

A Comparative Study on Graduation Rates, Attendance, and Student Behavior Between Four-Day School Week and Five-day School Week in Montana

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Abstract

More and more schools are interested in the four-day school week (4dsw) schedule. However, the existing research on the effects of the (4dsw) schedule in Montana is limited. This quantitative census study was conducted to address this gap and offer valuable insights to the literature about 4dsw schedule. The purpose of this quantitative census study was to investigate whether there are differences in student graduation, attendance, and behavior between the 4dsw schedule and the 5dsw schedule in Montana school districts. The research results revealed that schools utilizing the 5dsw schedule had a slightly higher overall graduation rate, compared to those that utilized the 4dsw schedule. The overall attendance rates in schools that utilized the 5dsw schedule were slightly higher compared to those of the 4dsw schedule. School districts utilizing a 4dsw schedule reported fewer incidents of fights compared to those with a 5dsw schedule. However, the data also showed higher incidents of alcohol and marijuana use among students in 4dsw districts compared to 5dsw districts. In summary, the 4dsw schedule in Montana school districts didn't improve student graduation rates and attendance rates. Additionally, these schools had an increase of substance use. Based on the findings, the researchers of this quantitative census study rendered recommendations and encouraged school district policy makers to evaluate the broader trade-offs of implementing a four-day school week as a strategy for improving student attendance and graduation rates, offering a nuanced framework for informed decision-making.

Keywords: graduation, attendance, behavior, four-day school week (4dsw)

1. Introduction

Over the past 20 years, the adoption of the four-day school week (4dsw) schedule in the United States has spread dramatically. Currently, over 2,100 schools in nearly 900 districts across 25 states have implemented this schedule, with the aim of saving costs, improving teacher recruitment and retention, and increasing student attendance (Ordway, 2024). Leading this transition trend are those states with predominantly rural areas and smaller school districts, including Colorado, Idaho, Missouri, Montana, Oklahoma, Oregon, New Mexico, and South Dakota (Kilburn et al., 2021). Other states like Iowa, Texas, and Florida have also adopted, or demonstrated great interest in the 4dsw schedule in recent years (Kilburn et al., 2021).

In 2005, the state of Montana legislature passed Senate Bill 170 and allowed schools to adopt a four-day school week (4dsw) schedule. This flexibility was expanded by revising the requirements for student attendance. This bill stipulated a minimum requirement of 1,080 aggregate hours of instruction, instead of mandating the traditional 180-day school year (Montana Code Annotated, 20-1-301). In order to understand the big picture about the effect of four-day school week on schools, students, and stakeholders, researchers (Dr. Erica Allen, Dr. John Matt, Dr. Bill McCaw, and Dr. Liqin Tang) from the University of Montana conducted a comprehensive comparative study on the four-day school week (4dsw) schedule and the five-day school week (5dsw) schedule in Montana schools. Their analysis was primarily built on data from all students in all Montana schools, in the area of district expenditures, student achievement, student attendance, student graduation rates, and student behavior provided by the Montana Office of Public Instruction (OPI). In this article, researchers investigated whether there are differences in student graduation, attendance, and behavior between the 4dsw schedule and the 5dsw schedule in Montana school districts.

2. Literature Review

With more and more schools adopting the 4dsw schedule, scholars and researchers began to explore the effect of 4dsw on the school finance, student achievements, attendance rate, etc. Paul N. Thompson, a professor from Oregon State University, is one of preeminent researchers on 4dsw schedule. This literature review focuses on three dimensions of the 4dsw schedule: student graduation, attendance, and behavior.

Student Graduation

There is a scarcity of literature on student graduation rates in 4dsw schedule. Thompson et al. (2022) examined several key outcomes in 4dsw in Oregon, and one of them is the persistence in school. They found that there was no “statistically significant evidence of differences in the incidence of on-time grade persistence and dropout between [high school] students on four- and five-day schedules” (Thompson et al., 2022. p. 527). However, they did find that “the four-day school week leads to lowered rates of on-time graduation” (p. 528). They stressed that “Reductions in test scores and increases in chronic absenteeism do, however, appear to negatively impact on-time graduation” (Thompson et al., 2022. p. 534).

