

Statewide Summative Assessment Report

2020-21



August 2021

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Executive Summary

Background

From the Smarter Balanced Assessment Consortium (SBAC or Smarter Balanced) exams to the Connecticut SAT School Day, summative assessments play a key role in the evaluation of student learning and critical thinking. Moreover, summative assessment results are an important part of Connecticut’s [Next Generation Accountability System](#). Due to the COVID-19 pandemic, the Connecticut State Department of Education (CSDE) received approval from the United States Department of Education (USED) to waive both summative testing and accountability for the 2019–20 school year. In June 2020, the CSDE provided [Sensible Assessment Practices](#) to offer guidance to educators on how to use available data to “assess” their incoming students when schools re-opened in September without necessarily having to test them.

The 2020–21 school year presented a unique set of challenges, as many Connecticut’s students spent a significant part of the year learning remotely. In light of these circumstances, the USED approved the CSDE’s request to waive accountability for a second consecutive year. Still, despite on-going disruptions to learning due to the pandemic, the CSDE felt it was vital to reaffirm Connecticut’s commitment to equity and administer all statewide assessments during the 2020–21 school year. Having these scores allows for the monitoring of long-term trends and the evaluation of the full impact of the pandemic on student achievement and growth. It also provides accurate data to target support and resources where they are most needed to address and combat the negative impact of this pandemic on student learning.

To support attendance and engagement of students as they participated in varied school learning models (i.e., in-person, hybrid, remote), the CSDE established a new system to collect district learning model data on a weekly basis and student-level attendance data on a monthly basis in 2020–21. The weekly collection allowed the CSDE to strategize and support districts locally with local boards. The monthly collecting of attendance and the separate reporting of in-person and remote days for each student allowed for the CSDE to provide targeted supports (e.g., roundtables, webinars, guidance, and the Learner Engagement and Attendance Program [LEAP]), to research and publish [attendance-related findings with Attendance Works](#) that informed policy discussions nation-wide, and to group students based on their predominant learning models. Moreover, these groupings facilitated the evaluation of 2020–21 summative assessment results by student learning model.

Attendance Patterns

An analysis of these attendance and assessment data indicates the following:

- Nearly one-quarter of students were fully/mostly in-person (i.e., more than 75 percent of school days or at least 16 out of an estimated 20 school days in an average month were in-person), nearly half of students were hybrid learners (i.e., between 25 and 75 percent of school days were in-person), and nearly one-quarter of students were fully/mostly remote (i.e., below 25 percent or fewer than 5 out of an estimated 20 school days in an average month were in-person).
- Students with high needs (i.e., those who are English learners, have a disability, and/or are from a low-income family) tended to be fully remote at greater rates than their peers. Specifically, a greater proportion of English learners (10.8 percent), students eligible for free meals (12.1 percent), and students who are experiencing homelessness (16.7 percent) were fully remote for the entire school year as compared to the state average (7.6 percent).

Test Participation

- A new remote testing approach was implemented with fidelity; 11.5 percent of Grade 3-8 students tested remotely. Pursuant to CSDE analyses, only results from tests administered in-person are used in these analyses.
- In-person test participation was strong overall.
 - Nearly 82 percent of Grade 3-8 students tested in-person (which was strongly recommended) on Smarter Balanced; 11.5 percent of students tested remotely.
 - In-person test participation was strongest for students who learned fully/mostly in-person (97%) or in hybrid (95%) model. Conversely, only 37 percent of fully/mostly remote learners took the exams in-person, while 45 percent of fully/mostly remote learners took the Smarter Balanced exams remotely. The CSDE confirmed that at the state-level, the demographics of those who tested in-person are reasonably similar to those who tested remotely or not at all, so as to allow for these analyses and related inferences.

Assessment Results

- During the pandemic, in all grades and most student groups, students who learned fully/mostly in-person lost the least ground academically while those who learned in hybrid or fully/mostly remote models showed substantially weaker achievement and growth.

- This pattern held true for students with high needs and students without high needs. A similar pattern is seen in all grades and most student groups.
- While the academic impacts were seen in all subjects, the observed differences were largest in math.
- Estimated statewide results from Connecticut’s growth model further indicate the following:
 - Growth before the pandemic was much stronger than growth during the pandemic.
 - Among low- and high-achieving students, those learning in-person showed greater growth than those learning in hybrid or remote models.
 - During the pandemic, students below proficiency (Levels 1 and 2) grew at lower rates than those above proficiency; this was not the case before the pandemic.
 - Students above proficiency (Levels 3 and 4) who learned in-person neared pre-pandemic growth in ELA but not in Math.
- Domain score analyses for Smarter Balanced assessments for students in Grades 5 and 8 reveal the following:
 - In Grade 5, the ELA domains of Research (Claim 4) and Evidence/Elaboration (which is part of Claim 2: Writing) show steeper declines than the other domains among hybrid and fully/mostly remote learners. Such declines are not observed prior to the pandemic.
 - In Grade 8, the ELA domains of Organization/Purpose (part of Claim 2: Writing) shows a slightly steeper decline than the other domains, especially among fully/mostly remote students. Such declines are not observed prior to the pandemic
 - In Grade 5 Math, Operations and Algebraic Thinking showed slightly lesser decline than the other domains in all learning models.
 - In Grade 8 Math, all domain scores decreased between grades 6 and 8 with the exception of Statistics and Probability for in-person learners which stayed constant.

Introduction

English Language Arts (ELA), Mathematics, and Science Assessments

Connecticut's statewide assessment program is just one component of an overall accountability system that is intended to assess the effectiveness of Connecticut schools and lead to greater success for all students.

Federal legislation, in the form of both the Elementary and Secondary Education Act (ESEA) and the Individuals with Disabilities Education Act (IDEA), and state legislation in the Connecticut General Statutes (C.G.S.) Section 10-14, and the implementation of the Connecticut Core Standards (CCS) is consistent in the vision that is being promoted: high expectations, uniform standards, and public accountability for the performance of all students, including those with disabilities and limited English proficiency.

Smarter Balanced Assessment System

Connecticut, as a member of the Smarter Balanced Assessment Consortium, administers assessments for English language arts (ELA) and mathematics to students in Grades 3-8, with the exception of special education students with significant cognitive disabilities participating in Connecticut's Alternate Assessments. The Smarter Balanced Assessment System was developed by the member states of the Consortium, including Connecticut, to align to the Connecticut Core Standards. **In-person testing and remote testing were available for students to take the Smarter Balanced exams in 2020–21.**

Connecticut SAT School Day

In the 2015-16 school year, the Connecticut State Board of Education adopted the SAT (created by the College Board) as the annual state assessment for eleventh graders in Connecticut. All students in Connecticut must be tested once in high school for English language arts and mathematics using the same assessment for all students. This is a requirement of federal and state law. By adopting the SAT, Connecticut eliminated duplicate testing and gave eleventh grade students in Connecticut an opportunity to take the SAT free of charge during the school day. The SAT assesses the critical thinking skills students need for academic success. Students are able to use their SAT scores for both the state school accountability system and for college admission. **Only in-person testing was available for students to take the Connecticut SAT School Day in 2020–21.**

Next Generation Science Standards Assessment

Connecticut's legacy science assessments, known as the Connecticut Mastery Test (CMT) Science (administered to students in Grades 5 and 8) and the Connecticut Academic Performance Test (CAPT) Science (administered to students in Grade 10), were replaced with the Next Generation Science Standards (NGSS) Assessment in Grades 5, 8, and 11 during the 2017-18 school year. The new science assessments, aligned to

the Next Generation Science Standards (NGSS) adopted by the Connecticut State Board of Education in November 2015, identify core scientific ideas, practices, and concepts that all students should master. **In-person testing and remote testing were available for students to take the NGSS Assessment in 2020–21.**

Connecticut Alternate Assessment System

The CSDE is committed to promoting student success for all students. The Connecticut Alternate Assessment System is designed exclusively for a small percentage of special education students with a disability or multiple disabilities that significantly impact intellectual functioning and adaptive behavior, requiring intensive instruction and substantial supports. Generally, one percent or less of the tested student population is expected to participate in alternate assessments and eligibility is determined by the student’s Planning and Placement Team (PPT).

Connecticut Alternate Assessment (CTAA) for English Language Arts and Mathematics

The CTAA for ELA and math is available for eligible students in Grades 3-8 and 11. This assessment is presented to each student individually by a CSDE-trained teacher via an online Test Delivery System. The CTAA, including the supporting resources, was developed with Connecticut teachers and administrators working closely with other national state members and experts in the National Center and State Collaborative (NCSC). **Only in-person testing was available for students to take the CTAA in 2020–21.**

Connecticut Alternate Science (CTAS) Assessment

If a student is determined eligible for the CTAA by the PPT, the student will also participate in the CTAS when enrolled in Grades 5, 8, and 11. Unlike the CTAA, the CTAS is intended to be administered throughout the year as teachers work with students to rate their performance on the NGSS standards. Similar to the CTAA, the CTAS is specifically designed for this specialized population by expert teachers from across Connecticut who work with these students. **Only in-person testing was available for students to take the CTAS in 2020–21.**

Attendance and Learning Models

Traditionally, the Connecticut State Department of Education (CSDE) collects student-level attendance data only once annually at the end of the school year through the June Public School Information System (PSIS) collection. Districts report days of membership (i.e., the number of days a student was enrolled in a district for the school year or identified period) and days in attendance (i.e., the number of days a student was considered “in attendance” for the school year or the identified period) for each enrolled student.

In the 2020–21 school year, schools across Connecticut used one of three learning models: (1) fully in-person, where all students attended school in-person on all days; (2) hybrid, where all students attended school in-

person on some but not all days; or (3) fully remote, where all students received instruction remotely through technology or other means on all days. Since reopening in late-August/early-September, many districts changed their learning models during the 2020–21 academic year based either on a district schedule (e.g., planned change in week 4 from hybrid to fully in-person) or on local health conditions (e.g., change from fully in-person to remote for two weeks due to increased infections and positivity rate in the local community). The school reopen plans also allowed parents to opt their students into fully remote learning.

With many districts opening in a hybrid format, and around one-third of students statewide learning remotely, access to a device and internet connectivity quickly became essential school supplies. A donation from the Partnership for Connecticut brought 60,000 laptops to high school students in the 33 Alliance Districts by July 2020. Additionally, in late July, Governor Lamont launched the Everybody Learns Initiative which brought an additional 82,102 laptops and Chromebooks, 12,774 hotspots, and broadband cable internet to students.

In 2020–21, the Connecticut State Board of Education resolved to allow school districts to have 177 days of student instruction versus 180 days, which permitted three days to be used at the beginning of the school year for the purpose of building capacity to safely transition back to in-person services during the COVID-19 pandemic. In its resolution, the Board affirmed that its authorization for hybrid or remote programming due to unavoidable emergency is contingent upon school districts providing rigorous learning and engagement opportunities that are aligned with State standards and Board expectations. The Board also charged the CSDE with ensuring fidelity to this expectation by collecting whatever data are necessary and making that information transparent. Therefore, the CSDE established two new data collections: a weekly collection regarding a district’s learning model and a monthly student-level attendance data collection to collect the number of days of membership and attendance for each student each month. The data have been disseminated on the [Supporting Student Participation](#) page of the CSDE website.

