MSAA COVID-19 Follow-Up Impact Study Report

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Prepared by Cognia for MSAA

cognia™

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Introduction

The Multi-State Alternate Assessment (MSAA) is a summative assessment system designed to promote increasingly higher academic outcomes for students with the most significant disabilities to prepare them for a broader array of post-secondary outcomes. The MSAA is designed to measure grade-level academic content that is aligned with, and derived from, MSAA Partner States' content standards. The MSAA is administered in the areas of English language arts (ELA) and mathematics in grades 3–8 and 11.

The impact of COVID-19 worldwide resulted in cancellation of the 2020 administration and continued to influence many MSAA Partner States' participation levels in 2021. Given the continued pandemic-related disruptions to the 2021 administration of the MSAA assessments, concerns have been raised about the effects on student test scores and achievement. Some researchers suggested a longitudinal approach to analyzing assessment data as a means of evaluating the potential effects of pandemic-related disruptions (An et. Al, 2022).

This report details the results of a study that Cognia conducted to examine the potential effects of pandemic-related disruptions to 2021 student performance on MSAA assessments. Cognia used MSAA ELA and mathematics assessment data from the 2017, 2019, and 2021 administration years to calculate three test-score metrics from Ho (2021) to detect any systematic impacts on student participation and test performance that might have stemmed from pandemic-related disruptions. Student performance data from 2017, and not 2018, was utilized to mirror the two-year gap between the 2019 and 2021 test administrations.

The MSAA Partner States that participated in all three assessment administrations years include Arizona, Maine, Montana, The Marianas (the Commonwealth of the Northern Mariana Islands), South Dakota, Tennessee, and the U.S. Virgin Islands. Note that while Washington, D.C. was one of the partners stated during the three assessment years, they did not administer the assessment in 2021 and are therefore not included in this report. Additionally, Guam was not included, because the student IDs of Guam students were not consistent (within student) across the 2017, 2019, and 2021 administrations. Also note that due to the gap between grades 8 and 11, the MSAA ELA and mathematics grade 11 assessment was not included in the analyses.

The next section of this report details the calculation of the match rates, fair trends, and equity checks test-score metrics. Then, participation counts, scaled score descriptive statistics, performance level distributions, and the results from each test-score metric are provided. This report also includes several appendices containing supporting details from these results.

Method

To address the overarching research question, i.e., to what extend did pandemic-related disruptions impact 2021 student performance on MSAA assessments, several sets of analyses were conducted. To begin, descriptive analyses related to student participation and performance on MSAA assessments were performed. The next set of analyses were based on three test score metrics (i.e., match rate, fair trend, and equity checks). More details on the specific methods related to each of the three metrics are provided below.

Test Score Metrics

Ho (2021) proposed three metrics for reporting test scores during COVID-19 which were labelled as match rate, fair trend, and equity check. Cognia adopted these metrics in this COVID-19 follow-up impact study. Brief descriptions that include the purpose, definition, and computation of each of the three metrics as they relate to the MSAA COVID-19 follow-up impact study are presented below. For additional details related to the three test-score metrics, please refer to Ho (2021).

Calculation of the test-score metrics—match rate, fair trend, equity check—rely on the student results data from the 2017, 2019, and 2021 of the MSAA ELA and Mathematics assessments. The details of the test-score metrics presented below rely on the notation defined in Table 1.

Table 1. Listing of Symbols and Definitions

Symbol	Definition
Administration Year	
y	2021, the current administration year
$y-2$	2019 the previous administration year (two years prior to the current administration year)
$y-4$	2017, four years prior to the current administration year
MSAA Assessment Grade Level	
g	assessment grade-level 5, 6, 7, or 8
$g-2$	assessment grade-level 3, 4, 5, or 6
Student Participation Frequencies	
$N_{y-2,g-2}$	Number of students who tested in grade $g-2$ in 2019 (year $y-2$)
$N_{y-4,g-2}$	Number of students who tested in grade $g-2$ in 2017 (year $y-4$)
$N^*_{y,g}$	Number of students who tested in grade g in 2021 (year y) and in grade $g-2$ in 2019 (year $y-2$)
$N^*_{y-2,g}$	Number of students who tested in grade g in 2019 (year $y-2$) and in grade $g-2$ in 2017 (year $y-4$)
Observed Scaled Scores	
$X_{y,g}$	Observed scaled score in 2021 (year y) in grade g
$X_{y-2,g}$	Observed scaled score in 2019 (year $y-2$) in grade g
$X_{y-2,g-2}$	Observed scaled score in 2019 (year $y-2$) in grade g
$X_{y-4,g-2}$	Observed scaled score in 2021 (year y) in grade g
Matched Scaled Scores	
$X^*_{y,g}$	Observed 2021 (year y) scaled score in grade g of a student who tested in grade g in 2021 (year y) and in grade $g-2$ in 2019

Symbol	Definition
$X^*_{y-2,g}$	Observed 2019 (year $y-2$) scaled score in grade g of a student who tested in grade g in 2019 (year $y-2$) and in grade $g-2$ in 2017 (year $y-4$)
$X^*_{y-4,g-2}$	Observed 2017 (year $y-4$) scaled score in grade $g-2$ of a student who tested in grade g in 2019 (year $y-2$) and in grade $g-2$ in 2017 (year $y-4$)
$\hat{X}^*_{y-2,g}$	Predicted 2019 (year $y-2$) scaled score in grade g
Non-Matched Scaled Scores	
$X'_{y-2,g-2}$	Observed 2019 (year $y-2$) scaled score in grade $g-2$ of a student who tested in grade $g-2$ in 2019 (year $y-2$) but *did not* test grade g in 2021 (year y)
$\hat{X}'_{y-2,g}$	Predicted 2019 (year $y-2$) scaled score in grade g of a student who tested in grade $g-2$ in 2019 (year $y-2$) but *did not* test grade g in 2021 (year y)

Match Rate

The match rate is the percentage of students who tested in the previous grade of the previous administration who also tested in the current grade of the current administration. The current study examines the 2019 and the 2021 match rates, each separately for MSAA ELA and Mathematics.

As shown in Table 2, the 2019 match rates treat the current administration as the 2019 administration of MSAA and the previous administration as the 2017 administration of MSAA. Similarly, the 2021 match rates define the current administration as the 2021 administration of MSAA and the previous administration as the 2019 administration of MSAA.

Table 2. Administration Years and MSAA Assessment Grade Levels for 2019 and 2021 Match Rates

MSAA Administration Year			MSAA Grade Level	
Current	Previous		Current	Previous
2019 Match Rates				
2019	2017		Grade 5	Grade 3
2019	2017		Grade 6	Grade 4
2019	2017		Grade 7	Grade 5
2019	2017		Grade 8	Grade 6
2021 Match Rates				
2021	2019		Grade 5	Grade 3
2021	2019		Grade 6	Grade 4
2021	2019		Grade 7	Grade 5
2021	2019		Grade 8	Grade 6

For a given assessment (MSAA ELA or MSAA Mathematics) and a given pairing of current grade and previous grade tested, the 2019 and 2021 match rates are given by

$$\text{2019 Match Rate} = 100 \times N^*_{y-2,g} / N_{y-4,g-2}$$

and

$$\text{2021 Match Rate} = 100 \times N^*_{y,g} / N_{y-2,g-2},$$

where $y = 2021$,

$y - 2 = 2019$,

$y - 4 = 2017$,

$g = 5, 6, 7,$ or $8,$ and

$g - 2 = 3, 4, 5,$ or $6.$

Fair Trend

The focus of the fair trend analysis is a set of comparisons between student observed scaled scores from the 2021 administration of a given current grade with their predicted (or fair trend adjusted) scaled scores from the 2019 administration, had those students in 2021 tested in the same grade in 2019. For example, the comparison for MSAA ELA grade 5 was based on the observed 2021 scaled scores of students from the 2021 administration of MSAA ELA grade 5 and the predicted 2019 scaled scores of those same students, had they also taken the MSAA ELA grade 5 in 2019.

