Growth Data: It Matters, and It's Complicated

DQC DATA QUALITY CAMPAIGN

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Executive Summary

Measures of student growth offer a richer understanding of student performance than a moment-in-time test score alone, but **measures of student growth are not created equal.** In their accountability plans for implementing the Every Student Succeeds Act (ESSA), some states are using a sophisticated analysis of multiple data points that evaluate the impact of schools on student learning, while others are using simpler measures of change in student assessment results year to year. These different approaches to measurement answer different questions and tell different stories about what is happening in schools and classrooms.

Leaders in all but two states have committed to measuring student growth as an indicator of academic achievement in accountability systems for elementary and middle schools, and 20 states will do so for high schools. States are responding to public demand for more information about school quality and student success that goes beyond a one-time test score. This development is made possible by years of state and federal investments in using longitudinal student data to draw richer insights about teaching and learning.

This data will be published on school report cards, which means that families, communities, and policymakers will have more information about student progress than ever before. To make sense of what the data on school report cards tells us about student success and school quality, and use it to inform decisions that improve student outcomes, **everyone—from parents to policymakers—needs to be able to understand what their state is measuring and what it means about students' academic progress.** To offer some clarity, this brief provides an introduction to the different ways states will measure student growth in their ESSA accountability systems to evaluate school quality and support improvements.

Who should use this brief: Policymakers, such as legislators and board members, and state advocates who need to be informed about the ways that states are measuring student achievement and school quality can use this brief as a first step in understanding how student progress is captured in state accountability systems. Policymakers and advocates can also read about actions they can take once they have learned more about student growth.

What Is a Growth Measure?

Most consumers of education data are familiar with **status measures,** often referred to as "proficiency." Status tells us a student's performance at one moment in time, usually based on a standardized test score. It tells us: *Is Grace reading on grade level right now?*

Growth measures use an individual student's assessment data over time to evaluate some aspect of that student's academic progress.

There are different ways to design growth measures. Some growth measures use advanced statistical methods; some use a more simple calculation. Each measure follows a set of processes or rules based on decisions made by people. Because they use different data and different methods, growth measures answer different questions, such as:

- *How much has Grace learned since last year?*
- *How much has Grace learned compared to her similarly performing peers?*
- *How much has Grace's school contributed to her learning?*

For the purposes of this paper, all measures that use individual student assessment data over time to evaluate some aspect of student progress are "growth" measures, mirroring the language states are using. But it is important to note that, though the terminology is the same, "growth" means something different in each state, and the measures answer different questions.

Introduction

Growth data offers a richer picture of student performance than a one-time test score alone.

Every student should make learning progress each year. By capturing the change in students' test scores over time, growth data helps teachers and parents understand students' progress, including whether each student is improving or falling behind. Growth data is based on assessments, but instead of just one score, measures of student growth use different methods to analyze individual students' test scores over time. (See **sidebar**, "What Is a Growth Measure?")

When considered side by side with other information, including proficiency measures, growth data provides a more comprehensive picture of student learning and a better indication of students' progress than a one-time test score alone. **Teachers and parents** can act on this valuable information to support students on their path to college and career—it is especially important for supporting students who may not be meeting learning benchmarks but have still improved. **District leaders** can use this information to identify schools that are outperforming their peers in improving student achievement and dig into best practices. **Community members** can understand whether schools are helping every student make learning progress each year and advocate for supports and resources. **State policymakers** can use this information to identify which districts may be in need of additional support.

The Every Student Succeeds Act (ESSA) prompted more states to shine a light on student growth.

ESSA ushered in a new era of state education accountability and opened the door for an unprecedented number of states to include measures of student progress in accountability systems. Critically, ESSA moves away from a reliance on a one-time test score, or proficiency measure, as the primary measure of student success and school quality and requires states to include an additional measure of student achievement. *For elementary and middle schools, this measure will be a measure of "student growth" if determined appropriate by the state or "another reliable statewide academic measure that allows for meaningful differentiation in school performance."* While stopping short of requiring states to include student growth, ESSA encourages states to do it—though the law does not define *student growth* or how states should measure it.

