Adjusting for Geographic Variations in Teacher Compensation:
Updating the Texas Cost-Of-Education Index
Technical Supplement

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The March 2004 summary report provides baseline estimates for the Pooled Salary and Benefits Index, the Teacher Fixed Effects Salary and Benefits Index, and the Comparable Wage Index. In this technical supplement, we explore the impact on the index values of changes in the definition of controllable and uncontrollable costs, and extend the analysis to include the 2003-04 school year. We also examine the relationship between the index values and key characteristics of Texas school districts such as student demographics and school district wealth.

Altering the Definition of Controllable Cost

Differences in Social Security participation and in the share of students in mainstreamed special education were treated as controllable cost factors in the construction of the cost index values for the summary report. However, some have argued that these two factors are largely outside of school district control. In this section, we examine the impact on the index values of treating these cost factors as uncontrollable.

Adjusting for Social Security

Teachers in 14 Texas school districts participate in the Social Security system. Those districts must pay an additional 6.2 percent of their teacher payroll to the Social Security Administration. In addition, there is a modest salary differential associated with being a Social Security district.

The baseline estimates treat Social Security participation as a controllable cost factor. A reasonable alternative would be to presume that participation in the Social Security system is a cost factor outside of school district control. If Social Security participation is an uncontrollable cost factor, the index values should be adjusted accordingly. Only the index values for the 14

Social Security districts would be affected by such an adjustment. Table 1 illustrates the change in the baseline index values for the 14 Social Security districts.

Table 1 The Impact of Social Security Adjustments

		Pooled Salary and Benefits Index		Fixed Effects Salary and Benefits Index	
District Name	District Number	Baseline	Social Security Adjusted	Baseline	Social Security Adjusted
RANDOLPH FIELD ISD	15906	1.158	1.221	1.165	1.233
SAN ANTONIO ISD	15907	1.276	1.346	1.277	1.352
LACKLAND ISD	15913	1.159	1.223	1.168	1.235
SWEENY ISD	20906	1.130	1.193	1.137	1.203
BROWNWOOD ISD	25902	1.055	1.116	1.050	1.115
ANAHUAC ISD	36901	1.161	1.225	1.165	1.233
BROOKELAND ISD	121902	1.033	1.092	1.054	1.120
FT DAVIS ISD	122901	1.037	1.097	1.038	1.103
PORT ARTHUR ISD	123907	1.161	1.224	1.153	1.220
PREMONT ISD	125905	1.063	1.123	1.072	1.138
LA GLORIA ISD	125906	1.031	1.090	1.053	1.118
IRAAN-SHEFFIELD ISD	186903	1.080	1.142	1.088	1.155
WEST RUSK ISD	201914	1.073	1.132	1.069	1.131
AUSTIN ISD	227901	1.282	1.352	1.272	1.346

Adjusting for Differences in Mainstreamed Special Education

The share of mainstreamed special education students is treated as a cost factor within school district control in the construction of the baseline index values. Alternatively, mainstreaming could be considered an uncontrollable cost factor. Treating the share of mainstreamed special education students as an uncontrollable factor has a negligible impact on the index values for most districts. (The correlation between the baseline indexes and their adjusted counterparts exceeds 0.99 in both cases.) At most, the Fixed Effects Salary and Benefits Index would be adjusted upward by one half of one percentage point. The Pooled Salary and Benefits Index is more sensitive to the share of mainstreamed special education students, but it too is generally insensitive to the change. In only 36 districts—all but two of them rural—would the Pooled Salary and Benefits Index be adjusted upward by more than one half of one

percentage point. The largest adjustment would be in Moran ISD, where the index value would be adjusted upward by 1.5 percentage points (from 1.033 to 1.048).

Updating to Include the 2003-04 School Year

The baseline analysis was conducted from data for the 2002–03 school year and prior years. Most of the data required to extend that analysis to cover the 2003–04 school year are now available. (The only major shortfall is that we lack updated data on average housing values, a problem we address by presuming that housing values did not change between 2003 and 2004.) Therefore, we explored the implications of adding the 2003-04 data to the estimation and updating the index accordingly.

Figure 1 compares the 2004 Fixed Effects Teacher Salary and Benefits Index with its counterpart from 2003. As the figure illustrates, updating the index to reflect school characteristics in 2004 has a negligible impact on the pattern of index values. The correlation between the two fixed effects indexes is .999. On the other hand, updating does tend to raise the level of the index. On average, index values would be revised upward by 0.4 percentage points in rural districts and by 0.8 percentage points in urban districts. Where index values for 2003 range from 1.00 to 1.29, the index values for 2004 range from 1.00 to 1.30.

Figure 1: Comparing the Fixed Effects Salary and Benefits Index Over Time

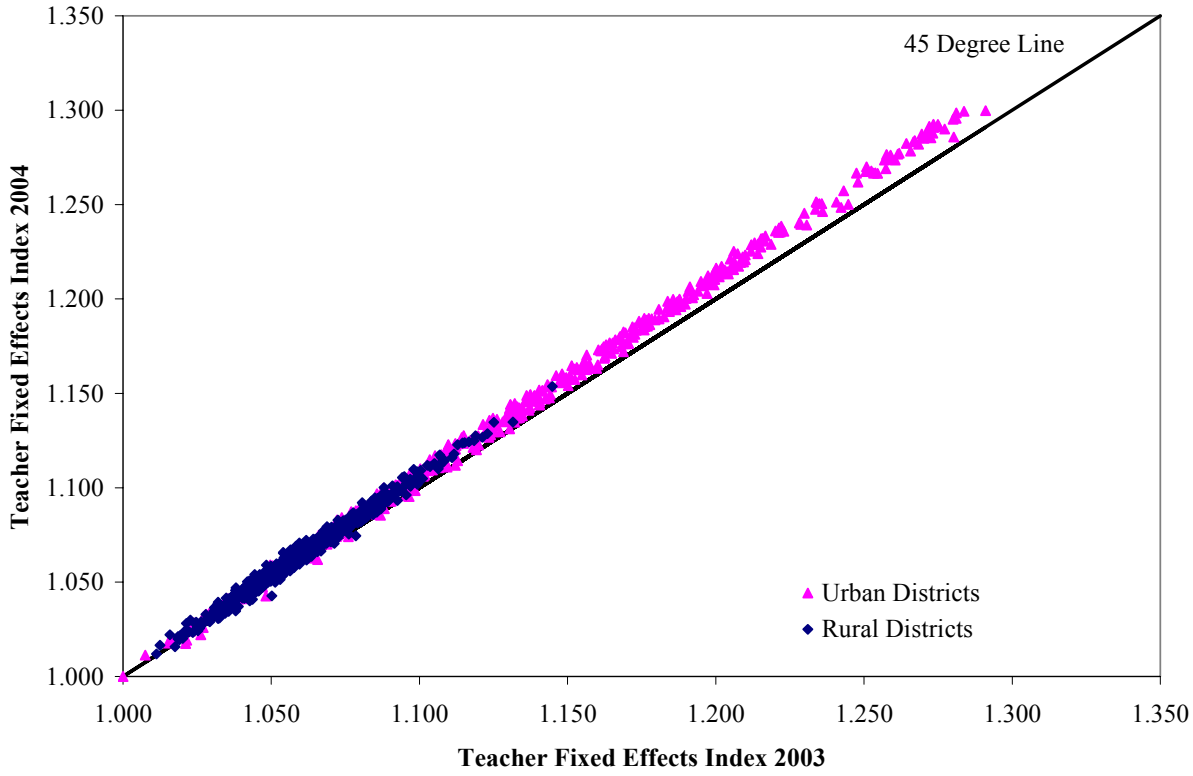
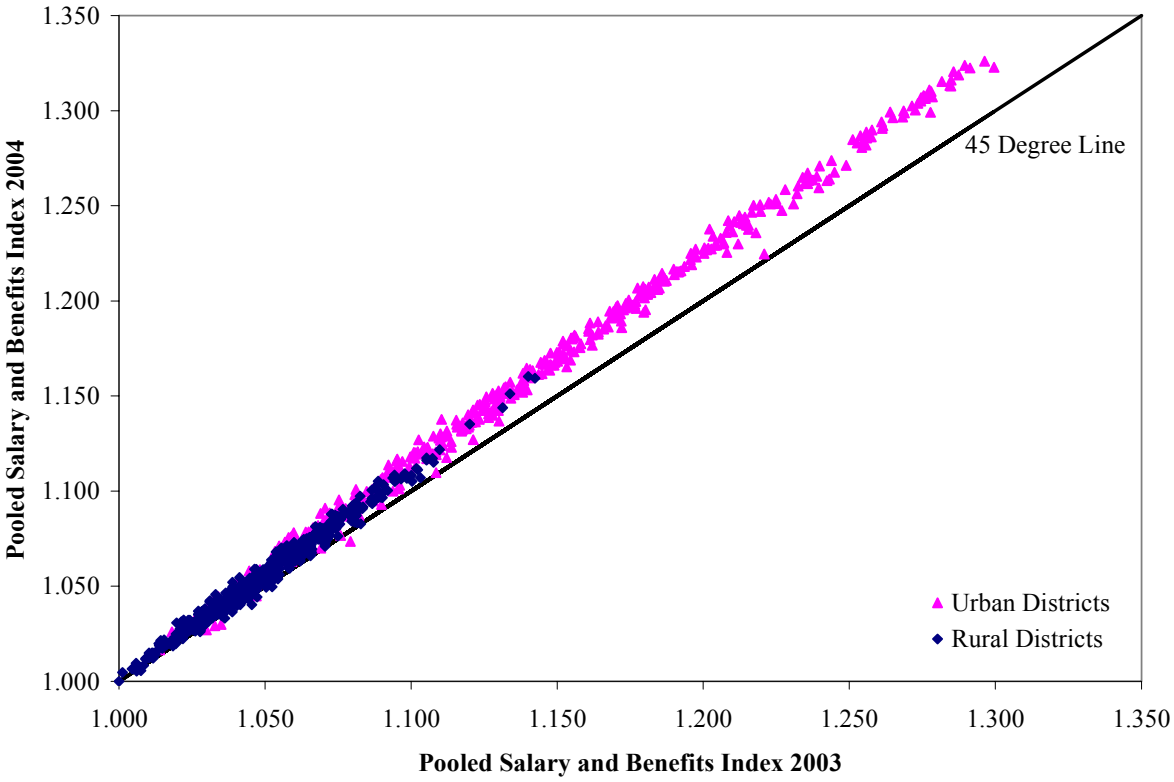


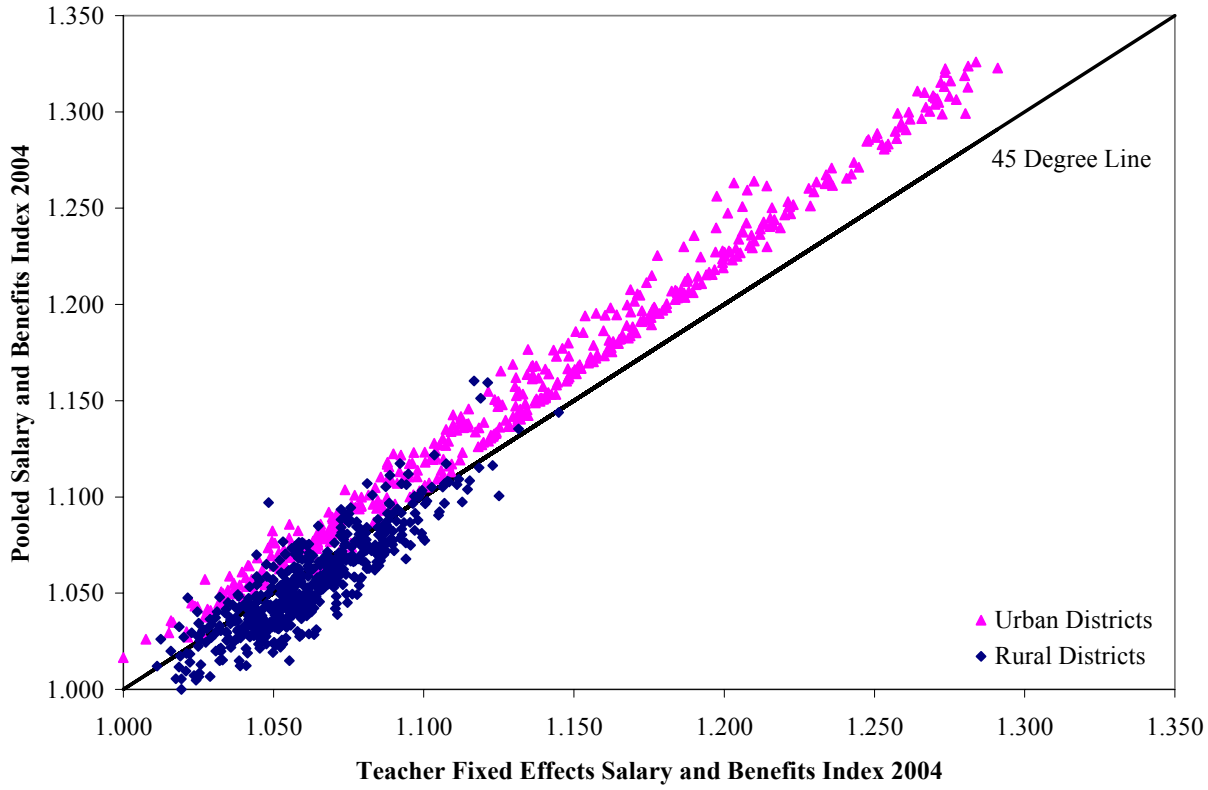
Figure 2 compares the 2004 Pooled Salary and Benefits Index with its counterpart for 2003. Again, the general pattern of index values is unaffected by updating. (The correlation is 0.999.) However, the pooled indexes are more sensitive than the fixed effects indexes to rising housing values and rising enrollments, so updating increases the pooled index values more substantially, particularly in urban areas. (Even though we presumed that housing values did not rise between 2003 and 2004, the index is based on a three-year moving average of all district and community characteristics and the three-year average of housing values increased by 4.1 percent in urban districts but only 2.9 percent in rural districts.) On average, index values would be revised upward by 0.6 percentage points in rural districts and by 1.8 percentage points in urban districts. Where index values for 2003 range from 1.00 to 1.30, the index values for 2004 range from 1.00 to 1.33.

Figure 2: Comparing the Pooled Salary and Benefits Index over Time



After updating, the Teacher Fixed Effects Salary and Benefits Index remains highly correlated with the Pooled Salary and Benefits Index, but the differences are larger than they were in 2003. As figure 3 illustrates, the updated Pooled Salary and Benefits Index generates systematically higher index values for urban areas and generally lower index values for rural areas than does the updated Teacher Fixed Effects Salary and Benefits Index.

