

Student Performance on the Maryland Integrated Science Assessment, SY2023

Key Findings

Close to a quarter of fifth-grade students and nearly 15% of eighth-grade students demonstrated proficiency on the MISA.

Changes in grade-level achievement from SY22 to SY23 mirror state trends.

Average proficiency rates on the MISA were not impacted by gender; male and female students performed comparably.

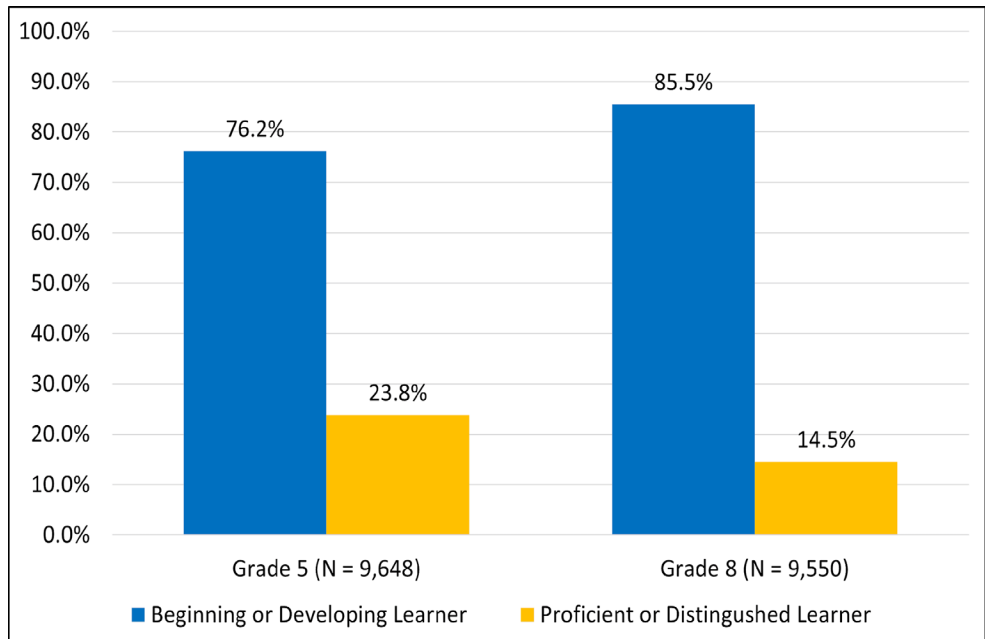
In both fifth and eighth grade, less than 10% of students in most service groups demonstrated proficiency on the MISA.

The performance of Black or African American and Hispanic or Latino students, which are more than 92% of students tested, appear most impacted by economic disadvantage and English learner status.

The Maryland Integrated Science Assessment (MISA) is a test designed to measure student progress on the Next Generation Science Standards ([Maryland State Department of Education, 2023](#)). Administered annually to fifth and eighth grade students, the assessment helps stakeholders determine the degree to which students are prepared for more advanced science content. In this data brief, findings of the most recent administration of the MISA are discussed. Areas of focus include district-level performance and a comparison of that performance to the other public schools districts in the state.

Overall Performance: The percentage of students who demonstrated proficiency on the MISA ranged from approximately 14% to 24% (see Figure 1). Specifically, 23.8% and 14.5% of students in grades five and eight, respectively, attained a performance level of 3 (Proficient Learner) or 4 (Distinguished Learner). In contrast, more than three-fourths of students in fifth (76.2%) and eighth (85.5%) grade reached performance level 1 (Beginning Learner) or performance level 2 (Developing Learner).

