



School District Staffing Challenges in a Rapidly Recovering Economy

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There is much discussion of late about the significant challenges that schools face with hiring staff for the 2021-22 school year and implementing COVID recovery initiatives. Numerous stories report increasing difficulties recruiting and retaining all manner of school personnel, from bus drivers to teachers (Barnum, 2021). But it is also true that stories about staffing challenges, and teacher shortages in particular, have been out in popular media for years, including years when it *did not* appear that these challenges were particularly acute according to large-scale available data (Goldhaber & Theobald, 2016; Jacobs & Olson, 2021). And despite some media reports of teachers and principals leaving the workforce because of COVID, there is evidence that retention rates remain consistent with pre-pandemic levels (Diliberti & Schwartz, 2021). Thus, at least some stories that appear in popular media do a poor job of representing the underlying labor market dynamics for public education employees.

Unfortunately, it is challenging to get a clear and *timely* picture about the staffing challenges schools face as comprehensive data on the supply and demand of school personnel is generally only available long after the fact. This is a problem if there is a desire to implement targeted solutions to staffing challenges, as opposed to, for instance, across-the-board pay increases (Cowan et al., 2016). Federal, state, and local education agencies cannot offer timely retention incentives in response to teacher attrition or sign-on bonuses for positions that are particularly difficult to staff without knowing which areas are experiencing shortages (Dee & Goldhaber, 2017).

In this research brief, we describe what we have learned about the staffing challenges faced by various kinds of school districts endeavoring to hire different school personnel in Fall of 2021. We view job postings in the Fall of the school year as reasonable proxies for shortage areas; the underlying assumption is that districts would have liked to have filled these positions prior to the start of the school year either through finding the right staff member before the start of the year, or by retaining staff.

Data Collection and Analysis

To better understand the nature of schools current staffing challenges, how pervasive it is across types of school personnel (e.g., bus drivers), different teaching specialties (STEM, Special Education, etc.), and for different types of school systems (e.g. high- and low-poverty), we collected data on jobs posted on school district websites for the great majority (about three quarters of districts in Washington state).¹ These districts serve over 1.1 million students and represent over 98% of students in the state. Data collected include the job title, date posted,² district IDs, when available school IDs, and job numbers, and were collected on October 26th.³ Using job titles, we classified postings as belonging to one of the following categories: administrative, athletics, bus drivers/other transportation, facilities, food service, health, paraeducators, and teaching. Within the teaching positions the following subcategories were

¹ We collected data for 216 of 295 districts using automated web scrapers. The remaining 78 districts either had unique webpages and required fine-tuned scrapers, did not post jobs in a consistent manner precluding the construction of a reliable scraper, or at the time had no jobs posted on their webpage.

² If date posted is not available, the date the first time a job was observed was used as its posting date.

³ We started collecting data twice a week beginning on September 24th of 2021. The findings we present here are broadly consistent with earlier snapshots of the data.

created: English Language Learner, Elementary, Special Education, science, technology, engineering, and math (STEM), substitutes, and other.

After obtaining position announcements we linked job posting data to information about the individual school districts. Specifically, we merged in school report card data from the Office of the Superintendent of Public Instruction on the percent of students eligible for free-or-reduced-price lunch (FRPL) and from the National Center for Education Statistics on the urbanicity of the school district. Based on the percent of students eligible for FRPL we constructed quartiles at the district level and refer to districts in the top quartile as “high-poverty” and districts in the bottom quartile as “low-poverty” districts. Below we present the number of open positions for all categories of jobs and for subcategories of teaching positions.

Figure 1 displays the number of posted job positions for all categories. Interestingly, while the media tends to focus on the “teacher shortage” (Bauerlein & Koh, 2020; Pandey, 2021; Singer, 2021), the position with the most postings statewide is that of paraeducator, about twice as many as teachers. Paraeducators can be many things, but often provide one-on-one support, support to students with disabilities, life skills support, and support to students with English language needs. The number of athletic positions (mostly coaches) also far surpass teaching positions.⁴

⁴ The number of athletic position postings is surprising. One possible explanation is that these positions were not staffed during the pandemic and thus represent rehires for positions staffed prior to the pandemic.

