Expanding Educational Opportunity
IN MARYLAND

THE ROLE OF FUNDING FORMULAS IN INCREASING EQUITY

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MDCEP
MARYLAND CENTER ON ECONOMIC POLICY

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The Maryland Center on Economic Policy advances innovative policy ideas to foster broad prosperity and help our state be the standard-bearer for responsible public policy. We engage in research, analysis, strategic communications, public education, and grassroots alliances promoting robust debate and greater public awareness of the policy choices Maryland residents face together.

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1 Introduction

Education is an essential public investment for Maryland's children and for the state economy. When students have access to high-quality public schools, they are better prepared to succeed in college, find good jobs, and participate fully in society—and research shows that a well-educated workforce means a stronger economy for everyone.[1] This is why it is crucial for the state to provide an excellent education to all students. Today, Maryland delivers some of the highest-quality education in the country—by some measures, it is the best state[2]—and yet too many students still don't get the same quality of education as their peers in other parts of the state. By improving the method that the state uses to distribute funding to local school districts, Maryland can do more to ensure that all students get the best education possible.

Maryland's current system combines state funding and local funding, which benefits some students more than others due to the disparate wealth in different areas of the state. While the state formula takes each school district's wealth into account, it does not do enough to ensure that students across the state can access the resources they need to succeed given the make-up of the students in their community. The net result is an inequitable school finance system in which some students do not receive the educational resources they need. Districts in which many families struggle to afford basic necessities, districts with few high-income residents, and districts with large numbers of black students and other students of color do not receive the same amount of funding as other districts, relative to their needs. This underinvestment means fewer educational and job opportunities for the students who grow up in these districts and a worse economy for all Marylanders.

State policymakers have an opportunity to improve this situation through the current review process of Maryland's school finance system. This review, running from 2014 to 2018, will address school aid formulas, the method used to measure local wealth, and several other aspects of state education policy. The review is proceeding in three phases:

- In 2014, the Maryland State Department of Education hired a consultant group to study Maryland's current education system and make recommendations on future policy. The consultant group released a draft report in October 2016. During this

1 See for example Enrico Moretti, "Estimating the Social Return to Higher Education: Evidence from Longitudinal and Repeated Cross-Sectional Data," *Journal of Econometrics* 121 (2004): 175–212, http://eml.berkeley.edu/~moretti/socret.pdf. Edward Glaeser, Jose Scheinkman, and Andrei Shleifer, "Economic Growth in a Cross-Section of Cities," *National Bureau of Economic Research* No. 5013, last modified February 1995, http://www.nber.org/papers/w5013.pdf. Edward Glaeser and Albert Saiz, "The Rise of the Skilled City," *National Bureau of Economic Research* No. 10191, last modified December 2003, http://www.nber.org/papers/w10191.pdf.

2 Robert Morse, "How States Compare in the 2016 Best High Schools Rankings," *U.S. News & World Report*, last modified April 18, 2016, http://www.usnews.com/education/best-high-schools/articles/how-states-compare.

period, a group of stakeholders also met to review the consultants' findings and provide input.

- In September 2016, the Commission on Innovation and Excellence in Education held its first hearing. The commission is responsible for making recommendations to the General Assembly, based on the consultant group's findings and other sources of information. The commission is scheduled to issue its final report at the end of 2017.
- In 2018, the General Assembly will review the commission's report and consider legislation to revise the state's education policies.

To ensure that all students can access the education they need and deserve, Maryland must take this opportunity to ensure that the districts with the greatest needs have adequate resources to provide an excellent education to all students. This report considers several ways the state could modify its school funding formulas and evaluates these potential changes in terms of their impact on equity. Education funding is equitable if funding is fairly distributed among districts so that the districts with the greatest needs are at least as well equipped to provide an excellent education as other districts. True equity requires more than simple equality of funding among districts. The primary focus of this report is the way local wealth is measured, which determines the mix of state and local funding in each school district. Although a full examination of Maryland's school finance system is beyond the scope of this report, several proposals that are closely related to wealth measurement are also considered.

The state should take four steps to improve equity in education funding:

1. **Adopt a more accurate wealth measure.** Using a multiplicative wealth measure, which involves multiplying property wealth by a local income index, is the most effective single step the state can take to improve school funding equity. This approach more accurately measures local jurisdictions' capacity to fund education, and would direct more funding to the districts with the greatest needs.
2. **Expand the guaranteed tax base.** The existing guaranteed tax base program leverages state and local resources to ensure that areas with lower incomes and property values have the education funding they need. Expanding this program would make education funding in Maryland more equitable.
3. **Improve transparency, accuracy, and equity in the funding formula.** The state has an opportunity to make education funding more straightforward and accurate by making three small changes to the formula: measuring a jurisdiction's income only one time per year, streamlining the way a district's property wealth is measured, and eliminating arbitrary funding floors that could direct more money than needed to some districts.
4. **Combine the most effective improvements to maximize gains.** Even the most effective improvements considered in this report would leave inequity in Maryland's school finance system if done in isolation. Combining the most effective changes is the only way to ensure that all students can access the education they deserve.

Together, these four steps will help ensure that schools throughout our state have the funding they need to provide an excellent education. However, these recommendations address only one part of education funding in Maryland, the treatment of local wealth in funding formulas. Other aspects of education finance, such as the way districts' needs are measured and the way school construction is funded, also have equity implications. Choices about policies such as pre-K and school discipline do as well. Although these decisions are beyond the scope of this report, policymakers should consider equity in all aspects of education policy.[3]

Finally, the **most reliable route to educational equity in Maryland is through increased state investment in schools.** From 2008 to 2014, state and local education investments in Maryland declined by nearly 7 percent.[4] Because local jurisdictions with the lowest incomes and the least property wealth are also the least well equipped to fund education on their own, expanding state investment in education is the most effective way to improve equity. The importance of the state's support for education is reflected in this report, as the most effective tools for improving equity will require greater investment. Continuing to strengthen Maryland's education system and invest in the future of all children will benefit our economy in the long term.

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3 For details on a multipronged approach to racial equity in education, see Jonathan Stith, Hiram Rivera, and Chinyere Tutashinda, "An End to the Privatization of Education and Real Community Control by Parents, Students and Community Members of Schools Including Democratic School Boards and Community Control of Curriculum, Hiring, Firing, and Discipline Policies," *The Movement for Black Lives,* accessed October 26, 2016, https://policy.m4bl.org/wp-content/uploads/2016/07/Community-Control-of-Schools-Policy-Brief.pdf.

4 Michael Leachman, Kathleen Masterson, and Marlana Wallace, "After Nearly a Decade, School Investments Still Way Down in Some States," *Center on Budget and Policy Priorities*, last modified October 20, 2016, http://www.cbpp.org/research/state-budget-and-tax/after-nearly-a-decade-school-investments-still-way-down-in-some-states. State and local education funding declined after adjusting for inflation.

2 Maryland's Current System

Maryland's current school finance system was established by the Bridge to Excellence in Public Schools Act of 2002.[5] This law simplified state aid formulas, increased the state's investment in education, and improved the system's overall equity. Under that system, a formula determines each district's need for funding, taking into account total enrollment as well as the number of low-income students, English language learners, and students in special education in the district. These groups are counted separately because research has determined that they need more resources to succeed in school, on average, such as one-on-one instruction and smaller class sizes.[6] The state shares the cost of education with local jurisdictions, with the state paying a larger share of the cost for less wealthy districts.

Under the current system, direct state aid to school districts includes four major components:

Foundation: This is the base funding level that the state considers necessary to provide each student with an adequate education. For the 2016–2017 school year, the per-pupil foundation level is $6,964. The state and local school districts split the cost, with the state paying a greater share of costs for low-wealth districts. Two aspects of the foundation grant are notable:

- Although wealthier districts are expected to fund a larger share of the foundation program on their own, the state pays a minimum of 15 percent of costs in every district. This means that the wealthiest districts receive larger foundation grants than the formula calls for.
- Some districts may have to offer higher salaries than others in order to attract and retain qualified teachers. For example, a district with long commuting times or a high cost of living may need to pay teachers more than other districts. To compensate for this, the foundation grant includes additional funding for districts that are expected to have above-average salary costs. This adjustment is known as the Geographic Cost of Education Index.

5 Further details on the current state school aid system are available in Volume 9 of the 2014 Maryland Legislative Handbook, Chapter 3. "Legislative Handbook Series, Volume 9: Education in Maryland," *Department of Legislative Services*, last modified 2014, http://mgaleg.maryland.gov/Pubs/LegisLegal/2014-legislativehandbookseries-vol-9.pdf. Components of the state education budget other than direct aid to school districts, such as the teacher retirement system, are outside the scope of this report.

6 Bruce Baker, "The Emerging Shape of Educational Adequacy: From Theoretical Assumptions to Empirical Evidence," *Journal of Educational Finance* 30, no. 3: (2005): 259–287, http://www.jstor.org/stable/40704236.

Targeted programs: These programs provide additional funding for evidence-supported resources—such as one-on-one instruction and smaller class sizes—needed to educate students with certain special needs. There are three targeted programs:

- *Compensatory education:* Funding for low-income students, currently measured by the number of students eligible for free and reduced-price meals.
- *Limited English proficiency:* Funding for students who are English language learners.
- *Special education:* Funding for students who have certain disabilities.

The cost of these programs is calculated using a formula that incorporates the number of students in each district belonging to each group, a student weight assigned to each program, and the foundation level. The student weights used in this calculation are shown in Table 1.

Table 1. Targeted Program Weights

PROGRAM	WEIGHT
Compensatory Education	97%
Limited English Proficiency	99%
Special Education	74%

For example, schools are expected to spend an additional $5,153 for each student in special education—74 percent of the $6,964 foundation level.[7] This cost is divided between the state and the districts, with the state paying a greater share of costs for low-wealth districts. The state pays a minimum of 40 percent of targeted program costs in each district.[8]

Guaranteed tax base: The guaranteed tax base provides additional funding to low-wealth school districts and encourages these local governments to fund schools above the minimum required level. Each district that has wealth per pupil below a certain threshold receives a state match on any education funding above the required level, up to a cap. The formula for this program has three parameters:

- *Threshold:* The maximum per-pupil wealth for a district to qualify for guaranteed tax base funding. The further below this threshold a district's wealth is, the more funding it receives. The current threshold is 80 percent of statewide average wealth per pupil.

7 Because students in the targeted programs are also counted in the foundation formula, the total cost for each student in special education is $12,117–$6,964 from the foundation formula plus $5,153 from the targeted formula.

8 Although much of Maryland's school finance system was designed through an analytical process, the funding floors for targeted programs were added legislatively after this process was complete.

- *Match rate:* The rate at which the state matches districts' additional educational effort. The more local funding a district invests in education (above the required amount), the more match funding it receives.[9] The current match rate is 100 percent.
- *Cap:* The maximum per-pupil grant, expressed as a share of the foundation level. The current cap is 20 percent. This means that no district can receive more than 20 percent of the foundation level, or $1,392.80 per pupil, in guaranteed tax base funding for the 2016–2017 school year.

Other grants: Several smaller grants, such as transportation aid, which are not related to district wealth. These grants are included in funding calculations, but not otherwise addressed in this report.

WEALTH MEASUREMENT

District wealth is a central concept in Maryland's school finance system and is used in calculating state grants for the foundation, targeted programs, and guaranteed tax base. Districts that have less wealth, as determined by the formula, receive more state funding. This means that the method used to calculate district wealth has a major effect on the equity of the school funding system as a whole. A wealth formula that more accurately measures local resources will direct more funding to the districts that need it most, producing a more equitable funding distribution. Conversely, a less accurate wealth formula will direct less funding to districts with the greatest needs, producing a less equitable distribution.

The state's current wealth formula is a weighted sum of four components, described in Table 2. Each district's wealth is calculated by multiplying each wealth component by its weight, and then adding the four components together.