However, Heyward (2018) highlighted that “graduation rates tend to be high in rural areas” (p. 4). Donis-Keller (2009) found similar results and stressed that graduation rates increased, and schools experienced fewer disciplinary referrals in certain contexts within the 4dsw schedule. Additionally, Frank and Shuls (2024) conducted a comparative study examining student demographics, district finances, staff statistics, and academic performance between districts operating on a 4dsw schedule and those on a 5dsw schedule in Missouri. Their analysis, based on 2021-2022 data, showed that students in 4dsw districts have GPAs that were statistically significantly lower than those in 5dsw districts. Despite this, Frank and Shuls (2024) stressed that “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” (p. 10).

Student Attendance

Student attendance is one of the reasons school districts choose to adopt a 4dsw schedule (Thompson et al., 2020). Morton (2021) further supported this idea by citing anecdotal evidence suggesting that the 4dsw schedule increases student attendance rates. This anecdotal evidence, primarily derived from interviews and opinion surveys, indicated that student attendance improved in a 4dsw schedule, because students may utilize the fifth day for activities and appointments that would otherwise lead to absences (Hanson, 2017, Hedtke, 2014, Kilburn et al.). However, the results of empirical research on the effect of 4dsw schedule are mixed regarding these claims. Feaster (2002) analyzed the data of student attendance from Custer School District 16-1 in South Dakota, collected through the South Dakota State Department of Education from the school years 1994 to 2001. The analyze showed that the average attendance rate was 95.2% during the 1994-1995 school year, and this rate had increased to 98.2% by the end of 2000-2001 school year. Gower (2017) conducted a similar study and examined student attendance in Missouri school districts utilizing a 4dsw schedule before the 2014-2015 school year. He found that attendance rates increased on the 4dsw schedule.

However, Thompson et al. (2020) conducted a similar study and their findings revealed the opposite research results, that is, there was a decrease in student attendance rates in those schools utilizing a 4dsw schedule, with reductions of one to two percentage points among 10th and 11th-grade students. In Kilburn et al.’s (2021) study, they analyzed the data of district-level attendance rates in Colorado, Idaho, Missouri, New Mexico, and Oklahoma from 2011 to 2018 school years. They concluded that there were no statistically significant differences in attendance rates during this period (p. xviii). Similarly, other research indicated that the 4dsw schedule did not significantly affect student attendance rates (Anderson & Walker, 2015; Thompson, 2021b), and has little to no impact on high school students’ attendance (Thompson et al., 2020). Morton (2021) conducted a quasi-experimental study based on the “district-level panel data from Oklahoma and a difference-in-differences research design to provide the first estimates of the causal effect of the four-day school week on high school students’ ACT scores, attendance, and disciplinary incidents during school” (p. 1). Her research findings also revealed a similar trend, showing no measurable effect on high school student attendance (Morton, 2021, p. 1).

Student Behavior

Several prominent reasons compelled school districts to adopt the 4dsw schedule, (cost saving, improved teacher recruitment and retention, and increased student attendance, etc.), however, student behavior is not one of the primary considerations. Fortunately, some researchers showed interest in this aspect and conducted studies to examine the impact of the 4dsw schedule on student behavior (Israel et al., 2020; Morton, 2021; Thompson et al., 2020; Tomayko et al., 2021). The research findings about student behavior are inconclusive or mixed. Israel et al. (2020) utilized secondary data from a statewide health surveillance survey conducted in high schools in Colorado. He examined the

