United States General Accounting Office

GAO

Report to the Ranking Minority Member, Committee on Ways and Means, House of Representatives

December 2002

# SCHOOL FINANCE

# Per-Pupil Spending Differences between Selected Inner City and Suburban Schools Varied by Metropolitan Area

GAO-03-234

DRAFT

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# Highlights

Highlights of GAO-03-234, a report to the Ranking Minority member, Committee on Ways and Means, House of Representatives

SCHOOL FINANCE

# Per-Pupil Spending Differences between Selected Inner City and Suburban Schools Varied by Metropolitan Area

## Why GAO Did This Study

The No Child Left Behind Act of 2001 has focused national attention on the importance of ensuring each child's access to equal educational opportunity. The law seeks to improve the performance of schools and the academic achievement of students, including those who are economically disadvantaged. The Congress, among others, has been concerned about the education of economically disadvantaged students. This study focused on per-pupil spending, factors influencing spending, and other similarities and differences between selected high-poverty inner city schools and selected suburban schools in seven metropolitan areas: Boston, Chicago, Denver, Fort Worth, New York, Oakland, and St. Louis.

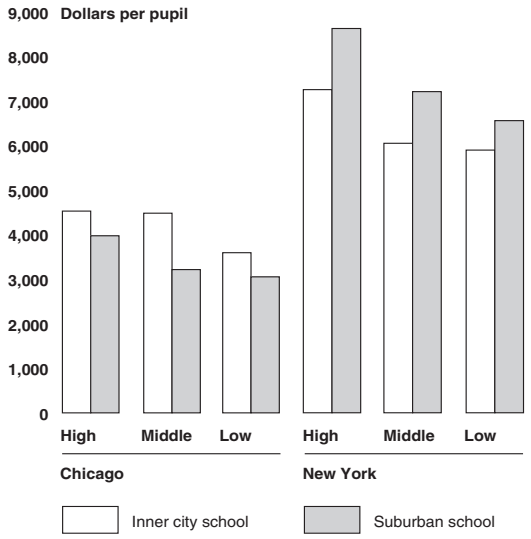
www.gao.gov/cgi-bin/getrpt/GAO-03-234

To view the full report, including the scope and methodology, click on the link above. For more information, contact Marnie Shaul at (202) 512-7215 or shaulm@gao.gov

## What GAO Found

Among the schools GAO reviewed, differences in per-pupil spending between inner city and suburban schools varied across metropolitan areas, with inner city schools spending more in some metropolitan areas and suburban schools spending more in other areas. The inner city schools that GAO examined generally spent more per pupil than suburban schools in Boston, Chicago, and St. Louis, while in Fort Worth and New York the suburban schools in GAO's study almost always spent more per pupil than the inner city schools. In Denver and Oakland, spending differences between the selected inner city and suburban schools were mixed. In general, higher per-pupil expenditures at any given school were explained primarily by higher staff salaries regardless of whether the school was an inner city or suburban school. Two other explanatory factors were student-teacher ratios and ratios of students to student support staff, such as guidance counselors, nurses, and librarians. Federal funds are generally targeted to low-income areas to compensate for additional challenges faced by schools in those areas. In some cases, the infusion of federal funds balanced differences in per-pupil expenditures between the selected inner city and suburban schools.

There is a broad consensus that poverty itself adversely affects academic achievement, and inner city students in the schools reviewed performed less well academically than students in the suburban schools. The disparity in achievement may also be related to several other differences identified in the characteristics of inner city and suburban schools. At the schools GAO visited, inner city schools generally had higher percentages of first-year teachers, higher enrollments, fewer library resources, and less in-school parental involvement--characteristics that some research has shown are related to school achievement.




Source: GAO's data analysis of school spending.

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### Abbreviations

| | |
|---|---|
| EdTrust | Education Trust |
| NAEP | National Assessment of Educational Progress |
| SMSA | metropolitan statistical area |

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**United States General Accounting Office**
**Washington, DC 20548**

December 9, 2002

The Honorable Charles Rangel
Ranking Minority Member
Committee on Ways and Means
House of Representatives

Dear Mr. Rangel:

The No Child Left Behind Act of 2001 has focused national attention on the importance of ensuring each child's access to equal educational opportunity. The law seeks to improve the performance of schools and the academic achievement of students, including those who are economically disadvantaged. The heightened challenge of meeting the act's new accountability requirements underscores the necessity of ensuring that all schools have the support they need to provide students with a quality public education. The challenge is particularly great for inner city schools serving low-income neighborhoods, where students on average continue to perform below students in suburban areas. The Congress and other policymakers have been concerned that this achievement gap may be related to possible differences in the amount of funding and resources available to low-income schools and school districts and affluent schools and school districts. Research has shown that such funding gaps are common at the district level; for example, a recent study by The Education Trust found that in 30 of the 47 states studied, school districts with the greatest numbers of poor children had less money to spend per student than districts with the fewest poor children.[1] However, little research has been done at the school level.

To provide you with information about inner city school spending and other school characteristics, we determined similarities and differences between selected inner city and suburban schools in (1) per-pupil spending and (2) other factors that may relate to student achievement, such as teacher experience, school enrollment, educational facilities and materials, and types of parental involvement.

[1]The Education Trust, *The Funding Gap: Low-Income and Minority Students Receive Fewer Dollars*, August 2002.

This study focuses on differences between inner city and suburban schools, and as such is distinct from a study of differences between urban and suburban schools; inner city schools, as a subset of urban schools, are in the central core of the city and have higher poverty rates. We selected 42 schools, 21 inner city and 21 suburban public elementary schools, to gather information on (1) school level, per-pupil spending, and federal revenues and (2) school, teacher, other staff, and student characteristics for the 2000-01 school year. We analyzed data from three inner city and three suburban schools from each of seven different metropolitan areas of medium, large, and very large population sizes: Oakland and St. Louis (medium); Boston, Denver, and Fort Worth (large); and New York and Chicago (very large).[2] In analyzing these data, we applied weights—a technique that allowed us to make adjustments to account for varying compositions of student need. We applied three different levels of weights.

To obtain a selection of "typical" schools, we chose the inner city schools in each metropolitan area that were at the median for poverty among the inner city schools; similarly we chose the school districts at the median for poverty among the suburban school districts. We attempted also to include one high-performing inner city school in each metropolitan area we visited, but were able to identify only two high-performing inner city schools—1 in St. Louis and 1 in Oakland. For this selection, we used The Education Trust database, which includes high-performing schools in low-income areas. We did not include high-performing schools that were special schools (e.g., magnet schools, science academies, etc.)[3]

In addition, we visited 24 of the 42 selected schools in the New York, St. Louis, Fort Worth, and Oakland areas. We visited these schools to obtain supplementary information on student achievement, the condition of the buildings and facilities, educational materials, and parental involvement. We analyzed similarities and differences separately for each geographic area and for all seven sites collectively. Our results are not generalizable beyond the schools in these seven sites. We conducted our

[2]Inner city schools and suburban schools in Miami were part of the original selection process but were dropped from the study because the district did not provide the necessary data.

[3]The criteria for including a school from the Education Trust database included the following: (1) The school was located in a selected inner city area. (2) The census child poverty rate for the school exceeded 40 percent. (3) The school placed in the top 50th percentile among all schools on the state's most recent reading assessment test. (4) The school was not a special school, for example, magnet school, science academy, etc.

work from January to November 2002 in accordance with generally accepted government auditing standards. (A detailed explanation of our methodology is found in app. I.)

## Results in Brief

Among the schools we reviewed, differences in per-pupil spending between inner city and suburban schools varied by metropolitan area, with inner city schools spending more in some areas and suburban schools spending more in others. In Boston, Chicago, and St. Louis, the selected inner city schools generally outspent suburban schools on a per-pupil basis. In Fort Worth and New York, the suburban schools in our study generally spent more per pupil than the selected inner city schools. In Denver and Oakland, spending differences between inner city and suburban schools were mixed. In general, higher per-pupil expenditures at any given school were explained primarily by higher staff salaries regardless of whether the school was an inner city or suburban schools. Two other important factors included lower student-teacher ratios and lower ratios of students to student support staff, such as guidance counselors, nurses, and librarians. While the selected inner city schools in Boston, Chicago, and St. Louis generally spent more per pupil than neighboring suburban schools, when we made adjustments using the highest weights the suburban schools generally spent more in every metropolitan area reviewed, because inner city schools had higher percentages of low-income students. Some research has shown that children from low-income families may require extra resources to perform at the same levels as their nonpoor peers. To address the additional needs of some children in low-income areas, federal education programs target funds to schools in these areas. In some cases, the infusion of federal funds has balanced differences in per-pupil expenditures between selected inner city and suburban schools.

Inner city students in the schools we reviewed generally performed poorly in comparison to students in suburban schools, a disparity that may be related to several differences we identified in the characteristics of inner city and suburban schools. Although research results are inconclusive on the importance of various factors, some studies have shown that greater teacher experience, smaller class size, more library and computer resources, and higher levels of parental involvement are positively related to student achievement. The inner city schools we visited generally had higher percentages of first-year teachers, higher enrollments, fewer library and computer resources, and less in-school parental involvement. For example, first-year teachers comprised more than 10 percent of the teaching staff in 8 of the 12 inner city schools visited, but the same was

true in just 4 of 12 suburban schools. In New York City, the selected inner city schools had fewer than 1,000 library books per 100 students, whereas the selected suburban schools had more than 2,000 library books per 100 students.

## Background

The Congress, among others, has been concerned about the academic achievement gap between economically disadvantaged students and their more advantaged peers. The disparity between poor students' performance on standardized tests and the performance of their nonpoor peers is well documented, and there is broad consensus that poverty itself adversely affects academic achievement. For example, on the National Assessment of Educational Progress (NAEP) reading assessment, 14 percent of fourth grade students who qualified for the free and reduced lunch program (a measure of poverty)[4] performed at or above the proficient level in comparison to 41 percent of those students who did not qualify for the program.[5] Furthermore, research has indicated the importance of socioeconomic status as a predictor of student achievement.[6] Research has shown that the achievement gap falls along urban and nonurban lines as well: students living in high-poverty, urban areas are even more likely than other poor students to fall below basic performance levels.[7]

In addition to the achievement gap between poor and nonpoor students, concerns exist that this gap may be related to differences between per-pupil spending among schools that serve poor and nonpoor communities. School district spending is generally related to wealth and tax levels, and differences in school district spending can have an impact on spending at

[4]Eligibility for free lunches is set at 130 percent of the official poverty line ($22,165 for a family of four during the 2000-01 school year), and eligibility for reduced-price lunches extends up to 185 percent of the poverty line ($31,543 for a family of four during the 2000-01 school year).

[5]U.S. Department of Education, National Center for Education Statistics, NAEP, *The Nation's Report Card: Fourth-Grade Reading 2000*, April 2001.

[6]See for example, U.S. General Accounting Office, *School Finance: State and Federal Efforts to Target Poor Students*, GAO/HEHS-98-36 (Washington, D.C.: Jan. 28, 1998).

