RedFame

Journal of Education and Training Studies
Vol. 13, No. 3; July 2025
ISSN 2324-805X E-ISSN 2324-8068
Published by Redfame Publishing
URL: http://jets.redfame.com

Comparing the Cost Effectiveness of Four-Day vs. Five-Day School Week Schedules in Montana Schools

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Received: April 8, 2025 Accepted: May 11, 2025 Online Published: May 12, 2025

doi:10.11114/jets.v13i3.7698 URL: https://doi.org/10.11114/jets.v13i3.7698

Abstract

Although cost savings are frequently cited as a key reason for schools adopting a four-day school week (4dsw), findings from this research showed that Montana school districts utilizing the 4dsw schedule in the years 2006 - 2023 did not realize these cost savings, even when adjusting for inflation and school size. In this research, a census of the population was utilized to answer the research question: Is there a difference in cost effectiveness on instructional and non-instructional costs (operations, transportation, and food service) between schools operating on a four-day school week and those operating on a five-day school week? A census consists of all data related to the population for the research question. In this case, the population comprised every student and every school district in the state of Montana. Findings from the research showed that school districts that utilized the 4dsw schedule spent more on an Average Number Belonging (ANB) basis than school districts that utilized the 5dsw schedule for 2006-2023, in the areas of Instruction, Maintenance, and Transportation. The only area of analysis where school districts that utilized the 4dsw schedule spent less per ANB was in Food Services. Additionally, the specific analysis of per ANB expenditures before and after schools transitioned to utilizing the 4dsw schedule revealed that most school districts spent less while on the 5dsw schedule, even after adjusting for inflation.

Keywords: four-day school week, finance, school districts, schedule

1. Introduction

The four-day school week (4dsw) is growing in popularity, particularly in the western United States, where states with extensive rural areas are leading the shift (Kilburn et al., 2021). Montana is among those states. Many of these rural school districts face budget shortfalls and are, therefore, compelled to find more efficient ways to manage their limited financial resources (Leachman et al., 2016). Because of this, cost savings are frequently cited as a key reason for schools to adopt a 4dsw schedule (Anderson & Walker, 2015; Donis-Keller & Silvernail, 2009; Heyward, 2018; Sagness & Salzman, 1993). However, questions remain as to whether these cost savings are realized when adopting this schedule (Griffith, 2011; Thompson, 2021). To provide school districts with the guidance needed to make informed financial decisions regarding the impact of the 4dsw schedule, additional research is necessary. Therefore, the question that guided this study was: Is there a difference in cost effectiveness on instructional and non-instructional costs (operations, transportation, and food service) between schools operating a four-day school week and those operating five-day school week? The research hypothesis was as follows: There is a difference in cost effectiveness on instructional and non-instructional costs (operations, transportation, and food service) between schools operating on a four-day school week and those operating on a five day school week.

2. Literature Review

Every student has the right to a high-quality education (U.S. Department of Education, 2021). The responsibility for this high-quality education is primarily a state responsibility, with state and local governments contributing over 90% of the funding for K-12 public schools (Malhoit, 2005). States typically provide this funding via income, sales, and property taxes, in order to supplement what can be raised locally through property taxes (Lee & Fuller, 2022). Although Challoumis (2020) asserted that taxes allocated to education contribute directly to the economy, when facing budget shortfalls, many states are not able to provide adequate funds to support schools. Because of this, school districts are required to find increasingly efficient strategies for the use of financial resources to compensate for reduced or inadequate funding. (Leachman et al., 2016).

One of the strategies school district leaders have increasingly employed in the pursuit of efficient financial resource utilization is to shorten the school week from five to four days, hoping to find savings in transportation, facility maintenance, and personnel costs (Donis-Keller & Silvernail, 2009; Hewitt & Denny, 2011). Thompson et al. (2021) interviewed 347 leaders of schools that currently operated with a four-day school week (4dsw) schedule and found that 65.1% (n=226) of these schools cited financial reasons as one of the main rationales for adopting the 4dsw schedule. According to Griffith (2011), some leaders believe that reducing the school week by one day, or 20%, will lead to a corresponding 20% decrease in school expenses.

Because the 4dsw schedule typically eliminates one day per week from the school calendar, it must also extend the length of the remaining four school days to meet state accreditation standards. Morton (2025) stated that districts that utilize the 4dsw schedule typically operate for 31 fewer days per year than traditional schools, usually holding classes for 148 days per year instead of 179. Because of the 31 fewer days, many school leaders expect that some non-fixed expenses, such as motor fuel, utilities, cafeteria food, and possibly hourly wages, could see reductions in expenditures. However, in practice, many schools do not fully close on the fifth day. Instead, they use the fifth day for extracurricular activities, tutoring, special programs, and professional development, which ultimately lessens the expected savings (Gaines, 2008).