relationship between the length of the school week and student health behaviors in schools. The research results revealed that students in schools utilizing the 4dsw schedule displayed higher rates of health risk behaviors and health-promoting behaviors, compared to those in schools utilizing the 5dsw schedule. In the violence domain, the 4dsw schedule students experienced higher rates of being bullied, carrying weapons, and physical fights on school property. In other domains, the 4dsw schedule students reported a decrease in marijuana use, non-school screen time, and sleep, but an increase in cigarette use, sexual activity, and physical activity. Mental health indicators indicated that there were no significant differences between students utilizing the 4dsw schedule and 5dsw schedule (Israel et al., 2020). Tomayko et al. (2021) investigated 8th- and 11th-grade students in Oregon over five survey years (including odd years of 2007, 2009, 2011, 2013, and 2015). They used a total sample size from 91,860 to 104,108 respondents, depending on the survey question. They also adopted the similar methods employed by Israel et al. and did not account for school fixed effects. Their findings were closely consistent with results observed by Israel et al. in Colorado. Specifically, the 4dsw students reported less likely to use marijuana ($p = .048$), with a decreasing trend in driving while impaired by alcohol ($p = .071$). They reported less hours on non-school-related screen time daily ($p = .002$), and more likely to engage in physical activity ($p = .075$). Both Israel et al.'s and Tomayko et al.'s research results indicated similar behavioral patterns among 4dsw students in rural areas in the state of Oregon and the state of Colorado.

With regard to bullying incidents, however, Morton's (2021) research on high school students on 4dsw in Oklahoma revealed the opposite finding. She found that implementing the 4dsw schedule reduces bullying incidents per student by about 31% and fighting incidents per student by roughly 27%. In addition, Fischer and Argyle (2018) conducted a study to investigate the relationship between school attendance and youth crime in schools operating on a 4dsw schedule in Colorado. They utilized difference-in-difference estimates, and found that there was a significant impact of the policy change in school schedule. Their research findings revealed that there was an approximately 20% increase in juvenile criminal offenses in those districts utilizing a 4dsw schedule, with the most pronounced effect observed in property crimes (Fischer & Argyle, 2018).

3. Methodology

This quantitative study is based on census data provided by the Montana Office of Public Instruction (OPI). The purpose of this quantitative study is to explore differences in student graduation, attendance, and behavior between the four-day school week schedule and the five-day school week schedule in Montana school districts. Following are the three research questions that guided this study:

1. Is there a difference in educational engagement, as measured by cohort graduation rate, between the four-day school week schedule and the five-day school week schedule?
2. Is there a difference in student attendance between the four-day school week schedule and the five-day school week schedule?
3. Is there a difference in student behavior between the four-day school week schedule and the five-day school week schedule?

In the following sections, three research questions are discussed respectively based on data collection, research results, and data analysis.

Research Question 1: Is there a difference in educational engagement, as measured by cohort graduation rate, between the four-day school week schedule and the five-day school week schedule?

Data Collection

For Research Question 1, researchers analyzed the data from all Montana school districts in the years 2011-2023. The analysis included 2,189 rows of data, with each row containing 9 columns, totaling 19,701 individual cells of data. Cohort graduation data were collected for all school districts in Montana from 2011 to 2023. A Cohort is a class of students who attend the same high school and are considered to have entered grade nine in the same year. The data included cohort graduates and cohort student members. These data were summed for school districts utilizing the 4dsw schedule and school districts utilizing the 5dsw schedule (Figure 1). Researchers then disaggregated these data to analyze outcomes for economically disadvantaged students (Figure 2).

Results

The analysis of cohort graduation data from Montana school districts between 2011 and 2023 revealed that school districts utilizing a 5dsw schedule had a slightly higher overall graduation rate of 85.46%, compared to school districts utilizing a 4dsw schedule, which had a graduation rate of 84.88%. The research results revealed that generally, the schedule type had a marginal impact on student graduation outcomes, and the school districts utilizing a 5dsw schedule showed a small advantage over the 4dsw schedule.

