New York City Independent Budget Office Schools Brief

April 2013

Is It Getting Fairer?

Examining Five Years of School Allocations Under Fair Student Funding

Summary

Beginning in school year 2007-2008, the city's Department of Education changed its method of allocating funds for basic instructional needs to schools. The old method, based largely on teacher salaries, led to wide disparities in schools' per-student funding. Under the new approach, called Fair Student Funding, the distribution of these funds, which can make up 60 percent to 70 percent of a school's budget, is driven by the composition of each school's student body. Students with different needs are "weighted" differently, with the weights corresponding to the additional funding required to address those particular needs.

Concerned that full implementation of Fair Student Funding in 2007-2008 would produce large and sudden changes in the budgets of some schools, the education department decided to phase in the new methodology over two years. Some schools received hold-harmless funds to avoid sharp falloffs in funding while other schools received only some of the funds due to them under the Fair Student Funding formula. When the recession derailed an expected increase in state aid, the education department indefinitely deferred full implementation of Fair Student Funding.

IBO examined how closely the actual allocation of funds to schools through Fair Student Funding matched the amounts determined solely by the formula. IBO also looked at the extent to which the delay in the full implementation of the formula disproportionately affected certain student populations. Among our findings over school years 2007-2008 through 2011-2012:

- The Fair Student Funding mechanism has moved the distribution of funding for basic instruction to more closely correspond to student needs.
- Middle school students, who were historically funded below their formula amounts, and high school students, who were funded above their formula amounts, were funded closer to their formula amounts by 2011-2012.
- For the first four years, most of the weights related to student achievement and need were not found to have a statistically significant effect on the allocations. By 2011-2012, however, all but one of the academic weights played a significant role in the allocations.

With 94 percent of schools receiving too little money based on the needs of their students in 2011-2012, Fair Student Funding still has a ways to go towards the goal of giving adequate funding to all city students through a readily understood and transparent formula. That would require more funding through the Fair Student Funding mechanism and an end to post-formula adjustments that distort schools' allocations.

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Introduction

The Department of Education (DOE) allocates the bulk of unrestricted (i.e. discretionary or noncategorical) funding to schools through its Fair Student Funding (FSF) methodology, which was first implemented in the 2007-2008 school year. The student need-based FSF methodology replaced the school system's previous allocation formulae that were primarily based on teacher salaries. When FSF was introduced, the DOE presented evidence showing that the allocation system then in place yielded wide disparities in per capita funding, with almost no correlation between noncategorical funding and student need.[1]

According to DOE, FSF dollars "are used by schools to cover basic instructional needs and are allocated to each school based on the number and need-level of students enrolled at that school. All money allocated through FSF can be used at the principals' discretion."[2] In practice, preliminary FSF allocations for each school are determined in June before the school year begins and are based on projections of the general education, special education, and high school portfolio composition of the student body for the upcoming school year and one-year lagged funding for the academic and English language learner (ELL) needs for the prior school year. Students with different characteristics carry different weights corresponding to the relative amount of additional funding that DOE estimates is required for the school to address that particular need. The weights are lumped into five major categories: grade weights, academic intervention weights that represent incoming students' need level, English language learner weights, special education weights, and portfolio weights (which apply only to certain high schools, including career and technical education schools, or CTE). The allocations are then adjusted through February to reflect the movement of students into and out of schools.

The DOE was concerned that full implementation of FSF in 2007-2008 would have produced large changes in individual school budgets so the department decided to phase it in gradually. This phase-in had three components:

- A hold-harmless provision ensured that those schools that had been receiving more than they were entitled to under the new formula would continue to receive the higher amount. Although this hold-harmless supplement was promised only for the first two years, it still has not been eliminated.
- Incremental allocations for schools that had been receiving less than they were entitled to under the new formula were capped in the initial years of FSF. That cap was set at the minimum of $400,000 or 55 percent of the difference between the formula and the pre-FSF funding level.
- The final component, the base allocation, was calculated differently for schools depending on whether they received the hold harmless or incremental funds. For schools that received hold-harmless funds, the base allocation was reduced to the FSF formula amount, which was less than the FSF-equivalent portion of their 2006-2007 budget. For schools that received the incremental funds, the base allocation was maintained at the FSF-equivalent portion of their 2006-2007 budget, which was less than the FSF formula amount in 2007-2008.

A school's total FSF allocation was the sum of the calculated base amount plus their hold harmless or incremental amount.

When FSF was first introduced the DOE expressed hope that new funds expected from the state as part of the resolution of the Campaign for Fiscal Equity school funding case would make it possible to increase the amount of incremental funds above the $400,000/55 percent cap for schools that were being held below their full FSF amount. DOE's plan during the first two years was that rising revenues would allow schools below their formula amount to be brought up to the level of funding determined by the FSF methodology, while no school would see its budget cut because of the new method thanks to the hold-harmless provision. Due to state budget shortfalls brought on by the economic downturn in 2008, however, the necessary revenue surge did not materialize and the DOE decided to leave the transitional hold harmless and incremental components of FSF in place. For 2011-2012, funds below the FSF formula amount were no longer reported separately and instead lumped in with the base amount, essentially changing the definition of the base amount from 2011-2012 onwards. The portion of hold-harmless funds that brought schools above the FSF formula amount was designated separately as Funds Over Formula.

Two effects may result from the delay in implementing the FSF methodology as initially intended, which would require doing away with the incremental cap and hold-harmless provisions. First, a school's current FSF funding might not reflect the academic needs of the current student body as measured by the weights in the formula. Second, the

disparities in funding across schools serving students with similar academic needs may not have declined over time, as intended under FSF.

With fewer budget resources available than DOE had anticipated, especially in 2009-2010 and 2010-2011, the level of funding provided through FSF decreased sharply, before recovering somewhat in 2011-2012.[3] In 2007-2008, $5.4 billion in FSF funds were allocated to schools. By 2009-2010, the total had dropped to $4.4 billion and in 2010-2011 it was $4.5 billion. This drop occurred because unrestricted state assistance shrank during the recession, and while federal stimulus money provided through the American Reconstruction and Recovery Act (ARRA) largely made up the difference to the overall school budget, much of that temporary money came with restrictions that prevented it from being distributed through the FSF system. In 2011-2012, with the end of the temporary ARRA assistance and a further decrease in state funding, the city committed additional tax levy (locally generated) funding to the DOE. Much of this additional funding was distributed through FSF, which—combined with the absorption of the previously separate Children First tax levy funds into FSF—brought total FSF funding up to $5.0 billion, although it was still below the 2007-2008 level. The FSF formula remained unchanged from 2007-2008 through 2010-2011; in 2011-2012, the DOE made changes to the weights and/or the definition of four of the student need categories (please see the appendix for more detail).

Given the substantial decline in FSF allocations over several years, the fact that the formula has remained in its transitional phase, and the ebbs and flows of student needs in particular schools, IBO examined how total FSF funding at schools through 2011-2012 compared with the amount they theoretically should have received under the formula. We also analyzed the extent to which the delay in the formula's implementation has disproportionately affected certain populations of students. While the weights and the definition of student needs in the formula are critical to achieving the DOE's stated goal of a more equitable distribution of funds to schools, in this report IBO focuses on analyzing how close DOE has come to implementing the FSF formula rather than assessing whether or not the formula is an appropriate way to distribute funds equitably.