Based on their approved ESSA plans, all but two states—California and Kansas—have seized this opportunity to include a measure of "student growth" in their accountability systems.[1] These measures, though different, evaluate the learning progress of individual students. Forty-eight states and Washington, DC, will use a measure of student growth for elementary and middle schools, and 20 states have committed to include such a measure for high schools.

This new data about student progress will appear on **school report cards** alongside other information about student success and school quality. As a result, families, communities, and policymakers will have more information about student progress than ever before.

The growth measures states have chosen for their accountability systems are not created equal.

While including student growth among a set of robust indicators used to assess school quality is an important step, consumers of this data need to know that states

Longitudinal Data Systems Make Growth Data Possible

Every state has the ability to use the most robust measures of student growth, such as value added and student growth percentile, because states have invested in statewide longitudinal data systems. These systems, which link state education data over time to provide a complete academic history for each student, are essential to calculating and using student growth measures. States have done the hard work to build these systems, establish relationships, and develop policies that support their ability to use this data to answer critical policy questions and support continuous improvement. Using student growth data to understand school quality is one way states are maximizing investments in longitudinal data.

1 California is measuring school-level change in performance over time, which compares the performance of different groups of students (for example, this year's third graders compared to last year's third graders). Kansas is measuring achievement gaps.

are arriving at these indicators differently. States have made decisions about how to define, calculate, and include measures of student learning over time in their accountability systems. Ultimately these decisions have an impact on public understanding of school quality and the way that resources and supports are deployed to schools.

States are using the *same language*—"growth"—but *different methods* to calculate it. While most states are including an indicator of student growth in their accountability systems, each state is measuring different things that lead to different conclusions about student learning over time.

State leaders select indicators by considering what questions they want to answer, state goals, capacity, cost, ease of implementation, and feedback from stakeholders.

In addition to choosing the types of indicators they want to use, states also decide how to calculate, summarize, and interpret them. **These differences matter.**

The differences also mean that, while they might share common building blocks, *every state's approach to measuring student growth for accountability is ultimately different.* Even if states use a common assessment, such as the Smarter Balanced Assessment Consortium exams, the growth data that states report by school cannot be compared across states.

This is complicated. If this data is going to deliver on the promise of giving everyone with a stake in education greater insight into student performance, everyone needs to understand their state's growth measure and how the data can be interpreted.

Measures of Growth in ESSA 101

Measures of student progress referred to as *student growth* provide a richer picture than one-time test scores alone, but different growth measures accomplish different things. Most states are using at least one of five common types of measures of student growth, though each state has applied its own customizations:

(See the table for a high-level comparison of common growth measures, and see the map for state-by-state findings.)

- **Value-added** measures use advanced statistics and multiple data points to evaluate the impact of schools on student achievement.
- **Student growth percentile** measures use advanced statistics and students' past performance data to evaluate how students are performing compared to their academic peers across the state.
- **Value-table** measures place students in performance levels based on their test scores and note when students move between levels year to year. These performance levels are a range of scores determined by the state.
- **Gain-score** measures use a change in test score on a comparable assessment year to year to demonstrate how much a student has learned over a given time period. An additional layer of analysis typically is applied to the test scores to make this measure possible; they are translated into what is called a "scale score," which allows for comparison (for example, if students take different versions of a test).
- **Growth-to-standard** measures evaluate the distance between a student's current performance and a grade-level standard and, based on that student's rate of progress, estimates how soon the student will meet that standard.

Value-added and student growth percentile measures offer insight into whether adults in a school are helping students learn, regardless of student proficiency level. These measures use advanced statistical methods to analyze students' progress compared to what is normal or expected, providing for conclusions about a school's collective contributions to student achievement. This calculation is not simple subtraction; the measures use multistep calculations that build on the capacity of state longitudinal data systems to support analysis of longitudinal student data and on years of work in the field to develop measures of school effectiveness using student performance data.

Value-table, gain-score, and growth-to-standard measures, on the other hand, track students' mastery of state learning goals over time. Generally, these measures track the change in an individual student's test score year to year and compare this change to state-determined expectations or other criteria to draw conclusions for accountability. (See table for a comparison.)

Recognizing the differences between the types of measures and the kinds of insight they offer, 10 states are using multiple growth measures within their accountability systems, giving the states an even more robust picture of student progress.

