Florida's Value Added Model
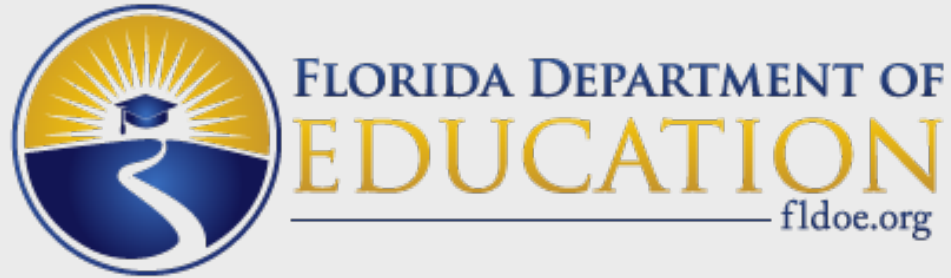
Agenda

- What the Law Requires

- History of Model Development

- Overview of the Models

- Use in Accountability Systems

- Transition to FSA

- The Future

What the Law Requires

Statute

Section 1012.34, F.S., Personnel evaluation procedures and criteria

- Section 3 – Evaluation procedures and criteria;

  - Must be based upon the performance of students assigned to the educator's classrooms (teachers) or schools (administrators);

  - Must be conducted at least annually;

  - Must be based upon sound educational principals and contemporary research in effective educational practices; and

Statute

Section 1012.34, F.S., Personnel evaluation procedures and criteria

- Section 3 – Evaluation procedures and criteria;

  Must include

  1. Performance of students (at least 1/3)

  2. Instructional practice/leadership (at least 1/3)

  3. Other indicators of performance

Statute

Section 1012.34, F.S., Personnel evaluation procedures and criteria

- Section 7 – Measurement of student performance;
  - Requires the commissioner to approve a formula for measuring student learning growth on statewide, standardized assessments in English/language arts and mathematics
  - The formula **must** take into consideration each student's prior academic performance, and **may not** set different expectations for student learning growth based on gender, race, ethnicity or socioeconomic status.
  - Other factors required to be considered include attendance, disability status, and status as an English language learner.
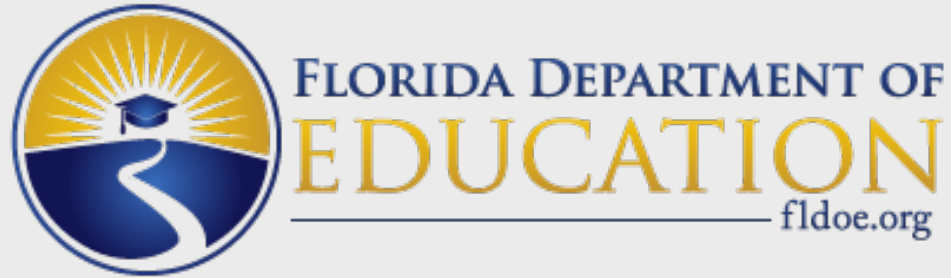
History of Model Development

Florida's Value-Added Model Was Developed by Florida Educators

The Student Growth Implementation Committee (SGIC) was originally composed of 27 members from across the state, selected from over 250 volunteers, including:

- Teachers (across various subjects and grade levels, including exceptional student education, and union)
- School-level administrators
- District-level administrators (assessment, HR, superintendent, school board)
- Postsecondary teacher educators
- Representative from the business community
- Parent representative

- The SGIC met regarding the FCAT model from March-June 2011

- Meetings were webcast live. See all materials and videos/recordings of committee proceedings at http://www.fldoe.org/committees/sg.asp

- The SGIC's recommended model for FCAT data was fully adopted by the Commissioner of Education in June 2011 as Florida's FCAT Value-added Model with no additions, deletions, or changes

Florida's Value-Added Model Was Developed by Florida Educators

After exploring eight different types of value-added models, the SGIC recommended a model from the class of covariate adjustment models.

