



# School District Funding in Massachusetts

## Computing the Effects of Changes to the Chapter 70 Funding Formula

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Massachusetts's funding formula—the mechanism through which state dollars for elementary and secondary education are allocated to school districts—is based on a per student funding model. A budget is calculated for each district based on student characteristics, and the state and local cities and towns share the responsibility for funding the districts' budgets. Fiscal year 2018 (school year 2017–18) cost-adjusted funding to school districts, as allocated through the formula, was progressive. We find that the average student in poverty lives in a district that receives higher average formula funding, in cost-adjusted dollars, per student than the average student not in poverty. Similarly, the average student of color is enrolled in a district that receives higher funding than the average white student. There is a small difference in funding for students enrolled in rural schools compared with students in urban schools, but students in rural schools receive slightly more per student funding than students in urban schools. We examine the effects of changes to the formula on funding progressivity and find that even aggressive changes have small effects on per student funding and progressivity of funding.

# Background

The current Massachusetts funding formula (commonly known as Chapter 70) was developed in 1993 as part of the Education Reform Act (ERA). Governor William Floyd Weld signed the ERA into law three days after a ruling was issued in *McDuffy v. Secretary of the Executive Office of Education*. In this case, a group of students from several Massachusetts districts filed a lawsuit asserting that the state failed to provide an equal and adequate education to students living in property-poor communities. The Massachusetts Supreme Court ruled in favor of the *McDuffy* students, finding that Massachusetts had failed to fulfil its constitutional obligation to provide adequate education.<sup>1</sup>

Researchers have found that the ERA reforms increased state funding to districts that spent the least in the years before 1993 and resulted in increased overall spending by the lowest-spending districts (Dee and Levine 2004). Districts that increased spending tended to direct new money toward student instruction and capital investments (Dee and Levine 2004). There is evidence that this additional spending increased test scores for low-performing students (Guryan 2001).

Despite these changes, the ERA's passage did not mark the end of lawsuits. In 1999, students filed a legal complaint in *Hancock v. Commissioner of Education*, asserting that the state was not providing adequate education to all children (adequate as defined in chapter 71 of the ERA). In 2005, the court determined that Massachusetts was making adequate progress toward reforming the school finance system and thus did not mandate additional changes to the funding formula.

In 2007, 13 years after the creation of the funding formula, legislators passed major reforms, including changes to the way the foundation budget (the minimum amount of money the state determines a school district should spend on education to meet adequacy, given school district characteristics) is determined. The reforms also changed the way the communities' local contribution toward the school district's budget is calculated, capping the local contribution at 82.5 percent of the school district's foundation budget.

Unlike other state formulas, there is no schedule for consistent and periodic updates to reflect current needs. But since the 1993 ruling, the education landscape in Massachusetts has changed substantially, including student population changes and other structural changes. Legislators convened a Foundation Budget Review Commission in the state budget for fiscal year 2015 to identify the programs and services necessary to achieve Massachusetts's educational goals, review the foundation budget formula, and recommend changes as necessary (FBRC 2015).

The commission determined that since the ERA's passage, some of the formula's assumptions have become outdated and, as a result, the formula underestimates the costs of providing adequate elementary and secondary education. In its report, the commission cited studies that estimate the gap between the foundation budget and actual spending by \$1 to \$2 billion a year. The commission identified several aspects of the formula that contribute to this shortfall and recommended relevant changes.

One of the main causes of this shortfall is the underestimation of school districts' spending on employee benefits. The commission cited a Massachusetts Department of Elementary and Secondary Education report that found that average district spending on employee benefits exceeds the allotment within the foundation budget by 140 percent (King and Hatch 2015). Although the formula sets an inflation rate to adjust for the growing costs of employee benefits, the costs of health care have risen (nationwide) faster than this index predicts. Thus, many school districts are spending more on health care than the budget allots.

Similarly, the costs for providing an adequate education to low-income and at-risk students are higher than the formula originally estimated. Since 1993, the commission argues, best practices for educating low-income students have changed. Schools serving high-need students aim to hire an array of specialized staff (e.g., social workers, guidance and adjustment counselors, and wraparound service coordinators) to support the needs of students and families in social-emotional development and experiences. Similarly, the commission argues that research on the importance of class size reduction has influenced schools to hire more teachers and staff per student. The commission also identified an increase in students with limited or interrupted education (often refugees or students from war-stricken countries), who need intensive support from specialized staff.

The commission raised the need for additional funding for special populations. For example, the formula budgets for 15 percent of students requiring special education services 25 percent of the time in school, but the average district has a higher share of students classified as requiring special needs and therefore needing additional resources and accommodations (King and Hatch 2015). Similarly, the districts with many students in vocational schools feel the formula does not account for the total cost of educating English language learners (ELL) because the additional rates do not apply to vocational students. Informed by the commission's recommendations, the Senate and the House produced bills to reform the Chapter 70 formula. But by the time the legislative session ended, the chambers had not negotiated a consensus between the two bills, marking the end of the most recent attempt to reform the formula.

## The Current Funding Formula

The Massachusetts funding formula, Chapter 70, has three main calculation steps. The formula determines a budget for each school district, determines how much of the budget should be paid for by the cities and towns that make up the school district, and calculates the amount the state will contribute (the difference between the budget and the local contribution).

There is also an implicit fourth step. Cities and towns can contribute above the amount required by the formula to meet adequacy, and several communities do so. Statewide, education spending exceeded the required formula amount by 26 percent. In some cases, net school spending is more than 300 percent of what is required from the foundation budget. In this brief, we look only at the distribution and progressivity of formula funding, not of overall district funding.

## Step 1. Determine the Foundation Budget

### STEP 1A. CALCULATE THE FOUNDATION ENROLLMENT

The first step of calculating a district's foundation budget is calculating its foundation enrollment. The foundation enrollment is the number of students in full-day kindergarten, elementary school, and high school; the number of English language learners in kindergarten through 12th grade; and the number of vocational students. In addition, the formula adds 0.5 times the number of prekindergarten and half-day kindergartners, and ELL prekindergartners and ELL half-day kindergartners.<sup>2</sup> Each enrollment category is discrete; thus, ELL students are not double counted.

The number of special education (in-district) students is estimated for each school district by taking 3.75 percent of the previously calculated foundation enrollment (less the prekindergartners and half-day kindergartners, ELL and non-ELL). The number of special education out-of-district students is calculated as 4.75 percent of the foundation enrollment (less the same population).

### STEP 1B. APPLY THE FOUNDATION ENROLLMENT TO THE FUNCTIONAL COST AREAS

The Chapter 70 budget outlines 11 functional cost areas.<sup>3</sup> Each area has a rate specified for different types of students. For example, funding rates for classroom and specialist teachers are \$1,523.99 per prekindergartner and half-day kindergartner, \$3,047.97 per full-day kindergartner, \$3,047.93 per elementary schooler, \$2,682.20 per middle schooler, and \$3,944.39 per high schooler.<sup>4</sup> For 8 of the 11 functional cost areas, the total allotted amount is adjusted for regional differences in prices, using a wage adjustment factor (WAF).

Each district is assigned a WAF, which ranges from 1 to 1.127. The WAF is calculated from annual wage data from the state's Office of Labor and Workforce Development and is a significant part of the formula. In the 2017 fiscal year, the WAF adjustment accounted for an increase of \$394 million to the entire budget (an average of \$787 per student) in the districts where it was applied (MDESE 2018).

In addition to an adjustment for differences in costs, 4 of the 11 functional cost areas adjust for the share of students that are economically disadvantaged. The classification of economically disadvantaged uses income certification through social services (including the Supplemental Nutrition Assistance Program, the Massachusetts Transitional Aid for Families with Dependent Children, and certain Medicaid programs). Students in the foster care system or in the custody of the Department of Youth Services and students with severe disabilities qualifying them for Supplemental Security Income are also classified as economically disadvantaged (MDESE 2017). Each district is assigned to a decile based on the share of economically disadvantaged students enrolled in the district, and each decile is assigned a rate that increases by level of student disadvantage. This rate is applied to the entire foundation enrollment for each school district.

