

Draft

“ISAT 2015 to 2022 Percentiles”

Isat2022percentiles.pdf

All Students

Female Students

Male Students

Total 36 pages.

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K-12 Research Idaho

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The Idaho Standards Achievement Test

Using ISAT Percentile Results to Describe the Impact of the Pandemic
(2019-2021), Recovery Learning (2021-2022), and Long-Term Status
(2015-2022) for All Students, Female Students and Male Students in
Grades 3-8 and 10

by
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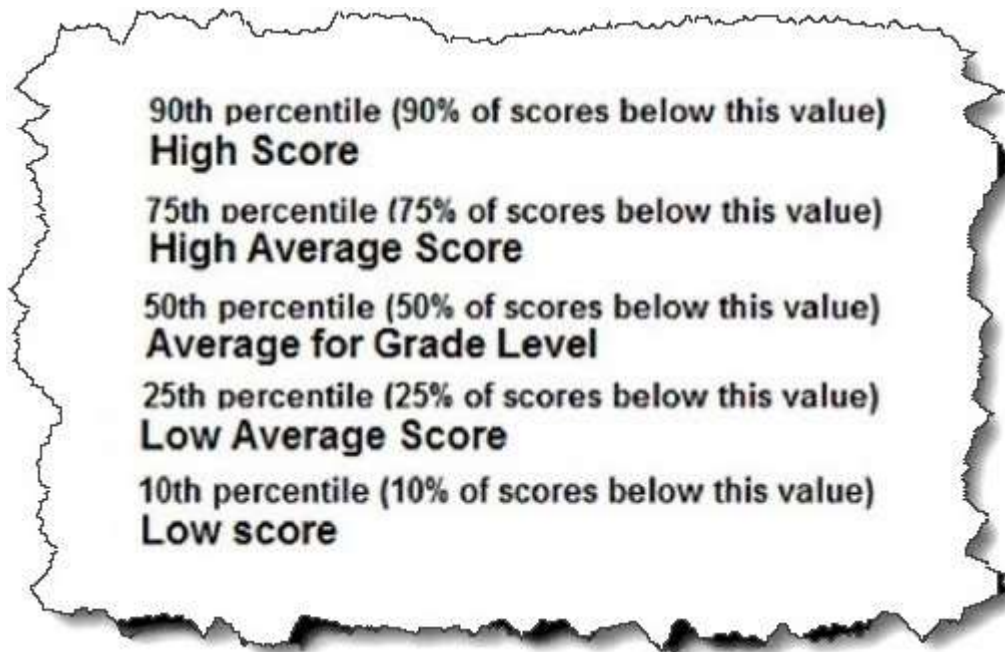
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Using ISAT Percentile Results to Describe the Impact of the Pandemic (2019-2021), Recovery Learning (2021-2022), and Long-Term Status (2015-2022) for All Students, Female Students and Male Students in Grades 3-8 and 10

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Learning Point Associates (2009) suggested three measures of school performance, once in widespread use, could provide program evaluation and accountability data more useful than the percentage of students rated as proficient or above. These measures were averages (means), percentiles, and effect sizes. This paper considered what we might learn about the statewide performance of Idaho students from their percentile scores from the 2015 to 2022 Idaho Standard Achievement Tests (ISAT) of English Language Arts and Mathematics.

Effect sizes of average scale scores provided much information, but they hid a lot of performance evidence in a single measure of central tendency. Percentiles provided additional evidence of performance across the distribution of student scale scores. They enabled us to look at the comparison of five performance levels from year to year, and five multi-year trends. The five percentiles (i.e., values or scale scores) used for this analysis were:



The Idaho State Department of Education (SDE) provided the ISAT statewide summary scores for 2015 to 2022, grades 3-8 and 10 utilized for the study. Data were identified for three student groups: all students, female students, and male students. For each statewide student group (i.e., year-subject-grade), the SDE provided (1) the number of students who had valid ISAT scale scores, (2) their average or mean scale score, and (3) their standard deviation.

Each of the five grade-level percentiles (p) was calculated using the SDE provided ISAT means and standard deviations and the z scores associated with each of the five percentiles:

$$p = (z \text{ score} \times \text{standard deviation}) + \text{mean}$$

where z-scores were retrieved from a *Proportions of Area under the Normal Curve* table of an undergraduate statistics textbook (Runyon and Haber, 1971).

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Impact of Pandemic: 2019 to 2021
ISAT English Language Arts

Table 1. ISAT English Language Arts - All Students
Pandemic Impact (2019 to 2021): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	-2	-1	4	-4	1	11	6	15
HI AVG	-4	-3	1	-5	1	7	4	1
AVG	-7	-4	-3	-6	-1	3	1	-17
LO AVG	-10	-5	-6	-7	-1	1	0	-28
LOW	-13	-6	-9	-8	-1	-4	-2	-43
Total	-36	-19	-13	-30	-1	18	9	-72

Table 2. ISAT English Language Arts - Female Students
Pandemic Impact (2019 to 2021): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	-2	-1	5	-2	0	8	10	18
HI AVG	-5	-3	1	-5	-2	5	7	-2
AVG	-8	-5	-2	-7	-3	2	4	-19
LO AVG	-11	-6	-6	-8	-3	0	3	-31
LOW	-14	-9	-10	-11	-5	-3	0	-52
Total	-40	-24	-12	-33	-13	12	24	-86

Table 3. ISAT English Language Arts - Male Students
Pandemic Impact (2019 to 2021): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	-1	-3	3	-5	4	14	2	14
HI AVG	-4	-3	0	-6	2	9	0	-2
AVG	-6	-4	-3	-5	2	5	0	-11
LO AVG	-8	-4	-5	-6	2	0	-2	-23
LOW	-11	-4	-8	-6	1	-5	-3	-36
Total	-30	-18	-13	-28	11	23	-3	-58

Recovery Year: 2021 to 2022
ISAT English Language Arts

Table 4. ISAT English Language Arts - All Students
Recovery Year (2021 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	9	8	7	10	6	-2	9	47
HI AVG	7	6	5	6	4	-3	7	32
AVG	4	5	4	3	3	-3	5	21
LO AVG	2	4	2	-1	0	-5	1	3
LOW	0	2	0	-5	-2	-4	-1	-10
Total	22	25	18	13	11	-17	21	93

Table 5. ISAT English Language Arts - Female Students
Recovery Year (2021 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	10	7	5	5	6	-5	7	35
HI AVG	7	5	4	4	5	-5	5	25
AVG	4	4	3	2	3	-4	4	16
LO AVG	2	3	2	0	2	-4	2	7
LOW	0	2	0	-1	1	-3	0	-1
Total	23	21	14	10	17	-21	18	82

Table 6. ISAT English Language Arts - Male Students
Recovery Year (2021 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	7	10	8	6	7	-3	10	45
HI AVG	6	9	6	5	5	-3	8	36
AVG	4	7	4	3	2	-3	4	21
LO AVG	2	5	2	1	-1	-4	1	6
LOW	0	3	0	-1	-3	-4	-3	-8
Total	19	34	20	14	10	-17	20	100

Long-Term Status: 2015 to 2022
ISAT English Language Arts

Table 7. ISAT English Language Arts - All Students
 Long-Term Status (2015 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	21	28	33	31	33	23	22	191
HI AVG	11	20	23	20	25	14	12	125
AVG	0	12	12	9	17	5	2	57
LO AVG	-11	4	1	-2	8	-5	-9	-14
LOW	-21	-4	-9	-13	0	-13	-19	-79
Total	0	60	60	45	83	24	8	280

Table 8. ISAT English Language Arts - Female Students
 Long-Term Status (2015 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	19	25	29	26	30	19	21	169
HI AVG	9	17	19	18	23	11	11	108
AVG	-2	8	9	9	16	5	2	47
LO AVG	-12	0	-1	0	9	-3	-8	-15
LOW	-22	-8	-12	-8	2	-9	-17	-74
Total	-8	42	44	45	80	23	9	235

Table 9. ISAT English Language Arts - Male Students
 Long-Term Status (2015 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	23	31	37	26	37	24	23	201
HI AVG	13	24	26	18	27	14	13	135
AVG	2	15	14	9	17	4	1	62
LO AVG	-9	7	2	-1	7	-6	-10	-10
LOW	-20	-1	-9	-10	-2	-16	-22	-80
Total	9	76	70	42	86	20	5	308

Impact of Pandemic: 2019 to 2021
ISAT Mathematics

Table 10. ISAT Mathematics - All Students

Pandemic Impact (2019 to 2021): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	-6	-4	-7	-12	-10	-11	5	-45
HI AVG	-10	-8	-10	-14	-14	-13	-1	-70
AVG	-12	-12	-12	-15	-16	-15	-5	-87
LO AVG	-15	-16	-13	-17	-19	-16	-10	-106
LOW	-19	-20	-16	-19	-22	-18	-16	-130
Total	-62	-60	-58	-77	-81	-73	-27	-438

Table 11. ISAT Mathematics - Female Students

Pandemic Impact (2019 to 2021): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	-9	-3	-15	-14	-13	-12	2	-64
HI AVG	-11	-8	-14	-17	-17	-16	-2	-85
AVG	-14	-13	-13	-20	-21	-19	-7	-107
LO AVG	-16	-18	-10	-23	-24	-21	-10	-122
LOW	-20	-24	-9	-26	-29	-25	-15	-148
Total	-70	-66	-61	-100	-104	-93	-32	-526

Table 12. ISAT Mathematics - Male Students

Pandemic Impact (2019 to 2021): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	-5	-4	-7	-9	-7	-8	6	-34
HI AVG	-8	-7	-9	-9	-10	-10	0	-53
AVG	-11	-11	-11	-10	-11	-10	-5	-69
LO AVG	-14	-14	-13	-11	-13	-10	-10	-85
LOW	-17	-17	-15	-13	-15	-12	-16	-105
Total	-55	-53	-55	-52	-56	-50	-25	-346

Recovery Year: 2021 to 2022
ISAT Mathematics

Table 13. ISAT Mathematics - All Students
Recovery Year (2021 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	10	8	6	13	3	0	1	41
HI AVG	8	8	5	11	4	0	1	37
AVG	7	7	4	9	5	1	-2	31
LO AVG	5	7	3	7	5	1	-4	24
LOW	4	6	2	4	5	1	-5	17
Total	34	36	20	44	22	3	-9	150

Table 14. ISAT Mathematics - Female Students
Recovery Year (2021 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	12	6	14	13	2	-1	1	47
HI AVG	9	6	9	10	3	-1	-1	35
AVG	7	6	4	8	4	-1	-4	24
LO AVG	4	6	-1	6	6	-1	-7	13
LOW	3	7	-6	3	7	-1	-9	4
Total	35	31	20	40	22	-5	-20	123

Table 15. ISAT Mathematics - Male Students
Long-Term Status (2015 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	22	29	25	28	26	16	39	185
HI AVG	13	20	16	19	17	8	22	115
AVG	5	10	6	9	8	0	5	43
LO AVG	-5	1	-3	0	-1	-7	-13	-28
LOW	-14	-8	-13	-9	-10	-16	-29	-99
Total	21	52	31	47	40	1	24	216

Long-Term Status: 2015 to 2022
ISAT Mathematics

Table 16. ISAT Mathematics - All Students

Long-Term Status (2015 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	21	25	23	24	22	12	29	156
HI AVG	11	16	14	15	12	4	15	87
AVG	2	6	4	4	3	-4	0	15
LO AVG	-8	-2	-5	-6	-6	-13	-16	-56
LOW	-17	-12	-15	-16	-16	-21	-31	-128
Total	9	33	21	21	15	-22	-3	74

Table 17. ISAT Mathematics - Female Students

Long-Term Status (2015 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	19	20	21	21	16	10	20	127
HI AVG	8	11	12	10	7	0	8	56
AVG	-1	3	2	0	-3	-9	-6	-14
LO AVG	-11	-6	-7	-12	-12	-18	-19	-85
LOW	-21	-14	-17	-23	-22	-27	-32	-156
Total	-6	14	11	-4	-14	-44	-29	-72

Table 18. ISAT Mathematics - Male Students

Long-Term Status (2015 to 2022): Scale Score Gains/Losses

Level	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Total
HIGH	22	29	25	28	26	16	39	185
HI AVG	13	20	16	19	17	8	22	115
AVG	5	10	6	9	8	0	5	43
LO AVG	-5	1	-3	0	-1	-7	-13	-28
LOW	-14	-8	-13	-9	-10	-16	-29	-99
Total	21	52	31	47	40	1	24	216

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All Students, ISAT 2015-2022

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Female Students, ISAT 2015-2022

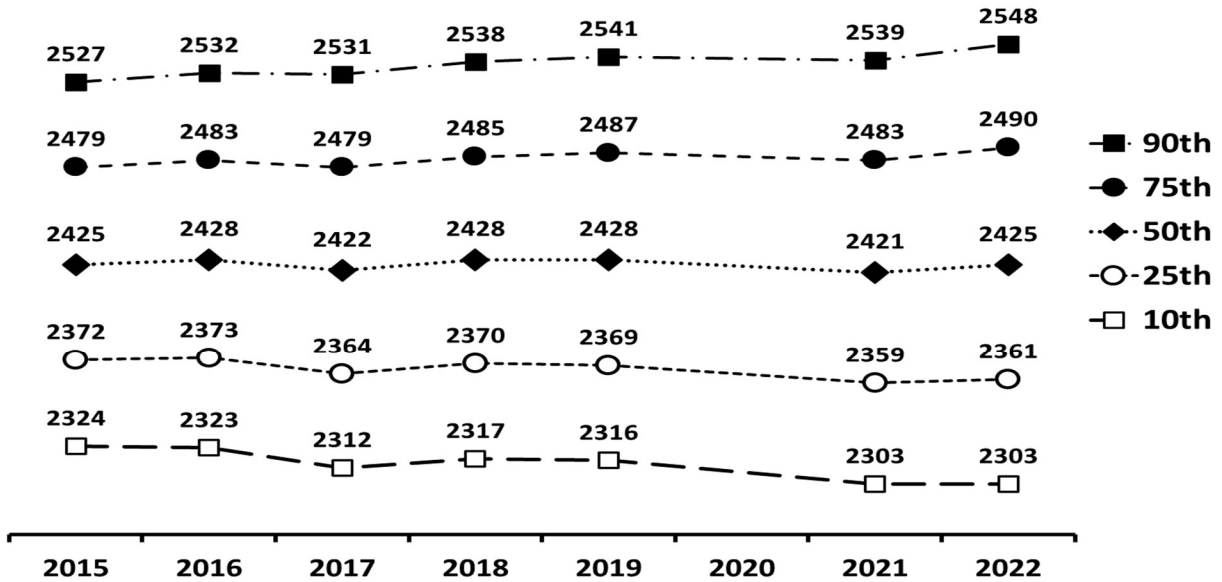
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Male Students, ISAT 2015-2022

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Figure 1. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for All Students, Grade 3

