

FL VAM

Calculating an Expected Score

The value-added model (VAM) implemented for the State of Florida considers numerous student and classroom characteristics in order to produce VAM scores that are as fair as possible. This model compares a student's actual score to the score that the student was expected to receive based on how similar students in similar classes performed on the same test during the same year. The difference between a student's actual score and their expected score is calculated and forms the basis of the teacher's eventual VAM score. A teacher whose students tend to score higher than their expected scores generally receives a higher VAM score, and a teacher whose students tend to score lower than their expected scores generally receives a lower VAM score.

Students' expected scores are the building blocks of their teacher's VAM scores. Each student and classroom characteristic used in the model contributes to student learning and some characteristics contribute more than others. These contributions are then weighted within the VAM formula based on how well they explain student performance by predicting it within the model. These weights and the students' expected scores are calculated during the VAM process and are based on current-year test scores. A separate model is implemented for each grade-subject combination. As a result, these weights are different for each model. That is, the weight for attendance is slightly different between the grade 6 Math model and the grade 7 Math model or the grade 5 ELA model. This process of weighting ensures that a student's expected score is based on the performance of other similar students and ensures that a teacher's VAM score only compares the performance of that teacher to other teachers with similar students.

The following sample scenario uses specific student characteristics to illustrate how they affect VAM calculations. The full list of characteristics can be found in Appendix A.

Sample Scenario

Ms. Smith's grade 6 Math class includes students with disabilities. In particular, Michael is a struggling sixth grader who was retained previously. He has an individualized education plan (IEP) for a specific learning disability. He attends school on a regular basis but tends to miss a few days each month. Michael's expected score in Ms. Smith's class considers these characteristics as well as his prior achievement on tests that he took in previous years.

In simple terms, for each characteristic considered in the VAM model, the weight of that characteristic is multiplied by the student's baseline measure to determine the characteristic's contribution to the student's expected score in the tables that follow. If the result is positive, it increases the expected score, but if it is negative, it decreases the expected score.

Appendix A contains all of the characteristics the model uses, but for ease of understanding, related characteristics are grouped into smaller tables throughout this sample scenario to show how their weights are determined and what impact they have on the student's baseline for that individual characteristic.

Each subject has a "constant" that is then added or subtracted based on the weights and baseline measures for each student. In Table 1, the constant for grade 6 Math is 15.012. This constant is different

for each subject and grade level and represents the VAM model’s starting point for each student in that grade and subject. The other characteristics then add to and subtract from this starting point to produce the expected score according to their weights in the model. Michael had a prior year test score of 288 in grade 5. The weight for this score is 0.695. This means that we take 69.5% of Michael’s score on last year’s test (288×0.695) and add it to the constant. Michael’s second prior year test score, the score that he earned two years ago in fourth grade, was 295. Because this score is older, it does not predict his current performance as well and therefore has a lower weight. The weight for this score is only 0.207. Just like before, we take 20.7% of Michael’s test score from two years ago (295×0.207) and add it to the constant. We now have an expected score that consists of a 15.012 constant, 69.5% of Michael’s most recent test score, and 20.7% of Michael’s test score from two years ago.

Table 1: Constant, Prior Year Score, and Second Prior Year Score

Characteristic	Student's Baseline Measure	Characteristic's Weight	Characteristic's Contribution to the Student's Expected Score
Constant (Applies to all students)	1	15.012	15.012
Prior Year Test Score (Grade 5 Math)	288	0.695	200.16
Second Prior Year Test Score (Grade 4 Math)	295	0.207	61.065

Table 2 shows the other characteristics that influence Michael’s expected performance on this year’s test. The first row shows Michael’s attendance. His daily attendance rate of .928 means that he was present for 92.8% of the school days that year. This baseline measure is multiplied by its weight of 21.149, which adds an additional 19.585 scale score points to his expected score. If he had perfect attendance (a baseline measure of 1), then the full 21.149 points would have been added to his expected score. Therefore, lower attendance is reflected by a smaller number of points being added to the expected score.

The second row in Table 2 shows that Michael has a specific learning disability (SLD) that subtracts 2.394 scale score points from his expected score. If any of the other 13 disabilities included in the model applied to Michael’s scenario, his expected score would have been adjusted accordingly for each one. Michael was also previously retained and is one year older than most students in his class. The age difference, serving as a proxy for retention, lowers his expected scale score by 1.493 scale score points.

Table 2: Attendance, Specific Learning Disability, and Age¹

Characteristic	Student's Baseline Measure	Characteristic's Weight	Characteristics Contribution to the Student's Expected Score
Attendance (Percentage of days present)	0.928	21.149	19.585
Specific Learning Disability	1	-2.394	-2.394
Age (Difference from the average age in grade level)	1	-1.493	-1.493

In addition to the personal characteristics described above, Table 3 shows how the model also considers some characteristics of Michael’s class as well. The model considers these differences in student performance within a classroom at the beginning of the year based on their prior year scores. Generally speaking, when students in the same class have scores that are very similar to each other, their expected scores are higher. When students in the same class have prior scores that were very different from each other, expected scores tend to be lower. Row 1 of Table 3 shows the difference between the students with the 75th percentile score and the students with the 25th percentile score for the class. The difference was 28 scale score points in Michael’s class. Multiplying this difference of 28 points by -.016 lowers Michael’s expected score by nearly half a point (.448 points).

