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**National Center for Education Statistics**

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*Selected Papers in  
School Finance,  
2000–01*

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**U.S. Department of Education  
Office of Educational Research and Improvement**

**NCES 2001–378**

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*Selected Papers in  
School Finance,  
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*William J. Fowler, Jr., Editor*

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**U.S. Department of Education  
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**NCES 2001–378**

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## *Dedication*

*In memory of William S. Myers,  
1925–2000*

This year's Selected Papers in School Finance is dedicated to William S. Myers. He spent his life as an economist, analyst, and finance specialist for many state and federal agencies. He firmly believed that a well-funded public education system is the cornerstone of the country's social, economic, and political structure. He received his Bachelor's degree from the College of Wooster and earned his Master's degree from the University of Kentucky.

In his final position, Will worked for the National Education Association in the research division as the manager of the school finance section. Much of his work promoted stable, adequate sources of revenue for public schools. In honor of his participation, work and accomplishments, the American Education Finance Association (AEFA) established the Will Myers Memorial Scholarship Award. The scholarship awards \$250 to two annual conference presenters who have been or currently are teachers.



## Foreword

*Jeffrey A. Owings, Associate Commissioner  
Elementary/Secondary and Libraries Studies Division*

The National Center for Education Statistics (NCES) commissioned the papers in this publication to address education finance issues of interest to the education finance community. These papers address how teacher compensation has changed over time; how to assess the financial condition of public school districts; two approaches to reporting school-level finance information; and how to make inflation and geographic cost adjustments in education. All four papers continue the NCES tradition of commissioning papers that address measurement issues of the education finance research community.

This compilation of papers is intended to promote the exchange of ideas among researchers and policymakers. Because the views are those of the authors, the papers may provoke discussion, replications, replies and refutations. If so, the publication will have accomplished its task, to raise the awareness of the finance community to new techniques for working with school finance data.



## Acknowledgments

The editor wishes to gratefully acknowledge the comments and suggestions of the reviewers: Marilyn M. McMillen and Karen O'Connor of the National Center for Education Statistics (NCES). I also wish to acknowledge the contributions of Su-

san Baldrige and Carol Rohr of Pinkerton Computer Consultants, Inc. who edited the manuscript, incorporated the text, tables, and graphics into a published document, and designed the cover.





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# Introduction and Overview

William J. Fowler, Jr.  
National Center for Education Statistics

## About the Editor

William J. Fowler, Jr. is the program officer of the Education Finance Program in the Elementary and Secondary Education and Library Studies Division at the National Center for Education Statistics (NCES), U.S. Department of Education. He specializes in elementary and secondary education finance and education productivity research. He is currently involved with devising a fast-response survey for school business officials to obtain an understanding of how energy costs are affecting school district fiscal health, and reporting the results in user-friendly language. He is also engaged in research regarding the equity and adequacy of resources for Kindergartners. His great passion is designing Internet tools for the NCES education finance web site at <http://nces.ed.gov/edfin>, as well as the graphic display of quantitative data.

Dr. Fowler has worked for NCES since 1987, before which he served as a supervisor of school finance research for the New Jersey Department of Education. He has taught school finance at Bucknell University and the University of Illinois,

and served as a senior research associate for the Central Education Midwestern Regional Educational Laboratory (CEMREL) in Chicago and for the New York Department of Education. He received his doctorate in education from Columbia University in 1977.

Dr. Fowler received the Outstanding Service Award of the American Education Finance Association (AEFA) in 1997, having served on its Board of Directors during the 1992–95 term, and has been re-elected for the 2001–04 term. He serves on the editorial board of the *Journal of Education Finance* and the *Educational Evaluation and Policy Analysis Journal* of the American Education Research Association. He formerly served on the Board of Leaders of the Council for Excellence in Government, and was a 1997–98 Senior Fellow. He was a member of the Governmental Accounting Standards Board (GASB) Advisory Committee charged with developing a *User Guide for Public School District Financial Statements*.