As 48 states and Washington, DC, have included a measure of individual student growth alongside proficiency to provide a richer picture of student achievement, it is important for consumers to know that the data is not created equal. Because these measures tell distinctly different stories about what is happening with student learning, states must communicate clearly which measures they are using. Each approach comes with tradeoffs for accountability, and states must be thoughtful to address each measure's limitations.

Measures of Growth Used in State Accountability Systems

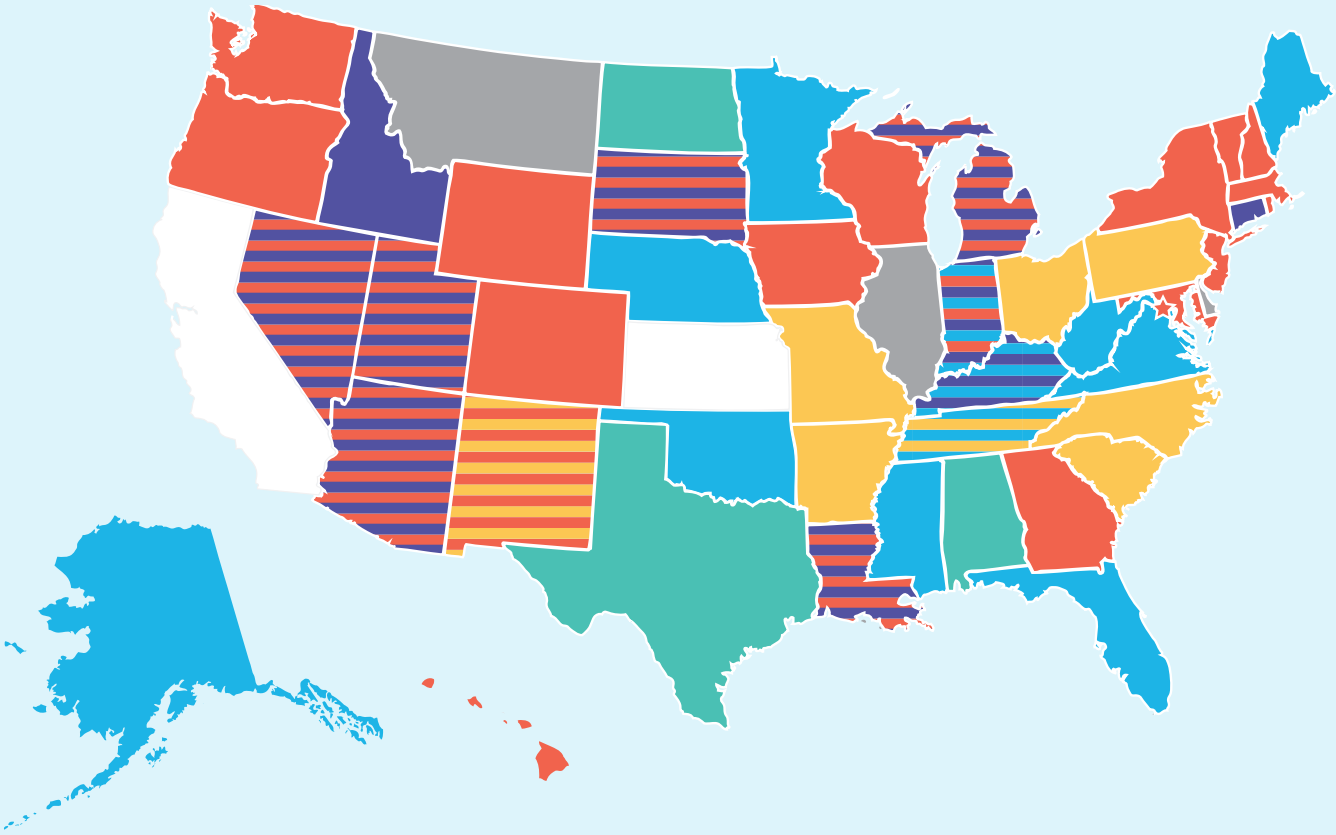
Type	Value Added	Student Growth Percentile	Value Table	Gain Score	Growth to Standard
These measures use individual student performance data to demonstrate . . .	The impact of adults in a school on student achievement.	How schools served students with the same academic starting point.	Student progress.	Student progress.	A student's distance from grade-level learning goals.
They are calculated by . . .	Using advanced statistics to analyze data about Joey's past performance, and sometimes other characteristics that would affect his score, such as income or English language learner status, to predict how Joey will perform on the assessment. Joey's actual growth score is compared to his expected growth score, and the result is attributed his school.	Using data about Joey's past performance, to group Joey with students across the state who got the same or similar score on the same test in the same grade. Joey is then assigned a percentile or rank—between 1 and 99—based on how his current year performance compares to that of his academic peers.	Using a series of performance levels developed by the state that are based on a range of scores (e.g., 1–12 points, 13–24 points, etc.). Joey's test score this year is placed in a performance level and compared to where his score fell last year. These measures note whether Joey moved between levels year to year.	Looking at the change in Joey's test score on a comparable assessment from last year to this year. An additional layer of analysis is applied to the test scores to make this measure possible; they are translated into what is called a "scale score," which allows for comparison (for example, if students take different versions of a test).	Comparing Joey's performance this year to a long-term learning goal. Assuming Joey will improve at the same rate every year, this type of measure estimates whether Joey is on track to achieve that goal within a given timeframe.
The resulting data tells us . . .	Joey's school helped him improve more than other schools helped similar students.	Joey is in the 70th percentile; compared to a group of academically similar peers, he did better than 70 percent of them.	Joey moved from below basic to basic based on the state's cut scores.	Joey scored 50 points higher than last year.	As a 4th grader, Joey is 100 points away from proficiency and is on track to be proficient by the end of the next two years.

