Pennsylvania Value-Added Assessment System (PVAAS)

Guide to PVAAS <u>Public</u> Reporting Release Date: September 29, 2011



PVAAS Data Supports:

- Raising Achievement
- Closing Achievement Gaps
- Decreasing Dropouts
- Increasing College Readiness

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Student Achievement v. Student Progress

- Student achievement and student progress are complementary but are different types of academic measures.
- Student Achievement
 - The final result of an academic experience
 - \circ $\;$ Highly correlated with demographic factors, e.g., socioeconomic status
 - Affected by factors outside the school
- Student progress
 - Not correlated with demographic factors
 - \circ $\;$ Dependent on what happens as a result of schooling $\;$
 - \circ $\;$ This is the concept underlying value-added analysis and reporting

Achievement AND Progress

- Achievement
 - \circ $\;$ Measures a student's performance at a single point in time $\;$
 - o Highly correlated with a student's demographics
 - Compares student performance to a standard
 - Critical to a student's post-secondary opportunities
- Progress
 - Measures a student's progress across time/years
 - o Not related to a student's demographics
 - \circ $\;$ Compares student performance to his/her own prior performance
 - Critical to ensuring a student's future academic success
- By measuring students' academic achievement AND progress, schools and districts will have a more comprehensive picture of their effectiveness in raising student achievement.

The Concept of Value-Added

To understand the concept of value-added analysis and reporting, imagine a child's physical growth curve. Every year, a child stands up against the wall; the parent puts a ruler on his head and measures the child's height at ages 2, 3, 4, and so on.

From these data points, the parent can construct a graph to illustrate the <u>height</u> of the child, as you see here, and then use these points to construct a graph of the <u>growth</u> of the child. Often, parents discover that this growth curve does not resemble the smooth line seen on a pediatrician's chart. Instead, there are "dimples" and "bubbles" in this constructed graph. Children may have growth spurts. In addition, errors of measurement are possible: the child may not have stood straight or the parent did not hold the ruler level.

Now apply the same process to education. This graph measures <u>growth</u> for the same group of students for each grade. Imagine that a school has been testing each student annually in math and that the scores from these tests are used to construct each student's math growth profile. The curve for any <u>group</u> of students will likely exhibit a pattern of dimples and bubbles similar to the physical growth curve for an individual child.

However, if by aggregating the information on many students we discover a dimple effect occurring in the 4th grade math at a specific school, then the dimple is evidence that we may need to examine the "standards-aligned system" for 4th grade math.

Value-added follows the progress of students over time to estimate their growth during a year of schooling. With valueadded assessment, educators get a sense of whether they are making appropriate academic progress for their students.

PVAAS Data Provides Information to:

- -Raise Achievement -Close Achievement Gaps
- -Decrease Dropouts
- -Increase College Readiness



More specifically, value-added does this by following the same students over time and then looking at the progress of groups of students to make an estimate of educational effectiveness.

- These schooling influences accumulate across the years and have been shown to measurably affect students' attainment at least four years beyond the grade in which the student encountered them.
- Without a value-added metric for measuring effective schooling, districts/schools have no way of knowing if they are capitalizing on academic growth opportunities for all students.
- Student opportunities to progress each year must be maximized to allow more students to enroll in and be academically prepared for college and a career.

What is Value-Added?

- Value-added is a statistical analysis used to measure the district's/school's impact on the academic progress rates of groups of students from year-to-year.
- Conceptually and as a simple explanation, a value-added "score" is calculated in the following manner:
 - Growth = Current Achievement/current results compared to all Prior Achievement/prior results; with achievement being measured by a quality assessment such as the PSSA.
 - Note: Simple models (comparing two scores) to value-added assessment yield results that are confounded by measurement error.
 - The methodology used in Pennsylvania for value-added assessment is based on the EVAAS methodology. This methodology has been nationally peer reviewed and published.
 - Pennsylvania's implementation of EVAAS is called the Pennsylvania Value-Added Assessment System (PVAAS).

The Benefits of Value-Added

- Value-added offers an objective, more accurate way to measure student progress and the influence districts/schools have on students' educational experiences. With this information, educators are better able to:
 - Monitor the progress of all groups of students from low-achieving to high-achieving, ensuring growth opportunities for all students
 - Measure student achievement as a result of the impact of educational practices, classroom curricula, instructional methods, and professional development
 - Make informed, data-driven decisions about where to focus resources to help students make greater progress and perform at higher levels
 - Modify and differentiate instruction to address the needs of all students
 - Align professional development efforts in the areas of greatest need
 - Network with other districts/schools that may be yielding different growth results
 - \circ $\;$ Identify best practices and implement programs that best meet the needs of their students

A Look at PVAAS Reports:

NEW! Web-based Scatter Plots District Value-Added Summary Report School Value-Added Summary Report School Search

The report legends are the same for grades 4-8 reading and math, and 9-11 reporting- reading, math, science and writing. While the legends and color codes are the same, the statistical process behind the reporting uses a different statistical methodology for each grade range. Therefore, this guide provides additional detail for each set of reports - Grades 4-8, Reading and Math; and Grades 9-11 Science, Writing and Reading and Math reporting.