Data

The DOE provided IBO with three main files for each school year. First, the DOE provided a list of schools and their projected student populations, broken down into the different need categories by which students are weighted to calculate the FSF formula. The second file is a list of schools and their preliminary FSF allocations, including detail on their base allocation (adjusted for expected changes to the composition of the student body), any incremental or hold-harmless funds they received, and their total allocation. The preliminary allocations are based on projected enrollments, which are adjusted midyear for changes in enrollment except for those students in the academic intervention and ELL student counts, which remain lagged. The third file provides data on the midyear adjusted FSF allocations and audited student registers. This report uses the midyear allocations and the audited registers since these reflect the latest adjustments to school budgets due to changes in the student body during the school year. The preliminary allocation data are used only to identify schools that received incremental or hold-harmless funds.

Fair Student Funding in Schools

Fair student funding is distributed to most elementary, middle, and high schools (see the appendix for more detail on the FSF formula). The only schools that are not funded through FSF are schools serving *only* special education populations (those in administrative district 75), three highly specialized programs serving blind or visually impaired students or students in a special education inclusion setting, and alternative programs serving students who are high school aged or older (those in administrative district 79).[4] In 2007-2008, 1,396 schools received FSF allocations totaling $5.4 billion.

As DOE has opened more small schools over the years, increasing the total number of schools in the system, there were 1,506 schools being funded through FSF in 2011-2012. From 2007-2008 through 2010-2011, while the number of students funded through FSF increased by less than 1 percent, total FSF funding decreased by 16.8 percent—a decline that was partially offset by ARRA funding in the latter two years. Even with this reduction, FSF funding still accounted for a significant portion of school budgets. For example in 2010-2011, FSF funding accounted for 61 percent of the preliminary budget for the average city school although there was considerable variation from one school to the next.[5] In 2011-2012, the large infusion of city funds (allocated through FSF) to replace the loss of ARRA (allocated outside of FSF) meant that 70 percent of the average school's preliminary budget was being allocated

through the FSF mechanism. However, the total amount of FSF funding in 2011-2012 was still 6.3 percent below funding in the first year of implementation, while the number of students in FSF funded schools increased by 0.6 percent. Reflecting annual step increases in average teacher salaries and other costs, total FSF formula amounts—the amount of funding a school would receive if the allocation were based solely on the FSF formula calculation, excluding any adjustments such as hold harmless or incremental amounts—steadily increased through 2010-2011 and leveled off in 2011-2012. FSF formula amounts totaled $5.3 billion in 2007-2008 and grew to about $5.9 billion in the last two years, an increase of 9.5 percent from 2007-2008 to 2011-2012. In every year but 2007-2008, total FSF formula amounts for the system as a whole exceeded the total of actual FSF allocations.

In all years when the DOE instituted across-the-board budget cuts, the impacts of the decreased funding on schools and their students varied because the dollar amount of a school's cut was determined by applying a fixed percentage to a pot of money that included both FSF and non-FSF sources, such as Children First funds. This dollar amount was then deducted entirely from the FSF allocation. So there was not necessarily a direct correlation between the amount of a school's cut and its student needs. In the last three years, while almost all schools received FSF allocations below the amount to which they were entitled according to the formula, there were still some differences in the degree to which schools were below their formula amounts.

How Does Funding Match Up With Need?

Over the five-year period, while more schools received less than their formula amounts, the distribution of those funds reduced funding disparities among schools serving students with similar academic needs. In addition, based on IBO's measure of student need using the "student need index" as described below, there were more schools with high need in 2011-2012 compared with earlier years. That trend was most likely a reflection of the fact that students in middle schools and high schools were previously not accurately identified under the old state standards as needing academic intervention services rather than a true influx of high-need students.

Percent of FSF Funded. Comparing a school's midyear FSF allocation relative to the amount determined by the FSF formula can provide a sense of how close the DOE has come to implementing its formula over the five-year period. We refer to the ratio of the FSF allocation to the FSF formula amount as "the percent of FSF funded." While the allocation includes any hold harmless or incremental amounts, the formula amount does not. If FSF was implemented as intended, each school's percent of FSF funded would be 100 percent. Since that is not the case, this indicates where schools fall along the distribution to assess how far DOE is from achieving that goal.

With the sharp decline in FSF funding through 2010-2011, most schools began to receive less than they were entitled to under the FSF formula. In 2010-2011, the median school received only 75.4 percent of its FSF formula amount, and only 32 schools received at least their formula amount. That meant that for 98 percent of schools, their FSF formula amount was not being fully funded. The distribution shifted up slightly in 2011-2012 when the median school received 86.0 percent of their FSF formula amount. Still, despite the increase in FSF funding for 2011-2012, 94.0 percent of schools remained below their formula amounts. Looking at the range of the percent of FSF funded indicator over the five years allows us to see how the cut in FSF funding has affected schools at both ends of the funding distribution.

While the DOE is far from achieving the goal of 100 percent of FSF funded for all schools, the difference between the

As Fair Student Funding Funding Decreased Over Time, More Schools Were Below Their Formula Amounts

	Percent of FSF Funded				
	Median*	Percentage Point Change in Median	Number of Schools	Number of Schools Below 100%	Percent of Schools Below 100%
2007-2008	98.1%		1,396	812	58%
2008-2009	92.2%	-5.8%	1,437	1,137	79%
2009-2010	75.2%	-17.0%	1,472	1,433	97%
2010-2011	75.4%	0.2%	1,495	1,463	98%
2011-2012	86.0%	10.6%	1,506	1,409	94%

SOURCE: Analysis of Department of Education data on school-level Fair Student Funding allocations
*Schools were arranged in increasing order of their percent of Fair Student Funding provided.

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Disparity in the Percent of Fair Student Funding Funded Across Schools Has Declined				
	1st Percentile	99th Percentile	Range: 1st to 99th Percentile	Standard Deviation of Schools: 1st to 99th Percentile
2007-2008	87%	146%	59 percentage points	10 percentage points
2008-2009	80%	136%	56 percentage points	9 percentage points
2009-2010	65%	109%	44 percentage points	7 percentage points
2010-2011	66%	107%	41 percentage points	7 percentage points
2011-2012	80%	115%	35 percentage points	7 percentage points

SOURCE: Analysis of Department of Education data on school-level Fair Student Funding allocations

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schools with the lowest percent of FSF funded and schools with the highest percent of FSF funded has decreased over time (see table above). Because a handful of schools have extreme values at both the bottom and the top of the distribution, we focused on the differences between schools at the 1st percentile and the 99th percentile of the distribution of percent of FSF funded. In 2007-2008, the 1 percent of schools with the lowest percent of FSF funded received 87 percent or less of their formula amounts. At the other end of the spectrum, the 1 percent of schools with the highest percent of FSF funded received 146 percent or more of their formula amounts. The range in the distribution was 59 percentage points. By 2011-2012, the range between the schools at the 1st percentile and the 99th percentile of the distribution of the percent of FSF funded dropped to 35 percentage points. Schools on both ends of the spectrum received a smaller share of their formula amounts relative to 2007-2008, with the decline more pronounced for schools at the upper end of the spectrum, especially schools that received hold-harmless amounts.

The 24 percentage point reduction in the disparity between the school at the 1st percentile and the school at the 99th percentile suggests that, in general, the distribution of FSF funds relative to each school's need has narrowed over time. This finding holds true when comparing the range between the 5th percentile and 95th percentile as well as the 10th percentile and 90th percentile, although the decrease in the range is a more modest 12 percentage points and 7 percentage points, respectively. The standard deviation in the percent of FSF funded for those schools in the 1st percentile to 99th percentile range also decreased over time. But simply looking at the extent to which disparities in FSF have narrowed over the past five years is only part of the story. It is also important to take into account how academic needs have changed over the same period.

