

Investing in Every Child

THE FUTURE OF COMPENSATORY EDUCATION AID IN MARYLAND



By Christopher Meyer



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Introduction and Summary

Public education is part of the foundation of a strong economy and thriving communities. High-quality schools create tomorrow’s skilled workforce. They draw families to put down roots in Maryland and encourage companies to do business here. Public schools also embody our shared understanding that every child has something to contribute to our state, and our shared commitment to providing the support children need to learn and thrive.

That is why it is essential to guarantee that children in every part of Maryland have access to first-rate public schools. As policymakers work to overhaul our education system this year and next, Marylanders have a once-in-a-generation opportunity to turn that promise into a reality. Compensatory education aid—targeted school funding intended to meet the needs of low-income students—is one of the most important policies this reform process must address. An effective support system for the students facing the greatest obstacles will enable these students to excel—and will ultimately build a stronger economy for all Marylanders.

CHALLENGE AND OPPORTUNITY

While all children benefit from an effective public school system, not all children have the same opportunities. Students who grow up in low-income families or struggling neighborhoods face a unique set of barriers that can make it harder for them to succeed in school.¹ For example, inadequate nutrition and environmental hazards like lead can create health problems. When families struggle to afford the basics, children often experience unhealthy levels of stress. Children face additional hurdles if they live in an unsafe neighborhood or have unstable housing.

When many low-income students are concentrated in a single school, these barriers often compound. As the multiple challenges facing students strain a school’s resources, it becomes harder for teachers and administrators to provide an effective education. As a result, all students in the highest-poverty schools have a harder time succeeding.² Fortunately, there are workable solutions that set all children up for success. Credible research shows that strategies such as expanded learning time, one-on-one tutoring, and comprehensive support services like counseling can enable schools to better meet all students’ needs.³ These strategies are especially vital for students in struggling families, and they can only succeed when schools have sufficient resources.

1 See discussion in Section 2, “Low-Income Children Face Barriers to Learning”

2 See discussion in Section 2, “High-Poverty Schools Face Additional Barriers”

3 See discussion in Section 2, “Additional Resources Can Help Struggling Students Succeed”

Maryland's school finance system currently leaves too many students behind. Twenty of the state's 24 school districts were underfunded as of 2015,⁴ and every district now faces a critical shortage of qualified teachers.⁵ Furthermore, multiple independent analyses have found that school funding in Maryland is inequitable—that is, the districts with the greatest needs are on average less well funded than their wealthier counterparts.⁶ Without adequate funding, districts and schools cannot provide students the support they need to succeed.

Maryland policymakers now have a rare opportunity to improve this system and ensure that every child has access to a first-rate education. State policymakers are in the midst of a top-to-bottom review of the state's education policies. The Commission on Innovation and Excellence in Education (also known as the Kirwan Commission, in honor of the body's chair) is reviewing the funding formulas and will make recommendations. A legislative overhaul based on these recommendations is expected during the General Assembly's 2018 session. If the process generates effective reforms, it would yield major benefits for Maryland children and our state's economy for many years to come.

IMPROVING COMPENSATORY EDUCATION

One of the most important policies the commission members are examining is **compensatory education aid**, one of four core components of Maryland's school funding formula. Compensatory education provides targeted funding intended to meet the educational needs of low-income students. Decisions made this year and next will have important implications for the effectiveness of our compensatory education system. Policymakers should take three steps to ensure that schools have the resources they need to help all students succeed:

- **Modernize the way low-income students are identified.** The state should update its method of counting low-income students, which is currently based on the number of students eligible for free or reduced-price school meals. This method is less reliable today than in the past because many schools now provide free lunch to every student. A better method is direct certification, which involves matching school records with data from other public agencies that already collect income

4 "Adequacy of Education Funding in Maryland," Department of Legislative Services, January 9, 2017, <http://mgaleg.maryland.gov/Pubs/CommTFWorkgrp/2017-Innovation-Excellence-in-Education-Commission-2017-01-09.pdf#page=77>

5 "Maryland Teacher Staffing Report," Maryland State Department of Education, September 2016, <http://www.marylandpublicschools.org/about/Documents/DEE/ProgramApproval/MarylandTeacherStaffingReport20162018.pdf>

6 Christopher Meyer, "Expanding Educational Opportunity in Maryland: The Role of Funding Formulas in Increasing Equity," Maryland Center on Economic Policy, 2017, http://www.mdeconomy.org/wp-content/uploads/2017/03/MDCEP_EdFundingMD_2017_FNL2lo.pdf

Bruce Baker, Danielle Farrie, Monete Johnson, Theresa Luhm, and David Sciarra, "Is School Funding Fair? A National Report Card: Sixth Edition," Education Law Center, January 2017, http://www.edlawcenter.org/assets/files/pdfs/publications/National_Report_Card_2017.pdf

Marc Tucker, "Summary: Gap Analysis for Building Block 2," National Center on Education and the Economy, July 26, 2017, <http://mgaleg.maryland.gov/Pubs/CommTFWorkgrp/2017-Innovation-Excellence-in-Education-Commission-2017-07-26.pdf#page=52>

information. This method would also require adjusting the formula used to calculate compensatory aid.

- **Strengthen support for low-income districts.** Maryland's lower-income school districts are less well funded than wealthier districts, which makes it harder for them to balance their budgets, attract well-qualified teachers, and ensure that students succeed. To fix this imbalance, Maryland should strengthen its current level of compensatory aid. Other approaches, like increasing per-pupil funding for all students while reducing the student weight used to calculate compensatory education aid, would be less effective in supporting the schools with the greatest numbers of low-income students.
- **Target resources toward concentrations of poverty.** Currently, school districts get the same amount of compensatory education aid for each low-income student. However, the barriers students face compound when large numbers of low-income students are attending a school. This makes it harder for all students in the school to succeed. Providing additional resources in communities that face concentrated poverty would enable students in these areas to access the supports they need to thrive.



