Fact Sheet #23: The Georgia Growth Model

STUDENT GROWTH PERCENTILES

The Challenge

Historically, Georgia's assessment system has only enabled educators and other stakeholders to ask questions such as, "What percentage of students met the state standard?" Or, "Did more students meet the state standard this year compared to last year?" As a result of this challenge, Georgia has selected the Student Growth Percentile (SGP) model as its growth model for instructional improvement, accountability, and educator effectiveness. Implementing a growth model will allow Georgia to move beyond questions about status to ask critical growth-related questions such as:

- Did this student grow more or less than academically-similar students?
- Are students growing as much in math as in reading?
- Did students grow as much this year as last year?
- What level of growth is necessary for students to reach or exceed proficiency?
- Did students grow sufficiently toward meeting state standards?

The SGP model will provide a wealth of rich information on student, classroom, school, district, and state performance on Criterion-Referenced Competency Tests (CRCT) and End of Course Tests (EOCT) and, eventually, on the common assessments developed by the Partnership for Assessment of Readiness for College and Careers (PARCC). In addition to providing information to enhance our understanding of student achievement, SGPs will work in conjunction with other factors as part of the state's new evaluation system. SGPs are an accurate and fair way to capture the progress students make throughout the course of an academic year. This model provides Georgia with a comprehensive indicator system that can be used at multiple levels (class, school, system, and state).

What is Growth?

There are three typical ways of describing student achievement: status, improvement, and growth. Status measures compare student achievement to a target [such as the Annual Measurable Objectives (AMO) used to calculate Adequate Yearly Progress, AYP]. Improvement measures compare student achievement across time using different groups of students (e.g., 3rd grade math achievement in 2009 vs. 2010). Growth measures compare student achievement across time using the *same* students.

As with student achievement, there are different methods of measuring growth: categorical, gain score, value added, and normative (the last two are not mutually exclusive). Categorical growth compares the change in student performance categories across time (e.g., a student moves from "Did Not Meet" to "Meets"). Gain score growth compares the change in scale scores across time (e.g., the mean scale score in grade 6 in 2010 minus the mean scale score in grade 5 in 2009). This type of growth measure typically requires a vertical or developmental scale (a continuous scale spanning multiple grades in the same content area), which Georgia's current assessment program does not include. Value-added models are designed to estimate a teacher's effect on student achievement through the use of prior achievement data and other student characteristics. Actual growth is compared to statistical estimates of expected growth and the difference between the two is considered to be value added. Normative models compare current achievement to prior achievement using the historical growth attained by the student population. SGPs are a normative model.

Understanding SGPs

SGP describes a student's growth relative to other students with similar prior achievement (students who have a similar score history). The SGP not only shows how an individual student is progressing from year to year, but it also shows how groups of students, schools, districts, and the state are progressing. SGPs do not require a vertical scale in order to describe student growth.

SGPs are a normative quantification of growth. They describe a student's growth relative to his or her academic peers – other students with the similar prior achievement. Each student obtains a growth percentile, which describes his or her "rank" on current achievement relative to other students with similar score histories. A growth percentile can range from 1 to 99. Lower percentiles indicate lower academic growth and higher percentiles indicate higher academic growth. Students also receive a growth projection, which describes the amount of growth needed to reach or exceed proficiency in subsequent years.

There are multiple ways of summarizing SGPs for groups of students (such as that for a classroom or a school district). Most commonly, a group's SGP is the median growth percentile for each student in the group. The median is obtained by rank ordering the percentiles for all students in the group and selecting the middle percentile (50% of the group would have a higher percentile and 50% a lower percentile). Additionally, the percentage of students demonstrating at or above a specified level of growth (for example, 60th percentile growth) can be reported. Finally, the growth percentile range can be divided into intervals (e.g., 1 – 25, 26 – 50, 51 – 75, 76 – 99) and the percentage of students demonstrating growth in each interval can be reported. Growth can be compared across grade levels and across subject areas, meaning summary measures also can be aggregated across grade levels and content areas.

An Example

Anna's reading growth percentile is 54. The median reading growth percentile for Anna's school is 65. This means that Anna grew at a rate greater than 54% of academically-similar students in reading. The typical student in Anna's school demonstrated 65th percentile growth in reading, meaning the typical student grew at a rate greater than 65% of academically-similar peers (those students in her school who share a similar history of scores on the reading test). Anna grew at a lower rate in reading compared to the other students in her school on *average*.

Growth Over Time

The fact that SGPs are normative, meaning growth percentiles describe a student's growth relative to other students in the state, raises the question, "How do we compare results from year to year?" A baseline will be used as a reference point so change in overall growth can be observed from year to year. Without using a baseline, the median SGP for the state would be 50 every year – half of students would be below 50 and half would be above 50. Establishing the baseline for comparison allows the state to observe change in overall educational effectiveness over time. The baseline will be an average of multiple years of data in order to allow for a more stable comparison.

Growth to Proficiency

A second question resulting from SGPs' normative nature is adequacy: "How do we know if a student's growth is enough to put that student on track to reach or exceed proficiency?" SGPs analyze historical student assessment data to model how students performed on earlier assessments, how they performed on later assessments, and what level of growth they demonstrated in between. This information is used to create growth projections for each student. The growth projection tells us, based on where students are now, how much they need to grow to reach or exceed proficiency in the future.

For example, 6th-grade student Anna's reading growth percentile is 54. She scored a 750 on the 6th-grade reading CRCT, which is in the "Does Not Meet" performance level. How much will Anna need to grow in reading next year in order to score at or above 800 ("Meets") on the 7th-grade CRCT? The SGP growth projection provides just

that. Given Anna's current 6th-grade achievement, she will need to grow at the 65th percentile to score "Meets" or at the 85th percentile to score "Exceeds" on the 7th-grade CRCT next year. What if we were interested in how much Anna has to grow for the next two years to score at or above 800 ("Meets") on the 8th-grade CRCT? The growth projection might tell us that Anna will need to grow at the 60th percentile for two years to score "Meets" or at the 75th percentile for two years to score "Exceeds" on the 8th-grade CRCT. The Georgia Growth Model will include multi-year projections, giving a long-term view of what is required for students to reach or exceed proficiency. *Note that these numbers are for this example only and do not represent actual data-based growth estimates.*