Learning Loss Recovery after COVID-19 Pandemic in Texas Public Schools

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http://DataLab12.github.io/

Motivation

➢ COVID-19 school reopening decisions were difficult for policymakers since there is no consensus on the impact of school reopening on the spread of COVID-19 [2,3,5]

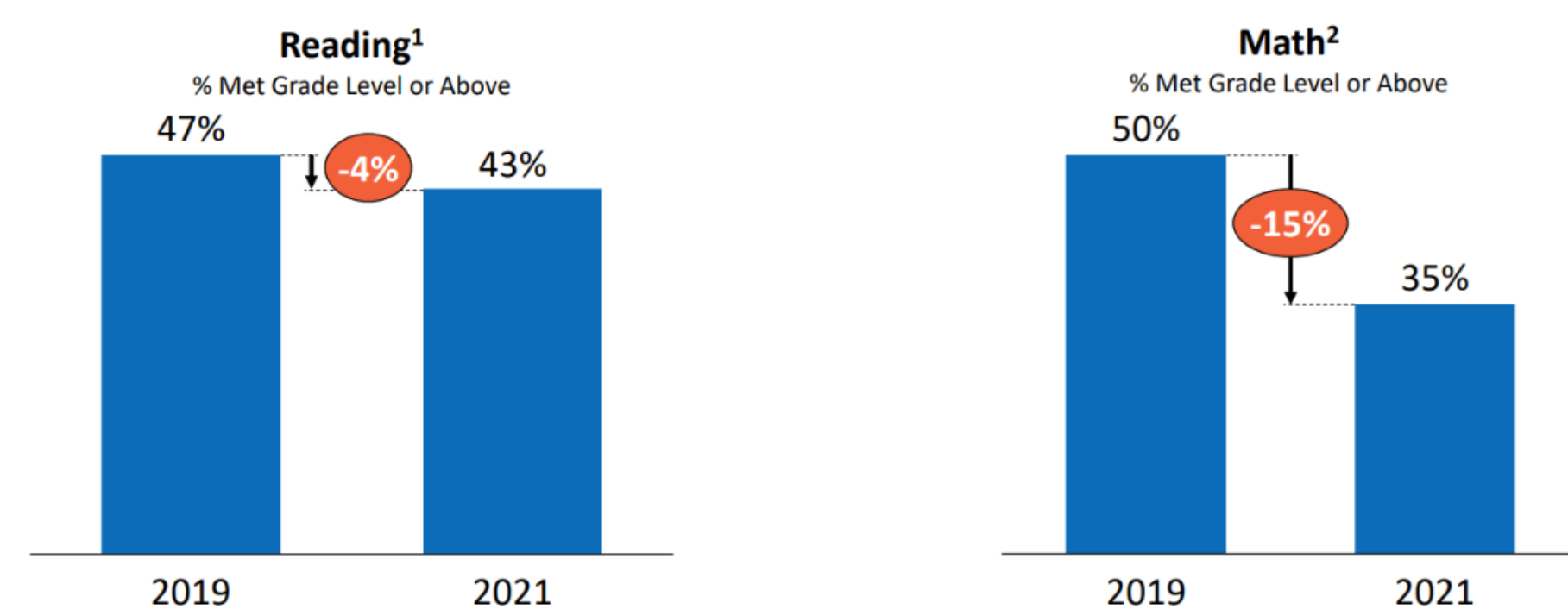➢ Learning loss was documented in many states [4],

Figure 1: Texas Educational Agency 2021 STAAR test report [1]

