

## The COVID-19 slide: What summer learning loss can tell us about the potential impact of school closures on student academic achievement

April 2020

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As the coronavirus (COVID-19) pandemic closes schools across the nation, education systems are scrambling to meet the needs of schools, families, and 55.1 million students<sup>i</sup> during these unprecedented times. The economic impacts and trauma of recent events will also have far reaching effects that will likely exacerbate long-standing opportunity gaps. While it is difficult to speculate on what missing months of school may mean for student achievement, research on seasonal learning and summer learning loss can offer some insights that can help educators, policy makers, and families understand, plan for, and address some potential impacts of this extended pause in classroom instruction when students return to school.

Seasonal learning research allows researchers to compare student learning patterns when school is in versus out of session. While there is some controversy about the magnitude of summer learning loss<sup>ii,iii</sup> three trends are consistent across seasonal learning research findings<sup>iv</sup>: achievement typically slows or declines over the summer months, declines tend to be steeper for math than for reading, and the extent (proportionally) of loss increases in the upper grades.

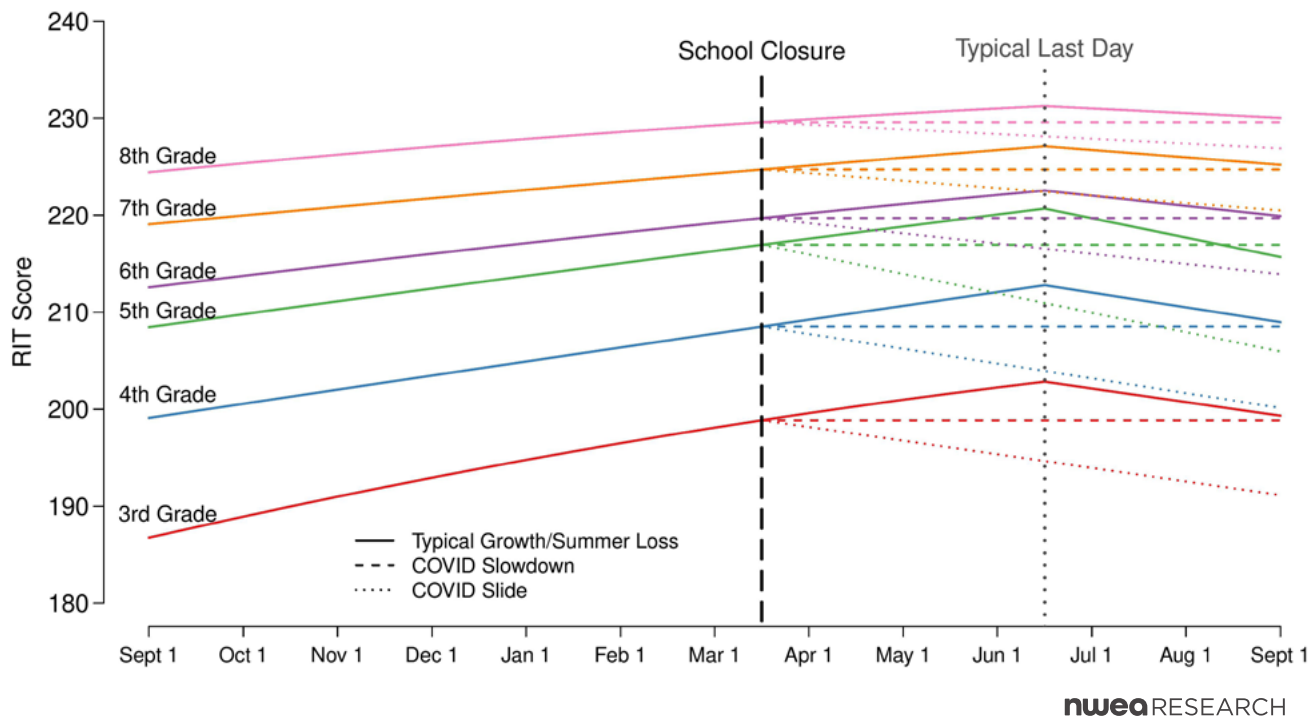
The degree to which students lose ground during the summer, however, can vary by data source, grade level, and subject<sup>v,vi</sup>. Some of the earliest work in seasonal learning suggested that **summer slide** leads to declines of two to three months of learning over summers<sup>vii,viii</sup> while other research using nationally representative data showed small declines (two weeks of learning), or sometimes even small gains, during the summers following kindergarten and first grade, which researchers described as **summer slowdown**<sup>ix</sup>.

