

District Spending in Small and Large High Schools: Lessons from Baltimore City, Boston, and Chicago

Education Resource Strategies

Stephen Frank and Randi Feinberg

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Executive Summary

In recent years, high school redesign has gained national momentum. The creation of small schools has surged. Proponents assert that small schools have lower dropout rates, increased graduation rates, and improved academic achievement. Many urban school districts, hoping to reap these benefits, are investing millions of dollars to give their students a more personal and successful experience by creating small high schools.

At Education Resource Strategies (ERS), we work with school and district leaders to help them target their scarce resources — people, time, and money — in strategic ways that improve student performance. We’ve learned that many districts don’t understand how much money they will need to start or maintain small high schools over time. Moreover, district leaders have only a vague idea of why smaller is better, what types of small high school designs might be more successful, and how much these successful designs might cost. With funding from the Bill & Melinda Gates Foundation, ERS embarked on a three-year effort to build understanding and tools to support districts in creating cost-effective systems of high-performing small urban high schools.

Our research resulted in several papers and tools. Our main report, *Strategic Designs: Lessons from Leading Edge Small Urban High Schools*, summarizes the findings from nine case studies of small urban high schools that we dubbed “Leading Edge Schools” — because they use resources in unique ways and outperform most schools in their local districts. The report examines spending and resource use at the Leading Edge small schools and identifies four practices that are common to them.

In this paper, a companion piece to the main report, we analyze small high school spending in three urban districts — Baltimore City, Boston, and Chicago — to understand whether it is higher than in larger schools; if it is, why it is different; and the policy considerations connected to small school spending. Specifically, we examined two key questions:

- How much do districts spend to operate small high schools?
- How do patterns of resource use in small high schools differ from patterns of resource use in larger high schools?

We detail the methodology we used to address these two questions and present a discussion of findings, policy considerations, and recommendations for how school and district leaders can approach small school resource use and funding.

Methodology

Our analysis is based on a comprehensive examination of district resource use that is more thorough than previous research on the topic.¹ For the districts in our study, we examined multiple sources of data at a very detailed level, including each district's operating budget as well as details on student enrollment and program participation. We confirmed, validated, and codified these data by conducting interviews with personnel at every level of the school system. We used a framework developed by ERS (explained in more detail in the Methodology section) to ensure that our analysis was consistent from district to district and that our comparisons were as complete and accurate as possible.

Findings

Our research on school spending led us to three findings: two specific to spending differences between small and large high schools within and across these three urban districts, and one regarding methodology. We found:

1. Districts spent more per pupil to run small high schools than they did to run large high schools because
 - small high schools tended to be staffed and run like large high schools and
 - districts deliberately awarded additional staff to small schools above staffing formulas.
2. Spending at small high schools shifted toward leadership and pupil services as compared to spending at large high schools. However, this did not necessarily mean that small high schools spent less per pupil on instruction.
3. Using a rigorous methodology was critical to accurately comparing spending across and within school systems.

Policy considerations

Higher spending on small schools was not inevitable nor was it necessarily undesirable, especially when small schools outperform large schools. Our examination of school size and spending has yielded the following key insights:

- **Funding level:** Districts do not always need to spend more on small high schools, but they do need to ensure a threshold level of funding for very small high schools.

- **Spending equity:** Districts attempt to equalize spending differences in a variety of ways. Efforts to increase flexibility over school resources can reduce spending differences and encourage innovation.
- **Funding system:** Awarding dollars (instead of staff) to schools can increase flexibility for all schools and offer a transparency that is helpful to districts considering the creation of small high schools.

Recommendations

This research reaffirms the value of using a rigorous approach to comparing spending across schools and districts. School-reported budgets and other readily available data are often ill-suited to this task and require supplemental analysis. In the case of this project, without a rigorous methodology, we would have overestimated the incremental spending at small schools, leading to a flawed set of recommended actions. Unfortunately, the available data will not improve until districts change what they collect, how they organize it, how often they reconcile it, and how well they track each expense to its end uses. Moving toward a more common standard is an important next step for the field.

To successfully create and integrate small high schools into their portfolios, districts need to understand how much these efforts will cost and what the various trade-offs are. ERS makes the following recommendations for districts to consider carefully before creating large numbers of small schools:

- Consider the level of available resources and the necessary anticipated additional requirements.
- Consider mitigating spending differences by adopting a per-pupil formula and creating flexibility over resources.
- Address equity either by offering school choice, by minimizing size differences between schools, or by deliberately positioning small schools in areas of strategic need.

I. Introduction

In recent years, high school redesign has gained national momentum. The creation of small high schools has surged. Proponents assert that small high schools have lower dropout rates, increased graduation rates, and improved academic achievement. Many urban school districts, hoping to reap these benefits, are investing millions of dollars to give their students a more personal and successful experience by creating small high schools.

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In the following sections, we detail the methodology we used to address these two questions and present a discussion of findings, policy considerations, and recommendations for how school and district leaders can approach small school resource use and funding.

II. Methodology

To address the two key questions posed in the introduction, we need to compare spending across schools within a district and to compare spending trends across districts. Unfortunately, this is not simply a matter of comparing the “reported” budgets of a given set of schools, as we will describe. In this section, we explain the approach we used. It is extensive, geared for those individuals who wish to understand the various pitfalls and shortcomings of district data and the ways a rigorous method can help account for them. This section specifically addresses two questions:

- a. How did we select the districts and schools to include in this study?
- b. How did we compare spending between schools within and across districts?

a. How did we select the districts and schools to include in this study?

Districts

For this study, we chose three urban districts: Baltimore City, Boston, and Chicago. We chose these three districts in particular because each had a specific high school design strategy with a portfolio of schools that included small schools and each had a stated goal of opening small high schools. It is important to note that these three districts were not chosen because their high schools were particularly high-performing. By most measures, they were not.

We selected urban districts because research shows that the educational benefits of small schools are more pronounced for urban students in poverty than for students in rural or suburban settings.² It also has been documented that minority and poor students are most adversely affected by attending large schools. These students tend to be concentrated in states with large school districts and in large schools.³

All three districts also had unions. This is an important consideration because union contracts can significantly affect spending patterns in schools, including small schools. For instance, union contracts often specify the ways schools can hire and assign employees. They can specify the amount and organization of collaborative and individual planning time as well as other professional development activities. Union contracts can designate the length of the school day, the number of days in the school year, the amount of the day to be spent in core academics, the maximum size of classes, the salary schedule, and even whether or not

a school must accept a transfer student (or teacher). For better or worse, all of these factors affect the degree of flexibility and autonomy in schools. When these contract provisions are applied uniformly to small and large schools, they can create spending differences.⁴

Our research examined spending patterns in the three districts in the early stages of their efforts to create portfolios of small high schools. To help explain the context, a brief history of key elements of small high school reform in each of the three districts follows.

Baltimore City

In 2001, the Baltimore City Public School System launched an initiative to convert nine of Baltimore's comprehensive high schools into small neighborhood schools and to create several small "innovation high schools."⁵ Neighborhood schools are small schools created by breaking up large comprehensive high schools. Innovation high schools are new, independent small schools developed by or with outsider operators or technical assistance providers. Unlike neighborhood schools, innovation high schools are given autonomy in hiring staff and selecting and implementing curriculum.

These new small high schools were intended to serve students from the city's most impoverished communities. At the time, almost half of the city's high school students attended schools that were part of this reform effort. At these schools, students' reading and math scores were three or more years below grade level, and the graduation rate was 55 percent.

The goals of the innovation high schools were to promote a "college-ready" culture and provide access to high-quality programs for all students. The reform centered around three principles: strong academic rigor; small supportive structures; and effective, accountable instruction and leadership.

The creation of both innovation high schools and small neighborhood high schools has unfolded more slowly than expected. As of 2007, only four of the nine comprehensive schools had been broken into smaller schools, and only six of the eight planned innovation schools were under way. Our study included 35 total high schools in Baltimore City. Sixteen of these were small high schools, of which six were innovation high schools.

Boston

As part of its multiyear reform effort, Boston Public Schools created both small pilot schools and small nonpilot schools. In 1994, the district worked with the teacher union and mayor to launch a pilot school initiative that supported the creation of small schools that were free of several existing district practices and contract provisions that were believed to restrict flexible resource use in Boston public schools.

Boston Public Schools pilot schools have considerable autonomy, including:

- **Staff:** Pilot schools can choose their staffs by hiring new or existing staff in the district pool.
- **Time:** Pilot schools can determine their own schedules by setting longer school days or calendar years.
- **Budget:** Pilot schools are funded using lump-sum per-pupil budgets. Each pilot school has near total discretion over the use of these funds.
- **Curriculum:** Pilot schools may develop their own curricula, assessments, and graduation requirements.

In addition to pilot schools, Boston created nonpilot small schools. In 2001, Boston was selected as one of seven cities to participate in the Schools for a New Society Initiative. The goal of this program, funded by the Carnegie Corporation of New York and the Bill & Melinda Gates Foundation, was to reinvent the high school experience. According to the Carnegie Corporation, a major component of the program was to reconfigure “vast and impersonal high schools into small learning communities that foster academic growth and caring relationships and, in many instances, tailor learning to student interests in a particular issue, academic subject, or career.” In Boston, the program was aimed at transforming the strategies and cultures of the city’s 12 large comprehensive high schools.