**ISAT English/LA, 2015-2022, Grade 3
Idaho Percentiles - All Students**



**ISAT Mathematics, 2015-2022, Grade 3
Idaho Percentiles - All Students**

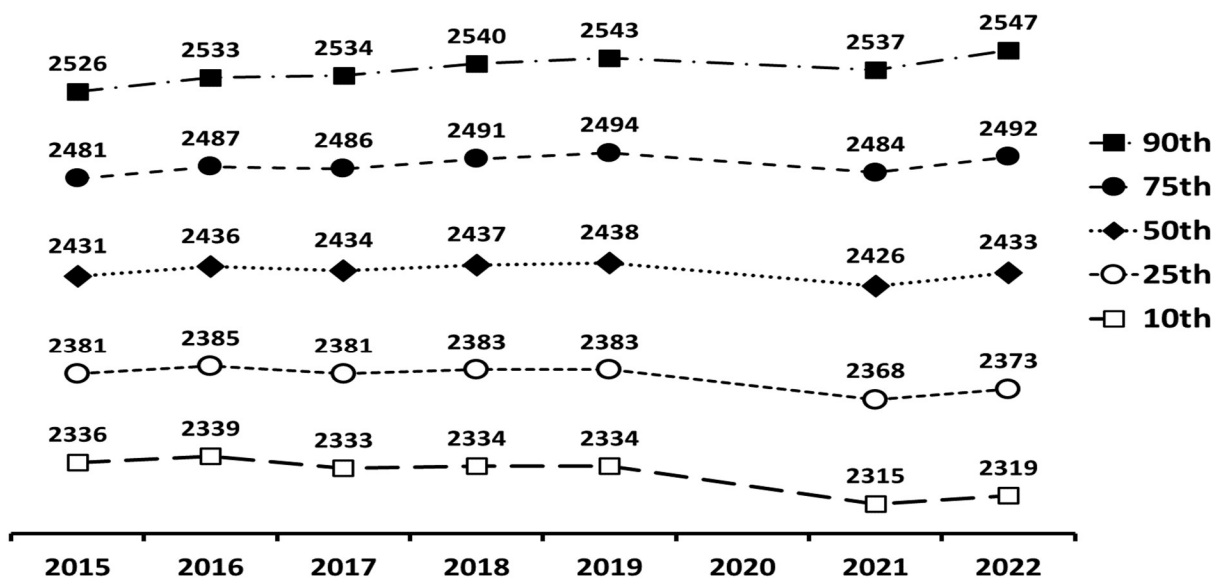
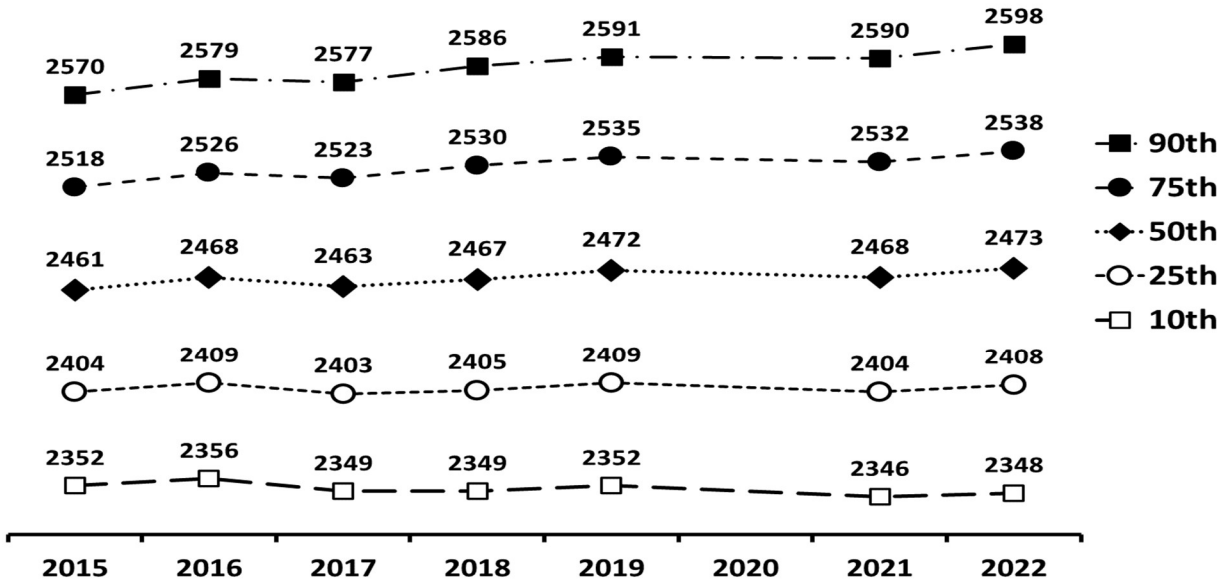


Figure 2. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for All Students, Grade 4

**ISAT English/LA, 2015-2022, Grade 4
Idaho Percentiles - All Students**



**ISAT Mathematics, 2015-2022, Grade 4
Idaho Percentiles - All Students**

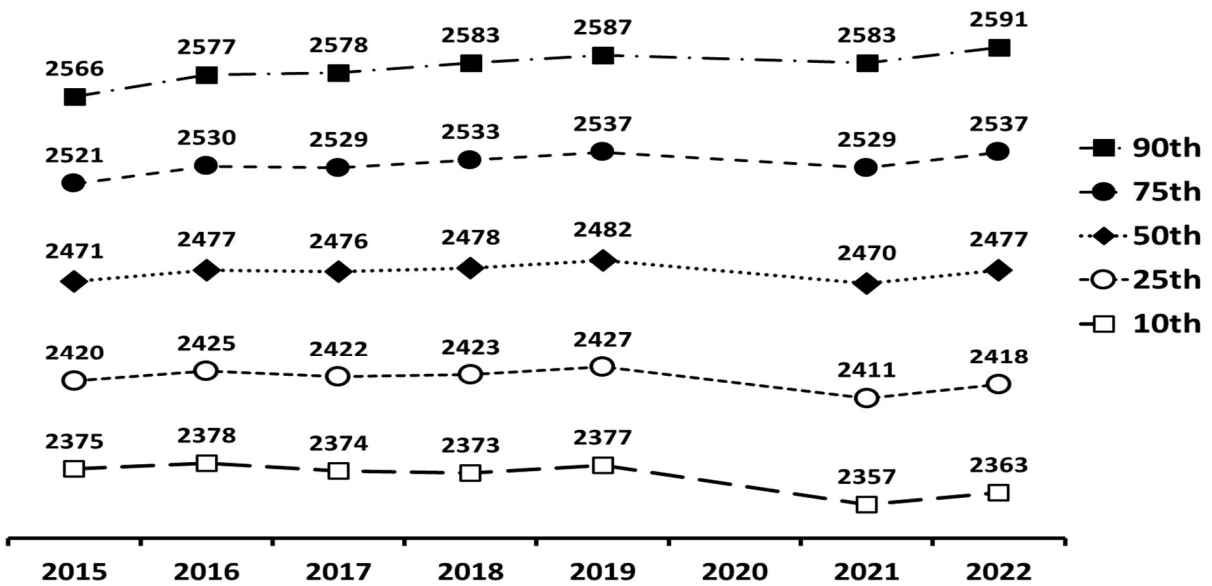


Figure 3. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for All Students, Grade 5

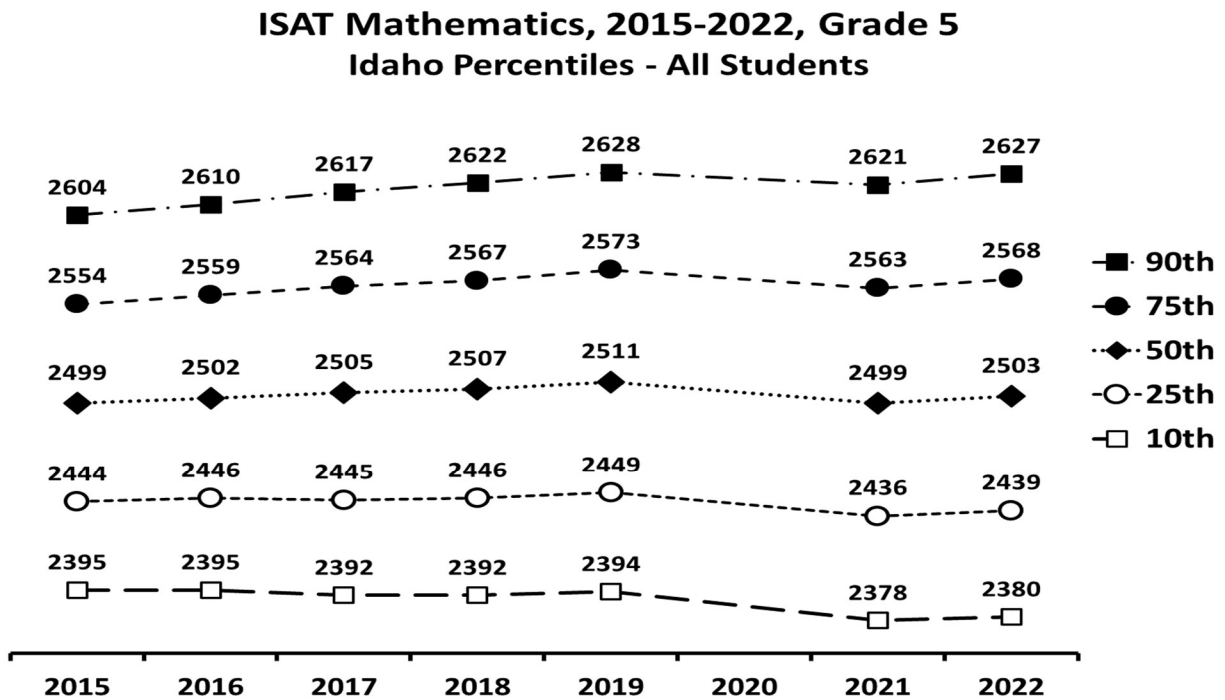
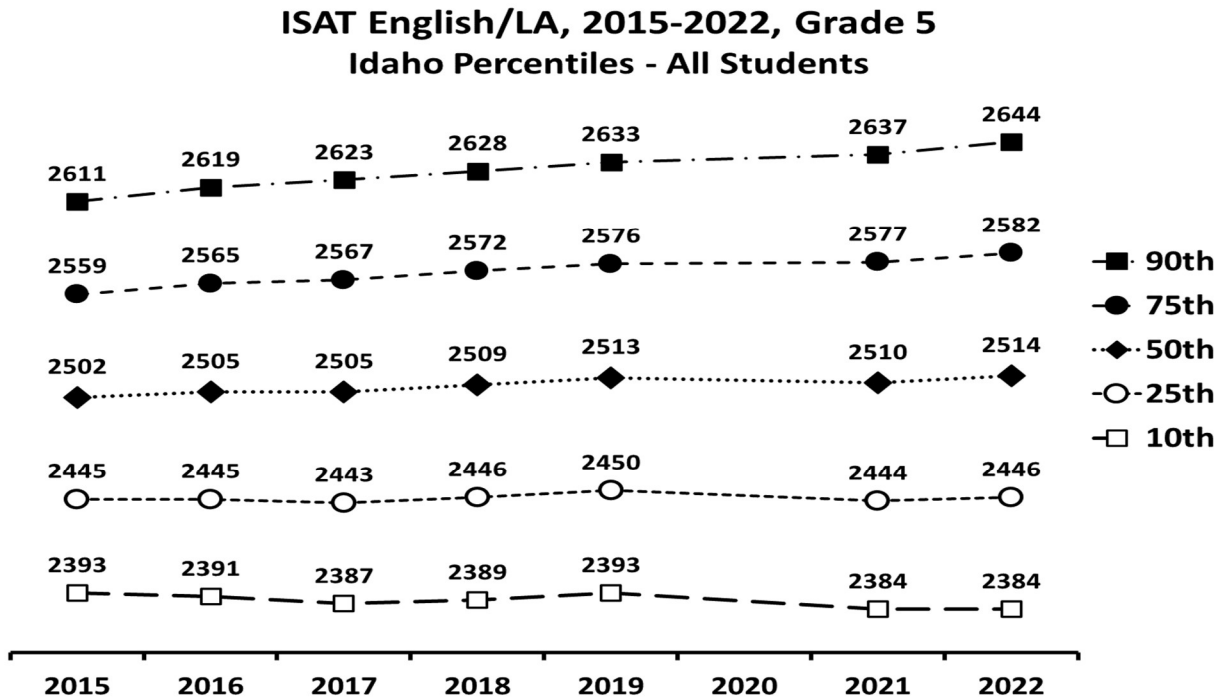


Figure 4. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for All Students, Grade 6

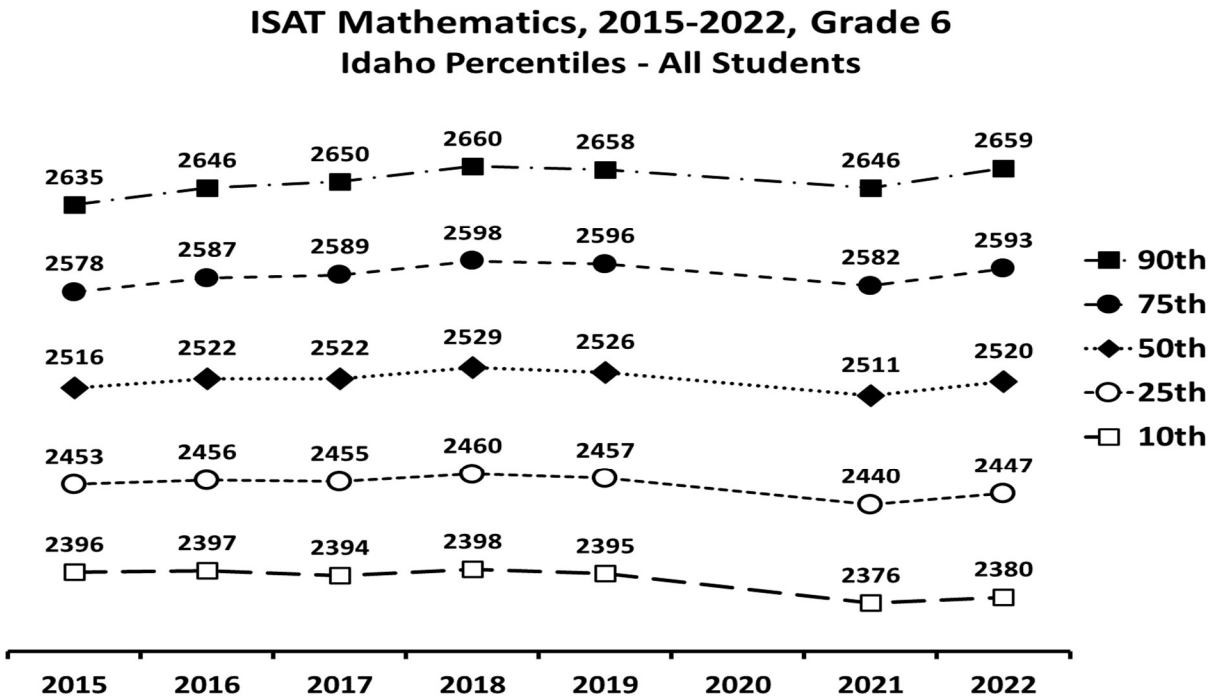
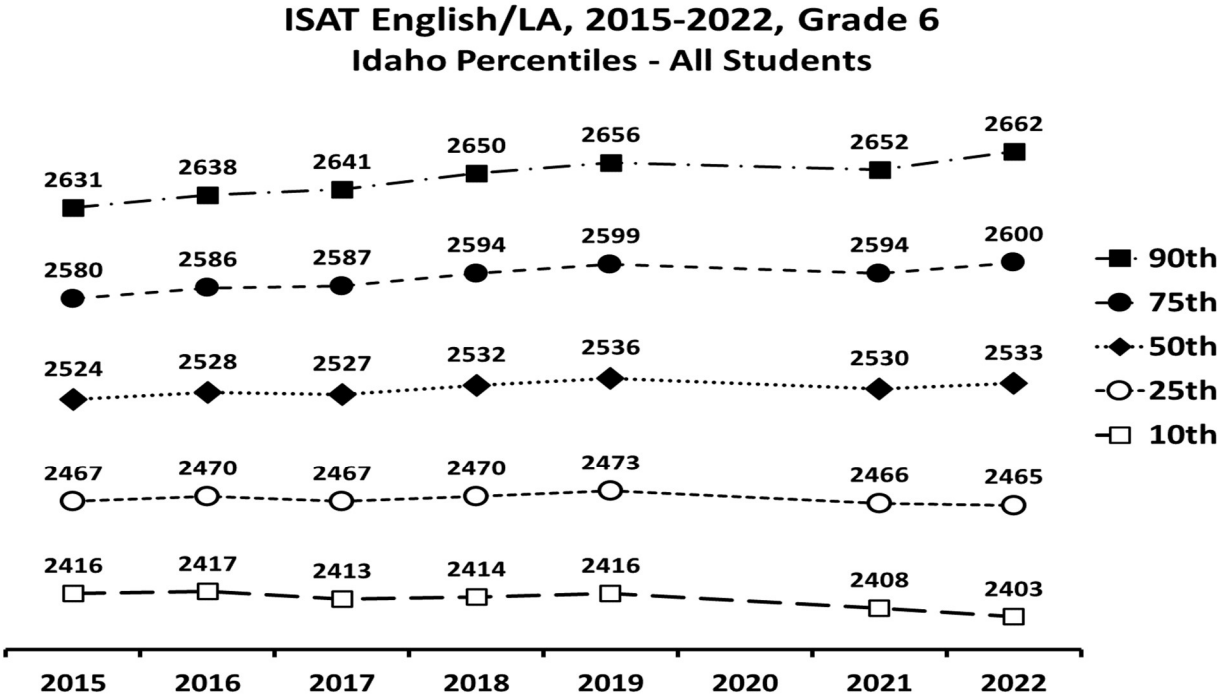


