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An Analysis of District Marginal Costs of Mandatory State Standardized Tests

by

J. Eli Crow

A DISSERTATION

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Philosophy

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Under the Supervision of Professor Barbara Y. LaCost

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An Analysis of the District Marginal Costs of Mandatory State Standardized Tests

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University of Nebraska, 2014

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The purpose of this study was to determine (a) the estimate for the district marginal cost of mandatory state standardized assessments, (b) if student enrollment can be used to predict the district marginal cost of mandatory state standardized assessments, and c) the unit (per student) district marginal cost of mandatory state standardized assessments. The study included the use of a simple linear regression analysis with associated plots and trend lines.

The study established that district enrollment was correlated with district marginal cost of standardized testing which allowed the researcher to calculate the total and per student district level marginal cost of mandatory state standardized assessments. The state marginal cost was also used to provide a comparative figure with past research in the field. The study was designed to provide a single year snapshot of these costs in order to provide a framework that adds to the scholarly research for the purposes of performing cost/benefit analyses on standardized testing initiatives. The study determined that the marginal costs of state standardized assessments has risen significantly since the introduction of the No Child Left Behind Act.

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Chapter 1

Introduction

Statement of the Problem

Since the passage of the 1994 reauthorization of the Elementary and Secondary Education Act, there has been a constant and steady increase in the scale and scope of state assessment programs (Supovitz, 2009). Each successive wave of legislation, including the No Child Left Behind Act and the Race to the Top, has led to more testing. In spite of this increase in testing, there has been a distinct lack of research conducted to ascertain the cost of these tests.

In 1991 the U.S. Government Accountability Office (GAO) conducted a study of the cost of system-wide testing. Since that time, there have been no wide scale studies of the cost of statewide standardized testing programs. What research has been done has often been conducted by advocacy and policy groups such as the Brown Center on Education. The reports published by these groups represent mostly state level costs and rough estimates of local costs, and they are included in the literature review in chapter 2.

Texas in particular has seen a considerable rise in the number of tests required to be administered each year. The annual budget for the 2013 fiscal year set by the Texas State Legislature allocated over \$86 million to the assessment and accountability program (State of Texas, 2013). These costs represent only those at the state level for the creation, distribution, scoring, and reporting of the results. As Phelps (2000) noted, the majority of costs of implementing tests falls on the local schools. But what are those costs?

Purpose Statement

The purpose of this study was to determine (a) the estimate for the district marginal cost of mandatory state standardized assessments, (b) if student enrollment can be used to predict the district marginal cost of mandatory state standardized assessments, and c) the unit (per student) district marginal cost of mandatory state standardized assessments. The study was designed to provide a single year snapshot of these costs in order to provide a framework that adds to the scholarly research for the purposes of performing cost/benefit analyses on standardized testing initiatives.

Research Questions

Research Question 1. What is the estimated marginal cost of mandatory state standardized assessments?

The first research question estimated the marginal costs of mandatory state standardized assessments. Open records requests were submitted to a randomly selected sample of large school districts. These requests provided data on the marginal cost of implementing state standardized tests for each district. Using enrollment figures for the sample districts obtained from the TEA website, an estimate of the marginal costs for all large districts in Texas was developed.

Research Question 2. Does the difference in student enrollment for districts account for the difference in the marginal cost of administering mandatory state assessments?

The second research question provided the basis for the estimate calculated in the first question. Using the data from the open records requests and publicly available from the TEA website, a regression analysis was performed to determine the amount of

variance that can be accounted for in a district's marginal costs by variance in student enrollment. Additionally, the significance of the regression was calculated.

The research hypothesis was: the district's marginal cost of administering mandatory state assessments has a significant positive correlation to the number of students enrolled in the given district.

The resulting null hypothesis was: there is no statistical significant correlation between the number of students enrolled in a district and that district's reported marginal cost of administering standardized assessment.

Research Question 3. What is the unit (per student) marginal cost of mandatory state standardized assessments?

The third research question utilized the regression data from the second question and the total cost data from the first question to unitize the marginal costs of mandatory state assessments on a per student basis.

Definition of Terms

Cost Accounting—a form of managerial accounting used to plan and control organizational activities in which a determination and accumulation of product, process, or service costs is conducted (Marshall, McManus, & Viele, 2004).

*Object Costs**—costs associated with the purchase of things, to include personnel (Phelps, 2000).

*Functional Costs**—costs associated with activities (Phelps, 2000)

* It is important to note that object and function costs are not mutually exclusive. A single purchase will always involve both an object and a function. An example might involve a textbook. The purchase of the book involves an object code for a thing (a textbook), and a function (such as instruction).

Gross Costs of Testing—inclusion of all costs associated with objects and functions involved in testing (Phelps, 2000, pg. 349)

Marginal Costs of Testing— the cost that can be attributed to the existence of testing and not to any other activity” (Phelps, 2000, pg. 348)

Sunk Costs—expenditures incurred in the past that cannot be recovered (Zimmerman, 2006).

Conceptual Framework

The conceptual framework for the study was determined by Phelps and the GAO and published in the *Journal of Education Finance* (2000). The framework stipulates that only marginal costs are to be considered when calculating the cost of standardized testing. Furthermore, the framework categorizes costs into five objects and eleven functions. Each object and function was compared against the purpose of the study to determine applicability of each cost. Each applicable object and function was then mapped to the chosen variables to ensure all costs are accounted for. The result of the mapping process for object categories and function categories is detailed in the methodology section.

Significance of the Study

The results of this study are significant because of the lack of published results in this field. Prior to the passage of the No Child Left Behind Act by the United States Congress, there was a need to study the costs of standardized testing as part of the legislation. This study would allow the federal government to include increases in state allotments to cover the increased cost of additional tests. At the same time, Texas was at the forefront of states that administered wide scale standardized tests to students. In

Texas, a total of 15 state tests were administered to students each year. Today, that number has increased to 22 (TEA, 2014). This number only considers the broad tests given to all students in the given grade levels. Texas has also increased the number of specialized tests given to specific student groups such as special education and English language learners. This increase in the number of tests is only part of the story. According to the same report, there have been numerous additional changes to the state testing program in order to maintain compliance with federal legislation.

When the GAO conducted its 1991 cost analysis (U.S. GAO, 1993) the conclusion was made that testing represented only a small amount of student time, and that more testing could occur without significantly impacting classroom time. Additionally the conclusion was made that additional tests would follow a linear growth. That is to say that if the current program were calculated to cost \$20/student, doubling the number of tests given would cost \$40. Since 1991, no studies have been conducted to determine if that assumption held true. This study represents the first attempt to compare the costs that the GAO determined with the actual marginal costs that school districts and states are currently incurring.

The GAO conservatively estimated the cost of system-wide testing in 1991 to be \$13 per student. Phelps converted this number in 1998 dollars to \$16 per student. If the value were to be converted to 2013 dollars, we would arrive at a little less than \$23 per student (Oregon State University, 2014). Phelps (2000) described the conversion of the GAO's conservative estimate isolating only the marginal cost of testing to be approximately \$8 per student per year (pg. 377). If Phelps' marginal cost estimate were to be converted to 2013 dollars the current cost would be little under \$14 per student.

It is common in Texas for large high schools (more than 2,000 students) to employ a full-time campus testing coordinator. This position's paid responsibility is to implement state tests. The cost of this position would therefore be considered a marginal cost, and these positions are often certified counselors or individuals with a suitable Master's Degree in Education or a related field. As such, they draw salaries in excess of \$50,000 per year before benefits. Taking a conservative estimate of 2000 students, the marginal cost of this position alone is over \$25 per student per year. That is almost twice what the GAO estimated. If we consider that testing has increased at least 47% in Texas, the GAO estimate (assuming linearity) should be a marginal cost of less than \$21. If this one marginal position has exceeded the GAO estimate of all marginal cost, it is reasonable to conclude that the time has come to re-examine the estimate. This study represents a first step in this re-examination.

Delimitations of the Study

This study was first delimited to consider only the local costs of standardized testing in schools in the state of Texas. The state has allocated funding to cover the costs of standardized testing at the state level, and these are fairly well defined. State budgetary information will be used to estimate total marginal costs in order to make a comparison to the GAO estimate only. Furthermore, this study only considers school districts with enrollment greater than 5,000 students. I hypothesized that these school districts are more likely to engage in division of labor to the extent that the costs of implementing the state standardized testing system will be truly marginal. For further discussion of this hypothesis, please see the section on sample selection in chapter 3

Based on the conceptual framework developed by Phelps and the GAO, this study was delimited to include only marginal costs. One of the outcomes of this study is to theorize what savings the state could realize if it terminated the testing program. Though many other costs could be attributed to the state's testing program, only the marginal costs would be saved if the state were to eliminate the program. As such, only those costs were considered.

Limitations of the Study

As I am considering only the marginal costs of standardized testing, the results should not be used to approximate the overall cost of the state's program. Additionally, the data used in the study were collected from a self-reporting process by school district personnel. The state's accounting procedures do not adequately categorize costs directly associated with standardized testing. As such, there is an expectation of reporting error in the data. The results are meant only as an estimate and care should be taken when applying these results outside of the conditions of this study. This study also represents a baseline for marginal costs. The study only considered actual costs reported by school districts that were directly and exclusively related to testing; therefore, the actual marginal cost of testing should be considerable higher than this baseline estimate.

Chapter 2

Literature Review

Purpose Statement

The purpose of this study was to determine (a) the estimate for the district marginal cost of mandatory state standardized assessments, (b) if student enrollment can be used to predict the district marginal cost of mandatory state standardized assessments, and c) the unit (per student) district marginal cost of mandatory state standardized assessments. The study was designed to provide a single year snapshot of these costs in order to provide a framework that adds to the scholarly research for the purposes of performing cost/benefit analyses on standardized testing initiatives.

In this chapter I provide a literature review addressing the national history associated with P-12 standardized assessment, specific literature addressing federal programs such as No Child Left Behind and Race to the Top, and results of cost studies associated with P-12 standardized assessment. Additionally, I provide a background of assessment in Texas in order to establish the viability of using Texas as a model state for this study.

National History

At least as early as the late 1800's the idea of using tests to impact education was on the mind of educators and researchers alike. Giordano (2007) chronicled the growth of testing from these early days to today. He demonstrated that educational assessment has consistently seen its share of criticism, but in spite of the critics, the growth has been consistent and substantial.

In the early 1900's educational psychologists were focused on the creation of tests designed to assess a specific ability of an individual. Even then, researchers recognized a need to compare these results against a standard. In these early years of educational assessment, the idea of a standard child of n years was used as the reference (Boring, 1923).