Before 2020, there were 662 school districts in 24 states that utilized the 4dsw schedule, this marked an increase of over 600% in schools utilizing this schedule since 1999 (Thompson & Morton, 2021). In 2005, the Montana legislature passed Senate Bill 170, introducing increased flexibility in school schedules. This bill changed attendance requirements from the traditional 180-pupil instruction day school year to instead requiring 1,080 minimum aggregate hours of pupil instruction (Montana Code Annotated, 20-1-301). This change allowed school districts to explore alternative schedules, leading to ten Montana schools transitioning to a 4dsw schedule by the conclusion of the 2006-2007 school year (OPI, 2024). Since that time, a total of 117 (29.3%) of Montana school districts, comprising 260 individual schools, have adopted a 4dsw schedule (OPI, 2024). With 32 districts adopting the 4dsw schedule in the 2022/23 and 2023/24 school years (OPI, 2024), the rate of Montana school districts transitioning to this schedule is increasing, and many of these districts hope to experience financial savings (OPI, 2011).

As Montana school districts continue to adopt the 4dsw schedule, it becomes increasingly important to understand the long-term financial outcomes of choosing a 4dsw schedule instead of the traditional 5dsw schedule (Thompson & Ward, 2022; Morton et al., 2024). Therefore, the purpose of this study was to explore the financial implications of choosing a 4dsw instead of a 5dsw schedule in Montana schools.

3. Methodology

3.1 Data Collected

A census of the population was utilized to answer the research question. A census consists of all data related to the population for the research question. In this case, the population was every student and every school district in the state of Montana. Therefore, data were not analyzed with inferential statistics since the purpose of inferential statistics is to infer findings from a sample to a population. Since a census was obtained, there was no need to sample or infer. Because the statistics are not inferential, no probability (p value) was needed or calculated. Additionally, there are numerous approaches to the four-day school week schedule within Montana school districts. For the purposes of this study, any school reporting to the Montana Office of Public Instruction (OPI) as using a 4dsw schedule was recognized as following the 4dsw schedule, regardless of specific configuration.

The school board from each school district is required to submit an annual Trustee Financial Summary (TFS) to the Montana Office of Public Instruction (OPI). These summaries contain all revenues and expenditures by category for the preceding fiscal year. For this research, data from all Montana school districts in the years 2006 through 2023 were analyzed. The analysis included 860,969 rows of data, with each row containing fourteen columns, totaling 12,053,566 individual cells of data.

3.2 The Four Major Variables Examined Were

- Instruction
  - Expenditures paid through the General Fund
  - Expenditures paid through all funds
- Maintenance
  - Expenditures paid through the General Fund
  - Expenditures paid through all funds
- Transportation
- Food Service

3.3 Limitations of Data Collected for Research Question

The data analyzed in this research were reliant on school district clerks assigning expenditures to funding codes in an accurate and consistent manner. Additionally, this analysis was completed on data provided by Montana school districts to the OPI.

3.4 Data Analysis

The Average Number Belonging (ANB) data for each school were added to the Trustees Financial Summary (TFS) data for analysis. ANB is calculated by each school's enrollment on the first Monday in October and February 1st each school year. These numbers are averaged, then multiplied by 187 and, finally, divided by 180. ANB = ((October Count + February Count) / 2) X 187 / 180. Each school was then identified as operating under a four-day or five-day school week schedule (Noted as Calendar in Figure 1) for each year from 2006 to 2023. These data were provided by the Office of Public Instruction (OPI).

Year	District	Calendar	ANB
2006	District A	5	229
2007	District A	5	221
2008	District A	5	211
2009	District A	5	199
2010	District A	5	198
2011	District A	5	189
2012	District A	5	184
2013	District A	5	182
2006	District B	5	319
2007	District B	5	307
2008	District B	5	312
2009	District B	5	305
2010	District B	4	294
2011	District B	4	289
2012	District B	4	288
2013	District B	4	324

Figure 1. Example of How Data Were Organized for the Analysis for Each Legal Entity (School District)

The instructional costs, by school district, by year, were extracted from the TFS for the General Fund (Fund 01). Instructional costs were identified by function code 1XXX. The funding code assigned to all instructional costs by the school district clerk is 1XXX. All function codes in the 1,000s are instruction related. In the TFS, these are combined under the function code 1XXX.

The same process was followed using instruction codes from All Funds within the school district budget. These additional funds to the General Fund (Fund 01) include: Tuition Fund (Fund 13), Miscellaneous Program Fund (Fund 15), including Title I Funds, Federal Impact Aid (Fund 26), and Technology Fund (Fund 28).