Each comparison of 2021 observed scaled scores with 2019 predicted scaled scores was a within-group comparison of two sets of scaled scores (one observed, the other predicted), with both sets of scaled scores being on the reporting scale of the same MSAA assessment (e.g., MSAA Mathematics Grade 7). The group in each comparison is the matched set of students who tested in 2021, in a subject (MSAA ELA or Mathematics) and grade g who also tested in 2019 in the same subject in grade $g-2$.

The fair trend analysis for each MSAA subject (ELA or Mathematics) and each pairing of current and previous grades was performed via the following steps:

1. Identify the set of students who tested in 2019 in grade g.
2. Identify the subset of those students, who also tested in 2017 in the previous grade $g-2$.
3. Using that subset of students testing in 2017 and 2019, fit the following linear regression model that predicts 2019 scaled scores in grade g from 2017 scaled scores in grade $g-2$:

   $$X^*_{y-2,g} = \beta_0 + \beta_1 X^*_{y-4,g-2} + \varepsilon$$

   where β_0 is an intercept parameter,
   β_1 is a slope parameter, and
   and ε is an error term.
4. Identify the subset of students who tested in 2021 in grade g who also tested in 2019 in the associated previous grade $g-2$.
5. For each student who tested in 2019 and 2021, calculate $\hat{X}^*_{y-2,g}$, the predicted 2019 scaled score in grade g from the observed 2019 scaled scores in the previous grade $g-2$, where

   $$\hat{X}^*_{y-2,g} = \beta_0 + \beta_1 X^*_{y-2,g-2}$$
6. Calculate the unstandardized mean difference, μ_d, between the observed 2021 scaled scores in grade g and predicted 2019 scaled score in grade g, i.e.,

   $$\mu_d = \mu\left(X^*_{y,g}\right) - \mu\left(\hat{X}^*_{y-2,g}\right),$$

   where $\mu(\cdot)$ is the mean value of the given variable.

   μ_d represents the average difference in scaled scores points between the observed 2021 grade g scaled scores and the predicted 2019 grade g scaled scores.
7. Calculate the standardized mean difference, δ, by dividing the unstandardized mean difference by $S^*_{y,g}$, the standard deviation of the 2021 observed scaled scores in grade g (for students who tested in 2019 and 2021), i.e.,

   $$\delta = \frac{\mu_d}{S^*_{y,g}}$$

   δ represents the number of (2021 grade-g) scaled score standard deviations by which the mean observed 2021 grade g scaled score differs from the mean predicted 2019 grade g scaled score.

When interpretating standardized mean differences, Cohen (1988) recommends the following intervals:

- Negligible effect: $0 \leq |\delta| < 0.2$
- Small effect: $0.2 \leq |\delta| < 0.5$
- Medium effect: $0.5 \leq |\delta| < 0.8$
- Large effect: $|\delta| \geq 0.8$

Equity Check

The equity check is a comparison between (a) the students who tested in 2019 in grade $g-2$ and in 2021 in grade g, versus (b) the students who tested in 2019 in grade $g-2$ but did not test in 2021 in grade g. That is, the matched students from 2019 are compared with the unmatched students from 2019. For each unmatched student, a predicted 2019 scaled score in grade g is estimated based on the student's observed 2019 scaled score in grade $g-2$. The mean predicted 2019 scaled score, in grade g among unmatched students, is compared against the mean observed 2021 scaled scores in grade g among matched students.

The equity check calculations are as follows:

1. Identify the set of students who tested in 2019 in grade $g-2$.
2. Identify a subset of those students who tested in 2019 but did *not* test in 2021.
3. For each student in that subset who tested in 2019 and but did not test in 2021, calculate $\hat{X}'_{y-2,g}$, the predicted 2019 scaled score in grade g from the observed 2019 scaled score in the previous grade $g-2$, using the same slope and intercept parameter estimates previously obtained as part of the fair trend analyses. That is,

$$\hat{X}'_{y-2,g} = \beta_0 + \beta_1 X'_{y-2,g-2}$$

4. Calculate the unstandardized mean difference, μ'_d , between the observed 2021 scaled scores in grade g for students who tested in 2019 and 2021 versus the predicted 2019 scaled scores in grade g for students who tested in 2019 but not in 2021, such that

$$\mu'_d = \mu\left(X^*_{y,g}\right) - \mu\left(\hat{X}'_{y-2,g}\right)$$

   μ'_d represents the average difference in scaled scores points between the observed 2021 grade g scaled scores and the predicted 2019 grade g scaled scores of those testing in 2019, but not in 2021.

5. Calculate the standardized mean difference, δ', by dividing the unstandardized mean difference by S_{pooled}, the pooled standard deviation of $X^*_{y,g}$ and $\hat{X}'_{y-2,g}$, such that

$$\delta' = \frac{\mu_d}{S_{pooled}},$$

   where

$$S_{pooled} = \sqrt{\frac{\left(N^*_{y,g} - 1\right)S^2_{X^*_{y,g}} + \left(N'_{y-2,g-2} - 1\right)S^2_{\hat{X}'_{y-2,g}}}{N^*_{y,g} + N'_{y-2,g-2} - 2}}.$$

   δ' represents the number of pooled standard deviations by which the mean observed 2021 grade g scaled score of students who tested in 2019 and 2021, differs from the mean predicted 2019 grade g scaled score of students who tested in 2019 but not in 2021.

Results

The following section of the report presents results based on the analyses conducted as described in the methods section, starting with relevant descriptive statistics. This is followed by analysis results for the three test score metrics (i.e., match rates, fair trends, and equity checks). Note that, where relevant, results are presented for three assessment administration years (2017, 2019, and 2021) for both ELA and Mathematics.

Descriptive Statistics

Results based on MSAA administration participation rates are presented first. Next, descriptive statistics related to student performance and assessment performance levels are presented. For additional details related to participation and performance on MSSA assessments, please refer to the annual MSSA technical reports.

Participation Rates

This section presents descriptive results related to student participation numbers on MSAA administrations for 2017, 2019, and 2021 across two subjects and six grades. Tables 3 through Table 8 show the disaggregated student participation rates on MSAA administrations as a function of grade for ELA and Mathematics in 2017, 2019, and 2021, respectively. The complete set of participation rate tables disaggregated by partner, subject, grade, student groups and subgroups are available in Appendix A.

Overall student participation numbers in 2017 for ELA (see Table 3) range from 2,153 to 2,566 across grades 3 through 8. In the same year, student participation numbers for Mathematics (see Table 4) range from 2,162 for grade 3 to 2,572 for grade 8. As shown in the Tables 2 and 3, the participation numbers for both the 2017 ELA and Mathematics subjects are consistent across student groups and subgroups.

Similarly, the overall student participation numbers in 2019 for ELA (see Table 5) range from 2,056 to 2,423 across grades 3 through 8, and participation numbers for Mathematics (see Table 6) range from 2,063 for grade 3 to 2,427 for grade 8. The participation numbers are consistent across student groups and subgroups between the two subjects. There are no notable differences in student participation numbers between the 2017 and 2019 assessment years.

In 2021, as shown in Table 7 and Table 8, the overall student participation numbers for ELA range from 1,666 in grade 3 to 2,105 in grade 8, while participation for Mathematics range from 1,762 to 2,107 across the same grades. Thus, there is a notable decline in participation between 2017 / 2019 and the 2021 MSAA assessment years. For both ELA and Mathematics, the percentage decrease in student participation numbers between the 2019 and 2021 assessment years range from approximately 13% to 20%.

