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Strength and comprehensiveness of school wellness policies in southeastern US school districts

Melissa J. Cox, MPH [Doctoral Student],
Department of Health Behavior, Gillings School of Global Public Health, University of North Carolina, Chapel Hill, Campus Box 7440, Chapel Hill, NC 27599, Phone: 919-966-5771

Susan T. Ennett, PhD [Professor],
Department of Health Behavior, Gillings School of Global Public Health, UNC Chapel Hill, Campus Box 7440, Chapel Hill, NC 27599, Phone: 919-966-9207

Christopher L. Ringwalt, DrPH [Senior Scientist],
Pacific Institute for Research and Evaluation, 1516 E Franklin St #200, Chapel Hill, NC 27514

Sean M. Hanley, PhD [Associate Research Scientist], and
Pacific Institute for Research and Evaluation, 1516 E Franklin St #200, Chapel Hill, NC 27514

James Michael Bowling, PhD [Research Associate Professor]
Department of Health Behavior, Gillings School of Global Public Health, UNC Chapel Hill, Campus Box 7440, Chapel Hill, NC 27599

Melissa J. Cox: coxmj@unc.edu; Susan T. Ennett: sennett@email.unc.edu; Christopher L. Ringwalt: ringwalt@pire.org; Sean M. Hanley: shanley@pire.org; James Michael Bowling: jbowling@email.unc.edu

Abstract

Background—In 2004, Congress passed legislation mandating that all public school districts participating in federal school meal programs develop a school wellness policy (SWP) to direct efforts related to nutrition and physical activity. We examined the extent to which SWPs varied in comprehensiveness and strength in a representative sample of school districts in the southeastern United States, the area of the country with the highest rates of childhood obesity.

Methods—Policies were assessed using an established 96-item coding tool by 2 raters to ascertain the comprehensiveness and strength of the policies as a whole, and across distinct subsections specified by federal legislation. In addition, variability in SWP comprehensiveness and strength was assessed based on district socio-demographic characteristics.

Results—Overall, SWPs in the southeastern states are weakly written, fragmented, and lack requirements necessary for healthy school environments. District size, which was the only socio-demographic factor related to policy characteristics, yielded an inverse association.

Conclusions—To encourage continued promotion of healthy school environments, school districts will require technical support to improve the quality of their school wellness policies.

Correspondence to: Melissa J. Cox, coxmj@unc.edu.

Keywords

child and adolescent health; health educators; school-related legislation; school health policy; school wellness

The epidemic of childhood obesity remains a central public health concern across the United States (US). This is particularly true in the southeastern US, a region with a disproportionately high percentage of overweight and obese children.[1,2] Support for obesity prevention and intervention strategies is high, with schools playing a critical role in those efforts.[3] Children spend a significant portion of their day at school, indicating the potential for school environments to facilitate the development and maintenance of positive health behaviors. Specifically, schools can address obesogenic environments through enhancing access to nutritious foods, increasing opportunities for physical activity, and ensuring the delivery of health education related to both nutrition and physical education.[4]

Recognizing the role of schools in improving child health and reducing obesity, Congress passed the Child Nutrition and WIC Reauthorization Act in 2004,[5] which required all school districts participating in a federal child nutrition program to establish a local school wellness policy (SWP) by the start of the 2006-2007 school year. The legislation required wellness policies to include goals for nutrition education, physical activity and other school-based activities to promote wellness; nutrition guidelines for all foods available on school campus; assurance that school meals meet federal requirements; a plan for measuring implementation; and the involvement of parents, students, school food authority representatives, school administrators and the public in the development of local SWPs. The purpose of this study is to examine the extent to which SWPs have been adopted in the southeastern states and the comprehensiveness and strength of the policies, both overall and with regard to specific wellness domains.

Early assessments of the quality of SWPs found inconsistencies across districts in meeting federally mandated components of the policies. In a study of Alabama public schools, Gaines et al[6] reported that the percentage of districts addressing each federal requirement varied from 72% (specifying a responsible party for evaluation) to 90% (physical activity goals). Similarly, Moag-Stahlberg et al[7] found variations in compliance with federal mandates in a national sample with the highest compliance for physical activity (94%) and other school-based wellness activities (95%), and the lowest compliance with requirements regarding measurement of implementation (85%). The total number of federal mandates addressed in districts' policies also varied. For example, Metos and Nanney[8] found that 77% of school districts in Utah addressed every mandated component, whereas Lyn et al[9] reported that only 52% of districts in Georgia met all required components. Although valuable in documenting variations in SWPs, these studies only examined the *minimum* federal requirements for SWPs.

