Weighted Student Formula Yearbook

Boston

by Katie Furtick & Lisa Snell
Boston Public School District

Program Name: Weighted Student Formula
Implementation: 2011–2012 School Year
Program Type: District-Wide
Legal Authorization: School Board Policy and Boston School Committee

Overall Grade: B–

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<tr>
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<tr>
<td>Principal Autonomy</td>
<td>B</td>
<td>8</td>
</tr>
<tr>
<td>School Empowerment Benchmarks</td>
<td>A</td>
<td>6</td>
</tr>
<tr>
<td>2011 Proficiency Rates</td>
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<td>10</td>
</tr>
<tr>
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<tr>
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<td>11</td>
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<td>2011 Graduation Rates</td>
<td>C</td>
<td>9</td>
</tr>
<tr>
<td>2011 Achievement Gaps</td>
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<td>B-</td>
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Achievement Gap Closures:
- **Internal District**
- **Internal District vs. Internal State**
- **External Achievement Gaps**

* Tied with Baltimore, Denver, Hartford, Houston, Minneapolis, and Newark for “School Empowerment Benchmarks”.

** Overall grades and ranks may not equal the average of individual grades and ranks because categories are weighted differently to reflect their relative importance.

Demographics

- Hispanic 40%
- African-American 36%
- White 13%
- Other 3%
- Asian 9%

- Low-Income Students
  - 76% 24%

- English Language Learners
  - 30% 70%

Source: Boston Public Schools at a Glance 2012–2013

2013–2014 Principal Autonomy

- Money Directly to Schools 42.3%

Source: BPS 2014 Budget

School Empowerment Benchmarks

- School budgets based on students not staffing: Yes
- Charge schools actual versus average salaries: No
- School choice and open enrollment policies: Yes
- Principal autonomy over budgets: Yes
- Principal autonomy over hiring: Yes
- Principal training and school capacity building: Yes
- Published transparent school-level budgets: Yes
- Published transparent school-level outcomes: Yes
- Explicit accountability goals: Yes
- Collective bargaining relief, flat contracts, etc.: Yes

BPS Met 9 out of 10 School Empowerment Benchmarks
1. Overview of Boston’s Weighted Student Formula Program

Boston Public Schools (BPS) enrolls 57,100 students. The demographic composition of the district includes 36 percent African-American, 40 percent Hispanic, 13 percent White and 9 percent Asian, with 30 percent of students English-language learners and 75 percent of students qualifying for the free and reduced lunch program.1

In FY12 Boston’s Superintendent Carol Johnson introduced a new “weighted student funding” (WSF) model to allocate funds to 118 schools in the BPS. Under WSF, dollars follow the students and individual schools receive funds according to the specific needs of their student population and total number of students. Students are given higher weights and are allocated additional funds if they meet additional criteria: high risk at grade 9, poverty, ELL, special education or vocational education.

Before the district-wide WSF program Boston had a “Pilot School” program where 21 schools had complete autonomy over budget, curriculum and staffing. The Boston pilot schools are the result of a unique partnership launched in 1994 among Mayor Thomas M. Menino, the Boston School Committee, the superintendent and the Boston Teachers Union (BTU). The pilot schools were explicitly created to be models of educational innovation and to serve as research and development sites for effective urban public schools.

If BPS had not completed the financial realignment of funding through WSF, the projected FY12 budget gap of $63 million would have resulted in a 7.4 percent cut for all Boston schools. Instead, a total of 90 schools, representing 80 percent of students (45,260), benefited as a result of WSF by receiving more resources than a 7.4 percent cut, while 28 schools received a cut greater than 7.4 percent. Approximately 62 schools—or 52 percent of Boston's schools—had an FY12 budget increase under WSF. WSF allowed the district to target budget reductions strategically and ensured that school funding was attached to kids and that education investments were made based on students and not based on maintaining programs or staffing levels. In conjunction with WSF, in 2012 BPS also closed eight schools and merged four schools to direct more resources into the WSF budget. In BPS, total spending for schools was redistributed but not reduced under WSF.

Weighted student funding is more equitable, transparent and predictable, enabling schools to make greater academic progress regardless of the economy. Under a weighted student funding formula, dollars follow students. This means that BPS anticipates what each student needs each year and then delivers the appropriate funds to the school that each student attends. Dollars no longer follow programs, buildings or schools. Instead, Boston allocates budgets solidly based on student need.

