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Equitable Compensation: Quantifying the Salary Differences of Comparison Communities

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Teacher salary scales from a target district are compared with those from six groups of comparable districts to provide a quantitative basis from which to assess self-serving bias in the selection of comparison districts. Comparison districts are used to gauge salary equity during contract negotiations. Salary data were extracted for three salary columns (bachelor's, master's, and master's plus 30 credits) from the 2014–15 Massachusetts teacher contracts from forty-eight districts. Comparison district groups were formed using six methods: three single-criterion and three multiple-criteria. Implications for selecting methods are also discussed.

Decreases in state aid coupled with disproportional increases in health care costs continue to strain municipal budgets in the Commonwealth of Massachusetts. Between FY2008 and FY2012, inflation-adjusted state aid was cut 36 percent.[1] Health care costs, however, have surged, outpacing the modest growth in property taxes. A 2014 Massachusetts Taxpayer Foundation study of nine low-income small cities, for example, found that retiree health care costs increased 24.0 percent between FY2009 and FY2013, while property tax revenue increased 12.1 percent.[2]

These fiscal pressures have diminished budget allocations, particularly for salaries, which account for the largest percentage of budget expenditures. But not all municipalities have experienced the same level of diminishing salary resources. A Boston Business Bureau report notes, for example, that "many school districts have seen average teacher pay jump in recent years, while others have made cuts."[3] The variations in compensation levels affect collective bargaining as teachers seek to achieve parity with peer districts.

In determining whether teacher salaries are equitable, news organizations and districts typically use the average teacher salary data from the Massachusetts Department of Elementary and Secondary Education (DESE).[4] But since teacher salaries are based on automatic step and column increases for years of experience and educational attainment, respectively, district variations may be an artifact of their population composition rather than their compensation policies. Thus, comparisons to assess equitable compensation levels should be made against the salary scales of comparable communities.

This article reports on a study that compares the teacher salary scales from six groups of comparable communities with those of a target district to determine whether the target district's compensation policy is equitable with that of the comparable groups. Salary data were extracted from the 2014–15 Massachusetts teacher contracts. The comparison groups were formed using three single-criterion and three multiple-criteria methods. Single-criterion methods identify comparables using a single parameter; multiple-criteria methods use combinations of demographic, economic, and geographic variables. Minimum and maximum thresholds are

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established for each variable, and a filtering process identifies communities that satisfy the specified thresholds on all values.

Single-Criterion Methods

Single-criterion methods are appealing in their simplicity—inclusion is not subject to debate. The criteria for the methods used in this study include proximity to the target district, membership in an athletic league, and household income.

Comparison based on proximity is referred to as the two-ring method. One of the oldest and most widely used single-criterion method, it has been described as the status quo because of its widespread use by municipal managers.[5] Municipalities that share borders with the target district make up the first ring; municipalities that share borders with the first ring make up the second ring. The two-ring method represents the available labor pool. In this study, six districts border the target district (the first ring) and fourteen districts border the first ring. Four of the districts, however, were regionalized, decreasing the total number of potential comparison districts to sixteen

Where the composition of comparables is based on athletic-league membership, districts in the league share such similarities as size, financial resources, and labor market characteristics.[6] The athletic league in which the target district held membership included nine potential comparison districts.

The U.S. Census Bureau provides data for household income, a metric that is commonly used to gauge household welfare.[7] The identification of comparison communities based on household income involves selecting an equal number of districts that fall below and above the target district's household income. The target district had selected five districts on either side, for a total of ten potential comparison districts.

Multiple-Criteria Methods

Unlike the single-criterion method, which offers a straightforward selection process, the multiple-criteria method requires agreement from the target district about the parameters and the size of the variation. Once agreement is reached, a single data file is constructed from multiple sources. Some municipalities contract with consultants to establish the selection, some use members of elected boards, and others reach agreement during collective bargaining.[8] In previous negotiations, the target district had used the collective bargaining process to establish comparable communities. This multiple-criteria method, referred to hereafter as "negotiation," identified fourteen potential comparison districts.

