Back to School: Colorado's Academic Performance 2022

A REPORT BY KEYSTONE POLICY CENTER

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Introduction and Key Findings:

While schools largely returned to in-person learning according to the recommended health safety measures and other COVID-era precautions in the 2021-22 school year, data nationwide demonstrates that our students need more support than ever. This report details the first robust data set available in three years and the student achievement scores should be of great concern to parents, community and policy makers.

The National Assessment of Educational Progress (NAEP), the nationally-comparable standard for measuring student achievement, suggests that 9-year-old students are academically performing at levels lower than anytime over the last 20 years. Since early 2020 the average reading score fell by five points, the largest drop since 1990, and math scores dropped seven points, the first decline of any kind in the history of the test.[1] The pandemic had a significant impact on student learning but it was uneven as students from different demographics and settings—urban, suburban and rural—were impacted differently from each other. Other nationwide data suggests that students have fallen behind on other key metrics as well, including:

- **Student engagement:** Student engagement in school has declined on many metrics since 2020. For example, according to the EdWeek Research Center, half of students reported feeling less motivated in class and experiencing lower morale. Teachers reported that more than 80% of their pupils were less motivated and had lower morale.[2]
- **Satisfaction:** On one recent survey, 56% of high school students are satisfied with their overall experience at school and 41% say the events of the past two years made them feel less connected to peers and teachers.[3]
- **College matriculation:** According to data provided by the National Student Research Clearinghouse, college matriculation declined 3.5% in Spring 2021, and another 3.5% in Spring 2022.[4]

Results in Colorado on 2022 academic assessments generally mirrored these nationwide trends, though some schools and districts have bucked this trend, and academic performance bounced back to near pre-pandemic performance for some cohorts of students across the state. Key findings from Spring 2022 include:

- Participation rates on academic assessments rebounded after historic lows in 2021, but are still below 2019 levels.
- While academic performance statewide was only slightly below 2019 levels on CMAS in both English Language Arts and Math, there was wide variations across districts, with some having significant declines while others saw improvement. In English Language Arts (ELA), performance in 2022 dropped relative to 2021 while math performance rebounded but is still very low.
- Math continues to be an enormous challenge across the entire state with so few students across demographic characteristics and grade levels meeting or exceeding grade level expectations. There were, however, some bright spots in math growth.
- Elementary school students' performance rebounded more quickly to near pre-pandemic achievement levels, while middle school and high school students made progress but are still far from where needed.

9-year-old students are **academically performing at levels lower than anytime over the last 20 years.**

[1] https://www.nationsreportcard.gov/highlights/ltt/2022/
[2] https://www.k12dive.com/news/5-strategies-for-rebuilding-student-engagement-after-COVID-19/630143/
[3] https://www.qualtrics.com/blog/student-belonging/
[4] https://www.forbes.com/sites/michaeltnietzel/2022/05/26/new-report-the-college-enrollment-decline-has-worsened-this-spring/?sh=2eb88fdd24e0

- Across grades and subjects, there is a relationship between student demographics (race, family income, special education and English Learner status) and academic achievement. There are also outliers that suggest the promise of a high-quality school or district educational program.
- Wide gaps in performance between different groups of students by race, family income, and instructional programs persist statewide, although there are some districts that have shown improvements in more equitably serving students.

This report provides a deeper look into student academic performance in response to several key questions while providing some considerations for community and policy makers.

Key Question 1:

What can state academic assessments from spring 2022 tell us?

Colorado students in grades 3-8 took the Colorado Measures of Academic Success (CMAS) to evaluate their mastery of grade level standards in math and english language arts.[5] Colorado students in grades 9-11 took the Preliminary School Aptitude Test (PSAT) and School Aptitude Test (SAT) assessments in math and evidence-based reading and writing (EBRW) to evaluate their mastery of grade-level academic content. While this information is illustrative, this still does not include student performance in grades K-2, which we know are critical, nor does it tell us about performance in subjects beyond math and ELA or what students know and can do when they enter college or the workforce.

