

Introduction

Beginning with the 2015-16 report cards, as legislatively required, the Growth Priority Area calculation has been based on a value-added growth model run by the Value-Added Research Center (VARC) at the University of Wisconsin-Madison. Prior to 2015-16, Student Growth Percentiles (SGPs) were used to measure student growth in schools. Value-added scores and SGPs both measure how rapidly students are gaining knowledge and skills from year to year, focusing on the pace of improvement in student performance. Whereas SGPs allow for a measurement of student growth relative to students with similar achievement histories, value-added models allow for the inclusion of additional demographic information to pinpoint how much a particular school or district contributed to student growth. This FAQ will help guide you through understanding the value-added model used in the report cards and answer commonly asked questions.

Understanding Value-Added

What is value-added?

Value-added is a type of student growth model that measures student improvement on state standardized assessments in comparison to similar students from one year to the next. Like all growth models, value-added models look at growth over time, focusing on the pace of improvement in student performance among similar groups of students. Value-added models try to pinpoint how much a particular school or district contributed to that improvement. Specifically, the value-added model is designed to identify and measure the difference between predicted growth and actual growth for students. This difference is the additional value a school or district adds to changes in student achievement over time.

Value-added quantifies how much growth students make over time after applying statistical controls for factors that are generally beyond a school's influence but may be related to how much growth students make (see below). This is meant to facilitate "apples to apples" comparisons of school performance between schools that often serve very different student populations. The measure reflects growth across the entire spectrum of student performance, regardless of a student's starting achievement level.

What factors into the value-added model?

The value-added model controls for two main factors: (1) prior test scores and (2) demographic characteristics:

1. *Prior test scores:* The value-added model includes English language arts (ELA) and mathematics test scores from the prior year to account for students' starting achievement levels. These prior-year scores are what make value-added a method for estimating growth, rather than just a point-in-time snapshot of student performance.

There are two important things to note about prior scores included.

- a) Whenever possible in the report cards, we use more than one year of prior scores; but for the 2015-16 report cards only one prior year of scores was used, due to the shift from fall to spring testing in the 2014-15 year.
 - b) For the 2016-17 report cards, two years of value-added data are available for many schools. In these cases, both years of value-added scores (calculated as a weighted average of the two year's value-added scores) will be aggregated to a multi-year value-added score calculate these schools' report card Growth scores.
2. *Demographic controls:* The value-added model also controls for certain demographic characteristics that have been found to be correlated with of student performance and growth on state assessments. These characteristics fall under six domains: economically disadvantaged status (ECD), English proficiency, race/ethnicity, disability status, gender, and migrant status. The specific categories within each domain are displayed in the table below.

Student Characteristic Controls						
	ECD	English Proficiency	Race/Ethnicity	Disability Category	Gender*	Migrant*
Categories included in Value-Added Model	Yes	1 - ELL/LEP Beginning Preproduction	American Indian/Alaska Native	Emotional/behavioral disability (EBD)	Male	Yes
	No	2 - ELL/LEP Beginning Production	Asian	Learning or intellectual disability (LD/ID)	Female	No
		3 - ELL/LEP Intermediate	Black/African American	Autism (A)		
		4 - ELL/LEP Advanced Intermediate	Hispanic/ Latino	Speech/language disability (SL)		
		5 - ELL/LEP Advanced	Two or more races	Other disability type		
		6 - Formerly ELL/LEP, now fully English proficient	Native Hawaiian/Pacific Islander	No disability		
		7 - Fully English proficient, never ELL/LEP	White			

* Gender and migrant status are included as controls in the value-added model, though they are not subgroups reported on or otherwise included in Wisconsin's state accountability system.

How does the value-added calculation work?