Figure 5. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for All Students, Grade 7

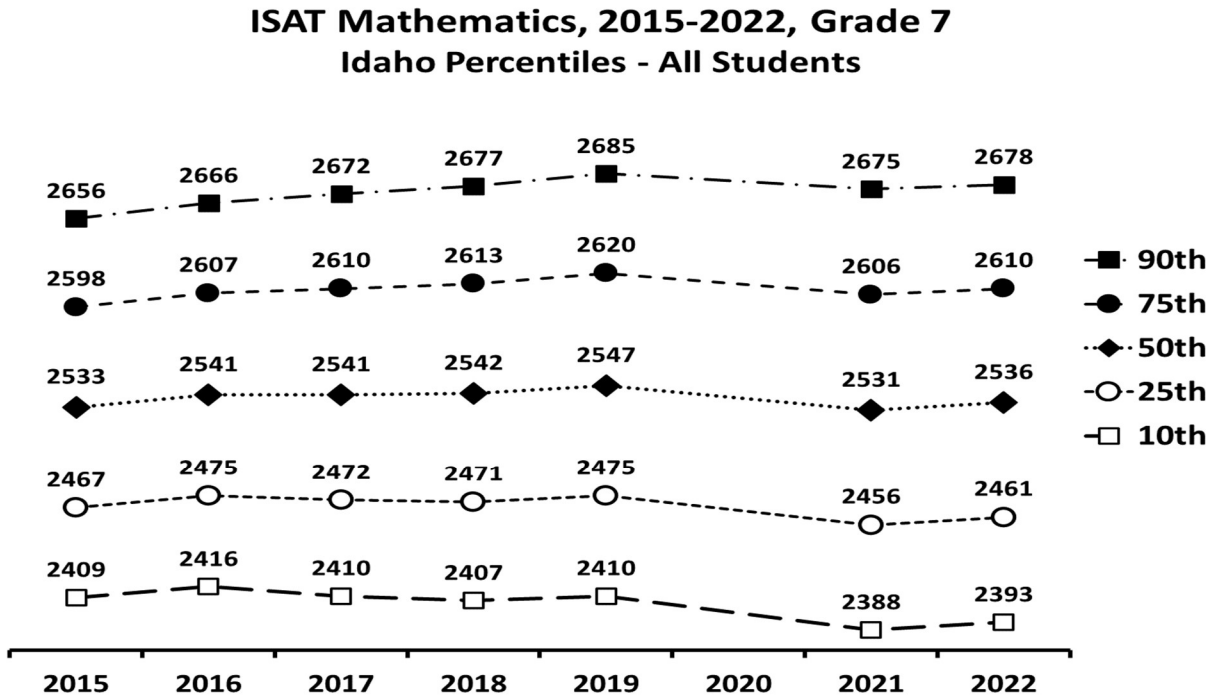
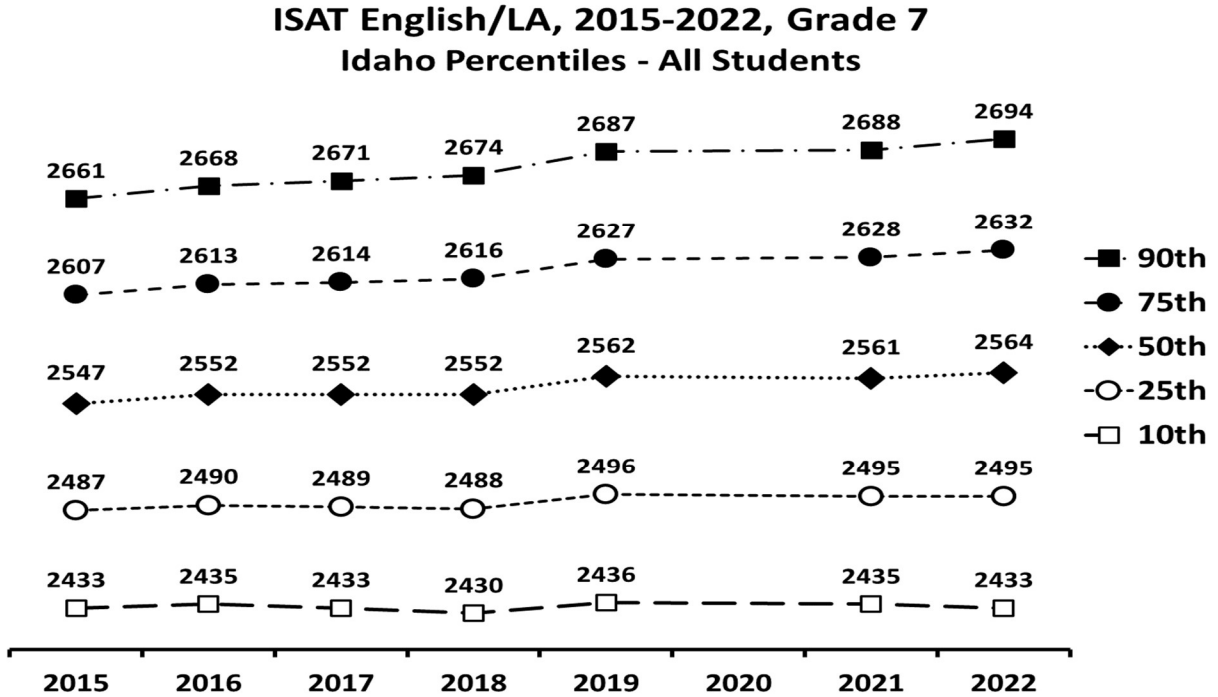


Figure 6. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for All Students, Grade 8

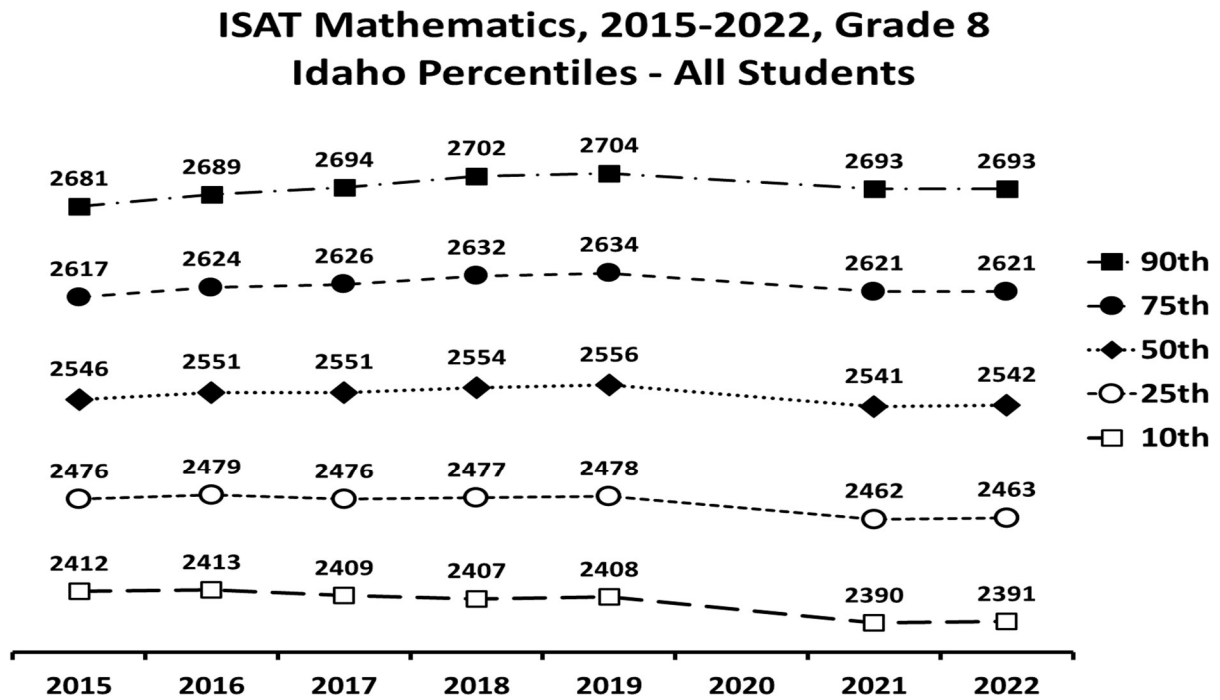
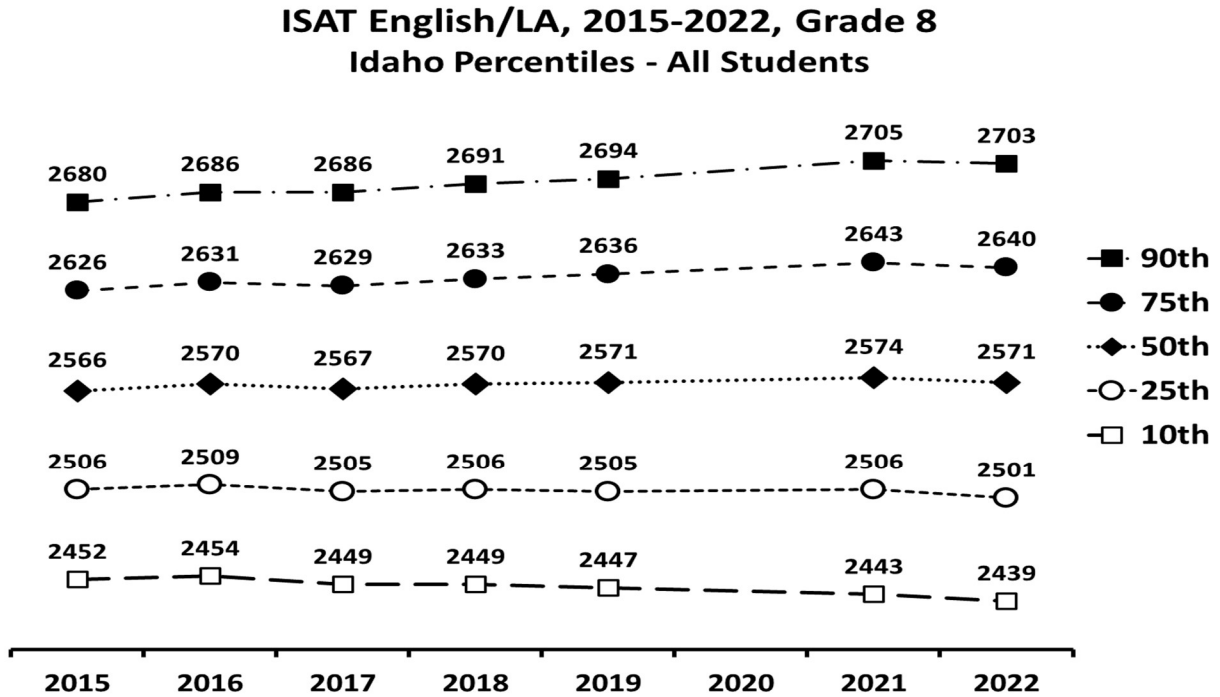


Figure 7. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for All Students, Grade 10

