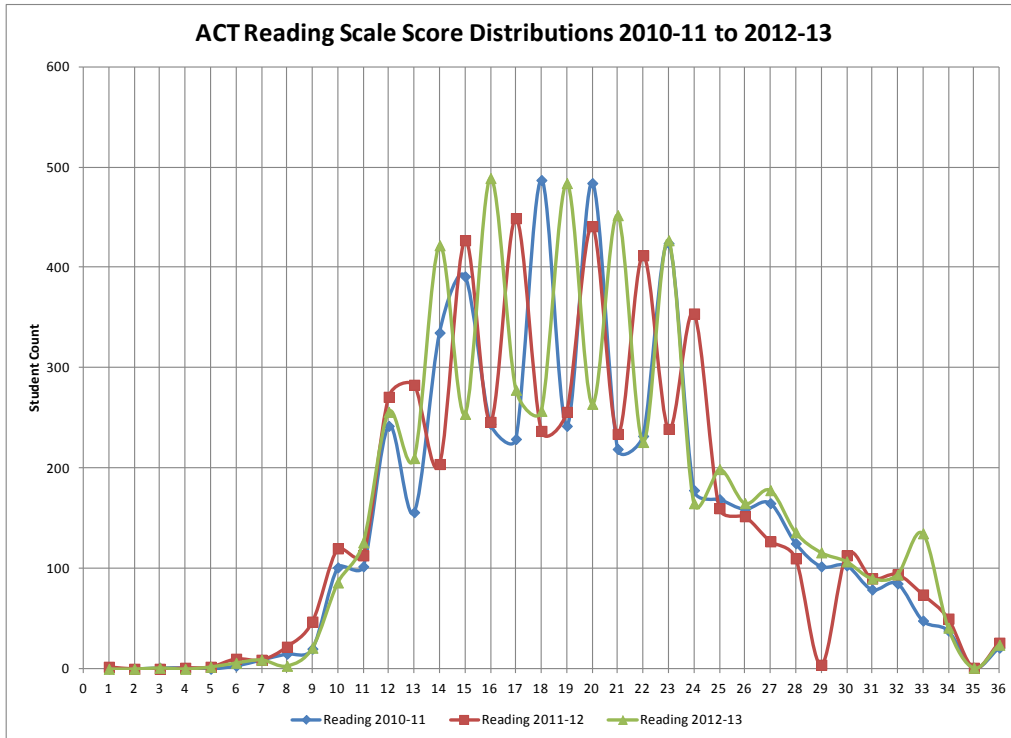


2014 Wyoming ACT Performance
Assessment Division, Wyoming Department of Education
December 12, 2014

The Problem.

The ACT test is a college entrance exam and the ACT scale scores were developed and used successfully for this purpose for many years. The ACT scale was never intended to be used for the identification of student performance levels that would be used for school accountability. Cut-points to distinguish basic from proficient student performance that are based on ACT scale scores would result in large swings in proficiency rates from one year to the next. The Figure 1 below shows a frequency distribution of ACT reading scores in Wyoming over a three year interval. As can be seen in the Figure 1, more than 400 students scored at a 23 two years but in another year fewer than 250 students scored at a 23. The wide variation in students performing at any particular score point on the ACT scale cannot reasonably be attributed to differences in the effectiveness of Wyoming schools across the school years. The fluctuations evident in Figure 1 led to Wyoming Department of Education consulting with ACT staff, the Wyoming Technical Advisory Committee of national experts in measurement, and the Wyoming legislature's expert consultants from the National Center on Assessment to find an alternative method for establishing student performance levels for use in school accountability.

Figure 1.



The Solution Supported by the Experts.

ACT, like all other major assessment companies, uses Item Response Theory (IRT) methodology to assure that the difficulty level of the ACT tests remains the constant across years. The IRT methodology

used by ACT involves producing IRT based theta scores that reflect not only item difficulty but also item discrimination (i.e., which takes into consideration the extent to which the item distinguishes between high ability and low ability students) and guessing. The IRT based theta scores have considerably more score points than the traditional ACT scale (i.e., 1-36 scale) and allow for more fine grained conclusions about student performance. The theta scores are centered on 0 and have both positive and negative numbers. The Wyoming ACT scale is a simple transformation of the theta scale provided by ACT into a scale where the score of 150 represents the cut-point recommended by the standard setting panel. It also establishes a standard deviation of 20. This transformation provides a criterion-referenced score (i.e., 150) at the point that the standard setting panelists recommended to represent proficient student performance. The transformation also put the scores on a more familiar three digit scale without negative score points.