Figure 1: Postings by Job Type

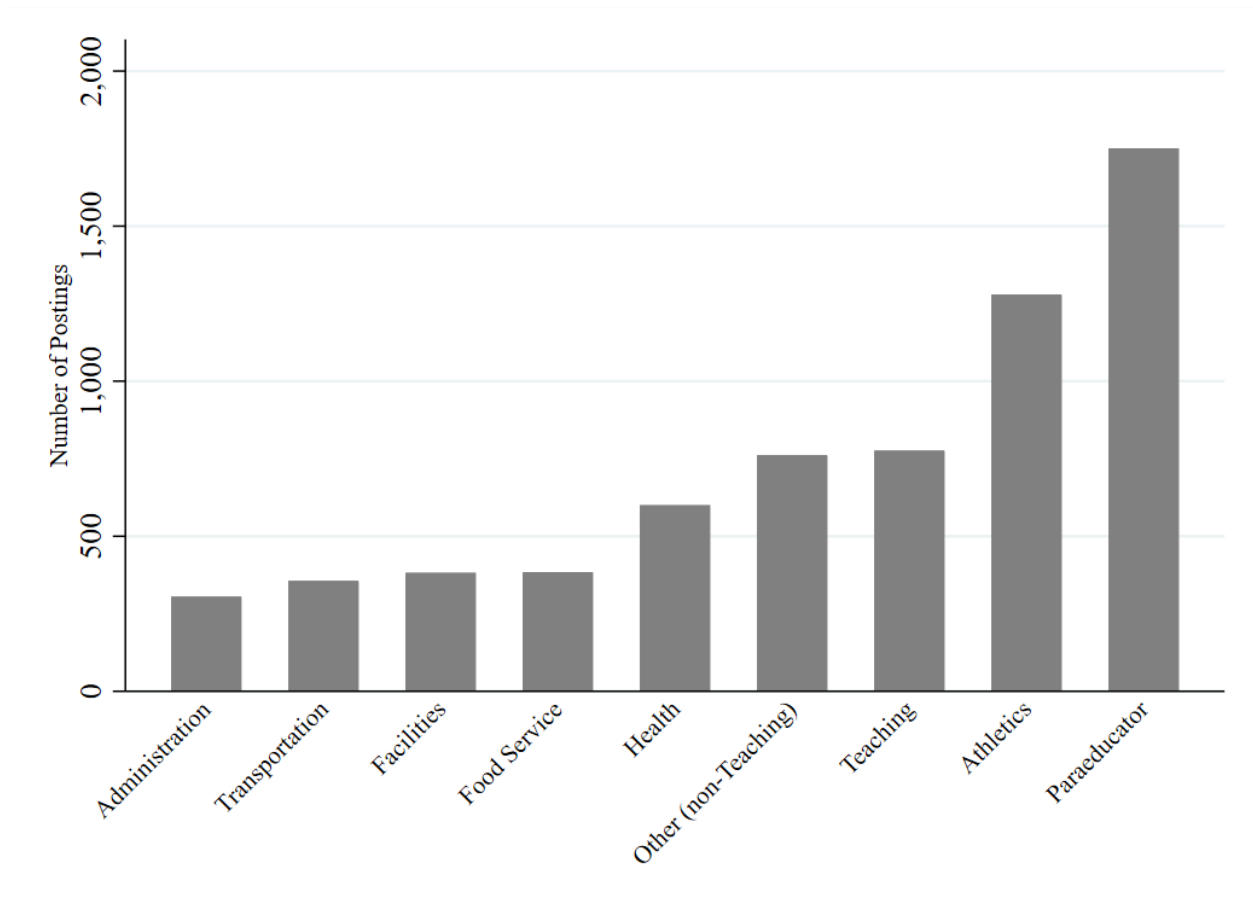
