



REPORT

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LONGER DAYS AND FEWER TOTAL HOURS: EXAMINING THE FOUR-DAY SCHOOL WEEK IN MISSOURI

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ADVANCING LIBERTY WITH RESPONSIBILITY
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FOR MISSOURI PUBLIC POLICY



KEY TAKEAWAYS

- The four-day school week has become increasingly popular in Missouri public school districts in recent years—rising from 18 districts in 2016–2017 to 173 districts in 2023–2024.
- Compared to the average Missouri school district, four-day school week districts in Missouri are typically much smaller, have more students receiving free or reduced-price lunch, have similar expenditures and revenues per pupil, retain fewer teachers, and have lower academic achievement.
- Moving to a four-day school week leads to an increase in the length of the school day, but fewer total hours in a school year.

I. INTRODUCTION: THE RISE OF THE FOUR-DAY SCHOOL WEEK

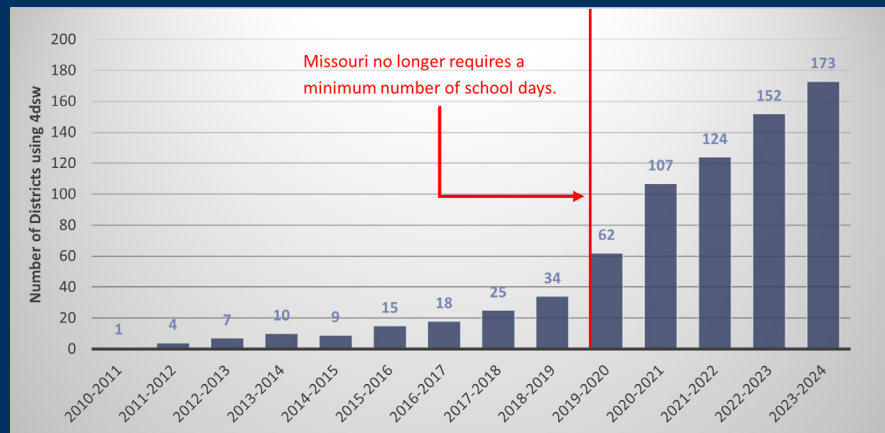
In Missouri, the number of school districts using a four-day school week (4dsw) has risen rapidly. During the 2016–2017 school year, only 18 school districts in the state were using a 4dsw. By the 2023–2024 school year, 173 of Missouri’s 518 traditional public-school districts (author calculation) were using this little-studied schedule (See Figure 1).¹ This equates to an 861 percent increase in the number of school districts using a 4dsw in seven years—from 3 percent of all Missouri traditional public-school districts to 33 percent. In 2023–2024, roughly 12 percent of all public school students in Missouri were in a school district that used a 4dsw (see Figure 2).

Given the rapid increase and the increasing public policy interest in the 4dsw, we launched a series of research projects examining various aspects of the issue. First,

Figure 1

Four-day School Week Districts in Missouri by Year

In 2023–2024, 1 in 3 traditional public school districts used a four-day school week.



Source: Missouri Department of Elementary and Secondary Education as well as data compiled by the Show-Me Institute.

we conducted a systematic literature review to assess the effects of the 4dsw on student achievement, finances, and teacher retention.² Our review revealed that the 4dsw tended to produce small, negative impacts on student achievement in math and English language arts, on average. In the two areas that school leaders cite as reasons for making the move to four days, finances and teacher retention, we found a surprising dearth of research. Just two studies examined fiscal impacts and three examined teacher retention in a sufficiently rigorous manner. These studies revealed decidedly mixed results. In other words, there appears to be little rigorous evidence to support the move to the 4dsw.

Next, we examined what Missourians think about the 4dsw. In a telephone poll of parents, 64 percent of respondents indicated they preferred a five-day school week (5dsw) for their children, compared to 24 percent who chose four days ($N = 1,386$).³ Support was strongest among the small sample of individuals who were already in a 4dsw district. Meanwhile, the strongest opposition came from those who said they could not provide childcare for

their children on the extra day they would be out of school. A majority of parents in our survey supported providing options for students if a district made the move to four days. In total, 69 percent said they “agree” or “strongly agree” that students should be able to transfer to another school district, while 59 percent said the students should be eligible for a voucher to attend a private school.