Compensatory Education Is Necessary and Effective

LOW-INCOME CHILDREN FACE BARRIERS TO LEARNING

Children who grow up in families that struggle to afford the basics face an array of challenges both at home and in their communities. These challenges, in turn, make it more difficult for children to succeed in school. Maryland needs a comprehensive policy approach to give children the tools they need to thrive; schools are one part of such an approach. Providing additional resources to schools that serve large numbers of low-income students can help those students achieve their full potential.

A substantial body of evidence shows that students in low-income families have more difficulty learning because of factors beyond their control like health, unstable housing, higher stress levels, and less access to learning opportunities outside of the classroom. Nationwide, school districts with higher shares of students eligible for free or reduced-price meals (or FARMS) score lower on state standardized tests than higher-income districts.⁷ Districts in which less than 10 percent of students are FARMS-eligible score 1.8 grade levels ahead of the overall average, while districts in which more than 90 percent of students are eligible score 1.8 grade levels behind average (see Figure 1). Research also shows that low-income students score lower on assessments than otherwise-similar students within the same school.⁸

7 Sean Reardon, Demetra Kalogrides, Andrew Ho, Ben Shear, Kenneth Shores, and Erin Fahle, “Stanford Education Data Archive,” Stanford Center for Education Policy Analysis, 2016, <https://cepa.stanford.edu/seda/data-archive>

8 See for example John Fantuzzo, Whitney LeBoeuf, and Heather Rouse, “An Investigation of the Relations between School Concentrations of Student Risk Factors and Student Educational Well-Being,” *Educational Researcher* 43 no. 1, 2014, <http://journals.sagepub.com/doi/pdf/10.3102/0013189X13512673>. This study of Philadelphia students used sophisticated statistical methods to identify the independent effects of student characteristics and school characteristics on test scores.

Figure 1. Low-Income Students Have More Difficulty Succeeding in School

Average achievement relative to grade level by school district, 2009–2013



Source: MDCEP analysis of Stanford Education Data Archive.

Disparities in academic achievement emerge early on. A 2002 study found that kindergarten students in high-socioeconomic status families had test scores 60 percent higher than low-socioeconomic status students.⁹ Researchers using novel methods to assess the language processing skills of very young children found that disparities by socioeconomic status are already evident at the age of 18 months and expand as children mature.¹⁰

These disparities are linked to the large number of barriers low-income children face, each of which has been linked through research to a child’s chances of academic and career success:

- **Low-income children are less healthy at birth.** Low birth weight is more prevalent among low-income children than their wealthier peers.¹¹ Researchers have linked infant health disparities to environmental hazards, access to health care, and a mother’s overall health status at the time of birth.¹² In one study, Philadelphia students who were born prematurely or with low birth weight scored 2.9 points

9 David Burkam and Valerie Lee, “Inequality at the Starting Gate: Social Background Differences in Achievement as Children Begin School,” Economic Policy Institute, 2002, http://www.epi.org/publication/books_starting_gate/

10 Anne Fernald, Virginia Marchman, and Adriana Weisleder, “SES Differences in Language Processing Skill and Vocabulary Are Evident at 18 Months,” *Developmental Science* 16 no. 2, 2012, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3582035/>

11 Jennifer Parker, Kenneth Schoendorf, and John Kiely, “Associations between Measures of Socioeconomic Status and Low Birth Weight, Gestational Age, and Premature Delivery in the United States,” *Annals of Epidemiology* 4 no. 4, 1994, <http://www.sciencedirect.com/science/article/pii/1047279794900825>

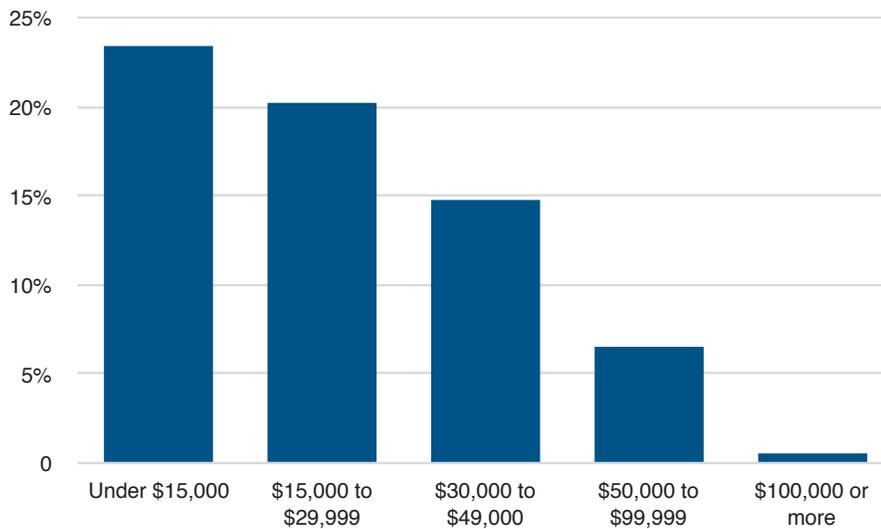
12 Anna Aizer and Janet Currie, “The Intergenerational Transmission of Inequality: Maternal Disadvantage and Health at Birth,” *Science* 344 no. 6186, 2014, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4578153/>

lower on reading assessments and 3.8 points lower on math assessments than otherwise-similar students at the same school.¹³

- **Low-income children are more likely to go hungry.** About 11 percent of Maryland households experience food insecurity, meaning that they cannot always afford enough healthy food.¹⁴ Food insecurity is especially prevalent among Maryland children in households with incomes below \$30,000 (see Figure 2).¹⁵ Food-insecure children are more likely to report poor health, are at risk of nutritional deficiencies related to cognitive and behavioral problems, and do worse in school than their peers whose families can always afford enough healthy food.¹⁶

Figure 2. Low-Income Children in Maryland Are More Likely to Experience Food Insecurity

Proportion of Maryland households with children experiencing food insecurity, 2011-2015



Source: MDCEP analysis of IPUMS CPS 2011-2015 Food Security Supplement.

