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Rural Demographics and the Standards and Indicators for School Improvement: Influence on Elementary School Accountability in Kentucky

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Introduction

Educators and policy makers have longstanding concerns about the quality of rural schools. There is widespread consensus that rural students do less well than those in urban areas (Reeves, 2012, p. 887). However, the reasons why are less clear. Prominent explanations include (a) cultural and values differences that reflect traditional rather than modern outlooks (Childs & Melton, 1983; Grasmick, 1973), consistent with classic works on values (Rokeach, 1973), attittudes (Fishbein, 1967), and the effects of economic change on culture and ideology (Eisenstadt, 1966; Harris, 1979; Inkeles & Smith, 1974); (b) widespread poverty in rural areas (see Fisher, 2007; Khattri, Riley, & Kane, 1997; Roscigno, Tomaskovic-Devey, & Crowley, 2006; Williams, 2005; Young, 1998); and (c) the low quality of rural teachers (see Little & Miller, 2007, for extended discussion). Somewhat surprisingly, several studies have demonstrated no difference or even an advantage to rural schools once poverty has been controlled (e.g., Fan & Chan, 1999; Khattri et al., 1997; Reeves, 2003; Reeves & Bylund, 2005).

Purpose

The current study addresses several issues directly related to the study of rural schools, including the measurement of rurality, the relationship between rurality and school achievement, school reform/school improvement, and micro studies of the elements of whole-school reform and their influence on accountability outcomes. The work builds on a strand of research by Steve Miller and Doug Smith at Western Kentucky University, including several dissertations examining Kentucky's Standards and Indicators for School Improvement (SISI) (see Ennis, 2007; McKinney, 2007; Saravia, 2008; Todd, 2010), each focused on a different combination of limited subsets of the full nine standards. Further, while controlling for demographic influence, no direst measure of rurality was included. The current study includes a new measure of rurality and investigates the full set of nine standards.

Research Questions

The hypothesized relationships linking the SISI model to achievement are presented in Figure 1, followed by the specific research questions.