Schools’ budgets are based on who they are educating—not the flat number of students or staff they usually have in the building. For example, schools with a higher percentage of students whose family income
is at the poverty level would need more resources to educate students, or a student with language challenges might require more highly specialized staff. In these cases, the school would receive a higher per-pupil amount. This per-pupil amount would follow the student to whichever school he or she chose.

More recently, Boston has used its weighted student formula to strategically target resources to the lowest performing schools and to increase seats for disadvantaged children in more high-performing schools. For example, the Access to Excellence plan implemented in the FY 2013 school year created 1,304 new seats in high-demand high schools and pilot schools. The demand for these schools directed the district’s capital investment dollars to expand these school facilities and allowed the WSF formula to follow students from lower-performing schools into these newly created high-quality school options. In addition, the district changed the weighted student formula for SY2013–2014 to provide extra resources to schools with more than 60 percent of their students receiving free and reduced price lunch.

2. How Does Boston’s Student-Based Budgeting Formula Work?

Under a weighted student funding model, BPS calculates per-student funding by assigning a value to the various factors that go into meeting a student’s academic needs, and then adding them up. Every student has a different formula, which is based on his or her grade level, educational needs, and learning challenges or ability. A school’s budget is calculated by adding the individual funding estimates for every student projected to attend that school in the fall. Table 1 shows Boston’s FY2014 weighted student funding formula.

School Foundation. All schools, no matter what size, receive $200,000 to support a core administrative function. Typically, this will include a principal or headmaster, an administrative support position and additional funding for overall school support. Principals and headmasters may create other positions based on funding levels determined through class size management and the weighted student funding model.

Grade-Level. These weights are a function of class size. The weights are heavier in early grades because the student/teacher ratio is smaller. Boston’s contracted class size maximum did not change from FY2013 to FY2014 and the weights are set at target class sizes. In addition, incoming 9th grade students defined in BPS’s Leading and Lagging Indicators as “high-risk” or “off-track” receive an additional weight. This extra funding allows high schools to provide targeted resources to at-risk students.
Poverty. Students who come from a challenging home environment sometimes need extra support in the classroom. This is why BPS set higher weights for students who qualify for a free or reduced lunch program. In addition, schools that educate students living in poverty at a higher level than 60 percent will receive extra funding on top of this increased allocation. Schools with high concentrations of students living in poverty may also receive federal Title I funds, which are in addition to the general fund school allocation that flows through a weighted student formula.

Students with Disabilities. These weights are calculated based on optimal staffing levels for varying degrees of need as recommended by Boston Public Schools’ Office of Special Education and Student Services. The district’s new Highly Specialized Setting programs are designed to replace existing Substantially Separate classes. BPS has based weights on class size targets set at one or two students lower than necessary staffing levels to allow schools flexibility to purchase additional resources if needed.
**Emotional Impairment.** The FY14 budget includes a weight for emotional impairment, which will help schools ensure appropriate supports can be in place for those students at all levels.

**English Language Learners.** In FY14, BPS changed the weighted student funding structure for English Language Learners. Previously, the district provided common weights for all English Language Learners and distinguished only by grade level. The FY14 budget recommendation includes weights that change based on English Language Development (ELD) levels to provide a more equitable distribution of resources across levels of need.

**Vocational Students.** This measure continues the FY13 increase in pupil funding by 50 percent for students in designated vocational programs. This weight was developed based on the standards the state gives the district in its funding formula.

### 3. How Much Autonomy Do Boston’s Public Schools Enjoy?

There are two ways to view school-level autonomy. First, autonomy at the school site can be evaluated by budget discretion—what proportion of funds is sent to the schools versus retained at the district level? Second, one can evaluate by planning discretion—how much control over staffing and programmatic offerings do principals have?

The letter grade given to school districts in the *Weighted Student Formula Yearbook* indicating the level of autonomy over school budgets is based on the percentage of yearly operating funds that are allocated to the school level. The higher the percentage of operating funds allocated to the school level, the greater budget autonomy the principal enjoys.³

In FY 2013–2014 Boston public schools received 42.3 percent of funds through student-based budgeting allocations. This is a relatively large percentage of budget autonomy relative to other school districts highlighted in the *Weighted Student Formula Yearbook*, giving BPS a “B” in principal autonomy.

