means that participation in the TVGPP program predicted changes in unfilled teaching positions that would be unlikely to be observed by chance. On average, TVGPP districts decreased their unfilled positions more than non-TVGPP districts (by 1 to 2 positions, depending on the model), relative to SY23, controlling for observable differences between districts. Put simply, TVGPP districts decreased unfilled positions more on average than non-participating districts, another positive signal (in addition to the descriptive data in the previous section).

However, these models have limitations for determining if the TVGPP was the cause of the difference we see in changes in unfilled teaching positions. A regression can control for observable differences between districts, like demographics and EBF tier.¹¹ However, participating and non-participating districts may be different in ways that we cannot account for, often called “unobservable” characteristics. It could be that such an unobservable characteristic, rather than participation in the TVGPP, is the actual cause of the change in unfilled positions. For instance, variations in housing prices or the amount of available housing options across districts could influence teacher staffing numbers and student enrollment.

To truly test whether the TVGPP is the cause of the changes we see, we would need an experimental or quasi-experimental method. An experimental model is not possible in this context, because it requires districts to be randomly assigned (or not assigned) to the program, which they were not. Instead, we can utilize a quasi-experimental method called regression discontinuity (RD). An RD design can be used when districts are assigned to a “treatment” based on a particular benchmark or “cutoff”; in this case, the cutoff is having a certain number of unfilled teaching positions in SY23, which was 2 unfilled positions for rural districts and 5 unfilled positions for urban districts.¹² Results from the first stage of the RD confirmed that no districts below the cutoff participated in the program, while almost all districts above the cutoff participated (see Appendix E, Figure E1). Using this cutoff, we can compare changes in unfilled positions for districts just below and just above the cutoff. These districts are presumed to be similar in many ways, including number of unfilled positions, but they were on opposite sides of an arbitrary cutoff. If the districts follow similar trajectories after the “treatment” (i.e., participation in the TVGPP), it is likely the treatment did not cause any change; if the districts follow different trajectories, the treatment is presumably the cause.

Figure 4 shows the result of the RD approach.¹³ This approach aims to estimate the contribution of the TVGPP grant to reduce teacher vacancies among grant-receiving districts.¹⁴ In this figure, the x-axis is called the *running variable*, which measures distance from the cutoff for being in a TVGPP district or not. Here, it is the number of unfilled teaching positions in SY23 relative to the cutoff (e.g., for a rural district, 0 represents 2 unfilled positions; for an urban district, 0 represents 5 unfilled positions). The cutoff is represented by the dashed vertical line. The y-axis, meanwhile, plots the outcome: the estimated number of unfilled positions in SY25, controlling for district characteristics. The fitted lines on either side of the cutoff are estimates of the relationship between the running variable and the outcome (i.e., between distance from the cutoff and unfilled positions in SY25).

Figure 4. The results of a regression discontinuity analysis, in which the x-axis shows distance from the cutoff for TVGPP participation (unfilled teaching positions in SY23), and the y-axis shows unfilled positions in SY25.



Note: This figure presents binned scatterplot with optimal bin selection and local polynomial smooth fits on each side of the cutoff, using `rdplot` package in STATA, designed specifically for visualizing the discontinuity. Bins estimated using IMSE optimal bin selection. This is different from the `rdrobust` package used for RD estimation (Calonico et al., 2014).

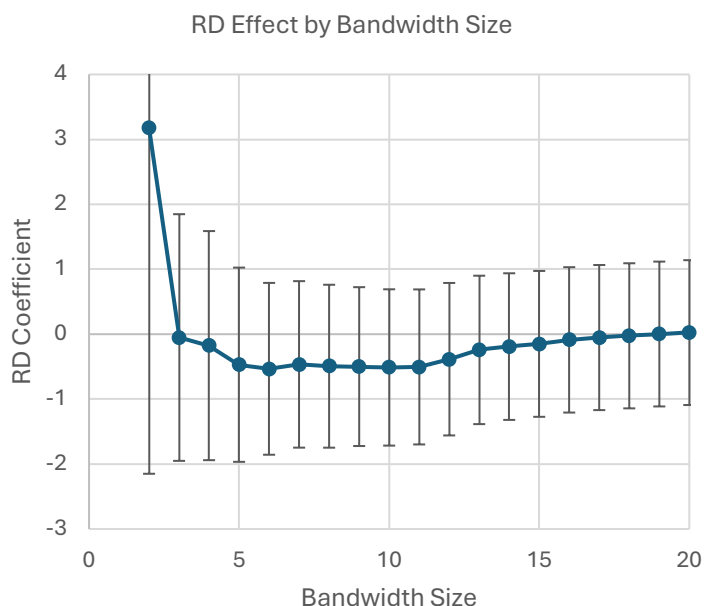
For an RD design, one should focus on the districts close to the cutoff, as they are most likely to be similar in both observable and unobservable characteristics that could confound the relationship between receiving the grant and unfilled positions in SY25 (Calonico et al., 2014). (We show the descriptive statistics of districts just above and below the cutoff in Appendix E, Table E1). So, for Figure 4, we look at the dots closest to the dashed line, or cutoff, at 0. We see that the dot just to the left, or below, the dashed line is almost at 5, while the dot just to the right, or above, the line is at around 3. This suggests a potentially slight policy effect for districts around the cutoff, but it is not statistically significant.¹⁵ Further investigation is required.

Although RD designs are useful for evaluating policy changes like the TVGPP, the choice of *bandwidth* can influence the results. A researcher must choose how many observations (in this case, districts) to include on either side of the cutoff. Not all TVGPP districts can be included, because those districts far from the cutoff (i.e., those districts with dozens or even hundreds of unfilled teaching positions) are assumed to be different from districts that mirror them on the other side of the cutoff (i.e., those districts with few or even zero unfilled positions). The key is to compare as many districts as possible around the cutoff, without getting too far away from the cutoff; in other words, one must select the correct bandwidth of districts to include.

A larger bandwidth means that we consider observations further away from the cutoff. This gives us more statistical power, because we have more observations, but it can also increase estimation bias, since districts further on either end of the cutoff are less similar. A smaller bandwidth reduces bias, but gives us less power, because fewer districts are included (Calonico et al., 2014).

Figure 5 illustrates the results of the RD with different bandwidths. The x-axis shows the distance from the cutoff that is included (i.e., the bandwidth). For instance, the 10 on the x-axis means that all districts within 10 teaching vacancies, in either direction, of the relative cutoff (i.e., the cutoff is 2 teaching vacancies for rural districts or 5 vacancies for urban districts) were included. So, using a bandwidth of 10 would include, in the sample, rural districts with 0-12 teaching vacancies in SY23 and urban districts with 0-15 teaching vacancies in SY23.

The y-axis shows the difference between TVGPP and non-TVGPP districts in the RD coefficient (the dot) and the standard error (the bars). At the bandwidth of 2, the coefficient is very noisy and imprecise, likely because the sample is so small. However, as we include more observations, with bandwidths between 3 and 18, the coefficient consistently approximates negative 0.5, suggesting that participation in the TVGPP may reduce unfilled positions by up to 0.5 positions. However, none of these coefficients are statistically significant, which is likely because not enough districts are close to the cutoff to provide the statistical power needed to reach significance if the effect is real. As such, the result of the RD is inconclusive. Because of this, we would advise repeating this RD in subsequent years, as the TVGPP has more time to unfold and as the effects of the grant may become more pronounced over time. That said, it is possible that the RD is underpowered because of the limited number of districts to compare and may still not reach sufficient statistical power over time, in which case a different method could be attempted in the future. For now, we would also advise following the recommendations, specifications, and robustness tests for an RD as outlined by Calonico et al. (2014).

Figure 5. The results of a regression discontinuity analysis, for different bandwidths of district inclusion.