The process of specifying multiple parameters to select comparable districts has been streamlined with the use of online tools from the DESE and the Division of Local Services (DLS). In 2010 the DESE released the District Analysis Review Tool (DART), which provides access to school- and district-level comparison data. The district-level tool generates the names of comparable districts based on "grade span, total enrollment, and special populations." The special populations include low-income students, students with disabilities, and English language learners. The DART produced ten potential comparison districts.[9]

In May 2012, the Commonwealth introduced a web-based tool that has "the ability to create customized community comparison reports" directly from the DLS website.[10] Users specify minimum and maximum values for five criteria as the basis for comparison: population, average single-family tax bill, per capita income, equivalent property value per capita, and total

municipal budget. Unlike the DART, which limits comparisons to ten districts, the DLS method generates a list whose length depends on the range of values specified—the larger the specified range, the higher the number of matched comparables. Rather than select arbitrary values for each parameter, minimum and maximum amounts were calculated for one standard deviation above and below those of the target district for each of the five criteria. Outliers were removed prior to the calculation to avoid distorting the data.[11] (The outliers included seventeen cities with populations exceeding sixty thousand, and seven towns whose equivalent property value per capita exceeded one million dollars.) The specified values generated thirty-eight municipalities. The target district had the tenth highest per capita income of this group. The DLS comparable communities group comprised eighteen communities—nine above and nine below the per capita income of the target district.

Salary Comparisons

Salary schedules for the majority of teacher contracts were obtained from the DESE website (http://educatorcontracts.doemass.org). A 2008 amendment to Massachusetts General Laws Chapter 15, Section 55A requires each district to supply the DESE with a copy of its collective bargaining agreements by October 1 of each year. Districts that did not have current postings were contacted individually. Of the fifty-two districts in the six methods, four were in mediation or had not settled for the 2014–15 school year (Table 1). Note that some districts are included in multiple methods.

Table 1. Sample Size for Each Comparison Method

Comparison method	Sample size
Athletic league	7
DESE	9
DLS	18
Household income	10
Negotiated	12
Two-ring	13

Teacher compensation is organized by steps and columns based on years of experience and educational attainment, respectively. The number of steps in the target district (14) nearly matched the average of the comparison districts (13.8). But the number of columns (3) was less than half the average of the comparison districts (6.8). Despite the difference in column configuration, the target district's three columns (bachelor's, master's, and master's plus 30 credits) were common to all districts except two, whose closest columns were master's plus 36 and doctorate. The former was substituted for the master's plus 30 column; the latter was eliminated from the master's plus 30 comparison. (Note that the Commonwealth requires educators to complete their master's degree within five years of hire. Because of this requirement, analysis at the bachelor's level was restricted to the first five steps.)

The target district's salary columns were compared with the averages of peer districts using the six methods. Differences between the target and comparison districts are expressed as a

percentage; a positive percentage indicates a higher salary at the target district, a negative percentage indicates that the target district lags behind the average of the comparison district groups (Figures 1–3).
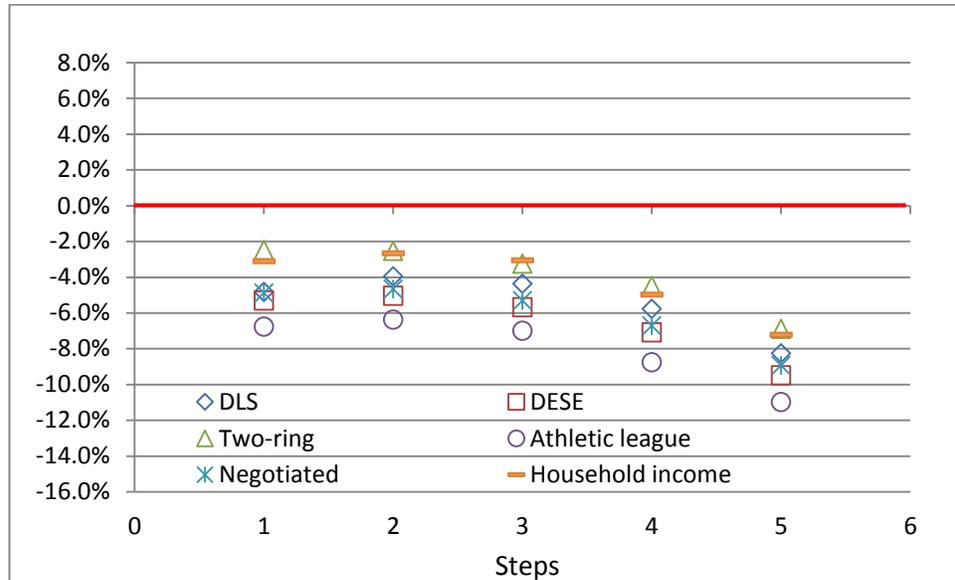