[7]Educational Testing Service, unpublished tabulations from 1994 NAEP reading test. Cited in *Education Week* "Quality Counts," 1998. http://www.edweek.org/sreports/qc98/challenges/achieve/ac-c1.htm.

the school level.[8] Recently, efforts have been made to achieve greater spending equity. Using a variety of approaches, a number of states have targeted some additional funding to poor students to amend the unequal abilities of local districts to raise revenues for public schools.[9] Comparing spending between schools in simple dollar terms provides one way to check for differences; however, this type of straightforward comparison may be insufficient to explain spending differences because it does not capture the higher cost of educating students with special needs. Schools with similar spending per pupil may actually be at a comparative disadvantage when adjustments are made to account for differing compositions of student needs. Though not definitive, some research shows that children with special needs—low-income students, students with disabilities, and students with limited English proficiency—may require additional educational resources to succeed at the level of their nondisadvantaged peers. Because these additional resources require higher spending, some researchers have adjusted per-pupil expenditures by "weighting" these students to account for the additional spending they may be required.[10]

Weighting counts each student with special needs as more than one student, so that the denominator in the expenditures to students ratio is increased, causing the weighted per-pupil expenditure figure to decrease accordingly. For example, a school with an enrollment of 100 students may have 20 low-income students, 20 students with disabilities, and 10 students with limited English proficiency. Weighting these three groups of special needs students twice as heavily as other students causes weighted enrollment to rise to 150 students. If spending per-pupil is $4,000 without weighting, it drops to $2,667 when weights are applied. The actual size of the weights assigned to low-income students, students

[8]For recent statistics of finance equity among states, see American Education Finance Association, *Equitable School Finance Systems: Grading The States*, American Education Finance Association meeting, Austin, TX, Mar. 9-11, 2000.

[9]Spending per pupil reported in this study reflects nominal dollars after such adjustments have been made by the state to account for student needs.

[10]See: S. Chaikind, et al., "What Do We Know About the Costs of Special Education? A Selected Review," *The Journal of Special Education*, 26, no. 4 (1993): 344-370; American Institutes for Research, *What Are We Spending on Special Education Services in the United States, 1999-2000?*, Advance Report No. 1.( Special Education Expenditure Project, Mar. 2002.); GAO/HEHS-98-36; T. Parrish, "A Cost Analysis of Alternative Instructional Models for Limited English Proficient Students in California," *Journal of Education Finance* (Winter 1994): 256-278.

with disabilities, and students with limited English proficiency is subject to debate and generally ranges between 1.2 and 2.0 for low-income students, between 1.9 and 2.3 for students with disabilities, and between 1.10 and 1.9 for students with limited English proficiency.[11]

The inner city schools selected for our study had high proportions of children in poverty in comparison to the selected suburban schools. The elected inner city schools also generally had more students with limited English proficiency than their suburban counterparts. However, the proportions of students with disabilities in our selected inner city and suburban schools differed within and among metropolitan areas. In Denver, the selected inner city schools consistently had a higher proportion of students with disabilities than the selected suburban schools while in Fort Worth, the suburban schools had a higher proportion of students with disabilities. (See table 1 for total enrollment and percentages of children in poverty, students with disabilities, and students with limited English proficiency for selected schools in the seven metropolitan areas reviewed in this study.)

**Table 1: Total Enrollment and Percentages of Children in Poverty, Students with Disabilities, and Students with Limited English Proficiency for Selected Schools in the Seven Metropolitan Areas Reviewed**

| Metropolitan area | Inner city/suburb | Enrollment | Percent poor | Percent disabled | Percent LEP |
|---|---|---|---|---|---|
| **Boston** | Inner city 1 | 712 | 51 | 21 | 0 |
| | Inner city 2 | 193 | 50 | 9 | 0 |
| | Inner city 3 | 250 | 49 | 17 | 12 |
| | Suburban 1 | 386 | 7 | 12 | 0 |
| | Suburban 2 | 979 | 7 | 15 | 0 |
| | Suburban 3 | 335 | 7 | 8 | 3 |
| **Chicago** | Inner city 1 | 466 | 59 | 9 | 0 |
| | Inner city 2 | 900 | 59 | 14 | 5 |
| | Inner city 3 | 692 | 59 | 12 | 0 |
| | Suburban 1 | 503 | 5 | 17 | 1 |
| | Suburban 2 | 401 | 5 | 8 | 2 |
| | Suburban 3 | 280 | 5 | 6 | 5 |
| **Denver** | Inner city 1 | 562 | 52 | 12 | 52 |
| | Inner city 2 | 372 | 52 | 13 | 19 |
| | Inner city 3 | 468 | 51 | 12 | 32 |
| | Suburban 1 | 407 | 9 | 13 | 0 |

[11]Ibid.

| Metropolitan area | Inner city / suburb | Enrollment | Percent poor | Percent disabled | Percent LEP |
|---|---|---|---|---|---|
| | Suburban 2 | 292 | 10 | 8 | 11 |
| | Suburban 3 | 623 | 11 | 6 | 10 |
| **Fort Worth** | Inner city 1 | 760 | 52 | 6 | 17 |
| | Inner city 2 | 555 | 51 | 3 | 10 |
| | Inner city 3 | 937 | 51 | 3 | 15 |
| | Suburban 1 | 413 | 12 | 18 | 2 |
| | Suburban 2 | 392 | 12 | 6 | 5 |
| | Suburban 3 | 373 | 14 | 17 | 13 |
| **New York** | Inner city 1 | 484 | 56 | 9 | 22 |
| | Inner city 2 | 645 | 52 | 11 | 18 |
| | Inner city 3 | 630 | 43 | 6 | 3 |
| | Suburban 1 | 457 | 5 | 16 | 9 |
| | Suburban 2 | 553 | 5 | 9 | 3 |
| | Suburban 3 | 536 | 5 | 9 | 0 |
| **Oakland** | Inner city 1 | 745 | 45 | 5 | 64 |
| | Inner city 2 | 312 | 50 | 9 | 73 |
| | Inner city 3 | 1,238 | 47 | 6 | 41 |
| | Suburban 1 | 402 | 8 | 8 | 15 |
| | Suburban 2 | 877 | 8 | 0 | 4 |
| | Suburban 3 | 460 | 8 | 8 | 3 |
| **St. Louis** | Inner city 1 | 163 | 85 | 12 | 0 |
| | Inner city 2 | 292 | 55 | 13 | 0 |
| | Inner city 3 | 499 | 55 | 8 | 0 |
| | Suburban 1 | 602 | 11 | 18 | 3 |
| | Suburban 2 | 391 | 11 | 5 | 0 |
| | Suburban 3 | 459 | 9 | 11 | 1 |

Source: GAO's data analysis.

Differences in school spending can affect characteristics that may be related to student achievement. There is a large body of research on factors that may directly or indirectly contribute to student achievement. Spending has been the factor most studied for its effect on student achievement. Differences in student outcomes have also been related to factors such as teacher quality, class size, quality of educational materials, and parental involvement. Our study describes how some of these factors may differ across selected inner city and suburban schools.

## Spending Differences between Selected Inner City and Suburban Schools Varied by Metropolitan Area

Differences in per-pupil spending between selected inner city and suburban schools varied by metropolitan areas in our study.[12] Inner city schools in Boston, Chicago, and St. Louis generally spent more per pupil than neighboring suburban schools, whereas selected suburban schools in Fort Worth and New York almost always spent more per pupil than the inner city schools. In Denver and Oakland, no clear pattern of spending emerged. Three factors generally explained spending differences between inner city and suburban schools: (1) average teacher salaries; (2) student-teacher ratios; and (3) ratios of students to student support staff, such as guidance counselors, librarians, and nurses. When we adjusted per-pupil expenditures to account for the extra resources students facing poverty, disabilities, and limited English proficiency might need, inner city schools almost always spent less per pupil than suburban schools. To compensate for additional challenges faced by schools in these areas, federal education dollars are generally targeted to low-income areas. As a result, federal funds have played an important role in increasing funding to inner city schools.

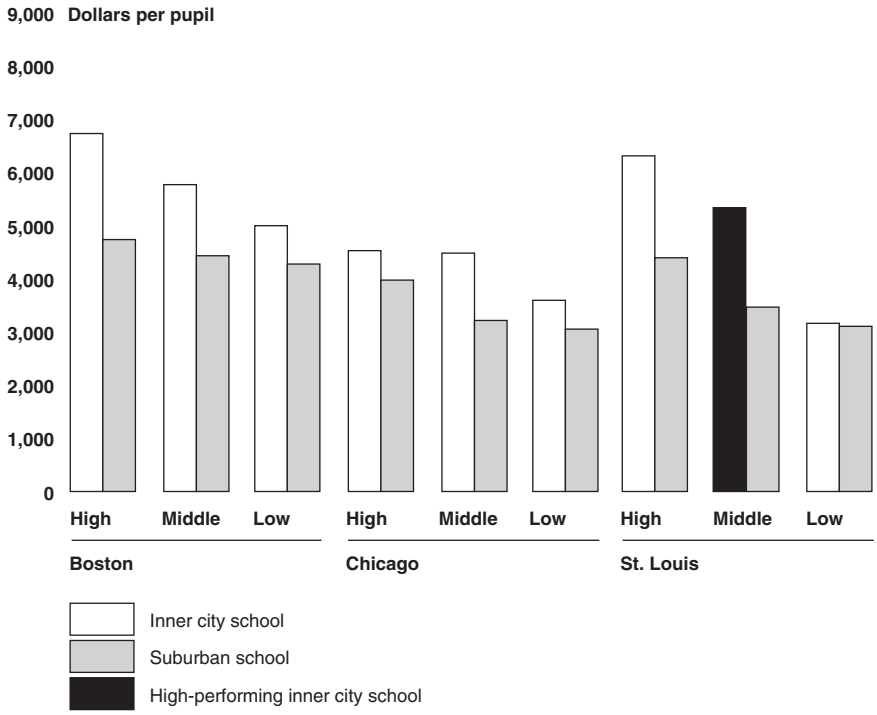
### Differences in Per-Pupil Spending between Selected Inner City Schools and Suburban Schools Varied by Metropolitan Area

Differences between inner city and suburban school per-pupil spending were related to the particular metropolitan area studied and generally seemed to be most influenced by teacher salaries. The selected inner city schools tended to outspend the suburban schools in the Boston, Chicago, and St. Louis metropolitan areas.[13] For example, in the Boston metropolitan area, the lowest spending inner city school spent more per pupil than the highest spending suburban school. (See fig. 1 for a comparison of per-pupil spending at selected inner city and suburban schools in these areas.)

[12]We gathered operational school-level spending on personnel salaries, building maintenance and repair, and educational materials and supplies. Other operational expenditures, for example transportation and capital expenditures, are not considered spending for this report. Total spending, as used herein, refers to the total amount spent on salaries, building maintenance and repair, and educational materials and supplies.

[13]See appendix I for technical details.

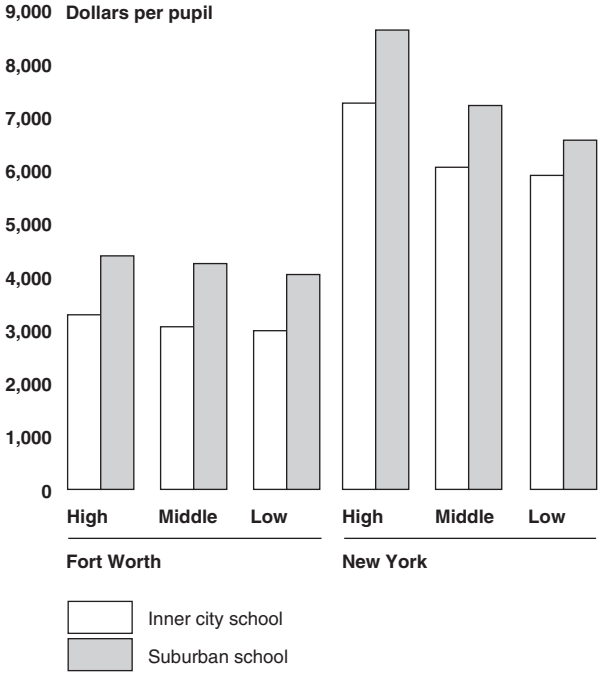
**Figure 1: Paired Comparison (High to High, Middle to Middle, and Low to Low) of Per-Pupil Spending at Selected Inner City and Suburban Schools in Metropolitan Areas Where Inner City Schools Spent More than Suburban Schools**




Source: GAO's data analysis.