While some students in grades 3-11 opt out of CMAS or SAT assessments, participation rates in Colorado have been historically consistent and over the federally required rate of 95%. In 2021, amidst hybrid learning, health concerns, limited testing scope, and continued critiques of standardized testing, participation rates declined dramatically statewide (although with still wide variation across districts). In 2022, CMAS and SAT testing took place in a different public health environment and all traditionally tested grades were included in the tests. Given this, participation rates did rebound from 2021 but remained below pre-COVID levels; a sample is shown in Figure 1.

Figure 1: Assessment Participation Rates

Assessment	2022 Participation Rate	2021 Participation Rate	2019 Participation Rate	2019 to 2022 Change
Grade 4 Math	93.3	75.7	96.9	-3.6
Grade 5 ELA	92.5	74.4	96.2	-3.7
Grade 11 Math	87.0	79.5	92.6	-5.6
Grade 11 Literacy	86.9	79.5	92.6	-5.7

While these participation rates are sufficiently high to draw conclusions from on the overall performance of the state and districts, it is still critical that policymakers understand what drove these decreases and understand what group of students might be underrepresented in the results. There are many factors that could be driving these declines in participation rates, including continued pushback against standardized tests, parent concerns about performance following interrupted schooling, or school systems not encouraging participation. Regardless of the reason, it remains critical to explore why so that all student groups are represented to better understand how schools are supporting all students to meet the state's academic standards.

[5] S small subset of students take the Colorado Spanish Language Arta assessment (CSLA). This is not included in this report due to limited sample size.

Key Question 2:

How did Colorado students do on the academic assessments? How did this performance compare to prior years?

Academic performance overall has not returned to prior levels, though there were some improvements from the precipitous drops in 2021. English Language Arts (ELA) performance on CMAS (Grades 3-8) was 2.6 percentage points below 2019 levels with 43.2% of students meeting or exceeding expectations compared to 45.8% in 2019. These declines exist at all grade levels but were most prominent at middle school grades.

Given that only some grades were tested in ELA in 2021, we cannot compare all grade performance from 2022 to 2021. We can look at some snapshots such as comparing 5th grade ELA for 2022 to 2021. Statewide, 5th grade performance was below 2021 and still sits three percentage points below the 48% of 5th graders who met grade level expectations on the exam in 2019.

Figure 2: Statewide Performance Over Time

Assessment	2022	2021	2019	Percentage Point Change 2019 to 2022
CMAS ELA-All Grades	43.2	N/A	45.8	-2.6
CMAS ELA-5th Grade	45.4	47.2	48.4	-3.0
SAT 11th Grade ELA	57.5	60	58.5	-1.0
CMAS Math-All Grades	31.5	N/A	34.7	-3.2
CMAS Math-4th Grade	31.5	28.5	34.7	-3.2
SAT 11th Grade Math	34.6	36.4	39	-4.4

Focusing on statewide elementary and middle school math, less than one third of students meet or exceed grade level expectations in math and these rates are three percentage points lower than the already low rates in 2019.

Fourth grade CMAS math did see a slight rebound from 2021 (which may suggest that math is more easily impacted by in school learning) but is still lower than the already-low scores from 2019.

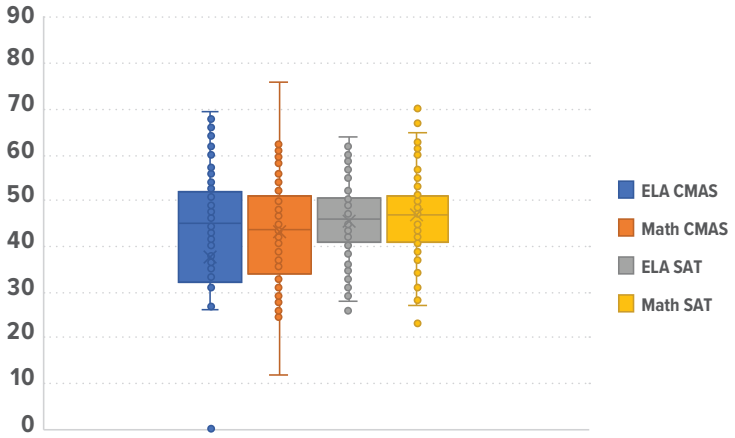
SAT performance trends were similar to CMAS, although we only looked at 11th grade performance because of data reporting constraints discussed in greater detail in the methodology section of this report. Performance was below 2021 and 2019 levels.