As education evolved over the first few decades of the twentieth century, so too did the use of assessments. Giordano chronicled the growth of tests in what are today referred to as the core academic subject areas, but as he points out, the military's use of testing led to the most widespread increase in standardized assessments. Use of standardized assessments during the first and second world wars revealed the state of the U.S. educational system as had never been seen before. By 1965, President Lyndon Johnson had begun his "war on poverty". As part of this campaign, he signed into law the Elementary and Secondary Education Act of 1956 (ESEA). This law provided significant increases in funding for schools and focused the nation's attention on education. The federal government recognized the need to evaluate the effects of the ESEA and established the National Assessment of Educational Progress (NAEP). This represented the federal government's first attempt to apply a standardized test to a national sample.

In 1983, the U.S. Department of Education published a report entitled *A Nation at Risk*. This report recommended extensive reforms and used results from standardized tests as evidence of issues with the American educational system. Up to this point, only a few states, such as California had implemented statewide standardized testing. Following this report, many others followed suit. As Supovitz pointed out, "movements in the

1980's and 1990's set the stage for the particular formulations of test-based accountability of the present" (2009). He also indicated that the period of the early 1990's through the mid 2000's saw the "ratcheting up of the frequency and stakes of testing systems".

No Child Left Behind and Race to the Top

As governor of Texas, George W Bush instituted a statewide accountability system that required annual testing and reporting. Upon his election to the U.S. Presidency, in 2001, he signed into law the No Child Left Behind Act (NCLB) (Supovitz, 2009). The act was actually the reauthorization of the 1965 Elementary and Secondary Education Act that congress had revisited regularly since the act was originally passed. With the passing of NCLB, states receiving federal education funding were required to adopt statewide accountability systems that were based on standardized tests. The law required states to annually test students in reading and mathematics (with a provision for science) from grades three through eight and once in high school.

Though this law received significant national attention and put standardized tests at the center of the debate, it was not the first time that the federal government attempted to legislate wide scale testing. The previous reauthorization of ESEA in 1994 actually required states to develop and assess students in reading/language arts and mathematics (Taylor, 2002).

In 2009, President Barak Obama, signed into law the American Recovery and Reinvestment Act (ARRA) (U.S. Department of Education, 2009). One of the components of the ARRA was the Race to the Top. The act was designed to give competitive grants to states that:

are creating the conditions for education innovation and reform; achieving significant improvement in student outcomes, including making substantial gains in student achievement, closing achievement gaps, improving high school graduation rates, and ensuring student preparation for success in college and careers; and implementing ambitious plans in four core education reform areas.

One of the areas of the reform targeted assessment directly. In this area, states were required to adopt common core standards and implement “common, high quality assessments”.

Cost Research

In spite of all of the growth in educational assessment, cost associated with assessment continues to be an allusive factor. Giordano pointed out “educational analysts had a hard time calculating the cost of large-scale assessment” (pg. 89). He included only three attempts at calculating costs, each with wide differences in results.

These studies included the Phelps study (2000) that is included below and which makes up the conceptual framework for my research. It was also the derivative of the work he did at the GAO. Giordano also included a 1982 study by Alkin and Stecher and a 1992 study by Bauer.

In consideration of these two studies, Alkin and Stetcher performed a meta-analysis of studies in three different evaluation context. They reminded their readers that “most people have a “common sense” notion that equates program costs with dollars appearing on a ledger...but...such a conception of cost is quite narrow” (pg. 3). They went on to explain how explicit expenditures represent only a partial measure of total cost. The authors stated “few, if any, published articles present cost data for evaluation activities, even though costs of evaluation are prominent in the literature” (pg. 5).

Ultimately the authors make an argument similar to that of Phelps and consistent with my research as they “suggest only considering marginal costs” (pg. 14). The intent of the paper was simply to provide a theoretical framework for cost analysis, and this framework is similar to that of Phelps which was used in my research. The authors do cite three cost analyses that were conducted. Most of these were surveys making policy recommendations. The recommendations varied from one percent to 10 percent of district budgets, but the authors conclude “such rules of thumb for total evaluation costs offer little useful information toward developing a framework to analyze costs” (pg. 11), suggesting that these analyses were consistent with other findings where surveys of best guesses from educational experts serve as the underpinning of the cost estimates.

Bauer (1992) used a similar theoretical framework to examine the costs of testing programs in 38 large school districts. He estimated a per student expenditure of \$4.79. This represented only the direct costs of administering the testing program. Giordano also includes the work of Monk (1995), who rather than describing the cost of testing, argues against the efforts to estimate costs due to the complexities of doing so.

Phelps (2000), one of the leading authors on the topic stated: “To people outside the field, then, the cost of standardized testing would likely seem a rather straightforward topic. But, within the field, it’s an anxiety-producing subject that spawns tense arguments (p. 343).” A 2003 study conducted by the Center on Education Policy (Gayler, Chudowsky, Kober, & Hamilton, 2003) indicated: “Since most of the local costs associated with exit exams are not broken out or reported specifically as exam-related expenses, the study relied primarily on the professional judgment of expert panels to

generate cost data (pgs. 50-51).” Instead of trying to assess the costs directly, they relied on the educated guesses of those close to the issue.

Returning to Phelps, who has written five books on the topic of educational assessment and dozens of scholarly articles, he acknowledges the lack of research on the cost of standardized assessments. In addition to the comment above, Phelps takes up the topic of the cost of standardized testing in one of his books from 2005. In his coverage of the cost of testing, he references only three published studies in the previous ten year period including his own referenced above. In another book from, he includes two more, for a total of five, including his own.

The first of these studies appeared in a book by Haney, Madaus, and Lyons (1993). Phelps severely criticizes the approach taken by the authors calling them critics of testing and accusing them of “exaggerating their cost estimates by counting the costs of any activities “related to” a test as a cost” (pg. 52). He was particularly critical of the authors’ use of student time as a cost and dismisses their estimate of \$575 per student.

Similarly Phelps dismisses the estimate of Picus and Tralli (1998) who used a similar approach to estimate costs at \$848 to \$1,792 per student. An analysis of their report does reveal that the authors leaned heavily on an estimate of the opportunity costs or as they refer to it: “measures of what must be foregone to realize some benefit” (pg. 5). Study of these articles also reveals that the authors attempted to quantify the cost of all activities related to testing.

Phelps point out that Hoxby (2002) included a chapter in a book by Evers and Walberg (2002) where she reported that in 2001-2002 “states spent between \$1.79 to \$34.02 per pupil on accountability-related activities” (p. 69). No indication was made

that these data ever appeared in a peer reviewed journal. The final study cited by Phelps was a follow up estimate conducted by the GAO in 2003. In this study, the GAO “provides estimates of what states may spend to implement the required tests, and identifies factors that explain variation in expense”. The GAO concluded that the average cost of all testing to be between \$271 million and \$575 annually, and Phelps concluded that this represented a cost of \$13 to \$35 per student (pg. 100).

More recent examples of cost studies include the report by the Center for Education Policy mentioned above. In that report, the researchers considered only high school exit exams. The report considered all states with current or planned exit exams (pg. 5). This resulted in 24 states in all (pg. 14). The report used survey instruments provided to state education department officials and higher education officials. As part of the report, the center commissioned a study in Indiana. The results of that study determined that the state was spending approximately \$444 per student per year on exit exams. This included direct costs as well as remediation of students.

Further analysis indicated that the direct cost represented only 18% or \$80 per student (pg. 52). It was not discernable what percentage of these costs could be considered marginal costs. Additionally, these costs included both state and local costs, but the study indicated that “the overwhelming majority of these costs were borne at the local level.” Of the \$18 per student, only \$2 per student was identified as the state portion associated with test development and administration.

Another study was published as “preliminary” in 2008 by Harris and Taylor. The authors specifically state that the results are incomplete and request not to be quoted. It is

listed here simply as a reference that some work was done on the subject of cost estimates for testing. It is not clear if these results were ever made available in final form.

The final available report was published by the Brown Center on Education Policy at Brookings. Chingos (2012) found that the average primary assessment contract that state agencies awarded to test publishers was \$27 per student per year (pg. 1). This represents only the amount paid for the creation, distribution, and scoring of the test. Chingos acknowledged that additional costs exist at state agencies, but restricts those from the study (pg. 6). Furthermore, he noted:

The roles played by school and district employees who aid in test administration and scoring are important as well, but the cost of this work is challenging to measure. Calculating such costs requires information on which employees have these responsibilities, their compensation levels, how much time they devote to test-related activities, and what work they would be doing if they weren't involved in testing. Future research should attempt to measure how significant these costs are, how they vary across different types of tests, and whether there are efficiencies to be gained by outsourcing more of the responsibilities currently delegated to teachers and administrators. (p. 7)

To date, the work performed by Phelps and the GAO represents the most thorough examination of the cost of standardized testing. This work was done more than two decades ago, and there is clear evidence that tests have proliferated in spite of our lack of a clear understanding of the costs associated. Certainly costs have gone up, but how much?

Background

In order to conduct a credible study of the costs of standardized testing, particularly at the local level, a representative sample is required. Ideally the approach of the GAO would be utilized, where a random sample across all 50 states is selected and studied. As many researchers have determined, this is both extremely expensive and

difficult. The wide variances in the way states implement their respective testing programs makes cross-state inferences difficult at best. It is therefore the case that many have chosen a single state in order to conduct their research. Given Texas' long history of educational assessment, and availability of data, I have selected the state as a tenable location to conduct my research.

Texas as a Model

The recent history of Texas state assessments. Texas began its foray into statewide standardized testing in the late 1970's (Cruse & Twing, 2000). The first test to explicitly link student assessment with state standards, known as the Texas Assessment of Basic Skills (TABS) was first administered in 1980. The Texas legislature replaced the TABS test with the Texas Educational Assessment of Minimum Skills (TEAMS) in 1984.

In 1990, the state again altered its testing system, this time implementing the Texas Assessment of Academic Skills (TAAS). The TAAS became the first statewide assessment in Texas to hold schools accountable for student performance. Furthermore, the assessment system required students to pass the TAAS test in high school as a condition of graduation.

The configuration of tests by grade level was altered several times in subsequent years, and the state began using End-of-Course assessments for some high school courses in the late 1990's (Texas Education Agency, 2011). In 2003, Texas replaced its testing system again, now using the name Texas Assessment of Knowledge and Skills (TAKS). The TAKS was the first test to be used to deny promotion from one grade to the next. With legislation passed in 1999, students were required to pass the 3rd grade reading, 5th

grade reading and mathematics, and 8th grade reading and mathematics tests in order to be promoted.

The final major transformation came in 2012 when the state implemented the State of Texas Assessment of Academic Readiness (STAAR). When Texas began its statewide assessment system, it required the administration of nine tests each year. The implementation of STAAR required K-12 school districts to administer a total of 22 different tests to all students each year. These tests were in addition to the tests required for various special populations such as Special Education, Gifted and Talented, and English Language Learners, or the administration of college readiness exams such as the PSAT, Advanced Placement, SAT, and ACT.

