Six Things You Should Know About ACT Score Gains From Retesting

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ACT retesting occurs when students take the ACT® test multiple times with the goal of improving their scores and postsecondary credentials. In this paper, I examine preliminary data for the 2022 ACT-tested graduating cohort to better understand the ACT score gains that occur with retesting. About 35% of the students in the 2022 ACT-tested graduating cohort tested at least twice: 21% tested twice, 8% three times, 4% four times, and 3% tested five or more times.

The number of times that students tested varies across demographic groups (Table 1). For example, 47% of students at the highest income level tested once, while 67% of students at the lowest income level tested once. Retesting rates were highest for students who are Asian (43%) or White (42%) and were much lower for students who are Hispanic (24%) and students who are Native Hawaiian or Other Pacific Islander (19%).

Table 1. Number of Times Tested, by Student Demographic Characteristics

Demographic Characteristic	Number of Times Tested (%)				
	1	2	3	4	5+
Family Income					
<$36,000	67	22	7	3	2
$36,000–$60,000	62	23	9	4	3
$60,000–$100,000	57	24	10	5	4
>$100,000	47	27	14	6	5
Missing	75	16	5	2	2
Race/ethnicity					
African American	64	22	8	4	3
Native American	71	18	6	2	2
White	58	23	10	5	3
Hispanic	76	16	5	2	1
Asian	57	23	11	5	4
Native Hawaiian/OPI	81	13	4	1	1
Two or more races	67	20	8	3	2
Prefer not to respond	62	21	9	4	3
Missing	91	8	1	<1	<1

The number of times tested was also related to academic achievement, with higher-achieving students more likely to test multiple times (Table 2). The average Composite score (based on

the first ACT test) was 18.4 for students who tested once and 20.9 for students who tested twice. The average high school GPA was 3.29 for single testers, 3.51 for students who tested twice, and 3.62 for students who tested three times. When interpreting the research findings presented in this paper, keep in mind that higher-achieving students, students who have higher family income, and students who are Asian or White are more likely to retest. Therefore, the results are not representative of all students who take the ACT test.

Table 2. Mean Academic Achievement, by Number of Times Tested

Achievement Measure	Number of Times Tested				
	1	2	3	4	5+
ACT Composite score (first test)	18.4	20.9	21.9	21.6	21.1
Number of Benchmarks met (first test)	1.2	1.9	2.2	2.1	2.0
High school GPA	3.29	3.51	3.62	3.67	3.71

I examined score gain differences by several factors, including the amount of time between tests, academic achievement (high school coursework and grades), demographics, and the number of retests. From my analysis, I came up with six things you should know about ACT score gains from retesting.

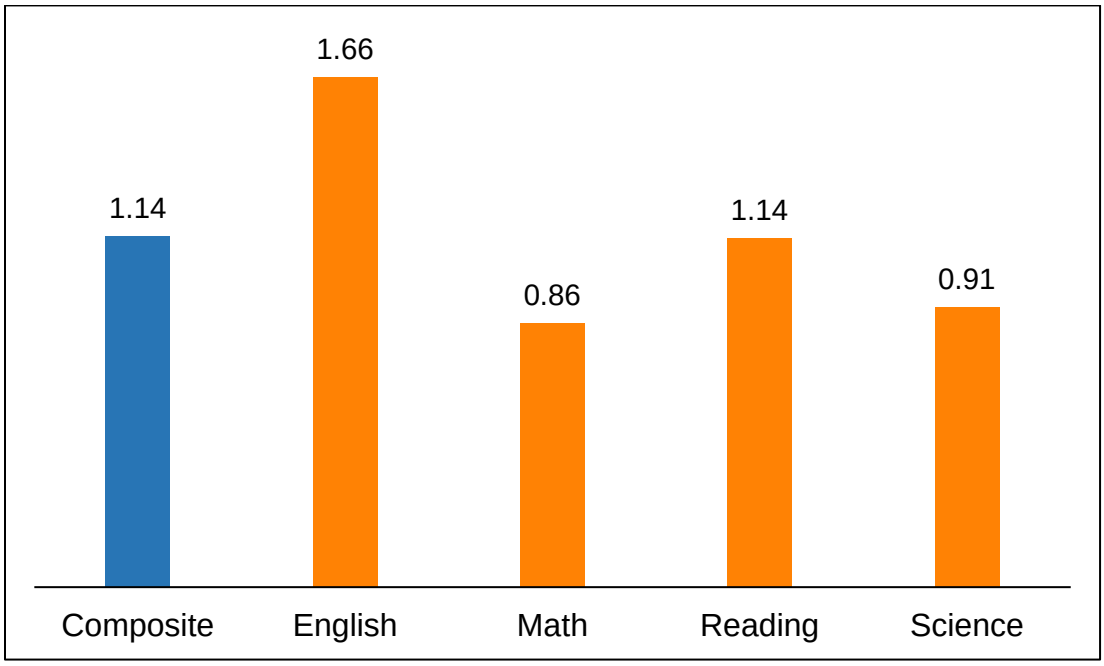
#1. Average score gains are modest (about 1 score point)

I first examined average score gains between students' first ACT test (taken in 10th grade or later) and their last ACT test (taken in 12th grade or earlier). The average time from the first to the last test was 8.3 months. The average ACT Composite score gain was 1.14. The average gain varied across subject areas, from a low of 0.86 for math to a high of 1.66 for English (Figure 1).

The average score gains suggest that students usually see only a small increase in scores when they take the ACT multiple times. The types of skills measured by the ACT are a product of learning and rigorous coursework that typically occur over several years of schooling, so it should come as no surprise that modest score gains are expected from retesting. If scores could be markedly improved simply by retesting, it could call into question the validity of the interpretations made from ACT scores.

Our research also shows that average ACT score gains are higher when students engage in test prep (Sanchez, 2020; Payne and Allen, 2019). However, the average effects of test prep are generally small because relatively few students engage in test prep of the duration, intensity, and quality needed to make substantial gains. Test prep usually has small effects compared to the longer-term effects of learning and rigorous coursework. The average ACT score gains presented in this paper presumably include some students who engaged in various forms of test prep and others who engaged in no test prep.