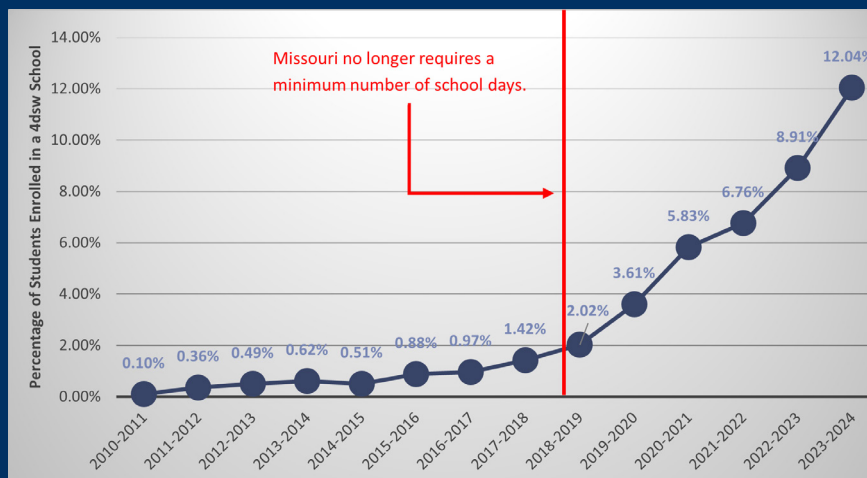
Our prior papers answer two key questions regarding the 4dsw: What does the literature say? And what do Missourians say? Here, we focus on another key question: What do the data say? Specifically, in this descriptive analysis we examine what the data tell us about school districts that currently use the 4dsw. A descriptive analysis is a snapshot. It allows us to compare 4dsw districts to 5dsw districts at a given point in time. Accordingly, the results cannot generally be thought of as causal. That is, if 4dsw districts are statistically significantly different from 5dsw districts in some category, we cannot necessarily claim that moving to the 4dsw caused the difference. It could have been that the difference existed before the district made the move.

Throughout our examination we treat the district as the unit of analysis. This means, unless noted, we are not weighting or taking the sizes of districts into account when making comparisons. When we compare four-day districts to five-day districts, we conduct *t*-tests. This is a statistical analysis that indicates whether there is a statistically significant difference between the two groups. The goal is to provide a robust analysis of the differences between 4dsw and 5dsw districts. This analysis may allow us to draw some inferences about the types of districts that make the move to four days and the potential impacts of this policy change. Additionally, we conduct a fixed-effects analysis of school days and time. Here, we are estimating the effect of moving to the 4dsw.

Figure 2

Percentage of Missouri Traditional Public-School Students in a Four-day School Week District, 2010–11 to 2023–24

In 2023–2024, almost 1 in 8 Missouri students were in a district with a four-day school week.



Source: Missouri Department of Elementary and Secondary Education as well as 4dsw data compiled by the Show-Me Institute.

II. GROWTH IN FOUR-DAY SCHOOL WEEKS

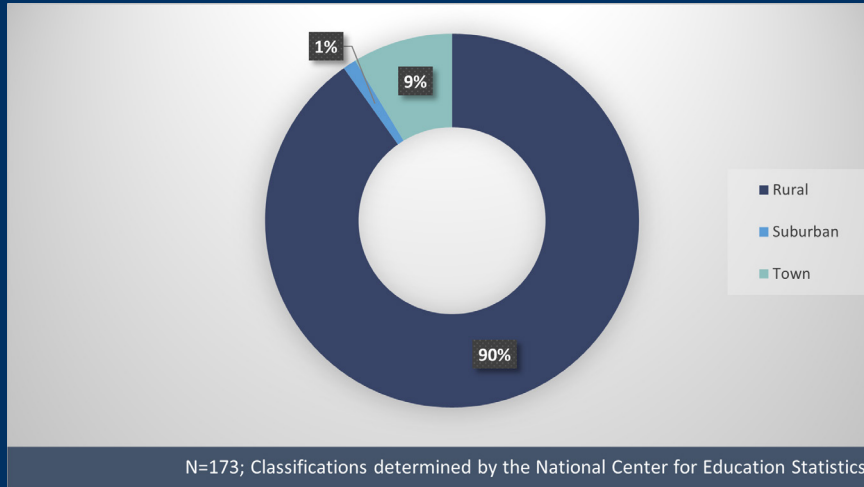
The types of Missouri districts moving to a 4dsw are typically small and located in a town or rural area (as opposed to an urban or suburban area), mimicking trends seen in other states.⁴ In the 2022–2023 school year, the largest 4dsw district was Warren County R-III, whose enrollment was 3,034 students. However, the fall of 2023 marked a serious divergence from the previous trend—the large Independence 30 School District in Kansas City began its first semester using a 4dsw schedule. The district had a preliminary enrollment of more than 13,700 students in 2023–2024, making it by far the largest 4dsw district in the state and the 13th-largest district in the state.

