

Idaho English Language Arts and Mathematics Achievement vs.
the COVID Pandemic, Grades 3-8 and 10, 2019 vs. 2021

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Bert Stoneberg, *K-12 Research Idaho*

This descriptive study explored the impact of federal, state, and local mandates shaping the conduct of schools, teachers, and students during the COVID-19 pandemic. Primary focus was on English language arts and science achievement in grades 3-8 and 10 as measured by the Idaho Standards Achievement Tests (ISAT) between the testing in 2019 (before pandemic) and 2021 (not yet out of pandemic). The ISAT was first administered statewide in 2015, so the pattern of achievement leading up to the pandemic contributed to our understanding about the intensity of the pandemic's impact on Idaho students.

ISAT data were identified for three (3) statewide student groups: all students, female students, and male students. Two tactics were employed to organize, analyze, and describe changes in English language arts and mathematics achievement from 2015 to 2021. In the first method, the Cohen *d* statistic, was used to estimate an "effect size" for each student group, which indicated the magnitude of change (i.e., gain or loss) in overall group performance between the spring 2015 and spring 2021 assessments. Effect size served as a measure of practical significance regarding the magnitude of change.

The second method focused on the change in student ISAT scale scores at five percentiles from each student group for 2019 and 2021 were selected to represent that group's high, high average, average for grade level, low average, and low performing students. Percentile changes (or lack thereof) from 2019 to 2021 were examined.

The Idaho State Department of Education graciously provided the IRI statewide summary scores from 2015 to 2021 utilized for the study. Data were identified for the three student groups in grades 3-8 and 10. For each student group, the Department provided (1) the number of students who had valid IRI scale scores, (2) the average or mean scale score, and (3) the standard deviation. These data are displayed in Appendix A [page 8], Tables A-1 and A-2.

This study did not examine ISAT "percent proficient and above" results because their interpretation was problematic. Ho (2007) found that their properties as trend statistics rendered them ill-suited for trend comparisons. and that for trend analyses, averages and average-based statistics should be the default consideration. The National Academies of Sciences, Engineering, and Medicine (2017) concluded that "news reports often focus not only on how students are doing at a particular time, but the extent to which the percentage of students scoring *Proficient* or above has (or has not) improved over successive NAEP years. When these comparisons are based on the scale scores, they provide useful information. When they are based on the "percentage *Proficient* or above" metric and used to compare progress across groups, they can be misleading" (p. 208).

Number of Students Tested

The State Department of Education notified schools that 2021 test data would not be used for state accountability purposes required by ESSA or other state programs, which may or may not have influenced student participation in 2021. The participation pattern is consistent for the three student groups across both tests. Student participation in grades 3, 4, 5 and 6 was lower in 2021 than in 2019. Grade 5 exhibited the largest decline in students tested in every case. On the other hand, student participation for ISAT in grades 7, 8 and 10 was higher in 2021 than in 2019.

Cohen d Effect Size

The effect size represents the “practical significance” of the difference between two means, for this study it is the difference between a group’s means from 2019 and 2021. It describes the combined performance of all the students in each statewide student group.

The effect size (i.e., the magnitude of the difference between two means) is calculated by dividing the difference between two means by their pooled standard deviation. This study used the Cohen d formula, which examines the mean, standard deviation, and number of students from 2019 and 2021 to estimate whether a group experienced a gain ($d > 0$), no difference ($d = 0$), or a loss ($d < 0$) in the English language arts and mathematics skills that the ISAT measures. Cohen’s d computational formula is:

The Cohen d is defined as the difference between two means divided by a standard deviation for the data, or

$$d = \frac{\bar{x}_2 - \bar{x}_1}{s}$$

Jacob Cohen defined s (the pooled standard deviation) as

$$s = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

The Cohen d effect size estimates based on spring 2019 and 2021 Idaho Standards Achievement Tests (ISAT) for the three statewide student groups (all students, female students, and male students) from each grade, 3-8 and 10 are displayed in Table 1. By Cohen’s standards these effect size estimates for ISAT were very small (Bradburn, 2019), but they were generally comparable to those encountered in similar analyses of other standardized tests.

Table 1. Cohen *d* effect size estimates for English language arts (ELA) and mathematics (MATH) from the Idaho Standards Achievement Tests (ISAT) of 2019 and 2021, for three student groups (all students, female students, and male students) in grades 3-8 and 10.

ISAT ELA / Cohen <i>d</i>				ISAT MATH / Cohen <i>d</i>			
Grade	All	Female	Male	Grade	All	Female	Male
3	-0.076	-0.091	-0.062	3	-0.148	-0.171	-0.128
4	-0.042	-0.050	-0.036	4	-0.140	-0.160	-0.121
5	-0.025	-0.024	-0.025	5	-0.124	-0.136	-0.114
6	-0.066	-0.074	-0.059	6	-0.146	-0.203	-0.096
7	-0.001	-0.029	0.023	7	-0.146	-0.198	-0.100
8	0.037	0.024	0.049	8	-0.122	-0.170	-0.082
10	0.015	0.046	-0.007	10	-0.045	-0.054	-0.038

ISAT ELA / 1,000 x Cohen <i>d</i>				ISAT MATH / 1,000 x Cohen <i>d</i>			
Grade	All	Female	Male	Grade	All	Female	Male
3	-76	-91	-62	3	-148	-171	-128
4	-42	-50	-36	4	-140	-160	-121
5	-25	-24	-25	5	-124	-136	-114
6	-66	-74	-59	6	-146	-203	-96
7	-1	-29	23	7	-146	-198	-100
8	37	24	49	8	-122	-170	-82
10	15	46	-7	10	-45	-54	-38

The yellow highlight in Table 1 point to a “positive” Cohen *d* that indicates achievement gain despite the epidemic in English language arts for Grade 7 male students, Grade 8 all three groups, and Grade 10 all students and female students. The unmarked Cohen *d* estimates indicated losses in student achievement in the pandemic, with the larger losses in mathematics.

The magnitude for females in grade 3 ELA loss is -0.091 which is half again the magnitude for males in grade 3 ELA loss (-0.062). [Likewise, the magnitude for female grade 3 ELA loss is -91, which is also half again the magnitude for male grade 3 ELA loss (-62).]

Percentiles

Percentile changes over time indicate trends in how students perform at different levels across the entire distribution. A percentile is defined by the percentage of students scoring the same as or lower than a particular scale score. For example, if the 75th percentile is 2485, 75 percent of the scale scores of students who participated in that administration of the ISAT scored at or below 2485.

Percentile data show the ISAT scale score attained by students performing at different achievement levels. This study looked at high performing students (90th percentile), high average students (75th percentile), average for grade level (50th), below average (25th) and low performing students (10th) achievement ranges for twenty Idaho student groups identified for this study.

The terms percentiles and percentile ranks are often used interchangeably, but they have different uses. Percentile ranks (denoted by integers from 1 to 99) indicate the percentage of students that scored the same as or lower than a particular student. Percentiles indicate the percentage of scale scores in a distribution that were the same as or lower than a particular scale score.

The five percentiles for each student group were calculated by adding the group's mean score (m) to the product of its standard deviation (s) and its z score:

$$\text{Percentile} = m + (s \cdot z)$$

The z score is the point on the normal curve baseline associated with the area under the curve. The five z scores for this study were retrieved from a *Proportions of Area under the Normal Curve* table in an old beginning statistics textbook (Runyon & Haber, 1971).

Table 2 displays the gains and losses in ISAT percentile standing from 2019 to 2021 for English language arts and mathematics for three student groups (all students, females, and males) at five percentiles (90th, 75th, 50th, 25th, and 10th) for grades 3-8 and 10.

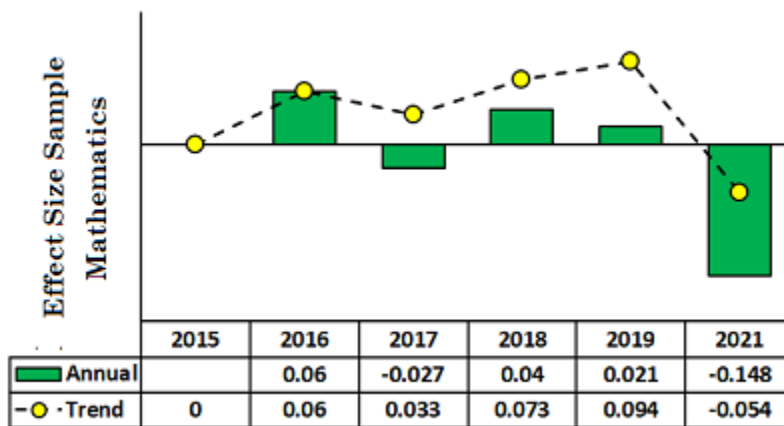
Table 2. Gains and losses in ISAT English language arts and mathematics percentiles from 2021 and 2019 for all students, female students, and male students by grade (3-8 & 10) at the 90th (high), 75th (high average), 50th (average for grade level), 25th (low average) and 10th (low) percentiles. [Yellow highlights either a gain or no loss in percentile standing amidst the pandemic.]

Grade - Percentile	ISAT English Language Arts			ISAT Mathematics		
	All	Female	Male	All	Female	Male
3-90	-1	-2	-1	-6	-9	-5
3-75	-3	-5	-3	-10	-11	-7
3-50	-7	-8	-6	-12	-14	-11
3-25	-10	-12	-9	-15	-17	-14
3-10	-13	-14	-11	-19	-20	-17
4-90	-1	0	-3	-4	-2	-4
4-75	-3	-3	-2	-7	-7	-7
4-50	-4	-5	-4	-12	-13	-11
4-25	-6	-7	-4	-16	-19	-14
4-10	-7	-9	-4	-20	-24	-17
5-90	4	5	3	-7	-7	-7
5-75	1	2	0	-10	-10	-9
5-50	-3	-2	-3	-12	-13	-11
5-25	-6	-6	-5	-14	-14	-13
5-10	-9	-10	-8	-16	-17	-15
6-90	-4	-2	-5	-11	-14	-9
6-75	-5	-5	-5	-13	-17	-9
6-50	-6	-7	-5	-15	-20	-10
6-25	-7	-9	-6	-17	-23	-12
6-10	-8	-11	-7	-19	-26	-13
7-90	1	0	4	-10	-13	-7
7-75	1	-1	3	-13	-17	-10
7-50	-1	-3	2	-16	-21	-11
7-25	-1	-4	1	-19	-25	-13
7-10	-1	-5	1	-22	-29	-15
8-90	11	8	14	-11	-12	-8
8-75	7	5	10	-13	-15	-9
8-50	3	2	5	-15	-19	-10
8-25	0	0	0	-17	-22	-11
8-10	-4	-3	-5	-18	-25	-12
10-90	6	10	2	5	2	6
10-75	4	7	1	0	-1	1
10-50	1	4	0	-5	-7	-5
10-25	-1	3	-2	-11	-11	-11
10-10	-2	0	-4	-16	-16	-17

Detailed Presentation of Effect Size and Percentile Results

Instead of thousands of narratives describing the Cohen d and percentile results, details about the impact of the pandemic are presented in bar graph and line graph formats. It is left the reader to identify and comment on the results that are important.

Cohen d . Effect sizes are illustrated using bar graphs, where the bars represent the magnitude of the effect size. A line illustrates the cumulative effect size from the first ISAT assessment in 2015 (i.e., the baseline). A table at the bottom of the graph displays the Cohen d effect size value for each assessment (annual) and the cumulative effect size.

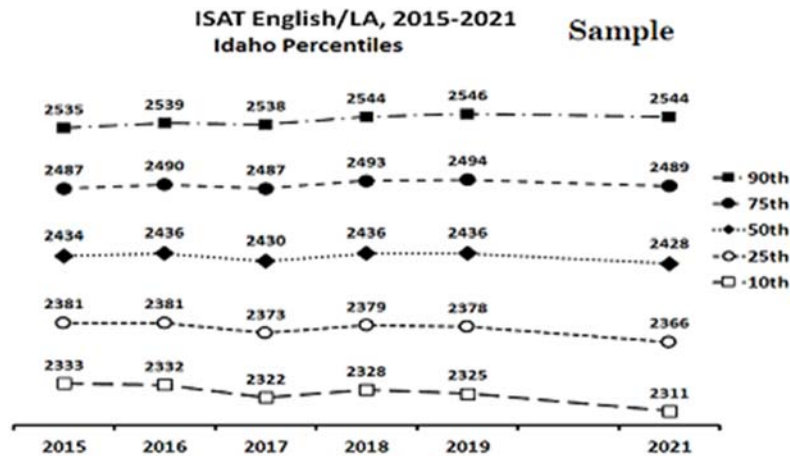


The last bar on the effect size graph illustrates the “impact of the pandemic” on the group’s overall performance from 2019 to 2021. The effect size results from 2016 to 2019 provide a context for an enhanced understanding the magnitude of the achievement gain or loss linked to the pandemic.

CAUTION/WARNING: Many effect-size graphs appear in the appendices. An equal-sized bar in two graphs may or may not represent equal effect sizes; that would require that the identical scale be used for every graph. That is not the case here. The computer was allowed to select a scale that would best fill the plot area, so each graph ended up with a unique scale. HOWEVER, the magnitudes of effect size change across subjects, grades, and/or groups may be compared using the Cohen d values in the tables.

Percentiles. After viewing the overall impact of the pandemic on a given subject-grade-group (i.e., the effect size), one might desire to know where the changes occurred. What, for example, did high performing students (90th percentile), high average (75th), average for grade level (50th), low average (25th), and low performing students (10th) contribute to the change in overall performance?

Percentiles are illustrated using line graphs with points following the scale score of the students who scored at a specified percentile each year (i.e., a different student each year who scored at a specific percentile).



The last point of each line on a percentile graph illustrates the “impact of the pandemic” on one of five different student performance levels from high to low from 2019 to 2021. The percentile results from 2015 to 2019 provide a context for understanding the gain or loss at each percentile. In the sample, students at each performance level had a lower scale score in 2021 than in 2019, a loss of percentile status. It’s noteworthy that the loss in the sample gets larger as one moves from the high performing student (loss of two scale score points) down to the low performing student (loss of fourteen scale score points).

Presentation of Results in Graphic Format

Details about findings are provided in appendices B through G, where each of the of the seven one-page, grade-level displays the Cohen *d* results graph above the percentile results graph.

Appendix B [page 13]. All Students, English Language Arts, 3-8 and 10.

Appendix C [page 21]. All Students, Mathematics, 3-8 and 10.

Appendix D [page 29]. Female Students, English Language Arts, 3-8 and 10.

Appendix E [page 37]. Female Students, Mathematics, 3-8 and 10.

Appendix F [page 45]. Male Students, English Language Arts, 3-8 and 10.

Appendix G [page 53]. Male Students, Mathematics, 3-8 and 10.

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Appendix A

Idaho Standards Achievement Tests (ISAT)

English language arts and mathematics 2019 and 2021 ISAT results (i.e., number of students with valid scale scores, mean, and standard deviation) for three statewide student groups (all students, female students, and male students) in grades 3-8 and 10 that the Idaho State Department of Education provided for this study.

Table A-1. The ISAT English Language Arts data from the 2019 and 2021 testing that the State Department of Education provided included the number of students with valid scale scores, mean scores, and standard deviations for all students, female students (F), and male students (M) in grades 3-8 and 10.

English Lang Arts		2019			2021		
Grade	Group	n	Mean	Std Dev	n	Mean	Std Dev
3	All	22,608	2428.0903	87.8192	22,294	2421.2686	92.3474
4	All	23,241	2471.5667	93.4902	22,838	2467.6406	95.3323
5	All	24,207	2512.8557	93.7532	23,221	2510.4143	98.9169
6	All	24,272	2536.1421	93.4179	23,600	2529.8665	95.4177
7	All	23,734	2561.5049	97.7239	24,408	2561.4375	98.7879
8	All	23,756	2570.5068	96.7177	24,242	2574.1948	102.2520
10	All	22,084	2593.6226	109.4254	22,543	2595.3298	112.8456

English Lang Arts		2019			2021		
Grade	Group	n	Mean	Std Dev	n	Mean	Std Dev
3	F	11,096	2435.7771	86.0984	10,920	2427.7520	91.0870
4	F	11,267	2479.9968	91.6353	11,257	2475.3152	94.6568
5	F	11,949	2523.4399	91.0170	11,369	2521.2136	96.8051
6	F	11,810	2549.6492	89.3021	11,405	2542.8843	92.8276
7	F	11,596	2577.6294	92.4941	11,987	2574.9595	94.2742
8	F	11,501	2588.7751	92.5807	11,742	2591.0825	96.8348
10	F	10,786	2609.6401	102.7759	10,851	2614.4675	106.5246

English Lang Arts		2019			2021		
Grade	Group	n	Mean	Std Dev	n	Mean	Std Dev
3	M	11,512	2420.6814	88.8228	11,374	2415.0439	93.1218
4	M	11,974	2463.6343	94.5221	11,581	2460.1804	95.3984
5	M	12,258	2502.5381	95.2236	11,852	2500.0549	99.8132
6	M	12,462	2523.3416	95.4123	12,195	2517.6919	96.2005
7	M	12,138	2546.1003	100.0771	12,421	2548.3879	101.2623
8	M	12,255	2553.3623	97.3799	12,500	2558.3311	104.6413
10	M	11,298	2578.3306	113.3281	11,692	2577.5688	115.6144

Table A-2. The ISAT Mathematics data from the 2019 and 2021 testing that the State Department of Education provided included the number of students with valid scale scores, mean scores, and standard deviations for all students, female students (F), and male students (M) in grades 3-8 and 10.

Mathematics		2019			2021		
Grade	Group	n	Mean	Std Dev	n	Mean	Std Dev
3	All	22,702	2438.4956	81.6390	22,306	2426.0562	86.4088
4	All	23,319	2481.9102	81.7983	22,831	2470.0095	88.1996
5	All	24,266	2510.8889	91.3644	23,205	2499.3267	94.9417
6	All	24,322	2526.4238	102.4724	23,567	2511.2432	105.6458
7	All	23,756	2547.4668	107.2711	24,385	2531.4128	112.0418
8	All	23,788	2555.7451	115.4984	24,196	2541.4177	118.5371
10	All	22,088	2562.2051	121.5743	22,573	2556.5176	129.7491

Mathematics		2019			2021		
Grade	Group	n	Mean	Std Dev	n	Mean	Std Dev
3	F	11,137	2434.7300	79.4874	10,925	2420.7678	83.9615
4	F	11,302	2477.9929	77.6001	11,250	2464.9072	85.5471
5	F	11,980	2507.7395	87.9247	11,357	2495.4885	91.6799
6	F	11,836	2528.8818	97.1593	11,389	2508.6484	101.9628
7	F	11,609	2548.6138	102.5958	11,978	2527.6545	109.0309
8	F	11,502	2561.8440	108.8882	11,716	2542.9312	113.8036
10	F	10,779	2562.7446	114.5870	10,878	2556.4099	121.7560

Mathematics		2019			2021		
Grade	Group	n	Mean	Std Dev	n	Mean	Std Dev
3	M	11,565	2442.1221	83.5018	11,381	2431.1328	88.4011
4	M	12,017	2485.5945	85.3985	11,581	2474.9663	90.4304
5	M	12,286	2513.9602	94.5007	11,848	2503.0059	97.8291
6	M	12,486	2524.0938	107.2180	12,178	2513.6697	108.9258
7	M	12,147	2546.3708	111.5496	12,407	2535.0410	114.7614
8	M	12,286	2550.0354	121.0873	12,480	2539.9971	122.8025
10	M	11,309	2561.6912	127.8822	11,695	2556.6177	136.7703

Idaho English Language Arts and Mathematics Achievement vs.
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Appendix B

English Language Arts, Grades 3-8 and 10
All Students

Graphic displays of the 2015 to 2021 Cohen d and percentile findings for the Idaho statewide all-students group for English language arts (ELA) in grades 3-8 and 10. Each of the seven grade-level graphic displays presents the Cohen d results above the percentile results.

ISAT English Language Arts, Grade 3

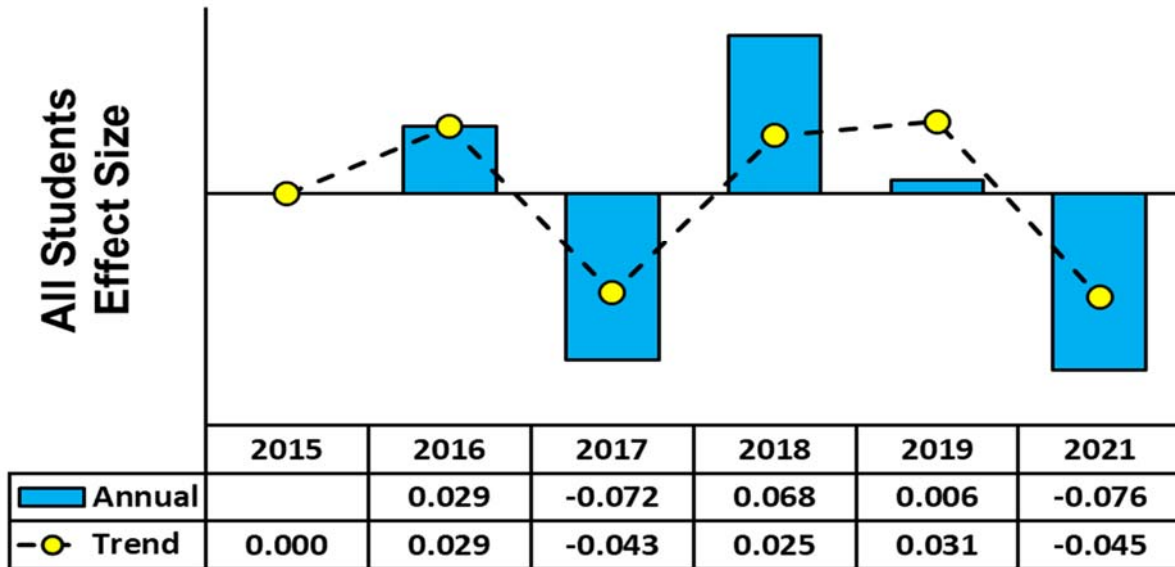


Figure B-1. Idaho effect sizes for ISAT English language arts for all students from 2016 to 2021, grade 3.

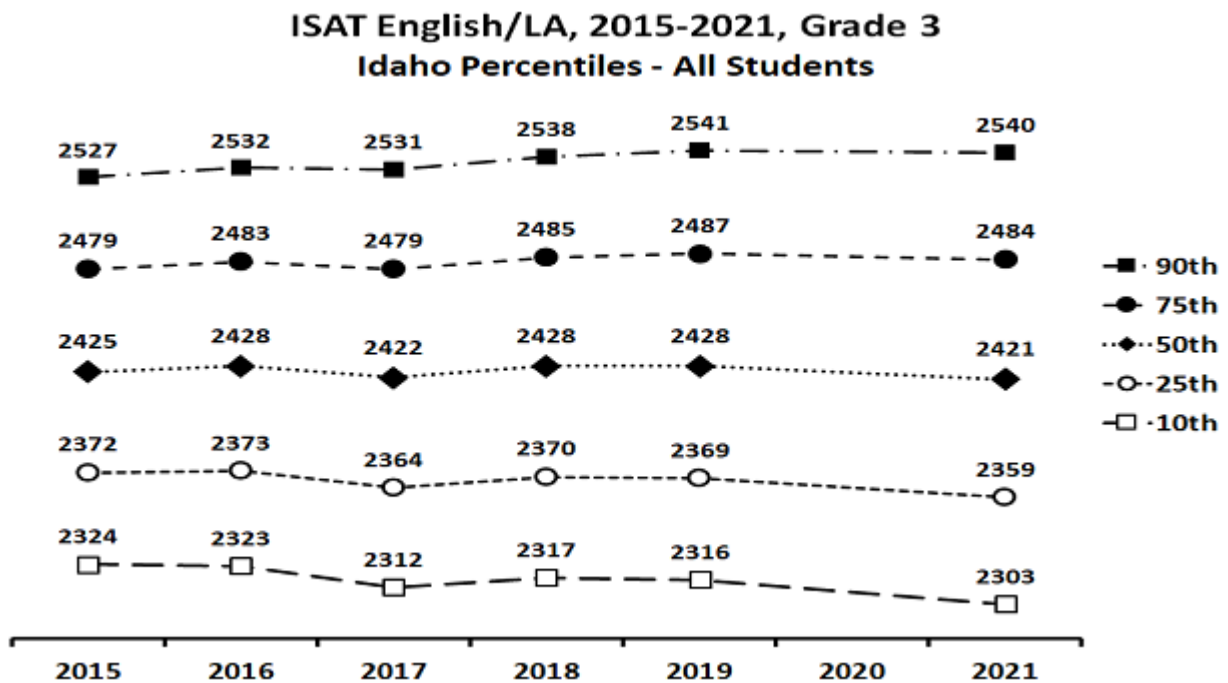


Figure B-2. Idaho percentiles for ISAT English language arts for all students from 2015 to 2021, grade 3.

ISAT English Language Arts, Grade 4

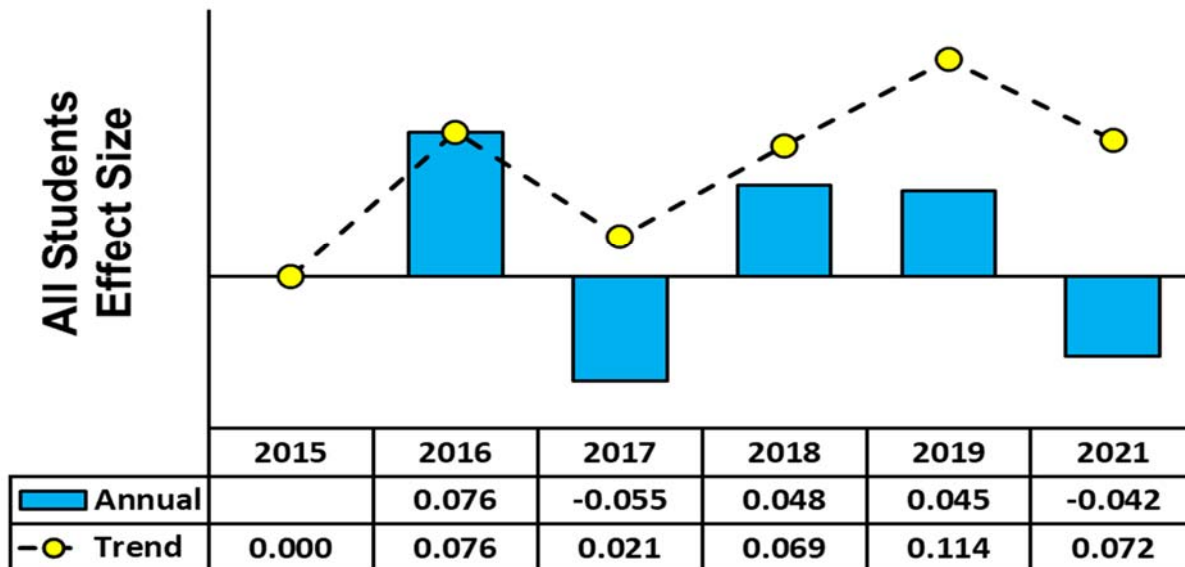


Figure B-3. Idaho effect sizes for ISAT English language arts for all students from 2016 to 2021, grade 4.

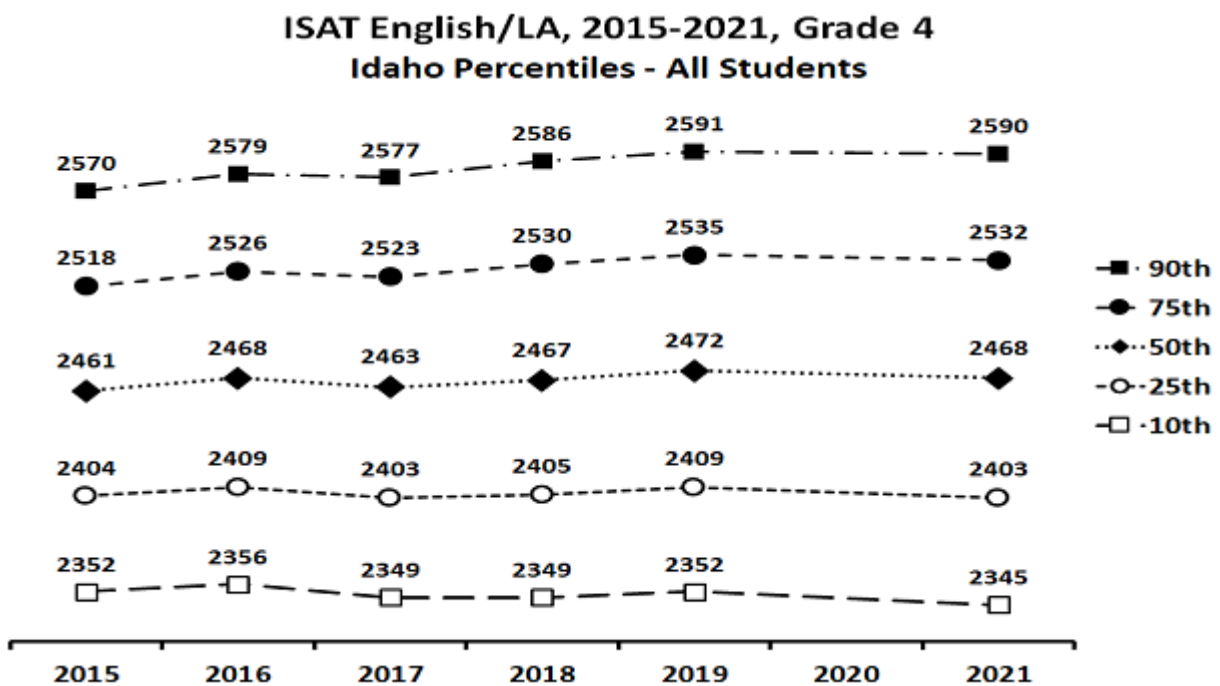


Figure B-4. Idaho percentiles for ISAT English language arts for all students from 2015 to 2021, grade 4.