A new concept of “remote attendance” was introduced for the first time in 2020–21. While the definition of “in attendance” is unchanged (i.e., presence for at least half a school day), the CSDE’s guidance on how to track attendance on remote days expects districts to consider synchronous and asynchronous approaches to determine whether a student is “in attendance.” Specifically, a remote student can be considered as being “in attendance” on a particular day if the total time spent on one or more of the following activities equals at least half the school day: synchronous virtual classes; synchronous virtual meetings; time logged in electronic systems; and/or assignment submission/completion. This has fundamentally changed who determines attendance, especially in elementary and middle schools. While previously front-office staff may have assumed

some responsibility for tracking and reporting attendance, now classroom teachers are expected to utilize student participation to determine and record whether a student is “in attendance.”

Since September is a month of significant change in public education systems – as districts follow up to determine the status of returning students, while also enrolling new students who may be entering the district – and data quality for new collections improves over time, CSDE decided to wait until October 2020 to mandate the separate reporting of in-person and remote days. So, attendance data were collected since the start of the school year, but data were reported separately for in-person and remote days since the beginning of October. This allowed for an examination of attendance patterns for different groups of students on in-person versus remote days.

Each student was assigned a learning model classification for the 2020–21 school year based on their membership days from the beginning of October through the end of the school year according to the following criteria:

- Fully/mostly in-person: more than 75 percent of membership days were in-person;
- Hybrid: 25 to 75 percent (inclusive) membership days were in-person; and
- Fully/mostly remote: less than 25 percent of membership days were in-person.

Results

Interpretability and Context

When viewing and interpreting the results for summative assessments administered in 2020–21 – especially when making comparisons with 2018–19 and earlier exam administrations – it is important to note the similarities to and differences from previous years. Notably, this year’s exams used the same test blueprint, the same item bank or the same/similar test forms, and the same in-person testing protocols as in 2018–19. Unfortunately, the list of differences is significantly longer. First, schools were fully remote from mid-March to mid-June 2020, a marked difference from prior years. In 2020–21, school learning models changed throughout the school year and students were remote to varying degrees due to factors beyond educator control. In addition, some students tested remotely, which was a new construct for 2020–21. In-person school didn’t look the same, and new instructional approaches emerged (e.g., concurrent teaching, remote academies). Students and educators expressed feelings of general stress, anxiety, and trauma.

Comparability of Remote and In-Person Test Scores

Since remote testing is a new construct and nearly 12 percent of students tested remotely, the CSDE conducted a study to explore whether in-person test scores were comparable to remote test scores for aggregate reporting and for the purpose of making statewide inferences. While the demographic distributions looked similar between the remote and in-person test-takers, regression analysis that controlled for demographic variables and prior test scores when available confirmed that there were statistically significant group mean differences between these two groups. These differences were seen in all grades for math, and in grade 3 for ELA. While remote test scores are assumed to be comparable to in-person test scores, further analysis is needed to confirm that slight differences are due to student achievement and not test mode. For this reason, only scores of students tested in-person were incorporated in the aggregate scores in this report and will be used for statewide inferences; both scores of those tested in-person and remotely will be provided to districts and families and likely used as baseline for future growth calculations.

Special Analyses are Required

It is common to compare assessment results across schools and districts. There are several reasons why those direct comparisons should not be made in 2020–21. First, *how* students learned (i.e., in-person, hybrid, remote) varied across districts and schools. In addition, *who* and *how many* learned fully/mostly remotely (i.e., student counts across student groups) varied across districts and schools. *Who* and *how many* tested remotely varied across districts and schools as well. Finally, *who* and *how many* participated in the in-person test also

varied across districts and schools. For these reasons, the CSDE has conducted specialized analyses at the state level to learn about the impact of the pandemic on student achievement and growth.

Approach to Interpreting 2020–21 Results

In light of comparability concerns outlined above, the CSDE used “matched cohort growth” (i.e., growth of same students from one grade to another) when feasible to evaluate how growth during the pandemic was different from growth before the pandemic. Further, results are disaggregated by a student’s learning model (i.e., fully/mostly in-person, hybrid, fully/mostly remote) and only those scores from students who tested in-person were included. Lastly, given the variations in learning models and test participation across student groups, comparisons are made within student groups (e.g., Students with or without High Needs).

Learning Models

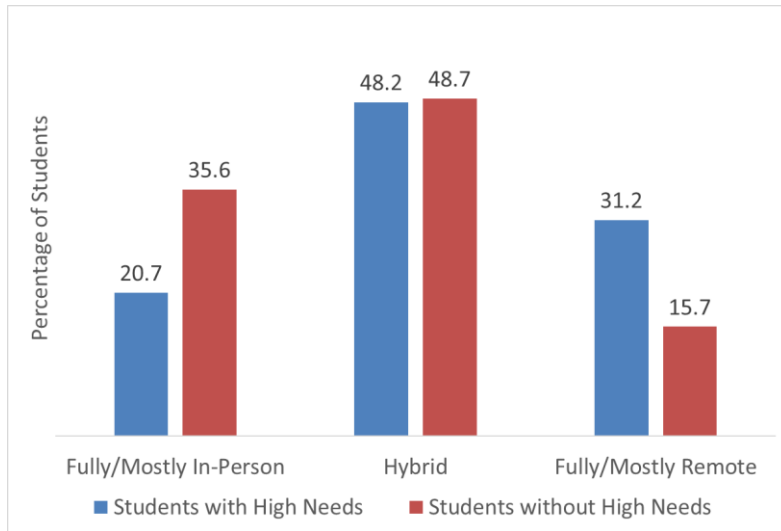
Table 1 shows the district learning models in 2020–21 based on the most prevalent learning model among the students in each district. In five of Connecticut’s twelve largest districts, the most prevalent learning model among their students was fully/mostly remote.

Table 1: District Learning Models in 2020–21 Based on the Most Prevalent Learning Model Among their Students

Learning Model	Number of Districts	Percent (%) of Districts
Fully/Mostly In-Person (more than 75% of days in-person)	79	39.5
Hybrid (between 25% and 75% of days in-person)	106	53.0
Fully/Mostly Remote (less than 25% of days in-person)	15	7.5

Figure 1 shows the percentage of Grade 3-8 students in each learning model by high needs status. Nearly a third (31.2%) of students with high needs (i.e., those who are English learners, have a disability, and/or are from a low-income family) were fully/mostly remote as opposed to only (15.7%) of students without high needs. By contrast, only one out of five (20.7%) of students with high needs were fully/mostly in-person as compared to more than a third (35.6%) of students without high needs.

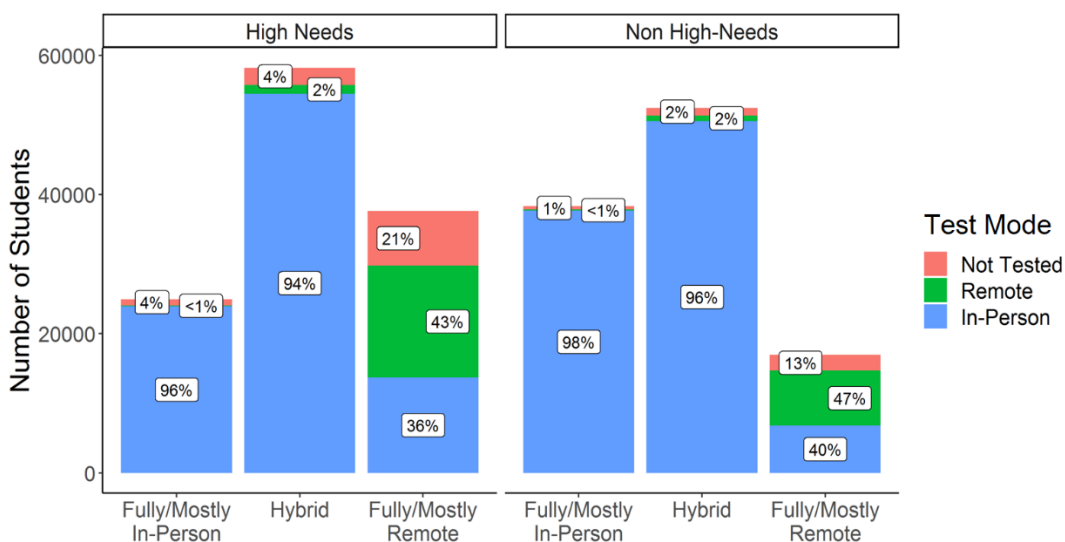
Figure 1: Percentage of Grade 3-8 Students in Each Learning Model by High Needs Status



Test Participation and Mode

Figure 2 shows the percentage of Grade 3-8 students for each test mode by learning model. The data are disaggregated by the high needs student group. At least 94 percent of students within both student groups, and among both the fully/mostly in-person and hybrid learning models, took the Smarter Balanced exams in-person. Among those who learned fully/mostly remotely, the in-person test participation was 36 percent among students with high needs and 40 percent among students without high needs. The not tested rate was also greater among students with high needs (21%) as compared to their non high needs peers (13%).

Figure 2: Test Mode Percentages by Learning Model, High Needs and Non High-Needs, Grades 3-8



Consequently, CSDE analyses show that at the state-level among fully/mostly remote learners, those who tested in-person are slightly less representative of students with high needs, those eligible for FRL, and students with disabilities (Table 2). It is possible that if the results had been weighted to more accurately represent the fully/mostly remote student population, their performance could have been even lower than was observed among those who tested in-person. However, at the state level, the differences are not large and the population of in-person testers is reasonably similar to those who tested remotely or not at all, so as to allow for these analyses and related inferences.

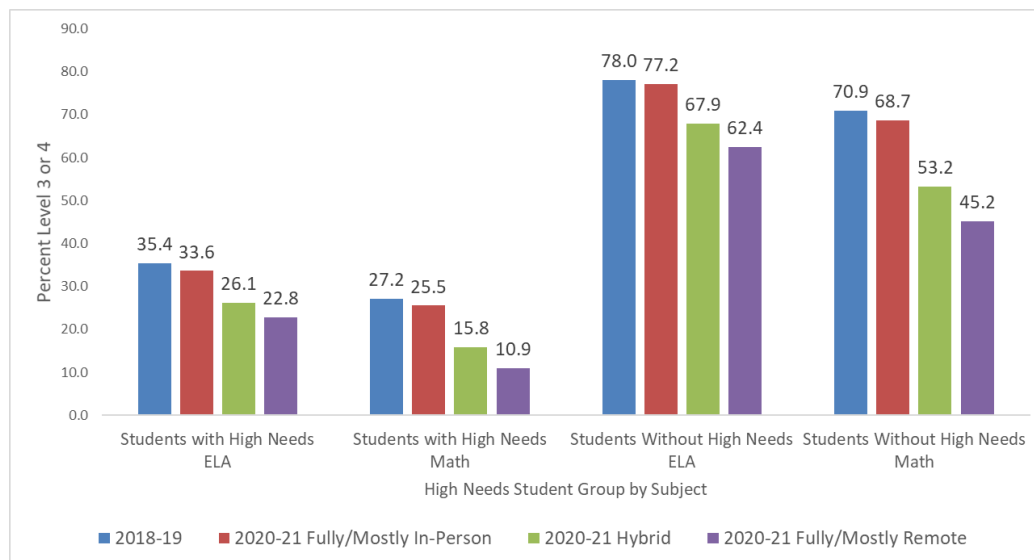
Table 2: Proportion of Student Group Among Fully/Mostly Remote Learners by Test Mode (Grades 3-8)

Student Group	In-person Testers	Remote Testers and Not Tested
High Needs	66.9	70.2
Not High Needs	33.1	29.8
Eligible for FRL	59.9	64.2
Not Eligible for FRL	40.1	35.8
English Learners	14.0	11.7
Not English Learners	86.0	88.3
Students with disabilities	13.3	14.3
Students without disabilities	86.7	85.7

Smarter Balanced Results

The traditional way to look at assessment data is to compare proficiency rates (i.e., the percentage of tested students who are achieving at level 3 or 4 on Smarter Balanced) for the same grades over time. Figure 3 presents the overall proficiency rates for Grades 3-8 combined. It compares 2018-19 proficiency rates for all students to the 2020–21 proficiency rates by learning model. Because students with high needs were more remote in 2020–21 and their in-person test participation in 2020–21 was lower than students without high needs, Figure 3 presents a disaggregated view of the data by high needs status.

