

## Guidance on Use of the NCSEAM Improvement Calculator

The NCSEAM Improvement Calculator is a computer application that requires the Java Runtime Environment, version 5.0 or above, to be installed on the user's computer. The program may be downloaded at no charge from <http://www.java.com/en/download/index.jsp>.

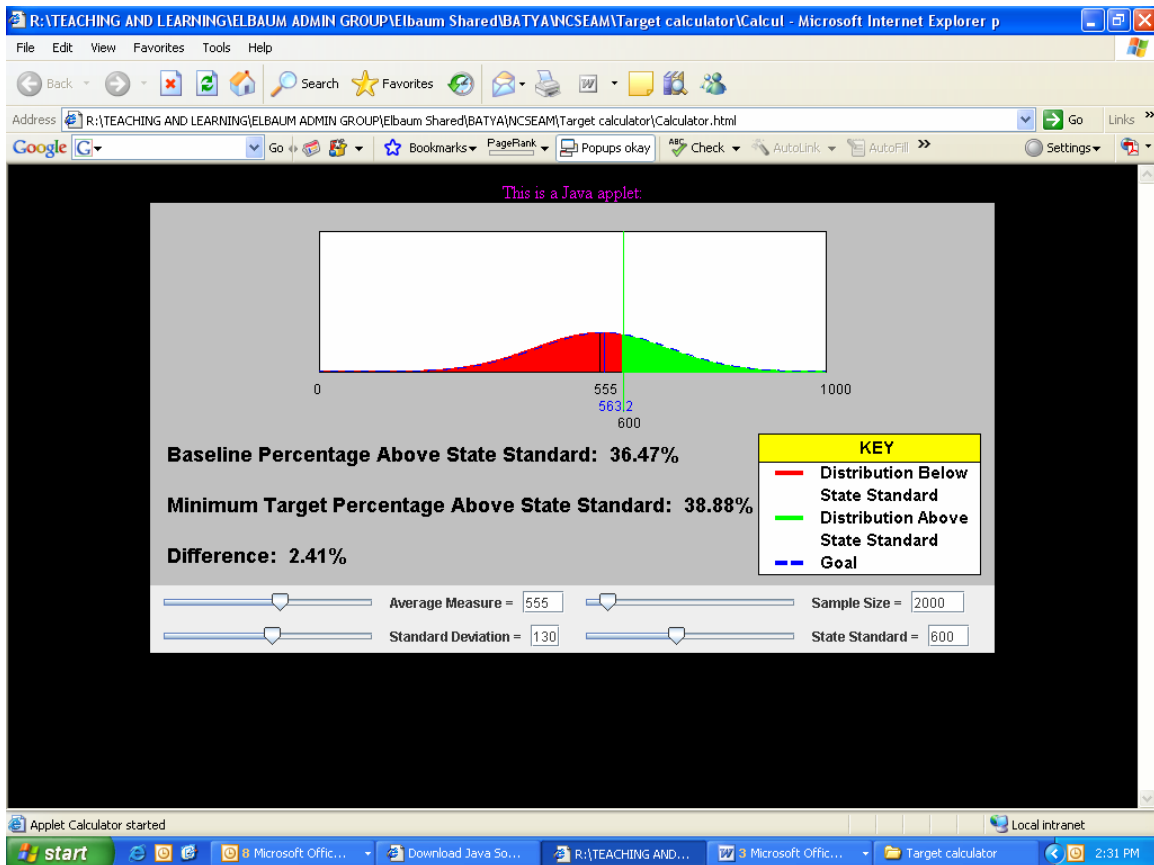
The NCSEAM Improvement Calculator was developed as a tool for states that are using the NCSEAM Parent/Family Surveys to use in setting targets for the Part B parent involvement indicator (Indicator #8) and/or the Part C family outcomes indicator (Indicator #4). Setting a measurable and rigorous target on these indicators involves determining, first, what amount of change indicates *real* improvement, and not just random variation owing to sampling and measurement error. The NCSEAM Improvement Calculator accomplishes this. Setting a measurable and rigorous target also involves determining what amount of change represents a *meaningful* improvement in results for children and families. This is a matter of judgment to be determined by each state.