There are many possible explanations for the rise in the number of districts using the 4dsw. District officials often

Figure 3

Missouri Four-day School Week Districts by Locale, 2023–24

Ninety percent of school districts using a four-day school week are classified as “rural.”

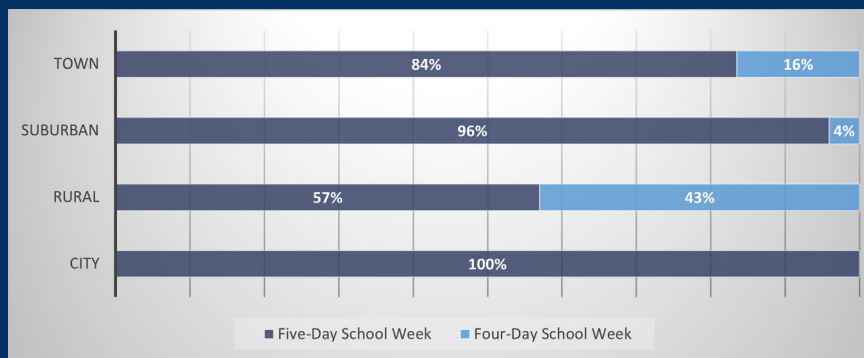


Source: Missouri Department of Elementary and Secondary Education as well as 4dsw data compiled by the Show-Me Institute.

Figure 4

Missouri Five-day vs. Four-day School Week Districts by Locale

If growth continues, the majority of rural districts may use a 4dsw in the near future.



Source: Missouri Department of Elementary and Secondary Education as well as 4dsw data compiled by the Show-Me Institute.

cite teacher retention or cost savings as reasons for making the move. Though these may be important considerations, it is also important to understand what makes the move possible. Prior to the 2019–2020 school year, the State of Missouri required school districts to be in session for a minimum of 174 days and 1,044 hours a year. That changed with the passage of Senate Bill (SB) 743 in 2018, which removed the number-of-days provision.⁵ This change made it feasible for school districts to remain in compliance with state requirements when they cut the number of school days and increased the number of minutes in a day. As a result, we have seen large increases in the number of districts opting for a 4dsw.

While a third of Missouri’s school districts are operating on a 4dsw, only about an eighth of the state’s students are learning in the four-day model. This is because small, rural school districts are more likely to adopt the 4dsw than larger districts. The vast majority (90%) of school districts using a 4dsw in 2023–2024 are rural, as classified by the National Center for Education Statistics (NCES) (see Figure 3). Meanwhile, 9 percent are “town” and just 1 percent are “suburban.” Crystal City 47 and Independence 30 are the only two districts classified as “suburban.”

The bulk of 4dsw districts are rural (see Figure 4). Presently, 43 percent of Missouri districts classified as rural use a 4dsw. If the current trend continues, we will see the majority of rural districts using the 4dsw in the near future. A small but significant number of town districts (16%) use

a 4dsw schedule. Typically, town districts are bigger than rural districts. In Missouri, the average town district has an enrollment of 1,999 students, while the average enrollment in rural districts is 502 students (using enrollment data for 2022–2023). It is worth noting that among town and rural districts that adopt the 4dsw, the average enrollment is even lower than the statewide average for their classification. The average town district using a 4dsw has 1,211 students, while the average rural 4dsw district has 424. Until recently, suburban districts have largely avoided the 4dsw, and no district classified as urban has adopted the model. The classifications noted here are determined by the NCES. According to NCES, these definitions rely “on standard urban and rural definitions developed by the U.S. Census Bureau, and each type of locale is either urban or rural in its entirety.”⁶ Size of the locale and proximity to other locales are considered in making the determinations.

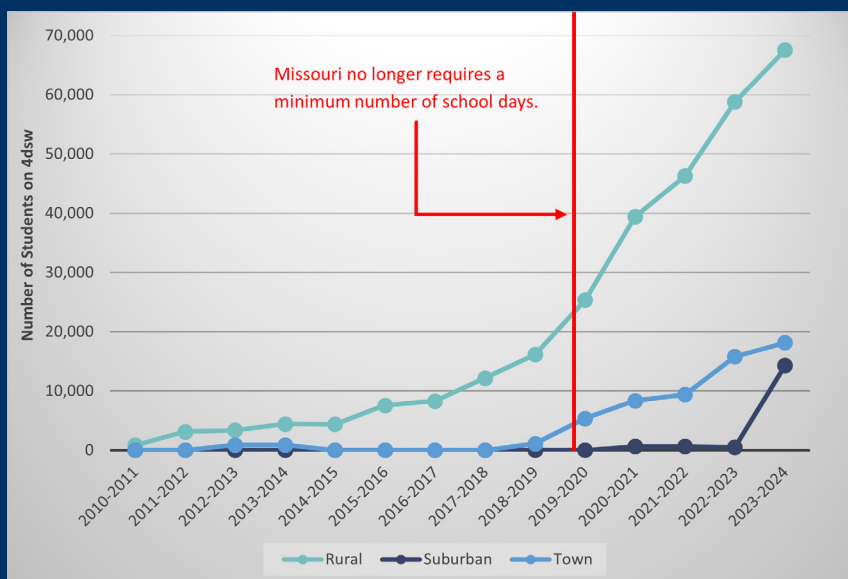
Compared to other states, Missouri has a large number of school districts—according to NCES, Missouri ranked 18th in total student membership and 12th in the total number of school districts.⁷ In fact, Missouri is ranked 39th in its ratio of students to school districts. As of 2023–2024, the state had 516 traditional public-school districts and two special school districts. Due to the large number of districts and the high percentage of these districts moving to the 4dsw, Missouri now has the most 4dsw districts in the entire country.⁸