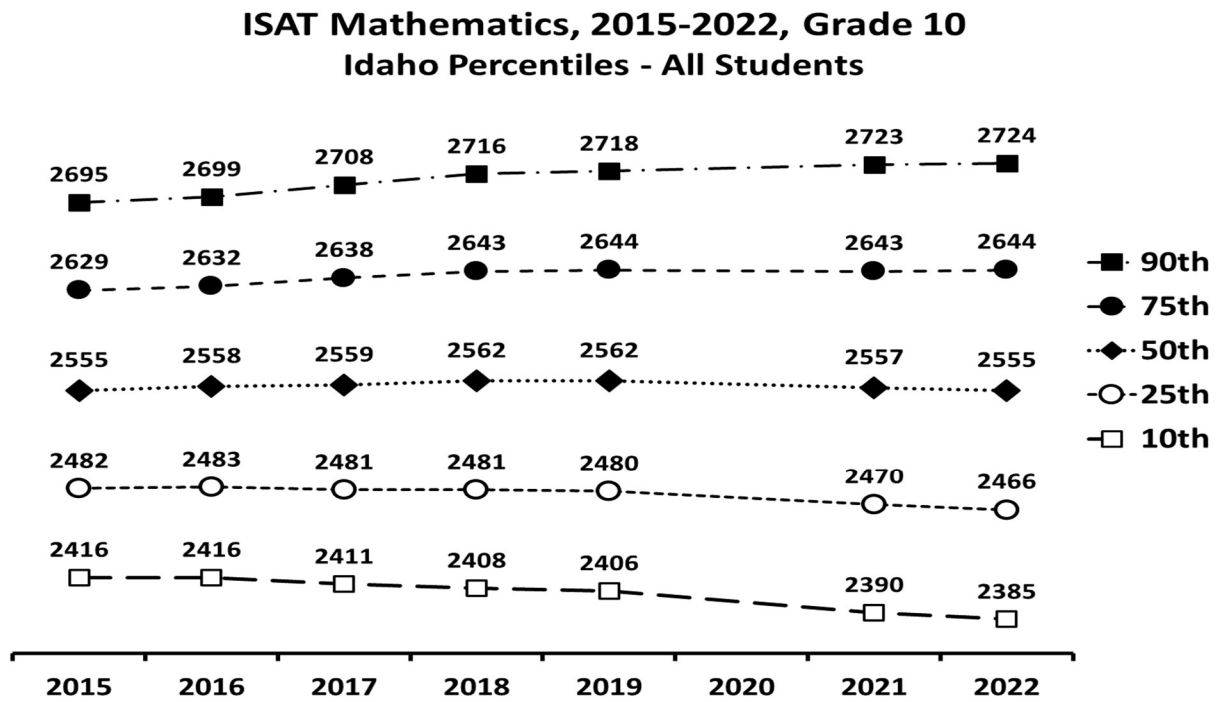
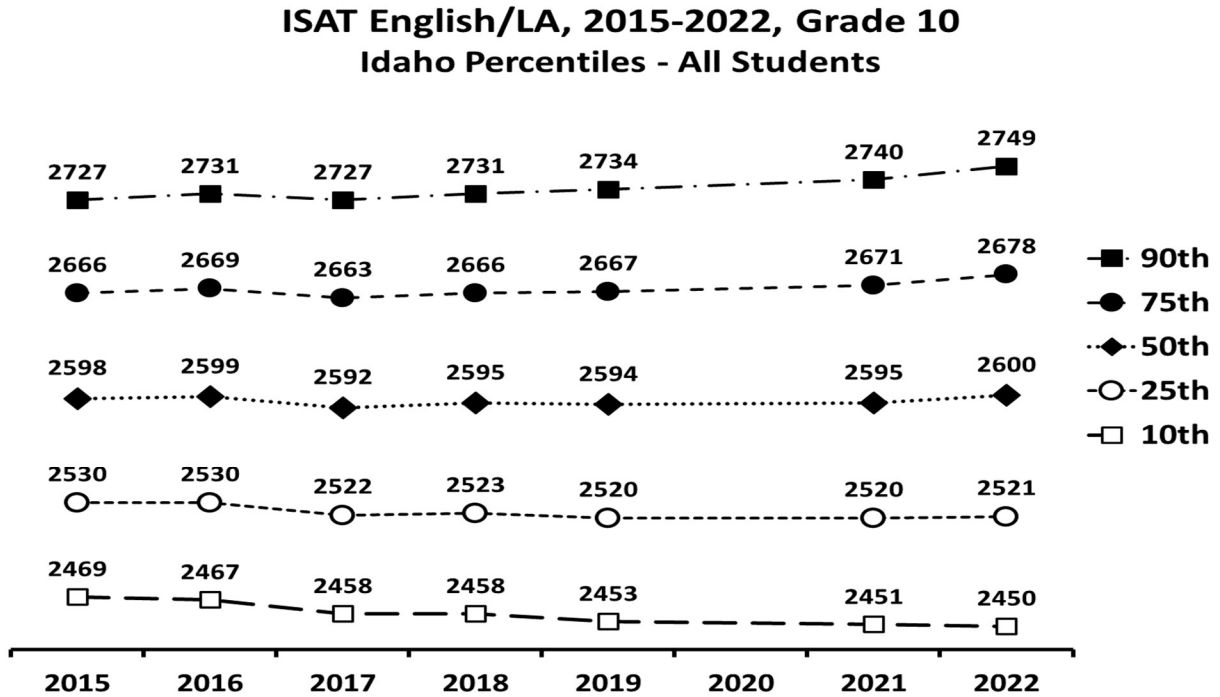


Figure 8. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Female Students, Grade 3

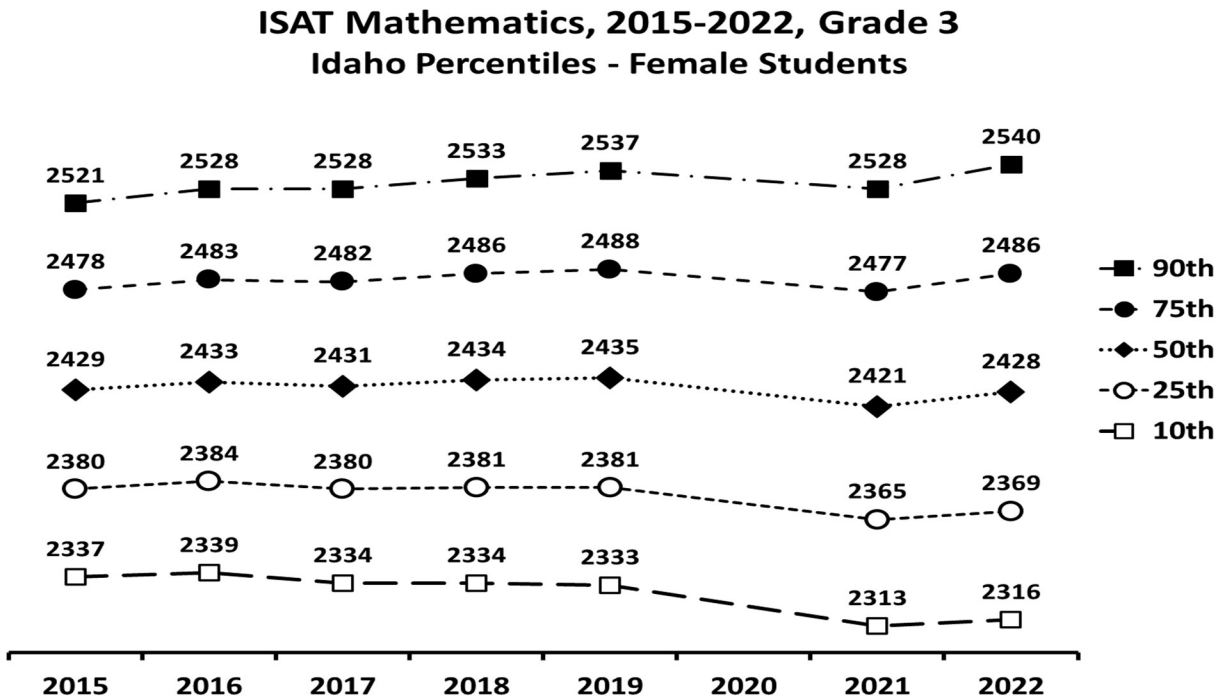
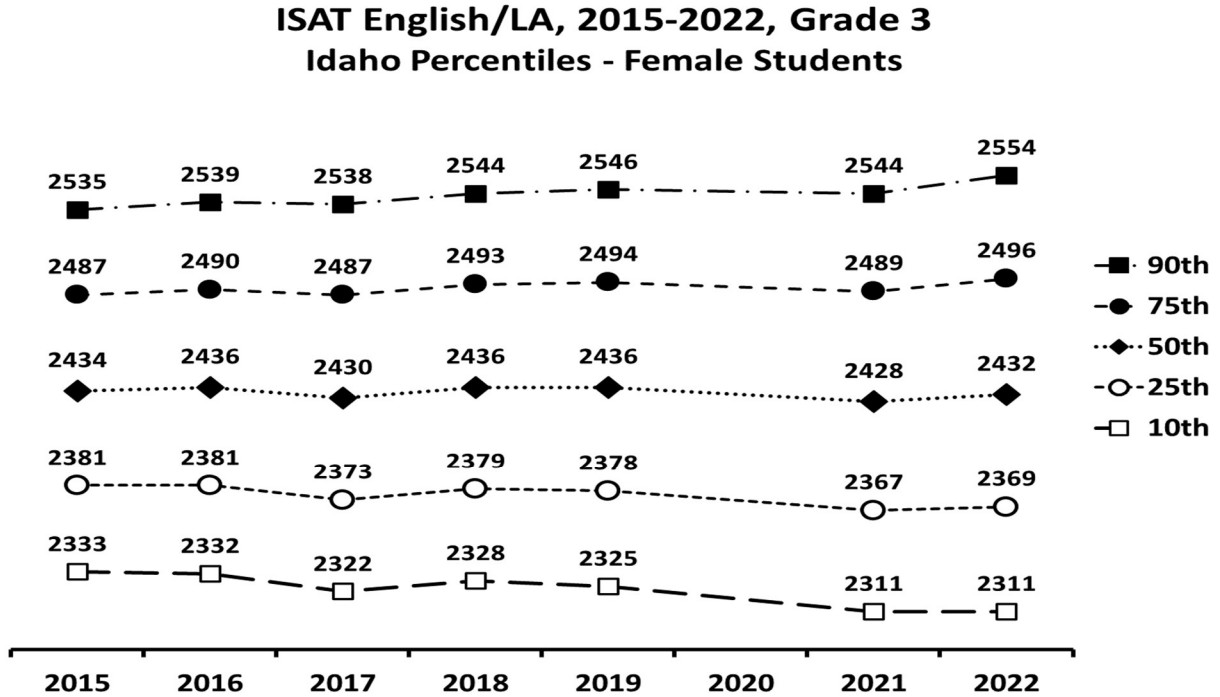


Figure 9. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Female Students, Grade 4

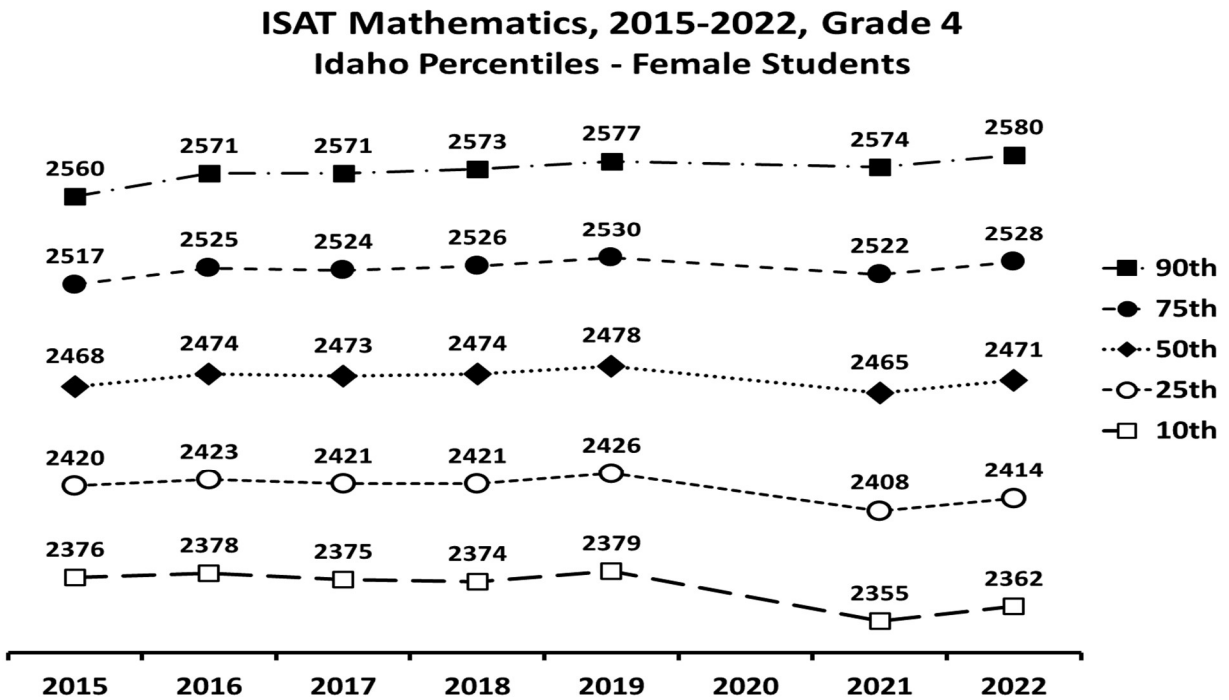
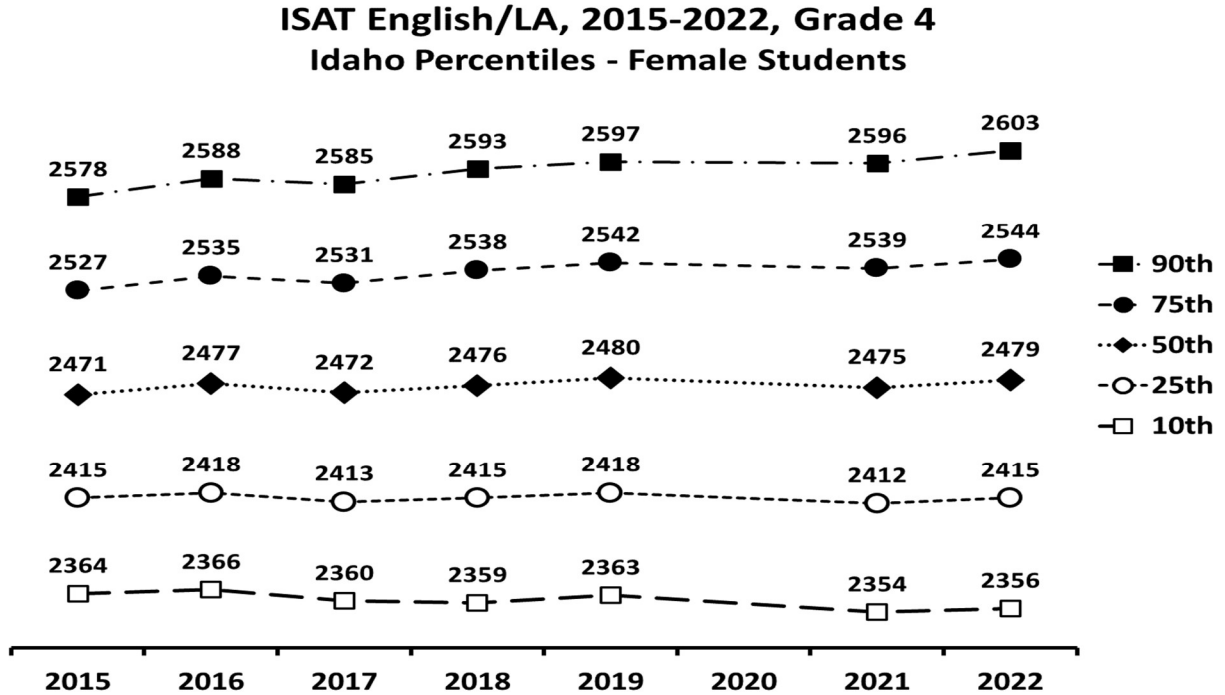


Figure 10. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Female Students, Grade 5

