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# IN SEARCH of TEACHERS and DATA: FOUR DAY SCHOOL WEEKS and SCHOOL STAFFING SHORTAGES

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**October 2023**



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***Please Cite As:***

Anglum, J. C., Manion, A., Varkey, S. (2023, October) In Search of Teachers and Data: Four Day School Weeks and School Staffing Shortages. PRiME Center. Saint Louis University.

<https://www.sluprime.org/policy-brief-database/fourdayschoolweeksandschoolstaffingshortages>

Do four-day school week policies reduce teacher shortages in Missouri? In exploring this question through this brief, we find:

- Permanent four-day school week policies have grown rapidly across the country, in part due to challenges in rural teacher labor markets.
- In 2023-24, more than 30% of Missouri’s traditional public school districts will operate a four-day school week, including more than 40% of its rural districts.
- Though popular among many including teachers and families, there is limited evidence four-day school weeks in Missouri have stemmed teacher shortages. For example, in 2021-22, four-day districts experienced larger shortages than did five-day districts.
- Data tracking school district teacher shortages in Missouri remains incomplete, rendering it difficult to fully assess the success of quickly expanding four-day policies on labor shortages.
- Alongside policy shifts addressing teacher compensation and working conditions, policymakers must consider the effects of four-day school weeks on their intended outcomes—improved teacher recruitment and retention—alongside its farther reaching impacts on students, families, and communities.

Since 1999, there has been a sixfold increase in the number of public school districts that operate permanent four-day school weeks (4DSW) across the United States. More than 1,600 schools in 24 states use this schedule,<sup>1</sup> a policy overwhelmingly concentrated in rural districts.<sup>2</sup> Typically foregoing either Monday or Friday's classes, these districts usually extend the school day on the remaining four days of the school week. Research on the impacts of the 4DSW shows mixed results, including with respect to student outcomes, with effects often varying depending on factors such as grade levels, approaches to implementation, and student populations.

Despite rapid 4DSW adoption, there is little rigorous empirical research showing it helps school districts strengthen teacher recruitment and retention, its central purported purpose in many instances, particularly amid challenging pandemic-era labor market conditions. 4DSW are popular with parents, faculty, and staff and can help to improve morale, but findings suggest that while administrators view the 4DSW as a key strategic recruitment tool, teachers largely view it as a benefit, not a deciding factor in their decision to take the job.<sup>3</sup>

At a time of upheaval for school districts and teacher shortages, particularly in school districts serving the largest shares of low-income students and low-compensated teachers, our research considers whether 4DSW can help to recruit and retain qualified teachers. In this policy brief, we focus, in particular, on the intersection of 4DSW policy expansion and teacher shortages. To extend this work, in future analyses we plan to examine related outcomes including teacher turnover, school staffing in hard-to-staff subjects like STEM and special education, and teacher compensation trajectories.



Studies examining the impact of 4DSW on student academic performance vary widely. Though some find no significant impact<sup>4</sup> and one study indicated a positive relationship with student performance,<sup>5</sup> most recent studies have noted detrimental effects on student achievement.<sup>6</sup> In addition, the 4DSW has not been shown to significantly impact student absenteeism,<sup>7</sup> though there is evidence of a rise in juvenile criminal offenses following adoption of 4DSW.<sup>8</sup> Based on this at-best mixed evidence, it is difficult to recommend 4DSW policies on the basis of student outcomes.

In the wake of the Great Recession, potential cost savings was the most commonly cited reason for districts adopting 4DSW, though realized savings typically amount to only 0% to 3% in operational costs.<sup>9</sup> This is true because the majority of school expenditures are allocated to academic personnel costs like teacher salaries, line items unaffected – at least initially – by one fewer day of school. Further research is necessary to assess whether the 4DSW affects the medium to long-term salary trajectories of teachers, an especially important datapoint in rural Missouri where teacher salaries rank among the lowest in the nation.<sup>10</sup>

