



The Impacts of Budget Reductions on Indiana's Public Schools: The Impact of Budget Changes on Student Achievement, Personnel, and Class Size for Public School Corporations in the State of Indiana

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In recent years, economic downturn and changes to Indiana's school funding have resulted in significant financial reductions in General Fund allocations for many of Indiana's public school corporations. The main purpose of this statewide study is to examine the possible impacts of these budget reductions on class size and student achievement. This three-year, quantitative study examines budget cutback amounts, teaching position reductions, per-pupil spending changes, class-size data, and student-achievement indicators. Methods of data collection include a statewide superintendent's survey, an evaluation of student achievement indicators, and a collection of public financial records of participating Indiana school corporations. Currently, year one is complete. A compilation of this data provides current information regarding General Fund budgets, position reductions, and class sizes for Indiana's public schools.

Keywords: school budget reduction, class size, student achievement, cost benefit analysis

Due to the national recession and shifts in leadership philosophy at the state level, several changes have been made to the Indiana preK-12 school funding formula over the past two years. These changes have resulted in significant financial reductions in General Fund allocations for the majority of Indiana's public school corporations. It is important to study these budget cutbacks because in Indiana, a public school's General Fund pays for the bulk of its educational operation, including salaries and benefits of teachers and support staff, the majority of teaching supplies, and most student programs. Therefore, General Fund reductions could ultimately impact the quality of education that students receive in Indiana's public schools.

This research is a statewide study with the goal of determining a number of outcomes as a result of these budget reductions. The researchers are asking Indiana's

public school superintendents questions regarding budget cuts, position reductions, and class-size information. Financial information is also being obtained for each of the responding superintendents' school corporations, including General Fund revenue and per pupil expenditure data. In addition, the researchers are gathering student achievement data in the form of statewide-standardized test results for the respondents' schools in math and language arts for third grade, eighth grade, and the corporation as a whole. The researchers' hypothesize that an analysis of this data will reveal steady increases in class sizes over a three-year period, and ultimately, a decline in student achievement. Thus, the main objective of this study is to examine the possible impacts of budget reductions on class size and student achievement in Indiana. Secondary objectives include an analysis of demographic variables in relationship to school corporations' budget changes, per-pupil

expenditures, reductions in personnel, class sizes, and student achievement indicators. In summary, the collected data will be examined to determine changes in the answers to each of the following research questions:

1. What are the changes being made in the number and type of teaching positions, and teaching assistant positions, in public schools in Indiana?
2. What are the changes in General Fund revenue and per pupil spending for Indiana public school corporations?
3. What are the average class sizes for third grade, eighth grade, and total elementary and secondary classes in public school corporations in Indiana?
4. What are students' average math and language arts passing scores on the statewide standardized exam for third grade, eighth grade, and K-12 total for public school corporations in Indiana?

For many years, the funding of Indiana's public school corporations has proven to be a challenging and controversial process. Historically, the Indiana public school funding formula placed a substantial reliance on property taxes as a major source of General Fund revenue. Prior to 1974, individual school corporations actually had complete control over their own General Fund tax rates (Michael, Spradlin, & Carson, 2009). This created a disproportionate system due to the fact that different communities had varying levels of assessed valuation per student, depending on the local property tax base or the overall wealth of the community. Across the state, property tax rates, as well as school corporations' annual per pupil expenditures, varied greatly.

Over the years, state policy makers recognized these concerns and attempted to limit and reduce the variability of property tax rates across the state (Toutkoushia & Michael, 2005). In order to offset disparities, legislators worked to create a funding formula in which school corporations with high assessed valuation received less state aid, while school corporations with less assessed valuation per pupil received additional state funds. More recently, a "complexity index" was implemented in order to provide extra funds to school corporations with high percentages of students on free and reduced meals (Michael, Spradlin, & Carson, 2009). Unfortunately, the system has never been perfected and funding inequities have continued. For example, in 2009, per pupil expenditures for some public school corporations were as high as \$11,000 per student, while some corporations per pupil spending was as low as \$7,000 or less (Hornaday, 2010).

