Adjusted Differences in ACT® Scores by Family Income

Daniel M. McNeish; Justine Radunzel, PhD; and Edgar Sanchez, PhD

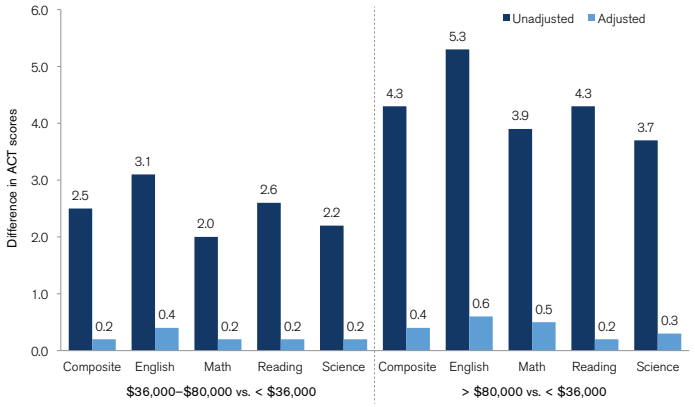
A recent study examined the contributions of students' demographic characteristics toward explaining performance on the ACT® test, over and above other cognitive, school-related, and noncognitive characteristics.[1]

Socioeconomic status and other demographic characteristics (including parental education level, race/ethnicity, and gender) accounted for a small percentage of the variance in ACT scores (4% or below), after high school coursework and grades, school characteristics, and other noncognitive student characteristics were taken into account. Additionally, differences in ACT scores among family income groups were substantially reduced after statistically controlling for these other student and school characteristics. That is, lower-income students are more likely to have lower ACT scores than higher-income students; however, they are also more likely to have lower high school GPAs and to take less rigorous coursework in high school.[2] Once other differences between higher- and lower-income students are controlled for, performance on the ACT is much more comparable.

Specifically, unadjusted mean differences in ACT scores ranged between 2.0 points (mathematics) and 3.1 points (English) between middle- and lower-income students and from 3.7 points (science) and 5.3 points (English) between higher- and lower-income students. After accounting for other student and school characteristics, mean differences were reduced by between 87% and 95%. For example, the mean differences in average ACT reading scores between higher- and lower-income students was reduced from 4.3 points in unadjusted analyses to 0.2 point in adjusted analyses.

Study findings suggest that differential performance on the ACT among family income groups is largely attributable to differential academic preparation. Students from all demographic groups benefit from taking rigorous courses in high school and earning good grades as these factors relate to an increased likelihood of earning higher ACT scores and being better academically prepared for college. Other research suggests that positive school climates featuring high-quality academic instruction and high levels of academic expectations, student engagement, and parental involvement can also contribute to improved student achievement and increased college aspirations and access.[3] ■

Unadjusted and Adjusted Mean Differences in ACT Scores by Family Income



Note: Results are based on 6,440 high school seniors from 4,541 schools who took the ACT in the fall of 2012 and completed an online questionnaire. For a more detailed description of the study, see *A Multidimensional Perspective of College Readiness*.

[1] Daniel M. McNeish, Justine Radunzel, and Edgar Sanchez, *A Multidimensional Perspective of College Readiness: Relating Student and School Characteristics to Performance on the ACT*, ACT Research Report No. 2015-6 (Iowa City, IA: ACT, Inc., 2015).

[2] Justine Radunzel, *Informing Educational Planning and Advising for Students from At-Risk Demographic Groups: Results from a Survey of High School Seniors Who Took the ACT*, (Iowa City, IA: ACT, Inc. 2015). Lower-income students are also less likely than higher-income students to indicate that their parents are involved in their post-high school plans and to participate early in college planning activities.

[3] Alliance for Excellent Education, *Climate Change: Creating an Integrated Framework for Improving School Climate* (Washington, DC: Alliance for Excellent Education, 2013); Rafael Heller, Sarah Calderon, and Elliott Medrich, *Academic Achievement in the Middle Grades: What Does Research Tell Us? A Review of the Literature* (Atlanta, GA: Southern Regional Education Board, 2003); Leticia Oseguera, *Importance of High School Conditions for College Access*, Research Brief No. 7 (Los Angeles, CA: UC/ACCORD and PATHWAYS to Postsecondary Success, 2013).

Daniel McNeish is a PhD candidate in the Measurement, Statistics, and Evaluation Program at the University of Maryland College Park and interned at ACT during the summer of 2014.

Justine Radunzel is a principal research scientist in Statistical and Applied Research at ACT specializing in postsecondary outcomes research and validity evidence for the ACT® test.

Edgar Sanchez, a research scientist in the Statistical and Applied Research Department at ACT, works on predictive modeling of student educational outcomes such as enrollment, persistence, and graduation.