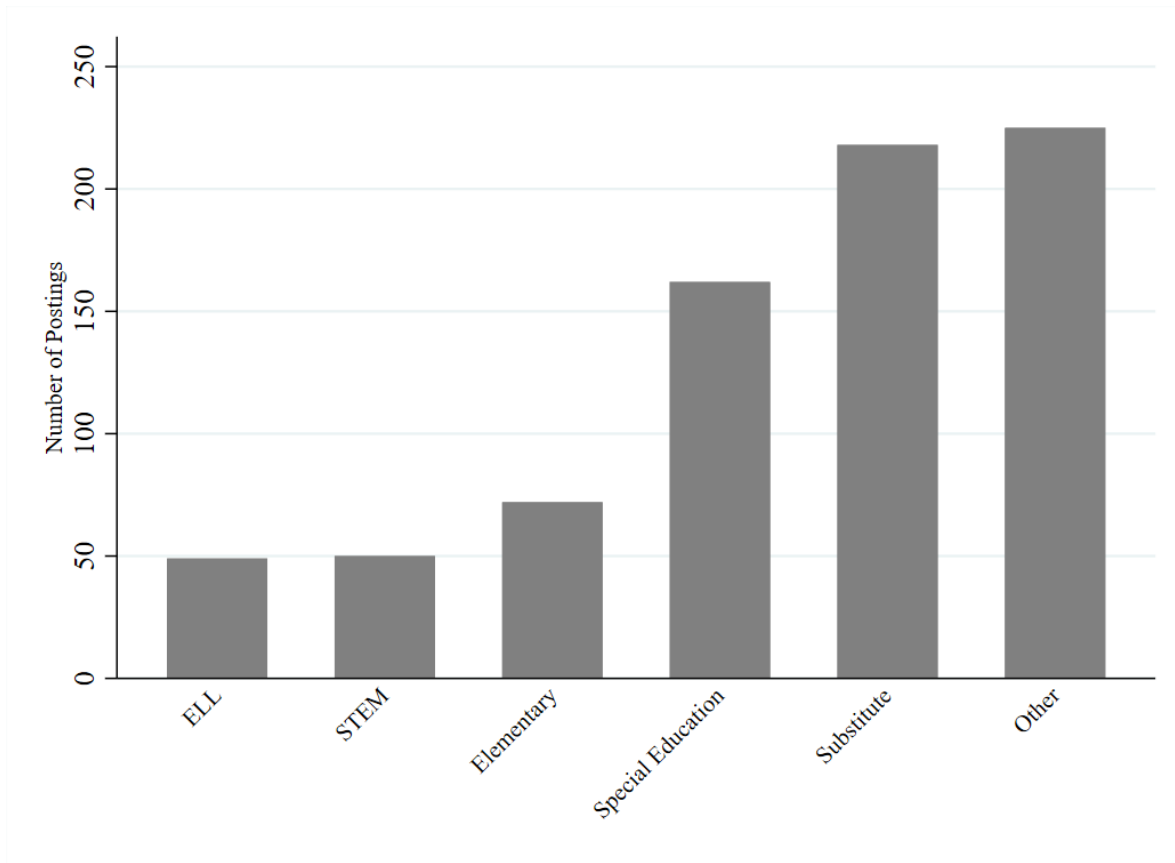


