Background

Two powerful currents have driven U.S. education policy over the past 50 years—the pursuit of educational excellence and the effort to ensure that all students, regardless of ethnicity or income, have equal access to education (Foorman, Kalinowski, & Sexton, 2007). An ongoing matter of debate in determining whether these goals have been met has been the role of family background versus the role of school resources. In most cases, family background and not school effects account for achievement outcomes (Coleman et al., 1966). However, there are instances of schools accounting for significant variation in achievement outcomes, especially in poor and developing countries, and cases where schools bridge the achievement gap between students from high vs. low socioeconomic status (Chudgar & Luschei, 2009).

Objective/research question

An important question for policy makers is to determine whether adjustments for socioeconomic differences and minority status make a difference in determining whether schools are closing the achievement gap. Since 2004, the Florida Center for Reading Research (FCRR) had provided an evaluation of Reading First schools in Florida to the Department of Education by examining the percentage of students on grade level on the Florida Comprehensive Assessment Test (FCAT). As a supplementary approach, FCRR used a "Beating the Odds" approach in addition to raw scores to demonstrate differences in school performance when accounting for school risk. Thus, we addressed this question for the Florida Department of Education by analyzing three-years of data from the Florida Comprehensive Assessment Test (FCAT) for the 3,011 public schools in Florida, with and without controls for SES and minority status. We utilized multiple regression and latent transition analyses.

Setting

The State of Florida's public elementary, middle and high schools from 2007-2009.

Participants

The unit of analysis in this study was the population of Florida's public schools. A total of 1,786 elementary, 575 middle, and 418 high schools were included in the analysis, for a grand total of 3011 schools.

Research Design

A secondary analysis of archival data available on the Florida Department of Education website was used in this design.

Data Collection and Analyses

The data represented aggregated, summative information collected by the Florida Comprehension Assessment Test (FCAT). The FCAT-SSS is a component of Florida's testing

effort to assess student achievement in Reading, Writing, Mathematics, and Science represented in Florida's *Sunshine State Standards* (SSS) (Florida Department of Education [FDOE], 2001). The SSS Reading portion of the FCAT is a group-administered, criterion-referenced test consisting of 6 to 8 informational and literary reading passages (FDOE, 2005). Students in grades 3-10 respond to between 6 and 11 multiple choice items for each passage and are assessed across four content clusters: reading comprehension in the areas of words and phrases in context, main idea, comparison/cause and effect, and reference and research. Reliability for the FCAT-SSS has been shown to be high at .90; moreover, test score content and concurrent validity have been established through a series of expert panel reviews and data analysis (FDOE, 2001). The construct validity of the FCAT-SSS as a comprehensive assessment of reading outcomes recently received strong support in an empirical analysis of its relationships with a variety of other reading comprehension, language, and basic reading measures (Schatschneider et al., 2004).

Students completing the reading portion of the FCAT-SSS were placed in one of five performance levels based on a scale score ranging from 100–500. Levels 1 and 2 reflect below grade-level performance in reading, with Level 1 being the lowest indication of reading performance. Levels 3 and above represent proficiency in reading comprehension at or above grade-level standards. In addition to FCAT levels, aggregated student performance was clustered into three additional variables that were used to describe AYP: 1) the percentage of all students within the school achieving Level 3 and above, regardless of grade level; 2) the percentage of students who made one year's worth of growth according to Florida's standards (FDOE, 2005); and 3) the percentage of students in the lowest quartile of FCAT performance within each grade that made one year's worth of growth according to Florida's standards.

Two sets of analyses were run to show a comparison between the "Beating the Odds" approach, and a more rigorous empirical approach. The "Beating the Odds" (BTO) index is a residual value from a multiple regression with demographics as predictors. If it is positive, it means the school did better than expected based on demographics; if it is negative, it means they did worse than expected. This index was extended to the present design for all schools in Florida. The raw score performance index is the absolute value of their performance compared to all other schools (not controlling for demographics). This just considers the overall level of their FCAT scores on the three performance indicators we used, which were: 1) percent meeting high standards in reading (i.e., the percent of students passing FCAT using FCAT-SSS scores); 2) percent making reading gains (i.e., the percent of students making one year's worth of growth based on FCAT Developmental Scale Scores); 3) percent of lowest 25% making learning gains in reading (i.e., the percent of students in the lowest quartile that made one year of growth based on FCAT Developmental Scale Scores) . Additionally, this index indicates how far schools are above (positive) or below (negative) the mean of all schools in that category in standard deviation (SD) units. The factors that were controlled in the BTO analyses were percent participating in the federal free and reduced lunch program, percent minorities, and percent actual English Language Learners (ELL).

