

# Student Outcomes in Idaho School Districts that Operate using a Four-Day Week<sup>1</sup>

## Idaho State Board of Education Working Paper

### Executive Summary

In this paper, I examine differences in standardized test scores between Idaho students who attend districts that utilize a four-day school week (four-day districts) and Idaho students who attend districts that utilize a five-day school week (five-day districts). I find students who attend four-day districts generally are less likely to score at grade level on the Math ISAT compared to students who attend five-day districts. These results hold across almost all grades and for both economically disadvantaged students and students not economically disadvantaged. The differences are the largest in 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grades. There are only statistically significant differences in the 7<sup>th</sup> and 8<sup>th</sup> grades on the ELA ISAT.

Students who attended four-day districts were less likely to achieve grade level proficiency in the 8<sup>th</sup> grade if they were not at grade level in 6<sup>th</sup> and 7<sup>th</sup> grades for both the Math and ELA ISAT. Furthermore, students who were at grade level proficiency in the 6<sup>th</sup> and 7<sup>th</sup> grades on the Math ISAT were less likely to maintain being at grade level proficiency in the 8<sup>th</sup> grade in four-day districts compared to students in five-day districts.

### Estimates using ISAT for the 2015-16 through 2018-19 school years

Students are less likely to score proficient on the ISAT in Math in four-day districts than they are in five-day districts (see Table 1). The only grade in which the difference is not statistically significant is the 4<sup>th</sup> grade. The differences are most pronounced in the 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grades. In the 8<sup>th</sup> grade, students who are in four-day districts are almost 30 percent less likely to score proficient than those in five-day districts. These results generally hold both for students who are economically disadvantaged and students who are not economically disadvantaged.

For ELA, statistically significant differences are only found in the 7<sup>th</sup> and 8<sup>th</sup> grades (see Table 2). In those grades, students who attend four-day districts are less likely to score proficient than students who attend five-day districts. Only in the 8<sup>th</sup> grade are statistically significant differences found for students who are economically disadvantaged.

Students who *were* at grade level in Math in grades 6 and 7 and attend a four-day district are *less likely* to be at grade level in Math in 8<sup>th</sup> grade compared to students who attend a five-day district. Students who *were not* at grade level in Math in grades 6 and 7 and attend a four-day district are also *less likely* to be at grade level in Math in 8<sup>th</sup> grade compared to students who attend a five-day district. These effects are present in Math both for students who are not economically disadvantaged and for those students who are economically disadvantaged. There are similar results in ELA. However, the results are only consistently statistically significant for students who were not at grade level in earlier grades. In ELA,

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These results are preliminary and should be interpreted as such.

students were less likely to be able to gain proficiency if they did not achieve it already if they attended a four day district than if they attended a five day district.

These results are generated using a statistical model that holds both student and district characteristics constant.<sup>2</sup> To the degree that the statistical model accounts for the other differences between four-day and five-day districts that impact student achievement, these results can be interpreted as attributable to the four-day week. Due to the timing of the adoption of the four-day week by districts, the timing of administration of comparable versions of the ISAT test, and the interruptions from COVID, it is difficult to perform causal analysis of the impact of the four-day week. Consistent ISAT data is only available from the 2015-16 school year through the 2018-19 school year.<sup>3</sup>

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<sup>2</sup> Student level characteristics included are gender, race/ethnicity, English Learner status, economic disadvantage status, Special Education status, and school grade level. District level characteristics included are education region, locale (rural, town), share of students economically disadvantaged, share of students English Learners, and total students. Also included was a year fixed effect.

<sup>3</sup> There was one traditional district that switched from a five day week to a four day week in that time period (Kamiah). Causal impacts can be estimated using this one district but these are preliminary and should be interpreted with caution. This estimation shows that students who attend a four day district are approximately 5 percentage points less likely to score at grade level on either the Math ISAT or the ELA ISAT compared to students who attend a five day district. Again, this results are only suggestive given they are based on one district switching during that time period.