Summary of Overall Grant Outcomes

The key findings from this section are as follows:

- TVGPP districts prioritized strategies that developed staff credentials for vacant positions, provided professional learning to new and veteran teachers, and provided direct compensation to new and returning teachers.
- Over the course of the grant program, unfilled positions have dropped in TVGPP districts (in both rural and urban areas). In non-TVGPP districts, unfilled positions have risen.
- Controlling for observable district characteristics, TVGPP districts have decreased unfilled teaching positions from SY23 to SY25 more, on average, compared to non-participating districts.

These data are positive signals for the TVGPP's potential success. However, it is still to be determined whether the grant is the *cause* of that success; we provide an RD approach that can be replicated in the future to assess causal impact when more data are available, but that approach is inconclusive at this time regarding program success.

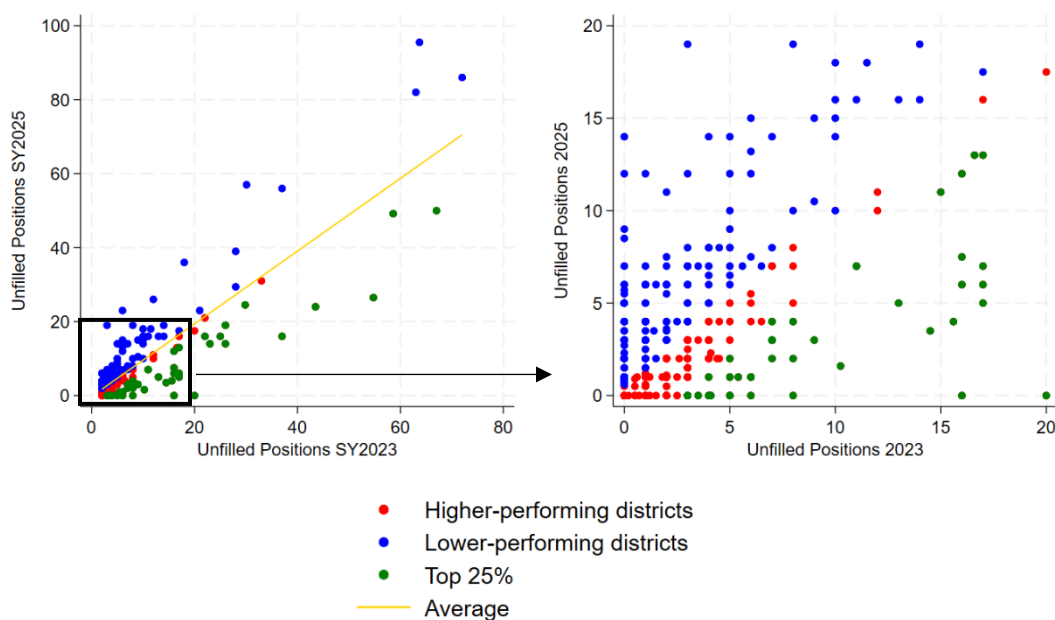
Part 2 – Variability in Outcomes by Participating Districts

As discussed in the previous section, TVGPP districts had the opportunity to tailor strategies they undertook to mitigate teacher shortages to their unique contexts. In applying for grant funds, TVGPP districts identified root causes for unfilled positions and proposed strategies to address those causes.¹⁶ A diverse array of strategies was employed with different allocations of funding within and across districts. As such, there is the possibility of learning from districts, and strategies, that have been more or less effective in reducing teacher shortages over the course of the grant. Of course, some strategies may take longer to implement and have impact. That said, this section examines what we can learn from the varied results of different districts within the grant program.

RQ4: How did different TVGPP districts perform in reducing unfilled positions, and what did the highest-performing districts do with their grant funds?

First, we examine the variance in district performance over the course of the grant in reducing unfilled teaching positions. Figure 6 plots the relationship between unfilled teaching positions in SY23, the baseline year, and SY25, the outcome year, by district. Each dot in the figure is a unique district, though Chicago Public Schools is not pictured due to visibility and interpretability of the figure, in both the magnified and unmagnified portions. (Please note that Chicago Public Schools is included in this analysis.) The yellow line shows the average relationship between unfilled positions in each year. Districts below the line (in red and green) are higher-performing districts—they had fewer unfilled positions in SY25 than we would expect compared to the average TVGPP district (i.e., less than the sample average given their unfilled positions in SY23). Meanwhile, those above the line (in blue) are lower-performing districts—they had more unfilled positions in SY25 than we would expect, given their unfilled positions in SY23. As a reminder, this figure compares TVGPP districts to each other to identify high performers; it does not compare TVGPP to non-TVGPP districts, as in the previous section, and thus should not be taken as an evaluation of the grant’s overall success.

Figure 6. Scatterplot depicting TVGPP districts’ unfilled positions in SY23 and SY25.



Note: Data points in blue are TVGPP districts whose SY25 unfilled positions are higher than predicted, whereas data points in red are lower than predicted. Data points in green represent the top 25% of districts whose SY25 unfilled positions are lower than predicted. The right panel shows a magnified view of the area indicated by the black box on the left panel.

To better understand the relationship between district strategies and their varied outcomes, we examine how the higher-performing districts allocated their grant funding to strategies, compared to how lower-performing districts did. This examination has two parts: (1) by dollar amount to represent the magnitude of grant dollars spent on different strategies and (2) by proportion to convey the concentration of grant funds allocated to different strategies. Table 7 shows the dollar amount spent by TVGPP districts on each of the nine spending categories. We examine lower- and higher-performing TVGPP districts separately (referred to in tables as below and above average) in terms of change in unfilled teaching positions relative to SY23. We also disaggregate the above-average group into the top 25% and top 10% of all districts to obtain a closer look at how districts of varying success allocated grant funds.

Table 7. Mean TVGPP district spending (in dollars) on spending strategies to reduce unfilled teaching positions, by district performance in reducing unfilled teaching positions.

	Below Average	Above Average	Top 25%	Top 10%
Special Compensation	73,877	57,477	73,698	111,289
Developing Staff Credentials	44,616	52,810	87,074	144,251
Professional Learning	28,703	28,643	41,578	36,722
Recruitment	13,724	23,257	33,090	63,491
Teacher Support	20,475	27,923	44,264	50,570
Classroom Resources	10,104	9,567	8,844	5,237
Standard Compensation	4,040	6,404	4,170	-
Support Staff	4,242	5,927	10,298	23,406
Location	951	3,571	4,831	8,228

Note: Cells highlighted in red contain lower values and cells in green higher values. See Appendix F, Table F1 for results disaggregated by urbanicity.

From this table, we see that higher-performing districts, on average, spent more on most spending categories, except for special compensation and classroom resources. (The average amount spent on professional learning by higher- and lower-performing districts was nearly the same.) However, this does not necessarily mean that more money leads to better outcomes. Larger districts have more unfilled teaching positions and thus receive more money under the grant funding formula. As such, it could be that bigger districts are high performing for other reasons, such as better ability to administer the money, better ability to attract talent, and so forth. To examine the issue in more detail, we also examine the districts by *percentage* spent on specific strategies, as shown in Table 8, which helps account for variability in amount of grant funding and district characteristics such as district size and urbanicity, among others.

Table 8. Mean percentage of TVGPP district spending on specific strategies to reduce unfilled teaching positions, by district performance in reducing unfilled teaching positions.

As percentage of total spending	Below Average	Above Average	Top 25%	Top 10%
Special Compensation	32%	28%	25%	27%
Developing Staff Credentials	20%	21%	24%	28%
Professional Learning	18%	15%	16%	9%
Recruitment	5%	7%	9%	15%
Teacher Support	11%	12%	15%	13%
Classroom Resources	7%	7%	4%	2%
Standard Compensation	4%	6%	3%	0%
Support Staff	2%	3%	3%	5%
Location	0%	1%	1%	1%

Note: Cells highlighted in red contain lower percentages and cells in green higher percentages. See Appendix F, Table F2 for results disaggregated by urbanicity.