In 2008, the Indiana General Assembly made the decision to change the Indiana public school funding formula to rely more on sales tax, thus eliminating the reliance on local property tax as a central revenue source for many school corporations' General Funds (Michael, Spradlin, & Carson, 2009). Because the shift to state sales tax reduces the association between a school corporation's level of assessed valuation and their General Fund revenue,

it is hoped that over time, the equity issue will decline. However, due to a number of unresolved factors, some funding gaps have been perpetuated. This has prompted several school corporations to initiate a lawsuit against the State of Indiana, alleging the current formula does not provide a level of funding adequate to meet current educational requirements (Michael, Spradlin, & Carson, 2009). To raise needed additional funds, a number of Indiana school corporations have attempted to hold local referendums, requesting that their community members vote "yes" on increasing property taxes in order to cover operating expenses (General Fund referendum) or the costs of facilities (Capital Projects referendum). In some cases, these referendums have been successful, but for the most part, they have not. As of May 2011, there have been a total of 67 referendums held in Indiana since the process was approved in 2008. Of these 67 referendums, 40 (60%) of them have failed (CEEP website, 2011).

Like most states in our nation, Indiana is currently recovering from a recession. The recession has seriously impacted revenues generated from taxes. Sales tax revenue is especially vulnerable during a recession, causing a deterioration of funding available for schools. In 2009, the Indiana legislature reduced public school funding by 3%, effectively cutting \$300 million from the public education budget, resulting in cutbacks in personnel and programs at the school level. Educators were hopeful that this was a "one time cut." However, in January 2011, the Governor of Indiana announced that the 3% cut would continue, effectively providing school corporations with the same lowered budget amounts in 2011 as in 2010. Due to inflation and other increasing cost factors, this will mean additional cuts for many school corporations in the coming year. The sum of these reductions in funding for Indiana's public schools have resulted in unusually high levels of budget cuts, forcing school corporations to reduce staff and programs, and in some cases, to close schools. The impacts of these budget reductions on class sizes and student achievement are the focus of this study. A review of research on class size will be discussed next.

Throughout public education's history, the subject of class size has presented teachers, parents and administrators with complex issues. Discussions have surrounded the issue of "best" class size, including the relationship of smaller classes to student achievement for economically disadvantaged children. Other studies have focused on smaller classes and student achievement as it pertains to children from middle or upper class families. Several studies have examined the relationship of class size as it relates to the attitudes and teaching methodology of classroom instructors. Although these are all important, the most perplexing issue continues to be the one that examines the general relationship between class size and student achievement regardless of the make-up of the student population.

As a result of a two-year economic slump, a

number of states find themselves financially challenged. State legislatures are re-examining and cutting educational budgets. School districts are reducing both teaching and non-teaching personnel as a response. In Indiana, there has been a substantial decline in public school funding as the state wrestles with balancing its budget. The problem for Indiana is becoming more than just financial. The uncertainty now emerging questions whether Indiana's financial problems will result in a severe long-term educational setback as well.

As more teachers are laid off and class sizes begin to increase, the original, overriding class size question regarding the impact of larger classes on student achievement is finding its way back to the forefront. Unfortunately for schools, the enactment of No Child Left Behind leaves little room when it comes to meeting Adequate Yearly Progress (AYP). The Indiana Department of Education requires that its schools reach AYP. Schools that repeatedly fail to meet their annual AYP goals will face state takeover. Clearly, Indiana's schools are caught in the middle of a political-economic-educational battle.

It is common knowledge that parents and instructional staff desire smaller class sizes. This is based on the belief that low class sizes are an important component in maintaining a quality educational program. However, research findings, especially earlier studies, have varied. While many studies have indicated that smaller classes do have a positive influence on student achievement, a few have indicated that larger classes may be more beneficial in certain instances. In addition, a number of studies have reported that class size made no difference in the achievement level of students.

In order to understand and explore this issue, it is necessary to develop a working definition of class size. In their 1955 literature review, *Class Size: The Multi-Million Dollar Question*, Ross and McKenna defined a class as "any group of students scheduled to meet regularly for all or a definite fraction of a school day with one particular teacher for the purpose of learning or being instructed in some specific part of the school's curriculum" (1955, p. 24). Other organizations, such as the National Education Association (1965), have described class size to mean the number of pupils for whom a teacher is responsible in a self-contained classroom. For the purpose of this study, a combination of these definitions is appropriate and the term "class size" will mean the number of students being taught by a single teacher, in a single classroom, for a specific period of time.