Maintenance costs by school district, by year, were extracted from the TFS for the General Fund (Fund 01). The function code for maintenance is 26XX. The same process was followed using maintenance function codes (26XX) from All Funds within the school district budget. These additional funds to the General Fund (Fund 01) include: Transportation Fund (Fund 10), Miscellaneous Program Fund (Fund 15), Federal Impact Aid (Fund 26), Technology Fund (Fund 28), and Building Reserve Fund (Fund 61).

Transportation costs by school district, by year were extracted from the TFS for the Transportation Fund (Fund 10). The function code for student transportation is 27XX.

Food service costs by school district, by year were extracted from the TFS for the Food Service Fund (Fund 12). This fund includes all expenditures for running a school district's food services.

The totals for each function by school district (Instruction: General Fund, Instruction: All Funds, Maintenance: General Fund, Maintenance: All Funds, Student Transportation, and Food Service) were then divided by each school district's total ANB for each year. These calculations generated a function cost per ANB by school district, by year (Figure 2).

				Instruction				Maintenenace				Transportation		Food Services	
Year	District	Calendar	ANB	GF	perANB	All	perANB	GF	perANB	All	perANB	10	perANB	12	perANB
2006	District A	5	229	$804,558.41	$3,513.36	$ 973,054.13	$4,249.14	$129,277.53	$564.53	$150,979.25	$ 659.30	$45,834.30	$200.15	$58,345.70	$169.61
2007	District A	5	221	$835,810.90	$3,781.95	$1,000,332.28	$4,526.39	$128,651.48	$582.13	$236,444.69	$1,069.89	$43,918.18	$198.72	$61,406.77	$185.52
2008	District A	5	211	$860,277.57	$4,077.14	$1,145,421.04	$5,428.54	$112,163.36	$531.58	$280,188.74	$1,327.91	$48,483.96	$229.78	$62,037.54	$192.66
2009	District A	5	199	$865,162.89	$4,347.55	$1,066,344.95	$5,358.52	$151,164.63	$759.62	$228,159.64	$1,146.53	$59,317.85	$298.08	$63,085.82	$201.55
2010	District A	5	198	$866,994.46	$4,378.76	$1,089,030.18	$5,500.15	$145,819.00	$736.46	$273,137.54	$1,379.48	$62,168.11	$313.98	$67,400.06	$216.72
2011	District A	5	189	$805,257.15	$4,260.62	$1,038,226.53	$5,493.26	$166,281.52	$879.80	$234,278.61	$1,239.57	$65,618.29	$347.19	$70,966.68	$235.77
2012	District A	5	184	$794,249.47	$4,316.57	$1,039,903.32	$5,651.65	$173,756.55	$944.33	$248,388.69	$1,349.94	$80,591.59	$438.00	$73,123.42	$249.57
2013	District A	5	182	$801,317.12	$4,402.84	$1,051,457.11	$5,777.24	$158,168.83	$869.06	$205,189.85	$1,127.42	$91,845.36	$504.64	$71,999.47	$250.87
2014	District A	5	177	$786,879.65	$4,445.65	$1,098,434.35	$6,205.84	$145,523.10	$822.16	$188,340.36	$1,064.07	$93,086.11	$525.91	$65,914.19	$238.82

Figure 2. Example of Cost per ANB in the Target Funds

Cost per ANB was averaged for each year the school districts utilized the 4dsw schedule and the 5dsw schedule. For each year, each fund, the average per ANB costs were calculated for the districts utilizing the 4dsw schedule and the districts utilizing the 5dsw schedule. These analyses yielded average costs for students in school districts utilizing a 4dsw schedule and school districts utilizing a 5dsw schedule for each year (Figure 3). The difference was then calculated between the 4dsw and the 5dsw schedules.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
				Instruction				Maintenenace				Transportation		Food Services	
Year	District	Calendar	ANB	GF	perANB	All	perANB	GF	perANB	All	perANB	10	perANB	12	perANB
2006	District A	5	229	$804,558.41	$3,513.36	$ 973,054.13	$4,249.14	$129,277.53	$564.53	$150,979.25	$ 659.30	$45,834.30	$200.15	$58,345.70	$169.61
2007	District A	5	221	$835,810.90	$3,781.95	$1,000,332.28	$4,526.39	$128,651.48	$582.13	$236,444.69	$1,069.89	$43,918.18	$198.72	$61,406.77	$185.52
2008	District A	5	211	$860,277.57	$4,077.14	$1,145,421.04	$5,428.54	$112,163.36	$531.58	$280,188.74	$1,327.91	$48,483.96	$229.78	$62,037.54	$192.66
2009	District A	5	199	$865,162.89	$4,347.55	$1,066,344.95	$5,358.52	$151,164.63	$759.62	$228,159.64	$1,146.53	$59,317.85	$298.08	$63,085.82	$201.55
2010	District A	5	198	$866,994.46	$4,378.76	$1,089,030.18	$5,500.15	$145,819.00	$736.46	$273,137.54	$1,379.48	$62,168.11	$313.98	$67,400.06	$216.72
2011	District A	5	189	$805,257.15	$4,260.62	$1,038,226.53	$5,493.26	$166,281.52	$879.80	$234,278.61	$1,239.57	$65,618.29	$347.19	$70,966.68	$235.77
2012	District A	5	184	$794,249.47	$4,316.57	$1,039,903.32	$5,651.65	$173,756.55	$944.33	$248,388.69	$1,349.94	$80,591.59	$438.00	$73,123.42	$249.57
2013	District A	5	182	$801,317.12	$4,402.84	$1,051,457.11	$5,777.24	$158,168.83	$869.06	$205,189.85	$1,127.42	$91,845.36	$504.64	$71,999.47	$250.87
2014	District A	5	177	$786,879.65	$4,445.65	$1,098,434.35	$6,205.84	$145,523.10	$822.16	$188,340.36	$1,064.07	$93,086.11	$525.91	$65,914.19	$238.82