13 Fantuzzo et al. 2014.

14 Alisha Coleman-Jensen, Matthew Rabbitt, Christian Gregory, and Anita Singh, “Household Food Security in the United States in 2015,” United States Department of Agriculture, September 2016, <https://www.ers.usda.gov/webdocs/publications/79761/err-215.pdf?v=42636>

15 MDCEP analysis of IPUMS 2011–2015 Current Population Survey Food Security Supplement.

16 John Cook and Deborah Frank, “Food Security, Poverty, and Human Development in the United States,” *Annals of the New York Academy of Sciences* 1136 no. 1, 2008, <http://onlinelibrary.wiley.com/doi/10.1196/annals.1425.001/full>

- **Low-income children face more environmental hazards.** A national survey found that low-income children have four times the risk of lead exposure as high-income children.¹⁷ Low-income children are also at greater risk of exposure to pesticides, air pollution, and indoor toxins like carbon monoxide and radon.¹⁸ These environmental hazards are linked to health problems and cognitive difficulties.¹⁹
- **Low-income children can't always get health care.** Although the Affordable Care Act significantly expanded access to health care in Maryland, low-income children are still more likely to lack insurance. In 2015, 9 percent of Maryland children with family incomes below the federal poverty line (about \$20,400 for a family of three) did not have health insurance, making them more than twice as likely as Maryland children overall to lack health coverage.²⁰ Research shows that children without health insurance are less likely to finish high school or earn a college degree.²¹
- **Low-income children have less stable housing.** Typical Maryland renters paid 32 percent more for their homes in 2015 than in 2001 (adjusted for inflation), while earning only 8 percent more. Low-income households are at the highest risk of spending more than half their income on rent.²² Rising rents can put low-income families at a greater risk of housing instability, which is in turn linked to lower school attendance rates and worse outcomes later in life. A study in Philadelphia found that students who were homeless at any point during the school year had lower attendance rates than otherwise-similar students at the same schools,²³ and evidence suggests that absences may have a larger impact on learning for low-income students than for their peers.²⁴
- **Low-income children live in less-safe neighborhoods.** A 2012 report on chronic absenteeism lists avoiding “unsafe situations on the way to and from school” as a significant reason for absences.²⁵ There is a significant link between the poverty rate and violent crime rate across metropolitan areas,²⁶ meaning students in

17 Gary Evans, “The Environment of Childhood Poverty,” *American Psychologist* 59 no. 2, 2004, <http://people.auc.ca/brodbeck/4007/article9.pdf>

18 Ibid.

19 Fantuzzo et al. 2014. Students with lead exposure also scored lower on math assessments, but the difference was not statistically significant.

20 MDCEP analysis of IPUMS 2015 American Community Survey.

21 Sarah Cohodes, Daniel Grossman, Samuel Kleiner, and Michael Lovenheim, “The Effect of Child Health Insurance Access on Schooling: Evidence from Public Insurance Expansions,” *The Journal of Human Resources* 51 no. 3, 2014, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.688.8495&rep=rep1&type=pdf>

22 MDCEP analysis of IPUMS 2001 and 2015 American Community Survey.

Will Fischer and Barbara Sard, “Chart Book: Federal Housing Spending is Poorly Matched to Need,” Center on Budget and Policy Priorities, 2017, <https://www.cbpp.org/research/housing/chart-book-federal-housing-spending-is-poorly-matched-to-need#Three>

23 Fantuzzo et al. 2014.

24 Douglas Ready, “Socioeconomic Disadvantage, School Attendance, and Early Cognitive Development: Differential Effects of School Exposure,” *Sociology of Education* 83 no. 4, 2010, <http://www.attendancecounts.org/wordpress/wp-content/uploads/2010/04/Ready-2010-2.pdf>

25 Robert Balfanz and Vaughan Byrnes, “The Importance of Being in School: A Report on Absenteeism in the Nation’s Public Schools,” The Johns Hopkins University, 2012, http://new.every1graduates.org/wp-content/uploads/2012/05/FINALChronicAbsenteeismReport_May16.pdf

26 Evans 2004.

high-poverty communities are more likely to experience unsafe situations that may keep them out of school. Neighborhoods where low-income children live also often pose a greater danger from traffic, with low-income children experiencing six times as many pedestrian accidents as other children.²⁷

- **Low-income children have fewer learning opportunities outside of school.** A longitudinal study of Baltimore students found that the greatest gaps in achievement between low-socioeconomic status students and their peers emerge not during the school year but in summertime.²⁸ The study found that students at all socioeconomic levels made significant gains during the school year, but low-socioeconomic status students' progress stalled over the summer. More advantaged students continued to learn over the summer, but more slowly. Other studies have found that low-income children have fewer books in their homes than higher-income children, on average, and are exposed to fewer words during early childhood.²⁹ These differences mean that middle- and upper-income children have opportunities to learn in many settings, while low-income children must rely more heavily on school.
- **Low-income children experience high stress levels that impact their brain development.** The conditions of poverty cause stress and anxiety in children that can impair brain development, leading to behavioral and cognitive difficulties that affect a child's ability to learn. Researchers have found that simultaneous exposure to multiple risks has a cumulative effect on children's physiological and psychological development beyond the effect of each risk in isolation.³⁰ A 2002 study tested low- and middle-income children in rural New York for anxiety, depression, and biological markers of chronic stress.³¹ The study found that low-income participants reported higher levels of psychological distress, had higher resting blood pressure, and had higher overnight levels of stress hormones than middle-income participants. A statistical analysis linked these stress markers to simultaneous exposure to multiple risks among low-income children, such as violence, family instability, and low-quality housing.³² Other studies have found that low-socioeconomic status children perform worse on tests of brain function related to language, memory, and cognitive control, and that these results are related to chronic physiological stress.³³