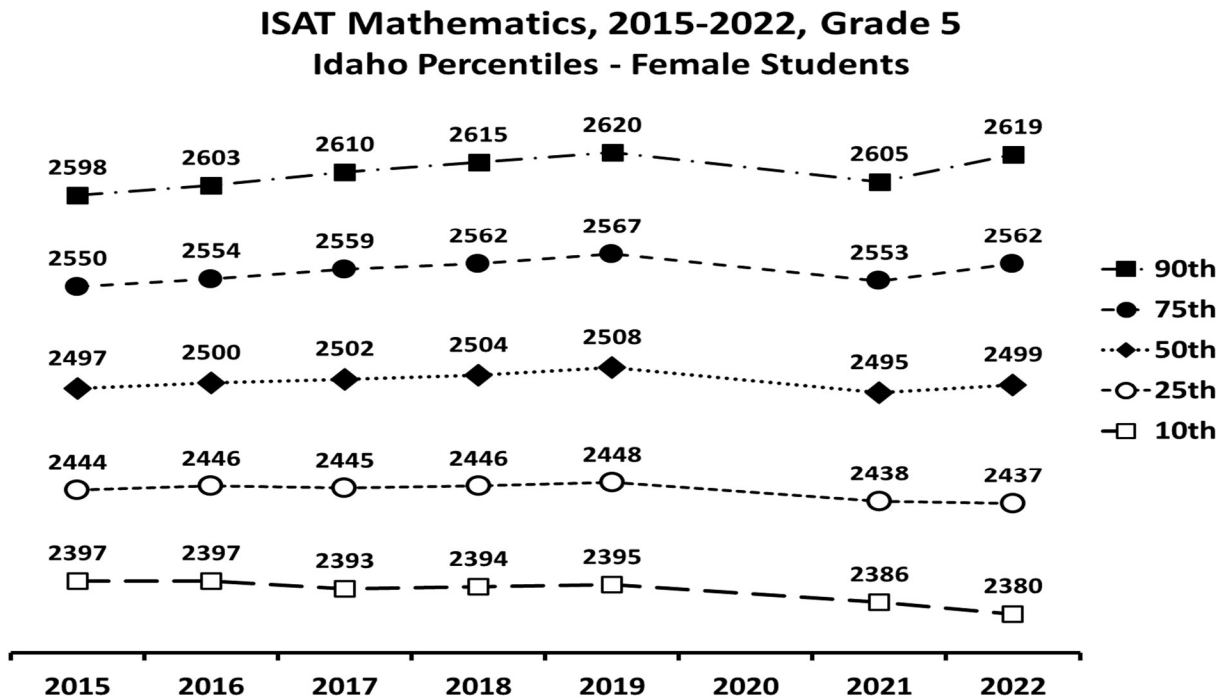
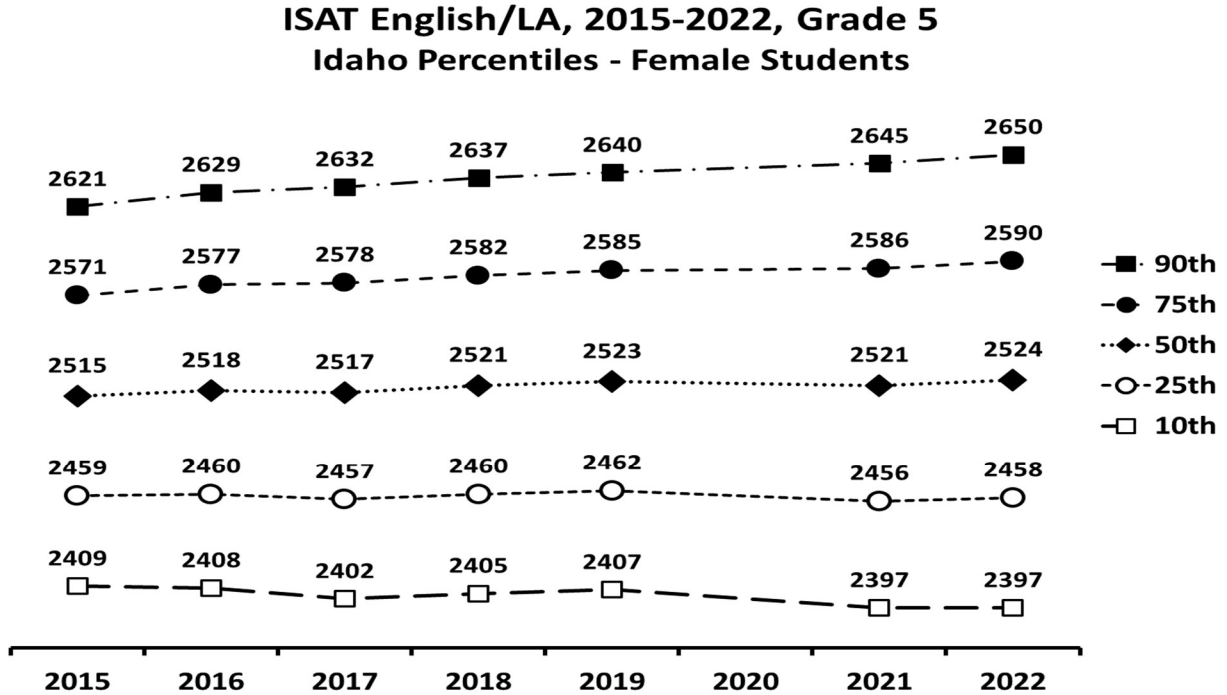


Figure 11. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Female Students, Grade 6

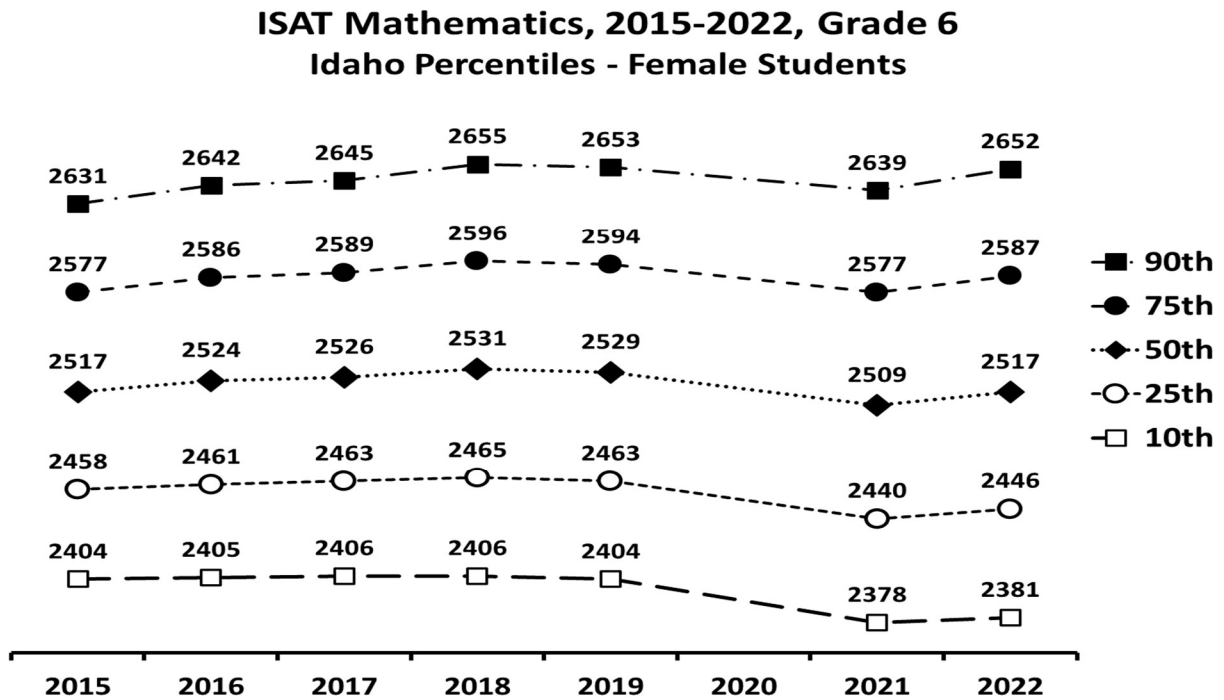
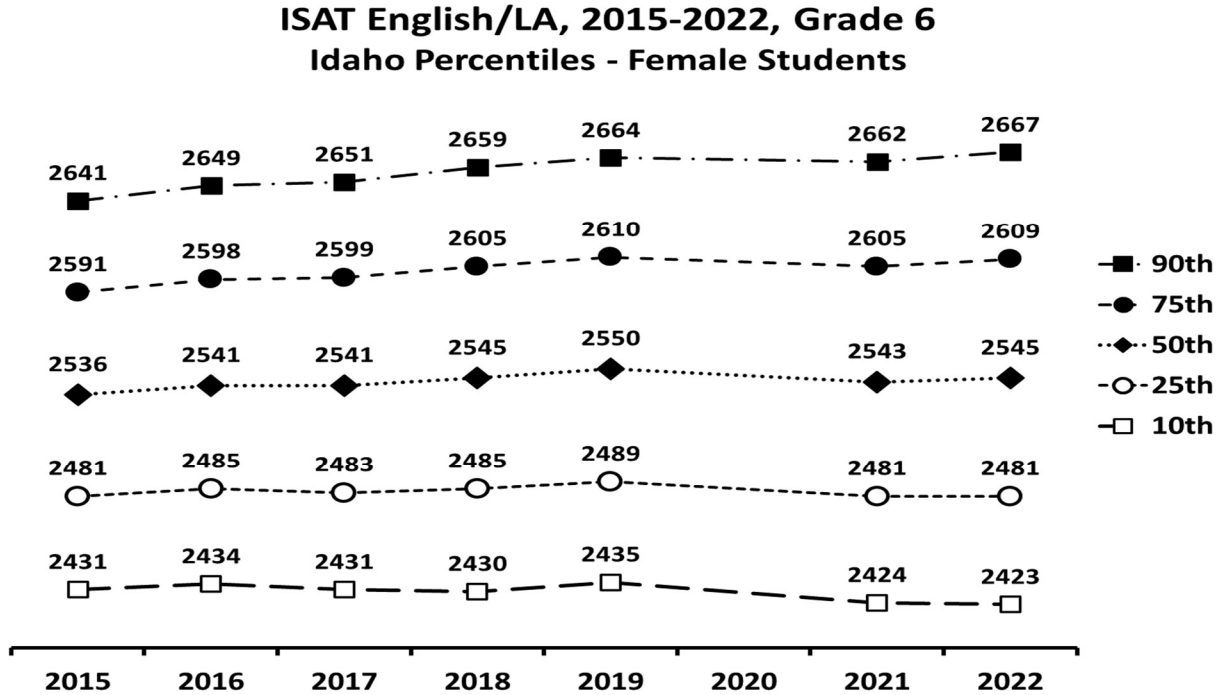


Figure 12. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Female Students, Grade 7

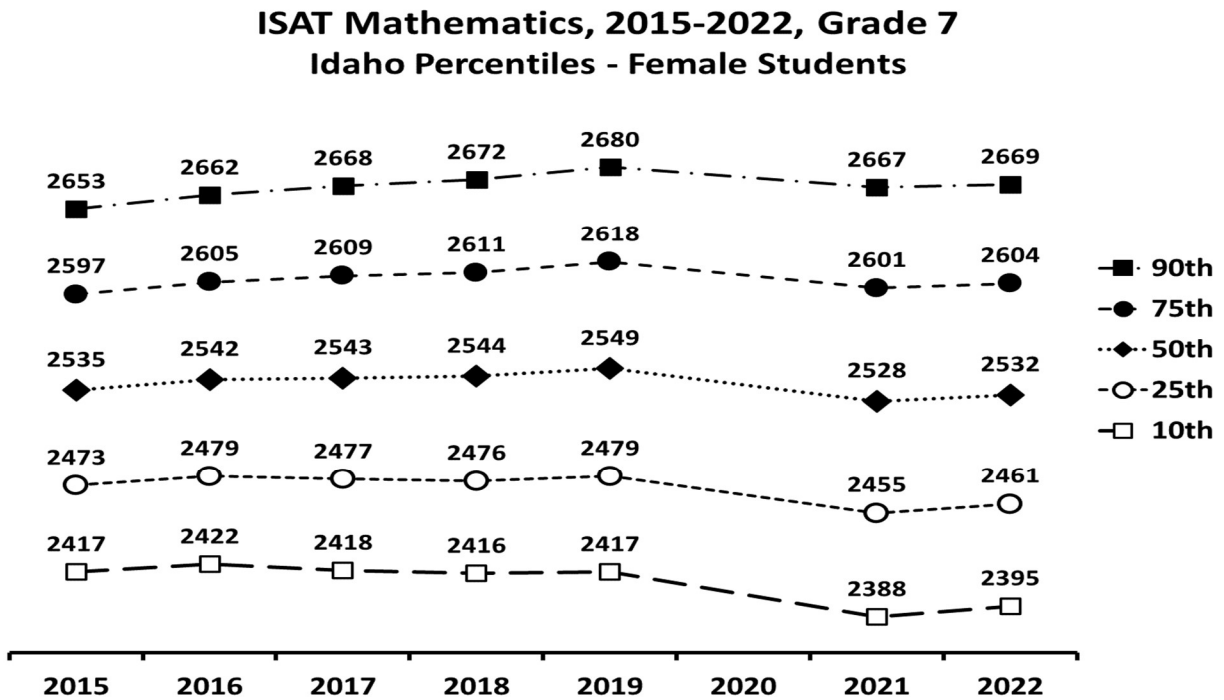
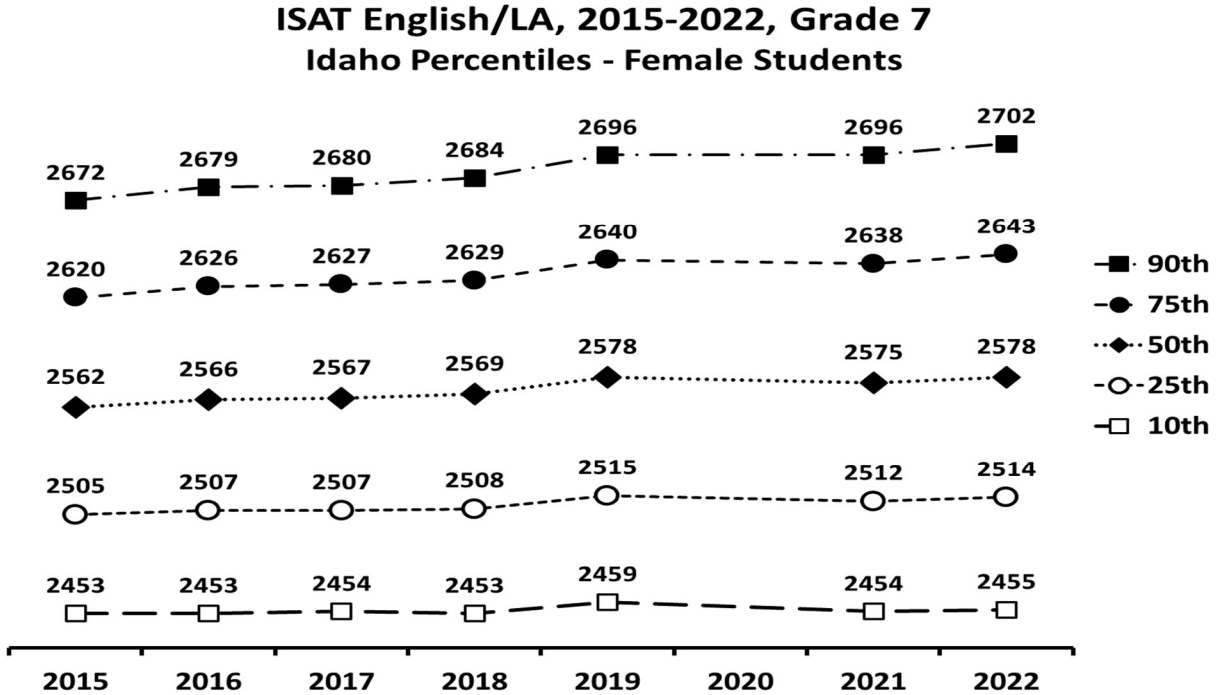


Figure 13. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Female Students, Grade 8