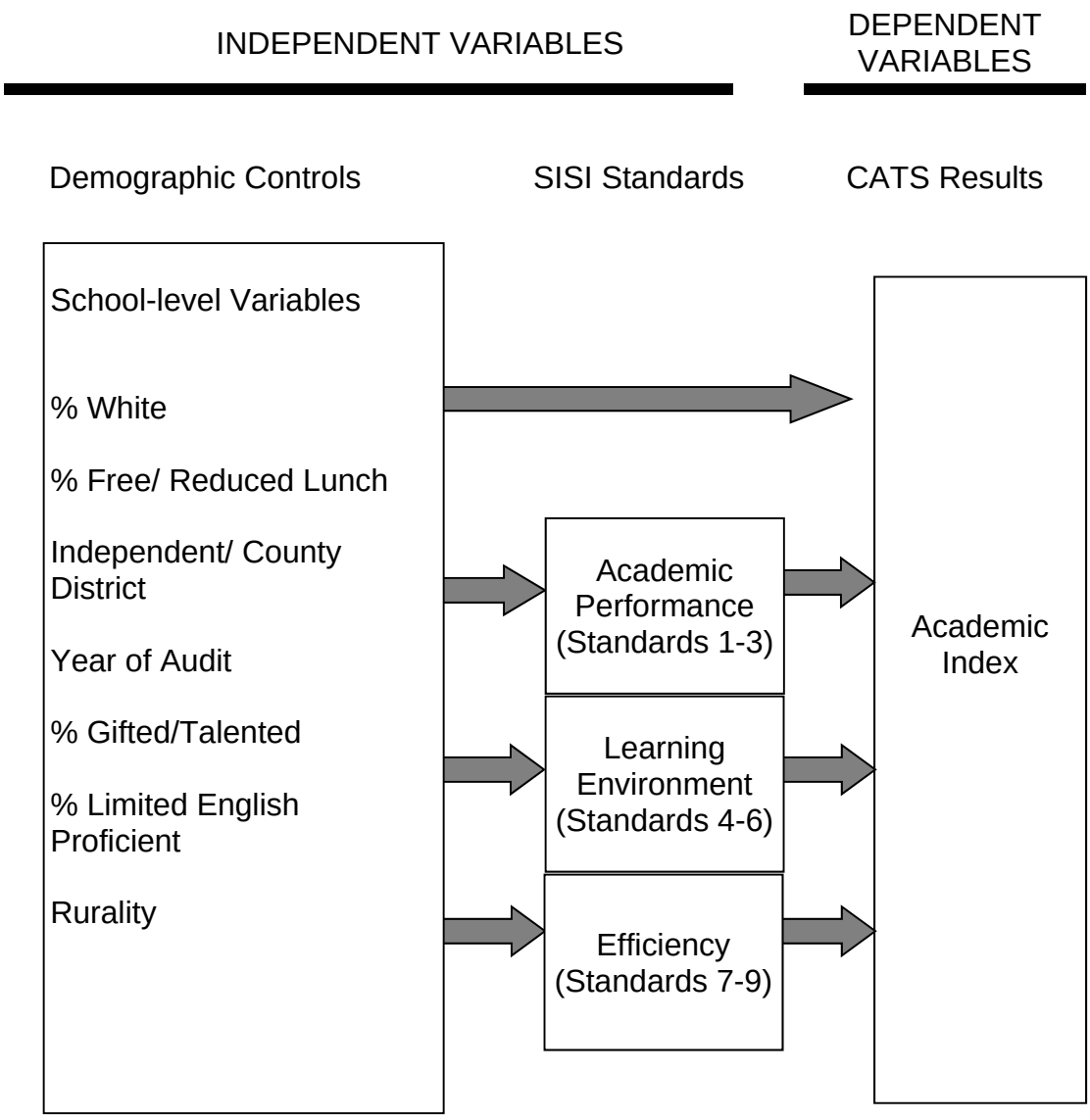

Figure 1. Relationships among Demographic Controls, SISI Standards (Academic Performance, Learning Environment, Efficiency), and accountability outcomes.

Net of the Demographic Factors, to what degree does:

1. Academic Performance (Standard 1, Curriculum; Standard 2, Classroom Evaluation/Assessment; Standard 3, Instruction) influence the Academic Index?

2. Learning Environment (Standard 4, School Culture; Standard 5, Student, Family and Community Support; Standard 6A, Professional Development; Standard 6B, Professional Growth and Evaluation) influence the Academic Index?

3. Efficiency (Standard 7, Leadership; Standard 8, Organizational Structure and Resources; Standard 9, Comprehensive and Effective Planning) influence the Academic Index

Methods

This research utilizes a secondary dataset from the Kentucky Department of Education (KDE). The design is correlational; analyses include descriptive statistics and hierarchical multiple regression to answer the research questions. The sample includes 171 elementary schools for which KDE conducted week-long visitations to assess the status of the school on each standard as represented by the 88 indicators. These scholastic audits were conducted from 2001 to 2005 and compiled into a useable dataset. The authors matched these school audit scores with performance test scores (the Academic Index from the Commonwealth Accountability Testing System [CATS] and demographic information from the Kentucky Performance Report [KPR], available publically).

The scholastic audit was developed by KDE as a measurement tool for the 88 indicators across the nine standards utilizing 4-point behavioral anchors (from 1 = little or no development to 4 = exemplary level of development). KDE-trained teams arrived at consensus for each indicator based on extensive observations, interviews, and reviews of documents ranging from minutes of meetings to school improvement plans and instructional and assessment materials. (Previous psychometric analyses conducted in the four companion dissertations demonstrated that the set of indicators representing each standard functioned as the unitary construct intended by KDE based on computations that included Factor Analysis, inter-scale correlations, external validity coefficients, and Cronbach's alpha).

The dependent variable is the Academic Index, a composite of the discipline-based Kentucky Core Content Tests, ranging from 0-140 (with long-term target of 100 for all schools by 2014). The two types of independent variables are the Demographic Controls (six demographic variables—%White, %Gifted, %Free/Reduced Lunch, %Limited English Proficiency, Year of Audit—plus the new measure of rurality, the NCES Urban-Centric Locale Code, recoded) and the scholastic audit scores from the sample schools. The school is the unit of analysis.