27 Ibid.

28 Karl Alexander, Doris Entwisle, and Linda Olson, "Schools, Achievement, and Inequality: A Seasonal Perspective," *Educational Evaluation and Policy Analysis* 23 no. 2, 2001, https://www.researchgate.net/profile/Linda_Olson2/publication/242305331_Schools_Achievement_and_Inequality_A_Seasonal_Perspective/links/542aa76c0cf29bbc1267bc5a.pdf

29 Gary, Evans, Jeanne Brooks-Gunn, and Pamela Klebanov, "Stressing out the Poor: Chronic Physiological Stress and the Income-Achievement Gap," *Pathways*, Winter 2011, http://inequality.stanford.edu/sites/default/files/PathwaysWinter11_Evans.pdf

30 Gary Evans and Kimberly English, "The Environment of Poverty: Multiple Stressor Exposure, Psychophysiological Stress, and Socioemotional Adjustment," *Child Development* 73 no. 4, 2002, <http://onlinelibrary.wiley.com/doi/10.1111/1467-8624.00469/full>

31 Ibid.

32 Ibid.

33 Martha Farah, David Shera, Jessica Savage, Laura Betancourt, Joan Giannetta, Nancy Brodsky, Elsa Malmud, and Hallam Hurt, "Childhood Poverty: Specific Associations with Neurocognitive Development," *Brain Research* 1110 no. 1, 2006 https://media.eurekalert.org/aaasnewsroom/2008/FIL_000000000605/FarahBrainResearch2006.pdf

Evans et al. 2011.

STUDENTS IN HIGH-POVERTY SCHOOLS FACE ADDITIONAL BARRIERS

While individual low-income students face an array of barriers to academic success, research shows that these barriers are often magnified when students are brought together into schools. In other words, a student attending a high-poverty school is likely to face more difficulty meeting academic standards than an otherwise-similar student in a low-poverty school.

The link between school composition and achievement was first documented in the 1966 Coleman report, a comprehensive examination of educational opportunity in the United States. The researchers, led by Johns Hopkins sociologist James Coleman, found that significant differences in achievement between schools remained after accounting for individual students' backgrounds.³⁴ The team's analysis indicated that this variation was primarily due to the family backgrounds of a student's classmates. That is, a student in a school that primarily serves relatively advantaged students is likely to score higher on assessments than an otherwise-similar student in a less-advantaged school.

More recent analyses using sophisticated statistical methods have confirmed this finding. For example, a study of students in Philadelphia schools found that, after controlling for individual student characteristics, a 10 percentage-point increase in the share of students eligible for free or reduced-price meals in a given school was associated with a 20-point decline in reading achievement and an 18-point decline in math achievement.³⁵ Analyses from other contexts have found similar results.³⁶ Some researchers have suggested that school-level concentrations of poverty pose the greatest challenge when the share of low-income students exceeds a threshold. The most frequently suggested value for this threshold is 50 percent low income.³⁷

The majority of evidence indicates that school-level concentrations of poverty affect all students, regardless of their individual family income.³⁸ For example, an analysis of students in New York State found that both low-income students and higher-income students were

34 James Coleman, Ernest Campbell, Carol Hobson, James McPartland, Alexander Mood, Frederic Weinfeld, and Robert York, "Equality of Educational Opportunity," National Center for Education Statistics, 1966, <http://files.eric.ed.gov/fulltext/ED012275.pdf>

35 Fantuzzo et al. 2014. These results are from models that included school demographics but not the school-level risk factors that were the focus of the study. See below for discussion of the full models.

36 Eric Hanushek, John Kain, Jacob Markman, and Steven Rivkin, "Does Peer Ability Affect Student Achievement?" *Journal of Applied Econometrics* 18 no. 5, 2003, <http://onlinelibrary.wiley.com/doi/10.1002/jae.741/epdf>. Note that Hanushek et al. found that the *achievement level* of a student's peers affected the student's own achievement. Because achievement and income are strongly related at the individual level, this finding supports the existence of a relationship between peers' *income* and a student's achievement.

Russel Rumberger and Gregory Palardy, "Does Segregation Still Matter? The Impact of Student Composition on Academic Achievement in High School," *Teachers College Record* 107 no. 9, 2005, <http://www.pined.info/pdf/found/4.pdf>