This model begins by establishing expected growth for each student which is based on:

- Historical data each year
- The typical growth, by grade and subject, among students who have earned similar test scores the past two years, and share the other characteristics controlled for by the model

To isolate the impact of the teacher on student learning growth, the model developed by the SGIC and approved by the Commissioner accounts for:

- Student Characteristics
- Classroom Characteristics
- School Characteristics

Overview of the Models

Covariate Adjusted, Cross Classified Models

- English Language Arts
  - Grades 4 through 10

- Mathematics
  - Grades 4 through 8

- Algebra 1
  - Grades 8 (optional) and 9

ELA and Mathematics

ELA/Mathematics Covariates

a. Number of subject relevant courses

b. Up to 2 prior test scores

c. Disabilities

d. English language learner status

e. Gifted status

f. Attendance

g. Mobility

h. Difference from modal age of peers in the same grade

i. Class size

j. Similarity of prior test scores among students in the class

Algebra 1

Algebra I covariates – same as ELA and Mathematics except 3 more are added:

k. Average prior test score on most recent test among students in the class

l. Percent of students in the class who are gifted

m. Percent of students in the class who are in a grade other than the most common one represented in the class.

Model Description

Student-level model contains 4 components:

- Fixed effects – those effects controlled for by the covariates

- School Component – those effects attributed to the impact of the school attended not explained by the fixed effects

- Teacher effect – those effects attributed to the teacher not explained by the fixed effects

- Unexplained or random variance not explained by the model

VAM Estimate

For ELA and Mathematics:

- VAM score = Teacher effect + 0.5(School Component)

For Algebra I:

- VAM score = Teacher effect

VAM Estimate Aggregation

ELA and Math

- Scores are standardized at the subject/grade/year level based on average growth between assessments.

- Once standardized, they are aggregated into 1, 2 and 3 year scores for each subject, as well as a combined score across all grades, subjects and years.

- Standard errors are also computed for each aggregate score.

VAM Estimate Interpretation

The formula produces a value-added score for a teacher, which reflects the average amount of learning growth of the teacher's students above or below the expected learning growth of similar students in the state, using the variables accounted for in the model.

- A score of "0" indicates that, on average, students performed no better or worse than expected based on the factors in the model

- A positive score indicates that students, on average, performed better than expected

- A negative score indicates that students, on average, performed worse than expected
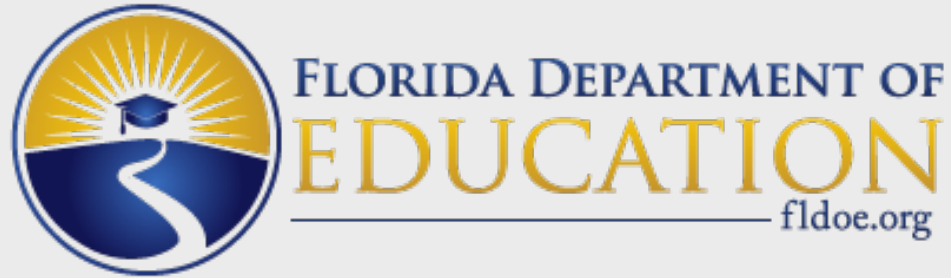
Uses in Accountability Systems

Accountability Systems Using VAM Results

Teacher Evaluations – s. 1012.34, F.S. and 6A-5.0411, F.A.C.

Educator Preparation Programs – s. 1004.04 and 6A-5.066, F.A.C.

