



State Snapshot of Test Scores and Pandemic Learning Models: Virginia

An initial look at variation in student academic outcomes by predominant learning model across Virginia's school districts¹ during the COVID-19 pandemic of the 2020-21 school year.

COVID-19 School Data Hub Team

Background

Schooling throughout the US was significantly disrupted during the 2020-21 school year. These disruptions were variable both across and within states, with some schools and districts offering in-person instruction and others offering predominantly hybrid or virtual instruction. While concerns have been raised about learning losses during the pandemic across all students, particular concerns have been raised about the losses for students who did not have consistent access to in-person school. It has, however, been difficult to measure these losses systematically given the limited data on schooling mode.

In August 2021, the Virginia Department of Education (VDOE) released the results of their Standards of Learning (SOL) tests from the end of the 2020-21 school year.² Student participation rates were lower than earlier years, so results should be taken with some caution (e.g., while participation rates are typically close to 99%, rates in 2020-21 were between 75-80% depending on subject area). We are now able to explore how these student outcomes differ across districts that utilized different learning models over the course of the school year, by drawing from the COVID-19 School Data Hub (CSDH) dataset.

This dataset includes comprehensive data on learning models across U.S. schools and districts between August 2020-May 2021, as collected by state education agencies (SEAs). Our data for Virginia include information at the district level on the learning models offered, initially at monthly intervals and at weekly intervals beginning in March 2021. By merging these datasets together, we were able to estimate the relative changes in test scores between the 2018-19 school year and 2020-21, separating results across learning model types. We report these differences below.

¹ VDOE uses the term "school division". For the purposes of our paper, we will use "school district" given that it is a more widely-understood term, but we acknowledge that this is different from terminology used within the state.

² SOL data available from the VDOE at https://www.doe.virginia.gov/statistics_reports/sol-pass-rates/index.shtml.

Method of Classifying Virginia’s Learning Models

The VDOE publicly reports school districts as one of five possible learning models, which we have consolidated for standardization purposes into the three categories of *in-person*, *hybrid*, and *virtual*. We present the state’s models and our classifications in Table 1.

Table 1. Virginia’s Learning Model Classifications

State Model	State Description	COVID-19 School Data Hub Model
In Person	4+ days of in person instruction for all students	In-person
Partial In Person	4+ days in person for some students (usually the younger grades); hybrid or remote for all other students	Hybrid
All Hybrid	All students with some in person and some remote (none hitting the 4 days/week threshold)	Hybrid
Partial Hybrid	Some students hybrid (usually the young grades; none hitting the 4 days/week threshold), all other fully remote	Hybrid
Predominantly Remote	Learning is remote for at least 95% of students and in person for all others.	Virtual
Fully Remote	Fully Remote	Virtual

Note. Learning model definitions and data available from the Virginia Department of Education, State Snapshot: Virginia School Operational Status, available at: https://www.doe.virginia.gov/support/health_medical/office/reopen-status.shtml.

Using our three learning model categories, we classify districts based on their predominant learning model through the 2020-21 school year. Among 131 districts, 21% are classified as offering a primarily in-person model ($n=28$), 65% are classified as offering a primarily hybrid model ($n=86$), and 13% are classified as offering a primarily virtual model ($n=17$).

Results

We focus on the percentage of students passing their math and reading assessments for grades 3-8.³ In Figure 1, we show the average percentage of students reaching proficiency in these subjects for the four school years prior to the pandemic⁴; we have disaggregated these data by the three learning models used in 2020-21. In general, schools which offered primarily virtual instruction had lower performance in both subjects before the pandemic. Note that there was no testing in the 2019-20 school year.

In Figure 2, we show the change in math test scores year-on-year by the 2020-21 learning model. The first set of bars (far left) shows the change in test scores between the 2018-19 school year and the 2020-21 school year. There are substantial proficiency declines across all

³ In VA, “passing” for grades 3-8 reading and mathematics tests includes the two achievement levels Pass/Advanced and Pass/Proficient. “Not passing” includes Fail/Basic and Fail/Below Basic.