Looking back to 1971, the Indiana Department of Education indicated that Indiana's class sizes, or pupil-teacher ratios, were slightly higher than the national averages. In 1971, the ratios for Indiana were 24.3 pupils per teacher for kindergarten classes, 24.8 per teacher for grades one through six, and 21.9 students per teacher in grades seven through twelve. By 1976, the figures showed

a decided drop in ratios for the primary grades. Indiana's ratios for the 1976-1977 school year were reported as 24.6 students per teacher in kindergarten, 22.1 students per teacher in grades one to six, and 21.3 pupils per teacher in grades seven through twelve. The gap between the national combined average and the Indiana combined average narrowed significantly through the 70's and into the early 80's. In the 1983-1984 school year, the combined U.S. average stood at 18.45 students per teacher, while the Indiana combined average was reported as 19.90 (Jarman, 1985).

As mentioned earlier, class size research has produced mixed results. However, it is important to note that several reviewers have argued that many class size studies, especially early studies, failed to produce definitive answers because of flawed or oversimplified design techniques. In a comprehensive review of literature, Murphy (1975) reported that faulty research design was a serious limiting factor in class size research studies conducted before 1975. The National Education Association indicated that in many studies that examined the question of class size and student achievement, the research had typically been one-dimensional and short-term; therefore, early class size research was not nearly as comprehensive as necessary for such a complex issue (NEA, 1965). For example, an early study in 1909 claimed a correlation between smaller classes and higher student achievement (ERS, 1978). This research, however, was only based on one year of student promotion data. In this study, which involved third grade students in the 6th District of Philadelphia, it was found that 88% of the students in classes below 40 students were promoted to the next grade level, 85% of students in classes with 40-49 students were promoted, whereas only 81% of the students in classes above 50 students were promoted. Therefore, the researcher reported a relationship between increased student achievement and smaller class size because the students in the classes with less than 40 students showed a higher rate of promotion than any other group (ERS, 1978).

It was during the 1920s that increased interest in the issue of class size and student achievement emerged. A great deal of material was published during this time period for both the elementary and secondary levels. However, by 1930, interest had begun to level off and remained fairly consistent until the late 1970s. Several researchers, including Goodlad (1984) indicated that while most of the studies on class size conducted prior to 1930 were attempts to determine the relationship between class size and student achievement, typically, student grades, class standing, or promotion results measured student achievement in those studies. There was little, if any, attempt to control the various independent variables that occurred in these studies and reliable standardized testing instruments were still in the development phase (Goodlad, 1984; NEA, 1965).

In 1954, Blake conducted a summary of early class size research. Blake analyzed the literature written on class

size prior to 1950. He located 267 studies and chose 85 of those that dealt with elementary and secondary students. From these studies, 35 indicated that small classes were better than larger ones, 18 reported that larger classes were better than smaller ones, and 32 indicated that the authors did not consider class size to be an important issue. In further analyzing these studies, Blake established six criteria to test their scientific acceptability. Only 22 of the original 85 studies met these requirements. Of these 22, those favoring smaller classes numbered 16, those favoring larger classes numbered three, and the remaining three were inconclusive (p. 119).

In 1964, Menniti studied the effects of class size on reading and mathematics achievement in Catholic elementary schools in Harrisburg, Pennsylvania, and Evansville, Indiana. For both locations, he concluded that large classes, those with 40 or more students, significantly favored achievement gains for average pupils in mathematics. Only the Harrisburg location found the same significance for reading scores. Also, low IQ groups exhibited positive gains for both subject areas when placed in larger classes, but high IQ groups assigned to large classes did not (Menniti, 1964). A study conducted by Furno and Collins, however, concluded that a class size of one to 25 was considerably better for non-White students in both reading and mathematics than classes above 25 (Furno & Collins, 1967). They also concluded that smaller classes showed significant gains in both areas for students in regular and special education curricula (p. 146).

The Metropolitan School District of Madison, Wisconsin, conducted a research study in 1976 to measure the effects of class size on the reading attainment of students in grades one through three. "Small" classes contained less than 25 students for each of the three years studied. "Large" classes were any classes above this number. Results of the study showed that students consistently enrolled in small classes had lower reading scores than those enrolled in large classes. Further examination, however, revealed that the majority of students enrolled in smaller classes had lower IQ scores than those enrolled in the larger classes. At the end of the study, the district indicated, "It is impossible to know if placing students in small classes, grades one to three, would have any effect on their reading achievement scores..." (MMSD, 1976, p. 19).

