



# The Impact of Four-Day School Weeks on Teacher Recruitment in Missouri

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## KEY POINTS

Since 2010, approximately 20% of Missouri public school districts have adopted a four-day school week (4DSW), and nearly all of those districts are in rural areas. The stated reasons for adoption are cost savings and teacher recruitment and retention. In this brief, we use data from the Missouri Department of Elementary and Secondary Education (DESE) from 2009-2020 to determine the impact of four-day school weeks on teacher recruitment. We find:

- Compared to rural districts with 5-day school weeks, rural districts with four-day weeks have more success filling vacancies with qualified candidates.
- In rural districts and in districts statewide, increased teacher salaries can improve the success rate of districts in recruiting qualified teachers, regardless of their implementation of four-day or five-day weeks.
- When considering all districts statewide, the adoption of a four-day school week did not have a significant effect on measures of teacher recruitment.

VOLUME 3, ISSUE 7

September 2021

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## Introduction

In 2009, Missouri enacted legislation allowing public school districts to implement a four-day school week (4DSW) with approval of their local school board. Districts adopting 4DSW calendars are required to have at least 1,044 hours of pupil attendance.<sup>1</sup> As of the 2020-21 academic year, at least 102 districts in Missouri, approximately 20% of public school districts, have adopted a 4DSW.<sup>2</sup> These largely rural districts often cite increased savings in transportation and utilities costs and enhanced teacher recruitment and retention.<sup>3</sup> Missouri is not alone in this approach as more than 1,600 schools in 24 states have adopted 4DSW.<sup>4</sup> Nationally, there has been a 600% increase in the number of districts with a 4DSW schedule since 1999.<sup>5</sup>

Despite the rapidly growing adoption of 4DSW, little is known about whether a four-day schedule is helping Missouri school districts achieve their goals. Initially, the move to 4DSW was largely motivated by cost savings, with districts hoping to save on transportation, utilities, and other operating costs. In more recent years, district administrators have said that their adoption of 4DSW is driven by the need to recruit and retain teachers. They anecdotally report that they are more successful in hiring and retaining qualified teachers with a 4DSW, but there is a lack of research analyzing the impact of 4DSW on teacher