Figure 1. Average Gain From First to Last ACT Test, by Subject

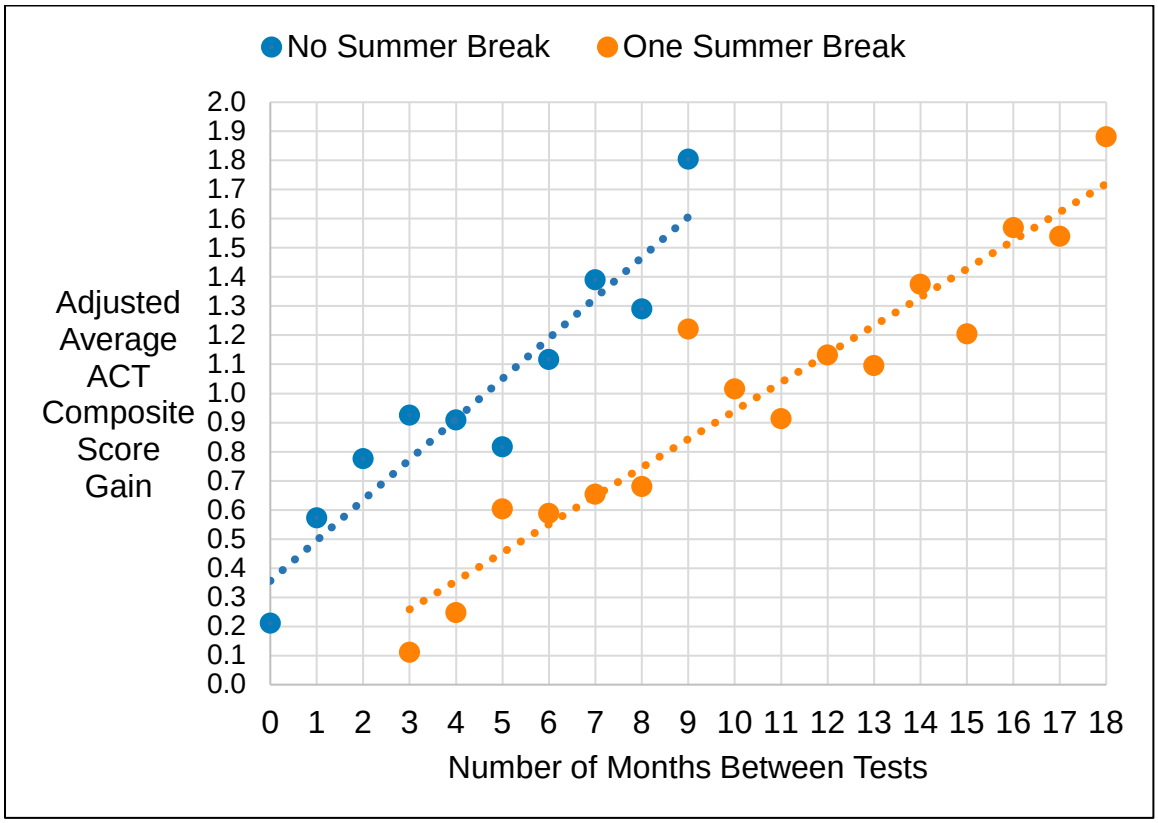


#2. Score gains increase with more time between tests

Because ACT scores measure long-term learning, and more learning occurs with more time in school, larger score gains are expected with more time between tests. ACT scores tend to increase more while students are in school and stagnate or even decline slightly during summer breaks. The most common test–retest timing scenario is testing in March of 11th grade and retesting in October of 12th grade, which typically includes a summer break. Other common retesting scenarios occur in 11th grade and do not include a summer break, such as March or April to June and February to April.

Figure 2 shows that the score gains increased with more time between tests and were greater when the time between tests did not include a summer break. For example, the average ACT Composite gain was 0.6 when the tests were taken six months apart and that time included a summer break (e.g., April to October), but the average gain was 1.1 when the tests were taken six months apart and that time did not include a summer break (e.g., December to June).

Figure 2. Adjusted Average Composite Gain From First to Second ACT Test, by Number of Months Between Tests



Compared to their peers, higher-achieving and higher-income students are more likely to retest with no summer break between tests. The values in Figure 2 are based on a statistical model