In September 2012, Boston Public Schools signed a new contract that gives schools more local autonomy including staffing and hiring flexibility so school leaders can select the right teacher for every classroom, replacing an outdated seniority-driven system. The new contract achieves the goal of offering all BPS schools access to similar flexibilities that the district’s successful Pilot, Turnaround, In-District Charter and Innovation Schools already enjoy.⁴
4. How Does Boston Public Schools Support Principals?

BPS has a comprehensive leadership development strategy to ensure that every school has strong principals. This strategy, supported by multiple non-profit partners, includes a training program for teacher leaders to earn licensure as a principal/assistant principal, training for current licensed administrators who desire to serve as principals, a mentoring and coaching program for school leaders in their first three years, and a strong professional development program for existing principals to strengthen their knowledge and skills.

5. The Site-Based Management of Boston Public Schools

Each school in Boston has a School Site Council (SSC). The role of the SSC is to engage parents and teachers to serve with the principal/headmaster as the central decision-making body of the school. School Site Councils are required by the Massachusetts Education Reform Act of 1993 and by the collective bargaining agreement between the Boston Teachers Union (BTU) and the Boston School Committee. Under the school-based management/shared decision-making model described in the collective bargaining agreement between BPS and the BTU, the role of the SSC is to:

• Review and approve the Whole School Improvement Plan within guidelines established by the superintendent;
• Review and comment on the entire school budget, including the general fund and External Funds budgets, in a timely fashion;
• Approve the budget for discretionary school materials, supplies, textbooks and equipment, including the use of school improvement award funds;
• Review and approve recommendations from any other committee or group that is established to recommend changes that will have a major effect on the school community;
• Review and approve recommendations of the Instructional Leadership Team that have been endorsed by the principal/headmaster and that will have a major effect on the school community;
• Develop and approve plans for increasing parent involvement in the school;
• Approve waivers, and
• Receive information about all outside programs or outside professionals that come into the school.
6. The School Choice Component of Boston’s Weighted Student Formula Program

In March 2013, the Boston School Committee approved a new school choice plan for kindergarten–8th grade to give more students access to quality schools closer to home. The plan will take effect for the 2014–2015 school year and replaces the existing three-zone system created in 1988. The new plan offers families all the choices within a mile of home, plus more choices a little farther away if needed to assure their list includes at least three high-quality schools, plus citywide schools. Every applicant will have at least six choices. The plan:

- Increases the chances a family will get one of its top three choices from 72 percent (current 3-zone) to 80 percent (home-based);
- Increases by 30 percent the chances a student will be in the same school as another child from his or her neighborhood;
- Cuts the average distance a child travels by 40 percent, from 1.87 miles to 1.1 miles, and
- Allows grandfathering and sibling grandfathering.

In addition, Boston maintains a complete open enrollment system for high school students in which they rank their top high school choices and are not constrained by residential assignment.

7. Initiatives to Increase School-Level Accountability in Boston

BPS has an accountability system based on two years of data, with equal weight given to student performance and student growth scores. Consequently, this system reflects school improvement more quickly, registers short-term improvement or declines more prominently, and uses BPS's schools as the norming group instead of all schools across the state. Also in contrast to the state system, BPS differentiates among types of special needs students and levels of English language acquisition. The BPS system places schools in four different quadrants. In 2013, 21 of the district’s schools have fallen into the lowest quadrant and are considered most in need of additional support. Enrollment in these 21 schools represents 16.9 percent of the BPS total.

In addition, the district publishes a yearly profile of every school in the district with student achievement trends.
8. Performance Outcomes in Boston Public Schools

While compiling this *Weighted Student Formula Yearbook*, Reason Foundation conducted an analysis to determine how the school districts that have adopted a Weighted Student Formula are performing relative to other districts in their state, and relative to each other.

Reason’s analysis grades 10 performance metrics. Scores are determined by comparing the school district in question—in this case Boston Public Schools—with other school districts in the same state (Massachusetts, in this instance), and sorting them into a decile ranking. Based on the school district’s decile rank within its own state, the analysis then compares it with the other districts studied in this *Weighted Student Formula Yearbook*. Finally, this analysis assigns the studied school districts a grade based on how they measure up against one another. This analysis also grades and ranks studied school districts on two other measures: the number of school empowerment benchmarks the district has reached, and the degree of autonomy principals have over school budgets. In determining the grades on these two measures, districts are compared only with the other districts covered in this *Yearbook*. A detailed explanation of the methodology used to determine performance metrics and grading can be found in the methodology chapter of the *Weighted Student Formula Yearbook*.