Student Need. Given that the composition of a school's student body changes from year to year, the needs of students served by the school also fluctuate. The DOE accounts for this in the FSF methodology, and allocates FSF funding to schools based on their weighted register, as opposed to simply the number of students that attend (the unweighted register). The weighted register takes into account all the different dimensions of academic need for students in each school used in the formula. Therefore, one way to measure a school's "need" is to look at the ratio of weighted students to unweighted students. We refer to this ratio as the "student need index," which indicates how much more funding the school hypothetically needs because some share of its students have special academic needs, relative to the amount of funding required if the school had *only* students at the base need level. The base need level, as defined by the FSF formula, reflects the amount of funding for an elementary school student with no additional FSF-defined special need. An important point to remember is that schools with the same index level do not necessarily have the same mix of students; instead, the different needs of all their respective students are assessed and weighted accordingly.

Over the past five years, the citywide student need index has remained relatively constant, with schools generally needing 43 percent to 45 percent more funding than if they served only students at the base need level (see table below).

Citywide Student Need Index Has Remained Stable Over Time			
Year	Unweighted Students	Weighted Students	Student Need Index
2007-2008	937,166	1,336,746	1.43
2008-2009	932,620	1,348,921	1.45
2009-2010	942,109	1,361,936	1.45
2010-2011	944,913	1,369,099	1.45
2011-2012	942,716	1,349,592	1.43

SOURCE: Analysis of Department of Education data on school-level Fair Student Funding allocations
NOTE: The Department of Education revised some of the weights in the formula in 2011-2012.

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Although the citywide student need index has remained relatively stable, the distribution of needs across individual schools has changed over the five years. The 5 percent of schools with the highest need index in 2007-2008 had a need index of roughly 1.75 or greater. By 2011-2012, the share of schools with a need index of 1.75 or greater had practically doubled to 9.8 percent. This increase was not simply due to the increase in the number of schools funded through FSF in those years, which grew by 7.9 percent.

The increasing need was observed mostly among middle schools and high schools and is largely attributable to the recalibration of state tests in 2010, which affected the status of incoming students' academic need in 2011-2012. Acknowledging that many of the students classified as proficient in prior years were actually not adequately prepared, in spring 2010 the New York State Education Department raised the cut offs for proficiency for the 4th grade through 8th grade tests. Using the recalibrated 2010-2011 state test scores, the number of students considered to be in need of academic intervention prior to entering middle and high schools in 2011-2012 increased significantly. There was also a corresponding increase in the weighted student counts for those schools. By 2011-2012, 23.4 percent of middle schools had a student need index greater than 1.75, up from 8.2 percent in 2007-2008. Similarly, 16.3 percent of high schools had a need index greater than 1.75, compared with 6.3 percent in 2007-2008.

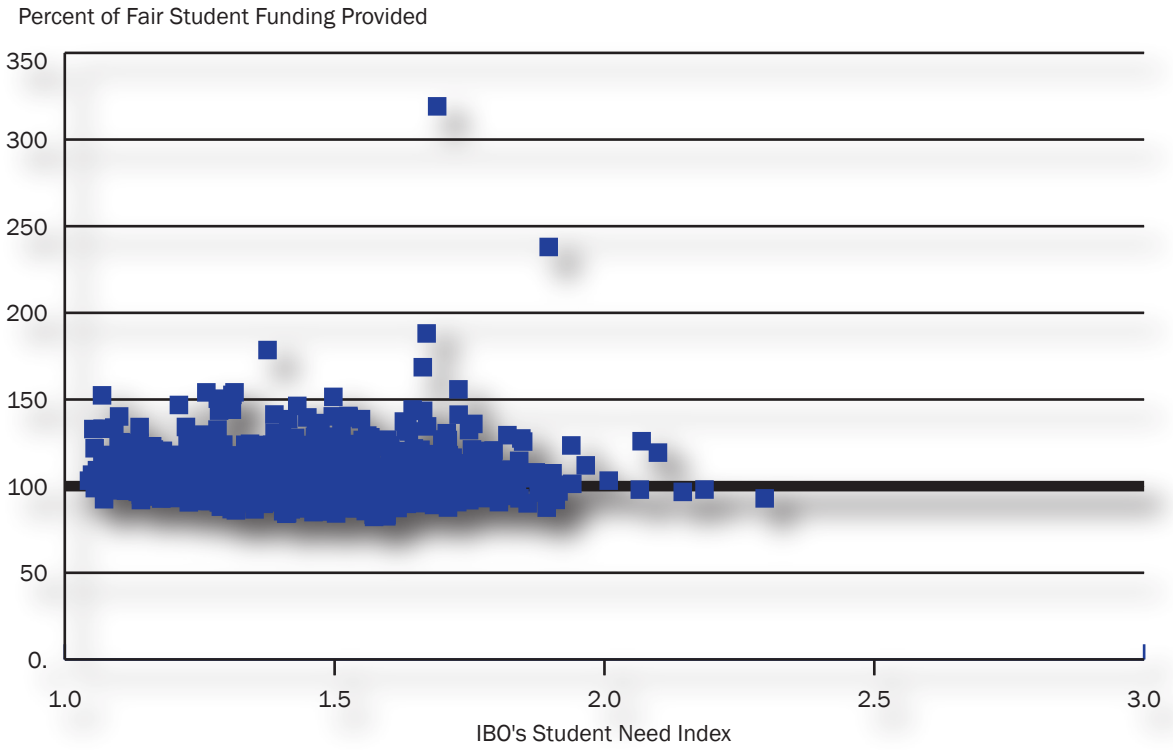
Over the same period, the number of elementary schools with such a high need index actually declined despite a 5 percent increase in the number of such schools. That trend was largely the result of a 50 percent reduction in the weight assigned to the poverty proxy for elementary students entering school with high academic needs—state testing begins in third grade so the DOE used poverty as a proxy to identify academic need. The DOE concluded that the simple poverty measure overstated the need for academic intervention in a school and that, in the past, many schools were receiving too much money because a larger share of students were classified as in need of academic intervention than were truly in need. This led the department to assign a lower weight to the poverty measure in the formula (see the appendix for more detail on all the 2011-2012 weight changes). The increases in middle and high schools with high need and the decrease in high need elementary schools appear to reflect changes in the state's measurement of proficiency and changes to the formula weights rather than changes in actual need. These changes led to a greater number of older students and fewer younger students identified as actually in academic need in 2011-2012. Plotting the percent of FSF funded at each school against the school's need index shows that there were more schools with very high needs on the far right (high) end of the student need index spectrum in 2011-2012 than in 2007-2008.

Less Disparity Across Schools Over Time. The plots of the percent of FSF funded against the student need index also show that despite the fact that almost all schools' allocations were below their formula amounts in 2011-2012, the distribution of the funds relative to student needs has narrowed over time. In general, at different levels of the student need index, the range in the percent of FSF funded was smaller in 2011-2012 than it was in 2007-2008.