Examined this way, we see similar patterns in strategy use. Higher-performing districts spent a greater percentage of their grant funding on developing staff credentials, recruitment, teacher support, and support staff, when compared to lower-performing districts. Meanwhile, lower-performing districts, when compared to the top 25% and 10% of higher-performing districts, spent a greater percentage on classroom resources, professional learning, and standard and special compensation. However, relative spending on categories was somewhat similar across districts of varying early performance, with the same strategies being most and least used by districts of all types—except for recruitment, a strategy for which average spending differed between higher- and lower-performing districts.

Finally, we look at how differences in changes in unfilled teaching positions among TVGPP districts relate to relatively endogenous district characteristics, such as urbanicity, district size, and funding levels, among others. Table 9 summarizes district characteristics across several dimensions. The majority of higher-performing districts were Tier 1 in the EBF scale, while a slight majority of lower-performing districts were Tier 2, suggesting that school funding may not be the driver of success with this grant. Higher-performing districts were also overwhelmingly more urban, larger in size, and had higher average teacher salaries. Importantly, all these relationships become stronger as we move further up into the top 25% and 10% of performance.

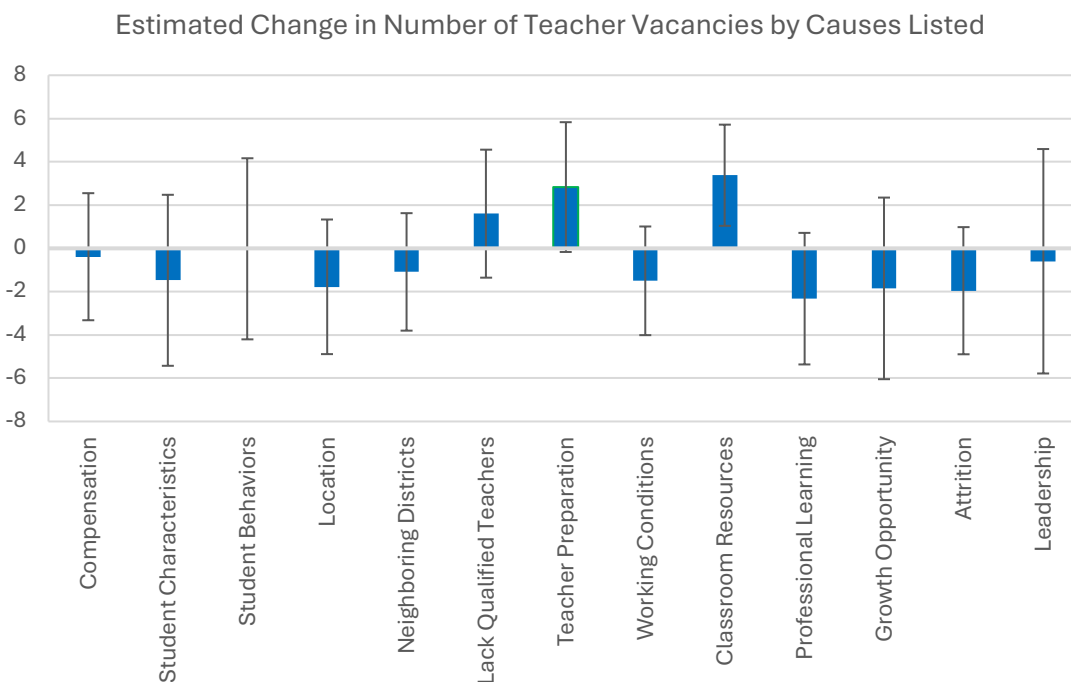
Table 9. Percentage of TVGPP districts with different performance in change in unfilled positions by different characteristics.

	Below Average	Above Average	Top 25%	Top 10%
<i>Evidence-Based Funding</i>				
Tier 1	45%	57%	62%	75%
Tier 2	52%	35%	33%	19%
Tier 3	3%	7%	5%	6%
Tier 4	0%	0%	0%	0%
<i>Locale</i>				
Urban	40%	40%	64%	81%
Percentage of Low-Income Students	61%	54%	56%	64%
<i>District Size</i>				
Small	12%	9%	5%	0%
Medium	48%	44%	29%	19%
Large	40%	47%	67%	81%
Average Teacher Salary	\$56,988	\$59,245	\$62,853	\$65,266
Percentage of Novice Teachers	10%	9%	9%	9%

RQ5: How did districts' reported causes of teaching vacancies predict changes in unfilled teaching positions?

To understand how district features and strategies related to changes in unfilled teaching positions, we conducted further regression analyses. As a reminder, regression analyses examine what factors predict an outcome, controlling for other factors and characteristics. In Figure 7, we share visually the results of a regression analysis that examines how the causes TVGPP districts identified for teacher shortages (coded as binary predictors) predicted changes in unfilled positions from SY23 to SY25. For a list of cause codes and their definitions, please refer to Table 2 or Appendix B, Table B1. The full regression output can be found in Appendix G, Table G1.

Figure 7. A visual representation of a regression for how districts' reported causes of teacher shortages predict changes in unfilled teaching positions over the course of the grant.



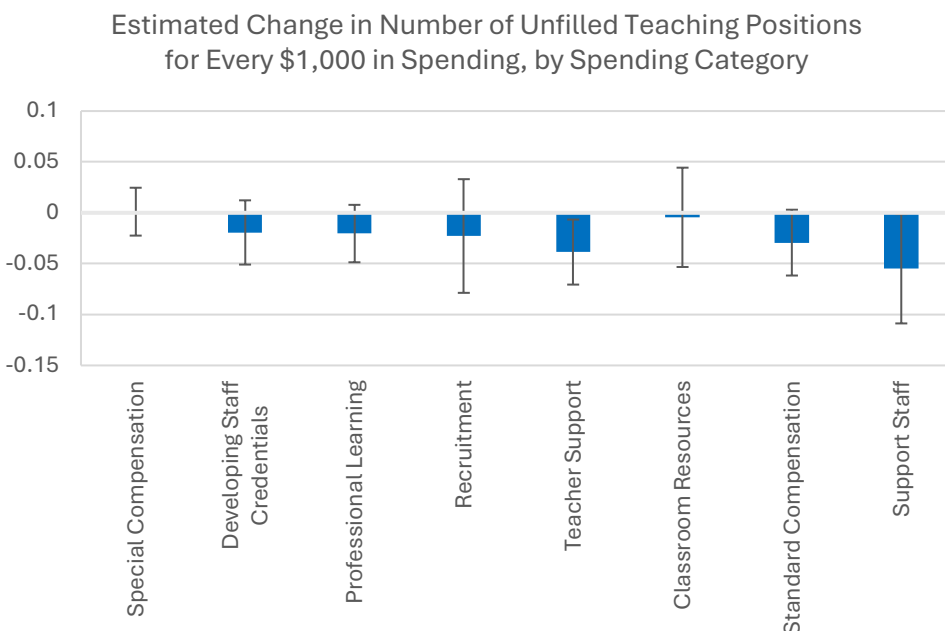
Note: The y-axis shows whether unfilled teaching positions were predicted to increase (positive numbers) or decrease (negative numbers) over the course of the grant. A decrease is, in this case, the desired result. The error bars represent a 95% confidence interval based on raw p-values.

This figure shows us that all causes were mildly predictive of changes in unfilled positions, as most of the bars hover around 0, but none were statistically significant. However, one cause did initially predict an increase in unfilled positions based on raw p-values at the 5% level. This cause was classroom resources, but after adjusting for multiple comparisons (Glickman et al., 2014), the association did not remain statistically significant (see Appendix G, Table G2). We note that the limited sample size ($N = 156$) means we have low statistical power to detect statistically significant relationships. We therefore caution that this finding should be taken as preliminary, and classroom resources could be a variable to watch in the future.