Student proficiency rates, as determined by standardized state tests and student enrollment data, were used to calculate the following:

- 2011 proficiency rates;
- Improvement (average change) in proficiency rates from 2008 to 2011;
- Expected versus actual proficiency rates;
- Improvement in expected proficiency from 2008 to 2011;
- Achievement gap, and
- Each of three achievement gap closure metrics.

Boston proficiency rate data were obtained from the Broad Prize for Urban Education 2012 District Data Reports. Elementary, middle and high school student proficiency rates in reading, mathematics and science are derived from Massachusetts Comprehensive Assessment System results.

The analysis discusses student achievement including 2012 proficiency rates, but 2012 data were not included because in many school districts the data were not yet available at the time of analysis. Therefore, 2012 student achievement is mentioned, but not compared relative to other school districts in Massachusetts and in the *Weighted Student Formula Yearbook*. 
Graduation rates were collected from Data.gov based on adjusted cohort graduation rates at the school level for school year 2010–11 (most recent data available). Four-year adjusted cohort graduation rates are calculated by state education agencies in accordance with U.S. Department of Education regulations on ESEA, Title I, published in 2008. Adjusted cohort graduation rates are reported for each school as a whole and for key sub-groups of students.

The grade given for school empowerment benchmarks is based on 10 benchmarks determined to be best practices within existing weighted student formula programs and recommendations of other studies on student-based budgeting.

The following sections expand upon each graded category by highlighting areas in which BPS performed exceptionally well relative to other districts in Massachusetts, and to other districts in the *Weighted Student Formula Yearbook*. This analysis also discusses areas in which BPS has fallen behind or could use improvement.

**Student Achievement**

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
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<td>2011 Proficiency Rates</td>
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**Boston Public Schools is among the fastest improving Massachusetts school districts for elementary school mathematics proficiency rates.**

Also, since 2008 BPS 10th grade students’ aggregate student population made a 21-point jump in English/Language Arts proficiency rates, rising 58 percent in 2008 to an all-time high of 79 percent in 2013. BPS is in the top 50 percent of school districts for improvement in mathematics proficiency among elementary and middle school students. Disaggregated by student group, the district’s Hispanic elementary school students are among the top 30 percent of Massachusetts districts for fastest improving mathematics proficiency rates, shown in Figure 1.

Boston’s non-low-income elementary school students are among the top 20 percent of Massachusetts school districts for fastest improvement in both mathematics and reading proficiency. Also, non-low-income high school students are among the top 30 percent of the state’s school districts for proficiency rate improvement in all school subjects: reading, mathematics and science. The district’s White students are not
far behind and are among the top 30 percent of Massachusetts school district for proficiency rate improvement in elementary mathematics and reading, and high school science.

Disadvantaged student groups’ proficiency rate improvement among BPS high school students is not as impressive as advantaged student groups’ high school proficiency rate improvement, but they are improving. For instance, the district’s African-American and Hispanic 10th grade students reached their highest levels of English/Language Arts proficiency in Boston’s history according to 2013 MCAS test scores, shown in Figure 2.

![Figure 2: English/Language Arts Proficiency Rate Improvement 10th Grade Students](Image)

Predicted or expected proficiency rates are calculated relative to all other school districts in Massachusetts, controlling for the percentage of low-income students at each grade level. Generally, a large, low-income student body is an indicator of low performance. By controlling for, or taking into account, the percentage of low-income students in each grade level across school districts, this analysis can determine how well a given school district should be performing relative to others in the state.

If the predicted proficiency rate is higher than the actual proficiency rate, then a school district is underperforming. In other words, the school district is not reaching its potential achievement level. If a school district’s actual proficiency is above its predicted proficiency, the district is over-performing what is expected given the low-income student population.
Boston Public Schools is one of the highest performing districts in Massachusetts for above expected performance in mathematics proficiency among elementary and high school students, given the percentage of low-income students at each grade level. BPS is among the top 10 percent of Massachusetts school districts for above expected performance in mathematics proficiency among high school students, and among the top 40 percent of school districts for improvement in expected mathematics proficiency among elementary school students. This means that, taking into account the percentage of low-income students at each grade level, BPS is performing better than expected in high school mathematics. And BPS is quickly improving expected proficiency in mathematics among elementary school students.