## Step 2. Determine Each District's Local Contribution

The formula uses two measures of wealth to calculate cities' and towns' contributions to their foundation budgets: property values (measured as equalized valuations, or EQVs) and personal income

(total income as measured by the department of revenue). The weights on these measures are determined at the state level. In the 2018 fiscal year, the state determined that roughly 0.35 percent of the property value and 1.42 percent of total income of each town’s property wealth go to the local contribution. This local revenue is the *combined effort yield*. If the combined effort yield is more than 82.5 percent of the district’s foundation budget, the town is required to contribute only 82.5 percent.

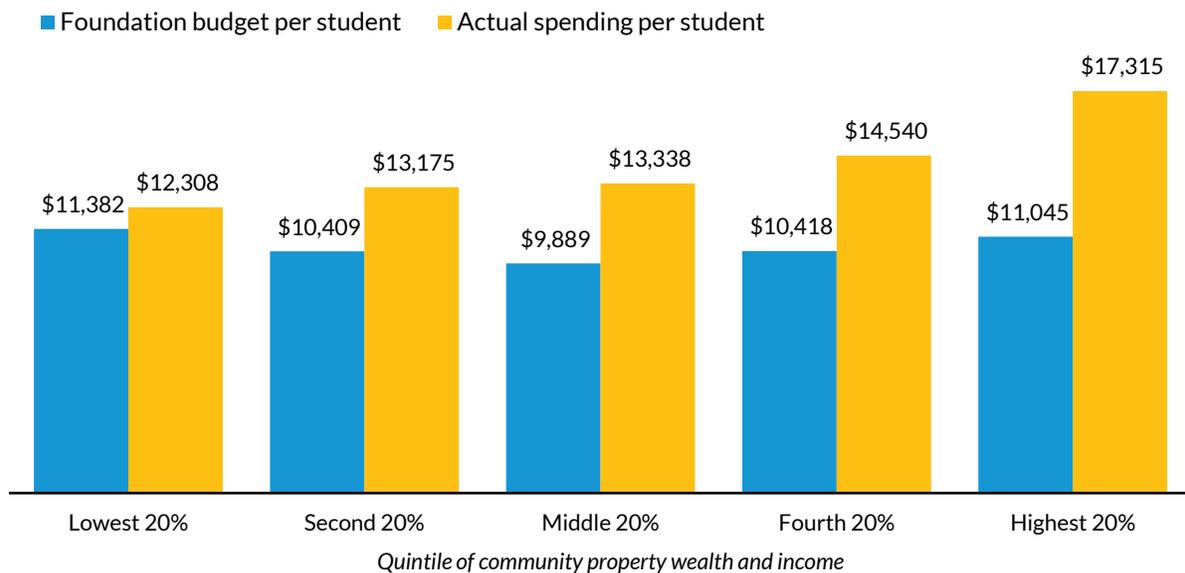
### Step 3. Calculate State Aid

The key portion of the state aid calculation is the “hold harmless” provision, which compares the estimated aid with prior aid the district received. Each district is entitled to the larger of either the aid it received the previous year or the difference between the budget and the current year’s local contribution, plus an additional \$30 per student.

### Step 4 (Implicit). Cities and Towns Determine How Much They Will Contribute above the Amount Required by the Formula

The local contribution determined by the formula is a floor; cities and towns can make contributions that exceed this amount. Massachusetts Budget and Policy Center research shows that, on average, spending in high-income and high-property-wealth districts exceeds the floor determined by Chapter 70 more than it does in low-income and low-property-wealth districts (Jones, Berger, and Hatch 2018).

**FIGURE 1**  
**Chapter 70 Foundation Budget and Actual Spending**



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Source: Colin Jones, Noah Berger, and Roger Hatch, “Building an Education System That Works for Everyone: Funding Reforms to Help All Our Children Thrive” (Boston, Massachusetts Budget and Policy Center, 2018).

This brief examines equity in the Chapter 70 formula and how changes to the formula would affect the equitable distribution of funding. For this reason, we consider only state funds that are allocated through the formula and the local funds that are required through the formula. We do not look at funding that local communities contribute outside the formula.

## Equity Measures

The Massachusetts funding formula accounts for districts' differing characteristics and the costs of educating students with more needs. Most aspects of the formula are designed to adjust funding for students' and communities' needs. For example, the wage adjustment factor considers differences in wages across the state and the difficulty in recruiting teachers. The formula's use of poverty deciles accounts for the relative differences in the socioeconomic status of students served in each district.

When looking at the equity of formula funding to Massachusetts school districts, it is important to look at the students the district serves (e.g., the socioeconomic status of the students, racial demographics, and the number students requiring special services). Doing subgroup analysis of funding allows researchers, policymakers, and advocates to better understand which students the formula best serves.

To better understand how the Massachusetts formula structure relates to funding for different students, we analyze the 2017–18 Chapter 70 funding formula using a set of equity measures (Chingos and Blagg 2017). Our socioeconomic measure looks at school funding progressivity in each state by estimating average spending on all poor children compared with average spending on nonpoor children. We classify poor children as children from families living below the federal poverty level. We adapt this measure to look at two additional measures of equity: funding for students of color relative to white students and funding for students in urban schools relative to students in rural schools. Before calculating the weighted averages, we adjust each district's funding to reflect differences in the costs they face. To make this adjustment, we use a measure of the salaries of college graduates who are not teachers in the district's labor market. All dollar amounts are reported in cost-adjusted dollars.

Because we use district-level data, we do not capture any differences in funding or spending across schools within districts (and students within schools). For example, poor students may benefit from programs or targeted revenue streams not available to nonpoor students. Conversely, nonpoor students may attend schools with more highly paid teachers or enroll in courses that are more expensive to provide than the schools poor students are enrolled in within the same district. But our analyses provide insights into the state's broad funding trends.

To calculate the first equity measure for poor and nonpoor students, we use district-level poverty data from the US Census Bureau's Small Area Income and Poverty Estimates to calculate the share of children ages 5 to 17 who are from low-income families in each district.<sup>5</sup> We merge these data with district-level finance data from the Massachusetts Department of Elementary and Secondary Education to estimate school district funding from local and state sources. We calculate a weighted average of

each district's per student funding using the number of poor children in each district as the weight. Then, we calculate the same weighted average using the number of nonpoor children.

**BOX 1**

**Calculating Equity Measures**

This simplified example best explains our equity measure calculation. In this example, the state has only two districts, A and B, each with 100 students.

<p><b>District A</b>  <b>\$10,000</b> per student          10 poor, 90 nonpoor students</p>	<p><b>District B</b>  <b>\$13,000</b> per student          30 poor, 70 nonpoor students</p>
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District B is located in an area where there are higher wages because of increased living costs, so they will likely need to spend more on teacher and staff salaries (a key driver of cost in education). We use the Comparable Wage Index to adjust the per student amount down to account for this difference.

<p><b>District A</b>          \$10,000 per student  <b>\$10,000</b> per student, cost-adjusted          10 poor, 90 nonpoor students</p>	<p><b>District B</b>          \$13,000 per student  <b>\$12,000</b> per student, cost-adjusted          30 poor, 70 nonpoor students</p>
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Next, we compute a weighted average funding level for poor and nonpoor students.

