

USING LEARNING GAINS VS. VAM IN TEACHER EVALUATION

This exploration is based on the 2017-2018 FSA ELA and mathematics assessment data for students in grades 4-8. Teacher VAM results are those from the Florida VAM. Percentages of students making learning gains are based on the INDV file provided by the state. The calculations are carried out for each teacher/grade combination separately. Demographic variables are from the District demographic files as of June 2018.

Relationship between a percentage of students making learning gains and VAM results

These measures are highly correlated:

- The Pearson correlation coefficient between the percentage of students making learning gains and Teacher VAM estimate is 0.70 in mathematics and 0.55 in ELA.
- The correlation coefficient between the percentage of students making learning gains and the percentage of students making/exceeding expectations is 0.76 in mathematics and 0.62 in ELA.

Relationship between teacher outcomes and classroom characteristics

Because VAM adjusts the results for various student characteristics, its outcomes are largely independent of those that are explicitly in the model. They have small correlations with student characteristics that are not explicitly in the model (such as student race/ethnicity or poverty). On the other hand, the percentages of students making learning gains are related to many student characteristics.

The table below shows correlation coefficients between teacher outcome and classroom demographic characteristics.

Percentage of Students	VAM estimate		LG percentage	
	ELA	Math	ELA	Math
Black	-0.09	-0.12	-0.23	-0.25
FRL	-0.07	-0.07	-0.29	-0.27
SWD	-0.04	-0.08	-0.40	-0.41
Gifted	0.01	0.04	0.35	0.31
ELL	0.01	-0.01	-0.17	-0.18

The values of the Pearson correlation coefficient r that are close to 0.1 are usually interpreted as indicating a weak correlation (positive or negative); those close to 0.3 as indicating moderate correlation, and those close to 0.5 as indicating a strong correlation.

Relationship between teacher categories and classroom characteristics

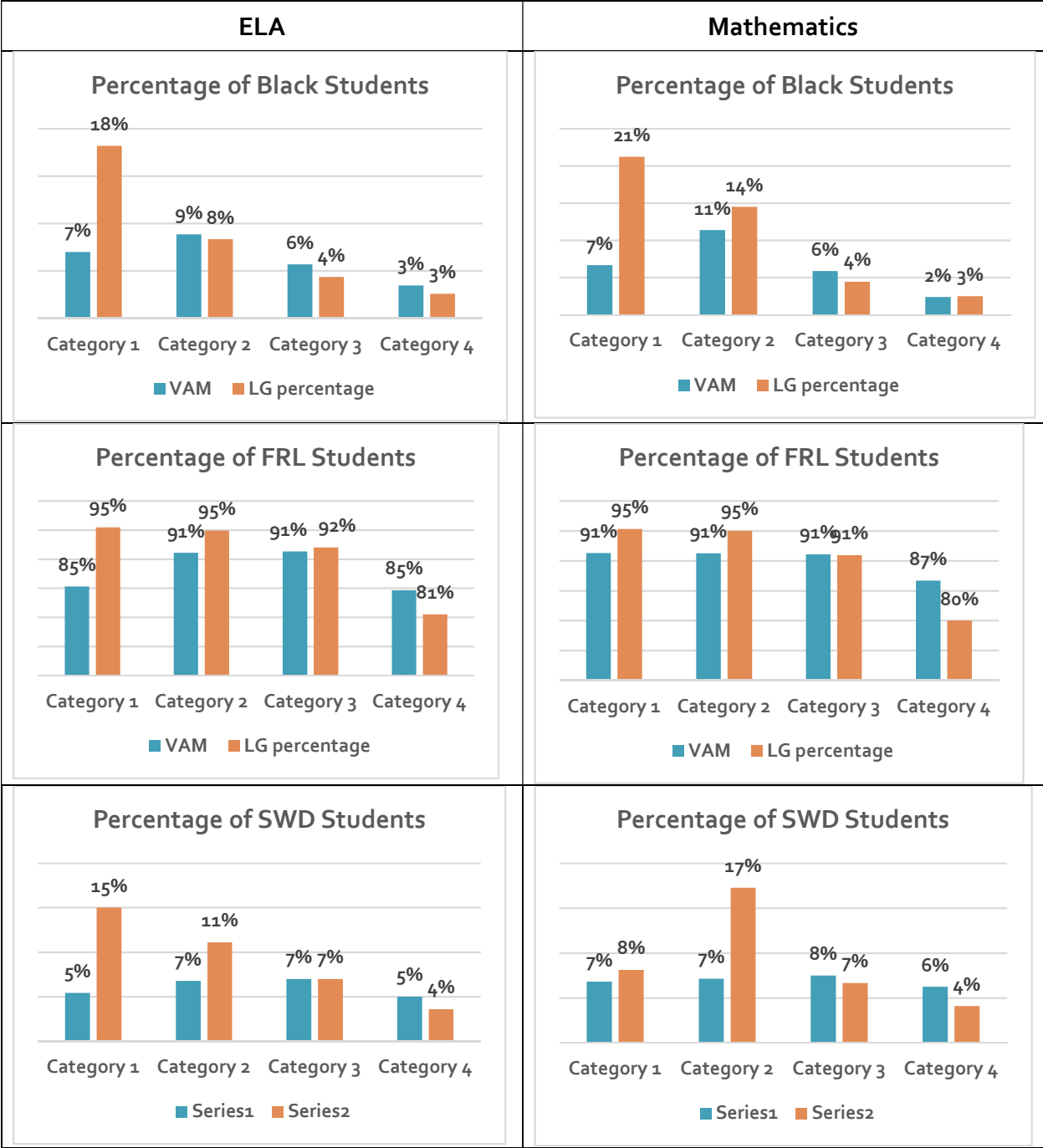
Using the one-year data from the Florida VAM, the teachers were classified into four categories using the VAM ratio approach as follows:

- If VAM Ratio < -3 , assign Category 1,
- If $-3 \leq$ VAM Ratio < -1 , assign Category 2,
- If $-1 \leq$ VAM Ratio ≤ 2 , assign Category 3,
- If VAM Ratio > 2 , assign Category 4.

For the learning gains results, the categories were created in the following similar way:

1. Teacher percentages of students making learning gains were determined for each grade level separately.
2. The teacher outcome was found by subtracting the Districtwide percentage of students making learning gains (for each grade) from the teacher percentage.
3. The standard error of these teacher-level percentages was found by dividing the student-level standard deviation of the percentages of students making learning gains for each grade by the square root of the number of students used in the denominator of the learning gain fraction.
4. The ratio of the teacher outcome to its standard error was found.
5. The teacher categories were created using this ratio as described in the bulleted list above.

The charts below show the median percentages of students with certain characteristics by teacher categories created using the two alternative approaches.



It can be seen that when learning gains are used to create teacher categories, the percentages of students in certain demographic categories display a clear pattern indicating a potential bias. This potential bias is apparent with the percentages of Black, FRL, and SWD students.

Conclusion

A comparison of teacher outcomes from the two alternative methods indicate that the teacher outcomes derived using learning gains are subject to bias to a considerable degree due to student characteristics that are beyond teacher control. In contrast, teacher VAM estimates seem to exhibit a much smaller degree of bias.