Our study included 32 high schools in Boston. Twenty-four of these schools were small schools, of which eight were pilot high schools that had the flexibility to use resources differently than large schools.

Chicago

Between 2001 and 2005, Chicago Public Schools created several small high schools in partnership with the Chicago High School Redesign Initiative (CHSRI), funded in significant part by the Bill & Melinda Gates Foundation.

In 2005, Chicago Public Schools launched Renaissance 2010 with the goal of creating 100 new schools in neighborhoods across the city by 2010. The goal was to replace low-performing schools, provide new educational options to underserved communities, and relieve school overcrowding in communities experiencing rapid growth. Most of the schools created under this program were small because, according to the Renaissance 2010 Web site, “most of the research supports the effectiveness of small schools.”

Like pilot schools in Boston, Renaissance 2010 schools have additional autonomy in exchange for being accountable for meeting their goals. Schools were invited to apply for varying degrees of flexibility over their resource use. Options included becoming a charter school, contract school, or district-run performance school.

Our study included 93 total high schools in Chicago. This included 33 small high schools — 18 of which were CHSRI schools that were being considered for additional flexibility.

Schools

Each of the three districts had various types of high schools, such as large comprehensive, magnet, neighborhood, alternative, and others. Our goal was to include as many high schools as possible from each district; however, we did not want schools with unusually high spending to skew the findings. As a result, we excluded schools that exclusively serve special education students. We also excluded vocational schools. Furthermore, given that small school reform was well under way, we excluded six CHSRI schools in Chicago that were operating but were not yet at full enrollment, since their spending on a per-pupil basis would have been (temporarily) unusually high.⁶ Finally — since our focus is on district practices — we excluded charter schools as well as private schools.

So which schools did we include? With the exception of the schools listed above, we included all schools in the three districts that served students in grades 9–12 or some subset thereof. Although we analyzed spending levels and patterns at all schools that fit this criteria, most of the comparisons and analysis highlighted in this paper focus on *small* high schools and *large* high schools.

For the purpose of this paper, we defined a *small* high school as a school with an enrollment of 499 or fewer students. This definition is consistent with other research that defines small schools as those with an enrollment range of 400 to 900 students.⁷ We only included autonomous schools — defined as schools that had their own principal. This includes individual small schools that might share a campus with other schools. This does not include small learning communities, which are distinct programs that are run within larger high schools but which are not autonomous schools themselves.

FIGURE 1

Number of schools by size category

Enrollment group	Baltimore City	Boston	Chicago
< 499	16	24	33
500–750	6	0	7
751–1,000	3	1	10
> 1,000	10	7	43
Total number of schools in analysis	35	32	93
Total number of high schools in the district	39	34	110

Note: Total number of high schools in the district includes special education schools, alternative schools, vocational schools, and in Chicago, CHSRI schools not yet at full enrollment. It does not include charter, private/parochial, or annex/branch schools.

We defined a *large* school as one with enrollment of more than 1,000 students. We did this to ensure that we had a large enough sample size in each district on which to base conclusions. If we had set the bar any higher, there would have been too few schools on which to base our findings. If we had set the bar lower, we would have lost some of the characteristics of large schools. See Figure 1 for the number of schools in each size group in the three districts.

b. How did we compare spending between schools within and across districts?

Comparing spending between schools within the same district and across districts is challenging. Budget documents vary from district to district. Terminology is not consistently used. Some budgets provide more detail than others. Districts report different spending items at the school level. Within a district, departments might use different data systems that don't talk to each other.

To make accurate comparisons between schools despite so much variation in data, we used a common spending framework and method for categorizing all spending associated with schools (see Appendix B). With district staff, we reviewed budget and related documents to be sure we fully understood how each expense item was used. In the end, we transformed the original budget and related data — each district's data set bringing its own structure, terminology, and degree of detail — into a uniform set of information that could be compared for schools both within and across districts.

Challenges in comparing school spending *within* a district

Challenge 1. District data systems do not always provide internally consistent data.

In most school districts, data systems are maintained separately in different departments. Key organizations such as finance, human resources, and special education often have their own sets of records that sometimes don't work on the same system. Updates are made on different cycles, and reports may be run on different dates. Dual- and triple-entry data systems result in inconsistencies across data sources that must be reconciled before they can be analyzed.

ERS methodology solution: To overcome this challenge, we began by collecting a broad set of data that included both quantitative and qualitative information. We received information from each of the three districts' main data systems, including budget, student information, payroll, special education, and school information.⁸ We supplemented our quantitative data by conducting interviews with personnel at all levels of the organization, including department managers, program heads, principals, the superintendent and members of the cabinet, and others.

We did this for two reasons. First, we verified the quantitative data we received and ensured that our approach to reconciliation was correct. Second, we collected data that are not ordinarily tracked and are unavailable (not collected or not collected properly) in existing data

systems. For example, to thoroughly understand resource use, we need to understand the amount of time devoted to teacher professional development and how that time is used. In these districts, this type of information is available only through interviews.

Insights: As we reviewed data with central office staff, we discovered numerous disparities across what should be identical data sets. These differences were the result of various inconsistencies in how different departments entered and used the data. For example, similar data were often entered twice in different data systems owned by different people and updated on different timelines for different purposes (usually in compliance with a state or federally mandated report). Together, these disparities made it challenging to look at one data set across various departments. To better understand how resources are used in districts, district leaders need to redesign data architecture for management purposes rather than compliance.

Challenge 2. Budget data are often based on “average salaries” and do not include all employee-related expenses, obscuring the true investment.

Districts often fund schools using average salaries rather than actual salaries. Schools that attract more experienced teachers, for instance, will have higher salary spending than schools with more new teachers. However, these higher expenditures are obscured when districts report costs using the district average salary expense. If we used average salaries, we could not measure the true spending per pupil for schools that might have clusters of higher-paid teachers.

Furthermore, fringe benefits are often budgeted centrally. When a staff allocation or salary is reported to a school or program manager, employee-related benefit spending is typically not included. This understates an employee’s total compensation by roughly 30 percent. Taken together, these practices make it difficult to accurately compare spending levels across schools and across districts, which might have different benefit (fringe) rates.

ERS methodology solution: To address this issue, we did two things. First, we merged payroll and budget data in each district and reconciled any disparities. To do this, we replaced all employee-related line items in the budget with detailed data line items from the payroll file. This gave us actual salary data for each employee and also gave us more nuanced data about every employee, allowing for a more precise analysis. Second, when we merged the payroll data into the budget file, we also assigned fringe benefits to each employee. This assigned all employment expenses to the specific schools and programs served by each employee.

Insights: Our method also allowed us to determine whether differences in teacher salary and experience were a primary driver of spending differences between small and large high schools. We found it was not. Although some schools experienced higher salary expenditures than other schools, no pattern systematically described which schools received the higher-paid teachers. In fact, salary spending in small high schools varied only by \$100 per pupil or less whether they were calculated based on actual teacher salaries or average teacher salaries. The same was true for large high schools. Thus we can conclude that the more experienced and highly paid teachers were not systematically clustered at small high schools or at large high schools.

Similarly, we found no pattern for teacher salary differences in schools with high poverty versus low poverty, or even between those schools that were highly funded versus those less well-funded within their district. Again, teacher salary differences did exist, but they were not correlated with poverty or school size and accounted for a very small proportion of the spending differences we saw between schools in each district.

Challenge 3. District data systems do not always track all resources expended to specific schools.

Most districts provide services to schools that are paid for out of centrally budgeted accounts — for example, speech therapists who work at schools but who are charged to central budgets. Since the budget data do not specify the schools that receive the services, it is difficult to assign these expenditures accurately. This makes it very difficult to determine the true amounts of resources schools receive. Similarly, some nonstaff resources, such as utilities and textbooks, are budgeted and tracked centrally, yet schools vary in how much of these resources they consume. To accurately compare school spending, we needed to assign these centrally budgeted expenses to the schools that received the benefit of these services.

To date, much of the research has been based on an analysis only of spending items that appear on individual school budgets. However, more recent research shows that including centrally budgeted items can make a significant difference.⁹

ERS methodology solution: To overcome this challenge, we applied a uniform method of allocating all expenditures to schools. Items already on school budgets did not need to be allocated. When items were not tracked to a specific school, we probed into whether or not the activity happened in a specific school or a cluster of schools. We also considered which students or group of students received the benefit or service, and we allocated the expenses accordingly. For example, funds spent on transportation for extracurricular high school athletic programs were allocated only to high schools that had athletic programs. Similarly, funds spent on professional development for new principals were allocated to schools that had new principals. Whenever possible, custodial or utility costs were assigned to a specific school based on usage. Using this approach, we reviewed all centrally budgeted items and allocated them to schools as appropriate given available data.

Some funds did not serve a school or a cluster of schools but rather a specific population of students. In this case, it made more sense to allocate funds to these students and, by extension, the school they attended. For example, many services are provided only to special education students (or even to special education students with a specific disability). We identified these services through extensive interviews and then allocated the expenditures to the students who received the services.