Figure 3: Comparing the Pooled Salary and Benefits Index with the Fixed Effects Salary and Benefits Index, 2004



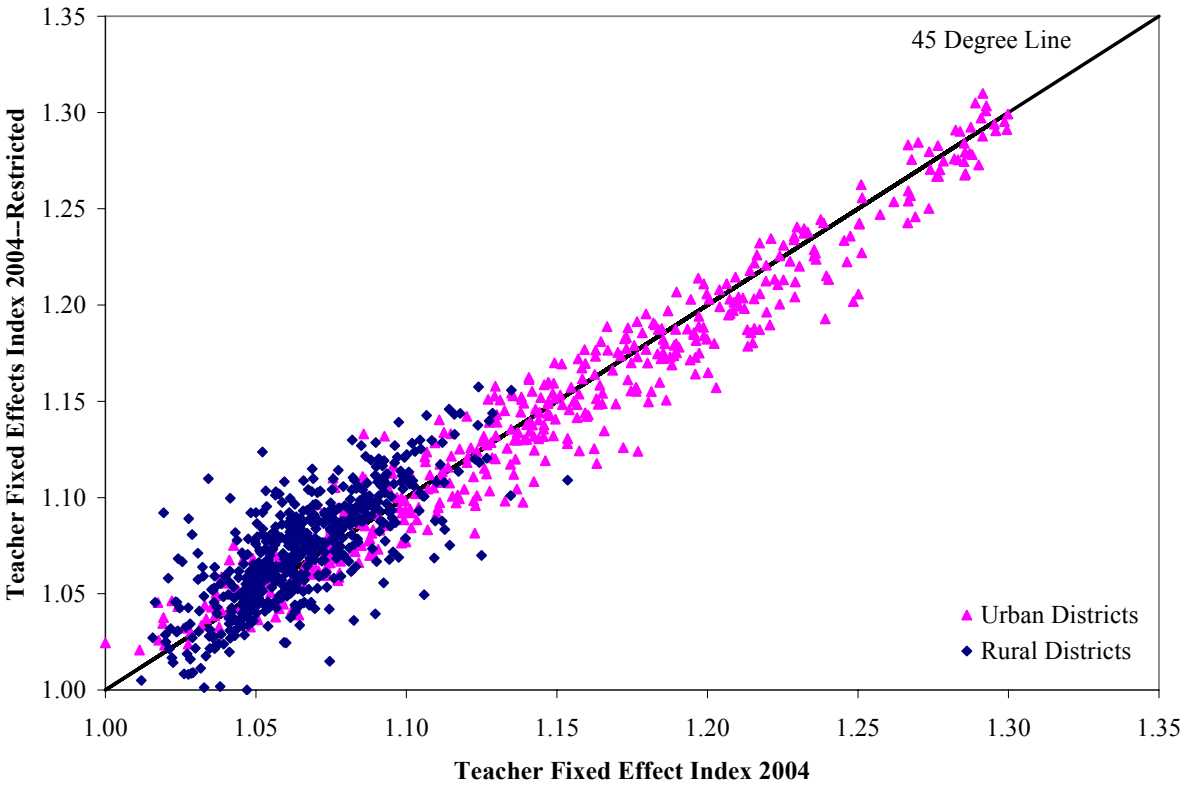
Restricting the Urban and Rural Coefficients to be Equal

The Texas school finance formula currently incorporates a Cost-of-Education Index (CEI) adjustment that is based on a teacher compensation model for the 1989-89 school year. That earlier analysis combined urban and rural districts in a single model. Although statistical tests strongly reject the idea of using the same model for rural and urban districts, it could be illustrative to examine the impact of the separation. Therefore, we re-estimated the Pooled Salary and Benefits and the Fixed Effects Salary and Benefits models for 2004, restricting the coefficients so that each variable has the same impact in urban areas as it does in rural ones. (Nothing prevents the separately estimated models from arriving at coefficient values that are the same for urban and rural districts, so the restricted models are statistically inferior to the

unrestricted ones.) Figures 4 and 5 compare the restricted indexes with their unrestricted counterparts.

As the figures illustrate, forcing the coefficients to be the same in urban and rural areas tends to increase rural index values slightly while lowering urban values. The differences between the restricted and unrestricted models are greatest for remote rural areas with low housing values and for urban areas with low housing values relative to other urban areas. Index values from the restricted model are generally higher for rural areas with low housing values and sharply lower for urban areas with relatively low housing values.

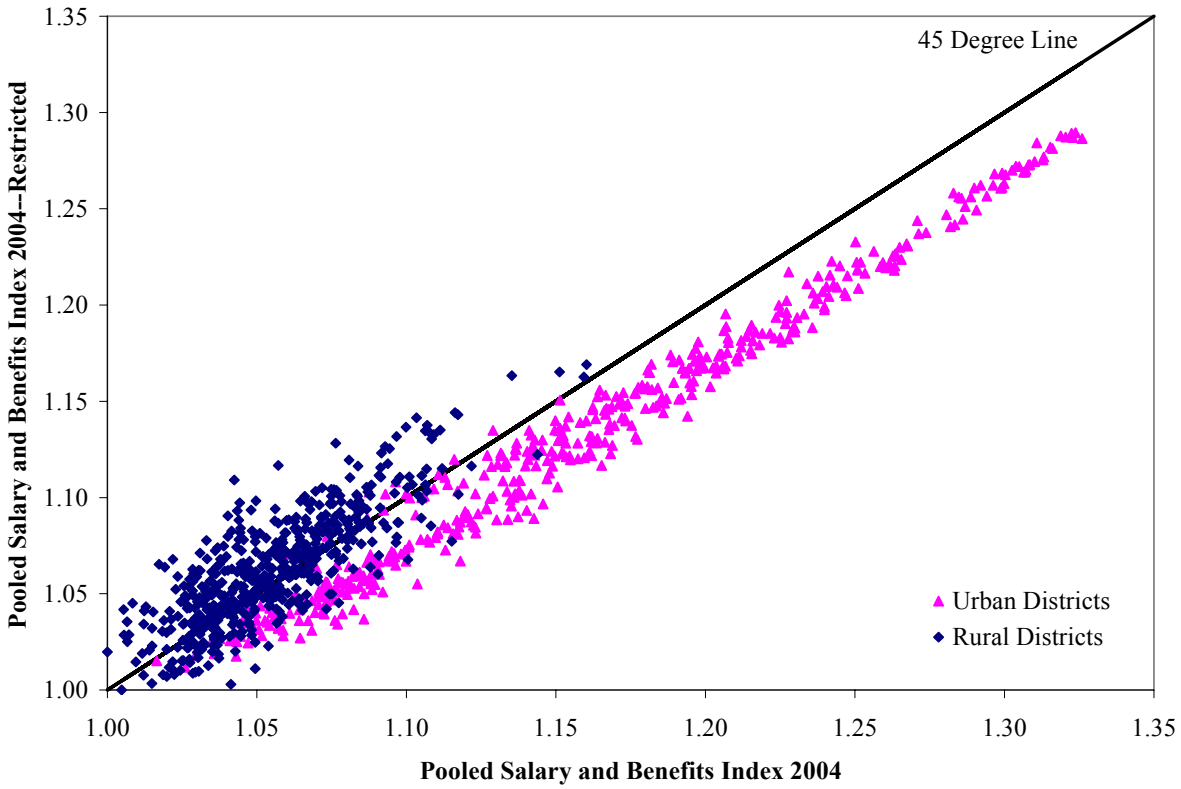
Figure 4: The Restricted Fixed Effects Salary and Benefits Index



On average the Teacher Fixed Effects Salary and Benefits Index is only moderately sensitive to the restriction: the average index value would be 0.6 percentage points higher in rural areas and 0.3 percentage points lower in urban areas if the restrictions were imposed. The

correlation between the restricted and unrestricted indexes is .961. However, there are substantial differences between the two sets of index values. Imposing the restrictions would lower average index values by more than three percentage points in the McAllen, El Paso, and Odessa metropolitan areas and in eight rural counties (Gillespie, Hansford, Hartley, Hemphill, Jeff Davis, Llano, Ochiltree, and Val Verde), while raising them by more than three percentage points in 20 rural counties (Borden, Culberson, Edwards, Foard, Grimes, Hudspeth, Kenedy, Kent, King, Kinney, Knox, McMullen, Newton, Reeves, Sabine, San Augustine, Stephens, Terrell, Trinity, and Zavala).

Figure 5: The Restricted Pooled Salary and Benefits Index



The Pooled Salary and Benefits Index is more sensitive to the restriction: with it, the average index value would be 0.8 percentage points higher in rural areas but 2.6 percentage points lower in urban areas. If the restrictions were imposed, the index values would be more than 3.5 percentage points lower in Hemphill County and the Beaumont, Brownsville, El Paso,

McAllen, and San Antonio metropolitan areas, and more than 3.5 percentage points higher in 14 rural counties (Borden, Edwards, Foard, Hudspeth, Kenedy, Kent, King, Knox, McMullen, Reeves, San Augustine, and Terrell).

Index Values and School District Characteristics

Analysis clearly demonstrates that the CEI currently used to adjust the Texas school finance formula is outdated. The March 2004 report presents the arguments for and against three possible strategies for updating the Texas CEI. In this section, we describe the implications of updating for various districts and examine the relationship between the index values and a number of key school district characteristics.

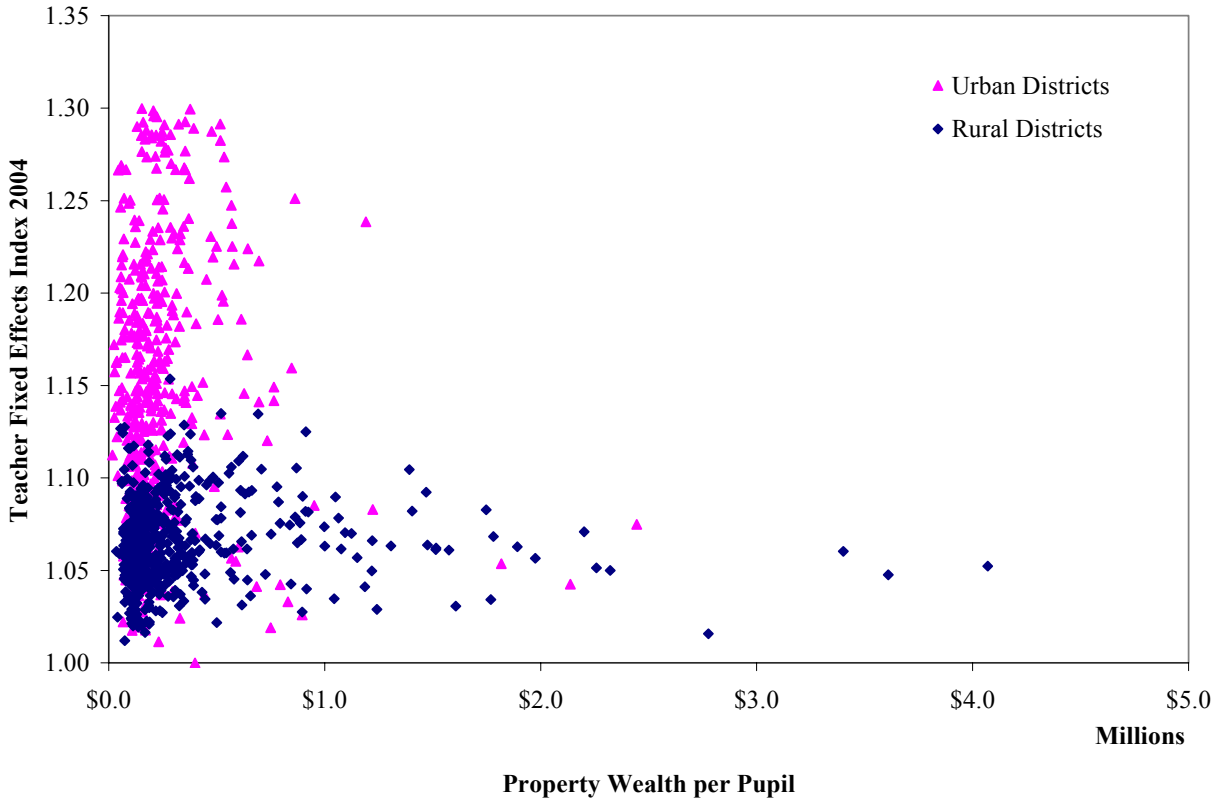
There are 10 uncontrollable factors that help determine a school district's index value. Tables 2a and 2b illustrate how one goes from cost factors to index values for a rural and an urban school district using the baseline coefficient estimates and the district characteristics for 2003. First, a three-year moving average of district and community characteristics is multiplied by the coefficient estimates. Second, we sum the products from the first step. Finally, we take the exponent of that sum to arrive at the index value.

As the tables indicate, the primary determinants of a district's index value are its geographic location and its average daily enrollment. Student demographics and the local unemployment rate have a statistically significant but relatively modest impact on the index values.

The Pearson correlations between the cost factors and the index values confirm this perspective. Table 3 presents the correlation between the index values, the cost factors, and a number of key school district characteristics. As the table 3 illustrates, the updated index values are much more highly correlated with ADA or community housing values than they are with any other school characteristics

Unlike the three indexes presented in the March 2004 report, the existing CEI explicitly controlled for variations in school district wealth. One question that might arise is whether the updated indexes are correlated with a school district's ability to pay teachers. Figure 6 plots the Teacher Fixed Effects Salary and Benefits Index against school district wealth per pupil. As the figure illustrates, the index values are, if anything, somewhat lower in districts with greater wealth per pupil. A similar pattern holds for the Pooled Salary and Benefits Index.

Figure 6: There is Little Relationship Between the Cost Index and School District Wealth



Because so much has changed in Texas since the existing CEI was constructed in 1990, updating would change index values for most districts. Some of the changes would be quite large. Figures 7, 8, and 9 map the changes in index values implied by updating the CEI. As the maps illustrate, updating—regardless of the indexing strategy—would greatly increase index values in urban areas while generally reducing them in rural areas. Such a pattern was expected given that housing costs have risen much more rapidly in urban areas in Texas than it has in rural areas. School districts in the Austin and San Antonio metropolitan areas would particularly benefit from updating.

Table 2a Deriving the Index Values for Dallas ISD						
Cost Factor	**District 3-year average value**	**Pooled coefficient estimate**	**District value x coefficient estimate**		**Fixed effect coefficient estimate**	**District value x coefficient estimate**
Adjusted intercept	1	-0.3744	-0.374		-0.228	-0.228
Percent of students LEP	0.327	0.0069	0.002		-0.004	-0.001
Percent of students immigrant	0.083	0.1022	0.009		0.024	0.002
ADA (log)	10.127	-0.0248	-0.251		-0.009	-0.092
ADA (log), squared	102.556	0.0033	0.342		0.0022	0.230
ADA ≥ 25,000 and < 50,000	0	-0.0071	0		-0.002	0
ADA ≥ 50,000	1	-0.0136	-0.014		-0.008	-0.008
Average house price (log)	11.850	0.0346	0.410		0.017	0.200
Major urban area	1	0.0664	0.066		0.075	0.075
Micropolitan area	0		0			0
Sparsely populated area	0		0			0
Very sparsely populated area	0		0			0
Unemployment rate	0.735	0.0014	0.002		0.004	0.003
Miles to center of closest MSA	6.183	0.0232	0.144		0.015	0.092
Log house price x MSA distance	73.271	-0.0021	-0.154		-0.001	-0.101
Miles to nearest certifying institution	4.414	0.0003	0.0015		0.0003	0.001
Cooling degree days	2.329	0.0296	0.069		0.030	0.069
Sum of the above			0.251			0.242
Index value =Exp(sum of the above)			1.286			1.273

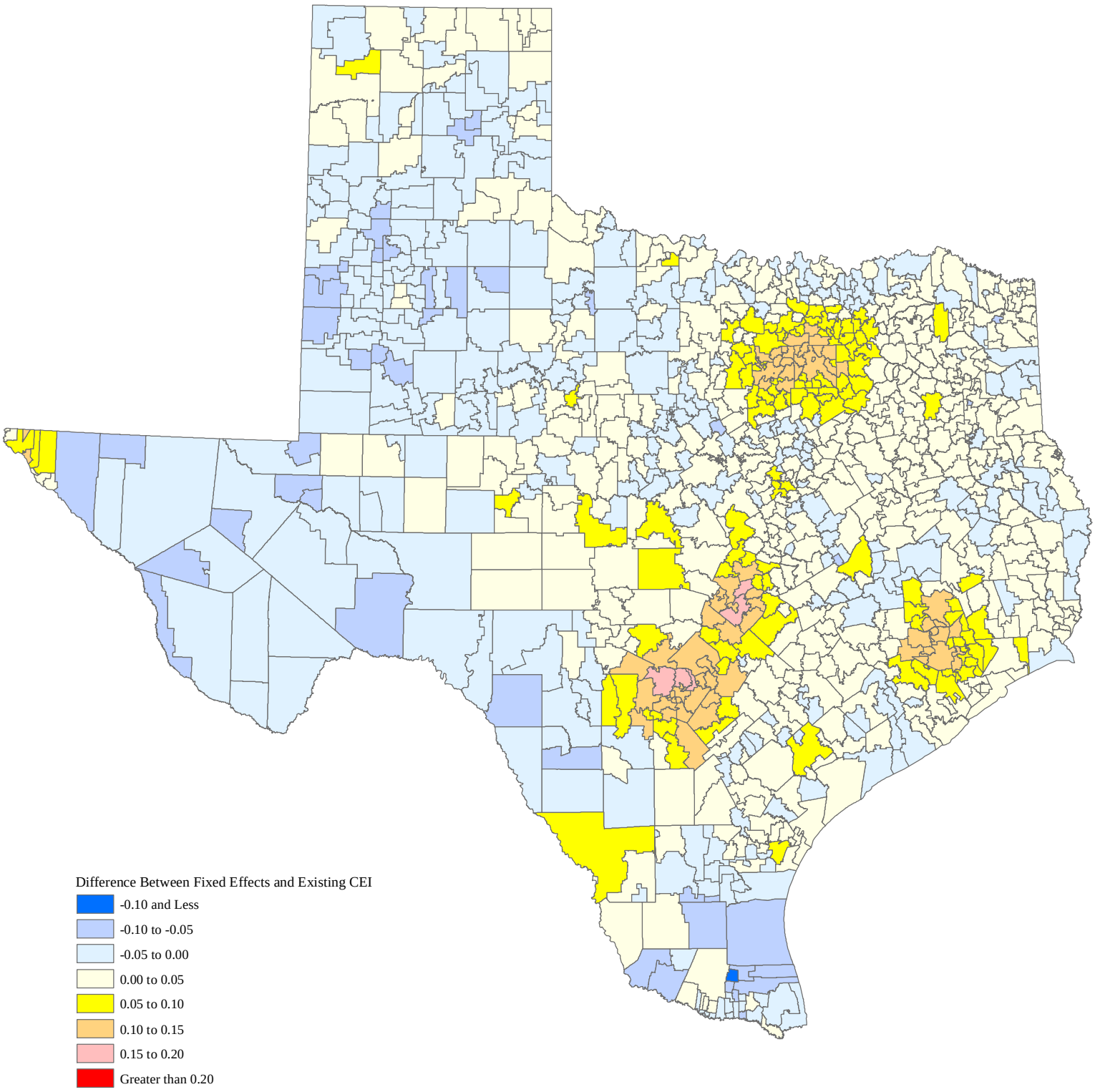
Note: LEP = Limited English proficient; ADA = Average daily attendance; MSA = Metropolitan statistical area