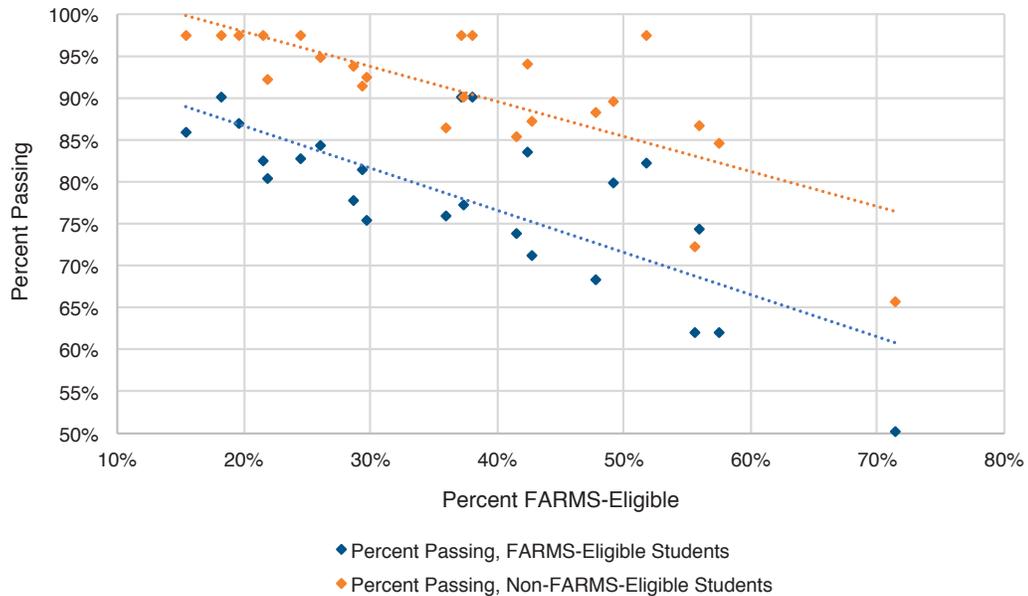
37 "Annotated Bibliography: The Impact of School-Based Poverty Concentration on Academic Achievement and Student Outcomes," Poverty & Race Research Council (PRRAC), 2015, http://www.prrac.org/pdf/annotated_bibliography_on_school_poverty_concentration.pdf

38 See for example Hanushek et al. 2003 and Rumberger and Palardy 2005. The Coleman report found that peer effects are most important for students of color, but still significant for White students.

more likely to fall behind if they attended a high-poverty school.³⁹ Data on high school algebra achievement in Maryland school districts show a similar pattern (see Figure 3).⁴⁰

Figure 3. All Students Have Lower Achievement in High-Poverty Maryland Districts

2016 HSA Algebra percent passing by school district and FARMS eligibility status



Source: MDCEP analysis of 2016 Maryland Report Card HSA Algebra and Special Services data.

Researchers have linked low academic performance in high-poverty schools to several challenges these schools face. Some of these arise directly from the challenges facing low-income students individually, while others are unique to the school setting.

- **Individual barriers build on each other.** As outlined in the prior section, low-income children face elevated risks of inadequate nutrition, health problems, and housing instability. They may have less access to reading materials and are more likely to have less positive family relationships than higher-income children. These conditions combine to produce psychological distress, behavior problems, and lower attendance at school. Research shows that students whose peers receive

39 PRRAC 2015.

40 MDCEP analysis of MSDE data available at www.mdreportcard.org. Note that this analysis, like others based on FARMS eligibility, may partially attribute student-level effects related to the depth of poverty to school- or district-level effects. In other words, to the extent that both FARMS-eligible and non-eligible students in high-poverty districts are less well-off than their counterparts in low-poverty districts, the association between district poverty and achievement could be caused by differences in how disadvantaged individual students are—even after disaggregating by FARMS eligibility status. This would also indicate that a simple count of FARMS-eligible students in a district will understate the degree of disadvantage facing the highest-poverty districts.

inadequate prenatal care, experience bouts of homelessness, or have few educational aspirations score lower on assessments—independent of these students’ individual circumstances.⁴¹

- **Schools often redirect resources toward behavior management.** Schools in high-poverty areas often respond to behavioral and attendance issues by placing a heavy focus on managing students’ conduct. This has the potential to exacerbate the stress students already face and can interfere with teachers’ and administrators’ ability to focus on academic success.⁴²
- **Teachers and students often have less positive relationships.** Researchers have found that teachers in high-poverty schools, on average, have lower expectations of students’ abilities and fewer positive interactions with students.⁴³ High-poverty schools also often have a less child-focused climate than more advantaged schools.⁴⁴ Each of these characteristics is linked to lower academic performance.⁴⁵
- **High-poverty schools have difficulty recruiting and retaining qualified teachers.** High-poverty schools can be a challenging work environment, and research shows that the teachers at these schools often have low morale.⁴⁶ This translates into higher rates of teacher absence and higher turnover.⁴⁷ After teachers leave, vacancies are often difficult to fill.⁴⁸ An independent analysis of teacher staffing in Maryland found substantial inequities in the distribution of highly qualified teachers across schools.⁴⁹
- **Fewer opportunities for challenging academics.** Students, teachers, and schools that must navigate significant academic and behavioral challenges often have little appetite to take on additional commitments. This can lead to a reduction in academic standards in the schools with the greatest needs.⁵⁰ Empirical research has shown that high-poverty schools tend to assign less homework and

41 Fantuzzo et al. 2014.

42 See for example discussion of attendance management in PRRAC 2015 and Sarah Wool, Mark Fermanich, and Robert Reichardt, “A Review of the Literature on the Effects of Concentrations of Poverty on School Performance and School Resource Needs,” Augenblick, Palaich, and Associates, 2015, <http://marylandpublicschools.org/Documents/adequacystudy/ConcentratedPovertyLitReviewFinalDraft-071015.pdf>.

43 Rumberger and Palardy 2005.

PRRAC 2015.

Nikki Aikens and Oscar Barbarin, “Socioeconomic Differences in Reading Trajectories: The Contribution of Family, Neighborhood, and School Contexts,” *Journal of Educational Psychology* 100 no. 2, 2008, <http://psycnet.apa.org/doiLanding?doi=10.1037%2F0022-0663.100.2.235>

44 Aikens and Barbarin 2008.

45 Rumberger and Palardy 2005.

Aikens and Barbarin 2008.