The growth in the use of the 4dsw by school locale is presented in Figure 5. In town districts since 2022, 4dsw participation has nearly doubled in terms of both the number of districts that use this schedule and the number of students enrolled at 4dsw schools. For rural districts, the increase by both of these measures has been 40 percent. This trend is worth monitoring in the coming years.

Figure 5

Number of Missouri Students Learning on a 4dsw by Year, by Locale

Since 2022, 4dsw participation in town districts has nearly doubled.



Source: Missouri Department of Elementary and Secondary Education as well as 4dsw data compiled by the Show-Me Institute.

In Missouri, some districts have used the 4dsw for more than a dozen years. Prior to the rule change that dropped the number-of-days requirement, use of the 4dsw was almost exclusively confined to rural districts. Following the change, the number of rural school districts using a 4dsw has soared and use has spread to town districts and even some suburban districts. This helps to explain why the adoption of the 4dsw by the Independence School District has been so noteworthy—the average suburban district is less than half its size. Though it is only one of 173 4dsw school districts, the Independence School District is estimated to be instructing over 14 percent of all 4dsw students.

In short, the 4dsw movement is quickly gaining momentum, chiefly through small, rural districts, but it appears now to be spreading to town and even some suburban school districts. In the following section, we further analyze the difference between 4dsw districts and those using the traditional five-day schedule.

TOTAL FOUR-DAY SCHOOL WEEK DISTRICTS: DATA COLLECTION

For the school years 2011–2012 to 2022–2023, the researchers used a combination of data from the Department of Elementary and Secondary Education (DESE)⁹ and an independent dataset compiled by Missouri State professor Jon Turner.¹⁰ Until very recently, DESE had not yet released its data for the number of 4dsw districts in the 2023–2024 school year, so news outlets around Missouri had been citing statistics for 2023–2024 from Turner at that time.

The researchers conducted a quick check and found that the Buchanan Co. R-IV School District¹¹ moved to a 4dsw schedule in 2023–2024 but was not included in the Turner database. Following this finding, the researchers decided it would be valuable to check every district in the state and determine the number of 4dsw districts through their own means. For the 2023–2024 school year (2024), all Missouri calendars were gathered by searching every district website, combing through districts' social media, or calling the district directly to determine which districts were using a 4dsw or 5dsw schedule.

By collecting these data the researchers found that 173 school districts in Missouri are using a 4dsw for the 2023–2024 school year.

It should also be noted that Gillam C-4¹² (one of the 173 districts) uses a 5dsw schedule up until Thanksgiving break, and then switches to a 4dsw schedule for the remainder of the school year.

Finally, districts that use a 4dsw every other week, or use a 4.5-day school week, were not counted as 4dsw districts.

III. DESCRIPTIVE ANALYSIS

Using data from DESE, we conduct a series of comparisons between school districts using a 4dsw and those using a 5dsw. We conduct *t*-tests to determine

whether there is a statistically significant difference between the two groups of school districts. When there is a statistically significant difference between two groups, we indicate it with one or more asterisks, which correspond to what is known as the *p* value. This is the probability that the differences between the two groups occurred by random chance. The standard level of significance for most social science research papers is five percent, with ten percent considered “marginally significant.” We note significant differences at the one-percent, five-percent, and ten-percent levels.

Comparison of Student Demographics

In Table 1, we present the first set of comparisons. Here, we examine the differences between the two groups on student demographics. This includes things like enrollment, the percentage of students with disabilities, and the percentage of students who qualify for free or reduced-price lunches. This last variable is a standard measure used as an indicator for poverty. Unless otherwise noted, our data are all from the 2021–22 school year. This was the most recent year for which we had access to all the variables of interest.