Just as the theta value from the IRT scoring provides ACT with a means of assuring consistency in test scores from year-to-year, the Wyoming ACT scale scores based upon the ACT theta values also provide Wyoming with consistency in student performance level designations from one year to the next. These scores will be more sensitive to changes in school effectiveness than would student performance level scores based upon cut-points on the traditional ACT scale.

The Intended Use of the Wyoming ACT Scale.

The Wyoming ACT scale is intended for use in the measurement of school performance over time. The Wyoming ACT scale is not intended for making educational decisions about individual students. Students and parents have a long history in understanding the scores on the traditional ACT scale and the implications of these scores for college admission. Student and parent focus ought to remain on student performance on the traditional ACT scale for this reason.

Why Do Students with the Same ACT Scale Score have Different Performance Levels?

One implication of using the ACT theta scale that includes measures of item discrimination and guessing along with measures of item difficulty is that some "proficient" students will have lower traditional ACT scale scores and some "not proficient" students will have higher traditional ACT scale scores. This is because traditional ACT scores do not consider item discrimination or guessing. As a result, the more precise theta scores and the transformation of those scores (i.e., the Wyoming ACT scale) contain more information about student performance than the ACT scale scores. This is the reason that students with the same ACT scale scores may have different performance levels.

Are Schools or Students Disadvantaged when Students with the Same ACT Scale Score have Different Performance Levels?

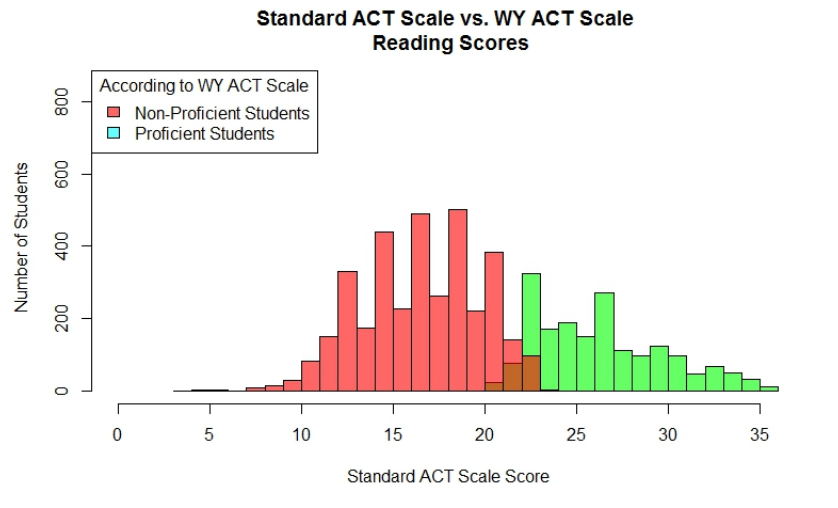
The short answer is no!

In reading, there were 103 students with an ACT scale score of 23 (i.e., the cut-point identified during standard setting) or higher who were not proficient while there were 101 students with ACT scale scores of less than 23 who were proficient. In reading, therefore, schools were neither advantaged nor disadvantaged because a Wyoming ACT scale score of 150 was used for the cut-score rather than an ACT scale score of 23.

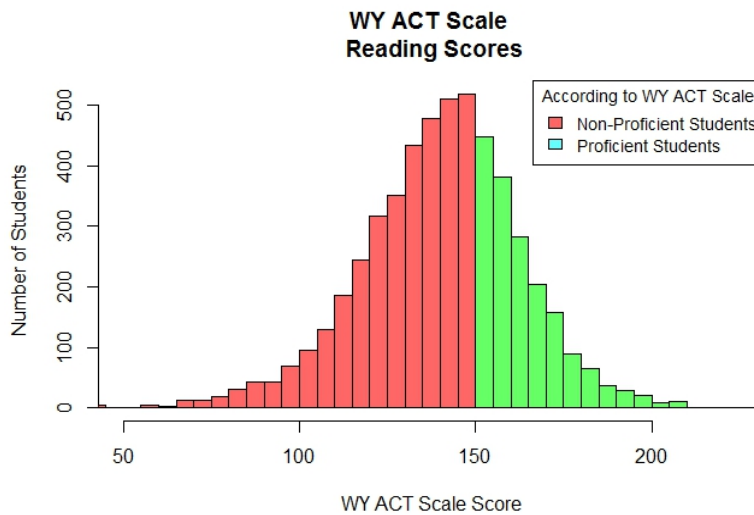
In math there were 52 students with ACT scores of 21 (i.e., the cut-point identified during standard setting) or higher who were not proficient while there were 112 students with ACT scale scores of less than 23 who were proficient. In math, therefore, schools were actually advantaged because the Wyoming ACT scale score of 150 was used for the cut-score rather than an ACT score of 21.