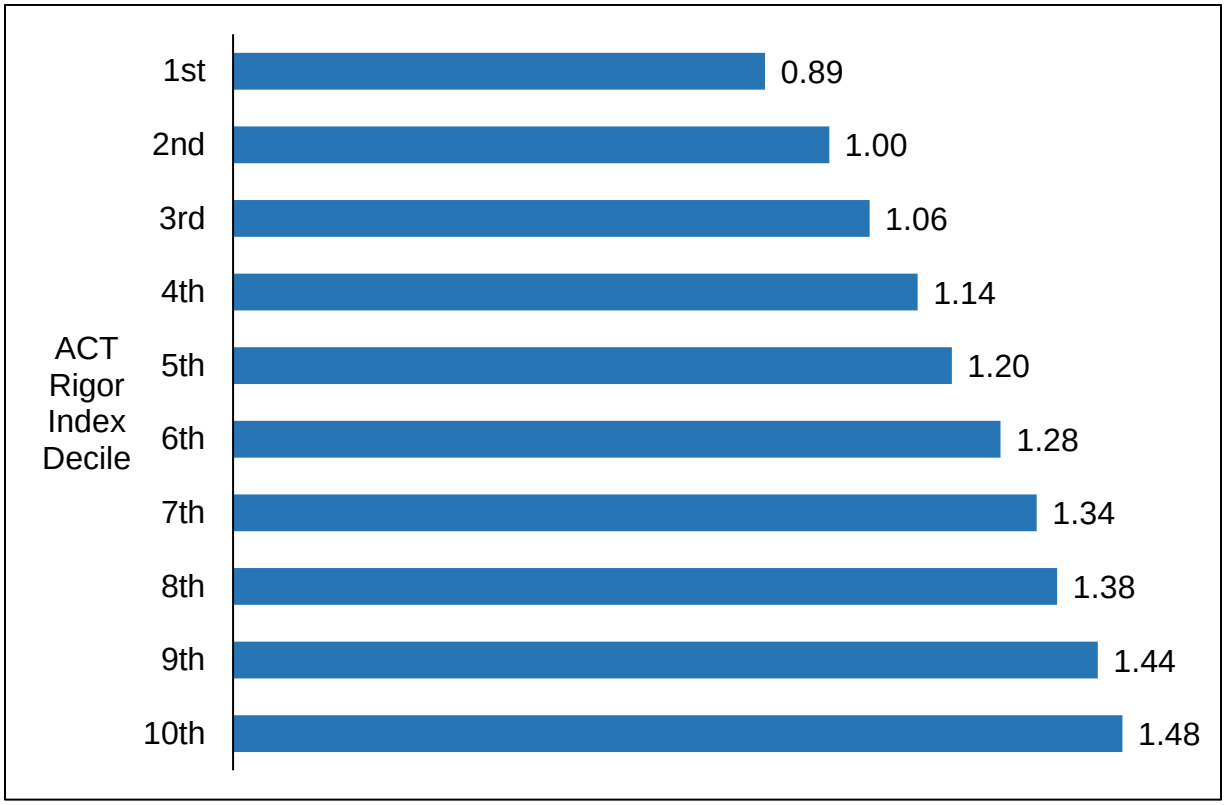
that adjusts the averages for student demographics (family income and race/ethnicity) and student achievement (high school coursework and grades). Therefore, we can be more confident that the differences across months and summer break status are not due to other variables. Overall, we estimate that ACT Composite score gains decline by 0.57 points due to the summer break.

#3. Higher-achieving students tend to have larger score gains

Students who take challenging high school courses and excel in those courses tend to have larger ACT score gains. This, again, is not surprising since the ACT measures long-term learning.

ACT's Rigor Index, a summary measure of high school coursework and grades, can be thought of as a difficulty-adjusted high school grade point average (see Allen & Mattern, 2019, for more details on the Rigor Index). Average ACT Composite score gains, calculated using students' first and last ACT tests, steadily increased with ACT Rigor Index decile (Figure 3).

Figure 3. Adjusted Average Composite Gain From First to Last ACT Test, by ACT Rigor Index Decile



The average score gains presented in Figure 3 are adjusted for the number of months between first and last test and the total number of times tested, so we can be more confident that the differences in gains are due to differences in academic achievement (high school coursework and grades).

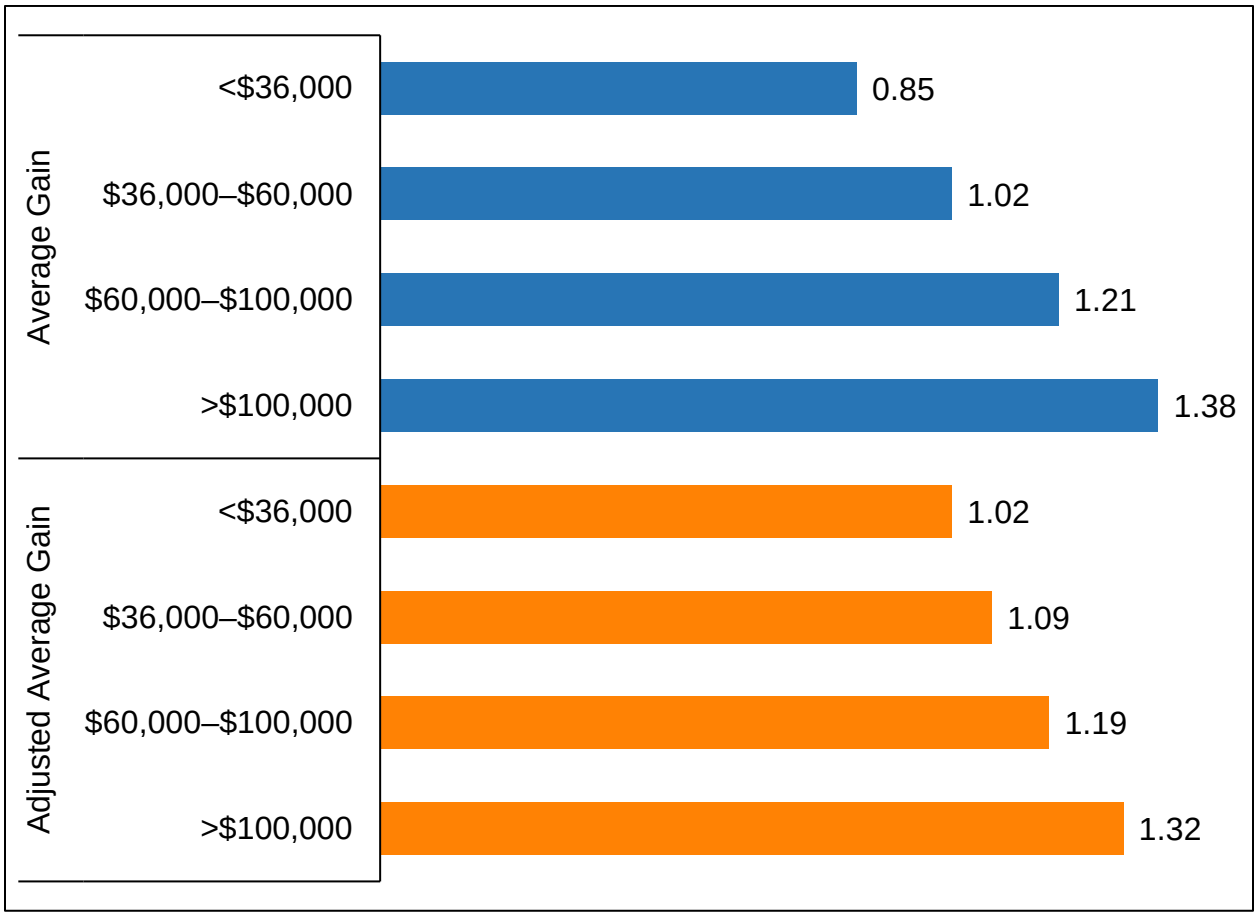
The adjusted average Composite gain was 0.89 for students at the lowest level of academic achievement and 1.48 for students at the highest level of academic achievement.