RQ6: How did districts' spending on strategies to reduce teaching vacancies predict changes in unfilled teaching positions?

Finally, we examined how districts' diverse strategies supported changes in unfilled teaching positions over the course of the grant. Figure 8 shares visually the results of a regression analysis examining the relationship between district spending on each strategy (in thousands of dollars) and changes in unfilled positions between SY23 and SY25. As in Figure 7, a negative change is a positive signal, in that unfilled positions were reduced. Full results for the regression are in Appendix G, Table G1.

Figure 8. A visual representation of a regression for how districts' spending on strategies to address teacher shortages predicts changes in unfilled teaching positions over the course of the grant.



Note: The error bars represent a 95% confidence interval based on raw p-values.

Similar to the previous finding, this figure shows us that all strategies were only mildly predictive of changes in unfilled positions, but none were statistically significant. Initially, two strategies predicted reduction in unfilled positions, based on raw p-values at the 5% level: teacher support and hiring school support staff. However, after correcting for multiple hypotheses (Glickman et al., 2014), these associations did not remain statistically significant (see Appendix G, Table G3). Again, this non-finding is likely related to the limited sample size (N = 170). It is worth noting that these two strategies could be a focus of future study.¹⁷

Summary of Variability in Outcomes by Participating Districts

The key findings from this section are as follows:

- TVGPP districts with the greatest early success tended to be urban, larger in size, had higher average teacher salaries, and were in EBF Tier 1, the tier of schools furthest from funding adequacy. Because they were larger in size, these districts also received higher amounts of grant funding.
- One root cause of shortages, a lack of classroom resources, was initially associated with an increase in unfilled positions, which is undesirable as the program aims to reduce unfilled positions. But, after adjusting for multiple comparisons, this association did not remain statistically significant. We therefore caution that this finding should be interpreted as preliminary, and classroom resources could be a variable to watch in future studies.
- TVGPP districts with better early success lowering teaching vacancies, when compared to TVGPP districts with less success, spent a greater percentage of grant funding on developing staff credentials, recruitment, teacher support, and hiring support staff. However, across all TVGPP districts, no strategies reached statistical significance in predicting reductions in unfilled positions. Teacher support and hiring school support staff initially were associated with a decrease in unfilled positions, but after adjusting for multiple comparisons, these associations did not remain statistically significant. One potential reason why these strategies were not associated with improvements in teaching vacancies could be due to the early nature of the outcome variable, as unfilled positions for SY25 were collected after districts' participation in just one year of the grant.

These results suggest some differences in districts' abilities to reduce unfilled teaching positions based on district characteristics. No associations between districts' root causes of teacher shortages and changes in unfilled teaching positions from SY23 to SY25 were found to be statistically significant. No statistically significant associations were also found between specific strategy use and changes in teaching vacancies. Repeating this analysis after the end of the grant period could provide a fuller picture of which strategies were most successful in reducing teaching vacancies.

Conclusion

This paper examines the second year of an important Illinois policy initiative to reduce unfilled teaching positions within 170 public school districts with chronic teacher shortage issues. Its findings provide early evidence about how the program has reduced unfilled positions overall, across grant program participants, as well as information about how specific district contexts and strategies might influence district success with the program.

The key findings are as follows:

- **Popular strategies to address teaching vacancies emerged across participating districts.** TVGPP districts prioritized strategies that developed staff credentials for vacant positions, provided professional learning to new and veteran teachers, and distributed direct compensation to new and returning teachers.
- **Overall, unfilled teaching positions are dropping in participating districts.** Over the course of the grant program, unfilled positions have decreased in TVGPP districts (in both rural and urban areas) while increasing in non-TVGPP districts. Controlling for observable district characteristics, TVGPP districts have lowered teaching vacancies more than non-TVGPP districts, on average. However, this does not mean that the grant program caused these changes; an attempt to examine causal effects of the grant was inconclusive but should be repeated in later years when more data are available.
- **Some TVGPP districts reduced teaching vacancies more than other TVGPP districts.** TVGPP districts with the greatest early success tended to be urban, larger in size, had higher average teacher salaries, and were in EBF Tier 1, the tier of schools furthest from funding adequacy. Because they were larger in size, these districts also received higher amounts of grant funding.
- **In this early period of the grant, no statistically significant associations were found between districts' reported causes of teacher shortages and changes in teaching vacancies.** This is likely related to the limited sample size of TVGPP districts (i.e., the small number of participating districts leads to low statistical power to detect statistically significant relationships) and to the fact that some causes take longer to address than others. Importantly, districts' varied causes of teacher shortages dually highlight the complexity of the issue and emphasize the need for adaptable, multifaceted strategies to reduce vacancies. More time is needed for a comprehensive study as strategies to address root causes unfold.
- **While we caution that these findings are early, before all district strategies have had a chance to conclude, TVGPP districts with early success lowering teaching vacancies spent a greater percentage of grant funding on developing staff credentials, recruitment, teacher support, and hiring support staff.** None of these strategies, however, were statistically significant in predicting reductions in unfilled positions. One potential reason why these strategies were not associated with improvements in teaching vacancies could be due to the limited sample size (and low statistical power) and/or the early nature of the outcome variable, as unfilled positions for SY25 were collected after districts had one year to enact solution strategies.

In sum, these early findings suggest that the grant program may be a promising approach for reducing teaching vacancies and that some strategies undertaken by districts to reduce vacancies may be more successful than others. However, we caution that these findings are still early and that some strategies may take longer to unfold and produce results, meaning that all findings should be interpreted with care. We

provide several methods that can be reproduced in subsequent years to continue to monitor program outcomes.

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Appendix A TVGPP Funding Formula

The funding formula ISBE used to allocate TVGPP funding to individual districts in SY24 to SY26 is below (see ISBE, 2025a).

Calculation of District Awards with “Variable-Base Funding” in SY24 and SY25

Districts selected for the program were allocated funding based on their total unfilled teaching positions in SY23. Because these totals ranged widely, ISBE created three different base funding levels to “allocate funding for selected districts with lower counts of unfilled teaching positions.” Additionally, districts received \$8,582.20 per reported unfilled teaching position.

$$\text{Total Award} = \text{Base} + (8,582.2 \times \text{count of unfilled teaching positions in SY23})$$

Base Options

- Eleven or more counts of unfilled teaching positions receive a \$200,000 base.
- Six to 10 counts of unfilled teaching positions receive a \$125,000 base.
- Fewer than six counts of unfilled teaching positions receive a \$75,000 base.

Examples

Chicago Public Schools, which reported 1,094 unfilled teaching positions in SY23
 $\$200,000 + (\$8,582.20 \times 1,094) = \$9,588,926.33$

Pleasant Hill CUSD 3, which reported four unfilled teaching positions in SY23
 $\$75,000 + (\$8,582.20 \times 4) = \$109,328.80$

Calculation of District Awards for SY26. In SY26, districts received two-thirds of their SY24 and SY25 awards. Original awards were divided by three and then multiplied by two.

Examples

Chicago Public Schools
 $\$9,588,925.00 / 3 \times 2 = \$6,392,616.67$

Pleasant Hill CUSD
 $\$109,329.00 / 3 \times 2 = \$72,886.00$

Appendix B

Codebooks for Causes of and Solutions for Teaching Vacancies

Table B1. Codebook for reported causes of teaching vacancies found in district narratives (from Beilstein & Bates, 2024b).