Table 2. Wealth Components

COMPONENT	DESCRIPTION	WEIGHT
Personal Property	Tangible property owned by businesses, such as inventory, furniture, and equipment	50%
Real Property	Fixed property such as land and buildings	40%
Utility Operating Property	Real property owned by utility companies and used in those companies' day-to-day business, such as rights-of-way for power lines	100%
Net Taxable Income	Income subject to local taxation as defined in Maryland law	100%

9 Specifically, additional education effort is calculated by dividing the amount of local education funding above the required level by a district's wealth. This produces a theoretical tax rate, which the state applies in calculating the grant. The match rate is the level at which the state matches this theoretical tax rate.

Two aspects of the wealth formula are notable.

Net taxable income: The state changed the way it measures income in 2014 due to a change in federal policy.

- Historically, the state has measured local income on September 1, two weeks after the federal government's traditional tax extension filing deadline. However, the federal deadline was moved to October in 2005, making the September income data inaccurate.
- In 2014, the state began measuring income in both September and November and calculating grants using both sets of tax data. Any district that would receive more total aid from the November calculations receives this additional aid in the form of a newly created net taxable income (NTI) adjustment grant. This grant is phasing in over a multi-year period.

Treatment of TIF districts: The state's measure of real property value includes the full assessed value of any property contained in tax increment financing (TIF) districts. TIF districts are areas where local governments have invested in infrastructure or redevelopment projects, planning to repay borrowed funds as the property's value increases. As the property tax revenue from a TIF district grows, this growth is used to pay down the debt rather than going into the local jurisdiction's general fund. Until the debt is fully paid, this revenue cannot be used to fund education. For this reason, development within TIF districts reduces the amount of state aid a school district receives because the new development increases the school district's measured wealth but does not increase the amount of local tax revenue available for funding schools. Under the current system, TIF districts have the potential to erode the funding available for education.

3 Equity Measures

Education is one of the most important public investments Maryland makes in its children and its future. It has the potential to open career paths to students from communities that have historically been excluded from opportunities. But it can only perform this role effectively if equitable educational resources are made available to all children.

Equity is one of two criteria often used to evaluate school finance systems—alongside adequacy—and these criteria are sometimes confused. Adequacy measures whether a school district has enough funding to ensure that students are able to meet basic achievement standards. Equity measures whether the amount of school funding is related to other district characteristics in a way that unfairly disadvantages certain students or districts. A strong school finance system should be both adequate and equitable. In an inadequate system, some or all students do not have access to the resources required to meet achievement standards. In an inequitable system—even one in which every district meets adequacy standards—children who live in some districts cannot access the same educational opportunities as others. As students grow up, unequal educational opportunities turn into unequal job opportunities. In an equitable school finance system, the districts with the greatest needs are at least as well equipped to provide an excellent education as other districts. While the goal of funding equity is to equalize educational opportunities, it means more than simply equalizing funding. Each district's funding should take into account the needs of the students in that district, and districts with greater needs should not be less adequately funded than other districts. Because equity is such a crucial measure of Maryland's school finance system, it is the focus of this report.[10]

To determine how the measurement of wealth contributes to equity or inequity in the current school finance system—and how that system can be improved—this report evaluates how several proposed changes to the state wealth formula would affect the system's equity. For each proposed change, the Maryland Center on Economic Policy (MDCEP) simulated how much funding each district would receive under the revised formula, and then calculated how strong of a positive or negative relationship would exist between

10 The state's Department of Legislative Services has previously analyzed adequacy across the state. This analysis found that several districts did not meet adequacy targets in the 2012–2013 school year. "Legislative Handbook Series, Volume 9."

school funding and several district characteristics.[11] The data used for this analysis are described in Appendix A.

Although some analyses of school finance equity consider only the relationship between school funding and a measure of district wealth, this report takes a broader approach by considering multiple dimensions of equity. This provides a more detailed view of the funding distribution and can reveal disparities that a one-dimensional approach might hide. For example, school districts with high levels of income inequality may have both above-average income levels and above-average poverty rates. Examining only one of these dimensions would mean missing some effects of proposed policy changes. In addition to measuring economic aspects of school finance equity, it is important to measure the racial aspects of equity. Marylanders of color have historically not had equal access to educational resources, and improving economic equity would not on its own solve racial inequity in education. Multiple measures of equity contribute to a more complete understanding of the extent to which Maryland provides high-quality education to all children. A proposal that improves equity along multiple dimensions at the same time is preferable to one that improves some dimensions of equity while worsening others.

This report considers five characteristics relevant to funding equity:

Median household income: This is the most straightforward measure of how wealthy typical families in a school district are. Residents of districts with a high median income have an advantage in education funding because they are better able to pay the local property and income taxes needed to support high-quality schools. Districts with lower median incomes have less ability to raise local revenues and, as a result, students in these districts cannot always access the same educational resources. When school funding rises with a district's income, it undermines the goal of providing a high-quality education to all Maryland students.

Poverty rate among school-aged children: Students whose families struggle to make ends meet are much more likely to live in districts with low income and property wealth. Because these districts have a harder time funding high-quality schools on their own, students living in poverty in these communities are at risk of not getting the education they need to successfully move into adulthood. Furthermore, a large body of research indicates that children living in poverty grow up with stress that interferes with the learning process[12] and, as a result, schools need additional resources to provide them an effective

11 To validate the accuracy of this approach, MDCEP also simulated funding under the current rules, replicating each district's state funding with an error of less than 0.1 percent. Errors were due to the elimination of intermediate rounding steps, and were not large enough to affect equity findings. Several of the proposed changes considered in this report could be implemented in multiple ways, and required some interpretation in order to simulate each district's funding. For example, the state share of each formula grant was assumed to always be positive but never exceed 100 percent of each program's cost. Except where otherwise noted, local funding is assumed to remain at its 2013–2014 level, as likely local responses to changes in state funding cannot be predicted with certainty.

12 Gary Evans, Jeanne Brooks-Gunn, and Pamela Kato Klebanov, "Stressing Out the Poor: Chronic Physiological Stress and the Income-Achievement Gap," *Pathways*, last modified 2011, http://inequality.stanford.edu/_media/pdf/pathways/winter_2011/PathwaysWinter11_Evans.pdf.

education.[13] In an equitable school finance system, education funding increases as the district's child poverty rate increases.

Share of students who are black: The United States has a long history of racial inequality in education, and this legacy hits black students the hardest. According to a 2014 report from the Civil Rights Project at UCLA, Maryland schools are the fourth-most racially segregated in the country, with only 14 percent of black students in the state attending majority-white schools.[14] Making matters worse, Maryland school districts with larger shares of black students are less adequately funded, on average, than those with fewer black students.[15] Equalizing funding would not solve racial segregation, but inequitable funding worsens racial disparities in education. For example, a 2015 study found that school funding affects students' educational attainment, their wages, and their ability to afford necessities in adulthood.[16] In an equitable school finance system, education funding is either unrelated to the share of students who are black, or it rises with this share.

Share of students of color: Black students have a unique history and experience with racial segregation and unequal treatment, and for this reason they merit special attention. At the same time, students who are Latino, American Indian, Asian, Pacific Islander, or belonging to other racial and ethnic groups also face more barriers to accessing education than white students. To gain a full picture of funding equity, it is necessary to assess the relationship between funding and the entire population of students of color.[17]

Share of students enrolled in special education: Many students with disabilities need different resources than other students in order to succeed in school, which can increase the cost to a district of providing all students a high-quality education. In an equitable school finance system, the students and districts with the greatest needs can access all the resources necessary to meet those needs. Special education enrollment is one measure of the share of students in a district who have disabilities. As this share increases, funding should increase as well.

MEASURING FUNDING RESPONSIVENESS

For each of the district characteristics described above, the equity impacts of policy proposals are measured here in terms of the responsiveness of weighted per-pupil funding

13 Baker, "The Emerging Shape of Educational Adequacy."

14 Gary Orfield and Erica Frankenberg, "Brown at 60: Great Progress, a Long Retreat and an Uncertain Future," *The Civil Rights Project*, last modified May 15, 2014, https://civilrightsproject.ucla.edu/research/k-12-education/integration-and-diversity/brown-at-60-great-progress-a-long-retreat-and-an-uncertain-future/Brown-at-60-051814.pdf.

15 MDCEP analysis presented in Section 4.

16 C. Kirabo Jackson, Rucker Johnson, and Claudia Perisco, "The Effects of School Spending on Educational and Economic Outcomes: Evidence from School Finance Reforms," *National Bureau of Economic Research* No. 20847, last modified January 2015, http://www.nber.org/papers/w20847.

17 The share of students of color is defined as 100 percent minus the share of non-Hispanic white students.

to that characteristic.[18] This value represents the average percent change in funding that accompanies a 10 percent change in the characteristic. For example, if the responsiveness of funding to school-age poverty is 2 percent, this means that if one district's school-age poverty rate is 10 percent higher than another district's, weighted per-pupil funding is expected to be 2 percent higher in the first district than the second.[19]

For ease of interpretation, funding responsiveness is presented here so that higher values are always more equitable. For example:

- If the responsiveness of funding to poverty is 5 percent, this means that a 10 percent *increase* in poverty is associated with a 5 percent *increase* in funding.
- If the responsiveness of funding to median income is 5 percent, this means that a 10 percent *decrease* in median income is associated with a 5 percent *increase* in funding.
- In all cases, *higher* responsiveness values are *more equitable*.

To measure per-pupil funding, this report divides each district's total funding by a weighted enrollment value calculated using the same student weights as the state uses in calculating the targeted program grants. These weights are shown in Table 3.[20]

Table 3. Student Weights

STUDENT CHARACTERISTIC	WEIGHT
Low-income	97%
English language learner	99%
Special education	74%

18 In this report, "school funding" refers to the sum of total direct mandated grants and local appropriations for current expenses. Together, these resources represent the amount of state and local funding available to each district for current-year operating costs, most importantly instruction.

19 Responsiveness is defined as ±10 percent × elasticity, with a negative sign for median income and a positive sign for all other characteristics. Elasticities were estimated in R version 3.3.1 by single-variable regression after normalizing weighted per-pupil funding and district characteristics by dividing them by their statewide averages. Observations were weighted using total enrollment. Elasticities estimated in this manner should be interpreted only as a description of the funding distribution, and do not indicate how funding would respond to a change in district characteristics. Measures of statistical significance are not meaningful in this context because the analysis used the full set of school districts rather than a sample.

20 The student weights in Table 3 are the same as the program weights in Table 1. These weights represent the state's current judgment regarding the resources necessary to deliver an effective education to students with special needs. Results calculated using an alternative set of weights proposed by MSDE's contracted consultant group are reported in Appendix C. This report's major findings are true under both sets of weights.

Weighted per-pupil funding is a more accurate measure of equity than unweighted per-pupil funding because the student weights better represent the true resources needed to effectively deliver education to students in families struggling to make ends meet, students who are English language learners, or students with disabilities.[21] For example, consider two hypothetical school districts with the same total enrollment and the same total funding, but with twice as many low-income students in the first district as in the second. Unweighted per-pupil funding will be the same in the two districts, even though the district with more low-income students cannot deliver the same quality of education as the other district with this level of funding. Weighted per-pupil funding more accurately describes this situation. Because the district with more low-income students has higher weighted enrollment, its weighted per-pupil funding is lower. This reflects the fact that the higher-need district is not funded as well when all its needs are considered.

DEFINITION: Weighted Per-Pupil Enrollment

Weighted per-pupil funding is calculated in three steps:

1. Multiply the student weights for targeted programs by each program's enrollment.
2. Add weighted enrollment in each targeted group to total enrollment.
3. Divide total funding by weighted enrollment.