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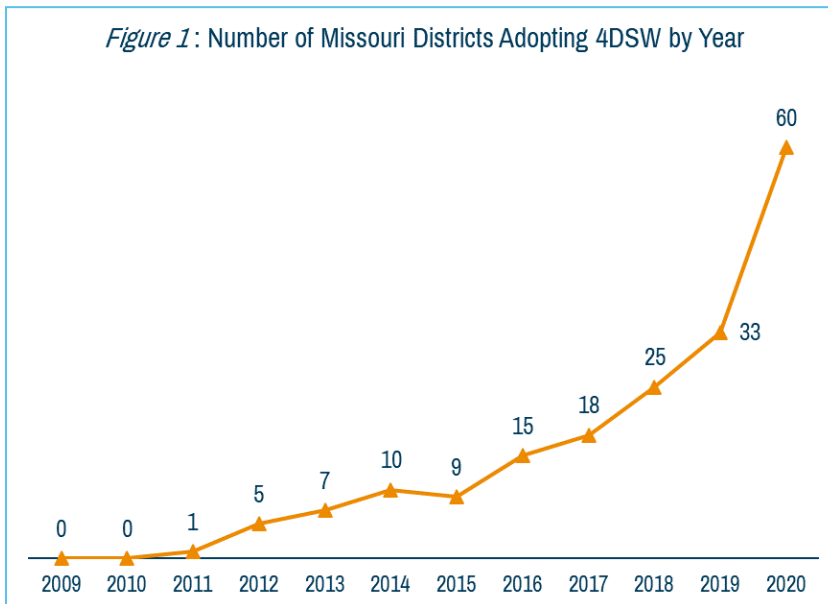
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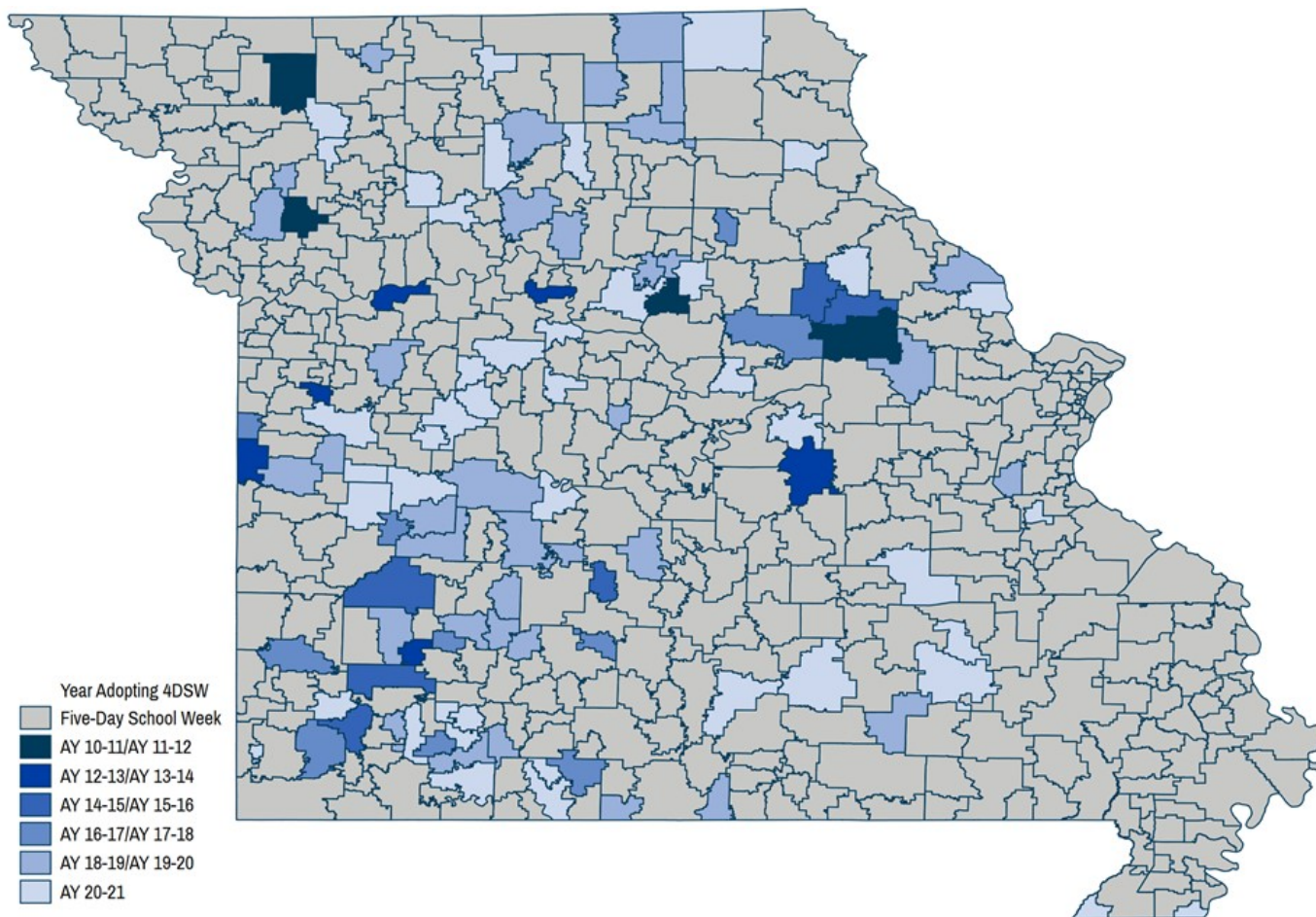
recruitment.<sup>6</sup> As participation in 4DSW grows, it is critical that policymakers and stakeholders understand the impact of this change to inform decision-making in Missouri. Understanding the impact of alternative school schedules is even more critical in the pandemic and post-pandemic environment in which schedules for school districts were uprooted and the lasting effects remain to be seen.

Figure 1: Number of Missouri Districts Adopting 4DSW by Year



In this brief, we use district-level data from the Missouri Department of

Elementary and Secondary Education (DESE) for the 2008-09 through 2019-20 school years to evaluate the impact of 4DSW on teacher recruitment in Missouri school districts. Our analysis focuses on districts' ability to fill vacant positions with qualified educators. Because districts implemented the 4DSW policy in different years, we analyze data to determine the difference in outcomes before and after the implementation altered