The researchers further analyzed the data of students who are economically disadvantaged, and found a more nuanced picture. For students not economically disadvantaged, the graduation rate was higher in school districts utilizing a 4dsw schedule (95.30%) compared to school districts utilizing a 5dsw schedule (93.10%). Additionally, economically disadvantaged students had better graduation rates in school districts utilizing the 4dsw schedule (80.46%) compared to school districts utilizing the 5dsw schedule (75.36%). This indicated that while the school districts utilizing the 5dsw schedule may be slightly more beneficial overall, it appeared to be less effective for economically disadvantaged students relative to the 4dsw schedule.

Data Analysis

The cohort graduation rate for students in school districts utilizing the 5dsw schedule from 2011 to 2023 was 85.46%. This compared to schools utilizing the 4dsw schedule from 2011 to 2023, which realized an 84.88% cohort graduation rate (Figure 1).

	Graduates	Cohort Members	Percentage
5	99084	115937	85.46%
4	17538	20662	84.88%

Figure 1. Cohort Members Graduating in School Districts Utilizing the 4dsw Schedule and School Districts Utilizing the 5dsw Schedule

These data were additionally analyzed by two categories (Figure 2): Not Economically Disadvantaged and Economically Disadvantaged. These designations were determined by the Montana Office of Public Instruction based on eligibility for Free and Reduced lunch and reported by school districts.

The cohort graduation rate for students in school districts utilizing the 5dsw schedule from 2011 to 2023 who were not economically disadvantaged was 93.10%. This compares to schools utilizing the 4dsw schedule, which was 95.30%. The cohort graduation rate for students in school districts utilizing the 5dsw schedule from 2011 to 2023 who were economically disadvantaged was 75.36%. This compares to schools utilizing the 4dsw schedule, which was 80.46% (Figure 2).

	Not Economically Disadvantaged		Economically Disadvantaged	
	Graduates	Cohort Members	Graduates	Cohort Members
5	68912	74019	44557	59122
4	2452	2573	3162	3930
5	93.10%		75.36%	
4	95.30%		80.46%	

Figure 2. Cohort Members Graduating in School Districts Utilizing the 4dsw Schedule and School Districts Utilizing the 5dsw Schedule Disaggregated by Economically Disadvantaged

The findings of this study demonstrated that there were lower graduation rates in schools utilizing a 4dsw schedule in Montana, and this was consistent with Thompson et al.'s (2022) study. Thompson et al. discovered that there were lower on-time graduation rates in 4dsw districts compared to 5dsw districts, and this was likely because of the declines in test scores and increased chronic absenteeism. However, the results of lower graduation rates from this research were not consistent with the findings of Donis-Keller (2009) and Frank and Shuls (2024). Both researchers found that there were higher graduation rates in 4dsw districts compared to 5dsw districts.

Research Question 2: Is there a difference in student attendance between the four-day school week schedule and the five-day school week schedule?

Data Collection

For Research Question 2, data from all Montana school districts in the years 2013 to 2023 were analyzed. The analysis

included 951,012 rows of data, with each row containing 56 columns, totaling 53,256,672 individual cells of data. Data included attendance for each student in Montana for the years 2013 to 2023.

Results

The analysis included a calculation of attendance based on the total days present and days enrolled for students in school districts utilizing a 4dsw schedule and school districts utilizing a 5dsw schedule. This method was preferred over using district-wide attendance percentages due to the varying sizes of the districts. The categories analyzed were all students, special education students, and homeless students.

The research results revealed that school districts utilizing a 5dsw schedule had a slightly higher overall student attendance rate at 92.53% compared to 92.18% in districts utilizing a 4dsw schedule. For Special Education students, attendance rates were similarly higher in the school districts utilizing a 5dsw schedule at 90.93% versus 90.55% in the school districts utilizing a 4dsw schedule. For Homeless students, the attendance rates were almost the same between the two schedules: 85.87% in school districts utilizing a 5dsw schedule and 85.76% in school districts utilizing a 4dsw schedule. The overall proportion of Homeless students was quite low, representing just 2.10% of the student population in Montana. Homeless is defined in the *McKinney-Vento Act*.

