Overview

What is Value-Added?
The Value-Added metric measures the impact of a school or teacher on the academic growth of his/her students from one year to the next. The CPS metric is a relative growth metric, meaning it measures the growth of a school or teacher’s students compared to the growth of similar students across the District. This is a nationally-recognized way of measuring school effectiveness. The CPS Value-Added model was developed by experts at the University of Wisconsin.

The Value-Added metric measures growth at the school and teacher level on the ISAT and NWEA MAP tests, which are given in grades 3-8 and 2-8, respectively. This metric is currently used only for elementary schools.

What is the purpose of the Value-Added metric?
CPS recognizes that it has students at all levels of attainment and that factors outside of a school’s and/or teacher’s control impact academic growth. The goal of the Value-Added metric is to measure the school’s and/or teacher’s impact on student growth independent of prior performance and student factors.

Measuring Growth

How is academic growth defined?
There are multiple ways of measuring growth, of which Value-Added is one option.

A simple growth model evaluates the difference between a student’s scale score in one year and the next. This type of model ignores the fact that one scale score point of growth may be more difficult to obtain at higher levels of pretest score.

A threshold model calculates the percentage of students at a school that meet a given growth target. This allows for growth targets to be set with the student’s pretest score in mind, but does not recognize the amount of growth individual students attain.
The **Value-Added growth model** improves upon these models by measuring growth at all levels of prior attainment (pretest score) and comparing that growth to the growth of similar students throughout the District. Value-Added recognizes that the student growth is influenced by factors outside the teacher and school’s control, such as the student’s prior level of performance and other student factors. The Value-Added model attempts to control for these external factors and isolate the school or teacher’s impact on student academic growth. In addition, this model differentiates between students that grow a small amount and those that grow by a larger amount.

**How does the value-added metric measure a school or teacher’s impact on academic growth?**
Conceptually, the Value-Added metric represents the difference between a school or teacher’s average student growth on the ISAT or NWEA MAP and the average growth of similar students across the District. This methodology accounts for differences in the student populations that schools serve and adjusts the score based on a comparison with the growth of other similar students.

**How is the growth of similar students measured?**
The Value-Added model utilizes a statistical regression framework that models the relationship between student-level factors, schools, and student test scores. The methodology identifies how much each student-level factor impacts growth so as to isolate the overall impact of a school or teacher on student growth. A statistical model is the standard way to compare students along multiple dimensions at the same time.

**What student-level factors does the value-added methodology account for?**
Students are compared along the following dimensions:

1. Prior reading score
2. Prior math score
3. Grade Level
4. Gender
5. Race/Ethnicity
6. Low-Income Status
7. ELL Status*
8. IEP Status**
9. Homelessness
10. Mobility

*ELL status is differentiated by ACCESS score.
**IEP status is differentiated by type of IEP (e.g. the impact of a severe and profound disability is considered separate from the impact of attention deficit disorder).

**Who are the students to which my students are being compared?**
A regression model does not use a comparison group. The growth of students for whom a school or teacher provides instruction is actually being compared to the growth of all students District-wide. But because the regression model controls for student-level factors, growth differences between groups of students (such as the average difference between ELL and non-ELL students) is controlled for. This has the effect of comparing a school or teacher’s students with similar students District-wide without having to identify individual students that match on all ten student-level factors.

**Why should a statistical model be trusted?**
Value-added is a nationally-recognized way of measuring growth, and it is utilized in multiple districts nationwide. At CPS, the value-added metric has been developed in collaboration with academic experts from the Value-Added Research Center at the University of Wisconsin with advisement from an external group of academic and education experts.

**Is there an expected level of growth for individual students?**
No. Value-added is an aggregate measure and does not set growth standards for individual students. Value-Added is not meant as a diagnostic tool for individual students; it is intended to measure the impact a school or teacher has on the growth of all of his/her students.
Understanding the Value-Added Score

How are Value-Added scores reported?
Value-Added scores are reported as a number on a standardized scale. These scores represent the number of standard deviations the score is away from the District average. A standard deviation is a statistical measure of distance from the mean (i.e., how much a score deviates from the mean).