#4. Differences in score gains across demographic groups are small but consistent with long-standing achievement gaps

The average Composite gain from the first to the last ACT test varies by family income level (Figure 4). Average gains are lowest for students with family income less than $36,000 (0.85) and highest for students with family income greater than $100,000 (1.38).

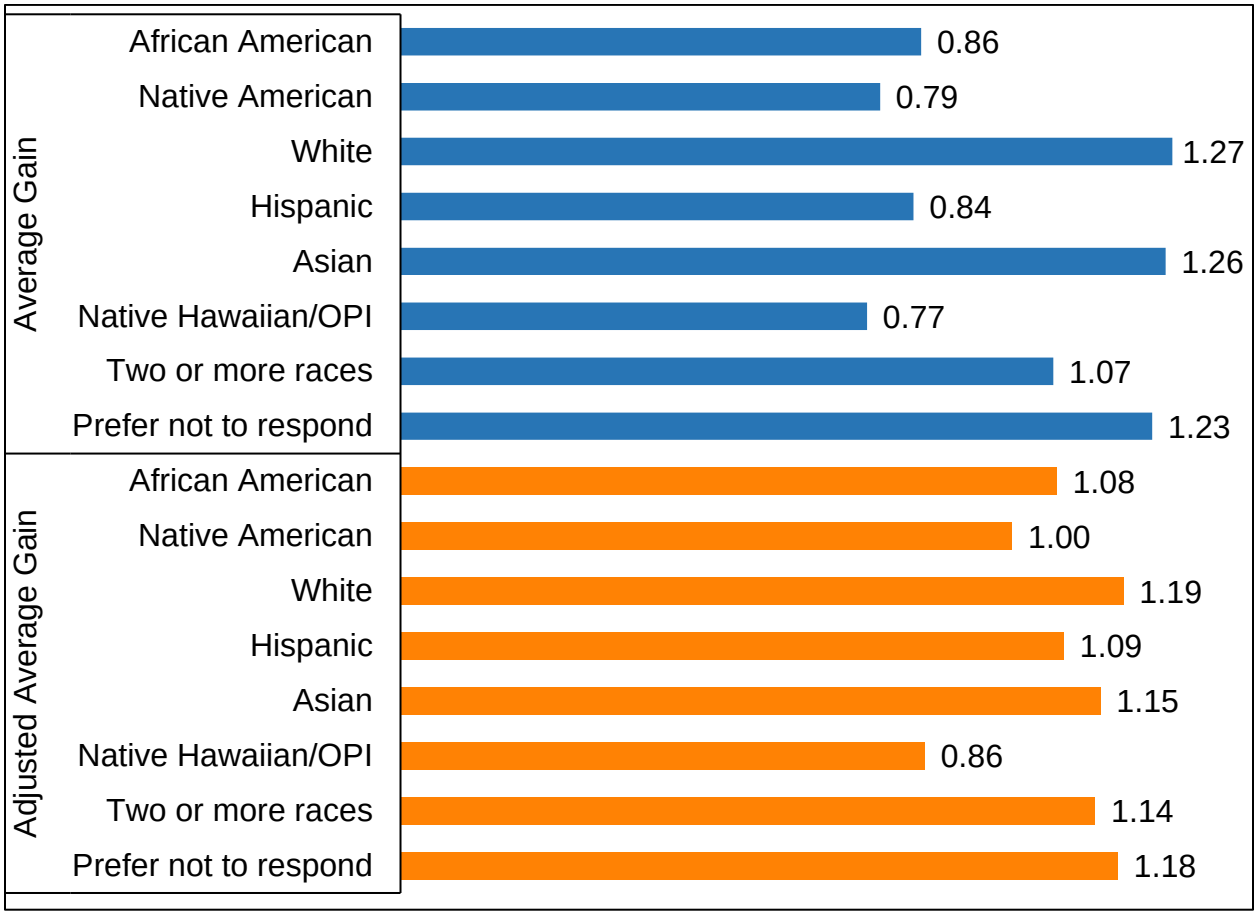
The adjusted average gains (orange bars) shown in Figure 4 show the average gains that would be expected if each income group were equal in terms of academic achievement (as measured by the ACT Rigor Index), number of months between tests, and total number of ACT tests taken. Because the adjusted average gains are more similar across income groups than the original gains (blue bars), we conclude that the gain differences across income groups are partly explained by differences in high school coursework and grades, time between tests, and number of tests taken.

Figure 4. Average Composite Gain From First to Last ACT Test, by Family Income Level



The average Composite gain from the first to the last ACT test also varied across racial/ethnic groups (Figure 5). The average gains are lowest among students who are Native Hawaiian or Other Pacific Islander (0.77) and highest among students who are White (1.27). Once adjustments have been made for differences in high school coursework and grades, time between tests, number of tests taken, and family income level, the differences in average score gains across racial/ethnic groups are smaller. Again, this suggests that the unadjusted (or observed) differences in gains by race/ethnicity are partly explained by differences in family income level, high school coursework and grades, time between tests, and number of tests taken.