Recognizing a need to evaluate SWPs rigorously, Schwartz et al[10] developed a quantitative tool to assess the comprehensiveness and strength of these policies. Comprehensiveness measures whether policy components are addressed at all, whereas strength measures whether those components are addressed with clear and specific language and whether the

component is required rather than recommended. Results from single-state studies have demonstrated that the overall language of the policies is vague and that there is wide variation in the strength of the language used to address mandated components.[11,12] Using a nationally representative sample, Chriqui et al[13] found that whereas both the comprehensiveness and strength of SWPs have increased in the years since 2006-2007 when they were mandated, they remain highly inconsistent and weak. Variability across policy subsections in this national sample was striking. Nutrition education was the most comprehensively addressed component (average comprehensiveness score of 70) and the regulation of competitive foods was the weakest component addressed (average strength score of 20 out of 100). The average total strength score of the SWPs 5 years after the federal mandate was only 28 (out of 100). Thus, SWPs across the United States leave much room for improvement.

The Current Study

The burden of childhood obesity remains alarmingly high, particularly in the southeastern US. Nationally, overall rates for childhood obesity based on BMI remained stable from 2003-2012, with 17% of US children classified as obese.[14] The highest rates of childhood obesity are concentrated in the southeastern US states, thus warranting investigation of this region.[15] To date, no study has systematically examined the quality of SWPs in the southeastern US, despite the burden of obesity and related illnesses. To address this gap, the goal of this study was to assess the comprehensiveness and strength of SWPs within a representative sample of school districts in the region. Based on prior studies,[6,9] we expected that across school districts in the southeastern US, SWPs would vary in comprehensiveness and strength both within districts by policy subsection, and across districts overall.

An additional goal of the study was to examine whether policy comprehensiveness and strength varied by the socio-demographic characteristics of the school districts. District size, percentage of students eligible for free and reduced priced lunch, race/ethnicity composition and a measure of the district-wide student-teacher ratio were used in this study as potential sources of variation in SWP comprehensiveness and strength. Larger district size has been previously associated with positive attributes of school wellness.[9] Studies have also demonstrated that high participation in free and reduced priced lunch, a marker of district poverty, is positively associated with policy strength[16] and the number of mandatory policies included in the SWP.[8] The student-teacher ratio is included to reflect a general level of resources available within each school district. This indicator may be especially relevant given that teachers and resources for specialty areas such as physical education are vulnerable to budget cuts. Due to the substantial differences in samples (eg, single state vs. regional area) and methods (eg, correlation analysis vs. regression) between our study and prior studies that examined socio-demographic factors, we viewed these analyses as exploratory and thus did not make directional hypotheses. Overall, the results of this study are intended to identify which policy areas are most in need of improvement, as well as identify characteristics of school districts most in need of technical assistance to address policy deficits.

Methods

Sample

Data are from the 2009-2010 Common Core of Data school universe survey file (http://nces.ed.gov/ccd/pubschuniv.asp); our sampling frame was restricted to the 8 states constituting the southeast region as defined by the USDA's Food and Nutrition Services agency (http://www.fns.usda.gov/fns-regional-offices). The states included Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. We further restricted the frame to regular (ie, not charter, alternative, vocational, or special education) schools and those comprising grades 6-8 only. We focused on grades 6-8 because of the potential greater relevance of SWPs to middle versus high school given that middle school students may not leave school grounds at lunch time and because physical education is more often required in middle than in either elementary or high school.[17] We then stratified the sample by computing the number of eligible schools per district and creating a 3-level stratum variable with values of 1, 2-5, and 6 or more eligible schools per district. We also created a 2-level urbanicity stratification variable with values of urban or rural as designated on the sampling frame, and cross classified it with our district size variable to create a final 6-level stratification variable. We then selected a random sample of 125 schools from these strata proportionate to the number of schools in each district. The sample of school districts (N = 111) was then defined as those districts that were associated with our sampled schools.