SEC. 103. GENERAL DEFINITION OF HOMELESS INDIVIDUAL.

(a) IN GENERAL.—For purposes of this Act, the term “homeless” or “homeless individual” includes—

(1) an individual who lacks a fixed, regular, and adequate nighttime residence;

and

(2) an individual who has a primary nighttime residence that is—

(A) a supervised publicly or privately operated shelter designed to provide temporary living accommodations (including welfare hotels, congregate shelters, and transitional housing for the mentally ill);

(B) an institution that provides a temporary residence for individuals intended to be institutionalized; or

(C) a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings.

(<https://www.congress.gov/100/statute/STATUTE-101/STATUTE-101-Pg482.pdf>)

For each school district that moved to a 4dsw schedule, student attendance rates were analyzed for two years before and two years after the transition. The findings revealed that the majority (54%) of the school districts that transitioned from utilizing the 5dsw schedule to utilizing the 4dsw schedule had a higher rate of attendance (average 2.53% higher) while utilizing the 5dsw schedule. The remaining school districts (46%) that transitioned from utilizing the 5dsw schedule to utilizing the 4dsw schedule had a higher rate of attendance (average 1.37% higher) while utilizing the 4dsw schedule.

Data Analysis

Data analysis began by identifying obviously flawed data (e.g., schools where all students had 100% attendance), these school districts were removed from the data set. In addition, not all school district submitted data in 2013 or 2014 and no data were collected before 2013. It is important to note these data include the COVID-19 years of 2020 and 2021.

The days present for all students attending the school districts utilizing the 4dsw and 5dsw schedules were then summed. The days enrolled were summed for the school districts utilizing the 4dsw and 5dsw schedules. The total percent was calculated based on all students in both schedules. A comparison of attendance in these schedules was made. Calculating total days present and total days enrolled at the student level was the most accurate way of accounting for attendance, as opposed to school district attendance percentages, because of the disparity in school district sizes.

Data were grouped by All Students, Special Education Students, and Homeless Students (Figure 3). Data analysis revealed that the student attendance rate for All Students in school districts utilizing the 5dsw schedule was 92.53% and for All Students in school districts utilizing the 4dsw schedule was 92.18%. For Special Education Students in school districts utilizing the 5dsw schedule, the attendance rate was 90.93% and for school districts utilizing the 4dsw schedule the attendance rate was 90.55%. Special Education Students in school districts utilizing the 5dsw schedule represented 13.40% of all students in school districts utilizing the 5dsw schedule. Special Education Students in school districts utilizing the 4dsw schedule represent 15.52% of all students in school districts utilizing the 4dsw schedule. All Special Education Students, both in school districts utilizing the 5dsw schedule and school districts utilizing the 4dsw schedule, in the state of Montana is 13.49%. For Homeless Students in school districts utilizing the 5dsw schedule, the attendance rate was 85.87% and for school districts utilizing the 4dsw schedule the attendance rate was 85.76%. In the state of

Montana, 2.10% of all students are identified as homeless.