Table 3. Disaggregated Student Participation Rates for the 2017 Administration of MSAA ELA, as a Function of Grade

Subgroup Variable	Subgroup Value	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Overall		2,153	2,280	2,374	2,369	2,348	2,566
Gender	Female	540	522	524	559	576	614
	Male	936	991	1,043	1,021	1,020	1,057
Race/Ethnicity	American Indian or Alaska Native	45	44	43	53	55	53
	Asian	26	20	32	19	19	29
	Black or African American	273	320	325	320	346	367
	Native Hawaiian or Pacific Islander	4	7	12	8	6	8
	White (Non-Hispanic)	859	910	954	932	943	1,012
	Hispanic or Latino	496	528	535	559	521	560
	Two or More Races (Non-Hispanic)	56	35	41	45	31	40
	No Primary Race/ Ethnicity Undefined	394	416	432	433	427	497
Receives LEP services		63	58	58	62	51	33
Econ. Disadv.		392	425	383	452	461	402
Augmentative Comm.		305	317	315	282	286	291
Hearing Loss		60	56	56	59	57	71
Visually Impaired		83	91	89	79	104	108
Receptive Lang.	Sensory Stimuli Response	176	139	151	137	117	131
	Follow Directions	1,974	2,136	2,223	2,232	2,229	2,434
Classroom Setting	Special School	90	106	141	139	132	134
	Regular School Self-contained	1,434	1,498	1,485	1,594	1,592	1,693
	Regular School Primarily Self-contained	370	411	443	408	374	493
	Regular School Resource Room	180	178	215	167	177	173
	Regular School General Education	76	82	90	61	71	72
Expressive Comm.	Student Communicates Primarily Through Cries	125	113	118	99	102	124
	Uses Intentional Communication	480	442	456	422	396	436
	Uses Symbolic Language	1,545	1,720	1,800	1,848	1,848	2,005

Table 4. Disaggregated Student Participation Rates for the 2017 Administration of MSAA Mathematics, as a Function of Grade

Subgroup Variable	Subgroup Value	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Overall		2,162	2,289	2,387	2,385	2,363	2,572
Gender	Female	541	523	523	561	578	618
	Male	945	994	1,051	1,032	1,027	1,057
Race/Ethnicity	American Indian or Alaska Native	46	45	44	56	55	52
	Asian	26	20	32	19	19	29
	Black or African American	275	320	330	322	347	367
	Native Hawaiian or Pacific Islander	4	7	12	8	6	8
	White (Non-Hispanic)	866	914	952	941	951	1,020
	Hispanic or Latino	497	530	543	560	525	562
	Two or More Races (Non-Hispanic)	56	35	41	45	31	40
	No Primary Race/ Ethnicity Undefined	392	418	433	434	429	494
Receives LEP services		63	59	57	62	51	34
Econ. Disadv.		400	427	385	456	465	406
Augmentative Comm.		304	321	320	288	288	294
Hearing Loss		61	56	56	61	57	71
Visually Impaired		83	92	90	81	105	108
Receptive Lang.	Sensory Stimuli Response	176	140	153	139	118	136
	Follow Directions	1,983	2,144	2,234	2,246	2,242	2,435
Classroom Setting	Special School	92	106	140	142	133	133
	Regular School Self-contained	1,443	1,505	1,498	1,602	1,604	1,703
	Regular School Primarily Self-contained	369	412	443	411	375	491
	Regular School Resource Room	179	179	216	168	177	172
	Regular School General Education	76	82	90	62	71	72
Expressive Comm.	Student Communicates Primarily Through Cries	127	115	123	102	105	129
	Uses Intentional Communication	482	445	460	428	400	437
	Uses Symbolic Language	1,550	1,724	1,804	1,855	1,855	2,005

Table 5. Disaggregated Student Participation Rates for the 2019 Administration of MSAA ELA, as a Function of Grade

Subgroup Variable	Subgroup Value	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Overall		2,056	2,216	2,337	2,326	2,418	2,423
Gender	Female	637	701	782	752	769	766
	Male	1,237	1,296	1,338	1,382	1,415	1,419
Race/Ethnicity	American Indian or Alaska Native	57	77	90	80	69	70
	Asian	47	40	44	43	39	31
	Black or African American	352	388	384	411	435	411
	Native Hawaiian or Pacific Islander	8	2	3	4	6	4
	White (Non-Hispanic)	820	887	923	980	1,021	1,060
	Hispanic or Latino	407	421	442	424	432	436
	Two or More Races (Non-Hispanic)	51	58	69	51	45	41
	No Primary Race/ Ethnicity Undefined	314	343	382	333	371	370
Receives LEP services		222	249	283	263	270	272
Econ. Disadv.		471	460	506	523	517	472
Augmentative Comm.		350	351	343	327	324	314
Hearing Loss		52	47	70	53	57	75
Visually Impaired		70	102	98	93	99	98
Receptive Lang.	Sensory Stimuli Response	171	168	173	160	118	140
	Follow Directions	1,885	2,046	2,163	2,165	2,299	2,281
Classroom Setting	Special School	80	132	109	125	141	147
	Regular School Self-contained	1,341	1,421	1,488	1,551	1,612	1,609
	Regular School Primarily Self-contained	375	389	458	436	429	431
	Regular School Resource Room	177	199	202	138	164	172
	Regular School General Education	83	73	79	75	71	62
Expressive Comm.	Student Communicates Primarily Through Cries	155	132	143	122	108	126
	Uses Intentional Communication	477	508	482	435	427	405
	Uses Symbolic Language	1,424	1,574	1,711	1,768	1,882	1,890

Table 6. Disaggregated Student Participation Rates for the 2019 Administration of MSAA Mathematics, as a Function of Grade

Subgroup Variable	Subgroup Value	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Overall		2,063	2,219	2,343	2,327	2,417	2,427
Gender	Female	639	699	780	753	768	764
	Male	1,242	1,297	1,345	1,380	1,417	1,423
Race/Ethnicity	American Indian or Alaska Native	57	77	91	81	69	70
	Asian	48	40	45	43	39	31
	Black or African American	353	386	388	408	434	411
	Native Hawaiian or Pacific Islander	8	2	3	4	6	4
	White (Non-Hispanic)	822	887	919	981	1,023	1,059
	Hispanic or Latino	409	423	444	425	432	437
	Two or More Races (Non-Hispanic)	51	58	70	51	45	42
	No Primary Race/ Ethnicity Undefined	315	346	383	334	369	373
Receives LEP services		224	250	283	263	270	274
Econ. Disadv.		473	459	508	522	518	471
Augmentative Comm.		350	349	346	329	323	316
Hearing Loss		52	47	70	54	56	75
Visually Impaired		70	101	98	96	100	98
Receptive Lang.	Sensory Stimuli Response	171	169	172	163	118	140
	Follow Directions	1,892	2,048	2,170	2,163	2,298	2,285
Classroom Setting	Special School	81	132	109	125	140	147
	Regular School Self-contained	1,347	1,424	1,492	1,553	1,613	1,615
	Regular School Primarily Self-contained	375	389	462	436	428	428
	Regular School Resource Room	177	200	199	137	164	173
	Regular School General Education	83	72	80	75	71	62
Expressive Comm.	Student Communicates Primarily Through Cries	155	134	142	124	106	127
	Uses Intentional Communication	479	507	484	437	428	407
	Uses Symbolic Language	1,429	1,576	1,716	1,765	1,882	1,891

Table 7. Disaggregated Student Participation Rates for the 2021 Administration of MSAA ELA, as a Function of Grade

