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Misleading the Taxpayer:

The Per-Pupil Expenditure Dilemma

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Misleading the Taxpayer: The Per-Pupil Expenditure Dilemma

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Abstract

Reporting timely and valid school-district performance data to parents and taxpayers is an important fiduciary responsibility of school boards. Although there are many measures for communicating performance, the most commonly used metric is per-pupil expenditure. The per-pupil measure is simply a *financial* ratio; it does not incorporate return on investment outcome data (such as graduation rates, state test scores, and student demand for special-needs services) that are necessary for a valid performance measure.

Because this metric can be computed in myriad ways, taxpayers do not really know how much districts spend on each student. Confounding matters, districts routinely underestimate per-pupil spending in their most publicly accessible report, the statutorily-required *User-Friendly Budget*. Through extensive statistical analysis of state and federal reports, this paper explores the ways in which taxpayers are misled through differences in New Jersey’s per-pupil spending measures, and identifies the scope of and possible reasons for the school districts’ budget underestimation.

We strongly recommend the review of the complete statistical analysis for this paper, which is available on the Common Sense Institute of New Jersey website at <http://www.CSINJ.org/SchoolSpending>.

NOTES

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Summary

Each year, New Jersey taxpayers have the option to vote directly on one, and only one, spending package—their local school budget. Prior to the budget vote, school districts are required to publish a *User-Friendly Budget* (UFB) to ensure that taxpayers understand how much their district proposes to spend per pupil. This budget has been used by voters to compare their local spending to other districts.

The Common Sense Institute of New Jersey has found that taxpayers are misled by the *User-Friendly Budget*, and therefore do not have adequate information when casting their school-budget votes. School districts may not be doing anything intentional, but existing law caters to the idea of fairness to districts in comparing themselves to each other to the detriment of giving taxpayers the clearest picture possible of how their money is spent. The dizzying array of definitions that are not made readily available, combined with optimistic budgeting, has misled New Jersey’s taxpayers.

This report identifies two alarming trends: first, it continues a literature-supported investigation into how the per-pupil expenditure metric can be misleading, and second, it identifies a statewide pattern of underestimating projected per-pupil expenditures in school board communications to the public.

Although the per-pupil expenditure is nothing more than a simplistic financial ratio, it has become the de facto measure for total school performance. Unfortunately, it is a weak measure for this purpose, and we recommend state funding for important productivity and integrated performance research.

The recent introduction of the *Taxpayers’ Guide to Education Spending*, published by the New Jersey Department of Education, and its Total Spending Per Pupil variable has enlightened the public to the “true cost” of education because the per-pupil expenditure measure in this report includes expenditures that are paid directly by the state and that are not provided in other district- or state-generated reports – chief among these exclusions are capital expenditures for building, health and pension costs, and debt service costs. When comparing the *Taxpayers’ Guide* to the 2010 *User-Friendly Budget* revised data, the differences in spending are quite large.

Some of our report’s findings include:

- In 379 of the 549 districts studied, or 69 percent, the difference between the *User-Friendly Budget* and *Taxpayers’ Guide* figures was greater than \$3,000 per pupil, and in 142 districts the difference was between \$1,000 and \$2,999 per pupil. The mean difference was \$3,590 per pupil.
- Only 28 of New Jersey’s 549 districts, or 5.1 percent, identified a per-pupil difference of less than \$999, and very few were close to \$0 difference.
- Lakewood Public Schools had the largest underestimation at an astounding \$10,566, followed by South Hunterdon Regional at \$10,337.
- Regional school districts represented 4 of the 10 largest differences, despite representing only 13 percent of the 549 districts in the study.

- In New Jersey’s 549 general operating districts, *Taxpayers’ Guide* Total Spending Per Pupil ranges from a low of \$12,146 (Rockaway Boro) to \$40,152 (Avalon Boro)—a staggering \$28,000 difference.

Based upon the above findings and other data presented in this report, it is obvious that true per-pupil expenditures are higher than what districts have been reporting. CSI-NJ recommends legislation to standardize and increase the accuracy of the numbers reported to the public by incorporating all spending and dividing it by enrollment.

More disconcerting than the lack of a standardized per-pupil expenditure measure is that school boards have a very high propensity to underestimate next year’s expenditures. In 82 percent of the districts analyzed, districts projected spending reductions that were not supported by historical expenditure, enrollment, and contractual data. Although taxpayers will not know the results of the districts’ underestimation until the end of the 2011–12 school year, it is statistically improbable for most of these districts to not spend more than they projected.

What taxpayers do know is that in the past year, district audit figures show that districts’ actual spending exceeded what was advertised prior to the budget vote and in the *Report Card* generated by the Department of Education. The chart below highlights districts with audits that show per-pupil spending in excess of \$20,000 and shows how the audit figures compare to other reported figures.

District Name	Type	Taxpayers’ Guide 2010	Audit 2010	Report Card 2010 Comparative	Report Card 2010 total	User – Friendly Budget 2010 original	User-Friendly Budget 2010 revised	Comparative Spending Guide 2010
SEA ISLE CITY	K–8	\$25,766	\$40,000	\$33,821	\$29,679	\$33,821	\$32,531	\$33,821
CRANBURY TWP	K–8	21,033	20,684	17,750	20,140	17,750	17,843	17,750
ASBURY PARK CITY	K–12	29,819	39,149	24,306	22,495	24,306	26,782	24,306
HOBOKEN CITY	K–12	24,092	31,525	21,859	18,726	21,859	21,845	21,859
WATERFORD TWP	K–12	15,931	30,510	13,825	15,108	13,825	14,353	13,825
CAMDEN CITY	K–12	23,770	28,456	17,336	16,850	17,336	19,478	17,336
NEWARK CITY	K–12	22,992	27,498	16,913	17,515	16,913	19,951	16,913
TRENTON CITY	K–12	21,038	26,805	16,481	16,390	16,481	16,884	16,481
ATLANTIC CITY	K–12	24,142	26,389	18,650	19,326	18,650	18,770	18,650
JERSEY CITY	K–12	21,824	23,406	17,368	17,249	17,368	17,582	17,368
TEANECK TWP	K–12	22,942	23,100	18,479	20,341	18,479	17,868	18,479
PEMBERTON TWP	K–12	22,190	23,029	18,882	20,594	18,882	19,801	18,882
DELAWARE VALLEY	REG	19,026	21,021	14,843	17,211	14,843	15,057	14,835
ELIZABETH CITY	K–12	21,952	20,732	16,242	17,507	16,242	15,893	16,242

* Sea Isle City has 77 tuition-paying students at \$1.5 million, or \$19,481 per pupil, in addition to the above.

** Cranbury Township has 269 tuition-paying students at \$5.4 million, or \$20,074 per pupil, in addition to the above.

*** REG stands for “regional,” that is, a middle or high school that combines students from several elementary (K–6 or K–8) districts.

Taxpayers are not given a complete picture of how much their districts spend before they enter the voting booth, and they are all too often presented with an optimistic per-pupil spending figure. A diligent taxpayer who wishes to check these projections against last year’s figures is given even more conflicting information when they check their school’s *Report Card*. New Jersey taxpayers deserve better. *Misleading the Taxpayer* explains how the misrepresentation occurs and proscribes a legislative fix for it.

Introduction

In 2010, New Jersey's local, state, and federal expenditures for its public Pre-K–12 system totaled \$24.1 billion dollars, nearly four times more than the \$6.3 billion spent by county government and almost two times more than the \$12.2 billion spent by municipal government.¹ School costs account for an average of 60 percent of local property tax bills, and they would require 96 percent of the state's total property tax levy of \$25 billion without direct state and federal appropriations.² Providing taxpayers with valid and understandable expenditure measures is critical to gaining their continued support for this most-costly government service. The U.S. Census Bureau reports that New Jersey spends 54.9 percent more per pupil than the national average: \$16,271 vs. \$10,499.³

Past per-pupil expenditure reports have been problematic on a number of levels, beginning with why government agencies need several reports to present expenditure data for a single category. State reports—the *Report Card*, the *Comparative Spending Guide*, and the *User-Friendly Budget*—provide wildly inconsistent per-pupil expenditure data. Federal data from the National Center for Education Statistics' Common Core of Data are consistently different from state-reported measures, and neither state nor federal reports provide clear definitions of which expenditure categories they include and what computation methodology they use in their per-pupil calculations. All these inconsistencies create a crazy quilt of confusion and preclude the ability to have an honest comparison of the quality v. cost of education here in the Garden State.

The New Jersey Department of Education's new *Taxpayers' Guide to Education Spending* introduces an improved level of school-expenditure transparency.⁴ This report's Total Spending Per Pupil metric is the state's first non-comparative per-pupil measure that includes many expenditures the state pays directly,⁵ such as capital construction and costly health and pension contributions for current and retired district employees.⁶ The exclusion of direct state contributions to these expenditures from earlier comparative reporting formats continually misled taxpayers on the true total cost of education. To use only comparative costs would be the equivalent of excluding mortgage payments from a family budget because some families in your neighborhood rent their homes.

The addition of the new *Taxpayers' Guide* report adds to the confusing array of statistics presented to taxpayers, however, and each statistic tells a different story. These varying statistics impede taxpayers' ability to judge whether their financial sacrifices, be they from local property taxes or from other taxes,⁷ match reasonable school-performance standards.

Also, the *Taxpayers' Guide* is just one of several reports providing per-pupil spending data. Other state, district, and federal reports publish a number of comparative per-pupil spending metrics, including expenditures for instruction, support services, administration, and operations and maintenance.

With so many different numbers to choose from, which ones, if any, should taxpayers believe?⁸

Another major problem is that school districts tend to underestimate future spending, and taxpayers may be outright misled by the school districts' annual *User-Friendly Budget* because of its tendency to present significant but unrealistic per-pupil budget reductions. The current state of contractual obligations combined with declining enrollment in many districts means a per-pupil reduction is highly unlikely in most districts.

In addition, this paper demonstrates that the grouping (or in statistical terms, clustering) methodology used impacts the range of variance displayed. The long-utilized District Factor Group (DFG) variable, which clusters districts based on socioeconomic factors, has influenced funding at the state level, and over time it has removed significant expenditure variation in the DFG populations. This removal is done at analytical peril, because expenditures are not necessarily correlated to socioeconomic or student-demand factors. The ongoing battle over the NJ Supreme Court's "Abbott Decision" is the egregious example where mostly urban poorer districts are mandated to receive additional state taxpayer aid to bring their per student spending up to the levels of the highest spending suburban districts while comparable districts that don't hold the special designation must do without the extra aid support.

Key Findings⁹

This research paper describes both the scope and scale of the underestimation problem, identifies patterns of misreporting by district type, and highlights policy solutions that will bring greater transparency to public-education spending and greater clarity to New Jersey's taxpayers.

This report's key findings are as follows:

- Definitional differences among four state measures of per-pupil spending, and between the state and federal government measures, create a confusing set of statistics for taxpayers. This is compounded by the fact the definitions are not readily available to the public or policy researchers.
- While only 12 percent of districts actually experienced per-pupil spending reductions during the last two years, 82 percent project per-pupil expenditure reductions in 2011.
- With 62 percent of districts showing enrollment declines from 2009 to 2010, and with mandatory employee contractual terms driving increased spending, a widespread reduction in per-pupil spending is highly improbable.
- Districts tend to project a smaller change when predicting higher per-pupil spending than they do when they project lower per-pupil spending.
- For the 549 general operating districts, which exclude the 106 special service, vocational, and charter districts, *Taxpayers' Guide* Total Spending Per Pupil ranges from \$12,146 (Rockaway Boro) to \$40,152 (Avalon Boro).¹⁰
- The newly developed *Taxpayers' Guide* is supposed to be a more realistic measure of taxpayer costs, but compared to the more comprehensive independent audit and federal measures, it still does not include all costs.
- New Jersey's tradition of home rule allows many districts to operate with enrollments of fewer than 500 (or in some cases, 200) students.¹¹ In these districts, slight variations in enrollment can have a major effect on per-pupil expense metrics.
- The District Factor Group (DFG), a socioeconomic measure,¹² provides considerably less information on spending variation than do the operating type and enrollment size

clusters.¹³ In fact, all three measures are weakly correlated to spending.¹⁴

There is a great tendency for small, wealthy, regional districts to spend more per pupil than the large, poor, former Abbott districts.¹⁵ This tendency calls into question the strategy of encouraging a regional district structure to achieve savings through administrative consolidation.

Recommendations

The state should mandate that all districts adhere to a uniform reporting format. The following standards would bring greater clarity to New Jersey's taxpayers:

- Utilize the new *Taxpayers' Guide to Education Spending* Total Spending Per Pupil and Budgetary Per Pupil Cost statistics as the mandatory format for reporting school budget information.
- Eliminate or coordinate the *Report Card* and *User-Friendly Budget* finance sections with the *Taxpayers' Guide* to ensure consistency in actual measures.
- Develop a state-defined uniform productivity measure that integrates outcomes (such as graduation rates, state test scores, and demand for special-needs services) and expenditure data on the above education reporting formats, and publish this information on all budget documents and property tax bills.
- Require statements by independent auditors that the district per-pupil expenditure projections for future years are reasonable given longitudinal and current operational evidence.¹⁶
- Consider using the Cato Institute's proposed Financial Transparency in Education Act as a template for mandated transparency and consistency (see appendix 1).

The "Total" Cost of New Jersey's Public Education System

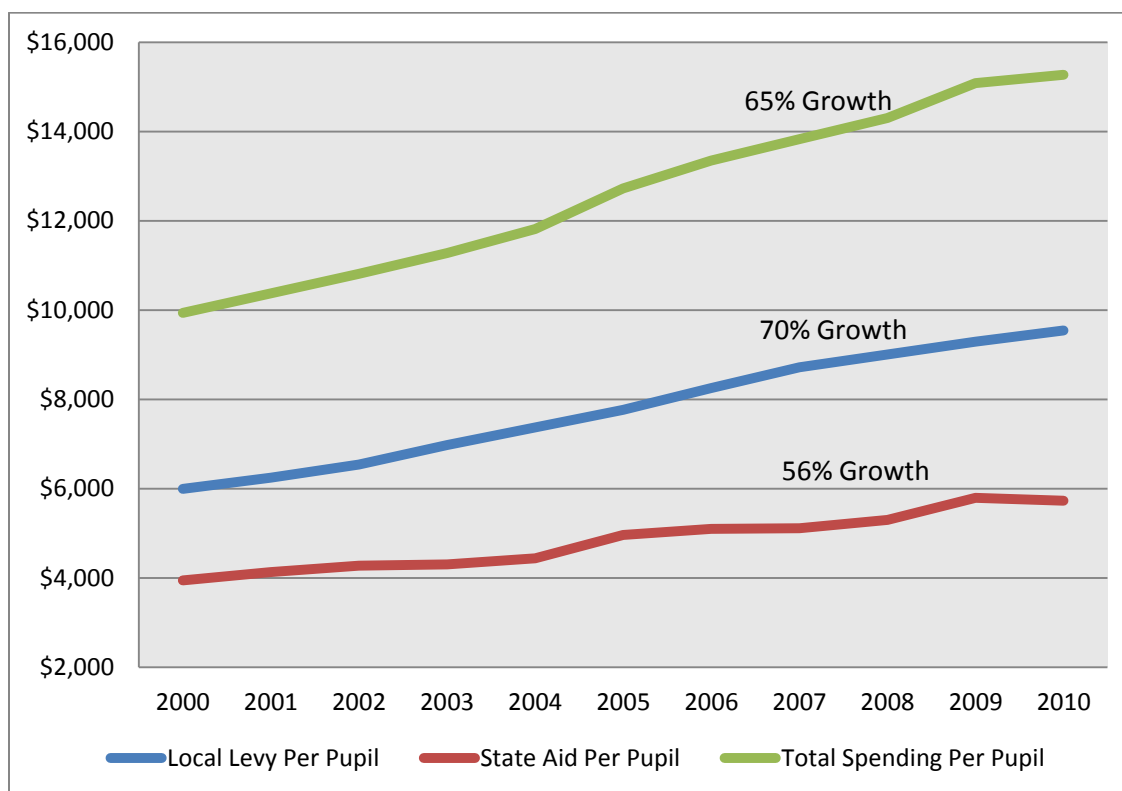
In 2009,¹⁷ federal, state, and local spending on U.S. public education totaled \$591 billion, up 1.5 percent from the previous year.