Figure 5. Average Composite Gain From First to Last ACT Test, by Race/Ethnicity

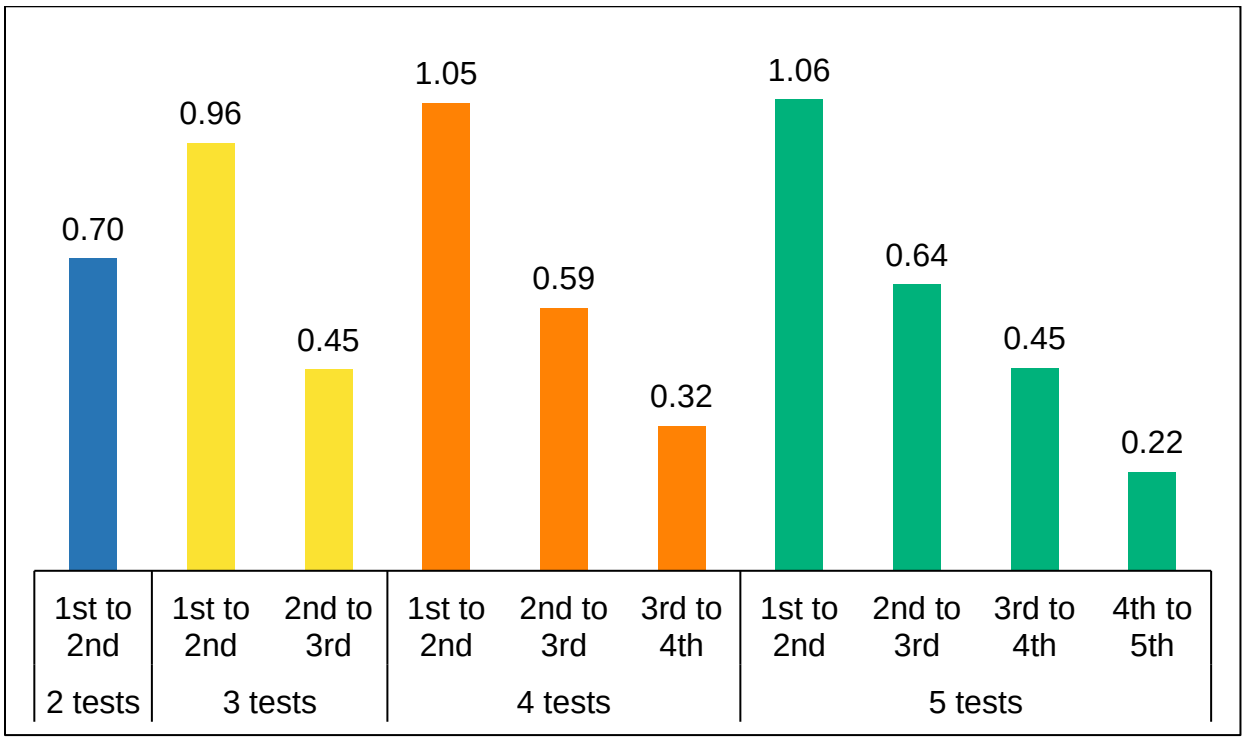


#5. ACT scores tend to increase with additional retesting, but there are diminishing returns

Students who retest more than once usually see additional increases in their ACT scores, but the score increases shrink with each additional test. For example, for students who tested four times (orange bars), the average Composite score increased by 1.05 points from the first to the second test, 0.59 points from the second to the third test, and 0.32 points from the third to the fourth test.

Figure 6 shows the average Composite score gain for each retest. Results are presented for four groups defined by the total number of times tested: two, three, four, or five times.

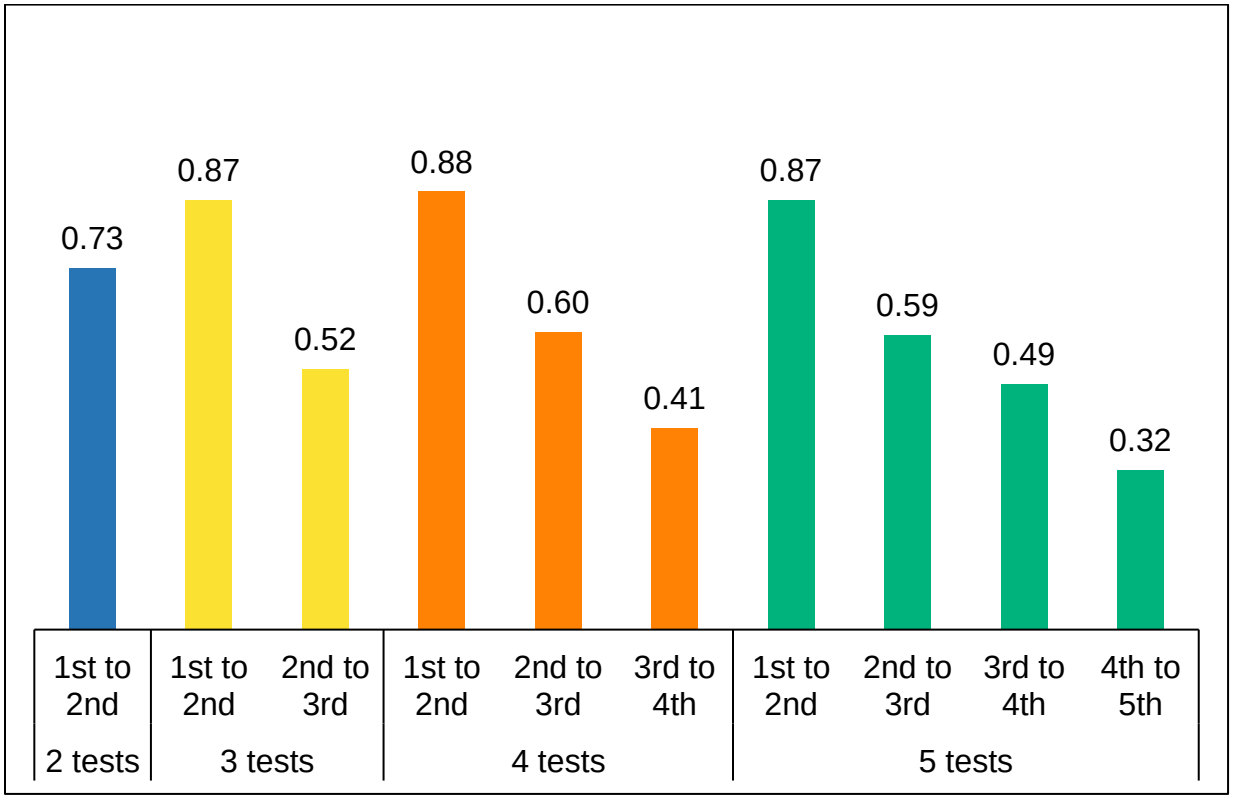
Figure 6. Average Composite Gain by Each Additional Retest, by Total Number of Times Tested



The amount of time between tests tends to decrease with more tests taken, contributing to the diminishing returns observed in Figure 6. I estimated what the average gains would be if the amount of time between each test were the same (Figure 7). The estimates also adjust for differences in high school coursework and grades, family income level, and race/ethnicity.