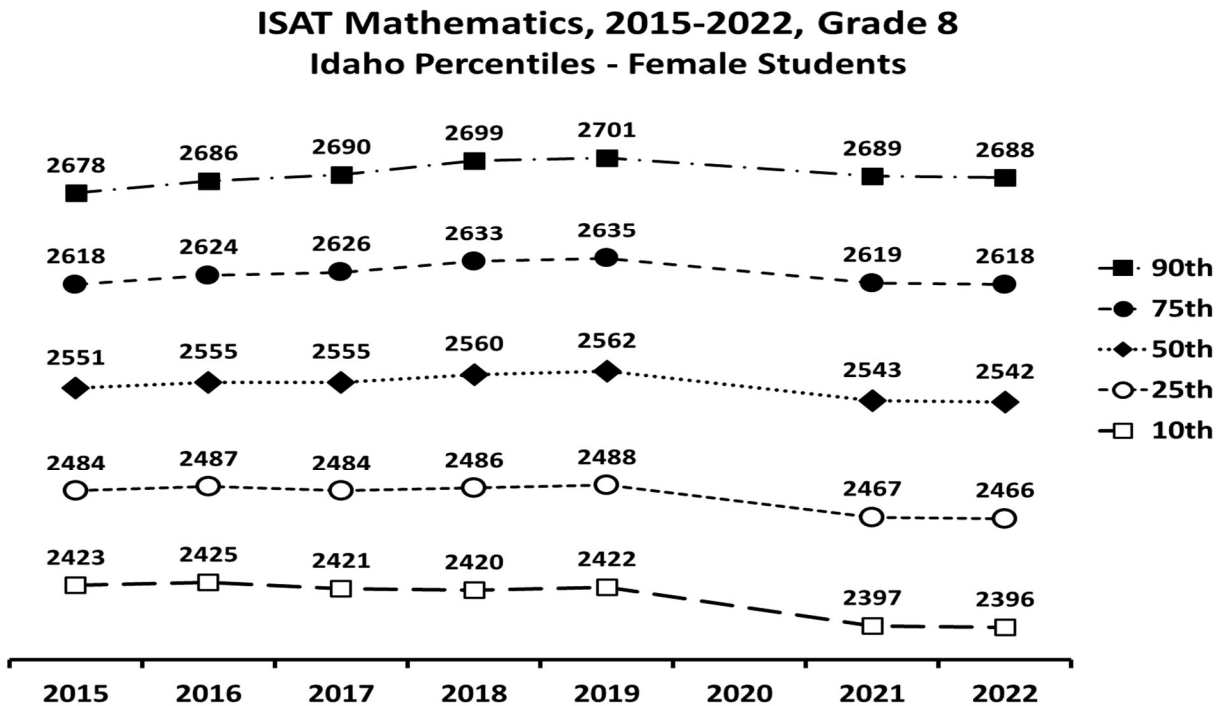
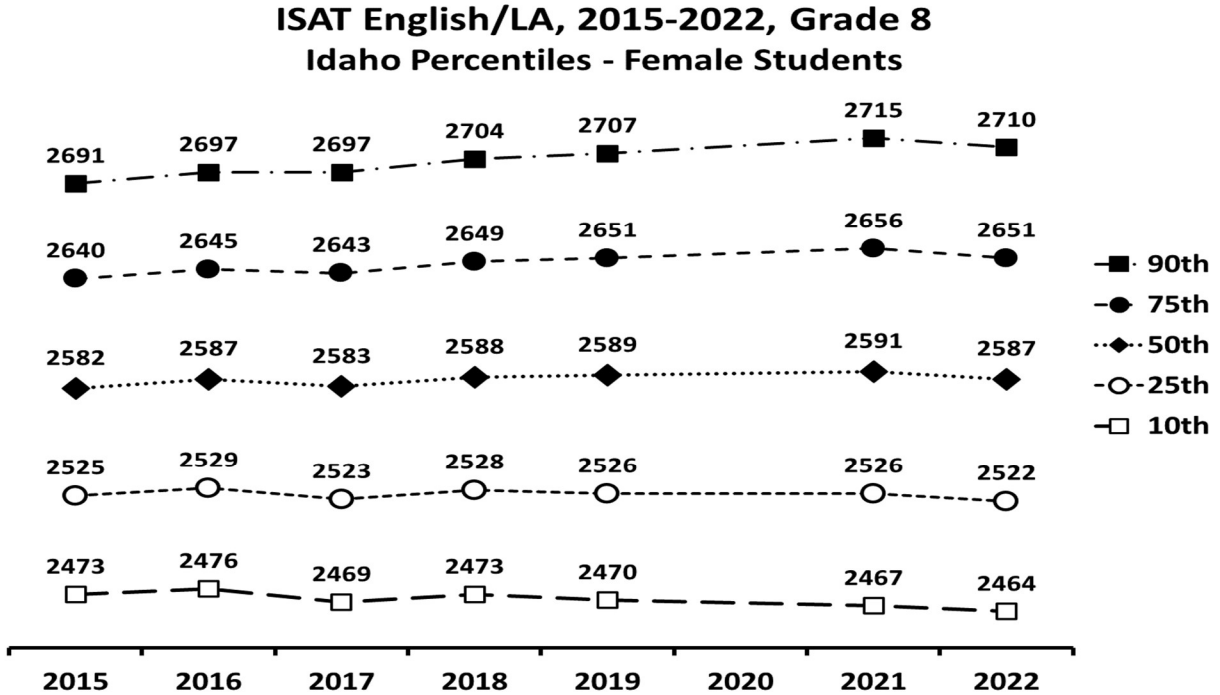


Figure 14. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Female Students, Grade 10

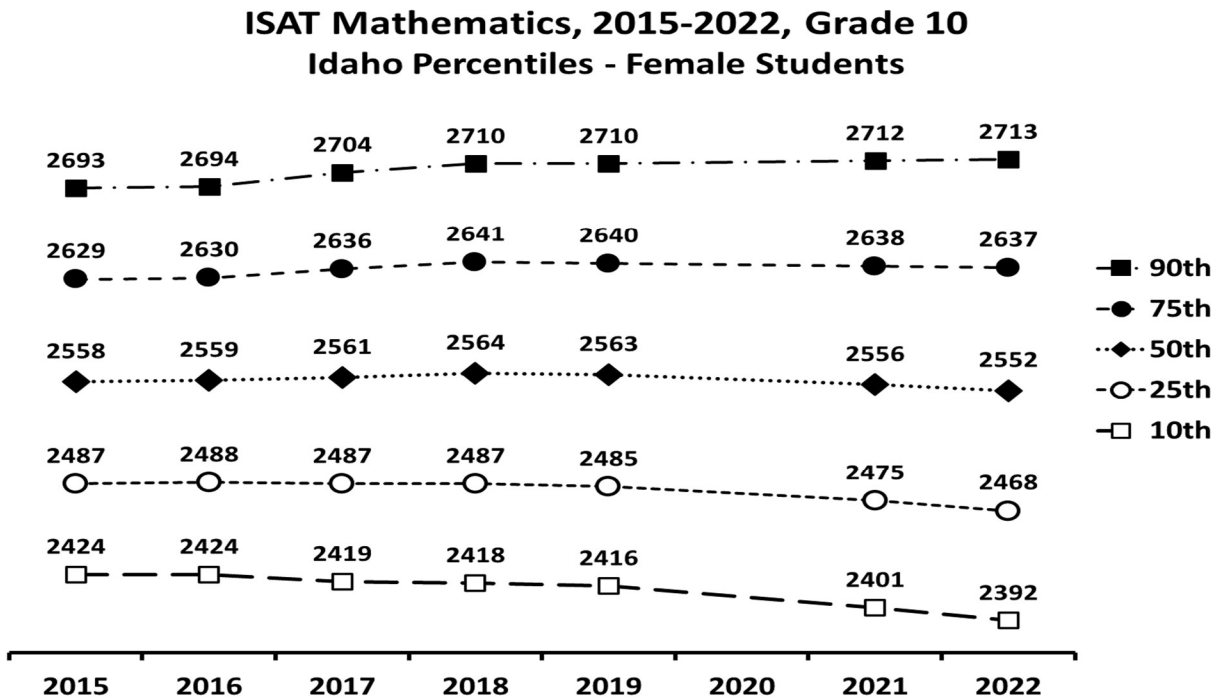
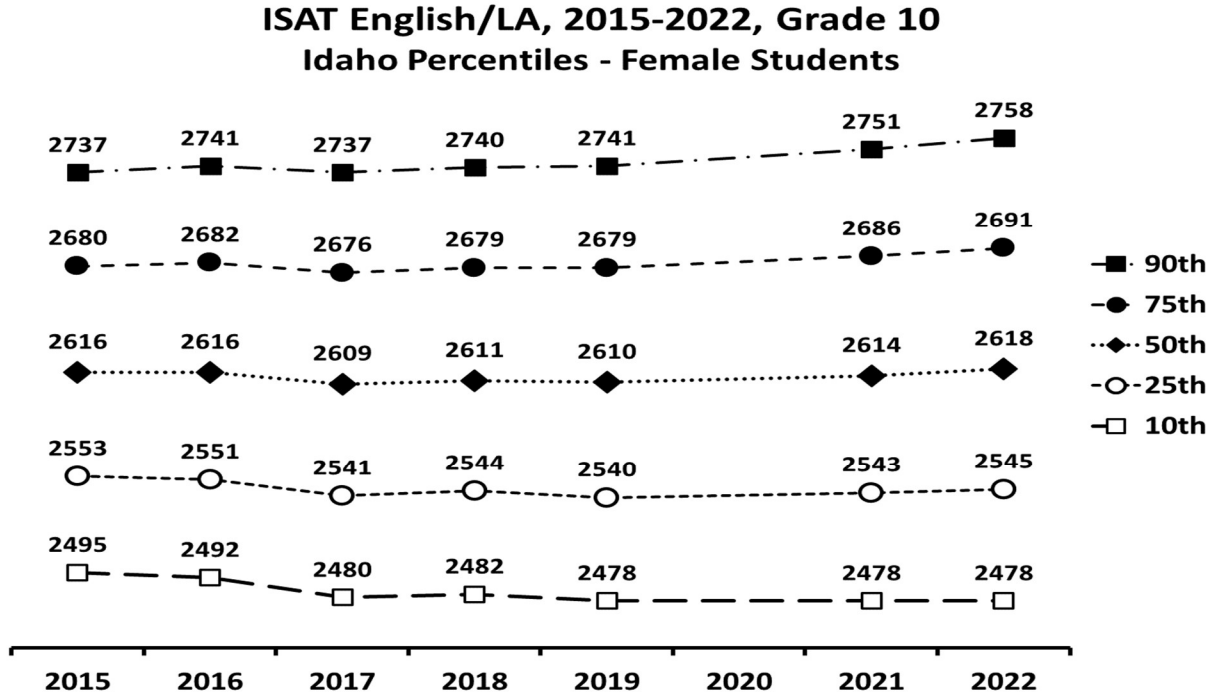


Figure 15. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Male Students, Grade 3

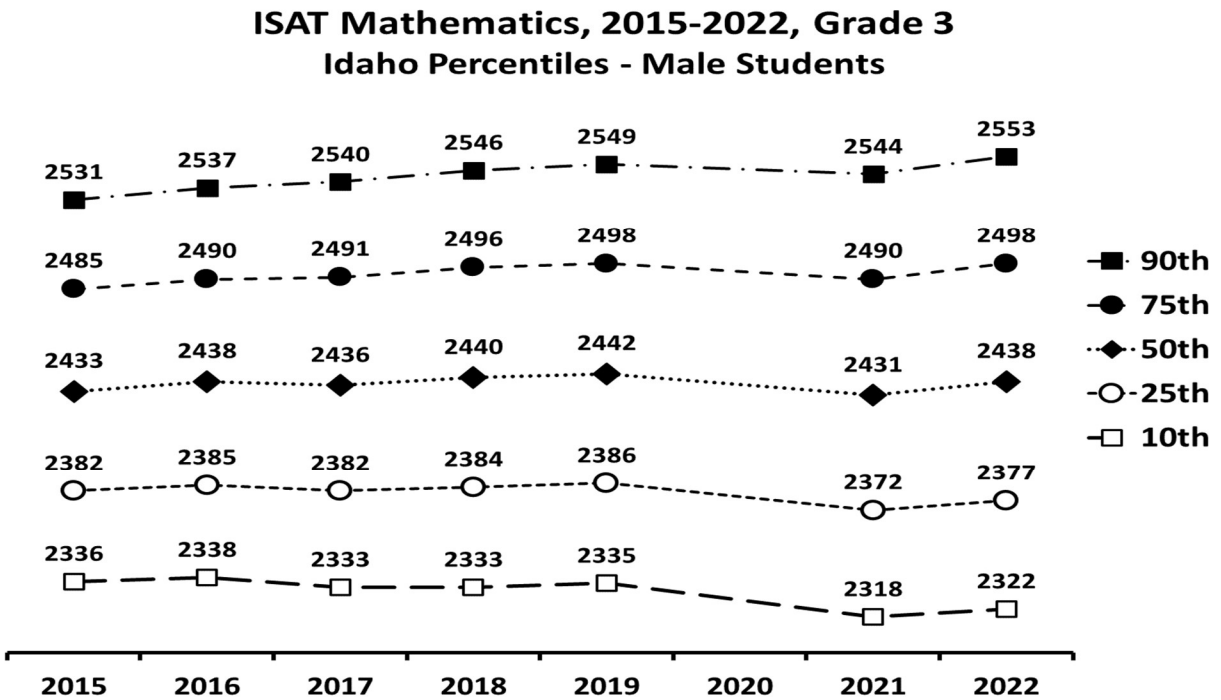
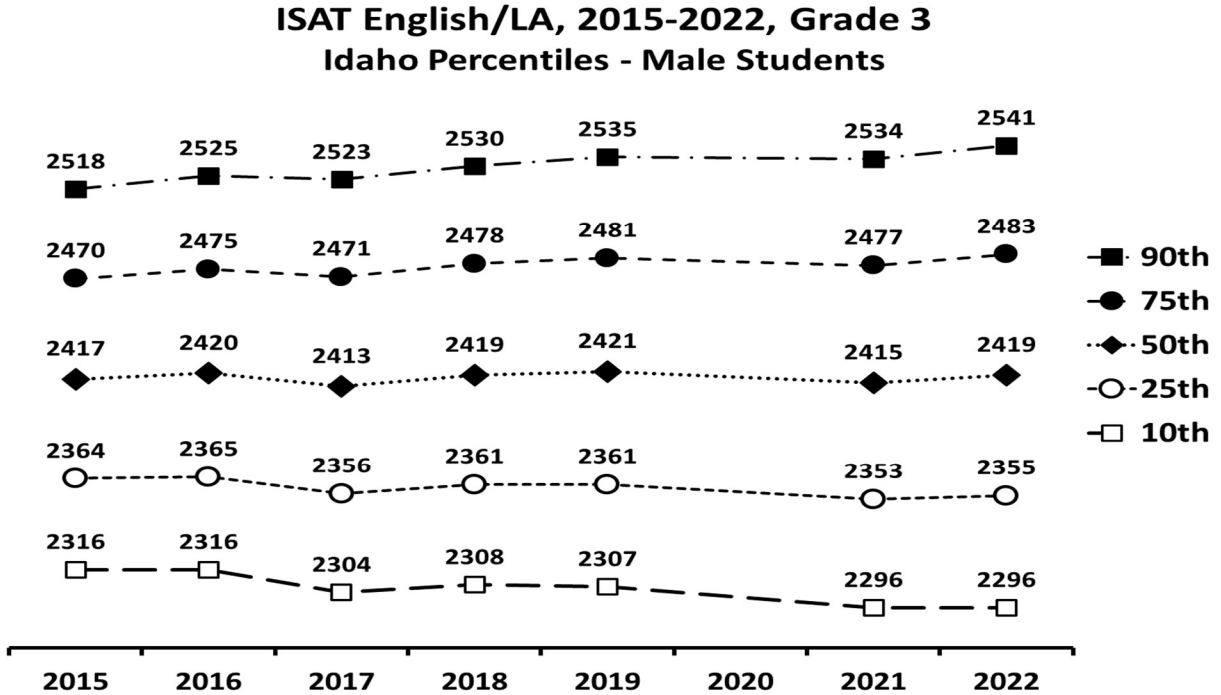
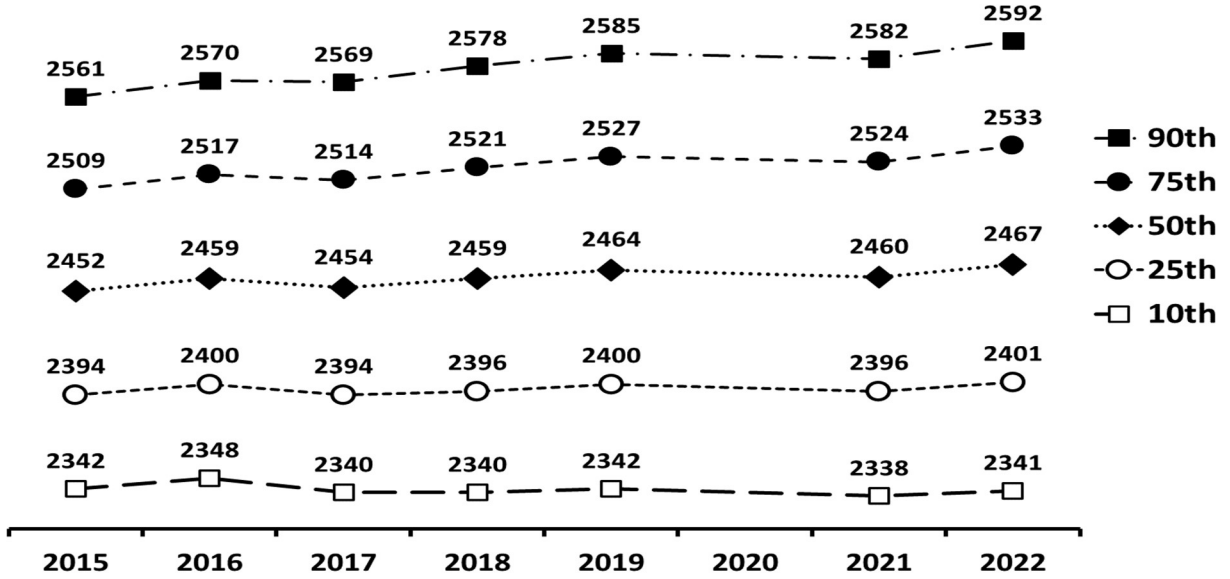