- State expenditures accounted for \$276.2 billion (46.7 percent of the total).
- Local expenditures accounted for \$258.9 billion (43.8 percent of the total).
- Federal expenditures accounted for \$55.9 billion (9.5 percent of the total).¹⁸

Education spending thus represents a significant investment by taxpayers; in fact, the amount is equal to 87 percent of what the United States spent on defense in 2009 (\$680 billion).¹⁹

New Jersey's per-pupil expenditures and taxpayer contributions place our state at the top of education spending. In fact, New Jersey alone accounts for 4 percent of total public education spending in the United States yet only 2.8 percent of public-school enrollment.²⁰

Figure 1: Per-Pupil School Tax Levy and State Aid Growth



Sources: New Jersey Department of Education State Aid Summaries 2000-2010
 New Jersey Department of Community Affairs. Local Government Services Municipal Tax Levy 2000-2010

Figure 1 identifies New Jersey’s state aid and local school tax levy contributions to public education.²¹ Since 2000, state aid has grown by 56 percent per pupil, while the local school tax levy has grown an astonishing 70 percent, for a total increase of 65 percent.²² The levy is calculated using projected budget requirements, expected federal and state funding, and assessed valuation measures.

To put the \$24.1 billion that New Jersey spent on public education in 2010 in perspective, total municipal spending was \$12.2 billion and county spending was \$6.3 billion.²³ That year’s statewide property tax levies totaled \$25 billion, up 4 percent from the previous year, and the average residential property tax bill was \$7,576 (up 4.1 percent).²⁴ Neighboring states recorded significantly lower local property tax contributions for public schools than New Jersey:²⁵

- New Jersey: 55.5 percent
- Pennsylvania: 54.2 percent
- Maryland: 51.4 percent
- New York: 48.0 percent
- National average: 43.8 percent

Today, New Jersey's 591 public school districts spend two times as much as the state's service-burdened 566 municipalities and four times as much as the state's 21 county governments. New Jersey's entire property tax levy of \$25 billion is barely enough to support the public schools, and with budget and tax caps, our state tax levy's 4 percent growth rate cannot support the larger education expenditure growth rates unless taxpayers accept ever-increasing burdens by locally overriding the property tax cap.²⁶ In fact, of New Jersey's total local spending of \$42.6 billion, a staggering 55.5 percent is directed to school districts.

The Per-Pupil Expenditure Dilemma

Over the last 18 months, several prominent think tanks have reported on the underestimation of public school per-pupil expenditures and the increase in actual expenditures.²⁷ However, any dialogue about per-pupil spending must transcend the mere presentation of spending data and become *prescriptive* for policy. Policymakers must be made aware that the per-pupil expenditure metric in its present form is arguably one of the least capable of assisting in systemic policy decisions, not only because of its inaccuracy as a financial measure, but because of its *definition inconsistency* and *incompleteness*.

From a definition inconsistency perspective, taxpayers in New Jersey have their choice of four state-derived measures and at least one federally derived measure of per-pupil spending.

State Measures

- ***New Jersey School Report Card (RC)***: A 1995 state law mandates this report, which “presents thirty-five fields of information for each school in the following categories: school environment, students, student performance indicators, staff, and district finances.”²⁸ Among other statistics, the *Report Card* presents both comparative costs and total costs per pupil. The comparative measure includes expenditure categories representative of districts of similar budget type, and the total measure includes all comparative costs and tuition expenditures, transportation, other current expenses, equipment, facilities/acquisition, and restricted expenses. **This measure routinely underestimates per-pupil costs, and should be used by taxpayers with extreme caution**
See <http://education.state.nj.us/rc/rc10/menu/01.html>.
- ***Taxpayers' Guide to Education Spending (TG)***: This report was formerly called the *Comparative Spending Guide* (CSG). Its Total Spending Per Pupil metric, which is new in 2011, provides a more inclusive picture of district expenditures by factoring in state expenditures on behalf of the districts, Budgetary Per Pupil Cost, pension and Social Security payments, capital outlays, debt service, judgments, and special revenues (e.g., preschool, Title I, and IDEA). **While failing to always depict accurate per-pupil costs for all school districts, this is the best tool currently available to taxpayers.**
See <http://www.state.nj.us/education/guide/2011/district.shtml>.
- ***User-Friendly Budget (UFB)***: School districts prepare this statute-defined report, which is a short-form accounting of major revenue and expenditure categories and the primary method for communicating budget information to the public.²⁹ The document “requires officials in each school district to place a ‘user-friendly’ summary of their proposed budget on the district’s website (if one exists) following the public hearing on



the budget and prior to the school election in April.” After the election, a final user-friendly summary of the final budget must be posted on both the district’s website and the New Jersey Department of Education (NJDOE) website. The budget communicates the advertised per-pupil cost calculations for each school district and includes the 2008 actual, 2009 actual, 2010 original,³⁰ 2010 revised, and 2011 proposed budgets. In an effort to compare districts uniformly, this measure has been the primary tool responsible for misleading taxpayers.

See <http://www.state.nj.us/cgi-bin/education/finance/budgets.pl>.

- **Independent Audit:** Formally known as the *Consolidated Annual Financial Report* (CAFR), this report is a comprehensive presentation of a school district’s finances that must be completed each year and approved by both the respective school board and the NJDOE. This report includes detailed information on revenues, expenditures, and assets. It also provides statistical background information on trends, revenue capacity, debt capacity, and general operating information. This document is not geared toward taxpayers. In addition, it does not present a per-pupil expenditure metric directly; this figure must be calculated. This measure will give taxpayers a complete account of their district’s spending, but data contained within it can be easily misinterpreted by concerned citizens and professional researchers alike. See <http://www.state.nj.us/education/finance/fp/cafr/search/>.



Federal Measures

- **National Center for Education Statistics (NCES) Common Core of Data:** The NCES annually collects fiscal and nonfiscal data about all public schools and districts. The most recent data available are from the 2008 school year. The fiscal data include computed statistics for Total Expenditure and Total Current Expenditure on a per-pupil basis. See <http://nces.ed.gov/ccd/districtsearch>.

Each of these data sources presents a different per-pupil expenditure metric for the same district, same year, and same total and minor expenditure classification. Districts include and exclude certain spending categories in an attempt to make apples-to-apples comparisons across districts and to avoid penalizing districts with unique expenses. For example, a geographically larger rural district requires significantly more busing, which means that district has significantly higher transportation expenditures than a geographically smaller suburban community.

Taxpayers in New Jersey (and nationwide) are becoming accustomed to the per-pupil expenditure metric as the prime measure of school-district performance, yet this measure does not incorporate outcome data such as graduation rates, state test scores, and demand for special-needs services.³¹ Outcome data should not be separated from expenditure data, particularly when evaluating school-district financial performance.

The dilemma that school districts and taxpayers now confront is that because per-pupil spending (if it is reported accurately) is the only uniform basis by which taxpayers can compare interdistrict spending, the per-pupil expenditure metric is here to stay, possibly in its present form(s) without outcomes integration. The challenge is how to increase its usefulness.

Lessons Learned from the *Taxpayers' Guide to Education Spending*

New Jersey's public school districts are diverse in terms of population density, socioeconomics, student ethnicity, enrollment size, and outcomes. However, their greatest diversity lies in how they spend taxpayers' money on students.³²

For the 549 general operating districts (which exclude special service, vocational, and charter districts), per-pupil expenditures range from \$12,146 (Rockaway Boro) to \$40,152 (Avalon Boro).

New Jersey's largest and poorest school districts, the former Abbott classified, have a per-pupil expenditure range of \$17,065 (Millville) to \$29,819 (Asbury Park), while the wealthiest districts, the District Factor Group J classified,³³ range from \$14,929 (Haddonfield) to \$24,404 (Harding Township). Even the smallest districts, with fewer than 200 students, have a large range, from \$14,165 (Bloomsbury Boro) to \$28,576 (Alpine).

The state's K–8 districts range from \$12,426 (Rockaway Boro) to \$40,152 (Avalon Boro); the K–12 districts range from \$13,373 (Point Pleasant Boro) to \$29,819 (Asbury Park); and the regional districts (7–12) range from \$14,711 (Kingsway) to \$31,800 (South Hunterdon Regional).

The Asbury Park school district is routinely identified as one of the highest-spending districts in the state, but its expenditure metrics differ widely by report, as figures 2 and 3 show. Depending on the reporting source utilized, Asbury Park's per-pupil expenditures ranged from \$22,090 to \$39,149, a difference of \$17,059. Figure 2 depicts the wide variation in per-pupil expenditure among several report formats and identifies three reports (NCES, *Taxpayers' Guide*, and the independent audit) that show significantly increased spending compared to the *User-Friendly Budget*.

**Figure 2: Variations in Reported Per-Pupil Expenditures:
Asbury Park District³⁴**

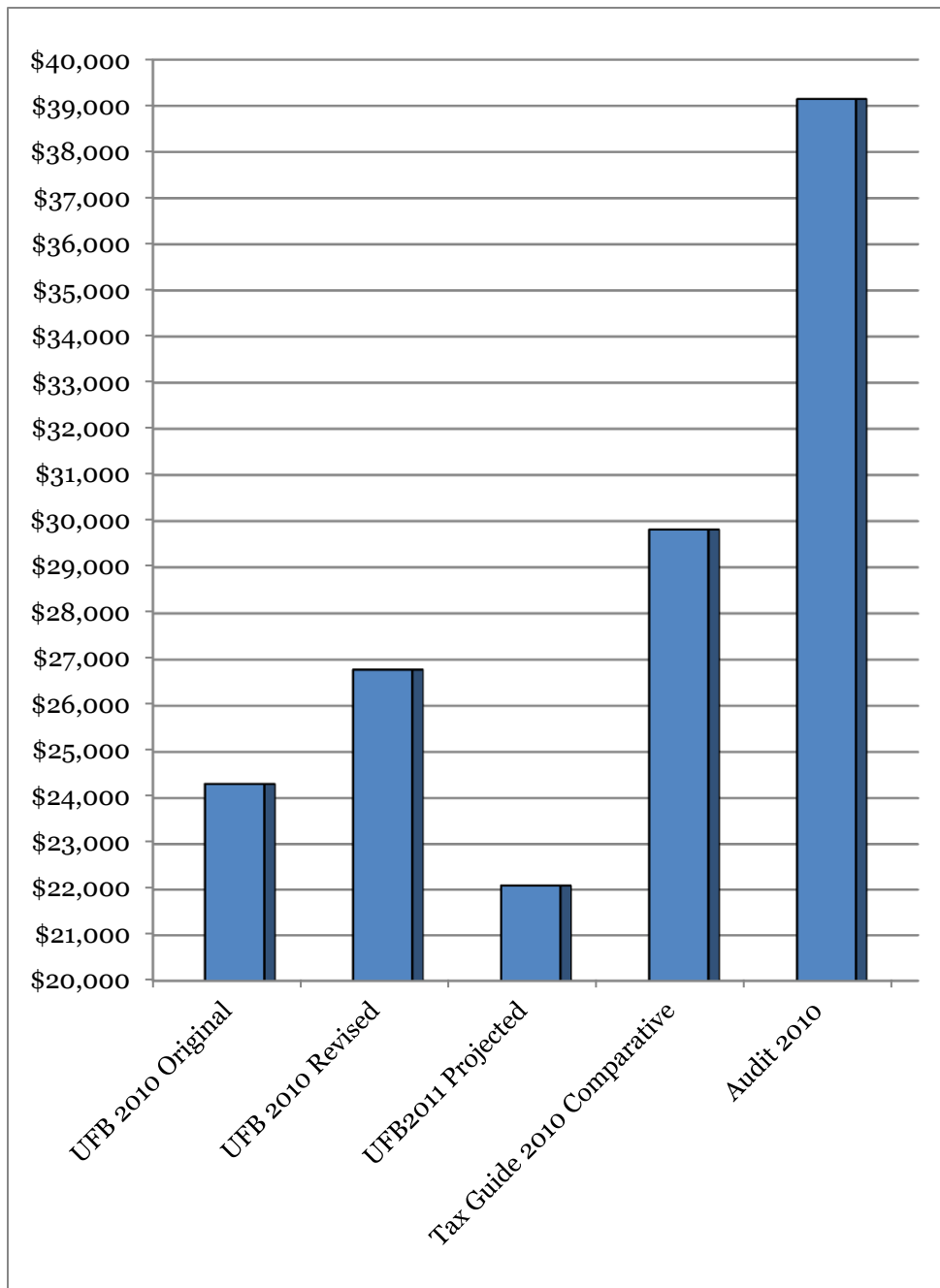


Figure 3 identifies how Asbury Park reported its expenditures to the public in the *User-Friendly Budget*.

Figure 3: Variations in Reported Per-Pupil Expenditures, Asbury Park District	
<i>User-Friendly Budget 2011</i>	\$22,090
<i>User-Friendly Budget 2010 Revised</i>	\$26,782
<i>User-Friendly Budget 2010 Original</i>	\$24,306
<i>User-Friendly Budget 2009 Actual</i>	\$24,548
<i>User-Friendly Budget 2008 Actual</i>	\$27,489

Taxpayers Beware . . . the Report Card

The annual *Report Card* has been the most widely communicated document for most taxpayers. Like the *User-Friendly Budget*, it presents district-derived comparative per-pupil expenditure data. However, when comparing these two reports, revised for UFB, no districts had the same per-pupil expenditure numbers for 2010. The range of variance was -\$6,869 to +\$2,899; very few districts were even close.

For taxpayers, this level of inconsistency is unacceptable. Faced with uncertain data, how can they knowledgeably vote on budgets? The methods for calculating per-pupil expenditures are not transparent to taxpayers, and the level of variance between these two reports violates fiduciary responsibility to taxpayers.

While taxpayers and policymakers may applaud the Total Spending Per Pupil indicator from the *Taxpayers' Guide* because it is an improvement over previous metrics, it further clouds the taxpayer's understanding. The Total Spending Per Pupil indicator is a non-comparative statistic in that it includes expenditure data that are not consistent across all districts (such as transportation and capital). The other indicators, at least, facilitate interdistrict comparisons.

If taxpayers cannot accurately assess actual spending for previous years, how will they be sure that school district projections for budget planning are accurate? The evidence suggests that New Jerseyans should assume that district estimates of future per-pupil expenditures are inaccurate, and understated. Taxpayers deserve, and districts should provide them with, straightforward and consistent answers.

The Independent Audit

Another report, the annual independent audit, is required by each school board and provides a comprehensive analysis of the financial transactions within each school district. This document identifies in great detail the scale and scope of a district's assets, revenues, and expenditures, allowing the reader to understand the flow of money through each district. The annual audit identifies expenditures by major operational categories (e.g., instruction, administration, support services) and by annual contributions for capital costs, employee benefits, transportation, and tuition payments.

However, current per-pupil spending measures basically ignore audit data in favor of district- or state-computed statistics. The audit is useful as a source of detailed financial disclosure information, but this lengthy document is not designed for the casual user—it is intended for oversight authorities and others who have the financial acumen to understand it. We recommend that the Management Discussion section of the independent audit be designed for taxpayer use, and that it include auditor-calculated noncomparative and comparative per-pupil expenditure measures.

That being said, as the data in figure 4 illustrate, the Audit 2010 and Tax Guide 2010 indicators are within smaller variances except for the Abbott districts. A taxpayer could sensibly assume that the audit indicator represented the full cost of public schools to the local taxpayer because of its simplistic expenditures divided by enrollment calculation. Thus, the Taxpayers' Guide does a very good job of communicating the real cost of education.

Figure 4 identifies selected school districts and displays several per-pupil expenditure measures that are accessible to taxpayers from each of the four state reports plus the audit.³⁵ The Audit 2010 indicator is computed by dividing the audit's Total Expenditure number from the balance sheet by the Total Enrollment number provided in the audit document (which may not coincide with enrollment numbers provided in other state reports).