Figure 1. MISA Performance Level Distribution, SY23

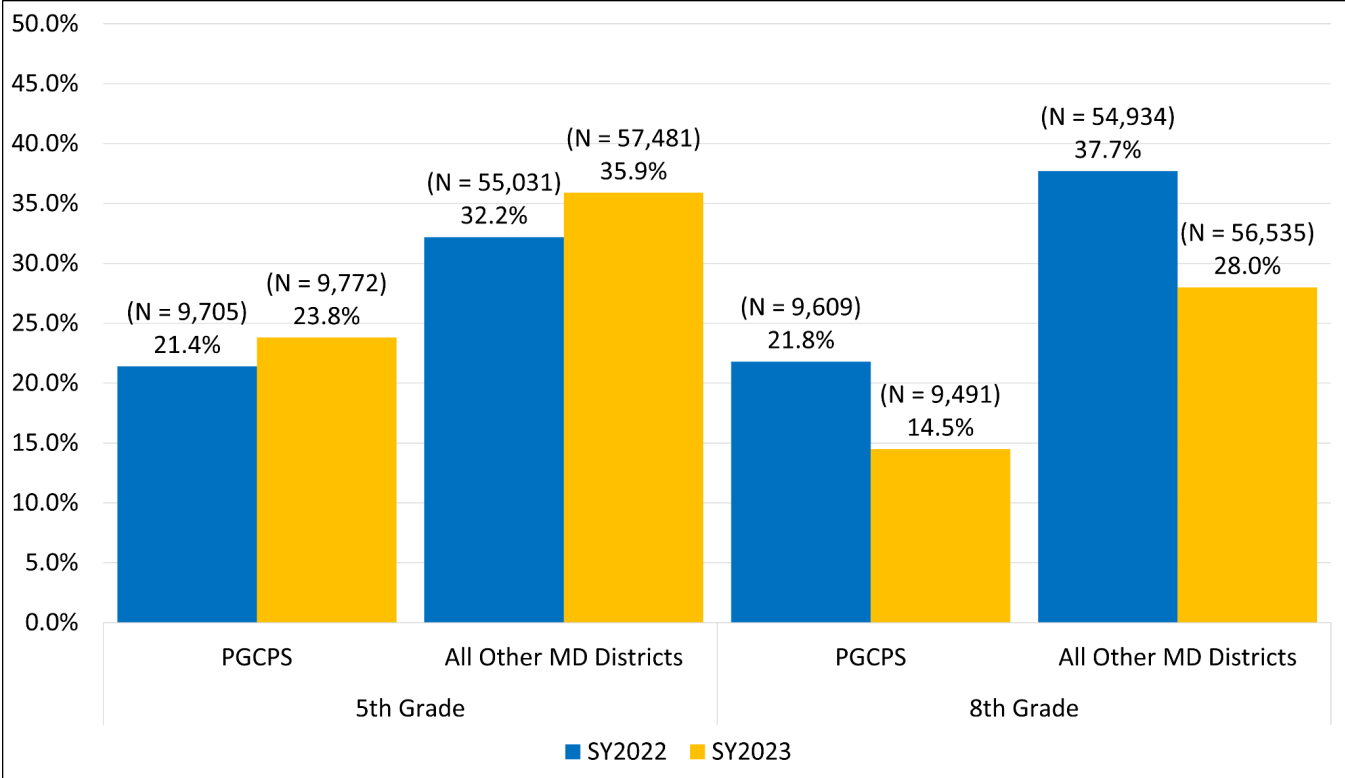


Note. Performance levels range from one to four and represent, respectively, Beginning Learner, Developing Learner, Proficient Learner, and Distinguished Learner.

Source(s). Maryland State Department of Education, MCAP Performance Results Summary, July 6, 2023.

District Comparisons: A comparison of district-level data shows that while fifth- and eighth-grade performance in PGCPs was lower when compared to that of all other districts combined, the changes in performance over time mirror trends experienced by all other Maryland public school districts (see Figure 2). From SY2022 to SY2023, fifth-grade achievement in both PGCPs and the other Maryland districts increased, specifically by 11.2% and 11.5%, respectively. During this same time span, eighth-grade level achievement decreased by 33.5% in the district and by 25.7% in all other Maryland public schools districts combined.

Figure 2. Percent Proficient or Distinguished of PGCPs and All Other Maryland Districts, SY22 and SY23



Note. All other MD districts refers, specifically, to the aggregated performance of all Maryland school districts apart from PGCPs.
Source(s). Maryland State Department of Education, MCAP Performance Results Summary, July 6, 2023; Maryland State Department of Education, MSDE Spring 2022 MISA State Summary Results, August 19, 2022.

District Performance by Gender: Data by gender show comparable levels of performance on the MISA (see Table 1). In fifth grade, close to a quarter of male and female students attained performance levels of three or four, and in eighth grade, nearly 15% of students in both gender categories met this proficiency threshold. Male students (24.4%) performed better than female students (23.3%) in grade five, while female students (14.6%) performed slightly better than male students (14.3%) in grade eight.