In contrast, in the Fort Worth and New York metropolitan areas, suburban schools generally outspent inner city schools. For example, among the selected schools in the Fort Worth metropolitan area, the lowest spending suburban school had per-pupil expenditures 21 percent higher than the highest spending inner city school. (See fig. 2 for a comparison of per-pupil spending at selected inner city and suburban schools in these areas.)

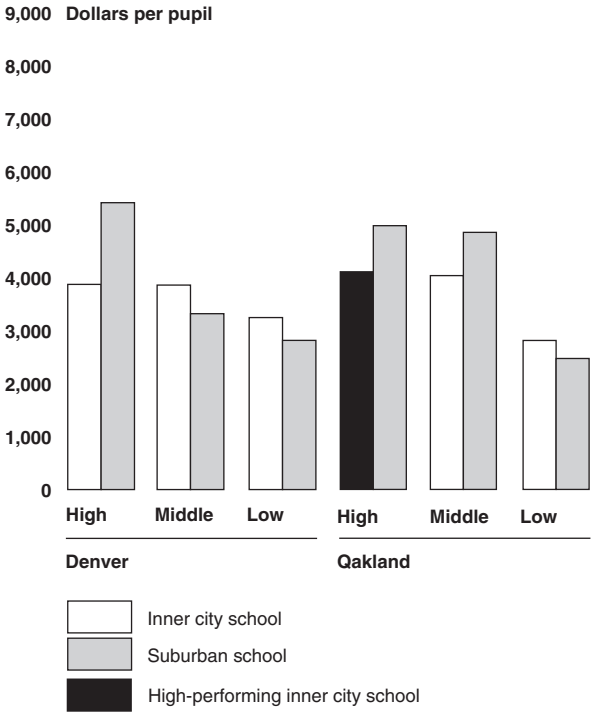
**Figure 2: Paired Comparison (High to High, Middle to Middle, and Low to Low) of Per-Pupil Spending at Selected Inner City and Suburban Schools in Metropolitan Areas Where Suburban Schools Spent More than Inner City Schools**




Source: GAO's data analysis.

In Denver and Oakland, an examination of spending differences among the selected suburban and inner city schools revealed mixed results. That is, analysis of spending differences showed no general pattern of spending that favored either inner city or suburban schools. (See fig. 3 for a comparison of per-pupil spending at selected inner city and suburban schools in the Denver and Oakland metropolitan areas.)

**Figure 3: Paired Comparison (High to High, Middle to Middle, and Low to Low) of Per-Pupil Spending at Selected Inner City and Suburban Schools in the Denver and Oakland Metropolitan Areas**




Source: GAO's data analysis.

## Average Teacher Salaries, Student-Teacher Ratios, and Ratios of Students to Student Support Staff Accounted for Most of the Differences in School Spending in Selected Schools

Among the schools in our study, three factors influenced per-pupil spending: average teacher salaries, student-teacher ratios, and the ratio of students to student support staff.[14] Average teacher salaries appeared to have the greatest impact on per-pupil spending, followed by lower student-teacher ratios and lower ratios of students to student support staff.

Average teacher salaries influenced per-pupil spending in areas where inner city schools spent more per pupil (Boston and Chicago), where suburban schools spent more per pupil (New York), and where spending was mixed (Oakland). For example, in Chicago, where inner city schools generally outspent suburban schools, the median inner city school average teacher salary was $47,851, compared with $39,852 in the suburbs. In Oakland, where spending between suburban schools and inner city schools was mixed, the average teacher salary at the median spending school was $60,395 and per-pupil spending was $4,849, compared with $52,440 and $4,022 at the median spending inner city school.

Student-teacher ratios and ratios of students to student support staff were factors that could offset the influence of teacher salaries in explaining per-pupil spending.[15] For example, in Fort Worth, where the three suburban schools typically spent more per student than inner city schools, inner city teacher salaries were generally higher than suburban teacher salaries. However, ratios of students to both teachers and student support staff were lower in our selected suburban schools. For example, the median spending inner city school in Fort Worth had 21 students per teacher, compared with 17 students per teacher in the suburbs. Additionally, the median spending inner city school had 1 student support staff professional for every 162 students, whereas in the suburbs the ratio was 1 to 68. (Table 2 lists factors contributing to higher per-pupil spending—average teacher salaries, student-teacher ratios, and ratios of students to support staff—for the median spending school in each reviewed metropolitan area.)

[14]Regression analysis was employed to identify factors influencing per-pupil spending. The t-scores of average teacher salary, student-teacher ratio, and the ratio of students-to-student support staff were found to be significant at the 0.05 level. Maintenance and repair spending was found to be positively related to per-pupil spending, but not at the 0.05 level. See appendix I for technical details.

[15]Student support staff was defined as including guidance counselors, social workers, psychologists, librarians, nurses, speech therapists, principals, and assistant principals.

**Table 2: Spending Per Pupil, Average Teacher Salary, Student-Teacher Ratio, and Student-Support Staff Ratio at the Median Spending School in Each Metropolitan Area**

| | Spending per pupil | Average teacher salary | Student-teacher ratio | Students-student support staff ratio |
|---|---|---|---|---|
| **Boston** | | | | |
| Inner city | $5,770 | $61,079 | 16:1 | 119:1 |
| Suburb | $4,433 | $38,180 | 17:1 | 61:1 |
| **Chicago** | | | | |
| Inner city | $4,482 | $46,661 | 23:1 | 58:1 |
| Suburb | $3,216 | $39,852 | 21:1 | 100:1 |
| **Denver** | | | | |
| Inner city | $3,852 | $38,044 | 20:1 | 171:1 |
| Suburb | $3,313 | $32,753 | 17:1 | 86:1 |
| **Fort Worth** | | | | |
| Inner city | $3,058 | $41,402 | 21:1 | 162:1 |
| Suburb | $4,246 | $33,316 | 17:1 | 68:1 |
| **New York** | | | | |
| Inner city | $6,057 | $42,285 | [a] | [a] |
| Suburb | $7,218 | $72,591 | 18:1 | 73:1 |
| **Oakland** | | | | |
| Inner city | $4,022 | $52,440 | 30:1 | 233:1 |
| Suburb | $4,849 | $60,395 | 20:1 | 155:1 |
| **St. Louis** | | | | |
| Inner city | $5,337 | $33,223 | 25:1 | 28:1 |
| Suburb | $3,467 | $34,304 | 13:1 | 87:1 |

Note: School districts in New York City did not provide us with information on student-teacher ratios and the ratio of students to student support staff.

[a]Not applicable.

Source: GAO's data analysis.

## Inner City Schools at a Disadvantage When Spending Adjusted for Student Needs

Despite higher per-pupil spending by about half of the inner city schools in our study, inner city schools generally spent less compared with neighboring suburban schools when spending was weighted to account for differing compositions of student needs. To account for the greater costs that may be associated with educating low-income students, students with disabilities, and students with limited English proficiency, some researchers have used formulas that weight these students more heavily than other students. In a similar fashion, we applied weights to our per-pupil expenditure data.

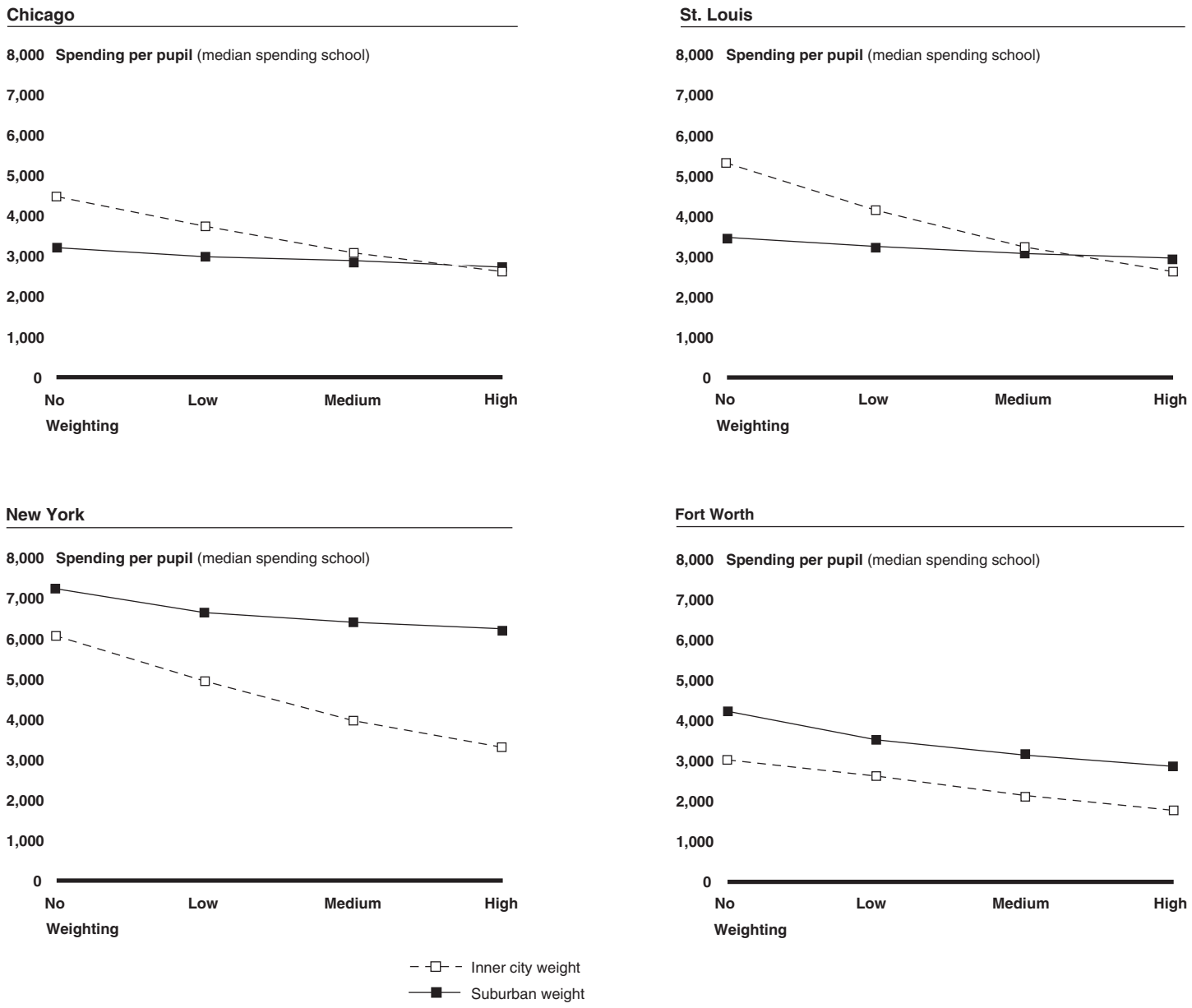
The use of the lowest and medium weights had little impact on spending differences between inner city and suburban schools.[16] Inner city schools in Boston, Chicago, and St. Louis continued to outspend neighboring suburban schools in most cases. For example, in Chicago, when students were weighted with the lowest weight, the median per-pupil spending for inner city school was $3,743 per pupil compared with $2,996 for the suburban school. Similarly, the use of medium weights generally did not result in higher per-pupil spending at suburban schools. For example, using medium weights, the median inner city school in Chicago still spent more than the median suburban school, although the difference was smaller—$3,089 compared with $2,858.