Cause Category	Definition
Compensation	District offers noncompetitive salary, benefits, healthcare.
Student Characteristics	District points to perception that their specific student population poses unique challenges (or challenges in hiring teachers with the right perspective/training).
Student Behaviors	District points to specific student behaviors as a concern (e.g., low achievement, behavioral problems, socioemotional/trauma).
Location	The area surrounding the district deters recruitment and retention (e.g., area is too rural, no housing, lack of access to healthcare, long commute, run-down buildings/facilities, high crime).
Neighboring Districts	District lost applicants and/or current teachers due to competition from neighboring districts that offer better salary, housing options, commute, access to healthcare, and/or community attractions. <i>Note:</i> Losing teachers due to better compensation in neighboring districts falls under this code and under compensation.
Growth Opportunity	District does not provide financial support for teachers to further their education or licensure/credentials.
Lack of Qualified Teachers	District receives small number of—or, at times, no—qualified applicants due to hard-to-fill specialization and/or onerous certification requirements.
Teacher Preparation	District cites issues with teacher preparation programs (TPPs; e.g., district is too far from TPP, has no TPP partnerships, cannot place student teachers, too few teacher candidates and graduates).
Recruitment Practices	District reports issues during the recruitment process (e.g., lack of places to advertise, problematic interview procedures, need more staff to recruit).
Working Conditions	District cites untenable working conditions as a problem (e.g., high stress, heavy workload, burnt-out or underappreciated staff, COVID-related stressors, poor parent-teacher or teacher-teacher connections).
Classroom Resources	District curriculum is insufficient (i.e., challenging, disliked, or outdated); district does not provide needed classroom supplies; or classroom furniture and/or technologies need updating.
Professional Learning	District does not provide teachers needed coaching, mentoring, or professional learning.
Attrition	Teachers left the district due to personal choices (e.g., moving closer to home), changing professions, or retired. <i>Note:</i> Districts that cite losing teachers to neighboring districts is not coded here, but under neighboring districts.
Leadership	District points to leadership as an area of concern (e.g., underdeveloped leadership, leadership turnover, vacancy in key leadership positions).

Table B2. Codebook for spending strategies found in district narratives and in budget details (adapted from Beilstein & Bates, 2024b).

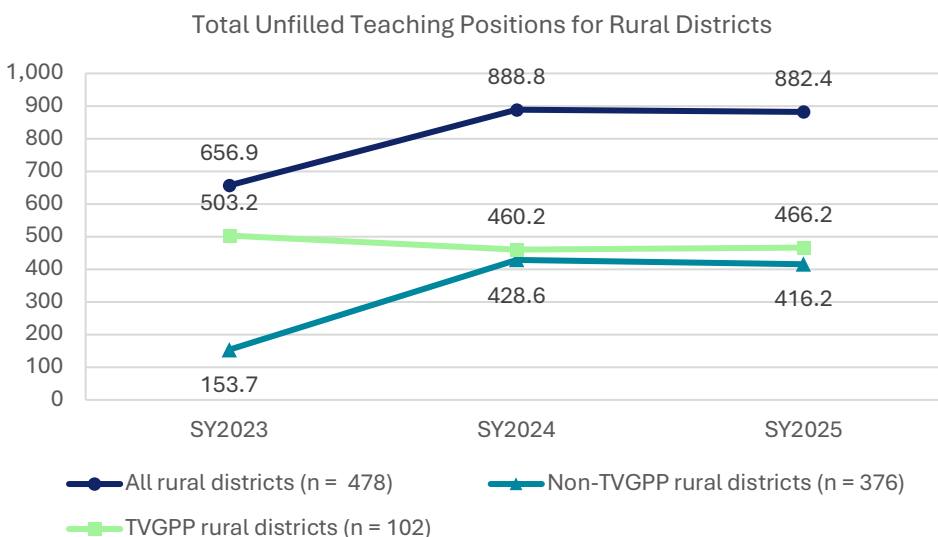
Spending Strategy Category	Definition
Special Compensation	Implementation of short-term or one-time bonuses that included the following types of stipends: • Hiring or signing bonuses (includes special subject stipends, which were given to new teachers or current teachers moving into a high-need subject) • Student loan forgiveness or tuition repayment • Retention bonuses • Other stipends (e.g., teacher attendance stipends)
Development of Staff Credentials	Provision of formal growth opportunities for current non-licensed and licensed staff to fulfill staffing needs, often in hard-to-fill areas. Strategies included the following: <i>Teacher preparation initiatives for non-licensed staff</i> • Building partnerships with teacher preparation programs; creating high school education pathways • Implementing Grow Your Own programs or other pathway initiatives for paraprofessionals, teacher aides, and other non-licensed staff (e.g., by providing tuition reimbursements and offsetting other costs of education) • Providing student teachers with stipends and paying current teachers to mentor student teachers <i>Growth opportunity initiatives for licensed staff</i> • Providing tuition reimbursements and other costs for teachers pursuing further education, licensure/certification, often in hard-to-fill areas
Professional Learning	Provision of additional teacher professional learning that includes instructional coaches, induction and mentoring programs, other learning opportunities, and stipends for current teachers to serve in mentorship/coaching roles.
Recruitment	Investing in recruitment practices included the following measures: Increasing advertising budget, improving interview protocol, hiring recruitment staff, distributing referral bonuses for staff who refer new hires, purchasing materials and travel for recruitment fairs, hiring international teachers (e.g., paying for VISAs), paying administration costs related to TVGPP.
Teacher Support	Implementing self-care programs, affinity groups, teacher/staff celebrations, promotional apparel and goods, improvements to facilities, activities to improve school climate (e.g., climate/culture surveys).
Classroom Resources	Distribution of stipends for classroom supplies (e.g., curriculum, technology, supplies for teachers and students, furniture, etc.).
Location	Distribution of stipends for relocation, housing, commute, general living costs, daycare; contributions for staff salary in in-school daycare programs.
Standard Compensation	Investments to increase teacher salary, improve healthcare coverage, covering full-time teachers' salaries (e.g., hiring and paying full-time special education teachers), amend salary scales to recognize teachers' prior years of experience.
Support Staff	Hiring more staff, such as school support personnel, paraprofessionals, and substitutes, to provide additional support to teachers.

Appendix C

Trends in Unfilled Teaching Positions by Urbanicity

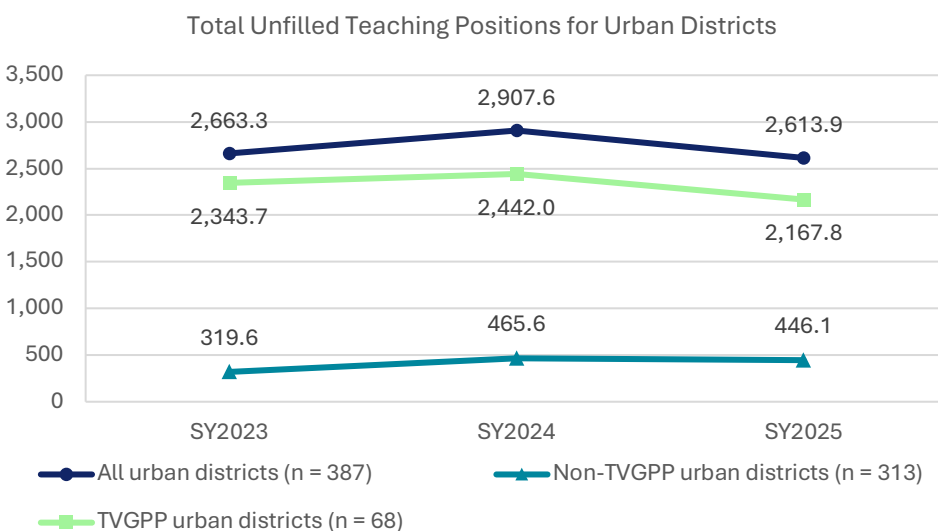
Here, we examine changes in unfilled teaching positions for districts by urbanicity. Figure C1 shows the changes in unfilled teaching positions from prior to the grant (SY23) to present (SY25) for rural districts. Overall, the rural districts participating in the TVGPP dropped their unfilled positions by 7% (from 503.2 to 466.2), while non-participants increased their unfilled positions by 171% (from 153.7 to 416.2).