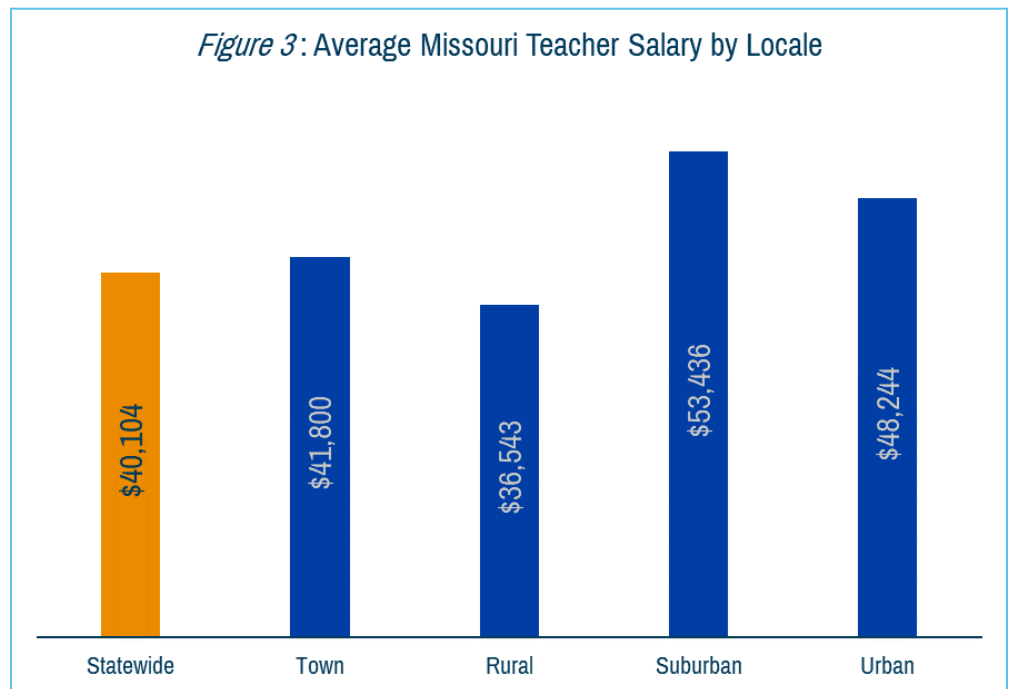
the calendar compared to standard five-day school week (5DSW) calendar districts. We included controls for teacher salary, student race, participation in the free and reduced-price lunch program, and the number of students enrolled for each district.

## Trends in Missouri Four-Day School Weeks

Few Missouri school districts switched to four-day school weeks in the first few years after legislation made the option available, but there has been a snowball effect in recent years. By the 2018-19 year, only 33 districts had adopted four-day school weeks. The next year, it nearly doubled to 60 districts, and another surge brought the total to 102 districts for the 2020-21 school year.<sup>7</sup>

Anglum and Park (2021) find the strongest predictor of whether a school adopts a 4DSW schedule is the presence of a nearby district with 4DSW—a keeping up with the Joneses effect.<sup>8</sup> They also find that 95% of Missouri districts with a 4DSW are rural. As illustrated in Figure 2, districts adopting the 4DSW are largely rural and clustered in geographic areas. Many schools adopted modified schedules in response to the COVID-19 pandemic but have not officially adopted a 4DSW. Those schools are not included in this analysis.

Studies evaluating teacher and parent satisfaction in Missouri districts with 4DSW indicate that both groups are happy with the schedule, with 91% of teachers preferring a 4DSW and 69% of parents supporting the continuation of 4DSW.<sup>9</sup> As of 2019-20, only one district that had adopted a four-day school week chose to return to a five-day school week, citing longer school days and the perception that those long days had a negative impact on elementary school students.<sup>10</sup>



## Teacher Shortages and Rural Disparities

Teacher shortages are an area of concern in Missouri and nationally, particularly in rural areas. In the 2019-20 school year, Missouri districts faced a 5% shortage in qualified full-time equivalent (FTE) instructors<sup>11</sup> and teacher retention was 64% after three years and 48% after five years.<sup>12</sup> That means that on average, a school will lose about half of their teachers every five years. There is speculation that more teachers will leave the

profession because of the pandemic, potentially making recruiting and hiring qualified teachers even more important and more challenging.

*Table 1 : Demographics of Analyzed Schools*

	All districts	Rural districts	Town districts
Pct. White	84.9%	92.6%	78.1%
Pct. FRL-eligible	47.3%	50.5%	45.9%
N	3,817	2,348	921

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>13</sup> As shown in Figure 3, teachers in rural school districts have the lowest average salary in Missouri. School administrators in Missouri identified pay as the biggest challenge to teacher recruitment.<sup>14</sup> This competitive disadvantage is one reason many rural school districts have moved to a 4DSW—to try to recruit and retain qualified teachers despite lower salaries.