ISAT English Language Arts, Grade 5

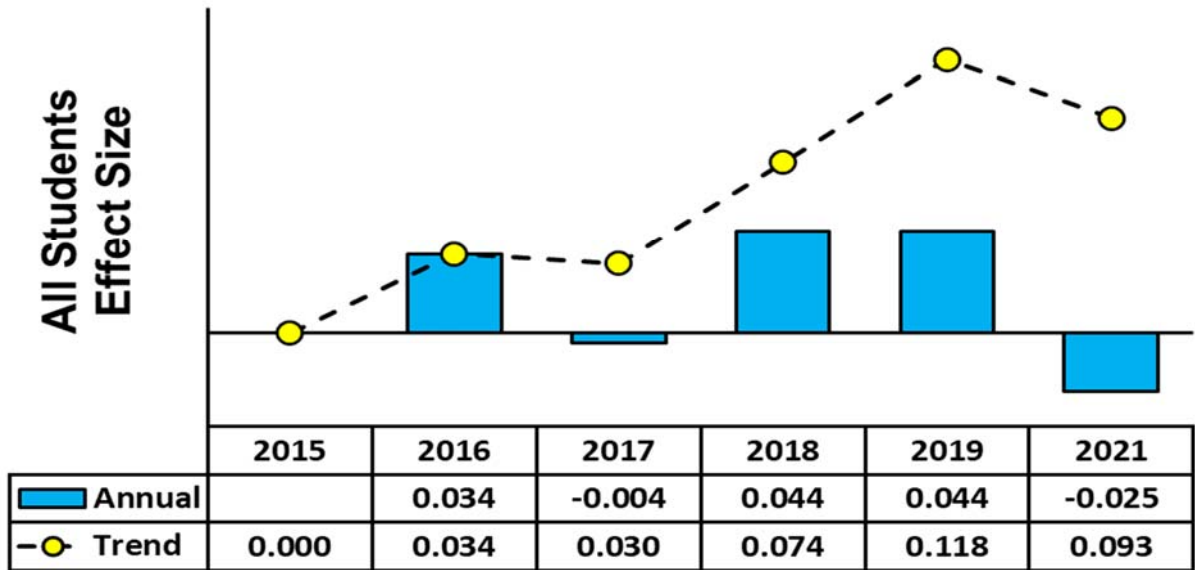


Figure B-5. Idaho effect sizes for ISAT English language arts for all students from 2016 to 2021, grade 5.

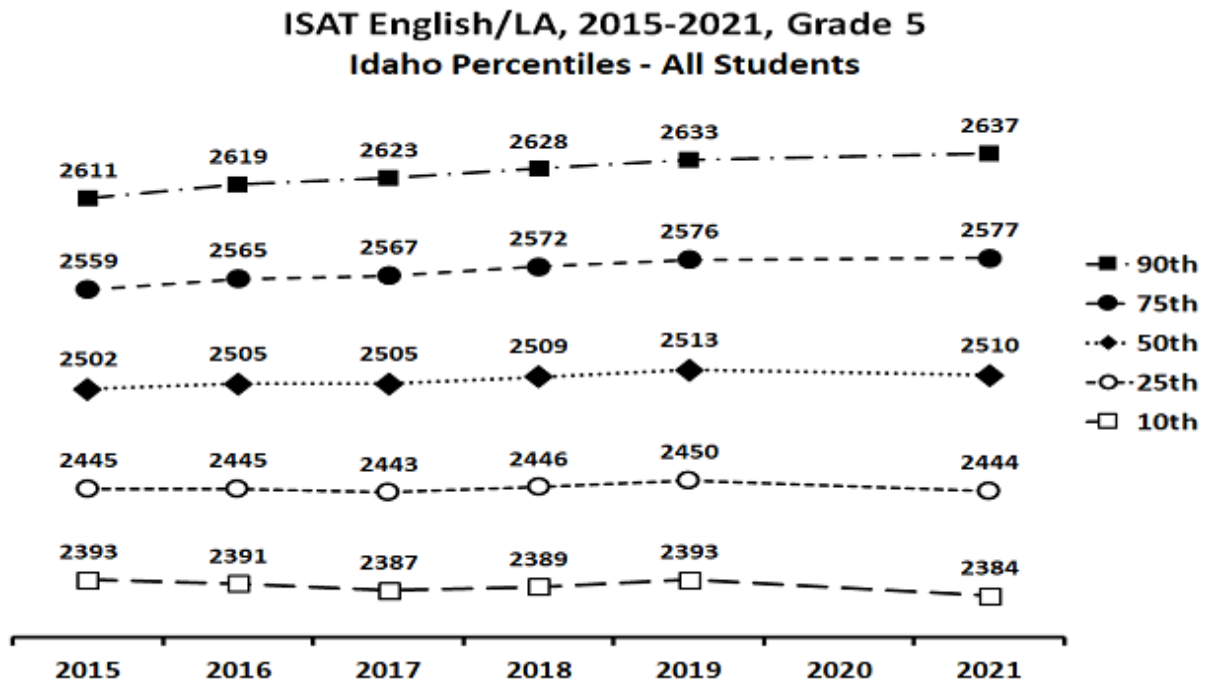


Figure B-5. Idaho percentiles for ISAT English language arts for all students from 2015 to 2021, grade 5.

ISAT English Language Arts, Grade 6

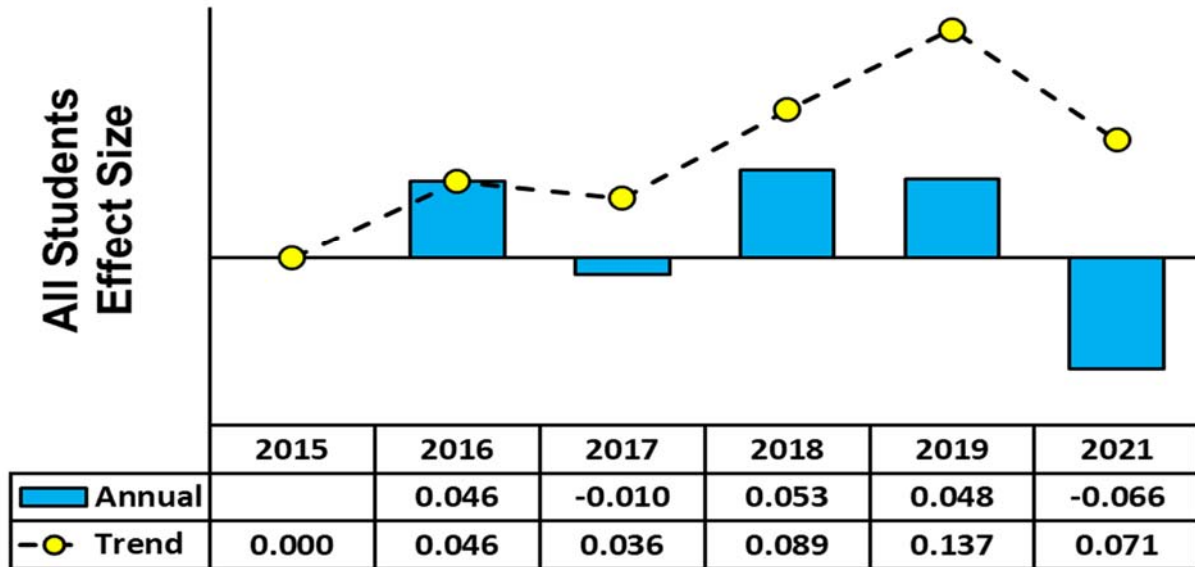


Figure B-7. Idaho effect sizes for ISAT English language arts for all students from 2016 to 2021, grade 6.

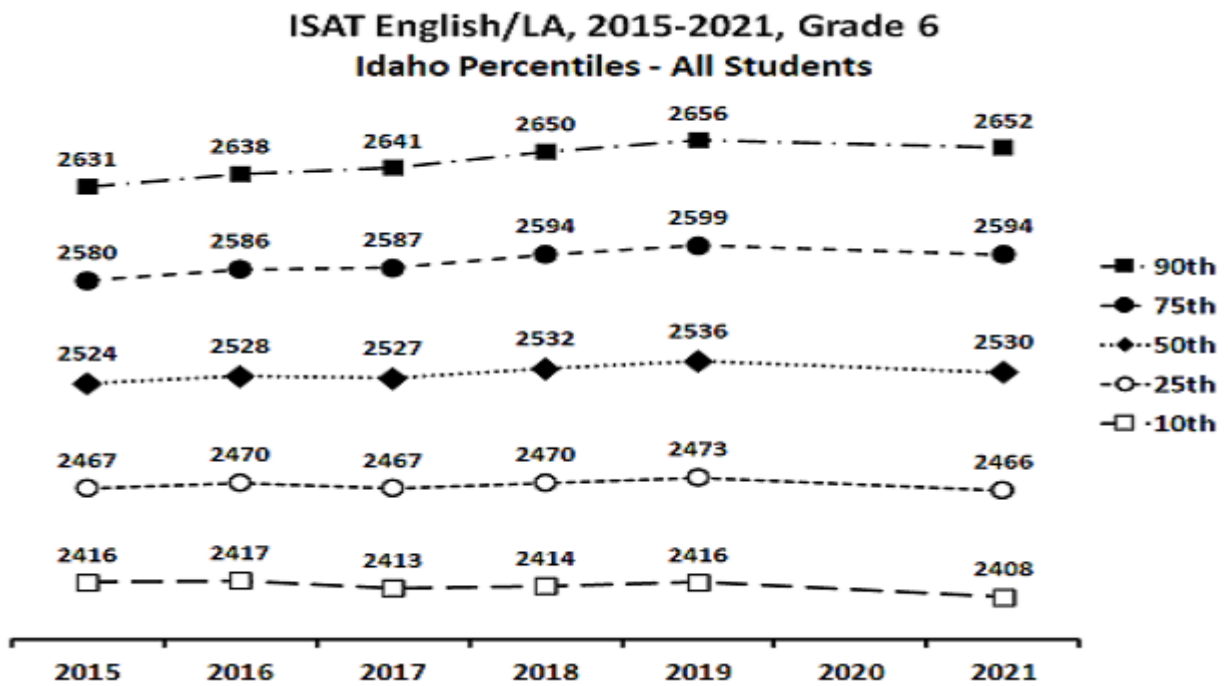


Figure B-8. Idaho percentiles for ISAT English language arts for all students from 2015 to 2021, grade 6.

ISAT English Language Arts, Grade 7

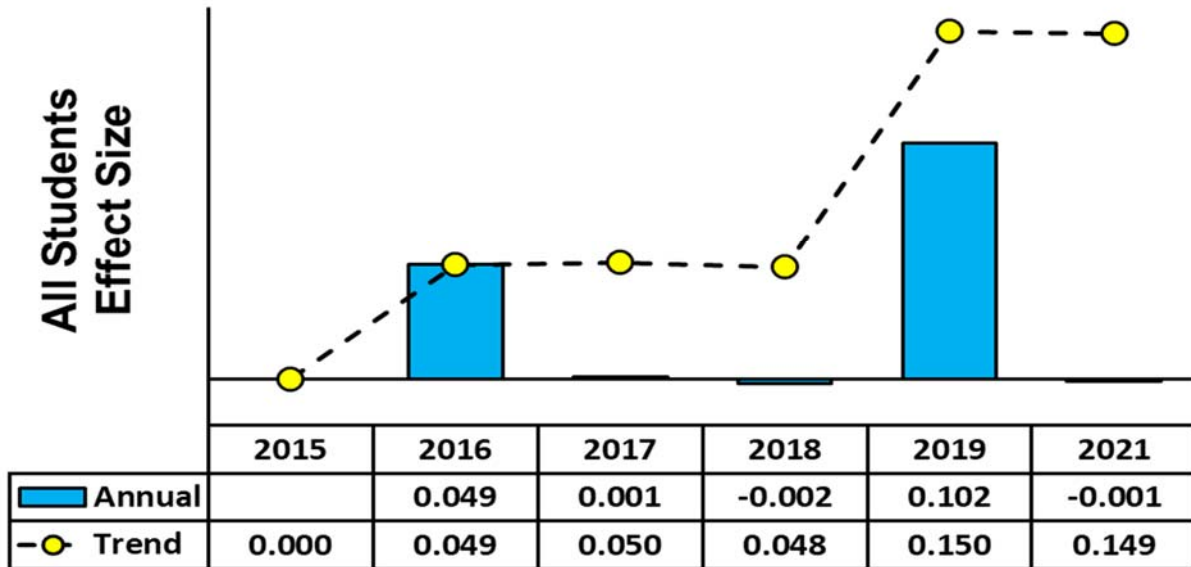


Figure B-9. Idaho effect sizes for ISAT English language arts for all students from 2016 to 2021, grade 7.

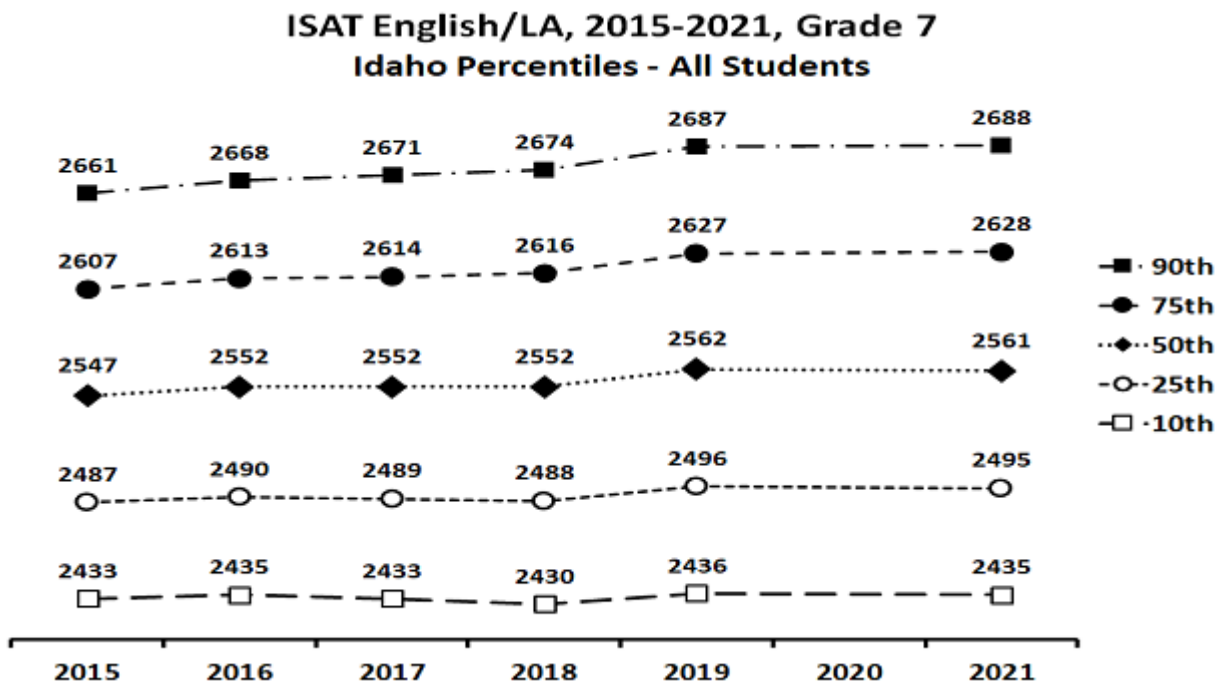


Figure B-10. Idaho percentiles for ISAT English language arts for all students from 2015 to 2021, grade 7.

ISAT English Language Arts, Grade 8

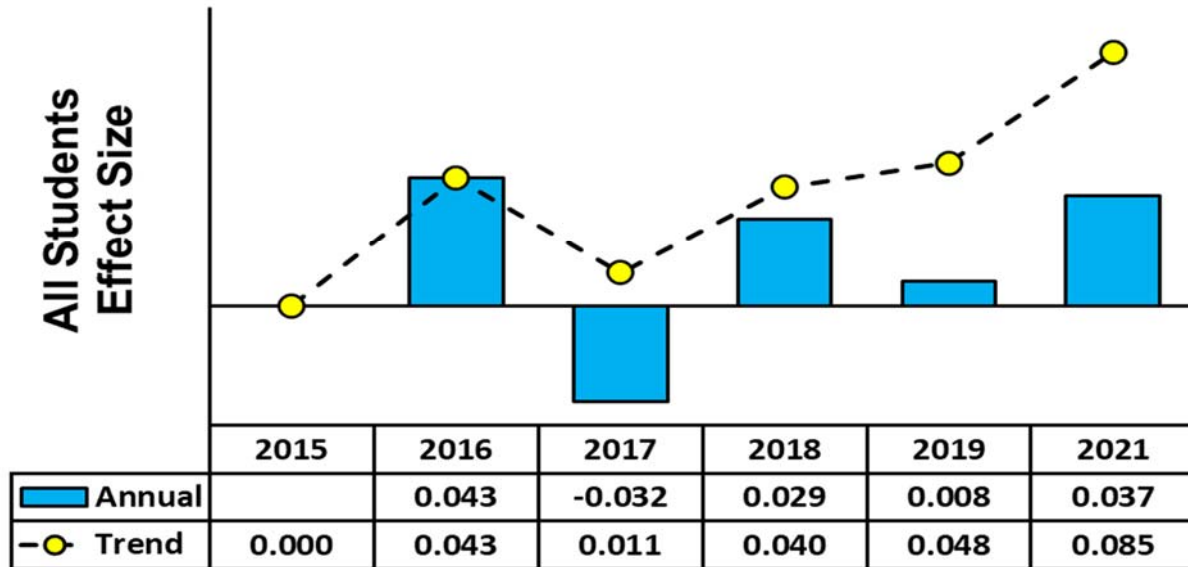


Figure B-11. Idaho effect sizes for ISAT English language arts for all students from 2016 to 2021, grade 8.

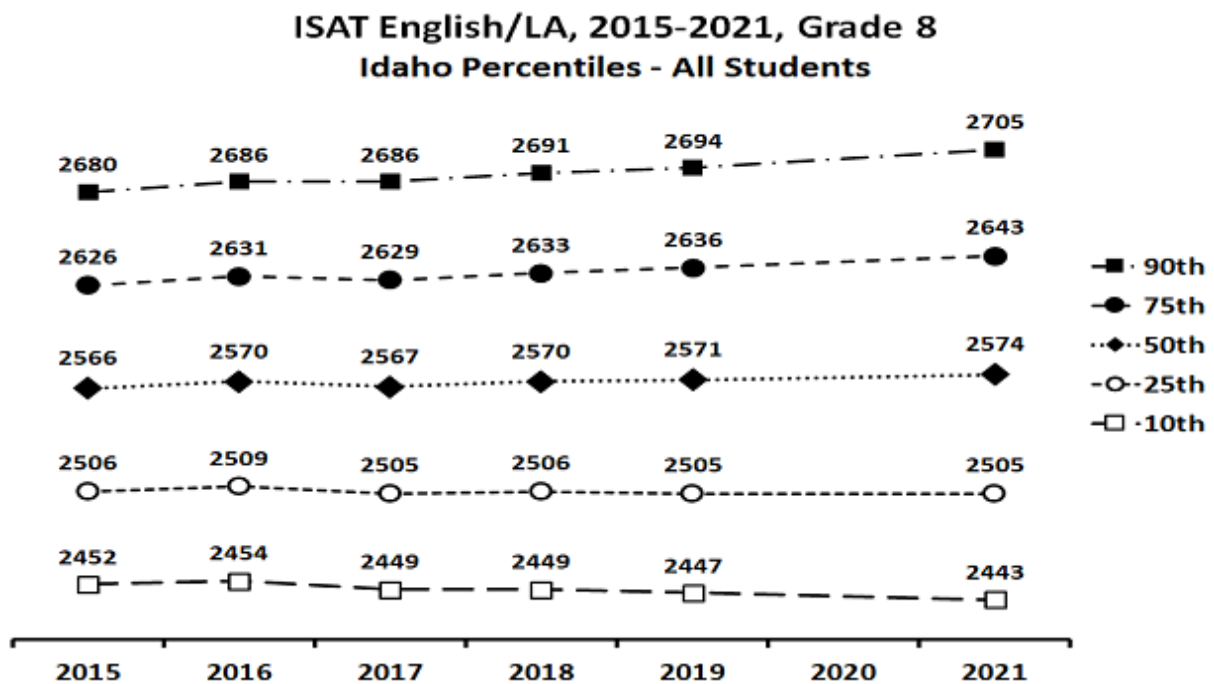


Figure B-12. Idaho percentiles for ISAT English language arts for all students from 2015 to 2021, grade 8.

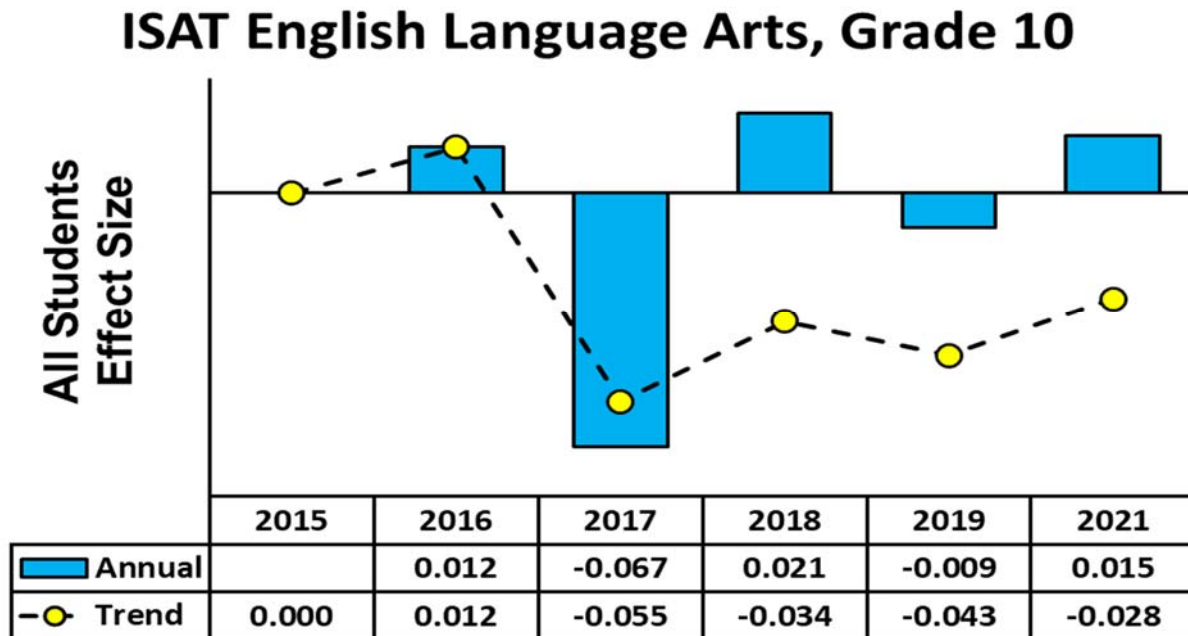


Figure B-13. Idaho effect sizes for ISAT English language arts for all students from 2016 to 2021, grade 10.

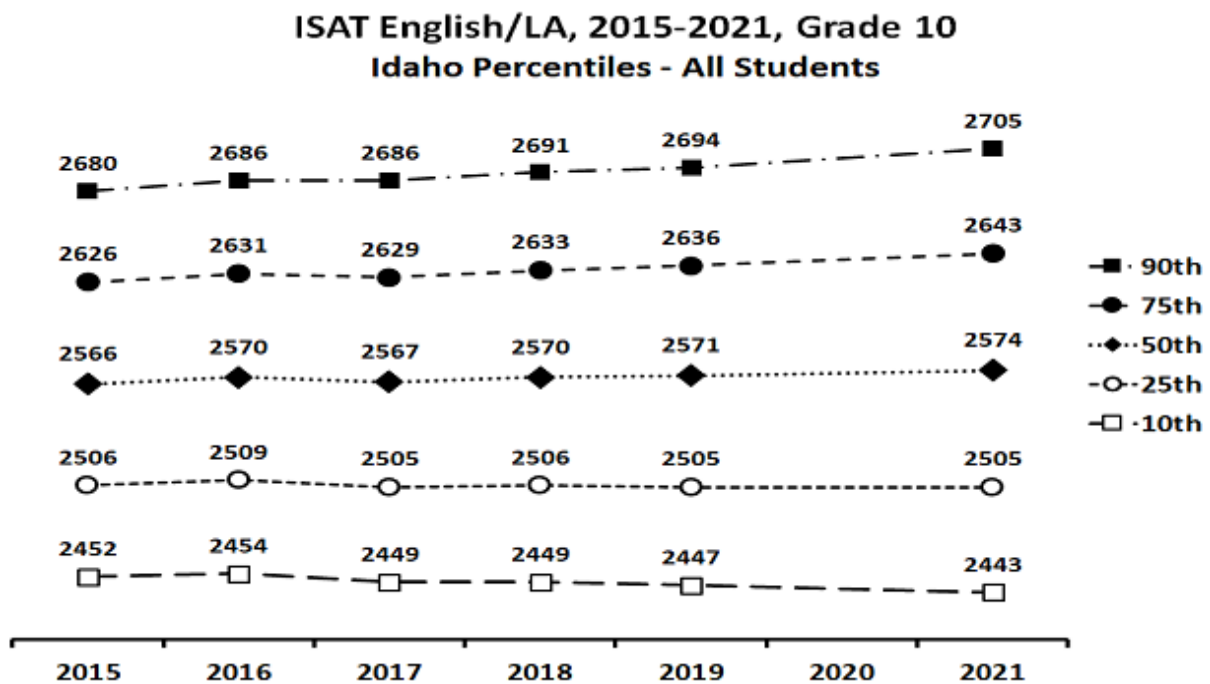


Figure B-14. Idaho percentiles for ISAT English language arts for all students from 2015 to 2021, grade 10.

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Appendix C

Mathematics, Grades 3-8 and 10
All Students

Graphic displays of the 2015 to 2021 Cohen d and percentile findings for the Idaho statewide all-students group for mathematics (MATH) in grades 3-8 and 10. Each of the seven grade-level graphic displays presents the Cohen d results above the percentile results.

ISAT Mathematics, Grade 3

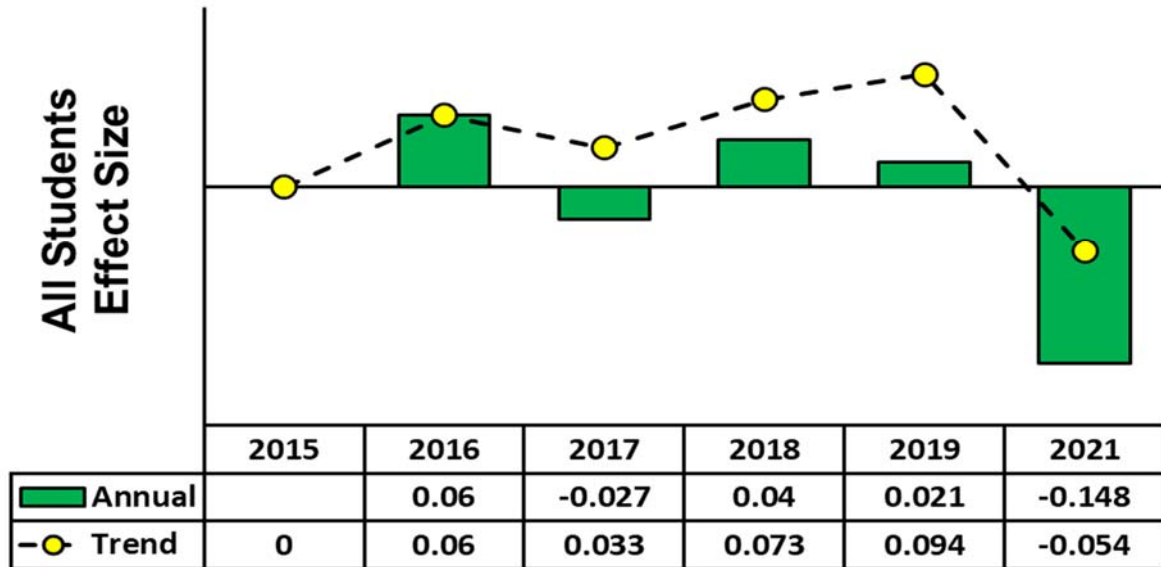


Figure C-1. Idaho effect sizes for ISAT mathematics for all students from 2016 to 2021, grade 3.