To see how this calculation works, consider two hypothetical school districts:

Box Table 1. Example Districts

	DISTRICT A	DISTRICT B
Total enrollment	1,000	1,000
Low-income enrollment	100	50
English language learner enrollment	100	50
Special education enrollment	100	50
Total funding	$10 million	$10 million

Both districts have unweighted per-pupil funding of $10,000. However, these resources are not as adequate in District A as in District B because the students in District A have greater educational needs. Weighted per-pupil funding accurately reflects this difference in needs:

21 Baker, "The Emerging Shape of Educational Adequacy."

Box Table 2. Weighted Per-Pupil Funding Calculation

	DISTRICT A	DISTRICT B
Total enrollment	1,000	1,000
Low-income enrollment ✣ 97%	97	48.5
English language learner enrollment ✣ 99%	99	49.5
Special education enrollment ✣ 74%	74	37
Weighted enrollment	1,270	1,135
Weighted per-pupil funding	$7,874	$8,811

All responsiveness values are calculated using data from the 2013–2014 school year, the last year for which complete data are available.

4 Current System Lacks Equity

Using the methodology described in Section 3, MDCEP evaluated the equity of Maryland's current school finance system. Funding responsiveness during the 2013–2014 school year is shown in Figure 1. In this year, weighted per-pupil funding was inequitable with respect to poverty, income, the share of black students, the share of students of color, and the share of students enrolled in special education. Specifically:

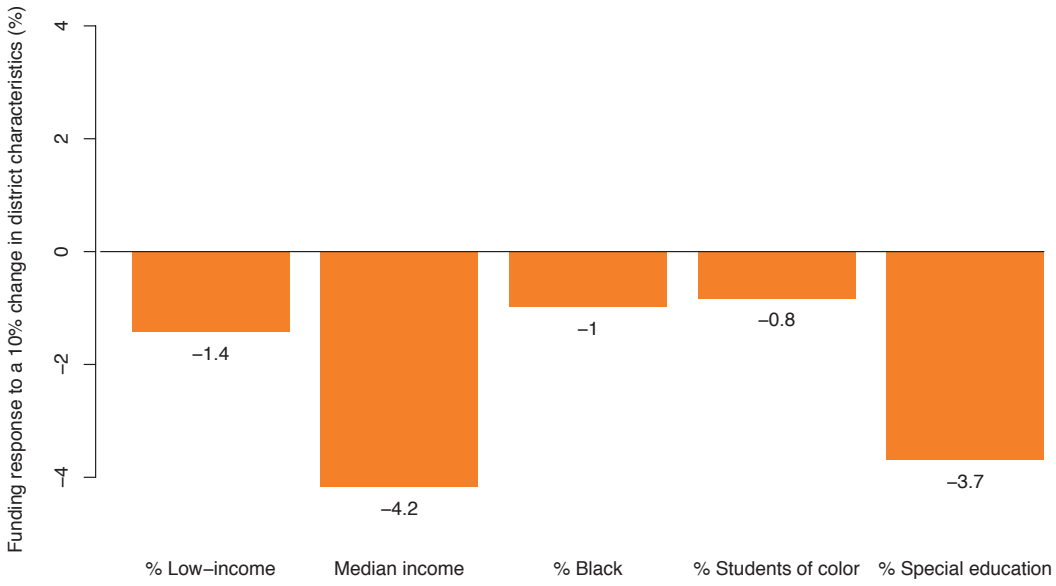
- A 10 percent increase in the school-age poverty rate was associated with a 1.4 percent decline in funding.
- A 10 percent decline in median household income was associated with a 4.2 percent decline in funding.
- A 10 percent increase in the share of students who are black was associated with a 1 percent decline in funding.
- A 10 percent increase in the share of students of color was associated with a 0.8 percent decline in funding.
- A 10 percent increase in the share of students enrolled in special education was associated with a 3.7 percent decline in funding.

This means that Maryland underinvested in education in school districts with high poverty, low incomes, large shares of black students or other students of color, or large shares of students in special education. This underinvestment has negative consequences for the students in these districts and for the state economy, as these students are likely to grow up with fewer opportunities, ultimately leading to a less-skilled workforce that is less attractive to employers.

While Figure 1 shows the distribution of school funding in the 2013-2014 school year, this does not perfectly match how funding would be distributed in the future if current policy continued. In 2013–2014, the net taxable income adjustment grant used to adjust for inaccurate September tax data (discussed in Section 2) was only 20 percent phased in. Under Maryland's current school finance system, funding for future years will be calculated with a fully phased-in NTI grant. As this situation represents the future path of spending under the current system, it is the correct benchmark to use in evaluating policy alternatives. Figure 2 shows the responsiveness of school funding if the NTI grant were fully phased in but all other grants were left unchanged. All subsequent policy alternatives discussed in this report assume a fully phased-in NTI grant, except proposals that change the timing of income measurement.

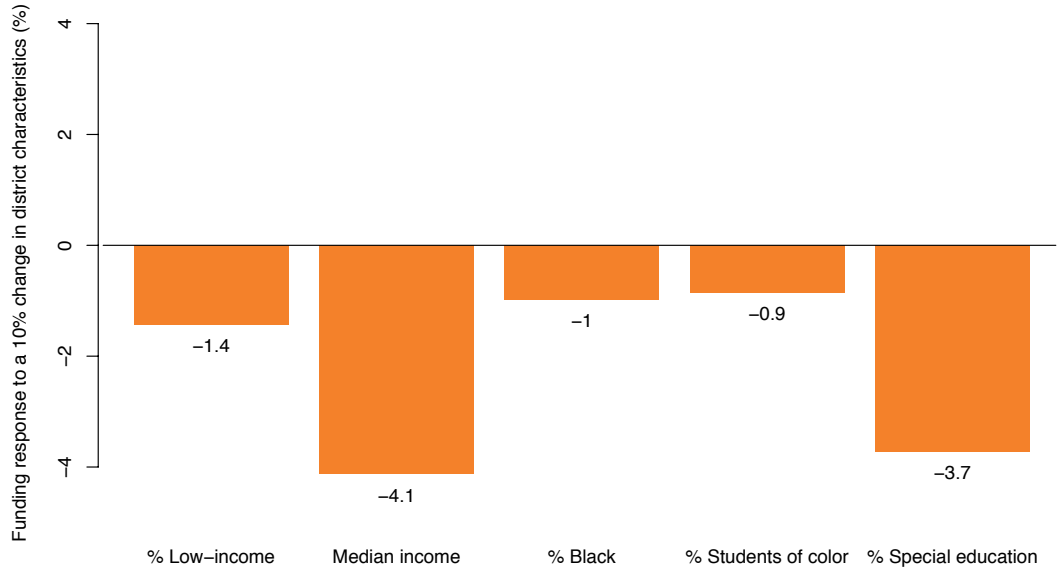
As Figure 2 shows, fully phasing in the NTI grant has only a small effect on equity. Responsiveness to income improves by 0.1 point, so that a 10 percent decline in median income is associated with a 4.1 percent decline in funding. Meanwhile, responsiveness to the share of students of color worsens by 0.1 point. A 10 percent increase in the share of students of color is associated with a 0.9 percent decline in funding. Both actual funding in the 2013–2014 school year and theoretical funding when the NTI grant is fully phased in fail to benefit all Maryland students equally.

Figure 1. Education Funding Was Inequitable in the 2013-2014 School Year



Source: MDCEP analysis of data described in Appendix A.

Figure 2. If Current Law Continues, Education Funding Will Remain Inequitable



Source: MDCEP analysis of data described in Appendix A.

5 Most Effective Policy Proposals

SUMMARY: MULTIPLICATIVE WEALTH MEASURE

What would this proposal do? It would change the formula used to measure local jurisdictions' wealth. Instead of adding income and property values, the formula would multiply them. The result is a more accurate measure of the local resources available to fund education.

How would this proposal affect equity? Adopting a multiplicative wealth measure would produce a **large improvement** in equity.

Key takeaway: This proposal is **strongly recommended.** A multiplicative wealth measure is the **most effective** way Maryland can improve school funding equity.

MULTIPLICATIVE WEALTH MEASURE

Under current law, district wealth is measured as a weighted sum of four wealth components: personal property, real property, utility operating property, and net taxable income. Each component is included because it forms part of the tax base available for local education funding. The three property components are part of the property tax base, and income is included because Maryland counties and Baltimore City can levy local income taxes. However, income also plays another role in school districts' ability to fund education, because it determines how much residents are able to pay in property taxes.[22]

Because it is difficult to convert the value of housing into money—to do so, a family might have to move or take out risky loans—families' ability to pay property taxes depends on their income. For example, consider two families living in similar housing, but with different income levels. These two families may have similarly sized property tax bills, but the family with higher income will have an easier time paying that bill. This means that local jurisdictions with higher income levels have an easier time raising revenue through property taxes, even if they have similar levels of property wealth. One way to account for this is to put greater weight on a district's income by including income as a multiplicative

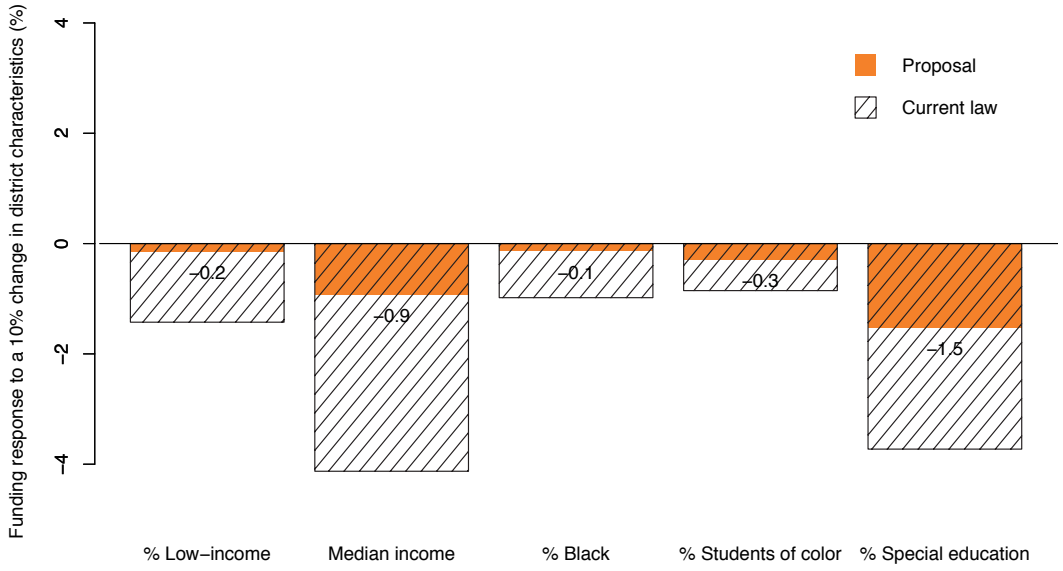
22 William Glenn, Mike Griffith, Lawrence Picus, and Allan Odden, "Analysis of School Finance Equity and Local Wealth Measures in Maryland" *APA Consulting*, last modified December 11, 2015, http://www.marylandpublicschools.org/Documents/adequacystudy/APA-POA-MarylandWealthEquityReport-Rev121115.pdf. The multiplicative wealth measure was originally recommended by the consultant group contracted by the Maryland State Department of Education.

component of the wealth formula rather than an additive component.[23] This approach accurately reflects the close relationship between local income levels and the ability to raise property tax revenues.

Figure 3 shows funding responsiveness under this proposal. For comparison, funding responsiveness under current law is shown as well. Measuring wealth with a multiplicative formula has a large positive effect on all dimensions of equity, reducing each aspect of the current system's inequity by more than half. Multiplicative wealth measurement would represent a strong improvement to Maryland's school finance system, and the state should adopt this proposal. However, even after this improvement, the funding system would still be inequitable on the whole without other adjustments.

This proposal would increase the state's investment in direct school aid by 13.3 percent.

Figure 3. A Multiplicative Wealth Measure Would Produce a Large Improvement in Equity



Source: MDCEP analysis of data described in Appendix A.