The result of this process is what we refer to as the “school attributed budget.” It represents all items actually on each school’s budget plus spending of materials and services that — while budgeted centrally — can be tied to a particular school. This latter group (centrally budgeted expenditures that can be linked to schools) is referred to as “shared services.”

Insights: In the three districts we studied, we found the impact of including shared services varied. In Boston, the inclusion of shared services did not change the findings significantly. In this case, if we had only looked at school-reported budgets, we still would have reached the same conclusion that we ultimately found — that small schools spent approximately \$2,100 more per pupil than large schools.

However, in Baltimore City, we found small schools spent approximately \$1,200 more per pupil than large schools. If we had not included shared services, we would have *overstated* this by \$200 per pupil, or 17 percent. Conversely, in Chicago, we found that small schools spent approximately \$1,100 more per pupil than large schools. If we had not included shared services, we would have *understated* this by \$300 per pupil, or 27 percent.

Challenge 4. Student populations vary significantly across schools.

Because the types of interventions needed for certain student populations vary, it can be difficult to determine whether a school is receiving more funding precisely to serve these students or whether the spending difference is caused by smallness, randomness, or some other factor. For instance, if a large school has a higher percentage of students with disabilities in self-contained settings than its smaller counterpart, it might appropriately receive more resources. It could be very misleading to conclude that one school receives more per pupil than another school without first accounting for the effects of differing student populations.

ERS methodology solution: To adjust for varying student populations, we accounted for the relative investment made in various student groups. To begin, we identified all expenditures in the budget by the students served, such as special education or English language learners. This helped us understand how much was spent per student in various programs. We then compared the amount each of the three districts spent on various student groups to the level of spending on general education students, as shown in Figure 2.

The table shows how much districts spent on special education students, students in poverty, and other student types, relative to general education students. A score of 1.0 would equate to spending exactly the same amount as on general education students. For example, Baltimore City spent 3.4 times as much on special education students in self-contained settings as on general education students.

FIGURE 2

Ratio of spending on special needs students to spending on general education students, by student type

	Baltimore City	Boston	Chicago
General education	1.0	1.0	1.0
Special education – Self-contained	3.4	3.3	4.3
Special education – Resource room	2.4	1.9	2.6
English language learners	1.3	1.8	1.1
Poverty	1.1	1.1	1.3

Insights: After we calculated these relative investment ratios, we were able to adjust for differences in student need across schools in each district. Making this adjustment was rather important as the following example illustrates.

In Boston, there are two main types of small schools:

- Pilot schools that are funded on a per-pupil basis and given discretion over spending and
- Other district small schools that are awarded staff by the central office.

In other work, we found that Boston pilot schools appeared to receive *less* than other small Boston high schools (before accounting for differences in student need):

- Pilot schools: \$11,300 per pupil
- Other small high schools: \$11,900 per pupil

But once we accounted for differences in student need, the pattern reversed itself. Pilot schools actually received *more* than other small schools:

- Pilot schools: \$11,200 per pupil
- Other small high schools: \$10,300 per pupil

In this case, our conclusion would have been the opposite of the one we ultimately reached if we had not adjusted for student need.

In this paper, too, adjusting for student need affected our findings for all three districts (if less dramatically). Briefly, we found that districts spent \$2,000 to \$3,000 more on small high schools than on large high schools *before* adjusting for student need. After accounting for student need, the difference shrank to between \$1,000 and \$2,000 more on small high schools than on large high schools. (Note: This was primarily because of higher percentages of students with disabilities in the small high schools.)

Challenges in comparing school funding across districts (and states)

So far, we have discussed the challenges we faced in comparing spending between schools in the *same* district. We faced additional challenges in comparing funding between schools in *different* districts and different states.

Challenge 1. Districts categorize spending in different ways.

Budget documents vary from district to district. Terminology is not consistently used, and some budgets provide more detail than others.

ERS methodology solution: To compare spending across schools, we needed a common framework to categorize spending. To that end, we developed the coding scheme shown in Appendix B. For each of the three districts, we reviewed every line item in the budget and coded it according to how the funds were used. We determined this by looking at the budget information (e.g., fund, program, account, type of expense, etc.), supplemented by interviews with district staff to ensure our understanding was correct.

Based on all of the information collected, we assigned each budget line item one of six uses:

1. Instruction
2. Pupil and ancillary services
3. Operations and maintenance
4. Instructional support and professional development
5. Business services
6. Leadership

We also assigned, based on interviews, a specific function under each of the uses to provide greater detail about expenditures (see Appendix B).

Challenge 2. Districts spend various amounts on nonoperating budget items such as capital expenditures. In addition, some districts run comprehensive adult or prekindergarten programs, while others do not.

ERS methodology solution: When we compared spending across districts, we needed to be sure we included the same types of spending. To do this, we identified each district's operating budget, or dollars used to fund the organization's ongoing operations. Operating expenses exclude interest and other debt service costs, budget reserves, and capital expenditures that relate to multiple years, such as buying land or buildings, construction and renovation of existing buildings, property rental and lease costs for school-related facilities, claims and settlements, spending to cover unfunded retiree benefits, and so on. We also excluded small school start-up costs since we analyzed spending of established schools, not those in the start-up or ramp-up phase.¹⁰

We also excluded operating expenses not associated with K–12 students, such as spending for adult education, preschool programs, special education students placed in nondistrict schools, spending to support private or parochial schools, and students not included in district enrollment figures. All other district budget items, including central items, were included in the analysis.

Challenge 3. Districts vary widely in the percentage of resources they track to specific schools.

It would be misleading to simply compare school-reported budgets across districts because some districts assign very little to schools' individual budgets while other districts assign much more. We found that the amount tracked at the school level varied from as low as 38 percent to as high as 95 percent.

ERS methodology solution: The cost allocation process discussed above was designed to be flexible enough so that it can be consistently applied even when the underlying data are tracked and reported differently from district to district. This requires an interview-heavy re-categorization process as well as a common allocation framework.

Challenge 4. Costs vary from region to region.

Average teacher salaries, as well as classroom supplies, utility costs, and all other costs associated with running a school are not the same in Chicago as they are in Baltimore City.

ERS methodology solution: We adjusted our expenditure estimates to account for cost of living differences using the Comparable Wage Index (CWI) created by the National Center for Education Statistics. The CWI is a measure of the systematic, regional variations in the salaries of college graduates who are not educators. Researchers use it to adjust district-level finance data to make better comparisons across geographic areas.¹¹

Overarching insight: Overall, our methodology was rigorous. To summarize, we codified each expenditure, tracked actual teacher salaries, allocated all centrally budgeted expenses to schools, and adjusted for student need, among other things. Was the extensive process worth it? Would we have reached similar conclusions if we had merely used the district-reported budget for each school? In this case, without a rigorous method, we would have significantly overstated the incremental costs of small high schools.

III. Findings

In sum, we found that all three districts spent more on small high schools than on large high schools on a per-pupil basis. We also found that there was a shift in the pattern of spending and that using a rigorous methodology was critical to accurately comparing spending across and within school systems.

Finding 1: Districts spent more per pupil to run small high schools than they did to run large high schools because (1) small high schools tended to be staffed and run like large high schools and (2) districts deliberately awarded additional staff to small schools above staffing formulas.

At the time of this study (FY2005), all three districts spent more per pupil at small high schools than at large high schools.¹² After adjusting for student need and excluding small high schools not at full enrollment, we found that districts spent 10–20 percent more on high schools with fewer than 499 students compared to those with more than 1,000 students, as shown in Figure 3.

FIGURE 3

School-based per-pupil spending — small high schools vs. large high schools (adjusted for student need)

	Baltimore City	Boston	Chicago
High schools < 250 students	\$9,600	\$10,400	\$16,700
High schools < 499 students	\$8,900	\$11,200	\$10,500
High schools > 1,000 students	\$7,700	\$9,100	\$9,400
Difference (< 499 vs. > 1,000)			
Dollar difference	\$1,200	\$2,100	\$1,100
Percentage difference	14%	19%	10%
Difference (< 250 vs. > 1,000)			
Dollar difference	\$1,900	\$1,300	\$7,300
Percentage difference	20%	13%	44%

Further, as schools got smaller, spending rose even higher. Baltimore City spent 20 percent more per pupil in its schools with fewer than 250 students compared to its schools with more than 1,000 students. Chicago spent more than 40 percent more per pupil in its very small schools compared to its largest schools. (Note: Boston was discounted in this analysis due to small sample size.)¹³

Why did districts spend more per pupil on small high schools than large high schools? We offer two reasons:

- Small high schools tended to be staffed and run like large high schools.
- Districts deliberately awarded additional staff to small schools above staffing formulas.