Figure 4: Per-Pupil Expenditures for Selected School Districts

District Name	Type	Taxpayers' Guide 2010	Audit 2010	Report Card 2010 Comparative	Report Card 2010 Total	User-Friendly Budget 2010 Original	User-Friendly Budget 2010 Revised	Comparative Spending Guide 2010
SEA ISLE CITY*	K-8	\$25,766	\$40,000	\$33,821	\$29,679	\$33,821	\$32,531	\$33,821
CRANBURY TWP**	K-8	21,033	20,684	17,750	20,140	17,750	17,843	17,750
ASBURY PARK CITY	K-12	29,819	39,149	24,306	22,495	24,306	26,782	24,306
HOBOKEN CITY	K-12	24,092	31,525	21,859	18,726	21,859	21,845	21,859
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JERSEY CITY	K-12	21,824	23,406	17,368	17,249	17,368	17,582	17,368
TEANECK TWP	K-12	22,942	23,100	18,479	20,341	18,479	17,868	18,479
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DELAWARE VALLEY	REG	19,026	21,021	14,843	17,211	14,843	15,057	14,835
ELIZABETH CITY	K-12	21,952	20,732	16,242	17,507	16,242	15,893	16,242

District Name	Type	Taxpayers' Guide 2010	Audit 2010	Report Card 2010 Comparative	Report Card 2010 Total	User-Friendly Budget 2010 Original	User-Friendly Budget 2010 Revised	Comparative Spending Guide 2010
LONG BRANCH CITY	K-12	19,930	19,391	16,163	18,034	16,163	15,102	16,161
LENAPE REGIONAL	REG***	20,345	18,793	14,456	16,839	14,456	14,971	14,456
CUMBERLAND	REG	19,350	18,219	13,532	15,959	13,532	12,054	13,532
RAMSEY BORO	K-12	17,157	17,472	13,715	15,147	13,715	13,924	13,715
CHERRY HILL TWP	K-12	16,389	16,280	12,636	15,077	12,636	12,907	12,636
RANDOLPH TWP	K-12	16,094	16,134	11,909	13,242	11,909	12,324	11,909
MILLVILLE CITY	K-12	17,065	16,051	13,153	14,803	13,153	13,438	13,152
NORTH BRUNSWICK TWP	K-12	16,182	15,954	11,873	13,702	11,873	11,844	11,872
BRICK TWP	K-12	15,514	15,345	11,550	13,468	11,550	11,912	11,549
EDISON TWP	K-12	15,555	15,196	12,012	13,915	12,012	11,879	12,012
SOUTH AMBOY CITY	K-12	14,983	14,752	12,913	13,772	12,913	12,067	12,913
DELTRAN TWP	K-12	14,700	14,548	11,719	13,403	11,719	11,925	11,719
HAMMONTON TOWN	K-12	13,545	13,654	11,189	12,208	11,189	10,906	11,189

* Sea Isle City has 77 tuition-paying students (i.e. students educated by another district, which is not part of a regional school district of which Sea Isle City is a member) at \$1.5 million, or \$19,481 per pupil, in addition to the above.

** Cranbury Township has 269 tuition-paying students at \$5.4 million, or \$20,074 per pupil, in addition to the above.

*** REG stands for "regional," that is, a middle or high school that combines students from several elementary (K-6 or K-8) districts.

The audit can be a very powerful document, but with New Jersey's confusing array of sending-receiving relationships, even the audit has its issues.³⁶ "Sending-receiving relationships" refer primarily to the regional districts that receive students from the surrounding K-6 and K-8 districts, but also include many K-12 districts that receive students. Under such a relationship, the sending district pays tuition to the receiving district.

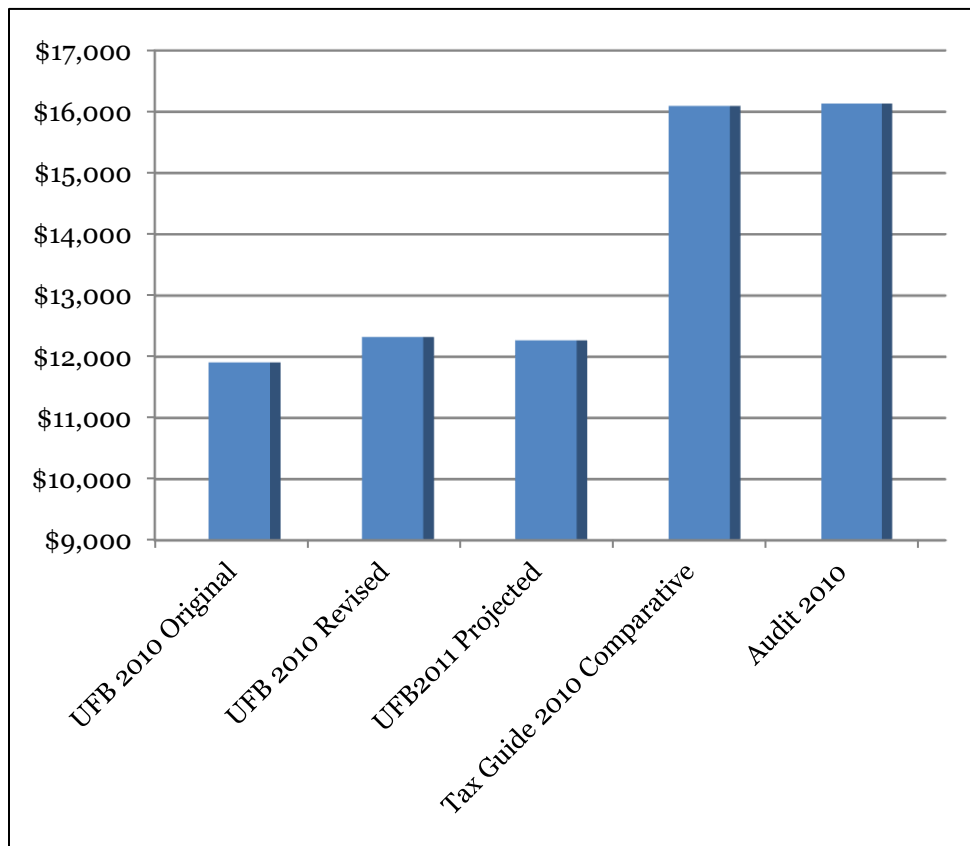
Sea Isle City provides an example of a sending-receiving relationship. The school board is responsible for 135 students, but the district is responsible for only 60 of those students. The other 75 students attend a school in the Ocean City school district, to which Sea Isle City pays \$1.5 million annually from its total \$3.9 million budget.

The Cranbury district is another example of a tuition-based sending relationship. The district pays \$5.4 million to the Princeton Regional district for 269 upper-grade students and \$12.7 million for the 614 students in their K-8 schools.³⁷ Unfortunately, information on sending-receiving relationships and how tuition is accounted for is not always easy to understand in school-district audits.

For the regional and K–12 districts, large differences between the Tax Guide 2010 and Audit 2010 numbers should raise questions, particularly when the Audit 2010 indicator is larger. A larger Audit 2010 number suggests that some expenditures are not being addressed. For example, Asbury Park’s per-pupil spending is \$10,000 higher in the Audit 2010 figure. Further investigation of large differences like this one are warranted.

The per-pupil spending numbers for Randolph Township, shown in figure 5, exemplify the inconsistencies among the different expenditure metrics. The Tax Guide 2010 and Audit 2010 figures are very close, suggesting that \$16,000 per pupil is accurate for all district- and state-paid expenditures. However, the district’s UFB 2010 original and revised indicators identify a \$12,000 per-pupil expenditure. The \$4,000 discrepancy suggests that these comparative indicators, which are communicated to taxpayers, are considerably lower than what is actually being spent.

Figure 5: Variations in Reported Per-Pupil Expenditures by Report: Randolph Township



As stated earlier, the discrepancies in these metrics are due to their mathematical definitions. For most taxpayers, these definitions are difficult to find; some reports do not even provide definitions. The districts and state must ensure consistency across the various reports (or eliminate duplicative and inconsistent reports).

Per-Pupil Spending Is Not a Productivity Measure

Often missing from discussions of per-pupil spending is any mention of productivity,³⁸ or how much output is produced per unit of input. Productivity is a crucial measure of the overall quality of the education process, integrating financial and outcomes measures.³⁹ A productivity measure is critical for understanding the optimal factors to achieve productivity growth, including technology, knowledge, and resource allocation. Several factors suggest a productivity decline over the last 10 years: declining student enrollments, increased certificated and non-certificated staff positions, mandated contract terms, costly technology integration, too many small districts, and continued weak performance of New Jersey's chronically underperforming districts (which account for almost 25 percent of students).

Despite declining productivity, New Jersey's public education expenditures are rising. The *User-Friendly Budget* conservatively identified a 7 percent median per-pupil expenditure growth from SY 2009 to SY 2010. By comparison, the national all-item Consumer Price Index grew by just 3.6 percent from June 2009 to June 2010.⁴⁰

Data Synopsis

In addition to identifying the wide array of per-pupil expenditure measurements, this paper also analyzes the propensity for school districts to underestimate their per-pupil expenditures. Our findings should influence the way districts and the state communicate information on education expenditures to the public, thereby ensuring that taxpayers receive valid, consistent, comparable and timely data.

The primary report for this analysis is the *User-Friendly Budget* summary, since it is the main method for communicating budget information to the public. The 2011 UFB identifies major and minor per-pupil expenditure data for the following categories: 2008 actual, 2009 actual, 2010 original, 2010 revised, and 2011 projected. These data allow us to perform a longitudinal analysis of actual and projected expenditures. We used data from the 549 general operating districts (which exclude charter, vocational, special service, and state schools), since their operations are more comparable to each other.

Interested readers should review the comprehensive statistical analysis report found on the Common Sense Institute of New Jersey website at <http://www.CSINJ.org/SchoolSpending> to gain a deeper understanding of the findings presented below.

Key findings from the 2011 *User-Friendly Budget* are as follows:⁴¹

- For 2009 actual, 97 school districts (18 percent) identified a per-pupil expenditure reduction from 2008 actual, with Asbury Park identifying a \$2,739 per-pupil reduction.
- For 2010 original, only 66 school districts (12 percent) identified a per-pupil expenditure reduction from 2009 actual, with Newark identifying a \$2,145 per-pupil reduction and Asbury Park identifying a \$242 per-pupil reduction.
- For 2010 revised, just 146 school districts (27 percent) identified a per-pupil expenditure reduction from 2010 original, putting Newark's spending at an increase of \$3,038 per pupil and Asbury Park at an increase of \$2,476 per pupil. The estimate for Newark was

off by \$5,183, and the estimate for Asbury Park was off by \$2,718.

- For 2011 projected, 451 districts (82 percent) identified per-pupil expenditure reductions from 2010 revised, with Newark at a \$2,636 reduction and Asbury Park at a \$4,692 reduction.
- For 2011, the school district mean projection over 2010 revised was a \$537 per-pupil spending reduction, with a range of a \$1,350 increase to a \$5,513 reduction.⁴²
- The overall median projection was a reduction of \$455, not significantly different than the mean of a \$537 reduction.
- For districts projecting lower per-pupil costs for 2011, the median is a \$567 reduction; for districts projecting higher per-pupil costs for 2011, the median is a \$228 increase.

Although only a small percentage of the districts had per-pupil expenditure reductions for 2009 actual (18 percent) and for 2010 revised (26 percent), *an astonishing 82 percent of the districts have projected expenditure reductions for 2011*. With 307 of these school districts (68 percent) identifying enrollment declines from 2009 to 2010 and with mandatory employee contractual terms driving increased expenditures,⁴³ this level of per-pupil expenditure reductions is highly unlikely.

2010 User-Friendly Budget vs. Taxpayers' Guide

The following points use actual (not projected) data from 2010 to show the difference between the new *Taxpayers' Guide to Education Spending* and the *User-Friendly Budget* for the same year. Comprehensive data costs include a perspective on the level of "off-book" expenses (state contributions for health, benefits, capital costs to build and improve facilities, etc.) that are not covered by the comparative *User-Friendly Budget* metric.

- The mean difference was \$3,590 per pupil, with a range of \$142 to \$10,566 higher in the *Taxpayers' Guide* vs. the *User-Friendly Budget*. These differences indicate that there are sufficient expenses not accounted for in the UFB.⁴⁴
- Nine districts' expenditures were lower in the *Taxpayers' Guide* than in the *User-Friendly Budget*. These districts include Sea Isle City (-\$6,765), Stone Harbor (-\$2,772), and Saddle River (-\$2,406), all very small K–8 school districts. Negative differences are significant, raising questions about why the more comprehensive *Taxpayers' Guide* metrics are lower than the comparative *User-Friendly Budget* metrics.
- The median difference was \$3,493, not significantly different from the mean of \$3,590.
- The districts with the largest *Taxpayers' Guide* vs. *User-Friendly Budget* differences were Lakewood (\$10,566), South Hunterdon Regional (\$10,337), South Hackensack (\$7,458), Cumberland Regional (\$7,296), and Fairfield Township (\$7,160). The districts with the smallest differences were Lower Alloways Creek (\$142), Spring Lake (\$504), Avalon (\$608), Farmingdale (\$766), and Port Republic (\$805).

- Districts with large differences identify a high amount of expenditures not in the *User-Friendly Budget*, while those with small differences identify a low amount of expenditures not in the *User-Friendly Budget*.

The pattern of lower per-pupil expenditures in the *User-Friendly Budget* compared to the *Taxpayers' Guide* suggests that the UFB omits significant expenditures. Again, this result is partly due to the definition of the *User-Friendly Budget* as a “comparative” report, which includes fewer expenditure variables than the more comprehensive *Taxpayers' Guide* report.

Lessons Learned: Scale Matters

New Jersey’s home rule has created a system whereby each of 43 districts serves fewer than 200 students, each of 125 districts serves fewer than 500 students, and each of 232 districts serves fewer than 1,000 students. Each of 389 districts serves fewer than 2,500 students, and each of 477 districts serves fewer than 5,000 students, leaving 72 districts serving more than 5,000 students.⁴⁵ The median enrollment for the 549 districts in this report is 1,276 students, which is much lower than the research-supported optimal district size of 2,000 students.

Low-enrollment districts have a scale problem when it comes to revenues, expenditures, and enrollments in that small changes in any of these measures can have significant effects on per-pupil expenditures. As an example, a district with 88 students that currently has a \$23,456 per-pupil expenditure (or \$2,064,128 in total expenditures) would experience growth to \$26,463 per pupil—a \$3,000 increase per student—if expenditures stayed constant and enrollment declined to 78 students. In contrast, a larger district with 5,500 students and \$18,715 per-pupil expenditures (\$102,932,500 in total expenditures) would see an increase to \$20,586—an \$1,800 increase per student—for the same approximate 10 percent drop in enrollment to 5,000 students.

Lessons Learned: Basis for Under-Estimation

The 2011 *User-Friendly Budget* projects that 82 percent of the 549 general operating districts will spend less in 2011 than they did in 2010. Local district school boards made these extremely optimistic expenditure-reduction projections despite empirical knowledge that in recent years, fewer than 18 percent of districts reduced expenditures.

The amount of projected decreases is also significant: those districts that said they would spend less projected a \$567 per-pupil average reduction, while the districts that anticipated spending more identified a \$228 per-pupil increase. These numbers suggest that districts are generally more aggressive in projecting reductions than increases.

Why are an overwhelming number of districts projecting reductions when faced with longitudinal expenditure data and current operating environments (constrained revenues, increasing expenses, and declining enrollments) that will force upward pressure on per-pupil expenditures?

We identify three literature-supported reasons for the high propensity to underestimate spending: self-serving bias, cognitive bias, and information quality.

Self-serving bias is the tendency for people to evaluate ambiguous information in a way that benefits their self-interests. In this case, self-serving bias involves a deliberate effort to make

spending appear lower in order to avoid the negative consequences of higher, more accurate projections.

Cognitive biases are mental errors caused by our simplified information-processing strategies. These observer effects may lead to perceptual distortion, inaccurate judgment, and illogical interpretation. In this case, cognitive bias may have to do with “framing,” or filtering information to appeal to the public or to bosses.

Information quality lies not only in the quality of the content, but in the quality of the information systems. School-district budgeting resides in a very small subset of school personnel, usually the superintendent and the business administrator. In many districts, particularly smaller districts, staff assets and administrative technology are at a premium, possibly limiting time spent on this important taxpayer communication.