Boston Public Schools students have increased their graduation rates each year since 2007. BPS reached its highest graduation rate to date with 69.5 percent of students who entered 9th grade in 2008 graduating in 2012, shown in Figure 3.

Disaggregated by student group, the district’s Hispanic student population was among the top 40 percent of school districts for 2011 four-year cohort graduation rates. And its African-American student population was among the top 50 percent of Massachusetts school districts for 2011 graduation rates.

**Achievement Gaps**

The following three achievement gaps are measured across all grade levels (elementary, middle and high school) and school subjects (reading, mathematics and science):

- African-American versus White student proficiency;
- Hispanic versus White student proficiency, and
- Low-income versus non-low-income student proficiency.

Internal district achievement gaps (IDG) are measured as proficiency gaps between disadvantaged and non-disadvantaged student groups within a given district. Because this analysis assesses internal district achievement gaps for each district in the state, it can rank relative size of achievement gaps across districts in the state, and how quickly those achievement gaps are closing from 2008 to 2011.
Boston Public Schools has small 2011 achievement gaps, but it is because the district’s advantaged students and disadvantaged students have relatively low proficiency rates, leaving little room for the achievement gaps. However, in some cases existing achievement gaps that are relatively large are closing faster than most other Massachusetts school districts.

BPS is among the top 30 and 40 percent of Massachusetts school districts in closing some achievement gaps between advantaged and disadvantaged student groups. The fastest closing achievement gaps are: elementary school Hispanic vs. White students’ mathematics proficiency rate (top 40 percent of Massachusetts districts), and high school Hispanic vs. White reading proficiency rate (top 40 percent of Massachusetts districts), shown in Figure 4.

An achievement gap is considered to be closing if the disadvantaged student group proficiency rate is increasing faster than the advantaged student group proficiency rate.

In addition to internal district achievement gaps (IDG) discussed above, this analysis also measures internal district versus internal state (ID vs. IS) achievement gaps and external district achievement gaps (EDG). Internal district achievement gaps (IDG) are measured between student groups within the district. Internal district versus internal state (ID vs. IS) achievement gaps are measured as the district’s achievement gap versus the average achievement gap of every other district in Massachusetts (excluding Boston Public Schools). If a given BPS achievement gap is closing faster than that of the rest of the state, the ID vs. IS gap is considered to be closing. Finally, external achievement gaps (EDG) are measured by the difference between the district’s disadvantaged student group proficiency rate and the advantaged student group average proficiency rate of all other districts in the state. External achievement gaps are considered to be closing if the district disadvantaged group proficiency rate is increasing faster than the state advantaged group. Table 2 shows which achievement gaps BPS is closing, and which achievement gaps are not closing, given the available data.
The district is having the most difficulty closing achievement gaps between low-income and non-low-income students. Boston’s non-low-income students are among the top 20 to 30 percent of all Massachusetts school districts for fastest improvement in mathematics and reading proficiency at every school level. BPS non-low-income students are also among the top 30 to 40 percent of the state’s school districts for fastest improvement in science proficiency at all school levels. On the other hand, BPS low-income students are among the bottom 30 to 40 percent of the state’s school districts for reading proficiency improvement at all school levels, and the bottom 50 to 40 percent of Massachusetts school districts for science proficiency improvement at all school levels.

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Total Gaps Closing out of Total Available: 4/27 2/27 6/27
**Areas for Improvement**

Boston Public Schools students had much lower proficiency rates in 2011 than students in most other Massachusetts schools districts. BPS falls into the lowest 10 percent of Massachusetts school districts in 18 of 36 categories for 2011 proficiency rates shown in Figure 5.

Disaggregated by student group, BPS had poor 2011 reading proficiency rates among African-American and low-income middle school students. The school district also is among the lowest performing Massachusetts school districts in science among African-American, Hispanic, and low-income middle and elementary school students. In particular, science proficiency rates among Hispanic and low-income middle school students are exceedingly low and have shown little to no improvement from 2008 to 2011, shown in Figure 6.