However, when the highest weight was applied, inner city per-pupil spending fell below suburban school spending in almost all cases.[17] For example, in Chicago when the highest weight was applied, per-pupil spending at the median inner city school was less than that of the suburban school, $2,629 as compared with $2,734. Similarly, in the New York metropolitan area, where suburban schools we reviewed outspent inner city schools, the use of the highest weights to adjust for student needs caused the differences between inner city and suburban school spending to be substantially enlarged. (See fig. 4 for examples of how spending changes as different weights are applied for per-pupil spending at the median inner city and suburban schools in four metropolitan areas.)

[16]The actual size of the weights assigned to low-income, special education, and limited English proficiency students is subject to debate and generally ranges from a 1.2 to 2.0 for low-income students, from 1.9 to 2.3 for special education students, and from 1.1 to 1.9 for students with limited English proficiency. Consequently, low-weights were 1.2 for low-income students, 1.9 for special education students, and 1.1 for students with limited English proficiency. The medium weights were 1.6 for low-income students, 2.1 for special education students, and 1.5 for students with limited English proficiency. The high weights were 2.0 for low-income students, 2.3 for special education students, and 1.9 for students with limited English proficiency.

[17]The differences between inner city and suburban weighted per-pupil spending was most affected by differences in the proportion of low-income students in inner city and suburban schools. The inner city schools in our study served populations with very high proportions of low-income students.

**Figure 4: Spending Per Pupil by the Median Inner City and Suburban School in Four Metropolitan Areas for Different Weight Adjustments for Students' Needs**




Source: GAO's data analysis.

## Federal Funds Played Important Role in Helping Inner City Schools Meet Expenses

Because federal programs, such as Title I, specifically target funds to schools in low-income areas, these federal funds generally helped reduce or eliminate the gap between selected inner city and suburban schools in terms of per-pupil expenditures.[18] In the Denver and St. Louis metropolitan areas, federal funds generally eliminated the gap between inner city and suburban schools' per-pupil spending. In Fort Worth, without federal funds per-pupil spending at the selected inner city schools would have been about 63 percent of selected suburban schools, and in Oakland, per-pupil spending would have been about 78 percent of suburban schools. However, selected inner city schools in Boston and Chicago would have still spent more than suburban schools without federal funds. (See table 3 for a comparison of inner city and suburban per child spending with and without federal dollars.)

[18]See U.S. General Accounting Office, *Title I Funding: Poor Children Benefit Though Funding Per Poor Child Differs*, GAO–02-242 (Washington, D.C.: Jan. 31, 2002).

**Table 3: Per-Pupil Spending with and without Federal Dollars for Selected Inner City and Suburban Schools in Seven Metropolitan Areas**

| Per-pupil spending with federal dollars | | | Per-pupil spending without federal dollars | |
|---|---|---|---|---|
| **Inner city** | **Suburb** | **Metropolitan area** | **Inner city** | **Suburb** |
| $6,731 | $4,737 | **Boston** | $6,283 | $4,620 |
| $5,770 | $4,433 | | $5,191 | $4,264 |
| $4,998 | $4,277 | | $4,669 | $4,147 |
| $4,529 | $3,975 | **Chicago** | $4,049 | $3,747 |
| $4,482 | $3,216 | | $3,859 | $3,145 |
| $3,595 | $3,053 | | $2,936 | $2,790 |
| $3,865 | $5,404 | **Denver** | $3,437 | $5,275 |
| $3,852 | $3,313 | | $3,136 | $3,203 |
| $3,240 | $2,810 | | $2,567 | $2,717 |
| $2,984 | $4,391 | **Fort Worth** | $2,474 | $4,202 |
| $3,058 | $4,040 | | $2,472 | $3,727 |
| $3,282 | $4,246 | | $2,316 | $3,655 |
| $7,263 | $8,637 | **New York**[a] | $6,318 | $8,457 |
| $5,904 | $7,218 | | $5,236 | $7,204 |
| | $6,566 | | | $6,298 |
| $4,022 | $4,849 | **Oakland** | $3,567 | $4,840 |
| $4,100 | $4,975 | | $3,355 | $4,796 |
| $2,810 | $2,470 | | $2,517 | $2,453 |
| $5,337 | $4,395 | **St. Louis** | $3,844 | $4,202 |
| $6,311 | $3,467 | | $3,730 | $3,361 |
| $3,162 | $3,106 | | $2,287 | $3,000 |

[a]School level federal dollars received for only two inner city schools in New York.

Source: GAO's data analysis.

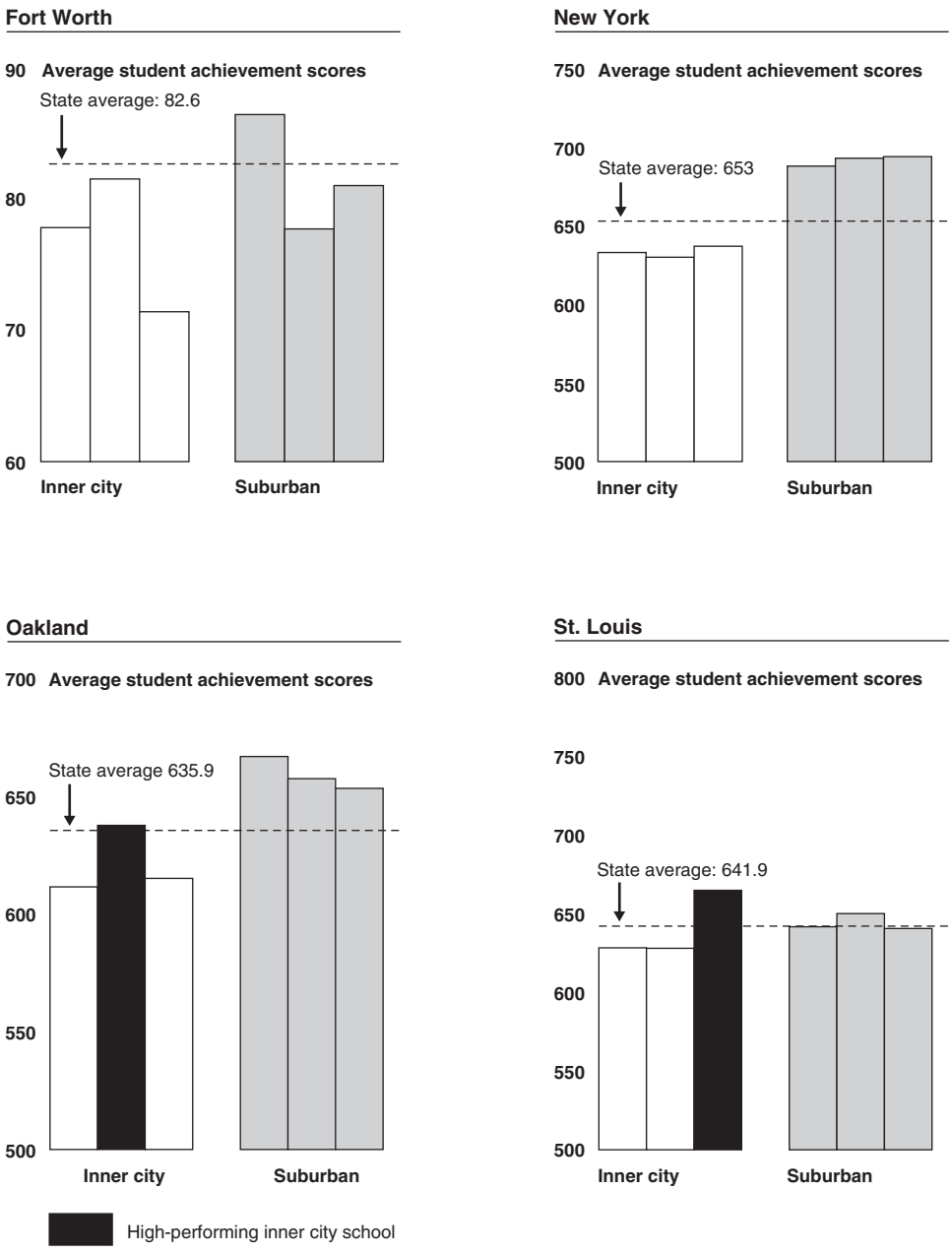
## Inner City Schools Generally Faced Greater Challenges That May Have Affected Student Achievement

Factors that may relate to student achievement differed between inner city and suburban schools in our study. Research has shown a positive relationship between student achievement and factors such as teacher experience, lower enrollment, more library books and computer resources, and higher levels of parental involvement. Among the 24 schools we visited, the average student achievement scores were generally lower in inner city than in suburban schools. Along with lower achievement scores, these inner city schools were more likely to have a higher percentage of first-year teachers, whose lack of experience can be an indicator of lower teacher quality. In addition, in comparison to the suburban schools, inner city schools generally were older, had higher student enrollments, and had fewer library books per pupil and less technological support. Finally, the type of in-school parental involvement in the inner city and suburban schools differed.

## Inner City Students' Achievement Scores Were Generally Lower than Suburban Students' Achievement Scores

In general, at the schools we visited in the metropolitan areas of Fort Worth, New York, Oakland, and St. Louis, inner city students' average achievement scores on state reading assessment tests were lower than scores at the neighboring suburban schools. Two schools were exceptions to this pattern. In St. Louis, we specially selected one high-performing inner city school; students at this school performed higher than students at the three suburban schools we visited. In the Fort Worth metropolitan area, one inner city school performed slightly higher than two of the three suburban schools we visited. (See fig. 5 for average student achievement scores for selected schools in the four metropolitan areas.)

**Figure 5: Average Student Achievement Scores for Selected Schools in Fort Worth, New York, Oakland, and St. Louis**




Source: GAO's data analysis.

Although the selected inner city schools' student achievement scores were generally lower, this pattern did not appear to be related to or consistent with per-pupil spending. That is, higher-performing schools were not necessarily schools that were high in per-pupil spending. For example, per-pupil spending at the highest-performing inner city school in Fort Worth we visited was $3,058, which was higher than one selected inner city school, lower than the other selected inner city school, and lower than each of the suburban schools.