SAT performance provides an additional reason to be concerned about Colorado students' mastery of key math concepts. Statewide only 34.6% of 11th graders met or exceeded college readiness benchmarks in math, a decline from 2021 and a decline of over 4 percentage points from 2019.

While academic status or how many students are meeting or exceeding grade level expectations is critical, academic growth is the best measure of how students are learning relative to peer students. Growth is a far better measure of the impact of school than academic achievement that is strongly impacted by where students started at home. Growth measures allow us to look at the impact a school has on a particular student's performance over the course of the year and is less correlated with student's socio-economic and family background. Historically, Colorado has measured student growth by comparing the achievement of a student relative to their academic peers – students across the state who they had scored similarly to in prior year(s). Starting in 2021, given the volatility in student experiences during the pandemic, CDE started also calculating "Baseline Growth" in addition to the standard "Cohort Growth." For each measure, a student's assessment performance is compared to their academic peers. In the case of Baseline Growth, a student's performance is compared to the academic

performance of students ("academic peers") who had performed similarly to them in pre-pandemic years. In the case of Cohort growth, a student's performance is compared to the performance of their academic peers last year. For both, the median reports the middle growth percentile of the group of students. This report includes both percentiles as we transition out of the COVID-19 era but focuses on Median Cohort Growth Percentile similar to the CDE accountability system.

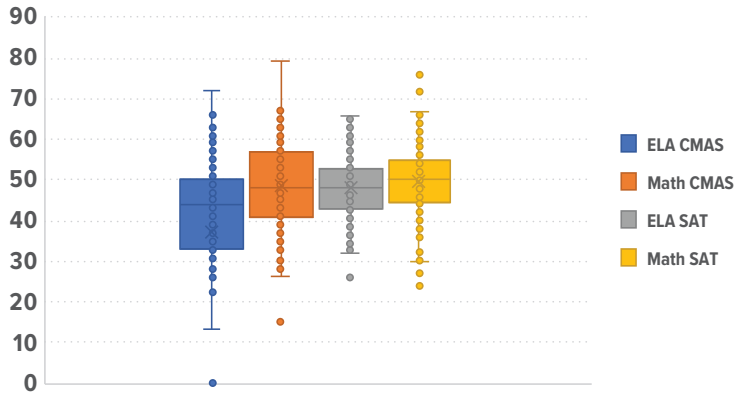
Figure 3: Cohort Based MGP



In general cohort growth is slightly higher than baseline growth, suggesting students are not growing as much as their pre-pandemic peers. Math shows slightly higher baseline growth, suggesting potentially more progress post-pandemic, though it may be a result of lower pre-pandemic growth rates as well. There is also more variability in math growth, suggesting potential learnings and need to dig deeper.

In CMAS ELA, 97 districts had MGPs below 50, demonstrating that their students made less growth than statewide peers; 54 districts had MGPs above 50. In CMAS Math, 97 districts had MGPs below 50 and 46 at or above. In both subjects, there was wide variation in MGPs across districts. High school growth (PSAT9, PSAT10, and SAT) is similar to CMAS in its distributions. In literacy, 100 districts had MGPs under 50 while 42 districts were above; in math, 106 districts had MGPs below 50 and 56 were above.

Figure 4: Baseline MGP



Key Question 3:

How variable was student performance across the state?

There is enormous variation in performance by geography across the state on assessments. We looked at this by both comparing districts rates of students meeting or exceeding expectations in 2022 to the same rate statewide and comparing the change from 2019 to 2022 in districts compared to the state overall. On CMAS ELA, 119 districts performed below the state, while only 47 performed above the state. Additionally, the majority of districts (119) saw declines from 2019 performance with an average decline of 5.9 percentage points (higher than the statewide decline.) There were 45 districts that saw performance increase from 2019, with the average among these districts being an increase of 5.5 percentage points.

On CMAS math, in addition to low statewide rates of students meeting or exceeding expectations there were 118 districts that performed below the state, while only 46 performed above the state. Only 43 districts saw increases in CMAS math rates of students meeting or exceeding expectations when compared to 2019 while 118 saw a decline with the average decline being 4.9 percentage points (more dramatic than the statewide decline).[6]

Similarly, on SAT math 86 districts across the states had achievement rates below the state with only 33 performing above. The majority of districts also saw a decline in performance when compared to both 2021 (73 districts with an average decline of 6.4 percentage) and 2019 (70 districts with an average decline of 8.1 percentage points). There were districts that saw increases in the same period, which should be reviewed to understand what contributed to these improvements.