**Poor:** 
$$\frac{(10 \text{ students from A} \times \$10,000) + (30 \text{ students from B} \times \$12,000)}{10 \text{ students from A} + 30 \text{ students from B}} = \text{\$11,500 per student}$$

**Nonpoor:** 
$$\frac{(90 \text{ students from A} \times \$10,000) + (70 \text{ students from B} \times \$12,000)}{90 \text{ students from A} + 70 \text{ students from B}} = \text{\$10,875 per student}$$

The difference between these two average per student amounts constitutes our measure of equity.

$$\$11,500 \text{ per poor student} - \$10,875 \text{ per nonpoor student} = \text{\$625}$$

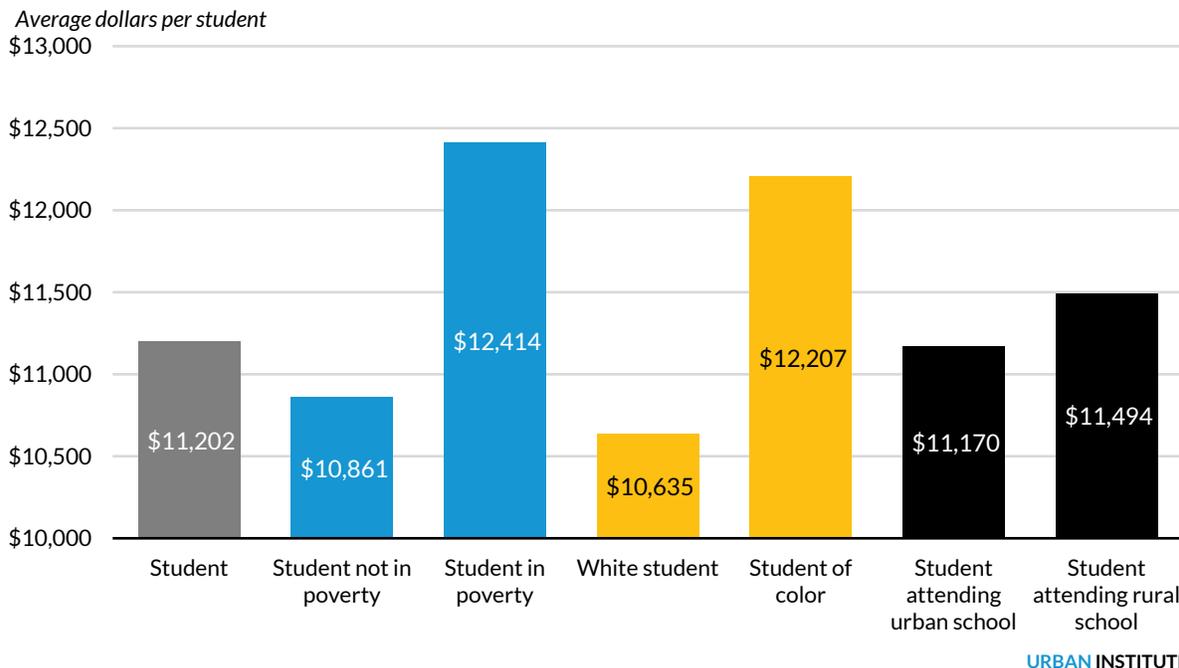
Thus, in our simplified example, we estimate that the average poor student lives in a district that receives \$625 more per student than the average nonpoor student.

Massachusetts has high funding per student compared with other states.<sup>6</sup> The average school district receives \$11,202 in cost-adjusted dollars per student. Per student funding (of dollars allocated through the formula) in Massachusetts is progressive (based on the progressivity measure described earlier). Average formula funding per student in poverty is higher than average funding per student not in poverty. The average student from a low-income family lives in a district receiving an average of \$12,414 per student through the formula, compared with students not from a low-income background, who live in districts with an average of \$10,861 per student through the formula. State contributions and required local contributions are only a portion of the funding available to many districts.

To calculate the equity measure for students of color and white students, we use district-level race and ethnicity data from the Common Core of Data to calculate the number of students of color and white students enrolled in each district. The rest of our calculations follow the same process we followed to calculate the equity measure for poor and nonpoor students. We calculate weighted averages of districts' per student funding for students of color and white students. Under the 2017–18 funding formula, the average student of color was enrolled in a school district that received \$1,572 more per student, relative to the average white student.

To calculate the equity measure for students attending schools in rural areas and students attending schools in urban areas, we use directory data from the Common Core of Data on whether a school is in a rural or urban area. The rest of our calculations follow the same process we used to calculate the equity measure for poor and nonpoor students. We merge data with Department of Elementary and Secondary Education finance data and calculate weighted averages of districts' per student funding for students enrolled in rural schools and students enrolled in urban schools. On average, in Massachusetts, students in rural schools receive \$324 more in per student funding than students in urban schools. The average rural student lives in a district that receives \$11,170 in per student funding, and the average urban student lives in a district that receive \$11,494 in per student funding, on average.

**FIGURE 2**  
**Measures of Equity in the Current Chapter 70 Formula, 2017–18**



**Source:** Urban Institute analysis of Massachusetts Department of Elementary and Secondary Education school finance data, the National Center for Education Statistics (NCES) Common Core of Data, and Census Bureau Small Area Income and Poverty Estimates.

**Note:** Cost adjustments made using NCES Comparable Wage Index.

# Formula Design Changes and Equity Measures

## Simulator Design and Assumptions

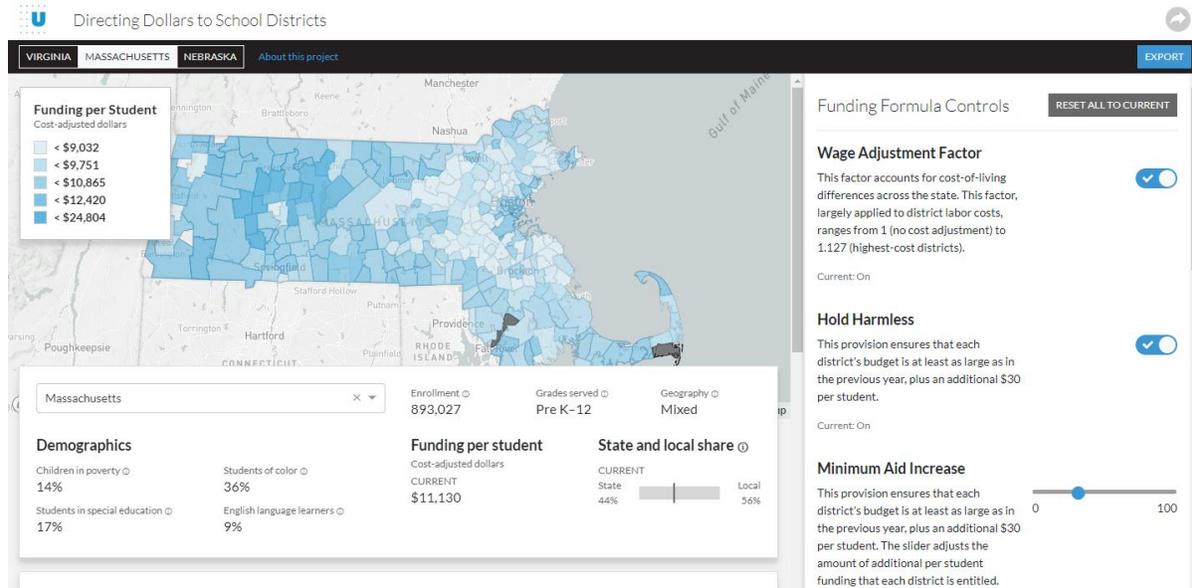
The Massachusetts formula funding is progressive. Students in poverty, on average, live in districts with higher cost-adjusted Chapter 70 funding per student than students not in poverty. Additionally, students of color, on average, are enrolled in districts with higher funding per student than white students, and students enrolled in rural schools have higher average funding per student than those in urban schools.

Although the formula produces progressive funding outcomes, policymakers have expressed interest in changing the formula to address concerns that inaccurate assumptions cause the underestimation of the cost of providing an adequate elementary and secondary education. To better understand how the current formula works and how the formula influences the distribution of dollars to students, we created a model of the state funding formula that allows us to adjust some of the formula parameters. In the remainder of this brief, we test how changing the formula affects overall funding in the state, funding at the local and state levels, and the progressivity of funding. The formula changes we test have either been proposed by policymakers or the Massachusetts Foundation Budget Review Commission, or provide important insights on how the formula functions.

## BOX 2

### Changing the Formula

This brief highlights only some of the potential changes that could be introduced into the current funding formula. You can implement changes yourself by navigating to our interactive, “Directing Dollars to School Districts: Computing the Effects of Changes to State Funding Formulas.”<sup>a</sup>



This interactive allows you to implement multiple changes for Massachusetts and see the resulting distribution of dollars. In addition to Massachusetts, this interactive provides the opportunity to look at formula changes for Nebraska, Texas, and Virginia.

<sup>a</sup> Kristin Blagg, Matthew Chingos, Victoria Lee, Cary Lou, Stipica Mudrazija, and Victoria Rosenboom, “Directing Dollars to School Districts: Computing the Effects of Changes to State Funding Formulas,” Urban Institute, October 31, 2018, <https://edfunding.urban.org/>.