VAM Estimate Classification
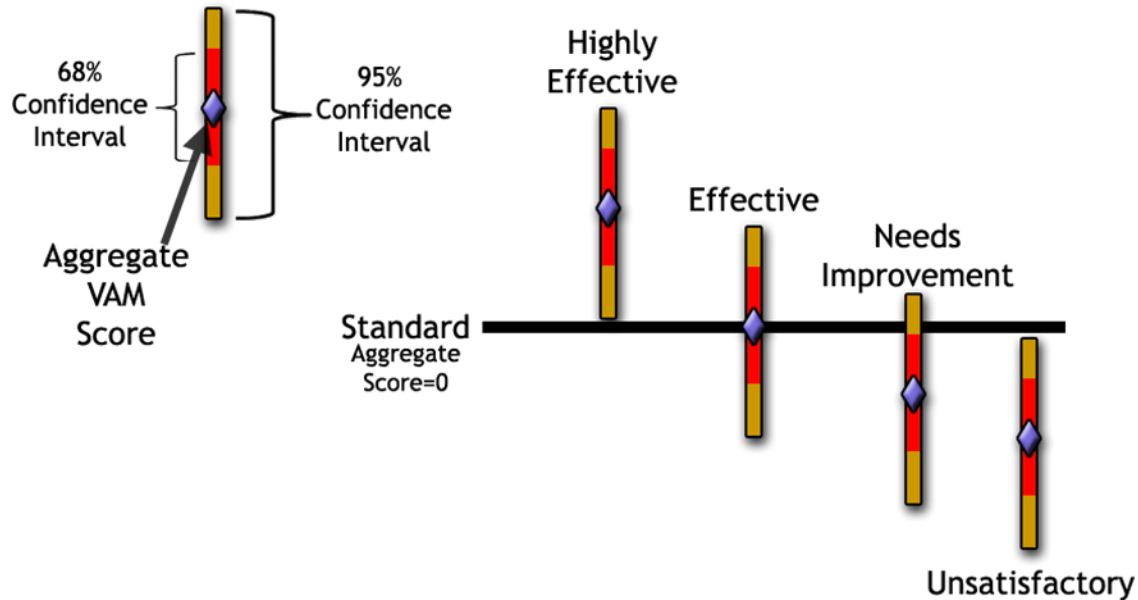
Comparison of Distribution Between 3 Year Aggregate Combined VAM Score and Student Achievement Levels
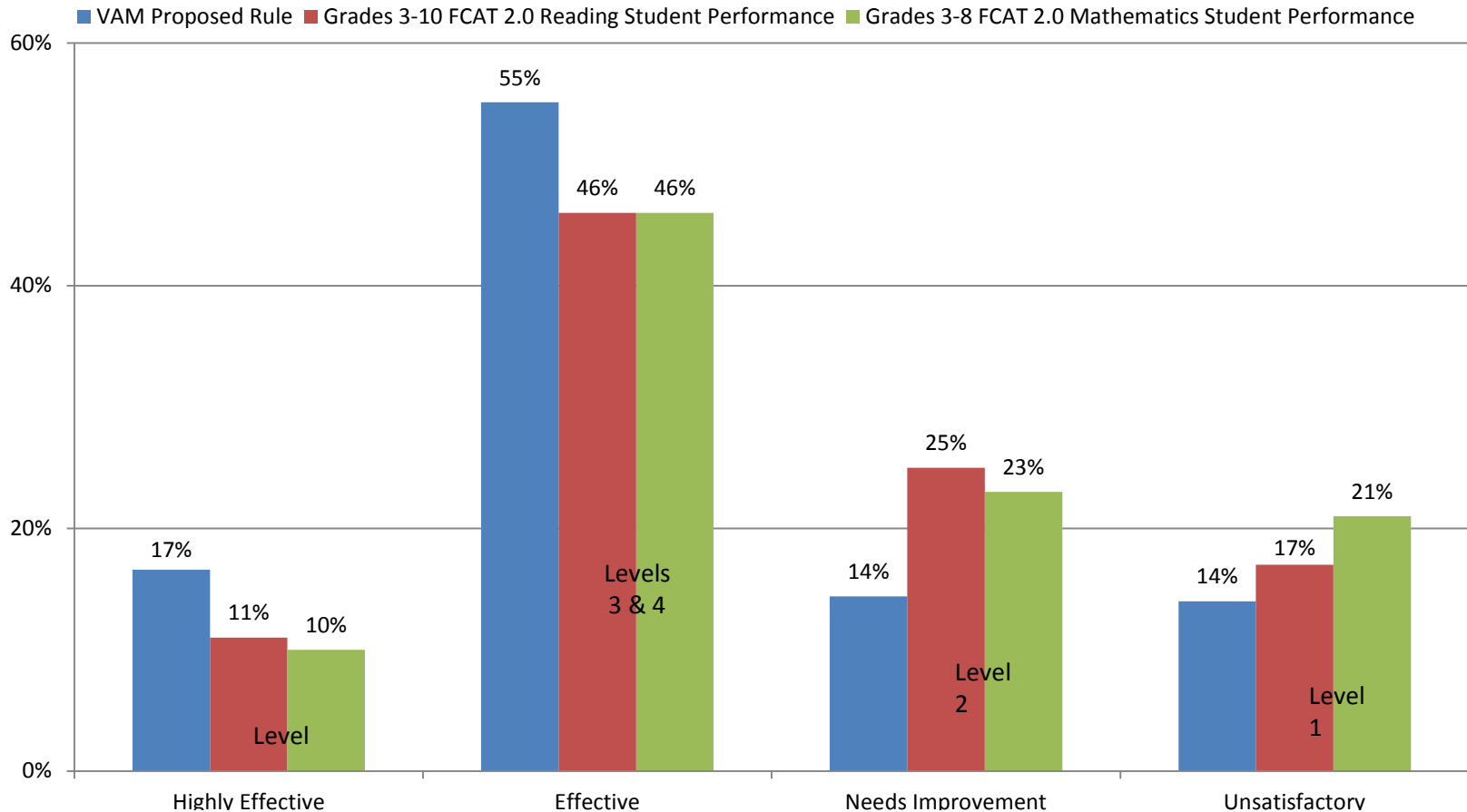
Legend: ■ VAM Proposed Rule ■ Grades 3-10 FCAT 2.0 Reading Student Performance ■ Grades 3-8 FCAT 2.0 Mathematics Student Performance

