

Does Testing Date Impact Student Scores on the ACT?

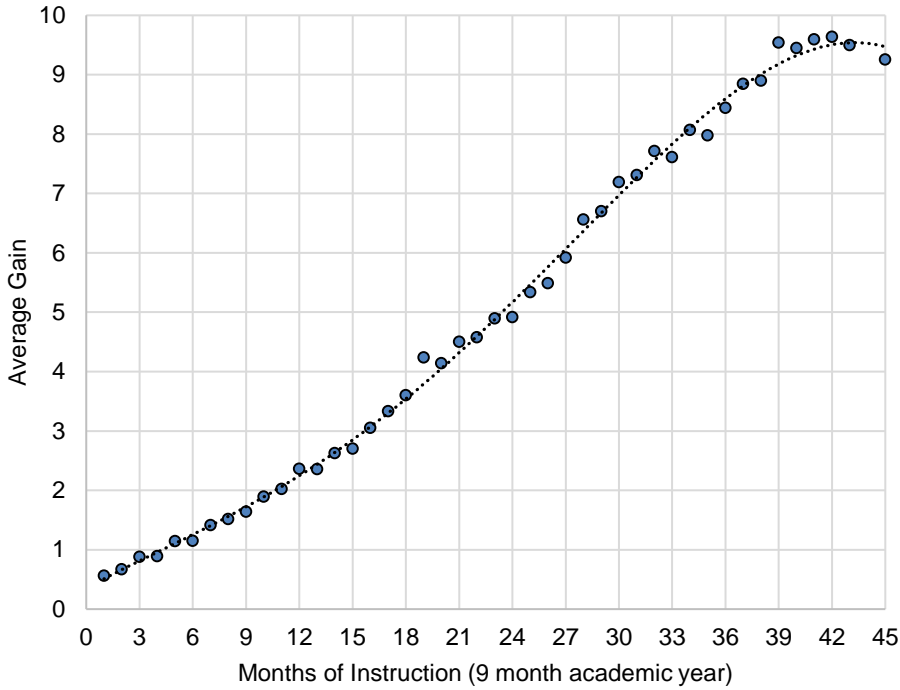
Wayne J. Camara, PhD and Jeff Allen, PhD

Students must choose when to take the ACT for the first time and if and when to retest. States and districts that administer the ACT test to all students must also choose when to administer the test. A key consideration in making these decisions is the impact on scores. Because the ACT is a curriculum-based test of academic achievement, students generally score higher later in their high school career. This brief provides answers to four questions related to the question of when to take the ACT.

Wayne Camara is ACT's Horace Mann Chair. His research background spans the ACT continuum of solutions. Before he came to ACT, he held positions at the American Psychological Association and College Board, where he served as vice president of research and development.

Jeff Allen is a statistician in the Research division at ACT. He specializes in longitudinal research linking test scores to educational outcomes and student growth models.

1. *What is equating and how does it affect interpretation of ACT test scores?*
 - a. Equating is the process of determining comparable scores on different forms of a test.
 - b. ACT's equating process eliminates observable differences across test forms in the difficulty of the test. This ensures that scores are directly comparable across different test administrations and that students do not benefit from taking the ACT on a certain test date. Average scores may vary across test dates due to differences in the ability levels of students taking the test, but not due to differences in test difficulty.



Note: Months of instruction based on time between ACT tests, not counting summer months (June, July, and August). ACT test-retest data (N>2.8 million test-retest instances) for the 2016 ACT-tested graduating class are summarized.

Figure 1. Average gain in ACT Composite score, by months of instruction

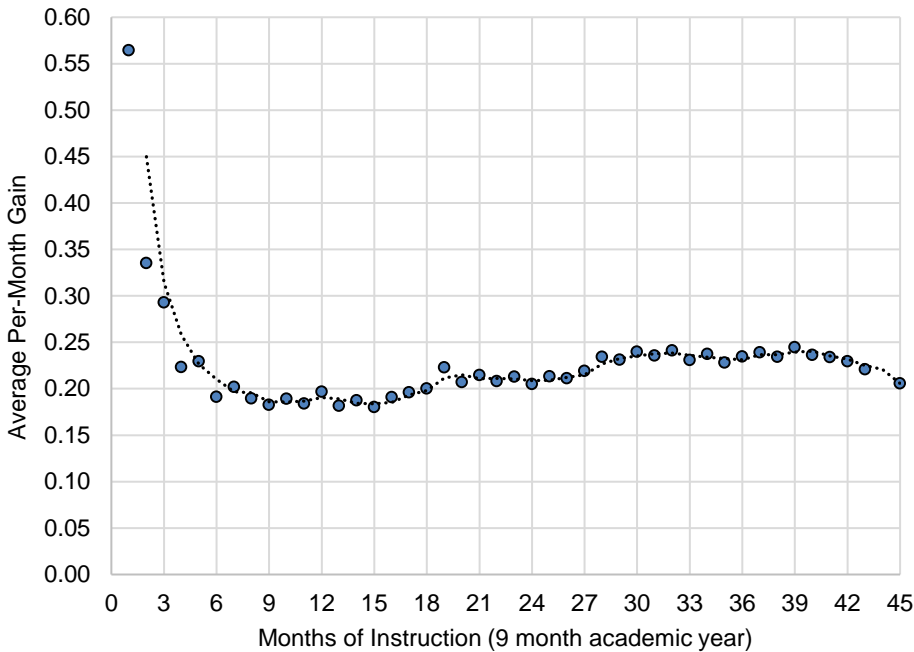


Figure 2. Average per-month gain in ACT Composite score, by months of instruction