More recently, however, and especially over the COVID-19 pandemic, district administrators say their adoption of the 4DSW is driven by the need to recruit and retain teachers.<sup>11</sup> Anecdotally, they report more success hiring and retaining qualified teachers with a 4DSW,<sup>12</sup> and one study suggests that 4DSW may help rural districts recruit qualified teachers.<sup>13</sup>

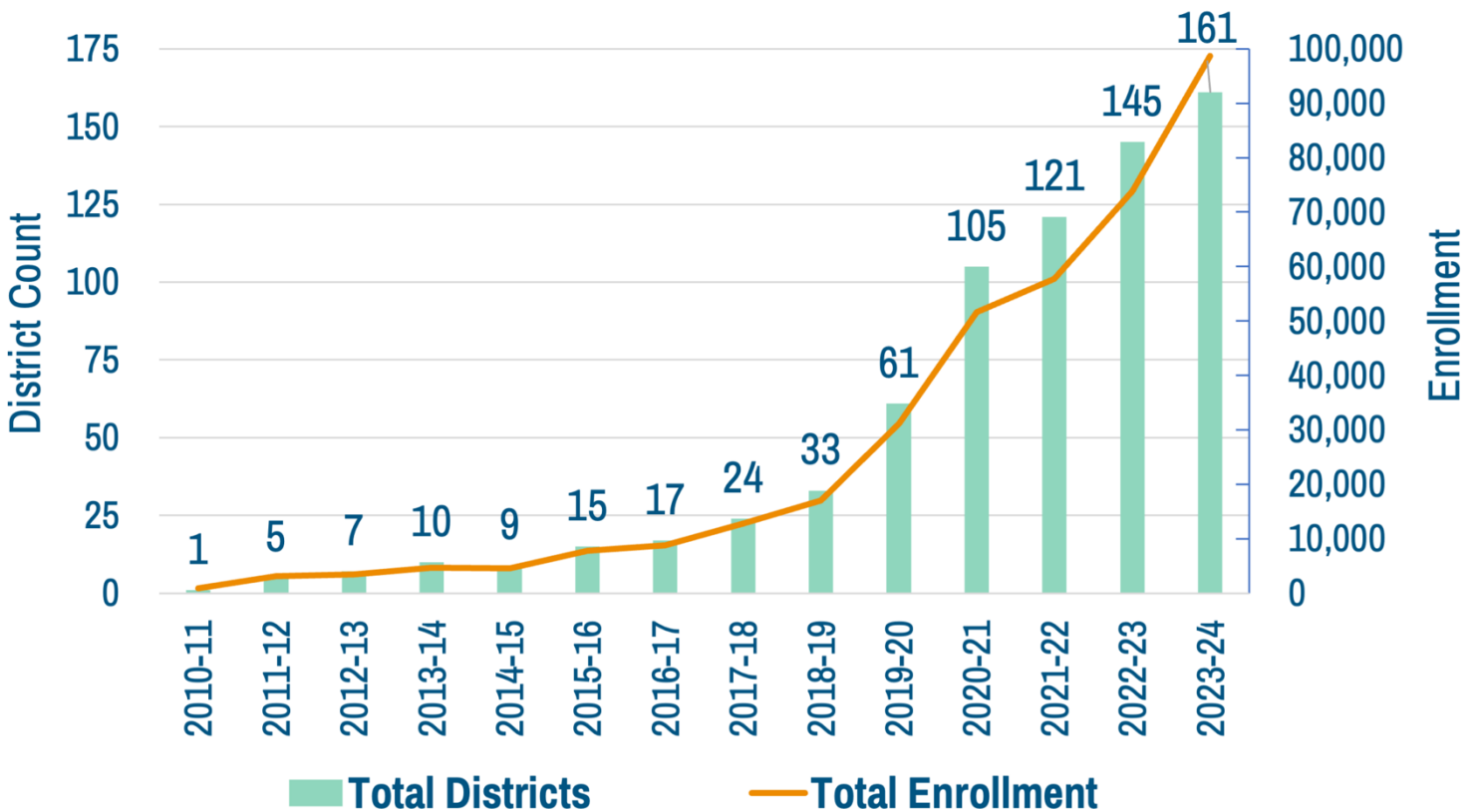
Researchers have found that rural school districts are at a disadvantage in recruiting and retaining teachers due to factors such as lower teacher salaries and geographic isolation.<sup>14</sup> There are also fewer academically qualified teachers in rural areas, on average,<sup>15</sup> and teachers have been shown to take jobs near their hometown or the town where they attended college,<sup>16</sup> areas often home to fewer higher education institutions. In addition, salaries often are lower for teachers in rural school districts than for their counterparts in towns, suburbs, and cities.<sup>17</sup> In this context, while the 4DSW might temporarily attract talent, this policy does not circumvent the high-stress, low-pay environment that is contributing to teacher shortages.<sup>18</sup>