ISAT Mathematics, 2015-2021, Grade 3 Idaho Percentiles - All Students

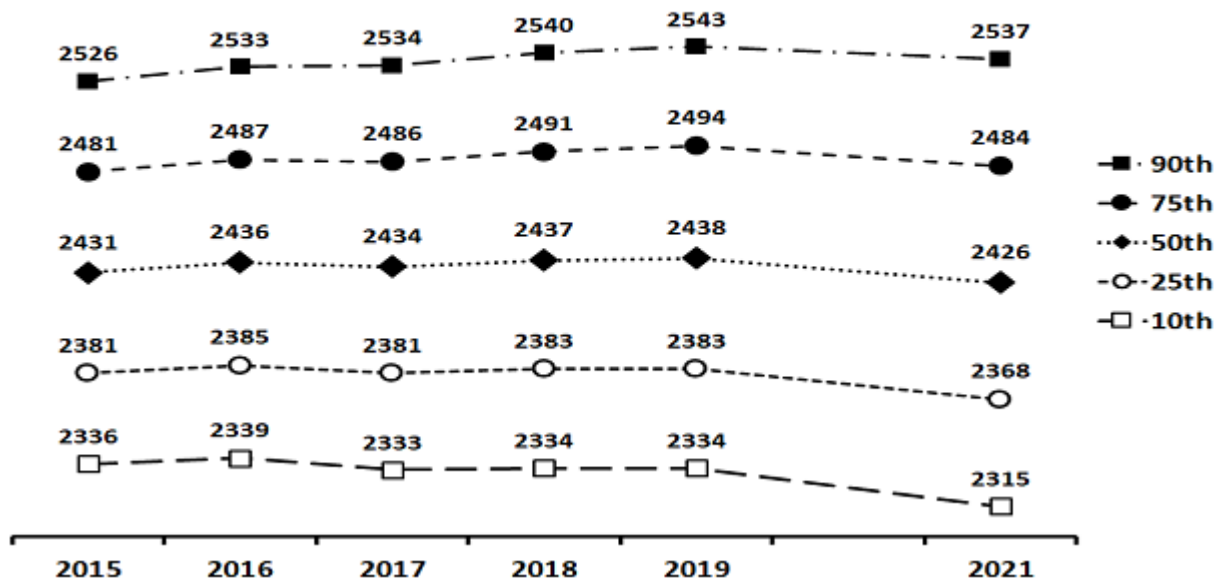


Figure C-2. Idaho percentiles for ISAT mathematics for all students from 2015 to 2021, grade 3.

ISAT Mathematics, Grade 4

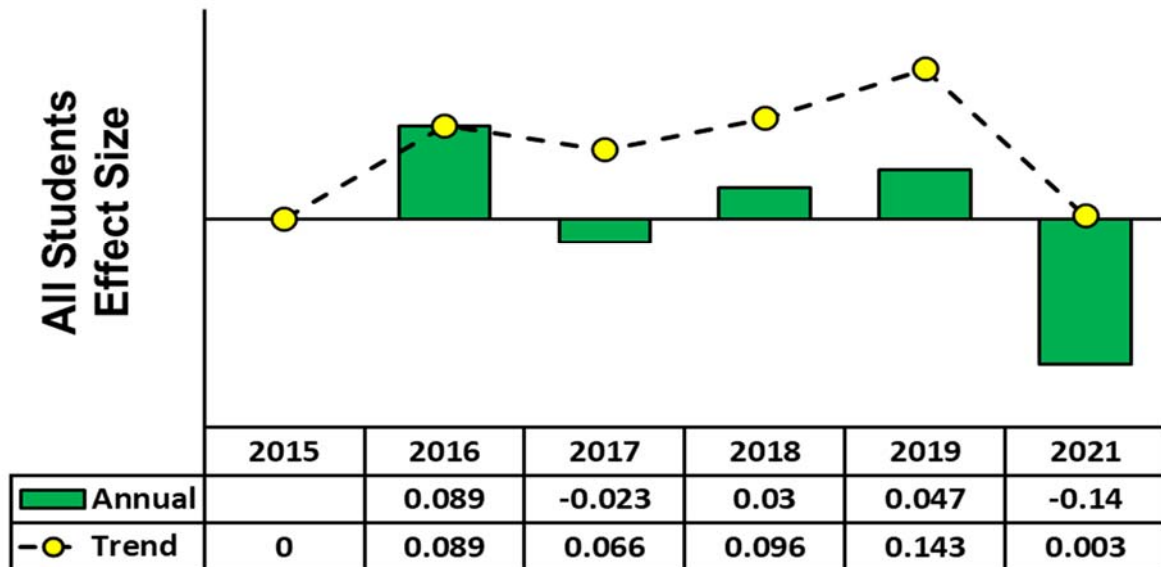


Figure C-3. Idaho effect sizes for ISAT mathematics for all students from 2016 to 2021, grade 4.

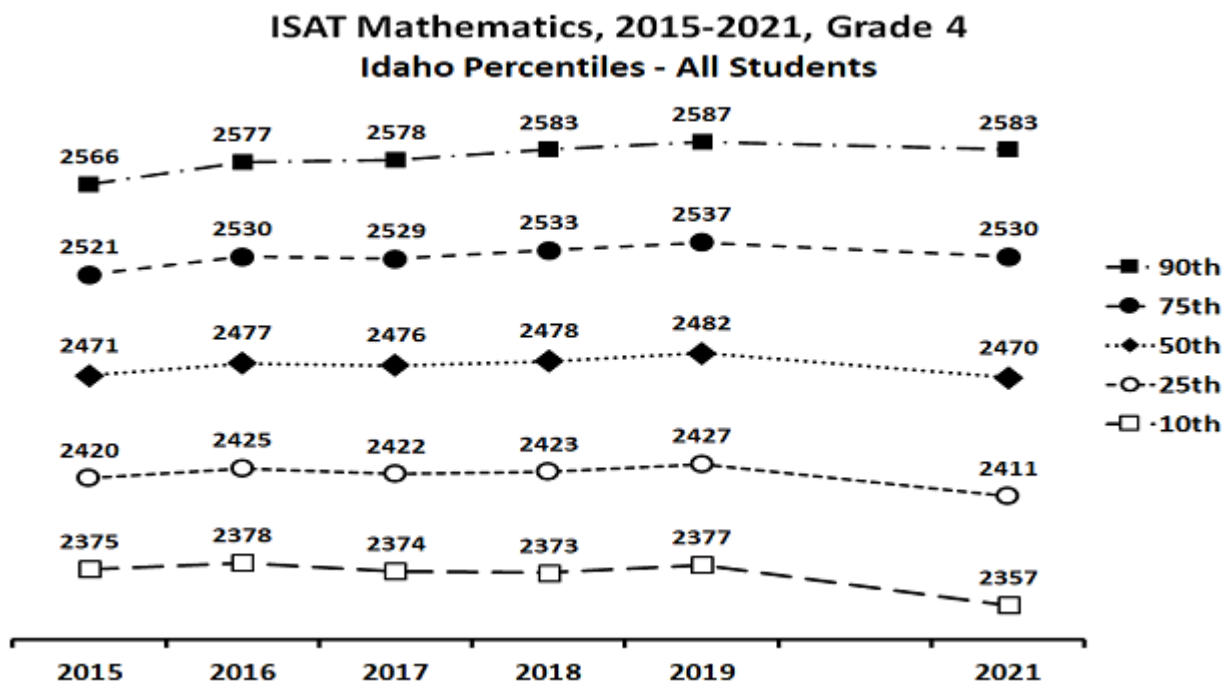


Figure C-4. Idaho percentiles for ISAT mathematics for all students from 2015 to 2021, grade 4.

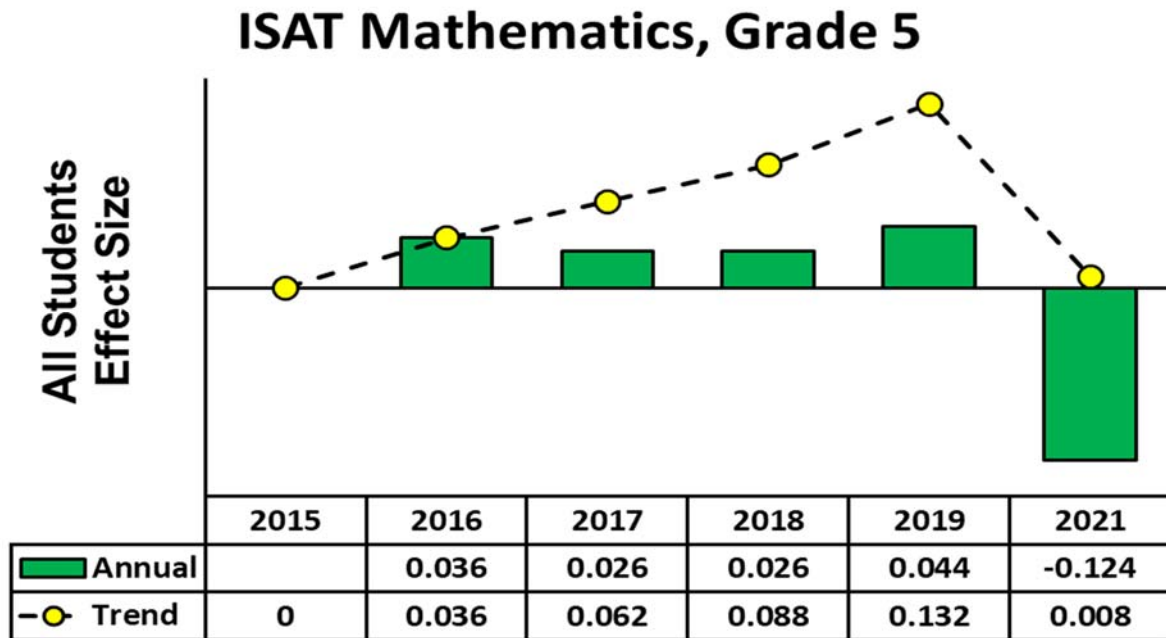


Figure C-5. Idaho effect sizes for ISAT mathematics for all students from 2016 to 2021, grade 5.

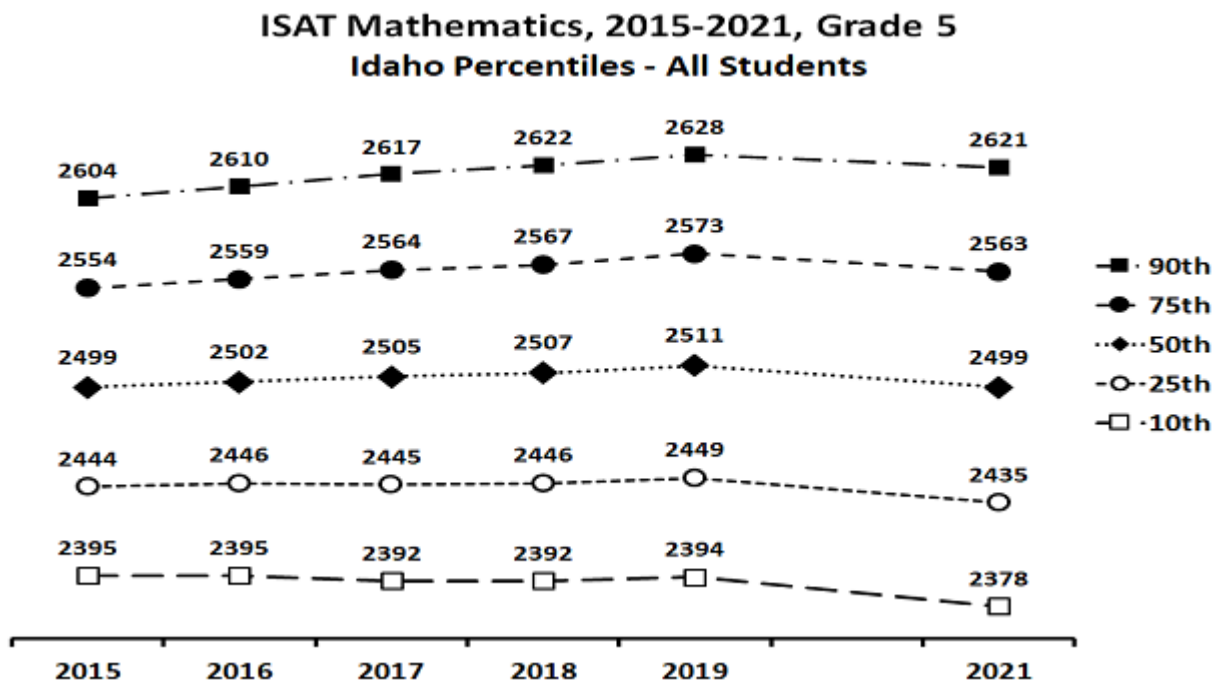


Figure C-6. Idaho percentiles for ISAT mathematics for all students from 2015 to 2021, grade 5.

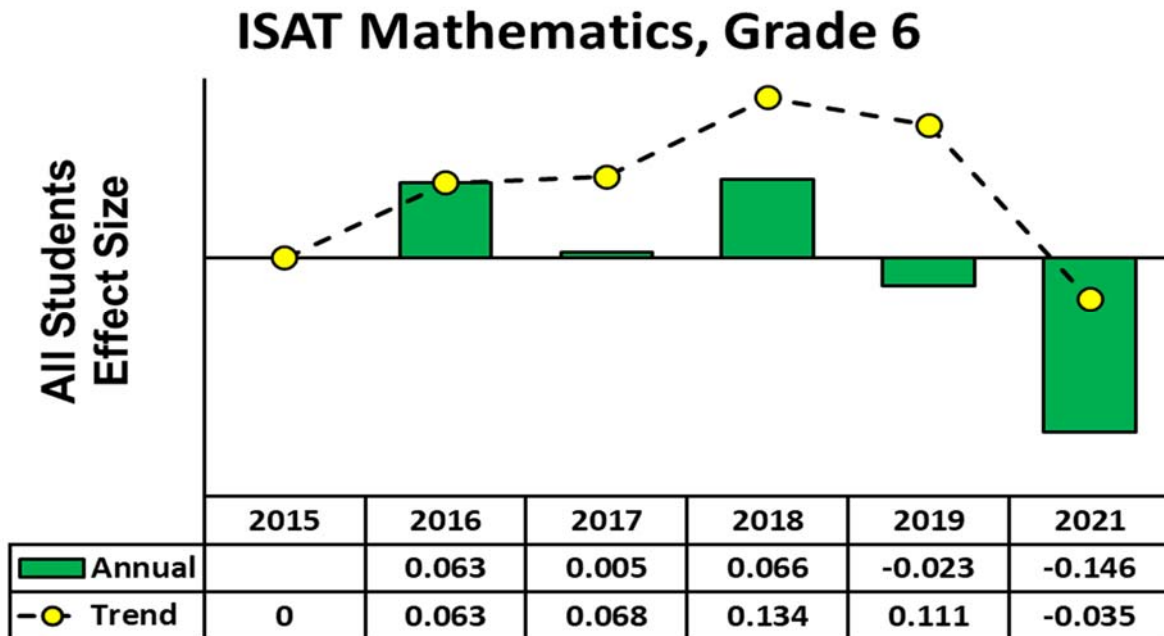


Figure C-7. Idaho effect sizes for ISAT mathematics for all students from 2016 to 2021, grade 6.

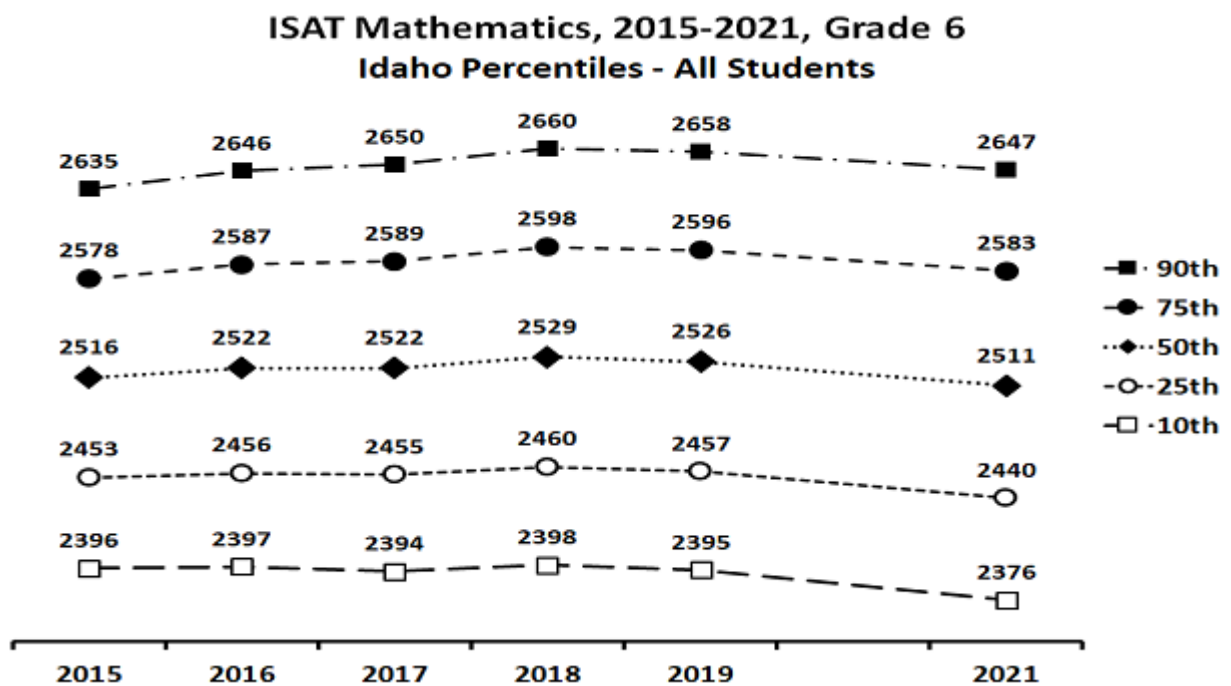


Figure C-8. Idaho percentiles for ISAT mathematics for all students from 2015 to 2021, grade 6.

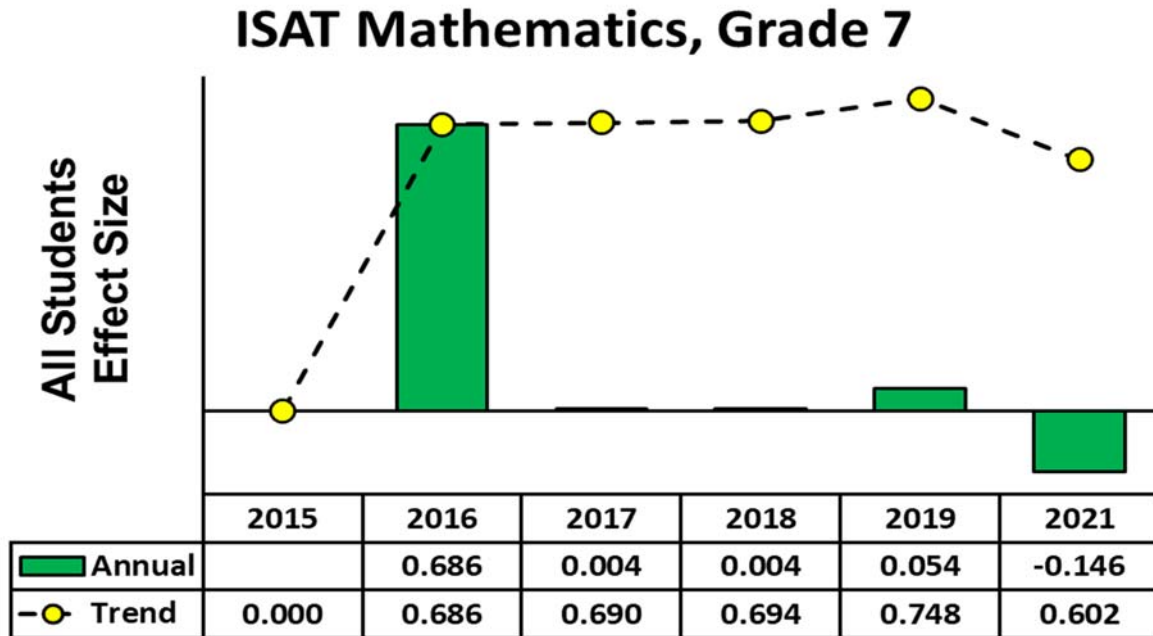


Figure C-9. Idaho effect sizes for ISAT mathematics for all students from 2016 to 2021, grade 7.

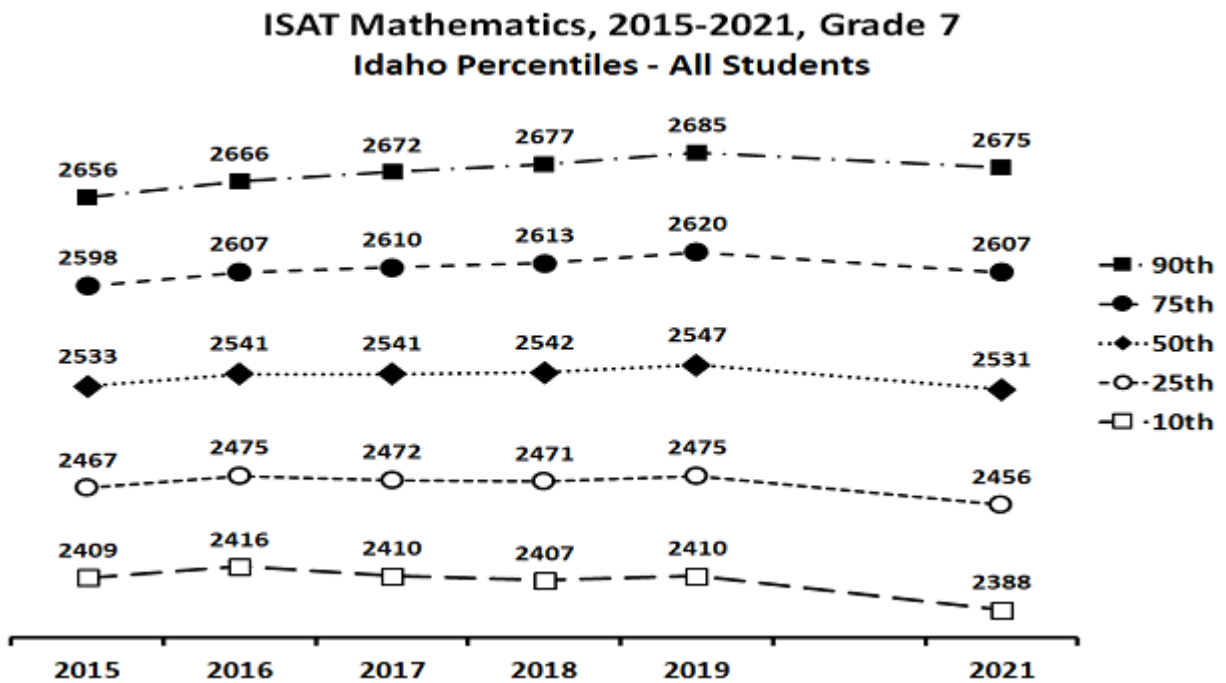


Figure C-10. Idaho percentiles for ISAT mathematics for all students from 2015 to 2021, grade 7.

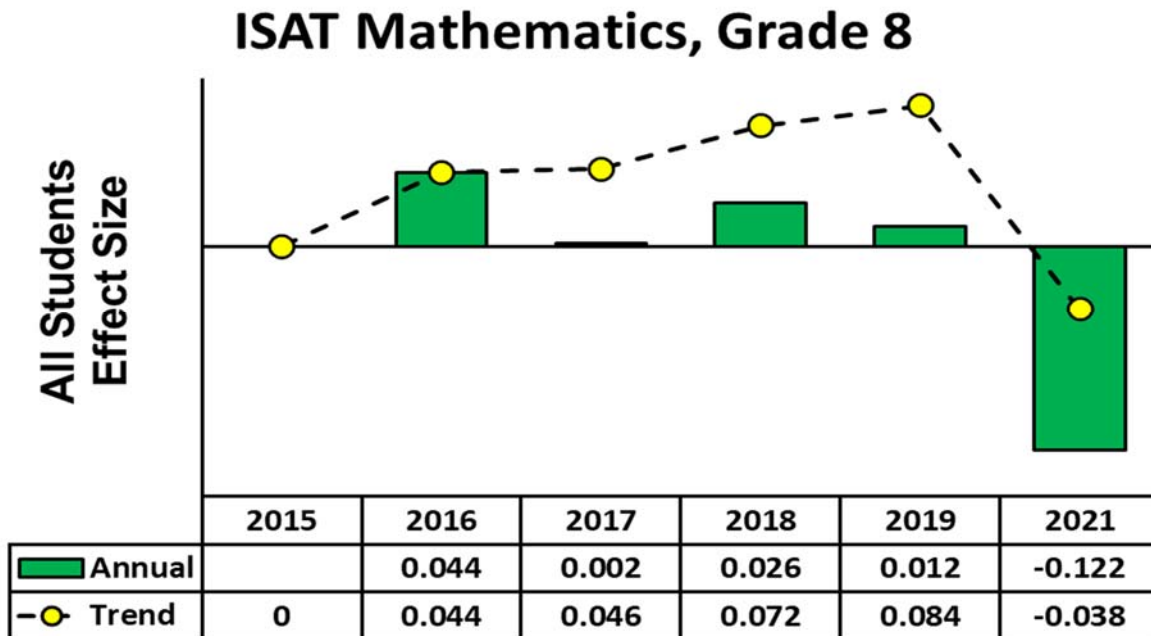


Figure C-11. Idaho effect sizes for ISAT mathematics for all students from 2016 to 2021, grade 8.

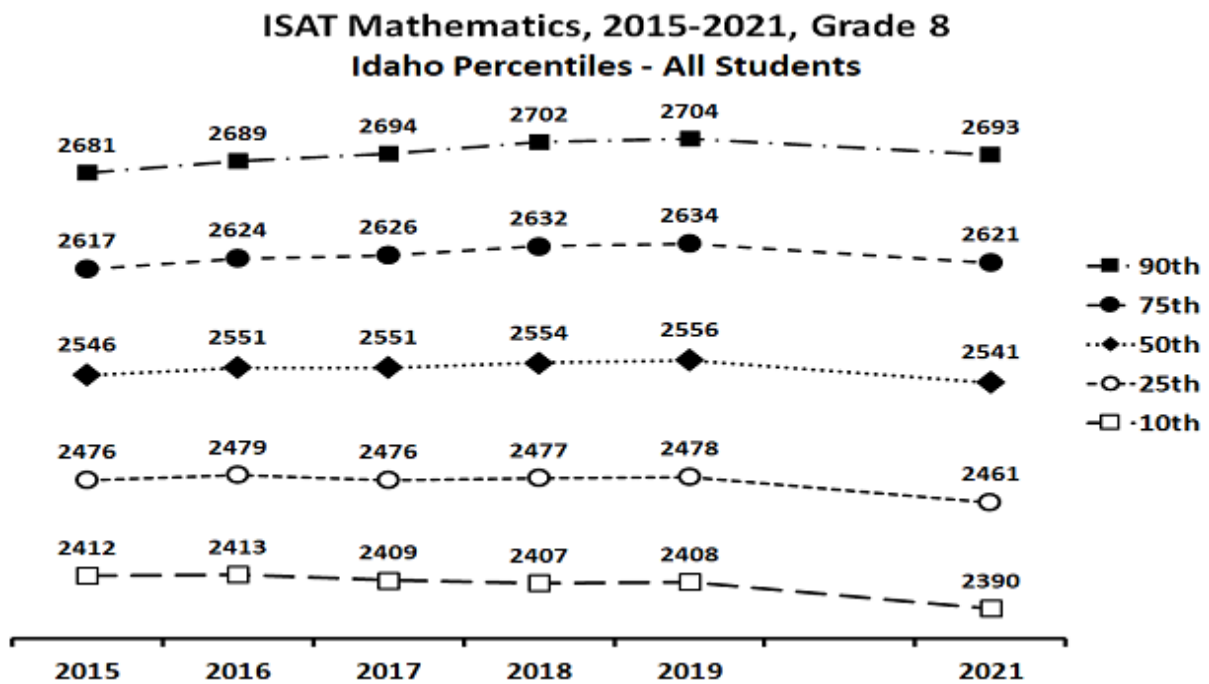


Figure C-12. Idaho percentiles for ISAT mathematics for all students from 2015 to 2021, grade 8.