Texas school districts. Texas has a wide variety of school districts. The TEA reported that there were over 1,228 districts with a total of 8,555 campuses in 2013. The largest district by enrollment was Houston Independent School District (ISD) with over 202,000 students. There were 18 school districts with more than 50,000 students each. Texas had a total enrollment of 5,058,939 students.

From 2003 to 2013, Texas school districts experienced significant growth. Enrollment was almost 20% greater in 2013 than it was in 2003. According to data obtained from the U. S. Census Bureau, the nation experienced a growth of just over 8% for the same time period (2014). The rapid growth of Texas public school students, which is expected to continue, makes the issue of the cost of standardized testing particularly important in the state.

Texas Cost Research

No cost research is publicly available outside of what has already been cited.

When the state began the assessment movement, the cost for some assessments did move from the district to the state. As researchers such as Phelps (2005) noted, when states adopt standardized tests, school districts often respond by reducing the number of locally administered tests. This trend may be reversing however. With the increase in accountability standards associated with standardized tests, many school districts have begun increasing the number of local assessments. These assessments are often referred to as “benchmark tests” as districts attempt to measure incremental growth toward the spring assessments.

The proliferation of these tests led the state legislation to limit the number of benchmarks that can be administered annually. During the 2013 legislative session the legislature amended Texas Education Code Section 39.0263 (b) to limit these types of tests to two per year. This may indicate an increase in the cost of assessment as opposed to a substitution effect.

Some school districts have reported that the TEA administered a survey during the 2012-2013 school year that asked a number of questions regarding the implementation of assessments. The survey reportedly asked administrators to estimate certain costs. To date, the results of the survey have not been made public, and no other cost analysis is provided by the TEA on its website.

State costs. Though cost research is not readily available, the budgetary appropriations made by the legislature in the most recent legislative session are available. According to the legislative budget report, the legislature allocated \$82,635,644 per year

for the next two years as the state operates on a biennial basis (State of Texas, 2013).

This allocation is to the Texas Education Agency for the administration of the “Assessment and Accountability System”. This results in a unit value of just over \$16 per student.

Problems with budget coding procedures. To get a picture of the total cost of testing, one would also need access to the appropriations of local school districts for testing or the actual expenditures. Ideally one would analyze the expenditure reports that all school districts are required to report to the state each year as part of the Public Education Information Management System (PEIMS). The state requires that school districts report all spending by both object and function.

According to the PEIMS Data Standards (2014), all expenditures must include a fund code, function code, and object code. Function codes are used for broad activities such as instruction, leadership, and debt service. Object codes provide a more detailed breakdown, but there are no object codes specified for assessment, and it has already been noted that the actual testing materials associated with the state testing system are provided at no cost to the districts.

There are two function codes that could prove useful. Function 6330 and 6339 specifically reference “Testing Materials”. Though these “Testing Materials” codes could provide some insight, they would also include the cost of testing that is not part of the state testing system. These would be tests and test services that the school district chose to implement in addition to the state system.

The costs that make up the marginal costs of implementing state assessment are included in other cost categories. These are costs such as salaries for those responsible

for implementing the state tests. Unfortunately, the state accounting system provides no assistance in the determination of the local marginal costs of state assessments. These values will be determined by an examination the actual expenditures of the districts.

Chapter 3

Methodology

Purpose Statement

The purpose of this study was to determine (a) the estimate for the district marginal cost of mandatory state standardized assessments, (b) if student enrollment can be used to predict the district marginal cost of mandatory state standardized assessments, and c) the unit (per student) district marginal cost of mandatory state standardized assessments. The study was designed to provide a single year snapshot of these costs in order to provide a framework that adds to the scholarly research for the purposes of performing cost/benefit analyses on standardized testing initiatives.

In this chapter, I provide a methodology for my study. A conceptual framework is discussed as well as the research method. I include three research questions, I discuss the sample and selection, and I detail the limitations of the study.

Conceptual Framework

Phelps (2000) described the methodology for estimating the cost of standardized testing (pp. 343-380) undertaken by the U.S. General Accounting Office (GAO) in 1991-1992 and subsequently published in 1993. The method defined five categories and eleven functions through which one can view the costs of standardized testing. Furthermore, Phelps argues for a marginal cost approach to estimating costs.

According to Phelps, cost estimates for standardized testing have produced widely varying results due to the varying approaches that have been used to develop the estimates. On one end, researchers have assumed that all activity associated with testing as well as the opportunity costs associated with the choice to test should be included in

the cost estimate. As an example of opportunity costs, one might consider the time that teachers spend implementing the tests. If on a given school day, students are engaged in taking a mandatory test, teachers must administer that test. If teachers are spending time administering the tests, they are not performing some other educational activity. The argument is made that the opportunity for teachers to engage in the alternative activity is then lost and therefore a cost of the test. In order to calculate the cost of that lost opportunity, researchers have estimated the daily salary of the teachers and multiplied by the number of days spent administering tests.

On the other hand, we might consider these costs as sunk costs. A sunk cost is one that the district has incurred and cannot recoup. Since the district has already committed to the employment of the teacher, the presence or absence of the test has no bearing on the cost to the district. Virtually all teachers give tests, and it is reasonable to assume that if the state was not giving a standardized test then the teacher would administer self-made tests. It is also reasonable to assume that if state testing were to be terminated, this would have no bearing on the number of days of instruction and thus no bearing on teacher salary. It is for this reason that Phelps argued that the cost of the teacher administering the test should not be included in cost estimates. Numerous other costs have been included in prior research, but these have all been outlined in the GAO approach as will be indicated in the table below.

Though Phelps provides five categories of costs, he first argues for considering costs in two ways: total costs vs. marginal costs. In the above example, the cost of the teacher administering the test would be considered part of the total costs, but that cost would not be part of the marginal costs. Phelps argued that only the marginal costs

should be consider true costs of standardized testing. Another way to consider this argument would be to ask the question: If the state legislature decided to cease all standardized testing, what savings could be immediately realized? Using our previous example, we can see that the cost of paying the teacher for the days to administer the test would not be saved. Districts would still pay teachers the same amount. On the other hand, the cost to ship the standardized test from the supplier to the school district would be saved. These shipping costs represent marginal costs.

For the purposes of this study, the conceptual framework detailed by Phelps was utilized. Only marginal costs were considered, and the organization of costs follows Phelps' outline. Phelps and the GAO categorized costs in five ways:

1. Purchased test materials and services
2. Time of school, school district, or state agency personnel
3. Time of students taking the test
4. Administrative overhead
5. Building overhead

The following describes the process of each of these categories being considered for applicability and the mapping of each variable to the category to ensure that all costs are considered. Table 1 shows the results of this process.

For the purposes of this study, only the costs that are incurred at the district level are considered. Phelps noted that the GAO study revealed that in virtually every state, the costs at the local level exceeded the costs at the state level (pg. 368). The administration of tests by its very nature requires local school districts to allocate personnel time to administration and therefore shifts the burden of cost to the local level.

Table 1

Objects, Levels of Application, and Cost Variable Considered

Object	Level of Applicability	Cost Variable
Purchased materials and services	Low applicability	Discretionary budget
Time of personnel	High applicability	Personnel Costs
Time of students	No applicability	
Administrative overhead	Medium applicability	Discretionary budget
Building overhead	Low to no applicability	Discretionary budget

This was noted in spite of the fact that most states (including Texas) pay for the development, distribution, and scoring of state assessments. Thus the state has already defined the costs that are incurred at the state level.

I used Phelps framework to define three major variables in object costs. The first is *Discretionary Budget*. As shown in table 1, *Discretionary Budgets* will capture the costs from three of Phelps' object costs. I then defined two variables for the purposes of capturing "Time of personnel". These are the *District Level Personnel Costs* and the *Campus Level Personnel Costs*. All of these costs will ultimately be summed for each district to establish a total *Marginal Cost*.

The State of Texas in 2013 provided all testing materials to the school districts at no charge, and since the costs of such have already been established using the state appropriations data, we can eliminate much of the first object, "Purchased materials and services" from this study. The state contracts with NCS Pearson to provide the materials as well as cover all shipping costs associated with delivering the test materials to the schools and returning the materials back to Pearson for scoring. Districts however may

pay for some services associated with testing in this category. They may pay for electronic systems to aid the process, or contract with outside individuals to assist during periods of increased testing activity. In order to capture these costs, I included the discretionary budgets of district assessment divisions.

Personnel costs serve as the largest percentage of costs associated with this study, and I included the costs of personnel at the district and campus level. In keeping with the marginal cost approach, I only considered the personnel costs of positions that are exclusively or almost exclusively focused on the implementation of state tests.

Though some researchers have made the argument that student time is a cost of standardized testing, it was not considered in this study. Though one might consider it as part of total costs, it certainly is not a marginal cost of testing.

Administrative overhead was considered in this study, and I captured these costs using the discretionary budgets of the assessment divisions of school districts. Though some administrative overhead might be incurred at the campus level, these costs are very small in comparison and were ignored for the purpose of this study.

Building overhead falls into the same category as student time. It could certainly be considered a total cost, but it is not a marginal cost. In very few circumstances would a district be able to reduce the number or size of buildings were testing to be removed at the state level. In cases where districts are leasing facilities for the direct purposes of assessment, I make the assumption that those costs are represented in the discretionary budgets of the assessment division.

Phelps further categorized the costs of standardized testing by considering the activities or functions involved in testing. There are eleven functional categories that are

meant to be collectively exhaustive. Each function is described below with the respective consideration of applicability. Applicable functions are then mapped to the respective cost variable.

1. Start-up test development – this is a cost incurred at the state level and is captured in state appropriations
2. On-going test development – this is a cost incurred at the state level and is captured in state appropriations
3. Preparing students to take the test- this is not a marginal cost as it is conducted by teachers and will not be considered in this study
4. Training others or getting trained to administer the test – these data are collected in marginal personnel costs; any training costs for personnel that are not exclusively used for testing is considered a sunk cost and is not included in this study
5. Preparing the administration of the test – these data are collected in marginal personnel costs
6. Administering or overseeing the administration of the test – these data are collected in marginal personnel costs
7. Training others or getting trained to score the test – this is a cost incurred at the state level and is captured in state appropriations
8. Scoring or overseeing the scoring of the test – this is a cost incurred at the state level and is captured in state appropriations

9. Collecting, sorting, and mailing the completed tests – these data are collected in the marginal personnel costs and the discretionary budgets of the assessment divisions
10. Analyzing or reporting the results – these data are collected in the marginal personnel costs
11. Miscellaneous other activities in any way pertaining to the test – these data are collected in the marginal personnel costs and the discretionary budgets of the assessment divisions

It can thus be concluded that the approach of this study reasonably accounts for all marginal costs associated with mandatory state standardized assessments, as each object category and each function have been considered when designing the variables that will be used to assess the marginal costs. The specific variables as well as the methods for gathering the associated data are described in the following respective sections.