Instruments

All school wellness policies were coded using a tool developed by the Robert Wood Johnson Healthy Eating Research Group to assess the potential impact of SWPs.[10] The tool contains 96 items covering 7 subsections: nutrition education, nutrition standards for USDA school meals, nutrition standards for competitive and other foods and beverages, physical education, physical activity, communication and promotion, and evaluation. Thus, the 6 goals of the federal legislation are encompassed within the 7 subsections of the tool, which further delineates pertinent components, such as the distinction between goals for physical activity and physical education.

Procedure

Policy collection—We developed a protocol to identify and collect SWPs using a multistage process. First, we conducted a systematic web-based search of the school district website for policies with the term ‘wellness’ in the title. Next, if the policy could not be found on a district website, we entered the school district name and ‘wellness policy’ into an Internet search engine. Overall, 99 district SWPs (89%) were found via a Web-based search. Third, for those policies not identified on the web, a call was made to the main school district phone number to identify the location of the SWP. In total, 4 district SWPs were found via phone calls. SWPs could not be identified for 8 districts and were considered missing. Altogether, SWPs were identified for 103 school districts (93%).

Once a SWP had been identified, a series of steps was taken to ensure it was the appropriate policy. For each, it was confirmed that the policy specifically referred to students in the

school district, was approved after June 30, 2004 (when Congress passed Public Law 108-265 mandating SWPs), and specified compliance with the federal legislation.

During the data collection process it became clear that many districts had additional policies relevant to areas covered by the SWP. Therefore, to identify policies that addressed components of the legislation mandating local wellness policies, but were not explicitly labeled as the school wellness policy, the same search protocol was used on the terms vending, competitive foods, physical education, and health education. All policies found through these additional search criteria are referred to as auxiliary policies. Thus, for each school district in our sample, a thorough search for the local wellness policy as well as auxiliary policies on these 4 related terms was conducted.

Policy coding—The SWPs and auxiliary policies were coded collectively, meaning that all the content of the SWP and any auxiliary policies were taken together as one unit and coded using the previously described tool.[10] Inter-rater reliability (IRR) between 2 study team members who conducted the coding was assessed at multiple stages of the coding process. At the beginning, the 2 team members each rated 5 policies (IRR=0.75) and then met to reach agreement. Once half of the policies were coded, a second inter-rater check was performed to ensure high inter-rater reliability (IRR=0.87).

Based on the coding tool, content of the SWPs was evaluated to assess comprehensiveness, the extent to which topics were covered, and strength, the degree to which the content was explicitly stated or required. Each item was scored on a 0-2 scale. For example, the item rating ‘optimizes scheduling of meals’ was coded as a 0= no mention, 1= language is vague or suggested (non-specific reference to ‘appropriate times’), or 2= language requires specific strategies (lunch will be scheduled after recess). For each of the 7 subsections, and the entire policy as a whole, comprehensiveness and strength scores were calculated based on this coding. Comprehensiveness scores were calculated as the number of items coded as either a ‘1’ or ‘2’, divided by the number of items in that section. Strength scores were calculated as the number of items scored as a ‘2’, divided by the number of items in that section. For example, if a section had 5 items, one of which was coded as 0, one of which was coded as 1, and 3 of which were coded as 2, the comprehensiveness score would be 4/5 or 0.8 and the strength score would be 3/5 or 0.6 and. Therefore, comprehensiveness and strength scores ranged between 0 and 1.

Socio-demographic Measures

The 4 district-level measures were from the Common Core of Data for the 2006-2007 school year:[18] district size, students eligible for free and reduced priced lunches, race/ethnicity composition, and student-to-teacher ratio. District size and students eligible for free and reduced price lunch are based on the total number of students in the district. The race/ethnicity composition indicator is the percent of students in the district who self-identified as white. The student-teacher ratio reflects the entire school district.

Data Analysis

We performed analyses using SAS (version 9.4, 2013, Cary, NC). First, we weighted the data to be representative of all public school districts within the 8 southeastern states included in the sampling frame. Weights were created by dividing the total number of eligible schools in the stratum by the product of the number of selected schools per district, the number of schools selected per stratum, and the number of eligible schools per district. These weights were used in all subsequent analyses using the SURVEY package available in SAS.