Figure 3: Overall Proficiency Rates (Smarter Balanced, Grades 3-8 Combined)



Overall, proficiency is lower in 2020–21 as compared to 2018-19, especially for those who learned in hybrid or remote models. This is a starting point for interpretation but doesn’t tell the whole story. This chart makes it appear that students who learned in-person did not lose any ground. That’s not entirely accurate. They too lost ground but less than the others.

The problem with simply looking at proficiency rates is that it misses any growth/change above/below the proficiency cut off score. Also, due to grade promotion, attrition, and other reasons, a third of the students in Grades 3-8 in 2018-19 were not the same as those in the same grades in 2020–21. Additionally, this view does not account for the fact that students who learned in the three learning models in 2020–21 may have different levels of achievement in 2018-19; since statewide assessments were not administered in 2019–20, prior achievement data is only available for students in Grades 5-8 in 2020–21.

Figure 4 shows matched cohort proficiency rates for Grades 5-8 combined by high needs status. So, while this analysis still looks at proficiency rates, it limits the sample to matched students (i.e., those who tested in 2018-19 and then two grades higher in 2020–21). The plots in Figure 4 illustrate several key points:

- Students who learned in-person in 2020–21 were higher achieving in 2018-19.
- Even students who learned fully/mostly in-person in 2020–21 lost ground as compared to their 2018-19 achievement, especially in math, though declines are greater for those who learned in hybrid or fully/mostly remote models.
- Declines were substantially greater in Math than in ELA.

Figure 4: Matched Cohort (2018-19 to 2020–21) Proficiency Rates by High Needs Status (Grades 5-8)

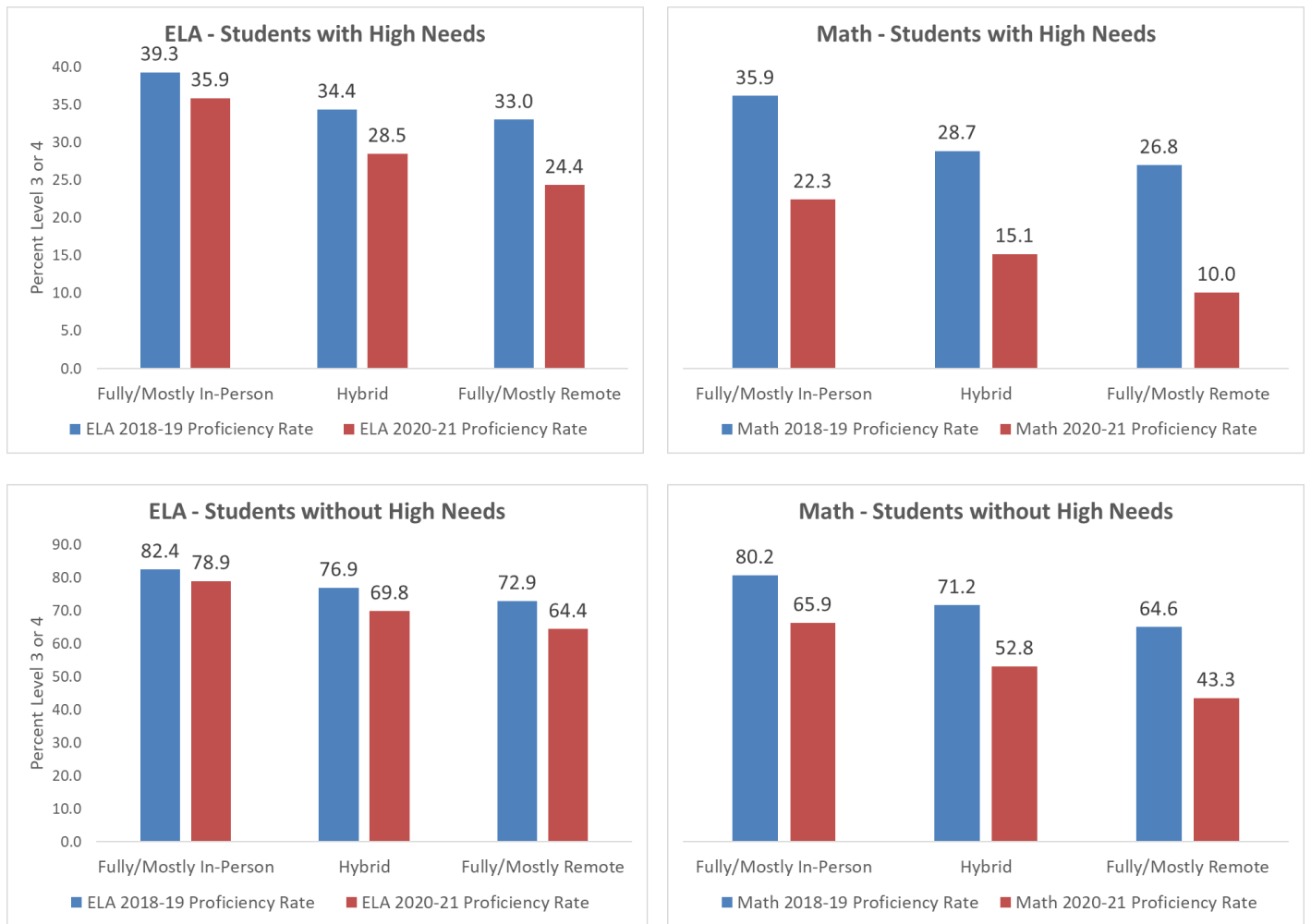


Figure 5 shows the matched cohort proficiency rates in ELA and Math for Grades 5-8 combined by race/ethnicity. The plots demonstrate similar findings to the high needs group analysis:

- In most race/ethnic groups, students who learned in-person in 2020-21 were higher achieving in 2018-19. The only exception to this pattern was among Asian students in ELA where the fully/mostly remote learners were equally high achieving in 2018-19 to their in-person peers.
- In most race/ethnic groups, even students who learned in-person in 2020-21 lost ground as compared to their 2018-19 achievement, especially in Math, though declines are greater for those who learned in hybrid or fully/mostly remote models. Asian students who learned in hybrid or fully/mostly remote models lost the least ground in ELA as compared to their peers from other race/ethnic groups.
- Declines were substantially greater in Math than in ELA.

Figure 5: Matched Cohort (2018-19 to 2020-21) Proficiency Rates by Race/Ethnicity (Grades 5-8)

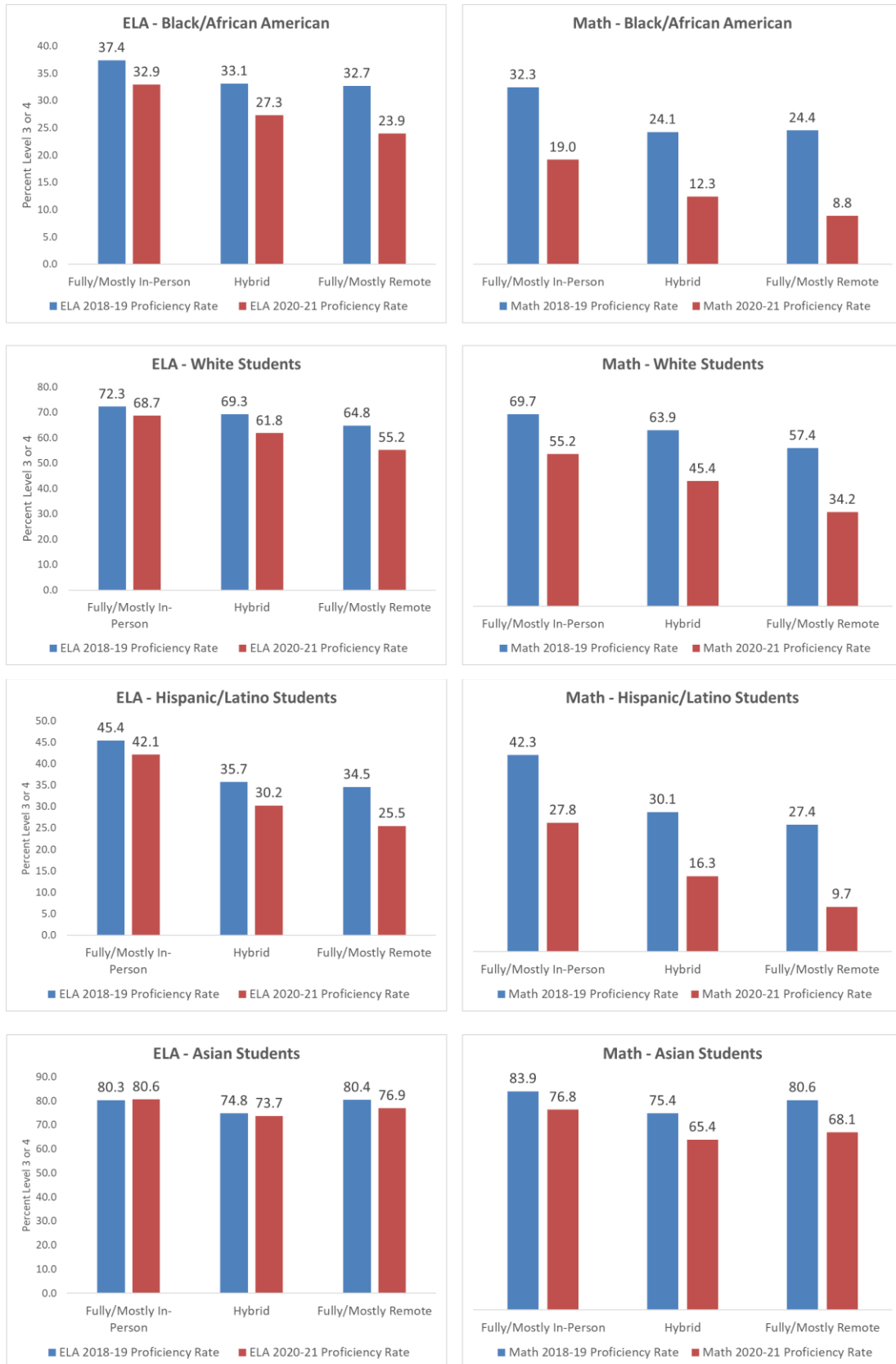
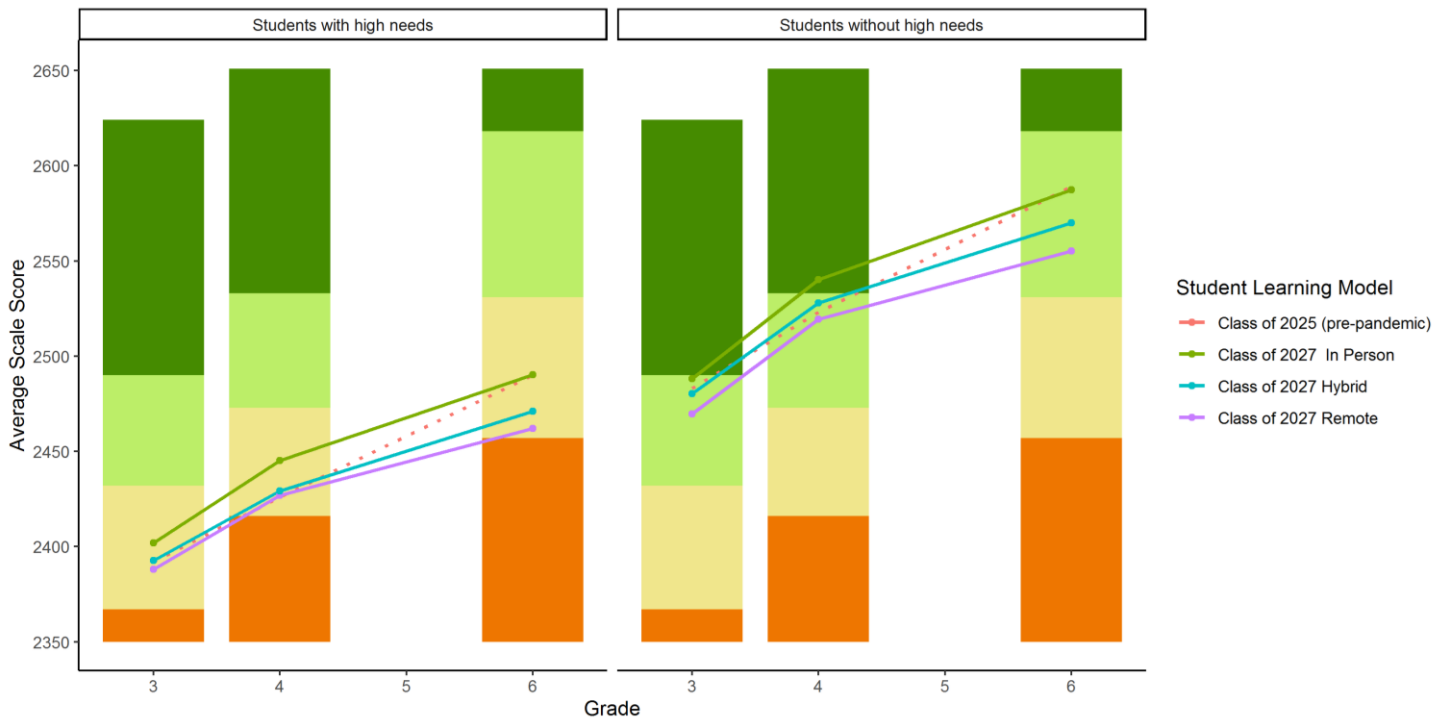