Figure 3. Example of Cost per ANB

Note. Figure 1.3 is an example of the data analysis performed for cost per ANB. Column A = year, Column B = School District, Column C = 5dsw schedule or 4dsw schedule calendar, Column D = ANB, Column E = General Fund Instruction Expenditures, Column F = Cost per ANB in the General Fund Instruction, Column G = All Funds Instruction Expenditures, Column H = Cost per ANB for all Funds Instruction, Column I = General Fund Maintenance Expenditures, Column J = Cost per ANB in the General Fund Maintenance, Column K = All Funds Maintenance Expenditures, Column L = Cost per ANB for all Funds Maintenance, Column M = Transportation Fund Expenditures, Column N = Cost per ANB in the Transportation Fund, Column O = Food Services Fund Expenditures, Column P = Cost per ANB in the Food Services Fund.

Total expenditures per ANB were calculated for school districts utilizing a 4dsw schedule and school districts utilizing a 5dsw schedule (Appendix A). Figure 4 represents the average cost per ANB from 2006 to 2023 for school districts utilizing the 4dsw schedule and school districts utilizing the 5dsw schedule.

A	B	C	D	E	F	G	H	I	J	K	L	M
	Instruction				Maintenance				Transportation		Food Services	
	GF	perANB	All	perANB	GF	perANB	All	perANB	10	perANB	12	perANB
5dsw		$4,908.92		$7,314.41		$1,231.13		$1,834.33		$ 672.88		$ 290.82
4dsw		$5,390.13		$8,246.75		$1,468.05		$2,176.12		$ 781.64		$ 218.01
		8.93%		11.31%		16.14%		15.71%		13.91%		-33.40%
		$ (481.20)		$ (932.33)		$ (236.93)		$ (341.80)		$ (108.76)		$ 72.81

Figure 4. Analysis of Total Cost per ANB

Note. Column A = 5dsw or 4dsw, Column C = Cost per ANB in the General Fund Instruction, Column E = Cost per ANB for all Funds Instruction, Column G = Cost per ANB in the General Fund Maintenance, Column I = Cost per ANB for all Funds Maintenance, Column K = Cost per ANB in the Transportation Fund, Column M = Cost per ANB in the Food Services Fund.

Total Cost per ANB

The cost per student for Instruction in the General Fund was 8.93% (481.20) higher for school districts utilizing the 4dsw schedule ($5,390.13) than for school districts utilizing the 5dsw schedule ($4,908.92). The cost per student for Instruction in All Funds was 11.31% ($932.33) higher for school districts utilizing the 4dsw schedule ($8,246.75) than for school districts utilizing the 5dsw schedule ($7,314.41). The cost per student for Maintenance in the General fund was 16.14% ($236.93) higher for school districts utilizing the 4dsw schedule ($1,468.05) than for school districts utilizing the 5dsw schedule ($1,231.13). The cost per student for Maintenance in All Funds was also 15.71% ($341.80) higher for school districts utilizing the 4dsw schedule ($2,176.12) than for school districts utilizing the 5dsw schedule

($1,834.33). The cost per student for Transportation in school districts utilizing the 4dsw schedule was 13.91% ($108.76) higher for school districts utilizing the 4dsw schedule ($781.64) than for school districts utilizing the 5dsw schedule ($672.88). The cost per student for Food Services in school districts utilizing the 4dsw schedule was 33.40% ($72.81) lower for school districts utilizing the 4dsw schedule ($218.01) than for school districts utilizing the 5dsw schedule ($290.82).

