Overview of the Georgia Student Growth Model

What is the Georgia Student Growth Model?

The Georgia Student Growth Model (GSGM) is an exciting initiative designed to provide students, parents, educators, and the public with important information on student progress. Student growth, in addition to academic achievement, provides a more complete picture about the academic performance of students. Now we not only know where students ended up, but we also know how much progress they made to get there. For example, one student may have struggled to demonstrate proficiency; but the GSGM shows that he is growing at a high level and, if he continues to grow at that level, is on the path to becoming proficient in the future. Another student may have demonstrated proficiency; but the GSGM shows that she is growing at a low level. This student could benefit from enrichment activities to help her keep pace with her academic peers. The Georgia Student Growth Model provides important information on how well all students are progressing – whether or not they currently demonstrate academic proficiency.

What are Student Growth Percentiles?

Georgia is implementing the student growth percentile (SGP) methodology. SGPs describe the amount of growth a student has demonstrated relative to academically-similar students from across the state. Growth percentiles range from 1 to 99, with lower percentiles indicating lower academic growth and higher percentiles indicating higher academic growth. With SGPs, all students – regardless of their prior achievement level – have the opportunity to demonstrate all levels of growth.

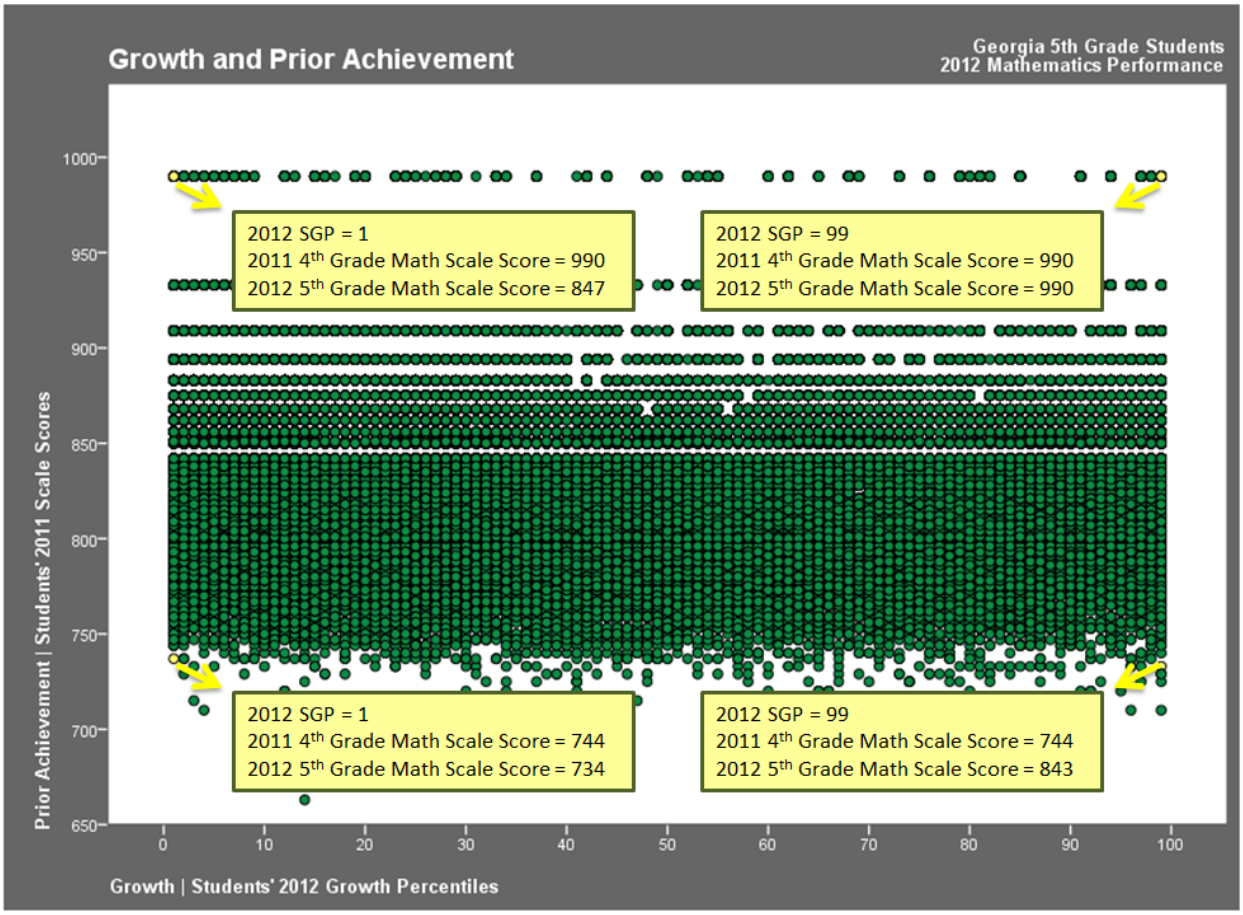
How are SGPs calculated?

SGPs are statistical, regression-based quantities used to characterize the growth of students on state-mandated assessments. SGP calculations utilize quantile regression with b-spline smoothing to create growth norms that model the relationship between students' current and prior achievement scores. Specifically, for each cohort of students taking the assessment in the same content area and grade, quantile regression is used to create 100 conditional percentiles for each student based upon their own scale scores. B-spline smoothing is used in conjunction with the quantile regression analyses to model any non-linearity in the distribution of student scale scores, particularly at the high and low end of the assessment scale. The coefficient matrices derived from the analyses relate prior and current achievement across for students across the entire achievement spectrum. These matrices can be calculated each year so that growth norms are annually updated or can be fixed to a baseline period and used with annual data to allow for growth comparisons across years fixed to the same growth norms.