Table 2b Deriving the Index Value for Hale Center ISD						
Cost Factor	**District 3-year average value**	**Pooled coefficient estimate**	**District value x coefficient estimate**		**Fixed effect coefficient estimate**	**District value x coefficient estimate**
Adjusted intercept	1	-0.274	-0.274		-0.450	-0.450
Percent of students LEP	0.0510	0.0444	0.0023		-0.0235	-0.001
Percent of students immigrant	0.0010	0.0000	0.0000		0.1988	0
ADA (log)	6.4509	0.0145	0.0934		0.0105	0.068
ADA (log), squared	41.6139		0			0
ADA ≥ 25,000 and < 50,000	0		0			0
ADA ≥ 50,000	0		0			0
Average house price (log)	10.7041	0.0166	0.1774		0.0352	0.377
Major urban area	0		0			0
Micropolitan area	1	0.0053	0.0053		-0.0019	-0.002
Sparsely populated area	1	0.0188	0.0188		0.0184	0.018
Very sparsely populated area	0	0.0405	0.0000		0.0369	0
Unemployment rate	-0.3426	-0.0024	0.0008		-0.0018	0.001
Miles to center of closest MSA	32.5516	-0.0002	-0.0066		-0.0003	-0.009
Log house price x MSA distance	348.436		0			0
Miles to nearest certifying institution	12.1000	0.0006	0.0071		0.0007	0.009
Cooling degree days	1.1560	0.0071	0.0082		0.0173	0.020
Sum of the above			0.0330			0.031
Index value =Exp(sum of the above)			1.034			1.031

Table 3 The Correlation Between Index Values and District and Community Characteristics						
	Existing CEI	Teacher Fixed Effects S&B Index	Pooled S&B Index	Comparable Wage Index	2004 Teacher Fixed Effect S&B Index	2004 Pooled S&B Index
Existing CEI	1	0.443	0.461	0.297	0.442	0.458
Percent of students LEP	0.323	0.284	0.351	0.017	0.282	0.335
Percent of student immigrant	0.084	-0.120	-0.066	-0.214	-0.120	-0.081
Average house price (log)	0.242	0.657	0.633	0.812	0.662	0.654
Unemployment rate	-0.054	0.226	0.158	0.464	0.229	0.174
Miles to center of closest MSA	-0.173	-0.422	-0.440	-0.361	-0.425	-0.456
Miles to nearest certifying institution	-0.153	-0.346	-0.360	-0.425	-0.359	-0.386
Cooling degree days	0.237	0.308	0.282	0.178	0.302	0.282
ADA (log)	0.402	0.813	0.834	0.477	0.824	0.847
Wealth per pupil	0.021	-0.069	-0.089	-0.101	-0.076	-0.101
Enrollment	0.277	0.581	0.588	0.305	0.582	0.584
Percent black	0.087	0.154	0.150	0.175	0.158	0.158
Percent low income	0.120	-0.149	-0.096	-0.328	-0.155	-0.115
Percent Hispanic	0.316	0.181	0.242	-0.132	0.177	0.221

Note: S&B = Salary and Benefits

Difference Between the Fixed Effects and the Existing CEI



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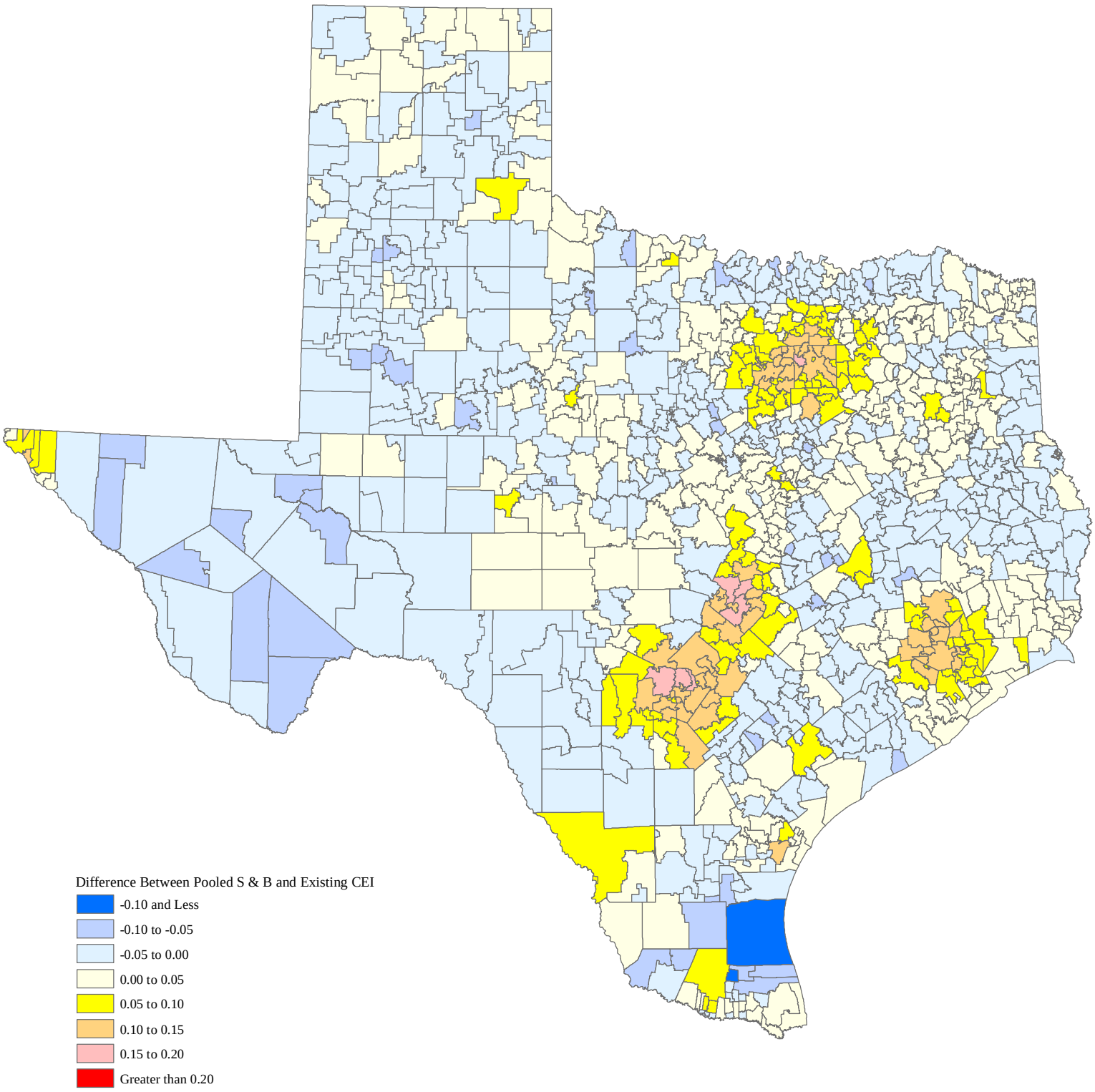
Difference Between the Pooled S & B Index and the Existing CEI



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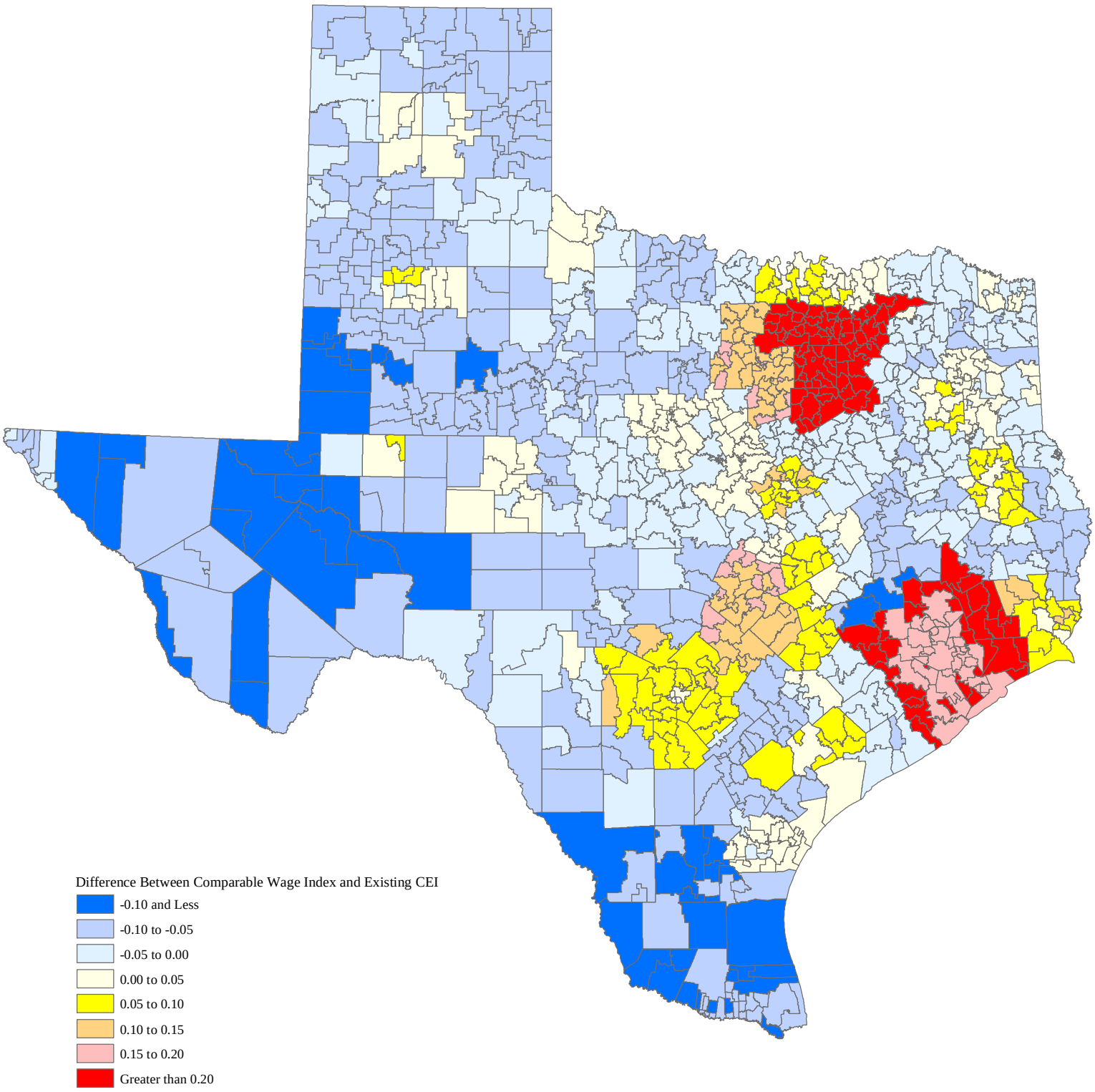
Difference Between the Comparable Wage Index and the Existing CEI



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Appendix A: Data Sources

Data from the following individuals, agencies, and organizations were used in this analysis and in the preparation of the March 2004 summary report, *Adjusting For Geographic Variations In Teacher Compensation: Updating The Texas Cost-Of-Education Index*:

Bureau of Labor Statistics
Minnesota Population Center (*Integrated Public Use Microdata Series: Version 3.0)*
Moak, Casey, and Associates, LLP
National Oceanographic and Atmospheric Association
State Board of Educator Certification
Teacher Retirement System of Texas
Texas Association of School Boards
Texas Comptroller of Public Accounts
Texas Education Agency
Texas State Teachers Association
The University of Texas at Austin
United States Census Bureau
United States Office of Management and Budget

Any errors or omissions in the analysis and presentation of data are the responsibility of the authors. Opinions expressed are those of the authors and do not reflect the viewpoints of the parties listed above.

Appendix B: Data Quality Issues

Because of concerns about its accuracy, a significant amount of data on Texas teachers was omitted from the analyses discussed in the March 2004 summary report and in this technical supplement. Approximately five percent of the records were omitted because they contained inconsistencies across time in the reported level of teacher experience that could not be resolved. Another two to three percent of the records reported salaries that were significantly lower or implausibly higher than the Texas minimum salary scale for the teachers' stated level of experience, an indicator that either salary data or experience was not reported correctly. These files were also omitted, as were a few additional files with anomalous data.

Such omissions raise the possibility of bias in the estimation. As the figure below illustrates, there are systematic differences between the teacher records that were retained in the data set and the teacher records that were omitted. In particular, omitted teacher records are more likely to be for teachers who were newly hired or who worked in small or rural school districts. Unfortunately, we do not know the extent to which these differences influenced the analysis.

Table B1 Percent of Teacher Records Omitted from the Salary Analysis

	1999	2000	2001	2002	2003	2004
Major urban area	4.8	6.0	4.9	5.1	4.8	5.1
Other urban	7.5	7.1	6.9	6.8	8.3	6.9
Sparsely populated rural	10.8	11.1	11.0	10.9	14.5	13.0
Very sparsely populated rural	13.3	12.9	13.4	13.3	17.8	16.2
Other rural	11.5	11.2	10.8	11.5	14.7	13.3
ADA < 500	20.3	25.0	27.4	29.2	34.7	30.9
ADA > = 500 and < 1,600	13.5	13.3	13.5	13.5	16.5	15.1
ADA > = 1,600 and < 10,000	8.0	7.8	7.5	7.5	8.2	7.7
ADA > = 10,000	3.9	5.2	4.0	4.3	4.4	4.4
> 75% Economically disadvantaged students	6.4	5.7	5.6	5.5	5.7	5.6
Newly hired teacher	10.8	11.3	11.4	11.8	10.8	10.4
All districts	6.6	7.5	6.8	7.1	7.8	7.4

Appendix C: The Models of Teacher and Auxiliary Compensation

We followed a common, multi-step procedure to estimate Salary and Salary and Benefits Indexes from the school district payroll files.

1) We estimated the relationship between the log of average monthly compensation (either salary or salary and benefits) and the independent variables. In all cases, the school, district, and community variables were transformed into three-year moving averages. Thus, for example, the share of limited English proficient (LEP) students in a campus in 2003 is the arithmetic average of the LEP shares for that campus in 2001, 2002, and 2003. Moving averages are used both to estimate each compensation model and to score the resulting compensation index. Separate estimates were generated for urban and rural school districts. (See tables C1through C8.)
   a) For all analyses of teacher compensation except the Fixed Effects Salary and Benefits Model, we use the SAS LIFEREG procedure, assuming that the residuals were normal and the observations were left-censored at the minimum salary for the teacher's designated level of experience.
   b) For the Fixed Effects Salary and Benefits Model of teacher compensation, we used the SAS GLM procedure with the "absorb" option to control for individual effects. (Once benefits are taken into account, only a negligible number of teachers earn the legal minimum for their stated level of experience, so censoring is not a problem.)
   c) For the Fixed Effects Salary Model of auxiliary and aide compensation, we also used the SAS GLM procedure with the "absorb" option to control for individual effects. There is no salary and benefits model for such workers because we lack information on the benefits districts provide to non-teachers.
2) Coefficient estimates from the first step that were not significantly different from zero at the 10-percent level were set equal to zero. Note that in making this determination we did not adjust the standard errors for grouping of the data.
3) We calculated the statewide averages for all of the controllable characteristics, including the minimum salary (where appropriate).