Selected  
Papers in  
School  
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*Introduction and Overview*



## Introduction and Overview

William J. Fowler, Jr.  
National Center for Education Statistics

The education finance community faces a wide variety of measurement issues. The first such measurement issue arises in trying to understand how teacher compensation has changed over time. Not only is there interest in comparing the change in teacher salaries to the change in benefits over time, but also how these changes in teacher compensation compare to changes for other comparable workers. Central to the measurement of how compensation changes over time is how to remove inflation from these changes. A second paper examines the conceptual and methodological approaches for making inflation and geographic cost adjustments in education. Inflation and geographic adjustments in education are a measurement issue in which the uniform acceptance of a particular approach remains elusive. A third paper discusses some tools of the trade for assessing the financial condition of public school districts. The final paper presents an attempt to devise a synthesis of two divergent approaches to school-level financial reporting, an admittedly difficult task. In the accounting approach, school-level reporting is simply a downward extension of reporting at the school district-level. The resource cost model, however, attempts to reflect actual differences in staff deployment, and the costs associated with that choice of staff allocation.

**Daniel D. Goldhaber**, of the Urban Institute, asks the reasonable question for the period from about 1980 to the present, “*How Has Teacher Compensation Changed?*” As Goldhaber acknowledges, the answer to this simple “...question is more complicated than one might initially imagine.” Although teacher salaries rose between 1980 and 1997 by 120 percent, that is only equal to a 19 percent increase once one removes inflation, or a little over a percent per year. This makes one wonder whether teaching, given changes in compensation, has become a less attractive occupation compared to comparable employment. To answer this question, Goldhaber uses data from the Bureau of Labor Statistics’ employment cost index (ECI) to make comparisons over time. His paper first provides an overview of the empirical literature—linking teacher quality and teacher compensation. Evidence abounds that teacher quality is the single most important school factor affecting student achievement. Most school districts have a salary schedule that is based on teacher experience and degree status, and teachers are placed on the salary guide in accordance with these two characteristics, although there is scant evidence they are correlated with student outcomes. Nevertheless, this appears to be a practice that is similar to other state and local government employ-



ees. Although some school districts pay signing or retention bonuses for teachers in specialty fields where recruitment is difficult, pay for performance efforts have been short-lived. Private education, in contrast, however, does seem to compensate teachers for performance, field of specialization, quality of college, and academic attainment, which may be related to student outcomes.

Goldhaber argues that it is difficult to assess changes in teacher salaries unless one also understands the effects of inflation and salaries in other occupations to which teachers may flee. Very little information is available to appraise teacher benefits over time. Only aggregate information is available. Also, most public school districts offer teachers retirement packages and medical insurance. Large majorities offer dental insurance and life insurance, although such in-kind benefits as meals, transportation, and tuition reimbursement are less common. Teachers roughly receive comparable employee benefits as those available to state and local government workers, which are far superior to the private sector.

Using a variety of inflation adjustments, Goldhaber examines the average salaries of teachers from 1987–88 to 1993–94, as well as using data collected by the Bureau of Labor Statistics (BLS). He uses these BLS data to show how average teachers' salaries have changed relative to salaries for all civilian workers, those in private industry, and those in state and local government, as noted:

Throughout most of the 1980s and 1990s the rate of increase of teachers' salaries exceeded that of other occupations...until very recently (1996–98) teaching increasingly became a (financially) more attractive field to be in throughout much of the last two decades.

However, Goldhaber finds that starting salaries in teaching have changed little in comparison to average salaries. In addition,

starting salaries in teaching have typically been far behind salaries in other comparable occupations. Since few school systems provide the flexibility to pay teachers for teacher attributes that matter, teachers who have the opportunity to flee for other advancement may do so. This situation, Goldhaber concludes, is unlikely to improve unless there is an increase in teachers' compensation.

While Goldhaber deals peripherally with inflation adjustments, **William J. Fowler, Jr.**, of the National Center for Education Statistics, and **David H. Monk**, Dean of the College of Education at Pennsylvania State University directly address two types of cost adjustment in education, inflation adjustments and geographic adjustments. Drawn from a larger work, this article attempts to summarize their book *A Primer for Making Cost Adjustments in Education*. Most people intuitively recognize geographic differences in costs and in measuring inflation. Everyone understands that a house in suburban Westchester, outside New York City, may cost more than the same house located in upstate New York. In addition, as a result of the work of the U.S. Department of Commerce, Bureau of Labor Statistics, development of the Consumer Price Index (CPI), most of the public understand that the present price of an automobile (now in the \$25,000+ range) has increased over time, so that the prices paid by our parents' (in the \$5,000+ range) seem incredibly reasonable. This does not mean that all the issues present with inflation, outside of education cost adjustments, have been resolved. Take, for example, the change in the price of the automobile over time. Quality changes may make comparability difficult. A 1984 automobile and a 2000 automobile have substantially different features, even for the same base price. Imagine the OnStar® system (a system of pushing a button and being connected via satellite to an assistance service), air bags or anti-lock brake systems, or an electronic stability program (ESP), which prevents skids. All of these automobile features were unavailable at any price in 1984.

