A Summary of Utah’s College-Bound Students’ Test Scores
Part 1: ACT Score Analysis
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Introduction
While the local media has reported on the 2007 standardized test scores for Utah students, there is more than meets the eye to these reports. This series of articles will examine the 2007 results from the American College Test (ACT), Scholastic Aptitude Test (SAT), and the 2006 Advanced Placement (AP) test results for Utah, the nation and selected other states. The analysis will focus predominately on math and science scores for reasons particular to Utah students. Math scores on college entrance exams as well as math coursework taken in high school is a strong predictor of college success, some researchers suggest that math performance and the intensity of the math course load during the freshman year of college outweighs all other factors when predicting whether or not a student will continue in college past their first year.[1]

Additionally, in the Education Interim Committee meeting of the Utah State Legislature on Wednesday, September 19th, Dr. Patty Harrington, State Superintendent of Education, testified that the Utah State Office of Education is considering mandating that all students in Utah’s secondary schools take the ACT as a requirement for graduation. According to the ACT board, as of the 2007 testing cycle there were two states, Colorado and Illinois that required all students to take the ACT. As Colorado is a neighbor and the demographic makeup of the student population is similar to Utah’s, a look at Colorado’s performance on the ACT will provide policymakers a glimpse at what Utah might expect if all students are required to take the test. This article focuses on ACT scores. Analysis of SAT and Advanced Placement tests will be forthcoming as well as the comparison of ACT scores with Colorado.

ACT Results by Ethnicity
During spring 2007, 22,000 Utah students took the ACT. This group of students is approximately the size of 70 percent of the graduating class of 2007. However, since many students take the ACT in their junior year, this is not an accurate count of the graduating class. Since the ACT board does not provide a breakout of scores based on grade-level, it is almost a certainty that the percent of the graduating class of 2007 that has taken the ACT at some point in their high school career is less than 70 percent. The average score for this group was 21.7 out of a possible 36. This mean was slightly above the national average of 21.2. The small difference between Utah and national scores came as a bit of a surprise. Usually, because Utah has a higher percentage of white students taking tests than the national average, Utah’s scores tend to be significantly higher. The gap between Utah and the US has been slowly diminishing over time. The demographic breakout for the class of 2007 is no different. In Utah, 85 percent of students taking the test were Caucasian compared with 68 percent nationally. So why wasn’t the overall composite for Utah higher?

First, disaggregating scores by ethnicity provides an interesting look at Utah’s scores. Figure 1 details student scores by ethnicity and degree-seeking plans for both the US and Utah. The results are somewhat surprising. While overall, in every degree category, Utah students score better than their national counterparts, that is not necessarily the case when ethnicity is included. Looking specifically at Caucasian scores, white students in Utah seeking a four-year, or a graduate-level or professional degree actually scored worse than their national counterparts. For Utah students seeking just a four-year degree, the mean composite score was
20.9 compared to 21.1 for their national counterparts. For students in Utah seeking a graduate or professional degree, the average composite score was 23.3. Nationally, those scores were 23.7 and 23.6, respectively. In Utah, Caucasian students indicating they were seeking one of these three degrees accounted for 74.5 percent of total Caucasian scores. Nationally, white students seeking these degrees accounted for 76.6 percent of white scores.

Hispanic and African-American students in Utah outscored their national counterparts in some or all cases. The average score for black students in Utah was 18.5 compared to the national average of 18.0. For African-American students seeking to obtain a graduate-level degree, Utah students significantly out-performed their national peers with an average composite of 20.5 vs. 18.1.

For Hispanic students, with the significant exception of those indicating they were seeking a graduate or professional degree, Utah students outscored their national counterparts. For all of Utah’s Hispanic students, the average score was 19.0 compared to 18.5 nationally. For Hispanic students seeking a bachelor’s degree, Utah students scored an average of 18.5 vs. 18.0 nationally. The largest difference in scores came for students seeking a 2 year degree. In Utah, the mean score was 16.2, almost a full point above the national average of 15.4.