➢ **If we can identify most impactful factors on learning loss from publicly available data sources during pandemic, we can help policy makers make more informative decisions on learning recovery**
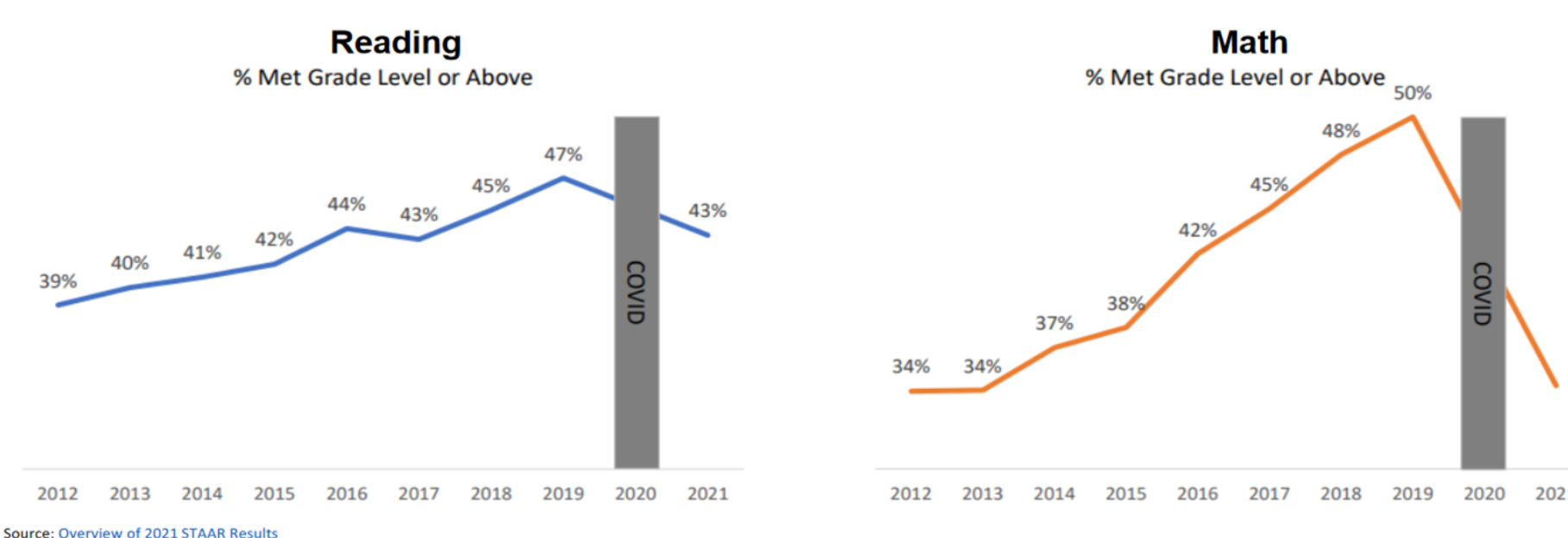
Research Questions

Figure 2: The negative impact of COVID-19 erased years of improvement in reading and math [1]

➢ Can we quantify the impact of the mode of instruction(hybrid, remote, in-person) on the learning loss?

➢ Do school district reopening decision influence the learning loss experienced by students?

➢ Are students from low-income background and minority students experience more learning loss?

➢ Do students from different grade level experienced learning loss differently?

Data Acquisition and Integrations

Data Acquisition

➢ STAAR test results by grade level from the Texas Education Agency 2019-2021: Thousands of attributes per school: scores broken by race, ethnicity, and free lunches

➢ COVID case data reported to the Texas Health and Human Services per county

➢ Common Core of Data from the National Center on Education Statistics: Mode of teaching, % of students that were virtual, # COVID cases reported per school

➢ Data Acquisition Step is cumbersome: various sources, modes of reporting, missing values

Data Integration

➢ Data Integration of Health and Education data is a complex step due to noisy data sources

➢ Integration of all 3 data sources per district, per county, per school

➢ Missing Values, no quality control , different ranges and criteria for reporting, different timespans, etc.
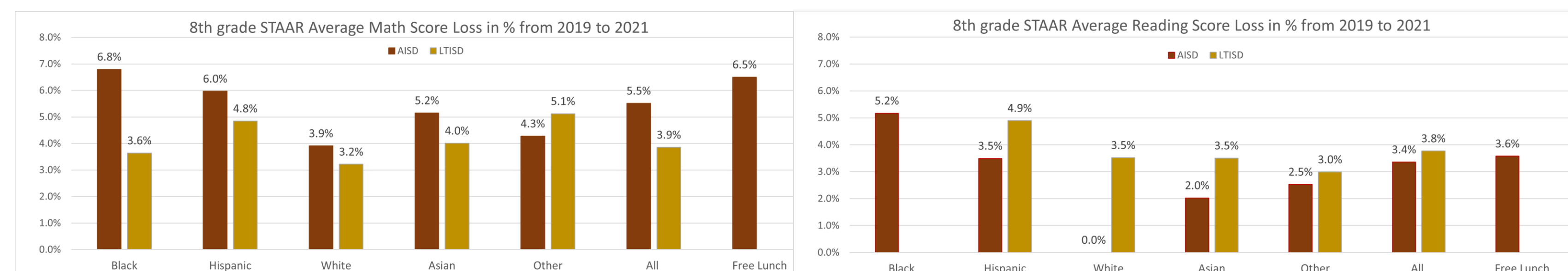
Initial EDA