46 Wool, Fermanich, and Reichardt 2015.

47 PRRAC 2015.

Wool, Fermanich, and Reichardt 2015.

48 Ibid.

49 Leib Satcher, Linda Darling-Hammond, and Desiree Carver-Thomas, “A Coming Crisis in Teaching? Teacher Supply, Demand, and Shortages in the U.S.,” Learning Policy Institute, 2016, https://learningpolicyinstitute.org/sites/default/files/product-files/A_Coming_Crisis_in_Teaching_REPORT.pdf

50 PRRAC 2015.

offer fewer advanced classes and that these differences are linked to lower student performance.⁵¹

ADDITIONAL RESOURCES CAN HELP STRUGGLING STUDENTS SUCCEED

Ensuring that all children have access to first-rate public schools is just one component to addressing the challenges described above. Policymakers can and should address these barriers directly. Communities need comprehensive strategies to guarantee that every child has the opportunity to thrive, learn, and succeed. Equally important strategies include ensuring that jobs pay a living wage and all families have necessities like food, health care, and a home in a thriving neighborhood.⁵²

At the same time, high-quality evidence shows that adequate school funding does make a difference, and targeting additional resources to schools that serve low-income students can help these students succeed.

While there are a number of factors beyond school resources that can affect student outcomes, education researchers have developed creative analytical strategies over the last 50 years that clearly demonstrate the positive effects of additional school funding.⁵³ Studies of court-ordered school finance reforms are among the most promising of these strategies. Because most states constitutionally guarantee a right to education, student advocates in 29 states have brought successful legal challenges arguing that their states' existing school finance systems failed to provide all schools the necessary resources for a legally adequate education.⁵⁴ These lawsuits led to court-ordered reforms that in many cases sharply increased education funding in historically disadvantaged districts. From researchers' perspective, the crucial element of these reforms is that the legal process determined their timing, rather than political and economic conditions that could affect student outcomes through other mechanisms.⁵⁵ In combination with statistical controls to ensure that only similar students are compared to one another, court-ordered reforms allow researchers to estimate the effect increased funding had on outcomes.

51 Rumberger and Palardy 2005.

52 Arloc Sherman and Tazra Mitchell, "Economic Security Programs Help Low-Income Children Succeed over Long Term, Many Studies Find," Center on Budget and Policy Priorities, 2017, <https://www.cbpp.org/research/poverty-and-inequality/economic-security-programs-help-low-income-children-succeed-over>

53 Creative methodological approaches are necessary in education research as in other social science fields because of the complex social and economic context in which schools operate. School funding and student outcomes are both determined by numerous factors, several of which influence funding and outcomes at the same time. As a result, a straightforward comparison of funding levels and outcomes can yield misleading conclusions.

54 See Appendix A in C. Kirabo Jackson, Rocker Johnson, and Claudia Persico, "The Effects of School Spending on Educational and Economic Outcomes: Evidence from School Finance Reforms," *The Quarterly Journal of Economics* 131 no. 1, 2016, http://socrates.berkeley.edu/~ruckerj/QJE_resubmit_final_version.pdf

55 For example, an overall improvement in a state's economy might simultaneously reduce the poverty rate and increase tax revenues, leading to increased school funding. If students' test scores improve in subsequent years, it is unclear which factor caused this improvement. In contrast, a court-ordered reform can occur in either a strengthening or weakening economy.

A prominent 2016 study examined court-ordered school finance reforms that occurred between 1967 and 2010.⁵⁶ The study found that when school funding increased in response to a court order, students went on to complete more years of school, earn more in adulthood, and experience lower poverty rates. These effects were strongest among students in low-income families.

Other analyses of court-ordered school finance reforms have drawn similar conclusions. A 2017 study found that graduation rates improved in high-poverty school districts following a court-ordered reform,⁵⁷ and a 2002 study found that the gap in SAT scores between high- and low-income students declined after court-ordered reforms.⁵⁸ Three separate analyses have found positive results from a court-ordered overhaul of the Massachusetts education system.⁵⁹ Together, the results of multiple studies using credible research designs, different data sources, and different outcome measures provide compelling evidence that increased education funding improves student outcomes. Furthermore, several of these studies have found that increased funding brought the greatest benefit to low-income students or students attending schools in low-income communities.

Research has also identified specific in-school resources and practices that can improve student outcomes. Several of these practices have been validated in randomized controlled trials, which are often referred to as the “gold standard” of evidence in social science.⁶⁰

- **Expanded learning opportunities:** Low-income students often have fewer chances to learn outside the classroom than their wealthier peers. Research shows that school systems can help by expanding learning opportunities outside the traditional school day and school year. For example, a large number of high-quality studies, including multiple randomized trials, have found positive results from

56 Jackson et al. 2016.

57 Christopher Candelaria and Kenneth Shores, “Court-Ordered Finance Reforms in the Adequacy Era: Heterogeneous Causal Effects and Sensitivity,” forthcoming in *Education Finance and Policy*, 2017, <https://cepa.stanford.edu/sites/default/files/cofr-efp.pdf>

58 David Card and A. Abigail Payne, “School Finance Reform, the Distribution of School Spending, and the Distribution of Student Test Scores,” *Journal of Public Economics* 83 no. 1, 2002, <http://davidcard.berkeley.edu/papers/school-finance-reform.pdf>

59 Phuong Nguyen-Hoang, and John Yinger, “Education Finance Reform, Local Behavior, and Student Performance in Massachusetts,” *Journal of Education Finance* 39 no. 4, 2014, <http://muse.jhu.edu/article/546723>

