Summary of Findings

This report fulfills the request of the 76th Texas Legislature for the Charles A. Dana Center, in coordination with the Comptroller of Public Accounts, to conduct a study of variations in known resource costs and costs of education beyond the control of a school district and to make recommendations to the 77th Legislature as to methods of adjusting funding under Chapter 42, Education Code, to reflect variations in resource costs and costs of education. The Dana Center was directed to perform this work with the assistance of the Texas Comptroller of Public Accounts, the Texas Education Agency, and Texas A&M University, and to submit recommendations to the legislature by November 1, 2000.

This report includes

- a brief history of educational spending adjustments, including a discussion of Texas school district officials perspectives on the issue of uncontrollable costs (costs beyond the control of school district officials) and a review of cost-of-education strategies employed by other states,
- an explanation of the existing Cost-of-Education Index (CEI), including an analysis of the consequences of updating the CEI with more current data, and
- analyses of three alternative models for a new Texas cost-of-education adjustment: a wage index, a salary index, and a cost-function index.

To aid the reader, a glossary of school finance terms used in this report is included in Appendix A.

The salary model and the cost-function model described in this report were constructed using data on school district expenditures from the 1998—99 school year. As soon as complete data for the 1999—2000 school year become available, we will publish a technical supplement containing an updated set of district index values for both of these models, and an updated analysis of the consequences of updating the existing CEI with new data.

This report contains a short description of the advantages and disadvantages of updating the existing CEI. It also examines several education cost-adjustment models and their advantages and disadvantages, as well as the potential total impact on the Foundation School Program of applying each of these models to existing school finance formulas. Finally, this report provides an overview of issues to consider in adopting a new Texas CEI.

This Summary of Findings contains an overview of the entire report.

SECTION 1: EDUCATION COST INDEXING IN THEORY AND PRACTICE

To address the issue of uncontrollable cost variations in the context of the financial pressures currently faced by Texas school districts, our researchers first conducted a series of formal interviews with officials from twenty-seven school districts to determine the financial pressures they face. In these interviews, some issues were raised repeatedly, regardless of the size and location of the school district. Especially important issues were cost pressures related to increased salaries for teachers and other personnel, the costs of recruitment, the costs of health insurance and other benefits, and the costs of building and maintaining schools. Other issues were raised only by certain types of districts. For example, administrators in small districts focused on higher costs for some goods and services in their communities and on the costs of transportation. Administrators in large districts, on the other

hand, emphasized conditions that made recruiting teachers difficult, including long commute times, safety concerns, and a shortage of affordable housing. Officials from large districts also expressed concerns about the highly competitive job market in metropolitan areas and about teacher perceptions of urban students as being more difficult to teach.

Section 1 also contains a brief history of education cost adjustments in Texas and a short discussion of adjustments to school district funding in other states. Many states adjust school district funding to counteract differences in the costs of education that are related to a district s size or location. Only a few states, however, adjust school district funding to account for regional variations in the cost of education. These states include Texas, as well as Colorado, Florida, Ohio, and Wyoming. Other states adjustments are designed to capture general variations in the cost of living. Texas is the only state that currently uses data on school district expenditures to adjust for variations in the cost of education.

SECTION 2: THE EXISTING TEXAS COST-OF-EDUCATION INDEX

This section provides an explanation of the existing Texas Cost-of-Education Index, including an analysis of the effects of updating the existing CEI using more current data. The CEI is the mechanism that Texas uses to adjust Foundation School Program calculations to compensate for variations in resource costs and uncontrollable costs of education. Under current law, the CEI affected the distribution of approximately $1.23 billion in state aid to school districts during each year of the 1999—2000 biennium.

The existing CEI adjusts funding to school districts based on five uncontrollable factors that a 1990—91 Legislative Education Board study found to have a significant impact on the costs of education. These factors include

(1) Average competitive salary for beginning teachers,

(2) Location in a county with a population of less than 40,000,

(3) Percentage of pupils that are low-income,

(4) District type in particular, whether a district is classified as rural or as in an independent town, and

(5) District size, in terms of students in average daily attendance.

Based on an analysis of these five factors, every Texas school district is assigned a CEI value between 1.00 and 1.20, which is used to adjust foundation program calculations for both Tier 1 and Tier 2 of the Foundation School Program. The existing CEI, however, has not been updated since its adoption by the Foundation School Fund Budget Committee in December 1990, which means that roughly thirteen percent of all state aid to school districts is currently distributed on the basis of a ten-year-old analysis of school district expenditures.