A 1977 study conducted by Johnson at the South Carolina Department of Education produced an interesting mix of results. This study found that smaller class sizes significantly increased reading achievement levels for first grade students, but had no noticeable effect on math scores. The study also concluded that when viewed as a stand-alone variable, teacher in-service training had no effect on pupil achievement in either reading or mathematics. However, when combined with class size, the results showed that students in small classes, whose teachers received in-service training, scored significantly higher in

reading than students in large classes whose teachers had not participated in the training sessions. Interestingly, this correlation did not hold up for math achievement (1977).

In a review of class size research conducted in 1978, Glass and Smith proclaimed that through a meta-analysis of existing research data, they were able to make "bold generalizations" about the effects of class size on pupil achievement where previous research analysis could offer only "timid generalizations" (pp. 22-23). Glass and Smith reported that smaller class sizes could be expected to improve students' academic achievement. Unlike many earlier studies, the Glass and Smith study used class sizes ranging from one to one (tutorial instruction) up to forty to one (large group instruction). Glass and Smith claimed that earlier studies did not show a marked difference in achievement gains because their class sizes were normally above the 15 to one student mark. Glass and Smith concluded that class size could be increased from 20 students per class up to 40 students per class with only a five percent decrease in student achievement (p. 35). They postulated that decreasing from 20 students down to 10 students per class would result in an increase in student achievement of approximately ten percent, with the optimum achievement level being reached at the one to one, or tutorial level. The authors further stated that neither grade level, nor subject taught, nor ability of pupils altered the basic results.

Since Glass and Smith's initial meta-analysis, there has been some rebuttal, notably from Educational Research Service. In 1980, the Educational Research Service contended that Glass and Smith had over-generalized their findings and had not taken into account all of the contradictory studies that preceded them. The Educational Research Service further contended that the Glass and Smith samples from which they based their findings were not of sufficient number to bear out the generalizations that were being made (pp. 239-241). However, other researchers, such as Hedges and Stock (1983) and Cahen and Filby (1979) supported the Glass and Smith findings.

Arguably, the most notable United States study on class size was the Tennessee initiative known as Project STAR (Student Teacher Achievement Ratio). This study officially ran from 1985-1989, although many student participants were followed for years afterwards. Project STAR was a randomized \$12 million experiment commissioned by the Tennessee state legislature which developed into one of the most extensive class size research projects ever conducted. It was voluntary in nature and open to all Tennessee public elementary schools. Of the 180 schools that expressed an interest in participating, only about 100 schools had enough students in each grade to qualify. Selected schools had to agree to four years of participation and to allow visitation from oversight teams who would verify class size, interview school personnel, and collect data. Participating schools also had to allow for

additional testing and for the random assignment of students and teachers to class types from kindergarten through grade three. Tennessee paid for additional teachers and classroom aides and only class size conditions changed within the participating schools. Curriculum-based test results were used as the student achievement indicator. The experiment randomly assigned kindergarten students into small classes (13-17 students), large classes (22-26 students), or large classes with a full-time classroom aide. Teachers were also randomly assigned to classes of different types and the assignments of students and teachers to class type were maintained through the third grade. Students who entered the study after kindergarten were randomly assigned to classes upon enrollment. The sound design of the STAR study prompted highly respected researchers and statisticians, such as the late Frederick Mosteller, then Professor Emeritus of Mathematical Statistics at Harvard University, to declare very high confidence in the study's data. In fact, in a review conducted by Mosteller, Light, and Sachs, Project Star was called "one of the great experiments in education in U.S. history" (1996, p. 814).

At the close of the STAR Project, several researchers analyzed and then re-analyzed the data. Repeatedly, the results indicated that students placed in the smaller classes showed higher gains in reading and in math in the primary grades. These gains were somewhat modest in the short-term, but were sustained over time. In addition, significant long-term gains were seen in terms of college attendance rates, especially for African-American students. In summary, Finn and Achilles (1990) reported that the results of the STAR Project provided convincing evidence as to the benefits of reduced class sizes in the primary grades and what appeared to be a positive longitudinal effect, especially for minority students. Other researchers have supported this analysis of the data. After a sophisticated analysis of the results, Nye, Hedges, and Konstantopoulos also described higher long-term gains for students in smaller classes and additional benefits for minority students, saying, "The analysis reported here suggest class size effects that are large enough to be important for educational policy and that are quite consistent across schools. Thus, small classes appear to benefit all kinds of students in all kinds of schools" (2000, p. 123). Krueger and Whitmore also conducted an in-depth analysis of Project STAR data and reported a long-term benefit for African-American children. They went as far as to suggest that smaller class sizes might actually help lessen the Black-White disparity in college attendance (2001).