Category	VAM Proposed Rule	Reading	Mathematics	Level
Highly Effective	17%	11%	10%	Level
Effective	55%	46%	46%	Levels 3 & 4
Needs Improvement	14%	25%	23%	Level 2
Unsatisfactory	14%	17%	21%	Level 1

3 Year Aggregate Combined VAM Score Means by Performance Level

Average VAM Score

■ Highly Effective   ■ Effective   ■ Needs Improvement   ■ Unsatisfactory
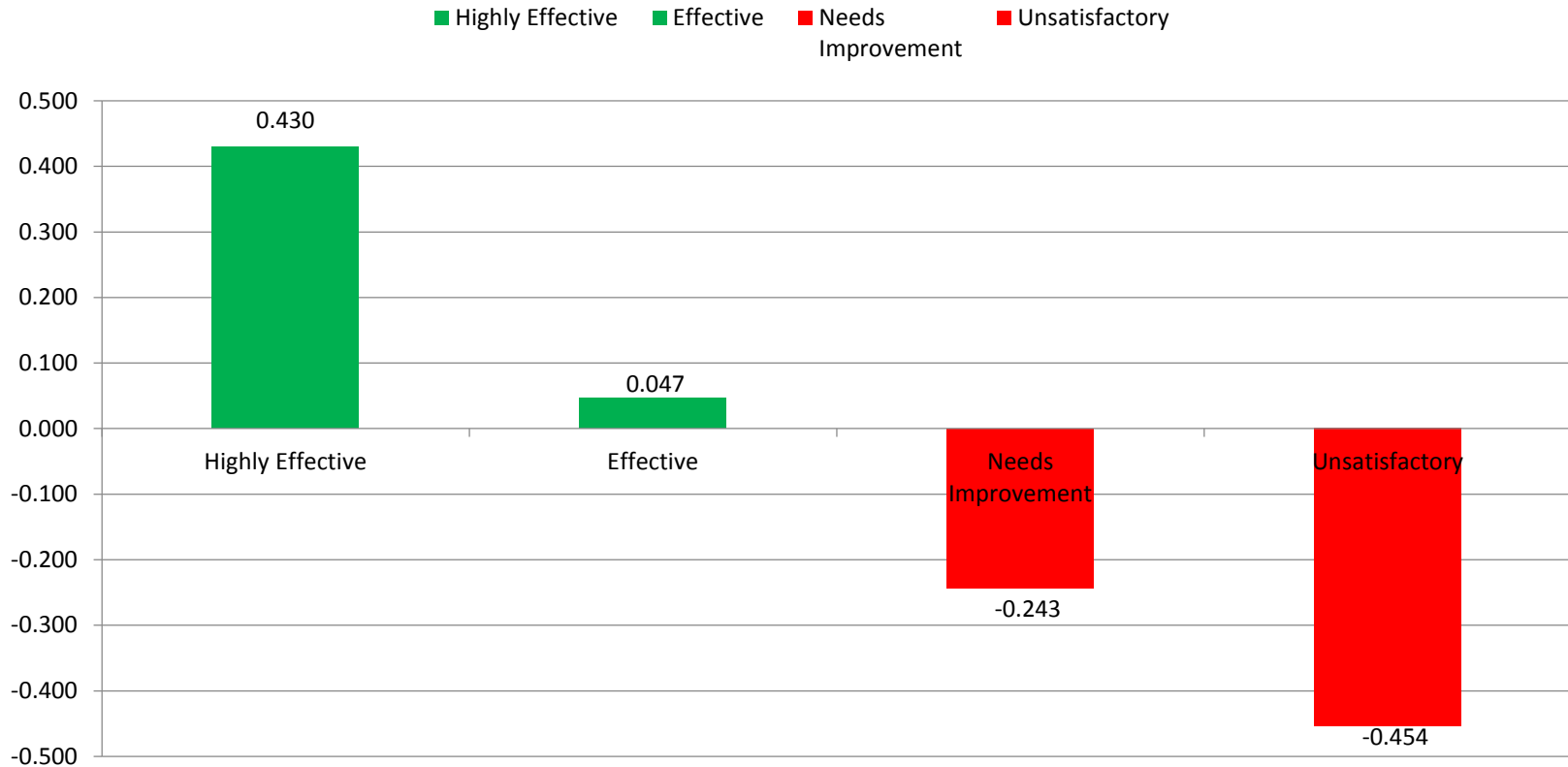
VAM Estimate Classification