Schedule	All Students			Special Education Students			Homeless Students		
	Days Present	Days Enrolled	Percentage	Days Present	Days Enrolled	Percentage	Days Present	Days Enrolled	Percentage
5	123,736,219.01	133,720,912.77	92.53%	16,291,172.47	17,917,076.53	90.93%	2,422,627.92	2,821,299.50	85.87%
4	5,484,867.55	5,949,851.00	92.18%	836,020.56	923,239.00	90.55%	62,191.82	72,522.00	85.76%

Figure 3. Attendance Data for All Students, Special Education Students, and Homeless Students from 2013–2023 Attending School Districts Utilizing the 4dsw and 5dsw Schedules

Student attendance data for the COVID-19 years of 2020 and 2021 present a potential confounding variable in the understanding of overall attendance rates. To address this issue, student attendance data from the COVID-19 years of 2020 and 2021 were removed from the analysis. With the COVID-19 years removed, data were again grouped by All Students, Special Education Students, and Homeless Students (Figure 4). Data analysis revealed that the student attendance rate for All Students in school districts utilizing the 5dsw schedule was 92.46% and for All Students in school districts utilizing the 4dsw schedule was 91.88%. For Special Education Students in school districts utilizing the 5dsw schedule, the attendance rate was 90.77% and for school districts utilizing the 4dsw schedule the attendance rate was 90.20%. For Homeless Students in school districts utilizing the 5dsw schedule, the attendance rate was 85.79% and for school districts utilizing the 4dsw schedule the attendance rate was 85.75%.

Schedule	All Students			Special Education Students			Homeless Students		
	Days Present	Days Enrolled	Percentage	Days Present	Days Enrolled	Percentage	Days Present	Days Enrolled	Percentage
5	101,199,405.34	109,449,859.97	92.46%	13,135,413.27	14,471,269.53	90.77%	1,872,739.27	2,183,004.50	85.79%
4	4,335,418.84	4,718,480.00	91.88%	653,247.96	724,254.50	90.20%	49,333.60	57,531.00	85.75%

Figure 4. Attendance Data for All Students, Special Education Students, and Homeless Students from 2013–2023 (with COVID-19 years 2020–2021 removed) for Students in School Districts Utilizing the 4dsw and 5dsw Schedules

For each school district that transitioned to the 4dsw, the student attendance was calculated for two years prior to the transition and two years after. There were 31 school districts that had better student attendance in the 5dsw prior to the transition and 26 school districts that had better student attendance after transitioning to the 4dsw (Figure 5).

School Districts that Transitioned to the 4dsw		Difference
School districts with better student attendance in the 5dsw before transitioning to the 4dsw	31	2.53%
School districts with better student attendance after transitioning to the 4dsw	26	1.37%

Figure 5. Student Attendance Before and After Transitioning to the 4dsw Schedule

Note. The difference column represents the average difference in attendance rate between the school district while utilizing the 5dsw schedule and the same school district while utilizing the 4dsw schedule.

In this study, researchers found another notable disadvantage of 4dsw schedule: lower student enrollment. Specifically, for each school district that transitioned to the 4dsw schedule, the student enrollment was calculated for two years prior to the transition and two years after. For all school districts that transitioned to the 4dsw schedule, enrollment decreased a total of 276 students. On average, school districts lost 3.1 students after transitioning to the 4dsw schedule.

The findings of this study, concerning the lower attendance rates in 4dsw districts, did not align with those of Feaster (2002) and Gower (2017). Both of these researchers discovered that the attendance rates in 4dsw districts have improved. Similarly, the findings of this study pertaining to the lower attendance rates were different from the research results of Kilburn et al.'s (2021) and Morton's (2021) studies. They found that the four-day school week did not significantly impact student attendance. However, the findings of lower attendance rates in 4dsw districts in this study were consistent with those of Thompson et al. (2020), who found that high school student attendance rates decreased within the 4dsw schedule.

Research Question 3: Is there a difference in student behavior between the four-day school week schedule and the five-day school week schedule?

Data Collection

For this research, disciplinary action data from all Montana school districts in the years 2007 to 2023 were analyzed. The analysis included 169,558 rows of data, with each row containing 61 columns, totaling 10,343,038 individual cells of data. Analysis of the Youth Risk Behavior Survey (YRBS) data included 240,237 rows of data, with each row containing 15 columns, totaling 3,603,555 individual cells of data. Analysis of these data were completed by comparing frequencies, which are reported as percentages.

