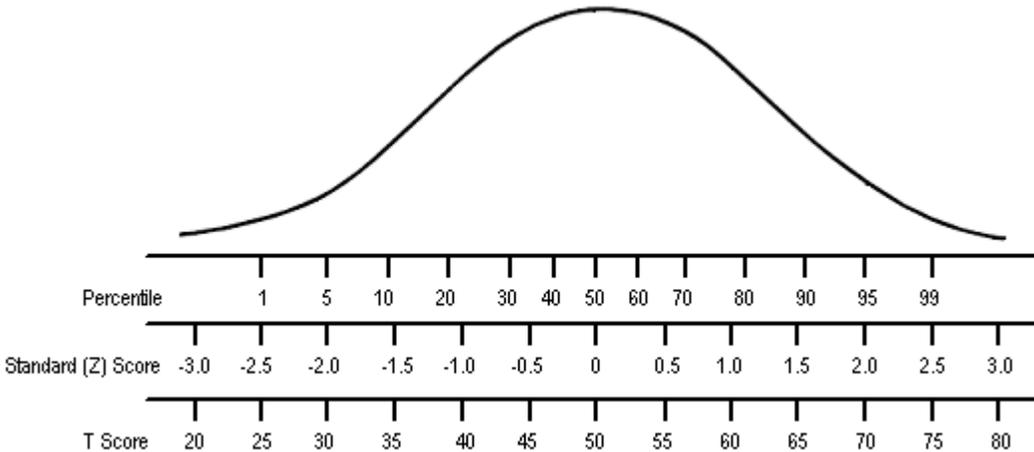


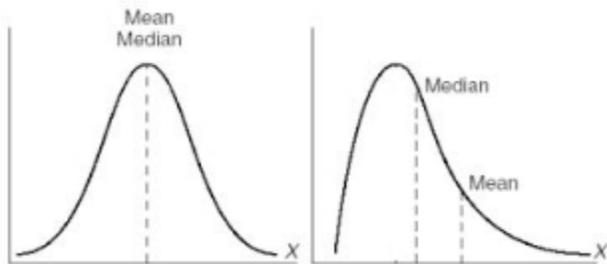
Student Ordinal Assessment Ranking (SOAR)

You can take any distribution and calculate a percentile for wherever students may fall in that distribution. Given a normal distribution (bell curve), the percentiles look like this, which also shows their relationship to Z Scores and T Scores, which are 1 to 1:



To calculate SOAR, a measure of growth between two academic years, you first take all students that scored the same scale score on an assessment in the previous year, and then look at the just those students' scores on next year's assessment. You apply percentiles to this distribution with the following formula $SOAR = P/(n+1)$, where P is the position of the score in the distribution n. 1 is added to the count of the distribution to center the percentiles. This percentile is simply a measure of student performance in the current academic year relative to their academic peers, those students that scored the same scale score in the previous year.

To assign a growth value at the teacher level, a roster of students is built for each teacher based on the course code, and the median SOAR value of those students is applied to the teacher. The median is used because extreme values on either side of the distribution can shift the mean (average) away from the center, demonstrated here,



while the median is a measure of center regardless of the shape of the distribution.

Looking at student growth is important because it is a measure of educational progress that is independent of the student's proficiency. For example, it is well understood that poorer students do not do as well as more affluent students, so if a school has a large number of poor students, their overall

proficiency will be lower than students from a school that does not have a large number of students. However, since SOAR only looks at academic peers, those students that scored the same in the previous year, the SOAR value is a measure of educational progress, regardless of the student's starting proficiency. In a school with high achieving students, it is possible that a teacher could have even 100% proficiency but still have a low median SOAR value if those students did not as well as their academic peers. This is because there are only 4 levels of proficiency, so in some cases the low growth would simply be a reflection that these students are moving down in scale score relative to their peers but not enough to make them not proficient. You can easily imagine this if all students began the academic year Advanced. However, continued low growth of these same students the next year would lead to lower proficiency levels, as a continuing drop in scale scores would mean that eventually these students will no longer score well enough to be Advanced or Proficient.

Student growth was originally calculated using the Student Growth Percentile (SGP) model which is used by other states. However, SGP uses complicated math and is difficult for educators to understand. The simpler SOAR model, $SOAR = P/(n+1)$, is easier to understand and gives results that are statistically the same as SGP. The state of Indiana uses a model similar to SOAR for their growth calculations. SOAR values at the individual student level are available for authorized users at hive.arkansas.gov, and aggregate SOAR values at the district, school, and teacher level are available at quicklooks.arkansas.gov.