Our model of the Massachusetts funding formula allows us to change parameters within the formula (e.g., increase the per student rates allotted for benefits). Our model does not account for how districts will change (in composition or in behavior) in response to the policy changes we simulate. Large parameter changes might provide districts incentives to change their local tax rates to optimize their state contribution. Or, if a change in the formula substantially affects funding, property values in that district might respond.

Another limitation is that we do not model the incentives that districts may have to over- or underclassify students for such services as special education or ELL services (Mahitivanichcha and Parish 2005). Thus, when we describe how funding will be affected, we demonstrate how the formula works and estimate potential short-run changes. We cannot make causal statements about how these policy changes would affect certain students or districts in the long run.

Similarly, our model does not cap the state budget for elementary and secondary education. Thus, some of the changes we simulate may not be feasible because of economic and political limitations imposed on the overall state budget.

## Formula Changes and Results

The Massachusetts funding formula is designed such that even aggressive changes to parameters within the formula do not result in huge differences in district-level funding per student. This is because of provisions that act as a hold harmless, ensuring no district receives less funding than it received the previous year (in fact, districts are guaranteed \$30 more per student each year over the previous year).

The first part of the formula calculates adequate minimum funding for each district within the state, given the number of students in each grade, programs within the school, and students' socioeconomic characteristics. Each district is entitled to this funding, but fulfillment of the funding allocation is a shared responsibility between the district and the state. In recent years, advocates have suggested that some of the assumptions underlying the calculations of the foundation budgets are inaccurate and underestimate the costs of educating students. In this section, we explore how changing these parameters affects spending.

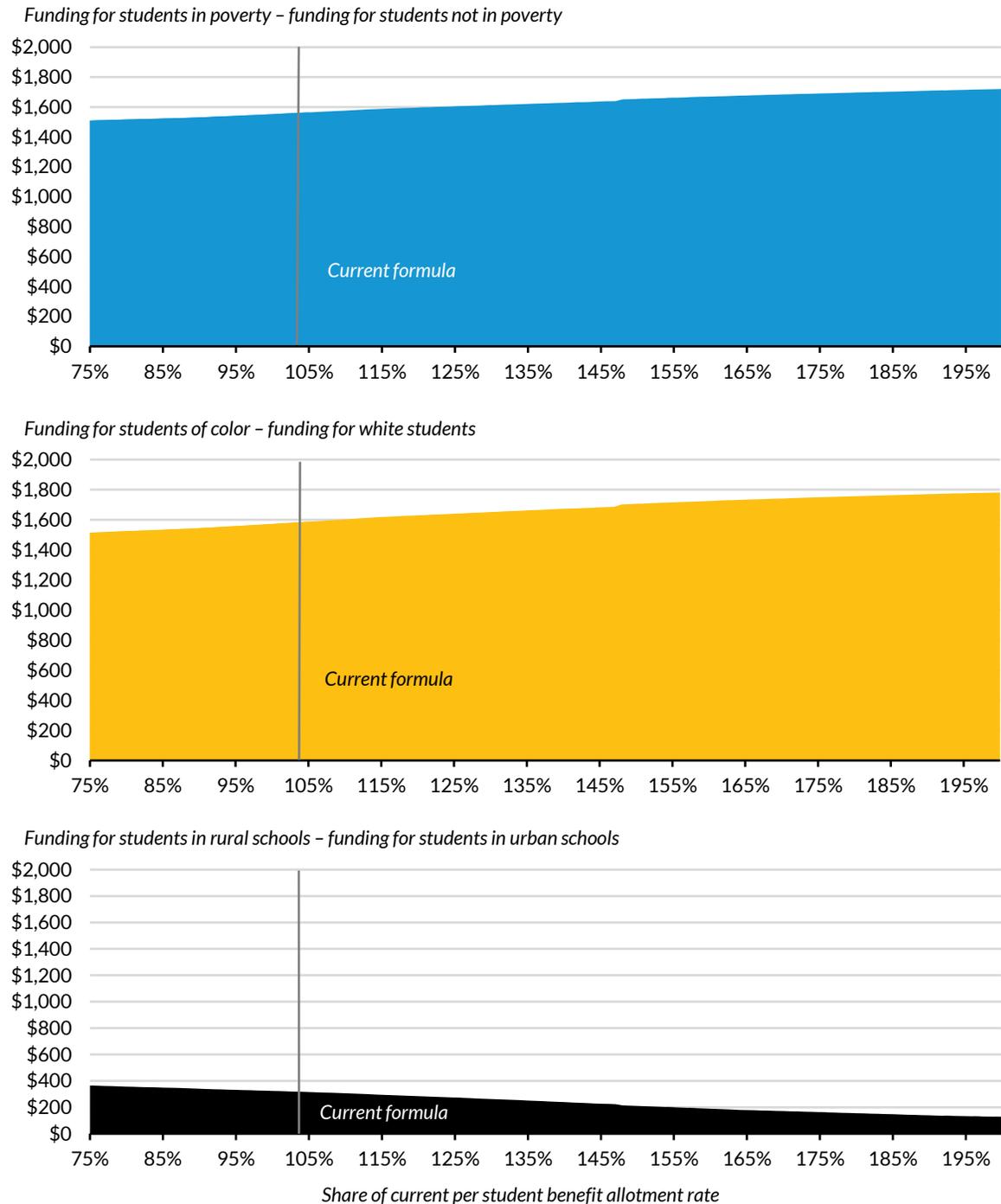
## Benefits

The Massachusetts Foundation Budget Review Commission cited research from the Department of Elementary and Secondary Education finding that, on average, school districts were spending 140 percent of the portion of their foundation budget allotted to benefits. The commission determined that this was because health care cost increases outpaced inflation and because the formula does not account for retired employees' health care costs. The commission recommended the legislature raise the "employee benefits and fixed charges" rate applied to enrollment. It also recommended this adjustment be made based on the Massachusetts Group Insurance Commission rate. Additionally, the commission recommended the legislature add a new category of funding, "retired employee health insurance." The commission also recommended the state establish a health care inflation factor, based on changes in the Group Insurance Commission rates, that replaces the current inflation factor used for the employee benefit rates. We test how raising the allotment for benefits would affect overall spending (at the state level and at the local level) and how it would affect funding equity.

When the benefit allotment is raised by 40 percent (the amount that school districts are estimated to be overspending, on average, on this portion of their foundation budget), average funding per student increases by 2.65 percent (\$297 in cost-adjusted dollars). This raises funding for all students and would particularly help students in poverty. With this increase in the benefit rate, students in poverty, on average, would receive \$1,629 more than students not in poverty (compared with a \$1,552 difference under the current formula). Students of color would also get a slightly larger bump relative to their white counterparts. Currently, students of color receive, on average, \$1,572 more than white students. Increasing the benefit rates by 40 percent increases this value to \$1,672. Under the current formula, students in rural districts receive \$324 more than urban students, but increasing this funding

disproportionately benefits students in rural districts. Raising the benefit allotment by 40 percent decreases the rural-urban difference to \$239.