Figure 16. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Male Students, Grade 4

**ISAT English/LA, 2015-2022, Grade 4
Idaho Percentiles - Male Students**



**ISAT Mathematics, 2015-2022, Grade 4
Idaho Percentiles - Male Students**

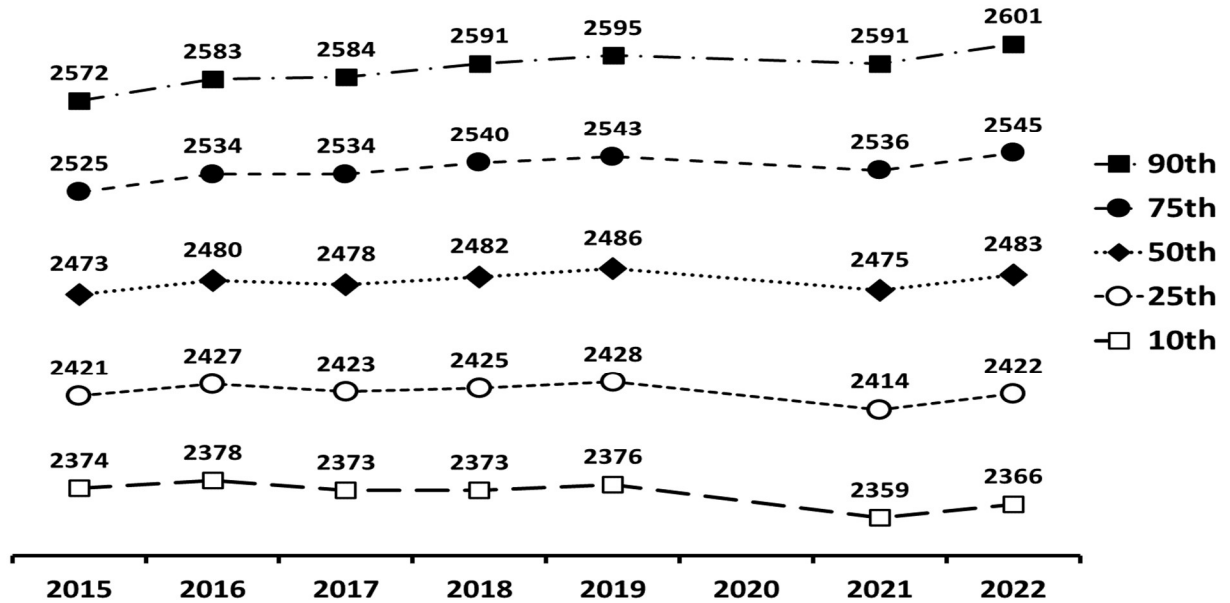


Figure 17. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Male Students, Grade 5

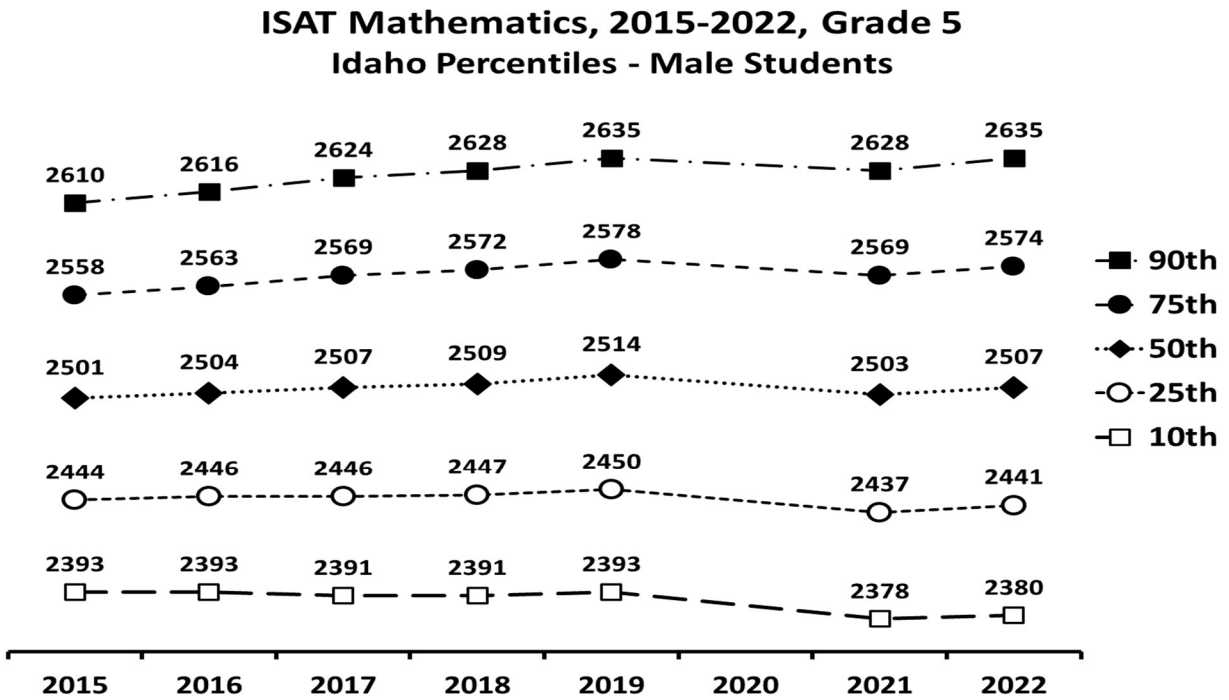
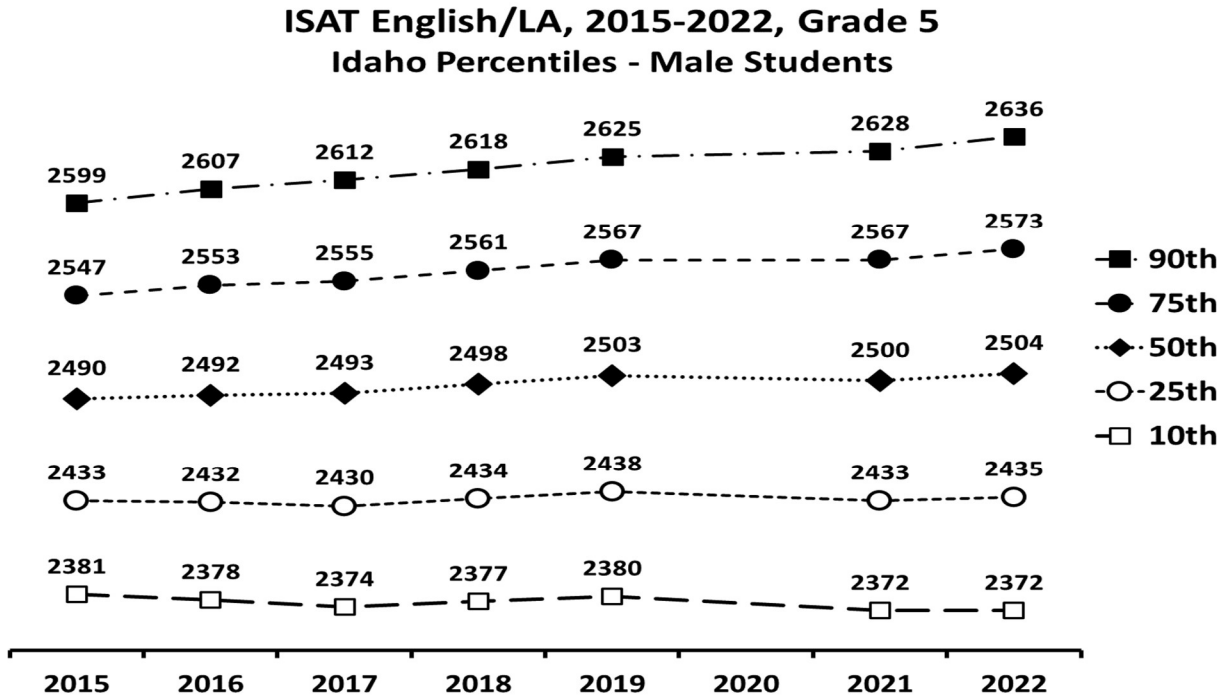


Figure 18. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Male Students, Grade 6

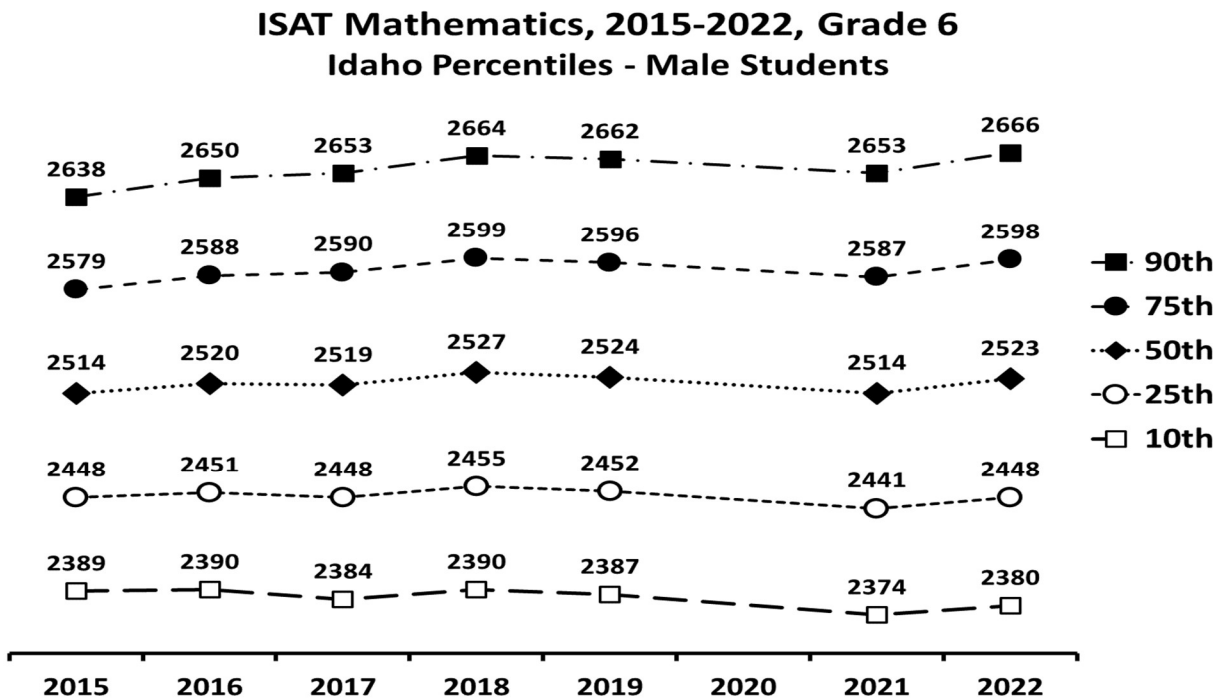
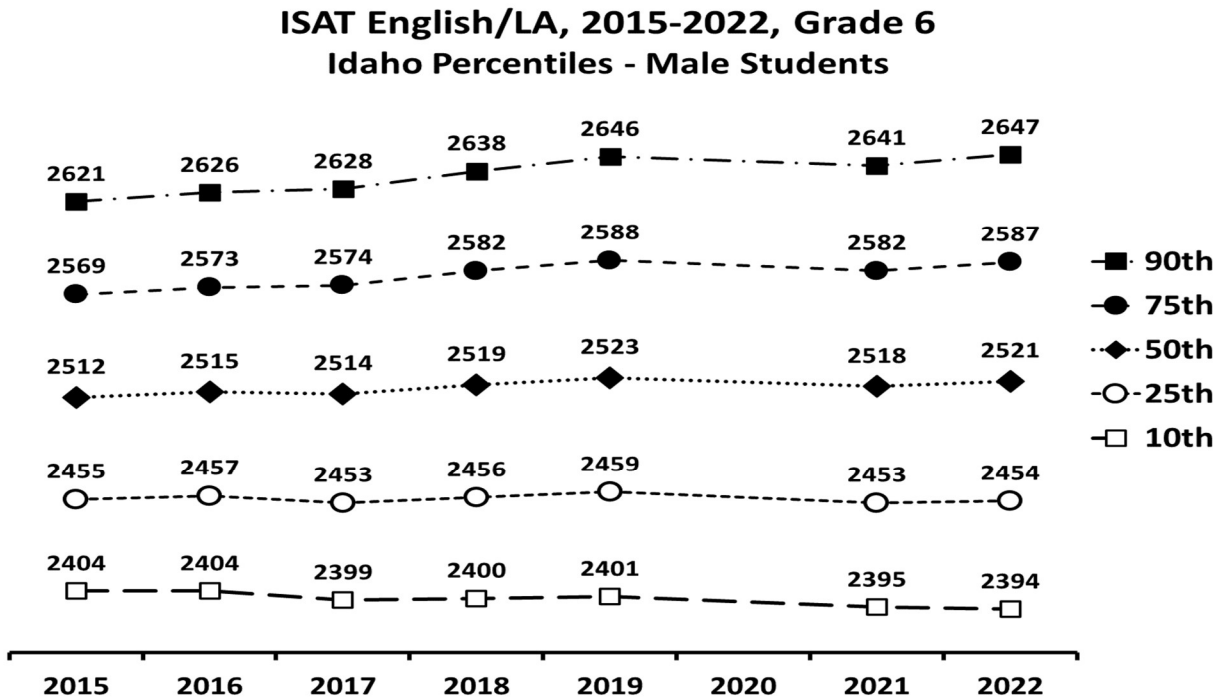
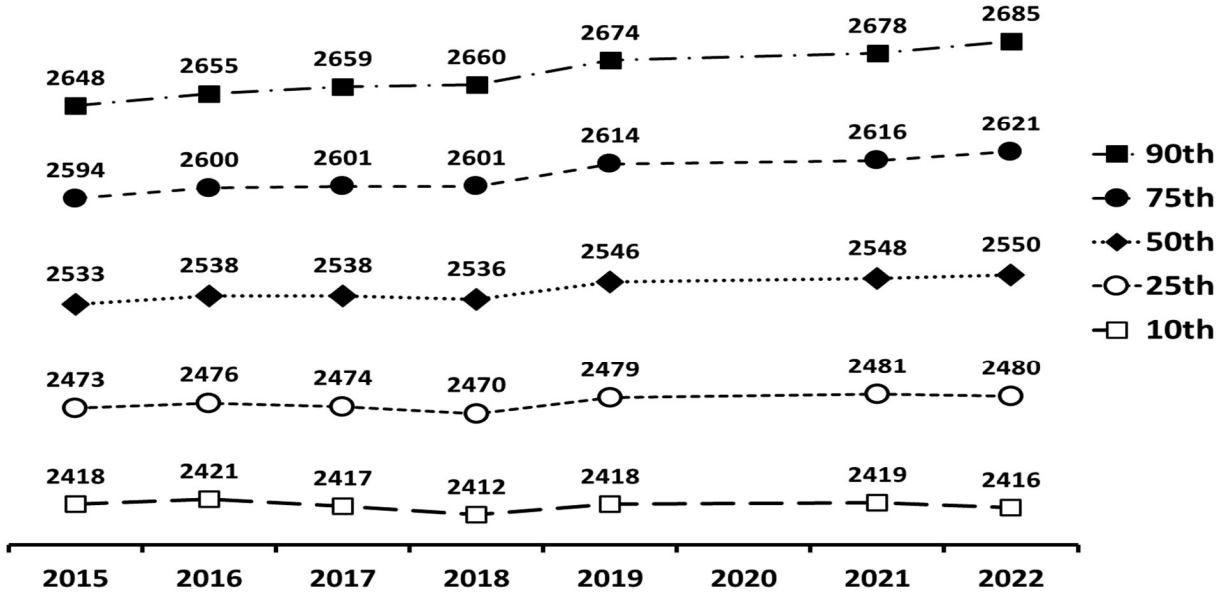