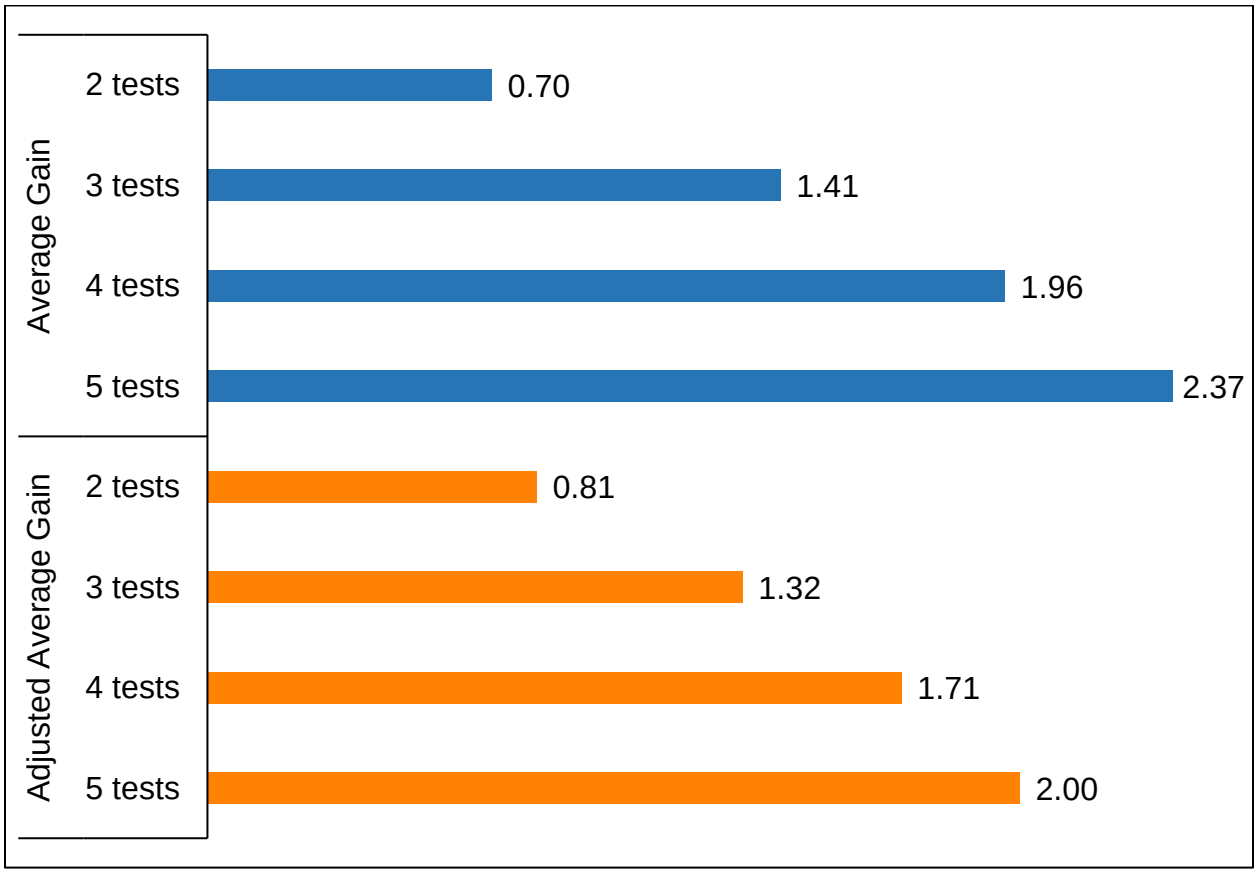
After adjusting for the time between tests and for student characteristics, we find that the average gains still shrink with each additional retest. These diminishing returns may be due to ACT practice effects: After the second test, students are less likely to benefit from increased familiarity and experience with the test.

Figure 7. Adjusted Average Composite Gain by Each Additional Retest, by Total Number of Times Tested



Because average scores increase with each additional retest, the average score gains from the first to the last test increase with the number of times tested (Figure 8). The blue bars show the average Composite score gains, by the number of times tested. The orange bars show estimates of what the average Composite score gains would be if the groups were the same in terms of the amount of time between the first and the last test, high school coursework and grades, family income level, and race/ethnicity. For example, after the statistical adjustments, students who tested three times saw an average score gain of 1.32 points from their first to last test, whereas students who tested five times saw an average score gain of 2.00 points from their first to last test.

Figure 8. Average Composite Gain From First to Last ACT Test, by Number of Times Tested