For the purpose of reporting, we reference the 50th percentile on the absolute and BTO scores to examine relative rank order to either index. Four groups may be extracted from the data based on whether they are above and/or below the 50th percentile on raw or BTO scores. Table

1 describes these 2 x 2 groupings. Group 1 are schools $\geq 50^{th}$%ile on both the raw and Beating the Odds scores, hereafter referred to as HH since they are high on both scores; Group 2 are schools $\geq 50^{th}$%ile on raw and $<50^{th}$%ile on Beating the Odds scores (i.e., HL); Group 3 are schools $<50^{th}$%ile on raw and $\geq 50^{th}$%ile on Beating the Odds scores (i.e., LH); and Group 4 are schools $<50^{th}$%ile on both the raw and Beating the Odds scores (i.e., LL). Using this table, we were able to report the number of schools within each category.

Table 1: Description of Four Score Types

	BTO Score	
Raw Score	$<50^{th}$%ile	$\geq 50^{th}$%ile
$\geq 50^{th}$%ile	HL	HH
$<50^{th}$%ile	LL	LH

The second approach taken was to use a latent transition analysis with a higher-order latent class variable, known more commonly as a mover-stayer analysis. This technique is within the family of latent mixture modeling where a categorical latent variable is used to describe clusters of participants based on observed indicators (discrete or continuous). This model allows for the specification of profiles or classes within a given year, and to examine the stability of the profiles over multiple years. In this study, three years of data were used to examine profiles of schools based on not only the three variables using in the Beating the Odds analysis, but also the percentage of minority students, percentage of students eligible for free/reduced price lunch, and percentage of students identified as English Language Learners.

Results

Table 2 summarizes the percentage of schools by school type and outcome in the 2008-2009 school year to illustrate the distribution by group categories for the Beating the Odds analysis.

Table 2: Proportion of Schools by Group for School Type and Outcomes in 2008-2009

	Group			
Elementary Schools (N = 1786)	1 (HH)	2 (HL)	3 (LH)	4 (LL)
% Meeting High Standards	33.8	17.3	17.2	31.7
% Making Reading Gains	39.4	9.6	11.6	39.4
% of Lowest 25% Making Reading Gains	45.7	6.4	5.3	42.6
Middle School (N = 575)				
% Meeting High Standards	32.2	18.4	18.8	30.6
% Making Reading Gains	43.7	11.7	7.3	37.4
% of Lowest 25% Making Reading Gains	43.5	4.0	7.5	45.0
High School (N = 418)				
% Meeting High Standards	37.1	15.1	13.9	34.0
% Making Reading Gains	41.4	12.2	9.6	36.8
% of Lowest 25% Making Reading Gains	45.7	6.9	5.3	42.1
Combination School (N = 232)				
% Meeting High Standards	40.1	9.5	10.8	39.7
% Making Reading Gains	42.7	11.2	8.2	37.9
% of Lowest 25% Making Reading Gains	44.4	6.0	6.5	43.1

Group 1 are schools >=50th%ile on both the raw and Beating the Odds scores
Group 2 are schools >=50th%ile on raw and <50th%ile on Beating the Odds scores
Group 3 are schools <50th%ile on raw and >=50th%ile on Beating the Odds scores
Group 4 are schools <50th%ile on both the raw and Beating the Odds scores

Results from this multiple regression analysis shown in Table 2 reveal that for all school types a large percent of schools falls into Group 1 (HH) where raw scores and BTO scores are above the 50th percentile. This is very encouraging to see so many schools scoring at grade level or higher with or without adjustment for challenging demographics. However, a large percent of schools also falls into Group 4 (LL) in which low proficiencies remain even after adjustment for challenging demographics. It is interesting that performance on Group 2 (HL) and Group 3 (LH) is relatively similar for all school types and all outcomes. The HL group has relatively high raw scores but low adjusted scores. These schools appear to be ignoring the needs of their disadvantaged students. The LH group, on the other hand, has low raw scores but high adjusted scores. They are serving their disadvantaged schools well and could be studied further to learn about their leadership practices and instructional programming.

To address stability in these groupings, we conducted a latent transition analysis on the prior two years of data for these schools (2006-2007 and 2007-2008) in addition to the 2008-2009. Results from this "mover-stayer" analysis indicated that for elementary schools, 71% of schools maintained a similar profile over time; whereas 29% of schools transitioned profiles over the three years. Analyses for middle and high school are in progress.

Conclusions

The State of Florida has a database of FCAT scores to address questions regarding equity and excellence in education. Florida also has the educational leadership in the Department of Education to ask how schools are doing in closing the achievement gap. Using the residual value from a multiple regression analysis with demographics as predictors—a Beats the Odds approach—is good first step to informing policy regarding schools' achievement in an absolute sense and when controlled for demographics. To address stability in these profiles over time, we recommend a latent transition analysis—a mover-stayer analysis—rather than trying to look descriptively across three years of Beat the Odds regression analyses. The information from these analyses may be used to identify schools where a large mismatch is observed between the absolute index of performance and the beating the odds performance. Additionally, this information could assist in thinking about how to focus resources based on the relationship of percentile ranks.

Appendix A: References

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