More detailed study is necessary to support self-serving and cognitive biases as reasons for underestimation in New Jersey school budgets, but our proposition is based on the planning fallacy first proposed by Daniel Kahneman and Amos Tversky. In a seminal paper, the authors identified a tendency for people and organizations to underestimate how long they would need to complete a task, even when they had past experience with similar tasks exceeding their time estimates.⁴⁶

Later, Kahneman and Dan Lovallo proposed an expanded definition of the planning fallacy as the tendency to underestimate the time, costs, and risks of future actions and at the same time to overestimate the benefits of the same actions. In other words, the planning fallacy results not only in time overruns, but also in cost overruns and benefit shortfalls.⁴⁷

Conclusion

We conclude with three key findings about education expenditure reporting in New Jersey:

- There is a confusing array of sources for a per-pupil expenditure metric. Each of the five sources is based on different inputs and reports different spending levels.
- An overwhelming 82 percent of New Jersey school districts have a bias toward projecting decreased per-pupil expenditures, even when longitudinal and current operational evidence supports increased projections.
- The per-pupil expenditure metric is often misused, and it does not include important outcome information.

Recommendations

To improve communication with taxpayers and to allow for logical, credible comparisons between and among similar districts on a cost/performance basis, we suggest the following policy changes:

- Utilize the new *Taxpayers' Guide to Education Spending Total Spending Per Pupil and Budgetary Per Pupil Cost* statistics as the mandatory format for school budget information.

- Coordinate *Report Card* and *User-Friendly Budget* documents with the *Taxpayers' Guide* to ensure consistency in actual measures.
- Develop a “certified” productivity measure that integrates outcome and expenditure data, that is mandatory on all education report formats, and that appears on all property tax bills.⁴⁸
- Mandate statements from independent auditors that district per-pupil expenditure projections are reasonable given longitudinal and current operational evidence.
- Require the NJDOE to develop and implement explicit rules and regulations, including the specific report formats and details, to ensure uniform reporting of per pupil expenditures. Health care costs, pension costs, capital costs, debt service costs and other significant cost centers must be included.
- Consider using the Cato Institute’s proposed Financial Transparency in Education Act as a template for mandated transparency and consistency (see appendix 1).

Per-pupil expenditure is nothing more than a simple measure of money spent, yet the myriad reports available to taxpayers present a wide and confusing array of data on this simple metric. Although hopefully not intentional, the discrepancies are misleading and can adversely impact taxpayers’ and policymakers’ ability to make sound decisions.

The recent introduction of the *Taxpayers’ Guide to Education Spending* has provided deep insight into “real” per-pupil expenditures, and this report’s Total Expenditure Per Pupil and Budgetary Cost Per Pupil metrics should be the standard for all other reports.

The vast majority of district officials underestimate their projected budgets via the *User-Friendly Budget* format. The *User-Friendly Budget* is the prime report for communicating budget information to local taxpayers, yet an overwhelming 82 percent of districts have underestimated their 2011 budgets.

In the immediate future, New Jersey’s taxpayers and policymakers must have a productivity measure that integrates not only the financial data from the per-pupil expenditure measure, but also outcomes and student-demand data. A powerful measure of productivity growth (or decline) can effectuate more precise policy on this very critical state-economy driver.

This paper should prompt responsible fiduciary behavior by the districts during the upcoming school budget cycle, ensuring that taxpayers (and parents) have timely and valid information on how well their school districts are performing. Until the various means of communicating per-pupil expenditure s are consolidated, voters should demand to know their previous year’s per-pupil expenditure as expressed in an audit, compared to last year’s User-Friendly Budget.

We strongly urge that this research initiative be continued, and that the statistical analysis basis for this report (<http://www.CSINJ.org/SchoolSpending>) be extended by other researchers. Lastly, we strongly recommend that the per-pupil expenditure research be integrated into a considerably more useful productivity measure.

Appendix 1: Financial Transparency in Education Act⁴⁹

Summary

The Financial Transparency in Education Act would require each local education provider in the state to create and maintain a searchable expenditure and revenue website that includes detailed data on revenues and expenditures. It also would require each local education provider to maintain the data in a format that is easily accessible, searchable, and downloadable, and to prominently post comprehensive figures on total expenditures and per-pupil spending. The Act also requires that each local education provider submit the summary data to the state to be aggregated and made available online by the state.

Model Legislation

Section 1. {Title} The Financial Transparency in Education Act

Section 2. {Legislative Declaration}

- (A) The Legislature finds that:
- (1) Taxpayers should have easy access to the details of public school district spending; and that
 - (2) Easier access to and storage of electronic data would increase transparency in public school financial matters; and that
 - (3) It is neither difficult nor prohibitively expensive to make such data available to the public via the Internet
- (B) Therefore, it is the intent of the Legislature to direct all local education providers to create and maintain a searchable expenditure and revenue website database detailing financial activities.

Section 3. {Definitions} As used in this Act, unless the context otherwise requires:

- (A)
- (1) “Entity” means a corporation, association, union, limited liability company, limited liability partnership, grantee, contractor, local government, other legal entity including a nonprofit corporation, or an employee of the local education provider.
 - (2) “Entity” shall not include an individual recipient of public assistance.
- (B) “Local education provider” means:
- (1) a school district organized and existing pursuant to law;
 - (2) a board of cooperative services or intermediate school district;
 - (3) a publicly funded agency established by the state for the express purpose of authorizing charter schools; or
 - (4) a public charter school authorized pursuant to state statutes.
- (C) “Public record” shall have the same meaning as set forth in state open records laws.

Section 4. {Creation of Searchable Expenditure and Revenue Website Databases}

- (A) No later than one year from the enactment of this legislation, each local education provider shall develop, maintain, and make publicly available a single, searchable expenditure and revenue website database that allows the public, at no cost, to review information concerning moneys collected and expended by the local education provider.
- (B)
- (1) The website shall include the following data for each fiscal year, using budgeted numbers no more than one week following the adoption of a budget for the most recent fiscal year, and actual audited spending figures no more than one week after official

figures have been accepted, concerning all expenditures made by the local education provider:

- (a) A comprehensive total for all moneys expended directly by the local education provider and any subsidiary under its direction, as well as all expenditures made on behalf or for the benefit of the local education provider or any subsidiary by any governmental or non-governmental entity;
 - (b) A total for all moneys expended on adult education programs, not including expenses for GED or alternative high school diploma programs;
 - (c) A total for all moneys expended on community services, which are defined as expenditures used exclusively for non-K–12 purposes;
 - (d) A total for all moneys expended on preschool and early childhood services, defined as all services provided to children younger than the age required by the local education provider for enrollment in kindergarten;
 - (e) The name and principal location or address of the entity receiving moneys, except that information concerning a payment to an employee of the local education provider shall identify the individual employee by name and business address or location only;
 - (f) The amount of expended moneys;
 - (g) The funding source(s) of the expended moneys;
 - (h) The date of the expenditure;
 - (i) The name of the budget program, activity, or category supporting the expenditure;
 - (j) A description of the purpose for the expenditure;
 - (k) A unique identifier for each expenditure on adult education as described in (b) and community services in (c) of this section, and for all other expenditures to the extent possible;
 - (l) Copies of all credit card statements, identified by department responsible for each credit card; and
 - (m) The database will include and retain both the budgeted and audited actual expenditure figures for each fiscal year and ensure each set of figures can be identified as budgeted or audited figures.
- (2) The expenditure data shall be provided in an open structured data format that:
 - (a) May be downloaded by the user; and
 - (b) Allows the user to systematically sort, search, and access all data.
 - (3) The website shall contain only information that is a public record or that is not confidential or otherwise protected from public disclosure pursuant to state or federal law.
- (C) The local education provider shall:
- (1) Update the financial data contained on the website at least monthly;
 - (2) Archive the financial data, which shall remain accessible and searchable on the website;
 - (3) Post total expenditures as defined in Section 4(B)(1)(a), (b), (c), and (d) on the home page of the local education provider's website no more than one week after the official budget is adopted for the latest fiscal year and no more than one week after final, audited actual expenditure figures are produced. In the same section, post the estimated K–12 and pre-K if applicable average daily attendance figure for the most recent fiscal year budget and the audit actual K–12 and pre-K average daily attendance for the most recently audited fiscal year. Finally the per-pupil spending figure will be posted, as derived by the following formula, using figures, both the budgeted and audited, described in Section 4 (B)(1)(a), (b), (c), and (d): (Total Expenditures - Adult

Expenditures - Community Services - Preschool Services)/K-12 Average Daily Attendance;

(4) Make the website easily accessible from the main page of the local education provider's website; and

(5) Create and make easily accessible an automated Really Simple Syndication (RSS) feed to which users of the Website database may subscribe for notification of updates to the website database.

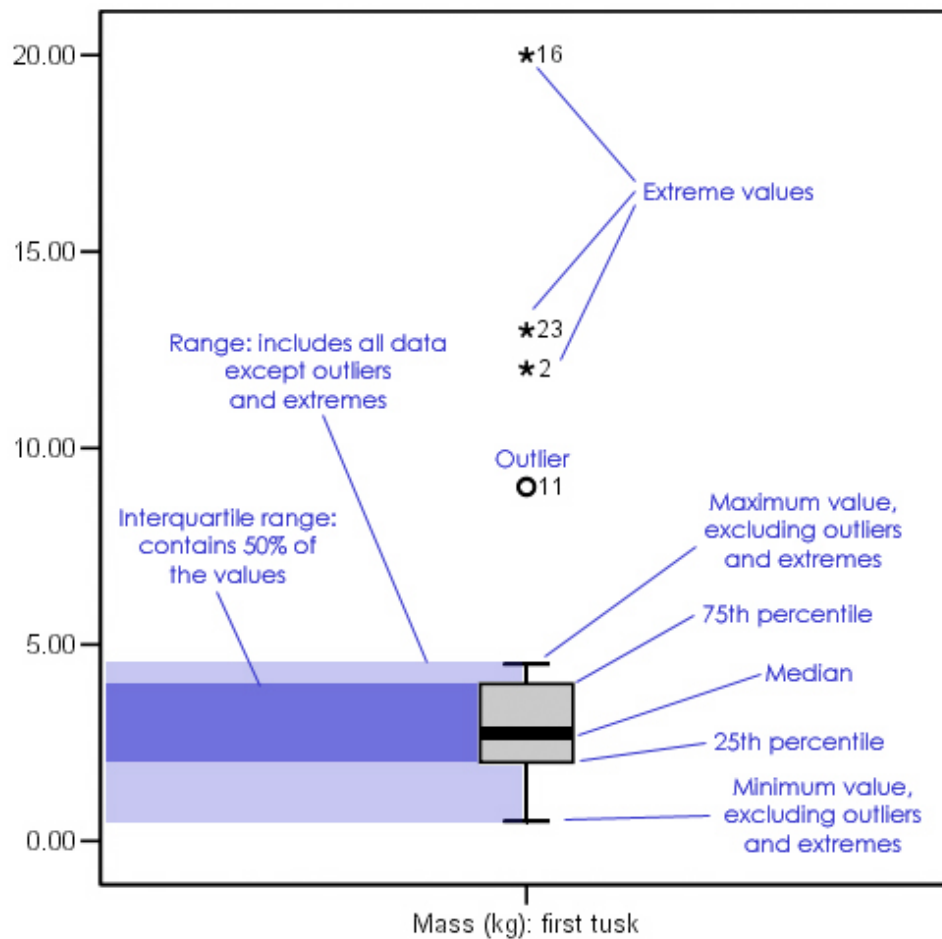
Note: This model legislation was originally drafted by the Cato Institute and is reprinted with permission. For the full citation, see Note 49.

Appendix 2: New Jersey's High Per-Pupil Expenditure Landscape

This appendix first explains what a box plot is, then uses a series of box plots to illustrate expenditure data.

Box Plot Tutorial

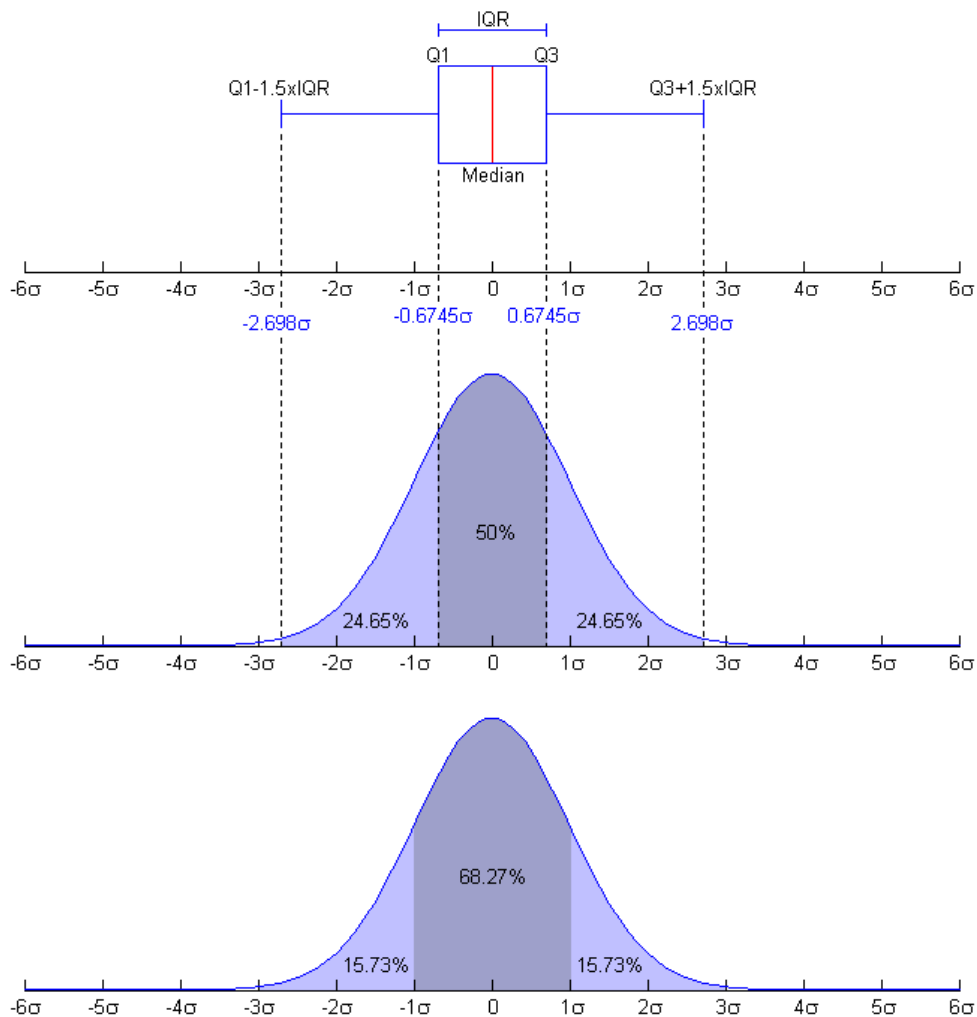
In descriptive statistics, a box plot or box plot (also known as a box-and-whisker diagram or plot) is a convenient way of graphically depicting groups of numerical data through their five-number summaries: the smallest observation (sample minimum), lower quartile (Q1), median (Q2), upper quartile (Q3), and largest observation (sample maximum). A box plot may also indicate which observations, if any, might be considered outliers.



Box plots display differences between populations without making any assumptions about the underlying statistical distribution: they are nonparametric. The spacing between the different parts of the box helps to indicate the degree of dispersion (spread) and skewness in the data and to identify outliers. Box plots can be drawn either horizontally or vertically.⁵⁰

How to Interpret a Box Plot in Terms of a Normal Distribution

One way to understand a box plot is to think of what a box plot of data from a normal distribution will look like. The graph below shows a standard normal probability density function ruled into four quartiles and the box plot you would expect if you took a very large sample from that distribution. The center line of the box is the sample median and will estimate the median of the distribution, which is 0 in this example.



The upper and lower hinges are the medians of the upper and lower halves of the sample. Hence, they are estimates of the third and first quartiles. For the $N(0, 1)$ distribution in this example, the third and first quartiles are 0.6745 and -0.6745 , respectively. The expected hinge spread will therefore be about 1.35 .