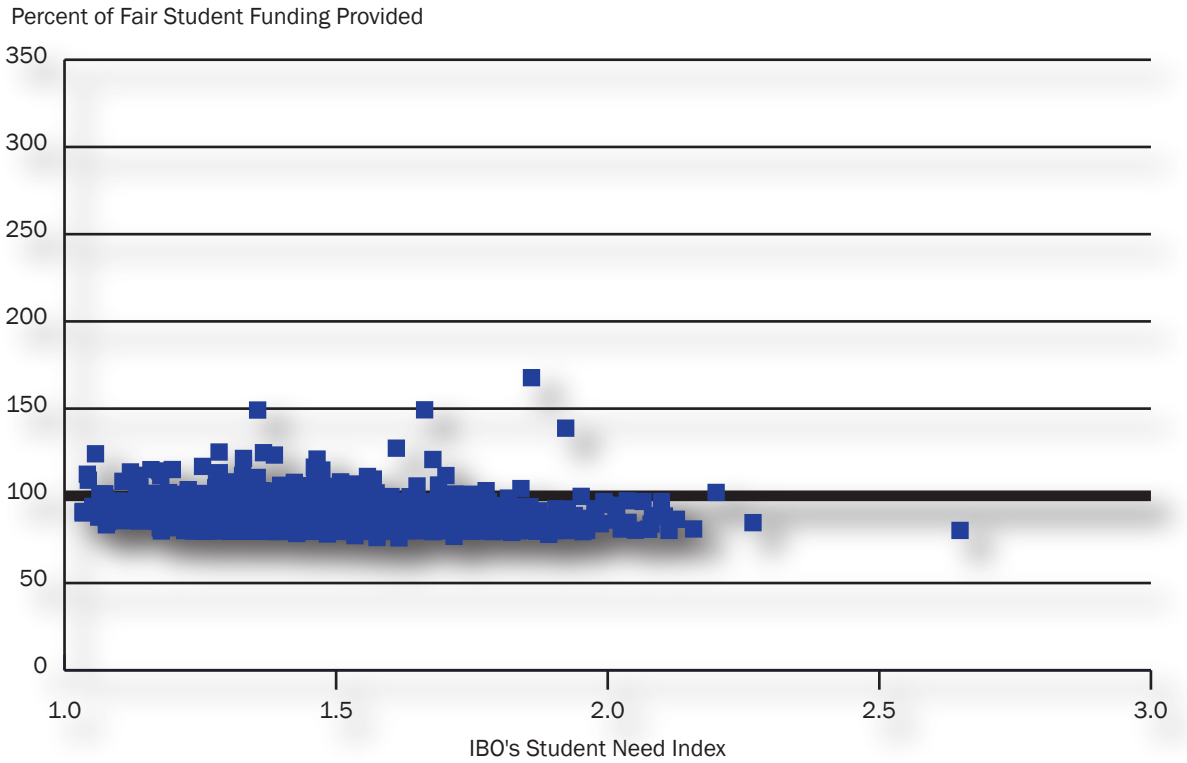
This trend towards a narrower distribution of FSF funding can be attributed in part to the DOE's efforts over the years to use different tweaks to the process to gradually bring all schools closer to their formula amounts. For example, from 2008-2009 through 2010-2011, the DOE treated hold harmless schools differently than schools receiving incremental funds when calculating register losses from one year to the next. Each year, schools that were funded below their formula amounts were penalized less for year-over-year register losses since it would be unfair to take away funding for 100 percent of the register decline when students were effectively funded at less than the full per capita amount. In contrast, schools above their formula amounts lost the full per capita amount for register declines. In 2011-2012, although register adjustments once again began to be calculated in the same way for all schools, funds were then shifted away from schools far above their formula amount and towards schools far below.[6] The cumulative effect of such adjustments made outside of the FSF formula is that schools receiving incremental funds have been brought up closer to 100 percent of their formula amount while hold-harmless schools have been brought down closer to 100 percent, negating much of the effect of the original hold-harmless policy.

IBO looked at the 1,322 schools that received FSF funding each year from 2007-2008 through 2011-2012 and confirmed that hold-harmless schools experienced greater cuts in two measures of FSF funding relative to FSF formula amount. Schools were determined to have received hold harmless or incremental funds for the entire five-year period based on 2010-2011 preliminary allocation data, the last year for which hold-harmless and incremental amounts are reported separately. As a result of the

Percent of Fair Student Funding Funded vs. Student Need: 2007-2008



Percent of Fair Student Funding Funded vs. Student Need: 2011-2012



SOURCE: Analysis of Department of Education data on school-level Fair Student Funding allocations
NOTE: The graph for 2011-2012 excludes one school that was in its last year of phasing out and therefore exhibited an artificially high ratio of total allocation relative to its formula amount.

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treatment of register adjustments and other processing changes by the DOE, the percentage cut in total allocations per weighted pupil for hold-harmless schools was more than double the cut to schools that received incremental funds. Of the 626 schools that received hold-harmless funds, the median school experienced a 10.9 percent drop in their total allocation per weighted pupil. Of the 696 schools that received incremental funds, the median school experienced a 4.4 percent drop. Hold-harmless schools also experienced larger percentage point decreases in the percent of FSF funded (18.6 percentage points for the median school) compared with schools receiving incremental funds (12.1 percentage points for the median school).[7]

FSF Formula: Do Weights Matter? Which Ones and How?

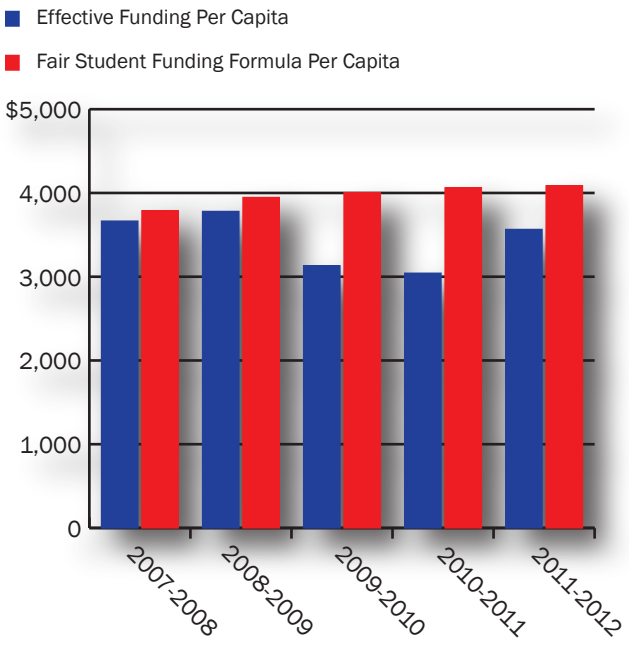
Since FSF allocations include hold harmless and incremental amounts that distort the formula's implementation, IBO sought a way to determine which student weights actually have the greatest impact on those allocations and whether the size of those impacts aligned with the formula's weights. More of the weights had a statistically significant impact on allocations in 2011-2012 than in earlier years. For those categories of students that were found to be funded above what they should have received, the degree to which they were funded above the formula weight generally decreased over time.

IBO used regression analysis to estimate how much the number of students with different types of learning needs influenced the FSF amounts allocated to each school for each of the five years (see the appendix for more detail on the regression framework). The regression results provide three pieces of information. First, we can look at the amount of funding that an additional elementary school student brings to a school's actual FSF allocation to determine the effective funding per capita each year. Second, we can see which types of student needs have statistically significant impacts on FSF allocations. Third, the parameter estimates from these regressions can be interpreted as implied weights, and can be compared with the FSF formula weights assigned to each type of student need. This comparison can tell us which types of student needs have been weighted less heavily in practice than the formula would suggest; on the assumption that the FSF formula accurately reflects the funding required for each type of student need, we refer to these needs as funded *below* the formula weight. Conversely, for those student needs that were weighted more heavily in practice than under the formula, those needs were labeled as funded *above* the formula weight.

The critical component of the FSF formula is the weighting mechanism for students with different specialized academic needs that would require extra services, and therefore extra funding. The categories of weighted student needs remained the same for the first four years that the formula was used—2007-2008 through 2010-2011. For 2011-2012, DOE decreased three of the weights used in the FSF formula calculation while also adding an additional weight category; reflecting these changes, the regression equation for 2011-2012 differs slightly from the equation used for the previous four years (see the appendix for more details on these changes).[8]

In 2007-2008, the DOE gave each student need category a weight based on how much money it estimated was needed to provide the appropriate services to educate a student with that particular characteristic; some of those amounts were adjusted in 2011-2012. It is important to note that the student weights are all relative to the grade weight for a K-5 student with no special academic needs, an amount that could be considered the base need level according to DOE's FSF formula. That is, the grade weight for a K-5 student is one, and the other student weights are all relative to the funding level associated with educating a K-5 student. For example, middle school students receive a weight of 1.08 in the FSF formula, implying that middle

Effective Funding Per Capita Closer to Fair Student Funding Formula in 2011-2012 Than in 2009-2010 & 2010-2011



SOURCE: Analysis of Department of Education data on school-level Fair Student Funding allocations.