2. Do students who test later in their high school career perform better than students who test earlier in their career?

- a. The ACT test is a curriculum-based assessment, and students who have completed more coursework achieve higher test scores. Therefore, students tend to score higher later in their high school career. Simple comparisons of ACT scores by student grade level are complicated by differences in ability levels among students who test in each grade. For example, average scores among 10th graders might be higher than average scores among 12th graders due to group differences in academic ability.
- b. ACT scores are higher for students who take upper-level coursework, particularly in mathematics and science. For example, students who have completed four or more years of science have an average Science score of 22.8 while students with three years or two years of science have mean scores of 20.6 and 20.1, respectively. Similar differences exist between students who have completed upper-level mathematics courses (e.g., pre-calculus or trigonometry vs geometry) or honors/AP courses.
- c. Research using longitudinal data (multiple ACT tests for the same student) has shown that ACT scores steadily increase with more instructional time (Figure 1). ACT Composite scores generally increase by 0.20 to 0.25 points per month of instruction, though the increment is larger for shorter periods (one to three months), perhaps due to practice effects (Figure 2). This research captures typical test-retest periods (e.g., April grade 11 to October grade 12) and much longer test-retest periods (e.g., grade 7 to grade 12) for students who take the ACT early for talent search programs and other reasons.
- d. Research using longitudinal data has shown that ACT scores improve more for students who earn higher grades, and take rigorous AP or honors courses.

3. *In grade 11, does it matter when during the school year students take the ACT?*
 - a. Often, states and districts will ask if there is an advantage to administering the ACT to all 11th graders in late April versus February or March. Students would have four to eight additional weeks of instruction with a later administration date, and the average per-month gain from Figure 2 can be used to predict the resulting increase in average ACT Composite score. Notwithstanding practice effects, the average per-month gain in ACT Composite score is about 0.20 for shorter periods of instruction (e.g., 18 months or less). So with four additional weeks of instruction, we would expect average ACT Composite score to increase by about 0.20 score points. With eight additional weeks of instruction, we would expect average ACT Composite score to increase by about 0.40 score points. This is not considered a large practical difference, but something for states and districts to consider when choosing an administration date.
 - b. Other factors can impact performance on the ACT such as student motivation and familiarity and exposure to the ACT. We always recommend students complete practice tests, and with the introduction of the Pre-ACT in Fall 2016, we expect to see slightly higher scores for students who have taken that practice test, similar to what we found for students who took ACT Plan and the ACT in the past.

4. *Do students who retest on the ACT increase their scores?*
 - a. Generally, yes. Research shows that among students from the 2013 graduating class who took the ACT for a second time:
 - I. 57% increased their Composite score on the retest
 - II. 21% had no change in their Composite score on the retest
 - III. 22% decreased their Composite score on the retest
 - IV. For students with an initial ACT Composite score between 13 and 29, the typical ACT Composite score from the second testing is 1 point higher (see Table below).
 - V. The lower your initial ACT Composite score, the more likely your second score will be higher than the first score.
 - VI. The higher your initial ACT Composite score, the more likely your second score will be the same as or lower than the first score.
 - b. **Example for how to read the table below.** For students who received an ACT Composite score of 20 the first time they tested:
 - I. the typical ACT Composite score on the second test was 21
 - II. the middle 50% of students with an initial score of 20 received an ACT Composite score of 20, 21, or 22 the second time they took the test
 - III. 57% of students increased their scores, 21% scored the same, and 22% saw their scores decrease.

ACT Composite Score Retest Statistics, by Initial ACT Composite Score

ACT Composite Score from first test	ACT Composite Score from second test		Percentage of students whose scores changed or remained the same from first to second test		
	Typical Score	Range for middle 50%	Increased	Remained the same	Decreased
35*	35	34 to 35	16	41	43
34*	34	33 to 35	33	32	35
33	33	32 to 34	41	27	31
32	32	31 to 33	46	24	30
31	31	30 to 32	48	24	28
30	30	29 to 32	50	23	27
29	30	28 to 31	51	23	26
28	29	27 to 30	53	21	25
27	28	27 to 29	54	21	24
26	27	26 to 28	55	22	24
25	26	25 to 27	55	22	23
24	25	24 to 26	56	22	22
23	24	23 to 25	56	22	22
22	23	22 to 24	57	21	22
21	22	21 to 23	57	21	22
20	21	20 to 22	57	21	22
19	20	19 to 21	57	20	22
18	19	18 to 20	58	20	22
17	18	17 to 19	57	20	23
16	17	16 to 18	58	20	22
15	16	15 to 17	59	20	21
14	15	14 to 16	61	20	19
13	14	13 to 15	67	20	14
12	14	13 to 15	76	17	7
11	13	12 to 14	88	9	4

Percentages may not sum to 100 due to rounding. The table does not include statistics for ACT Composite scores (from the first test) in the 1-10 range due to small sample size.

** Results for these ACT Composite scores are based on a relatively small number of students with these scores.*