Subgroup Variable	Subgroup Value	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Overall		1,666	1,769	1,893	1,956	2,036	2,105
Gender	Female	513	531	664	662	712	704
	Male	1,049	1,138	1,125	1,180	1,225	1,291
Race/Ethnicity	American Indian or Alaska Native	39	54	37	45	61	49
	Asian	42	40	43	32	40	38
	Black or African American	292	299	314	357	354	354
	Native Hawaiian or Pacific Islander	8	13	12	12	6	7
	White (Non-Hispanic)	682	773	839	921	925	984
	Hispanic or Latino	380	411	444	410	461	474
	Two or More Races (Non-Hispanic)	55	30	51	32	49	39
	No Primary Race/ Ethnicity Undefined	168	149	153	147	140	160
Receives LEP services		38	47	50	47	69	54
Econ. Disadv.		328	363	389	404	409	389
Augmentative Comm.		340	295	309	283	299	296
Hearing Loss		27	47	34	47	52	53
Visually Impaired		53	55	66	69	74	75
Receptive Lang.	Sensory Stimuli Response	139	136	111	122	130	108
	Follow Directions	1,527	1,633	1,782	1,834	1,906	1,997
Classroom Setting	Special School	69	87	95	129	135	111
	Regular School Self-contained	1,154	1,214	1,258	1,328	1,423	1,434
	Regular School Primarily Self-contained	270	269	334	314	296	382
	Regular School Resource Room	117	144	135	132	135	130
	Regular School General Education	56	55	71	53	47	48
Expressive Comm.	Student Communicates Primarily Through Cries	105	120	100	95	106	91
	Uses Intentional Communication	420	405	395	398	394	366
	Uses Symbolic Language	1,141	1,244	1,398	1,463	1,536	1,648

Table 8. Disaggregated Student Participation Rates for the 2021 Administration of MSAA Mathematics, as a Function of Grade

Subgroup Variable	Subgroup Value	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Overall		1,654	1,762	1,886	1,947	2,029	2,107
Gender	Female	510	532	661	655	707	702
	Male	1,041	1,131	1,122	1,179	1,223	1,295
Race/Ethnicity	American Indian or Alaska Native	40	55	37	43	60	51
	Asian	41	40	43	32	41	39
	Black or African American	289	297	314	354	352	354
	Native Hawaiian or Pacific Islander	8	13	11	12	6	7
	White (Non-Hispanic)	680	767	839	918	922	982
	Hispanic or Latino	376	412	440	410	461	475
	Two or More Races (Non-Hispanic)	54	30	51	32	47	40
	No Primary Race/ Ethnicity Undefined	166	148	151	146	140	159
Receives LEP services		38	47	50	47	68	55
Econ. Disadv.		326	362	390	404	405	388
Augmentative Comm.		338	294	306	282	298	293
Hearing Loss		27	47	35	45	52	53
Visually Impaired		53	56	65	67	74	73
Receptive Lang.	Sensory Stimuli Response	138	140	110	122	130	108
	Follow Directions	1,516	1,622	1,776	1,825	1,899	1,999
Classroom Setting	Special School	69	86	93	128	135	113
	Regular School Self-contained	1,142	1,210	1,256	1,321	1,420	1,434
	Regular School Primarily Self-contained	270	268	331	313	295	381
	Regular School Resource Room	118	143	135	132	133	130
	Regular School General Education	55	55	71	53	46	49
Expressive Comm.	Student Communicates Primarily Through Cries	105	121	99	94	106	92
	Uses Intentional Communication	414	404	392	399	389	362
	Uses Symbolic Language	1,135	1,237	1,395	1,454	1,534	1,653

Scaled Score Descriptive Statistics

This section presents descriptive results related the scaled score means and standard deviations on MSAA assessments. Table 9 summarizes the disaggregated scaled score means and standard deviations for MSAA ELA, as a function of administration year, partner, and grade. While Table 10 shows the same information for MSAA Math. We also calculated and compared the scaled score means and standard deviations of MSAA assessments by MSAA partner disaggregated by student groups and subgroups (See Appendix B). In addition, histograms of scaled score distributions are presented in Appendix C.

As shown in Table 9, the overall scaled score means in 2017 for ELA range from 1238.35 to 1242.76 across grades 3 through 8. In the same year, scaled score means for Mathematics range from 1239.97 to 1243.26 across the same grades. Similarly, the overall scaled score means in 2019 for ELA range from 1237.70 to 1242.70 across grades 3 through 8, and scaled score means for Mathematics range from 1238.42 to 1241.96. The scaled score means and standard deviations are relatively consistent across student groups and subgroups between the two subjects. The overall scaled score means based on the 2021 administration year for ELA range from 1236.39 (SD =11.78) to 1241.18 (SD = 12.81), while scaled score means for Mathematics range from 1239.22 (SD = 11.22) to 1240.98 (SD = 12.73).

Table 9. Disaggregated Scaled Score Means and SDs for MSAA ELA, as a Function of Administration Year, Partner, and Grade

Grade	Partner	2017	2019	2021
03	Overall	1241.68 (15.49)	1240.38 (13.49)	1239.17 (12.64)
	AZ	1239.06 (14.33)	1237.94 (12.60)	1237.53 (11.52)
	ME	1244.12 (17.24)	1243.22 (14.50)	1239.57 (11.90)
	MP	--	--	--
	MT	1242.65 (16.13)	1243.57 (15.03)	1244.21 (12.23)
	SD	1245.22 (18.13)	1241.07 (13.40)	1239.48 (11.60)
	TN	1243.29 (15.59)	1241.74 (13.59)	1239.96 (13.61)
	VI	--	--	--
04	Overall	1240.00 (14.94)	1239.36 (13.34)	1238.11 (14.11)
	AZ	1238.41 (14.67)	1237.46 (11.85)	1237.48 (13.10)
	ME	1246.62 (17.19)	1239.69 (14.19)	1238.55 (13.96)
	MP	--	--	--
	MT	1240.55 (13.52)	1241.54 (14.40)	1240.72 (13.97)
	SD	1240.53 (13.69)	1240.50 (14.21)	1238.80 (15.90)
	TN	1240.42 (14.91)	1240.63 (14.10)	1238.23 (14.74)
	VI	--	--	--
05	Overall	1241.02 (14.21)	1239.57 (13.72)	1238.37 (12.23)
	AZ	1239.15 (13.28)	1237.49 (12.97)	1236.16 (11.29)
	ME	1242.09 (15.04)	1239.40 (12.79)	1239.88 (13.94)
	MP	--	--	--
	MT	1242.62 (12.97)	1241.73 (12.37)	1242.58 (12.52)
	SD	1243.98 (14.12)	1239.55 (12.25)	1238.41 (11.48)
	TN	1242.07 (14.79)	1241.17 (14.48)	1239.53 (12.53)
	VI	--	--	--
06	Overall	1238.35 (14.39)	1239.26 (12.08)	1236.39 (11.78)
	AZ	1236.91 (13.41)	1238.08 (11.48)	1234.65 (11.38)
	ME	1242.37 (16.89)	1240.05 (13.92)	1238.85 (12.35)
	MP	--	--	--
	MT	1238.79 (15.48)	1238.00 (9.87)	1237.45 (11.62)
	SD	1238.88 (14.07)	1236.83 (10.32)	1236.29 (11.51)
	TN	1239.06 (14.70)	1240.46 (12.51)	1237.50 (11.90)
	VI	--	--	--
07	Overall	1242.76 (13.68)	1242.70 (12.86)	1241.18 (12.81)
	AZ	1241.05 (13.01)	1241.66 (12.60)	1239.86 (12.28)
	ME	1245.28 (15.91)	1243.22 (13.18)	1239.14 (12.41)
	MP	--	--	--
	MT	1243.97 (12.29)	1243.44 (12.96)	1241.45 (14.24)
	SD	1243.54 (10.93)	1240.20 (12.47)	1240.11 (11.32)
	TN	1243.84 (14.29)	1243.53 (12.80)	1242.39 (13.08)
	VI	--	--	--
08	Overall	1239.19 (14.08)	1237.70 (11.50)	1237.62 (11.06)
	AZ	1237.90 (12.88)	1236.37 (10.84)	1236.43 (10.84)
	ME	1242.26 (17.76)	1239.27 (13.44)	1239.37 (11.92)
	MP	--	--	--
	MT	1241.31 (14.77)	1238.59 (11.16)	1237.43 (11.18)
	SD	1242.22 (14.16)	1234.94 (10.63)	1235.25 (8.68)
	TN	1239.45 (14.35)	1238.90 (11.76)	1238.53 (11.20)
	VI	--	--	--

Note. Statistics suppressed when based on fewer than 50 students and denoted by table cell values of '--'.