**Table 1: Share of students who score at grade level on Math ISAT**

<b>Math</b>	<b>All Students</b>	<b>Students not Economically Disadvantaged</b>	<b>Students Economically Disadvantaged</b>
<b>Grade 3</b>			
Five Day	48%	61%	39%
Four Day	46%	57%	37%
Difference	-2 p.p.	-4 p.p.	Not stat. sign.
Percent Difference	-5%	-7%	
p-value	0.008	0.004	0.114
Number observations	19,189	8,187	11,002
<b>Grade 4</b>			
Five Day	43%	56%	33%
Four Day	42%	53%	33%
Difference	Not stat. sign.	-3 p.p.	Not stat. sign.
Percent Difference		-6%	
p-value	0.219	0.036	0.994
Number observations	19,521	8,537	10,984
<b>Grade 5</b>			
Five Day	37%	49%	28%
Four Day	35%	45%	25%
Difference	-3 p.p.	-3 p.p.	-3 p.p.
Percent Difference	-7%	-7%	-10%
p-value	0.002	0.014	0.004
Number observations	19,669	8,854	10,815
<b>Grade 6</b>			
Five Day	37%	48%	28%
Four Day	33%	45%	23%
Difference	-4 p.p.	Not stat. sign.	-5 p.p.
Percent Difference	-12%		-18%
p-value	0.000	0.059	0.000
Number observations	19,516	8,979	10,537

<b>Math</b>	<b>All Students</b>	<b>Students not Economically Disadvantaged</b>	<b>Students Economically Disadvantaged</b>
<b>Grade 7</b>			
Five Day	37%	47%	27%
Four Day	33%	43%	24%
Difference	-4 p.p.	-4 p.p.	-3 p.p.
Percent Difference	-12%	-8%	-12%
p-value	0.000	0.001	0.001
Number observations	19,215	9,196	10,019
<b>Grade 8</b>			
Five Day	38%	48%	28%
Four Day	28%	37%	19%
Difference	-10 p.p.	-11 p.p.	-8 p.p.
Percent Difference	-27%	-23%	-30%
p-value	0.000	0.000	0.000
Number observations	18,955	9,381	9,566

**Table 2: Share of students who score at grade level on ELA ISAT**

<b>ELA</b>	<b>All Students</b>	<b>Students not Economically Disadvantaged</b>	<b>Students Economically Disadvantaged</b>
<b>Grade 3</b>			
Five Day	44%	57%	35%
Four Day	43%	55%	34%
Difference	Not stat. sign.	Not stat. sign.	Not stat. sign.
Percent Difference			
p-value	0.248	0.201	0.264
Number observations	19,146	8,175	10,971
<b>Grade 4</b>			
Five Day	45%	57%	35%
Four Day	45%	58%	35%
Difference	Not stat. sign.	Not stat. sign.	Not stat. sign.
Percent Difference			
p-value	0.54	0.519	0.987
Number observations	19,466	8,521	10,945
<b>Grade 5</b>			
Five Day	49%	61%	40%
Four Day	49%	61%	39%
Difference	Not stat. sign.	Not stat. sign.	Not stat. sign.
Percent Difference			
p-value	0.774	0.846	0.546
Number observations	19,612	8,837	10,775
<b>Grade 6</b>			
Five Day	46%	57%	36%
Four Day	45%	57%	35%
Difference	Not stat. sign.	Not stat. sign.	Not stat. sign.
Percent Difference			
p-value	0.242	0.977	0.176
Number observations	19,486	8,988	10,498

<b>ELA</b>	<b>All Students</b>	<b>Students not Economically Disadvantaged</b>	<b>Students Economically Disadvantaged</b>
<b>Grade 7</b>			
Five Day	50%	60%	40%
Four Day	47%	57%	38%
Difference	-3 p.p.	-3 p.p.	Not stat. sign.
Percent Difference	-6%	-5%	
p-value	0.001	0.024	0.054
Number observations	19,197	9,201	9,996
<b>Grade 8</b>			
Five Day	51%	62%	41%
Four Day	45%	55%	35%
Difference	-7 p.p.	-7 p.p.	-6 p.p.
Percent Difference	-13%	-11%	-14%
p-value	0.000	0.000	0.000
Number observations	18,932	9,388	9,544