The three research questions were addressed via three separate hierarchical regressions. Seven demographic variables were entered in Step 1, followed by three content groupings for the Standards and Indicators for School Improvement: (a) RQ1, Academic Performance (Standards 1-3); (b) RQ2, Learning Environment (Standards 4-6); RQ3, Efficiency (Standards 7-9).

Results

For all three research questions, Step 1 was identical. Five of the demographic factors were significant predictors of the Academic Index, with an Adjusted R^2 of 0.61. Country/Independent School District and the rurality measure, the NCES Urban-Centric Locale, were not significant. The highest standardized betas for Step 1 were %Free/Reduced Lunch at -0.42, Year of Audit at 0.37, and %White at 0.26.

For Research Question 1, Standard 1 (Curriculum), Standard 2 (Classroom Evaluation/Assessment), and Standard 3 (Instruction) were added to the equation in Step 2. The same five demographic variables plus Standard 2 (Classroom Evaluation/Assessment) and Standard 3 (Instruction) were significant. The effect size increased to 0.74, with the highest betas found for the same three demographic variables, now ranging from -.30 to .26. Betas for Standards 2 and 3 were both .18.

Research Question 2 addressed the effects of the Learning Environment, with Standard 4 (School Culture), Standard 5 (Student, Family and Community support), Standard 6A (Professional Development), and Standard 6B (Professional Growth and Evaluation) added in Step 2. Only School Culture was significant (beta - .25), with Year of Audit replacing Free/Reduced Lunch as the highest beta among the demographic factors at .35. Total effect size remained at .74.

Finally, for Research Question 3, Efficiency was added in Step 2: Standard 7 (Leadership), Standard 8 (Organizational Structure and Resources), Standard 9 (Comprehensive and Effective Planning). Standards 8 and 9 were significant (betas of .19 and .25, respectively). Year of Audit continues to be the strongest of the demographic factors (beta = .33), with Total Adjusted R^2 of .73.

Discussion

This study extended previous work on Kentucky's Standards and Indicators for School Improvement in two ways. First,

the effects of all three groupings of the SISI by content area—Academic Performance (Standards 1-3), Learning Environment (Standards 4-6), and Efficiency (Standards 7-9)—were examined. Prior studies (Ennis, 2007; McKinney, 2007; Saravia, 2008; Todd, 2010) had looked at only selected subsets of variables and no analyses of Standards 2, 8, and 9 had been completed, although dissertations in progress (Harvey, Huskey) are focused on Leadership paired with Standard 8 and with Standard 9, respectively. Thus the current investigation provides a more comprehensive analysis of the overall efficacy of the Standards and Indicators for School Improvement regarding student achievement.

Five of the nine standards were significant predictors of the Academic Index from Kentucky's CATS performance testing: Classroom Evaluation/Assessment and Instruction from the Academic Performance grouping; School Culture from the Learning Environment grouping; Organizational Structure and Resources and Comprehensive and Effective Planning from the Efficiency grouping. Further, prior work has demonstrated that Standards 5, 6A, and 7 were all significant predictors of achievement when tested in smaller subset combinations of the SISI. This leaves only Standard 1 (Curriculum) as not significantly related to the Academic Index. Thus Kentucky's Standards and Indicators have demonstrated to be a powerful tool for use in school improvement efforts. Given Kentucky's rural heritage and widespread rural landscapes, this is great news for rural schools generally, confirming earlier claims by Mintrop (2003) and Mintrop and Trujillo (2005), that SISI, and their accompanying measurement tool, the Scholastic Audit, warrant consideration as among if not the most powerful extant tools for school improvement available today.

Second, the previous work, while controlling for school-level demographic background, had not tested an explicit measure of rurality. In this study, the new NCES Urban-Centric Locale Code was recoded for each of the 171 schools. However, this measure proved not to be related to school-level achievement. This rurality measure was not only not significant; it had a *t* value of -.002, essentially zero effect. Interpretation of this should be tempered, however. This does not necessarily mean that rurality is not a useful construct. It does indicate that this more recent effort to measure rurality is clearly not related to school-level achievement. Unresolved issues include the disentangling poverty from spatial or other measures of rurality. Perhaps a more direct assessment of values could be a useful approach (see Little & Miller, 2007, on the effect of rural values in personnel practices in hiring teachers). Clearly more work is needed in this domain.

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