Table 10. Disaggregated Scaled Score Means and SDs for MSAA Mathematics, as a Function of Administration Year, Partner, and Grade

Grade	Partner	2017	2019	2021
03	Overall	1243.26 (13.71)	1241.70 (11.67)	1240.98 (12.73)
	AZ	1241.94 (13.46)	1240.26 (10.78)	1239.99 (11.68)
	ME	1243.48 (14.69)	1242.27 (11.65)	1240.59 (14.74)
	MP	--	--	--
	MT	1243.38 (12.46)	1243.47 (12.66)	1243.06 (12.73)
	SD	1245.93 (15.98)	1240.75 (12.76)	1240.77 (11.73)
	TN	1244.06 (13.51)	1242.75 (11.96)	1241.58 (13.43)
	VI	--	--	--
04	Overall	1239.97 (13.14)	1239.42 (11.07)	1239.22 (11.22)
	AZ	1238.61 (13.09)	1237.81 (9.39)	1238.41 (9.79)
	ME	1241.39 (11.00)	1239.66 (11.04)	1237.97 (9.24)
	MP	--	--	--
	MT	1239.70 (12.62)	1239.28 (13.65)	1240.65 (10.02)
	SD	1240.76 (14.20)	1238.70 (11.45)	1240.79 (13.67)
	TN	1240.91 (13.26)	1240.90 (11.79)	1239.69 (12.27)
	VI	--	--	--
05	Overall	1242.35 (13.29)	1240.87 (12.49)	1239.65 (11.29)
	AZ	1241.40 (12.73)	1239.69 (11.61)	1238.46 (10.57)
	ME	1241.45 (12.02)	1239.55 (10.64)	1237.37 (12.23)
	MP	--	--	--
	MT	1244.40 (12.88)	1241.34 (12.34)	1242.35 (11.42)
	SD	1244.97 (13.61)	1239.34 (10.75)	1238.53 (8.90)
	TN	1242.86 (13.87)	1242.12 (13.45)	1240.63 (11.82)
	VI	--	--	--
06	Overall	1241.40 (14.00)	1241.21 (12.46)	1240.56 (11.40)
	AZ	1240.24 (13.33)	1239.74 (11.20)	1239.49 (11.08)
	ME	1243.86 (16.35)	1239.21 (10.11)	1242.03 (12.18)
	MP	--	--	--
	MT	1240.18 (13.35)	1241.27 (11.89)	1241.17 (10.02)
	SD	1240.61 (12.63)	1239.48 (11.40)	1239.70 (10.38)
	TN	1242.44 (14.43)	1242.69 (13.53)	1241.40 (11.70)
	VI	--	--	--
07	Overall	1243.19 (13.26)	1241.96 (11.25)	1240.51 (12.83)
	AZ	1242.23 (12.42)	1241.52 (11.07)	1239.66 (11.88)
	ME	1244.00 (14.23)	1240.46 (10.91)	1238.20 (12.25)
	MP	--	--	--
	MT	1242.62 (11.84)	1240.81 (11.12)	1239.43 (11.93)
	SD	1244.77 (13.94)	1238.82 (9.76)	1239.68 (10.77)
	TN	1243.78 (13.86)	1242.82 (11.39)	1241.53 (13.66)
	VI	--	--	--
08	Overall	1241.79 (13.26)	1241.80 (12.40)	1240.96 (12.05)
	AZ	1241.01 (12.50)	1241.11 (11.83)	1240.03 (11.11)
	ME	1242.07 (14.84)	1241.24 (13.98)	1240.45 (11.20)
	MP	--	--	--
	MT	1243.08 (13.95)	1240.74 (10.36)	1240.14 (11.45)
	SD	1244.99 (13.67)	1239.96 (11.17)	1238.07 (11.50)
	TN	1241.88 (13.48)	1242.73 (12.88)	1241.87 (12.61)
	VI	--	--	--

Note. Statistics suppressed when based on fewer than 50 students and denoted by table cell values of '--'.

Performance Level Statistics

Table 11 through Table 16 summarizes the overall performance level percentage distributions for the 2017, 2019, and 2021 administration of MSAA ELA and Mathematics, as a function of grade and partner. The full set of disaggregated performance level percentage distributions is available in Appendix D.

Table 11. Performance Level Percentage Distribution for the 2017 Administration of MSAA ELA, as a Function of Grade and Partner

Grade	Partner	Level 1	Level 2	Level 3	Level 4
03	Overall	34.2%	19.1%	23.0%	23.7%
	AZ	40.6%	18.9%	22.9%	17.6%
	ME	30.9%	18.4%	18.4%	32.4%
	MP	--	--	--	--
	MT	27.9%	24.4%	18.6%	29.1%
	SD	27.4%	16.9%	25.8%	29.8%
	TN	30.2%	19.1%	23.7%	27.0%
	VI	--	--	--	--
04	Overall	38.5%	17.9%	31.5%	12.1%
	AZ	43.6%	16.9%	29.8%	9.7%
	ME	23.1%	16.2%	40.8%	20.0%
	MP	--	--	--	--
	MT	33.0%	22.6%	30.2%	14.2%
	SD	35.7%	14.7%	37.2%	12.4%
	TN	36.7%	19.1%	31.4%	12.8%
	VI	--	--	--	--
05	Overall	25.4%	27.8%	34.2%	12.6%
	AZ	29.0%	28.9%	32.5%	9.5%
	ME	23.7%	27.6%	33.6%	15.1%
	MP	--	--	--	--
	MT	20.2%	31.3%	36.4%	12.1%
	SD	22.1%	21.4%	39.3%	17.2%
	TN	22.8%	27.4%	35.3%	14.4%
	VI	--	--	--	--
06	Overall	34.1%	27.5%	23.7%	14.6%
	AZ	35.7%	29.9%	23.1%	11.4%
	ME	29.5%	21.8%	23.7%	25.0%
	MP	--	--	--	--
	MT	33.0%	18.6%	35.1%	13.4%
	SD	32.0%	30.1%	23.5%	14.4%
	TN	33.7%	26.5%	23.4%	16.4%
	VI	--	--	--	--
07	Overall	33.4%	16.2%	31.3%	19.1%
	AZ	38.8%	15.7%	29.7%	15.9%
	ME	28.5%	17.9%	26.5%	27.2%
	MP	--	--	--	--
	MT	29.8%	13.5%	34.6%	22.1%
	SD	21.3%	17.4%	47.1%	14.2%
	TN	31.0%	16.5%	31.0%	21.5%
	VI	--	--	--	--
08	Overall	28.7%	31.3%	18.0%	22.1%
	AZ	31.1%	32.6%	16.8%	19.5%
	ME	25.7%	26.9%	16.2%	31.1%
	MP	--	--	--	--
	MT	22.0%	32.1%	14.7%	31.2%
	SD	20.9%	34.3%	17.9%	26.9%
	TN	28.1%	30.3%	19.8%	21.7%
	VI	--	--	--	--

Note. Statistics suppressed when based on fewer than 50 students and denoted by table cell values of '--'.