School districts utilizing the 4dsw schedule spent more per ANB in all six fund categories, except Food Services (Figure 5). In the OPI's (2011) Four-Day School Week Report in Montana Public Schools, one of the reasons identified for transitioning to the 4dsw schedule was cost savings. Based on this comprehensive analysis of these Fund Categories expenditures from 2006-2023, the anticipated cost savings were not realized, and, indeed, expenditures were higher for students in school districts utilizing the 4dsw schedule ($1,268.07 per ANB).

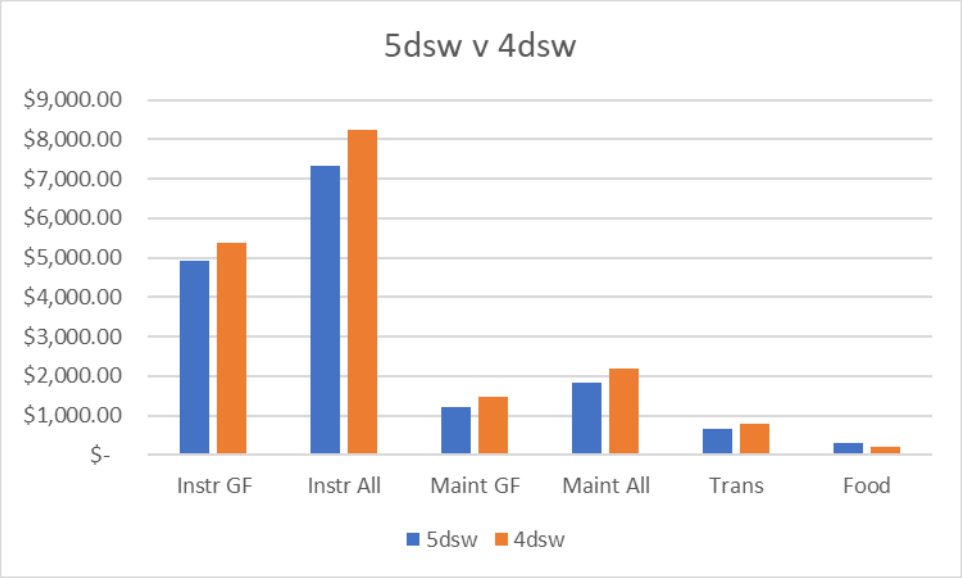

Figure 5. Comparison of School Districts Utilizing the 4dsw Schedule and School Districts Utilizing the 5dsw Schedule

A confounding variable when analyzing the difference between school districts utilizing a 4dsw schedule and school districts utilizing a 5dsw schedule is school district size. Due to the concept of economies of scale, larger school districts should cost less per student to operate (Lovenheim & Turner, 2018). To address this variable, data from large schools were removed from the dataset, and a separate analysis was conducted comparing small school districts utilizing the 4dsw schedule with small school districts utilizing the 5dsw schedule. A similar comparison was not performed on large school districts because only one school district utilizing a 4dsw schedule met the criteria for a large school district. Large was determined by the largest two Montana High School Association (MHSA) classifications (Class A & AA). These classifications delineate school sizes for co-curricular competition. This is the most common classification method used in Montana.

Small school districts utilizing a 4dsw schedule spent $258.92 more per ANB than small school districts utilizing a 5dsw schedule for Instruction in the General Fund. In Instruction, for All Funds in small school districts utilizing a 4dsw schedule spent $537.54 more per ANB than small school districts utilizing a 5dsw schedule. In General Fund Maintenance, small school districts utilizing a 4dsw schedule spent $134.50 more than small schools utilizing a 5dsw schedule. In Maintenance from All Funds, small school districts utilizing a 4dsw schedule spent $164.08 more than small school districts utilizing a 5dsw schedule. In Student Transportation, small school districts utilizing a 4dsw schedule spent $49.03 more than small school districts utilizing a 5dsw schedule. In the Food Service Fund, small school districts utilizing a 4dsw schedule spent $30.91 less than small school districts utilizing a 5dsw schedule. Food services is the only funding area analyzed where cost savings were realized in school districts utilizing the 4dsw schedule (Figure 6 & 7).