New! Web-based Scatter Plots

The NEW Scatter Plot Report visually displays the growth and achievement of districts or schools. This report is useful in assisting a district or school to ascertain a better picture of student performance by providing information on both achievement (where students are) and growth (where students are headed).

What do we need to know about this report?

If you set the scatterplot axes for PVAAS Growth Index and % Proficient or Advanced, below is how you would interpret the scatter plot:

- If a school's dot is in the first quadrant, this indicates that the tested students in this school have made adequate achievement and positive growth. The farther the school's dot is away from the intersection of the boundaries, the higher the achievement and/or the greater the evidence of growth. Some apply the term "Excelling" to schools in this quadrant.
- 19 L. **Higher Achievement** lent or Advanced 75 **Higher Growth** Profit 24 Higher Achievement Proficient or Advanced Lower Growth 25 3 Lower Achievement Lower Growth ' PVAAS Growth Index Proficient or Adv Lower Achievement Higher Growth '-

PVALS Growth Inde

- If a school's dot is in the second quadrant, this indicates that the school made adequate achievement but negative growth. Negative growth should be of great concern since continued adequate achievement may be in jeopardy. Some apply the term "Slipping" to schools in this quadrant.
- 3. If a school's dot is in the third quadrant, this indicates that the school made below adequate achievement and negative growth. This situation suggests that substantial investigation and remediation is necessary since the students are not achieving and are headed in the wrong direction. Some apply the term "Underperforming" to schools in this quadrant.
- 4. If a school's dot is in the fourth quadrant, this indicates the school did not make adequate achievement; however, their growth is positive. This situation may indicate that interventions implemented are producing positive results. Some apply the term "Improving" to schools in this quadrant.

Note: There are additional selections available for each axis of the scatter plots. The user defines the axes on the scatter plots.

District Value-Added Summary Report for Grades 4 through 8 for Reading and Math

The District Value Added Summary Report provides educators with an overall look at the progress, or growth, of groups of students by subject within each district and charter school across the entire Commonwealth. This report indicates if the district/charter school met or exceeded the standard for PA Academic Growth in grades 4-8 Reading and/or Math.

District Name		Growth Measur (Math) Re	e over Grades lative to
District Name		Growth Standard	State
Sample District	2011	0.8	-0.5
Sample District	3-Yr-Avg	2.6	1.3
Sample District	2011	1.5	0.1
Sample District	3-Yr-Avg	2.4	1.1
Sample District	2011	-5.6	-6.9
Sample District	3-Yr-Avg	-2.8	-4.1
	2011	3.1	1.8
Sample District	3-Yr-Avg	1.9	0.6
Sample District	2011	1.5	0.1
Sample District	3-Yr-Avg	2.8	1.5
Significant evidence that the district excee	ded the sta	ndard for PA Acade	mic Growth
Moderate evidence that the district exceed	ed the stan	dard for PA Acader	nic Growth
Evidence that the district met the standard	for PA Aca	demic Growth	
Moderate evidence that the district did not	meet the st	tandard for PA Acad	demic Growth
Significant evidence that the district did not	t meet the :	standard for PA Aca	ademic Growth
The district does not have data for this test	and subject	t in the most recen	t year.

The two levels below the Growth Standard (Yellow and Red) can be understood using a medical analogy:

- A Yellow, or Y, is comparable to taking your temperature and recording a fever of approximately 100.5°F. It is
 unlikely that you would go to the emergency room with that temperature but this may warrant a call to the
 doctor's office. We say that a Yellow indicates moderate evidence that the district did not meet the standard for Pa
 Academic Growth.
- A Red, or R, indicator requires immediate attention, comparable to a temperature of perhaps 104.0°F. This temperature provides significant evidence that the patient needs immediate attention, just as a Red indicator provides significant evidence that the district did not meet the standard for PA Academic Growth.

In this same way, the Light Blue, LB, and Dark Blue, DB, indicators signify moderate and significant evidence of exceeding the standard for PA Academic Growth.