Finally, Utah’s Native American and Asian/Pacific Islander populations struggled to keep up with their counterparts. For Native Americans, Utah students outscored their peers in two categories—a two year degree or (importantly) a graduate degree, 15.8 and 21.1 respectively compared to the national average of 15.7 and 20.7. The only Utah Asian/Pacific students to outscore their national peers were those indicating they were going into either a Vo-Tech program or a two-year degree program. The mean scores for Utah students in these categories were 16.8 and 17.1 compared to 16.4 and 16.3, respectively. There are two interrelated reasons for the disparity between Utah’s Asian/Pacific Islander students’ scores and the nation’s. First, by lumping both ethnicities into one category, the College Board is masking the fact that Utah’s Pacific Islander student population dwarfs its Asian student population. Asian students typically outscore every other ethnic group on these types of standardized tests while Pacific Islander students don’t fare as well.

The second reason applies to all high performing students in Utah, of which, Asians make up a small but significant portion. In order to illustrate this second point, a look at the overall distribution of scores is necessary. Figure 2 suggests part of the problem Utah faces in using the ACT as a benchmark for student performance vis a vis students nationally. When looking at the upper ranges of scores—31 to 36 the US has a higher percentage of students scoring in those ranges than Utah. The difference is small but potentially significant. It becomes more pronounced in Figure 3, which highlights math scores. In this graph, the US has a higher percentage scoring in the range of 28 to 36 than Utah. The question then becomes, why? One possible answer is that the best students are forgoing the ACT to take the SAT, which has a more intensive math section (based on the percent of questions that come from more challenging math such as Trigonometry). The SAT is the only test most top tier schools accept while local colleges and universities accept scores from both tests. Also any consideration for a national merit scholarship must include an SAT score. The best students, if they want to go out of state, win a prestigious scholarship or leverage an out-of-state offer against an in-state school are more likely to take the SAT than the ACT. Consequentially, Utah’s overall average on the ACT may be driven down because the more skilled students are not taking it.

**High School Math Coursework and the ACT**

Another reason for fewer students in the upper score range in math may be due to students’ choices in high school course work. Only 10 percent of Utah students reported taking math beyond Trigonometry while the national average was 13 percent. Interestingly, the rates for males and females in Utah are the same—only 10 percent of either gender takes high school
math beyond Trigonometry while nationally, 14 percent of female students take advanced math compared with 12 percent for males.

Overall, when it comes to high school math coursework, four years is necessary to achieve a score above the cut point for college readiness, which is pegged by the College Board (administrator of the ACT test) at a math score of 22.0. A schedule of Algebra 1 & 2, Geometry, Trigonometry & Calculus provides the biggest boost to scores, calculated to raise scores by 6.2 points to a mean of 24.5. However, taking Algebra 1 & 2, Geometry, Trigonometry and other advanced math or another combination of four years of math also boost scores over the cut point. Interestingly, taking only the required math “core” of Algebra 1 & 2 and Geometry are actually detrimental to a student’s score, dropping it 0.5 points.

The additional math coursework bears out in an examination of the math sub scores on the ACT. Figure 4 shows the scores for Utah students compared to their national counterparts on the most advanced portion of the math test—Plane Geometry and Trigonometry. As the chart shows, again US students do better than their Utah counterparts.

Conclusion
Utah students overall perform about average on the ACT. However, when broken down by ethnicity, performance compared to a national cohort varies. Higher Education policymakers in Utah spend significant resources of time, and money in remediation of incoming freshmen and in efforts to bring back students who have dropped out. Math test scores suggest that there needs to be greater emphasis in the secondary system on a four year math curriculum and that the curriculum needs to be fairly rigorous. The next articles in this series will focus on SAT, AP scores and an in-depth analysis of ACT scores for Colorado and Utah.


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