Figure 2 takes the 776 teaching positions from **Figure 1** and delves deeper by disaggregating into different teacher categories (for some perspective on the 776 figure, public schools in Washington employed about 66,000 teachers in the 2018-19 school year; Bazzaz, 2019). By total postings, districts are most in need of substitute teachers and Special Education teachers, after which comes Elementary, ELL, and STEM postings, all of which added together roughly equal the number of Special Education postings.

Figure 2: Postings by Teaching Subcategory



While **Figures 1** and **2** are useful for getting a sense of aggregate demand by job classes, these figures can mask districts’ relative needs. For instance, the typical Washington school district employs 3.5 times as many full-time Elementary Education endorsed (the area of specialty) teachers as Special Education endorsed teachers, so we might expect the number of postings to be around 3.5 times higher. Thus, to create a more apples-to-apples comparison of staffing challenge across different teaching categories, we follow Goldhaber et al. (2020) and divide the position postings within a given category, e.g., ELL, by the number of teacher FTEs endorsed to teach that subject in the most recent year of available data.⁵ We also weight the average across the state by the total enrollment in each district, so that the numbers we present are representative of students, rather than districts; we refer to this as the “vacancy rate”.⁶

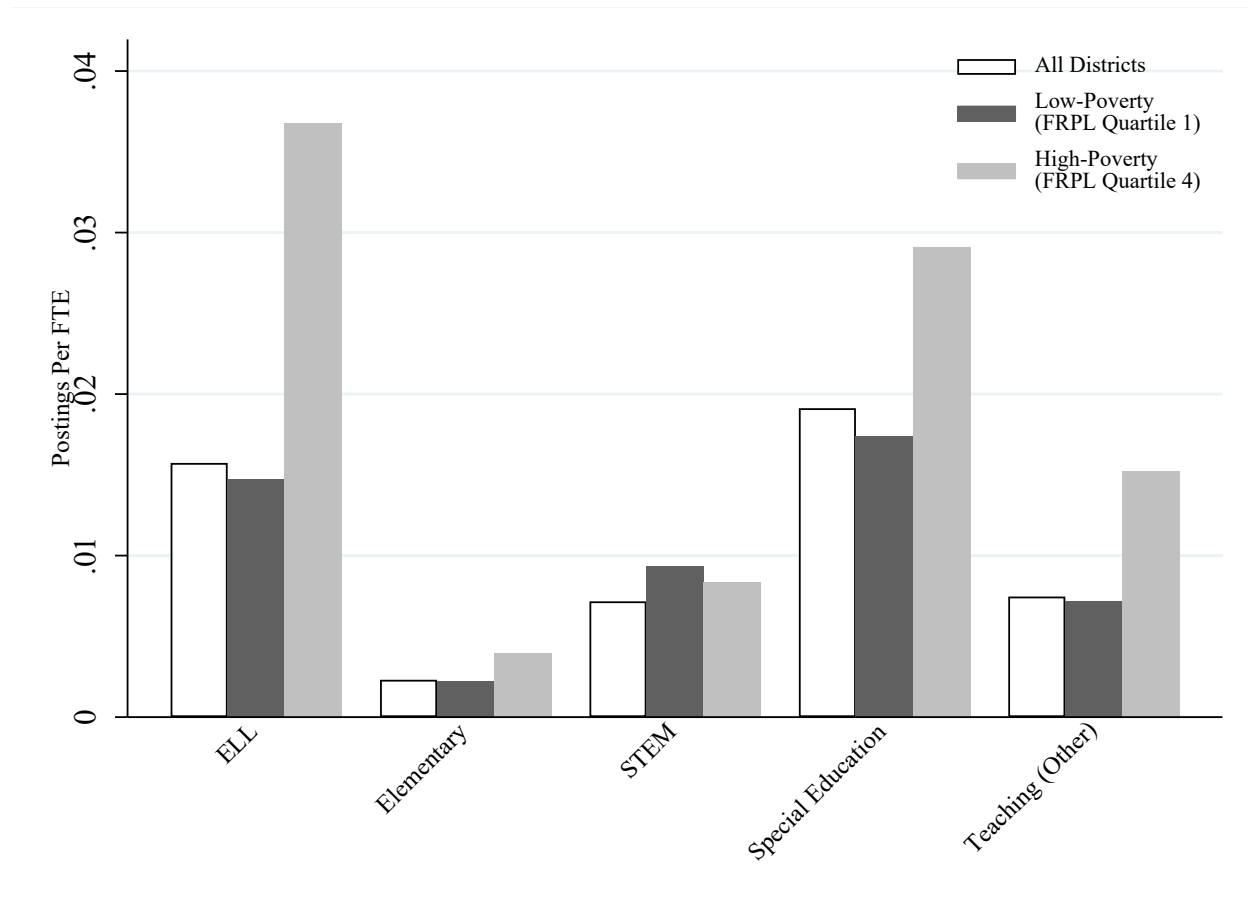
The vacancy rates for different teacher categories appear in **Figure 3**. The first bar for each teacher category is the vacancy rate for all districts, the second bar shows the vacancy rate

⁵ The most recent year available is the 2019-2020 school year. Unfortunately, we cannot do this for substitute teachers because the state administrative data do not accurately track the number of substitute teachers.