- The numbers are reported in NCE Normal Curve Equivalent (NCE) units. It is necessary to convert PSSA scaled scores to a common scale (NCEs) so a growth measure can be yielded. The use of NCEs allows PSSA scores in any school year and grade level to be compared across years.
- The value displayed next to each district for the most recently tested year, is the *Growth Measure* for the specified grades and subject. The *Growth Measure*, displayed across grades, indicates how much movement a group of students has made on the NCE scale (that ranges from approximately 1 to 100) as compared to the previous year. A *Growth Measure* of 0 indicates that this group of students has <u>maintained</u> its position from the previous year in the statewide distribution of PSSA scores (baseline of 2006); this group has met the Standard for PA Academic Growth.
- If a Green (G), Light Blue (LB), or Dark blue (DB) rating is listed for some schools but not others, it is beneficial for all schools to dig deeper and begin conversations involving questions such as, "How has this result been achieved?" and "How can we learn from this school to impact growth in other schools in our district?"

District Value-Added Summary Report for Science, Writing, and Grade 9-11 Math and Reading

The District Value Added Summary Report provides educators with an overall look at the progress, or growth, of students by subject within each district, charter schools and CTC across the entire Commonwealth. This report indicates if districts, charter schools or CTCs met or exceeded the standard for PA Academic Growth in science, writing and grade 9-11 math and/or reading.

District Name		Growth Measure	
School District A	2010	55.3	
School Distilict A	2011	64.6	
School District B	2010	-39.0	
	2011	-14.4	
School District C	2010	-48.3	
	2011	-40.1	
School District D	2010	60.5	
	2011	43.7	
School District F	2010	11.3	
	2011	13.8	
School District F	2010	-19.4	
School Biotherr	2011	38.1	
Significant evidence that the district exceeded the	e standa	ard for PA Acade	mic Growth
Moderate evidence that the district exceeded the	standa	rd for PA Acaden	nic Growth
Evidence that the district met the standard for PA	Acade	mic Growth	
Moderate evidence that the district did not meet t	he stan	dard for PA Acad	lemic Growth
Significant evidence that the district did not meet	the sta	ndard for PA Aca	demic Growth
 The district does not have data for this test and s	ubject i	n the most recer	nt year.

- The data on the PVAAS District Value-Added Summary reports for Science, Writing, and Math and Reading, Grades 9-11, are expressed in PSSA scaled score points.
- The District Value Added Summary Report provides educators with an overall look at the progress, or growth, of grade level groups of students by subject within each district/charter schools/CTC across the entire Commonwealth. This report indicates if there is significant or moderate evidence that a district met or exceeded the standard for PA Academic Growth in science, writing and grade 9-11 math and/or reading. The numbers displayed next to each district/charter school/CTC for the most recently tested year, is the *Growth Measure*.
- The *Growth Measure* is an estimate of a district's influence on a group of students' academic progress. This measure is the difference between the students' actual scores and their predicted scores. If students score as expected (i.e., students' actual scores are equal to their predicted scores), the estimated Growth Measure would be 0. The value of 0 indicates the group met the standard for PA Academic Growth.

School Value-Added Summary Report for Grades 4 through 8 for Reading and Math

The School Value Added Summary Report provides educators with an overall look at the progress, or growth, of grade level groups of students by subject within each school across the entire district/LEA/charter school.

	School Name		Growth Measur (Math) Re	re over Grades elative to
	School Malile		Growth Standard	State
	Sample School	2011	-0.4	-0.6
	Sample School	3-Yr-Avg	-0.7	-1.0
	Sample School	2011	-2.0	-4.0
Sample Sc	Sample School	3-Yr-Avg	1.7	-0.3
	Sample School	2011	5.4	3.4
	Sumple Senoor	3-Yr-Avg	4.1	2.1
	Significant evidence that the school exceeded the	he standard	for PA Academic C	Growth
	Moderate evidence that the school exceeded the	e standard f	for PA Academic G	rowth
	Evidence that the school met the standard for P	A Academi	c Growth	
	Moderate evidence that the school did not meet	the standa	rd for PA Academic	Growth
	Significant evidence that the school did not mee	t the stand	ard for PA Academi	c Growth
	The school does not have data for this test and	subject in t	he most recent year	r.

The two levels below the Growth Standard (Yellow and Red) can be understood using a medical analogy:

- A Yellow, or Y, is comparable to taking your temperature and recording a fever of approximately 100.5°F. It is unlikely that you would go to the emergency room with that temperature but this may warrant a call to the doctor's office. We say that a Yellow indicates moderate evidence that the school did not meet the standard for Pa Academic Growth.
- A Red, or R, indicator requires immediate attention, comparable to a temperature of perhaps 104.0°F. This temperature provides significant confidence that the patient needs immediate attention, just as a Red indicator provides significant evidence that the school did not meet the standard for Pa Academic Growth..

In this same way, the Light Blue and Dark Blue indicators signify moderate and significant evidence of exceeding the standard for PA Academic Growth.