4) We constructed a standardized data set that merged the statewide averages for the controllable characteristics with district values for all of the uncontrollable characteristics. Campus variables were set equal to their district means for those variables. District values for a community characteristic were set as the same for all districts within a given metropolitan area (urban districts) or county (rural districts).
5) We generated predicted salaries for each district by multiplying the coefficient estimates (step 2) by the values in the standardized data set. Values for urban districts were multiplied by the urban coefficient estimates, while values for rural districts were multiplied by the rural coefficient estimates.
6) We identified the minimum salary predicted in step 5. For teachers, if the minimum predicted salary was below the statewide average minimum salary (see step 3) then the minimum predicted salary was set equal to the statewide average minimum salary.
7) Index values were calculated as the predicted salary for each district divided by the minimum predicted salary. Index values below one were set equal to one.

Dependent Variables Used In The Estimation

Average monthly salary. To find average monthly salary, we calculated average daily salary as base salary (payroll activity code 80) divided by effective days worked. Then we multiplied average daily salary by 18.7 to reflect the 187 days in a standard 10-month teaching contract. For individuals who worked more than one campus or otherwise held more than one position, average monthly salary was the weighted average of the average monthly salary in each position using effective days in the position as the weights. For individuals who received a separate incentive that exceeded $100 per year for teaching in a bilingual/ESL program (payroll code 15), average monthly ESL supplement was added to average monthly salary. Average monthly ESL supplement was total payments under payroll code 15 divided by effective days worked and then multiplied by 18.7. The average monthly ESL supplement was included in total average monthly salary because it is the only supplement specifically designated for teaching duties.

In 2003 and 2004, teachers received a salary supplement. Some districts accounted for this supplement in base pay; others did not. Because some districts did not include this amount in base pay, the first $1,000 in supplemental pay (payroll code 79) was added to base pay for 2003,

while the first $500 in supplemental pay was added for 2004.

Average monthly salary plus benefits. Average monthly salary plus benefits was calculated as average monthly salary plus the imputed monthly health insurance benefits for the corresponding district. For each district, the imputed monthly benefit was calculated by determining the average annual outlays for single coverage and then dividing by 10 (so as to correspond with the pay period used to calculate average monthly salary). Imputed monthly benefits were assumed to be the same for all teachers in the district.

Data on district outlays for health insurance come from surveys by the Texas State Teachers Association (TSTA) Survey of Heath Insurance Benefits and the Teacher Retirement System of Texas (TRS). In each year, the analysis uses the benefits survey that provides information on the greatest proportion of Texas teachers. Benefits data for 2000 and 2002 come from TRS. The benefits data for odd-numbered years come from TSTA. The surveys offer more complete data coverage in some years than in others. Only 87 percent of the urban teachers and 72 percent of the rural teachers in our salary analysis for 2001 could be included in the salary and benefits analysis for 2001. (Although Houston ISD and Dallas ISD did not respond to the TSTA survey, they graciously provided answers to the survey questions for this analysis.) Only 90 percent of the urban teachers and 92 percent of the rural teachers could be included in the salary and benefits analysis for 2003. In 1999, 2000, and 2002, the analysis retains more than 98.5 percent of urban teachers and 97 percent of rural teachers.

The two surveys reflect slightly different definitions of benefits. For TRS data, the value of health insurance benefits received by teachers is the maximum district outlay for single coverage; for TSTA data, the value of benefits is the most common district outlay for single coverage. Analysis of a year with good coverage from both sources of information (1999) suggests that the Salary and Benefits estimation is not sensitive to the differences between the two surveys. The correlation between TRS-based and TSTA-based versions of the Salary and Benefits Index for 1999 is .997 for urban districts and .992 for rural districts.

The introduction of the TRS ActiveCare program created a discontinuity in the TSTA survey for 2002-03. ActiveCare is a statewide healthcare benefits program for school district employees. Only districts that indicated they did not intend to participate in ActiveCare were asked to complete the TSTA survey. For survey participants, the annual healthcare benefit per

teacher comes from the survey responses. For districts that participated in the TRS ActiveCare program during any part of 2002–03, the annual healthcare benefit received by teachers is presumed to be $1,800 (based on the minimum monthly contributions for health care coverage under HB 3343). A survey of 858 Texas school districts conducted by TRS in November and December of 2002 indicated that 59 percent of districts contribute exactly the minimum required by law ($1,800 per year). Assuming that ActiveCare participants contribute only the minimum required by law clearly underestimates the benefits provided by a significant proportion of districts (only 21 percent of the districts in the analysis have benefits above the legal minimum in 2003) but we lack reliable information as to which ActiveCare districts are providing more than $1,800 per year.

Data on healthcare benefits for 2004 are not yet available. However, we do know which districts participated in the TRS ActiveCare program during any part of the 2003–04 school year. With the exception of districts that joined TRS ActiveCare after the end of the 2002–03 school year, the best available estimate of health care benefits for 2004 is the benefits for 2003. As before, we presume that ActiveCare districts contribute the minimum required by law, so any district that joined ActiveCare is assigned an annual benefit of $1,800, regardless of the benefits provided in 2003.

Independent Variables Used In The Estimation

Average daily attendance. Data on average daily attendance (ADA) were provided by TEA. Districts with ADA greater than 15,000 were assigned a value of 15,000. Districts with ADA less than 50 were assigned a value of 50. In addition, the urban regressions include two indicator variables, an indicator for ADA greater than or equal to 25,000 and less than 50,000 and an indicator for ADA greater than or equal to 50,000. (There are no rural districts in those size categories.)

Average price of a single-family home. The average price of a single-family home was calculated as the assessed value of single-family homes, divided by the number of single-family parcels in the community. Data on the number of parcels and the assessed values by county were provided by the Comptroller of Public Accounts. We used a ten-year panel of such data to

identify anomalies and wherever feasible contacted the County Appraisal Districts to resolve the problems. Gross anomalies that could not be resolved were set to missing. Data on assessed values for 2004 are not yet available. The best available estimate of average values for 2004 is average values for 2003. Therefore, 2003 average values are used for 2004.

Certification status. An indicator of certification status was constructed from State Board of Educator Certification data and merged to the PEIMS data provided by TEA, using Social Security numbers. Teachers were considered certified if they held a teaching certificate coded as STD, JB, PB, UNK, ALT, EXP, or HB in any subject on September 1 of the school year.

Community. For urban school districts, the community was defined as the metropolitan area in which the district is located. For all other districts, the community was defined as the county in which the district is located. The county in which a district is located was determined to be the county associated with the district on the PEIMS files.

Distance from the center of the closest metropolitan area. Distances are calculated using latitude and longitude information. Where available, latitude and longitude information for campuses are taken from the National Center for Education Statistics' Common Core Database (CCD). The remaining campuses are assigned latitudes and longitudes according to the zip codes at their street address. Using zip codes to identify geographic location can be problematic if the zip code area is large, but is unavoidable given that the CCD fails to identify the location of roughly one-third of Texas campuses. Comparing the latitude and longitude assigned by CCD to those implied by zip codes indicates that the average difference between the two locational indicators is less than three miles, but that it can reach 25 miles in some parts of the state.

The distance between a campus and any metropolitan center was determined to be the as-the-crow-flies distance in miles between the campus's coordinates and the coordinates of the closest metropolitan area (as determined by the Bureau of the Census). For urban districts, the distance from the center of the closest metropolitan area was the distance between the campus and the center of the metropolitan area in which it is located. For rural districts, the distance from the center of the closest metropolitan area was the minimum distance between the campus and any Texas metropolitan center. A district's distance from the center of the closest metropolitan area

was calculated as a weighted average of the distances for its constituent campuses, where the weights were the campus enrollments during the corresponding school year.

Distance from the closest teacher-certifying institution. Distances are calculated using latitude and longitude information. Where available, latitude and longitude information for campuses are taken from the CCD. The remaining campuses are assigned latitudes and longitudes according to the zip codes at their street address. The latitude and longitude of each teacher-certifying institution in Texas was identified using the zip code associated with its site address in the TEA's Texas Education Directory. The distance between a campus and each certifying institution was the as-the-crow-flies distance in miles between the campus's coordinates and the institution's coordinates. The distance from the closest certifying institution was the minimum distance between the campus and any teacher certifying institution. A district's distance from the closest teacher-certifying institution was calculated as a weighted average of the distances for its constituent campuses, where the weights were the campus enrollments (CPETALLC) during the corresponding school year

Educational attainment. Teachers' educational attainment was taken directly from the PEIMS personnel files. Three indicators were used in the analysis—M.A. (degree code 2), Ph.D. (degree code 3), and No Degree (degree code 0).

Effective days worked. Effective days worked was defined as number of days employed multiplied by percent day employed, divided by 100. Number of days employed was PEIMS indicator E0160, while percentage of day employed was PEIMS indicator E0760. Records indicating that the individual worked more than 261 effective days (365-52x2) were omitted from the analysis, as were records indicating that the individual worked less than 93.5 effective days (half of a 187-day school year).

Ethnicity. Teacher ethnicity was taken directly from the PEIMS personnel files. Three indicators were used in the analysis—Black (ethnicity code 3), Hispanic (ethnicity code 4), and Asian/Native American (ethnicity code 1 or 2).

Experience. Years of experience were taken directly from the PEIMS personnel files for school years 1993–94 through 2003–04. Individual records were merged across time using the PERSONID and occupational role codes provided by TEA (teachers and special duty teachers were considered the same occupation). Individual records for whom the experience profile within the designated occupation was inconsistent across time were treated as follows: if corrections for anomalous values could be imputed from experience data for prior or subsequent years, then the imputed years of experience were used in the analysis. For example, if a teacher's experience profile indicated that they had five years of experience in 1997, six years in 1998, *six* years in 1999, and eight years in 2000, then their experience for 1999 was adjusted to indicate seven years of experience in 1999. If anomalies could not be resolved, then the record was omitted from the analysis. Furthermore, if the average monthly salary was more than $10 below the state's minimum monthly salary for the indicated level of experience, and the occupation was subject to the minimum salary scale, then either the experience or the average monthly salary was determined to be in error and the record was omitted. Records indicating average monthly salaries (excluding supplements) more than $4,000 above scale must also have an error of either experience or salary and were also omitted.

First year in district. This indicator variable was assigned a value of one if the individual was not employed by the district in the designated role (teacher, principal, etc.) during the previous year.

Gender. Teacher gender was taken directly from the PEIMS personnel files.

Cooling degree days. The latitude and longitude of each county in Texas were taken from the U.S. Census. The latitude and longitude of each weather reporting station in Texas and surrounding states, as well as the climate data, are taken from *Monthly Station Normals of Temperature, Precipitation and Heating and Cooling Degree Days 1961-90*, published by the National Oceanic and Atmospheric Administration. The climate measure for each county is the average annual numbers of cooling degree days at the closest weather reporting station. The climate measure for each metropolitan area is the average of the climate measures for its constituent counties. Weather stations with an altitude exceeding 5,000 feet were excluded.

Local wage level. To reflect the prevailing wage level, we use the predicted wage from a comparable wage model for Texas workers with all levels of educational attainment. See the discussion below of the Comparable Wage Index.

Micropolitan area. This indicator takes on a value of one if the district is located in a micropolitan area as defined by the U.S. Office of Management and Budget. The county in which a district is located was determined to be the county associated with the district in the PEIMS files.

Multiple campus indicator. The multiple campus indicator was derived from the PEIMS personnel files. Individuals who had multiple records for any given year and for whom the campus designation was different across the multiple records were assigned a value of one. All other individuals were assigned a value of zero. This indicator does not differentiate between individuals who worked multiple campuses within the same district and individuals who worked in multiple districts.

Occupational role. PEIMS data on occupational roles were used to generate indicator variables for whether the person was employed as an administrator (role codes 003, 004, 012, 020, 027, 043, 044, or 045) or teacher aide. The indicator variable was assigned a value of one if the individual performed that role for any fraction of the school year.

Percent time in subject. SBEC provided information on full time equivalent (FTE) units worked in a field for which an individual holds a teaching certificate. Percent time in subject is the sum of FTE units in field divided by total FTE units.

Population density. We constructed three indicators for population density—major urban area, sparsely populated, and very sparsely populated. A metropolitan area was defined as a major urban area if the population per square mile of land area in the core county exceeds 500 persons. A county or metropolitan area was defined as sparsely populated if there are fewer than 50 persons per square mile of land area and the county is not already classified as very sparsely populated. A county was defined as very sparsely populated if there are fewer than 10 persons

per square mile. Population per square mile of land area came from the 2000 Census. Six metropolitan areas meet the definition of a major urban area—Austin, Dallas, El Paso, Fort Worth, Houston, and San Antonio.

Rural district. A rural district was defined as a school district that is primarily located in a county that is not part of a metropolitan statistical area as defined by the U.S. Office of Management and Budget. The county in which a district is located is the county associated with the district in the PEIMS files.

Secondary teacher indicator. Assignments data from SBEC were used to determine whether an individual was an elementary or a secondary teacher. Teachers assigned exclusively to campuses without elementary students (who are defined as grades PK–6) were deemed secondary teachers. Teachers assigned exclusively to campuses with only elementary students were deemed elementary teachers. Teachers assigned to at least one mixed campus were designated as secondary.

Secondary school indicators. The salary analysis for auxiliary personnel and teacher aides includes two indicators of secondary school assignment—large secondary school and small secondary school. A large secondary school is one with more than 50 percent of its students in grades 7–12 and an enrollment of at least 1,000 students. A small secondary school is one with more than 50 percent of its students in grades 7–12 but enrollment less than 1,000 students. A campus is deemed a large or small secondary campus based on student enrollment patterns in the prior year.

Social Security indicator. Fourteen Texas districts were identified as participating in the Social Security system for their teachers. In order of their PEIMS district identification numbers, they are: Randolph Field ISD, San Antonio ISD, Lackland ISD, Sweeny ISD, Brownwood ISD, Anahuac ISD, Brookeland ISD, Ft. Davis ISD, Port Arthur ISD, Premont ISD, La Gloria ISD, Iraan-Sheffield ISD, West Rusk ISD, and Austin ISD. We thank Lynn Moak and Dan Casey for this information.

Student population characteristics. A number of campus-level student population characteristics were used in this analysis. Data for percentage limited English proficient were taken from the AEIS files on the TEA website. Percentage immigrant and percentage mainstream special education were derived from supplemental data provided by TEA. Where campus-level data were missing, the district average value for the variable was substituted. Teachers who worked multiple campuses were assigned a weighted average of the campus characteristics using effective days in the position as the weights.

Teaching assignment. Data on teaching assignments were provided by SBEC and merged with the PEIMS data provided by TEA using Social Security numbers. Indicator variables take on the value of one if the individual taught mathematics, science, health and physical education, computer science, or special education. The variables take on the value of zero if the individual did not teach one of these subjects. An individual teacher could conceivably have a one in all categories.

Unemployment rate. County- and metropolitan-level data on monthly unemployment rates were taken from the Bureau of Labor Statistic's website. Annual unemployment rates were then constructed from the twelve months ending in July so as to match the typical school year. Thus, the annual unemployment rate for 1999 was calculated as the average monthly unemployment rate for August 1998 through July 1999. For each community, the historical average unemployment rate is the average of the monthly unemployment rates from January 1990 through December 1999. For purposes of estimation, the unemployment rate was expressed in differences from the historical average to control for local characteristics (like labor force demographics and proximity to the border with Mexico) that lead the unemployment rate to be persistently higher in some parts of the state.

Urban district. An urban district was defined as a school district that is primarily located in a county that is part of a primary metropolitan statistical area as defined by the U.S. Office of Management and Budget. The county in which a district is located was determined to be the county associated with the district in the PEIMS files.