One would think, based on these examples, that adjustments for inflation and geographic differences might be easily implemented in education. Alas, Fowler and Monk assert, the reverse is true. Since most of the costs in education are in personnel, rather than in things, which are easier to measure in terms of quality and quantity, measuring cost differences in education is even more difficult than measuring changes in, say, automobiles. Complicating the cost of education is that it can be defined as follows:

The minimum of what must be given up to accomplish some result. ‘Expenditure’ is different from ‘cost’ in that expenditures are not tied to results or outcomes and can exceed the minimum of what must be given up.

Fowler and Monk believe that cost adjustments, which are not now commonly employed in reporting expenditures either in different geographic regions, or over time, should become standard practice. Certainly a beginning teacher salary of \$35,000 means very different things in New Jersey in comparison to South Dakota. In addition, 10 years ago, a beginning teacher salary of \$35,000 would have been quite an incentive, while 10 years from now, it may be perceived as quite inadequate.

In a review of the attempts of several scholars to devise a geographic cost adjustment, Fowler and Monk explain that determining the relative cost of hiring and retaining comparable teachers requires not only adjusting for geographic cost differences that are outside of the control of a school district, but also holding constant those cost differences controlled by the school district. For example, crime, climate, and residential desirability are clearly not something the school district has control over. An example would be San Francisco, California and Anchorage, Alaska. Class size, the number of male hires versus female hires, and the credentials of a teacher are cost features a school district can influence.

Chambers has raised the notion of “hedonic” or amenities that should be taken into account. To understand amenities, one need only compare the school district of Princeton, New Jersey (which includes Princeton University) and Trenton, NJ—the state capital, only 5 miles away. There is a cache to Princeton, NJ. Its family-educated children, personal safety, excellently maintained facilities, and the prestige associated with being employed by the system leads many teachers to want to work there—even at a salary below some other school systems. However, Trenton, NJ is a typical urban school district—even with high teacher salaries the district has difficulty attracting and retaining teachers who are comparable to those in Princeton.

Adjusting for inflation differences in education may be easier, however, than adjusting for geographic differences. Most of the inflation adjustments yield similar results (the exception being Rothstein’s). On the other hand, there may have been quality substitution changes in education that are comparable to those suggested above for automobiles. If so, additional work is needed in understanding what the effect of those quality changes has been. Fowler and Monk conclude that there are two primary goals for the future of education cost adjustments: improving the mechanisms for making the adjustments, as well as educating the public and policymakers about any progress that has been made.

Another of the troubling measurement issues facing the education finance community is how to assess the financial condition of public school districts. **Dean Michael Mead** of the Governmental Accounting Standards Board (GASB), first defines financial condition in a broad manner:

Financial condition is the ability of a school district to meet its obligations as they come due and to finance the services its constituency requires.

Many things, including the health of the local economy, the wishes of the citizens, and the school district's political landscape, determine this "barometer" of a school district's fiscal health. Mead provides an overview of the financial information to consider when determining a school district's financial condition, particularly information from a district's annual financial statements.

The first tools that Mead considers are common-size ratios, such as the percentage change and percentage distribution. For example, did outstanding debts grow or shrink? Was state aid a larger or smaller share of revenue? These provide a quick overview of the finances of a district and how they have changed. Another concern is liquidity and solvency, the school district's ability to pay its bills in the short and long run, respectively.

The current ratio (assets/liabilities) can be used to assess the district's ability to raise resources to cover its obligations. A more rigorous approach to liquidity (ability to pay bills in the short run) might be the quick ratio, which compares only the most liquid assets of a school district (cash), to its liabilities. Some districts do not include any long-term debt in their quick ratio. The determination of what is an acceptable level of liquidity is subjective, but 1.0 leaves no room for unforeseen demands for cash. Thus, most prudent people would require a quick ratio of 1.5 or greater.

Solvency ratios come in two forms, leverage ratios and coverage ratios. Leverage is the degree to which a district's assets are financed through borrowing and other long-term obligations. For example, a debt-to-net asset ratio of .55 means that for every dollar of resources the district has available to use for providing public services, it owes 55 cents.