We then computed a series of descriptive statistics to assess wellness policy coding results. First, we assessed the percentage of districts that included the 6 broad, federally mandated SWP components. Second, we used the coding tool for a more detailed analysis of the SWPs. Means and standard deviations were calculated for comprehensiveness and strength scores for each of the 7 coding tool subsections, as well as for the policies as a whole. Third, frequencies were used to describe the distribution of auxiliary policies. Finally, we ran least squares regression models using PROCSURVEYREG to examine the influence of district demographic factors on SWP comprehensiveness and strength scores.

Results

The 2004 Child Nutrition and WIC Reauthorization Act mandated 6 components for SWPs across the domains of nutrition, physical activity and education, school meals and competitive foods, and plans for implementation and stakeholder involvement. Policies were coded as to whether policies addressed goals relevant to each federal mandate and if so, whether the goals were recommended or required (Table 1). Almost all districts required goals for physical activity and the regulation of school meals. District policies varied considerably for the other federal mandates, with almost one-fourth of all districts not addressing goals for nutrition education or involvement of all required stakeholders in the development of the SWP. Most schools addressed guidelines for other foods available at school, with half requiring specific guidelines and 43% making weaker recommendations. Only two-thirds of districts mandated a plan for measuring implementation of the SWP.

Once it was determined whether the districts had met the basic requirement of the federal legislation, each district's policy was assessed on all 96 items of the coding tool[10] to determine the comprehensiveness and strength of the policy. As stated previously, scores for both, ranging from 0 to 1, were calculated for each policy subsection. Table 2 presents the aggregate mean comprehensive and strength scores for all policy subsections as well as for the policy in its entirety. For the total policy scores across all districts, the average comprehensiveness score was 0.34 and the average strength score was 0.20. Districts ranged from 0.20 for communication and promotion to 0.55 for evaluation on comprehensiveness scores. As expected, strength scores were lower, ranging from 0.13 to 0.42 across domains, with the lowest scores for competitive foods and the highest for evaluation. Examining comprehensiveness and strength together, districts had the lowest scores for communication and promotion and the highest scores for evaluation.

Auxiliary policies, when available, were included with the designated wellness policy in deriving these scores. Table 3 presents the percent of districts with auxiliary policies in 5 relevant areas. Approximately one-fourth of all districts had auxiliary policies related to the management of food services and the school nutrition program, competitive foods, and physical education. The most common auxiliary policy (34.9%) was related to vending machines. Only 2.2% of districts had a separate policy for health education.

Regression analyses were conducted to assess any relations between the district-level socio-demographic factors and SWP comprehensiveness and strength scores, as reported in Table 4. The only significant finding among the demographic variables was that as district size increased, the comprehensiveness of the SWP decreased.

Discussion

Using a coding tool developed by the Robert Wood Johnson Healthy Eating Research Program, we examined the comprehensiveness and strength of SWPs collected from a representative sample of school districts in the southeastern United States. As expected, we found substantial variability in the degree and manner in which districts address mandated components of their SWP. Overall, policies were inadequate with regard to both dimensions: they missed critical components for a comprehensive policy and lacked sufficiently strong language to address SWP components in a potentially effective manner. The coding tool allowed us to assess SWPs on 2 levels. The first was whether SWPs met the requirements of the federal legislation in articulating goals for 6 mandated components. To meet this standard only a single sentence is required indicating district goals for the components. The second level was much more detailed based on important SWP characteristics identified by the Robert Wood Johnson Healthy Eating Research Program and reflected through the 96 items on the coding tool. The interpretation of our results from school districts in the southeastern US on both levels of assessment is presented below.

The majority of districts stated goals in their SWPs related to all 6 broad, federally mandated components: goals for nutrition education, physical activity and other school-based activities to promote wellness, nutrition guidelines for available foods, assurance that school meals meet federal requirements, plans for measuring SWP implementation, and the involvement of multiple stakeholders in developing the SWP. These findings are consistent with those of previous studies.[7,8] We assessed whether statements indicated that the goal was recommended or required. The strongest language was used to address goals for physical activity and school meal assurance, with over 90% of districts requiring those policies. That most districts required these goals is likely because specific policies addressed both these topics before the development of the SWP. For example, school meals were regulated by previous versions of the Child Nutrition Act, while state policy often includes physical activity and education under mandated curriculum components. Topics with the fewest districts reporting requirements were guidelines for competitive foods and the involvement of multiple stakeholders in developing the policy. These topics reflect newer dimensions of school environments, and thus may require more technical assistance and related monitoring to achieve standards for adequate and effective SWPs.