As a group, school districts that use the 4dsw tend to be smaller than those that do not. In Missouri, the average 4dsw district enrolls roughly 455 students, while 5dsw districts enroll 1,983, on average. Students in 4dsw districts are slightly more likely to be eligible for free or reduced-price lunches—53.6% compared to 47.2%. In addition, 4dsw districts also tend to be more homogeneous, with 92.6% of students identified as white. There are no real surprises here; these characteristics fit with what we know about the location of 4dsw districts, which tend to be in rural areas.

Comparison of District Finances

Next, we examine the differences between 4dsw districts and 5dsw districts in the area of finances (Table 2). Due to the difference in size (that is, because 4dsw districts tend to be so much smaller in terms of enrollment than 5dsw districts), we tested measures on a per-pupil basis when appropriate. Additionally, we created three ratios that indicate the number of students to administrators, teachers, and total staff.

Though we see significant differences in the sizes of districts, there are few large differences in terms of revenues and expenses. Four-day and five-day districts tend to tax themselves at similar rates, as indicated by the tax-rate ceiling. They are similar in terms of assessed valuation per pupil and total revenue per pupil. Similarly, there are not significant differences in terms of instructional expenditures, capital outlays, or debt expenses.

In terms of overall per pupil revenues and expenses, there are not statistical differences between 4dsw and 5dsw districts. There is a difference, however, in where the districts derive their funding. Four-day school week districts tend to rely more on state funding and less on local sources of funding.¹³ For example, 4dsw districts receive 39.6% of funding from local sources, while 5dsw districts receive 42.6% from local sources.

Comparison of Staffing Statistics

Despite having similar levels of revenue and expenditure per pupil, there are significant differences between 4dsw and 5dsw districts in terms of staffing policy (see Table 3). Some differences are clearly due to size. For example, 4dsw districts have 41.83 full-time equivalent teachers, on average, compared to 154.49 in 5dsw districts. Similarly, they have fewer full-time administrators, with 3.54 compared to 11.25.

The differences do not stop there. Four-day districts tend to have slightly less experienced teachers, with an average of 12.16 years of experience compared to 12.62. They also have fewer teachers with master's degrees. Perhaps unsurprisingly, teachers in 4dsw districts earn less than their 5dsw counterparts, averaging \$40,441 compared to \$45,598. These differences may partially be the result of the salary schedule, which tends to pay teachers for experience and degrees.¹⁴

Four-day school week districts tend to have more adults in the building relative to the number of students than do five-day districts. For example, 4dsw districts tend to have one administrator for every 118.7 students. Meanwhile, 5dsw districts have one administrator for every 137.8 students. A similar pattern exists with the student–teacher ratio, where 4dsw districts have one teacher per every 9.9 students and 5dsw districts have one per every 11.1 students. In total, 4dsw districts have one staff member

NOTE ON ENROLLMENT DATA

First, it is most important to note that these enrollment numbers are for traditional public school students only. Charter school, special-school district, private school, and home-school enrollment are not included.

K-12 enrollment for 2023–2024 is based on preliminary data released by DESE. It is possible that DESE will release corrections or adjustments prior to the final release of enrollment data. If so, the researchers will make every effort to update these figures accordingly. It is worth noting that our estimates using final 2021–2022 enrollment data yielded a similar result in 2023–2024 of 11.22% for percent of students on a 4dsw and a total of 96,867 students. The difference in our estimates and the actual preliminary numbers is mainly attributable to a large uptick in enrollment for two 4dsw districts, Grandview R-II and Sturgeon R-V.

Grandview R-II was preliminarily reported to have increased its enrollment from 645 students in 2021–2022 to 3,246 students in 2023–2024. Likewise, Sturgeon R-V increased from 402 students to 2,256. This is most likely due to the formation of two new virtual-learning programs that are facilitated by these two school districts.¹⁵

for every 6.08 students, and 5dsw districts have one staff member for every 6.62 students. These ratios suggest 4dsw districts tend to be less efficient than 5dsw districts. It is not clear whether this difference is simply the product of economies of scale in larger districts or if these are partially the result of staffing decisions that could be improved. Nevertheless, these ratios probably contribute to the disparities in average teacher pay.