Thomas Downes, Jeffrey Zabel, and Dana Ansel, “Incomplete Grade: Massachusetts Education Reform at 15,” MassINC, 2009, https://massinc.org/wp-content/uploads/2009/05/incomplete_grade_full.ashx_.pdf

Jonathan Guryan, “Does Money Matter? Regression-Discontinuity Estimates from Education Finance Reform in Massachusetts,” NBER Working Paper No. 8269, 2001, <http://www.nber.org/papers/w8269.pdf>

60 Many of the effective practices referred to below are discussed in detail, including discussion of effect sizes and implementation best practices, in Allan Odden and Lawrence Picus, “Appendix F: Full Report and School Case Studies for the Evidence-Based Approach to Estimating a Base Spending Level and Pupil Weights for Maryland,” Augenblick, Palaich, and Associates, 2016, <http://www.marylandpublicschools.org/Documents/adequacystudy/AppendixFSchoolCaseStudies113016.pdf>.

prekindergarten,⁶¹ summer instruction,⁶² and after-school programs.⁶³ Evidence-supported benefits range from improved social skills and behavior to higher test scores and higher incomes as adults.

- **Individual and small-group tutoring:** Multiple high-quality studies, including randomized trials, have found positive results in early-intervention programs that offer one-on-one tutoring to students in early grades who are starting to fall behind in reading.⁶⁴ Combined tutoring and behavioral supports are effective for

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- 61 Gregory Camilli, Sadako Vargas, Sharon Ryan, and W. Steven Barnett, “Meta-Analysis of the Effects of Early Education Interventions on Cognitive and Social Development,” *Teachers College Record* 112 no. 3, 2010, <http://www.gregorycamilli.info/papers/early%20education%20interventions.pdf>
- Rucker Johnson, “The Health Returns of Education Policies from Preschool to High School and Beyond,” *American Economic Review* 100 no. 2, 2010, http://socrates.berkeley.edu/~ruckerj/Johnson_AERMay2010_PapersProceedings.pdf
- Eliana Garces, Duncan Thomas, and Janet Currie, “Longer Term Effects of Head Start,” NBER Working Paper No. 8054, 2000, <http://www.nber.org/papers/w8054.pdf>
- Rucker Johnson and C. Kirabo Jackson, “Reducing Inequality through Dynamic Complementarity: Evidence from Head Start and Public School Spending,” NBER Working Paper No. 23489, 2017, http://socrates.berkeley.edu/~ruckerj/RJabstract_LRHeadStartSchoolQuality.pdf
- While there is strong evidence that low-income students benefit from prekindergarten, research also indicates that universal pre-K that combines students from diverse backgrounds is most effective. See for example <https://link.springer.com/content/pdf/10.1007%2F2288-6729-4-1-1.pdf>. For this reason, it may be most effective to provide pre-K outside the context of compensatory education, with priority given to low-income students during any phase-in period.
- 62 James Kim and David Quinn, “The Effects of Summer Reading on Low-Income Children’s Literacy Achievement from Kindergarten to Grade 8: A Meta-Analysis of Classroom and Home Interventions,” *Review of Educational Research* 83 no. 3, 2013, https://scholar.harvard.edu/files/dmq/files/kim-quinn-summer_reading_meta-analysis-rer-2013.pdf
- Geoffrey Borman and N. Maritza Dowling, “Longitudinal Achievement Effects of Multiyear Summer School: Evidence from the Teach Baltimore Randomized Field Trial,” *Educational Evaluation and Policy Analysis* 28 no. 1, 2006, <http://journals.sagepub.com/doi/abs/10.3102/01623737028001025>
- James Kim, Jonathan Guryan, Thomas White, David Quinn, Lauren Capotosto, and Helen Kingston, “Delayed Effects of a Low-Cost and Large-Scale Summer Reading Intervention on Elementary Children’s Reading Comprehension,” *Journal of Research on Educational Effectiveness* 9 no. 1, 2016, <https://eric.ed.gov/?id=EJ1115350>
- Geoffrey Borman, Michael Goetz, and N. Marita Dowling, “Halting the Summer Achievement Slide: A Randomized Field Trial of the KindergARTen Summer Camp,” *Journal of Education for Students Placed at Risk* 14 no. 2, 2009, <http://www.tandfonline.com/doi/abs/10.1080/10824660802427652?src=recsys&journalCode=hjsp20>
- 63 Deborah Vandell, Kim Pierce, and Kimberly Dadisman, “Out-of-School Settings as a Developmental Context for Children and Youth,” *Advances in Child Development and Behavior* 33, 2005 https://www.researchgate.net/profile/Deborah_Vandell/publication/7659646_Out-of-school_settings_as_a_developmental_context_for_children_and_youth_Advances_in_Child_Development_and_Behavior_33_43-77/links/56ddd0cc08ae46f1e99f8cc0.pdf
- “What we Know about the Impact of the 21st CCLC Program,” American Institutes for Research, 2015, <http://www.air.org/sites/default/files/downloads/report/What-We-Know-21st-CCLC-April-2015.pdf>
- Melissa Johnston-Gross, “Measuring the Impact of 21st Century Community Learning Centers,” Illinois State University, 2016, <http://ir.library.illinoisstate.edu/cgi/viewcontent.cgi?article=1018&context=scced>
- 64 Harry May, Philip Sirinides, Abigail Gray, and Heather Goldsworthy, “Reading Recovery: An Evaluation of the Four-Year i3 Scale-Up,” *CPRE Research Reports*, 2016, http://repository.upenn.edu/cgi/viewcontent.cgi?article=1089&context=cpre_researchreports
- Geoffrey Borman and Gina Hewes, “The Long-Term Effects and Cost-Effectiveness of Success For All,” The Johns Hopkins University, 2001, <http://www.jhucos.com/wp-content/uploads/2016/04/Report53.pdf>
- Robert Slavin, “Neverstreaming: Preventing Learning Disabilities,” *Students with Special Needs* 53 no. 5, 1996, <http://www.ascd.org/publications/educational-leadership/feb96/vol53/num05/Neverstreaming>

struggling students in later grades.⁶⁵ While the majority of research focuses on one-on-one tutoring, there is also evidence that small group instruction for students who have difficulty reading is effective.⁶⁶