To more thoroughly evaluate SWPs, we used a 96-item coding tool to examine the comprehensiveness and strength of SWPs across 7 domains. These 2 dimensions characterize the extent to which relevant components are addressed (comprehensiveness) and the degree to which those components are specified with clear and directive language (strength). As expected, the overall comprehensiveness and strength scores were low, with an average of 0.34 and 0.20 out of 1, respectively. The scores from our sample of southeastern US schools are even lower than those reported by a national assessment of SWPs[13] (0.48 for comprehensiveness and 0.28 for strength), which was conducted one year prior to our study. Thus, while collectively schools in the US have room for improvement, schools in the southeastern region are particularly behind in creating policies that promote healthy school environments.

Across SWP domains, policies varied considerably with regard to both comprehensiveness and strength. The lowest scores were found for communication and promotion, which include items regarding how and when district officials will engage stakeholders and disseminate wellness information. While this policy subsection is included in the coding tool, it is not explicitly required in the 2004 legislation, which may in part explain the lower scores. In addition, communicating and promoting the SWP go beyond establishing goals as stated in other policy subsections, and require the coordination of wellness policy components. Due to this additional challenge, districts will likely require greater support and assistance to develop and implement quality benchmarks for communication and promotion of their SWPs.

Low comprehensiveness and strength scores were also found for physical activity and physical education. Thus, while many districts met the basic federal requirement of stating *any* goal for physical activity, districts did not support those goals with elements necessary to ensure effective implementation, such as a specified number of minutes for moderate to vigorous activity or adequate space and equipment for physical activity. Without clear and specific requirements for reaching overall wellness goals, SWPs are likely to fall short in achieving their intended impact. The subsection with the highest comprehensiveness and strength scores across the districts was policy evaluation. This may be due to the less detailed nature of the items within the evaluation subsection of the coding tool as compared to other policy domains.

The range of required topics to be covered in a SWP spans multiple topics that are related, yet distinct. To capture the most inclusive set of district policies on these topics and to include them in our rating of district policies, we searched for policies on related terms in addition to the district wellness policies. This search resulted in identifying auxiliary policies on food services, vending machines, competitive foods, physical education and health education, all of which are topics covered within sections of the mandated wellness policy. Approximately one-fourth of districts had policies in each of these topics, with the exception of health education. On the one hand, our inclusion of these auxiliary policies in our coding of a district's policy suggests that the district wellness policy is stronger than is evident based on coding of the SWP alone. On the other hand, the frequency of these auxiliary policies may reflect policy fragmentation. Weaker SWPs may in part be due to multiple and disjointed policies. Such fragmentation may diminish likelihood of effective

implementation. Without strategic integration of wellness topics in policies and programs, schools may not reach their full potential for creating healthy environments.

We found little variation in SWP comprehensiveness and strength with regard to district demographics. The only significant result was that as a district's size increased, the comprehensiveness of its SWPs decreased. This finding suggests that state-level technical assistance efforts that seek to improve district SWPs should focus on larger districts first. This strategy is also likely to affect large numbers of students most expeditiously.

Results from this study should be viewed within the context of several limitations. First, because data for this study are drawn from a probability sample of school districts in the southeastern US, findings may not be generalizable to other regions of the country. Our purpose, however, was to focus specifically on this region because it has the highest prevalence of childhood obesity in the country. Second, our findings only included formal district-level policies approved by a governing body. Less formal approaches, such as memoranda or procedural guidelines, would not have been captured by this study. Finally, our policy analysis was restricted to benchmarks established by federal legislation. For some school districts, local and state mandates or statutes may exceed federal policy, and thus require more of school wellness policies. Assessment of local and state variations in policy, however, was not possible given our sampling strategy and size. This is an area rich for further exploration.

Despite these limitations, we have demonstrated important insights relevant to school health and wellness: namely, that while federally mandated, SWPs in the southeastern US are weakly written, disjointed, and lack provisions on topics critical to healthy school environments. School districts will require assistance in meeting standards for high-quality policies that facilitate successful implementation and foster healthy school environments.