**FIGURE 3**  
**Equity Measures by Share of Current Per Student Benefit Allotment**



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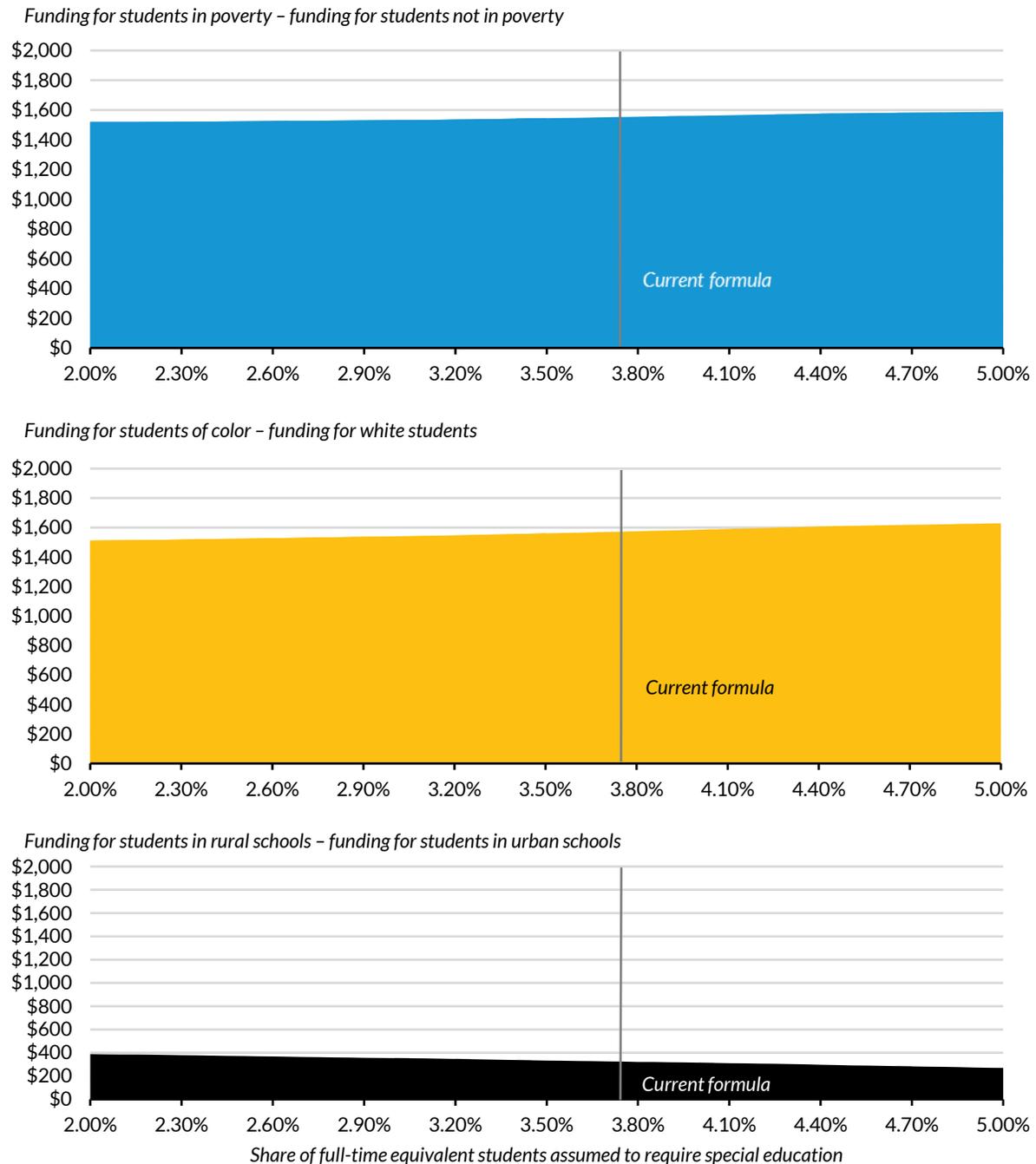
**Source:** Urban Institute analysis of Massachusetts Department of Elementary and Secondary Education school finance data, the National Center for Education Statistics (NCES) Common Core of Data, and Census Bureau Small Area Income and Poverty Estimates.

**Note:** Cost adjustments made using NCES Comparable Wage Index.

## Special Education

The Chapter 70 formula assumes 15 percent of students need special education services for a quarter of their hours in school. Thus, the calculation of the foundation enrollment assumes 3.75 percent of full-time equivalent students will require special needs funding. But the bill Massachusetts state senators proposed would increase this assumption to 4 percent (16 percent of students at a quarter of the time), as recommended by the Foundation Budget Review Commission. Changing the assumed number of special education students to 4 percent increases the overall average funding per student to \$11,240 (a \$38 increase). Increasing this assumption benefits students overall, but it benefits the average student in poverty more relative to the average student not in poverty. It also benefits students of color relative to white students but decreases the rural-urban difference in funding. Moving the assumed rate from the current 3.75 percent to the proposed 4 percent would increase the poverty-nonpoverty difference from \$1,552 to \$1,561. The student of color-white student difference would increase from \$1,572 to \$1,585, and the rural-urban difference would decrease from \$324 to \$314. This enrollment increase does not create a linear increase in funding per student because of the formula parameters that weight districts with different characteristics differently.

**FIGURE 4**  
**Equity Measures by Share of Full-Time Equivalent**  
**Students Assumed to Require Special Education Services**



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**Source:** Urban Institute analysis of Massachusetts Department of Elementary and Secondary Education school finance data, the National Center for Education Statistics (NCES) Common Core of Data, and Census Bureau Small Area Income and Poverty Estimates.

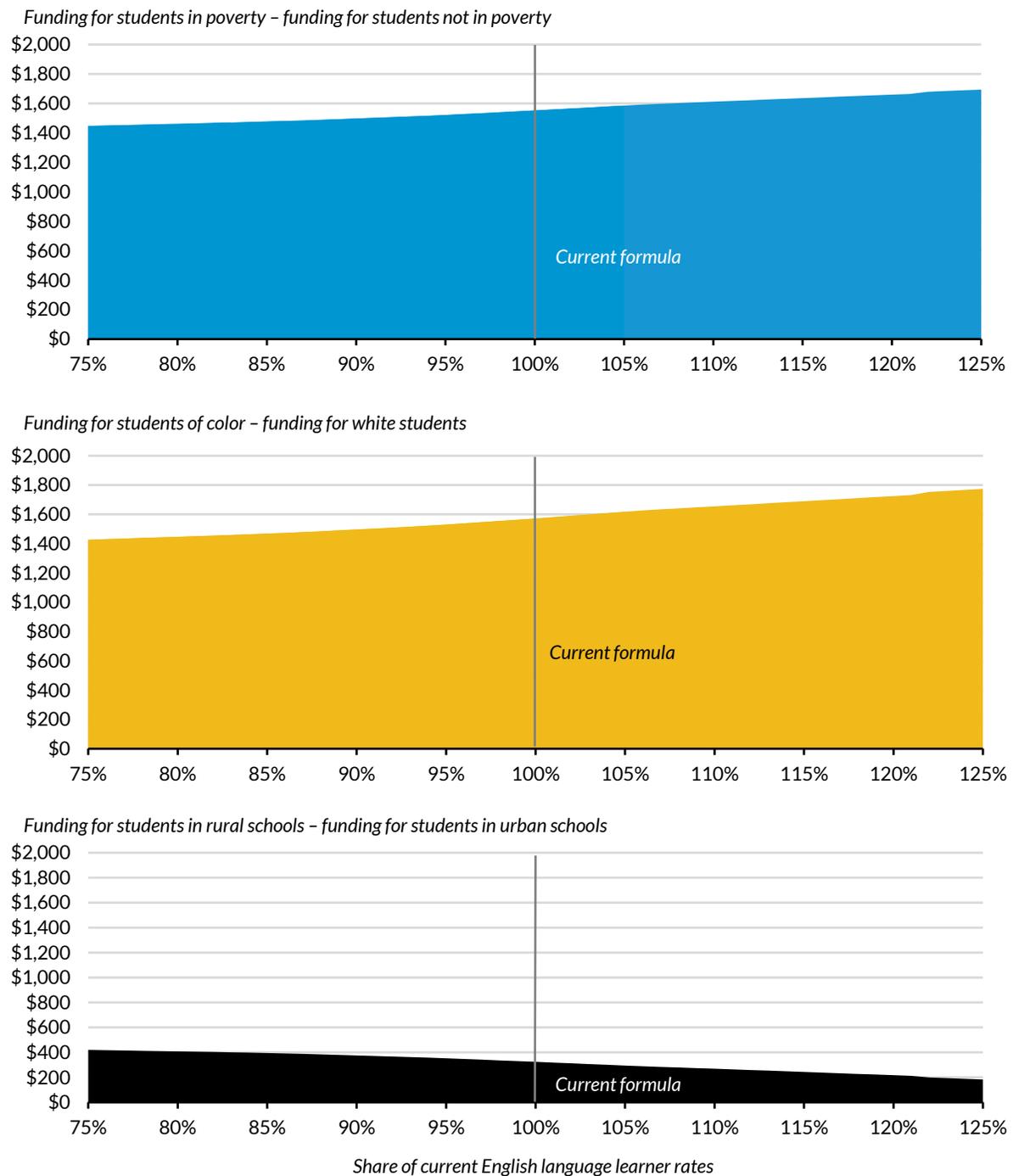
**Note:** Cost adjustments made using NCES Comparable Wage Index.