23 Specifically, the multiplicative wealth measure involves two steps. First, each district's per-pupil income is converted into an index, which is greater than 1 for districts with above-average income and less than one for districts with below-average income. Second, this index is multiplied by each district's property wealth.

SUMMARY: EXPAND THE GUARANTEED TAX BASE

What would this proposal do? It would expand the guaranteed tax base program, which directs additional funding to the school districts with the greatest needs.

How would this proposal affect equity? Expanding the guaranteed tax base would produce a **moderate improvement** in equity.

Key takeaway: This proposal is **strongly recommended.** Expanding the guaranteed tax base would increase funding in the school districts that need it most and encourage them to increase local investments in education.

EXPAND THE GUARANTEED TAX BASE

The guaranteed tax base grant is a powerful tool for directing education funding to the districts that need it most, and strengthening it would lead to a more equitable school finance system. The guaranteed tax base formula has three parameters:

- **Threshold:** The maximum per-pupil wealth for a district to qualify for guaranteed tax base funding. The further below this threshold a district's wealth is, the more funding it receives. The current threshold is 80 percent of statewide average wealth per pupil.
- **Match rate:** The rate at which the state matches districts' additional educational effort. The more local funding a district invests in education (above the required amount), the more match funding it receives. The current match rate is 100 percent.
- **Cap:** The maximum per-pupil grant, expressed as a share of the foundation level. The current cap is 20 percent. This means that no district can receive more than $1,393 per pupil in guaranteed tax base funding for the 2016–2017 school year.

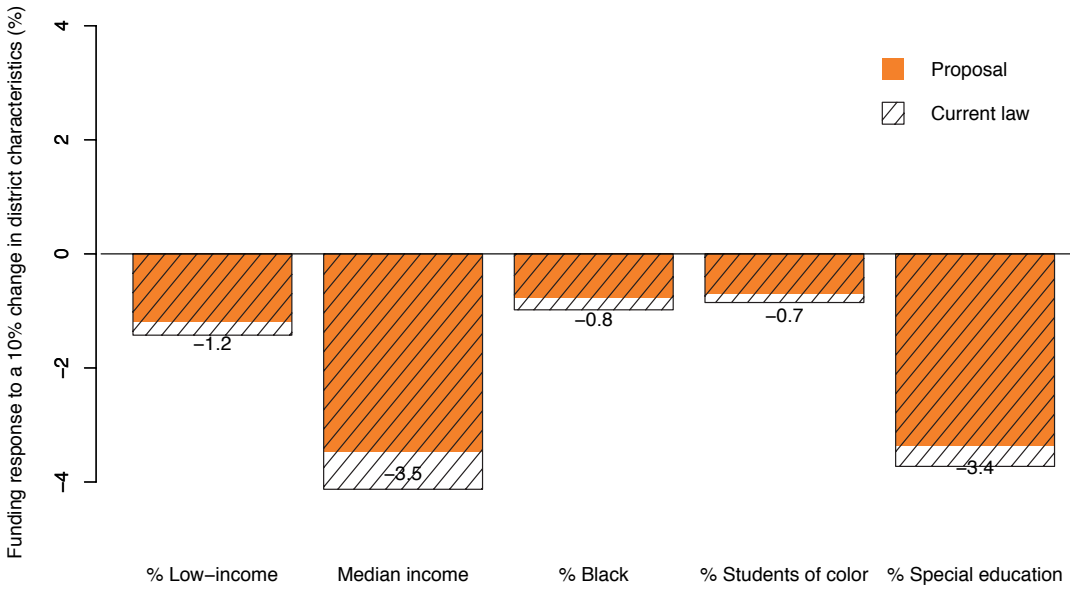
The proposal considered here would raise all three parameters of the guaranteed tax base:

- Raise the threshold to 100 percent.
- Match additional local investment in education at a rate of 150 percent.
- Cap the grant at 100 percent of the foundation level.

The equity impacts of expanding the guaranteed tax base are shown in Figure 4. Expanding the guaranteed tax base would produce a moderate improvement in equity. This proposal would improve responsiveness to income by 0.6 point, responsiveness to special education enrollment by 0.3 point, and to the three other district characteristics by 0.2 point. These gains are larger than those produced by most other proposals considered in this report, but they would still leave substantial inequity in Maryland's school finance system if not paired with other measures.

Policymakers could also expand the guaranteed tax base by raising any of its parameters in isolation. Raising the threshold or match rate would produce small improvements in

Figure 4. Expanding the GTB Would Produce a Moderate Improvement in Equity



Source: MDCEP analysis of data described in Appendix A.

equity. Raising the cap would have no effect on its own, because no district currently receives the maximum per-pupil grant.

Another proposal currently under consideration could affect the way the guaranteed tax base grant works. The consultant group the Maryland State Department of Education hired has recommended requiring local governments to fully fund their share of the three targeted programs, rather than only the foundation program.[24] By ensuring that all school districts have at least the minimum level of funding called for under the formula, this proposal would be a beneficial change. At the same time, because guaranteed tax base funding is determined in part by the amount local governments are required to contribute to education, a change in local funding responsibilities could require policymakers to revise the guaranteed tax base formula. This could be handled in two ways:

- The state could maintain the current formula, in which the state matches all local funding above the local share of the foundation program. If the state chose this option, the guaranteed tax base would remain a major source of funding for the districts with the greatest needs, but would largely not serve as an incentive to increase local funding.
- The state could revise the formula to match only local education funding above the local share of the foundation and targeted programs. If the state chose this option, the guaranteed tax base would continue to act as an incentive for local education funding, but would direct much less funding to the districts with the greatest needs.

24 Currently, local governments are required to fund the local share of the foundation program, but any local funding above this level is discretionary as long as local per-pupil funding is not cut from one year to the next.

Of these two options, the first would produce a larger improvement in equity.

Expanding the guaranteed tax base would increase the state's investment in direct school aid by 7.2 percent.

SUMMARY: USE NOVEMBER NTI

What would this proposal do? It would change the tax data the state uses to measure school districts' income. Instead of using both September and November data, the state would only use November data.

How would this proposal affect equity? Using November income data would produce a small improvement in equity.

Key takeaway: This proposal is **recommended.** Using November income data would simplify the state's wealth formula and improve its accuracy.

USE NOVEMBER NTI

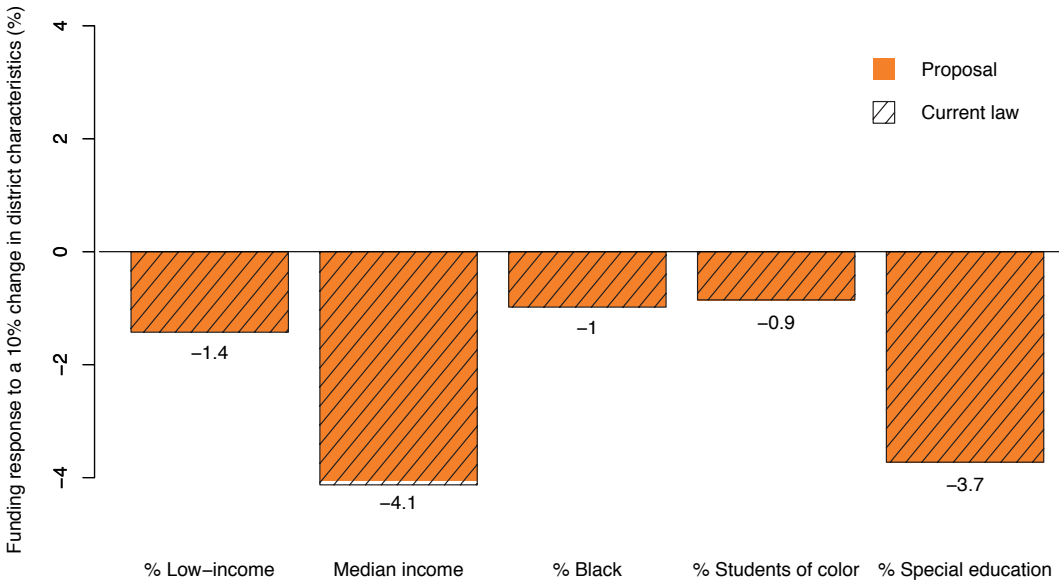
Under current law, the state measures district income twice: once using tax data available on Sept. 1 and once using the data available on Nov. 1. The September measurement, which has been inaccurate since a 2005 change in federal policy, is used to calculate the foundation, targeted programs, and guaranteed tax base grants. The November measurement is used to compensate school districts that lose funding from the inaccurate September measurement. Under this proposal, the state would measure income only once, in November. Districts that currently receive the NTI adjustment grant would be unaffected because they are already funded using the more accurate November data. Under this proposal, funding calculations for the other districts would also use the November data.

Figure 5 shows the effect of this proposal on funding responsiveness. This proposal would have only a small effect on equity. Responsiveness to income improves by less than 0.1 point. Under this proposal, a 10 percent decline in median income is still associated with a 4.1 percent decline in funding. All other dimensions of equity are unchanged.

Nonetheless, shifting to a single income measurement in November would be an improvement in school funding policy because the November tax data are the most accurate representation of local jurisdictions' true wealth. The state should take advantage of this opportunity to simplify its funding system, use the most accurate data available, and direct funding to the districts that need it most.

This proposal would generate a savings of 0.6 percent of state direct school aid. To maximize the benefit to the state's economy, the state should reinvest any savings in education.

Figure 5. Using November Income Data Would Produce a Small Improvement in Equity



Source: MDCEP analysis of data described in Appendix A.

SUMMARY: OPTIMIZE WEALTH COMPONENT WEIGHTS

What would this proposal do? It would simplify the formula used to measure local jurisdictions' wealth. The new formula would use either real property alone or real property multiplied by an income index.

How would this proposal affect equity? Optimizing the wealth component weights would produce a **small improvement** in equity.

Key takeaway: This proposal is **recommended.** Optimizing the wealth component weights would improve education funding equity and simplify the state's wealth formula.

OPTIMIZE WEALTH COMPONENT WEIGHTS

In the state's current wealth formula, each of the four wealth components is assigned a weight and the four components are added together. Table 3 shows the weights currently in use. Although all four wealth components are part of the local tax base available to fund education, these components are not equally good measures of districts' ability to fund their schools. To determine what mix of wealth components produces the most equitable

funding distribution, MDCEP analyzed 352 alternative weightings: 286 alternatives with the current, additive formula and 66 weightings with a multiplicative formula.[25]

Table 3. Wealth Component Weights

COMPONENT	WEIGHT
Personal property	50%
Real property	40%
Utility operating property	100%
Net taxable income	100%

The most equitable weighting eliminates all components but one: real property value.[26] Although all four wealth components are part of the tax base, real property alone is most effective in directing funding to the school districts that need it the most. Including personal property, utility operating property, or net taxable income as additive components of the wealth formula results in a less equitable funding distribution. This finding confirms a counterintuitive argument made by the Education Commission of the States: Even though multiplicative income formulas tend to improve equity, funding formulas with an additive income component are sometimes less equitable than real property alone.[27] Although the effect of optimizing the wealth component weights is small, it has the added benefit of simplifying the state aid formula.

Figure 6 shows responsiveness with additive weights optimized to include only real property. This proposal has a modestly positive effect on equity. Funding responsiveness to special education enrollment improves by 0.4 point, and all other dimensions of equity improve by 0.1 point.

Optimizing the additive wealth component weights increases the state's investment in direct school aid by 0.2 percent.