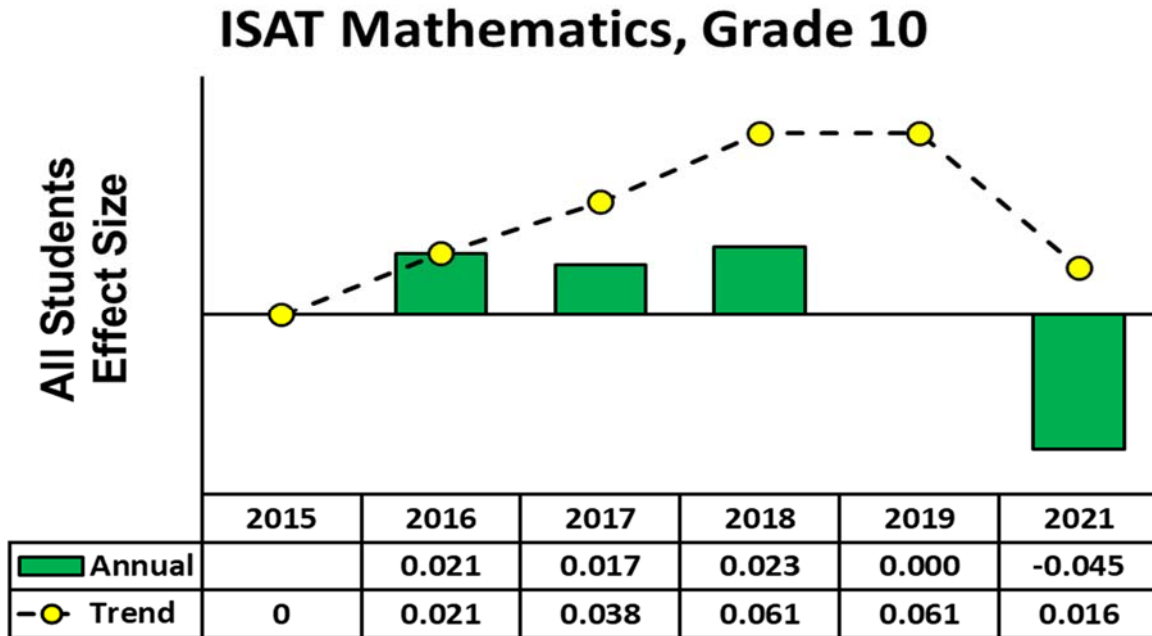


Figure C-13. Idaho effect sizes for ISAT mathematics for all students from 2016 to 2021, grade 10.

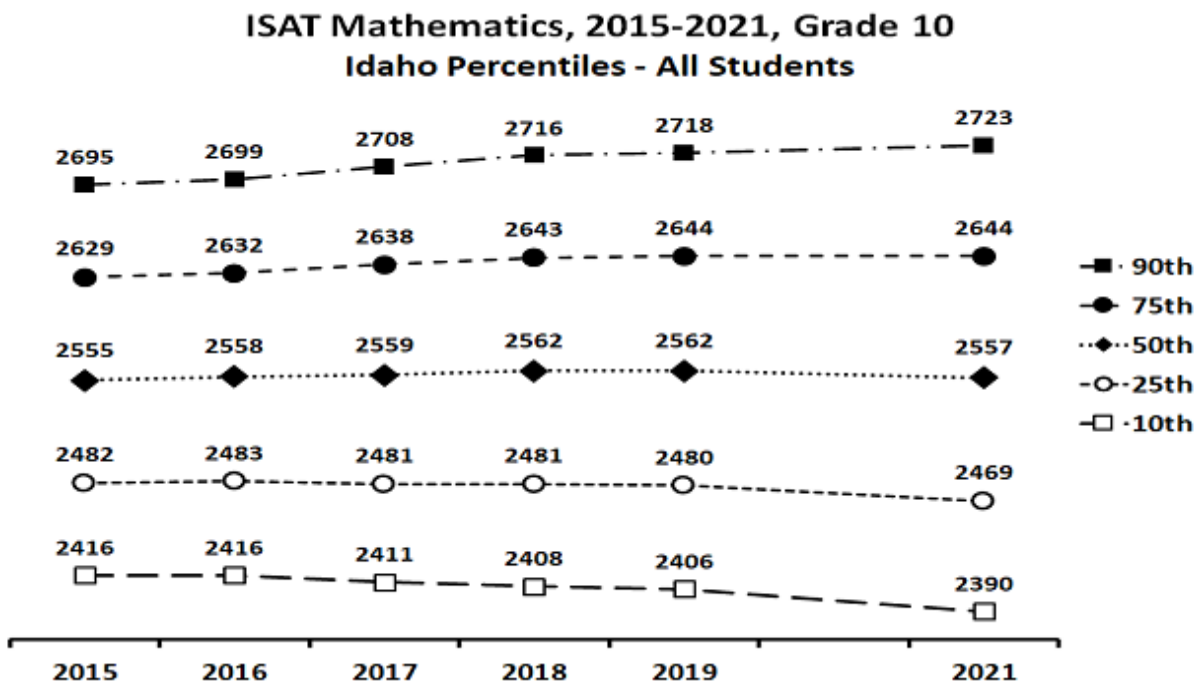


Figure C-14. Idaho percentiles for ISAT mathematics for all students from 2015 to 2021, grade 10.

Idaho English Language Arts and Mathematics Achievement vs.
the COVID Pandemic, Grades 3-8 and 10, 2019 vs. 2021

Appendix D

English Language Arts, Grades 3-8 and 10
Female Students

Graphic displays of the 2015 to 2021 Cohen d and percentile findings for the Idaho statewide female-students group for English language arts (ELA) in grades 3-8 and 10. Each of the seven grade-level graphic displays presents the Cohen d results above the percentile results.

ISAT English Language Arts, Grade 3

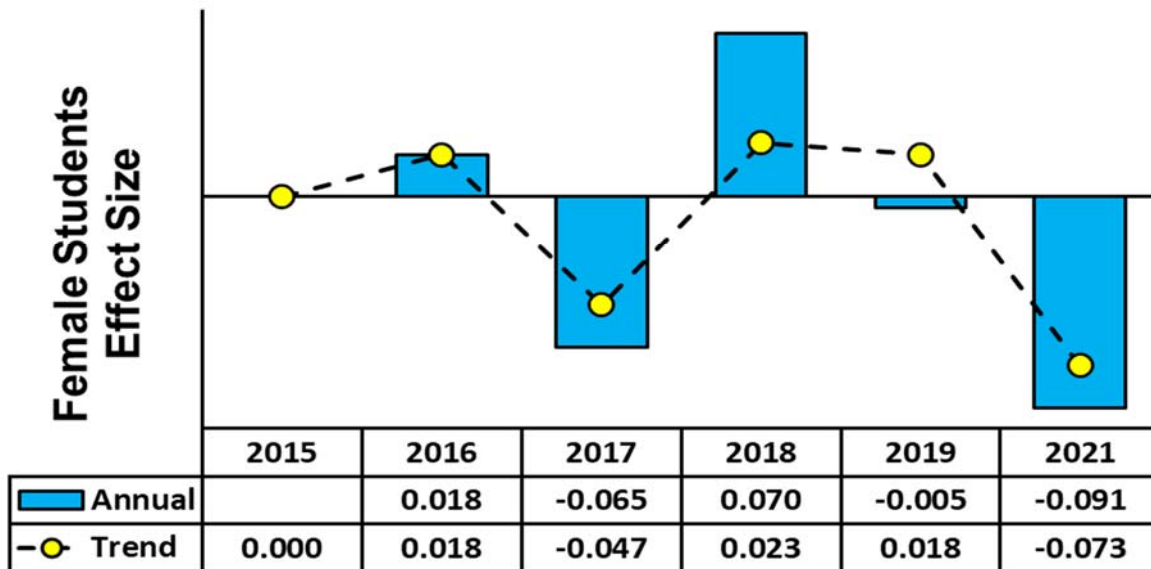


Figure D-1. Idaho effect sizes for ISAT English language arts for female students from 2016 to 2021, grade 3.

ISAT English/LA, 2015-2021, Grade 3 Idaho Percentiles - Female Students

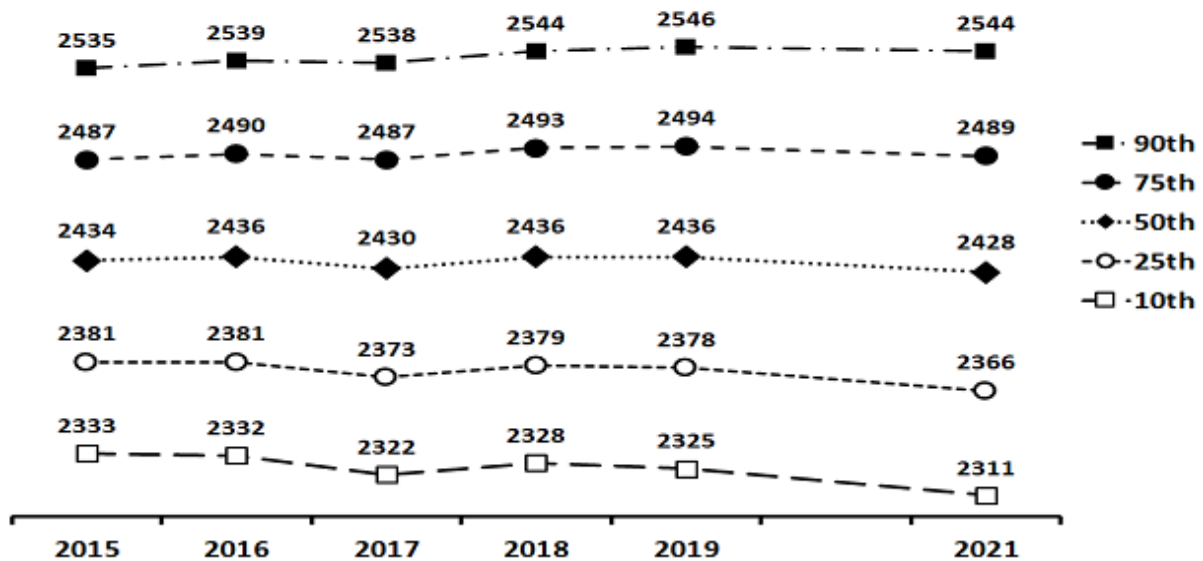


Figure D-2. Idaho percentiles for ISAT English language arts for female students from 2015 to 2021, grade 3.

ISAT English Language Arts, Grade 4

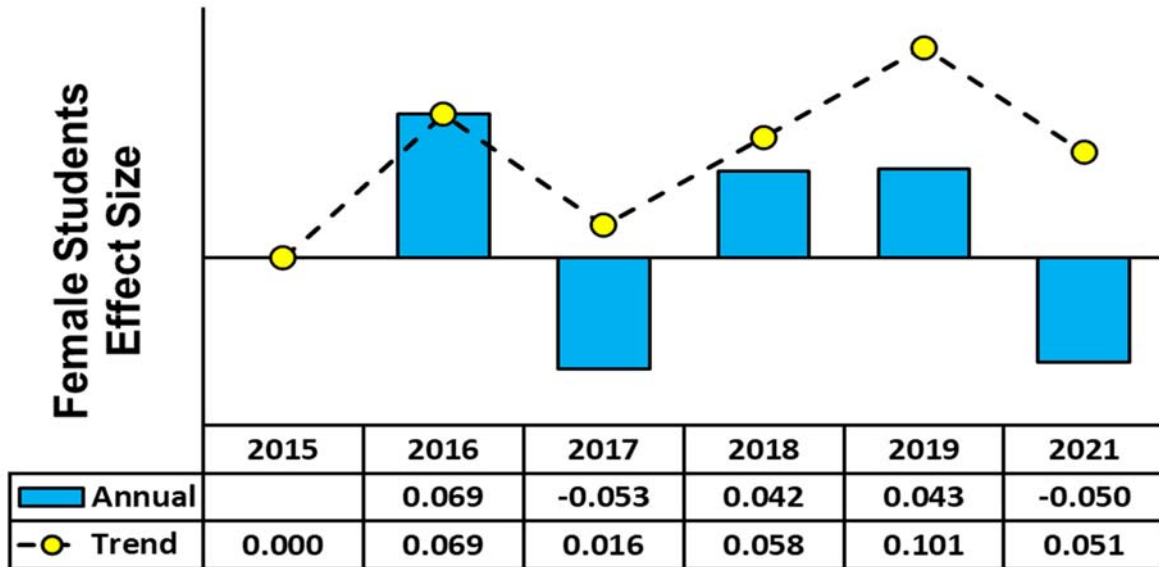


Figure D-3. Idaho effect sizes for ISAT English language arts for female students from 2016 to 2021, grade 4.

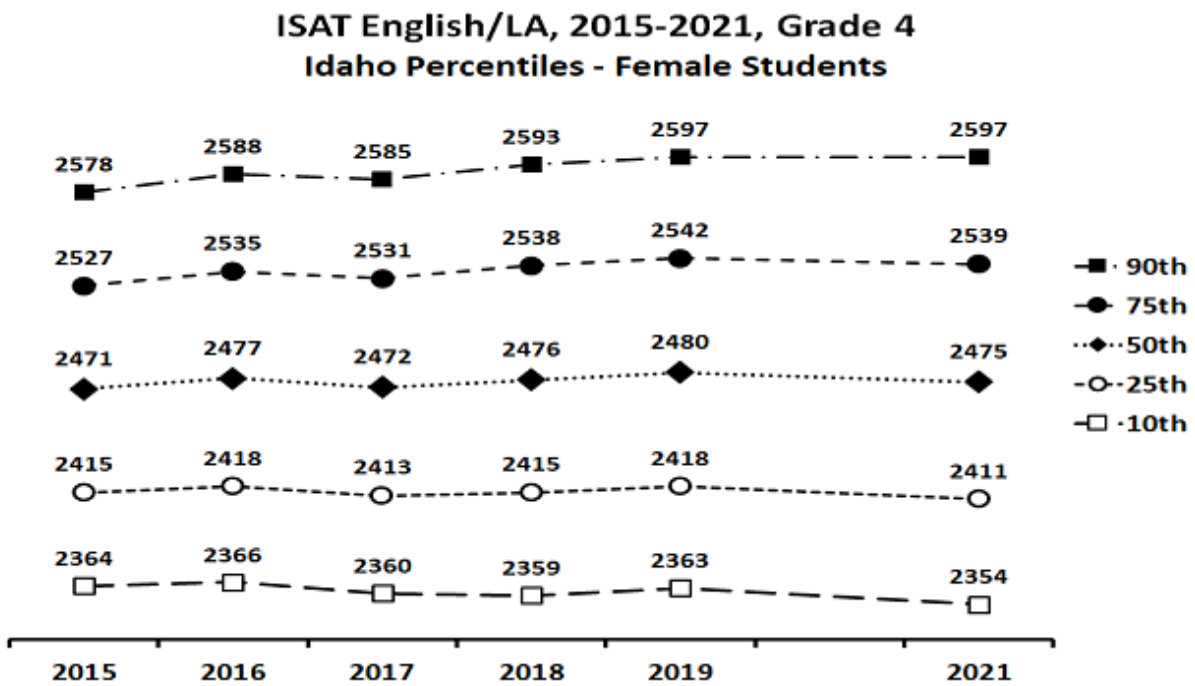


Figure D-4. Idaho percentiles for ISAT English language arts for female students from 2015 to 2021, grade 4.

ISAT English Language Arts, Grade 5

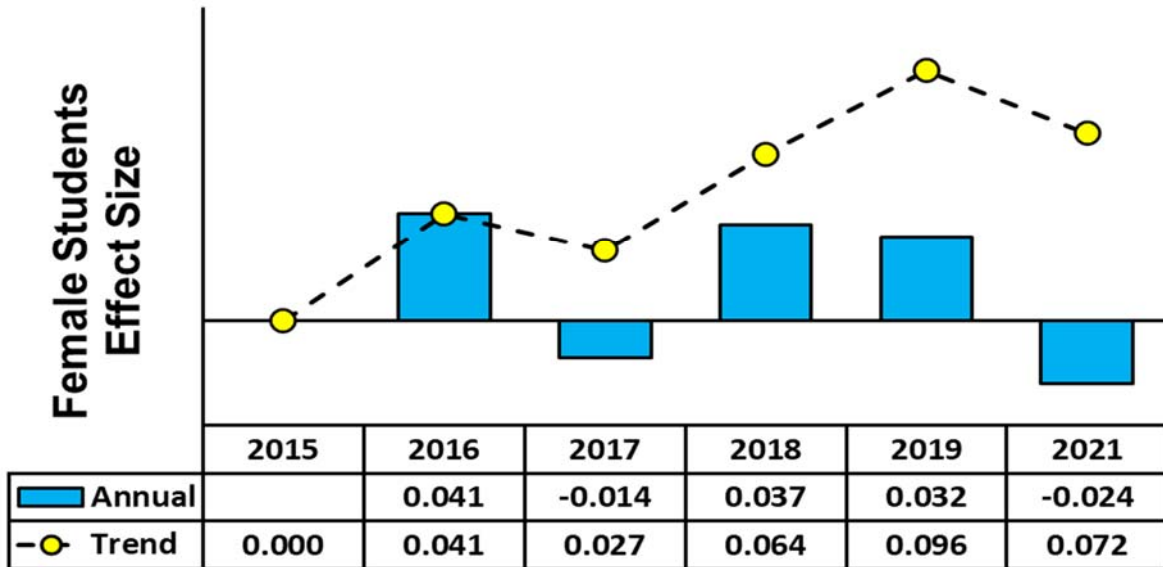


Figure D-5. Idaho effect sizes for ISAT English language arts for female students from 2016 to 2021, grade 5.

ISAT English/LA, 2015-2021, Grade 5 Idaho Percentiles - Female Students

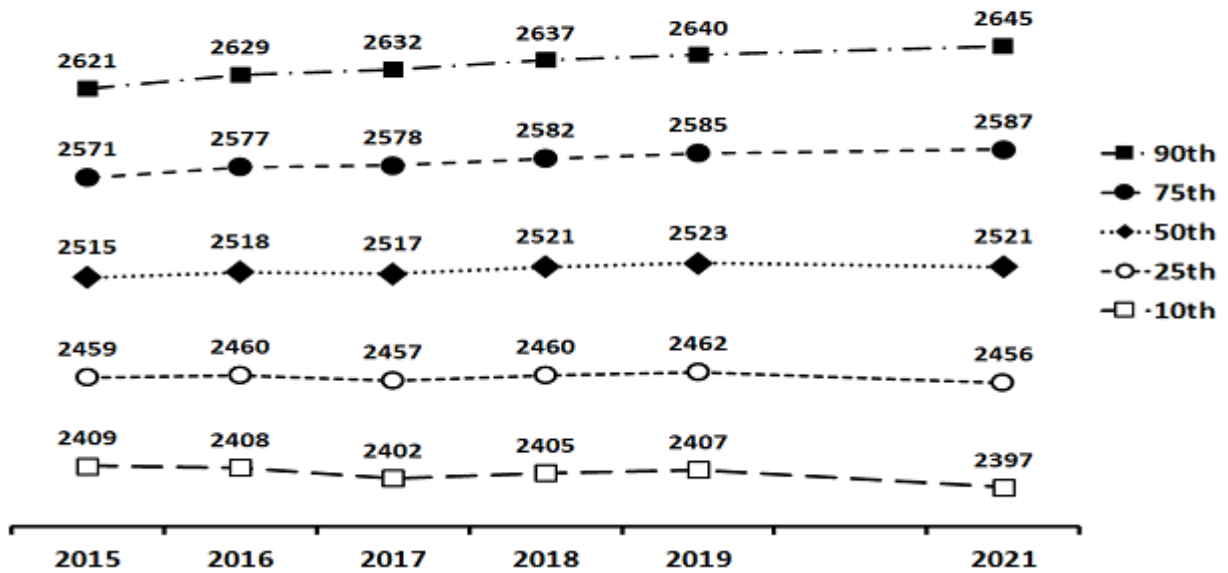


Figure D-6. Idaho percentiles for ISAT English language arts for female students from 2015 to 2021, grade 5.

ISAT English Language Arts, Grade 6

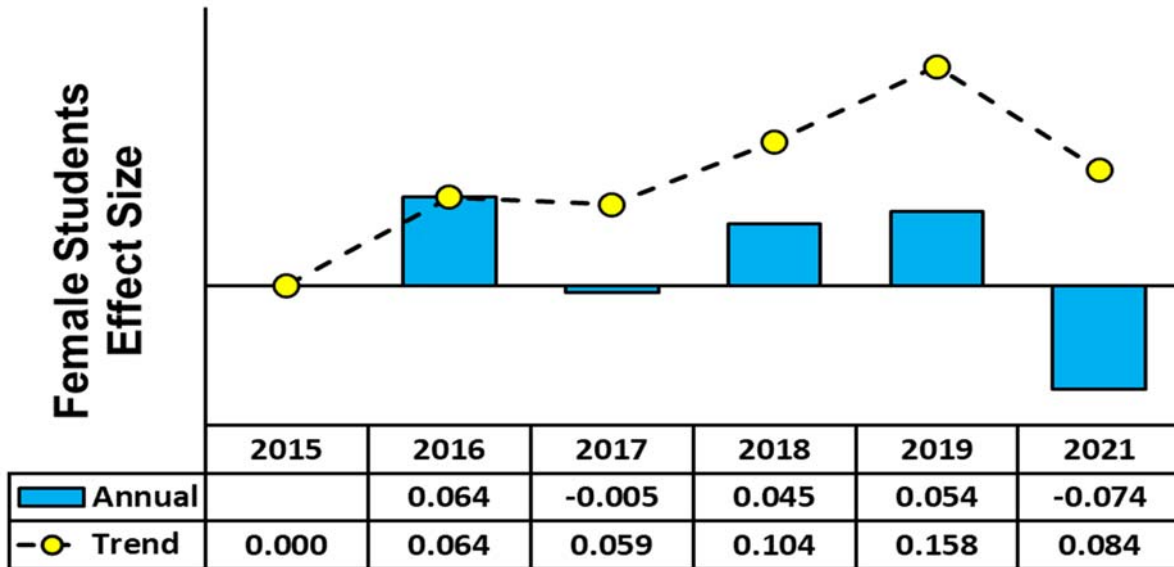


Figure D-7. Idaho effect sizes for ISAT English language arts for female students from 2016 to 2021, grade 6.

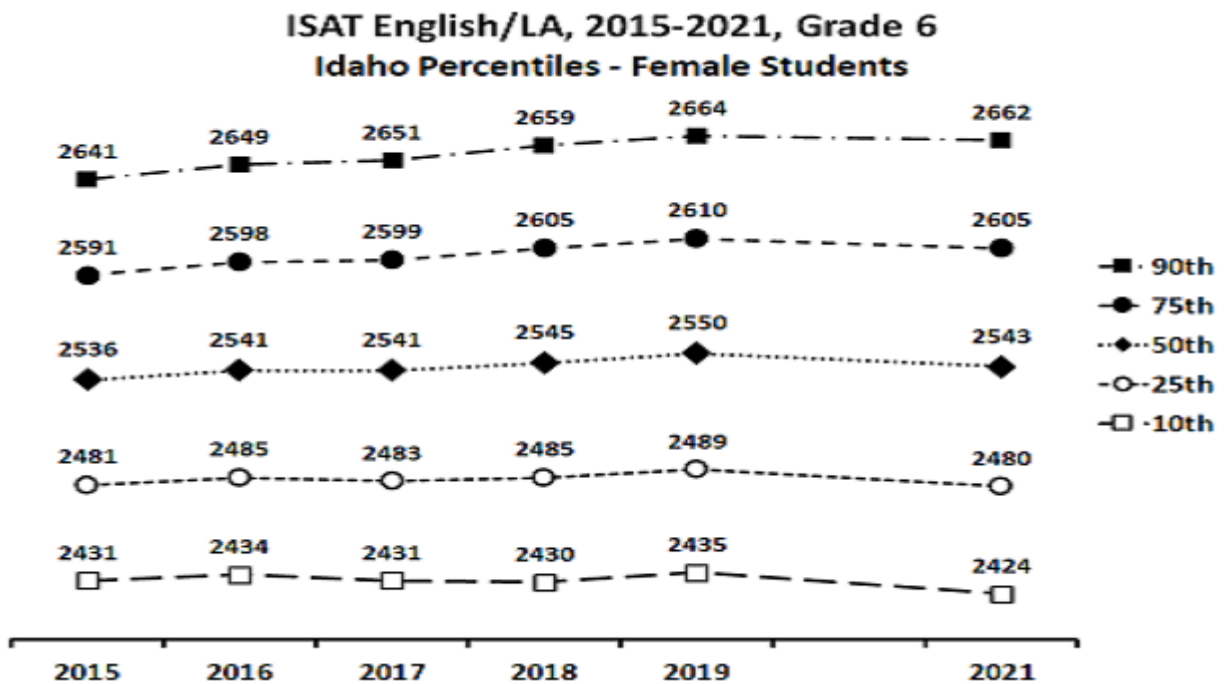


Figure D-8. Idaho percentiles for ISAT English language arts for female students from 2015 to 2021, grade 6.

ISAT English Language Arts, Grade 7

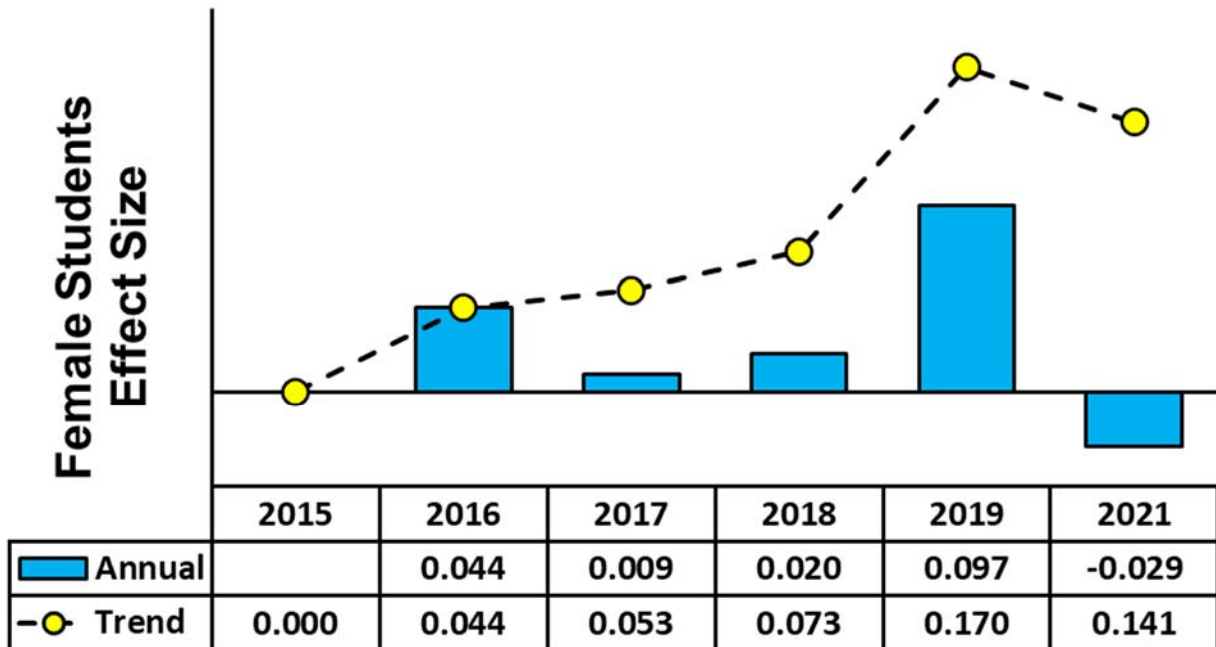


Figure D-9. Idaho effect sizes for ISAT English language arts for female students from 2016 to 2021, grade 7.

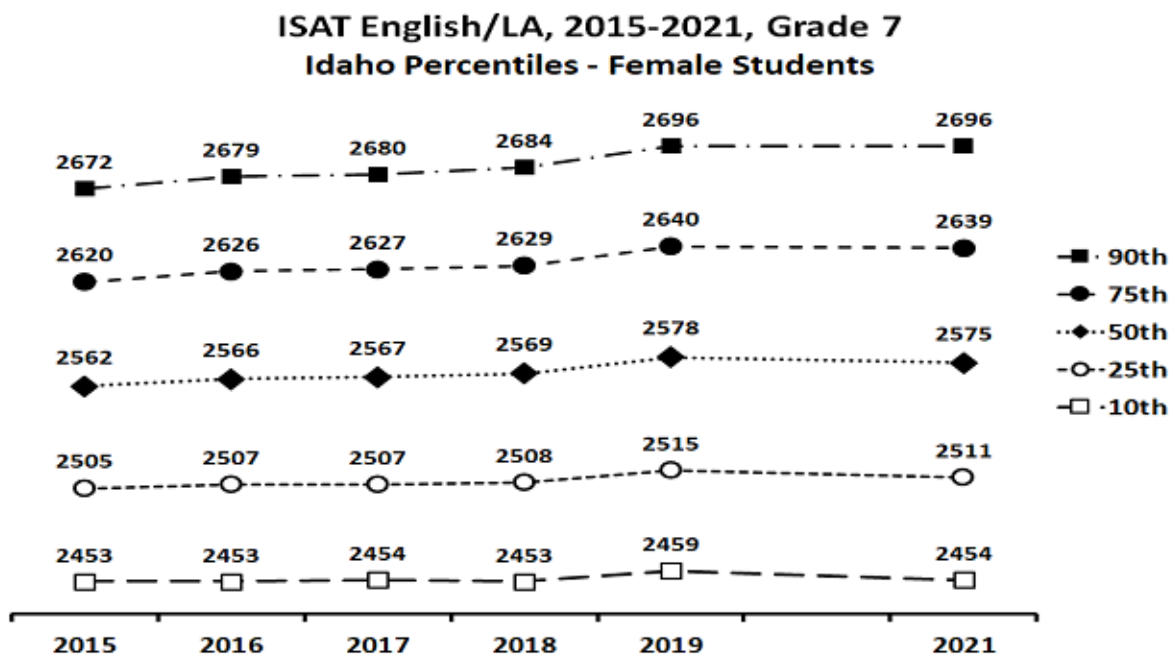


Figure D-10. Idaho percentiles for ISAT English language arts for female students from 2015 to 2021, grade 7.