To provide preliminary estimates of the potential impacts of the extended pause of academic instruction during the coronavirus crisis, we leverage research on summer loss and use a national sample of over five million students in grades 3–8 who took MAP® Growth™ assessments in 2017–2018. We examined how the observed typical average growth trajectory by grade for students who completed a standard-length school year compares to projections under two scenarios for the closures: a **COVID-19 slide**, in which students showed patterns of academic setbacks typical of summers throughout an extended closure and **COVID-19 slowdown**, in which students maintained the same level of academic achievement they had when schools were closed (modeled for simplicity as March 15, with school resuming in fall).

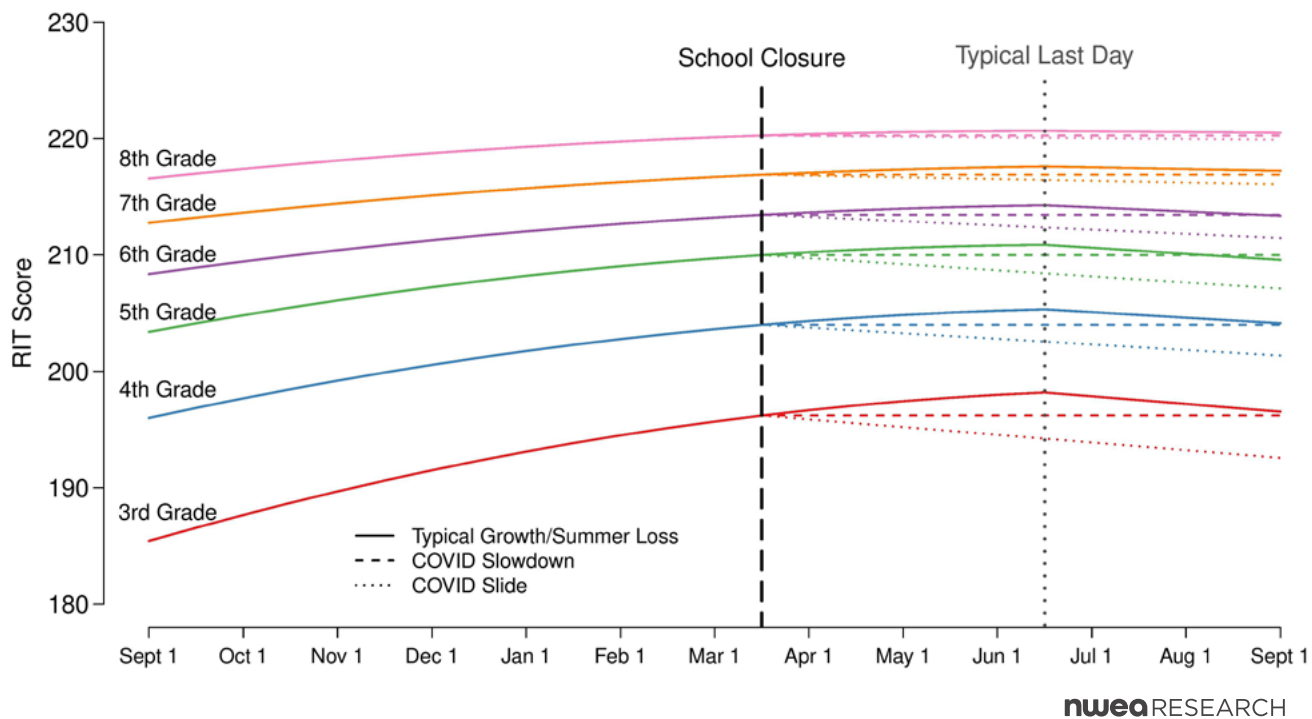
## Projections suggest major academic impacts from COVID closures for students, especially in mathematics