Figure C1. Total unfilled teaching positions in SY23 to SY25 across rural districts statewide and by non-TVGPP and TVGPP rural districts.



The story in urban districts is similar, if less dramatic in magnitude (see Figure C2). Urban districts participating in the TVGPP dropped their unfilled positions by 8% (from 2,343.7 to 2,167.8), while non-participating districts increased their unfilled positions by 40% (from 319.6 to 446.1).

Figure C2. Total unfilled teaching positions in SY23 to SY25 across urban districts statewide and by non-TVGPP and TVGPP urban districts.



Appendix D
Analysis of Change in Unfilled Teaching Positions and TVGPP participation

We include additional regression specifications to complement Table 6. We note that the coefficients are similar across models, and the results appear to be robust to different controls and specifications.

Table D1. Alternative regression specifications/robustness check.

	Original		Excluding Chicago Public Schools		Including EBF Tier 4		Excluding Zero-Vacancy Districts	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Change in Unfilled Positions (SY23 - SY25)							
TVGPP District	-1.201** (0.584)	-1.961*** (0.517)	-1.201** (0.584)	-1.961*** (0.516)	-0.985* (0.579)	-1.683*** (0.494)	-0.873 (0.601)	-1.674*** (0.576)
Observations	660	660	659	659	860	860	356	356
R-squared	0.616	0.631	0.014	0.053	0.604	0.617	0.655	0.668
Chicago Public Schools	X	X					X	X
Student Enrollment		X		X		X		X
District Urbanicity		X		X		X		X
District Demographics		X		X		X		X
EBF Tier		X		X		X		X
Exclude Districts with 0 Vacancies							X	X
Exclude Chicago			X	X	X	X		

Robust standard errors in parentheses

***p<0.01, **p<0.05, *p<0.1

In Figure D1, we plot residuals against fitted values to see whether the results might be mechanically driven by larger districts or by a systematic misfit or misspecification. The plots show little to no evidence of heteroskedasticity or model misspecification. We exclude Chicago Public Schools from this figure for visual interpretability.

Figure D1. Regression diagnostics: Plot of residuals against fitted values for the change approach we use in the current study.

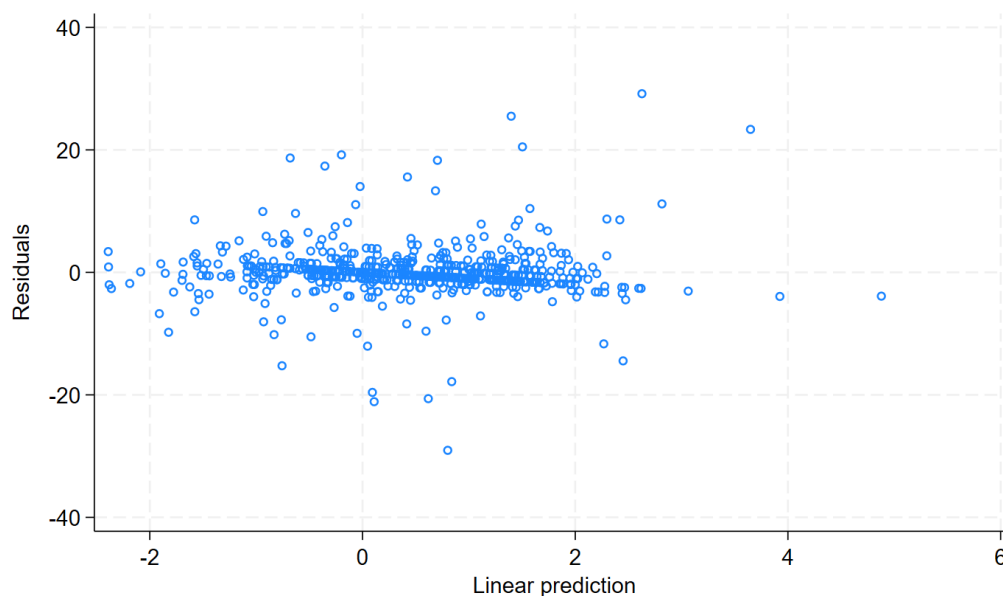


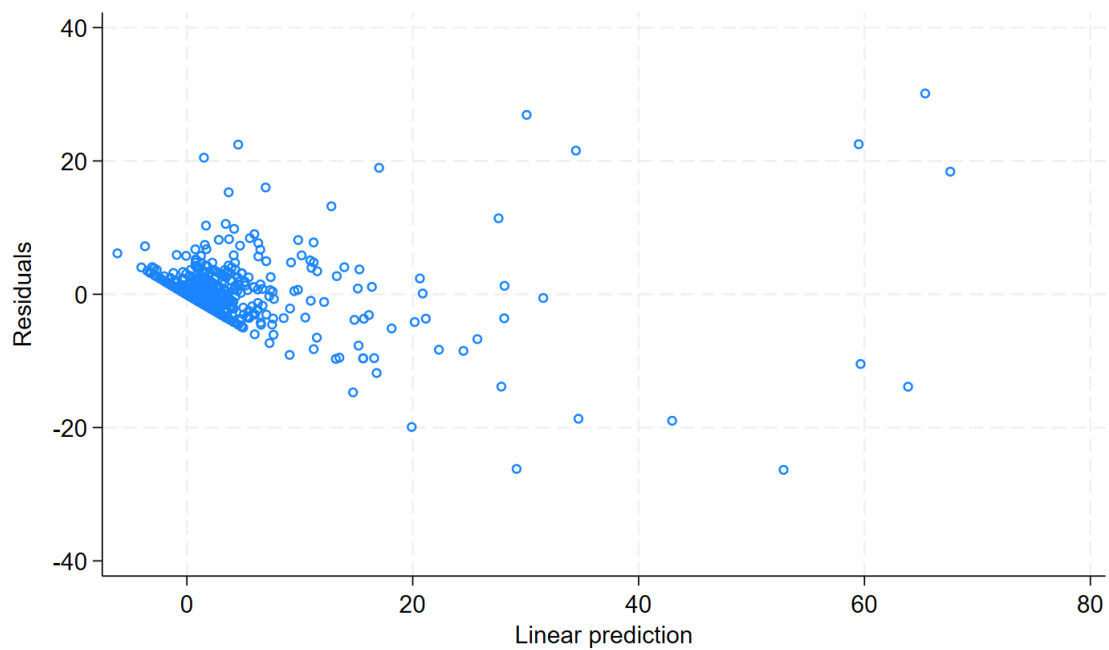
Table D2. Regression output using a *lagged dependent variable* (LDV) model.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Unfilled Positions SY25							
TVGPP District	-0.993 (0.761)	-1.369* (0.774)	-0.993 (0.760)	-1.369* (0.773)	-0.661 (0.738)	-1.108 (0.755)	-0.717 (0.696)	-1.146 (0.787)
Unfilled Positions SY23	0.979*** (0.106)	0.901*** (0.121)	0.979*** (0.106)	0.901*** (0.121)	0.967*** (0.104)	0.913*** (0.114)	0.982*** (0.107)	0.901*** (0.128)
Constant	0.786*** (0.133)	16.23 (18.80)	0.786*** (0.133)	16.23 (18.79)	0.579*** (0.113)	-4.686 (6.611)	0.475* (0.252)	11.24 (29.21)
Observations	660	660	659	659	860	860	356	356
R-squared	0.987	0.988	0.746	0.759	0.986	0.987	0.989	0.989
Unfilled Positions SY23	X	X	X	X	X	X	X	X
Include Chicago Public Schools	X	X					X	X
Student Enrollment		X		X		X		
District Urbanicity		X		X		X		X
District Demographics		X		X		X		X
EBF Tier		X		X		X		X
Exclude Districts with 0 Vacancies							X	X
Exclude Chicago Public Schools			X	X	X	X		