Figure 6 provides a long-term view of how growth trajectories prior to the pandemic compare to those during the pandemic using matched cohort average scale scores. A comparison of average scale scores in 2020-21 for those in Grade 6 ELA by High Needs status is used for illustrative purposes. The CSDE’s analyses showed similar patterns in other grades and for most student groups.

The three solid lines in Figure 6 represent the matched cohort growth of students in the three learning models from Grade 3 to Grade 6. The Grade 3 data on the chart represent the average Grade 3 scale scores in 2017-18 for the students who tested in-person in Grade 6 in 2020-21. The Grade 4 data on the chart represent the average Grade 4 scale scores in 2018-19 for the same cohort.

Figure 6: Matched Cohort Average Scale Scores (ELA Grade 6 in 2020-21) by High Needs Status



Students who learned in-person in 2020-21 had higher scores when they were in Grade 3 and in Grade 4 as compared to those who learned in hybrid or remote formats. All three learning model groups show a higher growth rate (i.e., a steeper slope) in the one year from 3rd to 4th grade (i.e., before the pandemic) than they do from Grade 4 to Grade 6 (i.e., through the pandemic). The declines are greater for those who learned in hybrid or remote formats. As a result, the gap between the three groups is wider in 2020-21 than it was when they were in Grade 3 or 4. By comparison, the previous matched cohort – shown in the plot as a dotted line and labeled in the legend as Class of 2025 (pre-pandemic) – demonstrated relatively steady growth from Grade 3 in 2015-16 to Grade 6 in 2018-19, and this pre-pandemic cohort shows a much steeper growth trajectory from

Grade 4 to 6 than those shown for the three learning model groups. Here, this pattern is shown to hold for students with high needs and students without high needs. A similar pattern is seen in all grades and most student groups with slightly greater declines in Grades 5 and 6 than in 7 and 8.

Figure 7 provides a matched cohort comparison of average scale scores for Grade 6 ELA by race/ethnicity. Asian students show the smallest gap in growth across student learning models. For all other races, the gap in average scale scores between the in-person students and the students in the other learning models widened over time.

Figure 7: Matched Cohort Average Scale Scores (ELA Grade 6 in 2020-21) by Race/Ethnicity

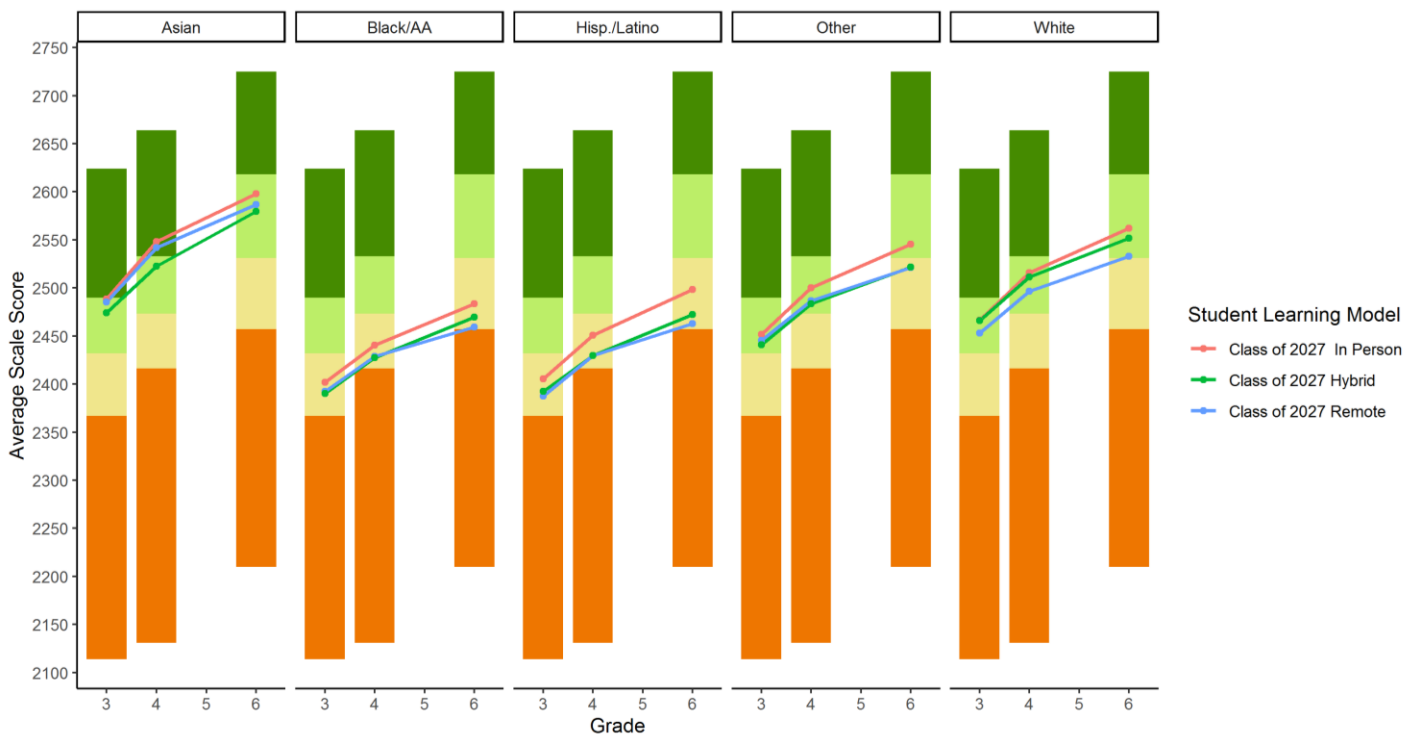
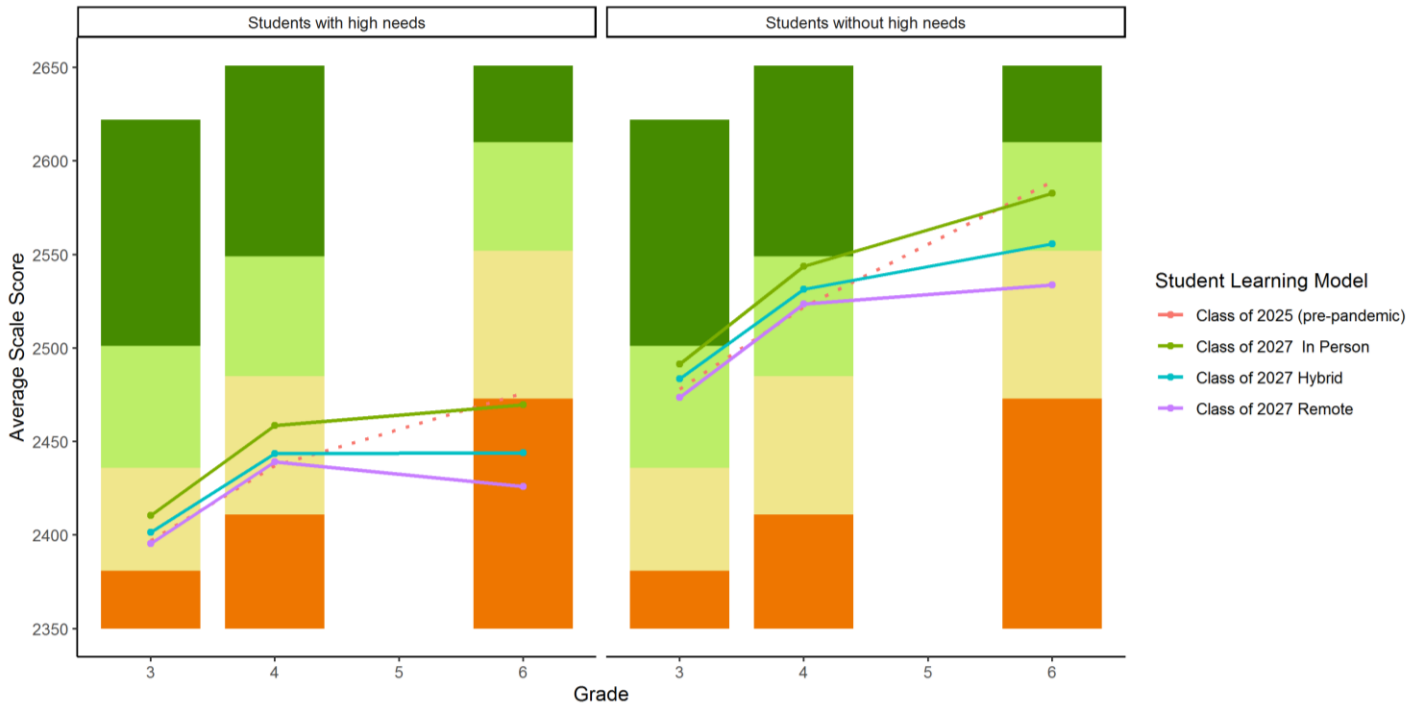


Figure 8 provides a look at growth trajectories in Math using matched cohort average scale scores. A comparison of average scale scores for Grade 6 Math by High Needs status is used for illustrative purposes; the CSDE’s analysis showed similar patterns in other grades and for most student groups. Again, we see that students who learned in-person in 2020-21 had higher scores in 2017-18 when they were in Grade 3 as compared to those who learned in hybrid or remote formats in 2020-21. All three learning model groups show a higher growth rate (i.e., a steeper slope) in the one year from 3rd to 4th grade (i.e., before the pandemic) than they do from Grade 4 to Grade 6 (i.e., through the pandemic). The declines are greater for those who learned in hybrid or remote formats. As a result, the gap between the three learning model groups is wider in 2020-21

than it was when they were in Grade 3 or 4. Again, the pre-pandemic cohort (dotted line) shows a much steeper growth trajectory from Grade 4 to 6 than those shown for the three learning model groups.