The inner fences are 1.5 hinge spreads beyond the hinges, or 2 hinge spreads (2.7 units in this example) above and below the median. The whiskers extend to the last observations inside the upper and lower inner fences. If the data are a small sample from a normal distribution, there

will be very few observations beyond the inner fences. The larger the sample, however, the more observations we would expect beyond the fences. Any observation between the inner fence and the outer fence is denoted by an asterisk (*).

The outer fences are 3 hinge spreads beyond the hinges, or 3.5 hinge spreads (4.73 units in this example) above and below the median. If the data are really from a normal distribution, there are not likely to be any observations beyond the outer fences, even if the sample size is large. Any observation beyond the outer fences is denoted by an O. Observations beyond the outer fences should be considered outliers if the data are assumed to come from a normal distribution.

There is a big advantage in using the median and quartiles instead of the mean and standard deviation if we need to check for outliers. The farther out an outlier is, the more effect it will have on the mean and standard deviation. In contrast, the median and quartiles will not be affected by observations beyond the quartiles. As long as the observation stays beyond a quartile, the quartile—and hence the hinges, hinge spread, and fences—will be unaffected by its value, revealing the presence of the outlier more clearly.

Statistical Expenditure Analysis

Previous reporting on per-pupil expenditures by research organizations has focused on simply presenting existing information on a comparative basis. Our approach is much different. This report has extensively analyzed per-pupil expenditure information following proven statistical rules, and in the process, has uncovered some interesting per-pupil expenditure reporting patterns that have not been presented in other reports. This knowledge can form the basis of directed policy that holds fiduciary communication to the highest standard.

The data analyzed were acquired from both the New Jersey Department of Education and the United States Department of Education websites. The individual report databases were converged into a relational database utilizing SPSS software, and descriptive and exploratory statistics were utilized to understand data structures and test for data quality. In a few samples, missing or incorrectly formatted data were confirmed at the source and corrected.

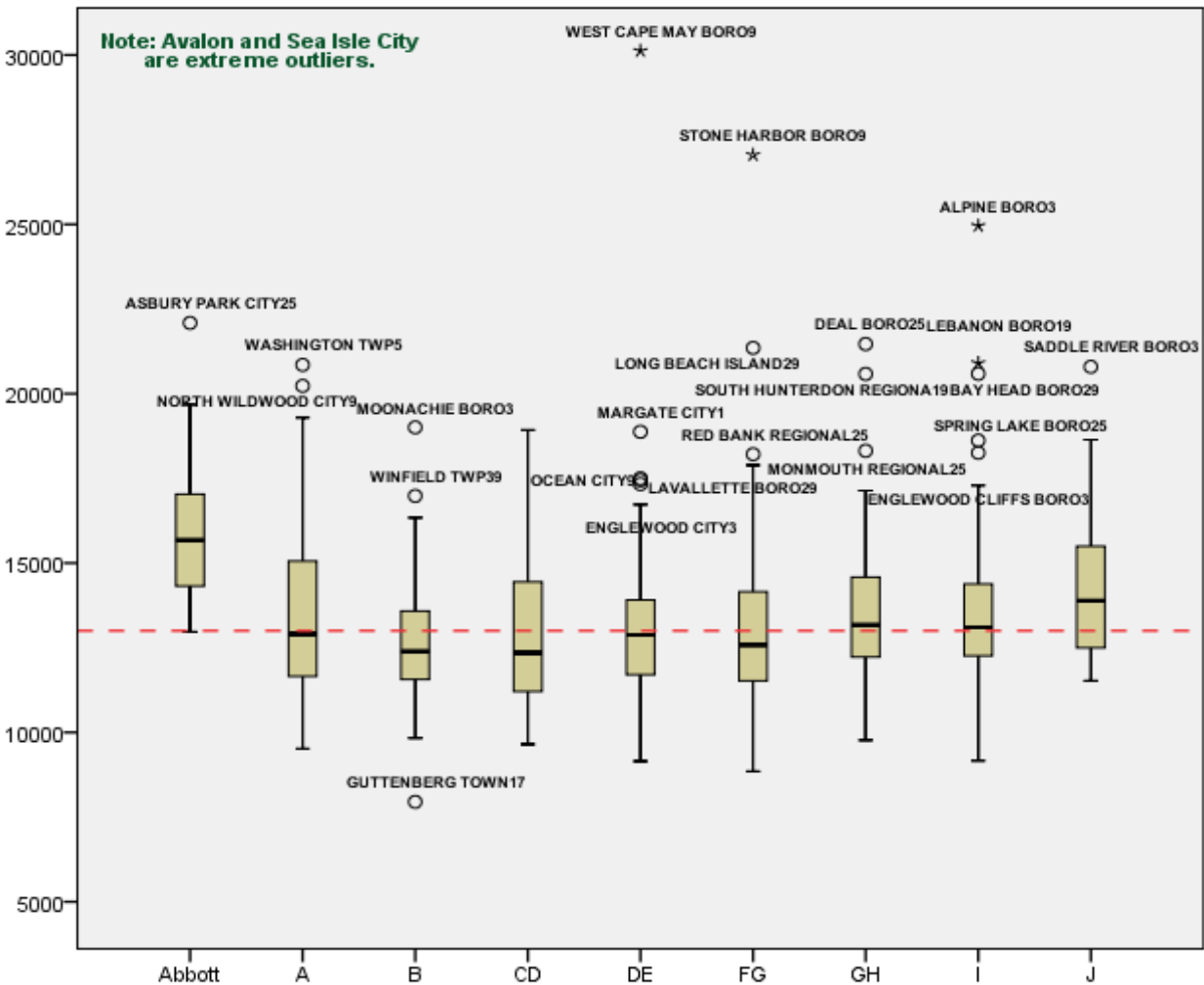
Emphasis was placed on using graphics that provide readers with the scale and scope of the data and analysis. The author chose to use statistician John Tukey's box-plot graphic, which allows both the presentation of five critical statistics and the clustering of school districts to highlight patterns based upon District Factor Group, operating type, and enrollment size.

The analysis compares the comparative per-pupil expenditure across several reports and compares the noncomparative Total Spending Per Pupil measure to the independent audit measures. The impact of this analysis is the state's first cross-sectional analysis of the per-pupil expenditure measure.

User-Friendly Budget Analysis

The *User-Friendly Budget* uses a statutorily defined formula to derive the per-pupil expenditure amount. On median, for the 2011 budget, the regular operating districts propose to expend an average of about \$13,000 per pupil, and these data were skewed by the Abbott clusters, which propose to expend a median of slightly more than \$15,000 per pupil (see graph 1a).

Graph 1a: User Friendly Budget 2011 Projected



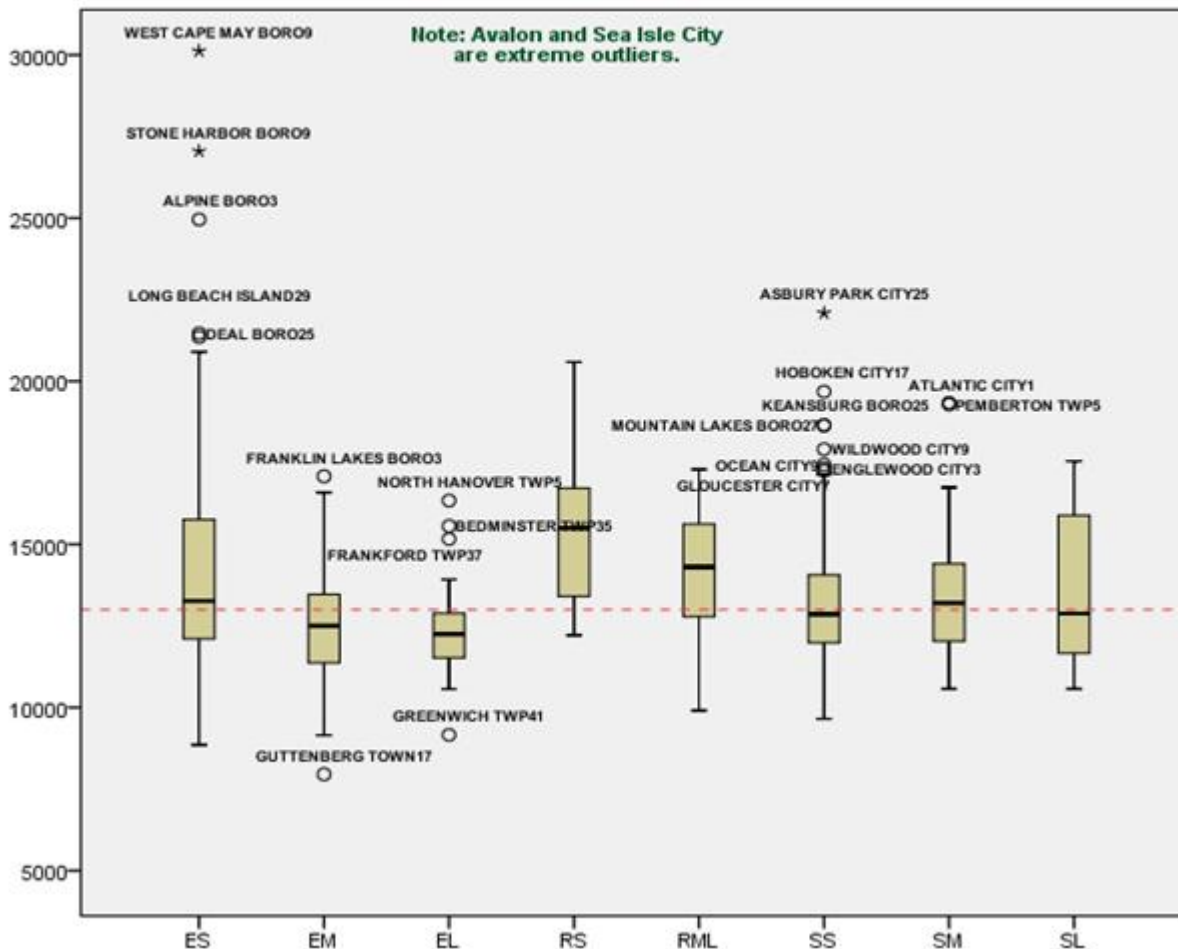
There are approximately 20 outliers and super-outliers (named districts) where the median expenditure would be approximately \$22,000 per pupil. Only one district, Guttenberg, was an outlier for proposed low spending per pupil, with an expenditure of approximately \$8,500.

In almost every box, the “line” is equidistant from the lower and upper hinges, so the median is very close to the mean, where 273 districts ($n=546/2=273$) show per-pupil expenditures below \$13,000 (other than the former Abbotts). Each of the boxes is approximately the same size, so half of each cluster’s districts are in the interquartile range (25–75 percent). The mean is the exact center of the box, and median is the line in the box. If the line is in the exact center, the mean and median have converged. The red dotted line is for user convenience to scale the cluster variation.

Too often, state and special-interest policy experts utilize the District Factor Group (DFG) as the only grouping variable to compare two districts, even though within any DFG subcluster there is measurable variance in size, expenditure, and other critical measurement variables. Also, due to previous state funding criteria that utilized the DFG, the expenditures by DFG clusters tend to

be predictable, save for a few outliers. As a result, the DFG as a cluster variable does not tell a very rich story on the expenditure distributions that would be found in other cluster choices.

Graph 1b: User Friendly Budget 2011 Projected



With the 2011 *User-Friendly Budget* projections shown by district operating type/size (see graph 1b), the data distributions have more distinct characteristics than the homogenous DFG clusters. Although the median expenditure remains around \$13,000, both the interquartile range (box size) and median line location are not similar to the DFG graph. When the median line is not equidistant in the interquartile range (in the middle of the box), this indicates skewness. Skewness is a measure of the asymmetry of the probability distribution of a real-valued random variable. In other words, skewness means that the data distribution is below or above the mean; that is, that the data do not follow a normal bell curve. A negative skew indicates that the tail on the left side of the probability density function is longer than the right side, and the bulk of the values (possibly including the median) lie to the right of the mean. Similar logic applies for a positive skew.

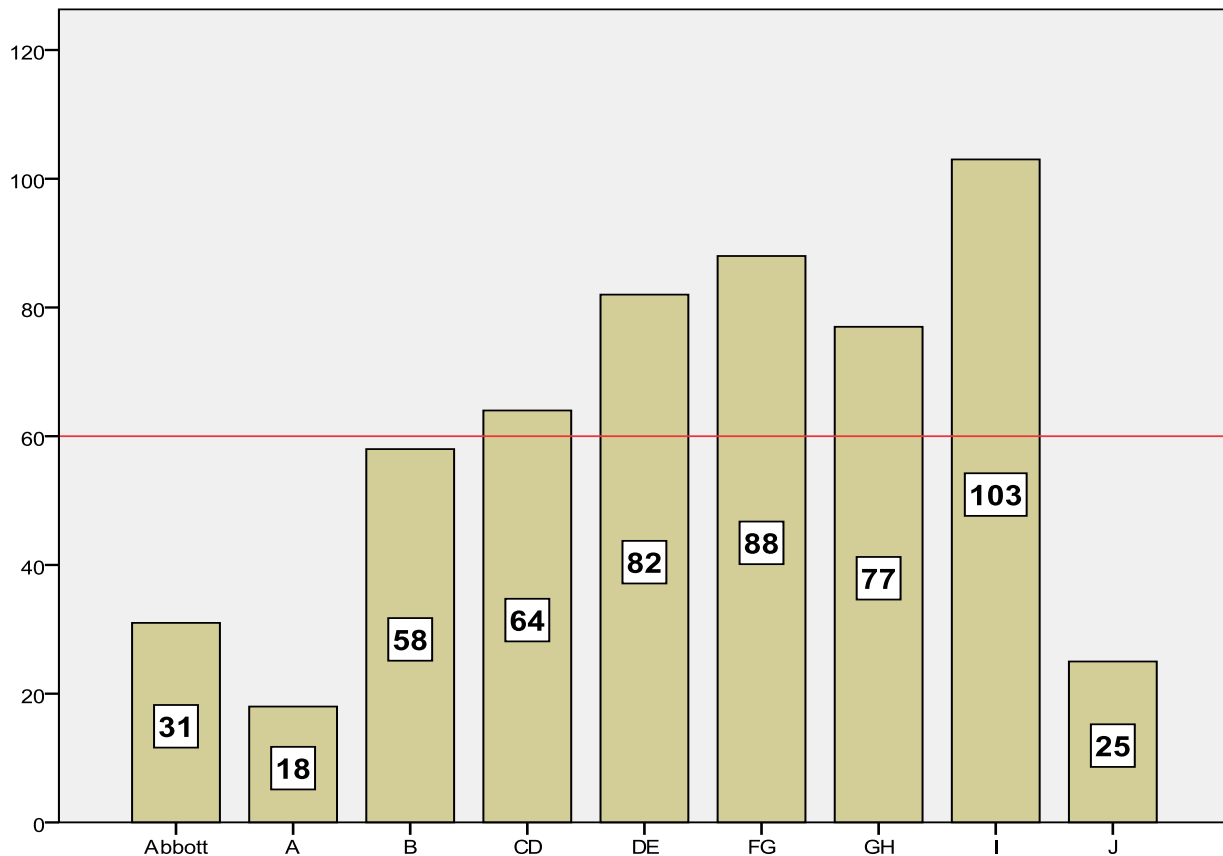
From the *Report on the Cost of Education*, written by the NJDOE for the School Funding Reform Act, we know that regional and secondary schools “require” more funding than elementary schools because of the diversity of specialist teachers and other certificated staff that

is not required in elementary schools. This higher funding requirement is evidenced by the location of the regional district clusters (RS and RML), with a median expenditure of approximately \$15,000 (graph 1b), or \$2,000 more than the median of elementary and secondary schools. Also note that the regional districts' upper hinge and upper whiskers far exceed those of all other clusters. There is a great tendency for smaller regional districts to be higher spending than the former Abbott districts.