- The numbers are reported in NCE Normal Curve Equivalent (NCE) units. It is necessary to convert PSSA scaled scores to a common scale (NCEs) so a growth measure can be yielded. The use of NCEs allows PSSA scores in any school year and grade level to be compared across years.
- The value displayed next to each school for the most recently tested year, is the *Growth Measure* for the specified grade and subject. The *Growth Measure*, across grades indicates how much movement a group of students has made on the NCE scale (that ranges from approximately 1 to 100) as compared to the previous year. A *Growth Measure* of 0 indicates that this group of students has <u>maintained</u> its position from the previous year in the statewide distribution of PSSA scores (baseline of 2006); this group has met the standard for PA Academic Growth.
- If a Green (G), Light Blue (LB), or Dark blue (DB) rating is listed for some schools but not others, it is beneficial for all schools to dig deeper and begin conversations involving questions such as, "How has this result been achieved?" and "How can we learn from this school to impact growth in other schools in our district?"

School Value-Added Summary Report for Science, Writing, and Grade 9-11 Math and Reading

The School Value Added Summary Report provides educators with an overall look at the progress, or growth, of groups of students by subject within each school across the entire district/LEA/charter school/CTC. This report indicates if schools met the standard for PA Academic Growth in science, writing and grade 9-11 math and/or reading.

	School Name		Growth Measure
	Ligh School	2010	8.7
	High School	2011	10.5
ific	ant evidence that the school exceeded the stan	dard fo	r PA Academic Gro

Significant evidence that the school exceeded the standard for PA Academic Growth
Moderate evidence that the school exceeded the standard for PA Academic Growth
Evidence that the school met the standard for PA Academic Growth
Moderate evidence that the school did not meet the standard for PA Academic Growth
Significant evidence that the school did not meet the standard for PA Academic Growth
 The school does not have data for this test and subject in the most recent year.

- The Growth Measure is an estimate of a school's influence on a group of students' academic progress.
- The data on the PVAAS School Value-Added Summary reports for Science, Writing and Math and Reading, Grades 9-11, are expressed in PSSA scaled score points.
- The School Value Added Summary Report provides educators with an overall look at the progress, or growth, of grade level groups of students by subject within each school across the entire district/LEA/charter school/CTC. This report indicates if schools met or exceeded the standard for PA Academic Growth in science, writing and grade 9-11 math and/or reading. The numbers displayed next to each school for the most recently tested year, is the *Growth Measure*.
- This measure is the difference between the students' actual scores (Avg PSSA Score) and their predicted scores (Avg Predicted PSSA Score) If students score as expected (i.e., students' actual scores are equal to their predicted scores), the estimated Growth Measure would be 0. The value of 0 indicates the group met the standard for PA Academic Growth.

School Search

Users can find and view the achievement and progress of public schools to which they have access and search for similar schools based on grade levels tested and various demographics.

The first table displayed on the top portion of the screen provides the selected school's demographics, including the percentage of PSSA tested Economically Disadvantaged students, Minority (non-Caucasian) students, Limited English Proficient students, and Special Education students. The table also lists the tested grades served by the selected school and, for high schools the graduation rate.

The second table displayed on the bottom portion of the screen provides a list of schools to which you have access that meet your search criteria. This table includes for each school the Average Growth Index across PSSA tested grade levels served in the school, as well as achievement and growth information for each grade level

Reference S	chool	2011 Sc	cho	ol Sear	ch 🥨				
School in Sch	ool District								
		s	chool	Information					
	Min DS	SA Tested Grade	6	Max BSSA Tas	tod Grada	2			
	% Test	ed Economically Disady	22	% Tested Limite	ed English Proficiency	1			
	% Test	ed Minority	8	% Tested Spec	al Ed	17			
	% Grad	luation Rate	N/A			<u> </u>			
Comparison	Schools								
Companoon	Concolo								
For Pennsylva	nia System	of School Asses	sme	ent (PSSA) I	Math				
All schools in I	Pennsylvan	ia with at least o	ne te	ested grade	in common w	ith the	refer	rence	scho
		re	strict s	search 🕜					
			strict s	search	hoolo				
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tested and served in the school. Note: The achievement and growth information is based only on PSSA, PSSA_M and PASA so as to match AYP results.

- The Average Growth Index is a measure of student progress across the tested grade levels in a school. This index is a value based on the Growth Measure over grade levels and its relationship to the standard error so that comparison among schools is meaningful. PVAAS utilizes this index (based on the standard error) to allow for a view across schools. If the standard error is not accounted for, users might get a skewed picture of the relative effectiveness of different schools.
- For Math and Reading in grades 4 through 8, this index is a value based on the average growth across grade levels divided by its Standard Error, so that comparison among schools is meaningful. For Grades 9-11 Science, Writing, and Math and Reading, the Average Growth Index is the Growth Measure for the most recent year divided by its Standard Error so that comparison among schools is meaningful.
- Average Growth Index (AGI) = 0: The average achieving student in this school met the standard for PA Academic Growth.
- Average Growth Index (AGI) > 0: The average achieving student in this school exceeded the standard for PA Academic Growth. A larger AGI provides more evidence that the average achieving student in this school exceeded the standard for PA Academic Growth.
- Average Growth Index (AGI) < 0: The average achieving student in this school did not meet the standard for PA Academic Growth. A smaller AGI provides more evidence that the average achieving student in this school did not meet the standard for PA Academic Growth.