**Table 3: Share of students at grade level in 8<sup>th</sup> grade by status in 6<sup>th</sup> and 7<sup>th</sup> grades, Math**

		Share at grade level in 8th grade		
Math		All students	Not economically disadvantaged	Economically disadvantaged
<b>At grade level</b>				
6th grade	Five day districts	83%	85%	80%
	Four day districts	73%	78%	65%
	Difference	-10 p.p.	-7 p.p.	-15 p.p.
	Percent Difference	-12%	-8%	-19%
	p-value	0.00	0.01	0.00
	Number observations	2,727	1,829	881
	7th grade	Five day districts	83%	85%
Four day districts		73%	75%	70%
Difference		-10 p.p.	-10 p.p.	-10 p.p.
Percent Difference		-12%	-12%	-12%
p-value		0.00	0.00	0.00
Number observations		4,479	2,922	1,557
<b>Not at grade level</b>				
6th grade	Five day districts	15%	20%	11%
	Four day districts	13%	15%	11%
	Difference	-2 p.p.	-5 p.p.	Not stat. sign.
	Percent Difference	-15%	-25%	
	p-value	0.05	0.02	0.96
	Number observations	4,968	2,322	2,644
	7th grade	Five day districts	12%	17%
Four day districts		7%	10%	5%
Difference		-5 p.p.	-7 p.p.	-4 p.p.
Percent Difference		-41%	-40%	-44%
p-value		0.00	0.00	0.00
Number observations		7,908	3,448	4,385

**Table 4: Share of students at grade level in 8<sup>th</sup> grade by status in 6<sup>th</sup> and 7<sup>th</sup> grades, ELA**

ELA		Share at grade level in 8th grade		
		All students	Not economically disadvantaged	Economically disadvantaged
<b>At grade level</b>				
6th grade	Five day districts	85%	88%	80%
	Four day districts	84%	87%	79%
	Difference	Not stat. sign.	Not stat. sign.	Not stat. sign.
	Percent Difference			
	p-value	0.34	0.54	0.69
	Number observations	3,472	2,263	1,204
	7th grade	Five day districts	85%	87%
Four day districts		82%	85%	78%
Difference		-3 p.p.	Not stat. sign.	-4 p.p.
Percent Difference		-3%		-5%
p-value		0.02	0.36	0.03
Number observations		5,989	3,752	2,235
<b>Not at grade level</b>				
6th grade	Five day districts	25%	29%	22%
	Four day districts	18%	21%	15%
	Difference	-8 p.p.	-8 p.p.	-7 p.p.
	Percent Difference	-31%	-28%	-32%
	p-value	0.00	0.00	0.00
	Number observations	4,215	1,913	2,301
	7th grade	Five day districts	20%	25%
Four day districts		14%	16%	12%
Difference		-6 p.p.	-8 p.p.	-4 p.p.
Percent Difference		-29%	-33%	-26%
p-value		0.00	0.00	0.00
Number observations		6,407	2,709	3,698



## Appendix I: Technical Notes

For the ISAT, I examine outcomes for students who were enrolled in traditional school districts that operated under either a four-day academic week or a five-day academic week for all years during the academic years 2015-2016, 2016-2017, 2017-2018, and 2018-2019. Charter schools authorized by the Public Charter School Commission were excluded as they operate under different rules than traditional school districts. Also excluded was a traditional district that switched from a five-day calendar to a four-day calendar during this period (Kamiah) and a traditional district that switched its elementary school calendar during this period (Council). Only five-day districts that were coded as having town (Distant/Remote) or rural locales (Fringe/Distant/Remote) were included to match the four-day district locales. Finally, five-day districts that were not comparable in size to the four-day districts were also excluded.