Table 12. Performance Level Percentage Distribution for the 2017 Administration of MSAA Mathematics, as a Function of Grade and Partner

Grade	Partner	Level 1	Level 2	Level 3	Level 4
03	Overall	26.8%	18.5%	37.2%	17.5%
	AZ	29.3%	19.3%	36.1%	15.3%
	ME	29.2%	19.0%	31.4%	20.4%
	MP	--	--	--	--
	MT	27.9%	17.4%	36.0%	18.6%
	SD	29.0%	10.5%	35.5%	25.0%
	TN	24.1%	18.5%	39.2%	18.2%
	VI	--	--	--	--
04	Overall	26.4%	22.6%	35.8%	15.2%
	AZ	29.8%	24.7%	32.5%	13.0%
	ME	23.5%	15.2%	44.7%	16.7%
	MP	--	--	--	--
	MT	28.6%	21.9%	33.3%	16.2%
	SD	26.2%	19.2%	38.5%	16.2%
	TN	23.5%	22.2%	37.8%	16.5%
	VI	--	--	--	--
05	Overall	15.3%	33.6%	36.8%	14.4%
	AZ	15.5%	35.4%	37.5%	11.6%
	ME	19.2%	29.8%	37.7%	13.2%
	MP	--	--	--	--
	MT	11.0%	32.0%	40.0%	17.0%
	SD	11.0%	28.1%	42.5%	18.5%
	TN	15.5%	33.4%	34.8%	16.3%
	VI	--	--	--	--
06	Overall	29.2%	27.5%	19.6%	23.8%
	AZ	30.3%	28.5%	20.1%	21.1%
	ME	26.1%	22.4%	18.0%	33.5%
	MP	--	--	--	--
	MT	36.0%	24.0%	19.0%	21.0%
	SD	24.0%	34.4%	19.5%	22.1%
	TN	28.4%	26.8%	19.5%	25.3%
	VI	--	--	--	--
07	Overall	11.3%	38.4%	33.7%	16.6%
	AZ	11.9%	39.3%	34.0%	14.8%
	ME	8.5%	41.2%	31.4%	19.0%
	MP	--	--	--	--
	MT	12.5%	38.5%	35.6%	13.5%
	SD	6.5%	37.4%	36.1%	20.0%
	TN	11.7%	37.3%	33.2%	17.7%
	VI	--	--	--	--
08	Overall	24.8%	25.3%	27.2%	22.7%
	AZ	26.7%	25.9%	26.3%	21.1%
	ME	25.0%	20.8%	25.6%	28.6%
	MP	--	--	--	--
	MT	20.6%	21.5%	34.6%	23.4%
	SD	14.2%	23.9%	34.3%	27.6%
	TN	25.0%	25.8%	26.9%	22.4%
	VI	--	--	--	--

Note. Statistics suppressed when based on fewer than 50 students and denoted by table cell values of '--'.

Table 13. Performance Level Percentage Distribution for the 2019 Administration of MSAA ELA, as a Function of Grade and Partner

Grade	Partner	Level 1	Level 2	Level 3	Level 4
03	Overall	37.5%	17.2%	30.0%	15.3%
	AZ	45.0%	18.5%	25.6%	10.9%
	ME	31.0%	18.0%	28.0%	23.0%
	MP	--	--	--	--
	MT	29.0%	19.4%	27.4%	24.2%
	SD	36.5%	13.5%	34.4%	15.6%
	TN	32.6%	15.9%	34.4%	17.1%
	VI	--	--	--	--
04	Overall	40.7%	18.2%	31.3%	9.8%
	AZ	46.1%	17.4%	30.8%	5.8%
	ME	36.8%	23.7%	29.8%	9.6%
	MP	--	--	--	--
	MT	33.6%	14.7%	41.4%	10.3%
	SD	37.1%	24.8%	26.7%	11.4%
	TN	37.6%	17.9%	31.3%	13.2%
	VI	--	--	--	--
05	Overall	30.9%	27.9%	28.6%	12.6%
	AZ	37.1%	27.3%	26.5%	9.1%
	ME	26.1%	32.8%	27.6%	13.4%
	MP	--	--	--	--
	MT	21.1%	25.7%	40.4%	12.8%
	SD	31.9%	26.4%	31.9%	9.9%
	TN	27.2%	27.9%	29.3%	15.7%
	VI	--	--	--	--
06	Overall	24.8%	22.3%	38.1%	14.7%
	AZ	28.5%	22.9%	36.0%	12.6%
	ME	29.0%	18.7%	32.7%	19.6%
	MP	--	--	--	--
	MT	25.0%	25.9%	36.1%	13.0%
	SD	26.3%	27.3%	37.4%	9.1%
	TN	21.2%	21.5%	40.8%	16.5%
	VI	--	--	--	--
07	Overall	35.1%	11.7%	33.7%	19.5%
	AZ	38.6%	11.7%	33.9%	15.9%
	ME	27.9%	11.8%	38.2%	22.1%
	MP	--	--	--	--
	MT	29.6%	15.7%	35.2%	19.4%
	SD	48.6%	11.4%	23.8%	16.2%
	TN	32.2%	11.6%	34.2%	22.1%
	VI	--	--	--	--
08	Overall	28.9%	25.3%	29.8%	16.0%
	AZ	31.7%	27.7%	27.7%	12.9%
	ME	23.8%	18.3%	38.1%	19.8%
	MP	--	--	--	--
	MT	30.0%	20.0%	31.0%	19.0%
	SD	39.3%	28.6%	18.8%	13.4%
	TN	25.9%	24.1%	31.8%	18.2%
	VI	--	--	--	--

Note. Statistics suppressed when based on fewer than 50 students and denoted by table cell values of '--'.

Table 14. Performance Level Percentage Distribution for the 2019 Administration of MSAA Mathematics, as a Function of Grade and Partner

Grade	Partner	Level 1	Level 2	Level 3	Level 4
03	Overall	25.9%	30.5%	30.7%	12.9%
	AZ	29.5%	32.9%	28.9%	8.7%
	ME	26.0%	22.0%	36.0%	16.0%
	MP	--	--	--	--
	MT	20.2%	27.4%	35.5%	16.9%
	SD	30.9%	30.9%	25.8%	12.4%
	TN	22.7%	30.0%	31.6%	15.7%
	VI	--	--	--	--
04	Overall	19.6%	29.0%	38.2%	13.2%
	AZ	22.6%	32.1%	36.1%	9.2%
	ME	15.0%	31.9%	40.7%	12.4%
	MP	--	--	--	--
	MT	19.1%	27.0%	41.7%	12.2%
	SD	23.1%	25.9%	34.3%	16.7%
	TN	17.2%	26.2%	40.3%	16.3%
	VI	--	--	--	--
05	Overall	19.6%	32.1%	33.0%	15.3%
	AZ	21.2%	32.9%	33.3%	12.5%
	ME	22.2%	30.4%	34.8%	12.6%
	MP	--	--	--	--
	MT	15.6%	33.0%	33.9%	17.4%
	SD	18.9%	34.4%	35.6%	11.1%
	TN	18.4%	31.3%	32.3%	18.0%
	VI	--	--	--	--
06	Overall	26.9%	22.0%	32.0%	19.2%
	AZ	29.8%	22.9%	31.3%	16.0%
	ME	26.2%	29.0%	29.0%	15.9%
	MP	--	--	--	--
	MT	27.3%	18.2%	33.6%	20.9%
	SD	25.0%	24.0%	38.0%	13.0%
	TN	24.9%	20.6%	32.2%	22.3%
	VI	--	--	--	--
07	Overall	16.8%	34.2%	34.3%	14.7%
	AZ	17.3%	36.7%	32.6%	13.4%
	ME	16.2%	34.6%	36.8%	12.5%
	MP	--	--	--	--
	MT	18.3%	33.0%	37.6%	11.0%
	SD	25.7%	38.1%	29.5%	6.7%
	TN	15.4%	32.0%	35.8%	16.8%
	VI	--	--	--	--
08	Overall	22.7%	21.3%	38.4%	17.5%
	AZ	23.0%	23.1%	37.7%	16.2%
	ME	22.8%	19.7%	41.7%	15.7%
	MP	--	--	--	--
	MT	25.3%	25.3%	35.4%	14.1%
	SD	29.2%	23.0%	35.4%	12.4%
	TN	21.5%	19.5%	39.2%	19.7%
	VI	--	--	--	--

Note. Statistics suppressed when based on fewer than 50 students and denoted by table cell values of '--'.