Small high schools tended to be staffed and run like large high schools¹⁴

Thirty years ago, urban high school organizations looked very similar from one school to the next. High school graduation requirements, state teacher certification requirements, union rules, and staffing formulas imposed a set of common external constraints that fostered uniformity in school design. Most high schools were large comprehensive schools. Funding systems based on one-size-fits-all staffing formulas evolved to serve these homogeneous schools. Over the years, districts have attempted to redesign high schools by making them smaller. But while schools were redesigned, staffing policies have remained the same and have had different effects on small schools than they did on large schools.¹⁵

As we discuss in our companion paper *Going to Scale: Managing District Spending on Small High Schools* (Travers, 2008), although school staffing policies vary across districts, they generally have two main components. First, schools automatically receive staff to cover certain positions — such as principal — regardless of size. We call these positions “minimum full-time equivalents” (FTE) because all schools have at least these positions. Second, districts allocate

FIGURE 4
Staffing policies in Chicago Public Schools (FY2005)

Position	Minimum per school	Formula	Average salary
Principal	1	1 per school	\$122,000
Assistant principal	0	1 for every 499 students	\$94,000
Head teacher	0	1 if no assistant principal	\$75,000
Guidance counselor	1	1 for every 360 students	\$63,600
Librarian	1	1 per school	\$63,600
Clerk	1	1 for every 45 teachers	\$35,000

other staff positions using a “staffing ratio” that defines a certain number of students required to justify more staff — for example, one teacher for every 20 students. Allocation policies for some positions combine these two components — a staffing policy that provides a minimum of one guidance counselor and adds .5 FTEs for every 400 students. This means that a school with fewer than 400 students would still receive one counselor, but a school with 600 students would get 1.5 counselors. Some districts may employ even more complex variations of these components.

Figure 4 shows the staff allocation policies used in Chicago during the year of this study.

In Chicago, all schools had a principal; schools with at least 499 students had an assistant principal, with additional assistant principals for every additional 499 students. Schools with fewer than 499 students received a head teacher instead of an assistant principal. All schools received one guidance counselor, one librarian, and one clerk. Additional guidance counselors and clerks were awarded as the school got larger.

Figure 5 shows how staff allocation policies affected the per-pupil staffing costs in Chicago Public Schools. Looking at FTE positions allocated at a ratio of one per school (for example, principal and librarian), we found that as the school size increased, the per-pupil spending decreased. For example, a small school of 250 students spent \$488 per pupil on a principal, while a large school of 1,500 students spent only \$81 on the principal position because they were able to spread the staffing cost over a larger group of students.

FIGURE 5

Staffing and staffing expenditures in Chicago schools (FY2005)

	Small school (250 students)			Small school (499 students)			Large school (1,000 students)			Large school (1,500 students)		
	FTE*	\$	\$/pupil	FTE	\$	\$/pupil	FTE	\$	\$/pupil	FTE	\$	\$/pupil
Principal	1	\$122,000	\$488	1	\$122,000	\$244	1	\$122,000	\$122	1	\$122,000	\$81
Assistant principal	0	\$0	\$0	1	\$94,000	\$188	2	\$188,000	\$188	3	\$282,000	\$188
Head teacher	1	\$75,000	\$300	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Guidance counselor	1	\$63,600	\$254	2	\$127,200	\$254	3	\$190,800	\$191	4	\$254,400	\$170
Librarian	1	\$63,600	\$254	1	\$63,600	\$127	1	\$63,600	\$64	1	\$63,600	\$42
Clerk	1	\$35,000	\$140	1	\$35,000	\$70	2	\$70,000	\$70	2	\$70,000	\$47
			\$1,436			\$883			\$635			\$528

*Full-time equivalent

Similarly, staffing policies that use trigger points — the student enrollment level after which schools receive an additional staff member — have a more significant impact on small schools than larger ones. For example, assume that according to Chicago Public Schools staffing policies, when a school enrolls fewer than 360 students, it receives one guidance counselor. However, if a school adds one more child, pushing the total enrollment to 361, this “triggers” an allocation of a second guidance counselor. This can be particularly costly to a small school that, again, has fewer students over which to spread the cost.

Districts deliberately awarded additional staff to small schools above staffing formulas

In addition to the increased funding that comes via staffing policies, districts often deliberately invest additional funds in small schools. In other words, small schools spend more because they get more. This subsidy comes in the form of either additional staff or additional dollars.

Some additional staff is given to schools that are “ramping up” to full enrollment. We deliberately excluded these transitional investments from our analysis.¹⁶ On the other hand, using Chicago Public Schools as an example, 14 of 15 CHSRI schools included in our study were awarded additional teachers above the district-prescribed staffing ratios even though they were already at full enrollment. In some cases, these additional allocations accounted for 10 percent or more of their total teaching staff.

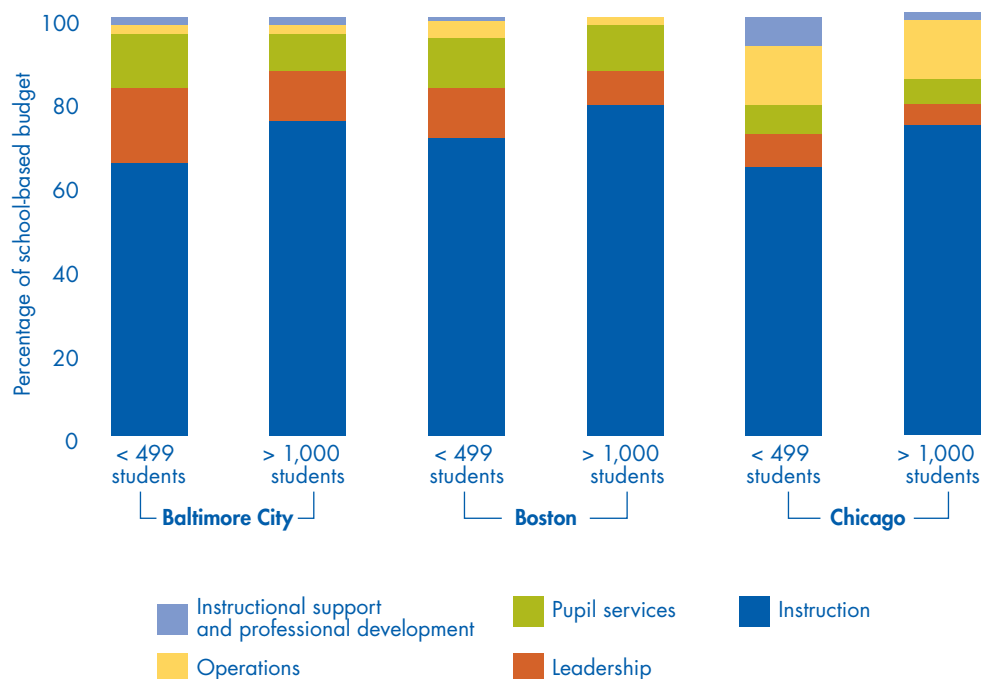
In conversations with district leadership, we learned that additional staff positions were awarded because district leaders believed these small high schools lacked sufficient staff to operate efficiently under the typical staffing ratios. In particular, some very small schools would not qualify for even seven teachers, which the district felt was the minimum required for any high school to offer a basic range of subjects.¹⁷

Finding 2: Spending at small high schools shifted toward leadership and pupil services as compared to spending at large high schools. However, this did not necessarily mean that small high schools spent less per pupil on instruction.

Figure 6 shows the percentage of school-based budgets that was spent on one of five usage categories. Although it is clear that most schools spent the majority of their budgets on instruction, we also see that small high schools in each of the three districts spent a greater percentage of their budgets on leadership and pupil services and a smaller percentage on instruction as compared to large high schools in the same district.

FIGURE 6

School-based budget by use — small vs. large high schools



Difference in percentage of school-based budget by use — small vs. large high schools

	Baltimore City	Boston	Chicago
Instruction	-10%	-8%	-10%
Leadership ⁱ	6%	4%	4%
Pupil services	4%	2%	1%
Operations ⁱⁱ	1%	1%	0%
Instructional support and professional development	0%	1%	5%

Green highlight = Small schools spent *less* as percentage of budget.

Orange highlight = Small schools spent *more* as percentage of budget.

i. Note that Baltimore City spent a higher percentage of its school-based budget on leadership than the other two districts. This is consistent with the findings in Figure 3, which show Baltimore City was the lowest funded of the three districts. Many leadership positions are fixed costs; as such, they account for a higher percent of budget when the overall budget is lower.

ii. School operations include business services.

High per-pupil spending for administration shifted budgets toward leadership

The primary difference between small and large schools in the category of leadership spending was in the subcategory of school administration (principals, assistant principals).¹⁸ School administration accounted for 64 percent of the difference between small and large school spending in Baltimore City, 46 percent in Boston, and 93 percent in Chicago (see Figure 7).

As noted in the Methodology section, each line in the districts' operating budgets was coded according to how funds were used. Here are some of the codes and their definitions related to this finding. Details are included in Appendix B.

Instruction: Classroom and other direct instruction. This includes compensation for teachers, aides, substitutes, and other staff.

Leadership: Guidance and direction of schools and the district. This includes school and district administration.

Pupil and ancillary services: Noninstructional services to students and the management of these services. This includes enrichment programs, counselors, therapists, and more.