ISAT English Language Arts, Grade 8

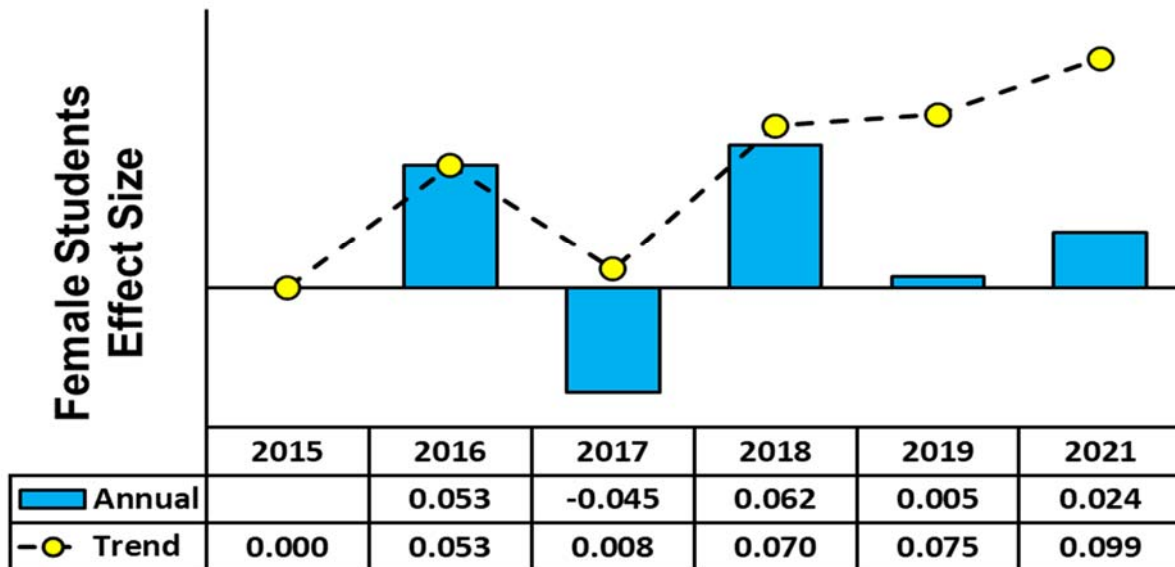


Figure D-11. Idaho effect sizes for ISAT English language arts for female students from 2016 to 2021, grade 8.

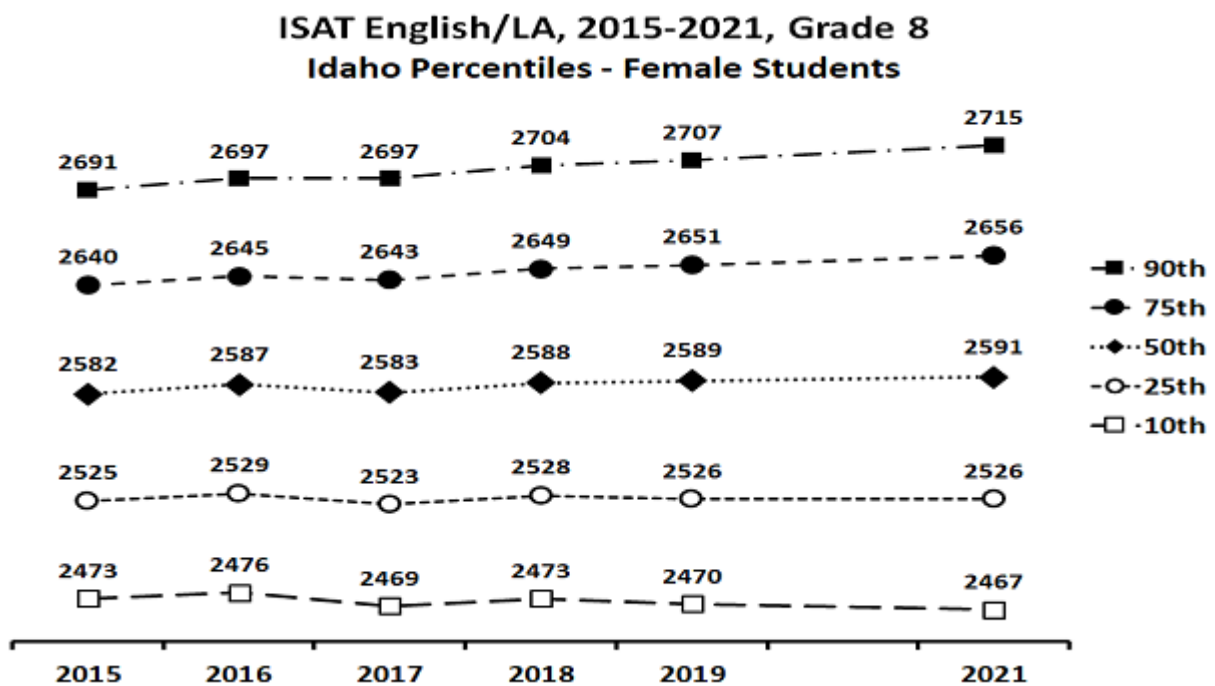


Figure D-12. Idaho percentiles for ISAT English language arts for female students from 2015 to 2021, grade 8.

ISAT English Language Arts, Grade 10

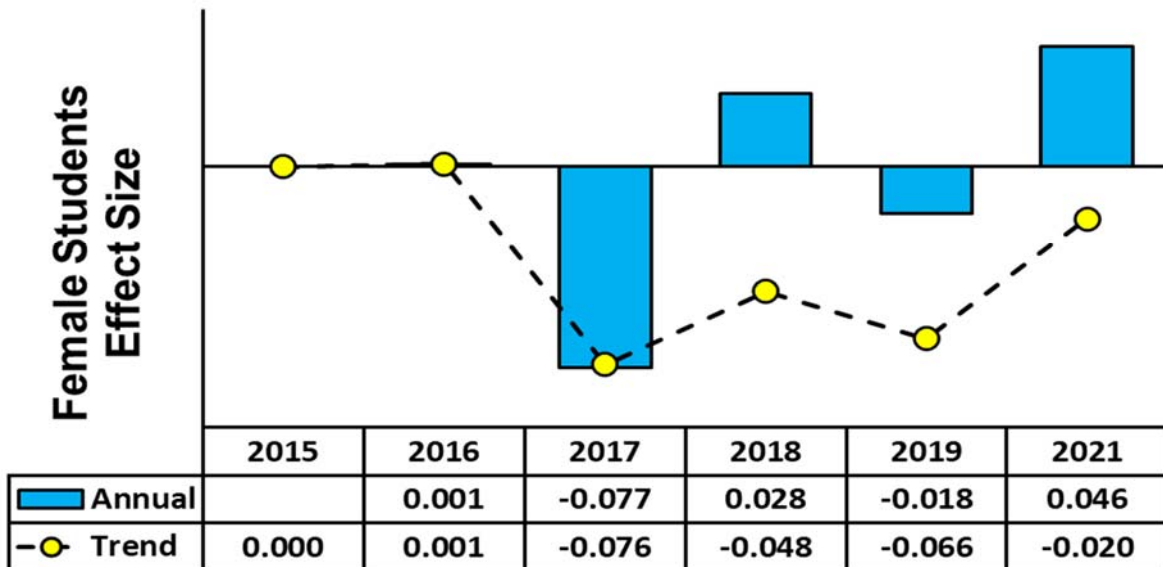


Figure D-13. Idaho effect sizes for ISAT English language arts for female students from 2016 to 2021, grade 10.

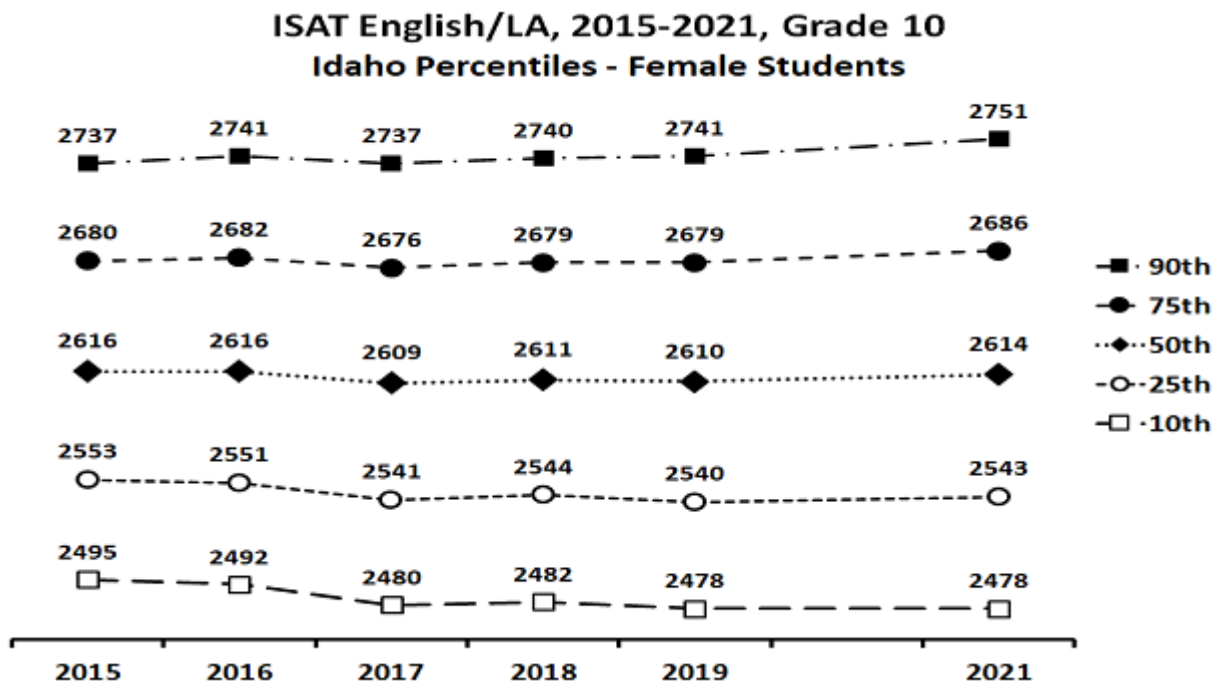


Figure D-14. Idaho percentiles for ISAT English language arts for female students from 2015 to 2021, grade 10.

Idaho English Language Arts and Mathematics Achievement vs.
the COVID Pandemic, Grades 3-8 and 10, 2019 vs. 2021

Appendix E

Mathematics, Grades 3-8 and 10
Female Students

Graphic displays of the 2015 to 2021 Cohen d and percentile findings for the Idaho statewide female-students group for mathematics (MATH) in grades 3-8 and 10. Each of the seven grade-level graphic displays presents the Cohen d results above the percentile results.

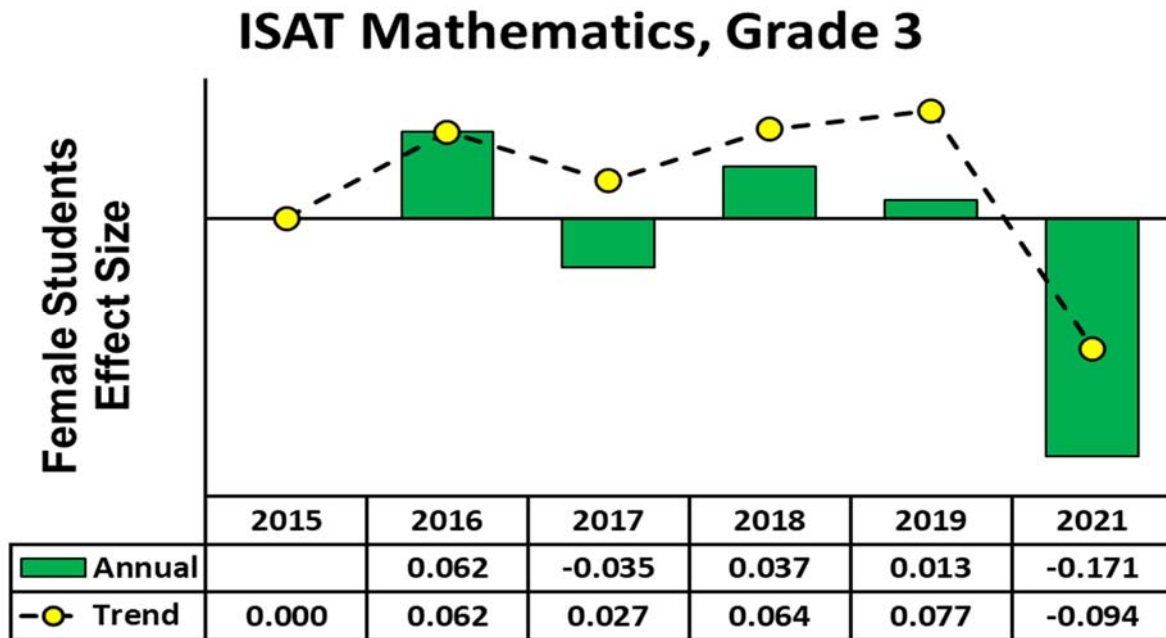


Figure E-1. Idaho effect sizes for ISAT mathematics for female students from 2016 to 2021, grade 3.

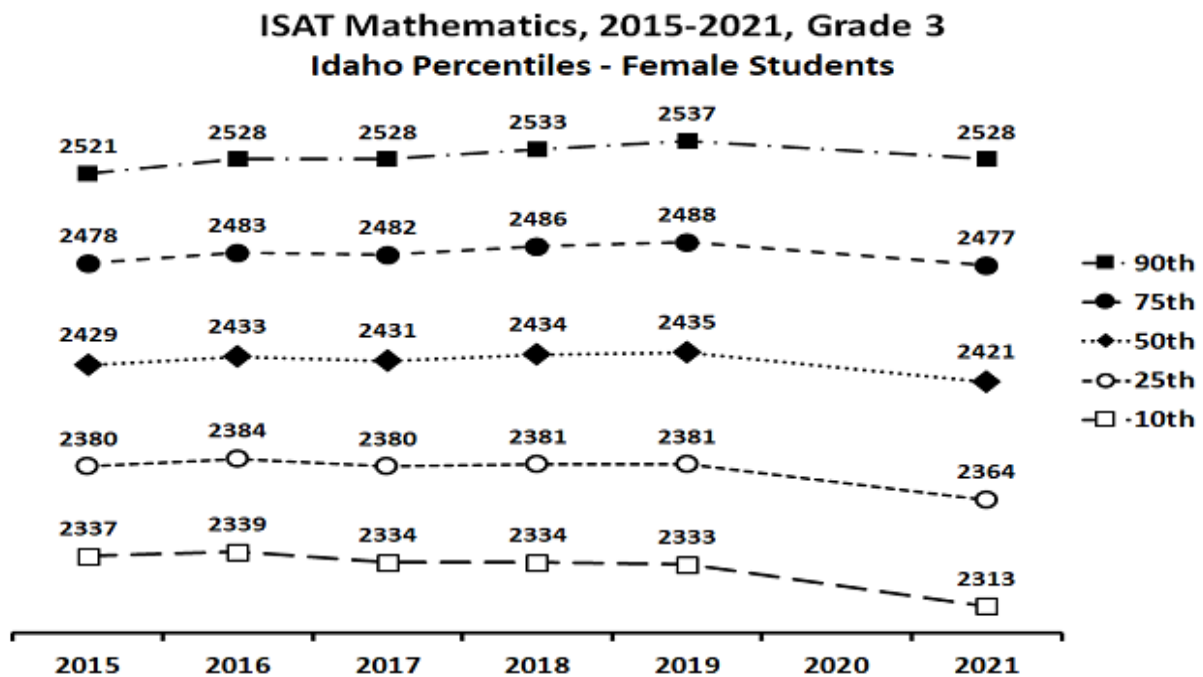


Figure E-2. Idaho percentiles for ISAT mathematics for female students from 2015 to 2021, grade 3.

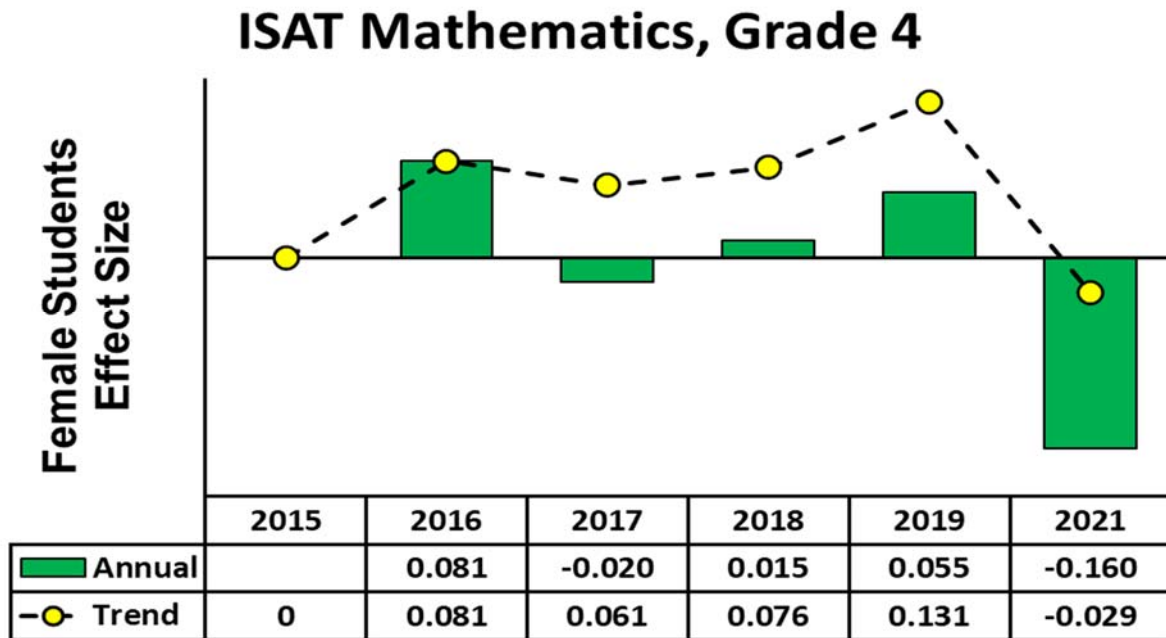


Figure E-3. Idaho effect sizes for ISAT mathematics for female students from 2016 to 2021, grade 4.

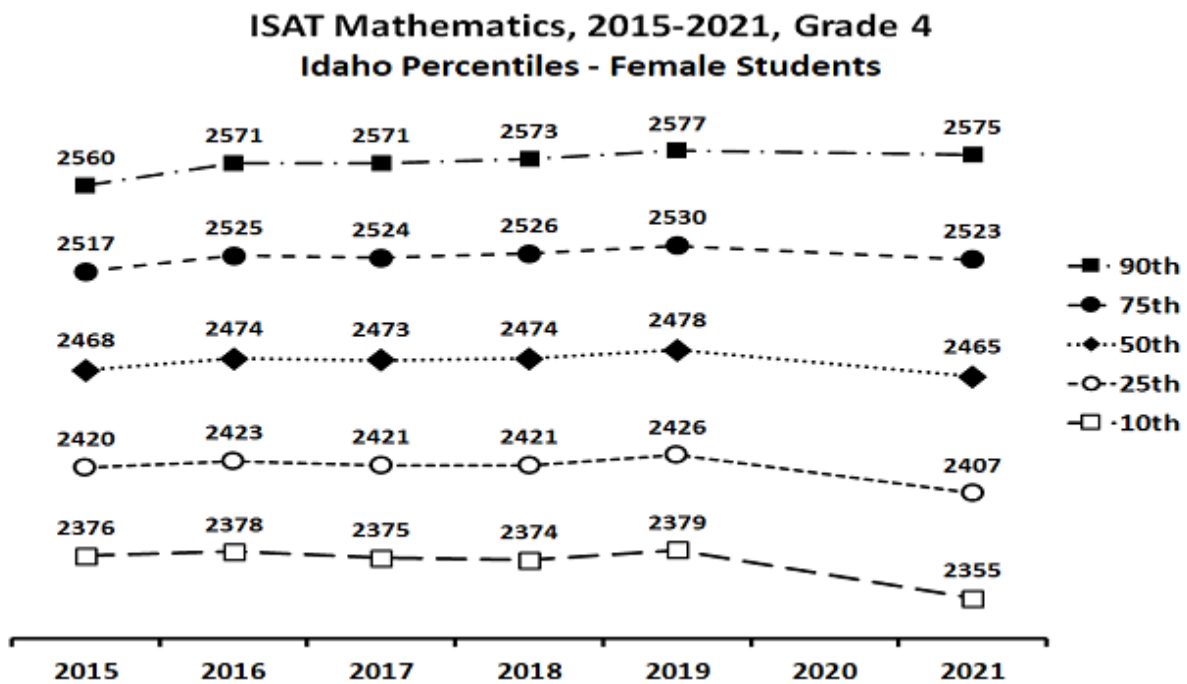


Figure E-4. Idaho percentiles for ISAT mathematics for female students from 2015 to 2021, grade 4.

ISAT Mathematics, Grade 5

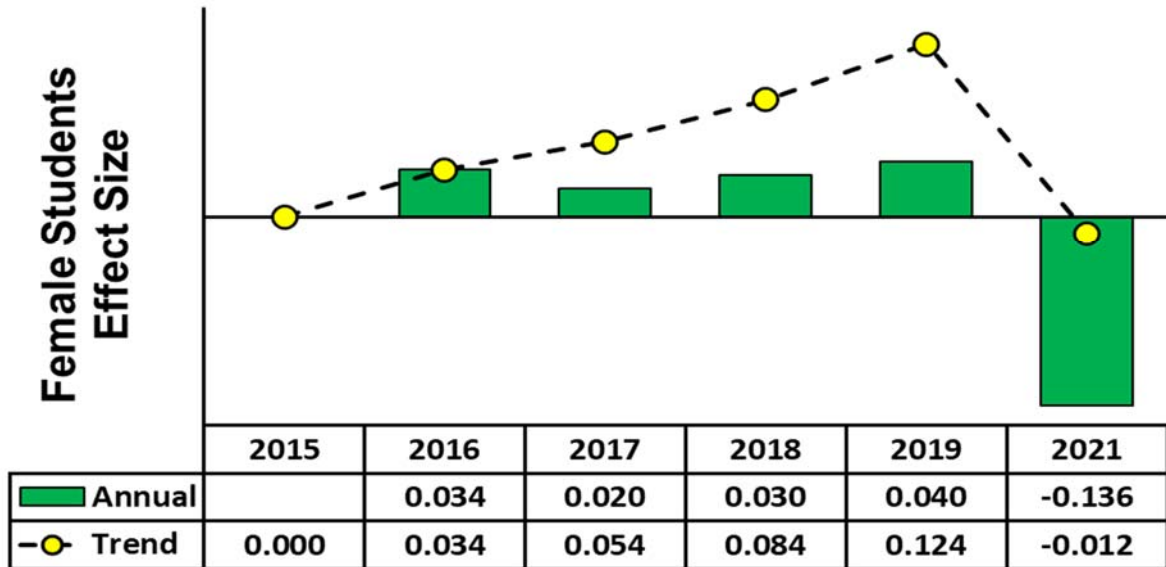


Figure E-5. Idaho effect sizes for ISAT mathematics for female students from 2016 to 2021, grade 5.

ISAT Mathematics, 2015-2021, Grade 5 Idaho Percentiles - Female Students

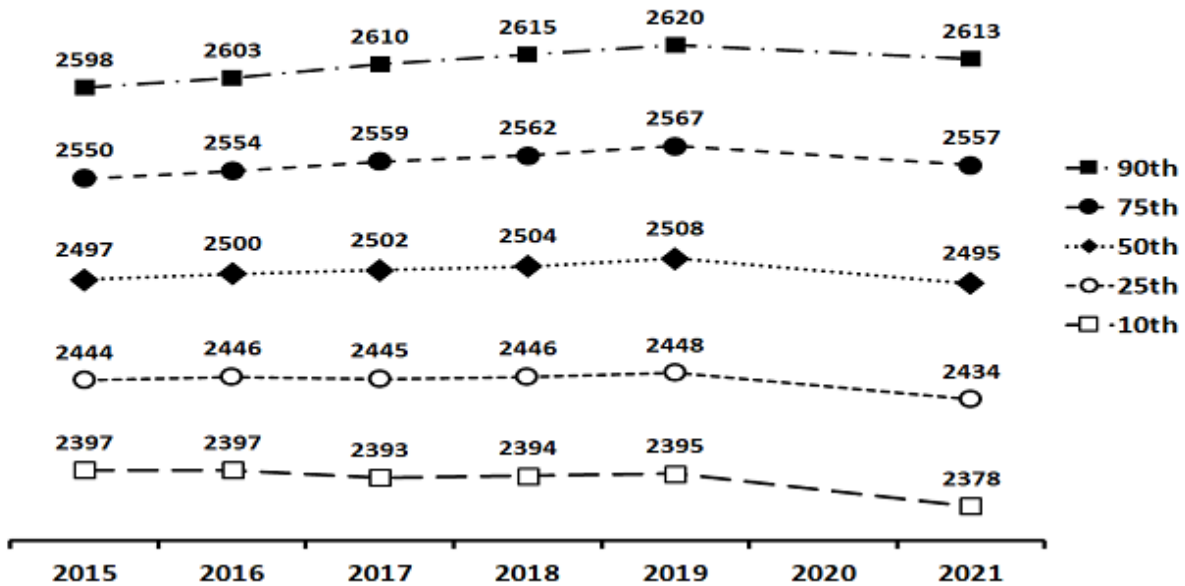


Figure E-6. Idaho percentiles for ISAT mathematics for female students from 2015 to 2021, grade 5.

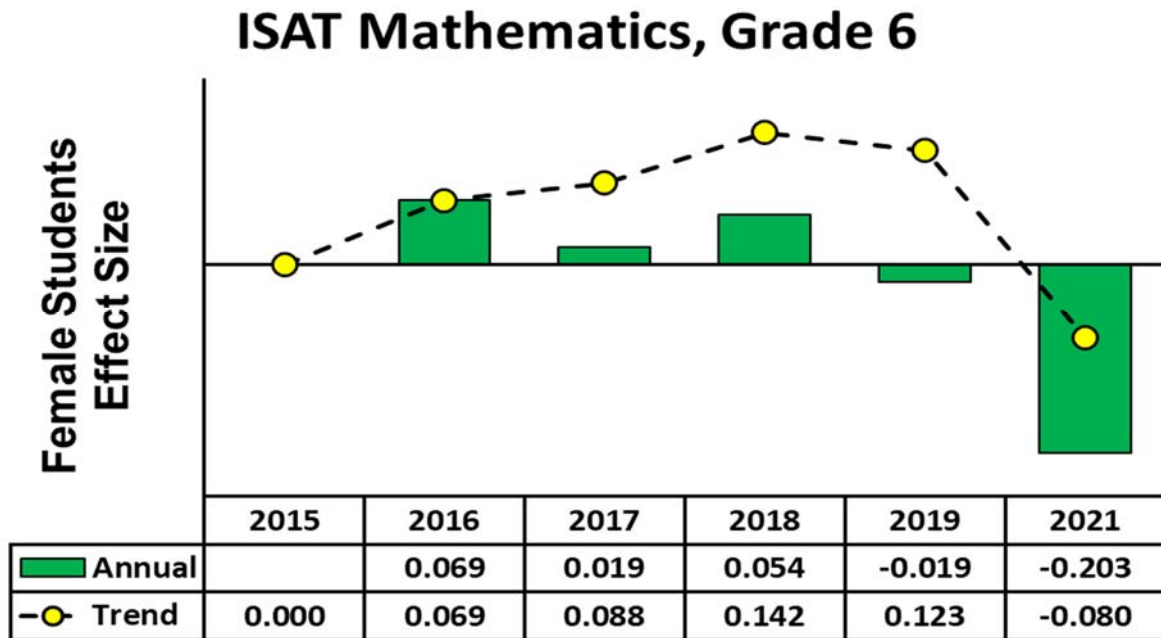


Figure E-7. Idaho effect sizes for ISAT mathematics for female students from 2016 to 2021, grade 6.