Table 15. Performance Level Percentage Distribution for the 2021 Administration of MSAA ELA, as a Function of Grade and Partner

Grade	Partner	Level 1	Level 2	Level 3	Level 4
03	Overall	39.4%	19.7%	27.8%	13.0%
	AZ	44.6%	20.0%	25.1%	10.2%
	ME	39.5%	13.6%	33.3%	13.6%
	MP	--	--	--	--
	MT	21.2%	17.6%	41.2%	20.0%
	SD	36.0%	24.4%	27.9%	11.6%
	TN	37.4%	19.8%	27.9%	14.9%
	VI	--	--	--	--
04	Overall	44.9%	14.7%	32.3%	8.0%
	AZ	46.8%	15.7%	31.7%	5.8%
	ME	42.1%	13.2%	38.2%	6.6%
	MP	--	--	--	--
	MT	36.6%	9.7%	43.0%	10.8%
	SD	49.5%	10.5%	27.4%	12.6%
	TN	44.1%	14.8%	31.9%	9.2%
	VI	--	--	--	--
05	Overall	30.4%	32.8%	27.3%	9.5%
	AZ	37.0%	33.5%	23.8%	5.7%
	ME	27.1%	32.3%	26.0%	14.6%
	MP	--	--	--	--
	MT	16.5%	33.0%	34.9%	15.6%
	SD	34.1%	27.3%	30.7%	8.0%
	TN	26.6%	32.7%	29.1%	11.6%
	VI	--	--	--	--
06	Overall	34.2%	19.8%	34.3%	11.8%
	AZ	39.8%	20.7%	30.3%	9.2%
	ME	30.1%	13.7%	38.4%	17.8%
	MP	--	--	--	--
	MT	30.7%	18.8%	35.6%	14.9%
	SD	29.8%	20.2%	40.4%	9.6%
	TN	30.9%	19.5%	36.4%	13.2%
	VI	--	--	--	--
07	Overall	40.4%	13.3%	27.8%	18.5%
	AZ	44.0%	12.9%	26.7%	16.4%
	ME	50.0%	9.1%	22.7%	18.2%
	MP	--	--	--	--
	MT	38.5%	13.2%	28.6%	19.8%
	SD	44.3%	16.5%	24.1%	15.2%
	TN	36.7%	13.8%	29.4%	20.1%
	VI	--	--	--	--
08	Overall	27.3%	27.7%	30.8%	14.2%
	AZ	30.2%	29.5%	28.9%	11.4%
	ME	29.1%	19.0%	30.4%	21.5%
	MP	--	--	--	--
	MT	24.4%	30.2%	32.6%	12.8%
	SD	33.0%	31.9%	26.4%	8.8%
	TN	24.7%	26.8%	32.3%	16.2%
	VI	--	--	--	--

Note. Statistics suppressed when based on fewer than 50 students and denoted by table cell values of '--'.

Table 16. Performance Level Percentage Distribution for the 2021 Administration of MSAA Mathematics, as a Function of Grade and Partner

Grade	Partner	Level 1	Level 2	Level 3	Level 4
03	Overall	29.3%	28.3%	28.2%	14.2%
	AZ	31.7%	29.1%	27.1%	12.0%
	ME	35.8%	24.7%	19.8%	19.8%
	MP	--	--	--	--
	MT	27.9%	18.6%	34.9%	18.6%
	SD	34.5%	23.8%	31.0%	10.7%
	TN	26.2%	29.9%	28.5%	15.5%
	VI	--	--	--	--
04	Overall	17.8%	29.5%	42.8%	9.9%
	AZ	19.7%	28.7%	43.0%	8.6%
	ME	20.3%	31.1%	40.5%	8.1%
	MP	--	--	--	--
	MT	18.1%	18.1%	50.0%	13.8%
	SD	17.9%	25.3%	38.9%	17.9%
	TN	15.9%	31.5%	42.8%	9.8%
	VI	--	--	--	--
05	Overall	20.7%	37.4%	31.1%	10.8%
	AZ	21.7%	39.2%	31.7%	7.4%
	ME	33.0%	37.1%	16.5%	13.4%
	MP	--	--	--	--
	MT	17.1%	27.9%	35.1%	19.8%
	SD	17.2%	43.7%	33.3%	5.7%
	TN	19.4%	36.7%	31.4%	12.5%
	VI	--	--	--	--
06	Overall	21.6%	28.6%	35.3%	14.5%
	AZ	26.2%	28.6%	32.2%	13.1%
	ME	19.7%	22.5%	39.4%	18.3%
	MP	--	--	--	--
	MT	19.0%	29.0%	37.0%	15.0%
	SD	20.4%	33.3%	34.4%	11.8%
	TN	18.3%	28.4%	37.6%	15.7%
	VI	--	--	--	--
07	Overall	27.8%	26.4%	31.9%	13.8%
	AZ	28.4%	26.6%	33.2%	11.7%
	ME	36.8%	24.1%	26.4%	12.6%
	MP	--	--	--	--
	MT	32.6%	24.7%	28.1%	14.6%
	SD	26.6%	30.4%	29.1%	13.9%
	TN	26.4%	26.4%	31.8%	15.4%
	VI	--	--	--	--
08	Overall	25.6%	22.7%	34.5%	17.2%
	AZ	25.1%	25.4%	34.7%	14.8%
	ME	31.6%	19.7%	27.6%	21.1%
	MP	--	--	--	--
	MT	26.4%	24.1%	36.8%	12.6%
	SD	34.8%	23.9%	29.3%	12.0%
	TN	24.7%	21.0%	34.9%	19.4%
	VI	--	--	--	--

Note. Statistics suppressed when based on fewer than 50 students and denoted by table cell values of '--'.

Test-Score Metrics

Match rates

Table 17 shows the overall match rates on 2019 MSAA assessments by subject and as a function of MSAA partner, while Table 18 gives the same results based on the 2021 MSAA assessments. Recall that the match rates serve as an indicator of student attrition between two years of test administrations. The 2019 match rates characterize typical attrition for MSAA assessments, serving as a reference point for the 2021 pandemic-impacted match rates. Note that tables showing the match rates disaggregated by subject and grade, as well as student subgroups, are available in Appendix E.

In general, the match rate trends for 2019 vs. 2021 mimic those of participation numbers for ELA and Mathematics. Overall, the 2021 match rates for both ELA and Mathematics show an 8 to 10-point decline compared to the 2019 match rates. However, these match rate trends varied considerably across partners with the following notable results:

Partner MP showed a 3 to 5-point increase for ELA grades 5 and 7, as well as Mathematics grade 7. In addition, there is an approximate 28-point increase for ELA and Mathematics in grade 6. Also, there is a 32-point decrease for ELA and Mathematics in grade 8.

Partner SD shows a 6 to 15-point increase across all grades for ELA and Mathematics. While partner VI shows no change for ELA grade 7, but a substantial 3 – 66-point decrease across all other grades for both subjects. The decline for grades 5 and 6 for both ELA and Mathematics are in the 30 to 40-point range, while grade 8 for ELA and Mathematics show the biggest decrease (66.7%) across all partners.