In each of these three districts, principals were allocated via a flat allocation of one per school. Spreading the cost of the principal across fewer students in small schools naturally leads to a higher per-student expenditure than for large schools. In each of these three districts, assistant principals were allocated via a staffing ratio. The specific ratios varied across the districts — for example, schools in Baltimore City with fewer than 400 pupils got one assistant principal, schools with 401–600 got two assistant principals, and so on; schools in Boston with fewer than 700 pupils got one assistant principal, a second was allocated to schools for every additional 500 students, and so on; and schools in Chicago got one assistant principal for every 500 students.¹⁹

As described earlier, positions, such as assistant principal, that are allocated using staffing ratios generate increases

in per-pupil spending that occur when the number of students reaches the trigger point for an additional staff position. However, the impact of this phenomenon on per-student expense diminishes as school size increases. Thus, small schools generally have higher spending per pupil for assistant principals. Higher per-student spending on both principals and assistant principals results in the higher administration expenditure at small high schools.

FIGURE 7

Difference in per-pupil spending on leadership — small vs. large high schools

	Baltimore City	Boston	Chicago
Total difference	\$509	\$653	\$287
High school administration	\$327 — 64%	\$301 — 46%	\$267 — 93%
Administrative support	\$94 — 18%	\$83 — 13%	\$11 — 4%
Other	\$88 — 17%	\$269 — 41%	\$9 — 3%

Note: School-reported budget only. Does not include portion of budget that ERS allocated from central budgets to schools (see Methodology section, page 6).

Additional staffing in specific areas shifted budgets toward pupil services

Spending on pupil services was higher in small high schools than in large high schools in all three districts. In Chicago, the overall amount spent on pupil services was significantly less than in the other two districts, and the difference in small school spending was similarly smaller so we focus on Baltimore City and Boston.²⁰ As shown in Figure 6, in Baltimore City, 9 percent of the budget was spent on pupil services in large high schools versus 13 percent in small high schools; in Boston, 11 percent of the budget was spent on pupil services in large high schools versus 13 percent in small high schools.

Figure 8 shows the *difference* in per-pupil spending between small high schools and large high schools across the components of pupil services. In Baltimore City, small high schools spent more per pupil than large high schools on contracted nursing services, psychologists, social workers, and guidance counselors. In Boston, small high schools spent more per pupil than large high schools on social workers but far less on guidance counselors. As we will see, these two are likely related.

FIGURE 8

Difference in per-pupil spending on pupil services — small vs. large high schools

	Baltimore City	Boston
Total difference	\$398	\$130
Nurses	\$174 — 44%	\$19 — 14%
Psychologists	\$99 — 25%	\$0
Social workers	\$75 — 19%	\$152 — 116%
Guidance counselors	\$53 — 13%	(\$81) — (62%)
Speech services	\$3 — 1%	\$27 — 21%
Diagnosticians	\$0	\$12 — 9%
Other	(\$6) — (2%)	\$1 — 2%

Note: School-reported budget only. Does not include the portion of budget that we allocated from central budgets to schools (see Methodology section, page 6).

In Baltimore City, contracted nursing services were the primary driver behind the shift toward pupil services. Nurses were typically assigned one per school, thus the spending on these services was spread over fewer students in small schools than in large schools, leading to a higher expenditure per pupil at small schools. Again, we see the impact of the flat allocation staffing assignments.

A second driver of higher pupil services spending in small high schools in Baltimore City was higher spending on psychologists. The School Site Staffing Model suggested that psychologists should be allocated at one per every 850 students. But we found the staffing formula was not followed religiously. Of the 35 high schools in our study, seven schools did not have a psychologist at all, and these schools were of all sizes. The remaining 28 tended to have one psychologist per school (with a few exceptions), regardless of size. In the end, the spending difference was caused because psychologists at small high schools tended to have lighter caseloads than those at larger high schools (285 to 1,046 student-to-psychologist ratio). The same finding holds for social workers. The staffing model was not followed closely. Social workers in the small high schools experienced an average caseload of 362 students while social workers at large high schools had an average caseload of 800 students.

In Boston, the primary driver of higher spending on pupil services in small schools was social workers. As it turns out, almost all of the social workers in high schools were at small high schools, particularly pilot and Horace Mann schools. Of the 21 full-time equivalent social workers, 18 were assigned to small schools. Of these 18, 12.5 were at pilot and Horace Mann schools. Because pilot and Horace Mann schools have more flexibility than traditional schools, it is hard to draw conclusions about schools in general from this information.²¹ In addition, we found that many of the larger high schools had guidance counselors on staff while these small schools did not.

As discussed in the *Strategic Designs* companion paper, many Leading Edge small schools invested heavily in leadership and pupil support. Higher spending on these areas should not be perceived as an inherently bad strategy or “wasted” resources. On the contrary, having guidance counselors with lower student caseloads and principals with fewer teachers to supervise could pay off in improved instruction and support of students. In our case studies of high-performing small schools, we expected that schools with flexibility might shift leadership and pupil support resources toward instruction. Instead, we found that with the exception of schools with extremely low overall spending levels, case study schools maintained or increased funding on pupil support and leadership.

The shift toward leadership and pupil services did not necessarily mean small schools spent less per pupil on instruction

As shown previously, in all three districts, the *percentage* of budget spent on instruction was less at small high schools than at large high schools. However, this does not necessarily mean that small high schools spent less per pupil on instruction than large high schools, as shown in Figure 9.

Small Chicago high schools did in fact spend less per pupil on instruction than large high schools. But in Baltimore City, the dollar-per-pupil investment was the same at small and large high schools, and in Boston, the dollars per pupil spent was actually higher at small high schools by \$800. This is because small schools had a higher overall budget (see Figure 3), particularly in Boston, where the difference between small school and large school spending per pupil was the greatest of the three districts.

FIGURE 9

School-based per-pupil spending on instruction (adjusted for student need)

	Baltimore City	Boston	Chicago
High schools < 499 students	\$5,800	\$8,000	\$6,700
High schools > 1,000 students	\$5,800	\$7,200	\$6,900
Dollar difference (< 499 vs. > 1,000)	\$0	\$800	-\$200

Ideally we would like to have looked not only at the overall amount spent on instruction but also at the composition of instruction — that is, how much was spent on core subjects and how much was spent on electives or other noncore classes. Often small high schools cannot offer the diversity of electives that large high schools can. This may benefit or handicap small high schools, depending on the needs of the student population and how small high schools organize electives and core classes. Many of the Leading Edge small high schools studied in the companion report actually extended the time they required students to spend on core subjects. Unfortunately, we were not able to study how much instruction time was spent in core and noncore academic courses and other pursuits in these three districts. This is an area that warrants further research.

Finding 3: Using a rigorous methodology was critical to accurately comparing spending across and within school systems.

In addition to our specific findings regarding spending at small and large high schools, we hope this paper helps district leaders see the value in using a rigorous methodology when calculating per-pupil spending. As mentioned previously, our methodology required us to codify each expenditure, to track actual teacher salaries, to allocate all centrally budgeted expenses to schools, and to adjust for student need, among other things. Although a detailed analysis is quite time-consuming, in this case, we found that it was worth the investment (see Figure 10).

FIGURE 10

*School-based per-pupil spending — small high schools vs. large high schools
ERS methodology vs. school-reported methodology*

	Baltimore City	Boston	Chicago
ERS methodology			
High schools < 499 students	\$8,900	\$11,200	\$10,500
High schools > 1,000 students	\$7,700	\$9,100	\$9,400
Difference < 499 vs. > 1,000	\$1,200	\$2,100	\$1,100
School-reported methodology			
High schools < 499 students	\$7,100	\$8,600	\$9,100
High schools > 1,000 students	\$5,200	\$6,000	\$7,300
Difference < 499 vs. > 1,000	\$1,900	\$2,600	\$1,800
Amount of overestimation using school-reported methodology	\$700	\$500	\$700

Overall, without using a more detailed method, we would have overestimated the additional investment in small high schools by approximately \$500 to \$700 per pupil. Overstating spending on small high schools could discourage district leaders from creating small high schools at all, based on faulty information.

This research reaffirms the value of using a rigorous approach to comparing spending across schools and districts. School-reported budgets and other readily available data are often ill suited to this task and require supplemental analysis. Unfortunately, the available data will not improve until districts change what they collect, how they organize it, how often they reconcile it, and how well they track each expense to its end uses. Moving toward a more common standard is an important next step for the field.

Although the method we used here was significantly more rigorous than other methods, it, too, was not yet nuanced enough to answer some of the important questions asked by education finance researchers. Specifically, the field of education finance research has long sought to understand the relationship between spending and student performance and answer the question: *Does spending more on a student improve that student's performance?*

To date, attempts to answer this question have demonstrated that how much districts spend may not be as important as how they spend the money.

But there is another important issue — aggregation. The method described in this paper allows us to understand the dollar spent per pupil only at a *school*: It helps us compare spending at one school to spending at another school. However, we know from experience that “within-school” spending differences also exist. They exist because (especially in secondary schools) few students have the exact same classes — they experience different class sizes, different teachers, and different opportunities. Spending differences within schools can be significantly larger than spending differences “across schools.”

To understand the relationship between spending and performance, we need a method that allows us to better track expenditures to the level of the specific students served. Going forward, ERS hopes to track and report expenditure data to the student level. If we can link all program expenditures (including average and actual teacher salaries) directly to the students who benefit, then we can calculate per-pupil spending more accurately to the students served. Over time, we can track different investments in students over the course of their careers.²²

While data matching teachers and students at the specific course level are available in some districts, at present, they are rarely used for this purpose. Moreover, in many districts the data are entirely unsuitable for research or management reports because of missing data on teacher identification numbers or because of data inconsistencies. We recommend that all district leaders consider the enormous benefits improved data collection would provide.