Table 1. Percentage of Proficient or Distinguished Performance Levels by Gender on the MISA, SY23

Grade 5		
Gender	# of Test-Takers	% Proficient or Distinguished
Male	4,880	24.4%
Female	4,764	23.3%
Grade 8		
Gender	# of Test-Takers	% Proficient or Distinguished
Male	4,754	14.3%
Female	4,794	14.6%

Source(s). Maryland State Department of Education, MCAP Performance Results Summary, July 6, 2023.

District Performance Level by Race/Ethnicity: Data by race/ethnicity show a wide range of proficiency attainment (see Table 2). In fifth grade, the percentage of students disaggregated by their race or ethnicity meeting the proficiency threshold was between approximately 17% and 48%, and in eighth grade, the percentage to meet proficiency ranged from about 10% among Hispanic students to nearly 44% among Native Hawaiian or Other Pacific Islander (OPI) students. When compared, data show that White students outperformed students from other racial/ethnic groups in fifth grade, while students identifying as Native Hawaiian or OPI performed better, on average, than all other racial/ethnic groups in eighth grade.

Table 2. Percentage of Proficient or Distinguished Performance Levels by Race/Ethnicity on the MISA, SY23

Grade 5		
Race/Ethnicity	# of Test-Takers	% Proficient or Distinguished
Am. Indian or Alaska Native	N ≤ 20	44.4%
Asian	270	45.9%
Black or African American	4,972	25.3%
Hispanic or Latino of Any Race	3,869	17.6%
Native Hawaiian or OPI	N ≤ 20	23.5%
White	361	47.9%
Two or More Races	137	36.5%
Grade 8		
Race/Ethnicity	# of Test-Takers	% Proficient or Distinguished
Am. Indian or Alaska Native	N ≤ 20	20.0%
Asian	238	39.9%
Black or African American	5,101	15.1%
Hispanic or Latino of Any Race	3,793	9.8%
Native Hawaiian or OPI	N ≤ 20	43.8%
White	292	37.3%
Two or More Races	88	31.8%

Note. To protect personally protected information, specific N counts of 20 or less students were suppressed.

Source(s). Maryland State Department of Education, MCAP Performance Results Summary, July 6, 2023.

District Performance by Service Group: Apart from economically disadvantaged fifth graders, less than 10% of students within each service group demonstrated proficiency on the MISA, including economically disadvantaged students in eighth grade (9.7%), English learners (ELs) in both fifth (6.0%) and eighth (0.2%) grades, and students with disabilities (SwDs) in both fifth (6.3%) and eighth (2.0%) grades. When compared, these data show that non-service group students outperformed their service group peers.

Table 2. Percentage of Proficient or Distinguished Performance Levels by Service Group on the MISA, SY23

Grade 5		
Student Service Group	# of Test-Takers	% Proficient and Distinguished
Economically Disadvantaged	4,543	18.6%
Non-Economically Disadvantaged	5,097	28.5%
English Learners	2,494	6.0%
Non-English Learners	7,115	30.2%
Students with Disabilities	987	6.3%
Students without Disabilities	8,661	25.8%
Grade 8		
Student Service Group	# of Test-Takers	% Proficient and Distinguished
Economically Disadvantaged	4,383	9.7%
Non-Economically Disadvantaged	5,162	18.6%
English Learners	1,709	0.2%
Non-English Learners	7,782	17.7%
Students with Disabilities	979	2.0%
Students without Disabilities	8,571	15.9%

Source(s). Maryland State Department of Education, MCAP Performance Results Summary, July 6, 2023. Maryland State Department of Education, SY23 MISA Student File, July 6, 2023.

District Performance by Race/Ethnicity and Service Group Participation: A second-tier analysis that focused only on non-participants in certain service group categories showed that the large proportion of English learners among the Hispanic or Latino student group and the large proportion of economically disadvantaged students among the Black or African American student group negatively impacts the average achievement of each group in total (see Table 3). For Black or African American fifth graders who are not participants in any service group category, the percent proficient on the MISA was 34.1 compared with 25.3 for all students identified as Black or African American. Similarly, for eighth-grade students, the MISA proficiency rate was 21.1% among Black or African American students who had no service group affiliation but 15.1% for the group as a whole. Among fifth-grade Hispanic or Latino students, the percent achieving proficiency was 17.6 overall, but it was 40.0% for those without any service group affiliation. For eighth-grade students identified as Hispanic or Latino, 9.8% achieved proficiency, but more than 20% of those who do not participate in any service group did so.