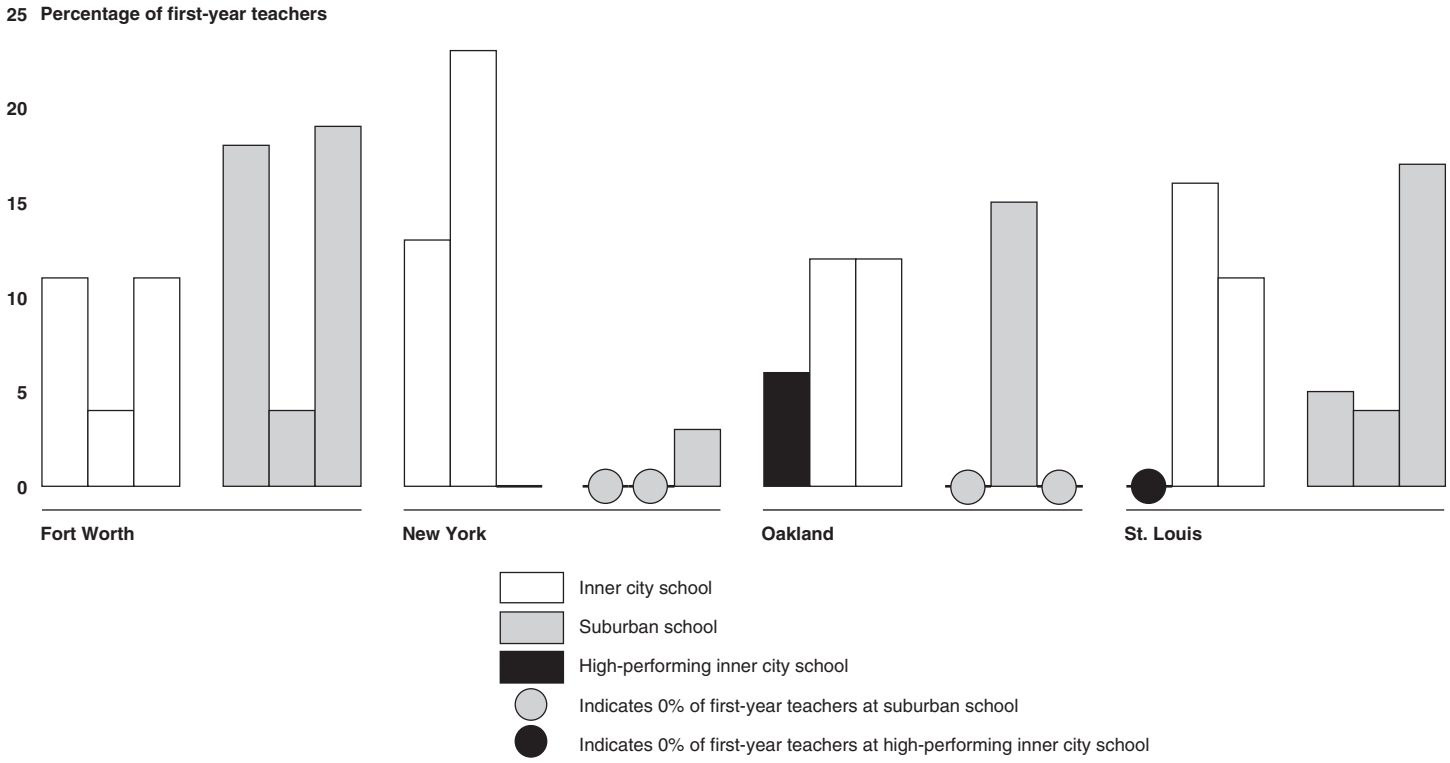
## Inner City Schools We Reviewed Had More First-Year, Thus Less Experienced, Teachers than Suburban Schools

First-year teachers in the 24 schools we visited generally constituted a higher percentage of the faculty in inner city schools than suburban schools.[19] First-year teachers comprised more than 10 percent of the teaching staff in 8 of the 12 inner city schools, but the same was true in just 4 of 12 suburban schools. However, both the percent of first-year teachers and differences between inner city and suburban schools varied among the 4 metropolitan areas. (See fig. 6 for the percentage of first-year teachers by school and metropolitan area.) For example, in the New York metropolitan area there were no first-year teachers at 2 of the suburban schools, but at 2 inner city schools first-year teachers were 24 and 13 percent of the faculty.[20] In the Fort Worth metropolitan area, 2 of the suburban schools had almost twice the percent of first-year teachers as the two inner city schools with the highest percent of first-year teachers.

[19]The percentage of first-year year teachers can be used as an indicator of lower teacher quality because of their relative inexperience.

[20]Information on first-year teachers was received for only 2 of the 3 selected New York City schools.

**Figure 6: Percentage of First-Year Teachers by School and Metropolitan Area**




Source: GAO's data analysis.

Note: One New York school did not provide data on first-year teachers.

Notably, the percentage of first-year teachers was low at the two high-performing inner city schools. In Oakland, the percentage of first-year teachers at the high-performing inner city school was 6 percent, compared with 12 percent at the other two inner city schools. In St. Louis, the high-performing inner city school had no first-year teachers, whereas the other two inner city schools had 11 and 16 percent.

As noted earlier in the report, average teacher salaries in large part accounted for most of the differences in school spending. The fact that teaching staff at inner city schools were generally comprised of higher percentages of first-year teachers is not inconsistent with the finding on teacher salaries. The average teacher salary at a school includes the salaries of all teachers in the school, from first-year teachers to the most senior staff. For example, in a school with a high proportion of first-year teachers the average teacher salary could still be higher than that of

another school because of higher proportions of tenured teachers and the district's salary structure.

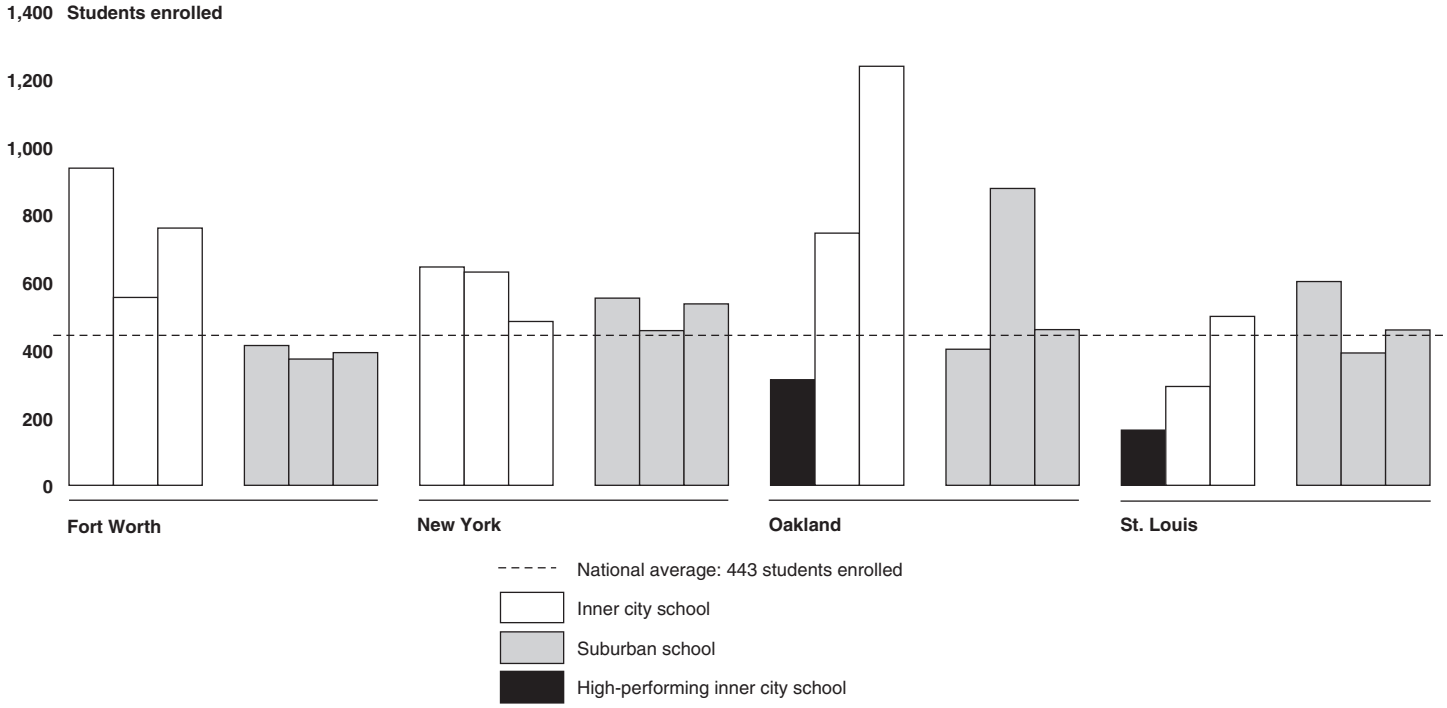
## Enrollment Was Higher in Inner City Schools than in Suburban Schools, and Buildings Were Older

The enrollment of the 12 inner city schools we visited tended to be higher than that of the 12 suburban schools we visited, but enrollment varied across and within metropolitan areas.[21] The national average elementary school enrollment is 443, and schools with enrollments over 600 are considered "large," regardless of the school's capacity.[22] In three out of the four metropolitan areas we visited, Fort Worth, New York, and Oakland, the enrollment at the inner city schools was consistently higher than the national average enrollment. In addition, 6 of the 12 inner city schools we visited had enrollments over 600 students. In contrast, enrollments exceeded 600 in only 2 of the 12 suburban schools we visited. (See fig. 7 for enrollments at the selected schools.)

[21]WestEd reports that research indicates smaller schools can reduce the effects of poverty on student achievement. See, WestEd, *Are Small Schools Better? School Size Safety & Learning*, November 21, 2001, San Francisco, CA.

[22]National Center for Education Statistics, *Condition of American Public School Facilities*, 1999.

**Figure 7: Student Enrollments at Selected Schools**




Source: GAO's data analysis.

Among the schools we visited, most of the inner city schools were older than 50 years, which is higher than the national average of 43 years. Furthermore, 7 of the oldest 10 buildings were inner city schools, 2 having been built in the 19th century. In contrast, most of the suburban schools we visited were less than 40 years old.

In addition to the physical condition of the buildings, playground facilities in the inner city schools differed greatly from facilities in the suburban schools. Inner city schools we visited were less likely to have playground equipment and expansive play areas. For example, the playgrounds in St. Louis suburban schools all had green fields and a variety of playground equipment. In this same metropolitan area, only one of the inner city schools had any playground equipment and at the other two schools asphalt lots were the single outdoor recreational facility. Figure 8 shows the playgrounds of an inner city school and a suburban school in the St. Louis metropolitan area.

**Figure 8: Playgrounds of an Inner City School in St. Louis and a Neighboring Suburban School**

Suburban St. Louis playground

Inner city St. Louis playground

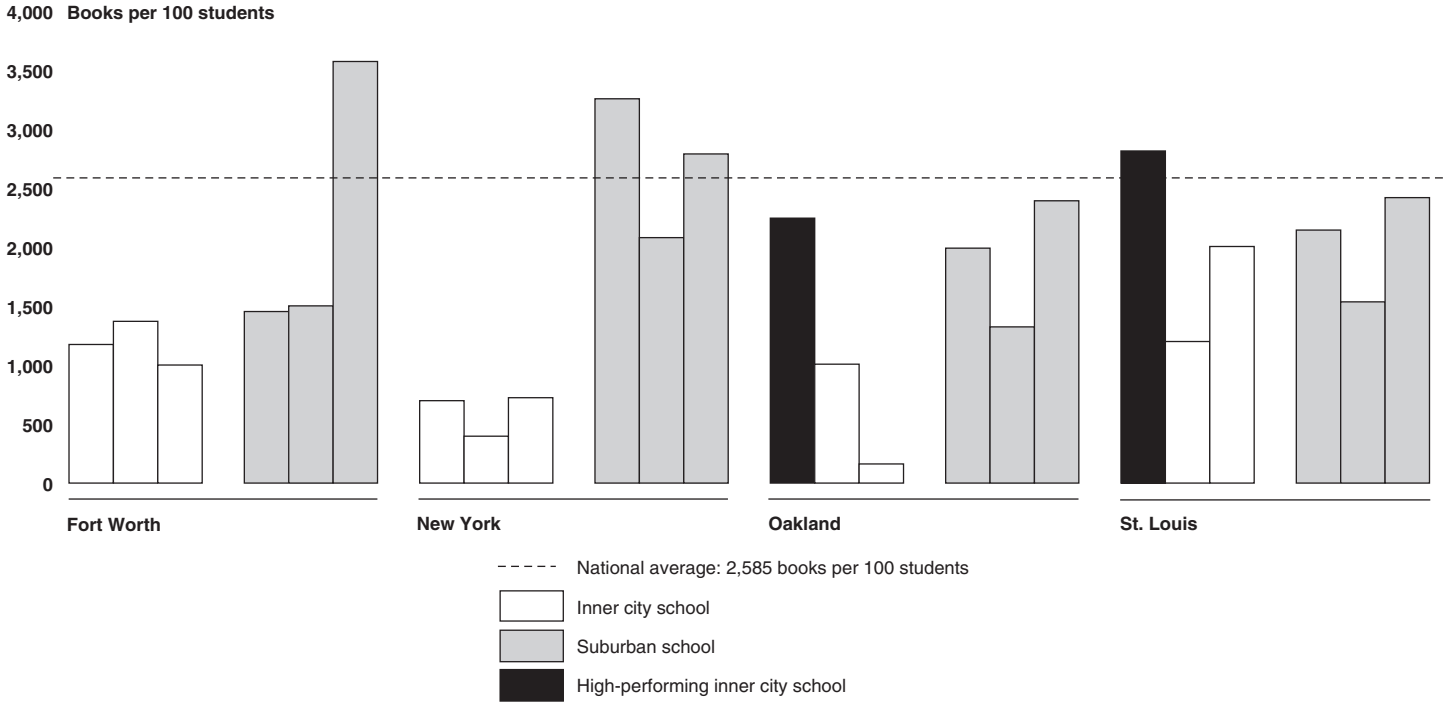
Source: GAO photographs.