# 4

## Growth of Four-day School Weeks in Missouri

Beginning in the 2019-20 school year and accelerating over the following pandemic school years, 4DSW policies grew rapidly across Missouri, particularly during the first full pandemic school year in 2020-21. Now encompassing 161 of Missouri’s 516 traditional public school districts (see Figure 1), four-day districts will educate nearly 100,000 students, or 11% of Missouri’s P-12 students, during the 2023-24 school year.

**Figure 1. Missouri Four-day District Policy Adoption and Enrollment, by School Year**

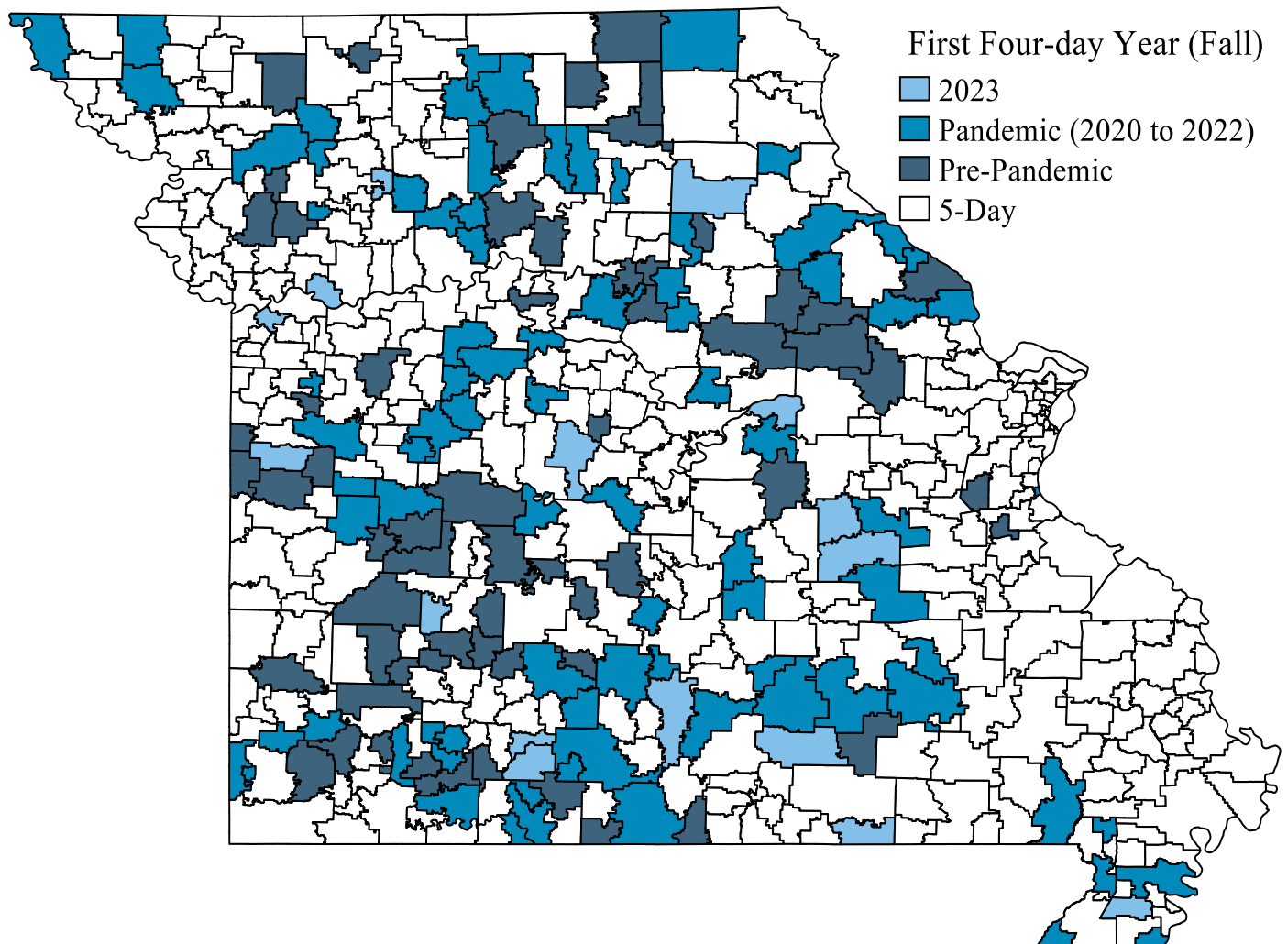


Note: 2023-24 enrollment figures use 2022-23 district enrollment reported by the Missouri Department of Elementary and Secondary Education (DESE).

Of the 161 districts, 145 are situated in rural parts of the state, or more than four in 10 of the state’s rural school districts. Both the policy’s rapid growth and its widespread operation heighten the need to evaluate its success. Further, this landscape renders Missouri an instructive case study for other states across the country experiencing school labor challenges, whether they have pursued 4DSW policies or may be weighing such decisions.

While 4DSW districts have proliferated across Missouri (Figure 2), the most recent adopters are situated in rural locales and there is spatial clustering of districts near or adjacent to one another.<sup>19</sup> Teacher labor markets often operate regionally, suggesting the spatial proximity of 4DSW policy adoption follows a familiar pattern, especially in rural areas.

**Figure 2. Missouri Four-day District Policy Adoption, by Period**





The Independence School district in suburban Kansas City, which is transitioning to a 4DSW in Fall 2023, represents a clear exception to this trend. This will be important to track moving forward, both in its differences from past 4DSW district traits and in whether other large, non-rural districts take cues from its adoption and implementation.