- Use the standard error to construct confidence intervals.

- Use these confidence intervals to establish performance standards.

- Give teachers the benefit of the doubt when there is below-threshold statistical uncertainty.

- Place a larger share of teachers statewide into higher performance categories than student-level metrics using the same assessment results.

Transitioning to FSA

Model Results Review

- Model r-square calculations have historically ranged from .60 To .74, with Algebra 1 generally having a lower value than Reading/ELA and mathematics models.

- Classification of scores is generally stable. Nearly 90% of scores are classified within one level of each other from one year to the next.

- More than 75% of classifications are the same or show improvement.

Explained Variance

Grade	2010-11	2011-12	2012-13	2013-14	2014-15
Math 4	0.60	0.64	0.62	0.61	0.67
Math 5	0.67	0.72	0.72	0.70	0.69
Math 6	0.71	0.73	0.73	0.71	0.72
Math 7	0.69	0.74	0.74	0.71	0.72
Math 8	0.69	0.74	0.74	0.69	0.55
Algebra 8	NA	NA	0.50	0.48	0.48
Algebra 9	NA	NA	0.51	0.48	0.39
ELA 4	0.63	0.66	0.66	0.66	0.65
ELA 5	0.70	0.70	0.72	0.72	0.70
ELA 6	0.69	0.69	0.70	0.70	0.71
ELA 7	0.68	0.70	0.72	0.71	0.73
ELA 8	0.67	0.71	0.72	0.74	0.73
ELA 9	0.68	0.69	0.72	0.72	0.74
ELA 10	0.65	0.68	0.71	0.71	0.72

Impact Analysis

Correlate	Reading/ELA			
	2011-12	2012-13	2013-14	2014-15
Mean Prior	-0.08	0.02	-0.02	0.06
% SWD	0.01	-0.02	-0.01	-0.02
% ELL	0.06	0.00	0.02	-0.03
% ED	-0.08	-0.10	-0.04	-0.06
% Gifted	0.01	0.02	0.01	0.04
% Non-white	0.03	-0.01	-0.02	-0.06

Impact Analysis

Correlate	Mathematics			
	2011-12	2012-13	2013-14	2014-15
Mean Prior	-0.03	0.01	0.05	0.06
% SWD	-0.03	-0.05	-0.04	-0.04
% ELL	0.00	0.00	-0.01	-0.06
% ED	-0.08	-0.07	-0.07	-0.07
% Gifted	0.00	0.00	0.04	0.04
% Non-white	-0.04	-0.06	-0.07	-0.15