## **Increase English Language Learner Rates**

The Foundation Budget Review Commission recommended the legislature increase the ELL rate for all grade levels, including high school and vocational education, to the highest rate, the current middle school rate of \$2,361. The commission made this recommendation based on its research, which concluded that the current formula does not consider the increase in the number of students with limited or interrupted formula education. Our model looks at the effects of increasing all ELL rates by a given percentage. As might be expected, increasing these rates for English language learners increases funding for the average student in Massachusetts. But the increases are larger for students in poverty, students of color, and students in urban school districts.

FIGURE 5

Equity Measures by Share of Current English Language Learner Rates



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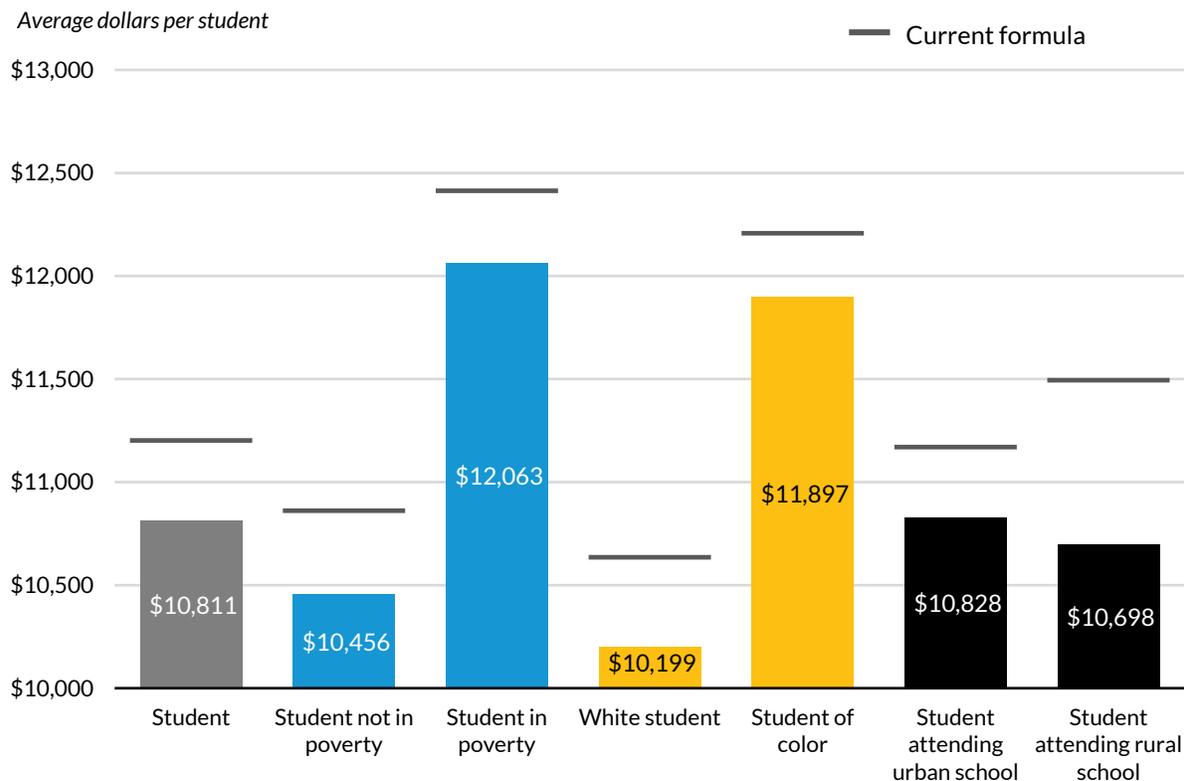
Source: Urban Institute analysis of Massachusetts Department of Elementary and Secondary Education school finance data, the National Center for Education Statistics (NCES) Common Core of Data, and Census Bureau Small Area Income and Poverty Estimates.

Note: Cost adjustments made using NCES Comparable Wage Index.

## Hold Harmless

The formula’s “hold harmless” provision requires each district to get at least the same amount of funding it received the previous year. Removing this provision reduces average district funding. Although the formula produces progressive funding levels both with and without the hold harmless provision, removing the provision reduces funding per student more for students not in poverty than for students in poverty. Without the hold harmless provision, students in poverty receive \$1,607 more in cost-adjusted dollars from the formula than the average student not in poverty (compared with \$1,552 with the hold harmless in place). Without the hold harmless provision, students of color would receive, on average, \$311 less than they receive under the current formula, and white students would see a larger reduction of \$436 per student. Students in rural districts see a larger reduction in per student formula funding than students in urban districts (\$796 compared with \$342).

**FIGURE 6**  
Equity Measures after Removing the Hold Harmless Provision



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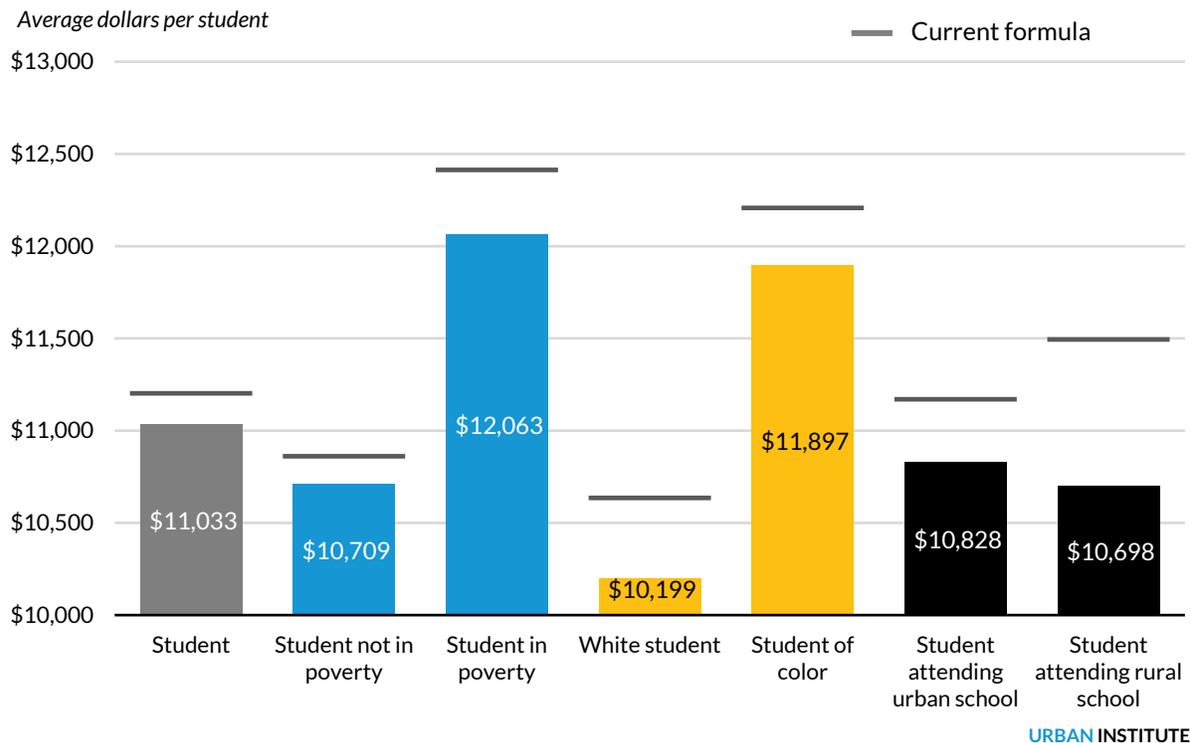
**Source:** Urban Institute analysis of Massachusetts Department of Elementary and Secondary Education school finance data, the National Center for Education Statistics (NCES) Common Core of Data, and Census Bureau Small Area Income and Poverty Estimates.