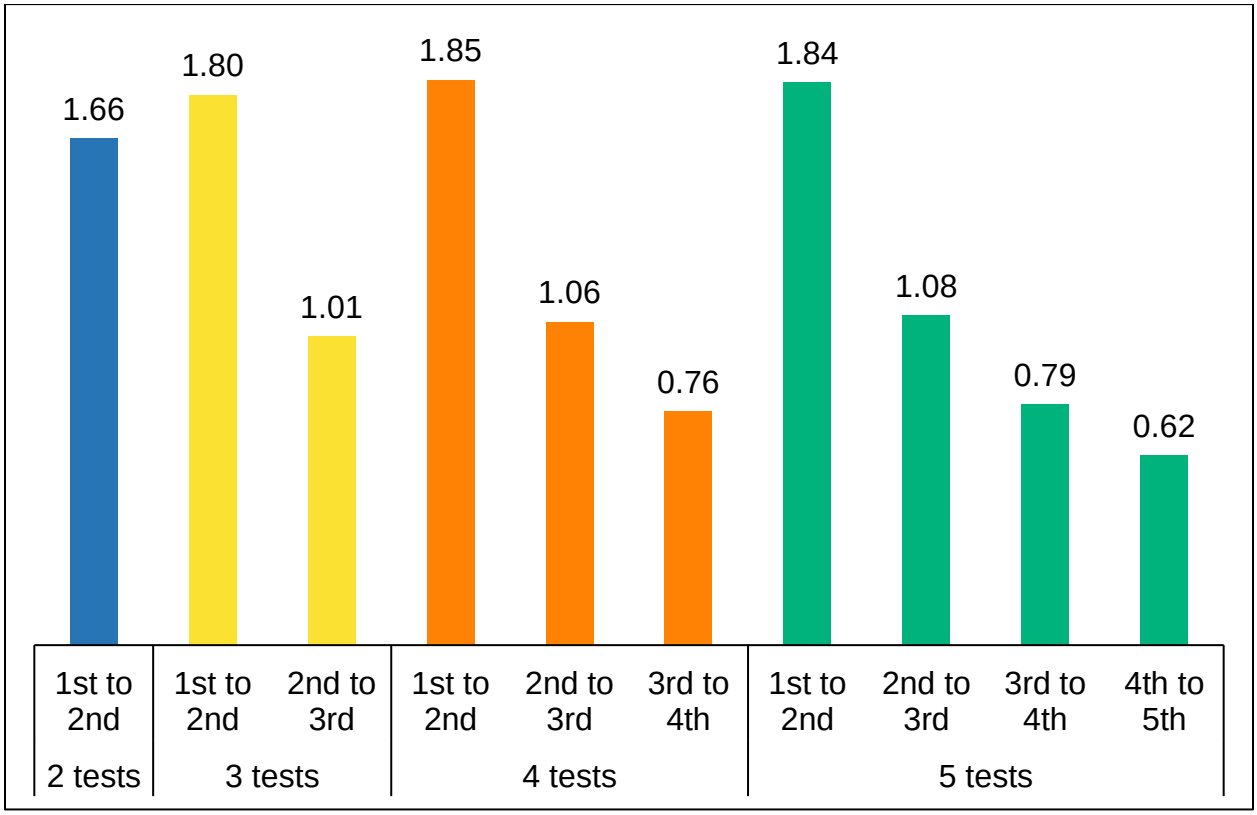


#6. ACT Superscore gains are substantially larger than ACT Composite score gains

ACT Superscores are calculated using students' best scores in English, math, reading, and science. They are like ACT Composite scores, but instead of averaging the section test scores from a single ACT test administration, the Superscore is the average of the best section scores across test administrations.

Like ACT Composite scores, average ACT Superscores increased with retesting, with diminishing returns for additional retests (Figure 9). However, the Superscore gains tended to be substantially larger than the ACT Composite score gains. For students who tested twice (blue bar), the Superscore was an average of 1.66 points higher than the original ACT Composite score. For students who tested three times (yellow bars), the Superscore increased by an average of 1.80 points from the first to the second test and by an average of 1.01 points from the second to the third test.

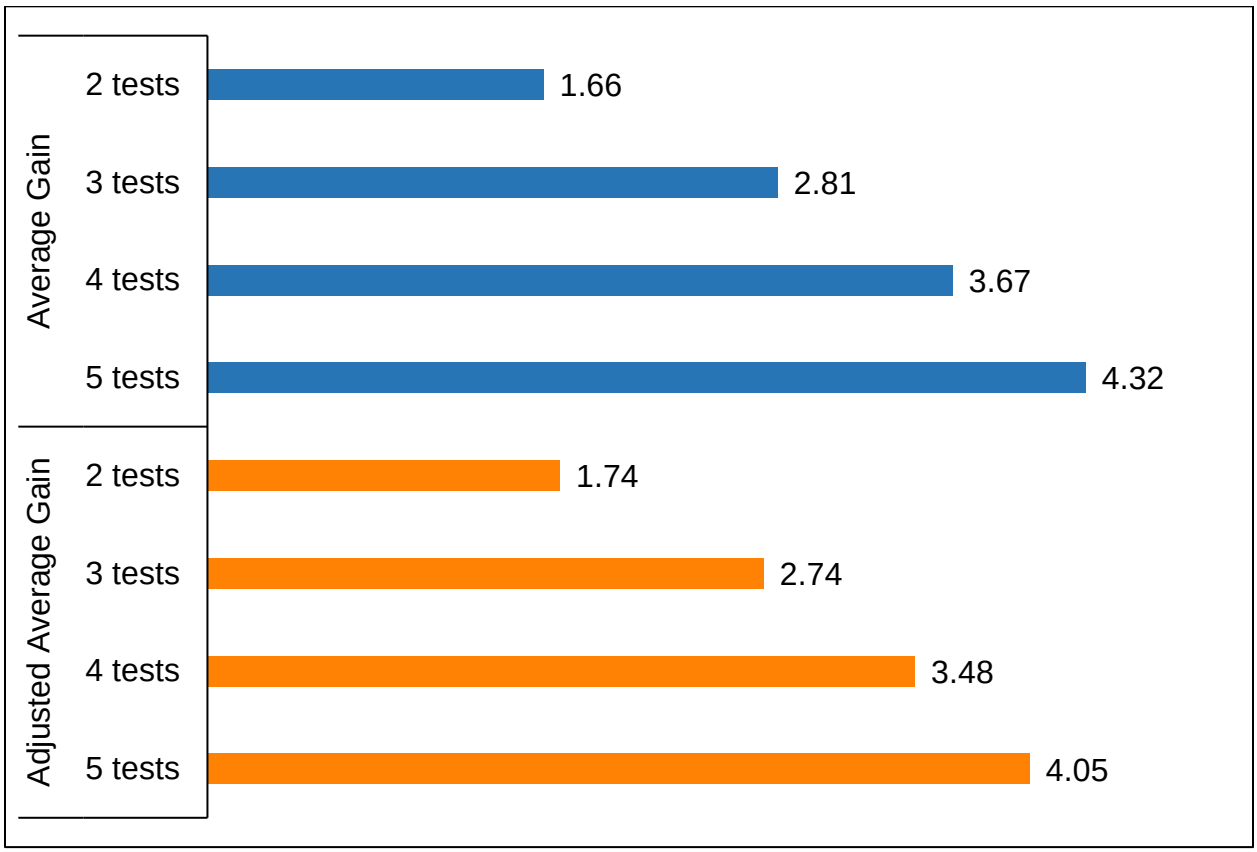
Figure 9. Average Superscore Gain by Each Additional Retest, by Total Number of Times Tested