⁶ This accounts for the fact that there are, for instance, a few very small districts that have very high vacancy rates in some areas where very few teachers are employed. For example, Inchelium School District has approximately 210 students and is looking to hire one Special Education teacher.

for districts in the lowest poverty quartile (according to FRPL), and the third bar for the top poverty quartile. Two points jump out from this figure. The first is that Special Education is even more of a challenge to staff than is apparent in the overall posting figure (**Figure 2**). For instance, the statewide number of Special Education teacher postings is roughly three times larger than the number of Elementary Education postings, but relative to the number of teachers that get hired into those areas, the ratio between Special Education and Elementary Education is about 8 to 1. Thus, not surprisingly research finds relatively high workforce entry rates (over 80%) for teacher candidates with Special Education credentials (Theobald et al., 2021).

Figure 3: Vacancy Rate for Teaching Positions by Subcategories and District Poverty Level



This figure also illustrates the far greater staffing challenge faced by high-poverty school districts.⁷ With the notable exception of STEM,⁸ the vacancy rates are far higher for high-

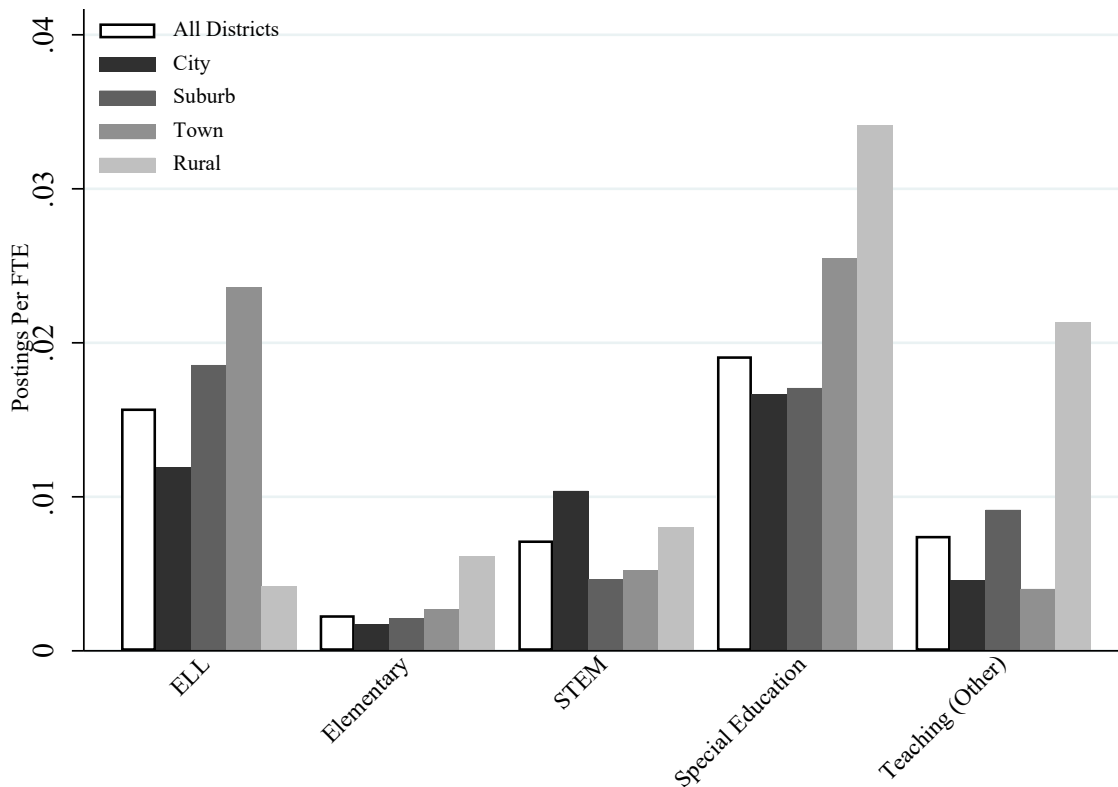
⁷ Districts in the highest FRPL quartile tend to be smaller than districts in the lowest FRPL quartile, with 2,900 students on average compared to 7,200 in the lowest FRPL quartile. Thus, were we to use job posting counts rather than vacancy rates, we would show that the lowest FRPL quartile districts have the greater staffing challenge.