We estimate COVID-19 projections of the average academic growth trajectory by grade and for mathematics (Figure 1) and reading (Figure 2). In a typical year (shown as solid lines), average academic growth varies across the academic year (shown as the curved lines seen in some grades) and generally declines from the last day of school through the summer, with steeper declines in mathematics than in reading. The average within-year growth follows a quadratic trajectory across the 2017–2018 student sample<sup>x</sup>, while the dashed line shows projected trajectories under a COVID slowdown, and dotted lines show projected trajectories under a COVID slide. Preliminary COVID slide estimates suggest students will return in fall 2020 with roughly 70% of the learning gains in reading relative to a typical school year. However, in mathematics, students are likely to show much smaller learning gains, returning with less than 50% of the learning gains and in some grades, nearly a full year behind what we would observe in normal conditions.

**Figure 1. Mathematics forecast**



**Figure 2. Reading forecast**





While the projections are based on growth rates calculated from actual data and extend results seen in seasonal learning studies, the school closures caused by COVID-19 have additional aspects of trauma to students, loss of resources, and loss of opportunity to learn that go well beyond a traditional summer break for many families. In other words, children from more affluent communities are more likely to come from families with financial resources, stable employment, and flexible work from home and childcare arrangements that allow them to weather this storm more easily than families who are renting their housing, working in low-pay fields that are hardest hit by the economic impacts, and experiencing higher rates of food insecurity, family instability, and other shocks from this disruption.

Nevertheless, these preliminary forecasts parallel many education leaders' fears: missing school for a prolonged period will likely have major impacts on student achievement come fall 2020. The COVID-19 crisis is a call to action for practitioners and policy makers alike. Once schools are back in session, we must be prepared to support students, many of whom will likely be behind academically.

## RECOMMENDATIONS

**Policymakers, educators, families, and communities should further their work to provide support, especially in mathematics, to students while school is disrupted.**

The projections in this study and lessons from seasonal learning research present us with a moral imperative: to help students succeed academically, we must provide resources and support to families during and after this disruption, especially in mathematics, which often show the steepest losses over summers and time outside of school. This does not suggest reading support is not important: research consistently finds that income-based reading gaps can grow over summers. Making sure all students and families have access to appropriate, engaging mathematics and reading materials, instruction, and support during coronavirus closures is one important way we can prevent opportunity gaps from growing. This will require addressing the most pressing challenges first, like closing the digital divide by providing increased access to the internet and technology. Then, school leaders and educators can address more nuanced instructional challenges like differentiation, accessibility, and special education needs.

**To guide curriculum and instruction to support students, educators will need data.**

Educators will need data to guide curriculum and instruction in support of students, especially to target resources and attention for communities most impacted by COVID-19 school closures. Accurate, valid, and reliable assessment data can provide valuable information in times of disruption and uncertainty. However, it may not be realistic to expect that teachers, school leaders, and families will focus their attention on assessment data during this crisis or in our transitions to distance learning and back. Over the past week, academics and policy influencers have publicly discussed the downfalls of using summative data from this spring for accountability purposes, and at this point, nearly all states have applied for or been granted federal assessment waivers for summative tests. However, losing these data may make the challenge of understanding and addressing the disruption of the COVID-19 crisis that is occurring for our students, and especially for those who are historically underserved,

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## RECOMMENDATIONS (CONT.)

more difficult. Now is the time to explore and discuss what comes next. Most agree that we need valid and reliable formative and interim data to guide curriculum and instruction but determining when and how to collect and interpret these data in our rapidly changing context will be complicated. Moving forward we should work collaboratively across stakeholder groups to determine how to best collect and interpret data that will help us mitigate the potential COVID slowdown or slide.