## Inner City Schools Had Less Library and Technological Support than Suburban Schools

Overall, the inner city schools we visited had fewer library books per child and were less likely to have a computer laboratory than suburban schools. Most of the suburban schools visited were below the national average of 2,585 books per 100 students—7 of the 12 schools had more than 2,000 books per 100 students. However, only 3 of the inner city schools visited had more than 2,000 books per 100 students.[23] For example, in New York City, the 3 selected inner city schools had fewer than 1,000 library books per 100 students, whereas the 3 selected suburban schools had more than 2,000 library books per 100 students and one had more than 3,000. Notably, the high-performing inner city school in St. Louis had 2,813 library books per 100 students, more than any of the suburban schools we visited in that area. Similarly, the high-performing inner city school in Oakland had 2,244 books per 100 students, which was more than the other two Oakland inner city schools and 2 of the 3 selected suburban schools. Furthermore, only 7 of the 12 selected inner city schools had a full-time librarian, whereas all but one suburban school had a full-time librarian. (See fig. 9 for the number of library books per 100 students at selected schools.)

[23]The number of library books reported is not precise. The reported number is based upon data that include both counts provided by some schools and best estimates provided by librarians from other schools.

**Figure 9: Number of Library Books per 100 Students at Selected Schools**




Source: Prepared by GAO from school site visits.

Our site visits also revealed a difference between inner city and suburban schools in terms of the presence of a computer laboratory. Eleven of the 12 suburban schools we visited had a computer laboratory, whereas 8 of the inner city schools visited had such a facility. Among schools with computer laboratories, however, the ratio of students to laboratory computers was similar among inner city and suburban schools.

## In-School Parental Involvement Differed between Selected Inner City and Suburban Schools

Parents of children attending the suburban schools we visited were more involved in on-site school activities than parents of inner city children.[24] According to the suburban school principals, parental involvement in their schools was typically very high and included participation in volunteer activities, attendance at parent-teacher conferences, and providing financial support to the school. Parent volunteerism at suburban schools could be quite substantial. For example, parents at one suburban school in the Oakland metropolitan area provided 24,000 hours of volunteer time during the school year. Inner city principals characterized parents as concerned and interested in their children's education, though less likely to attend parent-teacher conferences and volunteer in school. A number of inner city principals we interviewed also noted that while parents generally wanted to help their children succeed in school, they often lacked the necessary finances, skills, or education to offer additional assistance beyond that offered by the school.

## Conclusions

Our findings suggest that spending differences between the inner city schools and suburban schools in our review do exist, but these differences for the most part depend upon the metropolitan area. In some metropolitan areas, inner city schools spent more per pupil whereas in others suburban schools spent more per pupil. Spending differences, regardless of metropolitan area for the most part, seemed to be the result of differences in salaries and student to teacher and staff ratios. However, the very heavy concentration of poverty in inner city schools may place them at a spending disadvantage, even when spending is equal. In addition, the suburban schools, as well as the high-performing inner city schools we visited, generally had more experienced teachers, lower enrollments, more library books per child, and more parental in-school volunteer activities than the other inner city schools in this study. These factors are important to consider in improving the performance of inner city schools.

[24]Research has indicated the importance of parental involvement to student achievement. The National Conference of State Legislatures reported on a comprehensive review of 66 studies that examined the correlation between parent involvement and student success and concluded that parent involvement, not income or social status, was the most accurate predictor of student success. See National Conference of State Legislatures, *Improving Student Achievement*, July 2001, citing Anne T. Henderson and Nancy Berla, *A New Generation of Evidence: The Family is Critical to Student Achievement* (Washington, D.C., Center for Law and Education, 1995).

## Agency Comments

We provided a draft of this report to the Department of Education for review and comment. Education's Executive Secretariat confirmed that department officials had reviewed the draft and had no comments.

We are sending a copy of this report to the Secretary of Education. We will make copies available to others upon request. In addition, the report will be available at no charge on GAO's Web site at http://www.gao.gov.

If you or your staff have any questions about this report, please call me at (202) 512-7215. See appendix III for other staff acknowledgments.

Sincerely yours,

Marnie S. Shaul, Director
Education, Workforce, and
Income Security Issues

# Appendix I: Objectives, Scope, and Methodology

The objectives of our study were to provide information on similarities and differences between (1) per-pupil spending in selected inner city and suburban schools and (2) other characteristics that may relate to student achievement, such as, teacher experience, school enrollment, educational materials, physical facilities, and parental involvement. To address the first objective, we reviewed the literature on spending differences, interviewed experts about the issues and approaches to measuring spending data, and collected spending and related school data on 42 inner city and suburban schools. To address the second objective, we examined the literature, interviewed experts about relationships between student achievement and school characteristics, and visited 24 inner city and suburban schools to collect information on student achievement, the quality and availability of educational materials, the condition of the buildings and facilities, and type and extent of parental involvement. This appendix discusses the scope of the study, criteria for selecting metropolitan areas and schools, and the methods employed to describe and explain observed spending differences.

## Scope

This study focused on similarities and differences between inner city schools and suburban schools. This is different and distinct from a study of similarities and differences between urban and suburban schools, or urban and suburban districts, as urban schools and districts generally include a wider range of poverty than inner city schools. This study covered selected inner city and suburban schools in seven metropolitan areas.

## Metropolitan Area Selection

Metropolitan areas were purposively selected to reflect diversity on the basis of geography and size. We used geographic areas from the Northeast, Midwest, South, and West. Three size categories were used: (1) very large, (2) large, and (3) medium. We defined these by population.

- Very large: areas where the central city of a metropolitan area had a population of more than 1 million residents;
- Large: areas where the central city of a metropolitan area had a population between 500,000 and 1 million residents;
- Medium: areas where the central city of a metropolitan area had a population between 250,000 and 500,000 residents.

The metropolitan areas selected for inclusion in the study were Boston, Chicago, Denver, Fort Worth, Miami, New York, Oakland, and St. Louis. Inner city and suburban schools in Miami were dropped from the study because the district did not provide the necessary data. (See table 4 for the selected metropolitan areas.)

**Table 4: Metropolitan Areas Selected for Study**

| Category | Metropolitan area | Geographic location | City population |
|---|---|---|---|
| **Very large** | Chicago | Midwest | 2,896,016 |
| | New York | Northeast | 8,008,278 |
| **Large** | Boston | Northeast | 589,141 |
| | Denver | West | 554,636 |
| | Fort Worth | South | 534,694 |
| **Medium** | Miami | South | 362,470 |
| | Oakland | West | 399,484 |
| | St. Louis | Midwest | 348,189 |

Source: GAO's data analysis and 2000 Census.

## Defining Inner City and Suburbs

For this study, in consultation with experts, we defined "inner city" as a contiguous geographic area that (1) had a poverty rate of 40 percent or higher, (2) was located within the "central core" of a city with a population of at least 250,000 persons, and (3) the city is the central city of a metropolitan with a population of at least 1 million persons.

We defined suburb as the geographic area that is (1) outside the boundaries of a central city with a population of at least 250,000 persons, (2) inside the boundaries of the metropolitan statistical area (SMSA) of the central city, as defined by the Office of Management and Budget and used by the census, and (3) the metropolitan area has a population of at least 1 million persons.

In total, we collected spending data on 42 schools, 21 inner city and 21 suburban public elementary schools in seven metropolitan areas, and gathered information on (1) school-level per-pupil spending and federal revenues, and (2) school, teacher, other staff, and student characteristics for the 2000-01 school year. In addition, we conducted site visits at 24 of the selected schools. These schools were located in the New York, St. Louis, Fort Worth, and Oakland metropolitan areas. We visited them in order to obtain supplementary information on characteristics that might affect student achievement, such as facilities, educational materials, and types of parental involvement.

## School Selection

The study was designed to compare "typical" inner city and "typical" suburban schools, rather than those schools with extreme poverty or wealth. We consulted with experts about our design. We used the factors described below to select typical schools. Our goal was to make comparisons that would reflect likely differences, if any, between the inner city and suburban schools in a given metropolitan area.

To select the inner city schools, we (1) consulted with local experts in each metropolitan area to identify the geographic area of the central city of the SMSA generally considered the inner city, (2) calculated census child poverty rates for each census tract within the inner city area, (3) retained identified census tracts with census child poverty rates higher than 40 percent, (4) ranked the census tracts by poverty rate, and (5) identified the three inner city census tracts closest to the 50th percentile, that is, the median poverty census tracts of the inner city.[1] We then selected the public elementary school that served those census tracts, but purposely excluded schools that were special schools, for example, magnet schools, science academies, etc.

Where possible, we attempted to include one high-performing inner city school in each metropolitan area we visited. We used *Dispelling the Myth*, an Education Trust (EdTrust) database of high-poverty, high-performing schools, for this selection. *Dispelling the Myth* is an ongoing EdTrust project to identify high-poverty and high-minority schools that have high student performance or have made substantial improvement in student achievement. We identified schools in that database with a student poverty rate greater than 50 percent and an overall achievement score on the most recent state reading assessment test above the 50th percentile. Because the EdTrust database used free and reduced lunch eligibility as its

[1]In two metropolitan areas, New York and Oakland, local experts identified three distinct inner city areas. In these two metropolitan areas, the census tract in each inner city area closest to median level poverty was selected. Two of the three selected inner city schools in New York—schools selected from Harlem and the Bronx—had poverty rates above 40 percent and were located in inner city areas. These schools, however, were selected on the basis of per capita income, which was the selection methodology employed during the early design phase of the study and subsequently replaced by the median poverty rate approach. The schools were retained, however, for data efficiency purposes and because their child poverty rates were consistent with that of schools that would have been selected in their stead.

criterion for poverty,[2] we further verified that the school was located in an inner city census tract as defined by this study serving an area with a census child poverty rate greater than 40 percent. We purposely excluded schools that were special schools, for example, magnet schools, science academies, etc. Inner city schools from the St. Louis and Oakland metropolitan areas met these criteria. The identified high-performing inner city school in St. Louis replaced a selected school. The identified high-performing inner city school in Oakland, however, was a school that would have been selected through the described census tract approach and was, therefore, treated similarly to the other selected inner city schools. (See table 5 for the selected inner city census tracts and child poverty rates.)