Figure 8: Matched Cohort Average Scale Scores (Math Grade 6 in 2020-21) by High Needs Status



Most notable in comparing Figure 8 (i.e., Grade 6 Math by High Needs Status) to Figure 6 (i.e., Grade 6 ELA by High Needs Status) is that the impact of pandemic-related factors in Math appears more significant than in ELA. Though in-person and hybrid students in 2020-21 started higher in Grade 3 than their pre-pandemic peers, in Grade 6, their achievement lags that of their pre-pandemic peers. The gaps are even greater in Math between those who learned in-person and those who learned in hybrid or remote formats. Here, this pattern is shown to hold for students with high needs and students without high needs. The average scale scores in the hybrid and remote learning models have not increased from Grade 4 to Grade 6 for students with high needs.

Figure 9 provides a matched cohort comparison of average scale scores for Grade 6 Math by race/ethnicity. Here, the gap in average scale scores between the in-person students and the students in the other learning models widened over time for all race/ethnicity groups. Most notable in comparing Figure 9 (i.e., Grade 6 Math by Race/Ethnicity) to Figure 7 (i.e., Grade 6 ELA by Race/Ethnicity) is that the impact of pandemic-related factors in Math appears more significant than in ELA. By grade 6, the gaps are even greater in Math between those who learned in-person and those who learned in hybrid or remote models. The average scale scores in

the hybrid and remote learning models have not increased from grade 4 to grade 6 for Hispanic/Latino and Black/African American students.

Figure 9: Matched Cohort Average Scale Scores (Math Grade 6 in 2020-21) by Race/Ethnicity

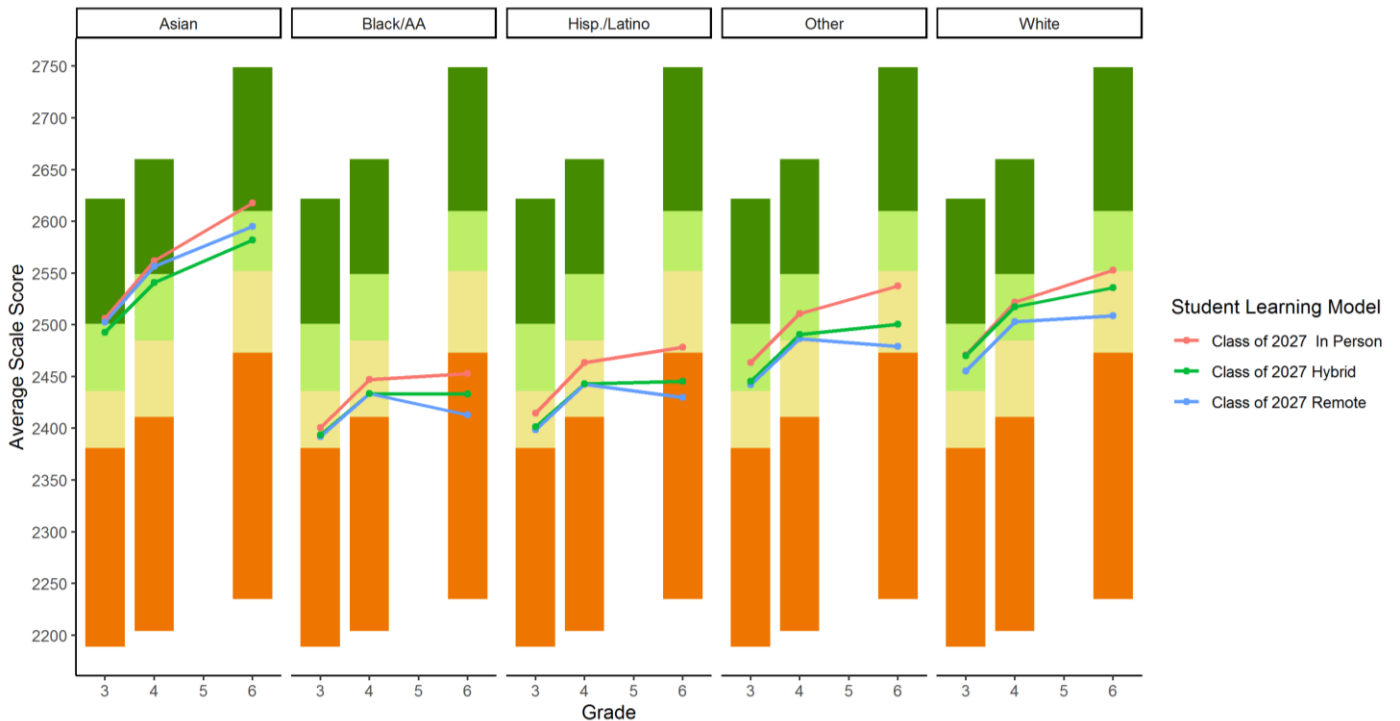
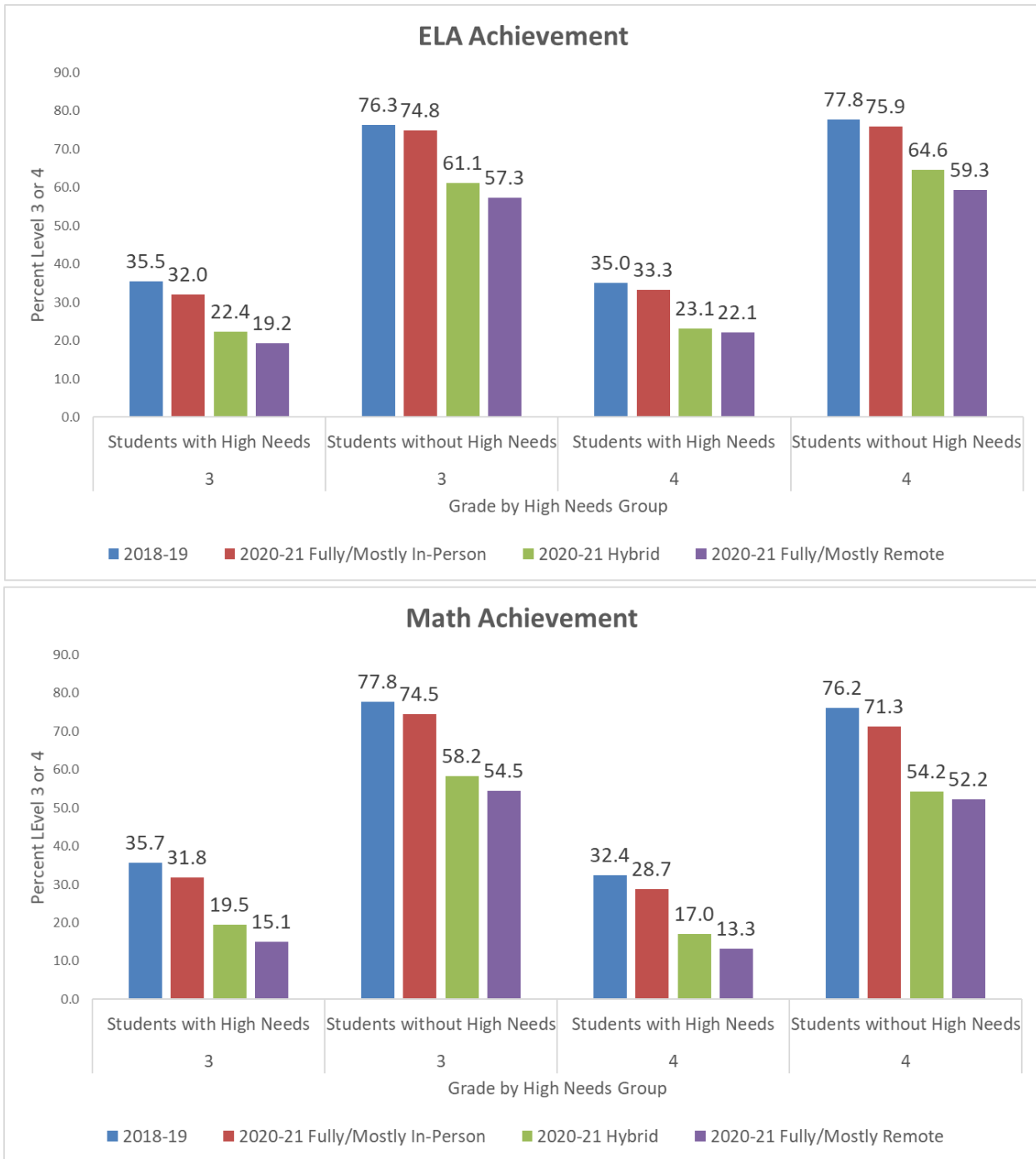


Figure 10 provides a look at ELA and Math achievement for students in grades 3 and 4 by high needs status. As in grades 5-8, students in grades 3 and 4 who learned fully/mostly in-person lost the least ground, while those who learned in hybrid or fully/mostly remote models in 2020-21 showed substantially lower achievement. The declines are greater in Math than in ELA. The charts in Figure 10 show that this holds for students with or without high needs; a similar pattern is seen for most student groups. One important note of caution: There are no prior achievement scores for these cohorts of students against which to compare this difference, since summative assessments were not administered in 2019-20 and these students were in Grades 1 and 2 in 2018-19 and thus did not take these assessments.