Implications for School Health

Collectively, these results indicate several areas for which policymakers and practitioners can improve efforts to meet school health and wellness goals through SWPs. Coordinated technical assistance is needed to draft revised policies that include strong and direct language. While some agencies and organizations such as the United States Department of Agriculture Food and Nutrition Services have stated their intent to offer such assistance, these efforts are not widespread. First, districts would clearly benefit from assistance in developing policy standards. The low SWP strength scores clearly indicate that schools do not have the directive language necessary for strong written policies. Without direct language in the written policy that makes requirements clear, implementation of the SWP is hampered. Exemplar policies that include strong, specific language should be shared as models for SWP development and revisions. Second, school districts would benefit from purposeful integration of policies related to the topics covered within the SWP, such as the US Centers for Disease Control and Prevention's Coordinated School Health Program model.[19] This would enable districts to more closely align goals for each section to produce coordinated wellness efforts. Cohesive policies would be more transparent and accessible to stakeholders, including teachers and school staff who are responsible for carrying out the

requirements of SWPs. Additionally, an integrated policy would allow for technical assistance across policy domains, rather than within singular areas to reach a broader impact on school wellness. Finally, strong policy language is only the first step towards creating healthy school environments. The results of this study do not reflect policy *implementation*, a critical step in the process of changing school environments that requires careful monitoring and evaluation.[20] Future directions for both researchers and practitioners are to identify and disseminate best practices for policy implementation and evaluation.

Human Subjects Approval Statement

This study was determined to be exempt by the University of North Carolina at Chapel Hill Institutional Review Board (#12-0179) as well as the Pacific Institute for Research and Evaluation Institutional Review Board (IRB00004721).

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Table 1

Percent of Districts Including Federally Mandated SWP Components (N = 103, Weighted Data)

Requirement that each SWP:	Not addressed	Recommended	Required
Include goals for nutrition education	21.8	7.9	70.4
Include goals for physical activity and other school-based activities to promote wellness	6.6	3.2	90.2
State nutrition guidelines for all foods available on school campus	6.6	43.3	50.1
Provides assurance that school meals meet federal requirements	1.5	5.6	92.9
Establishes plan for measuring implementation	15.9	17.6	66.9
Involves parents, students, school food authority representatives, school administrators and public in development of SWP	24.4	23.0	52.7

* Not addressed= item coded as ‘0’; Recommended= item coded as ‘1’; Required= item coded as ‘2’

Table 2

Mean Scores for Strength and Comprehensiveness across 7 SWP Subsections (N = 103, Weighted Data)

Policy Section	Comprehensiveness Mean (SE)	Strength Mean (SE)
Nutrition Education	0.46 (0.07)	0.35 (0.07)
Standards for School Meals	0.36 (0.04)	0.24 (0.03)
Standards for Competitive Foods	0.36 (0.06)	0.13 (0.06)
Physical Education	0.26 (0.04)	0.16 (0.03)
Physical Activity	0.28 (0.03)	0.20 (0.03)
Communication & Promotion	0.20 (0.03)	0.14 (0.02)
Evaluation	0.55 (0.07)	0.42 (0.08)
Total Policy	**0.34 (0.02)**	**0.20 (0.02)**

Table 3

Percent of Districts with Relevant Auxiliary Policies (N=103, Weighted Data)

Type of Auxiliary Policy	% Districts with auxiliary policy (95% confidence limits)
Food Services/School Nutrition Program (Operation; Selection of Food)	24.7% (4.47, 44.92)
Vending Machines	34.9% (12.57, 57.25)
Competitive Foods	29.7% (8.18, 51.16)
Physical Education	25.2% (4.57, 45.82)
Health Education	2.2% (0.00, 4.60)

Table 4
Demographic Factors Associated with SWP Strength and Comprehensiveness

	Total Policy Strength	Total Policy Comprehensiveness
Demographic Construct	**Beta (SE)**	**Beta (SE)**
District size	-0.0000038 (<0.0001)	-0.0000075 (<0.0001) *
District poverty (% free & reduced price lunch)	0.0000055 (<0.0001)	0.000012 (<0.0001)
Ethnicity (% white)	0.00045 (0.0007)	0.00087 (0.0008)
Student-teacher ratio	-0.010 (0.0071)	0.0067 (0.0094)

* Significant at $p < .05$