To reduce the impact of size on the analysis, we also conducted *t*-tests while limiting the data to only “rural” and “town” districts. While the gaps between 4dsw and 5dsw districts narrowed, the patterns held in almost every area. Indeed, the differences between the two groups remained significant and in the same direction on

Table 1: Comparison of Missouri 4dsw and 5dsw Districts, 2021–2022: Demographics

District Demographics	Four-day Districts Mean (Standard Deviations)	Five-day Districts Mean (Standard Deviations)
Enrollment: K-12th grade	454.59*** (449.67)	1,982.93*** (3,569.06)
Free/reduced lunch %	53.64** (24.37)	47.15** (25.95)
White enrollment %	92.60*** (6.70)	85.74*** (18.6)
English-language-learning enrollment %	0.74** (2.55)	1.58** (3.96)
Students with disabilities %	14.26 (4.25)	13.80 (3.85)
Number of observations	124	392

* $p < 0.1$; ** $p < 0.05$; *** $p < .01$

Source: Missouri Department of Elementary and Secondary Education.

every one of the staff statistics save four: the percentage of teachers holding a master's degree, average years of experience, average administrator salary, and student enrollment to staff ratio. This indicates that even when comparing 4dsw districts to their rural and town counterparts, the 4dsw districts tend to have lower teacher salaries, which may also be related to the lower student-to-administrator and student-to-teacher ratios.

Additionally, teacher retention rates in 4dsw districts are statistically significantly lower than rates in 5dsw districts even when limiting observations to rural and town districts. As one additional check, we also tested the differences between 4dsw districts that had made the move in 2020 or earlier against rural or town 5dsw districts.

Table 2: Comparison of Missouri 4dsw and 5dsw Districts, 2021–2022: Finances

School Finance Area	Four-day Districts Mean (Standard Deviation)	Five-day Districts Mean (Standard Deviation)
Tax Rate Ceiling	\$3.69 (0.74)	\$3.66 (0.71)
Assessed property per pupil	\$132,552 (162,189)	\$137,218 (159,776)
Total expenditures per pupil	\$16,849 (4,656)	\$16,919 (5,031)
Total revenue per pupil	\$19,144 (18,486)	\$18,634 (21,706)
% Revenue from local sources	39.6%** (8.93)	42.6%** (13.21)
% Revenue from state sources	33.7%** (8.46)	31.3%** (10.34)
% Revenue from federal sources	18.5% (7.66)	17.3% (7.86)
Instructional expenditures per pupil	\$8,638 (7,601)	\$8,497 (12,240)
Capital outlays per pupil	\$1,534 (2,898)	\$2,016 (5,964)
Debt expenses per pupil	\$1,111 (1,931)	\$1,354 (2,603)
Number of observations	124	391

* $p < 0.1$; ** $p < 0.05$; *** $p < .01$

Source: Missouri Department of Elementary and Secondary Education.

Table 3: Comparison of Missouri 4dsw and 5dsw Districts, 2021–2022: Staff Statistics

Descriptive Statistic	Four-day Districts Mean (Standard Deviation)	Five-day Districts Mean (Standard Deviation)
Teacher full-time-equivalent (FTE)	40.83*** (33.35)	154.49*** (269.27)
Teacher average salary	\$40,441*** (3,877)	\$45,598*** (8,434)
Percent of teachers holding master's degree	43.11*** (13.93)	48.33*** (16.94)
Teacher average years of experience	12.16* (2.55)	12.62* (2.20)
Administrator FTE	3.54*** (2.88)	11.25*** (17.45)
Administrator average salary	\$80,051*** (14,661)	\$85,826*** (18,058)
Teacher retention rate: 1 year	78.5%*** (10.37)	81.4%*** (9.07)
Teacher retention rate: 3 years	57.1%*** (14.27)	61.6%*** (11.70)
Student enrollment to administrator ratio	118.7*** (47.60)	137.8*** (56.91)
Student enrollment to teacher ratio	9.9*** (2.50)	11.1*** (2.53)
Student enrollment to total staff ratio	6.08*** (1.93)	6.62*** (1.89)
Number of observations	124	392

* $p < 0.1$; ** $p < 0.05$; *** $p < .01$

Source: Missouri Department of Elementary and Secondary Education.

Table 4: Comparison of Missouri 4dsw and 5dsw Districts, 2021–2022: Academics

Descriptive Statistic	Four-day Districts Mean (Standard Deviation)	Five-day Districts Mean (Standard Deviation)
MO School Rankings GPA	1.53** (0.43)	1.66** (0.52)
ELA Percent Proficient or Advanced	39.2%*** (9.58)	43.0%*** (11.15)
Math Percent Proficient or Advanced	35.0%*** (10.86)	39.8%*** (13.31)
Four Year Graduation Rate	94.6%** (5.72)	93.0%** (5.93)
ACT Composite Score	19.4 (1.73)	19.6 (1.86)

* $p < 0.1$; ** $p < 0.05$; *** $p < .01$

Source: Missouri Department of Elementary and Secondary Education.