Type	Value Added	Student Growth Percentile	Value Table	Gain Score	Growth to Standard
Certain features of this type of measure have implications for accountability. These measures . . .	**Can account for additional student background characteristics** beyond academic performance. **Use advanced statistics** and provide information that is different and complementary to a proficiency measure. **Can be challenging to communicate.** Their sophistication can be challenging to explain to a broad audience. **Do not account for standards.** These measures do not reveal any information about how students are performing relative to grade-level learning goals.	**Use advanced statistics** and provide information that is different and complementary to a proficiency measure. **Use only test scores.** These measures do not account for other factors that contribute to student progress beyond a test score. **Do not account for standards.** These measures do not reveal any information about how students are performing relative to grade-level learning goals.	**Are provided in terms that are more familiar to many stakeholders.** These measures use simple language that is commonly used in education, such as proficiency, which makes interpreting the change in a student's mastery level easier. **Like proficiency measures, depend on state-determined criteria.** Student performance depends on how high or low states have set accountability goals and expectations. **Do not account for school effectiveness independent of student proficiency status.** These measures are unable to provide insight into how the adults in a school contributed to student performance.	**Like proficiency measures, depend on state-determined criteria.** The resulting growth data depends on how student test scores are translated into scale scores, which is part of the analysis that allows for comparison. **Do not account for school effectiveness independent of student proficiency status.** These measures are unable to provide insight into how the adults in a school contributed to student performance.	**Offer a picture of whether students are on track to meet academic benchmarks.** These measures are helpful for offering more information about students who are already performing below a proficiency benchmark. **Like proficiency measures, depend on state cut scores.** Student performance depends on how high or low states have set benchmarks. **Are based on an estimate.** Generally, these measures are based on an assumption that a student will continue to make the same amount of improvement on his or her test scores year after year, regardless of his or her starting point or other characteristics.

Which growth measures are states using?

Based on states' approved ESSA plans, the map below shows the measures states have indicated they will use to evaluate student growth in elementary and middle schools.

The Data Quality Campaign (DQC) reviewed every state's ESSA plan to determine whether the state planned to use a measure of student growth for school accountability. Based on our analysis, and consultation with experts and existing resources, we determined which type of growth measure each state is using. States' choices about which growth measures to use in accountability may evolve or change in the course of implementation.