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

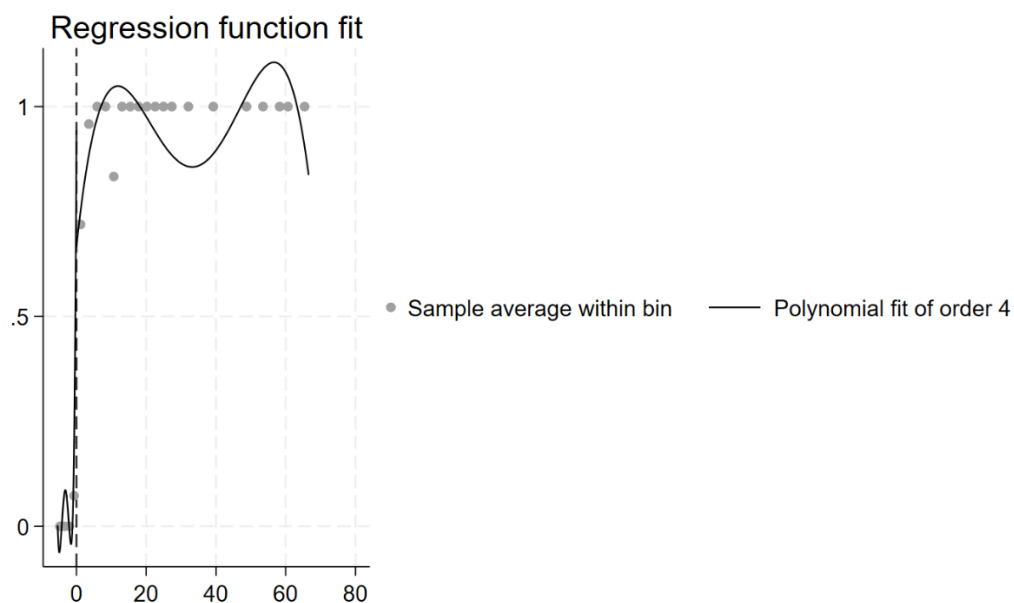
Figure D2. Regression diagnostics: Plot of residuals against fitted values using an LDV model (i.e., the approach we did not use in the current study).



Appendix E

Regression Discontinuity Analysis

Figure E1. Regression discontinuity first-stage results.



Note: The figure plots the relationship between the running variable (i.e., distance from the unfilled teaching positions cutoff in SY23) and the likelihood of receiving the treatment (in this case, participation in the TVGPP grant). The figure shows that districts below the cutoff have a 0 likelihood of receiving the treatment, while districts above the cutoff have a likelihood near 1. That is, no districts below the cutoff were treated, while almost all districts above the cutoff received the treatment.

Table E1. Descriptive statistics for districts below and above the cutoff.

	Within 1 Vacancy		Within 2 Vacancies	
	Below Cutoff	Above Cutoff	Below Cutoff	Above Cutoff
Student Enrollment (#)	1,423	1,539	976	1,485
Attendance Rate	93%	92%	93%	92%
Low-income Students	46%	48%	45%	49%
White	81%	74%	83%	73%
Black	3%	8%	3%	8%
Hispanic / Latino	10%	12%	8%	13%
Asian	1%	1%	1%	1%
IEP	15%	17%	15%	17%
EL	4%	5%	3%	5%
EBF Tier 1	51%	49%	50%	49%
EBF Tier 2	42%	35%	42%	36%
EBF Tier 3	8%	15%	8%	13%
EBF Tier 4	0%	0%	0%	0%

Appendix F
TVGPP Spending Strategies by Urbanicity

Table F1. Spending strategies, as a mean of district spending in dollars, disaggregated by urbanicity.

Mean of total spending in dollars	Urban				Rural			
	Below Average	Above Average	Top 25%	Top 10%	Below Average	Above Average	Top 25%	Top 10%
Special Compensation	127,619	82,155	76,963	108,009	38,456	41,309	67,819	125,501
Developing Staff Credentials	84,853	92,731	107,888	168,257	18,097	26,655	49,608	40,228
Professional Learning	38,054	42,912	49,871	38,709	22,540	19,295	26,650	28,111
Recruitment	29,832	47,954	42,539	64,462	3,108	7,076	16,081	59,287
Teacher Support	22,343	37,079	45,502	57,251	19,244	21,923	42,035	21,620
Classroom Resources	6,254	4,923	5,188	1,946	12,641	12,610	15,424	19,496
Standard Compensation	-	3,969	5,586	-	6,702	8,000	1,620	-
Support Staff	3,961	10,787	13,870	28,807	4,428	2,743	3,868	-
Location	1,437	7,925	6,265	10,127	631	719	2,250	-

Table F2. Spending strategies, as a mean percentage of total spending, disaggregated by urbanicity.

Mean percentage of total spending	Urban				Rural			
	Below Average	Above Average	Top 25%	Top 10%	Below Average	Above Average	Top 25%	Top 10%
Special Compensation	37%	27%	25%	25%	29%	29%	24%	38%
Developing Staff Credentials	27%	24%	25%	31%	16%	20%	24%	18%
Professional Learning	16%	16%	17%	9%	20%	14%	14%	9%
Recruitment	8%	13%	11%	14%	2%	4%	6%	20%
Teacher Support	8%	11%	13%	14%	14%	12%	18%	10%
Classroom Resources	4%	1%	2%	1%	9%	11%	9%	6%
Standard Compensation	0%	2%	3%	0%	7%	8%	1%	0%
Support Staff	1%	3%	3%	6%	3%	3%	4%	0%
Location	0%	2%	1%	1%	0%	0%	1%	0%

Appendix G

Causes of and Strategies for Teaching Vacancies and Changes in Unfilled Teaching Positions

Table G1. Regression outputs for analysis related to how causes (Figures 7) and strategies (Figure 8) separately predict changes in unfilled teaching positions.

Reported Causes	(1) Change Model	Spending Strategies	(1) Change Model
Compensation	-0.386 (1.498)	Special Compensation	0.00112 (0.0120)
Student Characteristics	-1.476 (2.016)	Developing Staff Credentials	-0.0193 (0.0161)
Student Behaviors	-0.0208 (2.135)	Professional Learning	-0.0204 (0.0144)
Location	-1.777 (1.587)	Recruitment	-0.0228 (0.0285)
Neighboring Districts	-1.088 (1.385)	Teacher Support	-0.0386** (0.0163)
Lack of Qualified Teachers	1.603 (1.509)	Classroom Resources	-0.00444 (0.0249)
Teacher Preparation	2.832* (1.530)	Standard Compensation	-0.0293* (0.0165)
Working Conditions	-1.500 (1.281)	Support Staff	-0.0550** (0.0274)
Classroom Resources	3.379*** (1.193)	Constant	27.79 (51.76)
Professional Learning	-2.325 (1.551)	Observations	170
Growth Opportunity	-1.850 (2.141)	R-squared	0.738
Attrition	-1.957 (1.499)	Chicago Public Schools	X
Leadership	-0.596 (2.646)	Student Enrollment	X
Constant	18.52 (53.27)	District Urbanicity	X
Observations	156	District Demographics	X
R-squared	0.741	EBF Tier	X
Chicago Public Schools	X	Robust standard errors in parentheses.	
Student Enrollment	X		
District Urbanicity	X	*** p<0.01, ** p<0.05, * p<0.1	
District Demographics	X		
EBF Tier	X		

In both tables below, we use the Benjamin-Hochberg False Discovery Rate (FDR) correction for multiple hypothesis tests. Coefficient, standard error, t-statistic, and raw p-value are estimated from regressions.

Table G2. Corrections (p-values and adjustment) for multiple hypotheses in causes regression (see Figure 7).