Table 17. MSAA 2019 Overall Match Rates, as a Function of Partner

Subject	Admin. Year	Prior Admin. Year	Grade Tested	Prior Grade Tested	Overall	AZ	ME	MP	MT	SD	TN	VI
ELA	2019	2017	05	03	73.1%	71.7%	70.6%	80.0%	65.1%	54.8%	78.0%	66.7%
ELA	2019	2017	06	04	73.0%	71.6%	56.2%	57.1%	73.6%	63.6%	78.0%	57.1%
ELA	2019	2017	07	05	74.1%	72.1%	66.4%	70.0%	67.7%	58.6%	80.3%	40.0%
ELA	2019	2017	08	06	74.9%	73.7%	60.9%	72.7%	69.1%	66.0%	80.3%	66.7%
Mathematics	2019	2017	05	03	73.2%	71.9%	71.5%	80.0%	64.0%	54.8%	78.0%	75.0%
Mathematics	2019	2017	06	04	73.0%	72.0%	56.8%	57.1%	74.3%	63.8%	77.6%	57.1%
Mathematics	2019	2017	07	05	74.0%	71.8%	66.2%	70.0%	68.0%	58.9%	80.2%	40.0%
Mathematics	2019	2017	08	06	74.9%	73.9%	60.2%	72.7%	69.0%	66.2%	80.3%	66.7%

Table 18. MSAA 2021 Overall Match Rates, as a Function of Partner

Subject	Admin. Year	Prior Admin. Year	Grade Tested	Prior Grade Tested	Overall	AZ	ME	MP	MT	SD	TN	VI
ELA	2021	2019	05	03	65.1%	59.8%	59.0%	83.3%	62.9%	69.8%	70.6%	33.3%
ELA	2021	2019	06	04	64.1%	61.1%	43.9%	85.7%	66.4%	73.3%	68.2%	22.2%
ELA	2021	2019	07	05	64.5%	60.6%	50.7%	75.0%	54.1%	67.0%	70.7%	40.0%
ELA	2021	2019	08	06	67.4%	63.2%	46.7%	40.0%	52.8%	72.7%	74.5%	0.0%
Mathematics	2021	2019	05	03	64.8%	59.2%	59.0%	66.7%	63.7%	69.1%	70.5%	33.3%
Mathematics	2021	2019	06	04	63.9%	60.9%	44.2%	85.7%	67.0%	72.2%	68.0%	22.2%
Mathematics	2021	2019	07	05	64.1%	60.3%	48.9%	75.0%	53.2%	67.8%	70.5%	36.4%
Mathematics	2021	2019	08	06	67.3%	63.2%	45.8%	40.0%	53.6%	73.0%	74.4%	0.0%

Table 19. MSAA 2019 and 2021 Overall Match Rates, as a Function of Subject and Grade

Subject	Grade Tested	Prior Grade Tested	2019 Match Rate	2021 Match Rate	Difference in Match Rate
ELA	05	03	73.1%	65.1%	-8.0%
ELA	06	04	73.0%	64.1%	-8.9%
ELA	07	05	74.1%	64.5%	-9.6%
ELA	08	06	74.9%	67.4%	-7.5%
Mathematics	05	03	73.2%	64.8%	-8.5%
Mathematics	06	04	73.0%	63.9%	-9.1%
Mathematics	07	05	74.0%	64.1%	-9.8%
Mathematics	08	06	74.9%	67.3%	-7.6%

Fair Trends

Overall MSAA Fair Trend results by subject and grade are given in Table 20. Additionally, tables showing fair trend results for each grade and subject disaggregated by partner are available in Appendix F. Recall that the focus of the fair trend analysis is a set of comparisons between student observed scaled scores from the 2021 administration of a given current grade with their predicted (or fair trend adjusted) scaled scores from the 2019 administration, had those students in 2021 tested in the same grade in 2019. For example, the comparison for MSAA ELA grade 5 is based on the observed 2021 scaled scores of students from the 2021 administration of MSAA ELA grade 5 and the predicted 2019 scaled scores of those same students, had they also taken the MSAA ELA grade 5 in 2019.

Overall, the fair trend analyses result in small to near-zero effect sizes. The largest trend occurred in ELA grade 6, which resulted in an effect size of -0.27. The next highest effect sizes occur in Mathematics grade 8 and grade 6 with effect sizes of -0.13 and -0.12, respectively.

Table 20. MSAA Fair Trend Results, as a Function of Subject and Grade

Subject	Grade	Number of Students	Mean 2021 Observed Scaled Score	SD 2021 Observed Scaled Score	Fair Trend Adj. Mean Scaled Score	Fair Trend Adj. SD Scaled Score	Mean Difference	Effect Size
ELA	05	1,338	1237.70	11.89	1238.37	7.35	-0.67	-0.06
ELA	06	1,420	1235.42	11.51	1238.55	5.95	-3.13	-0.27
ELA	07	1,508	1240.47	12.58	1241.39	6.87	-0.93	-0.07
ELA	08	1,567	1237.27	10.85	1238.29	5.92	-1.02	-0.09
Mathematics	05	1,336	1239.21	11.10	1239.74	4.80	-0.53	-0.05
Mathematics	06	1,418	1239.54	10.79	1240.85	3.76	-1.32	-0.12
Mathematics	07	1,503	1240.08	12.62	1241.20	4.41	-1.12	-0.09
Mathematics	08	1,566	1240.54	11.73	1242.05	5.53	-1.51	-0.13

Equity Checks

Overall MSAA Equity Check results (as a function of subject and grade) are listed in Table 21, and the complete set of tables showing the same information for each grade and subject disaggregated by partner and student groups is presented in Appendix G. As a reminder, the equity check analyses compare matched students (students who tested in both 2019 and 2021) with unmatched students (students who tested in 2019 but not in 2021). For the unmatched students, predicted scaled scores are estimated based on the students' observed 2019 scaled scores. The mean predicted scaled scores among unmatched students is compared against the mean observed 2021 scaled scores among matched students.

As shown in Table 21, the missing students adjusted mean scale scores are similar to the fair trend adjusted mean scale scores. On average, the means for the missing (unmatched) students are greater than the means of the matched students. However, the differences are mostly in the same direction and are all less than 1 scale score point. Additionally, the analyses result in small to near-zero effect sizes ranging from 0.06 (Mathematics,

grade 7) to -0.12 (ELA, grade 8). Notable results include ELA, grade 8 with an effect size of -0.12 and a mean difference of -0.75. Similarly, ELA (grade 6) results in an effect size of -0.11 with a mean difference of -0.66.

Table 21. MSAA Equity Check Results, as a Function of Subject and Grade

Subject	Grade	Number Matched	Fair Trend Adj. Mean Scaled Score	Fair Trend Adj. SD Scaled Score	Number Missing	Missing Students Adj. Mean Scaled Score	Missing Students Adj. SD Scaled Score	Mean Difference	Pooled SD	Effect Size
ELA	5	1,338	1238.37	7.35	718	1239.03	8.19	-0.66	7.65	-0.09
ELA	6	1,420	1238.55	5.95	796	1239.21	6.32	-0.66	6.09	-0.11
ELA	7	1,508	1241.39	6.87	829	1241.37	7.48	0.02	7.09	0.00
ELA	8	1,567	1238.29	5.92	759	1239.04	6.94	-0.75	6.27	-0.12
Mathematics	5	1,336	1239.74	4.80	727	1240.13	5.28	-0.39	4.98	-0.08
Mathematics	6	1,418	1240.85	3.76	801	1240.97	4.10	-0.11	3.89	-0.03
Mathematics	7	1,503	1241.20	4.41	840	1240.95	4.27	0.25	4.36	0.06
Mathematics	8	1,566	1242.05	5.53	761	1242.12	5.72	-0.07	5.59	-0.01

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