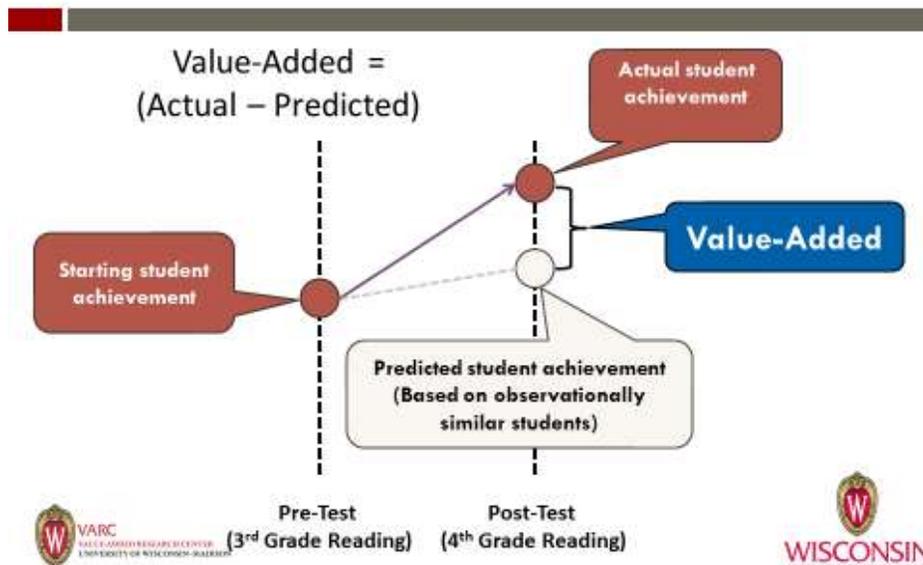
Value-added uses a student's prior year test scores as the starting point, controlling for demographic characteristics, and compares the student's performance to others like him or her. Value-added models predict what a student's post-test score would be (his or her *predicted* growth), assuming that the student was in the average school, and compares it to his or her *actual* growth over time.

In short, value-added works as such:

- Value-added starts with one (or more, if available) pre-test scores, such as a 3rd grade ELA score, to generate predictions of how much growth a student is likely to make based on his or her prior test score history. When a second post-test score, such as a 4th grade ELA score, is available, the actual scores of students within a school are compared to their predicted scores.

- If, collectively, the school's actual scores are higher than predicted scores, we call this high value-added, meaning that the school produced more growth than schools that serve similar student populations.
- The value-added model also includes a statistical correction for natural variation in scores on standardized assessments. Such fluctuation in scores is especially common among students with very low or very high scores.

Value-Added: A Visual Representation



Isn't it harder to demonstrate higher test score growth between some grades than others?

Yes, achieving one test score point of growth is more difficult in some grades than others, which puts growth scores for different grades on different scales. The value-added model standardizes test scores across grades to facilitate growth comparison between different grades. Standardization brings all grades onto a shared scale. Standardized value-added scores are calculated by dividing the raw value-added score by the standard deviation of value-added scores across districts or schools respectively. This does not affect the statistical power of the model or the ranking of estimated school or district effects.

For a more detailed description of the inner workings of the value-added model used in Wisconsin's accountability system, please see the [Value-Added Technical Manual](#).

Value-Added in the Growth Priority Area

How are value-added scores used in the report cards?

The Growth Priority Area provides a single score that characterizes the growth of students in a particular district or school regardless of their prior achievement levels. In the Report Card Detail, two scores are reported: a Value-Added Score, which is determined by VARC, and a Growth Score, which is produced by DPI based on the VARC value-added scores. Value-added calculations for 2016-17 report cards are based on 2015-16 and 2016-17 Forward results for both English language arts (ELA) and mathematics. Two

years of value-added scores (results from 2015-16 and 2016-17 value-added calculations) are used in Growth scoring on report cards for schools with at least two years of value-added data.

How does the Value-Added Score compare to the Growth Score?

The Value-Added Score and Growth Score are related, in that the Value-Added Score is used to determine the Growth Score. DPI takes the value-added scores that are on a 1 to 5 point scale, provided by VARC, and transforms them onto a 0 to 100 point scale to align with the other Priority Areas (see the [Report Card Technical Guide](#) for details on the score conversion). The value-added score DPI receives is based on a weighted average of 2015-16 value-added scores and 2016-17 results, with the current year weighted more than the prior year's value-added. A school or district's Growth Score is then used in calculating its Overall Score.

How is the Value-Added Score interpreted?

The best way to understand your value-added score is by comparison to the statewide mean score and the spread of value-added scores across Wisconsin schools or districts. In short, anything above the statewide mean of 3 indicates better than average growth; anything below 3 indicates lower than average growth. Value-added scores generally range from 1 to 5, with 3 being average. While rare, a value-added score can extend below 1 or above 5 when growth is much higher or lower than expected. Here are some basic interpretive guideposts:

- The value-added scale ranges from approximately 0 to 6.
- The state average is set at 3.
- Most schools fall between 2 and 4.
- Nearly all schools fall between 1 and 5.
- Only about 0.5% of schools (and no districts) have an estimate less than 0 or more than 6.

Since value-added calculations measure the difference between the predicted growth and actual growth of students, a Value-Added Score of 3 suggests that student growth in a school or district is on par with what one might expect based on the average school in the state and the prior achievement and select characteristics of these students. Scores higher than 3 indicate that a school or district has high value-added, meaning that the value the school or district provided to student growth was higher than predicted. Value-added scores less than 3 are indicative of low value-added.