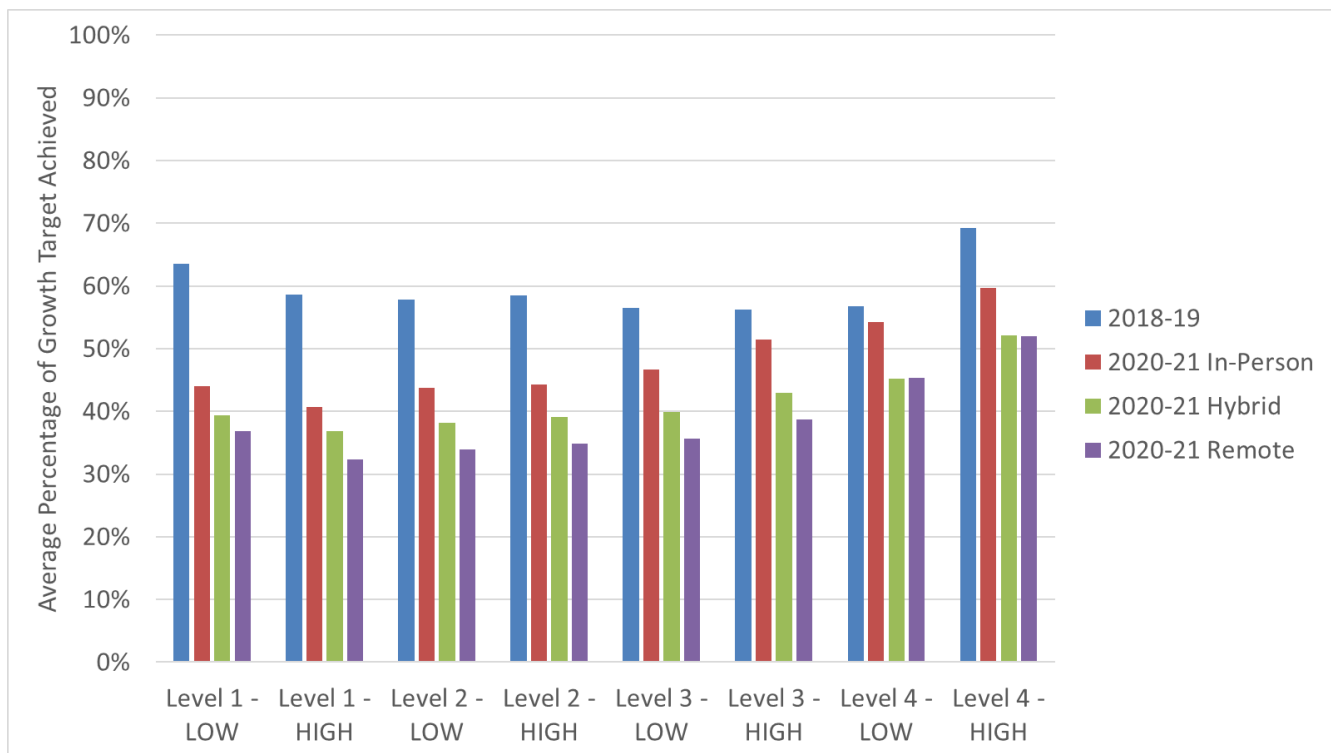
Figure 10: ELA and Math Achievement in Grades 3 and 4 by High Needs Status



Figures 11 and 12 look at the Smarter Balanced scores through the lens of the [Connecticut Growth Model](#). This growth-related analysis confirms what was presented earlier with achievement data, but it also offers some additional insights. Since there were no actual summative assessment results in Spring 2020, the CSDE used available longitudinal data to [“estimate” student performance in 2020 in Grades 3 through 7](#). This allowed the CSDE to implement our annual matched cohort, [growth model](#) from estimated scores in 2019-20 (Grades 3-7) to actual scores in 2020-21 (Grades 4-8). The growth model allows an examination of how low- and high-achieving students are growing through the pandemic and how that compares to pre-pandemic growth. The blue columns represent growth from 2017-18 to 2018-19 (pre-pandemic). The next three columns (red, green, and purple) represent estimated growth achieved by students learning in the three learning models in 2020-21. The Connecticut growth model matched cohort ELA comparison for Grades 4-8 combined (shown in Figure 11 below) reveals the following:

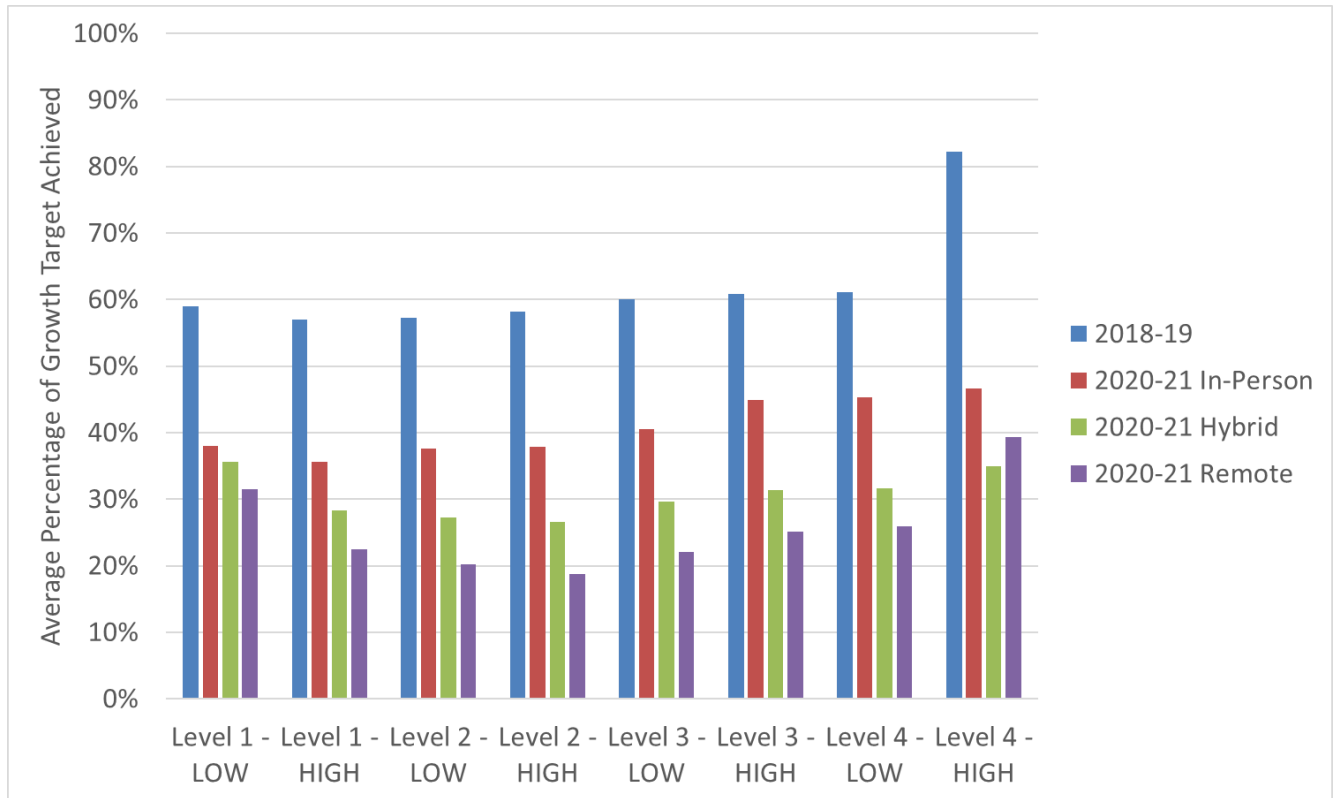
- Among low- and high-achieving students, those learning in-person showed greater growth than those learning in hybrid or remote models.
- During the pandemic, students below proficiency (Levels 1 and 2) grew at lower rates than those above proficiency; this was not the case before the pandemic (see blue columns).
- Students above proficiency (Levels 3 and 4) who learned in-person neared pre-pandemic growth.

Figure 11: Connecticut Growth Model Matched Cohort ELA (Grades 4-8 Combined)



The Connecticut growth model matched cohort Math comparison for Grades 4-8 combined (Figure 12) shows that the results for Math were similar to ELA in one respect: Among low- and high-achieving students, those learning in-person showed greater growth than those learning in hybrid or remote models. However, unlike in ELA, even students above proficiency who learned in-person substantially trailed pre-pandemic growth.

Figure 12: Connecticut Growth Model Matched Cohort Math (Grades 4-8 Combined)



Domain Score Analysis

The CSDE calculated domain scores in order to better understand the specific areas that may have proved more challenging for students through the pandemic. The domain scores are the difference between student performance on the test and the performance we would expect from a proficient student. Domain scores are only calculated for groups of students, as individual students do not respond to enough items to reliably estimate their ability. Positive domain scores represent above-proficient performance, negative domain scores represent below-proficient performance and scores near zero represent near-proficient performance. More explanation of these scores is provided in the paper: [Re-Analyzing Smarter Balanced Mathematics Target Results to Inform Instructional Improvement](#).

For the 2020-21 school year, the CSDE calculated domain scores for students in 5th and 8th grades in 2020-21 who had scores from 3rd and 6th grade respectively in 2018-19. In math, domains are common only within the elementary (3-5) and middle grades (6-8), so we cannot compare domain scores outside of these grade ranges.

Figure 13 shows the change in domain scores in ELA from Grade 3 to Grade 5 for students who were in Grade 5 in the 2020-2021 school year; the results are disaggregated by the three learning models. The first panel also shows the change in domain scores for students who were in Grade 5 in 2018-19 (class of 2026); it serves as a pre-pandemic reference. For all domains, in-person students start higher than their peers and decrease in proficiency from 3rd through 5th grade. The differences between 3rd and 5th grade are small (no larger than 0.2) but consistent. The students in hybrid and fully/mostly remote learning models start lower, but also appear to decrease more than their in-person peers. Specifically, the domains of Research (Claim 4) and Evidence/Elaboration (which is part of Claim 2: Writing) show steeper declines than the other domains among hybrid and fully/mostly remote learners. Such declines are not observed prior to the pandemic among the class of 2026. Note that the middle grade (i.e., either Grade 4 or Grade 7) in Figures 13-16 represents an actual data point only for the pre-pandemic class chart and not for the three learning model charts.