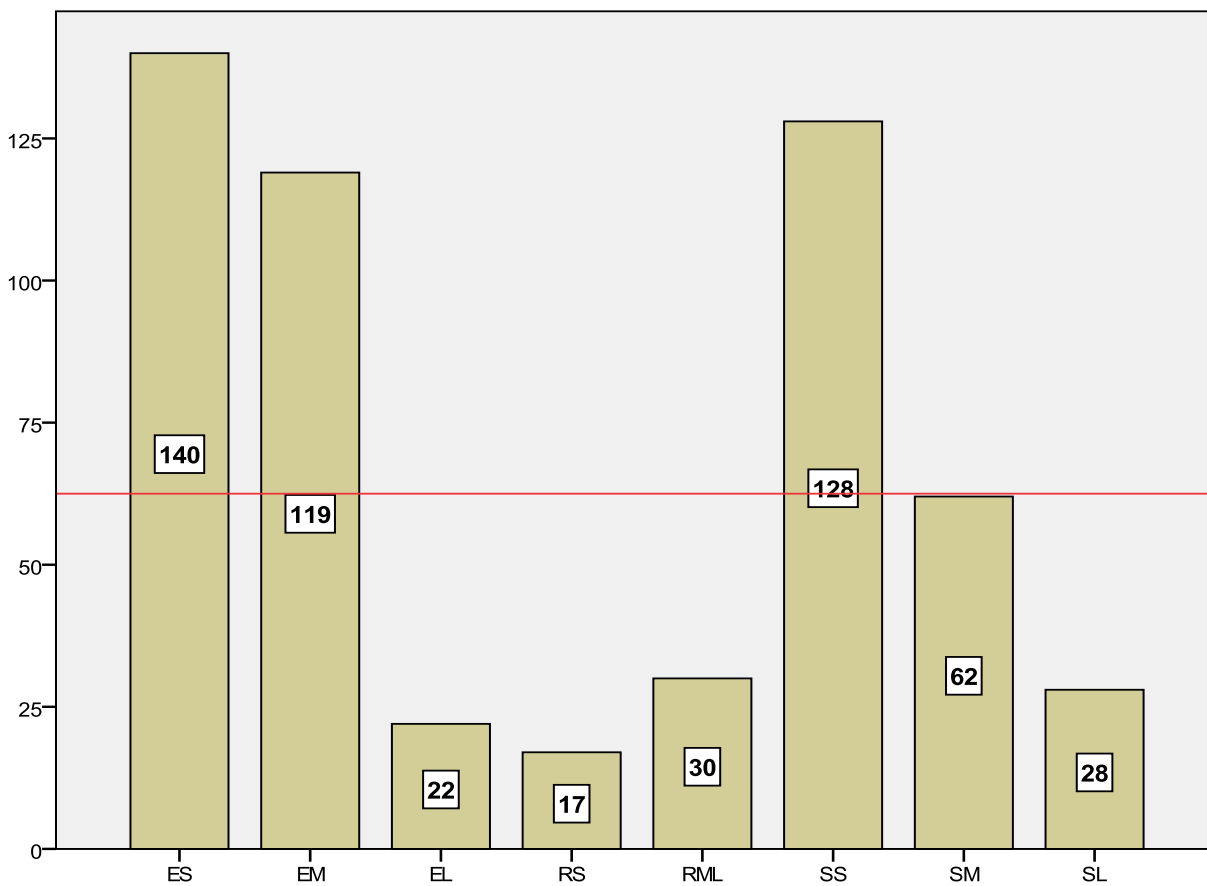
The smallest elementary schools have the opposite problem; they typically have fewer than 400 students and cannot achieve a productive scale size that would allow for increased specialization and resources. This problem is evidenced by the upper hinge and whisker for the elementary small (ES) cluster, which is much larger than the other elementary schools (e.g., the range of per-pupil expenditures is larger than all operating type/size districts) (graph 1b).

For grouping purposes, both the DFG (graph 2a) and the operating type/size (see graph 2b) variables will be utilized throughout this section. The DFG variable is an NJDOE-computed statistic of socioeconomic measures, assigning each district to nine clusters, from lowest to highest socioeconomic status: Former Abbott, A, B, CD, DE, FG, GH, I, and J. The operating type/size variable is computed by the author to assign districts an operating type (elementary = K-6/8, regional = 7/9-12, and secondary = K-12), with nested clusters for size (S=small, M=medium, ML=medium/large, and L=large).

Graph 2a: Number of Districts Analyzed (N = 546)



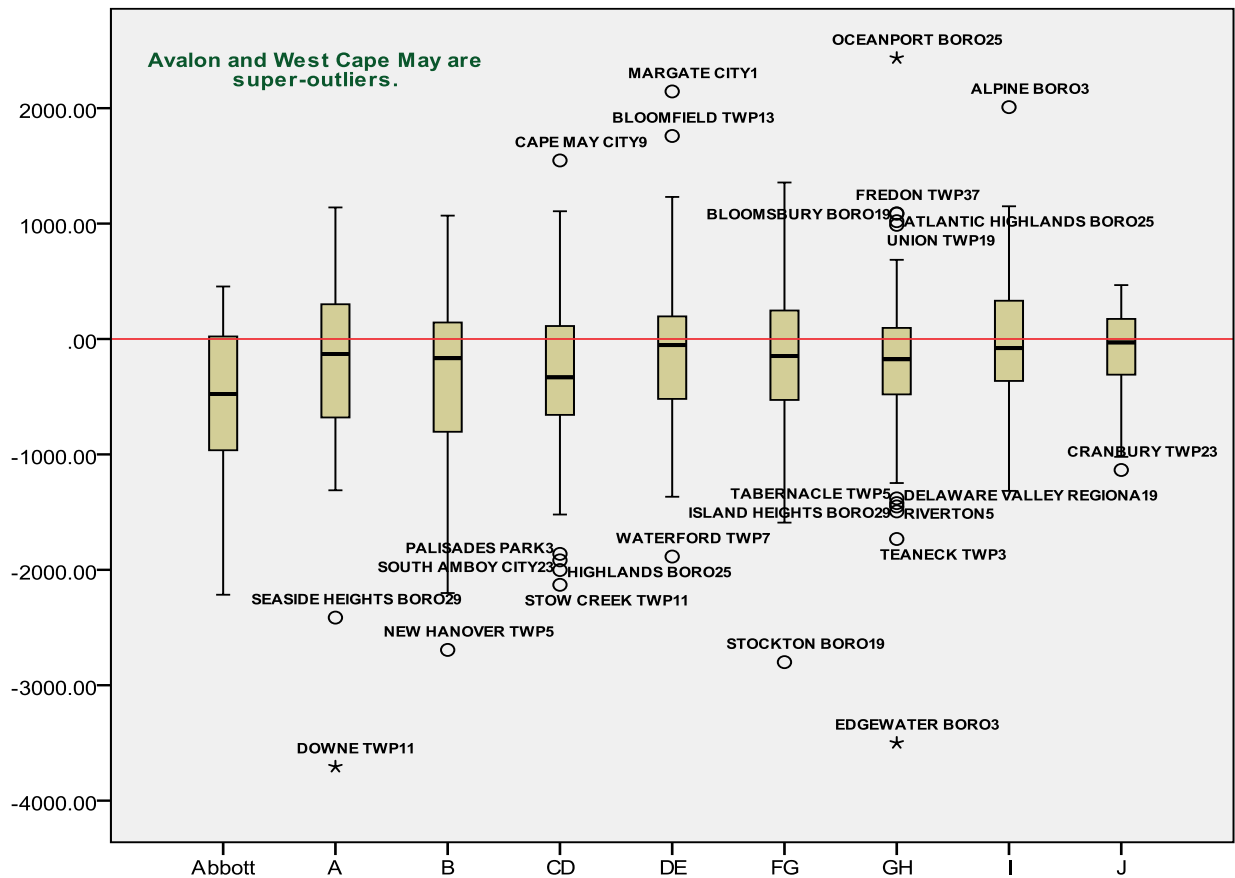
Graph 2b: Number of Districts Analyzed (N = 546)



Comparing 2011 Proposed vs. 2010 Original and Revised Budgets

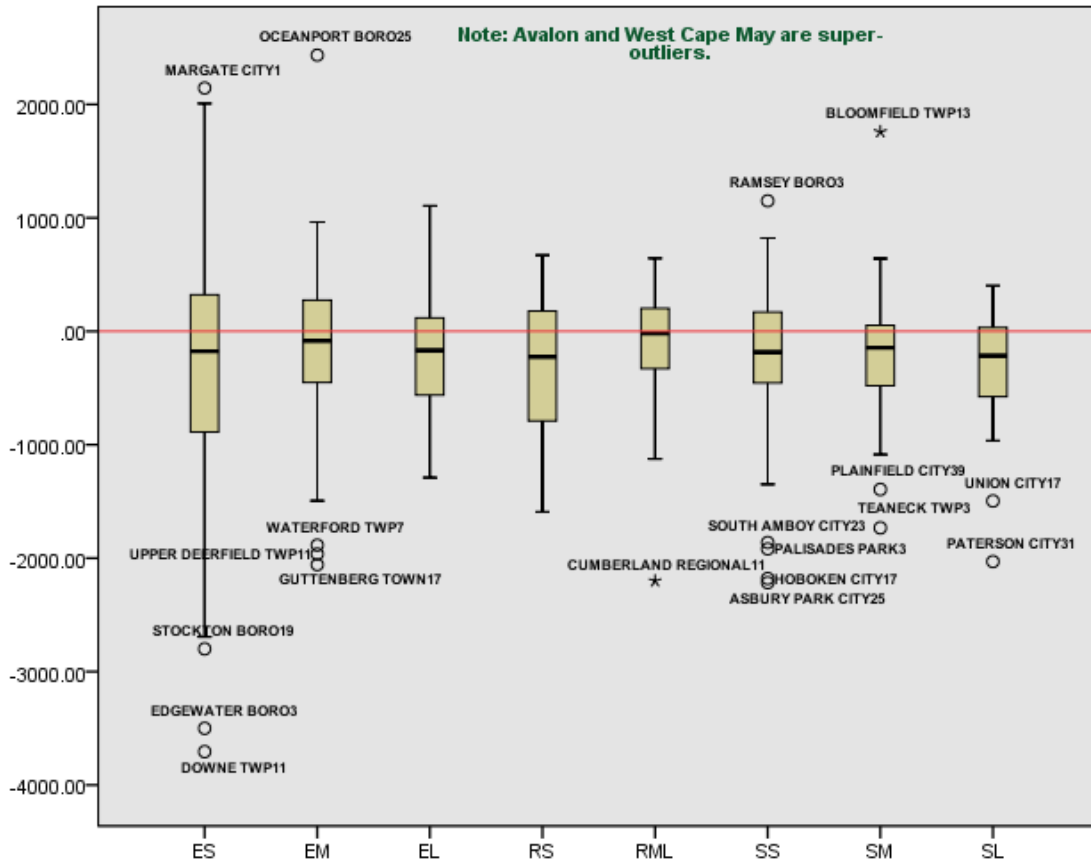
Graphs 3a and 3b are the key points for this paper, comparing the 2011 projected with the 2010 original and actual budgets. The red line indicates a zero budget change (i.e., the districts on the line projected 2011 at their 2010 actual expenditure levels, and the districts below the line project 2011 budgets below 2010 original expenditure levels).

Graph 3a: Difference 2011 UFB and 2010 UFB Original



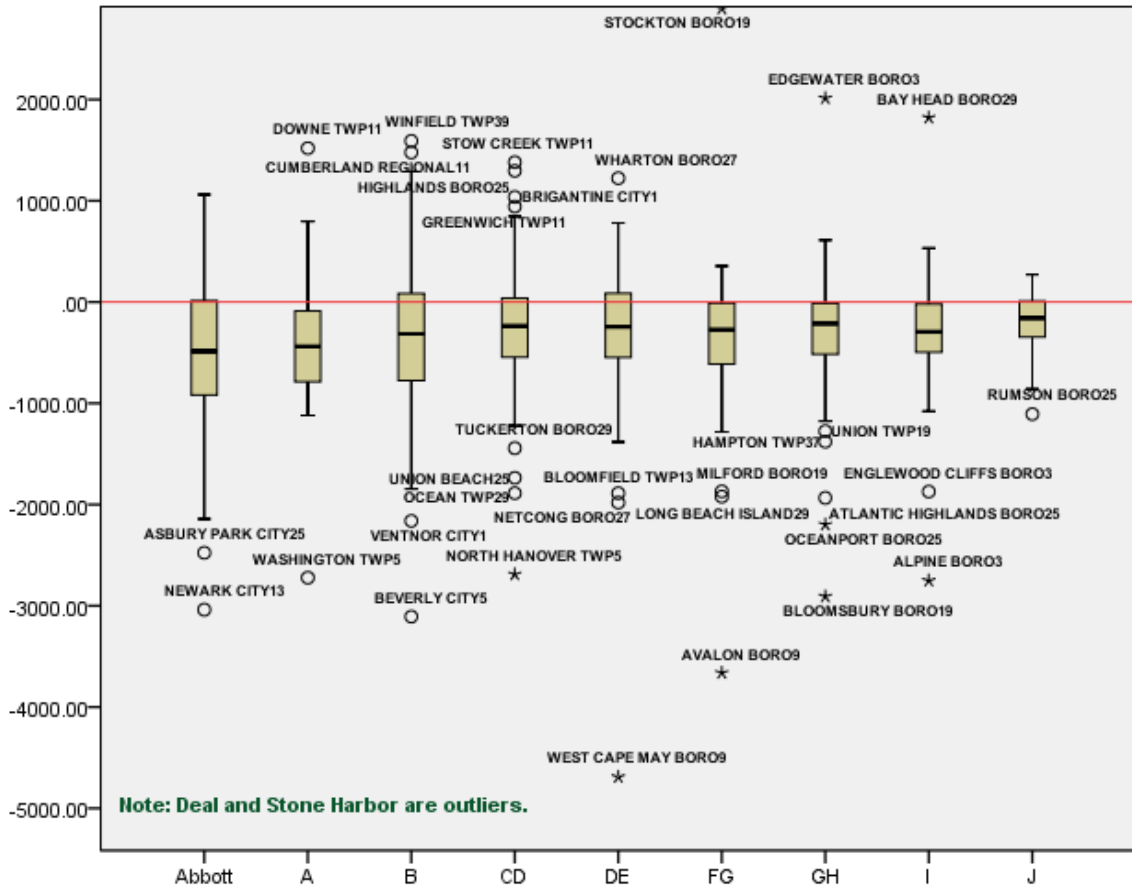
In the 2011 *User-Friendly Budget*, approximately 82 percent of the districts stated they would expend less in 2011 (proposed) than in their 2010 original budgets, as evidenced by the upper hinge lying at/below the zero budget-change line (the red line at .00 in graph 3a). The median lower estimate was approximately \$300 per pupil, and the lower hinge is approximately \$600. Approximately 25 percent of the districts estimated a decrease of more than \$600 for their 2011 proposed per-pupil expenditures. The smaller elementary (ES and EM) and small regional (RS) clusters showed the greatest propensity to estimate a decrease in proposed expenditures, while all other clusters had similar interquartile levels (graph 3b).

