

## INVESTIGATING THE IMPACT OF COVID-19 ON ELEMENTARY MATHEMATICS TEST SCORES

Dara Bright  
Drexel University  
dnb66@drexel.edu

Christopher Fornaro  
Drexel University  
cf6888@drexel.edu

Yiyun Fan  
Drexel University  
yf366@drexel.edu

Toni Sondergeld  
Drexel University  
tas365@drexel.edu

Jonathan Bostic  
Bowling Green State University  
bosticj@bgsu.edu

Keywords: Assessment, Elementary School Education, and Curriculum

The COVID-19 pandemic has ravaged onward over the last year and has greatly impacted student learning. An average student is predicted to fall behind approximately seven months academically; however, this learning gap predicts Latinx and Black students will fall behind by 9 and 10 months, respectively (Seiden, 2020). Moreover, the shift to online instruction impacted students' ability to learn as they encountered new stressors, anxiety, illness, and the pandemic's psychological effects (Middleton, 2020). Despite the unprecedented circumstances that students were precipitously thrust into, state testing and assessments continue. Assessments during the pandemic are likely to produce invalid results due to "test pollution," which refers to the systemic "increase or decrease in test scores unrelated to the content domain" (Middleton, 2020, p. 2). Considering the global pandemic, test pollution is prominent and worth exploring as it is uncertain whether state testing can identify the impact COVID is having on student learning.

NWEA produces the Measures of Academic Progress (MAP) assessment test. NWEA argues that MAP testing can also provide school districts with the ability to "identify trends for students, create flexible learning groups, and target professional development for teachers" (Belgard, 2017, p.1). This case study research aims to identify if current learning conditions have impacted MAP scores in a rural school setting due to the pandemic. The three research questions are: (a) Is there a statistically significant difference in 4<sup>th</sup> grade MAP math scores between students in the September 2019 cohort and September 2020 cohort? (b) Is there a statistically significant difference between 4<sup>th</sup>-grade math MAP scores based on gender within this rural school district between September 2019-September 2020? (c) Is there a statistically significant difference between this school districts' 4<sup>th</sup> grade math scores and national 4<sup>th</sup> grade math MAP scores for September 2019 -September 2020?

Data analyses suggest no statistically significant difference between the two cohorts, nor is there a statistically significant difference in 4<sup>th</sup> grade MAP math scores between male and female students. Data findings suggest no statistical significance between our case study cohorts' mean math scores and the comparison groups: the case study district, and the national norm data. While COVID has a wide-reaching impact on school activities, our findings indicate that the COVID-19 pandemic may not necessarily affect student learning outcomes as measured using MAP scores. Future studies that utilize qualitative methods, such as teacher and student interviews, should be conducted to problematize these findings.

### Acknowledgments

Ideas in this manuscript stem from grant-funded research by the National Science

Foundation (NSF 1720646; 1720661). Any opinions, findings, conclusions, or recommendations expressed by the authors do not necessarily reflect the views of the National Science Foundation.

### References

Belgard, N. (2017). The Power of MAP Data in the Classroom. NWEA. <https://www.nwea.org/blog/2017/power-map-data-classroom/>

Middleton, K. V. (2020). The Longer-Term Impact of COVID-19 on K–12 Student Learning and Assessment. *Educational Measurement: Issues and Practice*, 39(3), 41-44.

Seiden, M. (2020) Remote learning latest example of education inequality for minority, low-income families. WSB-TV Atlanta.<https://www.wsbtv.com/news/2-investigates/remote-learning-latest-example-education-inequality-minority-low-income-families/EQNIVUSYAJAV3DICM5ZRFE4QWM/>