Value-Added Frequently Asked Questions (FAQs)

- 1. Why is measuring both achievement and progress important?
- 2. How can value-added information help educators improve teaching and learning?
- **3.** Is it possible to show progress with all groups of students, including students with IEPs, gifted students, high achieving and low-achieving students?
- 4. How can our percent of proficient and advanced students have increased last year in a grade level, but our PVAAS reports did not indicate a year of growth?
- **5.** The value-added methodology seems complicated. How can people understand the measure?
- 6. Does value-added analysis require additional testing?
- 7. How can teachers be innovative or creative if student progress is based on test scores?
- 8. Do socioeconomic or other demographic factors of a school's student population impact *progress*?
- 9. Can you measure the progress of schools/districts with high mobility rates?
- 10. Who provides PVAAS reporting for Pennsylvania?
- 11. How is PVAAS different from the assessment already in use in districts?
- 12. How is PVAAS different from other data tools being used in local districts?
- **13.** PVAAS only gives information on rates of progress in reading, math, writing, and science. How is this useful to teachers in other content areas?
- 14. Is there a cost for the PVAAS analyses, reports, and training opportunities and resources?

Value-Added Frequently Asked Questions (FAQs)

1: Why is measuring both achievement and progress important?

- Achievement measures provide educators with a snapshot of students' performance at a single point in time and how well those students perform against a standard.
- Progress measures provide a more complete, and comprehensive picture of student growth from year-to-year, including how much growth, or gain, groups of students make over time.
- By measuring progress, all students count, regardless of their achievement level, rather than just those students near the cut for proficiency.
- By combining achievement and progress information, educators will have a more comprehensive picture of their impact on student learning.

2: How can value-added information help educators improve teaching and learning?

- Provides important diagnostic information that was not previously available with traditional achievement reporting.
- Allows educators to assess their schools' impact on student learning.
- Can help initiate conversations about the effectiveness of curriculum, instructional practices, and programs.
- Allows educators to better identify what is working well and areas for improvement to help individual students and groups of students.

3: Is it possible to show progress with all groups of students, including students with IEPs, gifted students, high achieving and low-achieving students?

- Yes!
 - If assessments have enough "stretch" to measure the achievement of both low- and high-achieving students, it is possible to measure all groups of students' progress. The PSSA meets the criteria!
 - The value-added methodology used is sensitive to individual students' achievement levels.
 - It measures growth from the end of one year to the end of the next year, regardless of whether a student performs below, at, or above grade level.

4: How can our percent of proficient and advanced students have increased last year in a grade level, but our PVAAS reports did not indicate a year of growth?

- There are two parts to this answer depending on the group of students you are following in regards to an increase in the percent of students performing at the proficient and advanced levels. First, when following the same grade level from one year to the next, districts/schools may be looking at the performance of two different groups of students (i.e., 6th graders in 2010 are not the same group of students as 6th graders in 2011). As expected, different cohorts of students are different year to year in terms of their achievement. PVAAS is looking at the most recent group of students and evaluating their progress from where this group of students was the prior school year in the prior grade level. Specifically, PVAAS is looking at the academic progress of that group of students in the most recent year they were tested on the PSSA.
- Second, you may in fact be following the same group of students from one grade level to the next. In this case, you
 may be seeing an increase in the percent of those same students performing at the proficient and advanced levels;
 however, in some cases you may be seeing a PVAAS report for those same students indicating evidence of the
 students not making a year's growth (yellow or red). This is possible even if the percent of proficient and advanced
 students is increasing (or even staying relatively stable). In this case, it is important to remember that PVAAS is not
 measuring progress by increasing an entire PSSA performance level. Rather, PVAAS is more sensitive to progress
 even within those performance levels. You may find that the school has been successful in helping more students
 move from a non-proficient to a proficient/advanced level. However at the same time, students already proficient
 or advanced may be "slipping" in terms of their level of achievement compared to where they were the year prior,
 but still maintaining a proficient or advanced level overall. In other words, they may still be proficient or advanced,
 just not as high within those levels as they were in the prior year.

5: The value-added methodology seems complicated. How can people understand the measure?