Graph 3b: Difference 2011 UFB and 2010 UFB Original



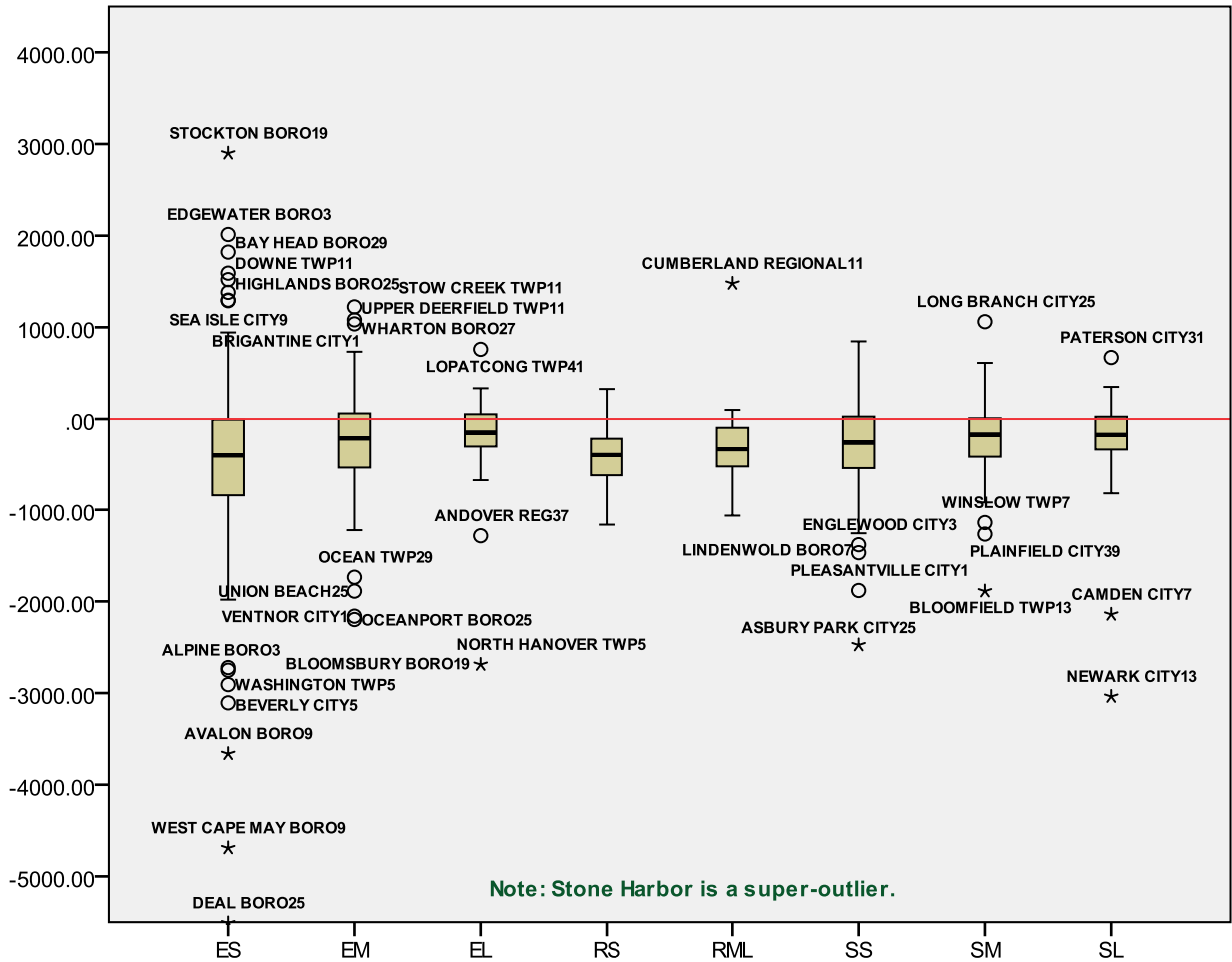
For the 2011 *User-Friendly Budget*, both the 2010 original and 2010 revised budget data were included, where the revised was the actual budget spent according to the 2010 independent audit data. In approximately 75 percent of the districts, the revised amount was larger than the original amount, evidence that districts may have underestimated their original budgets. The size of this underestimation is \$400 (median) per pupil, and \$600 (median) for the lower hinge (graph 4a). There are considerable outliers in the \$1,000–\$4,000 underestimate; these districts significantly underestimated their original budgets. On a positive note, outliers above the zero-change red line stated that their original estimates were \$1,000–\$3,000 higher than their actual revised spending (although significant overestimating may have its own issues in communicating with taxpayers).

Graph 4a: Difference UFB 2010 Original and UFB 2010 Revised



Within the operating type/size clusters, the smaller elementary (ES and EM) and small secondary (SS) clusters had the largest range. The minimum values (lower whisker) median approximates a \$1,600 lower estimate (from zero), which is significant on a \$13,000 per-pupil expenditure (12 percent variance) (see graph 4b).

Graph 4b: Difference UFB 2010 Original and UFB 2010 Revised



The propensity to underestimate original budget expenditures occurs in districts across all DFG and operating type/size spectrums. A large urban district such as Newark is as likely to underestimate as a small wealthy district like Alpine Boro, and Union Beach is as likely as Winslow Township (the two are similar in size and socioeconomics).

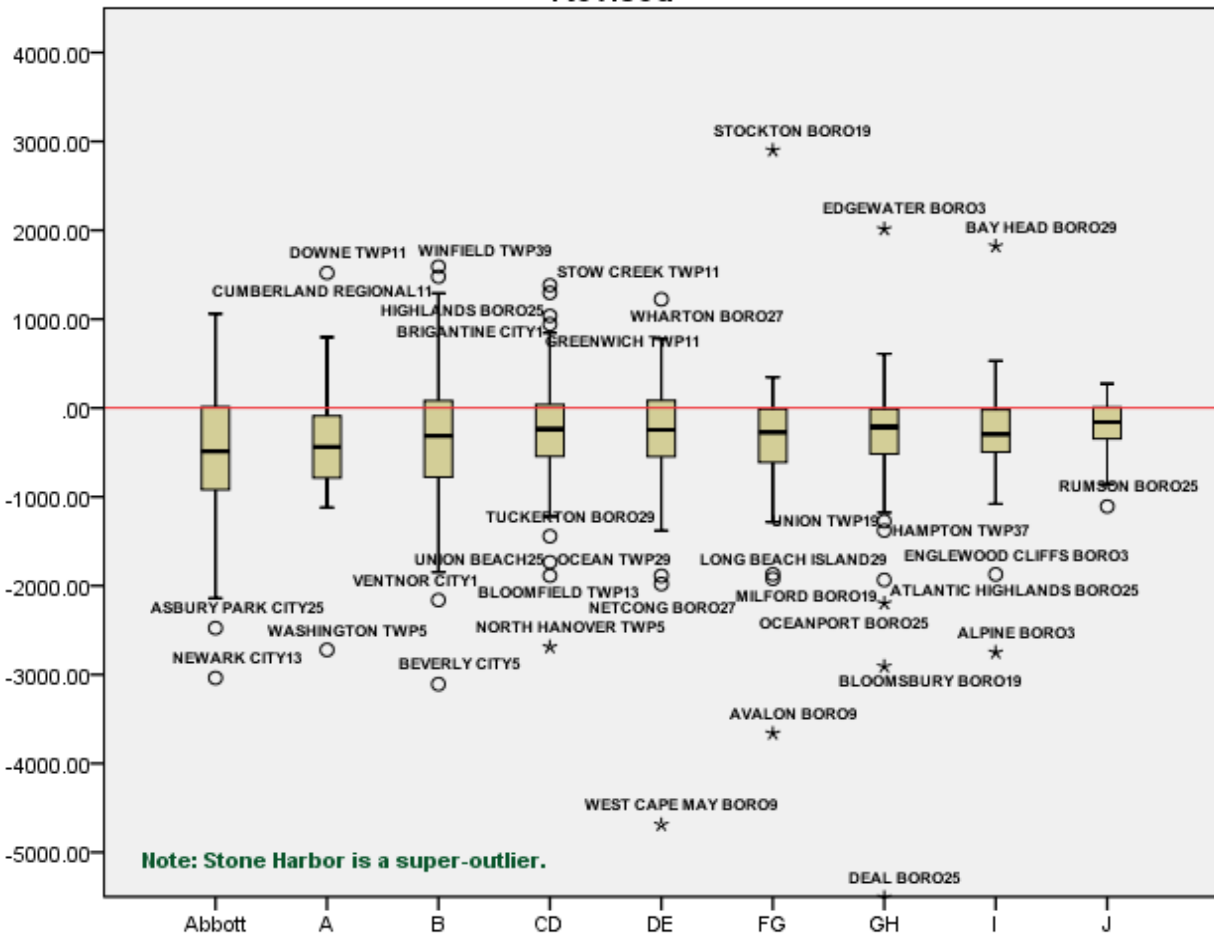
Comparative Spending Guide and User-Friendly Budget

The *Comparative Spending Guide* (CSG) has exactly the same measures as both the *Report Card* (RC) and the original *User-Friendly Budget* (UFB) for year-end actual data, although the revised UFB has very different per-pupil expenditure data than the CSG.

Approximately 75 percent of all districts show lower expenditures in their CSG 2010 actual expenditures in comparison to their 2010 revised UFB expenditures (graph 5a). Although the median underestimate is approximately \$400 per pupil, the minimum estimate is approximately \$1,300 per pupil (lower whisker), and there are a considerable number of underestimating outliers.

For the overestimate, which applies to approximately 25 percent of the districts, the maximum is approximately \$700 per pupil, with only several outliers (with Stockton Boro overestimating by \$3,000 per pupil) (graph 5a). The interquartile range for the DFG clusters is predictable, with lower and upper hinges on virtually the same plane.

Graph 5a: Difference 2010 Comparative Spending Guide and UFB 2010 Revised

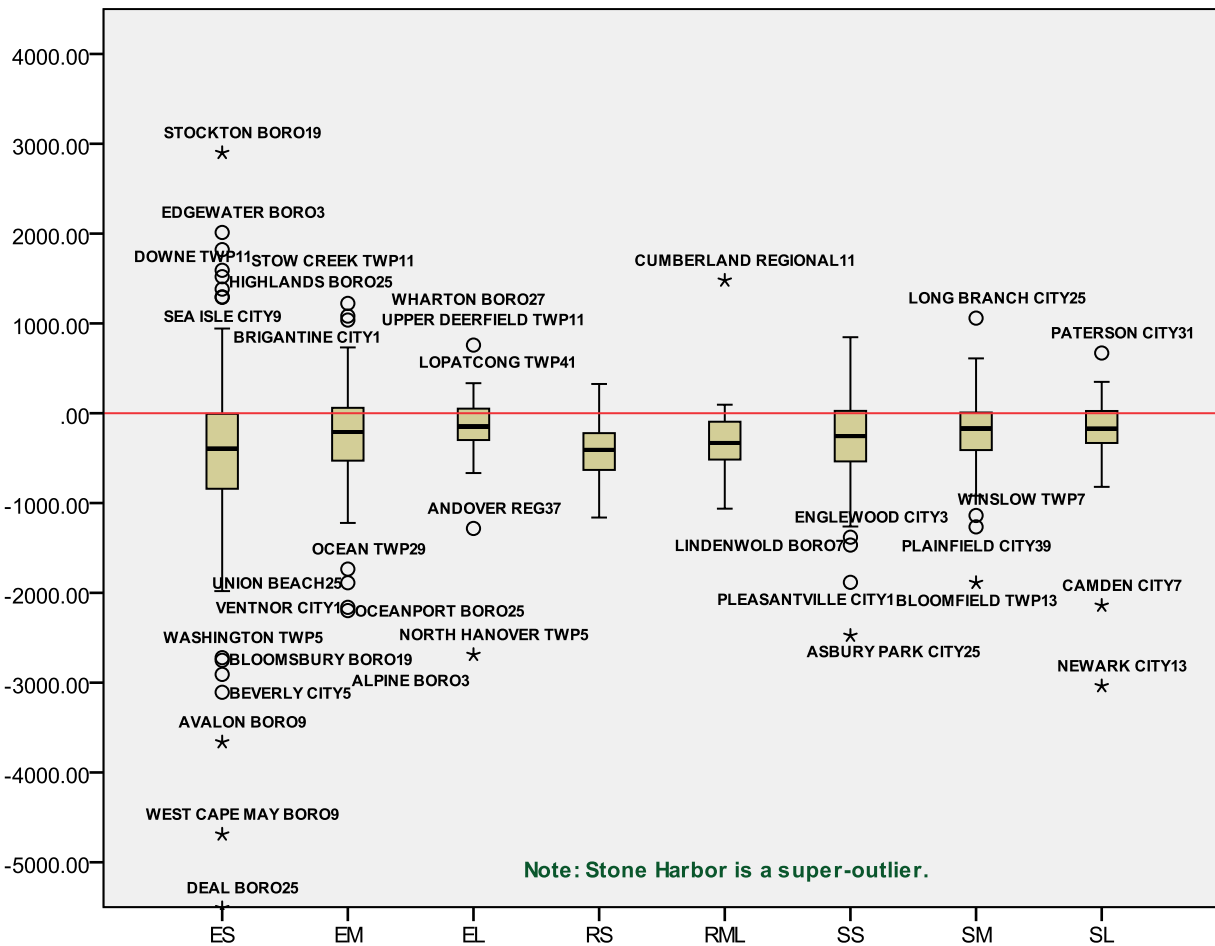


The CSG analysis by operating type/size cluster follows similar per-pupil expenditure patterns, with a median underestimate of \$400 per pupil, although there is much greater range in the lower-hinge levels (graph 5b). Again, the smaller elementary (ES and EM) and small secondary (SS) clusters have the greatest range (minimum, maximum, and interquartile), although their size (graph 2c) suggests that only the ES cluster may have a productive scale size issue.

Total Expenditure: Taxpayers’ Guide vs. User-Friendly Budget

The NJDOE’s Total Spending Per Pupil variable in the new *Taxpayers’ Guide to Education Spending* includes many expenditure lines that are not included in the *Comparative Spending Guide, Report Card, or User-Friendly Budget* definitions. As would be expected, this number is typically much larger than the aforementioned “comparative” per-pupil expenditures. The median overestimate for the *Taxpayers’ Guide* is approximately \$4,000 per pupil in comparison to the 2011 proposed *User-Friendly Budget* (graph 6a).

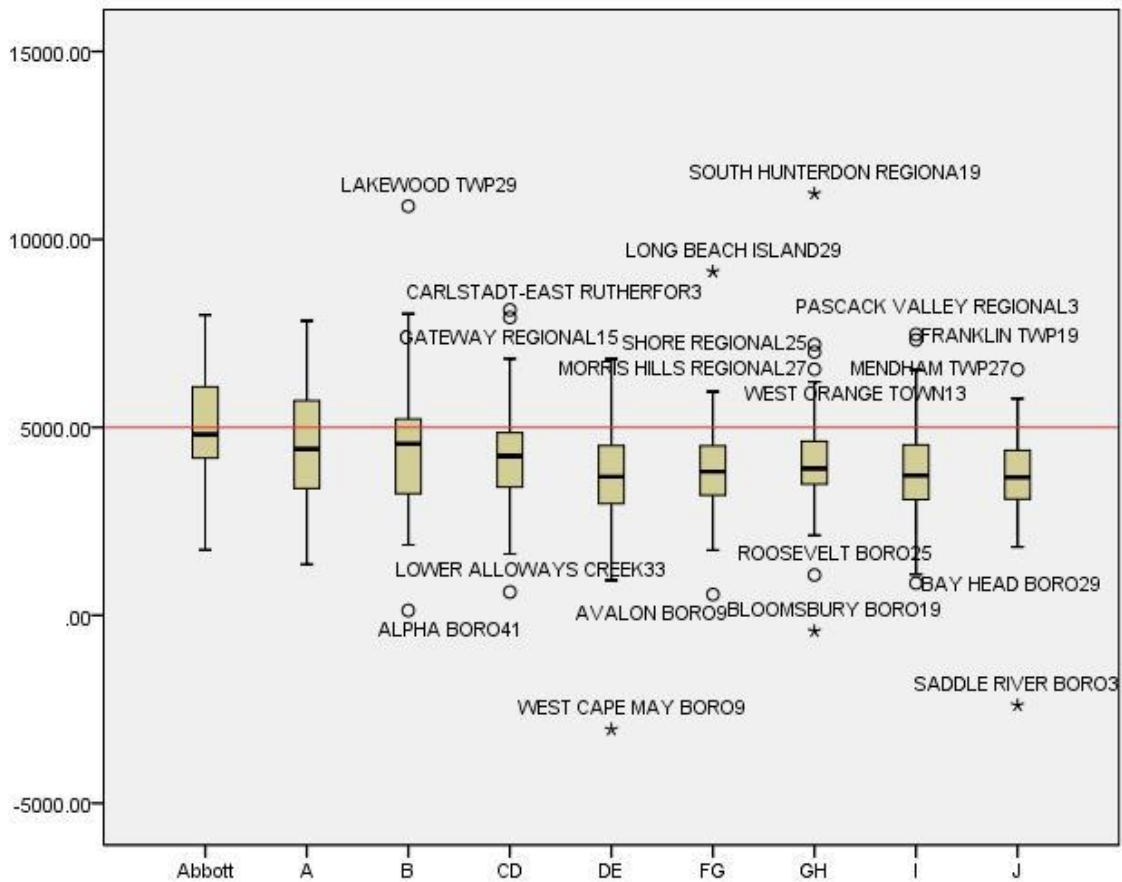
Graph 5b: Difference 2010 Comparative Spending Guide and UFB 2010 Revised



The median difference between these two measures ranges from a \$5,000 median higher estimate for the former Abbott districts to a \$3,500 median higher estimate for the wealthiest J districts, with a generally equidistant reduction from the lowest socioeconomic clusters to the highest (graph 6a).