### Appendix 1: Districts used in estimations

#### **Five-day districts used in estimation**

011 MEADOWS VALLEY DISTRICT  
041 ST MARIES JOINT DISTRICT  
044 PLUMMER-WORLEY JOINT DISTRICT  
058 ABERDEEN DISTRICT  
072 BASIN SCHOOL DISTRICT  
083 WEST BONNER COUNTY DISTRICT  
092 SWAN VALLEY ELEMENTARY DISTRICT  
121 CAMAS COUNTY DISTRICT  
133 WILDER DISTRICT  
137 PARMA DISTRICT  
202 WEST SIDE JOINT DISTRICT  
215 FREMONT COUNTY JOINT DISTRICT  
221 EMMETT INDEPENDENT DISTRICT  
242 COTTONWOOD JOINT DISTRICT  
244 MOUNTAIN VIEW SCHOOL DISTRICT  
252 RIRIE JOINT DISTRICT  
253 WEST JEFFERSON DISTRICT  
274 KOOTENAI DISTRICT  
281 MOSCOW DISTRICT  
282 GENESEE JOINT DISTRICT  
283 KENDRICK JOINT DISTRICT  
285 POTLATCH DISTRICT  
287 TROY SCHOOL DISTRICT  
288 WHITEPINE JOINT SCHOOL DISTRICT  
302 NEZPERCE JOINT DISTRICT  
314 DIETRICH DISTRICT  
322 SUGAR-SALEM JOINT DISTRICT  
341 LAPWAI DISTRICT  
371 PAYETTE JOINT DISTRICT

- 372 NEW PLYMOUTH DISTRICT
- 373 FRUITLAND DISTRICT
- 381 AMERICAN FALLS JOINT DISTRICT
- 383 ARBON ELEMENTARY DISTRICT
- 391 KELLOGG JOINT DISTRICT
- 392 MULLAN DISTRICT
- 393 WALLACE DISTRICT
- 401 TETON COUNTY DISTRICT
- 412 BUHL JOINT DISTRICT
- 413 FILER DISTRICT
- 414 KIMBERLY DISTRICT
- 417 CASTLEFORD DISTRICT
- 418 MURTAUGH JOINT DISTRICT
- 421 MCCALL-DONNELLY JOINT SCHOOL DISTRICT
- 422 CASCADE DISTRICT
- 431 WEISER DISTRICT

**Four-day districts used in estimation**

- 021 MARSH VALLEY JOINT DISTRICT
- 033 BEAR LAKE COUNTY DISTRICT
- 052 SNAKE RIVER DISTRICT
- 059 FIRTH DISTRICT
- 071 GARDEN VALLEY DISTRICT
- 073 HORSESHOE BEND SCHOOL DISTRICT
- 101 BOUNDARY COUNTY DISTRICT
- 111 BUTTE COUNTY JOINT DISTRICT
- 135 NOTUS DISTRICT
- 136 MELBA JOINT DISTRICT
- 148 GRACE JOINT DISTRICT
- 149 NORTH GEM DISTRICT
- 150 SODA SPRINGS JOINT DISTRICT
- 161 CLARK COUNTY DISTRICT
- 171 OROFINO JOINT DISTRICT
- 181 CHALLIS JOINT DISTRICT
- 182 MACKAY JOINT DISTRICT
- 191 PRAIRIE ELEMENTARY DISTRICT
- 192 GLENN'S FERRY JOINT DISTRICT
- 201 PRESTON JOINT DISTRICT
- 231 GOODING JOINT DISTRICT
- 232 WENDELL DISTRICT
- 233 HAGERMAN JOINT DISTRICT
- 234 BLISS JOINT DISTRICT
- 243 SALMON RIVER JOINT SCHOOL DISTRICT

262 VALLEY DISTRICT  
291 SALMON DISTRICT  
292 SOUTH LEMHI DISTRICT  
305 HIGHLAND JOINT DISTRICT  
312 SHOSHONE JOINT DISTRICT  
316 RICHFIELD DISTRICT  
342 CULDESAC JOINT DISTRICT  
351 ONEIDA COUNTY DISTRICT  
363 MARSING JOINT DISTRICT  
364 PLEASANT VALLEY ELEMENTARY DISTRICT  
365 BRUNEAU-GRAND VIEW JOINT SCHOOL DISTRICT  
370 HOMEDALE JOINT DISTRICT  
382 ROCKLAND DISTRICT  
394 AVERY ELEMENTARY DISTRICT  
415 HANSEN DISTRICT  
416 THREE CREEK JOINT ELEMENTARY DISTRICT  
432 CAMBRIDGE JOINT DISTRICT  
433 MIDVALE DISTRICT