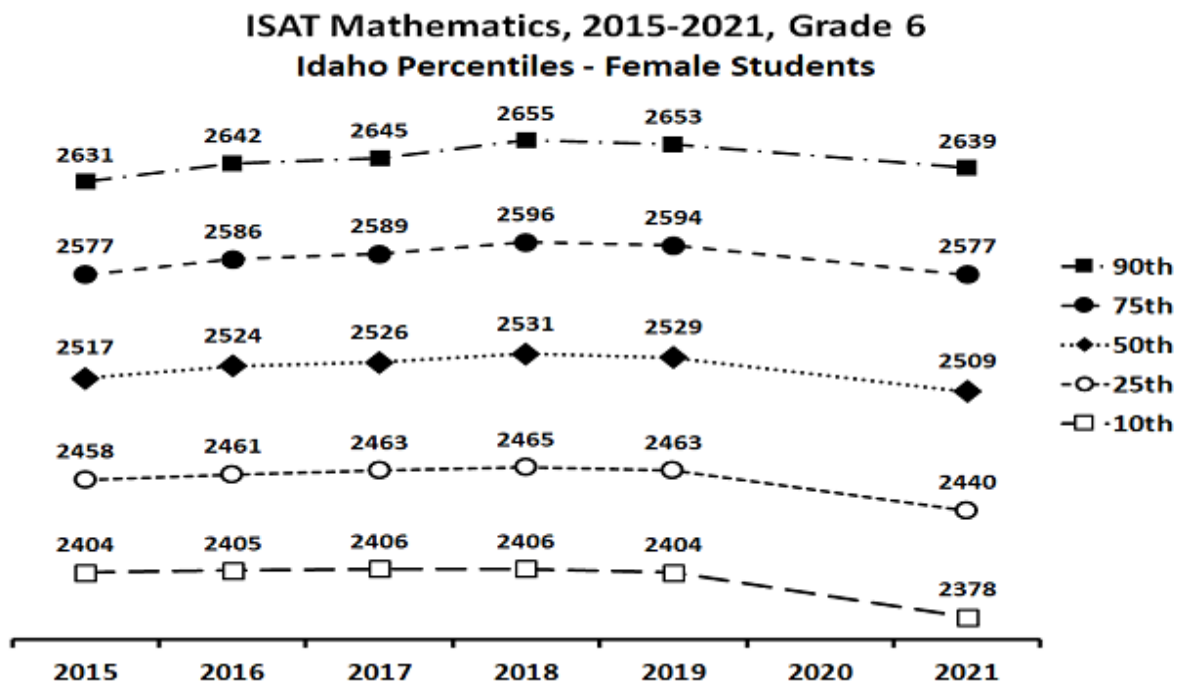


Figure E-8. Idaho percentiles for ISAT mathematics for female students from 2015 to 2021, grade 6.

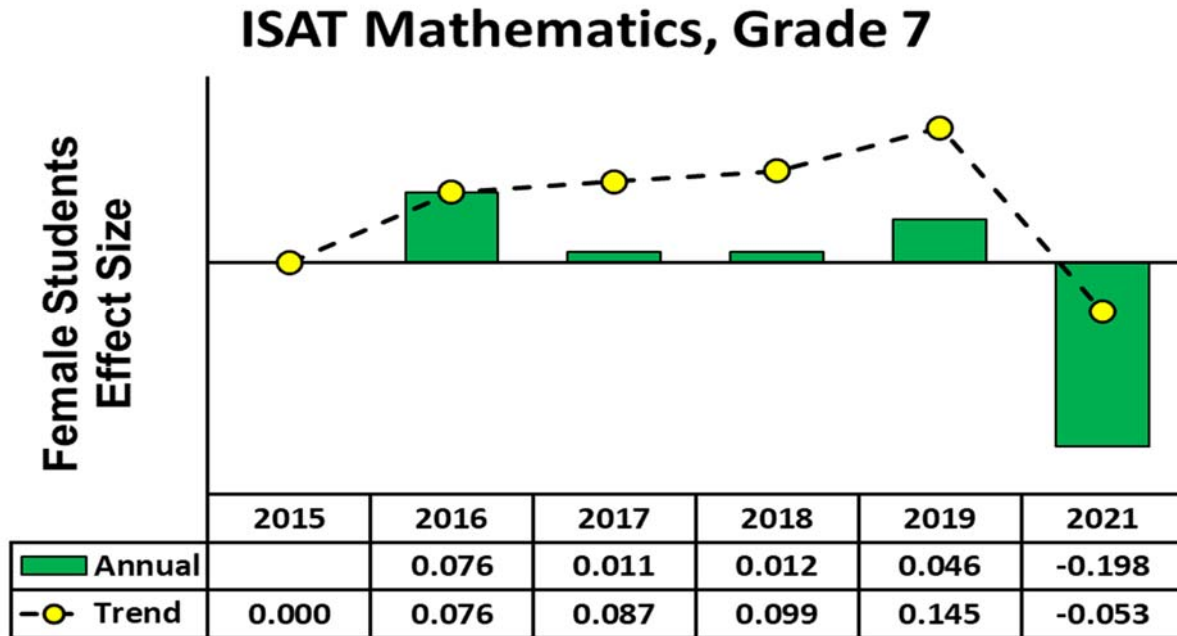


Figure E-9. Idaho effect sizes for ISAT mathematics for female students from 2016 to 2021, grade 7.

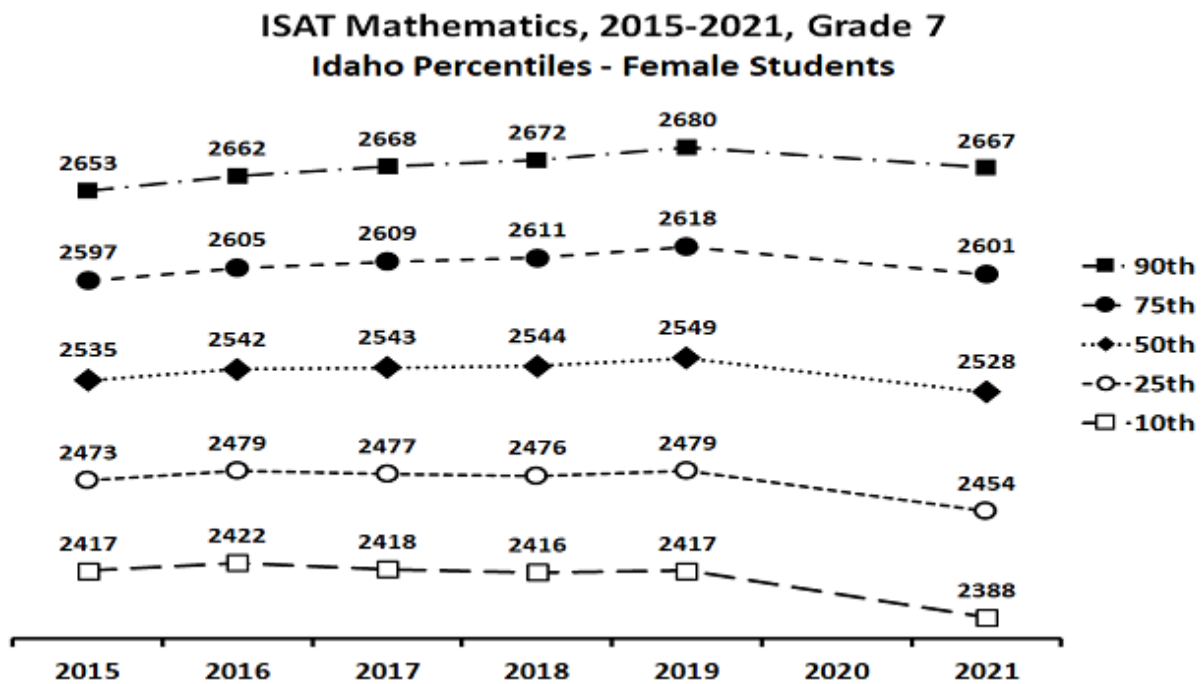


Figure E-10. Idaho percentiles for ISAT mathematics for female students from 2015 to 2021, grade 7.

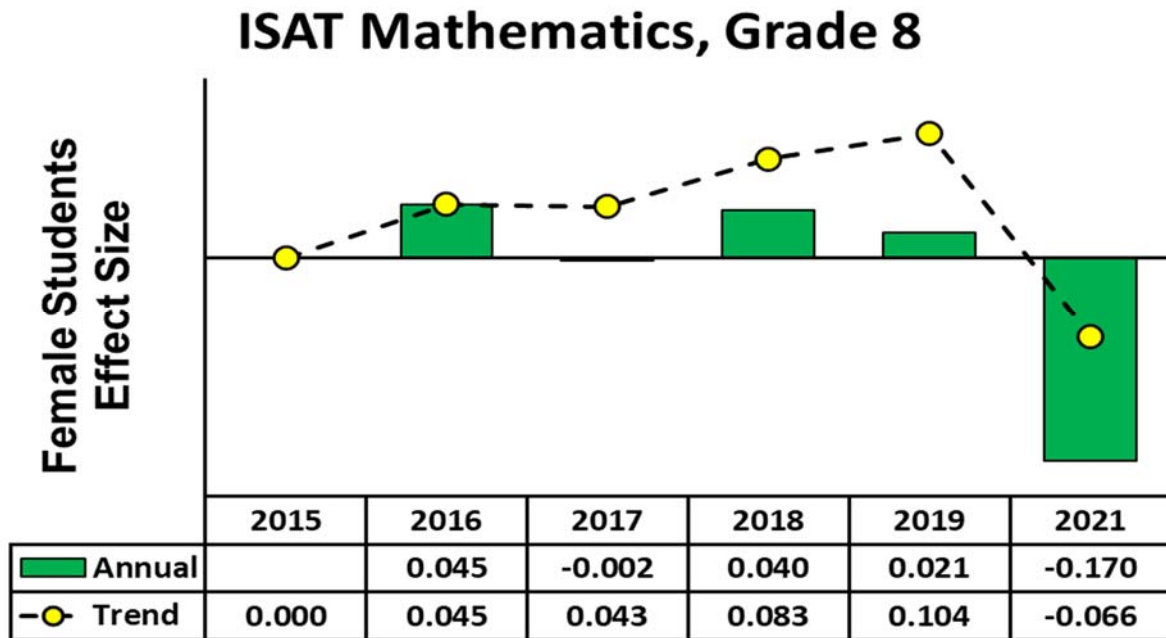


Figure E-11. Idaho effect sizes for ISAT mathematics for female students from 2016 to 2021, grade 8.

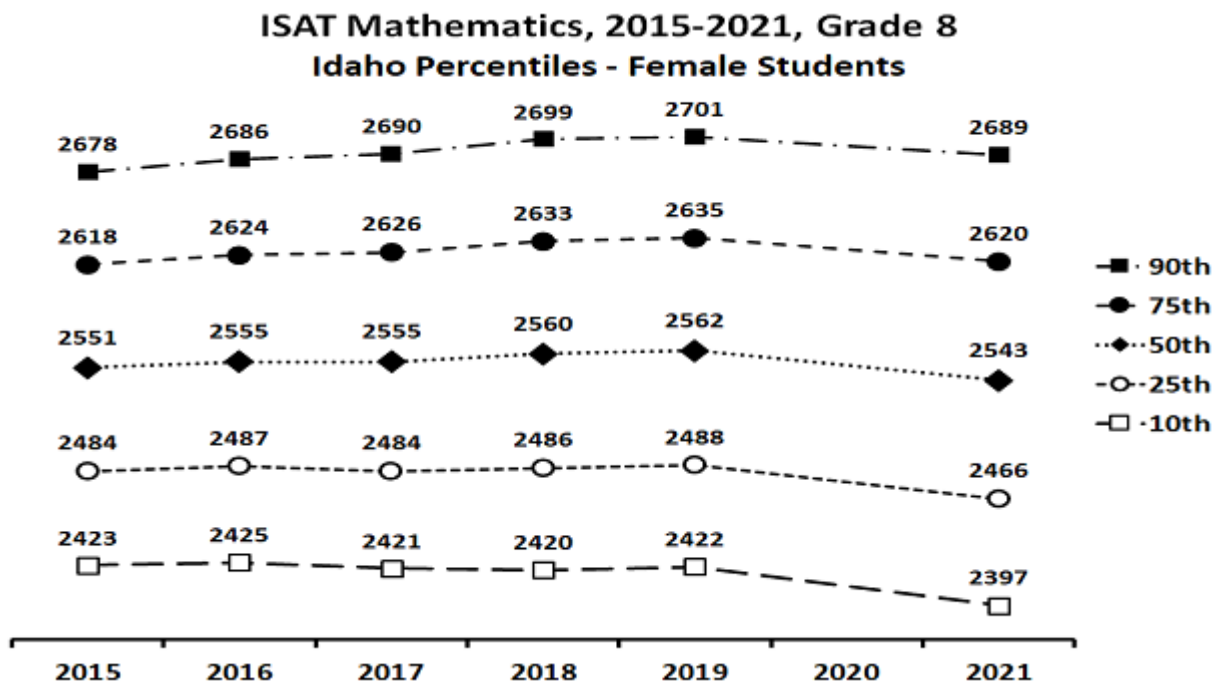


Figure E-12. Idaho percentiles for ISAT mathematics for female students from 2015 to 2021, grade 8.

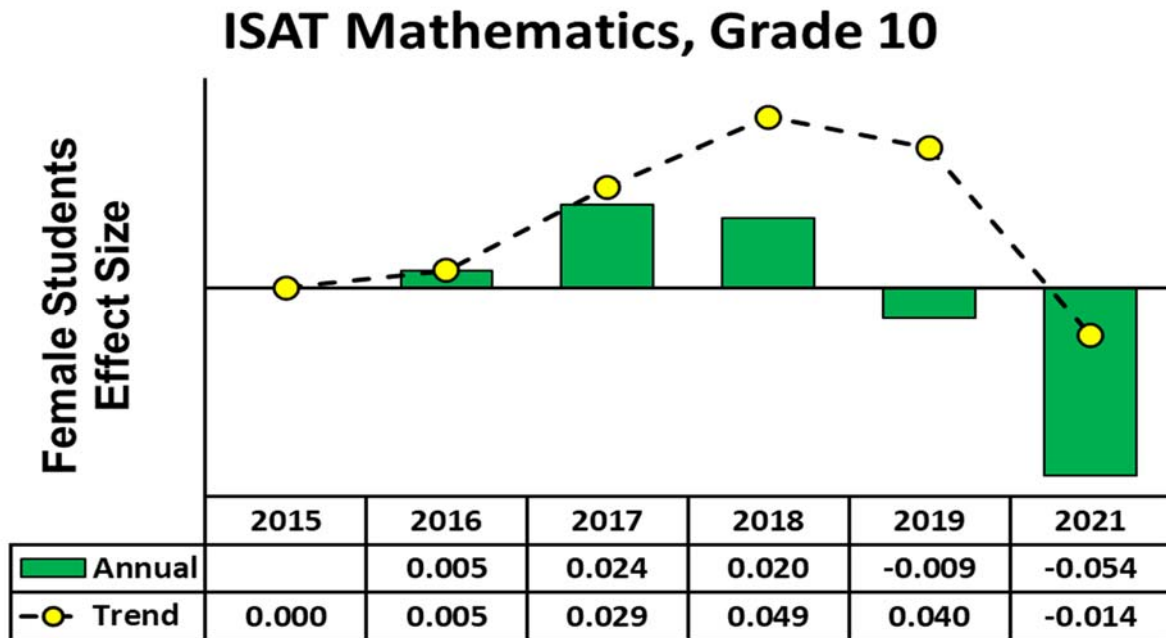


Figure E-13. Idaho effect sizes for ISAT mathematics for female students from 2016 to 2021, grade 10.

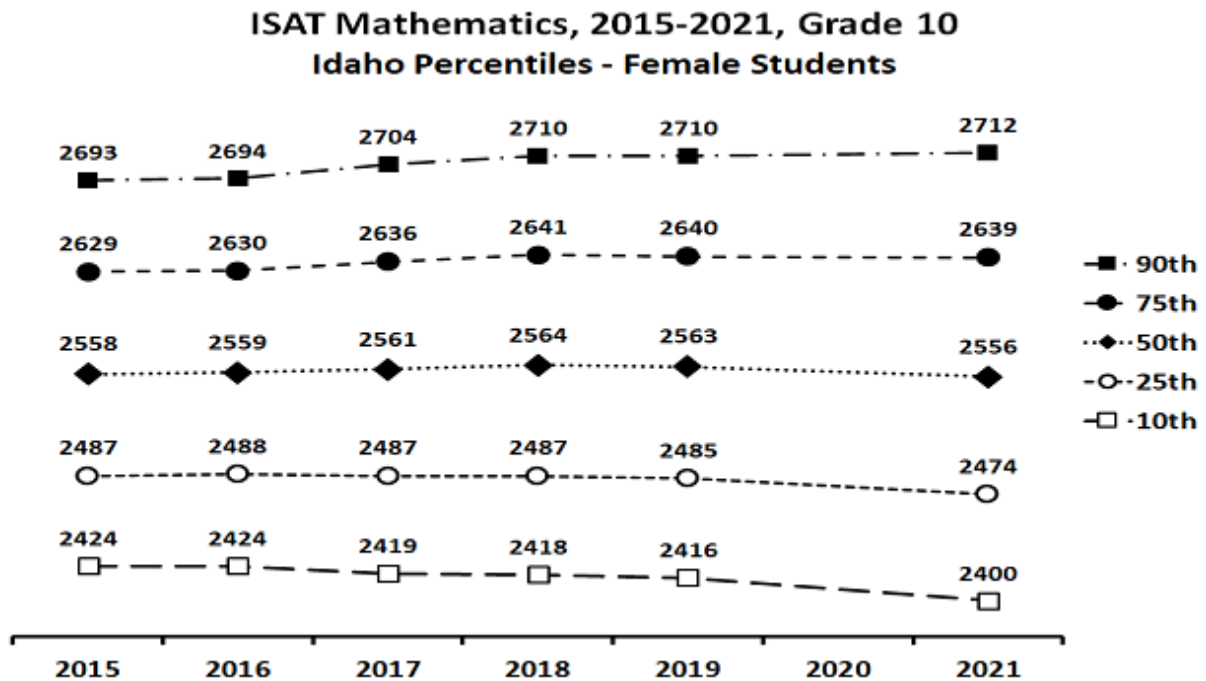


Figure E-14. Idaho percentiles for ISAT mathematics for female students from 2015 to 2021, grade 10.

Idaho English Language Arts and Mathematics Achievement vs.
the COVID Pandemic, Grades 3-8 and 10, 2019 vs. 2021

Appendix F

English Language Arts, Grades 3-8 and 10
Male Students

Graphic displays of the 2015 to 2021 Cohen d and percentile findings for the Idaho statewide male-students group for English language arts (ELA) in grades 3-8 and 10. Each of the seven grade-level graphic displays presents the Cohen d results above the percentile results.

ISAT English Language Arts, Grade 3

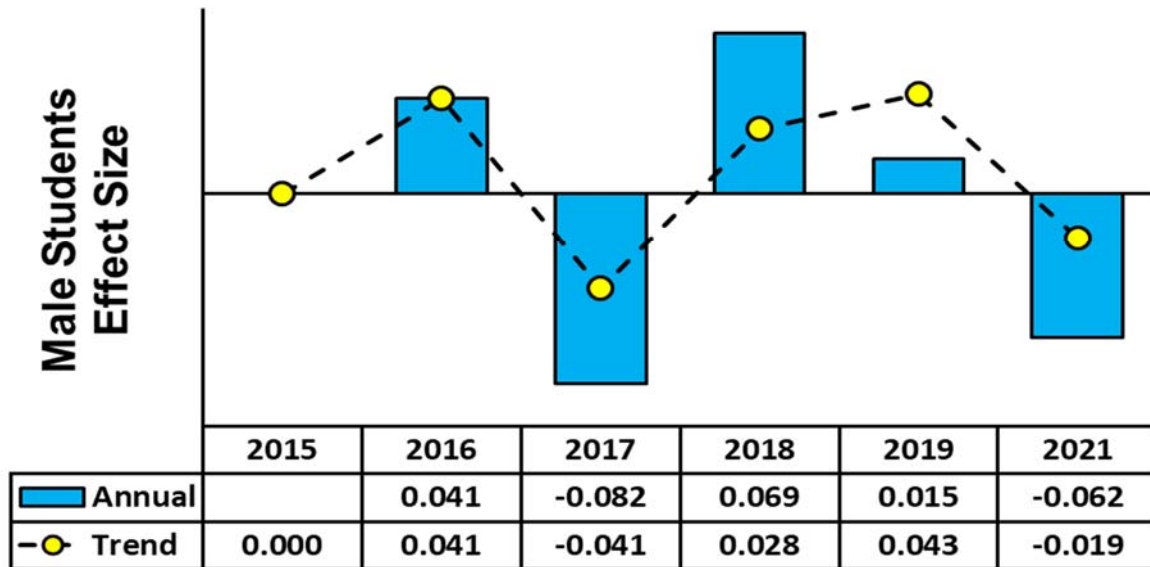


Figure F-1. Idaho effect sizes for ISAT English language arts for male students from 2016 to 2021, grade 3.

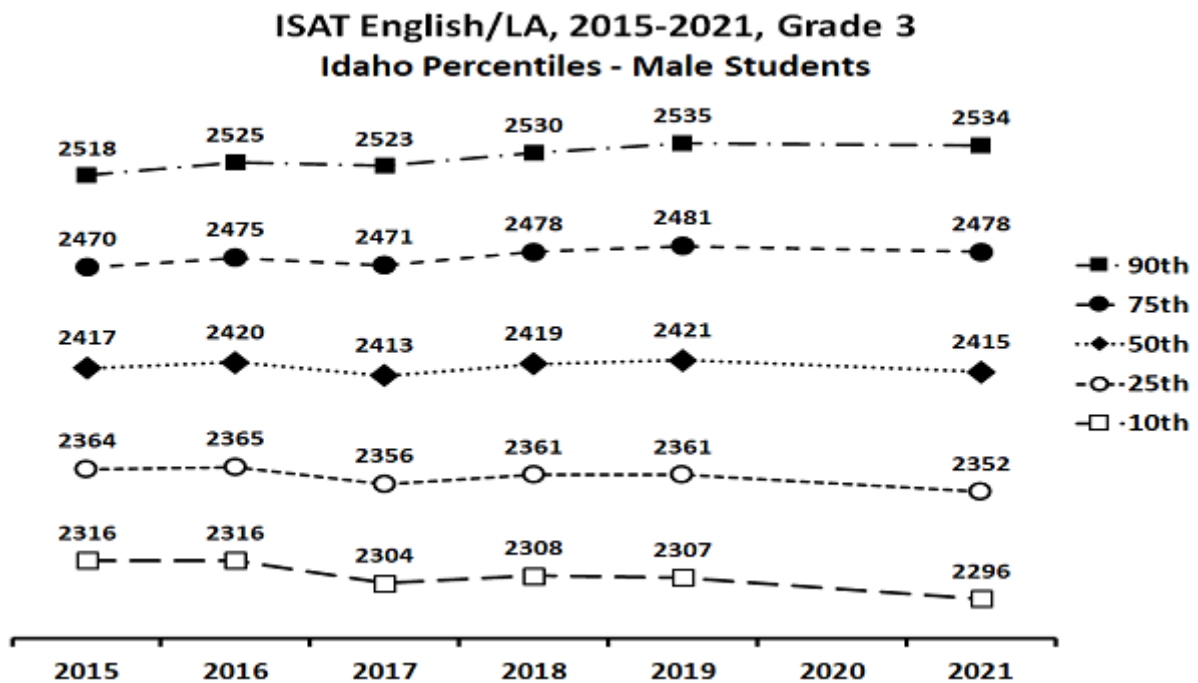


Figure F-2. Idaho percentiles for ISAT English language arts for male students from 2015 to 2021, grade 3.

ISAT English Language Arts, Grade 4

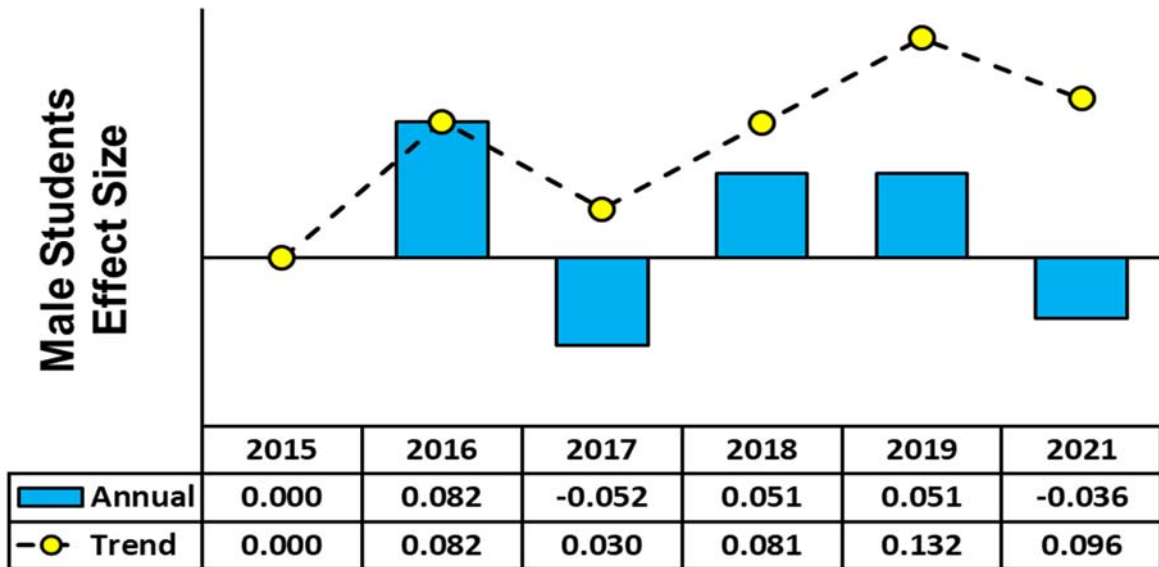


Figure F-3. Idaho effect sizes for ISAT English language arts for male students from 2016 to 2021, grade 4.

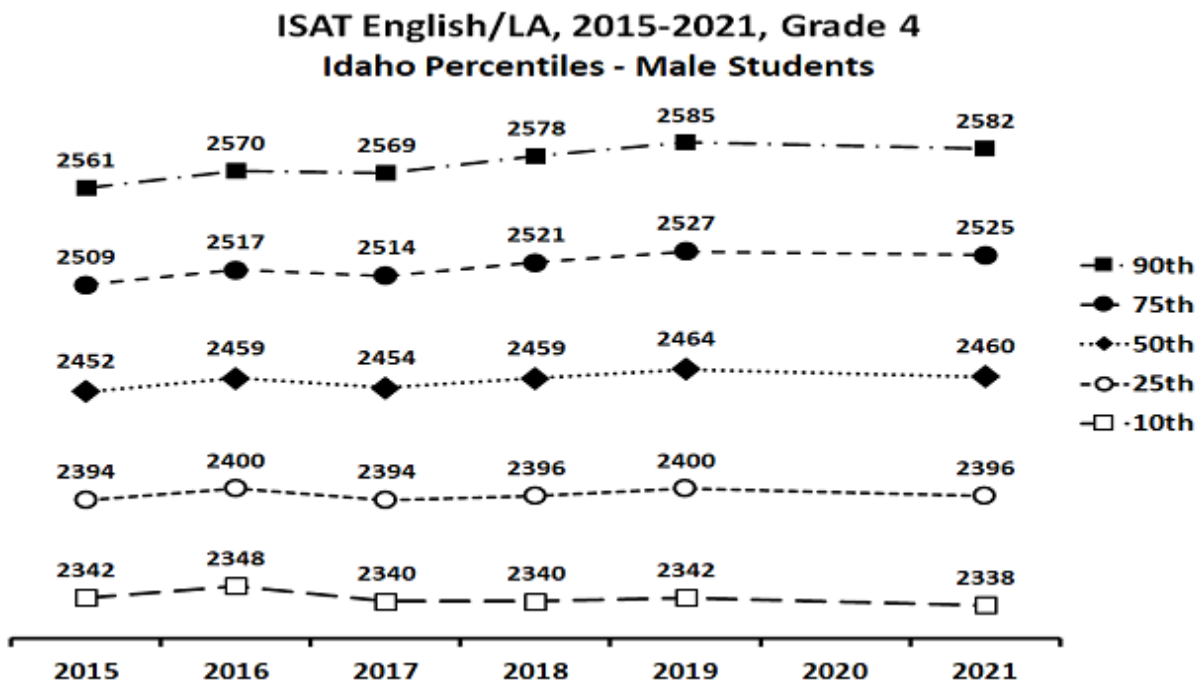


Figure F-4. Idaho percentiles for ISAT English language arts for male students from 2015 to 2021, grade 4.

ISAT English Language Arts, Grade 5

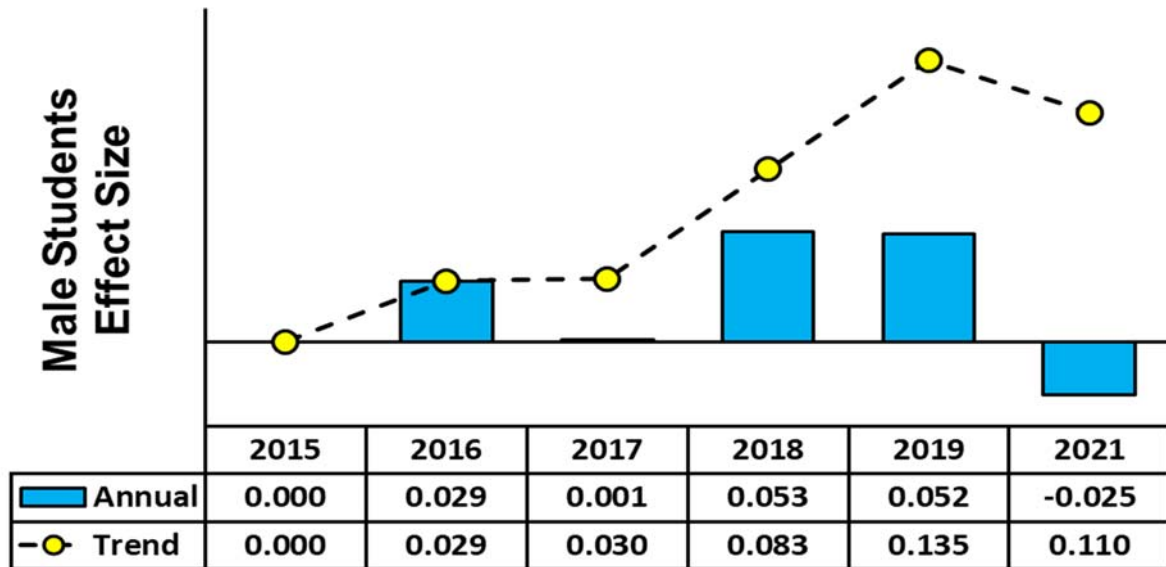


Figure F-5. Idaho effect sizes for ISAT English language arts for male students from 2016 to 2021, grade 5.