In some cases, adjustments are made to account for data elements that do not apply to a student but might apply to others. For example, some students are enrolled in more than one class in the same subject and therefore receive more instruction in the subject. The second row of Table 3 illustrates how the model can incorporate data about the similarity of up to six of additional classes for students. The model makes additional adjustments to account for the fact that Michael does not have any additional grade 6 Math classes and adjusted his score by 1.2 points.

Class size is another factor the model considers when determining Michael’s expected score. As class size increases, the expected scores for students in that class decrease slightly from what they otherwise would have been. Michael was in a class with 19 students, so his score was lowered by about a tenth of a point (-.119).

¹Additional adjustments can be made for other characteristics. For this example, we did not include any characteristics that would have a weight of zero. See Appendix A for a full list of characteristics.

Table 3: Homogeneity and Class Size

Characteristic	Student's Baseline Measure	Characteristic's Weight	Characteristic's Contribution to the Student's Expected Score
Class Homogeneity (Degree of similarity between prior test scores for students in the class. Values are determined by taking the difference between the prior scale score for the 75th percentile for the class and the prior scale score for the 25th percentile.)	28	-0.016	-0.448
Homogeneity of additional classes (this student has only one grade 6 Math class)	1	1.2	1.2
Class Size for grade 6 Math (Number of students) ²	19	-0.006	-0.119

Michael's expected score of 292.568 is based on the contributions of all of the factors described above. Stated differently, it is the sum of all of the values in the "Characteristic's Contribution to the Student's Expected Score" columns in the tables. Michael's actual performance in grade 6 Math is then compared to this score when calculating value-added measures.

The table in Appendix B combines the data in the tables above to summarize how Michael's expected score was determined for grade 6 Math. Each grade, subject, and year has a different multiplier or weight for each characteristic included in the value-added model. This chart is for illustrative purposes only and should not be used to determine student scores for your classes. This sample scenario represents only one example of how the expected score can be impacted by some of the factors included in the value-added model.

Appendix A provides a full list of characteristics that are considered when calculating expected scores. The weights for each data point in the model vary for each grade and subject and across years. School districts have access to these weights and can provide them to educators as requested. If you need any assistance or have any questions, click Contact Us with the FL VAM site.

² Additional adjustments can be made for up to five other classes in a given subject. When necessary, the class sizes for each additional class are multiplied by a weight for the size of a student's second, third, fourth, fifth, or sixth class.

Appendix A

There are eight characteristics of a student that are considered when calculating the expected score for the FSA/Algebra 1 VAM.

1. Up to two prior years of achievement scores (the strongest predictor of student growth)
2. The number of subject-relevant courses in which the student is enrolled
3. Students with Disabilities (SWD) status
 - a. Language Impaired
 - b. Deaf or Hard of Hearing
 - c. Visually Impaired
 - d. Emotional/Behavioral Disabilities
 - e. Specific Learning Disability
 - f. Dual Sensory Impaired
 - g. Autistic
 - h. Traumatic Brain Injured
 - i. Other Health Impaired
 - j. Intellectual Disability
4. English Language Learner (ELL) status
 - a. Student is ELL and has been in ELL for less than two years
 - b. Student is ELL and has been in ELL for more than two years and less than four years
 - c. Student is ELL and has been in ELL for more than four years and less than six years
 - d. Student is ELL and has been in ELL for more than six years
5. Gifted status
6. Daily attendance
7. The number of times the student changed schools during the year
8. The student's age relative to the typical age of students in the same grade (as an indicator of acceleration or retention)

There are two common characteristics of a classroom considered when calculating the expected score for the FSA and Algebra VAM.

1. Class size
2. Similarity on prior test scores among students in the class

In addition to these characteristics, the Algebra model also considers:

1. Mean prior test scores
2. Percentage of students that were gifted
3. Percentage of students that were at the modal grade

Appendix B

Characteristic	Student's Value	Characteristic's Weight	Characteristic's Contribution to the Student's Expected Score
Constant (Applies to all students)	1	15.012	15.012
Prior Year Test Score (Grade 5 Math)	288	0.695	200.16
2 nd Prior Year Test Score (Grade 4 Math)	295	0.207	61.065
Attendance (Percentage of days present)	0.928	21.149	19.585
Specific Learning Disability	1	-2.394	-2.394
Age (Difference from the average age in grade level)	1	-1.493	-1.493
Class Homogeneity (Degree of similarity between prior test scores for students in the class. Values are determined by taking the difference between the prior scale score for the 75th percentile for the class and the prior scale score for the 25th percentile.)	28	-0.016	-0.448
Homogeneity of additional classes (this student has only one grade 6 Math class)	1	1.2	1.2
Class Size for grade 6 Math (Number of students)	19	-0.006	-0.119
Expected Score			292.568