



Learning Opportunities: Understanding Scores from ACT's Assessment Suite During the COVID-19 Pandemic

Shannon Hayes, MPA
July 2021

Acknowledgement

The author would like to thank Jeff Allen for his original research on this topic and his thoughtful review of this brief.

Throughout the coronavirus pandemic, teachers have radically adjusted instruction to fit online learning, hybrid learning, socially distant in-person learning, and sometimes multiple modes of instruction at once. They have exerted often superhuman effort to engage and connect with students during a time of stress and trauma for students and themselves.¹ Despite these best efforts, there is widespread consensus that learning from March 2020 through at least the end of the 2020-21 school year has been disrupted.

It is important for policymakers, educators, parents, and students to know the extent and effects of this disruption on student learning to tailor resources, instruction, and other supports in the months and years ahead. Where possible, ACT worked with schools to continue testing during the 2020-21 school year because we believe that [measurement matters](#).² Scores from ACT's assessments measure students' progress towards college and career readiness and can be used to help the education community understand the pandemic's effects on readiness in core subject areas. While these scores are important indicators of academic progress, a holistic understanding of the pandemic's effects must also consider students' mental, physical, and social and emotional well-being.³ Those effects should also be carefully considered, using data from assessments, surveys, and other available sources, to ensure that the students most in need of support receive it.⁴



This paper summarizes findings from school-day testing on ACT Aspire Interim (grades 5-10), PreACT (grade 10), and the ACT test (grades 11-12) during the 2020-21 school year. The PreACT and ACT tests were only administered in a school setting, and data were not available on student learning modes (meaning that some students could have been learning virtually and returned to school to test). While the impact on learning likely varies by learning mode, **the findings are expected to represent mostly those students learning in person** during at least some part of the 2020-21 school year. Because ACT tests are sensitive to instruction, meaning that we see scores increase as students have more time in the classroom and more exposure to rigorous coursework, decreases in average scores—when other factors are held constant—signal disruption in learning opportunities.⁵

Key findings from ACT’s research into scores from our assessment suite during the coronavirus pandemic can be found below.

Full reports addressing this research, as well as other ACT research examining the pandemic’s effect on learning, can be found at <http://www.act.org/covidresearch>.

Research Summary

It is important to emphasize that **these findings only represent schools testing a comparable number of students before (in the 2018-19 and/or 2019-20 school years) and during (in the 2020-21 school year) the pandemic.** For example, only 59 percent of schools that tested at least three quarters of their 11th grade class on a school day before the pandemic tested enough students in spring 2021 to qualify for inclusion in the analysis of spring 2021 ACT testing. The findings contribute to our overall understanding of the pandemic’s effect on academic achievement—but they may be less representative of student learning outcomes at schools that were not able to test similar numbers of students before and during the pandemic.



Across assessments and grade levels, we have seen score declines suggesting that disruptions due to the pandemic had a negative effect on students' learning opportunities. On ACT tests administered during the school day in fall 2020 and spring 2021, average scores decreased in every subject (see Table 1). The average Composite score was 0.52 points lower among 12th grade fall testers (19.0 in 2020 compared to 19.5 in 2019). The decline was slightly larger among 11th grade spring testers, at 0.64 points (an average Composite of 19.5 in spring 2019/[pre-pandemic] to 18.8 in 2021).

To better understand what these score declines represent in terms of student learning, we can describe the size of the pandemic-related score declines in instructional months, as seen in Table 1 below. Prior research estimated that ACT test scores increased with each additional month of schooling by 0.31 points in English, 0.19 points in math, 0.18 points in reading, and 0.19 points in science.⁶ Therefore, the PreACT English score decline of 1.02 points is comparable to 3.3 fewer months of instruction ($1.02/0.31 = 3.3$). The score changes in percentile units is also provided, as this approach allows comparisons of score changes for tests with different score scales.