This was a comparison of 62 4dsw districts and 331 5dsw districts. Despite having made the move years earlier, the 4dsw districts' three-year retention rate remained statistically significantly lower than those of the rural and town 5dsw districts.

Comparison of Academics

In Table 4, we compare the academic performance of students in 4dsw districts and 5dsw districts. Once again we must note that these are simply comparisons of district averages. As such, they cannot be thought of as causal estimates of the impact of the four-day school week. Rather, they simply describe the difference between the two groups. The t -tests, which we present here, also do not take into account district size. This means a small school district is assigned the same weight as a large district, making this a comparison of district averages.¹⁶

The first measure in the table is the grade point average from the Show-Me Institute's Missouri School Rankings website.¹⁷ The MO School Rankings GPA was developed using performance data from DESE. The measure takes into account proficiency on state tests, student growth, and graduation rates, among other measures. It is a holistic look at overall school district performance. Our analysis reveals that students in 4dsw districts have statistically significantly lower GPAs than those in 5dsw districts. The 4dsw districts also have significantly fewer students scoring proficient or advanced on state exams in math and English language arts.

Though students in 4dsw districts score worse on the state's standardized tests, they tend to graduate at higher rates. The four-year graduation rate is 1.6 percentage points higher in 4dsw districts than in 5dsw districts. There is no statistically significant difference in ACT scores between the two groups.

IV. THE IMPACT OF THE FOUR-DAY SCHOOL WEEK ON DAYS AND SCHOOL HOURS

To this point our analyses have been descriptive; they allow for comparisons but do not prove causal relationships. Rather, they are simply comparisons. The lower test scores in 4dsw districts may have been caused by the reduction in days, or these districts may have had lower scores before they moved to the four-day schedule. In this section, we will present descriptive data comparing the number of days and the number of instructional hours between the two groups. Here, however, our analysis will go one step further. We will conduct a fixed-effect analysis to test the impact of switching to four days. A fixed-effects analysis is a statistical tool that attempts to control for unobserved differences between subjects, in this case school districts.

The data for this analysis were provided by DESE via data request. The dataset spans 2010 to 2023 and contains school-level and district-level measures. The data contain an indicator from DESE on whether a district is considered a 4dsw district. Here we are only examining the district-level measures of the (1) standard day length, (2) actual total days, and (3) actual total hours. Actual total

days is the number of days students in a school district attended class in a given year, while actual total hours are the number of hours the school was in session. We will test all three of these as dependent variables.

With these data we can estimate the effect of switching from a 5dsw district to a 4dsw district on the three dependent variables. This analysis uses school and year fixed-effects. This is an attempt to isolate the impact of switching from five to four days while netting out the school-specific characteristics and the changes that may have occurred in each year that could impact the dependent variables.

In Table 5, we present *t*-tests comparing the three time-dependent variables. Once again, these comparisons are simply a snapshot. They are not causal estimates. Nevertheless, they give us a picture of the difference between the two groups. In 2023, students in 4dsw districts went to school roughly 39 minutes more per day, but they went to school 18.5 days fewer. This resulted in 4dsw districts being in session 15 fewer hours.

Missouri school districts have some leeway in the number of days and hours that students are required to attend. While it is reasonable to assume the 4dsw might lead to fewer days or even fewer total hours, it is possible the districts that adopt the 4dsw already had fewer days and hours than their peers that did not move to four days. Accordingly, the Table 5 estimates are not causal.

Next, we present the causal estimates from the fixed-effects analysis. We conduct three separate analyses for the three outcome measures. In all cases, we are testing the impact of switching to the 4dsw. The units of measurement are hours or days. Thus, the numbers in the second column can be read as the change that occurs when a school district makes the official switch from a 5dsw to a 4dsw.

Our fixed-effect analysis (Table 6) suggests that moving to a four-day school week results in a longer school day of roughly 35 minutes (0.58 hours). In exchange for the longer days, districts that move to four days cut, on average, 15.9 days from the calendar. Switching to a 4dsw leads to a 8.3 hour reduction in learning time for students or roughly 1.24 days of learning.¹⁸ While this may not sound like much, these differences are cumulative. From

Table 5: T-test Comparison of Missouri 4dsw and 5dsw Districts, 2023: School Time

Descriptive Statistic	Four-day Districts Mean (Standard Deviation)	Five-day Districts Mean (Standard Deviation)
Standard day length (hours)	7.34*** (0.21)	6.69*** (0.23)
Actual total days	145.9*** (3.61)	164.4*** (6.18)
Actual total hours	1,067*** (17.24)	1,082*** (25.65)
Number of observations	85	308

* $p < 0.1$; ** $p < 0.05$; *** $p < .01$

Source: Missouri Department of Elementary and Secondary Education.

kindergarten through 12th grade, students in a 4dsw district will receive 106.99 fewer instructional hours. It is also important to note that Missouri already has lower requirements than most other states. According to the Pew Research Center, 32 states require school districts to be in session at least 180 days or more.¹⁹ Missouri is one of just eight states that does not have a state required minimum number of days.