Because average Superscores increased with each additional retest, the average Superscore gains from the first to the last ACT test increased substantially with the number of times tested

(Figure 10). The blue bars show the average Superscore gains by the number of times tested. The orange bars show estimates of what the average Superscore gains would be if the groups were the same in terms of the amount of time between the first and the last test, high school coursework and grades, family income level, and race/ethnicity. For example, after the statistical adjustments, students who tested twice saw an average Superscore gain of 1.74 points from their first to last test, whereas students who tested four times saw an average Superscore gain of 3.48 points from their first to last test.

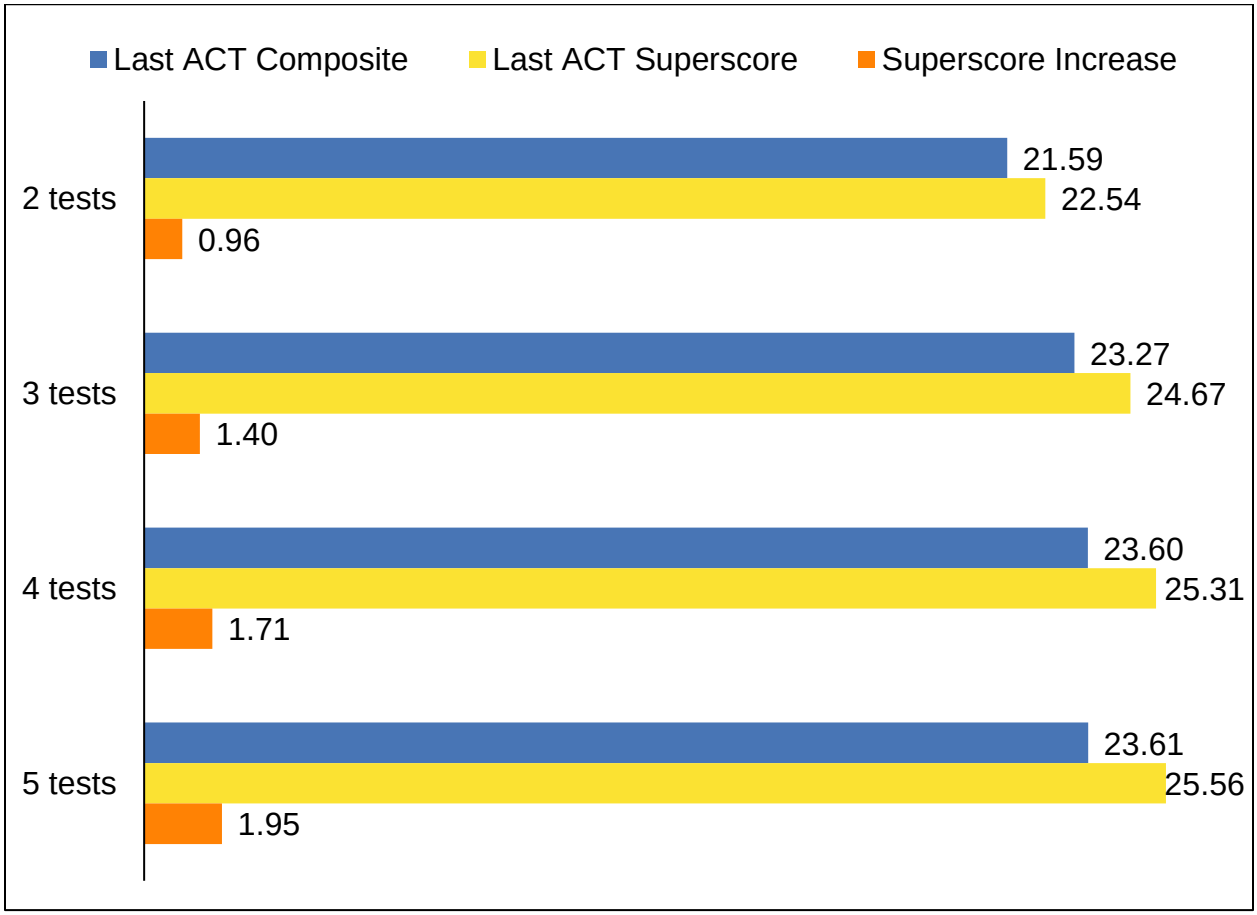
Figure 10. Average Superscore Gain From First to Last ACT Test, by Number of Times Tested



Because average Superscores increase substantially with the number of times tested, additional retesting may be particularly beneficial for students applying to institutions that use ACT Superscores for informing admissions or scholarship decisions.

In some situations, institutions may need to compare ACT Composite scores (from a single test administration) to ACT Superscores. In those situations, users should understand the extent to which superscoring results in a higher score than the traditional ACT Composite score. Figure 11 shows how the average Composite scores from the last test compare to the average Superscores. For students who tested twice, Superscores were larger than last Composite scores by about one point (0.96). Similarly, Superscores were larger than last Composite scores by 1.40, 1.71, and 1.95 points for students who tested three, four, and five times, respectively.

Figure 11. Comparing Average Superscores to Average Last Composite Scores, by Number of Times Tested



Prior research has examined the implications of superscoring for fairness (Mattern & Radunzel, 2019) and predictive validity (Radunzel & Mattern, 2020). Because ACT retesting can result in substantially higher ACT Superscores that may advantage some student groups over others, it is important for researchers and postsecondary institutions to continue to monitor the effects of superscoring.

References

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