- While the statistical methodology used for value-added analysis is robust, the data produced are valid, reliable, and presented in readable charts and graphs.
- See additional explanations in this guide to explain the concepts behind value-added analyses.
- If we understand the information derived from the value-added reports, we can use it to make sound decisions about improving student achievement.
- Providing robust measures that yield quality information as compared to simple measures that are questionable in quality/accuracy makes the most sense for students.

6: Does value-added analysis require additional testing?

- No new testing is required.
- Test data must meet the following criteria to be used for value-added analysis:
 - Be highly correlated with curricular objectives
 - Have enough "stretch" to measure the growth of both low- and high-achieving students
 - Meet appropriate standards of test reliability
 - The PSSA meets all of these criteria!
- The analysis uses existing standardized assessment data such as the PSSA to produce progress reports and can only be done where annual testing is provided (which is across the Commonwealth).

7: How can teachers be innovative or creative if student progress is based on test scores?

- The value-added approach was developed to estimate each student's academic growth over his/her school year in each subject and provide a report on the progress of a group of students.
- It does not suggest a particular method or instructional approach for encouraging this growth.
- Thus, teachers can and must be flexible, innovative, and evidence-based in their approaches to move all students toward higher levels of achievement.

8: Do socioeconomic or other demographic factors of a school's student population impact progress?

- Demographic variables have no significant relationship with student *progress* measures.
- Value-added analysis measures the change in students' academic achievement levels from one point in time to another (i.e., year-to-year).
- Factors that remain relatively constant over time, such as socioeconomic status, have shown little or no impact on student *progress*.

9: Can you measure the progress of schools/districts with high mobility rates?

- Yes!
 - Value-added analysis includes <u>all</u> students, for which there are sufficient test data, including highly-mobile students.
 - From a statistical perspective, it is important to include highly-mobile students in the analysis because their exclusion could bias the results.
 - From a philosophical perspective, all students must be included in the school's analysis to ensure that highly-mobile students receive the same level of attention as non-mobile students.
 - The EVAAS modeling approaches do take into account the quantity and quality of information available for each student.
- It is not enough to consider student achievement alone!
- Students' progress must also be considered, so that students at every achievement level count.
- Ultimately, positive student growth will raise <u>overall achievement for all student populations</u> instead of placing focus on a specific achievement level.
- The SAS EVAAS team has been working for more than 20 years to develop a process that will enable a fair, objective measure of the impact of districts, schools and teachers on the rate of academic progress of populations of students utilizing student achievement test data.

10: Who provides PVAAS reporting for Pennsylvania?

- The SAS EVAAS team has more than 20 years of experience of delivering value-added results in a production environment, and the statistical modeling behind EVAAS reporting has been publically available for many years.
- The reliability of EVAAS reporting has been reviewed and confirmed by prominent experts.
 - o US Government Accounting Office
 - o Four US Department of Education Peer Review Committees
 - o The RAND Corporation
- The rigor of the EVAAS value-added models protects student, while more fairly informing the effectiveness of public districts and schools.

11: How is PVAAS different from the assessment already in use in districts?

- PVAAS is not an assessment or test.
- PVAAS is the analysis of existing PSSA assessment data to produce measures of district and school effectiveness on the academic progress of groups of students. These measures of growth or progress are different from measures of achievement or proficiency. Growth, or progress, measures are different from measures of achievement or attainment/proficiency.

12: How is PVAAS different from other data tools being used in local districts?

• PVAAS is a unique measure of the progress of groups of students. This measure is based on a robust statistical methodology. PVAAS reporting is complimentary to information yielded from other data tools, such as PSSA Data Interaction by eMetric, PAAYP, 4Sight benchmark assessments, and locally-used data systems and warehouses.

13: PVAAS only gives information on rates of progress in reading, math, writing, and science. How is this useful to teachers in other content areas?

• Successful schools know that many of the concepts measured by reading and math assessments can and should be reinforced and applied in other content areas. Grade-level teams, subject-area teams, and other groups of teachers can work together to use their knowledge of effective curriculum, assessment, and instruction to take students to increased levels of growth in these areas.

14: Is there a cost for the PVAAS analyses, reports, and training opportunities and resources?

• Data submission, analyses and Web-based reporting are being funded by the Pennsylvania Department of Education. In addition, school districts and IUs may obtain, free of charge, Pennsylvania Department of Education developed print resources, professional development training and materials.