The STAR Project continues to be viewed as critically important research in the ongoing discussion regarding the impact of class size and student achievement. In light of its findings, many states commenced statewide class size reduction efforts over the past 15 to 20 years. Indiana's initiative began in the mid 1980s, as did a review

in Texas during the same time period. Nevada and Oklahoma's efforts started in 1989, while Utah's work began in 1990. Wisconsin began a class size reduction effort in 1995 and California in 1996. Many of these class size initiatives continue today; however, several others have been repealed due to economic factors.

The question of whether increased student achievement is important for the broader good of society is not in dispute. Educators, politicians, economists, and physicians acknowledge the importance of improved educational achievement as it relates to the health and prosperity of a nation. The tie between higher student achievement and a nation's economic well-being is real and worldwide. In 2003, an English study published in *The Economic Journal*, and entitled "Class Size, Education, and Wages," researchers Dustmann, Rajah, and van Soest, stated, "We use micro data for England and Wales to examine the effects of class size on the decision to stay on in full time schooling at 16 and on wages later in life. We find that class size has a sizeable and significant effect on the decision to stay on. This finding is very robust. Wage equations show the effect of staying on is significantly positive for wages. Combining this with the effect of class size on the staying on decision, reveals that class size significantly affects future wages" (p. F99).

However, even if lower class sizes mean a better chance of students staying in school, not everyone agrees that reducing class size is worth the cost. In 2002, Florida amended its constitution and adopted Amendment 9. Beginning with the school year 2003-2004, class sizes in Florida were to be reduced by two students per year until the average number of students per class did not exceed the maximum set by the new law. Per legislative action, the funding needed to meet this requirement was to be the responsibility of the state, not the local district. However, it was estimated that by 2012, the amendment would cost billions of state dollars, causing many groups, including the Florida Association of District School Superintendents, to oppose the amendment.

In 2006, Normore and Ilon of Florida International University wrote an article addressing the cost-benefit analysis of class size. The authors explained that, "...the debate is whether the costs involved are the best ways to spend taxpayers' monies...this article finds that reducing class size is the most expensive of state inputs that affect achievement scores. Varying the mix of school personnel (administrators, teachers, and teacher aides) and investments in teacher quality (training and experience) are shown to produce the same results (raising test scores) at a lower cost than the reduction of class sizes" (p. 429). The conclusions drawn by Normore and Ilon appear to have lent credibility to those who later suggested that Florida consider changing Amendment 9 so that a district's overall classroom averages could be used as opposed to individual classroom averages. Therefore, while there is a mounting

body of research that supports the idea that lower class size increases student achievement, the question remains, “at what price?”

Indiana’s class size reduction initiative, called Project Prime Time, began in 1985. This program, initiated as a categorical grant, provided school corporations with additional funds in order to reduce class size at the primary grade levels. Under Prime Time, the target ratio was set at 18 students per teacher for kindergarten and first grade, and 20 students per teacher at grades two and three. As the program was being considered, a statewide study by Jarman (1985), found that there was not enough classroom space in most Indiana school districts to hire the number of teachers needed to fully implement Prime Time. Consequently, the initiative that finally passed the Indiana legislature allowed school districts to implement Prime Time with the option of hiring three instructional assistants in the place of hiring one new “Prime Time” teacher. However, the amount of money that Indiana placed in this categorical grant did not allow school districts to fully recover the entire cost associated with the hiring of new Prime Time teachers and instructional assistants. The result was that school districts had to reduce their upper elementary personnel in grades four and above in order to fully implement the project. Eventually, as it became apparent that the cost associated with Prime Time salaries and benefits would become too high, the Indiana legislature folded the Prime Time grant monies in with a school district’s General Fund revenues. The final result is that Project Prime Time, as it was originally conceived, no longer exists in the state of Indiana.