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school students cost somewhat more to educate than elementary school students. Similarly, high school students receive a weight of 1.03, implying that they are relatively more costly to educate than elementary school students, but less costly than middle school students.

Effective Funding Per Capita. IBO used the regression results to estimate effective funding per capita, which corresponds to the amount of money a K-5 student who did not require any special services would have brought to a school each year based on the school's FSF allocations in that year. Effective funding per capita is close to the FSF formula per capita amount for 2007-2008 and 2008-2009, falls off substantially in 2009-2010, and recovers about halfway in 2011-2012. Effective funding per capita is below per capita funding under the FSF formula in each year, which indicates that the amount of money for each student at the base level of need is below what the DOE has targeted—a reflection of both the limited funding available and how available funds were distributed. In the first two years, effective funding per capita was just 3 percent to 4 percent below the target formula, but that gap grew to 22 percent and 25 percent during 2009-2010 and 2010-2011, respectively. In 2009-2010, effective funding per capita was $873 below the formula target, and the gap grew to $1,018 in 2010-2011 before shrinking to $521 in 2011-2012—12.7 percent below DOE's FSF target.

Following standard practice in tests of statistical significance, in order to take into account the degree of uncertainty associated with the regression's parameter estimate, we considered the two standard deviation range above and below the estimate of effective funding per capita when comparing effective funding with funding under the FSF formula target.[9] In each year from 2008-2009 through 2011-2012, the difference between effective and target per capita funding was statistically significant, with the target formula per capita more than two standard deviations above the estimate of effective funding per capita. For those four years, students in grades K-5 without additional special needs received significantly less funding than the FSF formula says they should have received.

Impact of Weighting Factors on School Allocations. The regressions were also used to test whether the 26 student need categories that have weights in the FSF formula (27 in 2011-2012) made statistically significant contributions in accounting for the variation in individual school allocations. If the FSF mechanism is working as intended, the impact of these weighting factors should be measurable, statistically significant, and positive. In general, the student weights that account for grade level, ELL status, special education (with one exception) and the needs of high school students in health, trade, and technical vocational schools as well as specialized academic and transfer schools were found to have a statistically significant impact on school allocations. However, two of the academic weights, one special education weight, and one portfolio weight did *not* significantly affect actual allocations in any, or at most one, of the years.

Prior to the most recent year (2011-2012), only one of the academic weights consistently made a significant contribution to the allocations. That is, the formulae were not successfully directing money toward schools with low achieving, and therefore high needs, students on their rosters. And even the estimate for the weight for middle school students below standards, which was statistically significant, was negative. This indicates that middle schools with students below standards were receiving *less* funding, not more funding as intended by the formula. While we cannot identify the exact cause of this result, something in the various adjustments to the formula appears to be systematically decreasing the amount of money provided to middle schools serving students below standards. In 2011-2012, although all of the academic weights except for the poverty proxy were found to have a statistically significant effect on school allocations, two still had negative estimated impacts—the weights for students below standards in grades 4-5 and 6-8.

By 2011-2012, the DOE was closer to achieving its stated intention of directing funds toward student needs. In 2007-2008, there were seven need weights (27 percent of all need weights) that did not have a statistically significant impact on FSF allocations. By 2011-2012, there were three such need weights (just more than 11 percent). This is not to say that the funding provided to schools was adequate to meet the needs of the various categories of students since the size and direction of the impact also matters. In fact, the entire FSF initiative remained underfunded in 2011-2012, and 94 percent of schools received less than their FSF determined formula amount.

Students Funded Below, Close to, or Above Formula Weight. Based on IBO's analysis of the effective funding per capita, schools generally did not receive the formula per capita amount for a student with a base level of need. However, it seems reasonable to still expect the relative funding for other categories of need to remain consistent

Fair Student Funding Funds Were Distributed Based on Student Characteristics More So in 2011-2012 Than in Previous Years						
		Statistical Significance				
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
Grade Weights	Enrollment K-5	Yes	Yes	Yes	Yes	Yes
	Enrollment 6-8	Yes	Yes	Yes	Yes	Yes
	Enrollment 9-12	Yes	Yes	Yes	Yes	Yes
Academic Intervention	Poverty	Yes			Yes	
	Well Below Standards 4-5				Yes	Yes
	Below Standards 4-5					Yes
	Well Below Standards 6-8					Yes
	Below Standards 6-8		Yes	Yes	Yes	Yes
	Well Below Standards 9-12	Yes	Yes			Yes
	Below Standards 9-12		Yes			Yes
English Language Learner	ELL K-5	Yes	Yes	Yes	Yes	Yes
	ELL 6-8	Yes	Yes	Yes	Yes	Yes
	ELL 9-12	Yes	Yes	Yes	Yes	Yes
Special Education	Less than 20% of the Day		Yes	Yes	Yes	Yes
	Between 20 and 60% of the Day	Yes				
	Self Contained K-8 Seats (More than 60% of the day)	Yes	Yes	Yes	Yes	Yes
	Self Contained 9-12 Seats (More than 60% of the day)	Yes	Yes	Yes	Yes	Yes
	CTT K-8 Seats (More than 60% of the day)	Yes	Yes	Yes	Yes	--
	CTT K Seats (More than 60% of the day)	--	--	--	--	Yes
	CTT 1-8 Seats (More than 60% of the day)	--	--	--	--	Yes
	CTT 9-12 Seats (More than 60% of the day)	Yes	Yes	Yes	Yes	Yes
Portfolio Schools	CTE-Nursing					Yes
	CTE-Health/Trade/Technical	Yes	Yes	Yes	Yes	Yes
	CTE-Business			Yes	Yes	Yes
	CTE-Home Economics/Arts	Yes	Yes			
	Specialized Academic	Yes	Yes	Yes	Yes	Yes
	Specialized Audition	Yes	Yes	Yes	Yes	Yes
	Transfer Schools	Yes	Yes	Yes	Yes	Yes

SOURCE: Analysis of Department of Education data on school-level Fair Student Funding allocations

New York City Independent Budget Office

with the formula's weights. To test this, IBO identified categories of student need that are below, close to, or above the formula. We treated the parameters (coefficients) for each category of need from the regressions as implied weights and compared those with the weights in the FSF formula. The weights that have a statistically significant impact on school allocations in a given year appear in bold in Table 1 online. Looking only at weights that were statistically significant, if the FSF formula weight is more than two standard deviations above the parameter estimate, students in that category of need in that year are characterized as funded *below* the FSF formula weight, and appear in Table 2 here. This meant that the additional money that schools received for a student with that type of need in a particular year was less than the amount of money that the DOE deemed necessary to provide the additional services needed by that student. If the FSF formula weight is more than two standard deviations below the parameter estimate, those students are considered funded *above* the FSF formula weights, and appear in Table 3 here. This occurred when schools received more money for a student with that particular type of need in that year than the department's FSF formula was intended to deliver. If the FSF formula weight falls within the two standard deviation range of the parameter estimate, IBO classifies those students as *closely funded* relative to the FSF formula weights. For those students, the distribution of FSF allocations to schools most closely reflects the stated intentions of the formula itself.

By evaluating the parameter estimates in this way, we are using a conservative standard in identifying students funded below, close to, or above the formula because we are taking into account the degree of uncertainty associated with the regression's parameter estimates.