Figure 1. Percentage differences in 2014–15 between the target district's teacher salary steps and the average steps in the bachelor's column for six comparison district groups
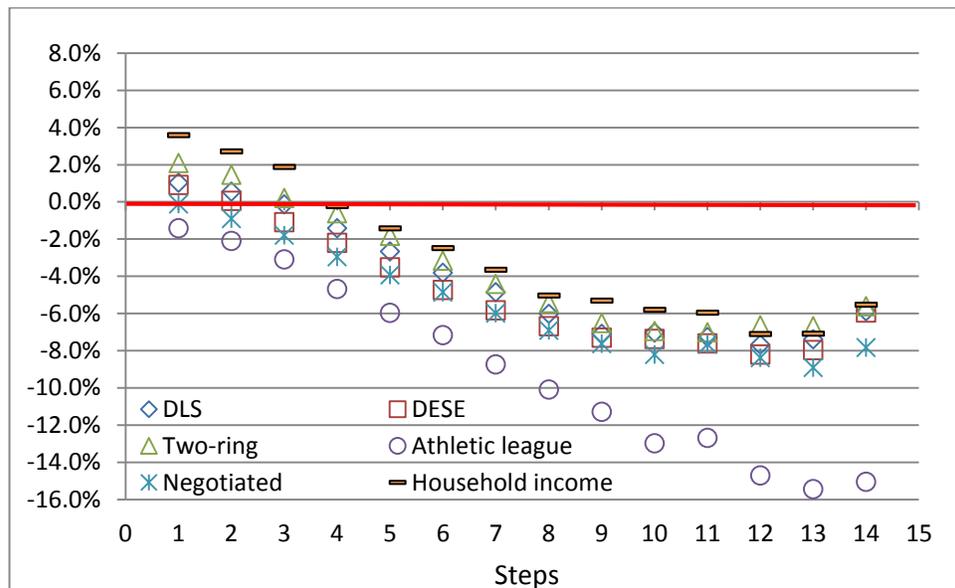

Figure 2. Percentage differences in 2014–15 between the target district's teacher salary steps and the average steps in the master's column for six comparison district groups
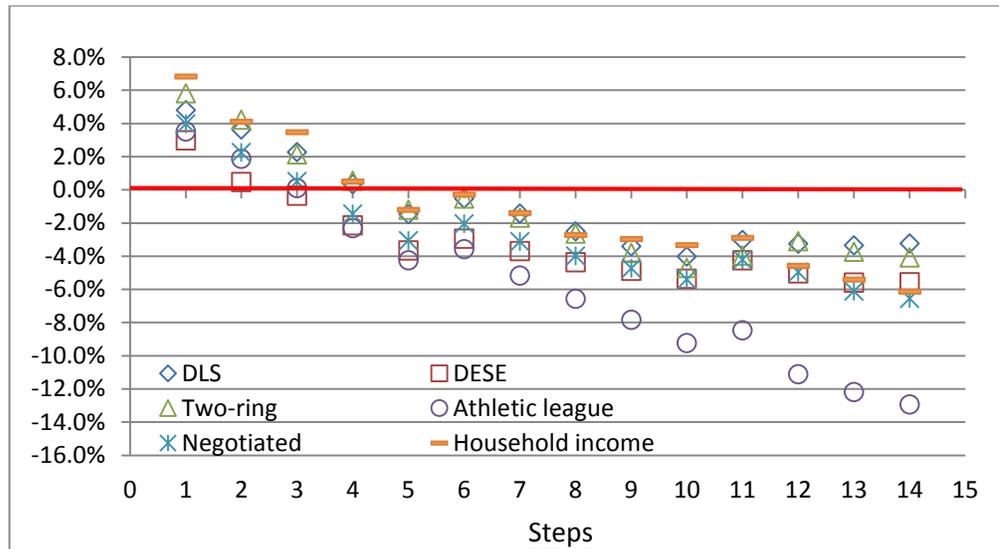
Figure 3. Percentage differences in 2014–15 between the target district's teacher salary steps and the average steps in the master's plus 30 column for six comparison district groups