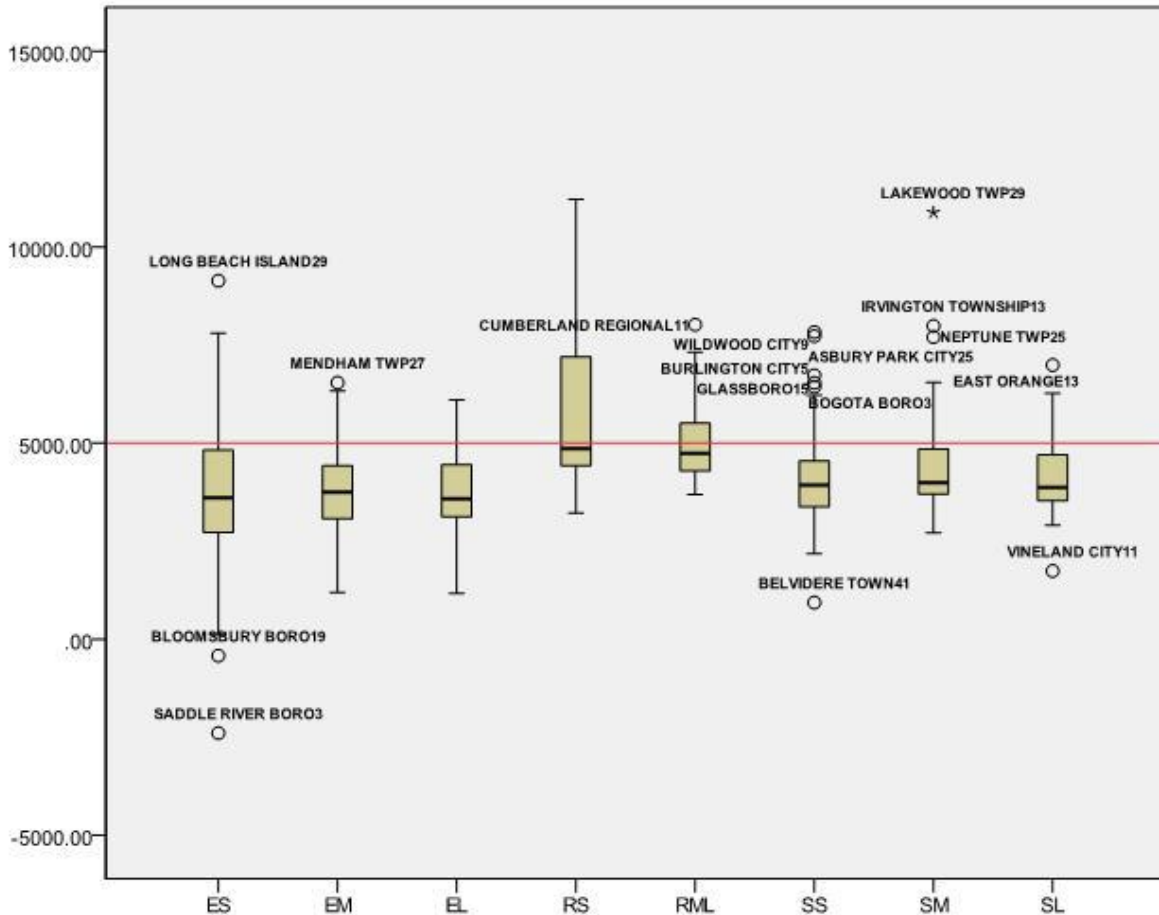
It is difficult to compare the *Taxpayers' Guide* with other “comparative” per-pupil measures, but the interesting story may lie in the outliers. Notice that Bay Head is at the “zero-change” plane, which means that Bay Head’s 2011 UFB proposed budget is at the same level as the *Taxpayers' Guide* Total Expenditure 2010 level. This similarity may be intuitive since Bay Head receives virtually zero state appropriations and its budget is based upon a very small and stable enrollment population. On the opposite end of the spectrum, Lakewood has an approximate \$12,000 higher estimate for the *Taxpayers' Guide* than its 2011 proposed UFB budget, suggesting that Lakewood receives significant “off-the-estimate” per-pupil state aid that is difficult to budget for. The former Abbotts have a median higher estimate of \$5,000, which most analysts understand to be a convergence of “off-the-estimate” state aid and predictable comparative per-pupil funding as a result of adjustment aid guarantees and productive scale size (graph 6a).

Graph 6a: Taxpayers' Guide 2010 and UFB 2011 Projected



As with other per-pupil variable analysis, the more interesting story is in the operating type/size clusters (graph 6b). Notice that the small regional (RS) districts have the largest range of per-pupil expenditure change, with the median skewed to the lower hinge. More than 50 percent of districts lie above the \$5,000 higher-estimate *Taxpayers' Guide* expenditure, with the upper hinge at approximately \$7,500 difference. Note that Saddle River had a UFB 2011 proposed higher estimate of approximately \$2,000 more than the *Taxpayers' Guide*, suggesting that Saddle River will spend beyond even state total expenditure estimates (graph 6b).

Graph 6b: Taxpayers' Guide 2010 and UFB 2011 Projected



¹ New Jersey Department of Community Affairs, Local Government Services, http://www.state.nj.us/dca/lgs/taxes/10_data/10taxsummary.htm. Municipal tax levies are identified by funding source, including regional and local schools, county library and government, and local municipal use.

² An appropriation is a legislative term for the setting aside of money for a particular purpose. The term is used in the context of budgets or spending bills. For example, the legislature appropriates funds for public education, and the governor approves or denies the amount.

³ U.S. Census Bureau, "Census Bureau Reports Public School Systems Spend \$10,499 Per Pupil in 2009," press release, May 25, 2011, <http://www.census.gov/newsroom/releases/archives/governments/cb11-94.html>.

⁴ This publication was formerly called the *Comparative Spending Guide*.

⁵ The comparative per-pupil expenditure metric has advantages for researchers since it attempts an apples-to-apples comparison of the most common and largest expenditures, such as classroom instruction, certificated support staff, administrative support, and operations and maintenance. The noncomparative per-pupil expenditure metric has advantages for taxpayers, since it attempts to identify the total cost of education and includes expenditure categories that are not necessarily common to all districts. These categories include capital construction costs as well as common costs such as state-paid pension and health care contributions.

⁶ Despite its name, the Total Spending Per Pupil metric may not include all spending. However, according to the *Taxpayers' Guide*, the metric does include transportation, special revenues, state-paid pensions and benefits, facilities (including debt service), equipment, total food services, judgments against the school district, and tuition/costs for students sent out of district (except for payments to charter schools).

⁷ State appropriations for schools are generated through state revenues such as the income tax, corporate tax, inheritance tax, sales tax, and other taxes. See State of New Jersey, Comprehensive Annual Financial Report: Fiscal Year Ended June 30, 2011, <http://www.state.nj.us/treasury/omb/publications/10cafr/pdf/intro.pdf>.

⁸ Per-pupil spending is not just a taxpayer issue. It also concerns elected officials, policy experts, interest groups, researchers, and the media, each of whom has a separate stake in the process and outcomes, and all of whom have a significant impact on education policy.

⁹ We acquired the data utilized for this study from the data repositories at the websites of the New Jersey Department of Education and the National Center for Education Statistics. Individual school district data can be viewed at these sites.

¹⁰ New Jersey Department of Education, *User-Friendly Budgets 2010*, <http://www.state.nj.us/education/finance/fp/ufb/menu/>.

¹¹ Home rule is a central government concept in which the state allows separate administrative entities to exercise the state's power of governance. New Jersey has 1,600 individual political entities, 591 school districts, 566 towns, 21 counties, and a hodgepodge of fire and sewer authorities. A separate governing body oversees each of these entities.

¹² The District Factor Group system uses census data to rank and group New Jersey's school districts by socioeconomic factors (income, occupation, and education). The system is intended to account for differences in educational outcomes that result from students' socioeconomic status (exogenous factors that educators cannot control) rather than school-based inputs (which educators can control). The DFG system assigns districts a letter rating from A to J, with A being the poorest districts and J being the wealthiest districts. DFGs are used in analyzing standardized test scores and in allocating funding to school districts. See NJDOE, "District Factor Grouping System," <http://www.nj.gov/education/finance/sf/dfgdesc.shtml>.

¹³ Operating type and enrollment size clusters are computed by the author to assign districts an operating type (elementary = K–6/8, regional = 7/9–12, and secondary = K–12) and an enrollment size (S=small, M=medium, ML=medium/large, and L=large). The author used cluster analysis to determine cluster populations and minimize variance.

¹⁴ In fact, for the 549 districts analyzed, the UFB2010Revised>DFG $R^2=.005$, while the UFB2010Revised>Weighted Demand $R^2=.012$, both statistically insignificant. For this paper we emphasize the operating type/enrollment size grouping, although with a similar $R^2=.006$ as the DFG and student-demand groupings, it at least directs the reader to the differences in elementary, regional, and K–12 schools. Cluster variation is a ripe area for continued per-pupil expenditure research.

¹⁵ The former Abbott districts are 31 poor districts that, by New Jersey Supreme Court mandate, receive extra funding above all other New Jersey school districts. They must receive supplemental state aid to bring their per-pupil spending up to the level of per-pupil spending in the state's wealthiest districts.

¹⁶ "Longitudinal" refers to the study of the same variables over a number of years.

¹⁷ 2009 is the most recent year for which data were available when this report was written.

¹⁸ Winnie Hu and Robert Gebeloff, "Growth in Education Spending Slowed in 2009," *New York Times*, May 25, 2011, <http://www.nytimes.com/2011/05/26/education/26spending.html>.

¹⁹ U.S. Department of Defense, 2010 Authorization Bill, H.R. 2647.

²⁰ New Jersey public school enrollment for the 2009–10 school year was 1.38 million; U.S. public school enrollment for the same period was 49.4 million. NJDOE, "New Jersey Public Schools Fact Sheet," <http://www.nj.gov/education/data/fact.htm>; Chen-Su Chen, *Public Elementary and Secondary School Student Enrollment and Staff Counts From the Common Core of Data: School Year 2009–10* (Washington, DC: National Center for Education Statistics, May 2011), <http://nces.ed.gov/pubs2011/2011347.pdf>.

²¹ The school tax levy is the amount contributed by taxpayers from local property tax bills to finance their local and regional schools.

²² These figures do not include federal aid or state-paid expenditures for employee benefits and capital construction that were added in the 2011 *Taxpayers' Guide* Total Spending Per Pupil metric. New Jersey Department of Education, state aid and enrollment data; New Jersey Department of Community Affairs, local tax levy data.

²³ New Jersey Department of Community Affairs, 2010 tax tables.

²⁴ New Jersey Department of Community Affairs, Local Government Services, municipal tax levy data.

²⁵ U.S. Census Bureau, *Public Education Finances: 2009* (Washington, DC: Government Printing Office, May 2011), <http://www2.census.gov/govs/school/o9f33pub.pdf>.

²⁶ In 2010, the governor proposed and the legislature approved a 4 percent property tax cap, excluding some contractual pension and benefit costs.

²⁷ Adam Schaeffer, *They Spend WHAT? The Real Cost of Public Schools*, Policy Analysis No. 662 (Washington, DC: Cato Institute, March 2010), <http://www.cato.org/pubs/pas/pa662.pdf>; Empire Center for New York State Policy, *2011–12 School Budget Spotlight* (Albany, NY: Empire Center, April 2011), <http://www.empirecenter.org/Documents/PDF/EmpireSchoolReport2011-12%20main.pdf>; Jennifer Cohen, "Examining the Data: State Per Pupil Expenditures and State Graduation Rates," Ed Money Watch blog, New America Foundation, September 16, 2010, <http://edmoney.newamerica.net/node/36914>; and Veronique de Rugy, "Losing the Brains Race," *Reason*, March 2011, <http://reason.com/archives/2011/02/22/losing-the-brains-race>.

²⁸ NJDOE, *2009–10 School Report Card*, <http://education.state.nj.us/rc/rc10/menu/o1.html>.

²⁹ NJSA 18A:22-8 is the New Jersey statute that requires the *User-Friendly Budget*.

³⁰ An “original” budget indicates projected spending.

³¹ The NJDOE includes the following types of students in its special needs category: students with disabilities, Limited English Proficient students, and low-performing students. See NJDOE, “Children with Special Needs,” <http://www.state.nj.us/education/parents/special.htm>.

³² The following data are based on the new *Taxpayers’ Guide to Education Spending* Total Spending Per Pupil metric.

³³ The DFG system assigns districts a letter rating from A to J, with A being the poorest districts and J being the wealthiest districts.

³⁴ As a former Abbott school Asbury Park receives significant state aid, as evidenced by the difference between its \$29,819 *Taxpayers’ Guide* 2010 Total Expenditure amount and its \$26,782 UFB 2010 revised amount. For the Audit 2010 figure, we used the district’s 2010 independent audit, which identifies a total expenditure of \$81.9 million and 2,092 students, to calculate a per-pupil expenditure of \$39,149.

³⁵ For this report, the school districts we selected were the outliers.

³⁶ For those who want to use the independent audits as a validation for the *Taxpayers’ Guide*, we urge caution in interpreting the K–8 districts. The K–8 districts have boards that are responsible for all students in their towns, not just those in the local K–8 schools. Those students who live in the district and are in grades 9–12 go to a regional high school district. If the students go to regional districts, they can attend either on a tuition basis or as regional members who pay taxes directly. Either way, the sending district is responsible for tuition.

³⁷ Although there are only two illustrative K–8 districts, the sending–receiving relationship typically has high tuition costs, and the data identify that the regional school districts are more costly than their peer K–12 districts. The economics of regionalization and of shared services suggest that there should be cost savings, and further study of this “market failure” is warranted in the future.

³⁸ However, productivity is a factor in the usual politically animated discussions of the School Funding Reform Act and in a host of subdialogues on school performance.

³⁹ For the better part of the last 30 years, pinpointing a statistically valid education productivity measure has been elusive. In his seminal 1996 paper, *The Productivity Collapse in Schools*, Dr. Eric Hanushek identified that the price of education relative to all other goods in the economy rose by 4 percent annually, when factoring a 7.6 percent per-pupil expenditure growth rate. Today, when analyzing the per-pupil expenditure metric anecdotally in relationship to outcomes metrics, the data may suggest that our public education system is experiencing a productivity decline.

⁴⁰ U.S. Bureau of Labor Statistics, National All-Item Consumer Price Index.

⁴¹ Asbury Park and Newark represent two of the highest-spending districts.

⁴² The standard deviation was \$724. Three cases were removed for insufficient data.

⁴³ Examples of mandatory contract terms include annual step raises, educational attainment raises, and cost of living raises.

⁴⁴ Nine districts with incomplete data were removed for this analysis.

⁴⁵ Note that these figures are only for the 549 regular operating districts and do not include small charter schools, which further impact per-pupil expenditures as the charter system grows.

⁴⁶ Daniel Kahneman and Amos Tversky, “Intuitive Prediction: Biases and Corrective Procedures,” *TIMS Studies in Management Science* 12, no. 3052 (1979): 313–327.

⁴⁷ Dan Lovallo and Daniel Kahneman, “Delusions of Success: How Optimism Undermines Executives Decisions,” *Harvard Business Review*, July 1, 2003.

⁴⁸ We propose that this productivity measure would be certified by a local superintendent or business administrator. It would be subject to audit and perhaps subject to penalties for gross inaccuracy.

⁴⁹ Reprinted from appendix B in Schaeffer, *They Spend WHAT?* The proposed bill language is based on model legislation adopted by the American Legislative Exchange Council.

⁵⁰ “AP Statistics: Boxplots,” StatTrek, <http://stattrek.com/AP-Statistics-1/Boxplot.aspx>



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