[2]Child poverty can be measured by (1) census data or (2) the number of children eligible for free or reduced-price lunch. The subsidized lunch program provides a looser definition of poverty than census poverty data. The number of students eligible for subsidized lunches is roughly double the number meeting the census poverty definition. Nonetheless, according to the Department of Education, the subsidized lunch program provides the best available source of data on low-income students at the school level.

**Table 5: Selected Inner City Census Tracts and Child Poverty Rates**

| Metropolitan area | Census tract | Child poverty rate |
|---|---|---|
| **Boston** | 0611 | 48.5% |
| | 0814 | 49.8% |
| | 0924 | 50.9% |
| **Chicago** | 6106 | 58.6% |
| | 6812 | 58.9% |
| | 4001 | 59.0% |
| **Denver** | 0011.02 | 51.3% |
| | 0007.02 | 52.0% |
| | 0010 | 52.2% |
| **Fort Worth** | 1046.04 | 51.0% |
| | 1050.06 | 51.2% |
| | 1061.02 | 52.1% |
| **New York**[a] | 209.01 | 42.9% |
| | 0395 | 52.4% |
| | 65 | 56.5% |
| **Oakland** | 4054 | 44.9% |
| | 4088 | 46.8% |
| | 4024[b] | 49.6% |
| **St. Louis** | 1212[c] | 85.0% |
| | 1104 | 54.8% |
| | 1243 | 54.9% |

Note: Child poverty rates were computed using 1990 census data.

[a]Census tracts are from three separate counties: CT 209.01 (New York); CT 0395 (Kings); CT 65 (Bronx).

[b]Census tract contained identified high-performing inner city school.

[c]Census tract 1112 (54.6% child poverty) was replaced by identified high-performing inner city school in census tract 1212.

Source: GAO's data analysis.

To select suburban schools, we (1) collected census child poverty rates for all school districts in the defined suburban area outside the central city of the selected metropolitan area and within the same state as the central city; (2) ranked by census child poverty rates in the suburban school districts; and (3) identified the three suburban school districts closest to the 50th percentile, that is, the median suburban school districts, based upon child poverty rates. We dropped districts that were contiguous or had a 5 to 17-year-old population of less than 500 and replaced them with the district with the next closest median level child poverty that did not have any of these attributes.

For those districts, we selected the elementary school of the district. If more than one elementary school served the school district, we selected the elementary school in the district with the median child poverty rate (as determined by free and reduced lunch eligibility) for elementary schools in that district. (See table 6 for the child poverty rates for the selected suburban school districts.)

**Table 6: Selected Suburban School Districts' Child Poverty Rates**

| Metropolitan area | Selected school district poverty rate | | |
|---|---|---|---|
| | District 1 | District 2 | District 3 |
| **Boston** | 6.5% | 6.6% | 6.9% |
| **Chicago** | 4.5% | 4.6% | 4.6% |
| **Denver** | 8.8% | 10.1% | 11.0% |
| **Fort Worth** | 12.0% | 12.3% | 13.9% |
| **New York** | 4.9% | 5.1% | 5.2% |
| **Oakland** | 7.5% | 7.9% | 8.4% |
| **St. Louis** | 9.3% | 10.5% | 10.8% |

Note: Child poverty rates were computed using 1995 census child poverty estimates for school districts.

Source: GAO's data analysis.

## Data Collected

From 42 selected schools we obtained detailed information for the 2000-01 school year on (1) school spending and federal revenues, (2) staffing and teacher experience, and (3) student characteristics. The practical difficulties of conducting any data collection effort may introduce errors, commonly referred to as nonsampling errors. For example, difficulties in how a particular question is interpreted or in the sources of information that are available can introduce unwanted variability into the results. We took steps in the development of the instrumentation, the data collection, and the data editing and analysis to minimize these errors. We pretested our data collection instrument with the Boston school district and called individual district officials to clarify answers. Completed instruments were examined for inconsistencies, and follow-up calls were made to districts to clarify imprecise responses or data that were unusually different from other respondent data.

- School spending data included (1) instructional staff salaries, (2) certified professional staff salaries, (3) administrative staff salaries, (4) operations staff salaries, (5) education materials and supplies spending, and (6) building maintenance and repair spending. In addition, schools reported federal sources of revenue.

- School, staff, and student information included numbers of (1) regular education teachers, special education, English as a second language instructional staff, and other specialized instructional staff, for example, art teachers, reading teachers; (2) regular education teacher assistants, special education teacher assistants, and other instructional staff teacher assistants, for example, art teacher assistants, reading teacher assistants; (3) student support professional and nonprofessional staff by job title; (4) administrators and administrative assistants by job title; (5) operations staff by job title; (6) the number of first-year teachers; (7) total enrollment; (8) number of students with disabilities and number of students with limited English proficiency; (9) race and ethnicity of students; and (10) the number of students eligible for free and reduced lunch.

Data on student achievement, facilities, educational materials, and parental involvement that may contribute to academic achievement were obtained from site visits to 12 inner city and 12 suburban schools. We developed a site visit protocol and pretested it at site visits to inner city and suburban schools in the New York and Baltimore metropolitan areas.

We obtained information on student achievement. In Fort Worth, we used Grade 3 reading scores on the Texas Assessment of Academic Skills. In New York, we used Grade 4 scores on the State English Language Arts Assessment. In Oakland, we used Grade 4 reading scores on the Stanford 9 test. In St. Louis, we used Grade 3 Communication Arts scores on the Missouri Assessment Program. In each metropolitan area, we contrasted the achievement scores of the selected schools to the state average.

Depending upon data, information was collected as a dichotomous variable (yes/no), date or period of time, number, or ranked scale assessment. (See table 7 for school site visit information collected, assessment measure, and description of the measurement scale.)

**Table 7: School Characteristics, Assessment Measure, and Measurement Description**

| Category | Assessment | Measurement description |
|---|---|---|
| **Facilities** | | |
| Age of building | Date | Year of construction |
| Renovations | Date | Year of most recent renovation |
| Ancillary buildings | Yes/no | Presence of auxiliary classrooms |
| Classroom size | Square feet | Size of 2nd Grade classrooms |
| Special classrooms | Yes/no | Presence of special classrooms and description[a] |
| Playgrounds | Yes/no | GAO assessment |
| Condition of facilities | Scale | GAO assessment (1- 4 scale) and description |
| **Educational materials** | | |
| Age of textbooks | Date | Year of purchase |
| Computers | Number | Total computers in building |
| Modernization | Scale | GAO assessment (1- 3 scale) and description |
| School supplies | Scale | Principal assessment (1-5 scale) and description |
| Library | Number | Number of books |
| **Parental involvement** | | |
| School activities | Scale | Principal assessment (1-5 scale) and description |
| Donate/raise money | Yes/no | Principal assessment |
| Volunteer | Yes/no | Principal assessment |
| PTA participation | Yes/no | Principal assessment |

Note: Scale is a subjective assessment.

[a]Special classrooms include gymnasium, auditorium, cafeteria, art room, music room, science room, and gardens, and were separately noted.

Source: GAO site visit data collection protocol.

## Methodology to Analyze Differences in Spending and Factors Accounting for Spending Differences

For each metropolitan area, per-pupil spending[3] for each of the three inner city schools and three suburban schools were ordered and paired, that is, the lowest spending inner city school was paired with the lowest spending suburban school, the middle spending inner city school was paired with the middle spending suburban school, and the highest spending inner city school was paired with the highest spending suburban school.

[3]Spending includes personnel salaries, building maintenance and repair, and educational materials and supplies. Some expenditures, such as transportation and district overhead, are, therefore, not included in spending.

To examine factors that explained differences in school spending, we conducted regression analysis. Regression analysis is a statistical methodology that measures the relationship between one variable and one or more other variables.

In our regression model, we tried to determine the extent to which total per-pupil spending at a selected individual school could be explained by (1) average teacher salary at the school, (2) adjusted student-teacher ratio at the school,[4] (3) the ratio of students to student support staff at the school, and (4) annual spending at the school on building maintenance and repair.

The variables in the model were defined as follows:

- Total per-pupil spending—total dollars spent by the school in the 2000-01 school year divided by total enrollment.[5]

- Average teacher salary—total salary expenditure for teachers at the school divided by the number of teachers. Teacher salary was used in the regression to capture the salary structure at the school.[6]

- Adjusted student-teacher ratio—total enrollment adjusted for students with special educational needs divided by the total certified instructional staff. Adjusted enrollment differed from total enrollment in that the adjusted enrollment included an additional weight of 100 percent for each child receiving special education instruction at the school and 50 percent for students with limited English proficiency. Adjusted enrollment was used to capture the direct higher spending by the school for students with special needs. Teachers included: regular classroom teachers, special education teachers, teachers of students with limited English proficiency, art teachers, music teachers, physical education teachers, reading teachers, teachers for the gifted and

[4]Enrollment was weighted to account for students with disabilities and students with limited English proficiency in order to more accurately gauge the school's student-teacher ratio.

[5]Total enrollment was calculated as the enrollment of the school on October 1, 2000.

[6]It was assumed that across schools the salaries of other employees in the school would be "structurally" related to the salaries of teachers. That is, if teachers at a particular school earn on average a higher salary, then other employees at the school, such as operations staff and administrators, would similarly earn higher salaries.

talented, science teachers, and computer laboratory teachers.[7] Teaching assistants and paraprofessionals were not included because their direct involvement with instruction was not always certain.

- The ratio of students to student support staff at the school was computed by dividing the total enrollment by the total certified professional staff. Support staff was not adjusted for students with special needs because it was assumed that at the school level support staff to student time is less dependent upon the disability of the child. Total certified professional staff included: administrators, health providers, and certified staff providing services to students.[8]

- Spending on building maintenance and repair at the school included contracted maintenance and repair and salary expenditures for building custodians and maintenance workers for the 2000-01 school year. (See table 8 for the regression results for factors explaining differences in per-pupil spending at the selected schools.)

[7]Classroom and instructional-service paraprofessionals were not included.

[8]Operation staff and clerical staff were not included.

**Table 8: Regression Results for Factors Explaining Differences in Per-Pupil Spending at Selected Schools**

**Dependent variable:** Per-pupil spending

R = 0.854

F = 21.536

sig. = 0.000

| Independent variable | Coefficient | Standard error | t-score | Significance |
|---|---|---|---|---|
| Constant | 3024.888 | 678.076 | 4.461 | .000 |
| Teacher salary | 7.718E-02 | .011 | 7.295 | .000[a] |
| Weighted student teacher ratio | -89.375 | 30.934 | -2.889 | .007[a] |
| Student-support staff ratio | -5.134 | 2.165 | -2.372 | .024[a] |
| Maintenance and repair | 2.067E-03 | .001 | 1.988 | .055 |

[a]Significant at the 0.05 level.

Source: GAO's data analysis.

Appendix II presents selected data on the 42 schools examined in the seven metropolitan areas, as well as additional information obtained from site visits at 24 schools.

# Appendix II: School Profiles

This appendix contains three tables of school-level information collected from selected inner city and suburban schools in seven metropolitan areas. Table 9 contains student characteristic information. Student characteristic information includes enrollment, child poverty measured by the census, percent of students with disabilities, percent of students with limited English proficiency, and percent of children that are minority.

