

Methods of Combining SGPs



The Georgia Student Growth Model (GSGM) utilizes Student Growth Percentiles (SGPs), which describe students' academic progress relative to academically-similar students – other students from across Georgia with the same achievement history. While SGPs are produced for individual students, there are multiple ways of combining SGPs to summarize the growth of a group of students (such as for a classroom, school, or system).

Median SGP (MGP)

One method of combining SGPs for a group of students is to utilize a median. A median is the numerical value separating the higher half of the data from the lower half. In other words, it is the middle value in an ordered list. To obtain the median, one would order all students' SGPs in a group from low to high and select the middle value. If there is an even number of values, the median is the mean of the middle two values. A median is useful because it is straightforward to interpret – half of the students demonstrated growth above the median, and half of the students demonstrated growth below the median.

Median Growth Percentiles are utilized in the Public and SLDS Growth Model Visualization Tools.

Mean SGP (MeanGP)

A second method of combining SGPs for a group of students is to utilize a mean. A mean is the sum of the values divided by the number of values. It is often referred to as an average. As such, a mean SGP for a group of students describes the “average” growth of that group of students. Even though it can be more difficult to interpret than a median, a mean is useful, especially for high-stakes purposes, because it is more statistically reliable than a median due to it being a more efficient estimator of central tendency (i.e., it is more precise and minimizes error). This is particularly true for smaller sample sizes. Typically, standard errors for the mean are 20% - 40% smaller than those for the median. **Mean Growth Percentiles are being utilized in the Teacher and Leader Effectiveness Systems (TKES and LKES).**

Weighted Average (Progress Score)

A third method of combining SGPs for a group of students is to use a weighted average (progress score). The progress score utilizes weights based on growth level. SGPs of 10-29 earn 0 points, 30-40 earn 0.5 points, 41-65 earn 1 point, and 66-99 earn 1.5 points. This sets the expectation that students need to make academic improvement by demonstrating greater than 40th percentile growth. Additionally, it incentivizes moving students from one growth level to the next. **This metric is utilized in the College and Career Ready Performance Index (CCRPI) Progress component calculation.**

All three measures – median, mean, and the progress score – are valid methods of combining SGPs. While the use of multiple methods may be confusing, the different methods provide different types of information and are best suited for certain applications. A median is well suited for general conversation and improvement planning as it is straightforward to interpret. A mean is well suited for teacher and leader effectiveness as it has more robust statistical properties. Median and mean both quantify the “middle” of a collection of numbers. The progress score is well suited for CCRPI because it utilizes a weighted score– much like utilizing the weighted performance levels for the Content Mastery component within CCRPI.

Example

A collection of numbers – for example, student growth percentiles...

{46, 28, 62, 34, 51, 64, 58, 21, 88}

Median

lowest ----- highest
21 28 34 46 51 58 62 64 88

The median is the middle number

Half of the values are above and half of the values are below the median

The median and the mean both quantify the “middle” of a collection of numbers

Mean

$$46 + 28 + 62 + 34 + 51 + 64 + 58 + 21 + 88 = \frac{\quad}{9}$$

$$= \frac{353}{9} = 50$$

The mean is also called the average

Progress Score

21 28 34 46 51 58 62 64 88

SGP	Count	Percent	Weight	Points
1-29	2/9	22.22	0.0	0
30-40	1/9	11.11	0.5	5.56
41-65	5/9	55.56	1.0	55.56
66-99	1/9	11.11	1.5	16.67

$$0 + 5.56 + 55.56 + 16.67 = 77.79$$

The progress score sets the expectation that students need to make academic improvement by demonstrating greater than 40th percentile growth