**Note:** Cost adjustments made using NCES Comparable Wage Index.

## Economically Disadvantaged Decile

Although the Foundation Budget Review Commission did not make a specific recommendation about funding targeted at low-income students, it highlighted programs and best practices (including extended learning time, wraparound services, and class size reduction) that have been shown to improve outcomes, particularly for low-income students. The commission recommended additional funding for these programs and practices. Our model allows us to look at how the use of economically disadvantaged deciles, which target funds to high-need school districts, affects funding. This example is not a proposed change but illustrates how this aspect of the formula works. The economically disadvantaged deciles contribute an average of \$169 per student in additional cost-adjusted funding. The average student not in poverty benefits from \$152 in additional district funding through this provision, compared with students in poverty, who receive an additional \$277. This part of the formula also benefits students of color (who receive an average of \$264 in additional funding from this part of the formula) relative to white students (who receive \$115). Students enrolled in rural schools benefit the least; on average, these students live in districts that receive an additional \$104 compared with students enrolled in urban schools, who receive an additional \$177.

**FIGURE 7**  
**Equity Measures after Removing the Economically Disadvantaged Decile Funding**



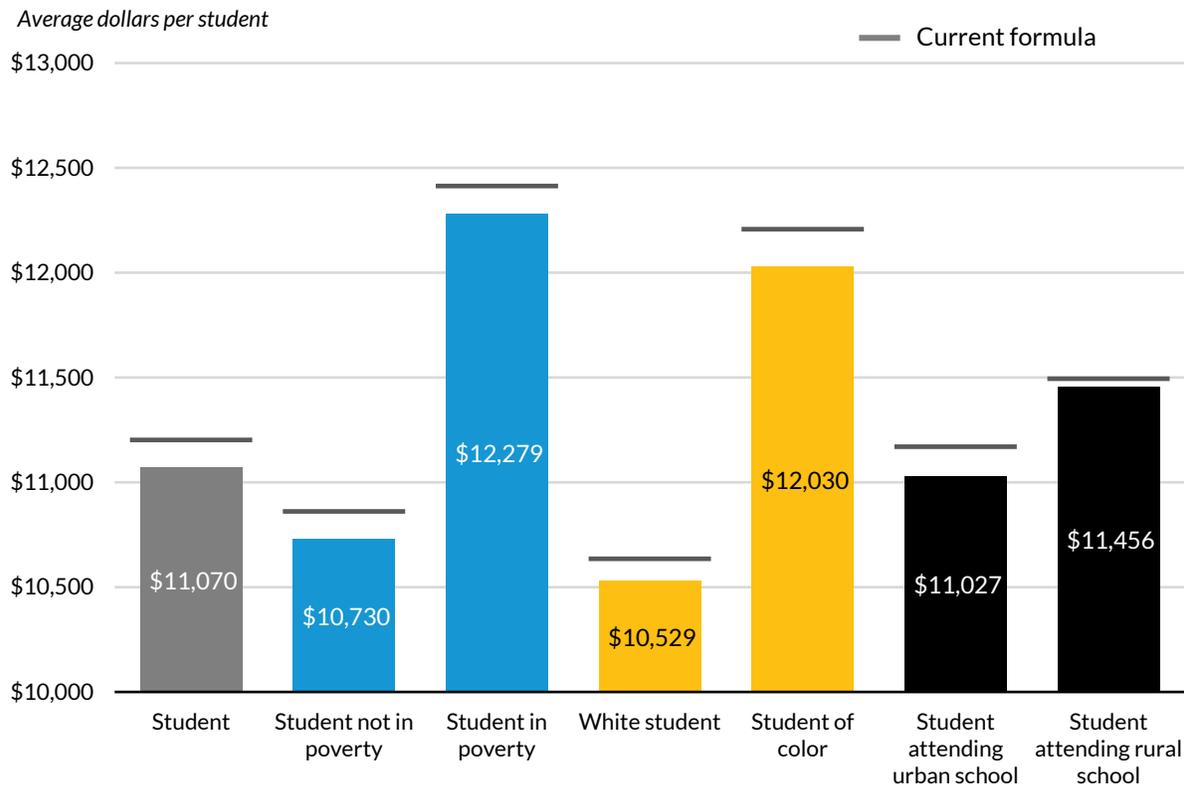
**Source:** Urban Institute analysis of Massachusetts Department of Elementary and Secondary Education school finance data, the National Center for Education Statistics (NCES) Common Core of Data, and Census Bureau Small Area Income and Poverty Estimates.

**Note:** Cost adjustments made using NCES Comparable Wage Index.

## Wage Adjustment Factor

The Massachusetts Chapter 70 formula uses a wage adjustment factor (WAF) to account for differences in living costs within the state. Schools in areas with higher average wages have a factor between 1 and 1.127 applied to functional cost areas. The state’s department of employment uses wage data from 23 labor markets to calculate the WAF. Our model tests Chapter 70 funding per student with and without the WAF. We find that the WAF does not play a large role in funding, in terms of our cost-adjusted model. Removing the WAF results in an average \$132 decrease (a 1 percent decrease) in cost-adjusted funding per student. Although the WAF gives more funding for all students, the WAF has no effect on the progressivity of our cost-adjusted funding measure across the state.

**FIGURE 8**  
Equity Measures after Removing the Wage Adjustment Factor



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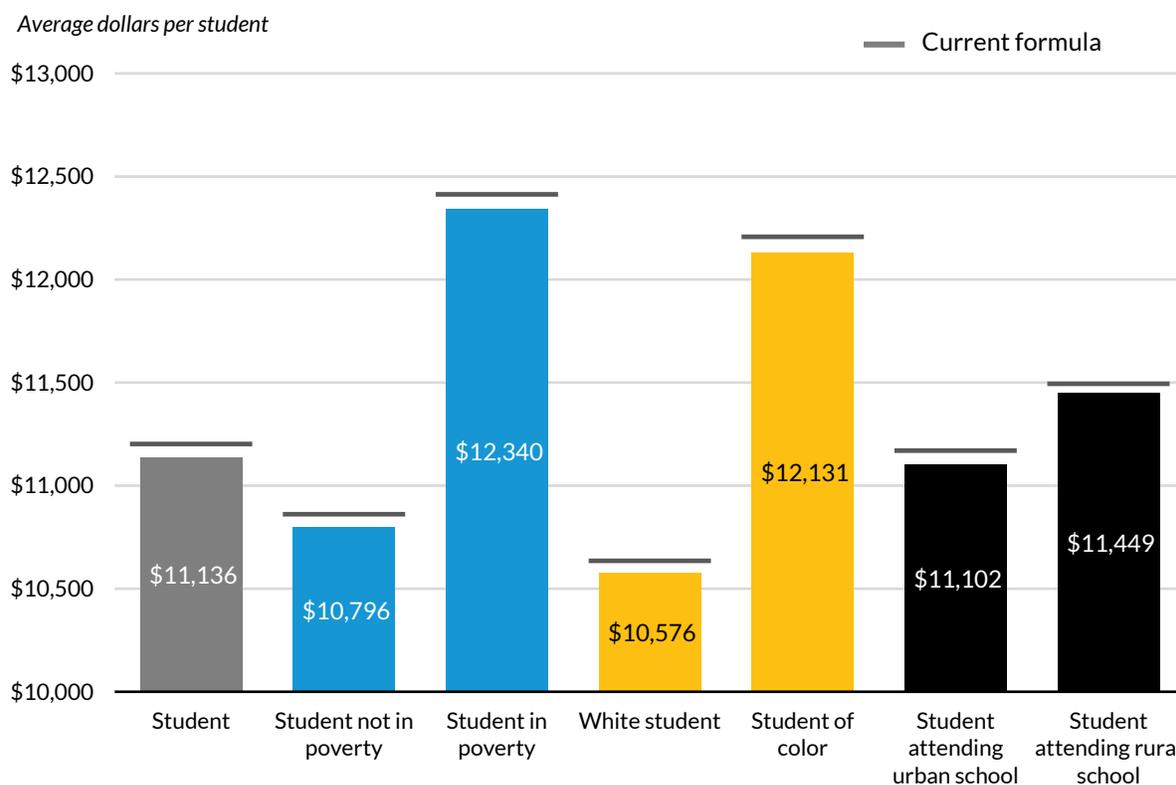
**Source:** Urban Institute analysis of Massachusetts Department of Elementary and Secondary Education school finance data, the National Center for Education Statistics (NCES) Common Core of Data, and Census Bureau Small Area Income and Poverty Estimates.