	Instruction				Maintenance				Transportation		Food Services	
	GF	perANB	All	perANB	GF	perANB	All	perANB	10	perANB	12	perANB
5dsw		$5,131.20		$7,709.21		$1,333.55		$2,012.04		$ 732.62		$ 295.36
4dsw		$5,390.13		$8,246.75		$1,468.05		$2,176.12		$ 781.64		$ 264.45
		4.80%		6.52%		9.16%		7.54%		6.27%		-11.69%
		$ (258.92)		$ (537.54)		$ (134.50)		$ (164.08)		$ (49.03)		$ 30.91

Figure 6. Small School Districts Utilizing the 4dsw schedule and the 5dsw Schedule

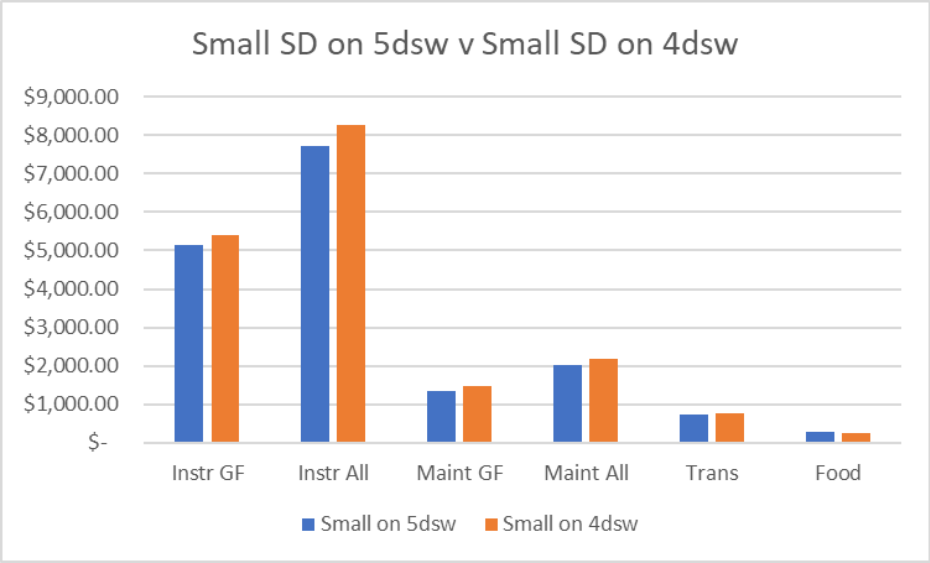

Figure 7. Graph of Small School Districts Utilizing the 5dsw Schedule Versus Small Districts Utilizing the 4dsw Schedule

Note. Small was determined by the smallest two Montana High School Association (MHSA) classifications (Class C & B).

Before and After: Expenditures

For each school district that transitioned to utilizing the 4dsw schedule, the per student expenditures were calculated for two years prior to the transition and two years after the transition. Two years before and after were used to allow data from the initial school districts that transitioned to a 4dsw schedule to be included. The categories that were studied were Instruction (General Fund and All Funds), Maintenance (General Funds and All Funds), Transportation, and Food Services (Figure 8).

In the General Fund, school districts utilizing the 5dsw schedule spent an average of $5,101.59 per ANB on instruction for the two years prior to the transition to the 4dsw schedule. For each of the two years following the transition, these same schools experienced districts spent an average of $5,455.85 per ANB. This is a difference of $354.26 per ANB, resulting in a 6.94% difference. In the years included in this study, the four-year average inflation rate was 6.50%.

In All Funds, school districts utilizing the 5dsw schedule spent an average of $7,343.19 per ANB on instruction for the two years prior to the transition to the 4dsw schedule. For each of the two years following the transition, these same schools experienced an 8.33% difference. In the years included in this study, the four-year average inflation rate was 6.50%.

In the General Fund, school districts utilizing the 5dsw schedule spent an average of $1,395.49 per ANB on maintenance for the two years before the transition to the 4dsw schedule. For each of the two years following the transition, these same school districts spent an average of $1,532.25 per ANB. This is a difference of $136.76 per ANB, resulting in a 9.80% difference. In the years included in this study, the four-year average inflation rate was 6.50%.

In the All Funds, school districts utilizing the 5dsw schedule spent an average of $2,104.13 per ANB on maintenance for the two years before the transition to the 4dsw schedule. For each of the two years following the transition, these same school districts spent an average of $2,281.45 per ANB. This is a difference of $177.31 per ANB, resulting in an 8.43% difference. In the years included in this study, the four-year average inflation rate was 6.50%.

In the Transportation Fund, school districts utilizing the 5dsw schedule spent an average of $936.56 per ANB on student transportation for the two years before the transition to the 4dsw schedule. For each of the two years following the transition, these same school districts spent an average of $958.92 per ANB. This is a difference of $22.36 per ANB, resulting in a 2.39% difference. In the years included in this study, the four-year average inflation rate was 6.50%.

In the Food Service Fund, school districts utilizing the 5dsw spent an average of $386.26 per ANB on meals for the two years before the transition to the 4dsw schedule. For each of the two years following the transition, these same school districts spent an average of $437.58 per ANB. This is a difference of $50.32 per ANB, resulting in a 12.99% difference. In the years included in this study, the four-year average inflation rate was 6.50%.