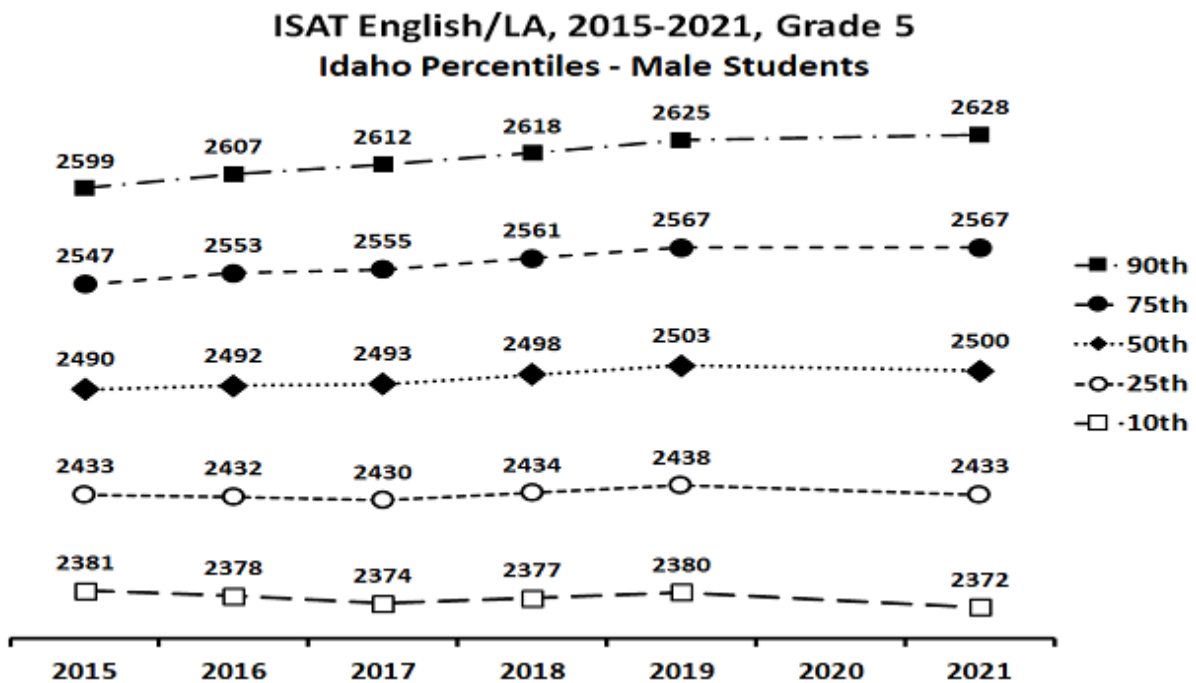


Figure F-6. Idaho percentiles for ISAT English language arts for male students from 2015 to 2021, grade 5.

ISAT English Language Arts, Grade 6

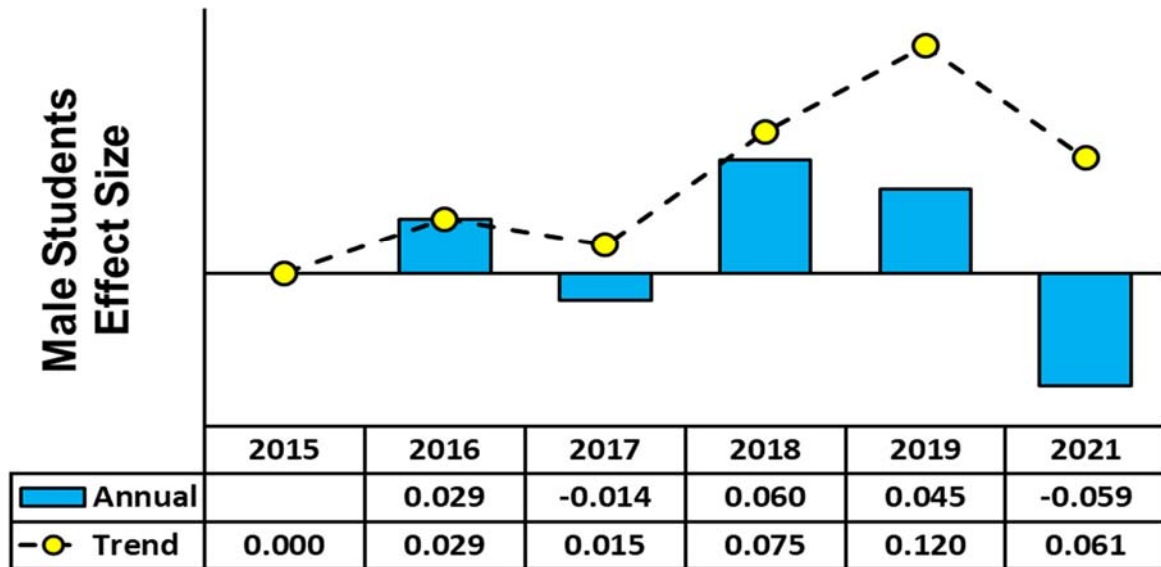


Figure F-7. Idaho effect sizes for ISAT English language arts for male students from 2016 to 2021, grade 6.

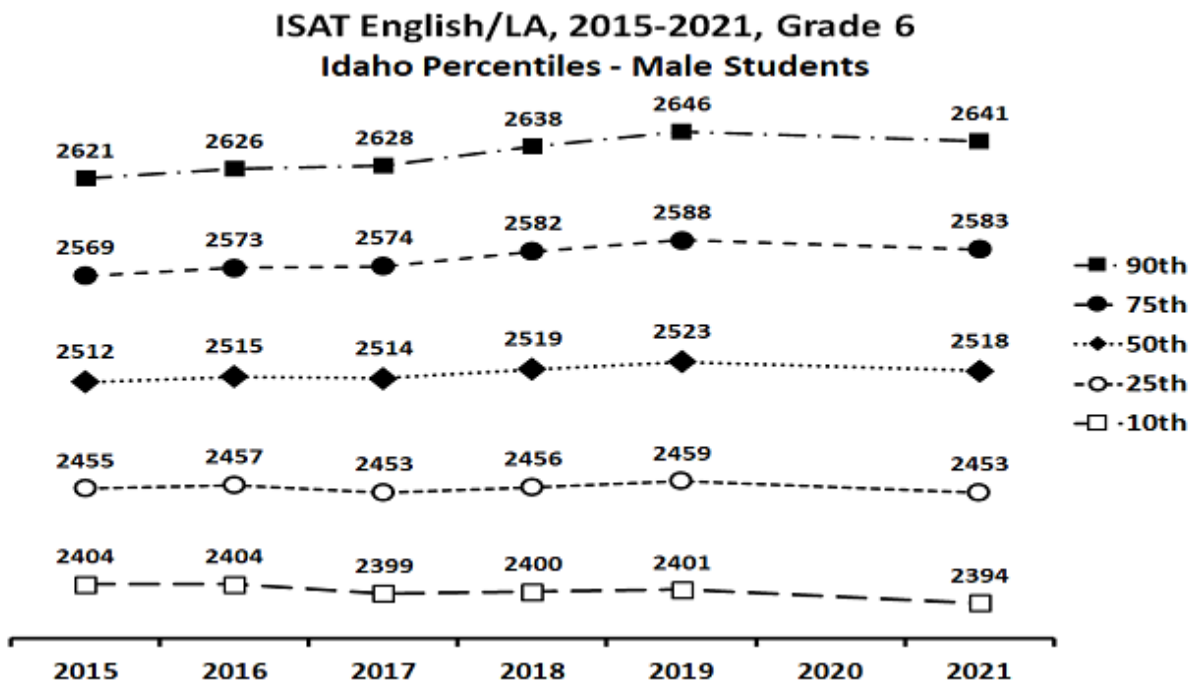


Figure F-8. Idaho percentiles for ISAT English language arts for male students from 2015 to 2021, grade 6.

ISAT English Language Arts, Grade 7

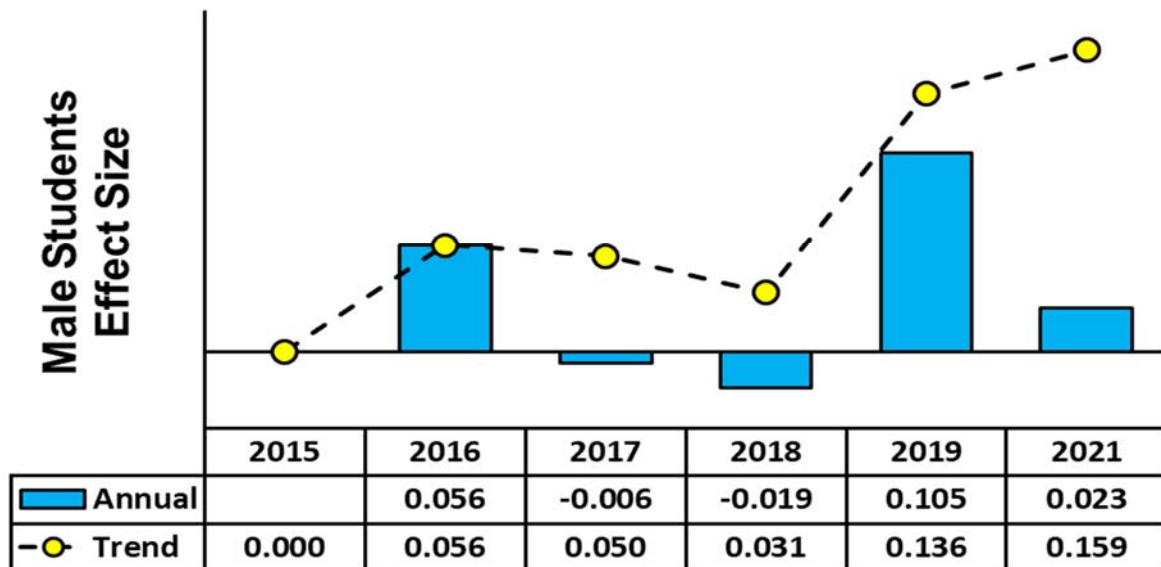


Figure F-9. Idaho effect sizes for ISAT English language arts for male students from 2016 to 2021, grade 7.

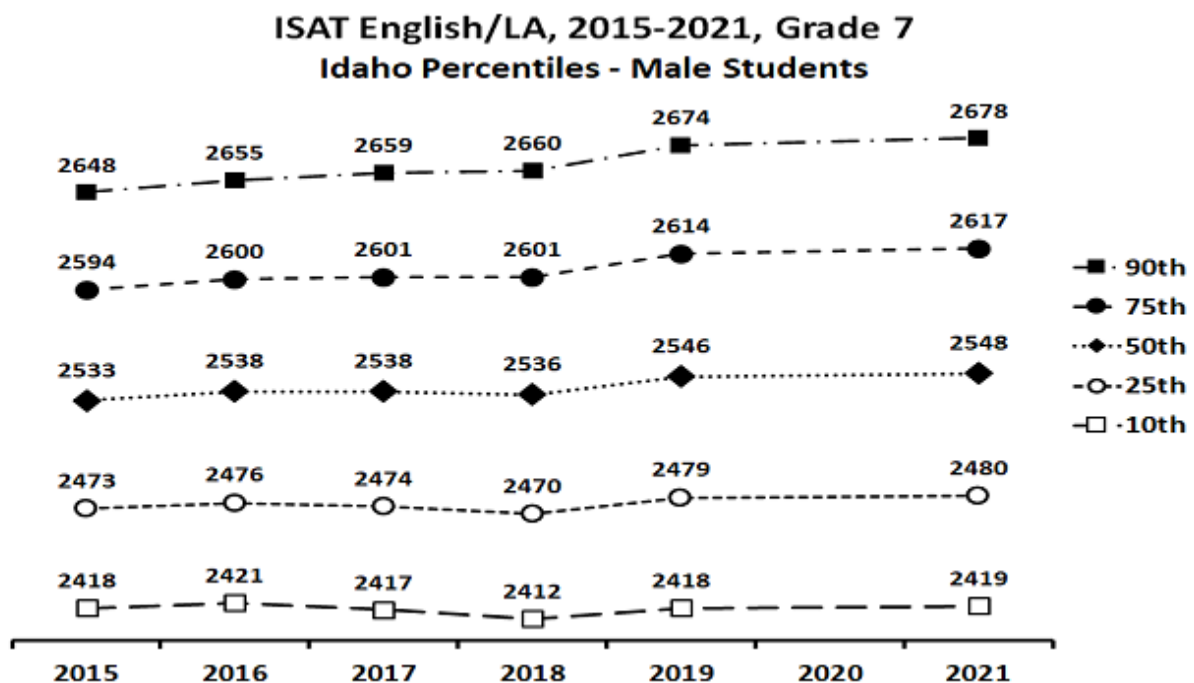


Figure F-10. Idaho percentiles for ISAT English language arts for male students from 2015 to 2021, grade 7.

ISAT English Language Arts, Grade 8

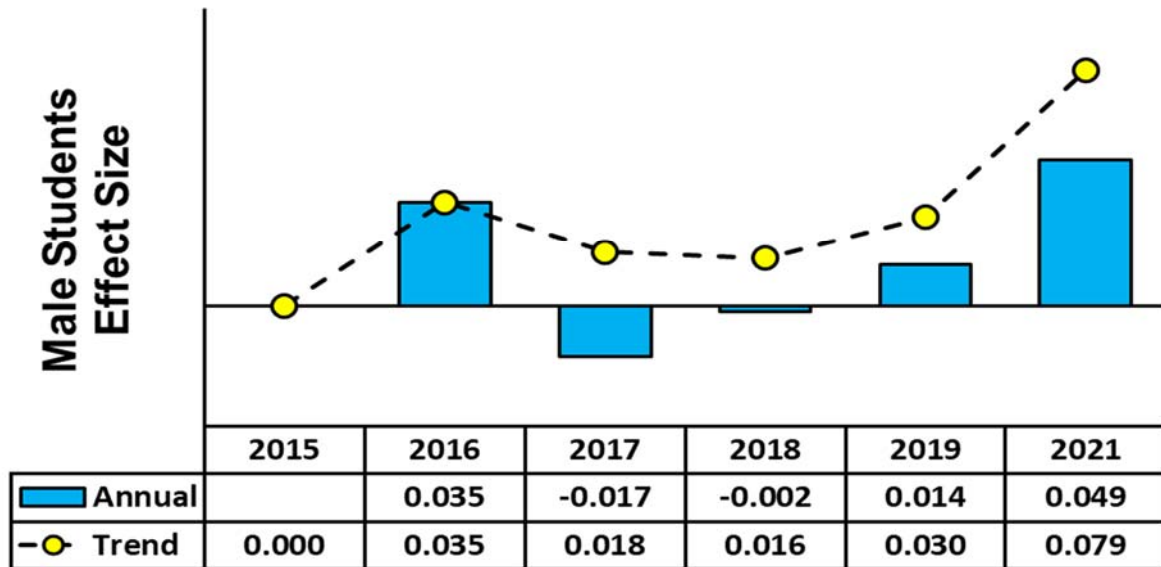


Figure F-11. Idaho effect sizes for ISAT English language arts for male students from 2016 to 2021, grade 8.

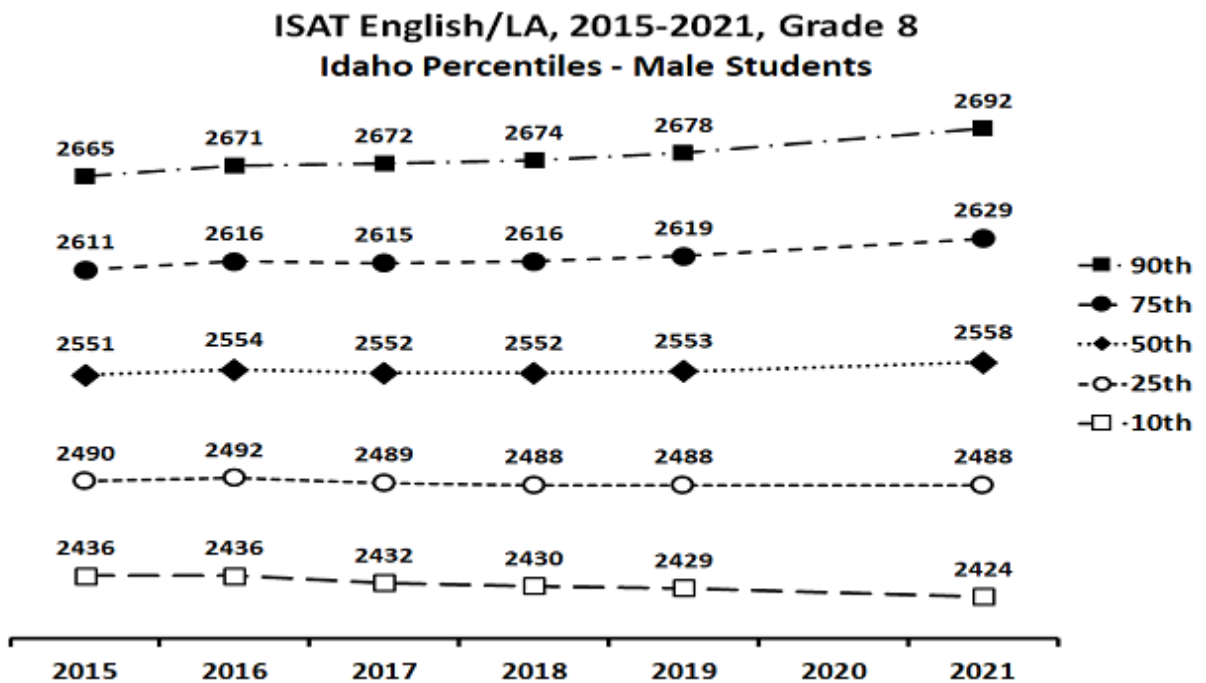


Figure F-12. Idaho percentiles for ISAT English language arts for male students from 2015 to 2021, grade 8.

ISAT English Language Arts, Grade 10

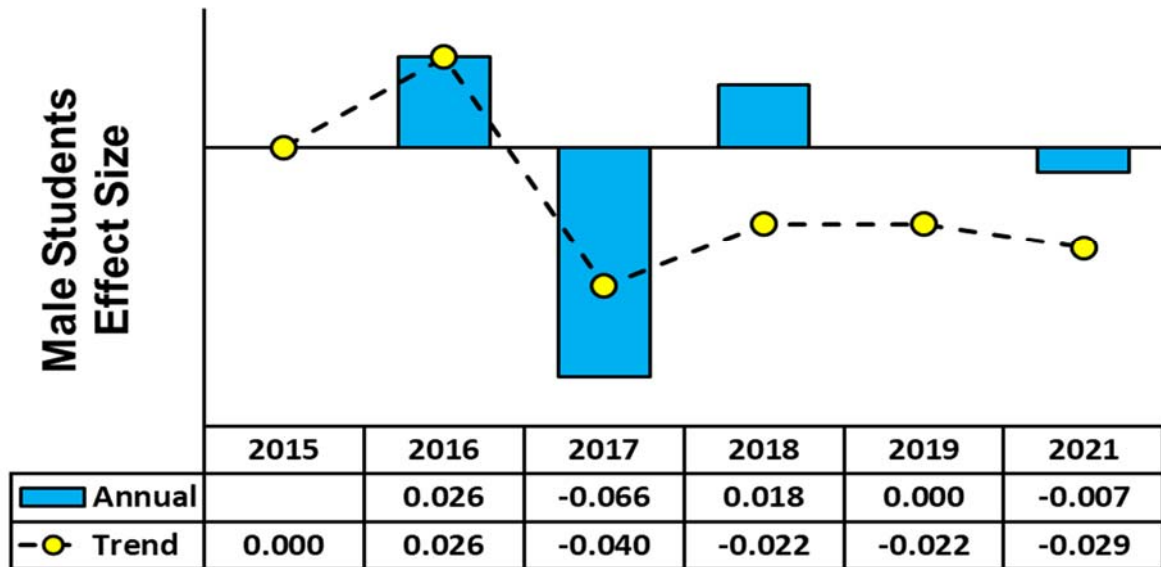


Figure F-13. Idaho effect sizes for ISAT English language arts for male students from 2016 to 2021, grade 10.

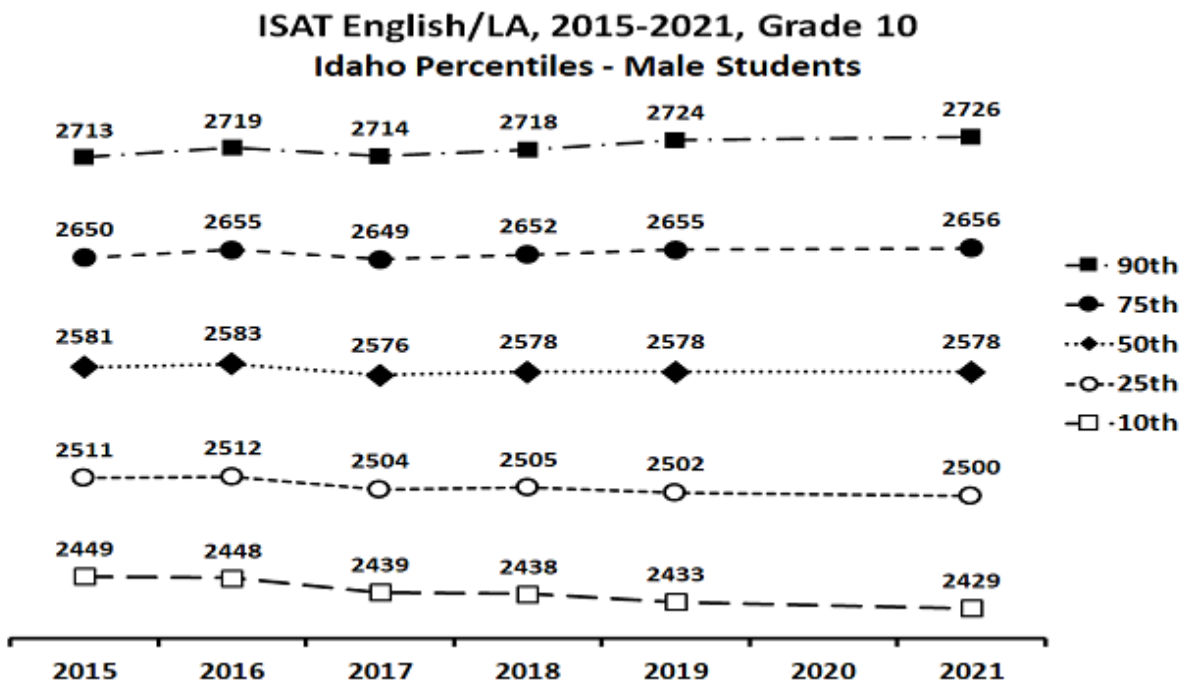


Figure F-14. Idaho percentiles for ISAT English language arts for male students from 2015 to 2021, grade 10.

Idaho English Language Arts and Mathematics Achievement vs.
the COVID Pandemic, Grades 3-8 and 10, 2019 vs. 2021

Appendix G

Mathematics, Grades 3-8 and 10
Male Students

Graphic displays of the 2015 to 2021 Cohen d and percentile findings for the Idaho statewide male-students group for mathematics (MATH) in grades 3-8 and 10. Each of the seven grade-level graphic displays presents the Cohen d results above the percentile results.

ISAT Mathematics, Grade 3

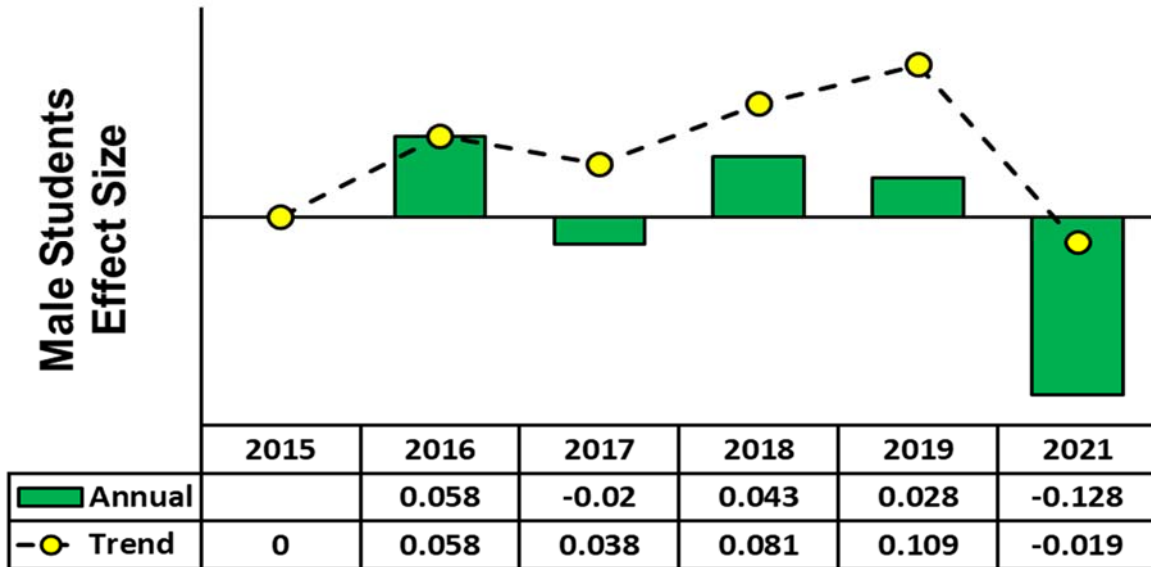


Figure G-1. Idaho effect sizes for ISAT mathematics for male students from 2016 to 2021, grade 3.

ISAT Mathematics, 2015-2021, Grade 3 Idaho Percentiles - Male Students

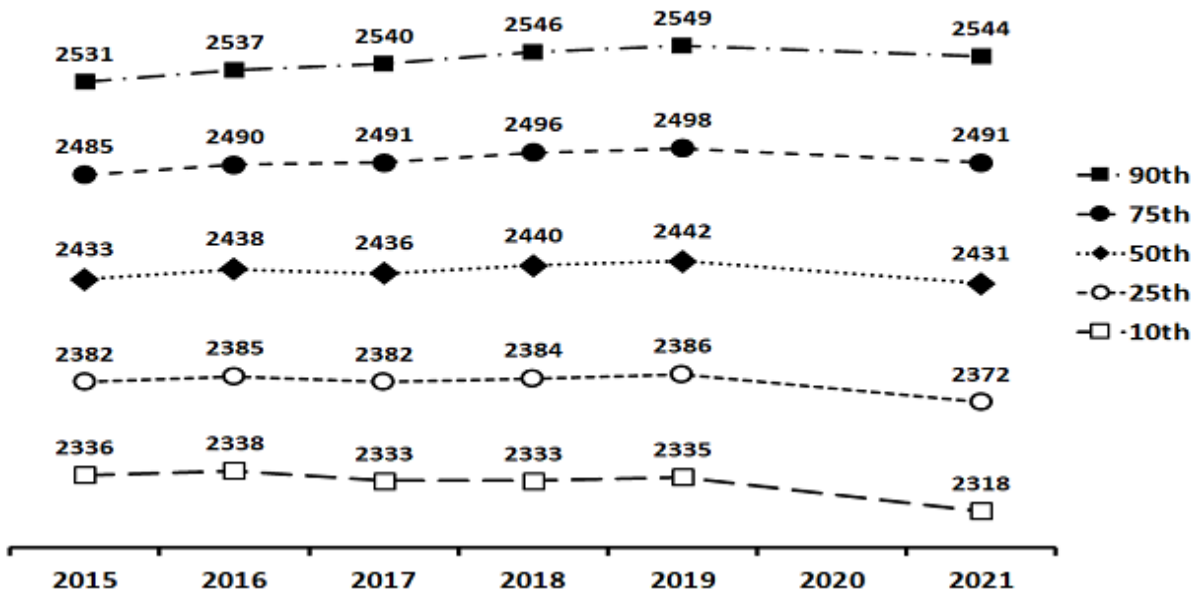


Figure G-2. Idaho percentiles for ISAT mathematics for male students from 2015 to 2021, grade 3.