IV. Policy Considerations

When opening small high schools, district leaders face many choices: encouraging or disallowing different school models, establishing funding policies (staff or dollars), establishing maximum and minimum school sizes, and so forth. Each choice places different requirements on schools based on factors such as budget, student preparation, staff experience, or school leader capacity. Inevitably, because resources are scarce, district leadership will be forced to make trade-offs — for example, to limit spending even though that might limit the effectiveness of a particular program. The effects of these decisions will ripple through the system for years to come, affecting students and staff not only at new small high schools but at *all* district schools.

Higher spending on small schools was not inevitable nor was it necessarily undesirable, especially when small schools outperform large schools. Our examination of school size and spending has yielded the following key insights:

- **Funding level:** Districts do not always need to spend more on small high schools, but they do need to ensure a threshold level of funding for very small high schools.
- **Spending equity:** Districts attempt to equalize spending differences in a variety of ways. Efforts to increase flexibility over school resources can reduce spending differences and encourage innovation.
- **Funding system:** Awarding dollars (instead of staff) to schools can increase flexibility for all schools and offer a transparency that is helpful to districts considering the creation of small high schools.

Funding level

We have shown that under current conditions, small high schools generally spend more than large high schools. As districts weigh the benefits of small high schools and perhaps look to open more, what impact does this have on systemwide funding? Excluding conversion and transition costs, how much would it cost to operate all of the high schools in these districts as small high schools (holding all else equal)? If the three districts included in this study were to run only small high schools using the same practices, the annual operating budgets would increase by about 3 percent. This is in addition to any increased annual capital costs associated with maintaining more schools and excludes all conversion and transition costs (see Figure 11).

In some cases, districts might operate small schools despite being relatively low-funded. As shown in the Findings section, small high schools tend to spend a higher portion of their budgets on leadership and pupil services and a lower portion on instruction. In relatively

high-funded districts, small schools still generally have sufficient funds to spend on instruction. Recall that small high schools in Boston, despite spending a lower percentage of their budgets on instruction, still spent more per pupil on instruction than large schools since their total budgets were relatively high.²³

FIGURE 11

Expenditure required to operate medium and large high schools as small high schools

	Baltimore City	Boston	Chicago
Total number of students enrolled in small high schools (< 499)	3,893	7,691	9,747
Total number of students enrolled in medium-size high schools (500–1,000)	6,276	814	12,997
Total number of students enrolled in large high schools (> 1,000)	13,598	10,502	77,791
Additional spending per pupil at small high school vs. medium-size high school	\$1,100	\$1,200	\$600
Additional spending per pupil at small high school vs. large high school	\$1,200	\$2,100	\$1,100
Expenditure required to operate medium-size high schools as small high schools (number of students in medium-size high school times additional cost per pupil at small high school)	\$6.9 million	\$900,000	\$7.8 million
Expenditure required to operate large high schools as small high schools (number of students in large high school times additional cost per pupil at small high school)	\$16.8 million	\$22.1 million	\$84.7 million
Total K–12 operating budget	\$814 million	\$764 million	\$3,176 million
Additional small school operating spending as percentage of K–12 budget	2.9%	3.0%	2.9%

But when overall funding is low, small school spending on instruction might be forced to a very low level. In other work, ERS found a situation such as this in Oakland, CA. Oakland's overall funding level (largely state determined) was \$10,700 per pupil in 2007–08,²⁴ which was the second-lowest funding level of the urban districts we compared it against, behind only Los Angeles.²⁵ Due to declining enrollment and a policy of putting two schools in every community, Oakland's schools tended to be very small. For example, the medium-size elementary school in Oakland was 289, compared to 258 in Boston, 368 in St. Paul, MN, 402 in Atlanta, and 652 in Los Angeles. We found the percentage of budget spent on instruction was squeezed to very low levels in the smallest schools. Oakland's elementary schools with fewer than 200 students spent just 57 percent of their budgets on instruction. However, once schools reached a threshold of 300 students, the percentage of budget spent on instruction jumped to 74 percent, which was more in line with the other districts. The combination of a per-pupil formula and a very low overall funding level squeezed money from instruction in the case of Oakland.

Before opening new small schools, districts should understand the incremental expenditures they will incur. They should carefully consider where these resources will come from and what trade-offs will be required. Unless they dramatically revise their staffing models or adopt per-pupil formulas, they should expect that they will spend more to operate small schools than to run large schools on a per-pupil basis. If the funding in the district is already low, care should be taken to make sure that small schools receive enough to run the mandated instructional programs. This will differ in every situation.

Spending equity

Proponents of small high schools argue that these schools have better attendance rates and higher student performance than large comprehensive high schools. But we have demonstrated that districts typically spend more to operate small high schools. What if a school system cannot afford to convert all of its high schools to small high schools at once, or what if a school system chooses to have a portfolio that includes high schools of various sizes? Which students should be supported and encouraged to attend small high schools? Can the district address equity concerns by giving students “choice” over the schools they attend?

We have found (in this and other research) that school size is a primary driver of spending differences among schools. If a district is attempting to create equity in spending across schools (after accounting for student populations), one way to do that is to move, over time, toward a more uniform school size throughout the district. A second way is to reduce the spending differences between small and large schools. Some ways of reducing spending, however, impose a heavy toll on school autonomy. Sharing school staff across schools, for instance, will save money but might require schools to adopt the same bell schedule even if a blocked schedule is a core part of the design of one school but not a desirable feature

of another school. The desire to create equitable spending across schools must be weighed against the benefits of having a portfolio of appropriately funded high schools that meet student need, community expectations and priorities, and teacher capacity and experience. A strategy for creating high schools must account for these difficult trade-offs.

For districts that choose to limit the number of small schools, or that simply cannot convert all high schools to small schools at the same time, another way to address equity concerns is to place small schools in areas of greatest academic need. The decision of where to open new small high schools should be deliberate based on where change is needed most and a consideration of which students will benefit most from attending a small high school. By contrast, we have seen that districts often open small high schools in areas where they happen to have excess building capacity or where they have an overcrowded school and need to make some changes to relieve the facilities situation. These solutions solve a real facilities problem, but they also may contribute to inequitable spending across schools.

Funding system

Currently, many districts, including the three that we studied in this paper, use *staffing ratios* as the method of funding all or most schools. Staffing ratios assign staff to schools either per school — for example, one principal per school — or based on the number of students in a school — for example, one guidance counselor for every 360 students per school. In the Findings section, we discussed ways that staffing ratios could create spending differences between small and large high schools.

Another method of funding schools that many districts are considering is per-pupil funding. Per-pupil funding methods allocate dollars (instead of staff) to schools. Dollars are allocated based on the number of students in a school. Weighted student funding (WSF) allocates dollars differentially based on students' needs. WSF can help alleviate spending differences between small schools and large schools because it tends to award less to very small schools than staffing ratios.

The majority of urban districts use a staffing ratio process to deliver resources to schools. The premise behind using WSF to fund schools is twofold:

- The dollars each school receives are based on the specific needs of the students who attend.
- Principals, who are closer to students than district administrators, are given discretion (presumably) over how to staff their schools to meet the strategic goals of their schools, taking into account the faculty experience, student need, and community expectations.

Although WSF may be a solution for many districts seeking to create small schools, districts should implement WSF carefully for two reasons:

- WSF can reduce or eliminate all spending differences between small high schools and large high schools, but equal funding may, in the end, be detrimental to the small high school. Consider this: If dollars truly follow students and small high schools are not given any subsidy, then, in theory, there should be no difference between the per-pupil amount (adjusted for student need) at small high schools versus large high schools — or any school for that matter. However, even if (hypothetically) small and large high schools were to *spend* the same per pupil, they would still not have the same underlying cost structure.

Small high schools will still need to have a core set of administrators (such as a principal) that are simply more expensive *per pupil* than those same administrators would be at a large school. When there are state-mandated class sizes, we have seen that the rigid staffing ratios make it more expensive to meet those ratios when schools are very small. Districts implementing WSF that overlook these very real issues will inadvertently place a significant burden on small high schools, jeopardizing their success. These issues can be addressed either with a foundation allocation to small high schools — for example, a flat amount of money or staff to all schools — or with a higher per-pupil amount awarded to small high schools.

- Under a per-pupil (dollar instead of staff) funding system, schools are often given more flexibility on how to spend resources. With staffing ratios, the central office (or state) determines how a significant proportion of a school's resources will be used. This reduces school discretion. As schools gain the ability to direct resources to meet the needs of their constituents, they can use this to create new schedules, hire part-time teachers, hire multiple certified teachers, redesign professional development opportunities, and do other things that will help their schools. To succeed, they will need support systems to help them reach wise decisions. And they will need accountability systems that, at a minimum, describe what they do so that it can be reviewed regularly. When support and accountability systems are missing or insufficient, moving to a per-pupil formula may not have the desired outcome.