Fiscal capacity is the concept of a district's ability to raise resources to finance the provision of the services its constituency demands. These ratios compare revenues, expenses, and outstanding debts with in-

dicators that imply a constituency's ability to pay for services. Property tax revenues per \$100 of assessed value, or an effective tax rate are examples. The risk and exposure of school districts can be measured through revenue dispersion. For example, if most of a school district's funds come from the state, it is more vulnerable to the shock of a reduction from the state.

Mead concludes that the financial statements are only one source of information that is relevant to assessing a school district's finances. School district employee pensions, often the largest long-term obligations, may not appear in these reports. In addition to knowing a district's capacity to raise resources and to provide services it is also important to know its willingness to do so.

A new development in education finance has been a focus on school-level resources. Traditionally, financial reporting has been a school-district level responsibility, whether to the federal government, the state, or to the public. However, more than a third of states (19 states) now report that they require school-level expenditure reporting. Since there are some 83,000 regular public schools in the United States, one can quickly see the difficulty of even the federal government collecting and reporting their finances. Typically, the method for school-level financial reporting is a simple downward accounting extension (DAE) of what is done at the school district level. **William T. Hartman**, Pennsylvania State University, **Denny G. Bolton**, Owen J. Roberts School District, and **David H. Monk**, Pennsylvania State University, explore the traditional DAE method with an alternative method of financial reporting, the resource cost model (RCM), which focuses on the use of resources (particularly staff allocation). They then go on to suggest a synthesis of the two approaches.

The first question that Hartman, Bolton, and Monk address is the consideration of who will be the primary users of school-level data, what new data they need, and for what purposes. They suggest four sets

of principal stakeholders: schools and school districts; state and national policymakers; researchers and policy analysts; and the public, represented by parents and taxpayers, special interest groups in education, and the financial community. One of the primary responsibilities of school and school district administrators, as well as school boards, is fiscal management and financial compliance. School-level data would allow state and federal agencies to monitor the achievements of schools in closer detail.

Hartman, Bolton, and Monk find school-level data of three main types: actual expenditures and costs, staff, and students. Frequently, schools do not integrate these school-level databases into a single, comparable database. Unfortunately the availability of staffing data and the ability to track staff information to the school level will vary by state and school district. Staff information usually includes assignment, location, professional qualifications, current salary and benefits. Student data is typically enrollment, although performance measures are becoming more common. The typical financial reporting scheme is function (i.e., instruction), by object (i.e., salaries), and program (i.e., special education) (Fowler 1997).

The DAE approach reports expenditures at the level of *individual schools*. The RCM approach uses an economic basis for establishing costs of *educational programs*. Hartman, Bolton, and Monk assert that “both the accounting approach and the RCM approach face common issues that need to be resolved regardless of which system would be utilized.” These include the definition of a school; what is included in expenditures; how to conduct allocation procedures, for example, when a principal also teaches two classes a day; counts of the number of students served, and perhaps their learning outcomes. However, Hartman, Bolton, and Monk also find areas of differences between the RCM and DAE approaches, including whether to focus on expenditures or staffing resources,

the unit of analysis (school or classroom), the timing of the data collection, the difficulty of the collection (RCM is generally regarded as the more difficult approach), startup costs and ongoing collection cost burdens, and the usefulness and limitations for analysis.

In order to achieve a synthesis of the two approaches, Hartman, Bolton, and Monk sagely focus upon the positive aspects of each approach while avoiding some of the difficulties of each. The DAE approach is recommended for obtaining expenditure data at the school level. The RCM approach is recommended for collecting school-level staff data. They do not recommend that district level expenditures, such as busing students, be allocated to schools, but, rather, simply not reported at the school level, stating:

Along with student data, the accounting and RCM approaches provide many more opportunities for perceptive and beneficial uses of the data than either approach alone.

In summary, Hartman, Bolton, and Monk assert that the synthesis of DAE and RCM results in both financial and personnel resource information at the school level. Having school-level expenditure information permits management control over operations and comparisons among schools. Personnel allocations yields program costs and operations, as well as effectiveness. The DAE approach fits the needs of school and district administrators and school boards to maintain fiduciary responsibility for public funds. The RCM approach permits insight into the effectiveness of different instructional approaches and their costs. The use of both approaches permits the attainment of all of these financial reporting objectives.

As always, readers are urged to visit the NCES elementary-secondary education finance Web site, <http://nces.ed.gov/edfin> for the latest NCES publications and information in the area of school finance.

## References

Fowler, W.J. 1997. *Financial Accounting for Local and State School Systems, 1990*. Washington, DC: U.S. Department of Education, National Center for Education Statistics (NCES 97-096R).