Results

Student behavior data were acquired from two different sources. School related behavior incidents resulting in

expulsions or suspensions were obtained from the Montana OPI. These data are reported annually by each school district. Risky student behavior involving fighting, drinking, and marijuana use is self-reported data from the Youth Risk Behavior Survey (YRBS), which is taken every other year in participating school districts.

This survey is conducted by the Centers for Disease Control and Prevention and surveys students in grades 9 to 12 at their high schools. Not all schools in Montana Participate in the YRBS survey and data are student self-reported. Three categories were selected from the YRBS: (a) incidents of fights at school, (b) incidents of alcohol use, and (c) incidents of marijuana use. These data indicated that there were less incidents of fights at school in school districts utilizing the 4dsw schedule (84.88% reported no fights at school) than in school districts utilizing the 5dsw schedule (65.87% reported no fights at school). Incidents of student alcohol (69.73% in 4dsw and 72.04% in 5dsw reported no alcohol use) and marijuana use (54.59% in 4dsw and 58.87% in 5dsw reported no marijuana use) were higher in school districts utilizing the 4dsw schedule than in school districts utilizing the 5dsw schedule (Figure 7).

Incidents resulting in expulsion and suspension were similar between school districts utilizing the 4dsw and school districts utilizing the 5dsw schedules. Examination of suspension data revealed a slightly higher rate of out-of-school suspensions without services (2.19%) in school districts utilizing the 5dsw (Figure 6).

Data Analysis

School districts annually report the number of expulsions where the student is placed in an alternative educational setting (code = 250), the number of expulsions without service (code = 260), the number of suspensions where the student is placed in an interim alternative educational setting (code = 400), out-of-school suspensions without service (code = 410), and in-school suspensions (code = 500). There was a slight difference in school districts utilizing the 4dsw schedule and school districts utilizing the 5dsw schedule for expulsions with and without services (Figure 6). Suspensions out-of-school, with or without services, were slightly higher in school districts utilizing the 5dsw schedule. The rate of student suspensions in-school was slightly higher in school districts utilizing the 4dsw schedule.

Schedule	Expulsion, placed in interim alternative educational setting					
	250	Expulsion, without services				
		260	Suspension, out-of-school, placed in interim alternative educational setting			
			400	Suspension, out-of-school, without services		
				410	Suspension, in-school	
500						
5	0.02%	0.07%	0.68%	4.18%	1.94%	
4	0.01%	0.05%	0.39%	1.99%	1.98%	

Figure 6. Frequency of Reported Disciplinary Actions for School Districts Utilizing the 4dsw and 5dsw Schedules

Responses from the bi-annual Youth Risk Behavior Survey (YRBS) were tallied for all school districts which transitioned to utilizing the 4dsw schedule. These data included surveys within two years before and after school districts transitioned to utilizing the 4dsw schedule. Data from the Youth Risk Behavior Survey (YRBS) focused on three categories: (a) incidents of fights at school, (b) alcohol use, and (c) marijuana use. The findings revealed fewer incidents of fights in school districts with a four-day school week (4dsw). However, incidents of alcohol use and marijuana use were higher in 4dsw districts than in 5dsw districts (Figure 7). It is important to note that this is student self-reported data. Given the confounding variables, there is little evidence that there is a reliable difference in the risk behaviors of, physical fights, alcohol consumption, and drug use between the 4dsw and 5dsw schedules. These data are not from a cohort of students. These data represent different groups of students (Figure 7).