Two points illustrate the limitations of the existing Cost-of-Education Index. First, the existing CEI only includes the uncontrollable factors that were found to have an impact on teacher salaries in 1990. Our analysis found that not all of the factors included in the calculation of the existing CEI are still statistically significant. Second, the existing CEI leaves out several factors such as teacher certification status that affect the cost of hiring teachers. In particular, the existing CEI omits community characteristics such as the average price of a house that influence teachers

willingness to live and work in an area. Beginning competitive teacher salary is the only community characteristic included in the existing CEI. In addition, significantly more data are available now than were available when the existing CEI was constructed in 1990.

An updated CEI would have a range of index values from 1.03 to 1.23, which is similar to the existing CEI. However, according to an analysis conducted by the school finance division of the Texas Education Agency, implementing the updated CEI would require a total annual increase in state aid to school districts of between $296 million and $368 million, depending upon how the index values were rounded. On the average, major urban districts and major suburban districts would be the primary beneficiaries of updating the existing CEI. Major urban and suburban districts would receive total projected increases in state aid of at least $87 million and $134 million, respectively. From a regional perspective, districts in Region I (Edinburg) and Region XVI (Amarillo) would receive somewhat less state aid than they would under current law, with total projected decreases of no more than $7.1 million and $9.4 million, respectively. It is important to note, however, that this analysis is based on the assumption that the updated CEI would be applied to the Foundation School Program in the same way that the existing CEI is applied. For example, the new index would be applied to seventy-one percent of the Basic Allotment, and fifty percent of the effects of the CEI would be applied in determining a district s counts of students in Weighted Average Daily Attendance (a component in the calculation of Tier 2 state aid). The updated CEI can easily be made revenue-neutral, however, by adjusting the percentages in the current finance formulas to which the CEI is applied. For a comprehensive discussion of how the existing CEI is applied to the Foundation School Program, see section 2.3.

SECTION 3: ALTERNATIVE APPROACHES TO A NEW TEXAS COST ADJUSTMENT

This section presents three alternative approaches to creating a new Texas adjustment a *wage index,* which explores variations in the local costs of doing business; a *salary index,* which explores variations in school district expenditures on personnel; and a *cost-function index,* which explores cost variations that are directly related to educational outcomes. From a theoretical perspective, there is no best approach to a new Texas adjustment. Each approach has advantages and disadvantages, which are described below.

Section 3.1: Capturing Variations in the General Cost of Doing Business: Texas Wage Indices. Given that education is so labor-intensive, one way to address the problem of how to capture uncontrollable regional variations in the costs of education is to look beyond labor costs for school districts alone and instead to measure variations in overall labor costs in various markets in Texas. For section 3.1, we constructed a series of wage indices designed to capture variations in the general cost of doing business in Texas, including a Professional Industries Index, a Professional Occupations Index, a Financial and Service Industries Index, and an All Industries Index. The analysis revealed that a Financial and Service Industries Index does a slightly better job than the other indices of predicting the salaries of teachers, administrators, and support staff. Thus, the Financial and Service Industries Index seems to be the most credible choice for a wage index that would reflect market wages for education.

The principal advantage of a wage index as an adjustment strategy is that it avoids the difficult problems associated with distinguishing *controllable* variations in school district expenditures from those that are *uncontrollable.* After all, it is unlikely that school districts will be able to affect the general labor market. The wage index is also the index most similar to the education cost indexing strategies used in other states.

A potential disadvantage of the wage index is that it draws on wage and salary information for non-teachers and may not fully reflect the actual market for teachers faced by Texas school districts. In particular, this index is unable to pick up district-level variations in the price of labor. For example, every school district in a metropolitan area would receive the same index value as every other district in that metropolitan area, and districts outside of metropolitan areas would receive the same index value as every other district in the same county.