Variable	Coefficient	SE	t-stat	Raw p-value	Adjusted p-value (FDR)
Classroom Resources	3.38	1.19	2.83	0.01	0.07
Teacher Preparation	2.83	1.53	1.85	0.07	0.43
Professional Learning	-2.32	1.55	-1.50	0.14	0.54
Attrition	-1.96	1.50	-1.31	0.19	0.54
Working Conditions	-1.50	1.28	-1.17	0.24	0.54
Location	-1.78	1.59	-1.12	0.27	0.54
Lack of Qualified Teachers	1.60	1.51	1.06	0.29	0.54
Growth Opportunity	-1.85	2.14	-0.86	0.39	0.60
Neighboring Districts	-1.09	1.39	-0.78	0.43	0.60
Student Characteristics	-1.48	2.02	-0.73	0.47	0.60
Compensation	-0.39	1.50	-0.26	0.80	0.89
Leadership	-0.60	2.65	-0.23	0.82	0.89
Student Behaviors	-0.02	2.13	-0.01	0.99	0.99

Table G3. Corrections (p-values and adjustment) for multiple hypotheses in spending strategies regression (see Figure 8).

Variable	Coefficient	SE	t-stat	Raw p-value	Adjusted p-value (FDR)
Teacher Support	-0.04	0.02	-2.37	0.02	0.15
Support Staff	-0.06	0.03	-2.01	0.05	0.19
Standard Compensation	-0.03	0.02	-1.78	0.08	0.21
Professional Learning	-0.02	0.01	-1.41	0.16	0.32
Developing Staff Credentials	-0.02	0.02	-1.20	0.23	0.37
Recruitment	-0.02	0.03	-0.80	0.43	0.57
Classroom Resources	0.00	0.02	-0.18	0.86	0.93
Special Compensation	0.00	0.01	0.09	0.93	0.93

Endnotes

¹ Excluding Chicago Public Schools, teaching vacancies in program-participating districts amounted to 53% of all teaching vacancies statewide in SY23.

² ISBE assesses districts' needs for state funding using the EBF formula. Tier 1 districts are furthest from funding adequacy: These districts need and receive the most state funding. Tier 4 districts have more than adequate funding: These districts need and receive the least state funding.

³ The program's application and review process was replicated in the second and third year of the policy initiative. In other words, the state reviewed and approved district applications and spending plans each year of the grant. We limit the current analysis to the first year of the TVGPP due to study scope and available unfilled positions data. However, Table 5 illustrates that districts did not greatly alter strategies in the second year of the program.

⁴ Although the approval and amendment process spanned the entire fiscal year, ending in July 2024, many districts enacted strategies toward the beginning and middle of the year.

⁵ Notably, the metrics of teacher retention and teaching vacancies are intertwined. To illustrate, teacher attrition during one school year could lead to unfilled positions the subsequent school year. As such, unfilled teaching positions is likely the best measure of grant outcomes.

⁶ Although our focus is primarily on how district spending during the first year of the grant relates to changes in unfilled teaching positions, we include an analysis of district spending in year two to obtain a sense of whether spending patterns for program participants, as a whole, changed across years.

⁷ One way to address this limitation is to perform a difference-in-difference identification strategy, in which the change in unfilled positions in the "untreated" group (non-TVGPP districts) serves as a counterfactual for what would have happened to the "treated" group (TVGPP districts) in the absence of treatment. However, this method rests on the assumption of parallel trends. That is, that the groups showed similar trends in vacancies before the treatment. It is challenging to test this assumption, but our data suggests that parallel trends was not the case (see Figure 2). For this reason, as well as the specifics of how treatment was assigned (with a cutoff), we believe that an RD is a more appropriate causal design.

⁸ This amount is slightly lower than the total yearly program allocation of \$45 million due to differences in how districts accounted for indirect costs. In particular, the line items in the Chicago Public Schools' budget detail do not include indirect costs, which accounted for \$1.8 million of their total spending in the program's first year.

⁹ Of the TVGPP districts with available unfilled positions data in SY22, 90% of urban districts and 78% of rural districts would have been selected into the TVGPP.

¹⁰ We present results using an LDV approach in Appendix D, Table D2. In that model, the outcome is SY25 unfilled positions, with the same controls, plus the addition of a lagged variable: SY23 unfilled positions (baseline). While the LDV approach provides some statistical advantages in certain settings, it is less intuitive and more challenging to interpret for non-academic audiences. Meanwhile, the change model (presented in Table 6) offers a more transparent measure of improvement (or worsening): Positive values reflect more unfilled positions, while negative values reflect fewer unfilled positions over time. Moreover, beyond interpretability, the change model has several desirable statistical properties in this context. First, the LDV model may have issues with collinearity which makes it noisier and less precise. Second, the LDV model produces heteroskedastic residuals (Appendix D, Figure D2), while the change model shows homoscedastic residuals (Appendix D, Figure D1). Thus, even though we use robust standard errors in all our models to

account for this, the change model presents fewer problems with key regression assumptions. Finally, we emphasize that the two methods produce similar results (though the LDV model is less precise and slightly smaller coefficients). This consistency increases our confidence in the findings.

¹¹ Another limitation is related to spillovers: Regression analysis relies on the assumption that one unit's treatment status does not affect the potential outcomes of another unit (the Stable Unit Treatment Value Assumption, in technical terms). We acknowledge that, in the shorter term, districts may be competing for staff to fill their vacancies. Thus, the results may reflect not only improvements for the treated districts, but also competition for staff among districts. This would, nevertheless, be an acceptable outcome of the grant, since it aims to redistribute resources to districts with higher needs in terms of vacancies. In the longer term, however, the policy may lead to changes in the teacher preparation pipeline and the teacher labor market more broadly. These longer-term changes are not captured in our analysis. (One way to address this would be to develop a general equilibrium model of the supply and demand for teachers across districts. However, this is far beyond the scope of this study.)

¹² To select districts for inclusion in the program, ISBE ranked rural and urban districts separately by counts of unfilled teaching positions, from highest to lowest. The top 102 rural districts and top 68 urban districts were selected. Eligibility rules also restricted EBF Tier 4 districts (i.e., adequately funded districts) from participating. When there was a tie in the count of unfilled positions (i.e., the cutoff), a "tiebreaker" of vacancy rate at the cutoff point was also used to assign districts to the program. We account for these selection nuances in our RD design but consider the RD a "fuzzy" rather than "strict" model (see, e.g., Calonico et al., 2014).

¹³ We present a simplified version of the RD in Figure 4 to aid interpretation. Because treatment was not perfectly assigned at the cutoff (there was a secondary measure—vacancy rate—used in the case of a tie in number of vacancies), the estimate requires a fuzzy design. However, since ties are rare, distance from the cutoff almost perfectly predicts treatment (see Appendix E, Figure E1) and is almost perfectly aligned with the sharp RD estimate. We present the visual of a sharp design because it directly relates the running variable (distance from cutoff) to the outcome of interest.

¹⁴ Because grant dollars were distributed according to the formula described above, which offers more funds to districts with more vacancies, we do not attempt to measure the effect of more or less dollars per vacancy, but rather the effect of receiving the grant overall.

¹⁵ While results from the RD analysis are consistent and in line with results from the rest of the paper, they are imprecise (i.e., not statistically significant). Thus, we cannot reject the null hypothesis that the program had no effect. Stated another way, we cannot confidently claim that the program caused the reduction in unfilled positions.

¹⁶ To assist in program implementation, ISBE provided TVGPP districts with information on research-based strategies that many districts adopted. Strategies targeted recruitment (e.g., teacher apprenticeships, mentoring student teachers); retention (e.g., mentoring and induction programs); and both recruitment and retention (e.g., hiring and retention bonuses).

¹⁷ Though the association between teacher support and hiring school support staff is not statistically significant after adjusting for multiple comparisons, that we might see early reductions in teaching vacancies linked to these strategies makes some sense. Both strategies would have an immediate impact on the working conditions teachers experience every day, perhaps leading to more retention of current teachers and a more enticing option for new teachers. It may also be that other strategies, like developing staff credentials, take longer to see results.

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