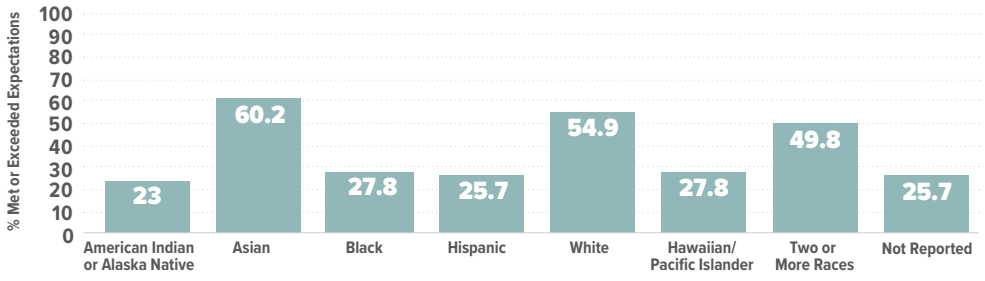
Key Question 4:

What variation in performance do we see across different student groups?

In addition to variation across districts, we are interested in how different groups of students performed on the assessments.

When looking at performance by students' race or ethnicity, Asian students, White students, and multiracial students had the highest rates of meeting or exceeding expectations. There were significant gaps between the performance of students with different racial or ethnic backgrounds within districts: on average districts had a gap of 27.5 percentage points between the percent of Black students and White students who met or exceeded expectations on CMAS ELA and a gap of 12 percentage points between Hispanic students and White students who met or exceeded expectations on the same assessment.

Figure 5: CMAS ELA Performance By Race and Ethnicity



[6] Note that while both of these numbers are 118, they are not all the same districts.

In SAT Literacy, more than half of the districts (86) performed below the state rate of 57.5, while 45 performed above. More than half of districts (71) saw a decline in performance from 2019, averaging 7.8 percentage points. There were still 50 districts that saw increases, averaging 7.2 percentage points.

In looking at district-level rates for students by race, we see some alarming trends. For example, in 2/3 of districts, Black students have rates of students meeting or exceeding grade level expectations under 14%, with only 4 districts having rates of over 28% for Black students. There are similar trends for other disadvantaged groups of students. Colorado and the state's school districts clearly need to do far more to address this crisis for Black, Hispanic, Native-American, English Language Learners and other groups of students that have historically been poorly served by our public schools.

Gaps also exist when looking at groups of students by whether they receive additional supports in schools. Specifically, there are gaps in academic performance between students who qualify for free or reduce- price lunch and those who do not, students who receive individualized educational programs and those who do not, and students who are emerging multilingual and those who are not.

Because of data suppression and small sizes, not all districts have disaggregated data available. Because of this, we look at the variation in district performance based on demographics using a District Demographic Index that encompasses the percentage of English Learners, Special Education students, students eligible for free and reduced-price lunch, and the district mobility rate. Across subjects there is a relationship between performance district demographics. The below graph shows this relationship in CMAS ELA as an example of this relationship.