Findings

The single-criterion athletic-league comparison is an outlier in the master's (M) column in steps 5 through 10 and in the master's plus 30 (M30) column in steps 8 through 14. Thus, it was eliminated from all comparisons. The gap between the target district (TD) and the comparison district groups indicates a steadily widening trajectory at the M level; this trajectory starts at step 4 where the TD's compensation level is less than half that of all five comparison district groups. The gap continues to widen until step 12, where the TD teachers are earning an average of -7.6 percent less than their peers at the five comparison districts.

The flattening at step 13 and the slight change at step 14 (-6.2 percent) are due to the decreased number of steps in the comparison groups. For example, at M12, the five comparison groups have an average of 11.2 steps; at M14 they have half that number (5.6). In order to extend the comparison to the 14 steps of the TD, salaries for missing steps were calculated to increase at the average rate of that district's column. Except for a small number of districts (15 percent), however, that have consistent between-step increases, the rate of step increases is not uniform. The average increase for M and M30 is 4.2 percent, but the ranges extend from 0.6 percent to 14.5 percent.

The data indicate variations among the three columns. Unlike the M and M30 columns, whose early steps compensate above the average of the comparison groups, all bachelor's column (B) steps fall below those of the comparison groups. Differences exist also between the degree to which the TD lags behind M and M30. Starting at steps 4 and 5 for M and M30, respectively, all comparison groups compensate at higher levels. The average difference is -5.6 percent at the M level and -3.5 percent at the M30 level. The difference between the M and M30 levels may reflect the multiple opportunities for educators in the peer districts to achieve higher salary levels through additional columns (6.8 average compared with the 3 in the TD).

Implications for Selecting Methods

All methods indicate that, except for the first four or five steps at the M and M30 levels, TD educators are compensated at levels lower than those of their peers. Although the average difference is negligible at the early steps, that difference exceeds 5 percent at B4, B5, and M7–M13. It also approaches -5 percent at M30-13 (-4.8 percent) and is -5.1 percent at M30-14.

The TD's capacity to adjust salaries to levels of comparable districts within the operational budget are constrained by a statute (Proposition 2 ½) that limits annual property tax increases to 2 ½ percent of the assessed value of taxable property. The statute does permit citizens to raise taxes beyond the 2 ½ percent limit through a ballot question. Passage of a ballot question to achieve salary equity with comparable districts depends on multiple factors. Chief among them are transparency and accountability, which form the basis of citizens' trust in government and have been linked to passage of operational overrides.[12]

A critical factor related to transparency and accountability is the elimination of the self-serving bias that is inherent in the selection of comparable districts. Research by Babcock, Wang and Loewenstein in Pennsylvania underscores the influence of this bias on both sides of the bargaining table. The researchers found that union presidents selected comparison districts whose average salary was 2.4 percent greater than that of the comparables selected by the school board president (p = .003).[13] They also noted that the 2.4 percent difference is more than twice the 1 percent gap between the typical final offers before strike activity in Pennsylvania during the period studied. Another consideration is the ability of municipalities to meet their obligation to negotiate in good faith and compensate educators at levels comparable to those of their peers, that is, the "ability to pay" criteria.[14] The accountability, self-serving bias, transparency, and ability to pay elements of each method were examined to assess which grouping best satisfies these conditions.

Accountability and Self-Serving Bias

Accountability and self-serving bias are inextricably linked. For example, though the single-criterion selection method is transparent because of its simplicity, to minimize self-serving bias, the selection must be justified in comparison with alternative methods. A comparison of the cumulative percentage differences between the average of fourteen steps of the three salary columns of the comparison district groups and those of the TD quantifies the self-serving bias (Table 2). A low cumulative percentage difference (household income and two-ring) would favor the cost-controlling interests of the municipality; a high percentage difference (negotiated and DESE) would favor the compensation interests of the employees. The DLS method is the midpoint between the two groups.