⁸ It may seem puzzling that the average vacancy rate for STEM positions is lower than both the low-poverty and high-poverty district rate, but the low- and high-poverty districts represent 50% of all districts i.e. the top and bottom quartiles. The middle two quartiles have vacancy rates lower than the “All Districts” rate.

poverty than low-poverty districts; for instance, it is more than double in the case of ELL teachers and about 1.7 times higher for Special Education positions.⁹

In **Figure 4**, we disaggregate vacancy rates by urbanicity (urban, suburban, town, and rural) as there is some evidence that rural districts face greater staffing challenges (e.g., Goldhaber et al., 2021). We do not find consistent evidence of this across position type. For instance, ELL vacancy rates relatively low in rural districts, but these same districts have relatively high Special Education vacancy rates.¹⁰ Nonetheless, this is consistent with prior research finding that rural districts in California had the highest vacancy rate among all district urbanicity types for Special Education and the lowest rate among all urbanicity types for ELL positions.

Figure 4: Vacancy Rate for Teaching Positions by Subcategories and Urbanicity



Finally, we also take a closer look at non-teaching positions. Unfortunately, we cannot create vacancy rates as we did in the above figures by adjusting for the number of positions in a category.¹¹ In lieu of this, to adjust for district size, we divide the number of open positions in a district by the number of students in that district. Because these rates are not adjusted by a

⁹ All of these findings are broadly consistent with recent (though pre-pandemic) research on job postings in school districts in California (Goldhaber et al. 2020)