V. CONCLUSION

Given the tremendous growth in the number of 4dsw districts in Missouri, it is important to examine this schedule closely. In this paper we present a descriptive analysis of 4dsw and 5dsw districts. These analyses present a snapshot view of the differences between the two groups. In some ways, our analyses are not surprising. For example, it should not come as a shock that 4dsw districts tend to be smaller, rural districts. Yet, when taken as a whole, the information paints an interesting picture.

Table 6: Fixed-effect Analysis of 4dsw Impact on School Time

Descriptive Statistic	4dsw Estimate (Robust Standard Error)
Standard Day Length (Hours)	0.58*** (0.03)
Actual Total Days	-15.9*** (0.53)
Actual Total Hours	-8.3** (3.19)
Number of Observations	6,510

* $p < 0.1$; ** $p < 0.05$; *** $p < .01$

Source: Missouri Department of Elementary and Secondary Education.

Four-day school districts in Missouri are funded on par with 5dsw districts. We found no real differences in revenues or expenditures. In both cases, school districts spent close to \$17,000 per pupil, on average. Yet, 4dsw districts tend to have lower ratios of students to administrators and teachers, which may help produce the significantly lower teacher salaries. Some of this may be due to economies of scale. Yet these patterns remain even when we compare 4dsw districts to rural and town 5dsw districts. This suggests that districts might be making different staffing decisions in order to raise salaries to comparable levels with similarly sized 5dsw districts.

It is noteworthy that 4dsw districts also experience lower rates of teacher retention and lower scores on state standardized tests. The average three-year retention rate in 5dsw districts was 61.6%, while it was just 57.1% in 4dsw districts. This was a statistically significant difference. Even when we compared districts that had reduced the number of school days in 2020, the three-year retention rate remains significantly lower than in rural and town 5dsw districts.

On one hand, the retention rates may help explain the move to the 4dsw as administrators look for ways to address low retention rates. On the other, it is not a good sign if districts with low retention rates and low test scores are the ones moving to the 4dsw. We know the 4dsw is not a strategy for improving test scores.²⁰ Indeed, the evidence suggests it may lead to lower scores. And there is little evidence that reducing the number of days improves teacher retention.²¹

In addition to conducting a descriptive analysis of school days and time, we also conducted a causal analysis. That is, we estimated the effect of switching to a 4dsw on the length of the school day, the number of days in a school year, and the total hours in the school year. Not surprisingly, reducing the number of days leads to fewer, but longer, days. On average, schools add roughly 35 minutes to their day and have 15.9 fewer instructional days when they switch from a 5dsw to a 4dsw. As a result, moving to a 4dsw reduces the number of total instructional hours by 8.3 hours.

The tremendous growth in the number of 4dsw districts shows that the reduced meeting pattern is clearly appealing to some school administrators and parents. Undoubtedly, there are some individuals for whom meeting in person at school fewer days is preferable or beneficial. As a policy matter, however, we are concerned with examining the 4dsw as a reform that is supposed to lead to improvements in the teacher workforce. Throughout our various analyses, including this one, we find very little evidence to support this claim. No one claims the 4dsw will improve student achievement, and for good reason. That is neither the intent nor the result. Reducing the number of days tends to have, on average, a negative impact on academics. Some suggest reducing days may lead to cost savings. The results of our study do not support such claims. The major motivating force for school administrators appears to be attracting and retaining teachers in districts that would otherwise be less attractive because of factors such as lower average teacher salaries and lower average academic achievement. While there may be anecdotal evidence that teachers prefer to work fewer days, the data do not show that teachers are more likely to remain in 4dsw districts.

Taken together, these results should suggest to school districts that the 4dsw is not a silver bullet. It is not

a stand-alone reform that will lead to improvement. If school districts are going to make the move to four days, they should consider two things. First, they should determine whether a full-scale, district-wide reduction in days is the best plan. As an alternative, officials might consider moving a portion of schools within the district to the four-day model and allowing parents and teachers to choose whether it is the right fit for them. This avoids potential harm to students who would be better served by a 5dsw. It also allows the district to study the impact of the move before fully implementing it. Second, school officials should only consider the 4dsw as part of a more comprehensive strategy. For example, in order to support students on that fifth day, schools should implement enrichment activities for younger students or internships or job training for older students.

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NOTES

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