Research Method

According to Creswell and Plano Clark (2007), the research method is determined by considering a number of steps. This begins with considering a review of the literature. In cases such as this, where the literature establishes the purpose and provides the theory or conceptual framework, a quantitative approach is suggested. Furthermore, in a quantitative study, the literature points to a focused, closed-ended outcome. Direct questions are related to variables that are tested for relational significance. The intent of this study is to relate student enrollment to marginal cost.

According to Gravetter and Wallnau (2009), a linear regression can be used to determine the prediction equation when one variable depends on another variable. It can

also be used to determine the statistical significance of the resulting equation. Since I am determining whether or not enrollment differences can be used to predict differences in the marginal costs, a regression analysis will be employed.

Research Questions

Research Question 1. What is the estimated marginal cost of mandatory state standardized assessments?

Research Question 2. Does the difference in student enrollment for districts account for the difference in the marginal cost of administering mandatory state assessments?

The research hypothesis was: the variability in the district marginal cost of administering mandatory state assessments has a significant positive correlation to the number of students enrolled in the given district.

The resulting null hypothesis was: there is no statistical significant correlation between the number of students enrolled in a district and the district's reported marginal cost of administering standardized assessment.

Research Question 3. What is the unit (per student) marginal cost of mandatory state standardized assessments?

Study Population

The population for the study consists of all school districts in the state of Texas with an enrollment of more than 5,000 students. As of November 2013, the Texas Education Agency (TEA) reported that Texas had 1,228 school districts and charter schools. The TEA categorizes districts by number of students enrolled. Table 2 shows a breakdown of the number of school districts in each of the TEA size categories.

Table 2

District by Size

District Size	50,000 and Over	25,000 to 49,999	10,000 to 24,999	5,000 to 9,999	3,000 to 4,999	1,600 to 2,999	1,000 to 1,599	500 to 999	Under 500
Count of Districts	18	30	57	70	92	135	140	249	437

The Texas Education Agency also publishes a database of all districts with their respective campuses and enrollment (Texas Education Agency, 2014). This database was used for the purposes of this study. I determined that there were 175 school districts with 5,000 or more students.

Sample Selection

The TEA categories will be used to develop the sample set for the study. According to the TEA testing procedures (2014), each district must designate a district testing coordinator (DTC). In small school districts, this person may have numerous responsibilities in addition to being the DTC. Often the Curriculum Director is also the DTC. As such, these positions do not represent marginal costs. They are sunk costs that would be expended regardless of the state's assessment system. As district size increases, districts engage in division of labor. This allows them to provide for a full time DTC. It is not uncommon to see multiple positions assigned to assessment divisions in very large school districts. Since only the large districts have these marginal costs associated with mandatory state assessments, this study focused on these school districts. This approach was verified by two independent researchers from Texas each of whom have considerable experience working with school districts.

Using the TEA district database, a random sample was drawn from those districts with an enrollment of 5,000 students or more. There are currently 175 school districts that meet this criterion. Based on the work of Dillman, Smyth, and Christian (2009), I determined that a random sample of 34 districts was required (p. 57). This number is derived by choosing a confidence interval of 95%, using a margin of $\pm 15\%$, with the most conservative estimate of standard deviation possible (.5). The margin of error was determined in order to ensure the accuracy of the random sample. If the margin of error were to be reduced to $\pm 5\%$, a sample of 120 districts would be required. Requiring this many districts could significantly reduce the response rate of the survey. By only requiring 34 districts, I was able to ensure high response rate thus reducing the potential for response error. In order to account for non-response, I randomly selected 40 school districts. When a district not respond, I replaced the district with one of the additional randomly selected districts, and I recorded the non-responding district. The non-responses were analyzed to attempt to identify any potential response error, and none was found. It was theorized that the size of the district might have had some influence on non-response, but when district size was compared against enrollment, no patterns emerged.

Further analysis of the districts from which the sample was drawn indicate that these districts account for 4,032,433 students. TEA reported that there were a total of 5,154,255 students enrolled in all schools in Texas. Thus the school districts from which we drew our sample collectively represent 78% of all students in Texas public schools.

Data Collection and Variables

Data for this study was collected from publicly available sources. Open records requests were submitted to each school district selected in the sample. A sample of the open records request letter is supplied in Appendix D. The requests produced answers to the following questions:

1. Does the district have a separate assessment division?
2. If so, what positions are in the division, and what are the salary and benefit costs of those positions?
3. If so, what is the annual discretionary budget for the assessment division?
4. Do any campuses have a full time campus testing coordinator?
5. If so, what are the salary and benefit costs of those positions?

These data were catalogued along with the enrollment of each district.

Enrollment data were obtained from the TEA website. Additionally, the data for questions 4 and 5 were catalogued with the enrollment of each of the campuses. Campus enrollment data were obtained from the TEA website.

The variables for this study were total marginal costs and enrollment. Total marginal costs were divided into three sub-costs: district personnel costs, campus personnel costs, and discretionary budget costs.

Data Limitations

The primary limitation of the data is the accuracy of reporting. Though these data are publicly available, the study relies on reporting by the districts. Verification of the accuracy of the district reports is a resource intensive process and no effort was made to do so. As such caution should be exercised in the use of the findings. As previously

discussed, accounting procedures in Texas public schools do not independently identify funds allocated for the purpose of implementing mandatory state standardized testing.

This same issue was identified by Phelps in 2000.

Data Analysis Methodology

The data from the district reports was analyzed using a linear regression. The dependent variable was the total marginal cost for standardized testing from each district, and the independent variable was the enrolment in the district. The linear regression was analyzed for significance at the .05 level using an F-test. The Pearson correlation was also determined in order to indicate the amount of variability in marginal costs predicted by the district enrollment. Descriptive statistics are provided for the enrollment of the districts in the sample as well as the marginal costs.

Chapter 4

Results

Purpose Statement

The purpose of this study was to determine (a) the estimate for the district marginal cost of mandatory state standardized assessments, (b) if student enrollment can be used to predict the district marginal cost of mandatory state standardized assessments, and c) the unit (per student) district marginal cost of mandatory state standardized assessments. The study was designed to provide a single year snapshot of these costs in order to provide a framework that adds to the scholarly research for the purposes of performing cost/benefit analyses on standardized testing initiatives.

Introduction

The results of the analyses are presented in this chapter. Each research question is considered independently, the accompanying hypotheses are listed as well as the results of the analysis. As the first question is dependent upon the second and third questions, it is reserved until the end of the analysis section.

The second question examined the amount of variance in district marginal cost of state standard assessment which could be explained by the enrollment of the respective districts. A linear regression was performed and the results are considered. The third question examined the unit marginal cost of the mandatory state assessments. The regression analysis from question two was utilized to unitize the marginal cost, and the results are considered. The first question examined the estimated marginal cost of mandatory state standardized assessments for districts in Texas. Again, the regression

analysis is used to extrapolate to all districts in the population of the study, and the results are considered.

The study population was defined as all districts in the state of Texas with an enrollment of at least 5,000 students. There were 175 school districts included in the population. From this population, it was determined that a sample of 34 school districts would provide a sufficient data set for the purposes of this study. More information is available regarding sample size calculations in Chapter 3. In order to ensure a significant response rate, 40 districts were randomly selected from the population. Out of those districts, 27 responded to the open records request. It was determined that these respondents provided sufficient evidence to produce a statistically significant model. The associated results are provided and a discussion of the analysis is included.

Question 2 Analysis

Research Question 2: Does the difference in student enrollment for districts account for the difference in the marginal cost of administering mandatory state assessments?

The research hypothesis was: the district's marginal cost of administering mandatory state assessments has a significant positive correlation to the number of students enrolled in the given district.

The resulting null hypothesis was: there is no statistical significant correlation between the number of students enrolled in a district and the district's reported marginal cost of administering standardized assessment.

The data for research question 2 were analyzed using a simple linear regression. *(You should put the formula here for a linear regression and then list variables)* A simple

linear regression is well suited for situations such as this when one variable can be used to predict the value of another variable. (Gravetter & Wallnau, 2009). As the following analysis demonstrates, I rejected the null hypothesis and concluded that the district's marginal cost of administering mandatory state assessments has a significant positive correlation to the number of students enrolled in the given district. It is important to distinguish this correlation from causation. The conclusion is simply that student enrollment can be used to estimate district marginal cost. It would be erroneous to conclude that student enrollment causes district marginal cost. Though it is true that as student enrollment in a district increases, the marginal costs associated with that district increase proportionally, the costs are caused by external factors such as legislative and administrative decision making. The variables associated with the analysis are described below.

Dependent variable: District marginal cost. District Marginal Cost was selected as the dependent variable in the linear regression. District Marginal Cost was a summation of three different district costs. When requesting data from districts, I solicited data regarding district personnel, campus personnel, and district discretionary budget data. Districts provided data for annual salaries and benefits for all personnel who were exclusively or almost exclusively hired to coordinate the administration of state standardized tests. Additionally districts provided data regarding the discretionary budgets of district level departments designed exclusively or almost exclusively for the purpose of the administration of state standardized testing. These data were catalogued and aggregated accordingly. Descriptive statistics of the variable are provided in Table 3 and the complete data set is provided in Appendices A-C.

Table 3

District Marginal Cost

District Marginal Cost	Amount
Mean	\$395,304.00
Standard Error	\$86,813.15
Median	\$202,787.00
Mode	0
Standard Deviation	\$451,094.37
Sample Variance	2.03486E+11
Kurtosis	3.742
Skewness	1.683
Range	\$1,929,388.54
Minimum	\$0.00
Maximum	\$1,929,388.54
Sum	\$10,673,208.26
Count	27

Independent variable: District enrollment. District Enrollment was selected as the independent variable in the linear regression. District Enrollment in Texas was reported by each school district in October of 2013. These data were made available through the Texas Education Agency website. These data were catalogued and aggregated accordingly. Descriptive statistics of the variable are provided in Table 4, and the complete data set is provided in Appendices A-C.

Table 4

District Enrollment

District Enrollment	Amount
Mean	24,468
Standard Error	4,714
Median	15,080
Mode	#N/A
Standard Deviation	24,496
Sample Variance	600,033,160
Kurtosis	5.194
Skewness	2.114
Range	106,405
Minimum	5,035
Maximum	111,440
Sum	660,646
Count	27

I conducted a linear regression analysis of these two variables using both Microsoft Excel and SPSS software. The goal of the linear regression is to first determine the percentage of the variance in one variable (District Marginal Cost) that can be explained by another variable (District Enrollment). Second, the analysis performs an F-test to determine the significance of the model. Finally, the analysis results in an algebraic equation of the relationship.