IBO's classification of a category of student as being funded below, close to, or above the formula is not based on whether or not those students receive the types of services to which they are entitled. IBO did not investigate what services students actually received. Instead, the results simply indicate, for example, that schools that served students who were funded below the formula did not receive the FSF-defined level of funding. The implication is that those schools were at a disadvantage because the lack of appropriate funding would have affected the schools' ability to educate not just those students but the entire student population.

The students that were funded *below* the formula weight in 2011-2012 and at least two other years were:

- middle school students below academic standards,
- elementary and high school ELL students, and
- high school special education Collaborative Team Teaching (CTT) students.[10]

Middle school students and students at the specialized academic high schools were funded below the formula weight in at least 3 of the 5 years but were funded close to the formula weight by 2011-2012.

While middle school students were funded significantly below the formula weight in each year from 2008-2009 through 2010-2011, the 2011-2012 FSF allocations they received were in line with the formula's goal for those students. The implied weight for middle school students was 1.00 in 2008-2009 and increased to 1.02 in the next two years. The funding of middle school students below the formula weight during this three-year period likely explains why many middle schools were found to have budgets below their minimum operating thresholds in 2010-2011. Based on IBO's measure, middle school students were funded close to their formula weight in 2011-2012. That shift may have been the result of the reshuffling of funds from schools well above their formula amounts to schools far below their formula amounts. Since middle schools were most likely to be well below their formula amount in 2010-2011, they were likely to be on the receiving end of the reshuffling of FSF funds in 2011-2012.

Students in specialized academic high schools and high school students in special education CTT settings also experienced similar patterns over time, where they were funded closer to their formula weight in later years relative to earlier years. Students in specialized academic high schools were funded significantly below the formula weight in the first four years, receiving less than half of the formula weight (0.25) in the first three years, before being funded close to the formula weight in 2011-2012. Special education high school students in CTT settings were funded significantly below the formula weight in all five years, receiving only half or less of the weight assigned under the FSF formula (2.52) in the first two years and up to about three quarters in 2010-2011. In 2011-2012, when the formula weight was adjusted down to 2.1, they were still funded below the formula weight, but less so than in the first two years—receiving more than two thirds of the FSF weight.

Both elementary and high school ELL students were funded below the formula weights in 2008-2009, 2009-2010, and 2011-2012. High school ELL students were funded below the formula weight in all five years, with implied weights ranging from 0.30 to 0.37, below the formula weight of 0.50.

While the degree to which middle school students below academic standards were funded below the formula weight worsened from 2008-2009 to 2010-2011, the implied weight moved closer to the FSF formula weight in 2011-2012. However, given that the implied weight was always negative, schools that served greater numbers of these students were receiving less money, not more as the formula intended. This result indicates that some FSF budget adjustments are unintentionally—though systematically—penalizing schools with these students.

The students that were funded *above* the formula weight in 2011-2012 and at least two other years were:

- high school students,
- special education self-contained students in grades K-8, and[11]
- CTE-Business students.

The implied weights for high school students and special education self-contained students in grades K-8 decreased over time, moving closer to the formula weights. The implied weight for high school students was significantly greater than the formula weight of 1.03 in all five years, although the gap narrowed over time. The implied weight dropped from 1.16 in 2007-2008 to 1.08 in 2011-2012,

ranging from 12 percent to 4 percent greater than the formula weight. Special education students in K-8 self-contained classes were also funded significantly above the formula weight in the five years—more than double the formula weight in 2007-2008, more than 1.5 times the formula weight through 2010-2011, and almost 1.2 times the formula weight in 2011-2012. Students in CTE-Business schools comprised the only category of students that did not experience a steady decline in the degree to which they were funded above the formula weight. They received significantly more funding than the formula weight in the last three years, receiving more than double the formula weight in 2009-2010 and 2010-2011, and just less than double the formula weight in 2011-2012.

The students that were funded *close to* the formula weight in 2011-2012 and at least two other years included:

- students receiving special education services less than 20 percent of the time (those receiving Special Education Teacher Support Services—SETSS),
- high school self-contained special education students,
- CTE students in Health/Trade/Technical schools, and
- high school students in both specialized audition and transfer schools.

Middle school ELL students were funded close to the formula weight until 2011-2012, when they were funded significantly below the formula weight. K-8 students in special education CTT settings were also funded close to the formula weight through 2010-2011. In 2011-2012, when the category was split into two groups, the kindergarten students continued to be funded close to the formula weight while their counterparts in grades 1-8 were funded above the formula weight.

For the weights that changed in 2011-2012, a comparison with the old weight definitions allows us to isolate the effect of the weight change from the effect of changes in the student body. IBO determined that only the weight change for grades 1-8 CTT students significantly affected whether those types of students were classified as funded below, close to, or above the formula weight. Under the old weight of 2.28, those students would have been considered funded below the formula weight in 2011-2012; due to the lower weight of 1.9, however, those students were now classified as funded above the formula weight under IBO's criteria. High school special education students in both CTT and self-contained classes would have been classified in the same way using both the old and new weight definitions—funded below the formula weight for the CTT students and funded close to the formula weight for the students in special education-only classes.

Achieving Fair Student Funding

With 94 percent of schools receiving too little money based on the needs of their students, FSF funding has not been distributed as it was first intended to be. The formula still has a ways to go towards the FSF initiative's goal of giving adequate funding to *all* city students through a readily understood and transparent formula. That would require not only more funding through the FSF mechanism, but also an end to post-formula adjustments, including funds previously labeled as hold harmless or incremental funds that distort schools' allocations.

Appendix

A Crash Course on Fair Student Funding: 2007-2008 Through 2011-2012

The fair student funding formula was first implemented in 2007-2008 with the intention of equalizing schools' per-pupil funding based on student need. It has now been in effect for six years. The calculation of the FSF formula yields a hypothetical amount of money that a school would receive if funding was allocated solely based on student need, and if the total amount of funding that the system needs was actually available. Unfortunately, fiscal realities have prevented the FSF formula from being fully implemented, so the actual FSF allocation that a school receives is often very different from the amount to which it is entitled under the formula.

The allocations that schools received for the first four years had three main components: the base allocation (incorporating changes in the composition of students, any budget cuts, etc.), the hold- harmless amount, and the incremental amount. Beginning with the 2011-2012 school year, the hold harmless and incremental amounts were not reported separately and instead dollars below the 2011-2012 formula amount were included in the base allocation. Dollars above the 2011-2012 formula amount were maintained in a separate Funds Over Formula allocation. The hold-harmless amount was provided to those schools that in the first year of implementation (2007-2008) would have received less money under the formula than they had in the previous year (2006-2007). Because it was politically difficult to take money away from schools that were used to receiving a certain budget each year, those schools were held harmless for the difference between the formula amount and their historical budget—they continued to receive at least what they used to get. And because there were limited funds to bring those schools that were below their formula amounts up to where they should be, the incremental amount was capped at the minimum of $400,000, or 55 percent of the difference between the formula and the pre-FSF funding level.

When the hold harmless provision was originally announced, the DOE only committed to providing it for two years; it has been extended in subsequent years. There was also the hope that when additional funds became available, the cap on the incremental funding would be raised and eventually eliminated. To date, the transitional hold harmless and incremental funds have not yet been fully eliminated.