Another important issue to consider is that, according to the school finance division of the Texas Education Agency, the wage index would be the most expensive alternative to implement, requiring a total annual increase in state aid to school districts of about $4.7 billion. The largest projected increases would be for districts in metropolitan areas. Again, this analysis is based on the assumption that the wage index would be applied to the Foundation School Program in the same way that the existing CEI is applied. Ultimately, the wage index represents a good measure of what it would cost public schools to be competitive with banks, high technology organizations, and other groups competing for highly qualified college graduates. Nevertheless, the absence of a revenue structure to support salaries comparable to those offered to other professional employees in metropolitan areas makes implementing the wage index problematic.[1]

Section 3.2: Price Variations Revealed in School District Expenditures: Texas Teacher Salary Indices. Because teacher salaries are the largest component of school district expenditures, another approach to capturing uncontrollable regional variations in the costs of education is to model differences in teacher salaries from district to district. This section presents salary indices designed to reflect the uncontrollable factors that influence the salaries that teachers are willing to accept from school districts. This approach is similar in spirit to that of the existing Texas CEI. Unlike the existing CEI, which includes factors that influence the salaries that school districts are willing and able *to pay,* the teacher salary indices approach the question of teacher compensation from the perspective of salaries that teachers are willing *to accept.* The teacher salary indices also incorporate more information on teacher characteristics and community characteristics.

We constructed two different salary index models. The *baseline* model incorporates all of the measurable factors that we have identified as important determinants of what salaries teachers are willing to accept from school districts. The *essentials* model incorporates only a subset of the student, district, and community characteristics from the baseline model. The essentials model has been designed to be intuitively as well as statistically appealing. (This is discussed in more detail in section 3.2.) We estimated separate essentials models for urban and rural school districts, because the data suggested that it was an appropriate distinction. We also estimated a version of the essentials model that includes district contributions toward health insurance as part of teacher compensation.

The essentials salary index would adjust funding to school districts based on eleven uncontrollable factors that were found to have a significant impact on the costs of education. These factors include

(1) District size in terms of average daily attendance,

(2) Distance to the nearest teacher certifying institution,

(3) Distance to the center of the nearest metropolitan area,

(4) An indicator for whether the district participates in Social Security,

(5) Percentage of students who are immigrants,

(6) Percentage of students who are limited English proficient,

(7) Percentage of students who are mainstreamed special education,

(8) Average house price,

(9) Average cooling days,

(10) Unemployment rate, and

(11) Population density.

Based on an analysis of these eleven factors, every Texas school district is assigned an index value between 1.000 and 1.281 for the essentials salary index and between 1.00 and 1.34 for the essentials salary and benefits index. Our analysis indicates that the basic pattern of salaries is not sensitive to the inclusion or exclusion of benefits. However, a comparison of these two indices suggests that school districts constrained by the state s minimum salary scale offset it by offering fewer benefits. On average, it appears that teacher salary and benefits are practically dollar-for-dollar substitutes.

The principal advantage of these salary indices is that they offer the greatest potential for a new adjustment that is both fair and easy to implement in the context of current school finance formulas.

There are three principal disadvantages to these salary indices. First, there is a risk that important factors have been omitted from the salary indices analysis. For example, although surveys suggest that teachers are not especially sensitive to the condition of the buildings in which they work, we suspect that school districts with more attractive facilities and equipment are better able to attract and retain teachers. Unfortunately, information that would permit a comparison of facilities across school districts is not available. We would also have liked to include in our analysis more information on teacher training and professional qualifications, but the data was unavailable.

A second disadvantage of these salary indices, which also pertains to the existing CEI, is the difficulty in distinguishing between controllable and uncontrollable costs. Because the salary models are drawn from information on the actual salaries received by Texas public school teachers, they provide good models of teacher compensation. It is up to the researcher, however, to make distinctions between controllable and uncontrollable factors that can be used to explain variations in the costs of education. Such distinctions are inherently subject to criticism. In the salary indices models, the specified student and community characteristics are all treated as uncontrollable factors, and all other factors that influence salaries including any relevant omitted factors are treated as controllable factors.

A third disadvantage of these salary indices also pertains to the wage index and to the existing CEI. All these indices are designed to capture local variations in the price of labor. As such, they capture only one part of uncontrollable cost variations. Cost variations related to the prices of nonlabor inputs are not addressed by any of these indices. Cost variations related to the varying intensity with which districts must use their resources (for example, the high costs associated with the operation of a very small school district) also are not addressed.

According to Texas Education Agency estimates, applying the *essentials teacher salary index* in the same way that the existing CEI is applied would result in a total annual decrease in state aid to school districts of approximately $88 million. Major urban districts and major suburban districts would receive a moderate annual increase in total state aid of $74 million and $21 million, respectively. On

the average, total state aid to other types of districts would be reduced. The *essentials salary and benefits index,* which includes an estimate of school district contributions for health insurance benefits as part of teacher compensation, would require a total annual increase in state aid to school districts of approximately $510 million. On average, almost every school district would receive an increase in state aid, although small rural districts would experience a moderate decrease in annual state aid of about $7 million total. These estimations are based on the assumption that the salary indices would be applied to the Foundation School Program in the same way that the existing CEI is applied. A revenue-neutral application of either index can be devised, however, by adjusting the percentages to which the salary indices would be applied to the current finance formulas.