Figure 19. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Male Students, Grade 7

**ISAT English/LA, 2015-2022, Grade 7
Idaho Percentiles - Male Students**



**ISAT Mathematics, 2015-2022, Grade 7
Idaho Percentiles - Male Students**

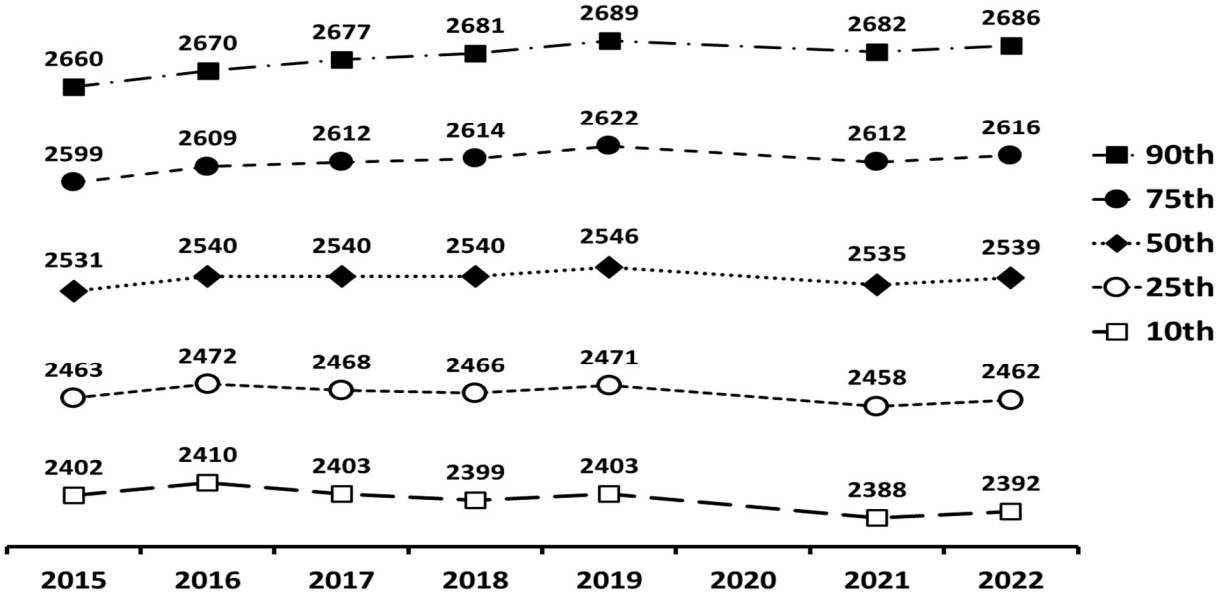
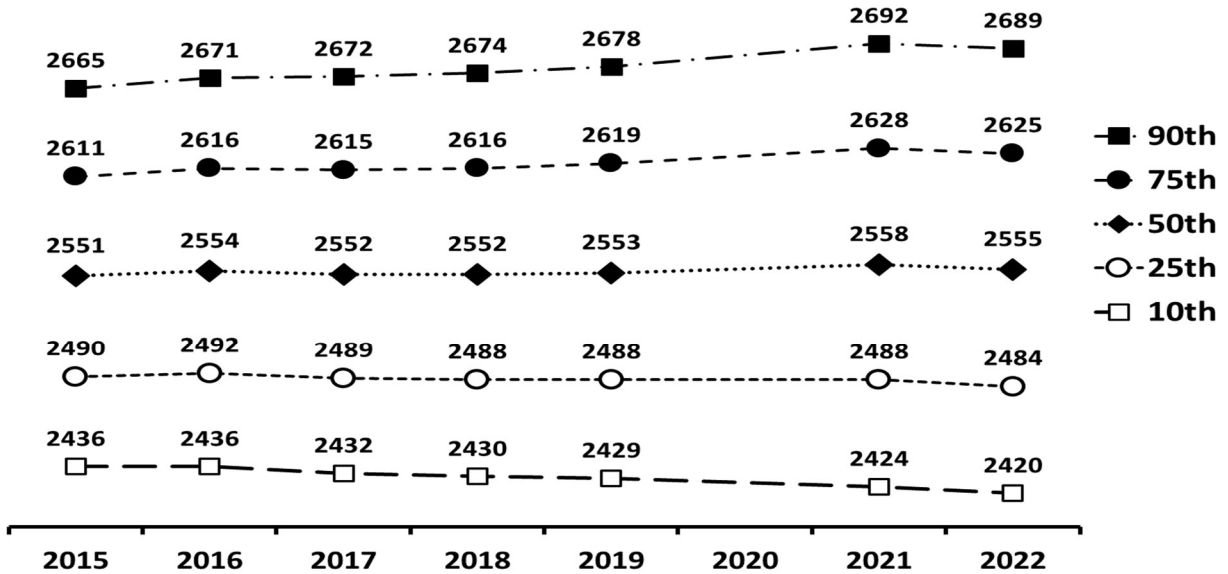


Figure 20. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Male Students, Grade 8

**ISAT English/LA, 2015-2022, Grade 8
Idaho Percentiles - Male Students**



**ISAT Mathematics, 2015-2022, Grade 8
Idaho Percentiles - Male Students**

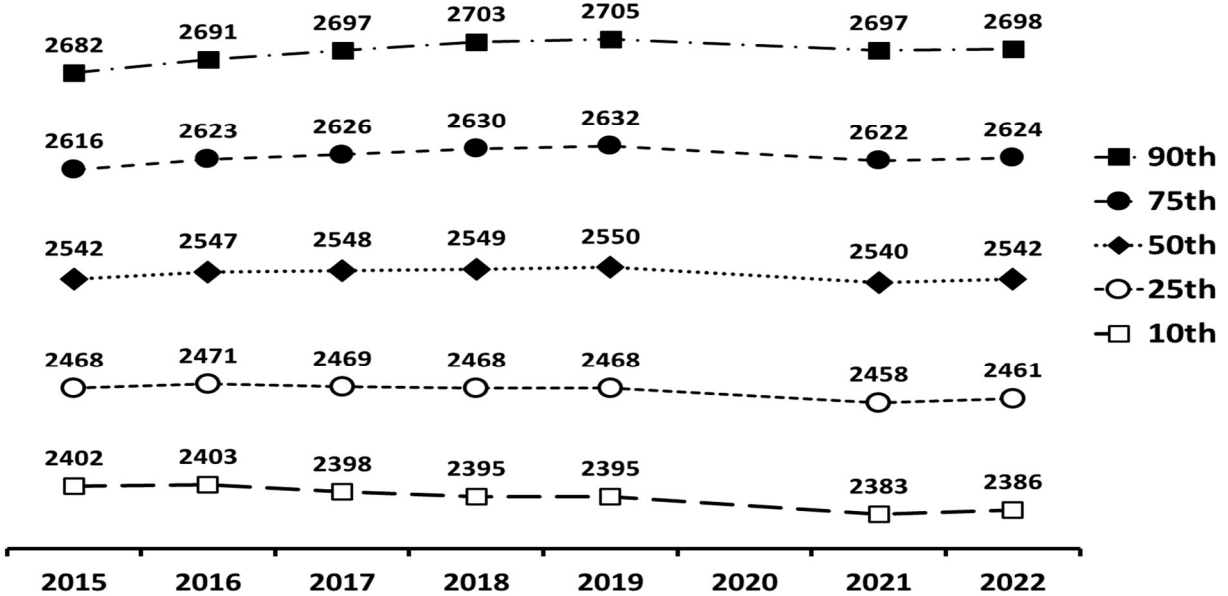
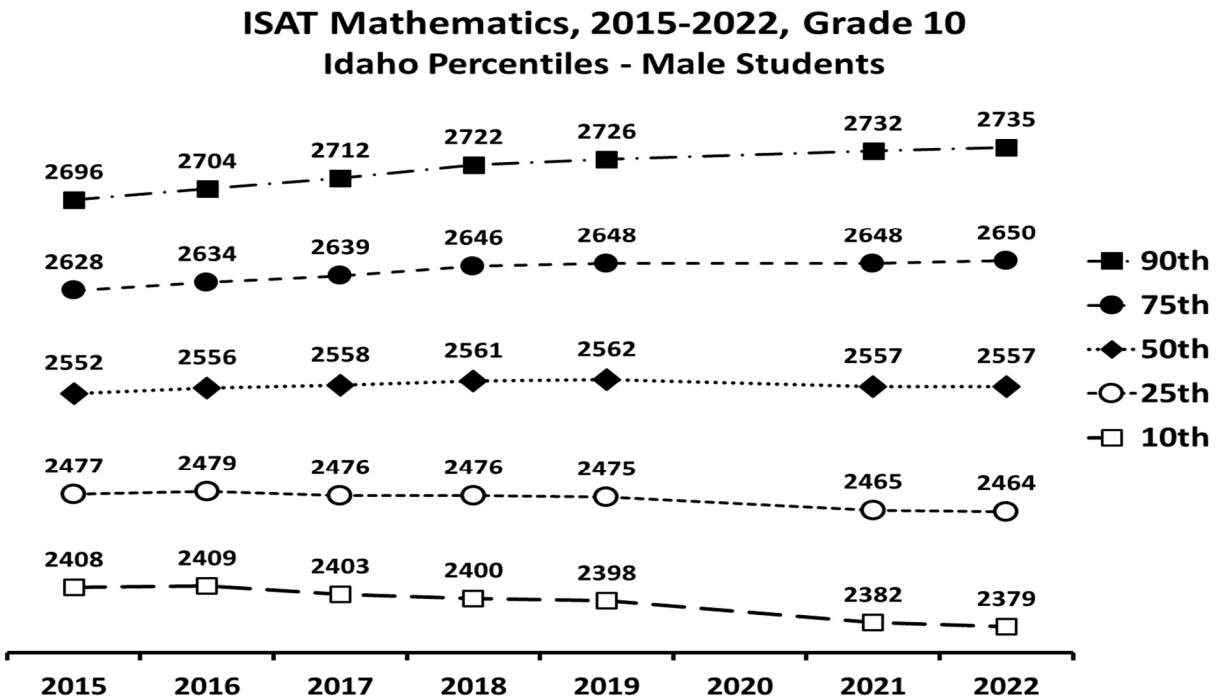
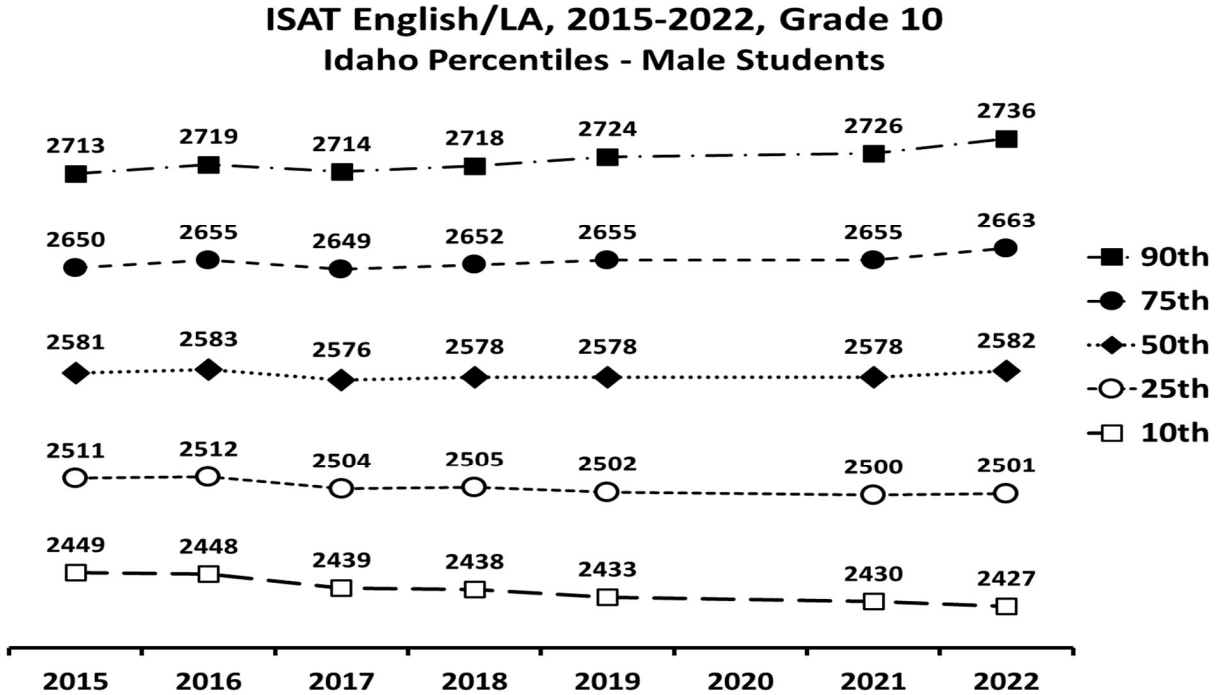


Figure 21. ISAT 2015-2022: English Language Arts and Mathematics Percentiles for Male Students, Grade 10



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Runyon, R.P. and Haber, A. (1971). *Fundamentals of Behavioral Statistics* (2nd Ed.). Reading, MA: Addison-Wesley Publishing Company.