Recently, this type of action has become more the rule than the exception. A proposal to loosen elementary school class size requirements is now making its way through the Texas legislature. For 27 years, Texas has had a class size cap that limits kindergarten through third grade classes to no more than 22 students per class. This year, the Texas comptroller is proposing to amend the law so that school districts could average 22 students across the district rather than using 22 as a hard cap for every classroom. However, teacher groups, parents and some local school officials are against that proposal. It has been estimated that allowing this amendment could save the state of Texas as much as \$558 million over a two-year period. According to Sterling Lloyd, a senior research associate at the Editorial Projects in Education Research Center, 11 states relaxed classroom requirements in 2010, either through legislative action or administrative action (Harrison, 2011).

As Indiana school districts receive less revenue, reductions in teaching positions will ultimately result in increased class sizes in school corporations across the state. This study examines these changes in class sizes and student achievement indicators for participating school corporation as a whole, and then, specifically, at the third

and eight grade levels. Given the results of previous research, it is this study’s hypothesis that over a three year time period, increased class sizes, as a result of budget cuts, will impact student achievement.

Method

Description

The primary objectives of this research are to gather and examine data regarding budget cuts in Indiana’s public schools and examine the possible impacts of those budget cuts on class size and student achievement. Based on these objectives, a combination of public records research and survey methodology were deemed most appropriate.

Procedure and Participants

For the survey portion of this study, all questions were developed by the researchers and were reviewed by a panel experienced in the development and use of educational surveys including college professors and practicing school administrators. The demographic questions were identified as appropriate through a review of the literature. The survey and a cover letter were mailed to every public school superintendent (293 total) in the state of Indiana in late July of 2010. By the end of August, a total of 103 superintendents had completed and returned the survey. A second round of surveys were sent out to non-respondents in early September, which resulted in an additional 29 completed surveys being returned. Therefore, the total number of returned surveys for year one was 132, giving a return rate of 46%. Of the 132 returned surveys, 127 were considered “valid” and usable. All survey were coded for confidentiality and results entered into a spreadsheet.

Simultaneously, a research and data collection of public records took place by accessing the Indiana Department of Education’s master database of school corporation statistics and student achievement indicators. First, the student achievement indicators for each of the responding superintendents’ school corporations were obtained. The student achievement indicator being using for this study is the Indiana Statewide Testing of Educational Progress Plus (ISTEP+), which is administered in the spring to students in grades three through eighth. The ISTEP+ exam is based on Indiana state academic standards. High levels of both reliability and validity are reported for this assessment (IDOE, pp. 108-116). The researchers collected the ISTEP+ percent passing results for each school corporation in math and language arts for third grade and eighth grade, and for each school corporation as a whole. Then, the financial records and end of year performance reports for the respondents’ school corporations were examined and recorded in order to collect baseline General Fund revenue and per pupil expenditure data.

Results

In regards to the demographics of the 127 school corporations participating in this study, the data reported presents an accurate representation of the state of Indiana in

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Table 1
General Fund Budget Information for Participating School Corporations

	Mean	High	Low
2009 General Fund Budget	\$21,776,000.	\$218,250,000.	\$3,600,000.
2010 General Fund Budget	\$21,067,000.	\$217,157,000.	\$3,400,000.
Amount Cut	\$1,096,600.	\$17,400,000.	\$12,746.
2009-10 Per Pupil Expenditure	\$10, 239.	\$13,000.	\$8,300.
2010-11 Per Pupil Expenditure	Not yet reported		

terms of typical population distributions and characteristics. The communities of the participating school corporations are 65 percent rural, 17 percent suburban, 12 percent town, and six percent urban. Of the participating corporations, 53 percent have 1000-3000 students, 19 percent have 1000 or less students, 16 percent have more than 5000 students, and 12 percent have 3001-5000 students. Fifty percent of the participating schools have 30 to 50 percent of their students qualifying for free or reduced meals, 22 percent have 10 to 30 percent of their students on meal assistance, 21 percent have between 50 to 60 percent of their students on free or reduced meals, and 7 percent have over 60 percent of their students receiving meal assistance.

With respect to the General Fund budgets of the participating Indiana school corporations, initial results also indicate a wide and expected representation as shown (see Table 1).