Glossary of PVAAS Terms

- 3-Year Average Growth Measure
- Average Growth Index
- Growth Measure
- EVAAS
- Growth Measure over Grades
- Growth Measure over Grades Relative to Growth Standard
- Growth Measure over Grades Relative to State
- NCE
- PSSA
- PVAAS
- Standard Error

<u>Glossary</u>

1. 3-Year Average Growth Measure

- The 3-Year Average Growth Measure provides a robust estimate of how well the district or school impacts student progress. As a general guideline,
 - If the 3-Year Average Growth Measure is greater than 0, the average student in this grade level in this district or school has met the standard for PA Academic Growth.
 - If the 3-Year Average Growth Measure is less than 0, the average student in this grade level in this district or school has not met the standard for PA Academic Growth.
- <u>What question does this answer</u>? In lay terms, what has been the average growth experience for students at this grade level?
- <u>Where can I find this</u>? District/School Value-Added Report (Grades 4-8, Reading and Math)

2. Average Growth Index

- The Average Growth Index is a measure of student progress for the selected test and subject. For Math and Reading in grades 4 through 8, this index is a value based on the average growth across grade levels divided by its Standard Error, so that comparison among schools is meaningful. For Science, Writing, and Grade 11 Math and Reading, the Average Growth Index is the Growth Measure for the most recent year divided by its Standard Error so that comparison among schools is meaningful.
- <u>What question does this answer</u>? In lay terms, how does the progress of students in this school compare to the progress of students in other schools who were tested in the same subject?
- <u>Where can I find this</u>? School Search

3. Growth Measure

0

- Grades 4-8, Reading and Math
 - Reading and Math is tested in consecutive grades in grades 4-8. The Growth Measure in grades 4-8 for reading and math represents the <u>minimum</u> amount of progress schools should expect a group of students to make from grade to grade in consecutive school years.
 - The Growth Standard is based on the 2006 PSSA statewide distributions of scaled scores; hence this is NOT a moving target.
 - The Growth Measure, displayed for each grade, indicates how much movement a group of students has made on the Normal Curve Equivalence (NCE) scale (that ranges from approximately 1 to 100) as compared to the previous year (all prior data is used to estimate previous year and current year's performance). The Growth Measure is approximately the difference between the Estimated District/LEA (or School) NCE Score from the most recent year (2010 for example) and the previous year (2009 for example). However the estimations are based on all longitudinal data, not just two scores.
 - The Growth Measure provides educators with a measure of progress students have made in that grade level during the previous school year. The Growth Measure is reported in Normal Curve Equivalence (NCE) points. NCEs are used to place test scores on a common scale so that academic growth can be measured across time and different subjects and grades.
 - For example, a Growth Measure of -2.7 indicates that the group of students declined in their achievement position by about 2.7 NCE points from one grade level to the next. Similarly, a Growth Measure of 5.9 indicates that the group of students improved their achievement position by approximately 5.9 NCE points from one grade level to the next.
- \circ Science, Writing and Reading and Math, Grades 9-11
 - For Science, Writing, and Grade 11 Reading and Math, students are <u>not</u> tested in consecutive years. The growth measure in these subject areas and grade levels is based on the Predictive Methodology and is reported in terms of District/School Effect. The Growth Measure is a conservative estimate of a district or school's influence on students' academic progress. The Growth Measure is a function of the difference between the students' observed scores (Average PSSA Score) and their predicted scores (Average Predicted PSSA Score). If students score as expected (i.e., students' observed scores are equal to their predicted scores), the estimated District/School Effect would be 0, indicating progress similar to

the average district/school in the state. In other words, the Growth Measure is the amount of progress made by that group of students.

- It is a measure of the growth that the students tested in grade 11 have made over the past 3 years since being tested in grade 8.
- <u>What question does this answer</u>? In lay terms, how effective was the district/LEA/school in promoting student academic growth and supporting students to meet or exceed their expected progress?
- Where can I find this? District/School Value-Added Reports

4. <u>EVAAS</u>

- o EVAAS stands for Educational Value-Added Assessment System.
- EVAAS is the statistical methodology used for value-added reporting in Pennsylvania.
- The EVAAS methodology is based on a mixed model multivariate longitudinal analyses of assessment data. In Pennsylvania, it is an analysis of the Pennsylvania System of School Assessment (PSSA).

5. Growth Measure over Grades

- The Growth Measure over Grades measures the average progress of a district or school's students in grades for which gains are available. This value represents the average gain across the grades reported in PVAAS for that district or school compared to either the Growth Standard or to the State 3-Year Average for those same grade levels.
- <u>What question does this answer</u>? In lay terms, how much did the district/LEA/school impact the average academic progress of students across the grade levels served in the district/LEA or school?
- o <u>Where can I find this</u>? District/School Value-Added Report (Grades 4-8, Reading and Math)