Figure 13: Domain Scores for Matched Cohort, ELA, Grade 5

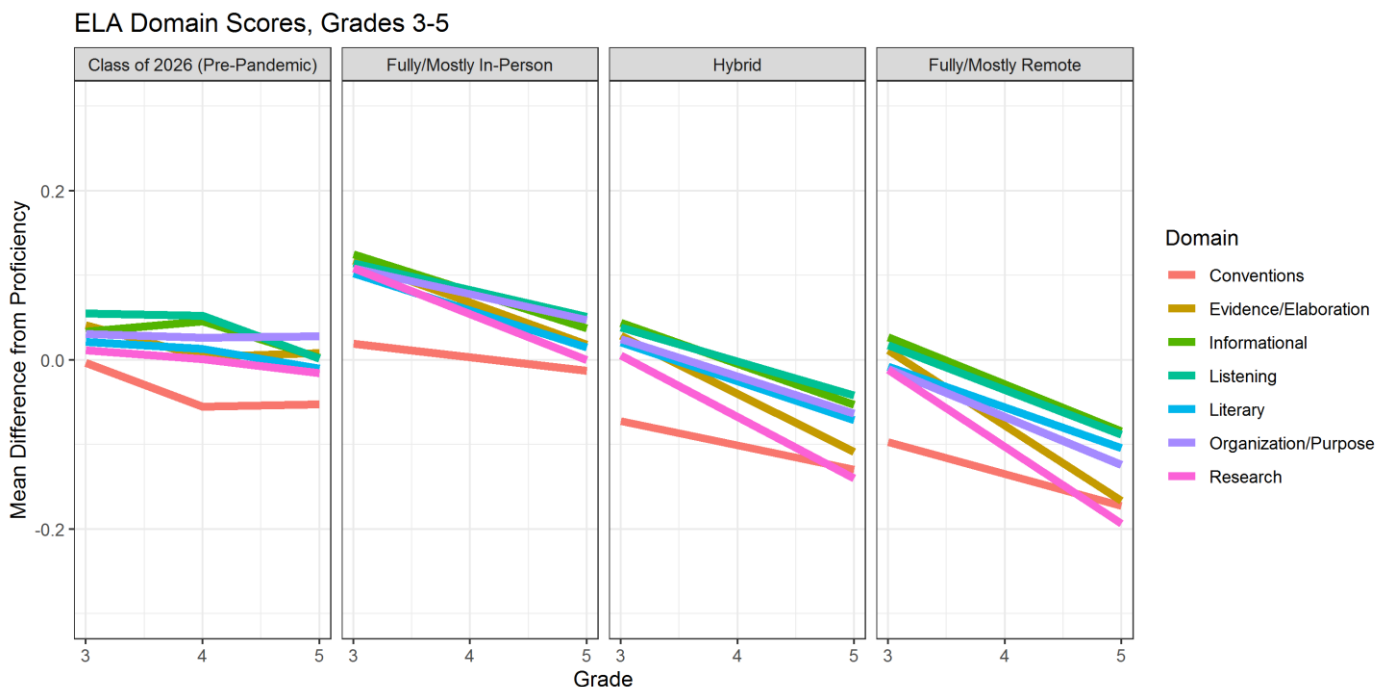
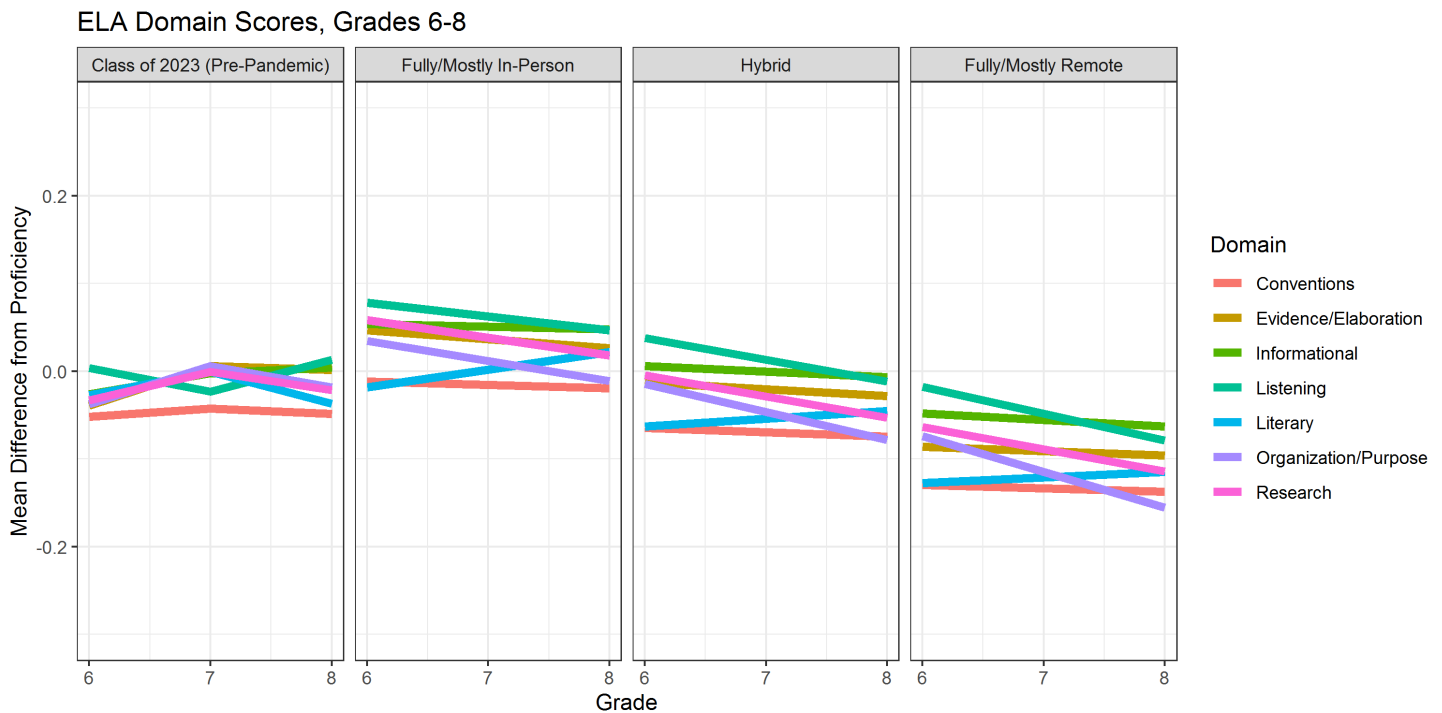


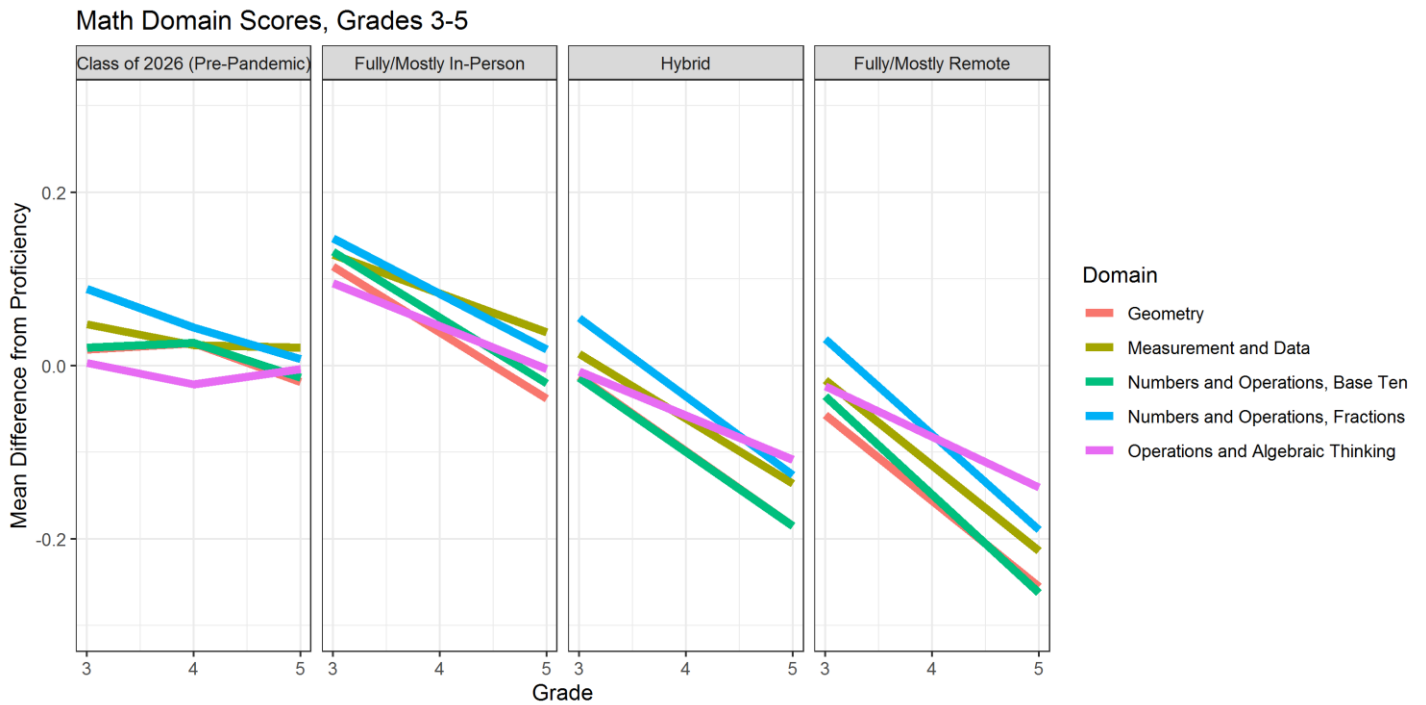
Figure 14 shows the ELA matched cohort for students who were in Grade 8 during the 2020-2021 school year. Here again, the fully/mostly in-person students start higher than their peers, while the hybrid students start higher than their fully/mostly remote peers. Most domains show a decrease in proficiency from grade 6 to 8 except for the Reading Literary Texts domain for all students regardless of learning model. The Organization/Purpose domain (part of Claim 2: Writing) shows a slightly steeper decline than the other domains, especially among fully/mostly remote students. Such declines are not observed prior to the pandemic among the class of 2023.

Figure 14: Domain Scores for Matched Cohort, ELA, Grade 8



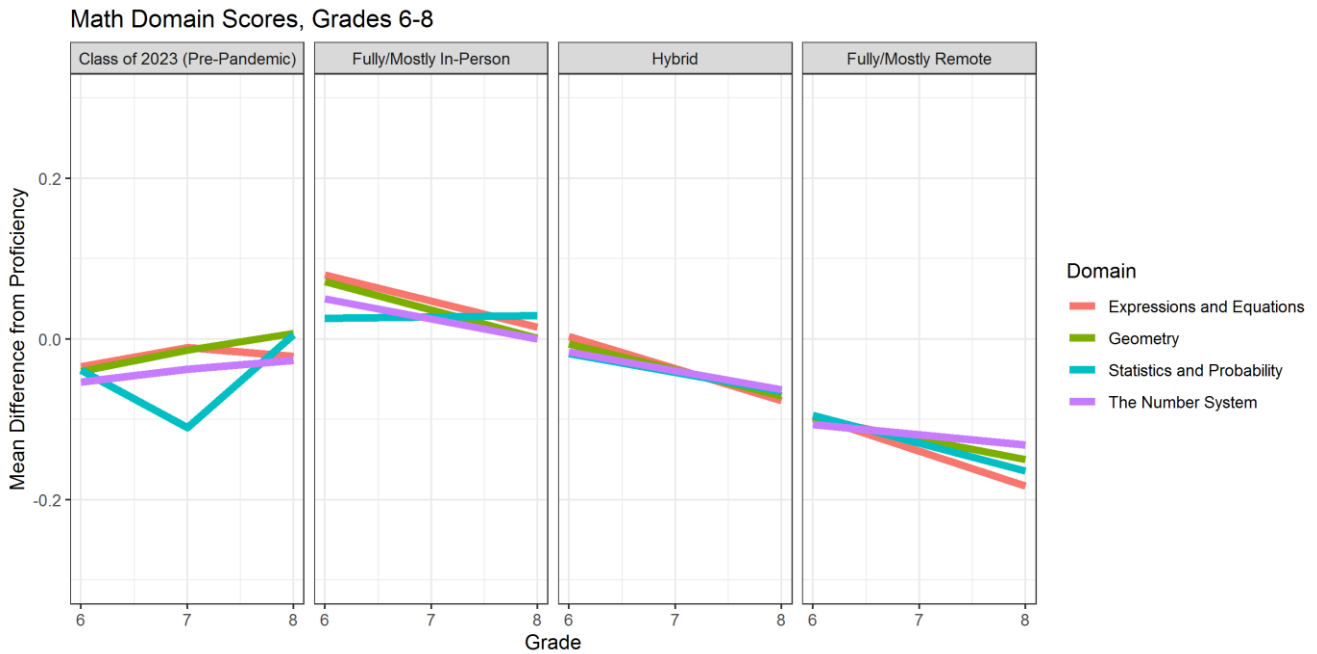
The domain scores in mathematics show a similar pattern to the domain scores for ELA. For the students in Grade 5 (Figure 15), those who learned in-person were the students with the highest domain scores in Grade 3. All three learning models had declines in proficiency from grade 3 to 5. The declines appear to be greatest for students who learned remotely. Operations and Algebraic Thinking showed slightly lesser decline than the other domains in all learning models. Again, as with ELA, such declines were not observed prior to the pandemic among the class of 2026.