Figure 6: Distribution of Black Student Performance

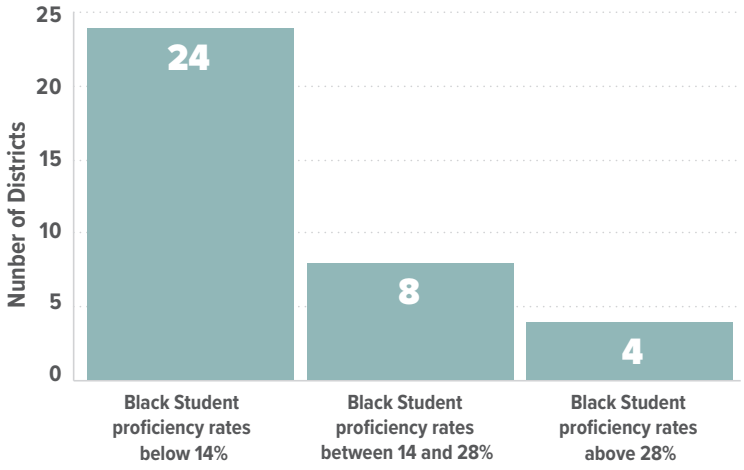
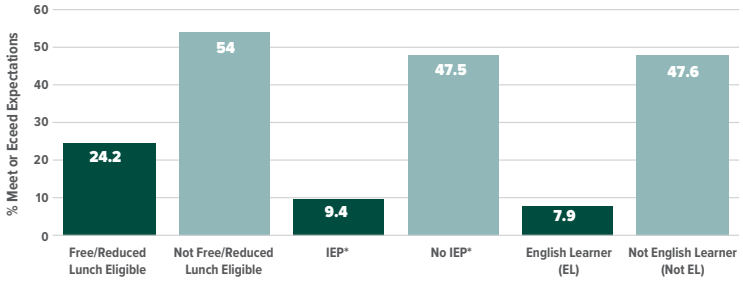
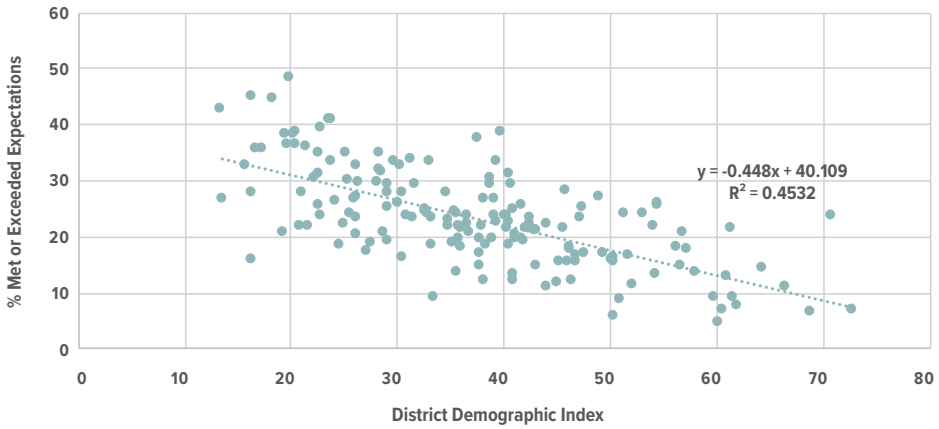


Figure 7: CMAS ELA Performance By Student Support Needs



*IEP is short for Individualized Education Plan, indicating if a student qualifies for special education services.

Figure 8: CMAS ELA Performance by Demographics



Key Question 5:

What type of variation exists in performance at the school level? What about variation at the school level?

While this report is focused on state- and district-level performance, there are a several school-level trends to highlight.

- **Within District Variation:** Just as looking at statewide results blurs significant variation in district performance, looking solely at district-wide performance masks high levels of variation in school level performance, particularly in the largest districts. For example, the table below shows the variation in CMAS math rates of students meeting or exceeding grade level expectations within the five largest districts in the state.

	District Math CMAS % Met or Exceeded Expectations	Range of School Level CMAS Math Met or Exceeded Expectations	Range of School Level CMAS Math Cohort MGP
Denver Public Schools	28.8%	2.4%-92.8%	25-88
Jefferson County Public Schools	37.4%	3.0%-90.6%	17-84.5
Douglas County School District	49.0%	5.3%-84.2%	19-86
Cherry Creek Schools	40.2%	9.9%-83.4%	22-80.5
Aurora Public Schools	13.8%	1.0%-82.3%	20-72

- **Variation By Governance Type:** In 2021, there were some areas where charter schools outperformed district-run schools and some subjects and grades in which the opposite was true. While a more thorough analysis is needed, the initial data suggests that charter schools outperformed non-charter schools on CMAS in both subjects.

	CMAS ELA % Met or Exceeded Expectations	CMAS Math % Met or Exceeded Expectations
Charter	44%	30.7%
Non-Charter	38.1%	26.8%

- **School Level Outliers:** While this report is not focused here, education leaders and policy makers should look to high performing schools in the state that also serve different groups of students, with different levels of educational needs to understand their practices and learn how they can be applied across the state.