Table C1 Teacher Salary and Benefits Coefficient Estimates—Multi-year Models 2000–03								
	Urban Districts				Rural Districts			
	Pooled		*Fixed Effect*		*Pooled*		*Fixed Effect*	
Parameter	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**
Intercept	7.7695	0.0094	0.2150	0.0314	7.7971	0.0140		
Years of Experience								
1	0.0132	0.0004			0.0210	0.0010		
2	0.0252	0.0004			0.0408	0.0011		
3	0.0365	0.0004			0.0601	0.0011		
4	0.0507	0.0004			0.0950	0.0011		
5	0.0660	0.0004			0.1294	0.0011		
6	0.0831	0.0005			0.1646	0.0011		
7	0.1008	0.0005			0.1964	0.0012		
8	0.1196	0.0005			0.2257	0.0012		
9	0.1385	0.0005			0.2557	0.0012		
10	0.1602	0.0005			0.2817	0.0012		
11	0.1815	0.0005			0.3079	0.0012		
12	0.2025	0.0005			0.3328	0.0012		
13	0.2239	0.0005			0.3549	0.0013		
14	0.2453	0.0005			0.3754	0.0013		
15	0.2647	0.0005			0.3937	0.0013		
16	0.2815	0.0005			0.4104	0.0013		
17	0.2965	0.0005			0.4243	0.0013		
18	0.3117	0.0005			0.4384	0.0013		
19	0.3260	0.0006			0.4511	0.0013		
20	0.3396	0.0006			0.4590	0.0013		
21	0.3511	0.0006			0.4634	0.0013		
22	0.3619	0.0006			0.4657	0.0013		
23	0.3716	0.0006			0.4680	0.0013		
24	0.3819	0.0006			0.4705	0.0013		

Table C1 Teacher Salary and Benefits Coefficient Estimates—Multi-year Models 2000–03								
	Urban Districts				Rural Districts			
	Pooled		*Fixed Effect*		*Pooled*		*Fixed Effect*	
Parameter	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**
25	0.3936	0.0006			0.4729	0.0014		
26	0.4034	0.0006			0.4742	0.0014		
27	0.4125	0.0006			0.4751	0.0014		
28	0.4226	0.0006			0.4788	0.0015		
29	0.4295	0.0007			0.4787	0.0016		
30	0.4365	0.0007			0.4789	0.0017		
31	0.4402	0.0008			0.4795	0.0018		
32	0.4442	0.0009			0.4827	0.0020		
33	0.4471	0.0010			0.4850	0.0022		
34	0.4483	0.0011			0.4811	0.0024		
35	0.4488	0.0012			0.4809	0.0027		
36	0.4512	0.0014			0.4839	0.0029		
37	0.4507	0.0016			0.4770	0.0035		
38	0.4533	0.0019			0.4716	0.0038		
39	0.4530	0.0022			0.4736	0.0043		
40	0.4436	0.0015			0.4735	0.0030		
Black	0.0080	0.0002			-0.0039	0.0009		
Hispanic	0.0022	0.0002			0.0125	0.0006		
Asian/ American Indian	0.0041	0.0006			0.0000	0.0026		
Male	0.0027	0.0002			0.0149	0.0004		
No degree	0.0103	0.0008	0.0016	0.0012	0.0191	0.0021	-0.0109	0.0028
M.A.	0.0351	0.0002	0.0284	0.0005	0.0142	0.0004	0.0269	0.0010
Ph.D.	0.0629	0.0009	0.0384	0.0029	0.0248	0.0033	0.0177	0.0074
Effective days	-0.0308	0.0010	-0.0710	0.0011	-0.0309	0.0024	-0.0726	0.0035
Multiple campuses	0.0050	0.0004	0.0001	0.0004	0.0062	0.0006	0.0018	0.0008
Administrative duties	0.1150	0.0018	0.0713	0.0025	0.1035	0.0025	0.0545	0.0038

Table C1 Teacher Salary and Benefits Coefficient Estimates—Multi-year Models 2000–03								
	Urban Districts				Rural Districts			
	Pooled		*Fixed Effect*		*Pooled*		*Fixed Effect*	
Parameter	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**
Classroom Assignment								
Math	0.0008	0.0002	-0.0022	0.0004	0.0000	0.0004	0.0008	0.0007
Science	0.0016	0.0002	-0.0001	0.0004	-0.0023	0.0005	-0.0013	0.0007
Health/ P.E.	-0.0012	0.0002	-0.0036	0.0003	0.0060	0.0005	0.0014	0.0007
Computer	0.0000	0.0006	-0.0022	0.0007	-0.0035	0.0009	-0.0027	0.0010
Special Education	-0.0009	0.0003	-0.0032	0.0004	0.0011	0.0007	-0.0053	0.0010
Certified	0.0077	0.0003	0.0124	0.0003	0.0019	0.0007	0.0141	0.0008
Percent of time in field of certification	-0.0051	0.0002	0.0007	0.0003	-0.0036	0.0006	0.0008	0.0006
Assigned to high school	-0.0003	0.0002	0.0020	0.0004	0.0053	0.0004	0.0029	0.0008
First year in district	-0.0075	0.0002	-0.0096	0.0002	0.0000	0.0005	-0.0094	0.0004
Percent of students mainstreamed special education	0.0788	0.0039	0.0552	0.0058	0.0901	0.0065	0.0059	0.0108
Social Security district	-0.0067	0.0003	-0.0036	0.0009	-0.0044	0.0014	0.0043	0.0032
2000 school year indicator	-0.1027	0.0002	-0.1407	0.0003	-0.0528	0.0004	-0.0981	0.0004
2001 school year indicator	-0.0783	0.0002	-0.1006	0.0002	-0.0414	0.0005	-0.0707	0.0004
2002 school year indicator	-0.0461	0.0002	-0.0555	0.0001	-0.0294	0.0004	-0.0419	0.0003
Percent of students LEP	0.0069	0.0006	-0.0041	0.0011	0.0444	0.0019	-0.0235	0.0038
Percent of students immigrant	0.1022	0.0022	0.0242	0.0030	0.0000	0.0130	0.1988	0.0208
ADA (log)	-0.0248	0.0013	-0.0091	0.0026	0.0145	0.0002	0.0105	0.0004
ADA (log), squared	0.0033	0.0001	0.0022	0.0002				
ADA $\geq$ 25,000 and < 50,000	-0.0071	0.0003	-0.0022	0.0005				
ADA $\geq$ 50,000	-0.0136	0.0003	-0.0080	0.0006				
Average house price (log)	0.0346	0.0005	0.0168	0.0014	0.0166	0.0006	0.0352	0.0014
Major urban area	0.0664	0.0003	0.0750	0.0009				
Micropolitan area					0.0053	0.0004	-0.0019	0.0010

Table C1 Teacher Salary and Benefits Coefficient Estimates—Multi-year Models 2000–03								
	Urban Districts				Rural Districts			
	Pooled		*Fixed Effect*		*Pooled*		*Fixed Effect*	
Parameter	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**
Sparsely populated area					0.0188	0.0004	0.0184	0.0012
Very sparsely populated area					0.0405	0.0007	0.0369	0.0019
Unemployment rate	0.0014	0.0001	0.0040	0.0001	-0.0024	0.0002	-0.0018	0.0002
Miles to center of closest MSA	0.0232	0.0003	0.0148	0.0005	-0.0002	0.0000	-0.0003	0.0000
Log house price x MSA distance	-0.0021	0.0000	-0.0014	0.0000				
Miles to nearest certifying institution	0.0003	0.0000	0.0003	0.0000	0.0006	0.0000	0.0007	0.0000
Cooling degree days	0.0296	0.0002	0.0298	0.0007	0.0071	0.0003	0.0173	0.0008
Number of observations	825,025		962,358		137,333		962,358	
R-Squared	0.8881		0.9739		0.9053		0.9739	
Note: The urban and rural fixed effects are estimated jointly to accommodate teachers who move between urban and rural districts. An imputed R-square for the joint estimate of the pooled model would be .8936.								

Table C2 Teacher Salary Coefficient Estimates—Rural Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Intercept	7.6636	0.0291	7.5452	0.0267	7.5385	0.0279	7.6358	0.0314	7.542	0.0326
Years of Experience										
1	0.0189	0.0022	0.0216	0.0021	0.026	0.0021	0.0268	0.0022	0.0287	0.0022
2	0.0385	0.0023	0.0467	0.0022	0.0466	0.0022	0.0485	0.0023	0.0549	0.0023
3	0.0597	0.0024	0.0673	0.0023	0.0708	0.0022	0.0694	0.0023	0.0774	0.0024
4	0.0895	0.0024	0.1031	0.0023	0.1066	0.0023	0.1085	0.0024	0.1221	0.0024
5	0.1247	0.0024	0.1362	0.0023	0.1438	0.0023	0.1468	0.0024	0.1658	0.0024
6	0.1562	0.0025	0.1749	0.0023	0.1815	0.0023	0.1858	0.0024	0.2059	0.0025
7	0.1893	0.0025	0.2091	0.0023	0.2171	0.0023	0.2185	0.0024	0.2447	0.0025
8	0.2156	0.0025	0.2413	0.0024	0.2462	0.0024	0.2505	0.0024	0.2835	0.0025
9	0.2492	0.0025	0.2664	0.0024	0.2738	0.0024	0.2866	0.0025	0.3252	0.0026
10	0.2712	0.0025	0.2941	0.0024	0.309	0.0024	0.3195	0.0026	0.3601	0.0027
11	0.2958	0.0025	0.3242	0.0024	0.3394	0.0025	0.3496	0.0026	0.3893	0.0027
12	0.3225	0.0026	0.3546	0.0025	0.3659	0.0025	0.3744	0.0027	0.4197	0.0027
13	0.3482	0.0026	0.3756	0.0026	0.3905	0.0026	0.3994	0.0026	0.4423	0.0025
14	0.3701	0.0027	0.398	0.0026	0.4109	0.0025	0.4188	0.0025	0.4646	0.0026
15	0.388	0.0028	0.4185	0.0026	0.4303	0.0024	0.4391	0.0026	0.4863	0.0027
16	0.4053	0.0027	0.436	0.0025	0.4497	0.0025	0.4563	0.0027	0.504	0.0027
17	0.4222	0.0026	0.4537	0.0025	0.4646	0.0026	0.4712	0.0027	0.5203	0.0027
18	0.439	0.0027	0.468	0.0026	0.4783	0.0026	0.484	0.0027	0.5347	0.0027
19	0.4522	0.0028	0.4812	0.0026	0.4889	0.0026	0.4951	0.0026	0.5477	0.0027
20	0.4611	0.0028	0.4851	0.0026	0.4939	0.0026	0.4978	0.0027	0.5495	0.0027

Table C2 Teacher Salary Coefficient Estimates—Rural Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
21	0.4663	0.0028	0.4921	0.0026	0.4992	0.0026	0.5037	0.0027	0.5533	0.0028
22	0.47	0.0028	0.4951	0.0026	0.5021	0.0026	0.5048	0.0027	0.5576	0.0028
23	0.4717	0.0028	0.4979	0.0026	0.506	0.0027	0.5095	0.0028	0.5556	0.0029
24	0.4772	0.0028	0.5023	0.0027	0.5089	0.0027	0.507	0.0028	0.5615	0.0029
25	0.4791	0.0029	0.5057	0.0028	0.5047	0.0028	0.5128	0.0028	0.5637	0.003
26	0.4847	0.003	0.5017	0.0028	0.5108	0.0028	0.5113	0.003	0.567	0.003
27	0.479	0.003	0.5074	0.0028	0.5129	0.0029	0.5137	0.003	0.5722	0.0031
28	0.4864	0.0031	0.5076	0.003	0.5136	0.0029	0.5215	0.0031	0.567	0.0034
29	0.487	0.0034	0.5083	0.003	0.5203	0.0031	0.5157	0.0033	0.5681	0.0035
30	0.4851	0.0035	0.512	0.0032	0.5091	0.0034	0.5191	0.0036	0.5732	0.004
31	0.4887	0.0037	0.5042	0.0035	0.5162	0.0037	0.5236	0.004	0.5736	0.0042
32	0.4873	0.0042	0.5153	0.0038	0.5228	0.0041	0.5219	0.0043	0.5747	0.0045
33	0.4906	0.0046	0.5186	0.0043	0.5156	0.0043	0.5255	0.0046	0.5634	0.005
34	0.4907	0.0052	0.5093	0.0046	0.5281	0.0048	0.5144	0.0051	0.5664	0.0055
35	0.4781	0.0057	0.5233	0.0049	0.5102	0.0055	0.5172	0.0057	0.5758	0.0064
36	0.503	0.0059	0.502	0.0058	0.5162	0.006	0.5298	0.0064	0.5721	0.0075
37	0.4685	0.0073	0.5091	0.0064	0.5273	0.0067	0.5191	0.0078	0.5645	0.0079
38	0.4759	0.008	0.5039	0.0073	0.5022	0.0081	0.5156	0.0083	0.5681	0.009
39	0.4798	0.0089	0.5083	0.0089	0.5062	0.0088	0.5219	0.0091	0.5569	0.0098
40	0.4818	0.0064	0.5033	0.0056	0.5101	0.006	0.5135	0.0067	0.5693	0.0077
Black	0	0.002	-0.0029	0.0018	0	0.0018	-0.0075	0.0019	-0.0048	0.002
Hispanic	0.0133	0.0012	0.0104	0.0011	0.013	0.0012	0.0119	0.0012	0.0116	0.0012
Asian/ Native American	0	0.0052	0	0.0052	0	0.0053	0	0.0057	0	0.005

Table C2 Teacher Salary Coefficient Estimates—Rural Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
No degree	0.0202	0.0045	0.0258	0.0035	0.0117	0.0044	0.0179	0.0046	0.0189	0.0047
M.A.	0.0172	0.0009	0.0166	0.0008	0.0166	0.0008	0.0168	0.0009	0.018	0.0009
Ph.D.	0.0331	0.0073	0.022	0.0066	0.023	0.0067	0.0269	0.0067	0.0287	0.0077
Male	0.016	0.0009	0.0168	0.0008	0.0168	0.0008	0.0174	0.0009	0.0184	0.0009
Effective days	-0.0578	0.005	-0.0258	0.0045	-0.0158	0.0047	-0.0165	0.0053	-0.0355	0.0055
Multiple campuses	0.0074	0.0014	0.0056	0.0013	0.0065	0.0013	0.0067	0.0013	0.0052	0.0014
Administrative duties	0.1407	0.0052	0.1129	0.0049	0.1077	0.005	0.1005	0.0054	0.1041	0.0058
Classroom Assignment										
Math	0	0.001	0	0.0009	0	0.0009	0	0.0009	-0.0028	0.001
Science	-0.003	0.001	-0.0026	0.0009	-0.0021	0.001	-0.0022	0.001	0	0.0011
Health/ P.E.	0.0046	0.001	0.0054	0.0009	0.0077	0.001	0.0096	0.001	0.0129	0.0011
Computer	0	0.0017	-0.0032	0.0016	0.004	0.0022	0.005	0.0023	0	0.0023
Special subject	0.0036	0.0015	0	0.0014	0	0.0013	0	0.0014	0	0.0014
Certified	0	0.0015	0	0.0014	0	0.0014	-0.0034	0.0015	0	0.0016
Percent of time in field of certification	-0.0025	0.0011	-0.003	0.0011	-0.0044	0.0012	-0.0021	0.0011	-0.0021	0.0013
Assigned to high school	0.0098	0.0008	0.0064	0.0007	0.0074	0.0008	0.0069	0.0008	0.0062	0.0008
First year in district	0.0026	0.0011	-0.0025	0.001	0	0.001	0	0.0011	-0.0028	0.0012
Percent of students mainstreamed special education	0	0.0158	0.031	0.0133	0.0253	0.0123	0.0258	0.0128	0.0438	0.0133
Social Security district	0	0.003	0	0.0027	-0.0166	0.0029	-0.0389	0.0033	-0.0291	0.0034
Percent of students LEP	0.0514	0.0041	0.0419	0.0036	0.0581	0.0036	0.0519	0.0038	0.053	0.004
Percent of students immigrant	0.1437	0.0271	0	0.0251	0	0.0271	0.1111	0.0289	0.1769	0.0293
ADA (log)	0.0185	0.0004	0.0157	0.0004	0.0131	0.0004	0.0103	0.0004	0.0104	0.0004
Average house price (log)	0.0335	0.0012	0.0262	0.0011	0.0228	0.0012	0.0169	0.0013	0.0229	0.0014