- **24 states are using student growth percentile.** This measure is the most common.
- **12 states are using a value table.**
- **10 states are using a growth-to-standard measure.**
- **8 states are using a value-added measure.**
- **3 states are using a gain-score measure.**
- **3 states are using a less common growth measure.** Based on our review, these states are using a measure of individual student progress that, as described in the plan, cannot be classified as one of the more common measures above.

- **10 states are using multiple measures.** These states will use more than one measure to evaluate student growth, combining the measures in various ways. Six states are pairing a growth-to-standard measure with a student growth percentile measure, which will give them insight into both how students are performing compared to their academic peers and how they are progressing toward state standards.[2]

2 Washington, DC, Massachusetts, and Maryland are considering this approach; their plans state that they will consider including a growth-to-standard measure in the future in addition to the student growth percentile measure they are already using.

Start Conversations About Your State's Growth Data

Forty-eight states and Washington, DC, have committed to holding elementary and middle schools accountable for improving individual student growth *in addition to* students meeting an academic proficiency benchmark. This data has the potential to shift thinking about school quality and student progress, equipping decisionmakers at all levels with the information they need to continuously improve in support of student success.

But the landscape of student growth measures in accountability systems is complicated. The only way this data will deliver on its promise to complement achievement data and broaden the picture of student success is if it is transparent, well communicated, and readily available to those closest to students so that they can use it to take action.

State policymakers should:

- **Be transparent about what growth measure they are using and why.** Everyone deserves to know how their public schools are doing, and states have a responsibility to present meaningful information to the public. State leaders should build trust by providing the context and rationale for the choices they have made.
- **Ensure that those closest to students have secure access to the data they need about students' academic growth.** None of this work will matter if those closest to students do not have the data they need to move the needle in schools and classrooms. This information will help improve practice only if it is shared with those working closest to students, such as teachers and parents, and with students themselves. States must ensure that educators and decisionmakers at all levels have timely access to useful, secure student growth data they can act on to support all students on their path to success.

State policymakers and advocates should:

- **Start conversations about the state's growth data.** Ask questions to unpack the decisions that shaped the state's growth data. Help others, such as educators and community members, understand what decisions were made.
- **Understand how growth data fits within the context of other accountability measures.** Ensure that all of the data points in state accountability systems work together to create a complete picture of student success and school quality. Ask questions to understand why and how growth is weighted and used in conjunction with other measures of school quality.
- **Observe how these measures impact decisionmaking and whether they evolve in the course of implementation.** Once this data is reported, ask how the state is using these measures to identify challenges and drive improvements and how the state is adjusting these measures in the course of implementation.

Data tells a story, and the story is richer when it helps educators and leaders understand student learning over time, not just at one moment. Collecting and reporting student growth is just the beginning. Everyone using student growth data must understand the value and limitations of the information and, like with all data, consider it within the context of other available information. Doing this will ensure that, together, families, educators, and policymakers can put data to work for students.

Ask Questions About Student Growth Data

Student growth data used for accountability, and therefore to inform decisionmaking about school quality and drive continuous improvement, reflects a series of decisions made by people. To understand what the numbers are telling you and unpack the decisions that shaped your state's growth data, ask questions such as:

- What are state leaders trying to learn about student progress?
- How was the growth measure selected? What were the key considerations?
- What are the expectations for student growth each year? How does the state determine these expectations?
- Does this measure tell us how well students are performing relative to the state's academic standards?
- Is the state measuring growth the same way for both high- and low-performing students?
- Is the state measuring just students' progress, or is it trying to isolate the impact of schools, taking into account the diversity of students they teach?

Appendix

Methodology

DQC employed a systematic analysis to determine which states, as detailed in their ESSA accountability plans, will use a measure of student growth to calculate academic indicators and which specific measure(s) they will use. DQC developed a tracking spreadsheet with a list of common growth measures used for accountability, informed by subject matter experts and existing academic resources, to review each state's approved ESSA plan.

In September 2018, DQC reviewed approved ESSA plans—which live on state websites—for all 50 states and Washington, DC, including Florida's plan once it was approved on September 26, 2018. We read the sections describing the academic indicators used for accountability (in the **ESSA plan template** issued by the US Department of Education: Title I, Part A, Section 4, iv. a & b). DQC analyzed the language in these sections to determine whether states were using a measure of student growth in the calculation of an academic indicator and, if so, which type(s) of growth measure were being described. If the state named the measure, it was classified as that measure. If not, we made our best determination based on our definitions of each type. The culminating step involved categorizing states based on our determinations about their models as well as the total number of measures used in each state.