Table 2. Cumulative Column and Total Percentage Differences between Compensation Levels for the Target District and Five Viable Comparison District Groups

	Column			
Comparison district	Bachelor's	Master's	Master's+30	

groups*				Total
Negotiated	-30.5%	-76.0%	-38.9%	-145.4%
DESE	-33.6%	-67.4%	-44.4%	-144.4%
DLS	-27.2%	-59.6%	-15.2%	-102.0%
Two-ring	-19.6%	-51.1%	-16.8%	-87.4%
Household income	-21.1%	-41.5%	-16.3%	-78.8%

*Average of 14 steps.

Transparency

The best way to achieve transparency is to explain to the public how the comparison districts are selected. Of the five viable selection methods used in this study, the two-ring, the household income, and the DESE methods are the most easily explained, two-ring and household income because they use a single criterion, and the DESE because it is based on the expertise of the Department of Education. Thus, these two methods have the highest transparency. The negotiated method is the least transparent because it is constructed through collective bargaining processes under the protection of executive session. And though the DLS method, like the DESE method, uses a government-provided online tool, it produces more complex data. While the DESE tool generates a comparison based on the name of the municipality, the DLS tool uses five minimum/maximum filtering values. The use of standard deviations to select filtering values may be incomprehensible to most citizens and thus appear less transparent.

Ability to Pay

The municipality's level of wealth determines its capacity to compensate employees. The use of comparable communities for salary negotiation is mandated by the arbitration provisions of collective bargaining statutes in thirty-four states.[15] Because compensation is a budgetary concern, it is important that methods for selecting comparison communities include financial metrics to gauge the municipalities' capacity to compensate employees fairly—the ability to pay. Two of the five viable models considered, however, do not include measures of wealth: the DESE tool bases the selection of comparable districts on a specific student population, and the two-ring method bases selection on proximity to the target district.

Each of the three remaining groups included some measure of wealth. The negotiated method employed a filtering mechanism that included per capita income along with nonfinancial measures (student enrollment, total population, and Massachusetts Comprehensive Assessment System performance). The DLS method included Massachusetts Department of Revenue figures for per capita income along with indicators of the municipalities' capacity to fund increases in salaries. Population was the single nonfinancial metric.

The household income method relied on the American Community Survey section of the U.S. Census. It is interesting to note that the household income comparison had the smallest

difference in overall compensation levels from the TD. Research by Datta and Meerman suggests that household income may overstate income; they suggest using household income per capita.[16] Table 3 summarizes the key characteristics of each method.

Table 3. Key Characteristics of Methods for Constructing Comparable Communities

Method	Self-serving bias/ accountability	Transparency	Financial metric(s)/ ability to pay
DESE	Favors employees (-144.4%)	High: DESE online tool, single data value	None
DLS	Mid-point between five methods (-102.0%)	Medium: construction of five min/max values based on standard deviation may be difficult for public to comprehend	DOR* per capita income, average single-family tax bill, total municipal budget
Household income	Favors employer (-78.8%)	High: single data value	ACS** household income
Negotiated	Favors employees (-145.4%)	Low: comparison district groups negotiated in executive session	DOR per capita income
Two-ring	Favors employer (-87.4%)	High: based on proximity to target district	None

*DOR = Massachusetts Department of Revenue.
**American Community Survey.

Concluding Remarks

Using current salary scales, rather than average salary levels, to evaluate compensation equity yields a quantitative measure of the differences between potential comparable communities and a TD. The quantitative analysis provides ranking data to enable collective bargaining parties to minimize the self-serving bias and improve transparency in the decision-making process. Specification of clearly identified financial metrics gauges the capacity of the municipality to work toward achieving compensation equity for educators.

Future investigations into the construction of comparison communities should seek to establish minimum sample size. A minimum sample size would reduce the impact of the large fluctuations in many salary scales. It would also provide a higher level of sample integrity in the event that current-year salary data is in dispute. Other considerations for future study include determinations about the level and frequency at which salary should be adjusted to achieve equity with peer districts.

Notes

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