Results determined that the model was statistically significant at a $p < .05$ level, and resulted in an R-squared of 0.41. A table detailing a summary of the output is provided in Table 5, and an analysis of each element follows.

Table 5

Summary Output for Regression Analysis

SUMMARY OUTPUT						
<i>Regression Statistics</i>						
Multiple R	0.63934088					
R Square	0.408756761					
Adjusted R Square	0.385107032					
Standard Error	353726.1592					
Observations	27					
<i>ANOVA</i>						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	1	2.16258E+12	2.16258E+12	17.28378163	0.000330419	
Residual	25	3.12805E+12	1.25122E+11			
Total	26	5.29064E+12				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	107221.2229	97138.37822	1.103798775	0.280192009	-92839.01198	307281.4578
Enrollment	11.77368098	2.831997584	4.157376773	0.000330419	5.94107277	17.60628918

Beginning with the regression analysis statistics, an R-Squared value of 0.41 was calculated. The results determine that 41% of the variance in a district's marginal cost was explained by student enrollment. The results of this regression analysis were found to be statistically significant $F(1,25)=17.28$, $p < .05$, specifically a significance level of .0003 was calculated.

This simple linear regression has only one independent variable. Accordingly, it was found to be statistically significant with a tStat of 4.16 and p -value of the same .0003. These values were deemed statistically significant, and I rejected the null hypothesis and concluded that there is a positive correlation between the enrollment in a

district and the district's marginal cost of implementing state standardized assessments.

This relationship is represented visually in Figure 1.

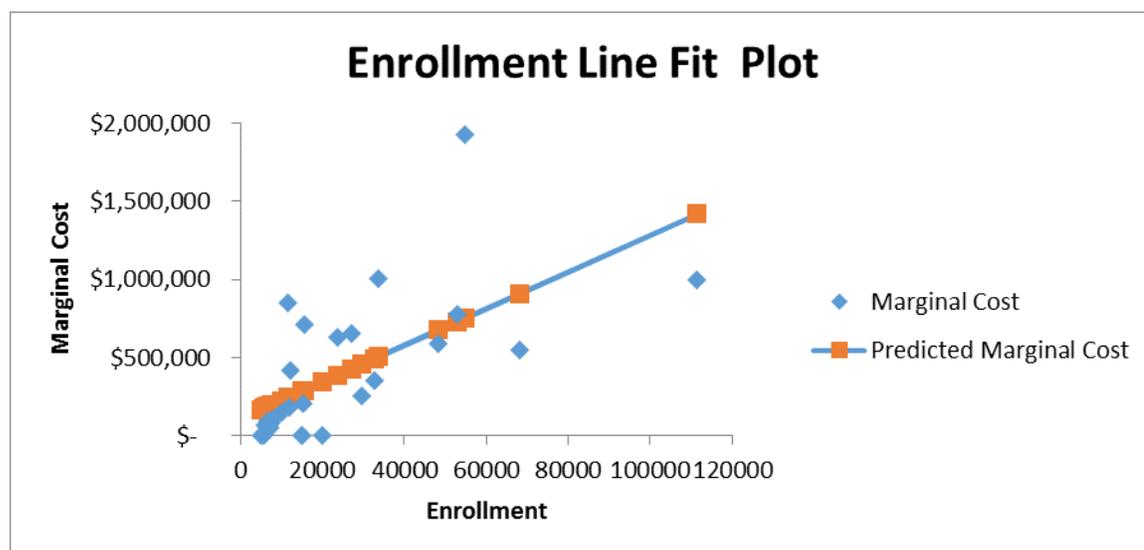


Figure 1. Marginal cost vs. enrollment.

Figure 1 displays a scatterplot of the Marginal Cost vs. Enrollment. Furthermore, it shows the predicted value based on the regression analysis. This figure demonstrates the positive correlation between marginal cost and enrollment as indicated by the positive slope of the trend line shown in the predicted costs.

Question 3 Analysis

Research Question 3: What is the unit (per student) marginal cost of mandatory state standardized assessments?

Question 3 concerns the unitization of district marginal cost. This question can be thought of in two ways. First, I considered what happens when a district adds one additional student. In this form, the question becomes: on average how much additional

money is the district expected to spend for one additional student. This question can be answered using the equation derived from question 2.

Returning to the concept of the simple linear regression, the analysis produces an algebraic equation of the relationship between the two variables. It takes the form:

$$y = B + A(x)$$

where “y”, the intercept, is the dependent variable,

“x” is the independent variable, and

the analysis then calculates the resulting coefficient “A” and the constant “B.”

In the case of my analysis I found the resulting equation:

$$\text{District Marginal Cost} = 107,221.22 + 11.77 (\text{District Enrollment})$$

The resulting coefficient $A=11.77$ represents the unitized marginal cost of each additional student. That is to say that districts on average spend approximately \$11.77 on the marginal costs of state standardized testing each time an additional student is enrolled.

Second, the question of unitization can be thought of as the average amount that districts spend per student. This varies from the first perspective because of the constant in the equation. This constant represents a static amount that each district spends regardless of enrollment. We need to include these costs in order to find the per student average. To answer this question, we need to know the total amount that all districts in the study population spend so that we can divide it by the total enrollment. For that, we will consider research question 1, and then revisit question 3.

Question 1 Analysis

Research Question 1: What is the estimated marginal cost of mandatory state standardized assessments?

Question 1 is concerned with the total estimated marginal cost of all districts in the state. In order to make this determination, I used the equation derived in Question 3.

At first glance, there might be a tendency to simply insert the total enrollment for all students in the population into the equation derived in the linear regression. This would be a mistake however. The regression model is meant to estimate the marginal cost of each district in the population. If one were to attempt to simply use the total enrollment for all districts, one would get an estimation for the marginal cost of a single district with over four million students, which would be an erroneous extrapolation of the model.

The correct approach is to use the enrollment from each of the districts in the population and calculate the respective estimated cost. The estimated costs can then be summed. I performed this calculation in the following fashion:

$$\begin{aligned} \text{District}_1 \text{ Marginal Cost} &= 107221.22 + 11.77(\text{District}_1 \text{ Enrollment}) \\ \text{District}_2 \text{ Marginal Cost} &= 107221.22 + 11.77(\text{District}_2 \text{ Enrollment}) \\ \text{District}_n \text{ Marginal Cost} &= 107221.22 + 11.77(\text{District}_n \text{ Enrollment}) \end{aligned}$$

Then I performed the second step of the calculation as follows:

$$\begin{aligned} \text{District}_1 \text{ Marginal Cost} + \text{District}_2 \text{ Marginal Cost} + \dots + \text{District}_n \text{ Marginal Cost} \\ = \text{Total Marginal Cost} \end{aligned}$$

I approximated that the total marginal cost for all districts in the study *sample* was \$66,547,114. In addition to this amount, I noted earlier that the Texas State Legislature allocated \$82,635,644 to the Texas Education Agency for the purposes of administering the state assessment and accountability system. Summing these figures brings the total marginal cost of state assessments to approximately \$149,182,758.

It is important to recognize that these figures represent estimates only. Returning to our regression analysis, I calculated a confidence interval for the equation. I used an upper and lower bound of 95%. That is to say that I am 95% certain that the true value for the coefficient in the equation is between \$5.94 and \$17.61.

Additionally, we must remember that our sample size introduced the possibility for error as well. Originally I estimated that the sampling error would produce a confidence interval of +/-%15.

Question 3 Analysis Revisited

Research Question 3: What is the unit (per student) marginal cost of mandatory state standardized assessments?

Previously I noted that the unitization of the marginal cost of administering the state standardized assessment system can be viewed from two perspectives. The first perspective was previously addressed. Now that I have estimated the total marginal cost from question 1, I can use this information to address the second perspective of question 3. That is, I can calculate the average per student marginal cost for the schools from our population. To do this, I divide the total marginal cost of \$66,547,114 by the total enrollment of 4,032,433. In which case I obtain a value of \$16.50. This represents an estimate of the average marginal cost per student at the local level.

Going one step further, I hypothesized (*be careful with this wording-another choice of words, BL*) that school districts with less than 5,000 students would not engage in the division of labor that allowed for the marginalization of costs associated with standardized testing. It was for the reason that I did not include them when selecting my sample. Evidence from my sample suggests that this hypothesis was correct, as two districts were randomly selected with student enrollment of less than 5,600 students. These were the smallest (by enrollment) two districts in the sample, and neither reported any marginal costs.

I am assuming that this pattern is consistent for all districts with less than 5,000 students, thus there are no marginal costs for any of the approximately 1,000 small districts in the state. Based on this assumption, I used the total marginal costs at the state and local level of \$149,182,758 and the total state enrollment of 5,058,939 to calculate an estimate of the total marginal cost for all of Texas on a per student basis. This resulted in a unit marginal cost of \$29.49.

Chapter 5

Discussion

Purpose Statement

The purpose of this study was to determine (a) the estimate for the district marginal cost of mandatory state standardized assessments, (b) if student enrollment can be used to predict the district marginal cost of mandatory state standardized assessments, and c) the unit (per student) district marginal cost of mandatory state standardized assessments. The study was designed to provide a single year snapshot of these costs in order to provide a framework that adds to the scholarly research for the purposes of performing cost/benefit analyses on standardized testing initiatives.

Introduction

In this study I randomly selected 40 school districts from a population of 175 school districts in the state of Texas with enrollment of 5,000 or more students. Open records requests were sent to each district, and 27 responded in time to be included in the study. Districts reported costs in three categories: district level personnel salaries and benefits, district level discretionary budgets, and campus level personnel salaries and benefits. Districts were instructed to only report costs that were exclusively or almost exclusively associated with implementing state standardized assessments. These costs were aggregated for each district and a simple linear regression was used to calculate an equation that uses a district's enrollment to predict the marginal costs. This equation was then used to answer the three research questions. A discussion of the findings associated with each question follows.

Question 1

Research Question 1: What is the estimated marginal cost of mandatory state standardized assessments?

In Question 1, I attempted to estimate the total marginal cost of implementing the Texas state standardized assessments. I estimated that the total marginal cost was \$149,182,757 for the 2013-2014 school year. This value was derived by using the state legislative appropriations data as well as the estimate from my linear regression. The state level costs were reported as \$82,635,644, and I determined that the estimated cost at the local level was \$66,547,113.57.