Acknowledgments

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Characterizations of common growth measures found in this resource were developed in consultation with experts in the field and existing literature on this topic. To learn more, explore the following resources about the application of student growth measures in accountability systems:

- The Council of Chief State School Officers' ***Considerations for Including Growth in ESSA State Accountability Systems*** provides a resource to support state policymakers as they walk through steps for actualizing a growth model for their state accountability systems.
- The Education Trust's ***Individual Student Growth*** factsheet outlines two main approaches to measuring growth and their implications for accountability.
- ***A Practitioners Guide to Growth Models*** provides comprehensive definitions of growth models.

Growth Measures State by State

Findings from DQC's analysis of state-approved ESSA plans:

State	Growth measure state will use for accountability indicator, according to ESSA plan	The state includes a measure of individual student growth in accountability	
		For elementary and middle school	For high school
Alabama	Gain Score	✔	✔
Alaska	Value Table	✔	
Arizona	Multiple Measures: Student Growth Percentile, Growth to Standard	✔	
Arkansas	Value Added	✔	✔
California	None		
Colorado	Student Growth Percentile	✔	✔
Connecticut	Growth to Standard	✔	
Delaware	Other	✔	✔
District of Columbia	Student Growth Percentile	✔	✔
Florida	Value Table	✔	✔
Georgia	Student Growth Percentile	✔	✔
Hawaii	Student Growth Percentile	✔	
Idaho	Growth to Standard	✔	
Illinois	Other	✔	
Indiana	Multiple Measures: Value Table, Student Growth Percentile, Growth to Standard	✔	
Iowa	Student Growth Percentile	✔	✔
Kansas	None		
Kentucky	Multiple Measures: Value Table, Growth to Standard	✔	
Louisiana	Multiple Measures: Student Growth Percentile, Growth to Standard	✔	✔
Maine	Value Table	✔	
Maryland	Student Growth Percentile	✔	
Massachusetts	Student Growth Percentile	✔	✔
Michigan	Multiple Measures: Student Growth Percentile, Growth to Standard	✔	✔
Minnesota	Value Table	✔	
Mississippi	Value Table	✔	✔
Missouri	Value Added	✔	
Montana	Other	✔	
Nebraska	Value Table	✔	
Nevada	Multiple Measures: Student Growth Percentile, Growth to Standard	✔	
New Hampshire	Student Growth Percentile	✔	
New Jersey	Student Growth Percentile	✔	
New Mexico	Multiple Measures: Student Growth Percentile, Value Added	✔	✔
New York	Student Growth Percentile	✔	
North Carolina	Value Added	✔	✔

State	Growth measure state will use for accountability indicator, according to ESSA plan	The state includes a measure of individual student growth in accountability	
		For elementary and middle school	For high school
North Dakota	Gain Score	✔	✔
Ohio	Value Added	✔	✔
Oklahoma	Value Table	✔	
Oregon	Student Growth Percentile	✔	
Pennsylvania	Value Added	✔	✔
Rhode Island	Student Growth Percentile	✔	✔
South Carolina	Value Added	✔	
South Dakota	Multiple Measures: Student Growth Percentile, Growth to Standard	✔	
Tennessee	Multiple Measures: Value Added, Value Table	✔	✔
Texas	Gain Score	✔	
Utah	Multiple Measures: Student Growth Percentile, Growth to Standard	✔	✔
Vermont	Student Growth Percentile	✔	
Virginia	Value Table	✔	
Washington	Student Growth Percentile	✔	
West Virginia	Value Table	✔	
Wisconsin	Student Growth Percentile	✔	
Wyoming	Student Growth Percentile	✔	
	Total	**49**	**20**

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The Data Quality Campaign is a nonprofit policy and advocacy organization leading the effort to bring every part of the education community together to empower educators, families, and policymakers with quality information to make decisions that ensure that students excel. For more information, go to www.dataqualitycampaign.org and follow us on Facebook and Twitter (@EdDataCampaign).