Assuming districts do provide the necessary support and are cognizant of small school cost issues when devising funding systems, WSF or other per-pupil funding methods can be an effective way of controlling the costs of small schools and creating additional flexibility for school leaders to design a school that works for their community.

V. Conclusion and Recommendations

In recent years, urban districts have rapidly created a large number of small high schools in an attempt to increase graduation rates and improve academic achievement. To succeed at this exciting reform effort, districts need to understand how much additional spending these efforts will require and what the various trade-offs are. In this paper, we examine small and large high school spending in three districts: Baltimore City, Boston, and Chicago. We found that:

- These districts spent \$1,000 to \$2,000 more per pupil to run small high schools than to run large high schools.
- Spending at small high schools shifted toward leadership and pupil services and away from instruction compared to spending at large high schools. Spending on instruction was approximately 75–80 percent of the budget at large high schools compared to 65–70 percent of the budget at small high schools. This does not mean small high schools necessarily spend less money per student on instruction. They may spend more if their overall budgets are higher than large high schools.
- Using a rigorous methodology was critical to accurately comparing spending across and within school systems. In this case, we would have overstated the incremental cost of running small high schools if we did not use a methodology in which we codified all expenditures, tracked actual teacher salaries, allocated all centrally budgeted expenses to schools, and adjusted for student need, among other things.

When deciding on a portfolio of high schools that includes small schools, district leaders face many choices: encouraging or disallowing different school models, establishing funding policies (staff or dollars), establishing maximum and minimum school sizes, and so forth. Based on our consideration of funding levels, equity, and funding systems and on the overall findings of this study, ERS makes the following recommendations.

Recommendations

- We recommend that districts carefully consider the level of available resources and the anticipated additional requirements before creating large numbers of small high schools.
- We recommend that districts consider mitigating the spending difference between small and large high schools:
 - By adopting a per-pupil formula as part of their small high school creation efforts and taking care to ensure that small high schools have sufficient funds to run mandated programs and that districts provide sufficient support and accountability systems; and

- By creating flexibility over resources so that school leaders are not forced to hire staff that they may not need or desire.
- We recommend that districts carefully consider whether sharing specific staff or facilities across campuses undermines the autonomy of schools and inhibits their ability to create a unique bell schedule or other desirable reforms.
- We recommend that districts seek to address equity either by offering choice and minimizing size differences between schools or by deliberately positioning small high schools in areas of strategic need.

Endnotes

- 1 As demonstrated in *The cost of small high schools: A literature review* (Miles, Shields, & City, 2007), “the literature on the costs of small high schools is scant ... most of the research on the impact of school size on cost was conducted in the 1960s when the concept of small schools and the challenges facing educators were significantly different.”
- 2 Lee & Smith, 1997; Gladden, 1998; Wasley et al., 2000; Darling-Hammond, Ancess, & Ort, 2002; Lawrence et al., 2002; Klonsky, 2004.
- 3 See Jewell, 1989; Walberg, 1992.
- 4 Importantly, district choices also can exacerbate spending differences. Atlanta Public Schools, which has no collective bargaining agreement, has unexpectedly large spending differences between small and large schools because of district choices and exceptionally small class sizes.
- 5 Guiding the reform was a high school steering committee comprised of representatives from numerous organizations: the Baltimore City Public School System central office and Board of Commissioners, the Baltimore Teachers Union, the Maryland State Department of Education, the Fund for Educational Excellence, and several foundations.
- 6 This paper focuses on the operating costs of small schools, not start-up costs. As such, we excluded schools in the start-up phase. Our companion paper, *Going to scale: Measuring district spending on small high schools* (Travers, 2008), provides an in-depth analysis of small school start-up costs.
- 7 Definitions of small schools vary. For example, some reformers define the threshold number of students in a small school as between 600 and 900 students (Lee & Smith, 1997; Fowler & Walberg, 1991; Howley, 1989; Raywid, 1997); (Funk & Bailey, 1999; Lawrence et al., 2002; Oxley, 1989; Raywid, 1996; Stiefel, Iatarola, Fruchter, & Berne, 2000; Walberg, 2002), whereas other scholars suggest that even smaller schools are optimal (Meier, 1995).
- 8 See Appendix A for ERS-detailed data requests.
- 9 A study in Denver conducted by Roza and Swartz in 2004 showed that small school-reported budgets appeared higher per pupil than large schools. However, small schools received less of the district-budgeted resources; thus, when all expenditures were included, small schools appeared to be more equally funded.
- 10 Our companion paper, *Going to scale: Measuring district spending on small high schools* (Travers, 2008) provides an in-depth analysis of small school start-up costs.
- 11 The CWI was developed by Lori L. Taylor and William J. Fowler, Jr. with support from the National Center for Education Statistics. Of the indexes we considered, this was the most comprehensive and up to date. The CWI is used by Standard & Poor’s in its widely used Web site SchoolMatters.com. As explained on the Web site, “Standard & Poor’s applies the [CWI] to improve the comparability of spending levels between districts.”
- 12 Data for Chicago are FY2005 budget data. Baltimore data are FY2004 budget data. Boston data are FY2005 budget data.
- 13 Only four high schools in Boston have fewer than 250 students.
- 14 As explained previously, Boston pilot schools are not staffed like typical Boston small schools as they have increased discretion over staffing.
- 15 With some exceptions, including Boston pilot and Mann schools and other schools funded based on per-pupil formulas.
- 16 In FY2005, Chicago Public Schools operated a set of small schools known as the CHSRI schools. Twenty of the 21 CHSRI schools studied received at least one teacher more than the staffing ratio would have provided. But six were not at full enrollment and were excluded from this study of ongoing operating costs, since their cost would be unusually high during the ramp-up period. Schools are often given some additional staff during their start-up years to promote a consistent culture among the staff and students.
- 17 Many districts attempt to create a foundation or minimum allocation for schools. For instance, when Seattle moved to a per-pupil funding system, it awarded a principal and secretary to every school.
- 18 In Boston, these positions are referred to as headmaster and assistant headmaster.
- 19 As mentioned previously, this does not apply to Boston pilot schools.
- 20 The percentage of budget spent on pupil services at small schools in Chicago is only 1 percentage point higher than in large schools, thus it is not studied in detail here.
- 21 In Boston, 8.5 social workers are on the budget of three pilot schools, and four social workers are on the budget of two Horace Mann schools.
- 22 ERS has, with funding from the Gates Foundation, begun creating tools that seek to do this student level of cost allocation. We hope to test not only the level of the expenditure, but also the nature of the expenditure: minutes of English the student taught, the teacher load, the certification status of the teacher, etc.
- 23 See Finding 2, page 20.
- 24 This was after adjusting for regional differences and included all school types (even any unusually high cost per-pupil schools that were excluded from this study). Also these data are from 2007–08, whereas data in our study are from FY2004 and FY2005.
- 25 Districts studied by ERS included Los Angeles, Chicago, St. Paul, District of Columbia, Boston, and Rochester.

Appendix A

Data Request

We collected the following information from each of the three districts:

- **Budget data:** Electronic version of the all-funds district operating budget with line item detail including all chart of accounts codes and code names (e.g., fund type, detailed fund or grant, object type, object, department, line item, etc.).
- **Payroll data:** The annualized salary (excluding stipends) of all district employees, with identification number, name, job title, school or organization code, and all other identifying information, as well as breakout of pay grade, etc.
- **Students database:** Detailed grade-by-grade enrollment data for each school (total students, total per grade, total English language learners and English as a second language students, special education (and where possible, special education — resource, self-contained), free and reduced-price lunch, ethnicity and gender, and other relevant data as collected.
- **Schools database:** Important information about each school, such as comprehensive school reform design (CSRSD) model (e.g., America’s Choice), special designations (e.g., magnet, alternative), span (e.g., K–3, grades 9–12), etc.
- **High-level indicators of student and school performance three-year trend:** For each school — school’s performance category (e.g., watch list, high performing), attendance rates, test pass rates, school’s average yearly progress, dropout rates, college-going rates, average SAT scores, etc., (disaggregated where possible); other disaggregated or value add student performance data as available.
- **Human resource data:** The name, identification, job title, school of assignment (name and code), active certification subject (e.g., elementary, science, math), type of certification (e.g., provision, probationary, uncertified); additional certification subject(s); hire date, years of teaching experience (or proxy, if available), evaluation level/code (e.g., journeyman); salary code, education level (e.g., BA, MA), subject of degree (if available, political science, math, science); and additional credits taken where tracked.
- **Special education student enrollment data for each school by type and/or category of disability:** As nuanced as possible (number of students at each school by placement: percentage of time in or out of the general education classroom; number of students at each school by disability classification: autistic, blind, learning disability, and so on).

- **Course schedule data:** A snapshot of all of the courses being offered in the district, by teacher and school, with detailed enrollment data for each course and one row per teacher per class period taught. Should include teacher name, teacher identification, school name, school identification, department name, department code, subject name, subject code, course name, course code, days met, starting period (of day), ending period (of day), quarter or semester; total students, total special education students, total English language learners and English as a second language students, total Title I or free and reduced-price lunch students, columns for students by grades 5–12.
- **Other documents:**
 - Special education staffing ratios or allocation formulas for teachers
 - Districtwide staffing ratios and/or allocation formulas
 - Chart of accounts from financial reporting system (list of accounts)
 - Union collective bargaining agreement or salary schedule
 - District budget book
 - Organizational structure

Appendix B

Coding Scheme for Resource Use

Each line item in the district’s operating budget was coded according to how the money was used.