Section 3.3: Cost Variations Related to Educational Outcomes: A Cost-Function Index. The cost indexing strategies discussed thus far are focused on uncontrollable variations in the prices that districts must pay for their most important resource teachers. *Prices* , however, are only part of the cost equation. Some districts must also cope with costs that derive from variations in the needs of their students and with costs associated with being too small to take advantage of economies of scale. Arguably, these factors are frequently beyond school district control. For section 3.3., we constructed an education cost-function index that is designed to capture these other factors. The basic perspective of an education cost-function index is that school districts combine purchased *inputs* (such as teachers and other personnel) with *environmental factors* (such as student characteristics and district size) to produce *educational outcomes*. The cost-function index is designed to capture variations in the costs to districts of producing a given level of educational outcomes, given the prices the districts must pay and the environmental factors which the districts face.

Because of significant overlap with the purpose of other adjustments, such as the Small District and Mid-Sized District Adjustments, it would not be proper simply to replace the existing CEI with cost-function index values in the current school finance formulas. In principle, a more appropriate approach would be either (1) to estimate cost-function index values which could be used in combination with some or all of the current school finance formulas; or (2) to use the cost-function index values as the sole adjustment to the Basic Allotment in Tier 1 of the Foundation School Program and to much of the Tier 2 Guaranteed Yield Program. As such, it is difficult to make direct comparisons between the cost-function index and the other indices. If the cost-function index were applied to the Foundation School Program in a manner that would provide all districts with at least their current levels of Tier 1 and Tier 2 funding, the projected annual cost to the state would be approximately $493 million.

The cost-function index addresses not only uncontrollable variations in the price of labor, but also uncontrollable costs that derive from variations in student needs, from geographic isolation, and from costs associated with being too small to take advantage of economies of scale. As such, the cost-function index is a more comprehensive index than the existing CEI, the wage index, or the salary indices. Constructing a cost-function index that reasonably describes educational practices in Texas involves identifying the relevant prices of inputs, environmental factors, and measures of educational outcomes.

A disadvantage of the cost-function index discussed in this report is that the analysis has been limited by a lack of data on nonlabor inputs and on educational outcomes. Another disadvantage of the cost-function index is that it is less intuitive and less transparent than the other indices. It does not lend itself to simple tabular presentations, because it incorporates complex interactions between district characteristics (reflecting, for example, the fact that small increases in the proportion of low-income students will tend to have a different impact on the costs of a small district than on the costs of a large district). Although the underlying relationships among the index factors are stable, these interactions

suggest that shifts in student demographics over time could have very different effects on the index values for different school districts, depending on their initial situations.

OTHER ISSUES TO CONSIDER IN ADOPTING A NEW TEXAS COST ADJUSTMENT

Application to the Foundation School Program. The existing CEI is applied to seventy-one percent of the Basic Allotment, and the impact of fifty percent of the effects of the CEI is applied in determining a district s count of students in Weighted Average Daily Attendance. The Legislature may wish to explore the modification of these percentages in adopting a new CEI, particularly the fifty percent weighting. For a detailed discussion of how the existing CEI is applied to the Foundation School Program, see Section 2.3.

Transition Mechanisms. When updating the existing CEI or adopting a new adjustment, an important issue to consider pertains to mechanisms to ease the transition from one adjustment to another. Under each of the education cost indexing strategies discussed in this report, some school districts would experience reductions in state aid. The Legislature may wish to explore transition mechanisms for implementing any new adjustments.

Periodic Updating. Districts index values have not been updated since the existing CEI was adopted in 1990. In our research, we found that many districts have changed significantly since the existing Cost-of-Education Index was constructed. Furthermore, it was determined that the existing index leaves out several factors that have an impact on the cost of hiring teachers. To avoid these issues in the future, the state should consider periodic updating of any new adjustment with current data, and the state should periodically reexamine the index methodology to ensure that the index continues both to capture appropriate cost factors and to reflect district conditions appropriately. Annual or biannual calculation of district index values would seem appropriate, and a thorough review of the underlying methodology could be conducted on a less frequent basis, depending on the volatility of economic conditions.

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[1] Thanks to Moak, Casey, and Associates, LLP, for highlighting the fact that the Texas school finance system currently lacks a revenue structure to support implementation of this wage index.