Fewer than 5% of total scores were inconsistent across the two scales in the determination of student performance levels.

How did Wyoming Students Perform on the ACT Scale and the Wyoming ACT Scale in Reading in 2014?

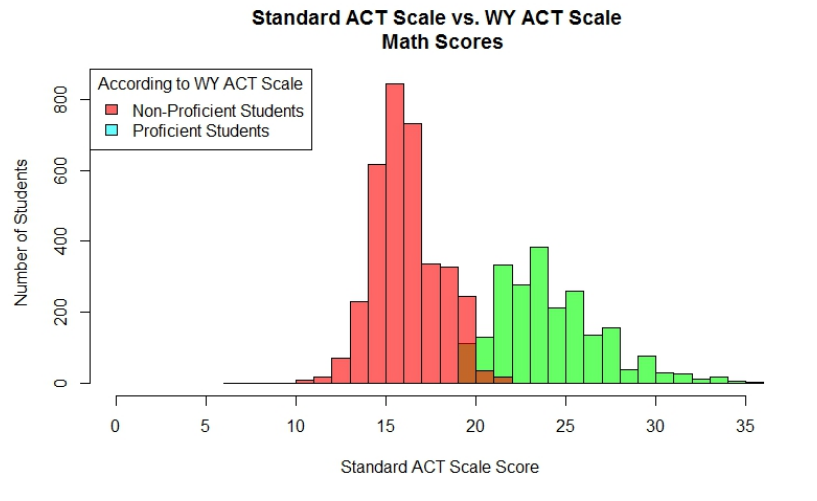


The erratic pattern of performance from score point to score point is quite evident on the ACT scale. This is an important reason why the ACT scale should not be used for determining student performance levels.

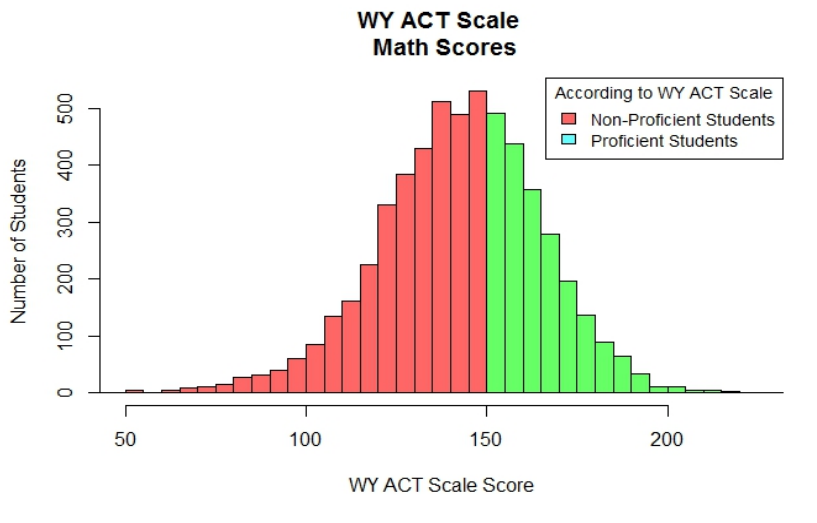


The pattern of performance on the Wyoming ACT scale is much smoother. This demonstrates that use of the Wyoming ACT scale accomplished its intended purpose and is much more appropriate for determining student performance levels that will have consistent meaning across years than the traditional ACT scale.

How did Wyoming Students Perform on the ACT Scale and the Wyoming ACT Scale in Math in 2014?



In math and in reading, the pattern of student performance on the ACT scale was erratic. This is an important reason why the ACT scale should not be used for determining student performance levels.



The pattern of performance on the Wyoming ACT scale is much smoother. This demonstrates that use of the Wyoming ACT scale accomplished its intended purpose and is much more appropriate for determining student performance levels that will have consistent meaning across years than the traditional ACT scale.