Figure 3: STAAR test score comparison for 8th graders in two districts in Travis county with very different COVID policies. Learning Loss % is relatively low and consistent across the board for the school district that opened early.

➢ Austin ISD (AISD) is the largest school district in Travis County, where student's demographic is: 6.6% Black, 55% Hispanic, 30% white, 4.5% Asian, 3.9% other. During COVID-19 pandemic, AISD was the latest to return in person of all school districts, kept the masking requirement until April 2022, and had the strictest COVID protocols including delayed schools tart or school cancellation.

➢ Lake Travis ISD (LTISD) is one of the smaller school districts, with student demographics: 1% Black, 20% Hispanic, 67% white, 7% Asian, 5% other. LTISD students went back in person in the Fall 2020, and the district fully relaxed mask mandates in Fall 2021; LTISD had one of the most relaxing COVID protocols of all ISDs in Travis County.
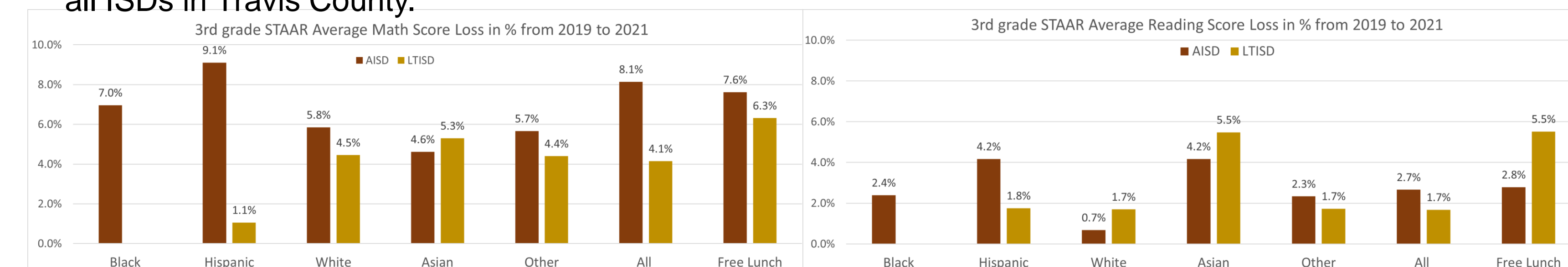

Figure 4: STAAR test score comparison for 3rd graders in two districts in Travis county with very different COVID policies. Learning Loss % is smaller for math and larger for reading in the school district that opened early.

➢ Black and Hispanic students in Austin ISD have been more affected by COVID-19 policies.