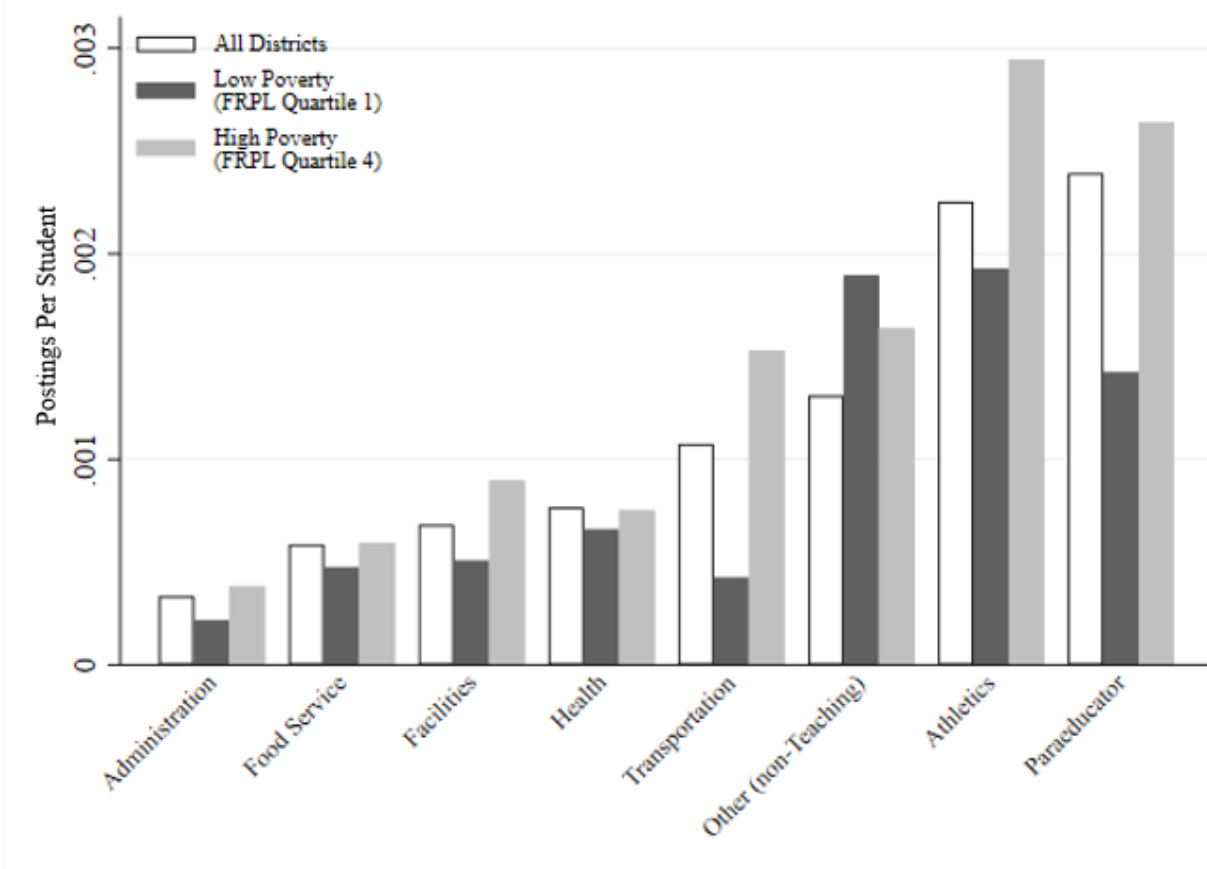
¹⁰ It is worth noting that not all school districts in Washington have high schools (e.g., roughly 12% of rural districts do not), and certain teaching positions (e.g., STEM) are disproportionately likely to be at found at the high school level.

¹¹ The state administrative data do not include enough detail about staffing in these non-teacher areas for this type of adjustment.

category’s prior hiring it likely not informative to compare across categories of jobs.¹² However, we can compare across different types of districts, which we do for districts of varying poverty level in **Figure 5** and for district urbanicity in **Figure 6**.

The findings by district poverty are strikingly consistent with the findings on teaching positions. For nearly every position category, the number of postings per student is higher for districts in the top FRPL quartile relative to the lowest quartile. This is particularly true for paraeducator positions, where the postings per student are nearly twice as high as low-poverty districts.