⁴ School years included here are 2015-16, 2016-17, 2017-18, and 2018-19.

three learning model groups, with the largest declines in those districts with predominantly virtual instruction. In math, for example, the average percentage of students reaching proficiency declined by 43 percentage points among predominantly virtual districts, as compared to a 28 percentage point decline for predominantly in-person districts. It is important to note that these school districts are also at a lower proficiency level in the baseline year.

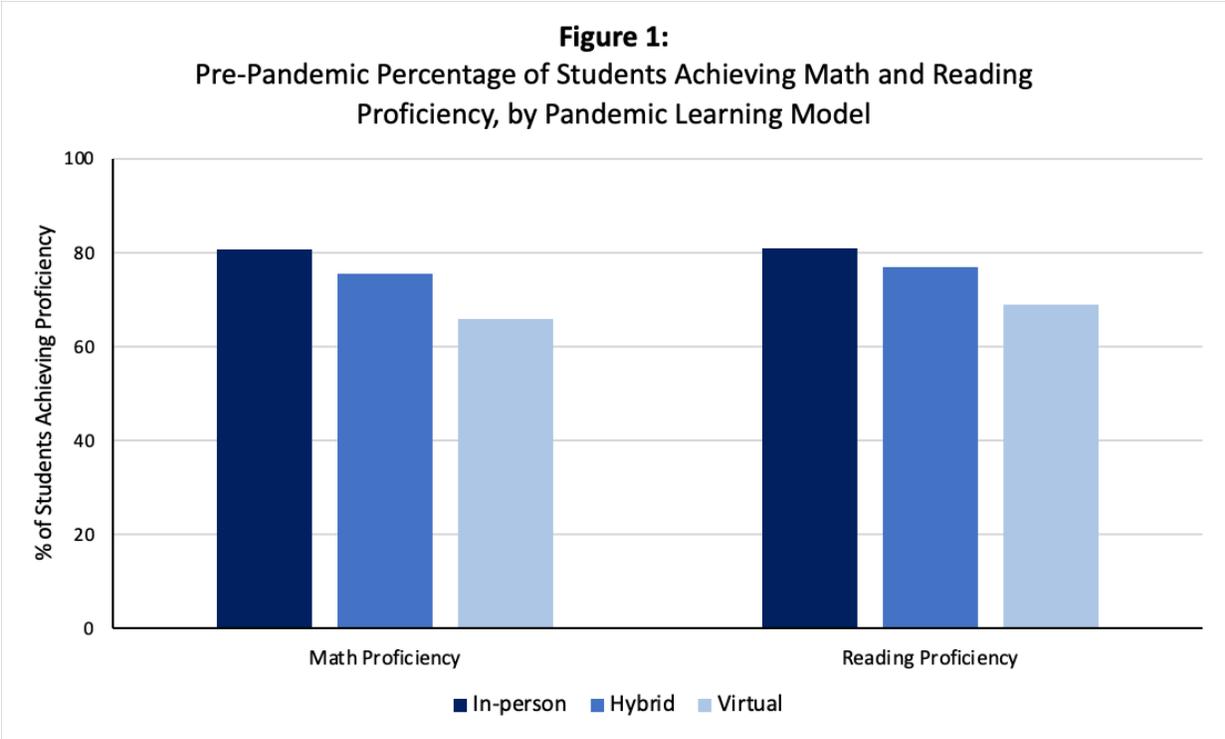
By way of comparison, Figure 2 also displays three additional sets of year-on-year changes pre-pandemic for these districts, with the largest decline again among those districts with predominantly virtual instruction. In the absence of the pandemic, these changes are small and similar across the three groups.

In Figure 3, we show a similar set of analysis for Virginia's SOL reading assessments. The declines in this case show a similar pattern across groups but are much smaller in magnitude. For example, the average percentage of students reaching proficiency in reading declined by 13 percentage points among predominantly virtual districts, as compared to an 8 percentage point decline for predominantly in-person districts.