Throughout the pandemic, media reports of staffing shortages have proliferated across industries. Teacher shortages have garnered significant attention, with some reports indicating as many as 55,000 positions remain unfilled and 270,000 filled by less-than-qualified teachers, nationally.<sup>a</sup> 4DSW policies, including in Missouri, often are aimed to address these concerns; though 4DSW policy effects are not uniform across the state, similarly challenging labor markets in many Missouri districts have spurred recent growth. Assessing the efficacy of 4DSW to improve labor market frictions, including teacher shortages, therefore, is critical in the pursuit of effective, evidence-informed policymaking.

With this objective in mind, we obtained data from Missouri's Department of Elementary and Secondary Education (DESE) regarding school district staffing and teacher shortages to begin to examine the relationship between 4DSW and teacher shortages. After reviewing the data, two central concerns emerged, limiting our (or any researcher's) ability to fully evaluate the policy's labor impacts.

First, DESE's reporting of teacher (and staff) data and teacher shortages to researchers often does not occur over a timeline that makes it most useful for policy making and broader public consideration. For example, the type of teacher-level data researchers leverage to calculate teacher turnover and attrition data is not available until midway through the following school year (e.g., 2021-22 data was made available in the middle of the 2022-23 school year). Hence, we do not yet have teacher data from last school year, a year when many states recorded sharp increases in teacher movement.