Are district value-added scores averages of their schools' value-added scores?

No. Not all schools in a district are of a similar size or student composition, so merely averaging school value-added scores to produce a district-value added score may unfairly weight some schools' value-added scores more than others. The best way to measure the growth of all students in a district, giving equal weight to each student, is to treat districts like one big school containing all students. This is what is done for the report cards, so you should not attempt to recalculate a district value-added score based on the scores of individual schools.

Do value-added scores in the Growth Supplemental Data affect the Growth Priority Area score?

No. The group-level value-added scores provided in the Growth Supplemental Data of the Report Card Detail are provided for informational purposes only. They are not used to determine the Growth Priority Area score. These supplemental value-added scores are calculated when 10 or more students are included in a group, though groups with less than 20 students will not have their scores shown in the report cards.

Common Questions

Which students are included when calculating the value-added score for my school or district?

Only students identified as full academic year (FAY) students for your school or district are included in the value-added calculation. Value-added scores for the 2015-16 school year include FAY students who took both the Badger Exam in 2015 and the Forward Exam in 2016; scores for the 2016-17 school year include FAY students who took the Forward Exam in both 2016 and 2017.

- Students must have prior year scores in both ELA and mathematics to be included in each school year's value-added score, as these scores serve as pre-test measures. In addition, the two test scores must be from consecutive grades.
- Students' pre-test scores may come from another school. Students who are FAY and have test scores for both years are included in the value-added calculation for the school at which they took the test in the school year for the value-added score, regardless of where they took the test in the prior year.
- Students who took the DLM either in the current Report Card year or the prior year are not included in the value-added calculations at this time.

How do value-added scores play out for schools with various grade ranges?

Value-added calculations are complex. To help clarify, below are a few case types that may help illustrate how the calculations work.

1. *K-3 schools:* Schools that only serve students in kindergarten through grade 3 will not receive a value-added score, as students only begin to participate in state assessments in grade 3. No prior-year test data are available against which to compare the performance of students in grade 3.
2. *Grade 5-8 schools:* All students who are school FAY and take the state assessment in a school serving grades 5 through 8 are included in that school's value-added calculation. The prior-year comparison scores for grade 5 students come from grade 4 at their previous school but are attributed to the school in which they were FAY for grade 5.
3. *Grade 9-12 high schools:* High schools with only grades 9 through 12 will not have a value-added score because there are no consecutive grades in which students take a state assessment used for accountability purposes (only 11th graders take the ACT).
4. *District FAY vs. school FAY:* Students who are not FAY at any one school but who are FAY in the district are included in calculating the district's value-added score.

Is DPI considering adding ACT Aspire results to value-added calculations in the future?

Yes. We have received a lot of requests to include ACT Aspire in the report cards. DPI is exploring the technical aspects of including ACT Aspire data in report card calculations, including the possibility of measuring high school growth using ACT Aspire

Why doesn't my school or district have a Growth score?

There are two primary reasons why your school or district would not have a value-added score and thus no Growth Priority Area score:

1. There are no test score data available for students in your school from the prior year. This is true of any high school serving grades 9 through 12, because the only state assessment currently used for accountability purposes is the ACT in grade 11. It is also true of K-3 schools, since, in such schools, only grade 3 students take state assessments and have no prior test data available for previous grades.
2. The number of students that could be included in value-added calculations at your school is less than DPI's minimum group size requirement of 20 for inclusion in the report cards.

Keep in mind it doesn't hurt your overall Report Card score if you don't have a Growth score. In such cases, the existing Priority Area scores are weighted to account for the lack of a Growth score, which is not assigned a weight. To get some idea of how your school or district is performing over time, you can look at the Closing Gaps Priority Area, though this compares one cohort of students to the next rather than reflecting growth of any one cohort over time. We also encourage you to utilize your local assessments to measure growth.

Where can I find more information on value-added?

The [Value-Added Research Center](#) at the [Wisconsin Center for Education Research](#), which has a long history of working with educators in Wisconsin and around the nation, works with DPI to provide value-added data. They have a number of valuable resources to help educators understand value-added:

- VARC Tutorials
<http://varc.wceruw.org/tutorials/>
- VARC Professional Development
<http://varc.wceruw.org/what-we-do/professional-development.aspx>

The resources provided above can be used to build a general understanding of what value-added is and how it works. However, these resources are not specific to the Accountability Report Cards. For specifics on the calculations used in the Accountability Report Cards, please refer to the Value-Added Technical Manual (<http://dpi.wi.gov/accountability/resources>).