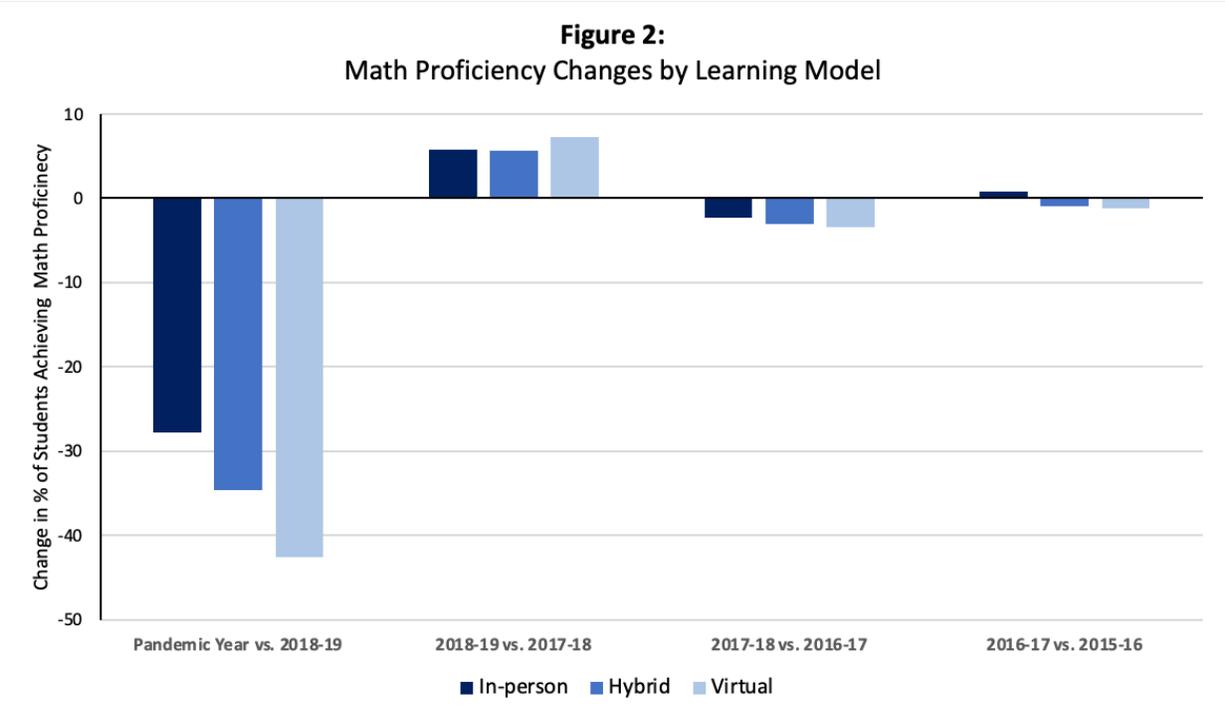
One note is that student participation rates in the SOL assessments were lower in the pandemic year than in previous years, at approximately 80% rather than 99%. Figure 4 repeats the changes for math and reading under the assumption that *all* of the missing students were proficient (and assumes similar missing rates across modes). The overall test score reductions are smaller in this case, but the differences persist.

Summary

By combining Virginia's test score data for the 2020-21 school year with data on learning models used by school districts, we demonstrate that measured learning losses were greater in districts with predominantly virtual schooling. These measured learning losses were especially prominent in math test scores.