This represents only an estimate of the local costs. First, it is important to recognize that my sample size limits the confidence interval to +/-%15. That is to say that the actual value could be as high as \$77 million or as low as \$57 million. Furthermore, the regression analysis used to predict this value also has a margin of error. Based on my calculations I can be 95% certain that the actual value lies somewhere between \$7 million and \$126 million. Finally, these data were based on self-reporting by the districts, and it is possible that the reported data included errors. No attempts were made to verify the accuracy of the reported data.

Of course these are wide ranges that indicate caution that should be used when considering the estimated cost. That said, this figure does provide an important estimate. As was discussed in the review from Chapter 2, virtually no efforts have been made to estimate these costs in recent years, and testing has proliferated. There is an ongoing debate in the state and the nation regarding the worth of these high stakes tests. If this

debate is going to move forward, a cost/benefit analysis needs to occur, and this can only occur with an estimate of the cost.

Additionally, it was noted earlier that the cost of implementing state standardized testing is generally born in greater proportion by the school districts as opposed to the state. My analysis represents only the marginal costs, that is, those costs that would theoretically no longer be needed if the state legislature were to terminate the state mandated testing program. This marginal cost is only a part of the total cost of the testing program. What I have shown is that the marginal cost of testing at the district level is approximately 80% of what the state pays. This is of critical importance since these assessments are mandated by the state, but the state has not made additional funding available to cover the costs. District administrators and elected officials need a better understanding of these costs as they work to develop a school finance model that adequately and appropriately funds the state's public schools.

It is also important to note that other researchers found that the cost of implementing standardized assessments is almost always greater at the local level than at the state level. My research indicated that the marginal cost at the local level was only 80% of the state cost. This discrepancy should be attributed to the conservative approach that I took. In order to be considered a marginal cost, I only considered the costs that I was very certain would be eliminated with the elimination of testing. There are certainly other costs that should be considered marginal. As such, my estimate represents an absolute baseline for marginal cost. The true marginal cost is no doubt much higher, but even with this very conservative approach, I have demonstrated that testing costs have increased significantly since the GAO estimate of 1991 as is shown below in Question 3.

Question 2

Research Question 2: Does the difference in student enrollment for districts account for the difference in the marginal cost of administering mandatory state assessments?

The research hypothesis was: the district's marginal cost of administering mandatory state assessments has a significant positive correlation to the number of students enrolled in the given district.

The resulting null hypothesis was: there is no statistical significant correlation between the number of students enrolled in a district and the district's reported marginal cost of administering standardized assessment.

The data for research question 2 were analyzed using a simple linear regression. A simple linear regression is well suited for situations such as this when one variable can be used to predict the value of another variable. (Gravetter & Wallnau, 2009). As the previous analysis demonstrated, I rejected the null hypothesis and concluded that the district's marginal cost of administering mandatory state assessments has a significant positive correlation to the number of students enrolled in the given district.

As stated in the analysis section, it is important to distinguish this correlation from causation. The conclusion is simply that student enrollment can be used to estimate district marginal cost. In the analysis section, I showed that the regression resulted in a statistically significant model $F(1,25)=17.28$, $p<.05$, with an R-squared of 0.41. The resulting equation from the regression was:

$$\text{District Marginal Cost} = 107,221.22 + 11.77 (\text{District Enrollment})$$

It is important to note that though I derived a statistically significant model, the model only accounts for 41% of the variation in the marginal costs of districts. Districts choose to spend their money in different ways for a variety of reasons. Though it is logical to conclude that the more students there are in a district the more they will spend on testing, there are a variety of other factors that influence the amount that is spent.

As an example, there were *five* districts from the sample that reported no marginal costs. These districts have chosen not to allot funds for a full time District Testing Coordinator or any full time Campus Testing Coordinators. Instead, they assign these duties to individuals in other roles. This is a good example of the difference between total and marginal costs. In these districts, there are still costs associated with implementing the state's assessment program, but if that program went away, there is no indication that these costs would diminish. More likely, those individuals would retain their employment and the district would reallocate the labor force.

It is possible that some money could be saved even in these districts. As a theoretical example, assume that the job of implementing the states testing program were divided equally among three people and each person spent 1/3 of their respective time on testing. If the state ceased the testing program, in theory each person would have 1/3 of their time available for other tasks. The district could then take the remaining tasks and assign all of them to two people instead of the three. In that case, the third person would no longer be needed and the district could eliminate the position. Of course this is simply a hypothetical illustration of a possible scenario associated with the difference between total and marginal cost. I made no attempt to isolate or analyze these situations. I simply assumed that the only marginal costs were in positions that were exclusively dedicated to

testing. It is for this reason that I consider my resulting analysis to be a very conservative baseline estimate of the true marginal costs.

Ultimately I determined that enrollment can be used to estimate a district's marginal cost. More importantly, I demonstrated that this approach can be used as a model to estimate the marginal costs in school districts in other states and over time. By conducting this same analysis on an annual basis, we could estimate the change in marginal costs. Perhaps as districts become more accustomed to implementing state tests, they may find that they become more efficient and no longer need full time personnel dedicated to testing. It may be just as likely that more school districts decide that engaging in division of labor is more efficient, and we may see more districts making this choice.

Many districts reported allocating full-time Campus Testing Coordinators to their larger campuses, but one district in my sample reported allocating full-time positions to all of their campuses, even the small elementary schools. It would be interesting to analyze the trend over time for these types of decisions, and by implementing this approach in subsequent years, we will be able to do so.

Furthermore, this analysis may prove useful to school administrators and financial officers. Using the equation from this study, a district could estimate the marginal cost that districts of similar size allocate specifically to testing. They could use this figure to assess their own allocation. In situations where a district's allocation is above the norm, the district might want to consider looking at what other districts are doing and determine if their additional spending is resulting in improved results which would justify the higher allocation. Districts spending below the norm could also be evaluated for best practices.

Perhaps these districts have found ways to more efficiently implement the mandated testing.

Question 3

Research Question 3: What is the unit (per student) marginal cost of mandatory state standardized assessments?

Question 3 concerns the unitization of the marginal costs, and it was analyzed from two perspectives. First I considered the additional cost that a school district is expected to have when adding one additional student. This value was derived from the regression analysis and is represented by the coefficient in equation:

$$\text{District Marginal Cost} = 107,221.22 + 11.77 (\text{District Enrollment})$$

The additional cost for each additional student was found to be approximately \$11.77.

Second, I considered the average per student marginal cost for the districts in my study. To do this, I used the equation above to estimate the marginal cost for each school district in the state with an enrollment of 5,000 or more students. Then I summed these costs and divided by the total number of students in all of these districts. This resulted in an average per student value of \$16.50. In addition to this calculation, I also included the state costs and then divided by the total number of students in all public schools in Texas. This resulted in a value of \$29.49.

This is an important finding because it demonstrates that there is sufficient evidence to suggest that the marginal cost of testing has increased significantly since the GAO estimate of 1991, even when accounting for inflation. As was noted earlier, Phelps (2000) reported that the GAO estimated system-wide testing costing \$13 per student. This represented a conservative estimate, but it included more than just marginal costs.

Phelps also noted that of the \$13, only \$8 could be deemed marginal. This implies that the actual cost is 1.625 times higher than the marginal cost. I converted this \$8 marginal cost to 2013 dollars and found it to represent \$14 per student.

My analysis indicates that the cost of testing has risen by over \$15 per student making the cost more than double what it was estimated to be in 1991 even after controlling for inflation. What's more, if I were to assume that the same marginal cost to total cost proportion exists today as it did during the GAO estimate, then the total cost of testing could be as high as \$47.92 per student, if not more. It should also be noted that my identification of marginal cost was an even more conservative estimate than that of the GAO. As has been noted, I considered all districts with less than 5,000 students to have \$0 marginal costs, but as I have indicated, this may not be the case.

Chapter 6

Conclusions

Introduction

In this chapter, I present a summary of the dissertation. Each research question is provided with the results of the analysis. I also provide a summary of the findings with recommendations for future research.

Summary of the Dissertation

In 1991, the GAO conducted a study attempting to determine the cost of system-wide testing. This study was done in preparation for the increases in state standardized testing associated with pending federal legislation. The results of this study were published by Phelps (2000) almost 10 years later. To date, very little scholarly research has been published on the topic of the cost of standardized testing. Furthermore, there is virtually no research of the cost born by school districts as they attempt to carry out the state mandates associated with testing at the local level.

The purpose of this study was to determine (a) the estimate for the district marginal cost of mandatory state standardized assessments, (b) if student enrollment can be used to predict the district marginal cost of mandatory state standardized assessments, and c) the unit (per student) district marginal cost of mandatory state standardized assessments. The study was designed to provide a single year snapshot of these costs in order to provide a framework that adds to the scholarly research for the purposes of performing cost/benefit analyses on standardized testing initiatives.

In the literature review, I provided an overview of the history of standardized testing. I documented how it has grown in scale and scope as well as the recent

proliferation of mandatory testing in school districts. In addition, I provide an overview of the available research on the cost of standardized testing.

I demonstrated that there exists considerable debate over the methodology of determining costs which results in a wide array of cost estimates. I documented how much of this debate centers on the use of total costs versus marginal costs, and I build a case for focusing on marginal costs in this study. Additionally I provided background on the state of Texas' approach to state mandated standardized testing and documented its growth over the last two decades. I built a case for Texas to be used as a model, and I argued that if I could create a model for estimating marginal costs at the local level in Texas, then this model could be replicated for a broader audience.

Phelps (2000) provides the conceptual framework for the study based on the work that was done at the GAO. I mapped each of the object and function costs listed by Phelps to my variables for the study.

I chose to focus my attention for this study on school districts with enrollment of 5,000 students or more. I theorized that these districts are large enough to engage in division of labor which would allow me to isolate marginal costs. I found that there were 175 school districts in Texas that met this restriction, and I drew a random sample of 40 school districts. I sent open records requests to all 40 school districts and 27 responded in time to be included in the study.

Districts were asked to report costs in three categories: district level personnel costs, assessment division discretionary budgets, and campus level personnel costs. Districts were instructed to include only those costs that were exclusively or almost

exclusively designated for the purpose of implementing the state standardized testing system.

Data from these districts along with their respective student enrollment were used to estimate the total marginal cost for the state as well as the per student marginal cost. I used a linear regression to determine if it were possible to use enrollment to predict district marginal costs. The research questions were:

Research Question 1. What is the estimated marginal cost of mandatory state standardized assessments?

The results of the linear regression discussed in question 2 allowed me to estimate the marginal costs of testing for each school district in the state with enrollment of more than 5,000 students. I determined that the total for all of these school districts for the 2013-2014 school year was \$66,547,113. Additionally, I documented that the state legislature allocated \$82,635,644 to the Texas Education Agency for the purpose of implementing the state assessment and accountability system. The total for both of these marginal costs was \$149,182,757. I cautioned the reader on use of this data and discussed the potential margins for error including district response error, the confidence interval from the linear regression, and the margin of error (+/-15%) from sampling. Furthermore, I documented that this estimate represents a conservative baseline for the marginal costs of standardized testing in Texas and I demonstrate how the true cost may be considerably higher.