**Note:** Cost adjustments made using NCES Comparable Wage Index.

## Municipal Revenue Growth Factor

The Municipal Revenue Growth Factor (MRGF) is a multiplier used to calculate the district’s preliminary contribution. The MRGF accounts for regional economic differences that either positively or negatively affect communities’ ability to contribute financially to their school districts’ foundation budgets. The MRGF is calculated annually by the department of revenue and measures the percentage change in communities’ local revenue. The MRGF is applied to the preliminary local contribution. The MRGF has a small impact on both overall funding and on equity, increasing funding per student by \$72, on average. Average changes to different student groups are also small. Students not in poverty, on average, see \$72 more in cost-adjusted dollars with the MRGF in place (compared with the funding these students would receive without the MRGF), students in poverty get \$79 more, white students get \$66 more, students of color get \$83 more, students enrolled in urban districts get \$74 more, and students enrolled in rural districts get \$54 more. Thus, the MRGF slightly increases progressivity across socioeconomic and racial lines and slightly decreases progressivity for rural students.

**FIGURE 9**  
Equity Measures after Removing the Municipal Revenue Growth Factor



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**Source:** Urban Institute analysis of Massachusetts Department of Elementary and Secondary Education school finance data, the National Center for Education Statistics (NCES) Common Core of Data, and Census Bureau Small Area Income and Poverty Estimates.

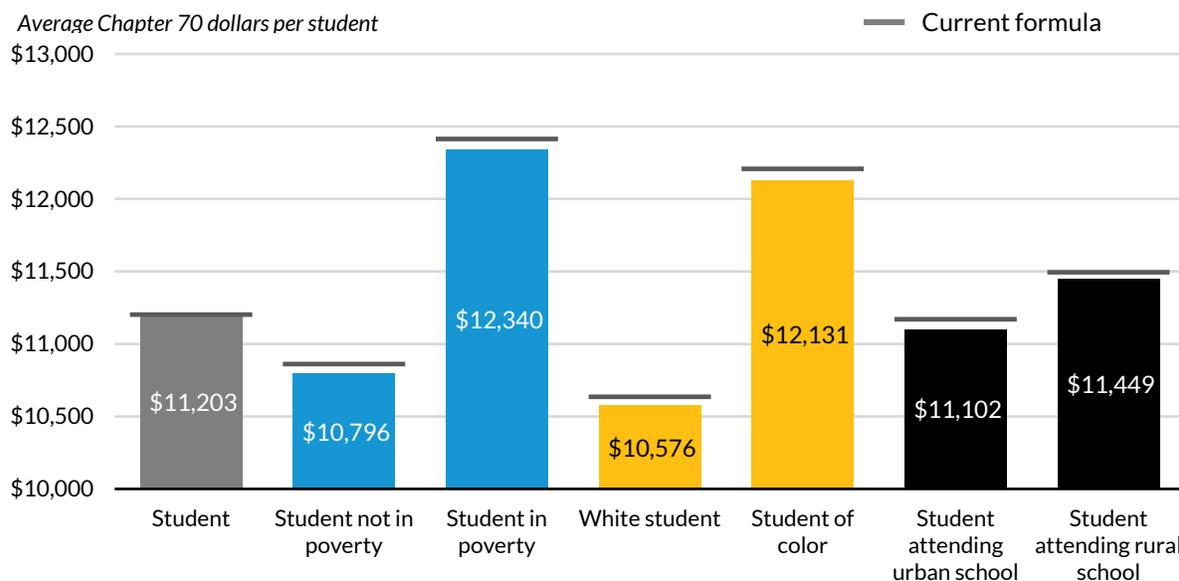
**Note:** Cost adjustments made using NCES Comparable Wage Index.

## Maximum Local Contribution

The formula requires that localities contribute a maximum of 82.5 percent toward their foundation budgets. Given the formula's design, it is not clear how this provision would affect overall funding per student or funding to specific subgroups. We estimate funding with and without this provision and find that there is no affect (less than \$1, on average) on overall funding or distribution of funding across subgroups with and without the cap. This aspect of the formula does not affect the dollars allocated to school districts; it simply limits the amount of money that comes from localities instead of the state.

FIGURE 10

### Equity Measures after Removing the Cap on Local Contributions



URBAN INSTITUTE

**Source:** Urban Institute analysis of Massachusetts Department of Elementary and Secondary Education school finance data, the National Center for Education Statistics (NCES) Common Core of Data, and Census Bureau Small Area Income and Poverty Estimates.

**Note:** Cost adjustments made using NCES Comparable Wage Index.

## Conclusion

In this brief, we examine how Chapter 70 funding varies for Massachusetts students by their poverty status, race or ethnicity, and urbanicity. The results show that the average student in poverty lives in a district that receives higher average Chapter 70 funding, in cost-adjusted dollars, per student than the average student not in poverty. Additionally, the average student of color is enrolled in a district that receives higher Chapter 70 funding than the average white student. There is a small difference in Chapter 70 funding for students enrolled in rural schools compared with students in urban schools, but students in rural schools receive slightly more Chapter 70 funding per student than students in urban schools.

We also assess how changing various elements of the formula affects equity for different students. Because of the hold harmless provisions built into the formula and the formula's complexity, changes to single aspects of the formula do not typically create large changes in per student funding. But some formula changes (e.g., increasing the estimated number of students requiring special education services and increasing funding for ELL students and funding for benefit allotment, as well as the MRGF) are progressive changes for students in poverty and students of color. Changes to the WAF and the maximum local contribution tend to increase funding for students in rural schools relative to students in urban schools but do not increase progressivity across socioeconomic and racial lines.

Understanding how different aspects of funding formulas promote or hinder funding equity and progressivity is essential, given the research on the short-term (i.e., educational) and long-term (i.e., economic) outcomes of students being moderately associated with per student funding, with the association being stronger for some students (e.g., poor) than for others (Jackson, Johnson, and Persico 2016).

Given the complexity of school funding formulas, it is hard to assess the implications of changing any single parameter without considering implications on the rest of the formula. Our interactive simulator addresses this issue and calculates funding implications of changing various elements. The interactive simulator does not account for the likely behavioral and policy changes that districts might make in response to various changes. Additionally, the simulator does not represent all the money that goes to school districts (e.g., it does not include local contributions that exceed the required local contribution). Despite these limitations, we believe the simulator can contribute to a more informed discussion about the implications of various proposed changes to school funding formulas and the complexities of undertaking school funding reforms in Massachusetts and other states.

## Notes

- <sup>1</sup> Rhoda E. Schneider, "The State Constitutional Mandate for Education: The McDuffy and Hancock Decisions," Massachusetts Department of Elementary and Secondary Education, last updated September 27, 2007, [http://www.doe.mass.edu/lawsregs/litigation/mcduffy\\_hancock.html](http://www.doe.mass.edu/lawsregs/litigation/mcduffy_hancock.html).
- <sup>2</sup> Each of these enrollment categories is mutually exclusive, and students are not double counted.
- <sup>3</sup> These areas are administration, instructional leadership, classroom and specialist teachers, other teaching services, professional development, instructional equipment and technology, guidance and psychological, pupil services, operations and maintenance, employee benefits and fixed charges, and special education tuition.
- <sup>4</sup> There are 13 enrollment cost categories: prekindergarten, kindergarten half day, kindergarten full day, elementary school, middle school, high school, ELL prekindergarten, ELL kindergarten half day, ELL K-12, vocational, special education in district, special education out of district, and economically disadvantaged decile.
- <sup>5</sup> We exclude districts that do not have poverty rates available in the Small Area Income and Poverty Estimates, which excludes districts that have only charter schools.
- <sup>6</sup> "2016 Public Elementary-Secondary Education Finance Data," US Census Bureau, accessed October 19, 2018, [https://www2.census.gov/programs-surveys/school-finances/tables/2016/secondary-education-finance/elsec16\\_sumtables.xls](https://www2.census.gov/programs-surveys/school-finances/tables/2016/secondary-education-finance/elsec16_sumtables.xls).

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