Turning to the calculation of the FSF formula, there are three main components:

1. **Foundation Amount.** The foundation amount is a set dollar amount that all schools receive, regardless of size or type of school. In 2007-2008, the foundation amount was $200,000. In each of the four subsequent years, it was $225,000.
2. **Student Weight Categories.** There are five main weight categories: grade, academic intervention, English language learner, special education instruction, and portfolio (which apply only to high schools). More detail on the weight categories is provided below.
3. **Per Capita Amounts.** Each student need weight must be multiplied by a per capita amount to determine the dollars that follow each type of student with a particular educational need. Per capita amounts are adjusted each year, taking into account collective bargaining increases and average teacher salary increases. Per capita amounts for each year were:

2007-2008:	$3,788.00
2008-2009:	$3,946.00
2009-2010:	$4,003.35
2010-2011:	$4,059.71
2011-2012:	$4,085.30

Student Need Weights: 2007-2008 Through 2010-2011. There were a total of 26 student need weights divided into five categories in the first four years of FSF:

Grade Weights. Since school funding is based on the number of students that are expected to enroll, the three grade weights taken together account for the total enrollment in a school: K-5, 6-8, and 9-12. Since the weights are all relative to the weight of 1.0 for K-5 students, high school students get a higher relative weight of 1.03 and middle school students, traditionally the most challenging to educate, receive the highest grade weight of 1.08.

All other weights in the FSF formula are simply added to the grade weights. For example, a middle school student who is well below academic standards with no special education or English language learner requirements would receive a weight of 1.58 (1.08 for his grade level and 0.50 for being well below standards).

Academic Intervention. The FSF formula takes into account the fact that a student's academic standing *prior* to coming to a school will affect the type of services needed to educate that student. Therefore, there are seven

Fair Student Funding Formula Weights 2007-2008 Through 2010-2011

		FSF Formula Weights
Grade Weights	Enrollment K-5	1.00
	Enrollment 6-8	1.08
	Enrollment 9-12	1.03
Academic Intervention	Poverty	0.24
	Well Below Standards 4-5	0.40
	Below Standards 4-5	0.25
	Well Below Standards 6-8	0.50
	Below Standards 6-8	0.35
	Well Below Standards 9-12	0.40
	Below Standards 9-12	0.25
English Language Learner	ELL K-5	0.40
	ELL 6-8	0.50
	ELL 9-12	0.50
Special Education	Less than 20% of the Day	0.56
	Between 20 and 60% of the Day	0.68
	Self Contained K-8 Seats (More than 60% of the day)	1.23
	Self Contained 9-12 Seats (More than 60% of the day)	0.73
	CTT K-8 Seats (More than 60% of the day)	2.28
	CTT 9-12 Seats (More than 60% of the day)	2.52
Portfolio Schools	CTE-Nursing	0.26
	CTE-Health/Trade/Technical	0.17
	CTE-Business	0.12
	CTE-Home Economics/Arts	0.05
	Specialized Academic	0.25
	Specialized Audition	0.35
	Transfer Schools	0.40

SOURCE: Department of Education school-level Fair Student Funding allocations

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different weights based on a combination of grade (K-3, 4-5, 6-8, or 9-12) and the degree to which the student is below academic standards (either below standards or well below standards) based on state ELA and Math grade 3-8 standardized test scores. The only exception is for the youngest grades, because students in grades K-2 do not take standardized tests. In those cases, schools serving grades K-5, K-8, or K-12 use a poverty proxy for the academic intervention weight to control for incoming students' academic deficiencies.

English Language Learner. There are three subcategories under ELL based on the same grade groupings as in the grade weights: K-5, 6-8, and 9-12.

Special Education. The special education weights are divided into four different service types that roughly correspond to the proportion of a student's time that is spent receiving special education services. The four service types are: less than 20 percent of the day (Special Education Teacher Support Services—SETSS); between 20 percent and 60 percent of the day (multiple SETSS or part-time collaborative team teaching—CTT); greater than 60 percent of the day in self-contained settings; and greater than 60 percent of the day in CTT settings. In collaborative team teaching classrooms, about 60 percent of the students are general education students and a maximum of 40 percent of the students are students with disabilities. There are two teachers in each classroom who instruct students with and without disabilities. One is a general education teacher and the other is a special education teacher. This method of instruction is also called Integrated Co-Teaching. Self-contained classes are those where special education students are taught only with other

special education students with similar educational needs. In self-contained classes in community schools, FSF-funded student-teacher ratios are always one of the following: 12:1, 12:1:1 including 1 paraprofessional, or 15:1 for high school classes. The self-contained and CTT categories are each split further into two subcategories—K-8 seats and 9-12 seats. For schools that existed prior to 2007-2008, K-8 seats are funded by classroom (so it includes filled and unfilled seats); for newer schools and high schools, seats are funded only for those students who attend (filled seats only).

Portfolio Weights (high schools only). These weights correspond to high schools with unique application processes or specialized curricula. These weights cover four different subcategories for career and technical education schools (previously known as vocational schools), two subcategories for schools with specialized admissions processes (academic and audition schools), and transfer schools that serve students with at least one year of high school but are often behind their peers in terms of credit accumulation.

Changes to FSF Methodology: 2011-2012. DOE reduced the weights for three of the weight categories and restructured the special education CTT weighting mechanism for grades kindergarten through 8. The poverty proxy for the academic intervention weight was cut in half from 0.24 to 0.12 because the DOE determined that the proxy had previously been overestimating the cost of educating those students based on their needs later on in grades 3-5. The revised weight is supposed to be more aligned with the true academic need of those students. The two special education weight categories for high school students—in self-contained classes and CTT classes—were also reduced to reflect an alignment with instructional models for those classes. Previously, those settings were funded based on the early childhood models, which assumed class sizes of 12 students for self-contained classes and 10 students for CTT classes. By law, high school self-contained classes can have up to 15 students, and CTT classes can have up to 12 students; the weights were decreased to account for these higher class sizes. Finally, the K-8 weight category for special education CTT students was split into two groups: one for kindergarten CTT students and the other for CTT students in grades 1-8. The weight for kindergarten students remained at the previous level of 2.28, while the weight for first through eighth grade CTT students was reduced to 1.90 to reflect class size alignments similar to those mentioned above for high schools. There were 27 weight categories in 2011-2012.

Weights for Certain Groups of Students Were Reduced to Align With Instructional Models and Actual Costs

Weight Category	Old Weight	Weight in 2011-2012
Poverty Proxy	0.24	0.12
Special Education Self-Contained (High School)	0.73	0.58
Special Education CTT:		
Kindergarten	2.28	2.28
Grades 1-8	2.28	1.9
Grades 9-12	2.52	2.1

SOURCE: Department of Education school-level Fair Student Funding allocations

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Regression Analysis–Implied Student Weights

A regression framework was used to determine which weight categories in a school's FSF allocation are statistically significant and of those, which implied weights are significantly different from the formula's weights.

Information about how FSF funding varies for each type of student is contained in two components of the FSF formula: the student weight and the per capita amount. In the FSF formula, each type of student carries a certain dollar amount to the school that they attend. This dollar amount depends on how much it costs to provide the services necessary to educate this type of student. For simplicity, rather than talk about the specific dollar amount that is attached to each student, DOE instead discusses those dollar amounts relative to the cost of educating a student in grades K-5. DOE refers to the amount of money necessary to educate a student with this base level of academic need as the per capita amount. In other words, DOE places a weight of 1.0 on K-5 students who do not require academic intervention, do not receive special education services, are not English language learners, and do not attend portfolio schools, and the weights of all other students in the formula are relative to the weight of a K-5 student.

To translate the weights into dollar terms, simply multiply the weight by the per capita amount. For example, let's assume that the per capita amount in a particular year is $1,000, the weight for a student in grades K-5 is 1.0 and the weight for a student in grades 6-8 is 1.08. If the FSF formula were to be implemented as it is calculated, a kindergarten student would bring $1,000 in FSF funding to the school he attends and a sixth grade student would bring $1,080.