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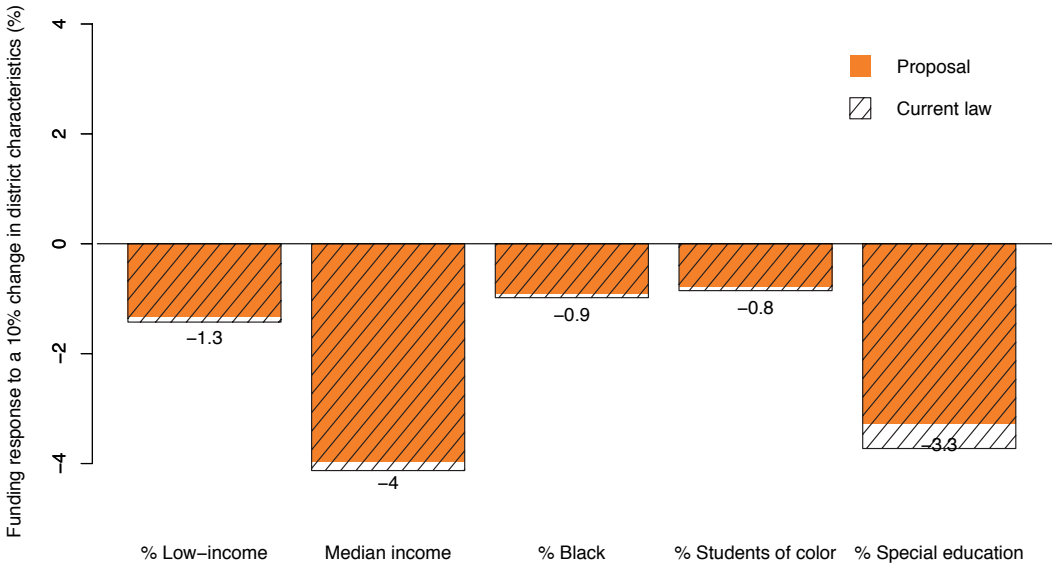
25 Each component weight was allowed to vary between 0 and 1 by increments of 0.1, with only weightings summing to 1 used to avoid duplication. For the current, additive formula, weights for all four components were adjusted (personal property, real property, utility operating property, and NTI). There are 286 such combinations of four weights. For the multiplicative formula, only the three property wealth weights were adjusted, because income is transformed into an index in this formula. There are 66 such combinations of three weights. As with all other proposals, this analysis was conducted with data from the 2013–2014 school year. It is possible that data from other years would have yielded different results.

26 In the multiplicative formula, income is retained as an index and multiplied by real property value

27 "Who Pays the Tab for K-12 Education? How States Allocate their Share of Education Costs," *Education Commission of the States* 14, no. 4 (2013), http://www.ecs.org/clearinghouse/01/08/47/10847.pdf.

Figure 6. Optimizing Additive Weights Would Produce a Small Improvement in Equity

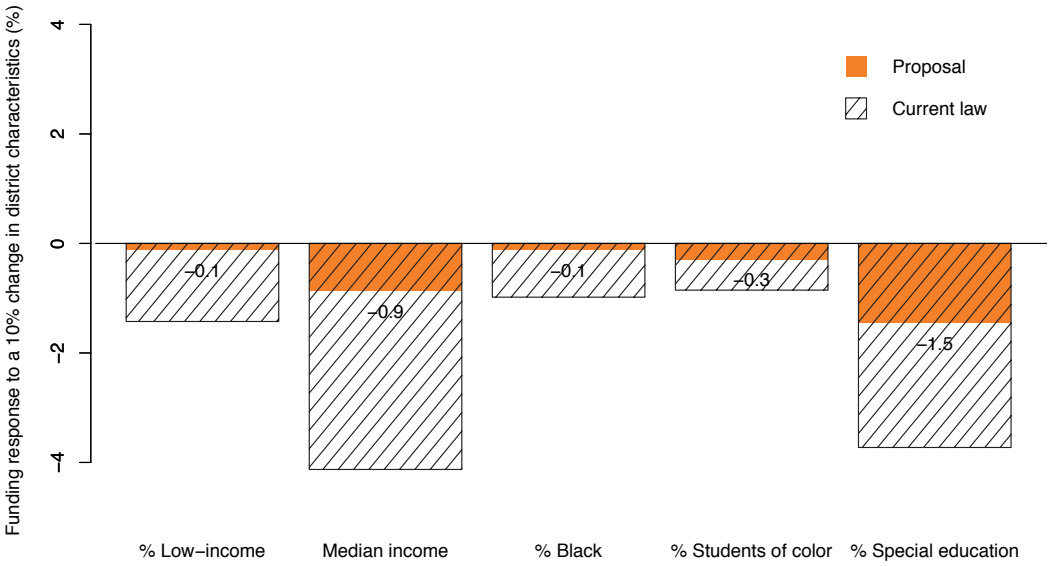


Source: MDCEP analysis of data described in Appendix A.

Figure 7 shows responsiveness with multiplicative weights optimized to include only real property. Relative to current law, this proposal produces large positive effects along all dimensions of equity. Compared to the non-optimized multiplicative wealth measure, this proposal produces a small improvement in funding responsiveness to poverty. The state should optimize the multiplicative wealth component weights used, both to improve the equity of the funding system and to eliminate unneeded complexity.

Optimizing the multiplicative wealth component weights increases the state's investment in direct school aid by 13.6 percent relative to current law, or 0.3 percent relative to the non-optimized multiplicative wealth measure.

Figure 7. Optimizing Multiplicative Weights Would Mean a Larger Improvement in Equity



Source: MDCEP analysis of data described in Appendix A.

SUMMARY: ELIMINATE MINIMUM GRANTS

What would this proposal do? It would eliminate minimum state funding levels for some categories of state education aid. Eliminating these grants, which benefit only a few wealthy districts, would result in a simpler, more rational formula.

How would this proposal affect equity? Eliminating minimum grants would produce a **small improvement** in equity.

Key takeaway: This proposal is **recommended.** Eliminating minimum grants would simplify the state's wealth formula and improve its accuracy.

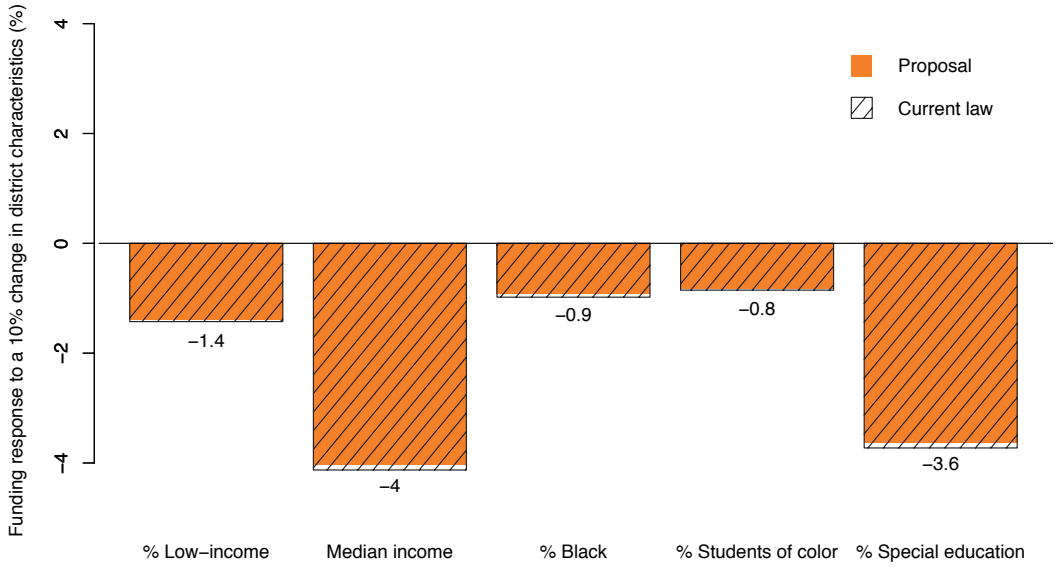
ELIMINATE MINIMUM GRANTS

Under current law, regardless of a school district's wealth, the state funds a minimum of 15 percent of each district's foundation costs (the baseline amount that reflects the total number of students) and 40 percent of all targeted programs (the additional funds for special education, English language learners, and students living in poverty). Because these minimum grants benefit only the school districts with the most per-pupil wealth as currently measured, they make the overall system slightly less equitable. The minimums also make the system less efficient by using state money that could otherwise be directed to the districts with the greatest needs. Figure 8 shows responsiveness with the minimum grants eliminated.

Eliminating minimum grants would slightly improve the equity of Maryland's school finance system, increasing funding responsiveness to all district characteristics other than poverty by 0.1 point. Although this proposal would produce only small improvements in equity, it is also worth pursuing because it would create a more straightforward relationship between district wealth and state funding.

This proposal would generate a savings of 1.5 percent of state direct school aid. To maximize the benefit to the state economy, this money should be reinvested in education.

Figure 8. Eliminating Minimum Grants Would Produce a Small Improvement in Equity



Source: MDCEP analysis of data described in Appendix A.

6 Other Policy Proposals

SUMMARY: DISREGARD TIF PROPERTY VALUE

What would this proposal do? It would change the formula used to measure local jurisdictions' wealth by excluding property located in tax increment financing districts because some of the taxes from this property cannot be used to fund education.

How would this proposal affect equity? Disregarding TIF property would have **very little impact** on equity.

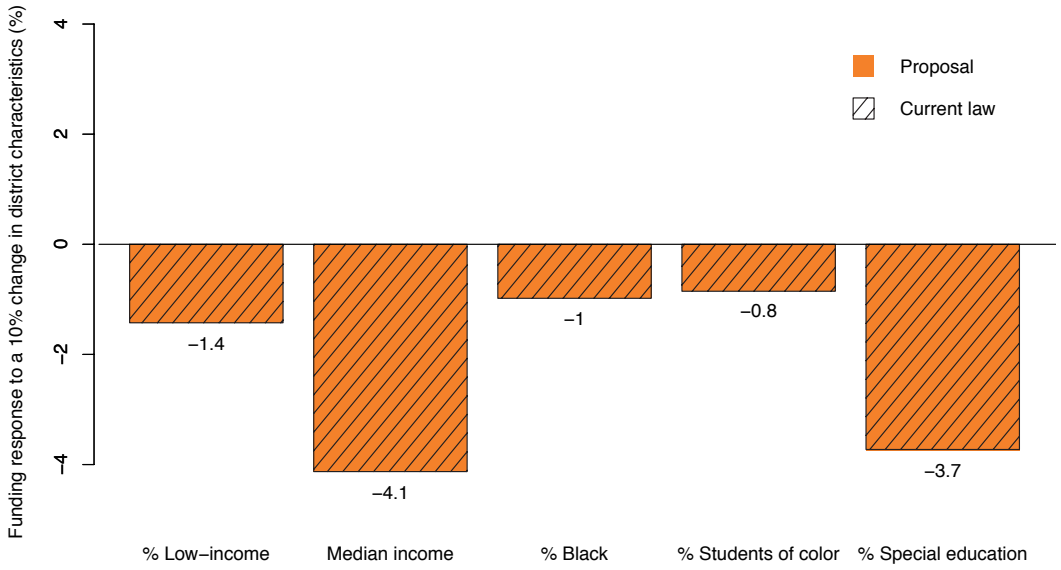
Key takeaway: This proposal would produce only small changes in school funding, with almost no effect on equity. If policymakers decide to disregard TIF property, they should consider also adopting measures to reduce incentives for local governments to create TIF districts.

DISREGARD TIF PROPERTY VALUE

Under current law, the value of all property in tax increment financing (TIF) districts is included in the wealth formula. Because some revenues from TIF district property taxes are used to pay off debt the jurisdiction took on to help finance development projects, they are not available to fund education. As a result, new development within TIF districts—or appreciation of existing property in a TIF district—has the potential to erode education funding. Each additional dollar in TIF property value reduces state aid through the wealth formula, but it does not increase local fiscal capacity.