Research Question 2. Does the difference in student enrollment for districts account for the difference in the marginal cost of administering mandatory state assessments?

Using the data from the open records requests and publicly available from the TEA website, a regression analysis was performed to determine the amount of variance that can be accounted for in total marginal costs by variance in student enrollment.

The research hypothesis was: the district's marginal cost of administering mandatory state assessments has a significant positive correlation to the number of students enrolled in the given district.

The resulting null hypothesis was: there is no statistical significant correlation between the number of students enrolled in a district and that districts reported marginal cost of administering standardized assessment.

Based on the result of the regression analysis, I rejected the null hypothesis and concluded that enrollment in a district is positively correlated to the district's marginal costs. Furthermore, I determined that I could explain 41% of the variance in district marginal cost using enrollment. The resulting equation was:

$$\text{District Marginal Cost} = 107,221.22 + 11.77 (\text{District Enrollment})$$

Research Question 3. What is the unit (per student) marginal cost of mandatory state standardized assessments?

For the third research question I utilized the regression data from the second question to unitize the marginal costs of mandatory state assessments on a per student basis. I considered this question from two perspectives. First, I noted that on average for each additional student who enrolls in a district, the district is expected to spend an additional dollar amount of approximately \$11.77. Second I used the data from the first research question to determine the average marginal cost for each student in schools with 5,000 or more students. I determined that the districts in my study spent an average of

\$16.50 per student on the marginal costs of testing. I also found the per student average of all marginal costs for all students in the state of. Using the total marginal cost figure from question one, I determined that the state of Texas spends approximately \$29.49 on the marginal costs of testing.

Summary of the Findings

In this study I found sufficient evidence to conclude that student enrollment can be used to predict a district's marginal cost of implementing state standardized testing. Specifically, I developed the following equation:

$$\text{District Marginal Cost} = 107,221.22 + 11.77 (\text{District Enrollment})$$

This is significant from a research perspective because it allows us to develop additional estimates of the costs of standardized testing in Texas. Specifically, I estimated that the state is spending approximately \$149,182,757 on testing. This represents only the marginal costs. In other words, if the legislature decided to discontinue the state mandated standardized testing program, an annual savings of \$149,182,757 could theoretically be realized.

I estimated that the state is spending approximately \$29.49 per student on testing. I compared this estimate to the estimate made by Phelps (2000) and the GAO in 1991. After controlling for inflation and isolating the marginal costs from the estimate, I determined that the original estimate from 1991 after adjusting for in inflation was approximately \$14. I subsequently showed that the cost of testing has more than doubled since these initial estimates were made even after controlling for inflation.

These findings represent a very important contribution to state and national discussion about the worth of standardized testing. This conservative estimate will allow others to ask the questions:

- What could we do in schools with an extra \$149 million?
- Would the alternative be more or less beneficial than the current testing program?

Suggestions for Future Research

This purpose of this study was to add to the scholarly research regarding the costs of standardized testing. The study drew from the conceptual framework provided by Phelps and the GAO. To that framework, I have added a model for conducting this analysis in the future. By using open records requests, and focusing on large districts other researchers will be able to estimate the marginal costs in different states. This approach could be used to determine whether the cost per student in Texas is the same as the cost per student in California for instance.

In addition to replicating the model, future research could be directed at the open records request that was used. This instrument needs to be further tested for validity and reliability. Though it is not a survey per se, it does contain the potential for response error. By evaluating this instrument closely, future researchers will be able to reduce the likelihood of response error and increase the accuracy of the model.

This study should be repeated on an annual basis. Doing so would allow the researcher to develop a trend line for cost over time. After accounting for inflation we would be able to determine if costs are increasing or decreasing giving us the opportunity to ask: why?

Finally, this research represents a starting point for developing a model to more closely estimate the true marginal cost of standardized testing. In this study, I derived a baseline estimate of marginal costs, but I demonstrate how additional marginal costs exist. By using the data from this research or data from similar research, more advanced statistical procedures could be employed. For instance, the data from this study suggest that 67% of districts with campuses of 2,000 or more students allocate a full time testing coordinator to the campus. Future research could determine if this is a suitable way to estimate the marginal cost of all campuses. For instance, could *researchers* determine that there is sufficient labor necessary for the allocation of a full time position when a campus reaches 2,000 students? If so, *they* may also be able to conclude that a campus of 1,000 students requires a half-time position. By conducting these types of analyses on each of the three cost variables in this study, future research may reveal an efficient tool for estimating the true marginal cost of standardized assessments in addition to the baseline estimate that I have derived.

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Appendix A

List of School Districts Included in Study

District Name
EDGEWOOD ISD
NORTH EAST ISD
ANGLETON ISD
COLLEGE STATION ISD
PLANO ISD
LEWISVILLE ISD
WAXAHACHIE ISD
LAMAR CISD
DICKINSON ISD
TEXAS CITY ISD
PLAINVIEW ISD
CYPRESS-FAIRBANKS ISD
KLEIN ISD
LA PORTE ISD
IDEA PUBLIC SCHOOLS
MISSION CISD
LA JOYA ISD
NEDERLAND ISD
BEAUMONT ISD
BOERNE ISD
KELLER ISD
MANSFIELD ISD
CROWLEY ISD
SAN ANGELO ISD
PFLUGERVILLE ISD
DEL VALLE ISD
HUTTO ISD

Appendix B

Detailed Cost Data Submitted by Districts

Budget Costs by District Detail

SampleID	Sum of Budget	Sum of Other
2	\$ 77,400.00	\$ -
3	\$ 280,000.00	\$ -
4	\$ -	\$ 1,500.00
5	\$ -	\$ 10,000.00
9	\$ 1,080,037.00	\$ -
15	\$ 49,000.00	\$ -
16	\$ 88,850.00	\$ -
18	\$ -	\$ 1,500.00
20	\$ 15,954.00	\$ -
21	\$ 110,000.00	\$ -
23	\$ 580,000.00	\$ -
25	\$ 48,000.00	\$ -
29	\$ 10,582.33	\$ -
31	\$ 55,493.00	\$ -
32	\$ 10,000.00	\$ -
35	\$ 72,446.00	\$ -
40	\$ 1,976.00	\$ 67,477.00

District Level Personnel Costs by District Detail

SampleID	Position Name	Salary	Benefits
2	District Testing Coordinator	\$ 73,696.00	\$ 8,843.52
2	Testing Specialist	\$ 76,567.00	\$ 9,188.04
2	Clerical Assistant	\$ 21,312.00	\$ 2,554.44
3	Director	\$ 78,000.00	\$ -
3	Specialist	\$ 78,000.00	\$ -
3	Analyst	\$ 78,000.00	\$ -
3	Materials Handler	\$ 31,000.00	\$ -
4	Assistant Testing Coordinator	\$ 25,000.00	\$ -
5	Director of Curriculum	\$ 43,220.00	\$ 4,400.00
9	Executive Director of Assessment and Accountability	\$ 122,500.62	\$ 3,108.00
9	Asst. Director Research and Campus Data Support	\$ 98,392.62	\$ 3,108.00
9	Office Manager	\$ 47,655.40	\$ 3,108.00
9	Coordinator Data Management	\$ 85,949.94	\$ 3,108.00
9	Assessment Compliance Specialist	\$ 79,312.86	\$ 3,108.00
9	Student Achievement Specialist Elementary	\$ 82,651.08	\$ 3,108.00
9	Student Achievement Specialist Secondary	\$ 71,713.92	\$ 3,108.00
9	Assistant Director Assessment	\$ 98,154.00	\$ 3,108.00
9	Specialist-Testing Materials	\$ 52,411.50	\$ 3,108.00
9	Secretary III	\$ 37,692.00	\$ 3,108.00
9	Assessment Technical Asst.	\$ 38,729.60	\$ 3,108.00
13	Assessment Administrator	\$ 79,478.00	\$ 5,515.56
13	Assessment Coordinator	\$ 69,009.00	\$ 4,595.19
13	Assessment Coordinator	\$ 68,949.00	\$ 5,362.31
15	Coordinator of Testing and Assessment	\$ 54,050.00	\$ 4,381.00
16	Director of Research and Assessment	\$ 93,352.00	\$ 15,256.00
16	Assessment Data Specialist	\$ 37,920.00	\$ 5,688.00
16	Data Technician	\$ 32,868.00	\$ 4,930.00
16	Administrative Assistant	\$ 29,553.00	\$ 4,433.00
17	Director of Assessment	\$ 91,593.00	\$ 3,736.00
18	Assistant Testing Coordinator	\$ 25,000.00	\$ -
20	Director of Testing	\$ 101,298.00	\$ 1,970.04
20	Coordinator of Testing	\$ 82,377.00	\$ 1,613.40
20	Coordinator of Testing	\$ 69,777.00	\$ 7,139.64
20	Secretary	\$ 38,380.00	\$ 4,355.16
20	Secretary	\$ 30,254.00	\$ 634.44
21	Executive Director of Accountability and School Improvement (50%)	\$ 58,744.00	\$ 614.00
21	Director of Assessment and Accountability	\$ 100,000.00	\$ 4.00
21	Secretary	\$ 28,019.00	\$ 101.00
23	Director of Assessments	\$ 66,000.00	\$ 17,000.00

SampleID	Position Name	Salary	Benefits
23	Assessment System Coordinator	\$ 35,000.00	\$ 12,000.00
25	Director	\$ 90,583.00	\$ -
25	Coordinator	\$ 64,204.00	\$ -
26	Executive Director for Curriculum and Evaluation	\$ 84,768.00	\$ -
26	District Testing Strategist	\$ 48,557.00	\$ -
26	District Testing Strategist	\$ 48,557.00	\$ -
26	District Testing Strategist	\$ 48,557.00	\$ -
26	Secretary	\$ 26,993.00	\$ -
29	Part Time District Testing and Guidance Coordinator	\$ 37,575.00	\$ 3,144.00
31	Director of Assessment and Accountability	\$ 90,027.00	\$ 6,864.28
31	Assessment Coordinator	\$ 76,395.00	\$ 7,660.71
31	Assessment Coordinator	\$ 78,721.00	\$ 6,083.05
31	Learning Specialist I	\$ 30,345.00	\$ 4,067.39
32	Director of Accountability and Assessment	\$ 111,875.51	\$ 13,558.39
32	Accountability and Assessment Specialist	\$ 83,054.05	\$ 10,848.61
32	Accountability and Assessment Specialist	\$ 70,172.97	\$ 9,631.35
32	Administrative Assistant	\$ 39,031.85	\$ 6,688.51
35	Director of Accountability and Assessment	\$ 90,904.00	\$ 344.00
35	Assistant Director of Accountability and Assessment	\$ 77,606.00	\$ 344.00
35	Assessment Coordinator	\$ 69,897.00	\$ 344.00
35	Coordinator of Data Validation	\$ 71,579.00	\$ 344.00
37	Director of Data and Accountability	\$ 74,265.29	\$ 6,967.15