### **Researchers, policymakers, and schools should work together to understand potential policies and practices for recovery.**

Summer slide data gives a starting point for the analysis of the impact of school closures on student learning, the complete answer needs to be found in research from an established longitudinal database and working in collaboration with schools to identify their specific circumstances. Schools, families, and communities are working in countless ways to support their children academically during this crisis, experimenting with online learning, homeschooling, exploring extending the school year and/or providing additional supports when school resumes, among other examples. Collaborative and timely research will enable patterns of loss to be identified that can be generalized to the larger population of schools throughout the United States and define potential policy for our schools' recovery that can be expanded throughout the United States in a timely manner.

1. Child Trends provides some resources on supporting children and their emotional well-being during the pandemic: <https://www.childtrends.org/research-topic/covid-19> and <https://www.childtrends.org/publications/resources-for-supporting-childrens-emotional-well-being-during-the-covid-19-pandemic>

- i. Map: Coronavirus and school closures. *Education Week*. <https://www.edweek.org/ew/section/multimedia/map-coronavirus-and-school-closures.html>. Accessed 3/27/2020.
- ii. von Hippel, P. T. (2019). Is summer learning loss real? *Education Next*. Retrieved from <https://www.educationnext.org/is-summer-learning-loss-real-how-i-lost-faith-education-research-results/>
- iii. Alexander, K. (2019). Summer Learning Loss Sure is Real. Retrieved from <https://www.educationnext.org/summer-learning-loss-sure-is-real-response/>
- iv. Quinn, D., & Polikoff, M. (2017). *Summer learning loss: What is it, and what can we do about it*. Washington, DC: Brookings Institution. Retrieved from <https://www.brookings.edu/research/summer-learning-loss-what-is-it-and-what-can-we-do-about-it/>
- v. Kuhfeld, M., Condrón, D., & Downey, D. (2019). When does inequality grow? A seasonal analysis of racial/ethnic disparities in learning in kindergarten through eighth grade. (The Collaborative for Student Growth at NWEA Working Paper). <https://www.nwea.org/resource-library/research/when-does-inequality-grow-3>
- vi. von Hippel, P. T., & Hamrock, C. (2019). Do test score gaps grow before, during, or between the school years? Measurement artifacts and what we can know in spite of them. *Sociological Science*, 6, 43–80.
- vii. Cooper, H., Nye, B., Charlton, K., Lindsay, J., & Greathouse, S. (1996). The effects of summer vacation on achievement test scores: A narrative and meta-analytic review. *Review of Educational Research*, 66 (3), 227–268.
- viii. Alexander, K.L., Entwisle, D.R., & Olson, L.S. (2007). Lasting consequences of the summer learning gap. *American Sociological Review*, 72 (2), 167–180.
- ix. von Hippel, P. T., Workman, J., & Downey, D. B. (2018). Inequality in reading and math skills forms mainly before kindergarten: A replication, and partial correction, of “Are schools the great equalizer?” *Sociology of Education*, 91(4), 323–357.
- x. Kuhfeld, M., & Soland, J. (2020). The learning curve: Revisiting the assumption of linear growth across the school year. (EdWorkingPaper: 20-214). Retrieved from Annenberg Institute at Brown University: <https://doi.org/10.26300/bvg0-8g17>
- xi. Huffman, K. (2020, March 27). Homeschooling during the coronavirus will set back a generation of children. *Washington Post*. [https://www.washingtonpost.com/outlook/coronavirus-homeschooling-will-hurt-students-badly/2020/03/27/f639882a-6f62-11ea-b148-e4ce3fbd85b5\\_story.html](https://www.washingtonpost.com/outlook/coronavirus-homeschooling-will-hurt-students-badly/2020/03/27/f639882a-6f62-11ea-b148-e4ce3fbd85b5_story.html)

Details on the methodology behind these projections can be found in:

Kuhfeld, M., & Tarasawa, B. (2020). *Technical Appendix for The COVID-19 slide: What summer learning loss can tell us about the potential impact of school closures on student academic achievement*. NWEA.

#### **Suggested citation:**

Kuhfeld, M. & Tarasawa, B. (2020). *The COVID-19 slide: What summer learning loss can tell us about the potential impact of school closures on student academic achievement*. NWEA.

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