6. Growth Measure over Grades Relative to Growth Standard

- The Growth Measure over Grades in general measures the average progress of a district or school's students in grades for which a Growth Measure is available. The Growth Measure over Grades Relative to the Growth Standard represents the average growth across the reported grades for that district or school compared to the Growth Standard.
- The Growth Measure over Grades Relative to the Growth Standard is the average of all growth in the chosen subject for that year across all reported grade levels. In other words, for a middle school serving grades 6-8, the Growth Measure over Grades Relative to the Growth Standard would be the average of the 6th grade gain, 7th grade gain, and 8th grade gain.
- <u>What question does this answer</u>? In lay terms, how effective was the district, LEA, or school in impacting the academic progress of its students compared to the Growth Standard?
- <u>Where can I find this</u>? District/School Value-Added Report (Grades 4-8, Reading and Math)

7. Growth Measure over Grades Relative to the State

- The Growth Measure over Grades Relative to the State represents the average growth across the grade levels served between 4 and 8 compared to the average progress of all students in Pennsylvania at the same grade levels. In other words, it is the average academic growth of a district's or school's students, compared to the academic growth of students statewide.
- The Growth Measure over Grades Relative to the State is a similar calculation to the Growth Measure over Grades Relative to the Growth Standard. However this value takes into account the difference between the growth for a year/grade level and the State 3-Year Average for that grade level.
- <u>What question does this answer</u>? In lay terms, how much did YOUR district/school impact the academic progress of students across grade levels compared to the progress of other students in Pennsylvania in those same grade levels?
- o <u>Where can I find this</u>? District/School Value-Added Report (Grades 4-8, Reading and Math)

8. <u>NCE</u>

- NCE stands for Normal Curve Equivalent. The NCE is simply a rescaled score for which a chosen reference distribution is rescaled so that the mean is always 50, the standard deviation is 21.06, and the scores follow a normal distribution. In Pennsylvania, the reference distribution is the statewide distribution of PSSA scaled scores in 2006. PSSA scaled scores are converted to NCE scores prior to the PVAAS analyses.
- The conversion of all PSSA scaled scores to NCE scores using the 2006 statewide distribution allows the scores in any year and grade to be on the same scale as the base year 2006, and therefore allows meaningful comparisons of position in the distribution relative to statewide student achievement in 2006. Simply stated, this means there is NOT a "moving target" for growth.
- The NCE score is simply a standard score where the mean is always 50 and the standard deviation is 21.06. There are four important points to remember when thinking about the use of NCE scores.
 - Due to rescaling, NCE scores have an equal-interval relationship so averages and differences of test scores remain meaningful. This allows Mean NCE Gains to be comparable for all schools no matter what the average achievement level is for that school.
 - NCE scores are about rescaling so that scores can be compared from grade level to grade level and from year to year. It is like putting the scores into a common language so they can talk to each other – in order to yield a measure of growth on a group of students.
 - The shape of the distributions of scaled scores in each year is irrelevant in the application of NCE scores that are used in the PVAAS analyses.
 - There is <u>no</u> relationship between Normal Curve Equivalents and norm-referenced tests. The intent is to put the scores on a common scale for comparison.
- <u>Where can I find this</u>? District/School Value-Added Report (Grades 4-8, Reading and Math)

9. <u>PSSA</u>

- PSSA stands for the Pennsylvania System of School Assessment.
- The annual Pennsylvania System of School Assessment (PSSA) is a standards-based, criterion-referenced assessment used to measure a student's attainment of the academic standards while also determining the degree to which school programs enable students to attain proficiency of the standards.
- Each school year, every Pennsylvania student:
 - grades 3 through 8 and grade 11 is assessed in Reading and Math;
 - grades 5, 8 and 11 is assessed in Writing; and
 - grades 4, 8 and 11 is assessed in Science.

10. <u>PVAAS</u>

- \circ $\;$ PVAAS is the Pennsylvania Value-Added Assessment System.
- PVAAS is Pennsylvania's approach for providing value-added reporting to local education agencies.
- The PVAAS methodology is based the EVAAS methodology which is a mixed model multivariate longitudinal analyses of assessment data. In PVAAS, it is an analysis of the Pennsylvania System of School Assessment (PSSA).

11. Standard Error

- Growth values reported on the PVAAS reports are estimates of progress for groups of students. There is
 natural error involved with any estimate, and this error is expressed in terms of the Standard Error. On the
 Value-Added Report, the Standard Error allows users to establish a confidence band around the Estimated
 Mean NCE Gain or the District/School Effect to determine if progress is evident for the group of students in
 question. The inclusion of more data (i.e., more students, more data points) generally yields a smaller Standard
 Error and makes the Estimated Mean NCE Gain or District/School Effect more precise. One of the major
 functions of the Standard Error is that it allows us to evaluate the significance or level of evidence that the
 estimate provides.
- The Standard Error is used in determining the color coding given to each Estimated Mean NCE Gain and District/School Effect.
- <u>Where can I find this</u>? District/School Value-Added Report (Grades 4-8, Reading and Math) and District/School Value-Added Report (Grade 11 Reading and Math; Science, all grades tested; and Writing, all grades tested)