Impact Analysis

Correlate	Algebra 1		
	2012-13	2013-14	2014-15
Mean Prior	0.06	0.07	0.05
% SWD	-0.03	-0.09	-0.04
% ELL	0.04	0.06	0.00
% ED	-0.04	-0.02	-0.04
% Gifted	0.05	0.03	0.09
% Non-white	0.00	0.03	-0.06

3 Year Aggregate Combined VAM Score Means by Performance Level

■ Average VAM Score 2013-14   ■ Average VAM Score 2014-15

Highly Effective: 0.430, 0.523
Effective: 0.047, 0.061
Needs Improvement: -0.243, -0.288
Unsatisfactory: -0.454, -0.566
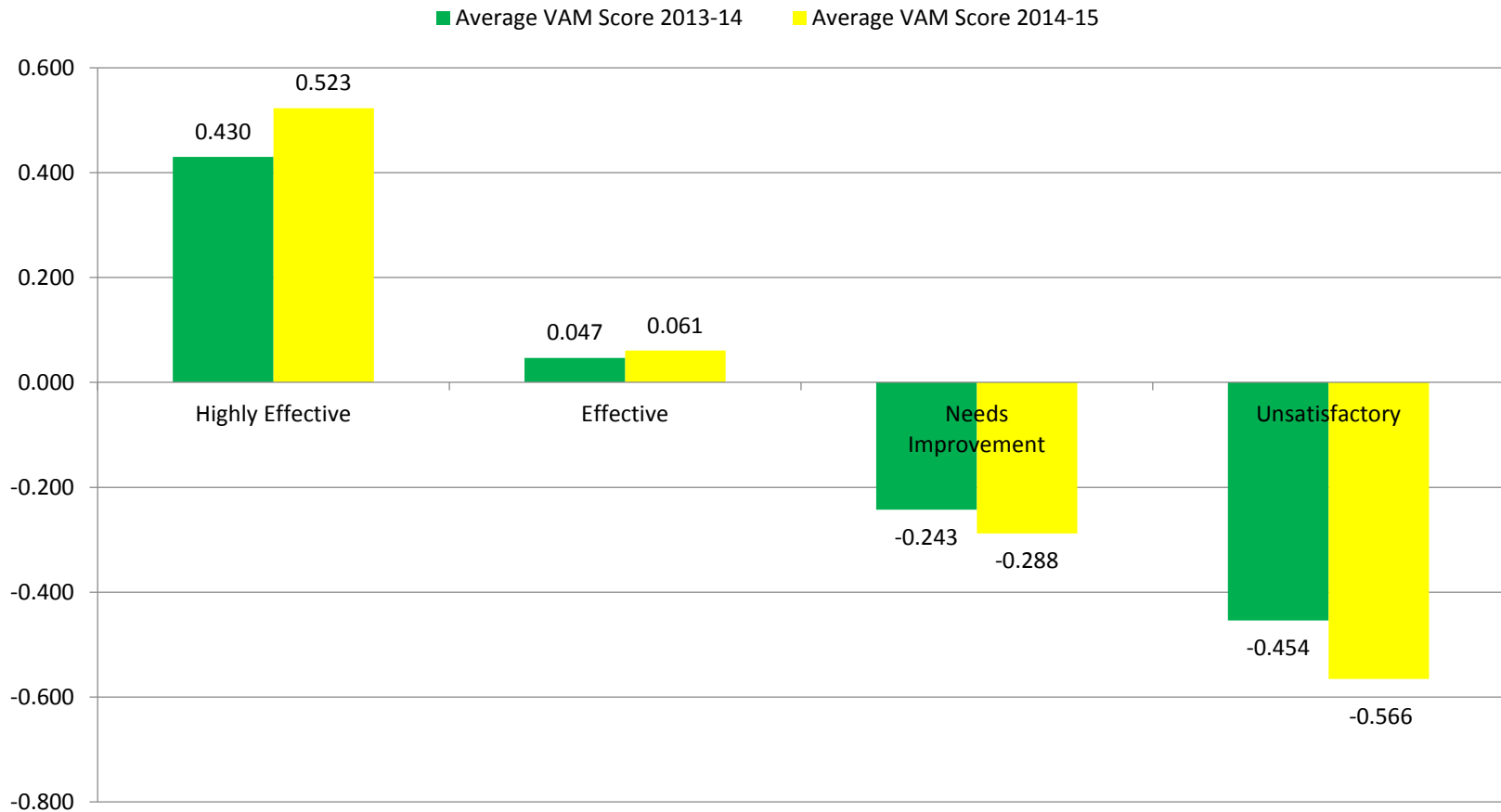
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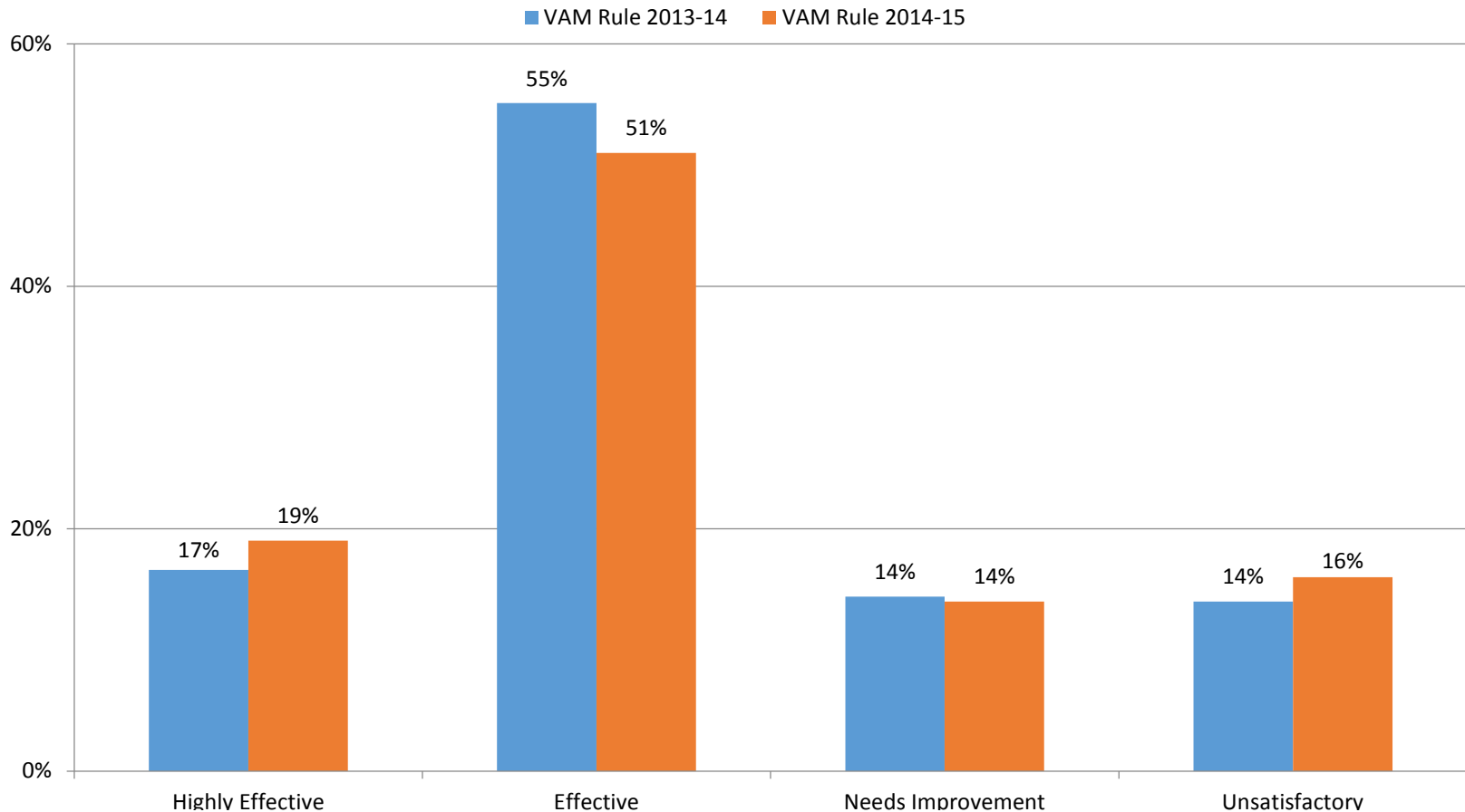
Frequently Asked Questions

- How can we have VAM scores when the test hasn't been administered twice yet?