Table 10 contains actual spending per child, then spending per child at low, medium, and high weights for selected schools in seven metropolitan areas. Table 11 includes information on the percent of first-year teachers, federal dollars per child, and federal dollars as a percent of total spending.

**Table 9: School-Level Student Characteristics for Selected Schools in Seven Metropolitan Areas**

| Metropolitan area | Inner city/ suburban | Enrollment | Percent child poverty | Percent with disabilities | Percent with limited English proficiency | Percent minority |
|---|---|---|---|---|---|---|
| Oakland | Inner city | 745 | 45 | 5 | 64 | 100 |
| Oakland | Inner city | 312 | 50 | 9 | 73 | 97 |
| Oakland | Inner city | 1,238 | 47 | 6 | 41 | 100 |
| Oakland | Suburb | 402 | 8 | 8 | 15 | 64 |
| Oakland | Suburb | 877 | 8 | 0 | 4 | 38 |
| Oakland | Suburb | 460 | 8 | 8 | 3 | 16 |
| St. Louis | Inner city | 163 | 85 | 12 | 0 | 100 |
| St. Louis | Inner city | 292 | 55 | 13 | 0 | 100 |
| St. Louis | Inner city | 499 | 55 | 8 | 0 | 90 |
| St. Louis | Suburb | 602 | 11 | 18 | 3 | 2 |
| St. Louis | Suburb | 391 | 11 | 5 | 0 | 8 |
| St. Louis | Suburb | 459 | 9 | 11 | 1 | 1 |
| Fort Worth | Inner City | 760 | 52 | 6 | 17 | 79 |
| Fort Worth | Inner city | 555 | 51 | 3 | 10 | 99 |
| Fort Worth | Inner city | 937 | 51 | 3 | 15 | 94 |
| Fort Worth | Suburb | 413 | 12 | 18 | 2 | 11 |
| Fort Worth | Suburb | 392 | 12 | 6 | 5 | 14 |
| Fort Worth | Suburb | 373 | 14 | 17 | 13 | 85 |
| New York | Inner city | 484 | 56 | 9 | 22 | 100 |
| New York | Inner city | 645 | 52 | 11 | 18 | 98 |
| New York | Inner city | 630 | 43 | 6 | 3 | 100 |
| New York | Suburb | 457 | 5 | 16 | 9 | 28 |
| New York | Suburb | 553 | 5 | 9 | 3 | n/a |
| New York | Suburb | 536 | 5 | 9 | 0 | 4 |
| Boston | Inner city | 712 | 51 | 21 | 0 | 96 |
| Boston | Inner city | 193 | 50 | 9 | 0 | 99 |
| Boston | Inner city | 250 | 49 | 17 | 12 | 71 |
| Boston | Suburb | 386 | 7 | 12 | 0 | 3 |
| Boston | Suburb | 979 | 7 | 15 | 0 | 1 |
| Boston | Suburb | 335 | 7 | 8 | 3 | 3 |
| Denver | Inner city | 562 | 52 | 12 | 52 | 94 |
| Denver | Inner city | 372 | 52 | 13 | 19 | 94 |
| Denver | Inner city | 468 | 51 | 12 | 32 | 94 |
| Denver | Suburb | 407 | 9 | 13 | 0 | 7 |
| Denver | Suburb | 292 | 10 | 8 | 11 | 51 |
| Denver | Suburb | 623 | 11 | 6 | 10 | 41 |
| Chicago | Inner city | 466 | 59 | 9 | 0 | 100 |
| Chicago | Inner city | 900 | 59 | 14 | 5 | 50 |
| Chicago | Inner city | 692 | 59 | 12 | 0 | 100 |
| Chicago | Suburb | 503 | 5 | 17 | 1 | 11 |

| Metropolitan area | Inner city/ suburban | Enrollment | Percent child poverty | Percent with disabilities | Percent with limited English proficiency | Percent minority |
|---|---|---|---|---|---|---|
| Chicago | Suburb | 401 | 5 | 8 | 2 | 8 |
| Chicago | Suburb | 280 | 5 | 6 | 5 | 13 |

Source: GAO's data analysis.

**Table 10: Spending Per Pupil and Spending Per Pupil at Low, Medium, and High Weights for Selected Schools in Seven Metropolitan Areas**

| Metropolitan area | Inner city/ suburban | Spending per pupil (unweighted) | Spending per pupil, low weight | Spending per pupil, medium weight | Spending per pupil, high weight |
|---|---|---|---|---|---|
| Oakland | Inner city 1 | $4,022 | $3,313 | $2,442 | $1,939 |
| Oakland | Inner city 2 | $4,100 | $3,226 | $2,321 | $1,818 |
| Oakland | Inner city 3 | $2,810 | $2,340 | $1,804 | $1,471 |
| Oakland | Suburb | $4,975 | $4,498 | $4,104 | $3,778 |
| Oakland | Suburb | $2,470 | $2,421 | $2,316 | $2,220 |
| Oakland | Suburb | $4,849 | $4,454 | $4,223 | $4,016 |
| St. Louis | Inner city | $5,337 | $4,168 | $3,244 | $2,656 |
| St. Louis | Inner city | $6,311 | $5,144 | $4,287 | $3,675 |
| St Louis | Inner city | $3,162 | $2,675 | $2,230 | $1,912 |
| St. Louis | Suburb | $4,395 | $3,705 | $3,444 | $3,218 |
| St. Louis | Suburb | $3,467 | $3,240 | $3,085 | $2,943 |
| St. Louis | Suburb | $3,106 | $2,769 | $2,620 | $2,486 |
| Fort Worth | Inner city | $2,984 | $2,542 | $2,049 | $1,718 |
| Fort Worth | Inner city | $3,282 | $2,879 | $2,364 | $2,007 |
| Fort Worth | Inner city | $3,058 | $2,658 | $2,157 | $1,817 |
| Fort Worth | Suburb | $4,040 | $3,396 | $3,156 | $2,947 |
| Fort Worth | Suburb | $4,391 | $4,060 | $3,777 | $3,534 |
| Fort Worth | Suburb | $4,246 | $3,546 | $3,180 | $2,885 |
| New York | Inner city | $7,263 | $5,966 | $4,704 | $3,887 |
| New York | Inner city | $6,057 | $4,929 | $3,956 | $3,307 |
| New York | Inner city | $5,904 | $5,150 | $4,401 | $3,843 |
| New York | Suburb | $6,566 | $5,616 | $5,218 | $4,877 |
| New York | Suburb | $8,637 | $7,874 | $7,523 | $7,205 |
| New York | Suburb | $7,218 | $6,623 | $6,390 | $6,173 |
| Boston | Inner city | $6,731 | $5,197 | $4,366 | $3,764 |
| Boston | Inner city | $4,998 | $4,223 | $3,567 | $3,087 |
| Boston | Inner city | $5,770 | $4,568 | $3,752 | $3,185 |
| Boston | Suburb | $4,277 | $3,802 | $3,638 | $3,487 |
| Boston | Suburb | $4,433 | $3,863 | $3,683 | $3,519 |
| Boston | Suburb | $4,737 | $4,357 | $4,149 | $3,962 |
| Denver | Inner city | $3,240 | $2,537 | $1,898 | $1,520 |
| Denver | Inner city | $3,865 | $3,113 | $2,495 | $2,084 |
| Denver | Inner city | $3,852 | $3,089 | $2,410 | $1,979 |
| Denver | Suburb | $3,313 | $2,931 | $2,783 | $2,649 |
| Denver | Suburb | $5,404 | $4,894 | $4,496 | $4,161 |
| Denver | Suburb | $2,810 | $2,578 | $2,374 | $2,202 |
| Chicago | Inner city | $4,482 | $3,743 | $3,089 | $2,629 |
| Chicago | Inner city | $4,529 | $3,615 | $2,948 | $2,490 |
| Chicago | Inner city | $3,595 | $2,939 | $2,425 | $2,065 |
| Chicago | Suburb | $3,975 | $3,430 | $3,274 | $3,132 |

| Metropolitan area | Inner city/ suburban | Spending per pupil (unweighted) | Spending per pupil, low weight | Spending per pupil, medium weight | Spending per pupil, high weight |
|---|---|---|---|---|---|
| Chicago | Suburb | $3,053 | $2,812 | $2,705 | $2,606 |
| Chicago | Suburb | $3,216 | $2,996 | $2,858 | $2,734 |

Source: GAO's data analysis.

**Table 11: Percent of First-Year Teachers, Federal Dollars Per Pupil, and Federal Dollars as a Percent of Total Spending at Selected Schools in Seven Metropolitan Areas**

| Metropolitan area | Inner city/ suburban | Percent first year teachers | Federal dollars per pupil | Federal dollars as percent of total spending |
|---|---|---|---|---|
| Oakland | Inner city | 12 | $455 | 11 |
| Oakland | Inner city | 6 | $745 | 18 |
| Oakland | Inner city | 12 | $294 | 10 |
| Oakland | Suburb | 0 | $179 | 4 |
| Oakland | Suburb | 15 | $17 | 1 |
| Oakland | Suburb | 0 | $10 | 0 |
| St. Louis | Inner city | 0 | $1,493 | 28 |
| St. Louis | Inner city | 16 | $2,581 | 41 |
| St Louis | Inner city | 11 | $875 | 28 |
| St. Louis | Suburb | 5 | $193 | 4 |
| St. Louis | Suburb | 17 | $106 | 3 |
| St. Louis | Suburb | 4 | $107 | 3 |
| Fort Worth | Inner city | 11 | $510 | 17 |
| Fort Worth | Inner city | 4 | $966 | 29 |
| Fort Worth | Inner city | 11 | $586 | 19 |
| Fort Worth | Suburb | 19 | $313 | 8 |
| Fort Worth | Suburb | 4 | $189 | 4 |
| Fort Worth | Suburb | 18 | $591 | 14 |
| New York | Inner city | a | a | a |
| New York | Inner city | 24 | a | a |
| New York | Inner city | 13 | $669 | 11 |
| New York | Suburb | 0 | $268 | 4 |
| New York | Suburb | 3 | $180 | 2 |
| New York | Suburb | 0 | $14 | 0 |
| Boston | Inner city | 12 | $448 | 7 |
| Boston | Inner city | 31 | $329 | 7 |
| Boston | Inner city | 6 | $578 | 10 |
| Boston | Suburb | 0 | $130 | 3 |
| Boston | Suburb | 0 | $169 | 4 |
| Boston | Suburb | 0 | $117 | 2 |
| Denver | Inner city | 9 | $673 | 21 |
| Denver | Inner city | 0 | $428 | 11 |
| Denver | Inner city | 19 | $716 | 19 |
| Denver | Suburb | 19 | $111 | 3 |
| Denver | Suburb | 14 | $129 | 2 |
| Denver | Suburb | 8 | $93 | 3 |
| Chicago | Inner city | 15 | $623 | 14 |
| Chicago | Inner city | 8 | $480 | 11 |
| Chicago | Inner city | 6 | $659 | 18 |

| Metropolitan area | Inner city/ suburban | Percent first year teachers | Federal dollars per pupil | Federal dollars as percent of total spending |
|---|---|---|---|---|
| Chicago | Suburb | 0 | $228 | 6 |
| Chicago | Suburb | 0 | $263 | 9 |
| Chicago | Suburb | 0 | $71 | 2 |

[a]Data not provided by the New York schools.

Source: GAO's data analysis.

# Appendix III: GAO Contacts and Staff Acknowledgments

## GAO Contacts

Harriet Ganson, (202) 512-7042
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## Acknowledgments

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