Table 1. Average score changes, expressed in instructional months and percentile units, from before the pandemic to 2020-21

ACT Assessment	Subject	Score Change	Comparable Instructional Months	Percentile Change
PreACT (fall 2020, tenth grade)	English	-1.02	-3.3	-7
	Math	-0.59	-3.1	-5
	Reading	-0.32	-1.8	-2
	Science	+0.34	+1.8	+3
	Composite	-0.40	-1.8	-3
ACT (fall 2020, twelfth grade)	English	-0.88	-2.8	-5
	Math	-0.49	-2.6	-3
	Reading	-0.44	-2.4	-2
	Science	-0.26	-1.4	-2
	Composite	-0.52	-2.4	-3
ACT (spring 2021, eleventh grade)	English	-0.72	-2.3	-4
	Math	-0.63	-3.3	-4
	Reading	-0.63	-3.4	-4
	Science	-0.58	-3.1	-4
	Composite	-0.64	-2.9	-4



Across the subjects and grade levels assessed by the PreACT and ACT tests, score declines represented approximately one to three months of lost instruction. While these scores are lower than we would have expected to see absent the pandemic, students have still made learning gains over the last year—just not to the degree we would expect to see under normal circumstances. ACT therefore interprets these score declines as cause for concern, but not alarm. Right now, score declines are generally small, and hopefully students will catch up with additional time in school and focused resources. However, if this trend of lower learning gains continues into the future, we can expect compounding negative effects over time that will have serious impacts on students' readiness for college and career.

Across all grades included in the analysis of ACT Aspire Interim test scores (Table 2), the average percentile score change ranged from a maximum decline of eight points in fifth and sixth grade math to a minimum decline of one point in tenth grade English and science. While additional detail can be found in the full report, the general trends were that lower grade levels seem to be affected more than upper grade levels and that score declines were most severe in math.

Table 2. Percentile changes from 2019-20 (pre-pandemic) to 2020-21 on ACT Aspire Interim tests, by grade level and subject

SUBJECT	GRADE LEVEL					
	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth
English	-5	-3	-5	-5	-2	-1
Math	-8	-8	-7	-4	-7	-6
Reading	-4	-3	-3	-3	-2	-2
Science	-6	-7	-3	-6	-5	-1

Opportunity gaps on standardized tests—including ACT assessments—have been well-documented for several years.⁷ For example, Black, Latinx, Native American, and Native Hawaiian/Pacific Islander students' scores have, due to systemic inequities inside and outside of education, historically been substantially lower than the scores of White and Asian students. There is widespread concern that the pandemic will exacerbate those gaps.



However, the results from ACT's assessments **do not** suggest consistent widening of opportunity gaps among those students tested. Surprisingly, there is evidence that the pandemic-era score declines, while not entirely consistent from assessment to assessment (or across grade levels), have actually been less severe for certain traditionally underserved student groups. For example, Black and Latinx students saw smaller declines in math on the PreACT, ACT (11th grade spring testers), and ACT Aspire Interim than White students (though it is important to note that their average scores remain lower than those of White students — while opportunity gaps may not have **grown**, they have not closed). It's also important to recognize that nationwide, students of color were less likely to be learning in person than White students, which may have impacted testing rates.⁸ Students with disabilities, English Learners, and students from low-income families also saw smaller math score declines on Aspire Interim assessments, and students with previously lower achievement levels saw smaller declines in English, math, and science.

Additional findings on subgroup differences, including by gender and school type (public or private, poverty level, and locale) can be found in the full research reports, [available here](#).

The score declines on ACT's suite of assessments are similar to findings from other assessments, including MAP, Star, and iReady.⁹ Reading scores were generally the least affected, while math scores saw greater declines. ACT's assessments include a greater variety of subject areas, so our tests were able to examine effects in English and science as well.

Closing

As mentioned previously, it is essential to keep in mind that these findings **may not generalize beyond the schools that administered ACT assessments both before and during the pandemic**. These schools were probably more likely to offer in-person instruction, at least during the testing window, and the students who took the tests were more likely to be attending school in person at least part of the time. The data included in this research can inform preparations for the 2021-22 school year, but it is also important to consider the students who did **not** take an ACT assessment during the 2020-21 school year. What does that student population look like in your school or community?

Measurement matters because it helps us understand what content students have and have not yet mastered. Who hasn't been measured this year, and how did the pandemic affect their learning? ACT is continuing our research into the effects the pandemic has had on students' academic, social, and emotional well-being. We are working collaboratively with educators, government officials, and other experts to ensure all available data are used to inform the nation's ongoing response to this crisis.