A	B	C	D	E	F	G	H	I	J	K	L	M
	Instruction				Maintenance				Transportation		Food Services	
	GF	perANB	All	perANB	GF	perANB	All	perANB	10	perANB	12	perANB
5dsw		$5,101.59		$7,343.19		$1,395.49		$2,104.13		$ 936.56		$ 386.26
4dsw		$5,455.85		$7,955.05		$1,532.25		$2,281.45		$ 958.92		$ 437.58
		6.94%		8.33%		9.80%		8.43%		2.39%		12.99%
		$ (354.26)		$ (611.86)		$ (136.76)		$ (177.31)		$ (22.36)		$ (50.32)

Figure 8. 2006-2023 Before and After Expenditures

Note. Two years before transitioning to the 4dsw and two years after transitioning to the 4dsw

Column A = 5dsw or 4dsw, Column C = Cost per ANB in the General Fund Instruction, Column E = Cost per ANB for all Funds Instruction, Column G = Cost per ANB in the General Fund Maintenance, Column I = Cost per ANB for all Funds Maintenance, Column K = Cost per ANB in the Transportation Fund, Column M = Cost per ANB in the Food Services Fund.

For school districts that have transitioned to the 4dsw schedule during the period from 2006-2023, there were higher expenditures, even when adjusted for inflation on a per ANB basis in Instruction, Maintenance, and Food Services. Whereas, in Transportation, the cost per ANB for school districts utilizing the 4dsw schedule was found to be less when adjusted for inflation. In the OPI (2011) Four-Day School Week Report in Montana Public Schools, one of the reasons identified for transitioning to the 4dsw schedule was cost savings. Based on this comprehensive analysis of expenditures before schools transitioned to utilizing the 4dsw schedule and after schools transitioned to utilizing the 4dsw schedule, from 2006-2023, the anticipated cost savings were realized only in Transportation in some districts when data was adjusted for inflation.

Examining the data over the years of 2006-2023, the total difference in Instruction, Maintenance, Transportation, and Food Services between school districts utilizing the 4dsw schedule and school districts utilizing the 5dsw schedule for the two years before the school districts transitioned and the two years after the school districts transitioned was $861.85 per ANB higher. This represented an 8.00% difference, which exceeds the average inflation rate of 6.50% by 1.50 %, resulting in an additional cost of $198.89 per ANB. Based on this data, schools that transition to a 4dsw schedule could expect to spend an additional $39,778.00 for a school district with 200 ANB (Class C); for a school district with 500 ANB (Class B) the extra cost would be $99,445.00; for a school district with 1,500 ANB (Class A) the extra cost would be $298,335.00.

4. Findings & Discussion

School districts in this study that utilized the four-day school week (4dsw) schedule spent more on a per Average Number Belonging (ANB) basis than school districts that utilized the five-day school week (5dsw) schedule for the years 2006-2023 in the areas of Instruction, Maintenance, and Transportation. The only area of analysis where school districts that utilized the 4dsw schedule spent less per ANB was in Food Services. The specific analysis of per ANB expenditures before and after schools transitioned to utilizing the 4dsw schedule revealed that schools spent less while on the 5dsw schedule, even after adjusted for inflation. To address the confounding variable of school size (large schools are more efficient to operate than small schools), large school districts classified as Montana Class AA (801+ students) and Class A (301-800 students) were excluded from the dataset. Among the smaller schools, Montana Class B (101-300 students) and Class C (1-100 students), analysis revealed that districts that utilized a 4dsw schedule had higher per-ANB expenditures than those that utilized a 5dsw schedule.

5. Conclusion

Although cost savings are frequently cited as a key reason for schools to adopt a 4dsw schedule (Anderson & Walker, 2015; Donis-Keller & Silvernail, 2009; Heyward, 2018; Sagness & Salzman, 1993), findings from this research showed that Montana school districts utilizing the 4dsw schedule in the years 2006 - 2023 did not realize these cost savings, even after adjusting for inflation and school size. Results from previous studies found that the direct impacts of the four-day school week on school district expenditures range between a 0.4% and 2.5% reduction in expenditures at most (Griffith, 2015; Thompson, 2015). Additionally, Thompson (2021) found a lack of persistent savings in transportation and maintenance expenditures, likely due to schools providing additional activities for students and teachers on off-days, as well as increased hourly wages to compensate for the one day of lost pay. Because most schools remain open in some capacity on the fifth day, there are minimal savings in fuel, electricity, and maintenance. Therefore, most school districts have not realized the financial savings hoped for. Although numerous Montana schools adopted the 4dsw schedule with the expectation of reducing costs, expenditures were actually higher in the areas of instruction, maintenance, and transportation.