To address this problem, some have suggested that some or all of the property in TIF districts should be excluded from the wealth formula. In practice, this would shift funding from school districts with little or no TIF property to those with more TIF property. Thus, Anne Arundel County, Baltimore City, and Prince George's County would gain funding under this proposal, while 19 districts would see small funding cuts. Because they receive the minimum state grants, Talbot and Worcester Counties would see their funding unchanged. Figure 9 shows responsiveness with all TIF property value excluded from the wealth formula.

Figure 9. Disregarding TIF Property Value Would Have Very Little Impact on Equity



Source: MDCEP analysis of data described in Appendix A.

This proposal would have very little impact on the equity of Maryland's school finance system. Responsiveness to the share of students of color improves by 0.1 point, while all other dimensions of equity are unchanged. A related proposal that only partially excludes TIF property would have similar equity effects.

Disregarding TIF property value in the wealth formula would have a secondary effect of encouraging local jurisdictions to create more TIF districts because it would effectively allow them to shift some of the costs of this policy onto the state. If the state adopts this proposal, policymakers should consider whether this effect is desirable and whether additional steps to counteract this effect are appropriate.

Disregarding TIF property value in the wealth formula would leave the state's investment in education essentially unchanged.

The state could address the role of TIF districts in education funding in two other ways:

- The state could revise its maintenance of effort rules to require local jurisdictions to replace any education funding lost due to the decision to create a TIF district. This would prevent TIFs from adversely affecting school funding, avoid cuts to school districts without TIF property, and avoid creating an incentive for local jurisdictions to create more TIF districts. However, this proposal would increase the fiscal burden on local jurisdictions with large amounts of TIF property, especially those that are less wealthy.
- The state could create a TIF adjustment grant similar to the current NTI grant. This would require measuring real property value twice—once with TIF property

included in local wealth and once disregarding TIF property. Funding for each district would then be determined by the greater of these calculations. Districts with large amounts of TIF property would gain from this proposal, while funding for other districts would not change.[28] This proposal would prevent TIFs from adversely affecting school funding, avoid cuts to school districts without TIF property, and avoid increasing any jurisdiction's local fiscal burden. However, it would create an incentive for local jurisdictions to create more TIF districts.

These two proposals would both have a slightly negative impact on equity.

SUMMARY: COMPARABLE WAGE INDEX

What would this proposal do? It would change the way the state adjusts education funding for differences in local prices and amenities, such as commute times. The current Geographic Cost of Education Index would be replaced with a comparable wage index.

How would this proposal affect equity? The comparable wage index would have a **mixed effect** on equity. School funding would be less equitable along economic lines, but more so along other dimensions.

Key Takeaway: The state should **prioritize policy changes that would consistently improve equity.** The comparable wage index has important weaknesses as a method for calculating geographic cost adjustments. However, the state should consider structural changes in the way it makes these adjustments.

COMPARABLE WAGE INDEX

Under current law, the foundation grant includes additional funding for certain districts to account for differences in the salaries needed to attract and retain qualified teachers. This additional funding, referred to as the Geographic Cost of Education Index, is calculated using a statistical model that incorporates the local cost of living, local characteristics such as commute times, and student body characteristics such as the share of students who are eligible for free and reduced-price meals.[29] Districts in which this index exceeds the statewide average receive additional funding.

The Maryland State Department of Education's consultants have proposed replacing the Geographic Cost of Education Index with a comparable wage index. This index assumes that the relative pay of school employees working in different areas should mirror the

28 A temporary version of this proposal applying only to future TIF districts was passed in 2016. Because this law does not apply to existing TIF districts, this report does not analyze its equity consequences. See Scott Gates, "Fiscal and Policy Note: State Education Aid—Real Property Valuation—Tax Increment Financing," *Department of Legislative Services*, last modified March 21, 2016, http://mgaleg.maryland.gov/2016RS/fnotes/bil_0005/hb0285.pdf.

29 Jennifer Imazeki, "Geographic Cost of Education Adjustment for Maryland" *APA Consulting*, last modified June 1, 2016, http://www.marylandpublicschools.org/Documents/adequacystudy/APAPOAGCEIFinalReport070716.pdf.

geographic differences in pay for other workers. For example, if professionals other than teachers working in Montgomery County take home 17 percent more, on average, than professionals statewide, the comparable wage index assumes that teachers in Montgomery County should also take home 17 percent more than teachers statewide.[30] Because the comparable wage index only uses data available annually from the Census Bureau, it is easy to recalculate each year.

The consultant group has also recommended three structural changes in the state's geographic cost adjustment:

- Adjusting funding both upward and downward using the comparable wage index. Currently, districts expected to have below-average costs do not lose funding as a result.
- Adjusting both the foundation and targeted programs. Currently, only foundation funding is adjusted for regional costs.
- Breaking the geographic cost adjustment into state and local shares. Currently, the state pays the full cost of the Geographic Cost of Education Index.

The comparable wage index has one important shortcoming in comparison to the current Geographic Cost of Education Index. Because the comparable wage index does not account for student population characteristics such as the share of students in low-income families, it does not accurately reflect all factors affecting teachers' location decisions. School districts in areas where many families struggle to make ends meet often have higher teacher turnover than other districts, which can adversely affect students' academic performance.[31] Studies have found that increasing teacher pay is one effective way to address this problem.[32] Because the comparable wage index does not account for these costs, it does not reflect the true variation in districts' salary needs.

The consultants' report argues that the share of students in low-income families is already incorporated into funding formulas through the student weights used to calculate targeted program grants. However, the student weights as currently calculated are not a substitute for geographic cost adjustment. The methodology used to calculate student weights focuses on the resources needed to effectively educate students with different needs, assuming that costs are the same across the state.[33] If the price of educational resources—such as the salary needed to attract and retain qualified teachers—is higher in a given district, student weights alone will not allocate enough additional funding to the districts with the greatest needs.

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30 Ibid. The statistical approach used to estimate the comparable wage index also controls for differences in the types of jobs and employers that exist across the state.

31 Baker, "The Emerging Shape of Educational Adequacy."

32 Charles Clotfelter, Elizabeth Glennie, Helen Ladd, and Jacob Vigdor, "Would Higher Salaries Keep Teachers in High-Poverty Schools? Evidence from a Policy Intervention on North Carolina," *National Bureau of Economic Research* No. 12285, last modified June 2016, http://www.nber.org/papers/w12285.pdf.

33 Mark Fermanich, Lawrence Picus, and Allan Odden, "Proposed Methodology for Establishing Adequate Funding Levels in the State of Maryland," *APA Consulting*, last modified December 8, 2014, http://www.marylandpublicschools.org/Documents/adequacystudy/ProposedMethodsEstablishingAdequatyFundingLevelsMD.pdf.

MDCEP analyzed the equity impacts of adopting two variations of the comparable wage index:

- Using the full range of the index, as the consultant group recommends. Compared to a system without any geographic adjustment—and compared to the current system—this would increase funding to some districts and cut funding to others.
- Truncating the index, using only values greater than one. This is the state's current practice with the Geographic Cost of Education Index. Compared to a system without any geographic adjustment, this would increase funding to some districts but not cut funding for any district. However, some districts would still lose funding relative to the current system under this proposal.

In both cases, the comparable wage index was applied to targeted programs as well as foundation costs, and was broken into a state and local share.[34]

Figure 10 shows responsiveness if the Geographic Cost of Education Index is replaced with the full range of the comparable wage index.[35] This proposal would have a mixed effect on the system's equity. Funding responsiveness to poverty and median income would worsen by 0.1 point and 0.7 point, respectively. Responsiveness to other dimensions of equity would improve by between 0.1 and 0.6 point.

Figure 11 shows responsiveness if the Geographic Cost of Education Index is replaced with only values of the comparable wage index greater than one. This proposal would also have a mixed effect on equity, but with smaller impacts across the board. Under this proposal, responsiveness to poverty and income would worsen by 0.1 point and 0.4 point, respectively. Responsiveness to other dimensions of equity would improve by between 0.1 and 0.4 point.

The comparable wage index has two important weaknesses: It does not consider all factors affecting school districts' ability to attract and retain qualified teachers, and it would make education funding in Maryland less equitable along economic lines. At the same time, it would modestly improve other dimensions of equity. These considerations suggest three courses of action:

- Maryland should prioritize policy changes that have a consistently positive effect on equity, or at worst no effect. The comparable wage index, which places lower-income districts at a relative disadvantage, does not meet this standard.
- Whatever method the state chooses to make regional cost adjustments, it should not use these adjustments to cut funding in any district. This is especially important when the method used to estimate costs does not consider all relevant factors.

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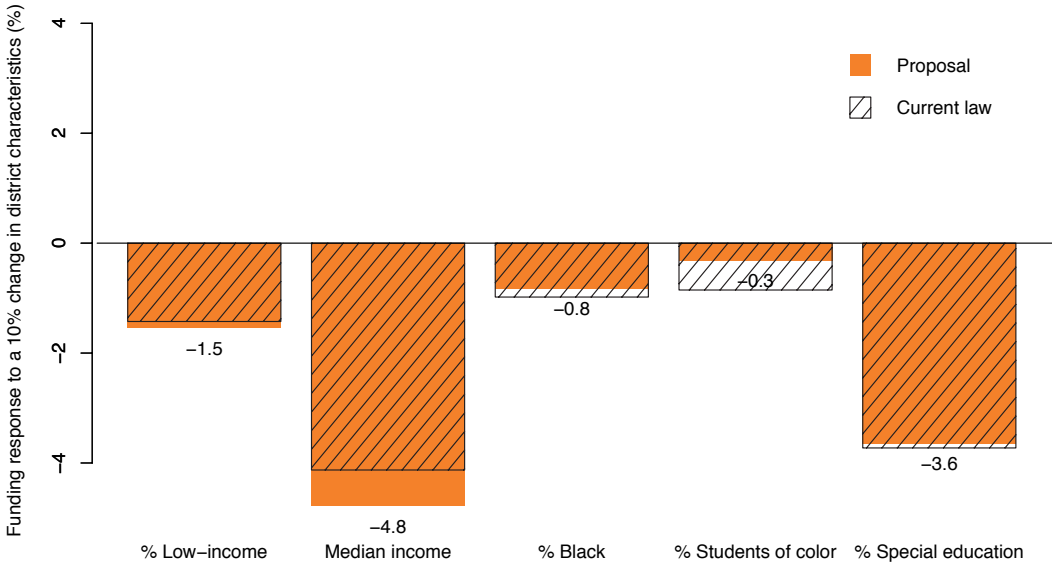
34 If the comparable wage index were adopted but all other components of the school aid formula were left unchanged, this would likely have a minimal impact on local funding—after adjusting required local contributions for the comparable wage index, only one district's required contribution was greater than its actual 2013–2014 appropriation in this analysis. If other school funding policies were changed at the same time, the effect on local education funding would likely be greater.

35 Note that both Figure 10 and Figure 11 compare the CWI to current law, not to a system without geographic cost adjustment.

- Dividing geographic cost adjustments into state and local shares is an effective way to reduce negative impacts on equity. This step would not require adopting the comparable wage index.