Table C2 Teacher Salary Coefficient Estimates—Rural Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Micropolitan area	0.0027	0.0008	0.0043	0.0008	0.004	0.0008	0.0028	0.0008	0.0054	0.0008
Sparsely populated area	0.019	0.001	0.0182	0.0009	0.0163	0.0009	0.0121	0.0009	0.0102	0.001
Very sparsely populated area	0.0398	0.0015	0.0399	0.0014	0.0359	0.0014	0.0289	0.0015	0.0279	0.0015
Unemployment rate	-0.0043	0.0003	-0.0053	0.0004	-0.0031	0.0004	0.0025	0.0004	0.0056	0.0005
Distance to center of closest MSA	-0.0001	0	-0.0002	0	-0.0001	0	-0.0002	0	-0.0002	0
Miles to nearest certifying institution	0.0006	0	0.0007	0	0.0006	0	0.0005	0	0.0006	0
Cooling degree days	0.01	0.0006	0.0091	0.0006	0.0072	0.0006	0.0059	0.0006	0.0062	0.0006
Number of observations		36,834		38,448		38,729		38,603		37,654
R-squared		.9004		.9220		.9247		.9224		.9345

Table C3 Teacher Salary Coefficient Estimates—Urban Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Intercept	7.548	0.0185	7.3815	0.0181	7.4917	0.0182	7.7705	0.0225	7.7716	0.0218
Years of Experience										
1	0.0116	0.0007	0.0152	0.0008	0.0098	0.0008	0.0226	0.0009	0.0188	0.0008
2	0.0239	0.0008	0.0239	0.0008	0.0292	0.0008	0.0358	0.0009	0.0341	0.0009
3	0.032	0.0008	0.0406	0.0008	0.0398	0.0008	0.0492	0.001	0.0514	0.0009
4	0.0468	0.0008	0.0524	0.0009	0.0547	0.0009	0.0679	0.001	0.0721	0.0009
5	0.0596	0.0008	0.0661	0.0009	0.0737	0.0009	0.0886	0.001	0.0957	0.0009
6	0.0729	0.0008	0.0842	0.0009	0.0911	0.0009	0.1126	0.001	0.1168	0.001
7	0.0912	0.0009	0.1011	0.0009	0.1117	0.0009	0.1324	0.0011	0.1418	0.001
8	0.108	0.0009	0.1201	0.0009	0.1316	0.0009	0.1573	0.0011	0.1708	0.001
9	0.1235	0.0009	0.1389	0.001	0.1535	0.001	0.1799	0.0011	0.2041	0.001
10	0.1425	0.0009	0.1606	0.001	0.1768	0.001	0.2099	0.0011	0.2286	0.0011
11	0.1631	0.0009	0.1812	0.001	0.2045	0.001	0.2326	0.0012	0.2539	0.0011
12	0.1835	0.0009	0.2075	0.001	0.2253	0.001	0.2541	0.0012	0.2792	0.0011
13	0.2061	0.001	0.2283	0.0011	0.2458	0.0011	0.2778	0.0012	0.3075	0.001
14	0.2268	0.001	0.2481	0.0011	0.2691	0.001	0.3013	0.0011	0.3305	0.0011
15	0.2447	0.001	0.2709	0.0011	0.2916	0.001	0.3188	0.0012	0.3474	0.0011
16	0.2656	0.001	0.2902	0.001	0.3095	0.001	0.3351	0.0012	0.3635	0.0011
17	0.284	0.001	0.307	0.001	0.3258	0.0011	0.3503	0.0012	0.3799	0.0011
18	0.3012	0.001	0.3233	0.0011	0.34	0.0011	0.3643	0.0012	0.398	0.0011
19	0.3159	0.0011	0.3362	0.0011	0.3543	0.0011	0.3807	0.0012	0.4121	0.0011
20	0.3288	0.0011	0.3512	0.0011	0.37	0.0011	0.3912	0.0012	0.4245	0.0011
21	0.3421	0.001	0.3656	0.0011	0.3807	0.0011	0.4028	0.0012	0.4391	0.0011
22	0.3554	0.001	0.375	0.0011	0.3943	0.0011	0.4141	0.0012	0.449	0.0012
23	0.3639	0.001	0.3876	0.0011	0.4051	0.0011	0.4227	0.0013	0.46	0.0012

Table C3 Teacher Salary Coefficient Estimates—Urban Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
24	0.3765	0.0011	0.3997	0.0011	0.4145	0.0011	0.4325	0.0013	0.4737	0.0012
25	0.3886	0.0011	0.4096	0.0012	0.4252	0.0011	0.4476	0.0013	0.4875	0.0012
26	0.3966	0.0011	0.4187	0.0012	0.4375	0.0012	0.4589	0.0013	0.4969	0.0013
27	0.4054	0.0011	0.4301	0.0012	0.4474	0.0012	0.4669	0.0014	0.5106	0.0013
28	0.4179	0.0012	0.4405	0.0012	0.4562	0.0013	0.4798	0.0014	0.5174	0.0014
29	0.4249	0.0012	0.447	0.0013	0.4665	0.0013	0.4837	0.0015	0.5243	0.0015
30	0.4329	0.0013	0.4586	0.0014	0.4714	0.0014	0.4898	0.0017	0.5234	0.0016
31	0.441	0.0014	0.4609	0.0015	0.4762	0.0016	0.4911	0.0018	0.5294	0.0018
32	0.4436	0.0015	0.4665	0.0017	0.4797	0.0017	0.495	0.002	0.5322	0.002
33	0.4498	0.0017	0.4708	0.0018	0.4811	0.0019	0.4975	0.0023	0.5317	0.0021
34	0.4532	0.0019	0.4695	0.002	0.4858	0.0022	0.4948	0.0024	0.5361	0.0025
35	0.4504	0.0021	0.4725	0.0024	0.4803	0.0024	0.4982	0.0028	0.5321	0.0029
36	0.4536	0.0025	0.4711	0.0026	0.4876	0.0027	0.5001	0.0033	0.5343	0.0033
37	0.4504	0.0028	0.4746	0.0029	0.4856	0.0032	0.4984	0.0037	0.5287	0.0039
38	0.4543	0.0032	0.4808	0.0037	0.486	0.0037	0.5003	0.0045	0.5335	0.0044
39	0.4565	0.0041	0.4723	0.0041	0.4926	0.0043	0.5019	0.0051	0.5295	0.0049
40	0.4465	0.0026	0.4685	0.0028	0.4778	0.0029	0.4895	0.0034	0.5229	0.0035
Black	0.0118	0.0004	0.008	0.0005	0.0104	0.0005	0.0062	0.0005	0.0066	0.0005
Hispanic	0.0055	0.0004	0	0.0004	-0.002	0.0004	0	0.0005	0.0075	0.0004
Asian/ Native American	0.0051	0.0011	0.0043	0.0012	0.0035	0.0013	0	0.0015	0.0074	0.0014
No degree	0.0164	0.0015	0.0073	0.0015	0.0056	0.0017	-0.0051	0.0019	0.0056	0.0017
M.A.	0.036	0.0003	0.0363	0.0003	0.0371	0.0003	0.037	0.0004	0.041	0.0003
Ph.D.	0.0628	0.0017	0.0672	0.0018	0.0702	0.0018	0.0655	0.0021	0.0643	0.002
Male	0.0039	0.0003	0.0035	0.0003	0.0027	0.0003	0.0022	0.0004	0.0022	0.0004
Effective days	-0.014	0.0018	-0.0319	0.0018	-0.0289	0.0019	-0.0523	0.0022	-0.0219	0.0021
Multiple campuses	0.0037	0.0007	0.0031	0.0008	0.0069	0.0008	0.0084	0.0009	0.0072	0.0008
Administrative duties	0.1262	0.0031	0.1274	0.0033	0.1086	0.0037	0.1159	0.0039	0.1436	0.004

Table C3 Teacher Salary Coefficient Estimates—Urban Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Classroom Assignment										
Math	0.0037	0.0004	0	0.0004	0.0018	0.0004	0	0.0005	-0.0014	0.0004
Science	0.004	0.0004	0	0.0004	0.0024	0.0004	0.0012	0.0005	0	0.0005
Health/ P.E.	-0.0024	0.0004	-0.001	0.0004	0	0.0004	-0.0017	0.0005	0	0.0005
Computer	0	0.0011	0	0.0011	0.0035	0.0012	0.0042	0.0014	0.0068	0.0013
Special subject	0.0013	0.0005	0	0.0005	-0.001	0.0005	-0.0022	0.0006	-0.0018	0.0005
Certified	0	0.0005	0.0036	0.0006	0	0.0006	0	0.0007	-0.0026	0.0006
Percent of time in field of certification	-0.001	0.0004	-0.0033	0.0005	-0.0012	0.0005	-0.0017	0.0005	0	0.0005
Assigned to high school	0.0011	0.0003	-0.0005	0.0003	-0.0026	0.0003	-0.0021	0.0004	0	0.0003
First year in district	-0.0072	0.0004	-0.0061	0.0004	-0.0081	0.0004	-0.0107	0.0005	-0.0092	0.0005
Percent mainstreamed special education	0	0.0073	0.0425	0.0075	0.1488	0.0075	0.2413	0.0087	0.2192	0.0082
Social Security district	-0.0132	0.0006	-0.0163	0.0007	-0.0125	0.0007	0.0106	0.0008	0.0169	0.0007
Percent of students LEP	0.0125	0.0011	0	0.0011	-0.0038	0.0011	0.0066	0.0013	0.0194	0.0012
Percent of students immigrant	0.0818	0.0038	0.1093	0.0043	0.1441	0.0042	0.0909	0.0058	0.1205	0.0051
ADA (log)	-0.0039	0.0024	0	0.0024	-0.0083	0.0024	-0.0717	0.0028	-0.0624	0.0025
ADA (log), squared	0.0022	0.0001	0.0016	0.0001	0.002	0.0001	0.0057	0.0002	0.0051	0.0002
District ADA ≥ 25,000 and < 50,000	-0.0114	0.0005	0	0.0005	0.0014	0.0005	-0.0104	0.0006	-0.0079	0.0005
District ADA ≥ 50,000	-0.0116	0.0005	-0.0015	0.0005	-0.0048	0.0005	-0.0261	0.0007	-0.0254	0.0006
Average house price (log)	0.0319	0.0011	0.049	0.0011	0.0406	0.0011	0.0466	0.0014	0.0199	0.0014
Major urban area	0.0746	0.0005	0.0759	0.0005	0.0734	0.0005	0.0723	0.0006	0.0702	0.0006
Unemployment rate	0.0077	0.0002	0.0021	0.0003	-0.0013	0.0003	-0.0171	0.0004	-0.0189	0.0003
Distance to center of closest MSA	0.0264	0.0006	0.0279	0.0006	0.0246	0.0006	0.0377	0.0008	0.0301	0.0008
Log house price x miles to MSA center	-0.0023	0	-0.0024	0.0001	-0.0022	0.0001	-0.0033	0.0001	-0.0027	0.0001
Miles to nearest certifying institution	0.0003	0	0.0004	0	0.0004	0	0.0002	0	0.0001	0
Cooling degree days	0.0317	0.0004	0.0345	0.0004	0.0343	0.0003	0.0329	0.0004	0.032	0.0003
Number of observations		228,663		224,000		217,622		210,376		205,526
R-squared		.8877		.8920		.9013		.8819		.9099

Table C4 Teacher Salary and Benefits Coefficient Estimates—Rural Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Intercept	7.8243	0.0271	7.6821	0.0262	7.7431	0.0311	7.8027	0.0275	7.7206	0.0292
Years of Experience										
1	0.0191	0.0021	0.0206	0.0021	0.0223	0.0022	0.0257	0.0019	0.0257	0.002
2	0.0381	0.0022	0.0443	0.0022	0.0399	0.0023	0.0448	0.002	0.0505	0.0021
3	0.0555	0.0022	0.063	0.0022	0.0598	0.0024	0.0654	0.0021	0.0729	0.0021
4	0.0869	0.0023	0.0965	0.0022	0.0961	0.0024	0.1038	0.0021	0.1152	0.0021
5	0.1201	0.0023	0.1281	0.0023	0.1324	0.0024	0.1407	0.0021	0.1567	0.0021
6	0.1506	0.0023	0.1642	0.0023	0.1667	0.0024	0.1794	0.0021	0.1962	0.0022
7	0.1816	0.0023	0.1961	0.0023	0.2002	0.0024	0.2103	0.0021	0.2327	0.0022
8	0.2075	0.0023	0.2279	0.0023	0.2287	0.0025	0.2407	0.0021	0.27	0.0022
9	0.2401	0.0023	0.2534	0.0023	0.2567	0.0025	0.2749	0.0022	0.3067	0.0023
10	0.2614	0.0023	0.2768	0.0023	0.288	0.0025	0.3043	0.0022	0.3374	0.0024
11	0.2845	0.0023	0.3055	0.0024	0.3149	0.0026	0.3311	0.0023	0.3652	0.0024
12	0.3095	0.0024	0.3321	0.0025	0.3395	0.0027	0.3536	0.0023	0.3939	0.0024
13	0.3325	0.0025	0.352	0.0025	0.3601	0.0027	0.3773	0.0023	0.4153	0.0023
14	0.3527	0.0025	0.373	0.0026	0.3795	0.0027	0.3962	0.0022	0.4365	0.0023
15	0.3687	0.0026	0.3913	0.0025	0.4003	0.0026	0.4151	0.0023	0.456	0.0024
16	0.3852	0.0025	0.4095	0.0024	0.4178	0.0026	0.4312	0.0023	0.4729	0.0024
17	0.401	0.0024	0.4256	0.0025	0.4295	0.0028	0.4451	0.0024	0.4892	0.0024
18	0.4174	0.0025	0.438	0.0026	0.4433	0.0028	0.4582	0.0023	0.504	0.0024
19	0.4308	0.0026	0.4512	0.0026	0.4544	0.0027	0.4699	0.0023	0.5155	0.0024
20	0.4394	0.0026	0.4579	0.0026	0.4641	0.0027	0.4766	0.0024	0.5225	0.0024
21	0.4446	0.0026	0.4641	0.0026	0.4664	0.0028	0.4813	0.0024	0.5246	0.0025

Table C4 Teacher Salary and Benefits Coefficient Estimates—Rural Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
22	0.448	0.0026	0.4668	0.0026	0.4715	0.0028	0.4806	0.0024	0.5276	0.0025
23	0.4484	0.0027	0.4693	0.0026	0.4724	0.0028	0.4852	0.0024	0.5262	0.0025
24	0.4536	0.0027	0.4723	0.0027	0.4759	0.0029	0.4834	0.0025	0.5321	0.0026
25	0.4548	0.0027	0.476	0.0027	0.4745	0.003	0.4885	0.0025	0.5333	0.0027
26	0.4604	0.0028	0.4718	0.0028	0.4803	0.0029	0.4887	0.0026	0.5366	0.0027
27	0.4553	0.0028	0.4777	0.0028	0.481	0.0031	0.4893	0.0026	0.5425	0.0028
28	0.4611	0.0029	0.4778	0.003	0.4818	0.0031	0.4979	0.0027	0.536	0.003
29	0.4627	0.0032	0.4781	0.003	0.4868	0.0032	0.4908	0.0029	0.5383	0.0031
30	0.4602	0.0032	0.4835	0.0032	0.4787	0.0036	0.4948	0.0032	0.5429	0.0035
31	0.4622	0.0035	0.4752	0.0035	0.4859	0.0039	0.4984	0.0035	0.5427	0.0037
32	0.4628	0.0039	0.4847	0.0038	0.4908	0.0044	0.4962	0.0038	0.5449	0.004
33	0.4666	0.0042	0.4892	0.0043	0.4856	0.0046	0.5006	0.004	0.535	0.0044
34	0.4652	0.0048	0.4796	0.0046	0.491	0.0052	0.4926	0.0045	0.537	0.0049
35	0.4549	0.0054	0.4965	0.0049	0.4754	0.0058	0.4958	0.0051	0.5467	0.0056
36	0.4731	0.0056	0.4709	0.0057	0.4892	0.0062	0.5058	0.0057	0.5402	0.0067
37	0.447	0.0068	0.4822	0.0064	0.4914	0.0074	0.494	0.0069	0.5354	0.007
38	0.4483	0.0076	0.4787	0.0071	0.4693	0.0084	0.4908	0.0072	0.5347	0.008
39	0.455	0.0082	0.4799	0.009	0.4681	0.0087	0.4932	0.008	0.5301	0.0087
40+	0.4568	0.0059	0.4753	0.0056	0.4757	0.0065	0.4914	0.0059	0.5396	0.0069
Black	0	0.0019	-0.0047	0.0018	-0.004	0.0019	-0.0072	0.0017	-0.0053	0.0018
Hispanic	0.0124	0.0012	0.0117	0.0011	0.0153	0.0012	0.0108	0.0011	0.0108	0.0011
Asian/ Native American	0	0.005	0	0.0051	0	0.0061	0	0.005	0	0.0045
No degree	0.0217	0.0042	0.0198	0.0035	0.0168	0.0047	0.0152	0.0041	0.013	0.0042