- How can we have VAM scores when the scale and cut scores haven't been set?

- If the new test is harder, does that mean VAM scores will go down?

- Why do some students get expected scores that are higher than the ceiling, and how do the impact VAM scores of teacher who have them?

How can we have VAM scores when the test hasn't been administered twice yet?

- Though VAM is characterized as a growth model, it does not rely on a growth calculation to run the model.

- Instead, it estimates the relative influence of all of the covariates, including prior score, on the outcome being modeled.

- Algebra 1 model uses FCAT 2.0 (and eventually FSA) from a differently-scaled assessment.

- Scores were linked to FCAT 2.0 scale in order to calculate year-to-year growth for ELA & Math only, which is required for standardization prior to aggregation.

How can we have VAM scores when the scale and cut scores haven't been set yet?

- VAM scores do not rely on the scale or the achievement-levels directly.

- Instead, influence on the outcome is based on a unit change in the covariate, regardless of scale.

- Transition between achievement levels is not required to positively impact a teacher's VAM score, just meeting or exceeding expectations.

If the new test is harder, does that mean VAM scores will go down?

- No. VAM scores are based on performance relative to expectations set by the model coefficients, which are in turn based on how students statewide performed on the assessment.

- If scores, statewide, go down, teachers can still show a positive impact on student learning by either having students increase despite this trend, or having them decrease less than expected based on overall student performance.

Why do some students get expected scores that are higher than the ceiling, and how does it impact VAM scores for teachers who have them?

- The scale of each assessment is finite.

- Occasionally, the relative influence of all of the covariates on the expected score produces an expected score that is out of range.

- This is rare.

The Future

New Rule

- 6A-5.0411 takes effect for evaluations covering the 2015-16 school year.

- Standardizes both the metric and interpretation of the score used.

- Incorporates the standard error to ensure fairness.

- Offers exemptions from use under certain circumstances.

Other Important Factors to Keep in Mind

VAM scores

- Are only one part of a multi-faceted evaluation system.

- May not even be the only measure of student performance used by your district.

- Use multiple years of data.

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Student Reading/ELA Performance Over Time

FCAT

FCAT 2.0

FSA

FCAT Reading Achievement Level 3 and Above: 47%, 47%, 50%, 52%, 53%, 57%, 58%, 60%, 61%, 62%

FCAT Reading Achievement Level 1: 32%, 31%, 29%, 27%, 26%, 22%, 21%, 20%, 18%, 18%

FCAT 2.0 Reading Achievement level 3 and Above: 56%, 57%, 57%, 58%

FCAT 2.0 Reading Achievement Level 1: 18%, 17%, 17%, 17%

FSA ELA Achievement Level 3 and Above: 53%

FSA ELA Achievement Level 1: 22%

Legend:
- FCAT Reading Achievement Level 3 and Above
- FCAT Reading Achievement Level 1
- FCAT 2.0 Reading Achievement level 3 and Above
- FCAT 2.0 Reading Achievement Level 1
- FSA ELA Achievement Level 3 and Above
- FSA ELA Achievement Level 1

Student Mathematics Performance Over Time

FCAT

FCAT 2.0

FSA

- FCAT Mathematics Achievement Level 3 and Above
- FCAT Mathematics Achievement Level 1
- FCAT 2.0/EOCs Mathematics Achievement level 3 and Above
- FCAT 2.0/EOCs Mathematics Reading Achievement Level 1
- FSA/EOCs Mathematics Achievement Level 3 and Above
- FSA/EOCs Mathematics Reading Achievement Level 1