Some features of the standardized scale include:

- A score of zero is the district average. A score near zero means that students at the school are growing at about the same pace as similar students throughout the District.
- A positive score means that the school is above the mean; students are growing at a faster pace than similar students.
- A negative score means that the score is below the mean; students are growing at a slower pace than similar students.
- About 68% of scores fall within 1 standard deviation (between -1 and 1).
- About 95% of scores fall between -2 and 2.
- About 99% of scores fall between -3 and 3.

Why is a standardized scale used?
Standardization is a common statistical process that allows us to compare numbers on different scales. In this case, it is used to convert ISAT or NWEA scale score points to a standard scale. This is important because one scale score point of growth is more difficult to achieve at some grade levels than others. For example, one ISAT scale score point of growth between 3rd and 4th grade is approximately equal to 0.7 ISAT scale points of growth between 7th and 8th grade (based on math scores between 2009 and 2010). Standardization allows us to more precisely compare growth across grade levels.

How does the model handle student-level factors that are difficult to measure?
It is recognized that certain factors influencing student growth, such as family circumstances, are difficult to measure. In addition, the Value-Added model is a statistical estimation of the school’s impact on student learning and therefore contains a certain amount of random error. For these reasons, the Value-Added model includes confidence intervals.

A confidence interval is a range of scores around the Value-Added estimate. We are 95% confident that the true Value-Added score falls within the confidence interval. The confidence interval depends on the size of the group being measured, meaning larger samples will yield smaller confidence intervals.

How do I interpret the confidence interval?
If a confidence interval does not include zero, we say that the score is statistically significant, meaning we are 95% confident that the score is different from zero. A color is associated with each score based on the statistical significance:

- Green: the entire confidence interval is above zero. The score is positive and statistically significant.
- Yellow: the confidence interval includes zero. The score is not statistically different from zero.
- Red: the entire confidence interval is below zero. The score is negative and statistically significant.
Using the Value-Added Metric

What information will the schools and teachers receive?
Currently, Value-Added reports provide schools with information on:

a) **School-level Value-Added:** The amount of relative growth occurring across a school. This represents a school’s impact on student growth.

b) **Grade-level Value-Added:** The amount of relative growth occurring across grade levels. This represents a school’s impact on student growth within a given grade level.

c) **Student Group Value-Added:** This compares the growth of students in a student group within the school with the growth of similar students across the District. For example, this will estimate the school’s impact on students with low prior performance versus students with middle or high prior performance.

d) **Teacher-level Value-Added (available only on REACH Students reports):** This will estimate the impact of individual teachers on student growth, both by subject and by grade level.

How can schools utilize the value-added information?
Value-Added information can be a conversation starter with teachers, school leadership and grade-level teams. In particular, Value-Added information can be utilized as one piece of information to help identify best practice areas or areas needing targeted support. After multiple years of data are available, the metrics may also be utilized as one piece of data which illustrates the impact of decision-making on student growth.

How will the value-added metric be used at CPS?
In addition to providing schools with additional information, the value-added metric is the district measure of growth at the elementary school-level. Three specific uses of the school-level value-added metric are: 1) As an additional piece of data in the school improvement planning process to help principals and District leadership make programmatic and instructional decisions; 2) As one component of the evaluation of school performance on the CPS Performance Policy; and 3) As one component for measuring teacher effectiveness under the REACH Students teacher evaluation system.

Additional Details

Which students are included in the value-added analysis?
CPS students making normal grade progression who took the ISAT or NWEA in both testing periods are included in the analysis. For the ISAT model, students in ELL Program Years 0-5 at the time of either the pretest or posttest are excluded. For the NWEA model, students with an ACCESS Literacy score less than 3.5 at the time of either the pretest or posttest are excluded, as well as students with an IAA indicator on their IEP.

What about students who were mobile during the school year?
The academic growth for mobile students will be apportioned amongst all schools that they attended, based on the length of attendance in each school between the two tests. For example, a student who spent one-half of the school year at School A and the other half at School B would be included in the Value-Added calculation for both schools, but would be weighted as one-half of a student in both calculations.