Table C4 Teacher Salary and Benefits Coefficient Estimates—Rural Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
M.A.	0.014	0.0009	0.014	0.0008	0.0143	0.0009	0.0133	0.0008	0.0146	0.0008
Ph.D.	0.0332	0.0068	0.0163	0.0066	0.0241	0.0072	0.0234	0.0059	0.0237	0.0071
Male	0.015	0.0008	0.0153	0.0008	0.014	0.0009	0.0147	0.0008	0.016	0.0008
Effective days	-0.0522	0.0046	-0.0199	0.0044	-0.0299	0.0052	-0.0202	0.0047	-0.0341	0.0049
Multiple campuses	0.0076	0.0013	0.0065	0.0012	0.0027	0.0014	0.0063	0.0012	0.0059	0.0012
Administrative duties	0.1312	0.005	0.0992	0.0048	0.0939	0.0056	0.0904	0.0048	0.0907	0.0053
Classroom Assignment										
Math	0	0.0009	0	0.0009	0	0.001	0	0.0008	-0.0026	0.0009
Science	-0.0024	0.001	-0.002	0.0009	0	0.001	0	0.0009	0	0.001
Health/ P.E.	0.0029	0.001	0.0053	0.0009	0.0089	0.001	0.0091	0.0009	0.0115	0.0009
Computer	-0.0028	0.0016	-0.0082	0.0016	0	0.0023	0	0.002	0	0.0021
Special education	0	0.0014	0	0.0013	0.0029	0.0014	0	0.0012	0	0.0012
Certified	0	0.0014	0	0.0014	0	0.0015	-0.0025	0.0013	0	0.0014
Percent of time in field of certification	-0.0017	0.0011	0	0.0011	-0.0024	0.0012	-0.0024	0.001	-0.002	0.0011
Assigned to high school	0.0094	0.0008	0.0042	0.0007	0.0042	0.0008	0.0044	0.0007	0.0042	0.0007
First year in district	0.0028	0.0011	0	0.001	0	0.0011	0	0.001	0	0.001
Percent of students mainstreamed special education.	0.0467	0.0146	0.0692	0.013	0.1606	0.0131	0.0838	0.0111	0.0799	0.0118
Social Security district	-0.011	0.0027	0.0191	0.0027	-0.0222	0.0029	-0.0053	0.0026	0	0.0027
Percent of students LEP	0.0803	0.0043	0.0358	0.0036	0.031	0.0041	0.0428	0.0033	0.0416	0.0036
Percent of students immigrant	-0.0581	0.0254	0	0.0248	0.0484	0.0284	0.0465	0.0257	0.0732	0.0266
ADA (log)	0.0167	0.0004	0.0168	0.0004	0.0138	0.0004	0.0101	0.0003	0.0107	0.0004
Average house price (log)	0.0247	0.0011	0.0171	0.0011	0.0166	0.0014	0.0088	0.0012	0.0113	0.0013

Table C4 Teacher Salary and Benefits Coefficient Estimates—Rural Districts										
	2002–03		2001–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Micropolitan area	0.0022	0.0008	0.0113	0.0008	0	0.0009	0.0059	0.0007	0.0096	0.0007
Sparsely populated area	0.0158	0.0009	0.0171	0.0009	0.0286	0.0009	0.0143	0.0008	0.0133	0.0009
Very sparsely populated area	0.0341	0.0015	0.0438	0.0014	0.0434	0.0016	0.0316	0.0013	0.0342	0.0014
Unemployment rate	-0.0045	0.0003	-0.0015	0.0004	-0.0030	0.0004	0.0045	0.0004	0.0047	0.0005
Distance to center of closest major metropolitan area	-0.0001	0.0000	-0.0002	0.0000	0.0000	0.0000	-0.0001	0.0000	-0.0001	0.0000
Miles to nearest certifying institution	0.0004	0.0000	0.0008	0.0000	0.0006	0.0000	0.0005	0.0000	0.0006	0.0000
Cooling degree days	0.0066	0.0006	0.0092	0.0006	0.0053	0.0006	0.0065	0.0005	0.0065	0.0005
Number of observations		33,741		37,571		27,923		38,098		37,183
R-Squared		.8957		.9019		.9142		.9142		.9252

Table C5 Teacher Salary and Benefits Coefficient Estimates—Urban Districts										
	2002–03		2000–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Intercept	7.8052	0.0182	7.5714	0.0173	7.7838	0.0199	8.0255	0.0213	7.9088	0.0212
Years of Experience										
1	0.0111	0.0007	0.0145	0.0007	0.0091	0.0008	0.0214	0.0008	0.0183	0.0008
2	0.0218	0.0007	0.0222	0.0008	0.0268	0.0008	0.0341	0.0009	0.0323	0.0008
3	0.0296	0.0008	0.0375	0.0008	0.0364	0.0008	0.0462	0.0009	0.0484	0.0009
4	0.043	0.0008	0.0488	0.0008	0.0499	0.0009	0.0642	0.0009	0.0683	0.0009
5	0.0551	0.0008	0.0619	0.0009	0.0676	0.0009	0.0842	0.001	0.0907	0.0009
6	0.0677	0.0008	0.0788	0.0009	0.0841	0.0009	0.1072	0.001	0.1115	0.0009
7	0.0844	0.0008	0.0952	0.0009	0.1025	0.0009	0.1266	0.001	0.1354	0.0009
8	0.0999	0.0009	0.1131	0.0009	0.1208	0.001	0.1502	0.001	0.1631	0.001
9	0.1144	0.0009	0.1305	0.0009	0.1419	0.001	0.1726	0.001	0.1938	0.001
10	0.1321	0.0009	0.1513	0.0009	0.1646	0.001	0.2003	0.0011	0.2174	0.001
11	0.1523	0.0009	0.1712	0.001	0.1897	0.001	0.2218	0.0011	0.2405	0.001
12	0.1718	0.0009	0.1952	0.001	0.2101	0.0011	0.2415	0.0011	0.2647	0.001
13	0.1923	0.001	0.2152	0.001	0.2291	0.0011	0.2645	0.0011	0.2914	0.001
14	0.2124	0.001	0.2332	0.001	0.2516	0.0011	0.2862	0.0011	0.3127	0.001
15	0.2288	0.001	0.2553	0.001	0.2741	0.001	0.3033	0.0011	0.3289	0.0011
16	0.2489	0.001	0.2733	0.001	0.2916	0.001	0.3188	0.0012	0.3438	0.0011
17	0.2669	0.001	0.2894	0.001	0.3063	0.0011	0.3327	0.0012	0.3599	0.0011
18	0.2828	0.001	0.3047	0.0011	0.3199	0.0011	0.3465	0.0011	0.377	0.0011
19	0.2961	0.001	0.3165	0.0011	0.3342	0.0011	0.3621	0.0011	0.3904	0.0011
20	0.3092	0.0011	0.3315	0.0011	0.3502	0.0011	0.373	0.0011	0.4031	0.0011
21	0.3218	0.001	0.3452	0.0011	0.3602	0.0011	0.3835	0.0012	0.417	0.0011
22	0.3337	0.001	0.3534	0.0011	0.373	0.0011	0.3947	0.0012	0.4261	0.0011
23	0.3415	0.001	0.3654	0.0011	0.3842	0.0011	0.4026	0.0012	0.4366	0.0011

Table C5 Teacher Salary and Benefits Coefficient Estimates—Urban Districts										
	2002–03		2000–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
24	0.3535	0.0011	0.3773	0.0011	0.3927	0.0012	0.4122	0.0012	0.4496	0.0011
25	0.3656	0.0011	0.386	0.0011	0.4041	0.0012	0.4264	0.0012	0.4626	0.0012
26	0.3727	0.0011	0.3952	0.0011	0.4155	0.0012	0.4372	0.0013	0.4715	0.0012
27	0.3806	0.0011	0.4061	0.0012	0.4259	0.0012	0.4448	0.0013	0.4847	0.0012
28	0.3922	0.0012	0.4158	0.0012	0.4331	0.0013	0.4572	0.0014	0.4913	0.0013
29	0.3993	0.0012	0.4225	0.0013	0.4434	0.0013	0.4611	0.0014	0.4978	0.0014
30	0.4065	0.0013	0.4336	0.0013	0.4482	0.0014	0.4667	0.0016	0.4971	0.0016
31	0.4148	0.0014	0.4353	0.0014	0.4514	0.0016	0.4683	0.0017	0.5028	0.0017
32	0.4176	0.0015	0.4412	0.0016	0.4556	0.0017	0.472	0.0019	0.5052	0.0019
33	0.4227	0.0017	0.4451	0.0018	0.4554	0.0019	0.4739	0.0022	0.5048	0.002
34	0.4252	0.0019	0.4441	0.002	0.462	0.0022	0.4717	0.0023	0.5098	0.0024
35	0.424	0.0021	0.4465	0.0023	0.4585	0.0024	0.4751	0.0027	0.5052	0.0028
36	0.4257	0.0025	0.4463	0.0025	0.4643	0.0027	0.4777	0.0032	0.5072	0.0031
37	0.425	0.0028	0.4498	0.0028	0.4626	0.0033	0.475	0.0035	0.5018	0.0037
38	0.4266	0.0032	0.4555	0.0035	0.464	0.0037	0.4773	0.0042	0.5063	0.0042
39	0.4298	0.0041	0.4473	0.0039	0.4703	0.0045	0.4774	0.0049	0.5036	0.0047
40	0.4192	0.0026	0.443	0.0027	0.4556	0.003	0.4676	0.0033	0.4971	0.0033
Black	0.0123	0.0004	0.0067	0.0004	0.0087	0.0005	0.0049	0.0005	0.0084	0.0005
Hispanic	0.0077	0.0004	0.0015	0.0004	-0.0026	0.0004	0	0.0004	0.0066	0.0004
Asian/ Native American	0.005	0.0011	0.0037	0.0012	0.0026	0.0013	0	0.0014	0.0073	0.0014
No degree	0.0155	0.0015	0.0104	0.0015	0.0111	0.0018	-0.0039	0.0018	0.0055	0.0016
M.A.	0.0333	0.0003	0.0345	0.0003	0.0358	0.0003	0.0349	0.0003	0.039	0.0003
Ph.D.	0.059	0.0016	0.0638	0.0017	0.0656	0.0018	0.0616	0.002	0.061	0.0019
Male	0.0044	0.0003	0.0035	0.0003	0.0019	0.0003	0.002	0.0004	0.0021	0.0003
Effective days	-0.016	0.0018	-0.0313	0.0018	-0.0313	0.0019	-0.0514	0.0021	-0.0207	0.002
Multiple campuses	0.0053	0.0007	0.0031	0.0007	0.0053	0.0008	0.0076	0.0009	0.0066	0.0008
Administrative duties	0.1188	0.003	0.1195	0.0032	0.1116	0.0041	0.1086	0.0037	0.1336	0.0038

Table C5 Teacher Salary and Benefits Coefficient Estimates—Urban Districts										
	2002–03		2000–02		2000–01		1999–2000		1998–99	
Parameter	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Classroom Assignment										
Math	0.0039	0.0004	0	0.0004	0.0007	0.0004	0	0.0004	-0.0023	0.0004
Science	0.0043	0.0004	0	0.0004	0.0011	0.0004	0.0008	0.0005	-0.0014	0.0004
Health/ P.E.	-0.0017	0.0004	-0.0013	0.0004	0	0.0005	-0.0022	0.0005	0	0.0004
Computer	0.002	0.001	-0.0019	0.001	0.0034	0.0012	0.0029	0.0013	0.0052	0.0013
Special subject	0.0011	0.0005	0	0.0005	-0.0013	0.0005	-0.0022	0.0006	-0.0014	0.0005
Certified	0	0.0005	0.0048	0.0006	0	0.0006	0.0011	0.0006	-0.0022	0.0006
Percent of time in field of certification	-0.0007	0.0004	-0.0026	0.0005	0	0.0005	-0.0013	0.0005	0	0.0005
Assigned to high school	0.0032	0.0003	0.0009	0.0003	-0.0016	0.0003	-0.0016	0.0003	0	0.0003
First year in district	-0.0067	0.0004	-0.0055	0.0004	-0.0077	0.0004	-0.0094	0.0005	-0.0079	0.0004
Percent mainstreamed special education	-0.0251	0.0073	0	0.0073	0.1328	0.0076	0.222	0.0083	0.2243	0.0079
Social Security district	-0.0138	0.0006	-0.0158	0.0006	-0.0042	0.0006	0.0158	0.0007	0.0202	0.0007
Percent of students LEP	0.0225	0.0011	0.0065	0.0011	-0.0045	0.0012	0.0067	0.0012	0.0186	0.0012
Percent of students immigrant	0.0506	0.0037	0.0957	0.0042	0.1388	0.0045	0.0805	0.0055	0.141	0.0049
ADA (log)	-0.013	0.0024	0.0143	0.0023	-0.0257	0.0029	-0.0813	0.0026	-0.0573	0.0026
ADA (log), squared	0.0032	0.0001	0.0009	0.0001	0.0033	0.0002	0.0065	0.0002	0.0049	0.0002
District ADA ≥ 25,000 and < 50,000	-0.0148	0.0005	0.0029	0.0005	-0.0022	0.0005	-0.0142	0.0006	-0.009	0.0005
District ADA ≥ 50,000	-0.0188	0.0005	0.0045	0.0005	-0.0109	0.0006	-0.032	0.0006	-0.0268	0.0006
Average house price (log)	0.0186	0.0011	0.0347	0.001	0.0274	0.0011	0.033	0.0013	0.0125	0.0013
Major urban area	0.0782	0.0005	0.0688	0.0005	0.0598	0.0005	0.0628	0.0006	0.0609	0.0005
Unemployment rate	0.0053	0.0002	-0.0029	0.0003	-0.0023	0.0003	-0.0163	0.0004	-0.0133	0.0003
Distance to center of closest MSA	0.0274	0.0006	0.0213	0.0006	0.0162	0.0007	0.0318	0.0007	0.0266	0.0007
Log house price x miles to MSA center	-0.0023	0	-0.0018	0	-0.0014	0.0001	-0.0028	0.0001	-0.0023	0.0001
Miles to nearest certifying institution	0.0002	0	0.0004	0	0.0006	0	0.0002	0	0	0
Cooling degree days	0.0247	0.0004	0.0262	0.0004	0.0308	0.0003	0.0255	0.0004	0.0242	0.0003
Number of observations		206,622		221,598		189,309		207,496		205,016
R-squared		.8889		.8871		.8989		.8793		.9057

Table C6 Teacher Salary and Benefits Coefficient Estimates—Multi-Year Models 2000–04								
	Urban Districts				Rural Districts			
	Pooled		*Fixed Effect*		*Pooled*		*Fixed Effect*	
Parameter	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**
Intercept	7.7177	0.0084	0.0753	0.0259	7.7966	0.0125		
Years of Experience								
1	0.0143	0.0004			0.0223	0.0009		
2	0.0262	0.0004			0.0405	0.0010		
3	0.0379	0.0004			0.0598	0.0010		
4	0.0508	0.0004			0.0944	0.0010		
5	0.0661	0.0004			0.1275	0.0010		
6	0.0819	0.0004			0.1621	0.0010		
7	0.0983	0.0004			0.1939	0.0010		
8	0.1168	0.0004			0.2231	0.0010		
9	0.1346	0.0004			0.2517	0.0011		
10	0.1551	0.0004			0.2786	0.0011		
11	0.1753	0.0005			0.3037	0.0011		
12	0.1963	0.0005			0.3275	0.0011		
13	0.2166	0.0005			0.3497	0.0011		
14	0.2392	0.0005			0.3713	0.0011		
15	0.2584	0.0005			0.3891	0.0011		
16	0.2751	0.0005			0.4063	0.0011		
17	0.2910	0.0005			0.4201	0.0011		
18	0.3059	0.0005			0.4342	0.0011		
19	0.3207	0.0005			0.4473	0.0012		
20	0.3349	0.0005			0.4563	0.0012		
21	0.3463	0.0005			0.4611	0.0012		
22	0.3571	0.0005			0.4634	0.0012		
23	0.3672	0.0005			0.4661	0.0012		