Table 3. Percentage of Proficient or Distinguished Performance Levels by Race/Ethnicity and Service Groups on the MISA, SY23.

Grade 5					
Race/Ethnicity	% Proficient or Distinguished (All Students)	% Proficient or Distinguished (w/o Service Groups)	% Proficient or Distinguished (w/o Economically Disadvantaged Group)	% Proficient or Distinguished (w/o EL Group)	% Proficient or Distinguished (w/o SwD Group)
Black or African American	25.3%	34.1%	31.1%	25.9%	28.0%
Hispanic or Latino of Any Race	17.6%	40.0%	18.9%	34.7%	18.8%
Grade 8					
Race/Ethnicity	% Proficient or Distinguished (All Students)	% Proficient or Distinguished (w/o Service Groups)	% Proficient or Distinguished (w/o Economically Disadvantaged Group)	% Proficient or Distinguished (w/o EL Group)	% Proficient or Distinguished (w/o SwD Group)
Black or African American	15.1%	21.1%	19.1%	15.5%	16.8%
Hispanic or Latino of Any Race	9.8%	20.8%	11.6%	16.3%	10.7%

Source(s). Maryland State Department of Education, SY23 MISA Student File, July 6, 2023.

Discussion: Although a majority of MISA test-takers did not meet proficiency standards, there is some positive news. When compared to fifth graders from the previous year, fifth-grade students in 2023 performed better on the MISA. This improvement may suggest a potential recovery from the challenges of COVID-19. Eighth graders, in contrast, seem to be struggling. However, this drop in performance is consistent across the state, and there was less of a decrease in eighth-grade MISA performance among district students compared to the state. Specifically, eighth-grade performance dropped from 21.8% to 14.5%, which amounts to slightly more than a one-third decrease in the number of eighth-grade students demonstrating efficiency. The decrease among students from other public school districts was 9.7 percentage points, which represents a decline of about one-quarter from the previous administration.

Overall, most fifth and eighth-grade students in the district are not demonstrating proficiency on the MISA. Understanding why, however, requires an exploration of factors that influence performance. As shown earlier with the district’s largest racial/ethnic groups (i.e., Black or African Americans or Hispanic or Latinos), the percent of students within these groups who demonstrated proficient or distinguished learner levels was higher among those students not participating in any service group. These analyses were done to illustrate the extent to which challenges associated with economic disadvantage, English proficiency, and disabilities impact student performance. The performance of each racial/ethnic group (including those not included in Table 3) is impacted by one or more of these challenges, but for the two largest student populations, data appear to show that the economic disadvantage and English learner status impact, respectively, Black or African American and Hispanic or Latino students more than other service group categories. Further investigation is necessary to understand this impact more comprehensively.

References

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- Maryland State Department of Education. (2023b). *MCAP science (MISA) score report interpretation guide*. Retrieved from [https://support.mdassessments.com/resources/reporting/MCAP%20Spring%202023%20Science%20Score%20Interpretation%20Guide_Final%20\(1\).pdf](https://support.mdassessments.com/resources/reporting/MCAP%20Spring%202023%20Science%20Score%20Interpretation%20Guide_Final%20(1).pdf)
- Maryland State Department of Education. (2023c). *MCAP performance results summary*.
- Maryland State Department of Education. (2023d). *SY23 MISA student file*.

Appendix I

Performance Level Descriptions

The following performance level descriptions (Maryland State Department of Education, 2023b) come directly from a state report (Maryland State Department of Education, 2022) that includes information on multiple state assessments.

- **Level 4 Distinguished Learners**: Distinguished Learners demonstrate advanced proficiency. The students are well prepared for the next grade level or course and are well prepared for college and career readiness.
- **Level 3 Proficient Learners**: Proficiency Learners demonstrate proficiency. The students are prepared for the next grade level or course and are on track for college and career readiness.
- **Level 2 Developing Learners**: Developing Learners demonstrate partial proficiency. The students need additional academic support to ensure success in the next grade level or course and to be on track for college and career readiness.
- **Level 1 Beginning Learners**: Beginning Learners do not yet demonstrate proficiency. The students need substantial academic support to be prepared for the next grade level or course and to be on track for college career readiness.