District Level Personnel Costs by District Summary

SampleID	Sum of Salary	Sum of Benefits
2	\$ 171,575.00	\$ 20,586.00
3	\$ 265,000.00	\$ -
4	\$ 25,000.00	\$ -
5	\$ 43,220.00	\$ 4,400.00
9	\$ 815,163.54	\$ 34,188.00
13	\$ 217,436.00	\$ 15,473.06
15	\$ 54,050.00	\$ 4,381.00
16	\$ 193,693.00	\$ 30,307.00
17	\$ 91,593.00	\$ 3,736.00
18	\$ 25,000.00	\$ -
20	\$ 322,086.00	\$ 15,712.68
21	\$ 186,763.00	\$ 719.00
23	\$ 101,000.00	\$ 29,000.00
25	\$ 154,787.00	\$ -
26	\$ 257,432.00	\$ -
29	\$ 37,575.00	\$ 3,144.00
31	\$ 275,488.00	\$ 24,675.43
32	\$ 304,134.38	\$ 40,726.86
35	\$ 309,986.00	\$ 1,376.00
37	\$ 74,265.29	\$ 6,967.15

Campus Costs by District Detail

SampleID	Position Title	Salary	Benefits
2	Campus Testing Coordinator	\$ 70,134.00	\$ 8,416.08
2	Campus Testing Coordinator	\$ 64,633.00	\$ 7,755.96
4	Testing Coordinator	\$ 64,190.00	\$ 335.00
5	High School Testing Coordinator	\$ 54,700.00	\$ 4,400.00
5	High School Testing Coordinator	\$ 57,681.00	\$ 4,400.00
13	Campus Testing Coordinator	\$ 61,452.00	\$ 5,085.19
13	Campus Testing Coordinator	\$ 53,800.00	\$ 5,141.82
13	Campus Testing Coordinator	\$ 53,598.00	\$ 794.88
13	Campus Testing Coordinator	\$ 56,000.00	\$ 5,173.84
13	Campus Testing Coordinator	\$ 59,431.00	\$ 1,239.78
13	Campus Testing Coordinator	\$ 54,448.00	\$ 807.25
13	Campus Testing Coordinator	\$ 56,000.00	\$ 5,173.84
13	Campus Testing Coordinator	\$ 56,855.00	\$ 4,742.28
13	Campus Testing Coordinator	\$ 55,650.00	\$ 5,168.75
16	Instructional Coordinator	\$ 65,789.57	\$ 10,235.54
16	Campus Testing Coordinator	\$ 53,000.00	\$ 8,982.00
16	Instructional Coordinator	\$ 62,366.00	\$ 9,900.00
16	Campus Testing Coordinator	\$ 57,900.00	\$ 9,462.00
16	Campus Testing Coordinator	\$ 57,250.00	\$ 9,398.00
17	Testing Coordinator	\$ 53,031.00	\$ 3,355.00
20	High School Testing Coordinator	\$ 55,432.00	\$ 1,231.32
20	High School Testing Coordinator	\$ 61,360.00	\$ 1,193.64
20	High School Testing Coordinator	\$ 65,288.00	\$ 4,071.00
20	High School Testing Coordinator	\$ 57,522.00	\$ 3,779.40
20	High School Testing Coordinator	\$ 56,780.00	\$ 6,241.08
20	High School Testing Coordinator	\$ 62,682.00	\$ 1,210.68
20	High School Testing Coordinator	\$ 58,184.00	\$ 3,798.60
20	High School Testing Coordinator	\$ 61,342.00	\$ 1,181.16
20	High School Testing Coordinator	\$ 70,866.00	\$ 1,371.96
20	High School Testing Coordinator	\$ 68,028.00	\$ 3,897.72
21	Assessment Assistant Principal	\$ 71,525.00	\$ 1,096.00
21	Assessment Assistant Principal	\$ 75,000.00	\$ 878.00
21	Assessment Assistant Principal	\$ 67,386.00	\$ 706.00
21	Assessment Assistant Principal	\$ 71,632.00	\$ 592.00
22	Campus Testing Coordinator	\$ 85,511.83	\$ -
31	Academic Associate	\$ 60,966.72	\$ 5,616.29
31	Academic Associate	\$ 65,098.54	\$ 5,682.52
31	Academic Associate	\$ 63,075.00	\$ 5,611.49
31	Academic Associate	\$ 58,590.25	\$ 5,810.02

SampleID	Position Title	Salary	Benefits
31	Academic Associate	\$ 51,662.00	\$ 3,399.19
31	Academic Associate	\$ 74,471.28	\$ 6,223.99
31	Academic Associate	\$ 54,581.49	\$ 5,889.00
31	Academic Associate	\$ 51,722.60	\$ 2,344.15
31	Academic Associate	\$ 60,588.65	\$ 2,536.74
31	Academic Associate	\$ 59,238.38	\$ 2,654.44
35	High School Testing Coordinator	\$ 66,382.00	\$ 11,285.00
35	High School Testing Coordinator	\$ 70,136.00	\$ 11,923.00
35	High School Testing Coordinator	\$ 71,076.00	\$ 12,083.00
37	Testing Coordinator	\$ 55,716.86	\$ 6,665.20
37	Testing Coordinator	\$ 50,687.30	\$ 6,495.59
37	Testing Coordinator	\$ 47,654.00	\$ 6,434.92
37	Testing Coordinator	\$ 53,033.50	\$ 6,542.51
37	Testing Coordinator	\$ 52,261.30	\$ 6,527.07
37	Testing Coordinator	\$ 49,084.10	\$ 6,463.52
37	Testing Coordinator	\$ 50,994.57	\$ 6,501.73
37	Testing Coordinator	\$ 48,781.20	\$ 6,457.47
37	Testing Coordinator	\$ 54,618.85	\$ 6,574.21
37	Testing Coordinator	\$ 49,298.60	\$ 6,467.81
37	Testing Coordinator	\$ 61,214.95	\$ 6,706.14
37	Testing Coordinator	\$ 48,886.50	\$ 6,459.57
37	Testing Coordinator	\$ 58,856.20	\$ 6,658.96

Campus Cost by District Summary

SampleID	Sum of Salary	Sum of Benefits
2	\$ 134,767.00	\$ 16,172.04
4	\$ 64,190.00	\$ 335.00
5	\$ 112,381.00	\$ 8,800.00
13	\$ 507,234.00	\$ 33,327.63
16	\$ 296,305.57	\$ 47,977.54
17	\$ 53,031.00	\$ 3,355.00
20	\$ 617,484.00	\$ 27,976.56
21	\$ 285,543.00	\$ 3,272.00
22	\$ 85,511.83	\$ -
31	\$ 599,994.91	\$ 45,767.83
35	\$ 207,594.00	\$ 35,291.00
37	\$ 681,087.93	\$ 84,954.70

Appendix C

Summary Cost Data Submitted by Districts

SampleID	Enrollment	Marginal Cost
2	12063	\$ 420,500
3	68205	\$ 545,000
4	6588	\$ 91,025
5	11713	\$ 178,801
9	54822	\$ 1,929,389
13	52801	\$ 773,471
15	7814	\$ 107,431
16	27079	\$ 657,133
17	10000	\$ 151,715
18	6163	\$ 26,500
19	5536	\$ -
20	111440	\$ 999,213
21	48253	\$ 586,297
22	7628	\$ 85,512
23	15535	\$ 710,000
25	15372	\$ 202,787
26	29711	\$ 257,432
27	5035	\$ -
28	19875	\$ -
29	7229	\$ 51,301
31	33763	\$ 1,001,419
32	32779	\$ 354,861
33	15080	\$ -
34	15009	\$ -
35	23543	\$ 626,693
37	11684	\$ 847,275
40	5926	\$ 69,453

Appendix D

Sample Open Records Request Letter

J. Eli Crow, MBA, M.Ed.
3505 Melanie Ct.
Tyler, TX 75707

June 9, 2014

DR Superintendent
Sample District ISD
P O BOX ###
Sample City, TX #####

Dear DR Superintendent:

Under the **Texas Public Information Act, §6252-17a et seq.**, I am requesting to obtain copies of public records that will help me determine the marginal cost of standardized testing in your school district. The data will be analyzed along with other large public schools in the state of Texas in order to estimate the per student cost of the state mandated STAAR program. Your district's cooperation in providing accurate data will help ensure accurate estimations.

I am pursuing this information to be included in my dissertation associated with the requirement of my doctoral degree from the University of Nebraska. As a former superintendent, I understand the burden that open records requests place on your school district. As such, I have attempted to limit the scope of my research as much as possible. If you would like to receive a report of the results of my findings, please let me know. I will happily share it with you. I strongly believe that these results will improve the conversations surrounding standardized testing by providing an unbiased estimation of the "added" cost to schools. I also intend to publish these data in order to make them available to the greater research community. Thank you for your assistance.

Please provide the following information:

- 1) **Do you have an assessment division independent of other divisions?** – I am attempting to ascertain whether the district dedicates resources via a position or division of positions directly and exclusively (or almost exclusively) for the purpose of implementing standardized testing.
- 2) **If so, please list the position titles of all personnel assigned to the division with their annual salary and cost of benefits.**
- 3) **If so, what is the annual discretionary budget for the assessment division?**

- 4) **Do any campuses have a full time campus testing coordinator?** – I am attempting to ascertain whether the district dedicates resources via campus positions directly and exclusively (or almost exclusively) for the purpose of implementing standardized testing.
- 5) **If so, please list the campus, salary, and cost of benefits for each full time campus testing coordinator.**
- 6) **To your knowledge, are there any other positions or budgets allocated in your district that are designed directly and exclusively for the purpose of implementing standardized testing? If so, please list.**

In order to facilitate this request, I have created a downloadable Excel template. The template can be found at www.educationadvanced.com/ORR.xlsx. From here you can download a copy, save it to your computer, and update the information.

If you feel that you need any clarification of these questions, I can be reached at 903-253-5885. If for any reason you are unable to provide me with this information in a timely fashion, please reply with the reason as soon as possible. All responses can be sent to j.elicrow@gmail.com. Once again, thank you for your prompt and accurate response. Sincerely,

J. Eli Crow MBA, M.Ed.

j.elicrow@gmail.com

903-253-5885