➢ Lack of diversity in LTISD prevents us to make any conclusions based on the numbers for black and free lunch students as they are in single digits.
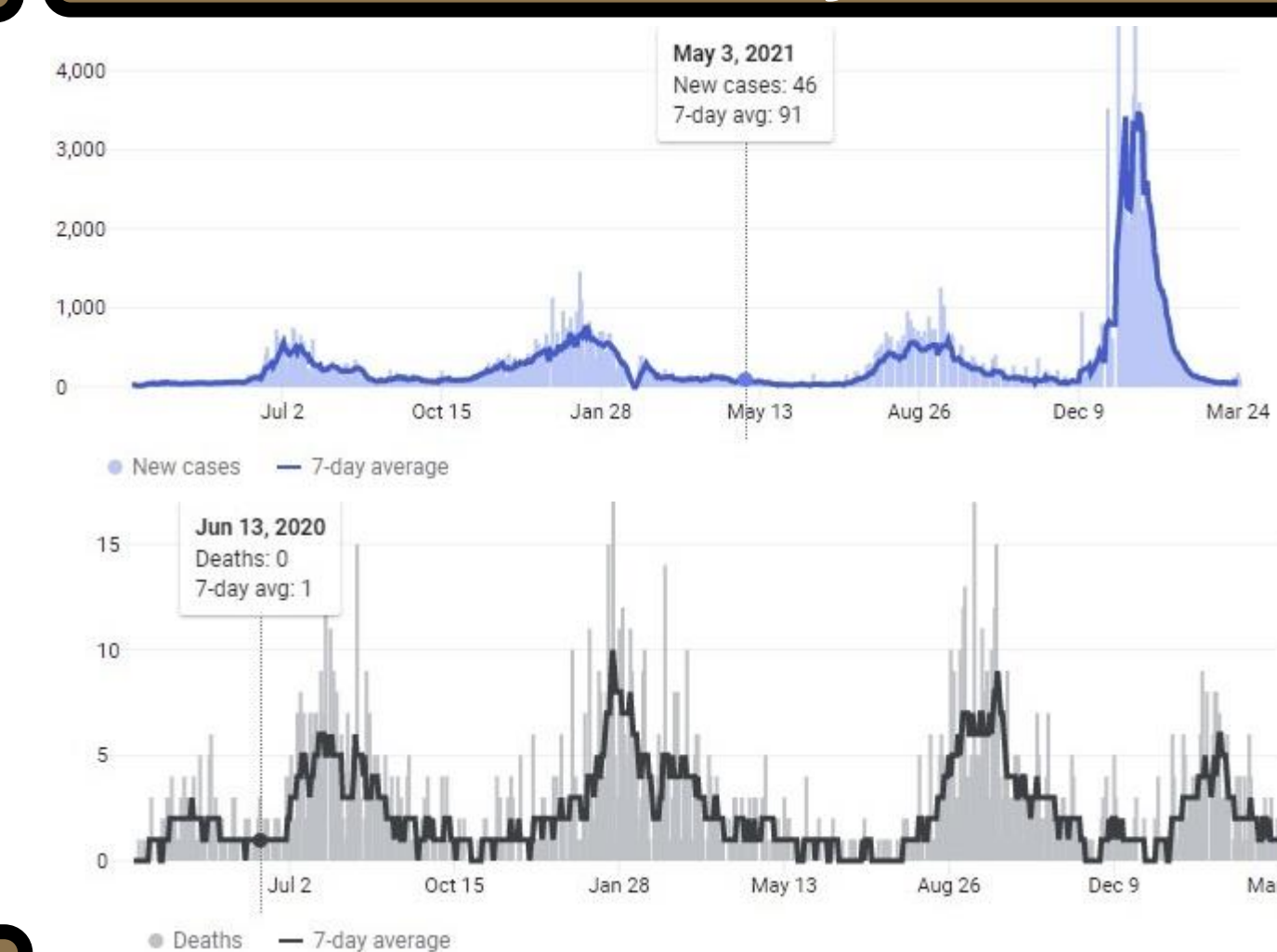
Travis County COVID

Figure 4: COVID-19 infection and death counts in Travis county since March 2020. Source: nytimes.com

Next Steps

➢ Analyze all Travis County ISD and compare learning loss outcomes and predicates

➢ Include school reopening/mask/delay policies as predicates

➢ The full effect of the school closing policies

➢ The trends found in Travis ISD will be evaluated on other Texas districts in terms of what predicates have the highest learning loss impact

➢ Prediction model for learning loss impact

References

1. https://tea.texas.gov/sites/default/files/2021-tac-accountability-presentation-final.pdf
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3. Goldhaber, D., Imberman, S., Strunk, K, Hopkins, B., Brown, N., Harbatkin, E., & Kilbride, T. (2021). "To What Extent Does In-Person Schooling Contribute to the Spread of COVID-19? Evidence from Michigan and Washington." American Institute for Research, working paper 247-2020-2.
4. Halloran, Clare and Jack, Rebecca and Okun, James C and Oster, Emily. (2021) Pandemic Schooling Mode and Student Test Scores: Evidence from U.S. States. NBER Working paper 29497.
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