The minimum amount of change in a measure that indicates real improvement can be calculated based on standard statistics derived from an analysis of the distribution of individual respondents' measures on the NCSEAM scales related to the indicator of interest. In order to use the Improvement Calculator, the user must input numerical values for the following:

- The mean (average) measure on the relevant NCSEAM scale. For Part B, the relevant scale that addresses the Part B indicator is School Efforts to Partner with Parents. For Part C, the relevant scale is Impact of Early Intervention Services on Your Family.
- The standard deviation of the distribution of individual measures.
- The sample size, i.e., the number of parents or families who responded to the survey and whose data were included in the data analysis.
- The standard, or cutoff measure, that the state is applying ("State Standard"). Each state may use discretion in setting its standard. Many states are adopting the NCSEAM-recommended Part B and Part C standards, which were established through a consensus process with a nationally representative stakeholder group. The NCSEAM-recommended standards correspond to the following scale values:
  - Part B: 600
  - Part C, Indicator 4a ("know their rights"): 539
  - Part C, Indicator 4b ("effectively communicate their children's needs"): 556
  - Part C, Indicator 4c ("help their children develop and learn"): 516

When the mean, standard deviation, and sample size values are entered, the program will automatically calculate the new mean and percent values that represent a statistically significant improvement in the indicator, relative to the standard applied. The following information will be displayed (for an example, see below):

- The current mean (average) of the measures. The current mean is represented by a vertical black line drawn through the center of the distribution.
- The current (baseline) percentage above the standard (“Baseline Percentage above State Standard”). This is similar to, but probably not identical with, the baseline percentage that the state is reporting to OSEP.
- The new mean that would need to be achieved in order to ensure that the difference between the new value and the old value is statistically significant with a probability of  $p \leq .05$ . The new mean is represented by a vertical blue line drawn through the distribution. Its numeric value is indicated in blue type just below the line.
- The percentage above the standard that corresponds to the new mean value (“Minimum Target Percentage above State Standard”).
- The change in percentage that corresponds to the move from the current mean to the new mean (“Difference”).
- The projected normal distribution around the new mean, represented by a blue dashed line.



The algorithm used by the Improvement Calculator is based on the standard error of the mean, which for large samples is estimated as the standard deviation of the sample divided by the square root of the sample size. Assuming (a) that both the current and future distributions of individual measures on the scale are normally distributed, (b) that

the distributions have equal standard deviations, and (c) that samples sizes are approximately the same, the value of the new mean must exceed the baseline mean by an amount corresponding to 2.828 times the standard error of the mean, in order for the increase to be statistically significant at  $p \leq .05$ .

***Users should bear in mind that the results of the Improvement Calculator are an estimate based on the assumptions stated above.*** Calculations based on actual data may yield different results. Depending on the skew of the distribution and other factors, the percentage above any of the indicators might be the same, higher, or lower in the Improvement Calculator than it is in the actual data. Thus, the “Baseline Percentage Above State Standard” shown in the Improvement Calculator will likely not exactly match the baseline percentage calculated from the state’s actual data. To derive a more accurate estimate of a reasonable minimum target, ***add the Difference percentage shown at the bottom left of the Improvement Calculator to the baseline percentage derived from your state’s actual data.***

Determination of the state’s target on the indicator should always be made in consultation with stakeholders and should include consideration of all relevant factors that can support continuous improvement.

The question of how rapidly states can effect change on the Parent/Family indicators is an open one. Some states, LEAs, or Part C programs may, in a single year, realize enough of an improvement on the indicator for the difference from baseline to be statistically significant. Others may require more than one year to bring about an improvement that is statistically significant. Though there *can* be real improvement without statistical significance, a gain that is statistically significant is one which is unlikely to be an artifact of the particulars of the data collection or the sample. Thus, the sooner one can achieve a result that represents a statistically significant change from baseline, the sooner one can be confident that there has been real change in the desired direction. As a minimum, it would be desirable for the total change over the remaining years of the SPP to be statistically, as well as functionally, significant.