Can all students demonstrate all levels of growth?

The nature of student growth percentiles ensures that all students – regardless of their prior achievement level – have the opportunity to demonstrate all levels of growth. By measuring growth relative to academically-similar students, SGPs provide an apples-to-apples comparison. A student's growth is relative to that of his or her academic peers – other students from across Georgia with the same prior scores. This means that high-achieving students are being compared to other high-achieving students and low-achieving students are being compared to other low-achieving students.

The figure below displays student-level data for 2012 5th grade mathematics statewide[1]. Student growth is plotted on the x-axis and students' prior achievement (2011 4th grade mathematics scores) is plotted on the y-axis. This figure shows that all students, for all various levels of prior achievement, are demonstrating the full range of 1st through 99th percentile growth.



The student in the upper left-hand corner earned the highest possible scale score (990) in grade 4. In grade 5, this student scored an 847, which represented 1st percentile growth. The student is still high-achieving, having only missed the Exceeds category by 3 points. However, compared

[1] This example utilizes one of Georgia's legacy assessment systems – the Criterion-Referenced Competency Test (CRCT).

to his or her academic peers (the other students across Georgia who scored a 990 in grade 4), this student demonstrated low growth.

The student in the upper right-hand corner also earned the highest possible scale score in grade 4. In grade 5, this student once again scored a 990, which represented 99th percentile growth. While there was not an opportunity for this student to show a higher level of *achievement* in either the 4th or 5th grades, it was possible for the student to show a high level of *growth* from the 4th grade to the 5th grade, as the student had to learn new content and grow in order to continue to earn the highest scale score.

The student in the lower left-hand corner earned a 744 in grade 4, which did not meet expectations. In grade 5, the student earned a 734, which also did not meet expectations. This represented 1st percentile growth.

The student in the lower right-hand corner also earned a 744 in grade 4. In grade 5, the student earned an 843, which represented 99th percentile growth.

This figure illustrates the importance of the concepts of "academic peers" and a student's "starting point" when measuring growth. The student in the upper left-hand corner and the student in the lower right-hand corner demonstrated very similar achievement in grade 5, scoring an 847 and an 843, respectively. But their SGPs help illustrate a more complete picture of their performance. The student in the upper left-hand corner's 847 represented a low level of growth given his or her prior achievement and the current achievement of his or her academic peers. The student in the lower right-hand corner's 843 represented a high level of growth given his or her prior achievement and the current achievement of his or her academic peers.

What are student growth levels?

Much like achievement levels are used to describe student performance on state assessments, student growth levels provide context for various values of SGPs. These levels were set using information about the relationship between student growth and status-based achievement. The SGP growth levels are low (1-34), typical (35-65), and high (66-99). A student who demonstrates low growth generally will struggle to maintain his or her current level of achievement. A student who demonstrates typical growth generally will maintain or improve academically. A student who demonstrates high growth generally will make greater improvements academically.

How are SGPs combined?

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). These methods include the median growth percentile, mean growth percentile, and the percentage of students demonstrating typical or high growth. All of these methods are utilized for different purposes.

How is the growth model used?

The core purpose of the GSGM is to provide students, parents, educators, and the public with valuable, actionable information on students' academic progress. The addition of student growth data to existing student achievement data paints a more complete picture of the achievement and progress being made by Georgia's students.

Reporting of growth model results is a critical component of this program. Students and parents receive student growth reports that provide information on students' academic progress and achievement. Students and parents can work with their teachers to better understand student performance and the support or enrichment opportunities that might contribute to them meeting or exceeding academic expectations.

The public can access school- and district-level SGP data through an interactive data tool at http://gastudentgrowth.gadoe.org/. Educators have access to detailed SGP data for their students through the Statewide Longitudinal Data System (SLDS). They can utilize SGPs, in addition to other information about student performance, to improve student learning, instruction, and educational programs.

SGPs also contribute to school and district accountability. SGPs are used as a measure of student progress in the College and Career Ready Performance Index (CCRPI). SGPs are combined with other measures to provide an overall indication of school and district effectiveness.

Finally, SGPs are one of multiple measures used to provide an indication of teacher and leader effectiveness in the Teacher and Leader Keys Effectiveness Systems (TKES and LKES).

How will the GSGM be affected by the transition from the CRCT and EOCTs to Georgia Milestones?

One important feature of the methodology used within the Georgia Student Growth Model (GSGM) is that the Student Growth Percentile (SGP) is robust to scale transformations like those associated with changes in assessment systems. SGPs can continue to be generated during the first year of implementation of the Georgia Milestones Assessment System (2014-2015) without interruption. Georgia has previous experience transitioning the growth model between assessment systems with the implementation of the Coordinate Algebra and Analytic Geometry EOCTs.

Where can I learn more?

There are many resources available on the Georgia Student Growth Model website at gsgm.gadoe.org. Resources include an animated introduction to SGP video; documents, such as guides and FAQs; technical information; a technical evaluation, a tutorial series providing in-depth information on the model; and information on student growth reports, including sample reports and interpretation videos.