

Comparing Average ACT® Composite Scores for Two Groups

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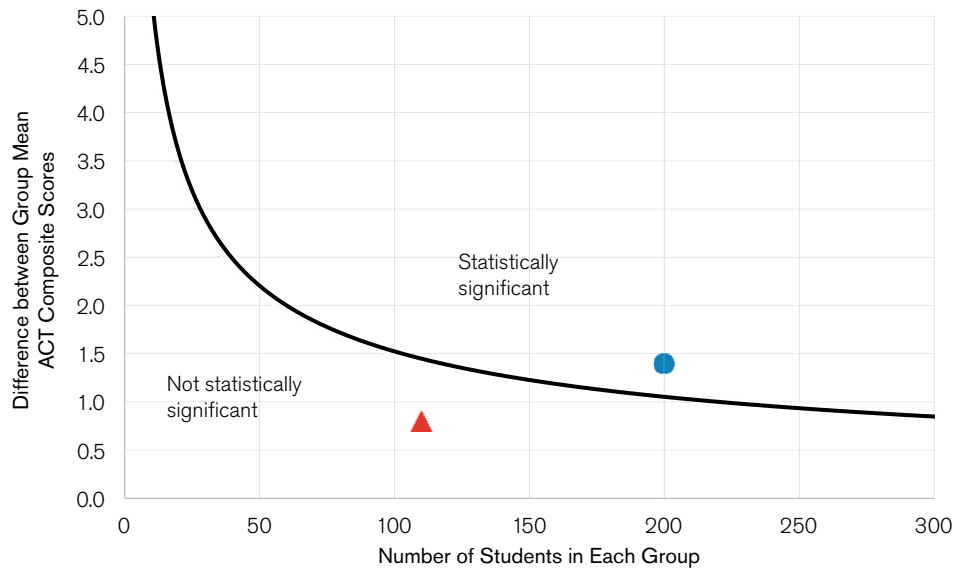
Use this graph to assess whether the difference between two group mean ACT Composite scores is large enough to be statistically significant.

The groups can be defined by school or district, college or university, student subgroup, or cohort year.

Example 1: School A had mean ACT Composite scores of 22.5 in 2015 and 23.3 in 2016. About 100 students took the ACT at School A in 2015 and 120 students took the ACT in 2016. The average sample size is 110 ($120 + 100 / 2$) and the score difference is 0.8 (23.3 - 22.5). This point is illustrated with the red triangle in the graph. This type of change is not statistically significant.

Example 2: A district wants to compare its mean ACT Composite score of 19.5 with an adjacent district that had a mean ACT Composite score of 18.1. One district had 180 ACT-tested students and the second district had 220 ACT-tested students. The average sample size is 200 and the score difference is 1.4 (blue circle in graph). This difference is statistically significant.

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How to use this graph

1. First determine the number of students in each group, and then find the average of those two numbers. Locate that point on the horizontal axis.
2. Next, locate the point on the vertical axis corresponding to the difference in the mean ACT Composite scores of the two groups being compared.
3. Then, locate the point on the graph where the two values intersect. Points that lie beneath the curve are not likely to be considered statistically significant by a formal statistical analysis. Those that lie above the curve are likely to be statistically significant.

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Summary points

- Many year-to-year changes in mean ACT scores are not statistically significant.¹
- Smaller groups require larger changes in order to be significant.
- High school ranks for one-year changes in mean ACT Composite scores are provided at www.act.org/content/dam/act/unsecured/documents/ACT-One-Year-Average-Score-Changes.pdf

Assumptions

- The two groups are distinct (no overlap in ACT examinees).
- The number of ACT examinees in each group is roughly equal.
- ACT Composite scores are normally distributed in each group.
- The standard deviation of ACT Composite scores is 5.4 in each group. If the actual

standard deviations are smaller, the graph provides a conservative estimate (e.g., the graph may indicate that the difference is not statistically significant when it actually is).

- Differences are statistically significant if the p-value is less than 0.05. ■

Notes

- 1 An ACT research report provides a more thorough analysis for interpreting changes in high schools' mean ACT scores and percent meeting ACT College Readiness Benchmarks (http://www.act.org/content/dam/act/unsecured/documents/ACT_RR2013-9.pdf).