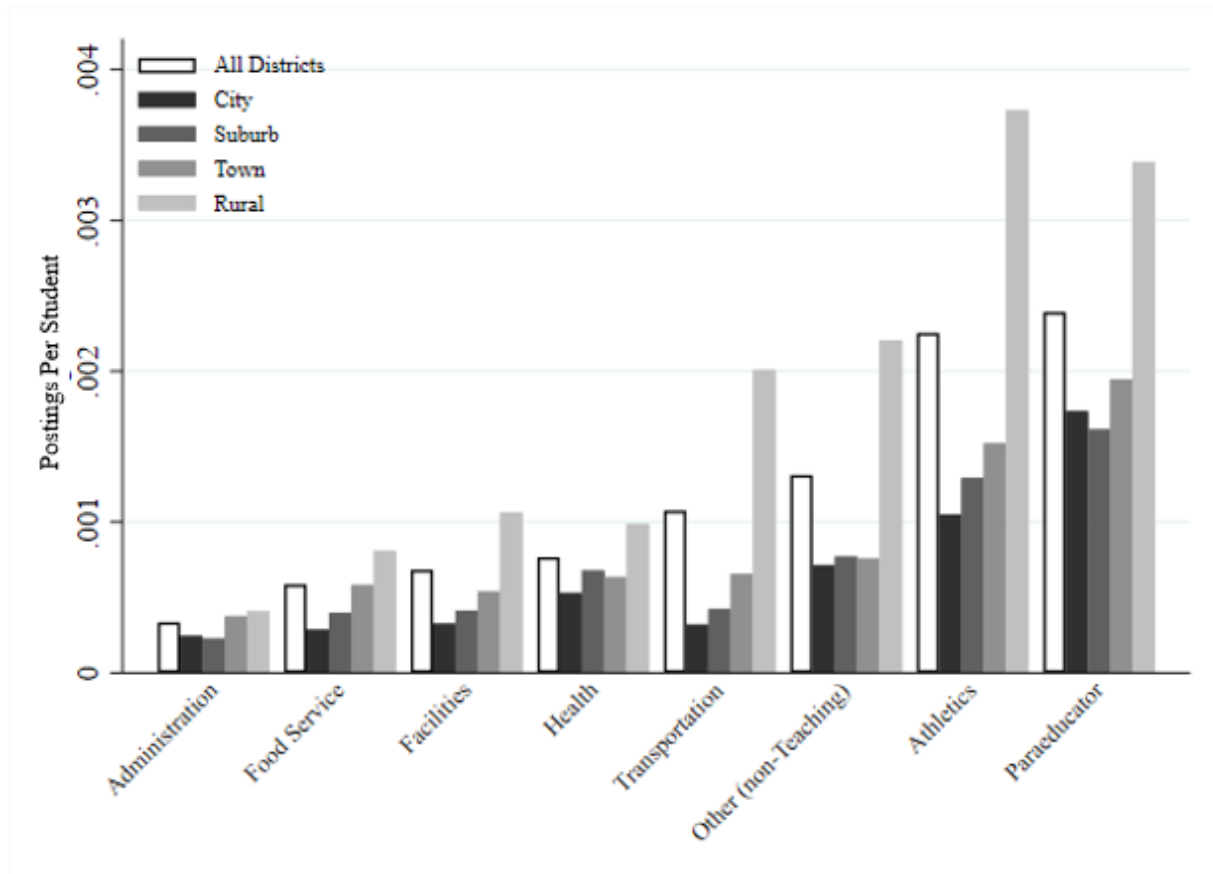
Figure 5: Postings Per Student for Support Positions by Subcategories and District Poverty Level



As **Figure 6** makes clear, there are also large differences in postings per student by urbanicity. Across all categories rural districts have more postings per student. And the difference between rural districts and districts in other urbanicities is particularly stark for the Transportation, Facilities, Athletics, and Paraeducator positions. For each of these categories the number of posting per student for rural districts is more than 30% higher than the postings per student for any other urbanicity.

¹² Paraeducators, for instance, may be employed to work one-on-one with students, whereas bus drivers help transport large numbers of students.

Figure 6: Postings Per Student for Support Positions by Subcategories and FRPL Quartile



Limitations and Concluding Thoughts

While these data present a detailed snapshot of the current hiring needs of districts, they are not without limitations. In particular, the analysis is descriptive, so does not attempt to determine why we see the patterns we observe. Another limitation is that postings may mask (or possibly overstate) hiring intentions.¹³

That said, this snapshot of district hiring needs suggests dramatic differences across job types, specialty types, and district types. The teaching specialty with the lowest need is clearly Elementary Education, which is consistent with a good deal of prior work, but perhaps at odds with the fact that it is currently listed as a teacher shortage area in Washington.¹⁴ Our findings also show that rural and high-poverty districts are facing more significant staffing challenges than other types of districts.

It is difficult to know the extent to which our findings reflect a changing labor market from prior years because we are unaware of any earlier work of this type in Washington.

¹³ For instance, districts may post “pooled” positions meaning a single posting represents more than one open slot. On the other hand, it is possible that posting get left up on a website even if the position is filled.

¹⁴ Note that this shortage area includes Early Childhood Educators well (<https://www.pesb.wa.gov/current-educators/educator-shortage/> Retrieved on 10/29/2021).

However, these vacancies are a significant concern because late hiring has been shown to be negatively associated with student learning (Papay & Kraft, 2016).

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