ISAT Mathematics, Grade 4

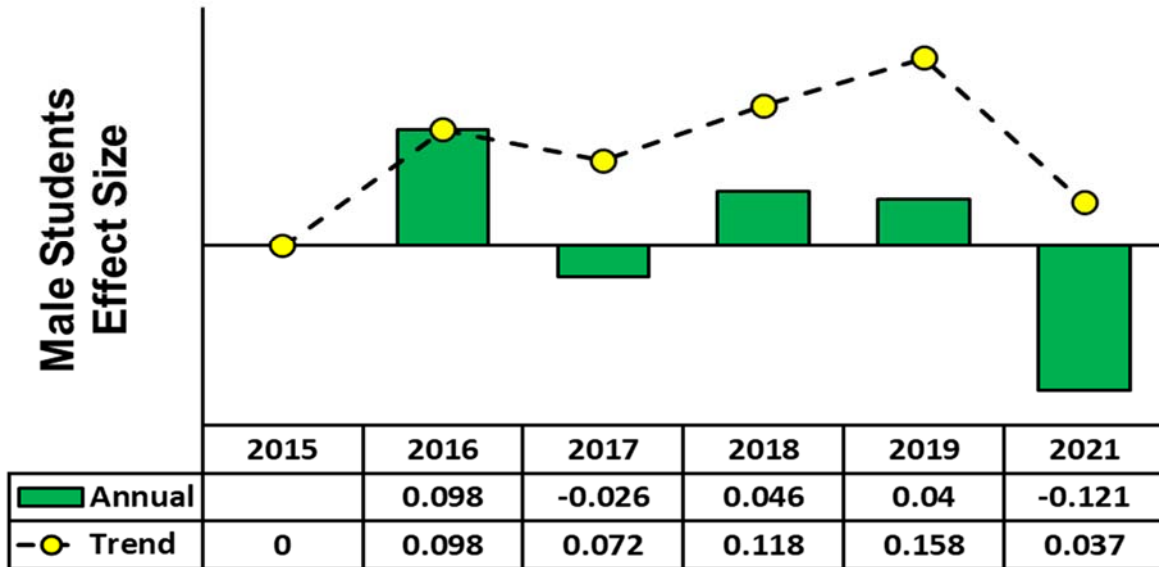


Figure G-3. Idaho effect sizes for ISAT mathematics for male students from 2016 to 2021, grade 4.

ISAT Mathematics, 2015-2021, Grade 4 Idaho Percentiles - Male Students

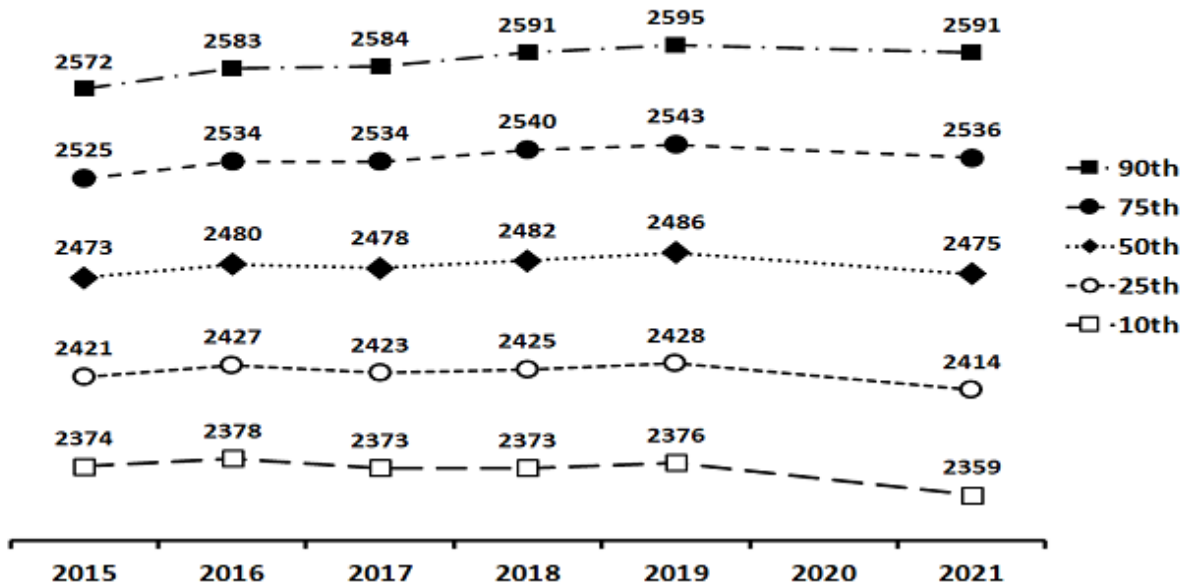


Figure G-4. Idaho percentiles for ISAT mathematics for male students from 2015 to 2021, grade 4.

ISAT Mathematics, Grade 5

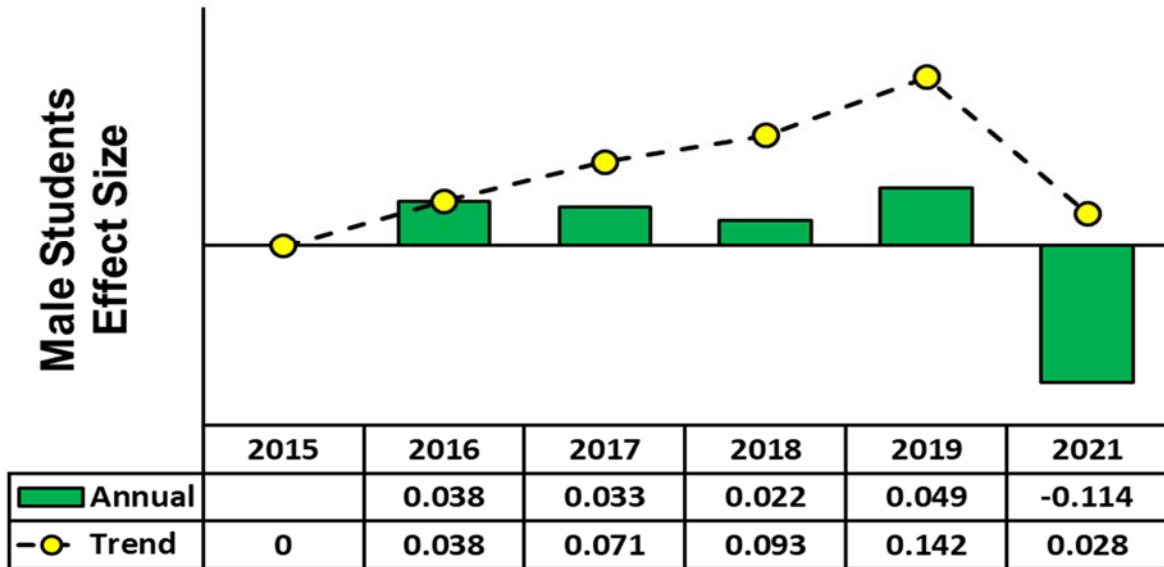


Figure G-5. Idaho effect sizes for ISAT mathematics for male students from 2016 to 2021, grade 5.

ISAT Mathematics, 2015-2021, Grade 5 Idaho Percentiles - Male Students

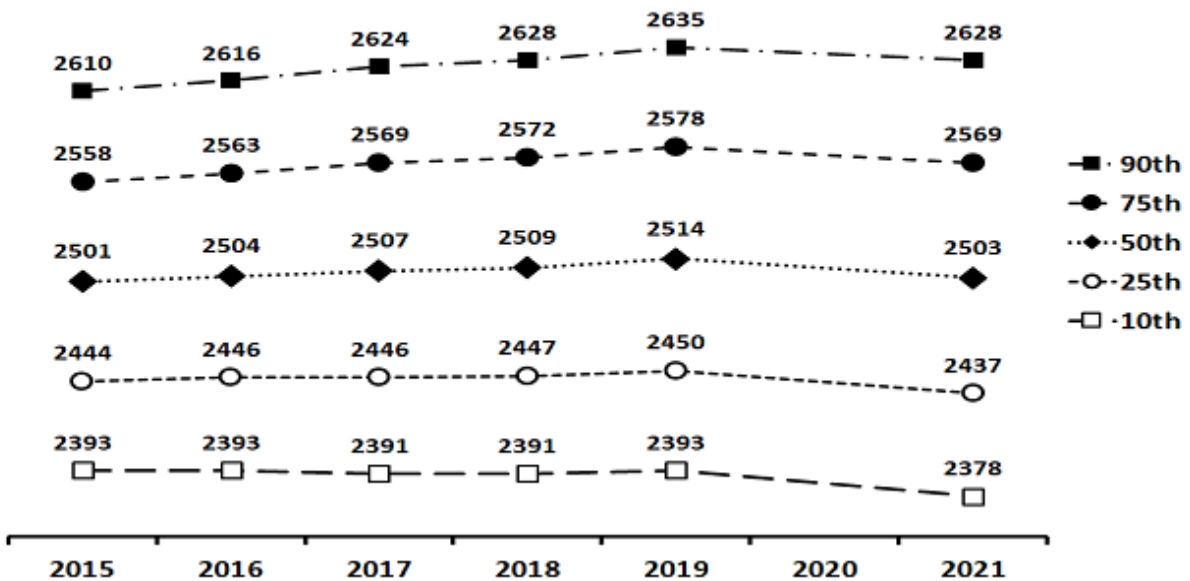


Figure G-6. Idaho percentiles for ISAT mathematics for male students from 2015 to 2021, grade 5.

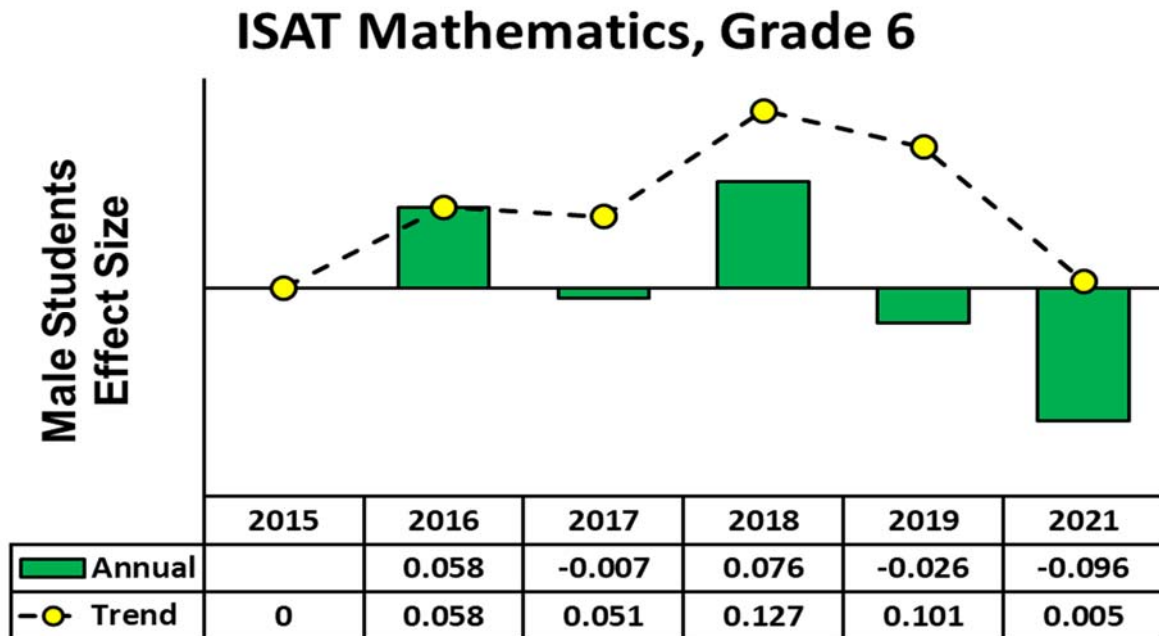


Figure G-7. Idaho effect sizes for ISAT mathematics for male students from 2016 to 2021, grade 6.

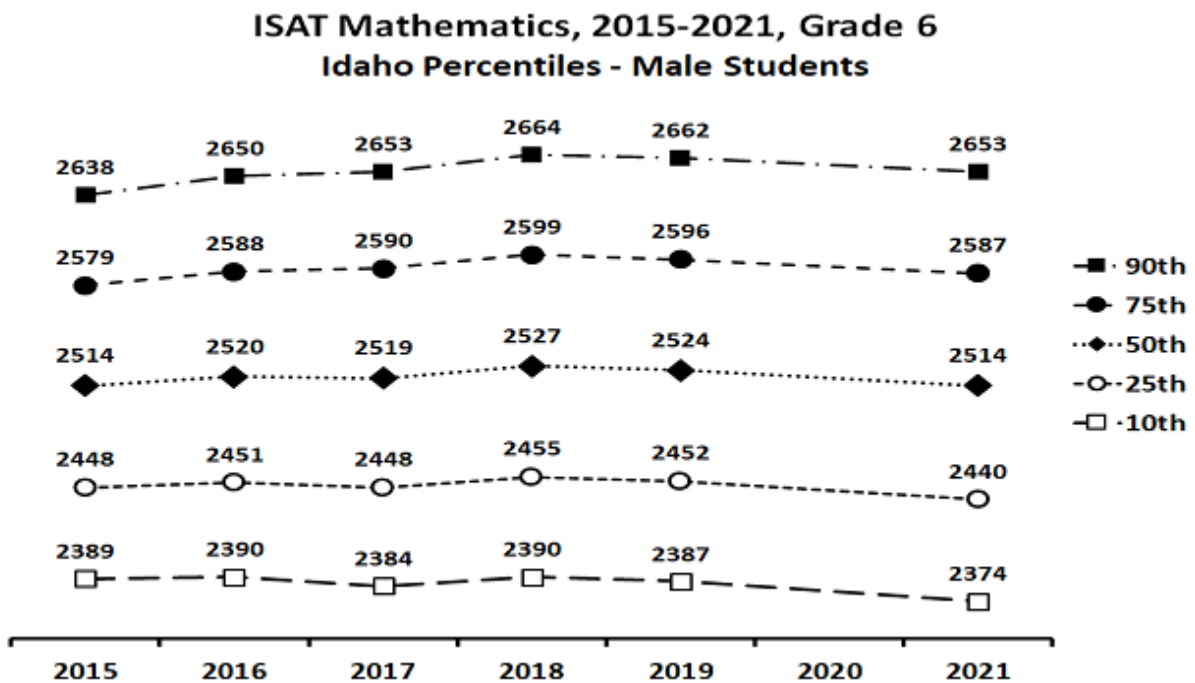


Figure G-8. Idaho percentiles for ISAT mathematics for male students from 2015 to 2021, grade 6.

ISAT Mathematics, Grade 7

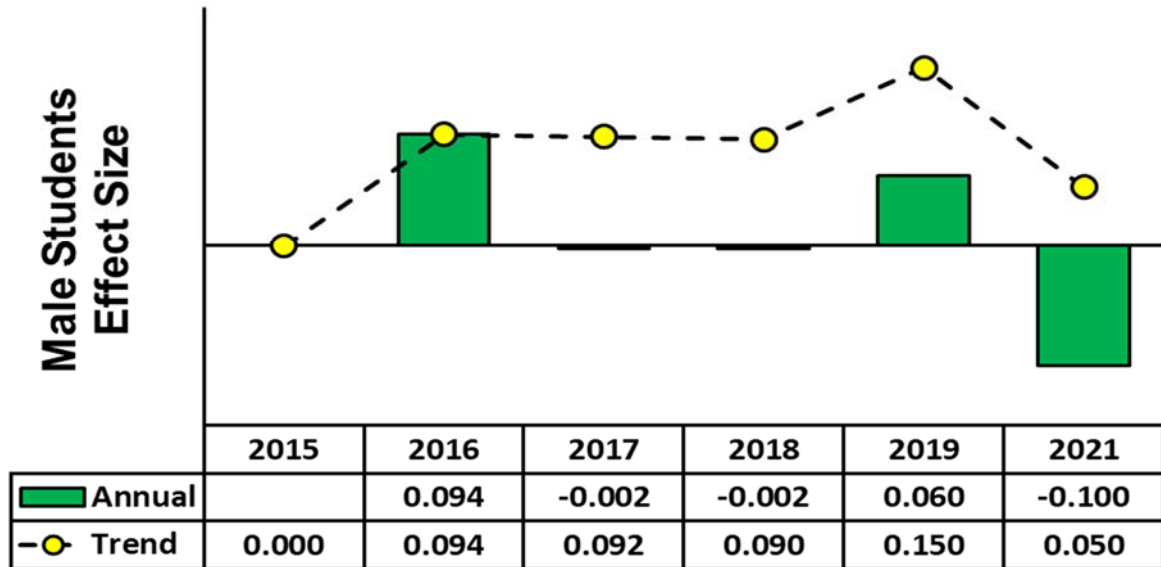


Figure G-9. Idaho effect sizes for ISAT mathematics for male students from 2016 to 2021, grade 7.

ISAT Mathematics, 2015-2021, Grade 7 Idaho Percentiles - Male Students

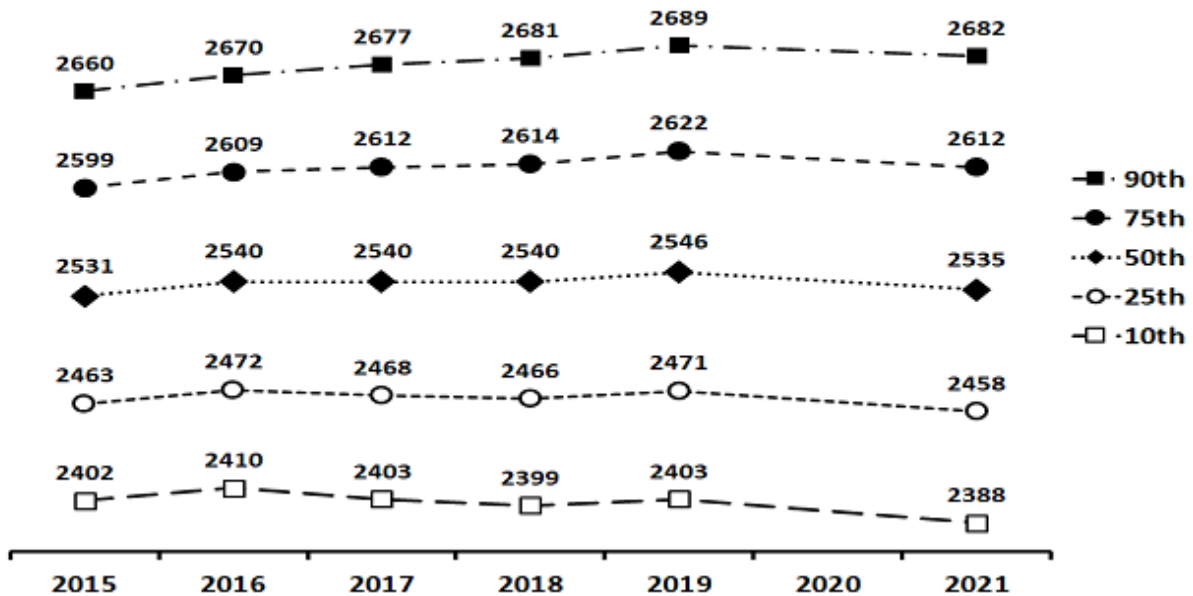


Figure G-10. Idaho percentiles for ISAT mathematics for male students from 2015 to 2021, grade 7.

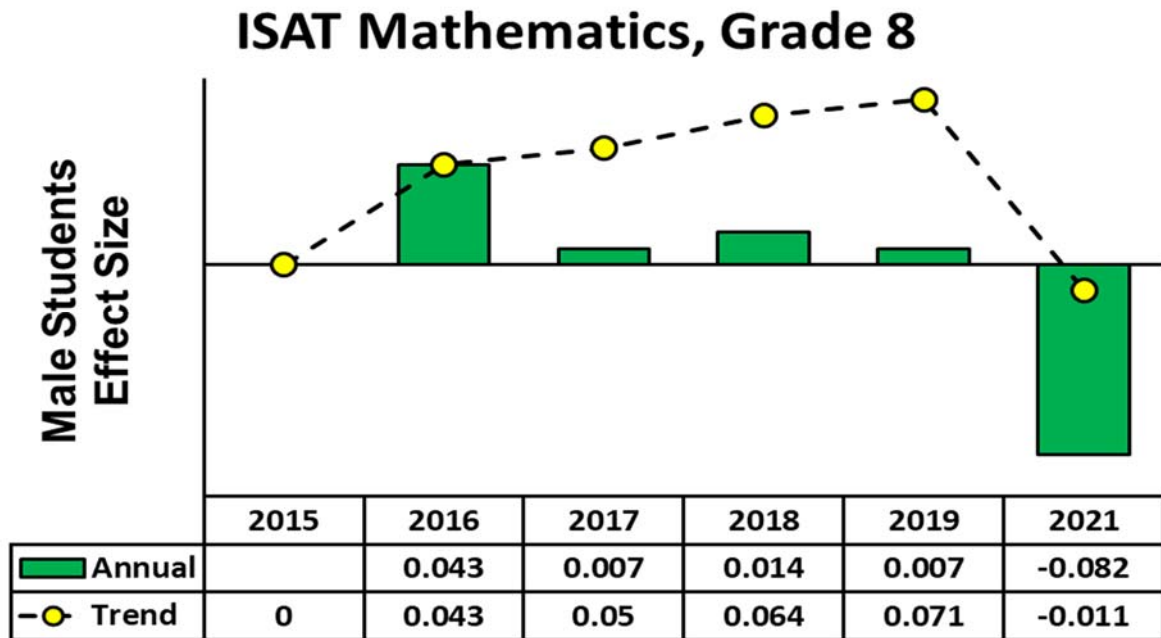


Figure G-11. Idaho effect sizes for ISAT mathematics for male students from 2016 to 2021, grade 8.

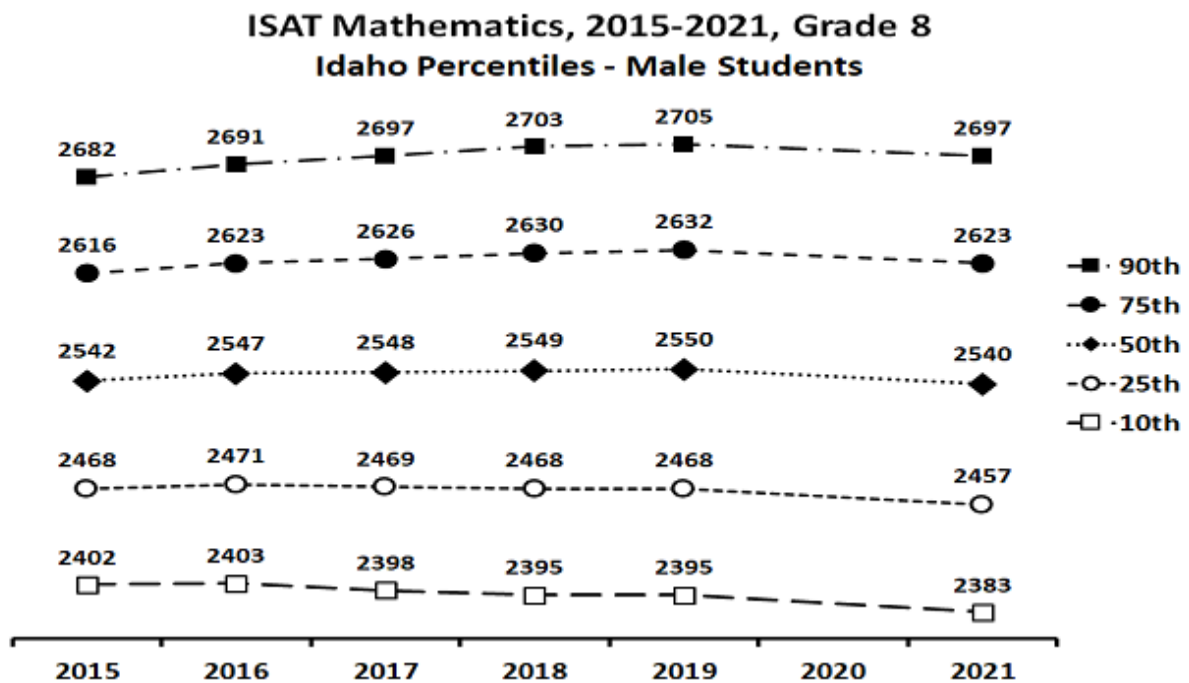


Figure G-12. Idaho percentiles for ISAT mathematics for male students from 2015 to 2021, grade 8.

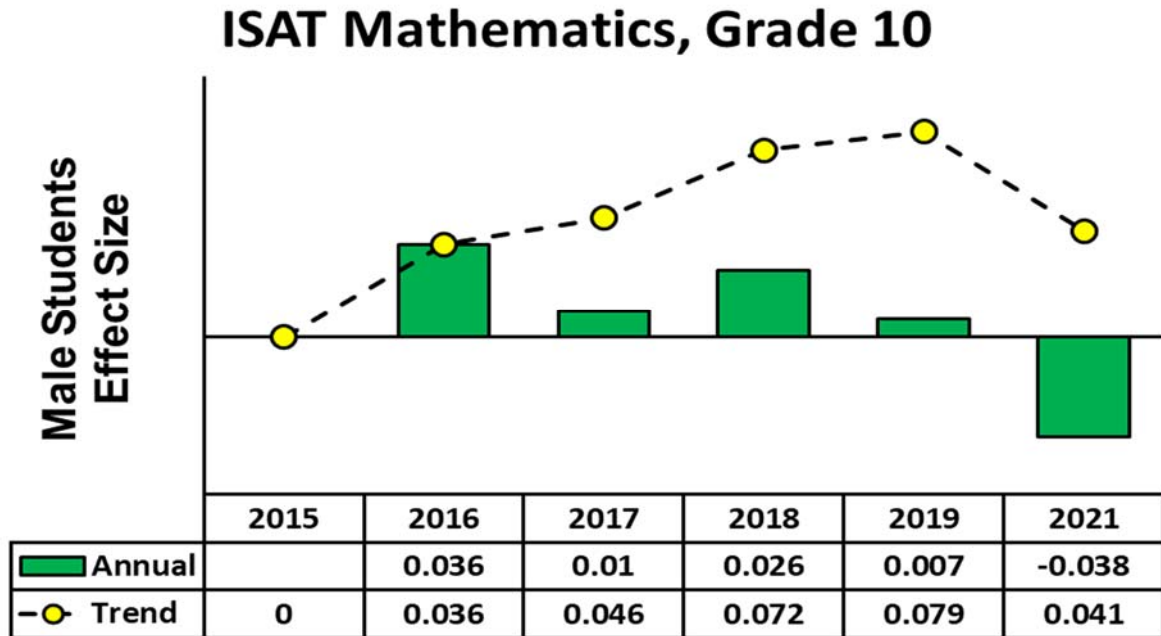


Figure G-13. Idaho effect sizes for ISAT mathematics for male students from 2016 to 2021, grade 10.

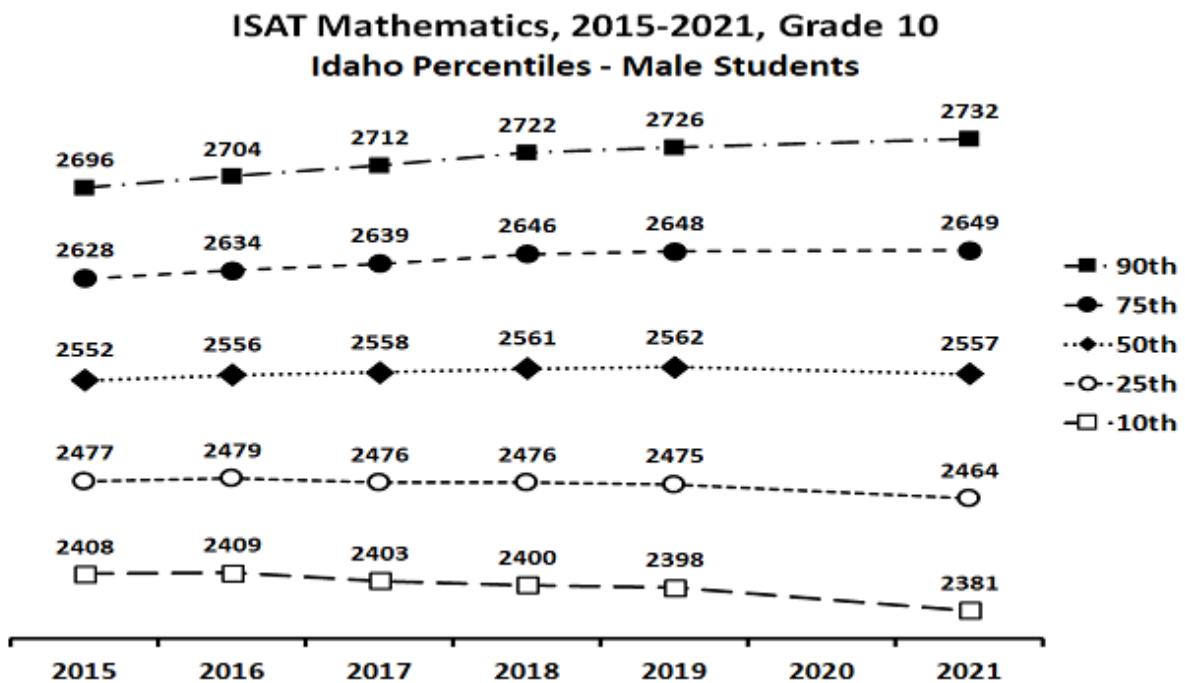


Figure G-14. Idaho percentiles for ISAT mathematics for male students from 2015 to 2021, grade 10.

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