In practice, however, a school's actual FSF allocation differs from its formula amount. IBO used a regression framework to determine how each category of student is *actually* funded, on average, relative to how each category of student *should* be funded according to the formula.

The regression equation for each of the first four years is as follows:

FSF Allocation Amount =
Intercept
+
Grade {K-5 Enrollment* β_1 + 6-8 Enrollment* β_2 + 9-12 Enrollment* β_3 }
+
Academic Intervention {Poverty* β_4 + Well Below Standards 4-5* β_5 + Below Standards 4-5* β_6 + Well Below Standards 6-8* β_7 + Below Standards 6-8* β_8 + Well Below Standards 9-12* β_9 + Below Standards 9-12* β_{10}}
+
ELL {K-5 ELL* β_{11} + 6-8 ELL* β_{12} + 9-12 ELL* β_{13} }
+
Special Ed {Less than 20 percent of the day* β_{14} + Between 20 and 60 percent of the day* β_{15} + Self-Contained K-8 Seats (more than 60 percent of the day)* β_{16} + Self-Contained 9-12 Seats (more than 60 percent of the day)* β_{17} + CTT K-8 Seats (more than 60 percent of the day)* β_{18} + CTT 9-12 Seats (more than 60 percent of the day)* β_{19} }
+
Portfolio {CTE-Nursing* β_{20} + CTE-Health/Trade/Technical* β_{21} + CTE-Business* β_{22} + CTE-Home Economics/Arts* β_{23} + Specialized Academic* β_{24} + Specialized Audition* β_{25} + Transfer* β_{26}}

The regression equation is modified slightly for 2011-2012 to reflect the reclassification of kindergarten through eighth grade students in special education CTT classes, as described above.

The intercept in the regression reflects the average non-per capita portion of the allocation that schools receive. This lump sum amount is a combination of the foundation amount and any hold harmless or incremental funds that schools receive as part of their allocation. If the FSF formula had been implemented as intended, the intercept would simply capture the foundation amount. However, since this non-per capita amount cannot be intuitively tied to any one source of funds, we focus instead on the coefficients from the regression.

The coefficients from this regression reflect the dollar amounts that each additional student with that characteristic brings to the school, similar to the example above where a kindergarten student brings $1,000 and a sixth grade student brings $1,080. From the regression, we can calculate the same two components of the allocation and compare them with the amounts specified in the formula: the per capita amount and the student need weight.

The coefficient on K-5 students (β_1) can be interpreted as the *effective* funding per capita in each year—the per-capita amount that is a reflection of the FSF allocation that a school is given. This amount can be compared with the per-capita amounts used in the FSF formula each year. Let's say β_1 in one year is $950. We can compare that to the formula per-capita amount—$1,000 in the example above—and determine that as the formula was implemented, the per-capita amount was $50 less than what it *should* have been. This gives us a sense of how far DOE is from implementing the formula; in this hypothetical example, the effective funding per capita is 5 percent below the target amount in the formula.

IBO also considered the student weight that was *implied* from the regression. IBO converted the dollar amounts from the regression to weights relative to the funding for a K-5 student, just as the DOE does to calculate the FSF formula student need weights. For example, let us say that the regression results in a particular year indicate that the coefficient on K-5 students (β_1) is $950 and the coefficient on 6-8 students (β_2) is $975. By definition, the implied weight for K-5 students would be 1.0. The implied weight for 6-8 students would be 1.03, or $975 divided by $950. In this way, IBO calculated the implied weight for each category of student with particular educational needs in the FSF formula by rescaling the dollar amounts from the regression relative to the funding that a K-5 student brings. That is, each β in the regression is divided by β_1. The implied weight for every weight category other than that for K-5 students is allowed to vary each year. By doing this, we can compare the implied weights from the regression (a measure of how students are *actually* funded) with those used in the FSF formula (a measure of how students *should* be funded). In our example, the implied weight of 1.03 for 6-8 students is less than the formula weight of 1.08. In other words, the amount of money that follows students in grades 6-8 is below the amount that DOE deems necessary to educate those students.

In order to highlight those implied weights that are significantly different from the FSF formula weights, we

take into account the degree of uncertainty associated with the regression's parameter estimates by focusing on those weights that are at least two standard deviations away from the FSF formula weight (or statistically different than the formula weight 95 percent of the time). IBO converted the 95 percent confidence interval for each of the parameters in the same way as for the parameter estimates—by dividing by the funding that a K-5 student brings (β_1). Where the FSF formula weight is more than two standard deviations above the parameter estimate, those students are considered funded *below* the formula weight. Where the FSF formula weight is more than two standard deviations below the parameter estimate, those students would be considered funded *above* the formula weight. For the complete regression results, see the table here.

This report prepared by Sarita Subramanian

Endnotes

[1]IBO, "New Funding Formula Seeks to Alter School Funding Disparities" http://www.ibo.nyc.ny.us/iboreports/FairStudentFunding2.pdf, and IBO, "Contributing Factors: Disparities in 2005 Classroom Spending" http://www.ibo.nyc.ny.us/iboreports/FairStudentFunding1.pdf.
[2]http://schools.nyc.gov/AboutUs/funding/overview/default.htm, accessed November 30, 2011.
[3]Funds allocated through FSF declined more steeply than *total* funding, which was bolstered by increases in categorical aid through the American Reconstruction and Recovery Act (ARRA), Children First, and other programs.
[4]There are, however, many students with special education needs in traditional schools, and unrestricted tax levy funding for those students *are* included in the schools' FSF allocations. Schools outside District 75 also receive categorical (restricted) funds to provide certain mandated services to students with disabilities.
[5]Since midyear adjusted total budget data for each school are not readily available on the DOE website, preliminary allocation and total budget data were used for these calculations. Among all schools, FSF accounted for as little as 28 percent of one school's budget, but for as much as 92 percent of another school's budget. So there is quite a bit of variation in the share of a school's budget that FSF covers.
[6]Details were obtained from the Fair Student Funding and School Budget Resource Guides from 2008-2009 and 2011-2012, as well as the 2011-2012 FSF School Overview.
[7]A Wilcoxon rank-sum test was used to determine that hold harmless schools fell lower on the distributions for both the percentage change in total FSF allocation per weighted pupil and the percentage point change in the percent of FSF funded from 2007-2008 to 2011-2012 than did incremental schools.
[8]In the reweighting of some formula weights this year, the DOE acknowledged that those weights did not accurately reflect the true cost of educating a student with that specific educational need. However, because those weights were used historically, there is no way to determine when the weight became inaccurate, or whether the weight was ever accurate. Therefore, we are left to assume that the formula weights from 2007-2008 through 2010-2011 are the appropriate benchmarks for those years. We adjust the weight benchmarks in 2011-2012 to reflect DOE's changes.
[9]The regression estimate is a measure of the average effect of a one-student increase in each category of student need on school allocations. By looking at a broader range that includes two standard deviations below and above the estimate, IBO takes into account the fact that, relative to the average, the effect for some schools is smaller and the effect for other schools is larger. The two standard deviation range is typical for analyses that use a confidence level of 95 percent. That is, one can be confident that the effect on schools will fall within the interval 95 percent of the time—leaving the chance that the estimate falls outside of that range to just 5 percent of the time. In all cases where statistical significance was evaluated, the 95 percent confidence level was used.
[10]In collaborative team teaching classrooms, about 60 percent of the students are general education students and about 40 percent of the students are special education students. There are two teachers in each classroom that instruct students with and without disabilities. One is a general education teacher and the other is a special education teacher. This method of instruction is sometimes also called Integrated Co-Teaching.
[11]Self-contained classes are those where special education students are taught only with other special education students with similar educational needs, based on disability and grade level.

Supplemental tables available here.