Of significant interest were the numbers and types of teaching positions that have been eliminated in Indiana's public schools since 2009. The 127 participating school corporations reported a total of 1135 teaching positions cut. This includes all grade levels and represents a mean of 8.9 reduced positions per school corporation. Of the eliminated teaching positions, 449 were elementary (K-5) positions and 497 were secondary (6-12) positions. The fine arts is an area that has been impacted as 89 positions were eliminated in elementary fine arts (music, art, physical education) while 59 eliminated positions were secondary related arts teachers. Finally, of the eliminated teaching positions, 41 were in "other" areas, such as guidance counselors or media specialists. Several superintendents made comments explaining that they had reduced positions by "encouraging" retirements and several commented that to minimize eliminating positions, they are now sharing more teachers among and between buildings. In addition to the teaching positions lost, instructional assistants' positions have also been substantially cut since 2009 with the participating corporations reporting a total loss of 570 of these positions. This represents an average of 4.63 instructional assistant positions eliminated per corporation.

For baseline class size information, superintendents from the participating corporations provided their average class sizes for the previous year. For the 2009-2010 school year, they reported secondary classes at 21.77 and elementary class sizes at 21.05. Because this research focuses specifically on third and eighth grade,

superintendents were also asked to project third and eighth grade class sizes for the 2010-2011 school year. Superintendents reported these at 19.76 for the average third grade class size, and 21.09 for the average eighth grade class size.

Statewide standardized testing (ISTEP+) data was also collected for the participating corporations for the entire corporation, third grade, and eighth grade in English/language arts and math. Using 2009 as the baseline year, this data shows that the participating corporations had a mean English/language arts percent passing rate of 72.86. Math passing percentages were at a mean of 75.24. The percent of students passing both areas of math and English/language arts for the participating corporations was a mean of 65.20. For the specific grades of interest, third and eighth, the third graders in the participating corporations had a mean passing percent of 77.95 for English/language arts and a mean passing percent of 76.04 for math. For both subjects, third graders in the participating corporations showed a mean passing percent score of 69.27. Eighth grade scores for the participating corporations were somewhat lower than third grade scores with a mean passing percent of 67.36 for English/language arts and 70.65 for math. The mean passing percent was 59.89 for eighth graders for both academic areas tested.

Discussion

In the state of Indiana, a school corporation's General Fund is used, primarily, to pay for the salaries and benefits of personnel, as well as student programs and supplies. Recent reductions in General Fund revenue for Indiana's public schools are resulting in high levels of cuts in both personnel and programs. This study looks specifically at reductions in teaching positions and changes in class sizes, and it also monitors student achievement indicators over a three-year period.

An examination of 2009-2010 data regarding budget cuts reveals important information. The 127 Indiana school corporations participating in this study have already made substantial cuts in instructional personnel, including a total of 1135 teachers, which is a mean of 8.9 reduced teaching positions per corporation. Participating schools have also eliminated 570 instructional assistants' positions, a mean of 4.63 positions per corporation. Using these means, it is estimated that overall, approximately 2,608 teachers and 1357 instructional assistants have been cut from Indiana's public schools this past year.

With the recent announcement that funding will be held at a reduced level for another year, Indiana's public schools will continue to face cutbacks in both personnel and programs. It will be important to follow the participating school corporations for the next several years and examine what impacts, if any, these cuts have on class sizes and student achievement indicators.

This study has significance in several ways. First, the data collected through this study will be of practical use to multiple individuals and agencies, including universities, state government and agencies, superintendents, and numerous other interested parties who are concerned about the status of reductions in Indiana's public school budgets. Second, this study will advance our overall understanding of the relationship between budget constraints, class size, and student achievement. Because this is an important topic, there have been many studies conducted over the years on class size and its relationship with student achievement. This study is an attempt to add to this body of knowledge.

Finally, for all schools facing budget cuts, continued reductions means "tightening their belts." At the same time, schools are attempting to maintain their educational programs and improve their students' achievement. Difficult and often controversial choices will need to be made. In some school corporations, budget reductions mean the loss of valuable student programs, such as fine arts and school counseling programs, in order to keep core educational programming in place. In other corporations, extracurricular programs and class options may be severely limited. However, amidst the turmoil that these budget reductions create, there may be schools that are able to rise above these challenges. If through this research, there are school corporations identified that are able to maintain and even improve student achievement, these school corporations should be studied further. The methods corporations use to improve student achievement should be shared. Ultimately, this study might provide clues as to ways school corporations can maintain or increase levels of student achievement, even during extremely difficult financial times.

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