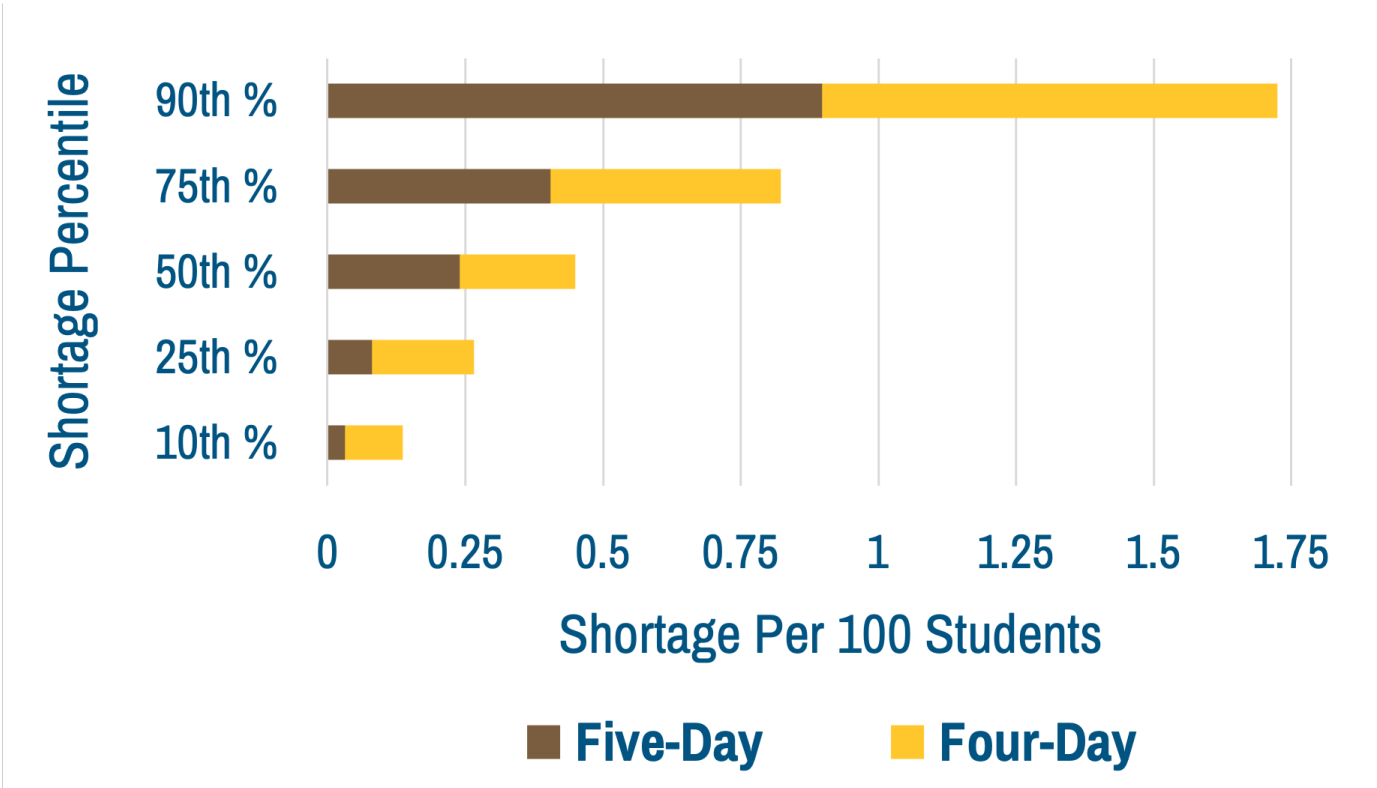
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<sup>a</sup> For more information, see [teachershortages.com](https://www.teachershortages.com) and Nguyen et al. (2022).

Second, DESE’s district-level teacher shortage data is incomplete. From the 2008-09 to the 2021-22 school years, between 56% and 88% of districts are represented in DESE’s data each year. Unfortunately for contemporary research, the 56% figure emerged from the 2021-22 school year. Part of this missingness includes districts which, indeed, did not have a shortage in the given year. As researchers, however, we are unable to distinguish between districts actually lacking teacher and staff shortages in a given year and those that do, indeed, have shortages but are not represented in data reporting.