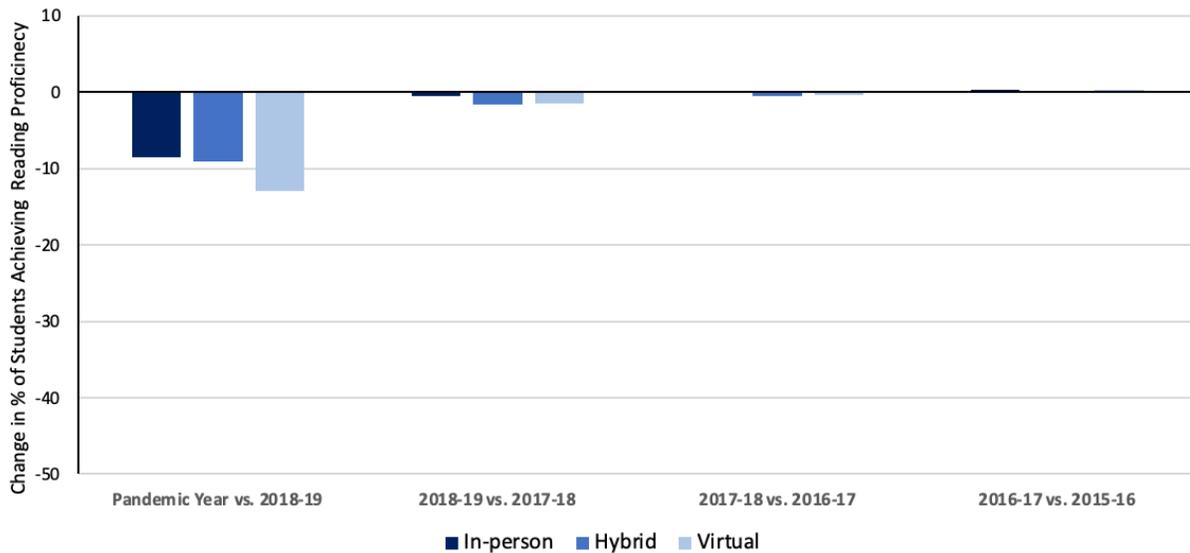


Note. This figure shows math and reading proficiency scores, averaged by district, for the four years before the pandemic, sorted by the predominant district learning model during the pandemic (2020-21 school year).



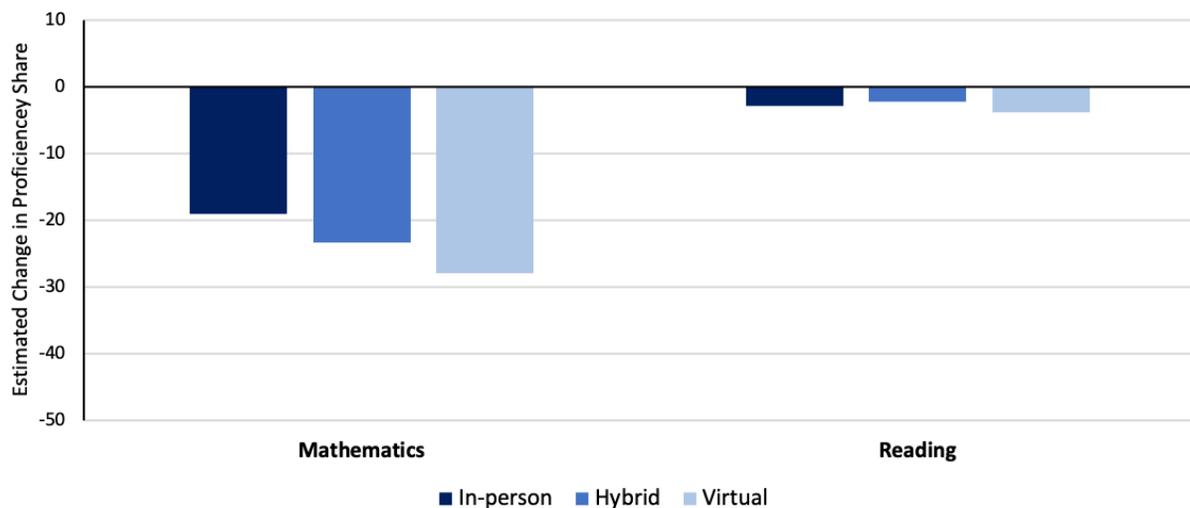
Note. This graph shows the year-on-year changes in the share of students testing proficient in math, divided by pandemic learning mode for comparison purposes. Note that all learning was in person during pre-pandemic years.

Figure 3:
Reading Proficiency Changes by Learning Model



Note. This graph shows the year-on-year changes in the share of students testing proficient in reading, divided by pandemic learning model for comparison purposes. Note that all learning was in person during pre-pandemic years.

Figure 4:
Robustness to Lower Participation Rates



Note. This graph shows the year-on-year changes in proficiency scores between the pandemic and the previous year under the assumption that the 20% of students who did not test during the pandemic would all have been proficient. This is a bounding exercise.