	No Fights at School	No Alcohol Use	No Marijuana Use
5dsw	65.87%	72.04%	58.87%
4dsw	84.88%	69.73%	54.59%

Figure 7. Youth Risk Behavior Survey Specific Frequencies

The findings of this study showed that there were fewer incidents of fights at schools utilizing the 4dsw schedule. These findings were different from those of Israel et al. (2020). Israel et al. found that there were higher rates of bullying and physical fights on school property in 4dsw districts. However, the findings of this study were consistent with Morton's (2021) research. Morton discovered that in 4dsw districts, both bullying and fighting incidents were reduced. Additionally, this study revealed that there was an increase in student alcohol and marijuana use in schools utilizing the 4dsw schedule. These findings were in contrast with those of Israel et al. (2020) and Tomayko et al. (2021). Both researchers reported that there were lower rates of alcohol and marijuana use among 4dsw students.

4. Conclusion

Communities across the country showed great interest in the four-day school week (4dsw), especially during periods of economic hardship, such as the Great Depression in the 1930s, the energy crisis of the 1970s, and the recession of the 2000s (Heyward, 2018). Since then, researchers and scholars began to investigate the effects of the 4dsw schedule on schools, students, and other stakeholders. However, much literature focuses on examining the 4dsw schedule within either a single state or across multiple states using sampling methods, rather than using the comprehensive census data. Consequently, current research findings on the effects of the 4dsw schedule are mixed and inconclusive. This quantitative comparative study addresses this gap by leveraging census data from the Montana Office of Public Instruction (OPI), with the aim of investigating student attendance, graduation rates, and behavior across Montana school districts. As such, it is one of the most comprehensive, valid, and convincing research to date on the topic of the 4dsw schedule.

The research results demonstrated that the overall cohort graduation rates in the 5dsw schedule were slightly higher compared to those in the 4dsw schedule. The attendance rates in 5dsw schedule were slightly higher compared to those in the 4dsw schedule. Student behavior data indicated mixed results. School districts utilizing a 4dsw schedule showed that there were less incidents of fights compared to those with a 5dsw schedule. However, the findings indicated that there were higher incidents of student alcohol and marijuana use in the 4dsw schedule compared to the 5dsw schedule. It revealed that on the one hand, the 4dsw may reduce some types of disruptive behavior, and on the other hand, it may be linked to an increase in substance use.

5. Recommendations

Overall, existing research on the effects of 4dsw schedule in the state of Montana is limited. This quantitative census study fills the gap and adds more information to the literature. The research results of this study revealed that the 4dsw schedule did not improve student graduation and attendance rates in Montana school districts, and there is a potential increase in substance use among students in schools utilizing the 4dsw schedule. Given the fact that more schools are interested in adopting the 4dsw schedule, the researchers of this study caution that before schools make the decision to transfer to the 4dsw schedule, they need to consider the following recommendations: First, schools need to conduct research, analyze and review studies on 4dsw, and learn about the potential advantages and disadvantages of 4dsw. Second, schools need to set up clear goals for transitioning to the 4dsws schedule and explore potential impacts of 4dsw on schools, stakeholders, and students, especially student performance and behavior, etc. Finally, schools need to perform a comprehensive cost-benefit analysis, learn about potential savings and costs related to the transition, including logistical, operational, and societal factors. All of the aforementioned steps may provide a solid foundation for school policy makers to make the final decision about whether or not to transition to the 4dsw schedule.

After careful consideration, if school policy makers finally decide to transition to a 4dsw schedule, they would be wise to undertake a pilot program to test the effect of 4dsw either in a small portion of the district or for a short period of time. Then, collect data on student achievement, attendance, behavior, and community feedback during and after the pilot period, and keep all stakeholders informed about the process of any decision making. Importantly, school leaders should also keep in mind there is often an initial improvement in student achievement before it begins declining, when making this comparison (Tharp, 2014; Tharp et al., 2024). Finally, if schools transition to the 4dsw schedule, they need to assess or evaluate the effects of 4dsw on schools, stakeholders, and students, and adjust the 4dws if necessary, based on findings of the evaluation. Researchers of this study hope that the findings of this analysis will help school district policy makers go beyond simple cost savings and achievement metrics and provide a better sense of the trade-offs of using a four-day school week schedule.

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