Notes

1. Jill McVey, “Staying Connected: Maintaining Meaningful Teacher-Student Connections During COVID-19,” Mawi Learning, published May 13, 2020, <https://www.mawilearning.com/blog/staying-connected-maintaining-meaningful-teacher-student-connections-during-covid-19/> and Amy Vatne Bintliff, “How COVID-19 Has Influenced Teachers’ Well-Being,” *Psychology Today*, published September 8, 2020, <https://www.psychologytoday.com/us/blog/multidimensional-aspects-adolescent-well-being/202009/how-covid-19-has-influenced-teachers-well>.
2. Catherine Hofmann, “Why Measurement Matters in a Post-COVID World,” ACT, published March 2, 2021, <https://leadershipblog.act.org/2021/03/why-measurement-matters-post-covid.html>.
3. Ed. Wayne Camara, Ryan O’Connor, Krista Mattern, and Mary Ann Hanson, *Beyond Academics: A Holistic Framework for Enhancing Education and Workplace Success* (Iowa City, IA: ACT, 2015), https://www.act.org/content/dam/act/unsecured/documents/ACT_RR2015-4.pdf.
4. Andrew Ho, “A Smart Role for State Standardized Testing in 2021,” FutureEd, published April 20, 2021, <https://www.future-ed.org/a-smart-role-for-state-standardized-testing-in-2021/>.
5. See Finding 3 and Figure 6 for evidence that PreACT to ACT gain scores increase with high school grades and course rigor in Jeff Allen, *PreACT-Tested Students in ACT’s 2020 Graduating Class: A Summary of Performance and Growth* (Iowa City, IA: ACT, 2020), <https://www.act.org/content/dam/act/unsecured/documents/R1857-PreACT-2020-graduates-2020-11.pdf>; see Table 1 and supporting discussion for evidence that ACT scores increase with more time spent in school in Jeff Allen, Krista Mattern, and Wayne Camara, *Predicting the Impact of COVID-19 School Closures on ACT Test Scores: Methods and Considerations for States and Districts*. (Iowa City, IA: ACT, 2020), <https://www.act.org/content/dam/act/unsecured/documents/R1828-covid-impact-2020-05.pdf>; and see section 12.1 for average test score gains by months of instruction in *ACT Aspire Periodic Technical Manual* (Iowa City, IA: ACT, last updated 2020), <https://success.act.org/s/article/ACT-Aspire-Periodic-Tech-Manual-V3>.
6. Allen, Mattern, and Camara, *Predicting the Impact of COVID-19 School Closures on ACT Test Scores*.
7. ACT, “Equity and Opportunity Gaps Persist as National Average Composite ACT Score Trends Down for Third Year in a Row,” published October 14, 2020, <https://leadershipblog.act.org/2020/10/act-grad-class-2020-achievement-data.html>.
8. See enrollment data by type of instruction, disaggregated by race/ethnicity, at Institute of Education Sciences, “Monthly School Survey Dashboard,” U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, accessed July 7, 2021, <https://ies.ed.gov/schoolsurvey/>.
9. Curriculum Associates, *Understanding Student Needs: Early Results from Fall Assessments* (North Billerica, MA: Curriculum Associates, 2020), <https://www.curriculumassociates.com/-/media/mainsite/files/i-ready/iready-diagnostic-results-understanding-student-needs-paper-2020.pdf>; Megan Kuhfeld, Beth Tarasawa, Angela Johnson, Erik Ruzek, and Karyn Lewis, *Learning during COVID-19: Initial findings on students’ reading and math achievement and growth* (Portland, OR: NWEA Research, 2020), <https://www.nwea.org/content/uploads/2020/11/Collaborative-brief-Learning-during-COVID-19.NOV2020.pdf>; and Renaissance, *How Kids Are Performing: Tracking the Impact of COVID-19 on Reading and Mathematics Achievement* (Wisconsin Rapids, WI: Renaissance Learning, 2020), <https://www.renaissance.com/how-kids-are-performing/>.





ABOUT ACT

ACT is a mission-driven, nonprofit organization dedicated to helping people achieve education and workplace success. Grounded in more than 60 years of research, ACT is a trusted leader in college and career readiness solutions. Each year, ACT serves millions of students, job seekers, schools, government agencies, and employers in the US and around the world with learning resources, assessments, research, and credentials designed to help them succeed from elementary school through career.

For more information, visit act.org
@ACT



ACT, Inc. 2021

© by ACT, Inc. This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License. <https://creativecommons.org/licenses/by-nc/4.0/>

R2102