Table C6 Teacher Salary and Benefits Coefficient Estimates—Multi-Year Models 2000–04								
	Urban Districts				Rural Districts			
	Pooled		*Fixed Effect*		*Pooled*		*Fixed Effect*	
Parameter	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**
24	0.3768	0.0005			0.4686	0.0012		
25	0.3889	0.0005			0.4715	0.0012		
26	0.3988	0.0005			0.4726	0.0013		
27	0.4075	0.0006			0.4741	0.0013		
28	0.4174	0.0006			0.4757	0.0013		
29	0.4249	0.0006			0.4773	0.0014		
30	0.4323	0.0006			0.4771	0.0015		
31	0.4358	0.0007			0.4782	0.0016		
32	0.4407	0.0008			0.4798	0.0018		
33	0.4432	0.0008			0.4809	0.0019		
34	0.4456	0.0009			0.4789	0.0022		
35	0.4467	0.0011			0.4788	0.0024		
36	0.4480	0.0012			0.4810	0.0027		
37	0.4484	0.0014			0.4789	0.0031		
38	0.4501	0.0017			0.4701	0.0035		
39	0.4519	0.0020			0.4699	0.0038		
40	0.4423	0.0013			0.4741	0.0027		
Black	0.0088	0.0002			-0.0040	0.0008		
Hispanic	0.0041	0.0002			0.0123	0.0005		
Asian/ American Indian	0.0048	0.0006			0.0057	0.0023		
Male	0.0030	0.0002			0.0149	0.0004		
No degree	0.0113	0.0007	0.0028	0.0010	0.0216	0.0017	-0.0091	0.0023
M.A.	0.0344	0.0001	0.0295	0.0004	0.0138	0.0004	0.0272	0.0008
Ph.D.	0.0613	0.0008	0.0389	0.0023	0.0233	0.0030	0.0188	0.0062
Effective days	-0.0253	0.0009	-0.0641	0.0010	-0.0369	0.0021	-0.0761	0.0028
Multiple campuses	0.0049	0.0004	0.0002	0.0004	0.0057	0.0006	0.0029	0.0007

Table C6 Teacher Salary and Benefits Coefficient Estimates—Multi-Year Models 2000–04								
	Urban Districts				Rural Districts			
	Pooled		*Fixed Effect*		*Pooled*		*Fixed Effect*	
Parameter	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**
Administrative duties	0.1175	0.0016	0.0721	0.0022	0.1116	0.0023	0.0618	0.0032
Classroom assignment								
Math	0.0015	0.0002	-0.0012	0.0003	-0.0007	0.0004	0.0002	0.0006
Science	0.0023	0.0002	0.0000	0.0003	-0.0026	0.0004	-0.0018	0.0006
Health/ P.E.	-0.0009	0.0002	-0.0027	0.0003	0.0062	0.0004	0.0026	0.0006
Computer	0.0000	0.0005	0.0010	0.0006	-0.0034	0.0008	-0.0010	0.0008
Special Education	-0.0007	0.0002	-0.0025	0.0003	0.0013	0.0006	-0.0040	0.0008
Certified	0.0031	0.0003	0.0055	0.0003	0.0013	0.0006	0.0082	0.0007
Percent of time in field of certification	-0.0025	0.0002	0.0051	0.0002	-0.0028	0.0005	0.0054	0.0005
Assigned to high school	0.0009	0.0001	0.0033	0.0003	0.0057	0.0003	0.0027	0.0006
First year in district	-0.0078	0.0002	-0.0105	0.0001	0.0000	0.0005	-0.0112	0.0004
Percent of students mainstreamed special education	0.0310	0.0035	0.0085	0.0048	0.0748	0.0060	0.0062	0.0090
Social Security district	-0.0134	0.0003	-0.0097	0.0008	-0.0072	0.0012	0.0016	0.0026
2000 school year indicator	-0.1040	0.0002	-0.1550	0.0003	-0.0458	0.0004	-0.1084	0.0004
2001 school year indicator	-0.0793	0.0002	-0.1158	0.0002	-0.0344	0.0005	-0.0814	0.0004
2002 school year indicator	-0.0473	0.0002	-0.0705	0.0002	-0.0223	0.0004	-0.0526	0.0003
2003 school year indicator	-0.0016	0.0002	-0.0144	0.0001	0.0072	0.0004	-0.0102	0.0003
Percent of students LEP	0.0109	0.0005	-0.0055	0.0009	0.0463	0.0017	-0.0253	0.0031
Percent of students immigrant	0.0974	0.0020	0.0268	0.0026	0.0000	0.0116	0.2086	0.0168
ADA (log)	-0.0181	0.0012	-0.0041	0.0022	0.0155	0.0002	0.0119	0.0004
ADA (log), squared	0.0031	0.0001	0.0020	0.0001	.	.	.	.
ADA $\geq$ 25,000 and < 50,000	-0.0089	0.0002	-0.0026	0.0004	.	.	.	.
ADA $\geq$ 50,000	-0.0133	0.0003	-0.0078	0.0005	.	.	.	.
Average house price (log)	0.0335	0.0005	0.0258	0.0012	0.0184	0.0005	0.0381	0.0012

Table C6 Teacher Salary and Benefits Coefficient Estimates—Multi-Year Models 2000–04								
	Urban Districts				Rural Districts			
	Pooled		*Fixed Effect*		*Pooled*		*Fixed Effect*	
Parameter	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**	**Estimate**	**Std. Error**
Major urban area	0.0662	0.0002	0.0709	0.0008	.	.	.	.
Micropolitan area	.	.	.	.	0.0049	0.0004	-0.0019	0.0008
Sparsely populated area	.	.	.	.	0.0172	0.0004	0.0174	0.0010
Very sparsely populated area	.	.	.	.	0.0385	0.0006	0.0405	0.0016
Unemployment rate	0.0026	0.0001	0.0035	0.0001	-0.0020	0.0001	-0.0013	0.0001
Miles to center of closest MSA	0.0240	0.0003	0.0187	0.0004	-0.0002	0.0000	-0.0003	0.0000
Log house price x MSA distance	-0.0022	0.0000	-0.0017	0.0000	.	.	.	.
Miles to nearest certifying institution	0.0003	0.0000	0.0002	0.0000	0.0006	0.0000	0.0007	0.0000
Cooling degree days	0.0295	0.0002	0.0303	0.0006	0.0081	0.0003	0.0172	0.0007
Number of observations		1,032,833		1,203,978		171,145		1,203,978
R-Squared		.8866		.9707		.9032		.9707
Note: The urban and rural fixed effects are estimated jointly to accommodate teachers who move between urban and rural districts. An imputed R-square for the joint estimate of the pooled model would be .8926.								

Table C7 Auxiliaries and Aides Salary Model 1999-2003				
	Urban Districts		Rural Districts	
Parameter	Estimate	Std. Error	Estimate	Std. Error
Intercept	-4.3120	1.0234		
M.A.	0.0241	0.0040	-0.0087	0.0223
Ph.D.	0.0060	0.0063	0.0776	0.0776
Effective days	-0.2933	0.0019	-0.2770	0.0050
Small high school	0.0019	0.0015	0.0081	0.0025
Large high school	0.0043	0.0017	-0.0028	0.0057
Teacher aide	-0.0210	0.0010	-0.0233	0.0022
1999 school year indicator	-0.2106	0.0014	-0.1939	0.0017
2000 school year indicator	-0.1479	0.0010	-0.1355	0.0014
2001 school year indicator	-0.1078	0.0007	-0.0894	0.0011
2002 school year indicator	-0.0578	0.0005	-0.0465	0.0009
ADA (log)	-0.1237	0.0130	0.0086	0.0024
ADA (log), squared	0.0088	0.0008		
ADA $\geq$ 25,000 and < 50,000	0.0134	0.0016		
ADA $\geq$ 50,000	-0.0083	0.0023		
Local wage level	0.0991	0.0427	-0.3657	0.0976
Average house price (log)	0.1312	0.0053	0.1097	0.0067
Major urban area	0.0189	0.0076		
Micropolitan area			-0.0126	0.0067
Sparsely populated area			0.0345	0.0087
Very sparsely populated area			0.1118	0.0136
Unemployment rate	-0.0044	0.0003	0.0003	0.0004
Miles to center of closest MSA	0.0012	0.0014	-0.0006	0.0002
Log house price X MSA distance	-0.0002	0.0001		
Miles to nearest certifying institution	-0.0020	0.0002	-0.0004	0.0002
Cooling degree days	0.0044	0.0050	0.0028	0.0064
Number of observations	1,001,884			
R-Squared	.9280			

Table C8 Auxiliaries and Aides Salary Model 1999-2004				
	Urban Districts		Rural Districts	
Parameter	Estimate	Std. Error	Estimate	Std. Error
Intercept	-2.9835	0.8907		
M.A.	0.0275	0.0040	-0.0112	0.0195
Ph.D.	0.0110	0.0063	0.0529	0.0745
Effective days	-0.2820	0.0017	-0.2675	0.0044
Small high school	0.0047	0.0014	0.0059	0.0022
Large high school	0.0059	0.0015	-0.0031	0.0049
Teacher aide	-0.0241	0.0009	-0.0231	0.0019
1999 school year indicator	-0.2306	0.0013	-0.2258	0.0017
2000 school year indicator	-0.1701	0.0010	-0.1683	0.0014
2001 school year indicator	-0.1324	0.0007	-0.1236	0.0012
2002 school year indicator	-0.0841	0.0005	-0.0818	0.0011
2003 school year indicator	-0.0277	0.0004	-0.0365	0.0009
ADA (log)	-0.1417	0.0115	0.0057	0.0021
ADA (log), squared	0.0100	0.0007	.	.
ADA $\geq$ 25,000 and < 50,000	0.0112	0.0015	.	.
ADA $\geq$ 50,000	0.0059	0.0019		
Local wage level	0.1183	0.0377	-0.2332	0.0849
Average house price (log)	0.1204	0.0048	0.1119	0.0058
Major urban area	0.0235	0.0067		
Micropolitan area			-0.0039	0.0058
Sparsely populated area	.	.	0.0385	0.0073
Very sparsely populated area	.	.	0.1096	0.0117
Unemployment rate	-0.0066	0.0002	-0.0001	0.0003
Miles to center of closest MSA	-0.0099	0.0012	-0.0004	0.0001
Log house price x MSA distance	0.0008	0.0001	.	.
Miles to nearest certifying institution	-0.0017	0.0002	-0.0001	0.0002
Cooling degree days	0.0096	0.0044	0.0110	0.0056
Number of observations	1,210,876			
R-Squared	.9189			

Appendix D: The Comparable Wage Models

Two comparable wage models were estimated from individual Census records using the SAS GLM procedure—one for college graduates and another for workers with all levels of educational attainment. Only individuals with at least a bachelor's degree were considered college graduates. In both cases, the dependent variables were the natural log of annual wage and salary earnings. Table D1 presents the regression coefficients.

For both models, we generated estimates of the predicted wage level in each labor market area. The predicted wage level is the least-squares mean for the market fixed effect. The least-squares mean (or population marginal mean) is defined as the expected value of the mean for each effect (in this context, each market) that would be expected from a balanced design holding all covariates at their mean values and all classification variables (e.g., occupation or gender) at their population frequencies.

To transform the predicted wage level for college graduates into the Comparable Wage Index, we calculated an adjusted wage level for each market by adding two standard errors of the predicted wage level to the predicted wage level for that market and then identified the minimum adjusted wage level as the reference wage. Index values were defined as the predicted wage level for each market, divided by the reference wage. Markets with a predicted wage level below the reference wage were assigned an index value of one.

Dependent And Independent Variables Used In The Estimation

Annual wage and salary earnings. This indicator represents each respondent's self-reported estimate of total pre-tax wage and salary income for 1999. This includes wages, salaries, commissions, cash bonuses, tips, and other money income received from an employer. It does not include any payments-in-kind or reimbursements for business expenses. Individuals whose annual wage and salary earnings were less than $5,000 were excluded from the analysis. Self-employed workers, unpaid family workers, and workers who did not indicate whether or not they had an employer were also excluded because their reported earnings may not represent the market value of their time. Only individuals who both lived in Texas in 2000 and worked in Texas in 1999 are included in the analysis. The data for this analysis come from the Integrated

Public Use Microdata Series: Version 3.0 (IPUMS) and were provided by the Minnesota Population Center.

Demographic characteristics. Each respondent's age, educational attainment, ethnicity, and gender were taken directly from the IPUMS database.

Industry. The model for workers at all levels of educational attainment also includes an indicator for the type of industry at which each person performed their primary occupation. Because the sample is restricted to non-educators, all records indicating industry 786 (primary and secondary education) were excluded. Records from industry 786 were also excluded from the college graduates model even though the smaller sample size prevented us from incorporating industry indicators in the estimation.

Labor market. The models include 51 indicators for labor market area. With one exception, public use microdata areas (PUMS) were aggregated into metropolitan areas according to the market definitions developed by the U.S. Office of Management and Budget for 2000. Because they were considered a single market at the time of the Census and the PUMS flow across county lines, it was not possible to separate Midland and Odessa into two distinct metropolitan areas. Rural PUMS include more than one county.

Occupation. The models incorporate indicator variables for each occupation reported in the Census. Respondents were asked to indicate their primary occupation, which is the one from which they earn the most money, or at which they spent the most time. Because the sample is restricted to non-educators, anyone who has a teaching occupation (occupation codes 230 through 255) was excluded.

Usual hours worked per week. Respondents reported the number of hours per week that they usually worked if they worked during the previous year. Only workers who indicated that they usually worked more than 20 hours per week were included in the analysis.

Usual weeks worked per year. This variable indicates the number of weeks that the respondent worked for profit, pay, or as an unpaid family worker during 1999, including paid vacations and other paid absences. Individuals who reported working 26 or fewer weeks were excluded from the analysis.

Table D1 The Comparable Wage Models						
	All Workers			College Graduates		
Independent Variables	**Estimate**	**Standard Error**		**Estimate**	**Standard Error**	
Usual hours worked per week (log)	0.6850	0.0050	*	0.6806	0.0119	*
Usual weeks worked per year (log)	0.9060	0.0084	*	1.0591	0.0249	*
Female	-0.1995	0.0023	*	-0.1889	0.0050	*
Age	0.0504	0.0004	*	0.0716	0.0013	*
Age, squared	-0.0005	0.0000	*	-0.0007	0.0000	*
Educational attainment						
No school completed	-0.2562	0.0086	*			
1^{st}–4^{th} grade	-0.3087	0.0100	*			
5^{th}–8^{th} grade	-0.2529	0.0049	*			
9^{th} grade	-0.2024	0.0061	*			
10^{th} grade	-0.1793	0.0060	*			
11^{th} grade	-0.1575	0.0057	*			
12^{th} grade, no degree	-0.1395	0.0051	*			
High school graduate	-0.0711	0.0024	*			
Some college, no degree	0					
Associate degree	0.0407	0.0038	*			
Bachelor's degree	0.2208	0.0030	*	-0.0656	0.0119	*
Doctorate degree	0.4509	0.0107	*	0.1303	0.0157	*
Master's degree	0.3253	0.0049	*	0.0203	0.0125	
Professional degree	0.2911	0.0101	*	0		
Racial Group						
American Indian	-0.0379	0.0119	*	-0.1028	0.0345	*
Black	-0.0660	0.0031	*	-0.1066	0.0085	*
Chinese	-0.1344	0.0125	*	-0.1372	0.0172	*
Filipino	-0.1075	0.0063	*	-0.1292	0.0108	*
Japanese	-0.0085	0.0305		-0.0351	0.0472	
Other nonwhite	-0.0523	0.0031	*	-0.1516	0.0137	*
Two or more major races	-0.0516	0.0063	*	-0.1396	0.0175	*
Number of observations		293,407			65,583	
R-square		0.5739			0.4252	

Note: The "All Workers" model also includes fixed effects for 459 occupations, 256 industries, and 51 labor markets. The "College Graduates" model also includes fixed effects for 436 occupations and 51 labor markets. The asterisk indicates a coefficient that is significantly different from zero at the 5-percent level.