Because the 4dsw schedule has been found to have a negative impact on student achievement (Allen et al., 2024;

Morton et al., 2024; Thompson et al., 2022), and school districts that utilize the 4dsw schedule spend more per student (ANB), it is critical that decisions regarding school scheduling be based on empirical evidence. Data often contradicts intuition, and that can be the case with the 4dsw schedule. Continued research in the area of school finance associated with the 4dsw schedule is recommended.

Acknowledgments

Not applicable.

Authors contributions

Not applicable.

Funding

Not applicable.

Competing interests

Not applicable.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Redfame Publishing.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

References

Anderson, D. M., & Walker, M. B. (2015). Does shortening the school week impact student performance? Evidence from the four-day school week. *Education Finance and Policy*, *10*(3), 314-349. https://doi.org/10.1162/EDFP_a_00165

Challoumis, C. (2020). The impact factor of education on the public sector – The case of the U.S. *International Journal of Business and Economic Sciences Applied Research*, *13*(1), 69-78. https://doi.org/10.25103/ijbesar.131.07

Donis-Keller, C., & Silvernail, D. L. (2009).Direct a review of the evidence on the four-day school week. Center for Education Policy, *Applied Research and Evaluation, University of Southern Maine*.

Gaines, G. F. (2008). Focus on the school calendar: The four-day school week. *Southern Regional Educational Board.*

Griffith, M. (2011). What savings are produced by moving to a four-day school wee? *Education Commission of the States*. https://files.eric.ed.gov/fulltext/ED520160.pdf

Heyward, G. (2018). What do we know about the four-day school wee? *Center on Reinventing Public Education*. https://files.eric.ed.gov/fulltext/ED584166.pdf

Hewitt, P. M., & Denny, G. S. (2011). The four-day school week: Impact on student academic performance. *Rural Educator, 32*(2). https://doi.org/10.35608/ruraled.v32i2.431

Kilburn, M. R., Phillips, A., Gomez, C. J., Mariano, L. T., Doss, C. J., Troxel, W. M., Morton, E., & Estes, K. (2021). Can four equal five? Assessing the four-day school week. *Rand Research Brief*.

https://www.rand.org/pubs/research_briefs/RBA373-1.html

Leachman, M., Albares, N., Masterson, K., & Wallace, M. (2016). Most states have cut school funding, and some continue cutting. *Center on Budget and Policy Priorities*. *4*, 1-16.

Lee, J. H., & Fuller, B. (2022). Does progressive finance alter school organizations and raise achievement? The case of Los Angeles. *Educational Policy*, *36*(3), 587-623. https://doi.org/10.1177/0895904820901472

Malhoit, G. C. (2005). Providing rural students with a high-quality education: The rural perspective on the concept of educational adequacy. *The Rural School Community Trust*. https://files.eric.ed.gov/fulltext/ED497989.pdf

Morton, E. (2025). What the research tells us about four-day school weeks. *Calder at the American Institutes of Research*. https://www.nwea.org/blog/2025/what-the-research- tells-us-about-four-day-school-weeks/

Morton, E., Thompson, P. N., & Kuhfeld, M. (2024). A multi-state, student-level analysis of the effects of the four-day school week on student achievement and growth. *Economics of Education Review*, 100, 102524. https://doi.org/10.1016/j.econedurev.2024.102524

OPI. (2011) *Four-day school week report in montana public schools*. The Montana Office of Public Instruction.

OPI. (2024) *2023-2024 Four Day School Week Listing.* The Montana Office of Public Instruction.

Sagness, R. L., & Salzman, S. A. (1993). Evaluation of the Four-Day School Week in Idaho Suburban Schools. *Northern Rocky Mountain Educational Research Association.*

Thompson, P. N. (2021). Does a day lost equal dollars saved. The effects of four-day school weeks on school district expenditures. *National Tax Journal, 74*(1), 1-307. https://doi.org/10.1086/712916

Thompson, P. N., Gunter, K., Schuna Jr., J. M., & Tomayko, E. J. (2021). Are all four-day school weeks created equal. A national assessment of four-day school week policy adoption and implementation. *Education Finance and Policy*, *16*(4), 558-583. https://doi.org/10.1162/edfp_a_00316

Thompson, P. N., Tomayko, E. J., Gunter, K. B., & Schuna Jr, J. (2022). Impacts of the four-day school week on high school achievement and educational engagement. *Education Economics*, *30*(5), 527-539. https://doi.org/10.1080/09645292.2021.2006610

Thompson, P. N., & Ward, J. (2022). Only a matter of time? The role of time in school on four- day school week achievement impacts. *Economics of Education Review*, *86*, 102198. https://doi.org/10.1016/j.econedurev.2021.102198

Turner, J. S., Finch, K., & Uribe-Zarain, X. (2018). The economics of a four-day school week: community and business leaders. Perspectives. *Applied Economics and Finance, 5*(2), 168-174. https://doi.org/10.11114/aef.v5i2.2947