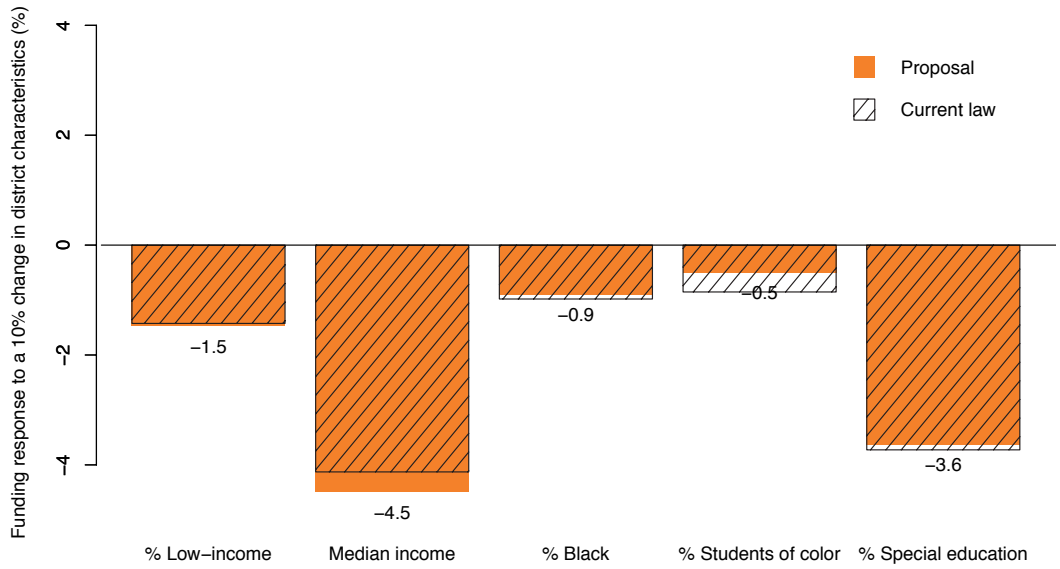
Adopting a comparable wage index would increase the state's investment in direct school aid by 4.9 percent. Using a truncated version of the comparable wage index would increase the state's investment in education by 5.6 percent.

Figure 10. The CWI Would Have a Mixed Effect on Equity



Source: MDCEP analysis of data described in Appendix A.

Figure 11. Truncating the CWI Would Have a Mixed Effect on Equity



Source: MDCEP analysis of data described in Appendix A.

7 Combined Proposal

SUMMARY: COMBINED PROPOSAL

What would this proposal do? It would combine the most effective proposals described in earlier sections.

How would this proposal affect equity? Combining the most effective proposals would produce a **large improvement** in equity.

Key takeaway: This proposal is **strongly recommended.** Each individual proposal would still leave substantial inequity in the funding distribution. By combining all the most effective proposals, the state can build a truly equitable school finance system.

Several of the policy alternatives considered in the previous sections would improve funding equity in Maryland's school finance system, and some, such as a multiplicative wealth measure, would produce large improvements. However, none of these proposals would eliminate funding inequity on their own. The only way to produce a truly equitable school finance system is to combine multiple positive changes.

Here, a combined proposal is considered, incorporating the most effective proposals from the previous sections:

- Multiplicative wealth measure
- Optimized property wealth component weights: real property only
- Income measured in November only
- Minimum grants eliminated
- Guaranteed tax base expanded

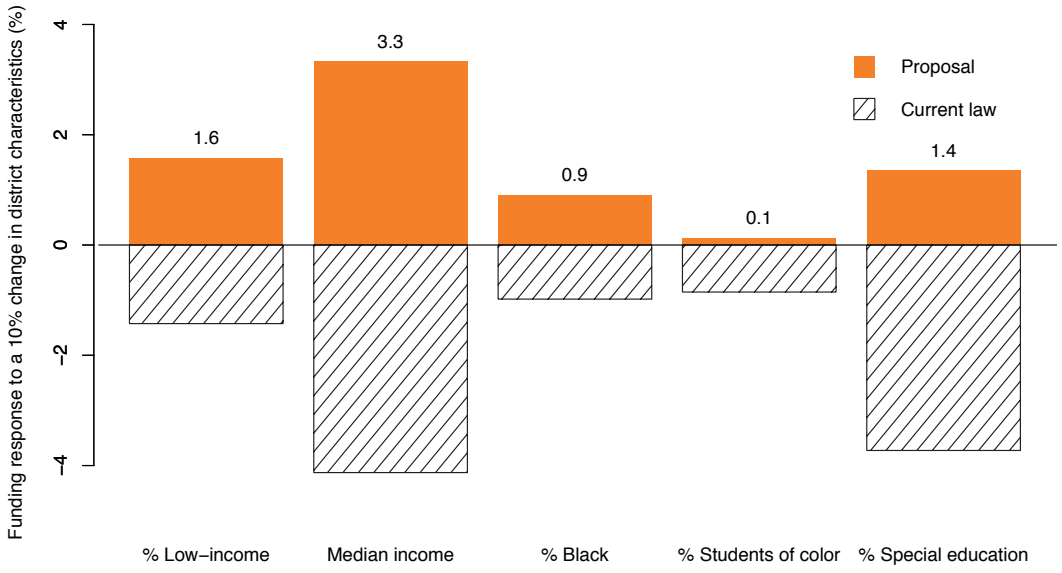
This proposal would produce a large improvement in equity, with positive funding responsiveness to all five district characteristics. Funding responsiveness under this combined proposal is shown in Figure 12.[36] Unlike current law, as well as each individual proposal, the districts with the greatest needs also have the most adequate funding when multiple policy improvements are combined. This is the first proposal considered in which the

36 Note that the equity impacts of the combined proposal are not simply the sum of the impacts of its components. In combination, proposals can have interactive effects that exceed their individual effects. For example, eliminating minimum grants with a multiplicative wealth measure has a larger equity impact than eliminating minimums under the current wealth measure, because the multiplicative measure more accurately determines which counties are wealthiest.

districts with the greatest needs are at least as well equipped as more advantaged districts to provide students with a high-quality education.

This proposal would increase the state's investment in direct school aid by 33.2 percent.

Figure 12. Combining Proposals Would Produce a Large Improvement in Equity



Source: MDCEP analysis of data described in Appendix A.

8 Recommendations

As the state considers ways to modify its school finance system, it should ensure that sufficient funding is getting to the schools that need it the most. When funding is distributed on a rational, equitable basis, all children can access the education they need and deserve. All Marylanders benefit from investments that give students the foundation they need to succeed later in life. A well-educated workforce is also good for businesses and will help attract more good jobs to Maryland and support a healthy economy. Underinvesting in education for some students means missing out on those gains.

In an equitable school finance system, students have access to the same educational resources, regardless of where they live. Right now, too many students in Maryland see their access to opportunity limited by their ZIP code. Improved investments in education, and an improved distribution of these investments, can change that. There are four steps Maryland should take to promote equity in education funding:

Adopt a multiplicative wealth measure. A multiplicative wealth formula does a better job of measuring districts' ability to fund education than the current formula. On its own, this change would reduce each dimension of inequity in the current system by more than half. This is the most effective single change Maryland can make to its school finance system, but it alone would not eliminate funding inequity.

Expand the guaranteed tax base. The guaranteed tax base grant makes Maryland's school finance system more equitable by directing additional state funding to low-wealth districts and providing an incentive for those jurisdictions to invest more local funds in their schools. Strengthening this program by raising its threshold, match rate, and cap would further improve equity.

Improve transparency, accuracy, and equity. The state should take three steps to make its school funding formula more straightforward. Each step would produce a small improvement in equity and reduce unneeded complexity.

- *Measure income once, in November.* The current system, in which income is measured twice, is needlessly complicated, produces inaccurate data, and reduces the share of funding going to the districts that need it most.
- *Streamline the wealth formula.* A simpler formula would more effectively direct funding to the districts that need it most. The state should adopt a multiplicative formula in which an income index is multiplied by real property value. If the state chooses not to adopt a multiplicative formula, it should measure wealth using real property alone.

- *Eliminate minimum grants,* which only benefit students living in the wealthiest districts. This change would produce a more rational system and produce savings that could be reinvested in schools.

Combine the most effective improvements to maximize gains. On their own, even the most effective improvements considered in this report would still leave Maryland with an inequitable school finance system. The only way to eliminate this inequity is to combine multiple improvements. By combining each of the positive changes recommended in this report, Maryland can ensure that all students have access to the education they need and deserve.

As Maryland policymakers review the state's school finance system, they have an opportunity to ensure that all children in our state have access to a high-quality education. The four recommendations above would bring significant improvement, but they address only one aspect of education policy. Other policy choices—such as the foundation level, student weights, access to pre-K programs, and approaches to student discipline—also have implications for equity. Policymakers should apply this lens to all aspects of education policy in Maryland. One of the most effective tools to improve educational equity is through **increased state investments in education**. While it may be tempting to cut or maintain the current level of funding, especially in trying fiscal times, this would reduce the state's ability to create a more equitable education system and a stronger economy. With responsible revenue policies, Maryland can afford to build an excellent education system—and we can't afford not to.

APPENDIX

A Data Sources

This report uses data on state revenues, local revenues, and school district characteristics from the 2013–2014 school year to estimate measures of funding equity under alternative policy scenarios. Although some variables are available in more recent years, this is the last year for which complete data are available. Table A-1 describes the specific data sources used.

Table A-1. Data Sources

VARIABLE	SOURCE	URL	COMMENT
Summary of Major State Aid Programs Fiscal Year 2014	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 1, columns 2–9. Actual grant amounts used to calculate responsiveness values in 2013-2014 and to validate funding simulations.
Total eligible FTE enrollment September 1, 2012 (total enrollment)	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 2, column 19. Used to calculate foundation funding under alternative scenarios, per-pupil wealth, and unweighted per-pupil funding. Used as observation weights in regression models.
Personal property subtotal	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 3, column 23. Used to calculate funding under alternative wealth measures.
Real property subtotal	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 3, column 28. Used to calculate funding under alternative wealth measures.
Utility operating property	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 3, column 30. Used to calculate funding under alternative wealth measures.
September net taxable income	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 3, column 31. Used to calculate funding under alternative wealth measures.

VARIABLE	SOURCE	URL	COMMENT
November net taxable income	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 3, column 32. Used to calculate funding under alternative wealth measures.
Eligible FARMS students + SEED October 31, 2012	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 7, column 60. Used to calculate compensatory education funding under alternative scenarios.
Limited English proficiency enrollment October 31, 2012	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 8, column 77. Used to calculate limited English proficiency funding under alternative scenarios.
Special education + SEED October 31, 2012	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 9, column 98. Used to calculate special education funding under alternative scenarios.
Prior year local appropriation	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 10, column 119. Used to calculate guaranteed tax base funding under alternation scenarios.
Summary of Major State Aid Programs Fiscal Year 2014—Based on November 1, 2012 NTI	Final Calculations: Major State Aid Programs FY2014-6-28-2013	http://marylandpublicschools.org/about/Documents/DBS/BudgetRes/STAID14_FINAL_06282013.pdf	Page 12a, columns 151–157. Used to calculate fully phased-in NTI adjustment and state funding using November income data.
Local appropriation for current expenses 2013–2014	Selected Financial Data 2013–2014, Part 1	http://archives.marylandpublicschools.org/MSDE/newsroom/special_reports/sfd/2013-2014/SFD2014-Part-1.xlsx	Table 2, column C. Used to calculate total funding in all scenarios.
Geographic Cost of Education Index	Legislative Handbook Series, Volume IX, 2014: Education in Maryland	http://mgaleg.maryland.gov/Pubs/LegisLegal/2014-legislativehandbookseries-vol-9.pdf	Page 78. Used to calculate foundation funding under alternative scenarios.
Comparable wage index, 2014	A Comparable Wage Index for Maryland	http://archives.marylandpublic-schools.org/adequacystudy/docs/APAPOAGCEIFinalReport070716.pdf	Page 7. Used to calculate foundation funding using the comparable wage index.
Poverty percent, age 5–17 in families	2014 Poverty and Median Household Income Estimates–Counties, States, and National	https://www.census.gov/did/www/saipe/downloads/estmod14/est14ALL.xls	Used to calculate responsiveness to school-age poverty rate.

