

PVAAS

POLICY BRIEF

What educators should know about PVAAS student probabilities

The PVAAS probabilities for reaching future academic milestones are based on the prior achievement data for each student. For teachers, the projections for the current year offer a basis for differentiated instruction, for identifying students needing an academic intervention or to determine a student's readiness for advanced coursework. A student with a very low probability is unlikely to reach proficiency without additional supports. Students with a higher probability will likely meet or exceed the proficiency cut on the upcoming assessment if the educational characteristics that created the success continue for that student.

What prior achievement data are used in the PVAAS projections?

PVAAS uses the historical state assessment data from the most recent five years, when available, to project future PSSA performances in Math, English Language Arts, Science, and Writing and future Keystone performances in Algebra I, Biology, and Literature. The table below illustrates the assessment scores used for projections to the state assessments.

Projection to...	Data Used to Calculate Projection
PSSA Math	PSSA Math and English Language Arts
PSSA English Language Arts	PSSA Math and English Language Arts
PSSA Science	PSSA Math, English Language Arts, and Science (in grades available)
Keystone Algebra I	PSSA Math, English Language Arts, and Science (in grades available)
Keystone Biology	PSSA Math, English Language Arts, and Science; Keystone Algebra I
Keystone Literature	PSSA Math, English Language Arts, and Science; Keystone Algebra I and Biology
ACT, AP	PSSA Math, English Language Arts, and Science; Keystone Algebra I, Biology, and Literature

This approach yields reliable results because high correlations (meaning, a predictable relationship) exist between the PSSA and Keystone scores across grade levels in a single subject area and across subjects. Using so many test records in the PVAAS analysis (approximately 115,000 per grade level per subject area) further improves the predictive power of the data. To illustrate these high correlations using the 2015-2016 data, the average multiple correlation obtained when predicting PSSA Math using all prior test scores ranges from 0.84 to 0.88, in PSSA English Language Arts from 0.81 to 0.86, and in PSSA Science from 0.78 to 0.83. The predicted scores of Keystone content areas using prior PSSA scores has a multiple correlation ranging from 0.81 to 0.83. In less technical terms, this means that the data used to calculate the projection have a very strong positive relationship to the actual projections.

How good are the PVAAS projection probabilities?

To answer the question, students' test scores from the 2015-2016 school year were compared to their PVAAS probabilities for achieving proficiency at the beginning of the school year. Students were divided into two groups based on their probabilities at the end of the previous school year. Comparisons were made for students with probabilities less than 70% and for students with probabilities equal to or greater than 70%. The results are reported in the tables below and establish the validity of the individual PVAAS probabilities as an important indicator in developing individualized student academic plans.

Table 1: How often did students with PVAAS probabilities of 70% or greater score at proficient or advanced?

Grade	PSSA Math	PSSA English Language Arts	PSSA Science
3 to 4	93.7%	93.6%	93.0%
4 to 5	92.4%	95.2%	N/A
5 to 6	92.9%	95.2%	N/A
6 to 7	95.2%	95.8%	N/A
7 to 8	93.8%	94.2%	93.0%
	Algebra I	Literature	Biology
Last Grade Tested	84.9%	93.7%	88.8%

Table 2: How often did students with PVAAS probabilities less than 70% score at proficient or advanced?

Grade	PSSA Math	PSSA English Language Arts	PSSA Science
3 to 4	21.2%	28.8%	31.1%
4 to 5	18.4%	25.3%	N/A
5 to 6	18.0%	27.8%	N/A
6 to 7	17.4%	29.4%	N/A
7 to 8	16.0%	26.4%	25.8%
	Algebra I	Literature	Biology
Last Grade Tested	15.5%	25.6%	17.2%

How accurate are the PVAAS projections?

A student's score from the end of a grade/subject reflects the student's achievement *as well as the educational influence of the district, school and teaching that he or she experienced*. PVAAS probabilities do not account for the effectiveness of the classroom specific curriculum, assessment and instruction in the current year. Rather, they reflect what the student is likely to score assuming the average schooling experience.

- A highly effective standards-aligned system at the school in which the student attends can increase the likelihood that students will reach the proficiency cut. Highly effective schools have value-added results shaded dark blue.
- When students experience an ineffective standards-aligned system at their school, the students are less likely to score as predicted. Students with 40-70% probabilities may not reach proficiency in these learning environments. Less effective schools have value-added results shaded red.

What are the implications for policy decisions?

Although teachers may choose slightly different ranges from those above, the cuts of less than 70% and greater than 70% are particularly appropriate for making decisions about students. **This conclusion is based on the percentage of students reaching proficiency and the percentage of students not reaching the proficiency mark in the two ranges above.** However, students in very effective schools with probabilities near 70% may also be successful. Therefore, the PVAAS Custom Student Report functionality allows educators to vary the ranges of probabilities used to identify students.