Function	Description
1. INSTRUCTION: Includes the direct costs of providing instruction to students	
Teacher compensation	Base salary and benefits for teachers (librarians not included), and extra-duty stipends that pay for supplemental instructional services (e.g., tutoring, summer schools, etc.)
Aide compensation	Base salary and benefits for instructional aides/paraprofessionals, and extra-duty stipends that pay for supplemental instructional services (e.g., tutoring, summer schools, etc.)
Substitute compensation	Compensation for substitute teachers; extra-duty payments to teachers who cover when actual substitutes are not available
Other compensation	All compensation for staff, other than teachers and aides, providing instruction to students; this typically includes librarians and library aides
Instructional materials and supplies	Textbooks and consumable materials, such as educational software
Other noncompensation	Contracted instructional services (e.g., tutors who aren’t district employees) and nonconsumable instructional equipment, such as technology hardware
2. PUPIL AND ANCILLARY SERVICES: Refers to the direct costs of providing noninstructional services to students and managing these services, such as providing administrative support and contracted services	
Enrichment and other ancillary programs	Noninstructional co-curricular programs, athletics, after-school and summer programs
Social and emotional	Social workers, psychologists, character-education and mentoring programs, nonacademic counseling services, school-based attendance/truancy, other discipline services, safety programs, etc.
Physical health and services	Itinerant therapists, speech therapists, occupational therapy/physical therapy, vision and auditory services, nurses and nurses’ aides, nursing supplies, emergency help, student health programs, etc.
Evaluation/diagnostics	Full-time positions dedicated to identifying and diagnosing special education and English language learner students
Career/academic counseling	Guidance and career counselors/advisors (Note: Nonacademic counselors coded “social and emotional”)
Other pupil services	Other noninstructional programs
3. OPERATIONS AND MAINTENANCE: Includes the cost of running and maintaining schools	
Facilities and maintenance	Custodial staff, grounds workers, and noninstructional supplies for all programs
Security and safety	Security guards, crossing guards, police officers, playground monitors, and other safety measures

(continued)

(continued)

Function	Description
Food services	Food services workers, commodities, supplies, etc.
Transportation	All transportation except for athletics, before- and after-school activities, field trips, etc.
Utilities	Water, electric, etc.
4. INSTRUCTIONAL SUPPORT AND PROFESSIONAL DEVELOPMENT (ISPD): Cost of building instructional and leadership capacity	
Professional development	Professional development targeted to teachers, principals, instructional aides, and coaches, instructional technology (training), performance evaluation (part of human resources), and all teacher certification and training (does not include noninstructional professional development)
Curriculum development and instruction	Positions associated with the district's curriculum development and instruction activities
Recruitment	Resources used for recruiting teachers, principals, and instructional aides; this is typically part of human resources
5. BUSINESS SERVICES: Cost of running the district's business operations	
Human resources	All human resources functions <i>except</i> professional development functions, which are coded to ISPD
Finance, budget, and purchasing	All staff and supplies related to finance, budgeting, and purchasing functions
Data processing and information services	All data processing and information services <i>except</i> instructional technology
Capital and facilities planning	Note that actual capital expenditures are excluded from the K–12 operating budget
Development and fundraising	All activities in support of development and fundraising
Legal	Includes all legal expenses incurred by the district, including legal costs associated with special education
Business managers	Includes school-based business managers
Insurance	Cost to maintain necessary insurance
6. LEADERSHIP: Includes the cost of guiding and directing schools and the district	
Governance	Superintendent's office, cabinet-level positions (provided responsibilities cut across multiple use/function categories), and the school board
School supervision	Area office staff, instructional deputy(s), or chief academic officer
School administration	Principals and vice principals
Accountability	Research, evaluation, assessment (including special education reporting), student registration and attendance (data) management, and program evaluation
Parent and community relations	Includes, but is not limited to, all community- and parent-based programs, student assignments, public affairs offices, and services
Special population program management and support	Management and administration (both central office and school-based) associated with special education, English language learners, vocational and alternative education, poverty, incarcerated, gifted, and homeless program

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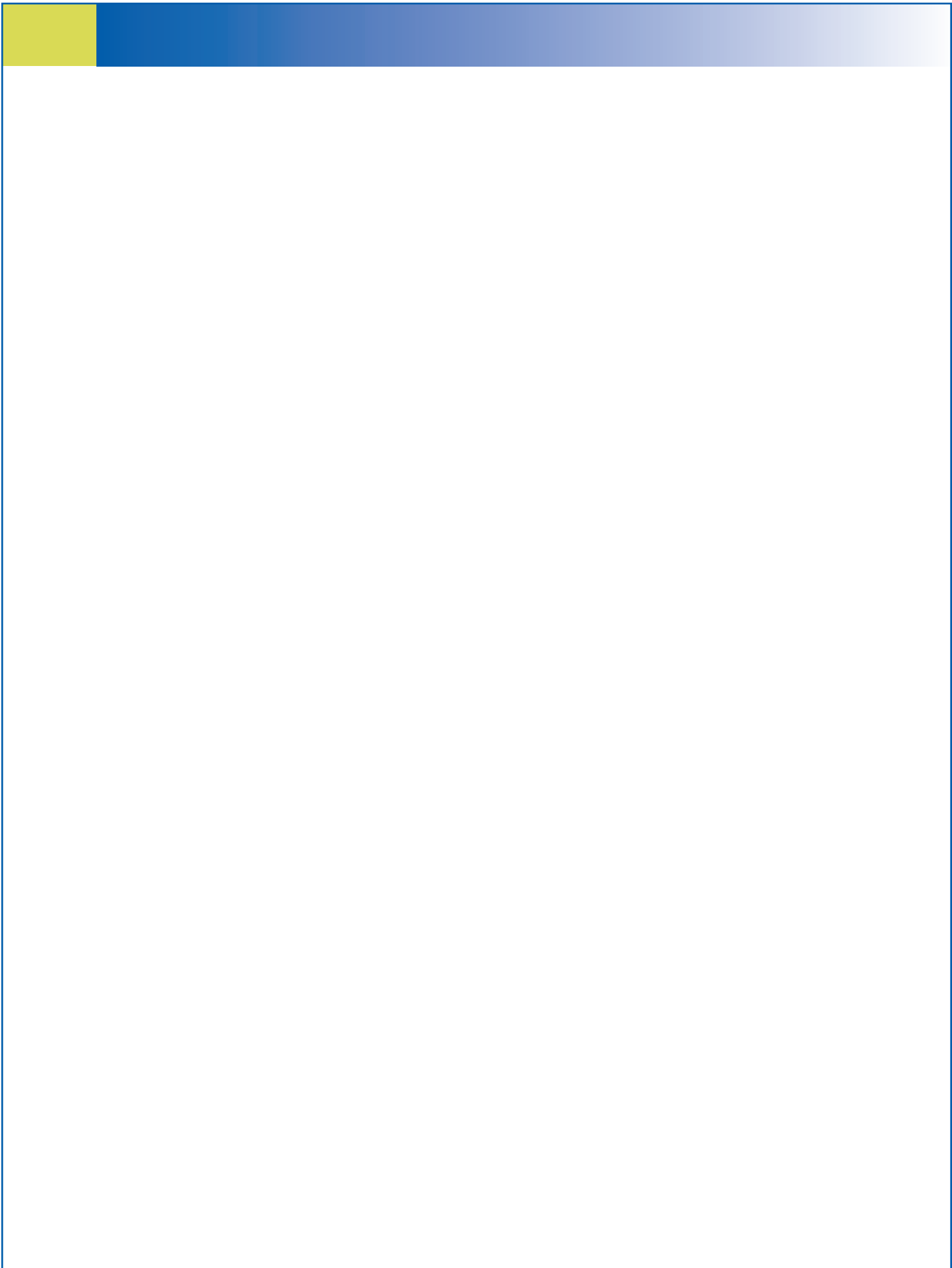
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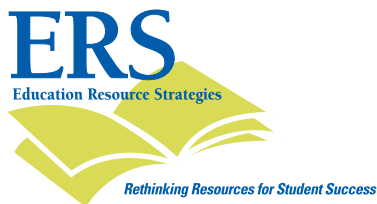


Rethinking the Cost of Small High Schools Project

The Bill & Melinda Gates Foundation supported Education Resource Strategies in a three-year effort aimed at building understanding and tools that would support districts in creating cost-effective systems of high-performing urban high schools.

Out of our extensive research, we created the following reports and tools to support leaders as they consider and design small high schools in their districts. All materials are available at www.educationresourcestrategies.org.

- **"The Cost of Small High Schools: A Literature Review"**
- **"Strategic Designs: Lessons from Leading Edge Small Urban High Schools"**
- **"Case Studies of Leading Edge Small Urban High Schools"**
- **"District Spending in Small and Large High Schools: Lessons from Baltimore City, Boston, and Chicago"**
- **Going to Scale Tool**
- **Small Secondary School Design Tool**
- **District Assessment Tool**



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