Conclusion and Considerations:

Colorado's policy makers and communities should be deeply concerned given the low levels of academic achievement for so many Colorado students. There is great variation of performance across the state with some districts and schools bouncing back after the pandemic and some even showing exemplary achievement given the difficult circumstances over the last several years; but overall Colorado has some significant educational challenges. Colorado policy makers must begin with a close analysis of the data to understand where there are opportunities to learn from success while pinpointing resources and change at challenges. Some considerations as they begin to move forward:

- **Learning From Bright Spots:** It is important that education leaders and policy makers look at districts and schools that are achieving strong results and understand the practices that contributed to these results. These practices should be researched and the scaling of them to other areas supported.
- **A Focus on Math:** While there is overall room for improvement, math performance across grade levels continues to be a primary concern. There were some bright spots in math growth this year that we should learn from along with more research into the cause of the low rates of students meeting or exceeding grade level expectations in math. Contributing factors could include curriculum materials, progress monitoring tools, and teacher trainings; research will help identify the root cause and then action must be taken to address these concerns.
- **Targeted Strategies to Support Particular Student Groups:** Achievement gaps are not new in Colorado or the nation, but they remain an area of grave concern. The data makes it clear that our current systems are not supporting all systems equitably. Schools, districts and the state must identify strategies that target improved performance for students of color, ELL and special education students to help close these gaps.
- **Data Transparency:** While increased requirements on testing and improvements in participation rates led to less data suppression this year than in 2021, there is still a lack of transparency in how data is reported in Colorado. Policy-makers should advocate for more transparent, high-quality data on Colorado student performance that can be used to inform decision-making.
- **School Funding:** Given the challenges with student performance statewide in Colorado, particularly for students from low-income backgrounds, students on IEPs, emerging multilingual students, and many students of color, Colorado policy makers should consider revisiting school funding formulas to better target resources to these students. Some considerations should include the weightings used, how stimulus dollars are being allocated to accelerate student learning, and other ways to more effectively fund schools.
- **A Colorado Plan for Improvement:** There have been countless reports, hundreds of pieces of legislation over the last decade on what Colorado should do to improve achievement and yet there have not been transformational gains in performance. There remains no state wide plan with measurable goals for what the state can and should do to support more students to live up to full potential.

We encourage policy makers to closely consider this year's academic results and ensure that their priorities are informed by this data and are focused on increasing the percent of students meeting and exceeding grade level expectations for all student groups moving forward.

Appendix: Methods

Analyses in this report are all based on publicly available data from the Colorado Department of Education. Analyses are based on the following tests:

- **CMAS Math and English Language Arts**
  - All grades (3-8) tested as reported in the aggregate by CDE
  - Grade 4 Math and Grade 5 ELA to show progress from 2021 given that all grades (at an aggregate) were not reported last year and all tests were not administered in 2021.
- **SAT Math and Literacy**
  - Grade 11 to show change from 2021
  - All grades were not reported in the aggregate and, because of data suppression rules, was not able to be accurately calculated so is not included

All publicly available data was utilized; districts without data included is a result of data suppression that CDE has done to comply with relevant rules and statutes.

To put this information better in context of the students being served, we have also considered participation and performance relative to demographics as well as looked at disaggregated participation and performance for Free and Reduced Lunch students. To look at demographics, we have calculated a Demographic Data Index (DDI), including District's Free and Reduced Lunch (FRL) rate, English Learner (EL) rate, Special Education rate, and student mobility rate. Mobility rate is not yet available for 2021-22 so 20-21 was used as a proxy; for districts with missing demographic data points, the state average was included.[7]

[7] Specific DDI Formula: [(40% * SY 2020-2021 District FRPL Eligible Rate) + (20% * SY 20-21 District English Learner Rate) + (20% * SY 20-21 District SPED Rate) + (20% * SY 2019-20 Inter-district Student Mobility Rate)] * 100

Acknowledgments

This research was sponsored by the Keystone Policy Center, with **Van Schoales** as the Keystone lead for the work. It was co-authored by **Maya Lagana** and **Lisa Berdie.** All data utilized for this report was publicly available from the Colorado Department of Education and can be provided upon request of the Keystone Policy Center.

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