VARIABLE	SOURCE	URL	COMMENT
Median household income	2014 Poverty and Median Household Income Estimates–Counties, States, and National	https://www.census.gov/did/www/saipe/downloads/estmod14/est14ALL.xls	Used to calculate responsiveness to median household income.
Black, non-Hispanic students	Local Education Agency (School District) Universe Survey Data	http://nces.ed.gov/ccd/pubagency.asp	Used to calculate funding responsiveness to racial composition
White, non-Hispanic students	Local Education Agency (School District) Universe Survey Data	http://nces.ed.gov/ccd/pubagency.asp	Used to calculate funding responsiveness to racial composition
Calculated agency race/ethnicity membership	Local Education Agency (School District) Universe Survey Data	http://nces.ed.gov/ccd/pubagency.asp	Universe of students whose race and ethnicity is defined. Used to calculate funding responsiveness to racial composition
Combined value of TIF districts by jurisdiction	HB 285 Fiscal and Policy Note: Education Aid—Real Property Valuation—Tax Increment Financing	http://mgaleg.maryland.gov/2016RS/fnotes/bil_0005/hb0285.pdf	Page 5. Used to calculate funding using TIF value disregards.

APPENDIX

B Budget-Neutral and Local Response Scenarios

By combining several of the most effective policy levers available, the combined proposal considered in Section 7 of this report would create a more accurate, equitable school finance system. However, there are two ways in which this proposal could deliver smaller improvements in equity than are predicted here. First, if policymakers modified the combined proposal to avoid increasing the state's investment in education, the districts with the greatest needs would receive less funding and equity would improve by a smaller amount as a result. Second, the districts that receive less funding under the combined proposal than under current law could make up for some or all of this reduction by increasing their local investments in education. Because the wealthiest districts are best-equipped to increase local education funding, this would likely reduce the improvement in funding equity. Both scenarios illustrate how important enhanced state investments in education are to improving equity. Maintaining the current level of investment would limit the state's ability to increase funding to the districts with the greatest needs, and an improvement in equity achieved through cuts rather than increased investment risks being diluted through increased local funding in the wealthiest districts.

SUMMARY: BUDGET NEUTRAL SCENARIO

What would happen in this scenario? This scenario assumes that policymakers modify the combined proposal to make it budget neutral.

How would this scenario affect equity? Compared to the original combined proposal, this modification would make Maryland's school finance system **less equitable**.

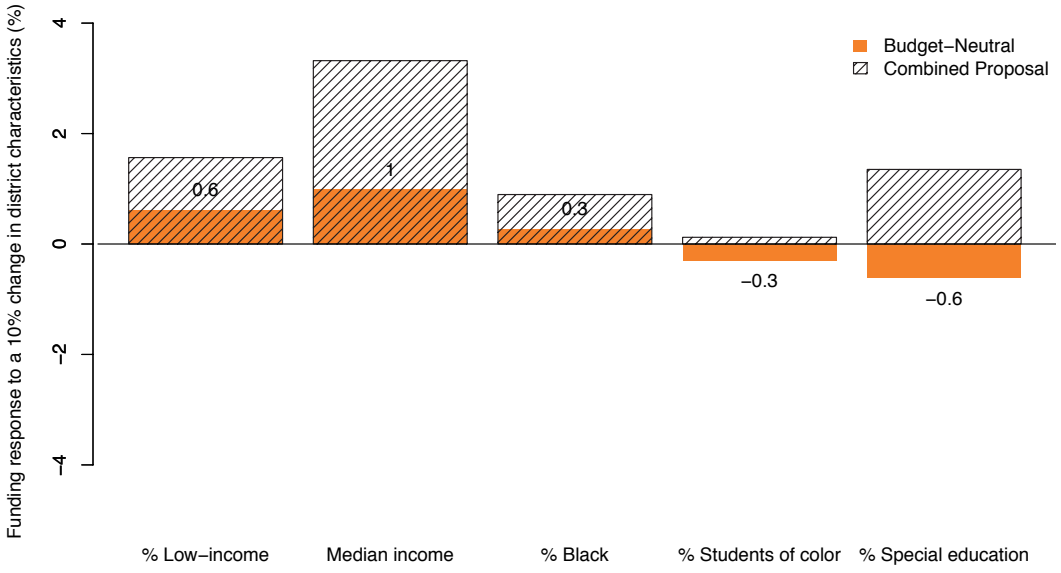
Key takeaway: The state should **reject this modification**. Increasing the state's investment in education is the most effective way to improve equity.

BUDGET NEUTRAL SCENARIO

Increased state investment in education will benefit the state's economy over the long term and ultimately lead to increased state revenues. At the same time, increasing that investment by one-third ($1.8 billion) in a single budget year would present a challenge given current state finances. The most effective way to deal with this challenge is to phase in formula changes over a number of years, as was done following passage of the Bridge to Excellence in Education Act.[37] A much less effective approach would be to create a budget-neutral version of the changes under consideration. Modifying the proposals considered in this report to make them budget neutral would reduce the amount by which equity can be improved.

Figure 13 shows funding responsiveness under a budget-neutral modification of the combined proposal considered in Section 7. The unmodified proposal is also shown for comparison. This budget-neutral modification would not produce nearly the same improvement in equity as the original combined proposal. Modifying individual proposals to make them budget neutral would similarly make them less effective in improving equity.

Figure B-1. Budget-Neutral Modifications Would Produce Smaller Equity Gains



Source: MDCEP analysis of data described in Appendix A.

37 During any such phase-in, it is critical to continue routine inflation adjustments to the foundation level. Neglecting inflation adjustments during the phase-in would lead to long-term underfunding of education, which would harm our state economy.

SUMMARY: LOCAL RESPONSE SCENARIO

What would happen in this scenario? This scenario assumes that local jurisdictions in which state funding declines under the combined proposal would respond by increasing local education funding.

How would this scenario affect equity? If wealthy jurisdictions respond to reductions in state funding by increasing local funding, it would make Maryland's school finance system **less equitable**.

Key takeaway: The most effective way to improve equity is to **increase the state's investment** in education, because there is not a risk that local jurisdictions will reverse this change.

LOCAL RESPONSE SCENARIO

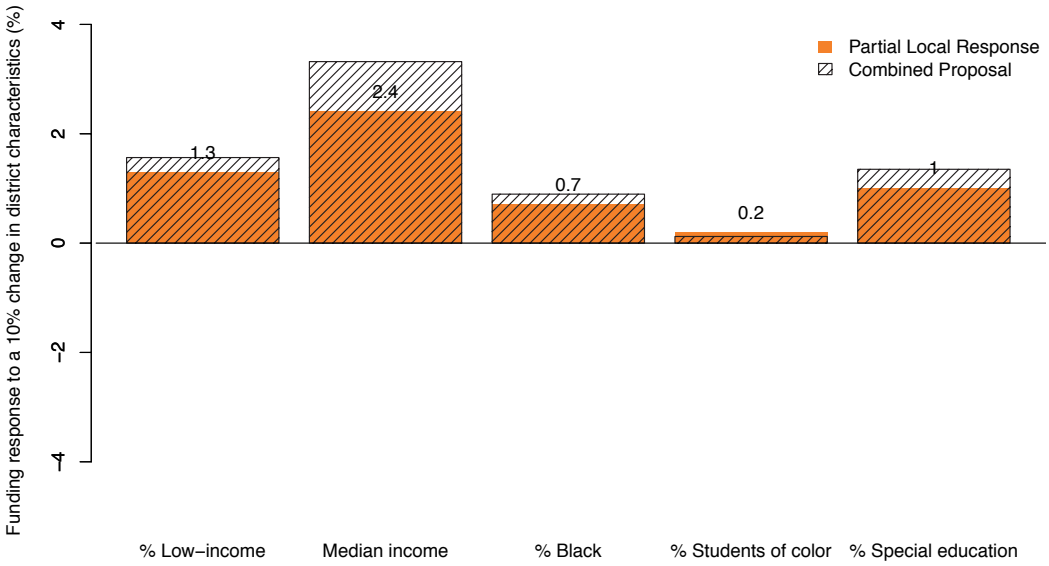
Each of the proposals considered in this report—with the exception of those requiring some districts to increase their local contributions—assumes that all districts maintain local funding at the 2013–2014 level. However, it is likely that at least some jurisdictions would increase local investment in education to make up for reductions in state aid. Under the state's maintenance of effort requirements, districts are generally prohibited from reducing their per-pupil contribution from one year to the next. However, if a district's level of state aid declines, that district is able to increase its local contributions to make up the difference. Because the wealthiest districts are best equipped to replace state dollars with local funds, this type of response is likely to dilute the effect of state policy changes meant to improve equity.

Figures 14 shows funding responsiveness if districts receiving less state funding than they did in the 2013–2014 school year make up half of the difference.[38] The no-response scenario is included for comparison. While it is not feasible to predict exactly how local jurisdictions would respond to changes in state education funding, this scenario provides an illustrative example of how local responses could affect equity. If a local jurisdiction decided to make up all of the lost state funds, it would further reduce funding equity.

A local response would reduce the improvement in equity but the change in state funding levels would still lead to substantial improvement. Because the maintenance of effort requirement prohibits school districts from reducing per-pupil funding but does not prohibit them from increasing it, proposals that improve equity by directing more resources to the districts with the greatest needs do not face the same risk from local responses as proposals that improve equity by reducing funding to wealthier districts.

38 Because local funding decisions for the 2013–2014 school year were made in light of that year's actual state funding distribution, not the theoretical distribution with the NTI adjustment fully phased in, this is the difference in state funding used to calculate local responses.

Figure B-2. Local Responses to Changes in State Funding Could Mean Smaller Equity Gains



Source: MDCEP analysis of data described in Appendix A.

APPENDIX

C

Responsiveness under Alternative Weights

The consultant group contracted by the Maryland State Department of Education has recommended revising the student weights used in the state's education funding formula. This revision would decrease funding for low-income students and English language learners, but increase funding for students in special education. The consultants' proposed weights are shown in Table C-1.

Table C-1. Consultants' Proposed Weights

STUDENT CHARACTERISTIC	WEIGHT
Low-income	35%
English language learner	35%
Special education	91%

Table C-2 shows funding responsiveness of the current system and proposed changes calculated using these student weights. This report's main findings remain true under the proposed weights:

- The current funding system is inequitable along four out of five dimensions of equity.
- Adopting a multiplicative wealth measure would produce a large improvement in equity.
- Other changes, such as expanding the guaranteed tax base, would also improve equity.
- Combining multiple proposals and investing more in education improves equity the most.

Table C-2. Funding Responsiveness Under Alternative Weights

PROPOSAL	% LOW-INCOME	MEDIAN INCOME	% BLACK	% STUDENTS OF COLOR	% SPECIAL EDUCATION
2013–2014 School Year	-0.6%	-2.4%	-0.2%	0.3%	-1.5%
Full NTI Phase-In	-0.5%	-2.3%	-0.2%	0.3%	-1.5%
Multiplicative Income	0.8%	1.0%	0.7%	0.9%	0.9%
Expand Guaranteed Tax Base	-0.3%	-1.7%	0.0%	0.5%	-1.1%
November NTI	-0.5%	-2.3%	-0.2%	0.3%	-1.5%
Optimize Additive Weights	-0.4%	-2.2%	-0.1%	0.4%	-1.0%
Optimize Multiplicative Weights	0.8%	1.0%	0.7%	1.0%	0.9%
Eliminate Minimums	-0.5%	-2.2%	-0.2%	0.4%	-1.4%
Disregard TIF Property	-0.5%	-2.3%	-0.2%	0.3%	-1.5%
CWI	-0.7%	-3.0%	-0.1%	0.9%	-1.4%
CWI, Truncated	-0.6%	-2.7%	-0.1%	0.7%	-1.4%
Combined Proposal	2.6%	5.4%	1.8%	1.5%	4.0%
Budget Neutral Scenario	1.6%	3.0%	1.1%	1.0%	1.9%
Local Response Scenario	2.3%	4.4%	1.6%	1.5%	3.6%

Note: This table describes school funding equity under the proposal considered in this report, with weighted per-pupil funding calculated using a different set of student weights. MDCEP did not simulate the results of using these weights to calculate targeted program grants. Responsiveness equals ±10% x elasticity of weighted per-pupil funding with respect to district characteristics, with a positive sign for all characteristics except income. Higher responsiveness indicates a more equitable funding distribution.