Figure 15: Domain Scores for Matched Cohort, Math, Grade 5



For students in Grade 8 (Figure 16), again the students who learned in-person started out at a higher proficiency level than their peers, with those who learned remotely starting out lower than their peers. All domain scores decreased between grades 6 and 8 with the exception of Statistics and Probability for in-person learners which stayed constant. Such declines were not observed prior to the pandemic among the class of 2023.

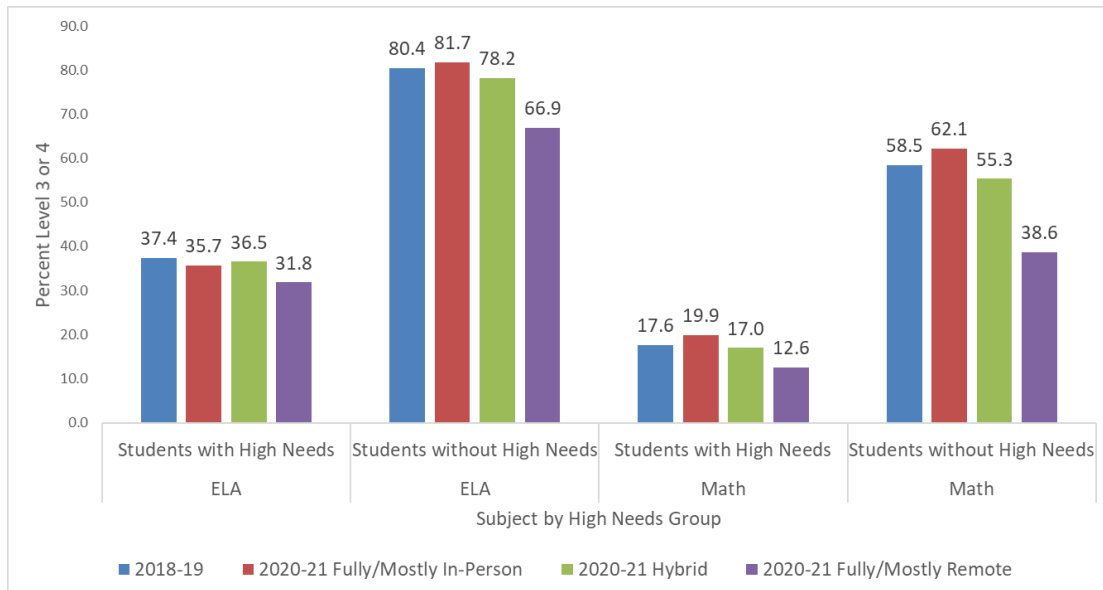
Figure 16: Domain Scores for Matched Cohort, Math, Grade 8



Connecticut SAT School Day

The state summative SAT exam was administered to students in Grade 11 in 2020-21. As with the Smarter Balanced assessments, among students with and without high needs, those who were fully/mostly remote showed lower performance in 2020-21 as compared to 2018-19 (Figure 17).

Figure 17: CT SAT School Day Achievement by High Needs Status (Grade 11)



Among students with high needs, the average scale scores for fully/mostly remote students in 2020-21 (446 in ELA and 427 in Math) are around 10 points lower than high need student achievement in 2018-19 (455 in ELA and 437 in Math). Among students without high needs, the average scale scores for fully/mostly remote students in 2020-21 (523 in ELA and 504 in Math) are approximately 35 to 45 scale score points lower than non-high-need student achievement in 2018-19 (560 in ELA and 548 in Math).

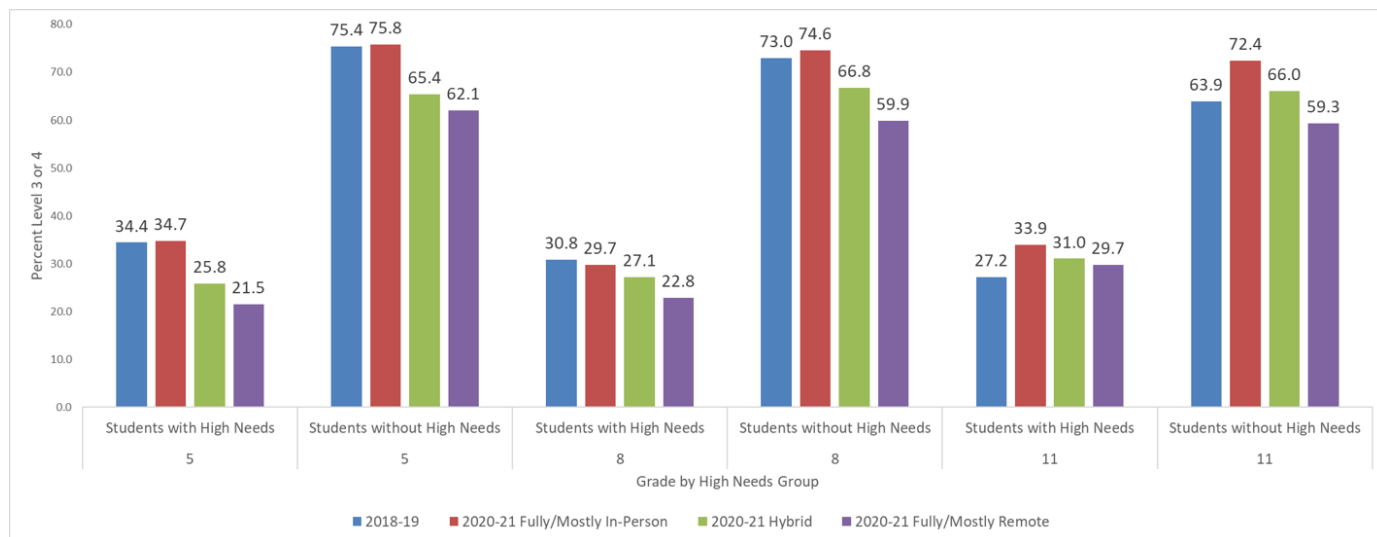
There are some important points of caution with these data:

- As with students in Grade 3 and 4, there may be previous achievement differences between students in the different learning models.
- Test participation is low among students with high needs (74.5%) as compared to those without high needs (93.4%).
- Participation among students fully/mostly remote is also low (73.9%) as compared to those in hybrid or in-person models (91.4%).
- Less than 10 percent of students attended in-person in Grade 11 within both groups (i.e., high needs and not high needs).
- 49 percent of students with high needs were fully/mostly remote while among students without high needs, only 28 percent were fully/mostly remote.

Next Generation Science Standards Assessment Results

The Next Generation Science Standards (NGSS) Assessment was administered to students in Grades 5, 8, and 11 during the 2020-21 school year. Figure 18 shows the science achievement in the tested grades by high needs status for in-person test takers. In all grades, students who learned fully/mostly in-person reflected higher achievement than those who learned in hybrid or fully/mostly remote models. We do not have longitudinal science achievement data for these students, so it's important to note that these results do not capture any previous achievement differences between students in the three learning models. Additionally, in-person test participation was low among those who were fully/mostly remote – less than 40 percent of fully/mostly remote across all grades learners took the NGSS Assessment in-person – as well as among students with high needs in Grade 11 across all three learning models (around 56 percent).

Figure 18: Science Achievement (Grades 5, 8, 11) by High Needs Status



Alternate Assessments - CTAA and CTAS

The alternate assessments in ELA and Math (CTAA) and science (CTAS) are designed for around one percent of all students statewide with the most significant cognitive disabilities. These assessments could only be administered in person at school. Participation in the CTAA was less than 90 percent among those who learned in-person or hybrid, while it was only 31.7 percent among those who learned remotely. Participation in the CTAS was less than 80 percent among those who learned in-person (78.9%) or hybrid (76.7%) students, while it was only 27.8 percent among those who learned remotely. In light of these low participation rates, the aggregate results presented below may not be representative of this population.

Learning Model	CTAA	CTAA ELA		CTAA Math		CTAS		
	Number of Students	Participation Rate (%)	Percent Level 3 or 4	Participation Rate (%)	Percent Level 3 or 4	Number of Students	Participation Rate (%)	Percent Level 3 or 4
Fully/Mostly In-Person	1,368	88.0	25.4	87.1	29.4	550	78.9	24.2
Hybrid	1,293	82.5	26.3	83.0	31.1	597	76.7	27.9
Fully/Mostly Remote	745	31.7	33.3	31.3	36.6	331	27.8	36.7
2018-19 Results	4,023	95.4	34.0	95.2	36.4	1,756	94.1	37.0

Conclusion

Summative assessments play a key role in the evaluation of student learning and critical thinking. From an equity standpoint, it is essential for Connecticut to use its statewide summative assessment data to monitor long-term trends, evaluate the full impact of the pandemic on student achievement and growth, and target support and resources where they are most needed to address and combat the negative impact of this pandemic on student learning. Connecticut's examination of the relationship of both achievement and growth with student learning models is a crucial component of this analysis and provides important context.

Student growth suffered during the pandemic. Students who learned fully/mostly in-person lost the least ground academically, while those who learned in hybrid or fully/mostly remote models showed substantially weaker achievement and growth. This pattern held true for students in all grades and most student groups. While the academic impacts were seen in all subjects, the observed differences were largest in math.

Estimated statewide results from Connecticut's growth model further indicate that growth before the pandemic was much stronger than growth during the pandemic. Among low- and high-achieving students, those learning in-person showed greater growth than those learning in hybrid or remote models. Moreover, students below proficiency grew at lower rates than those above proficiency which was not the case before the pandemic. Students above proficiency (Levels 3 and 4) who learned in-person neared pre-pandemic growth in ELA but not in Math. With regard to the alternate assessments, due to low participation rates, the aggregate results may not be representative of the population.

The encouraging results among students who learned fully/mostly in-person strengthen the case for offering full time, in-person instruction during 2021-22. The performance declines, especially in mathematics and among students who learned in hybrid or fully/mostly remote models, demand the sustained implementation of evidenced-based solutions.

The CSDE's American Rescue Plan - Elementary and Secondary School Emergency Relief Fund (ARP-ESSER) application to the U.S. Department of Education will provide an additional nearly \$1 billion to districts across the state with the majority concentrated in our highest need districts to support a range of evidence-based activities that are designed to increase student engagement and accelerate learning. The CSDE is also using its state set-aside of over \$100 million to support a wide range of projects including: model curricula; online curricula and courses; summer enrichment grants; social, emotional, and mental health supports; high dosage tutoring; specialized initiatives for English learners and students with disabilities; postsecondary access, adult education, and credit recovery; and boosting engagement of high school students.