### *Analytic Approach*

*To analyze the impacts of switching to a 4DSW on teacher recruitment in Missouri, we implement the following approach:*

- *Analyzes K-12 public districts in operation for the duration of our study.*
- *Did not consider charter schools, K-8 districts, special school districts, or districts which closed between 2009-2020.*
- *Results are outlined below and organized by geography (statewide, rural, and town).*
- *Includes statewide and separate analyses specifically examining school districts in rural areas and towns.*
- *Uses National Center for Education Statistics (NCES) guidelines for the locale classifications of rural and town.*
- *Did not analyze city or suburban districts because there were no districts in those locales which had adopted a 4DSW.*

## 4DSW Adoption Positively Effects Teacher Recruitment in Rural Districts

Our goal is to determine the effect of the 4DSW on teacher recruitment in Missouri. We measure recruitment in three ways:

1. Successful recruitment (vacancies filled by qualified applicants)
2. Unsuccessful recruitment: altered courses (courses are altered due to inability to fill the vacancy with a qualified candidate)
3. Unsuccessful recruitment: less than qualified candidates (vacancies filled by less than fully qualified candidates)

The measure for successful recruitment was created using a ratio of total positions filled by qualified applicants over FTE vacancy total. The measure for unsuccessful recruitment: altered courses, is a ratio of total positions filled due to altered courses over FTE vacancy total. An altered course occurs when the originally scheduled course is changed because administrators were unable to hire a qualified candidate to teach it. For example, perhaps a school wanted to teach French but couldn't hire a French teacher, so they had to teach German instead. The measure for unsuccessful recruitment: less than qualified candidates, is a ratio of total positions filled by less than fully qualified candidates over FTE vacancy total. In this situation, administrators may have had to fill a position with a candidate that was not fully qualified for the position.



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Table 1 provides an overview for two control variables used in the analysis. In our sample, the average percentage of white students enrolled is highest in rural districts (92.6%) and lower in town districts (78.1%), with all districts statewide falling between (84.9%). The average percentage of students receiving free and reduced-price lunch is consistent for all locales, ranging from approximately 45-50%. Previous research shows that teacher retention is higher in districts where students are white and wealthier.<sup>15</sup> We include control variables for race and teacher salary to incorporate insight from previous research. Figure 3 (above) shows that there was substantial variety in our other control variable, average teacher salaries, ranging from \$27,584 to \$79,897.

## Impacts of the 4DSWs

*Statewide results did not show that the adoption of the 4DSW had a significant effect on any measure of teacher recruitment.*

For the districts considered in this analysis for the 2019-2020 school year, approximately 14% of districts used a 4DSW schedule. Our results show adopting a 4DSW in Missouri has no measurable impact on teacher recruitment. However, we find that as the percentage of white students enrolled increases, there is a very small increase (0.2%) in the number of vacancies filled by qualified applicants.

*In both 4DSW and 5DSW districts statewide, as teacher salary increases, the number of altered courses decreases.*

While the effect size for this relationship is very small, it is consistent with Missouri educational administrators' perceptions that shows that salary is a critical factor in recruiting qualified candidates.<sup>16</sup>

*When compared to districts with 5DSW, successful recruitment for rural districts with the 4DSW schedule is 4% higher.*

For the 2019-2020 school year, approximately 19% of rural districts adopted the 4DSW. When comparing rural districts that adopted the 4DSW to rural districts that have 5DSW, 4DSW has a positive effect on successfully filling positions with qualified applicants. Additionally, teacher salary has a positive effect on teacher recruitment. For each additional \$1,000 in salary, there is a 1% increase in successful recruitment.

*In 4DSW and 5DSW districts, increasing teacher salary in rural districts can lessen the likelihood of hiring an unqualified teacher.*

In rural 4DSW and 5DSW districts, with each additional \$1,000 in teacher's salary there is a 1% decrease in unsuccessful recruitment in the form of hiring an unqualified teacher.

*Town districts experienced no effects from adopting a 4DSW.*

During the 2019-2020 school year, about 3.4% of districts located in towns adopted the 4DSW. When looking at towns specifically, results did not show the adoption of the 4DSW had an effect on any measure of teacher recruitment.

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*The percentage of students with free and reduced-price lunch was favorably related to teacher recruitment in towns.*

As the percentage of students with free and reduced-price lunch increased, both measures of unsuccessful recruitment decreased. Since the free and reduced-price lunch percentage is used in our models as a socioeconomic measure, its positive relationship with favorable recruitment is unexpected, as previous research suggests that more students with free and reduced-price lunch would lead to more difficulties with recruitment.

## Conclusions

These results provide context for policymakers and school administrators as they work to attract educators to Missouri schools, particularly in rural areas. The effect of the 4DSW schedule on teacher recruitment is evident in rural districts, but these results do not hold when considering districts statewide. In rural-to-rural comparisons, the 4DSW and teacher salary both improve teacher recruitment. Statewide, our results do not show that the 4DSW has an impact on teacher recruitment; however, statewide teacher salary is still important and has a positive effect on recruitment. Additionally, it was surprising that the percentage of students with free and reduced-price lunch was favorably related to teacher recruitment in towns. Overall, our findings suggest that 4DSWs are a useful tool to help rural school districts in Missouri recruit qualified teachers. Districts struggling to recruit teachers may want to consider implementing this calendar option that has been well-received by teachers and parents.

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