Boston Public Schools ranked best out of all Yearbook school districts for smallest achievement gap in science proficiency rates among middle school students. BPS is among the top 30 percent of Massachusetts school districts with smallest achievement gaps between African-American and White, and low-income and non-low-income middle school students in this category. BPS is also among the top 40 percent of school districts with smallest achievement gap between Hispanic and White middle school students’ science proficiency rate.

However, when comparing the proficiency rates of these student groups it is clear that a deciding factor in the size of the achievement gap is that proficiency rates among both advantaged student groups and disadvantaged student groups of students are very low, shown in Figure 7.
Boston Public Schools falls in the bottom 40 percent of Massachusetts school districts for closing achievement gaps of mathematics proficiency rates among Hispanic vs. White high school students. BPS also falls in the bottom 30 percent of all districts for science proficiency achievement gaps among low-income vs. non-low-income high school students.

**BPS falls among the bottom 10 percent of Massachusetts school districts for the aggregate student population’s 2011 graduation rates.**

Disaggregated by student group, graduation rates are better among African-American and Hispanic students, but the district is still among the bottom 20 percent of Massachusetts school districts’ graduation rates among low-income students. More importantly though, according to Boston Public Schools' Office of Research, Assessment, and Evaluation, graduation rates have been steadily improving each year since 2007. If BPS continues to increase its graduation rates, it will be on the path to meet the graduation rates of high performing districts in Massachusetts.

### School Empowerment Benchmarks

<table>
<thead>
<tr>
<th>Category</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Empowerment Benchmarks</td>
<td>A</td>
</tr>
<tr>
<td>School budgets based on students not staffing</td>
<td>Yes</td>
</tr>
<tr>
<td>Charge schools actual versus average salaries</td>
<td>No</td>
</tr>
<tr>
<td>School choice and open enrollment policies</td>
<td>Yes</td>
</tr>
<tr>
<td>Principal autonomy over budgets</td>
<td>Yes</td>
</tr>
<tr>
<td>Principal autonomy over hiring</td>
<td>Yes</td>
</tr>
<tr>
<td>Principal training and school capacity building</td>
<td>Yes</td>
</tr>
<tr>
<td>Published transparent school-level budgets</td>
<td>Yes</td>
</tr>
<tr>
<td>Published transparent school-level outcomes</td>
<td>Yes</td>
</tr>
<tr>
<td>Explicit accountability goals</td>
<td>Yes</td>
</tr>
<tr>
<td>Collective bargaining relief, flat contracts, etc.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

BPS is reaching 9 of the 10 weighted student formula benchmarks, giving the district an “A” letter grade. The benchmark that BPS has not fully achieved is, “Districts charging actual versus average teacher salaries.” Boston Public Schools is directing nearly half of school budgets to principals, giving them higher autonomy over spending. By decentralizing ownership of school budgets, principals can decide the best way to spend money at the ground level.
9. Lessons Learned in Boston

1. The most important lesson from Boston Public Schools is that school boards can negotiate with unions for more flexibility to support school-level decision-making and more effective implementation of WSF with stronger autonomy for school principals. The Boston pilot schools and the new Boston Public Schools’ contract demonstrate the benefit of a flat contract where principals are free to negotiate with individual teachers that best meet the needs of their school.

2. Boston also demonstrates how the weighted student formula can help target district priorities like improving low-performing schools. Through the weighted student formula, Boston targeted more resources to the schools with the highest concentration of disadvantaged students and created more seats in high performing schools to allow funding to follow students to these high-demand schools. Boston has used an explicit strategy to expand facilities and seats of already high-performing schools to give parents more high-quality options.

Resources

Contact Information

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Boston Public Schools
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Endnotes


2 A second foundation allocation is applied to schools with two sites, where at least one is serving elementary age students. BPS provides $50,000 if sites are less than one mile apart, and $100,000 if one mile or more apart.

3 The methodology used for determining principal autonomy is explained in detail in the methodology section of this Weighted Student Formula Yearbook.


6 For extensive details see Superintendent’s Circular, School Site Councils, September 1, 2013. fam-1_school_site_council.doc


9 School details and school report cards can be found here. http://www.bostonpublicschools.org/view/all-schools-z