Though these data limitations restrict the prospect of reporting fully on the relationship between teacher shortages and 4DSW, there are a few helpful elements we can observe nonetheless. In the analysis below, we assume all missing shortage data indicates a district did, indeed, have zero shortages in the given school year. Anecdotally, we know this to be untrue – data from our collective individual district partnerships indicates shortages where we do not observe them in DESE’s data.

**Figure 3. 2021-22 Staffing Shortages, by Four- or Five-Day Status**



In Figure 3, we report district staffing shortages in the 2021-22 school year. We define shortages as the sum of advertised positions which remained unfilled, positions filled by a less than fully certified employee, and positions filled but altered to fit the characteristics of the available applicant(s). This graph also reflects the subset of districts which reported a shortage (i.e., excluding those with no shortage); 31% of five-day districts and 33% of 4DSW districts reported some shortage in 2021-22. Shortages in 4DSW districts significantly outstripped those in five-day districts often by a magnitude of two or more across shortage percentiles. For example, the median 4DSW district with a reported shortage indicated a shortage of 0.45 per 100 students (or one per 222 students), while the median five-day district with a reported shortage indicated a shortage of 0.24 per 100 students (or one per 418 students).

In addition, no definitive employee shortage evidence appears to distinguish between recent adopters of 4DSW (2020 to present) and those with long-standing 4DSW policies (between 2010 and 2019). Across both groups of 4DSW districts, 33% reported some shortage in 2021-22. Additional research is needed to determine whether 4DSW have been ineffective in stemming shortages or if the characteristics of 4DSW districts and their local labor markets may have evolved over the policy's now 14-year duration. In other words, it may be possible that 4DSW policies have both attracted districts with the largest shortages but not reduced them to be lower than their five-day counterparts. Furthermore, teacher shortage analyses must always weigh important considerations related to district geography, including aspects of urban, suburban, and rural school district labor markets that may contribute to teacher shortages.

As 4DSW policies witness significant growth across the nation, Missouri's rapid pace of policy adoption has thrust an urgency on research which seeks to evaluate its effects. Perhaps the most understudied aspect of 4DSW is its effects on teacher shortages and retention, an alarming fact given school districts' motivations for the policy typically center on school labor challenges. Missouri, much like other states, has weathered an unprecedented period responding to the pandemic in its public schools, with teacher well-being and job satisfaction declining and teacher turnover, shortages, and attrition growing. As schools continue to emerge from the pandemic, including confronting ongoing teacher turnover and shortages, policymakers and researchers across the state would be well-served by timely research on policies like the 4DSW, though data limitations currently restrict its complete assessment.

- <sup>1</sup> Thompson & Morton, 2021
- <sup>2</sup> Anglum & Park, 2021; Thompson et al., 2021
- <sup>3</sup> Kilburn et al., 2021; Turner et al., 2019
- <sup>4</sup> Morton, 2021; Oklahoma State Department of Health, 2017
- <sup>5</sup> Anderson & Walker, 2015
- <sup>6</sup> Kilburn et al., 2021; Morton et al., 2023; Thompson, 2021
- <sup>7</sup> Kilburn et al., 2021
- <sup>8</sup> Fischer & Argyle, 2018
- <sup>9</sup> Griffith, 2011; Kilburn et al., 2021; Thompson, 2021
- <sup>10</sup> Anglum et al., 2022
- <sup>11</sup> E.g., Missouri Department of Elementary and Secondary Education, 2020
- <sup>12</sup> Kilburn et al., 2021; Stracener, 2020
- <sup>13</sup> Manion & Varkey, 2021
- <sup>14</sup> Harrington, 2017; Latterman & Steffes, 2017; Rhinesmith et al., 2023
- <sup>15</sup> Player, 2016
- <sup>16</sup> Boyd et al., 2005
- <sup>17</sup> National Center for Education Statistics, 2007
- <sup>18</sup> Doss et al., 2023
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