- **Small class sizes:** A large randomized initiative placed Tennessee children in smaller classes from kindergarten through third grade. Multiple independent analyses of this program have found it had positive effects on children’s test scores, and students went on to earn more as adults.⁶⁷ These benefits were the greatest for low-income students. While most research on class sizes has focused on early grades, there is evidence that small classes benefit older children as well.⁶⁸
- **Teacher compensation:** Teachers nationwide earn 17 percent less than similar professionals in other occupations.⁶⁹ While teacher salaries in Maryland are more competitive than in many states, Maryland teachers are still underpaid in comparison to other workers with college and graduate degrees. Research shows that teachers are less likely to leave the profession or change districts when their pay is competitive with other professionals.⁷⁰ Competitive teacher pay is also linked to lower dropout rates.⁷¹
- **Community schools:** Low-income students face an array of barriers to learning both in and outside of school. Community schools address these barriers through an integrated system of supports and community engagement.⁷² For example, an on-site coordinator might help students access health care beyond the services a school nurse offers. Many community schools also include several of the effective

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- 65 Philip Cook, Kenneth Dodge, George Farkas, Roland Fryer, Jonathan Guryan, Jens Ludwid, Susan Mayer, Harold Pollack, and Lawrence Steinberg, “The (Surprising) Efficacy of Academic and Behavioral Intervention with Disadvantaged Youth: Results from a Randomized Experiment in Chicago,” NBER Working Paper No. 19862, 2014, https://static1.squarespace.com/static/543fe0e3e4b0f38ea7930575/t/544a7712e4b0f95316c2287/1414166290135/Crime+Lab+pilot+study+paper_Match+Tutors+Chicago.pdf
- 66 Joseph Torgesen, “Avoiding the Devastating Downward Spiral: The Evidence that Early Intervention Prevents Reading Failure,” *American Educator*, Fall 2004, <https://www.aft.org/periodical/american-educator/fall-2004/avoiding-devastating-downward-spiral>
- 67 For a review of the literature on Project STAR and other class size research, see Diane Whitmore Schanzenbach, “Does Class Size Matter?” National Education Policy Center, 2014, http://nepc.colorado.edu/files/pb_-_class_size.pdf.
- 68 Michael Boozar and Cecilia Rouse, “Intraschool Variation in Class Size: Patterns and Implications,” NBER Working Paper No. 5144, 1995, <http://www.nber.org/papers/w5144.pdf>
- 69 Sylvia Allegretto and Lawrence Mishel, “The Teacher Pay Gap Is Wider than Ever: Teachers’ Pay Continues to Fall Further behind the Pay of Comparable Workers,” Economic Policy Institute, 2016, <http://www.epi.org/publication/the-teacher-pay-gap-is-wider-than-ever-teachers-pay-continues-to-fall-further-behind-pay-of-comparable-workers/>
- 70 Richard Murnane and Randall Olsen, “The Effect of Salaries and Opportunity Costs on Duration in Teaching: Evidence from Michigan,” *The Review of Economics and Statistics* 71 no. 2, 1989, <https://www.jstor.org/stable/1926983>
- Jan Ondrich, Emily Pas, and John Yinger, “The Determinants of Teachers Attrition in Upstate New York,” *Public Finance Review* 36 no. 1, 2008, http://cpr.maxwell.syr.edu/efap/Papers_reports/The_Determinants_of_Teacher_Attrition.pdf
- 71 Susanna Loeb and Marianne Page, “Examining the Link between Teacher Wages and Student Outcomes: The Importance of Alternative Labor Market Opportunities and Non-Pecunniary Variation,” *The Review of Economics and Statistics* 82 no. 3, 2000, <http://web.stanford.edu/~sloeb/papers/loebpape.pdf>
- 72 Jeannie Oakes, Ana Maier, and Julia Daniel, “Community Schools: An Evidence-Based Strategy for Equitable School Improvement,” National Education Policy Center, 2017, https://learningpolicyinstitute.org/sites/default/files/product-files/Community_Schools_Evidence_Based_Strategy_BRIEF.pdf

practices discussed above. A large number of studies, including several randomized trials, support the effectiveness of community schools as a comprehensive approach.⁷³

Researchers have identified a wide range of evidence-based practices to support learning among low-income students and students in high-poverty schools. While each of these strategies requires careful implementation to achieve the greatest possible results, the first step is to ensure that schools have the resources they need to pursue them.



73 Ibid.

Opportunities for Improving Compensatory Education in Maryland

As it currently exists, Maryland’s compensatory education system is an essential tool to help students overcome obstacles related to poverty. At the same time, we have opportunities to improve this system and ensure that it meets the needs of tomorrow’s students as effectively as possible.

There are three major areas in which policymakers should improve Maryland’s compensatory education system.

- Modernize the method of counting low-income students. The state’s current method of counting low-income students is outdated and increasingly ineffective. Updating it would ensure that it measures students’ needs accurately.
- Ensure that the schools and districts with the greatest needs are equipped to provide an excellent education. The state should strengthen these schools and districts by increasing its level of support for compensatory education.
- Address the additional barriers faced by low-income students who attend high-poverty schools. The state should create a system that targets funding to areas of concentrated poverty.

THE CURRENT FORMULA

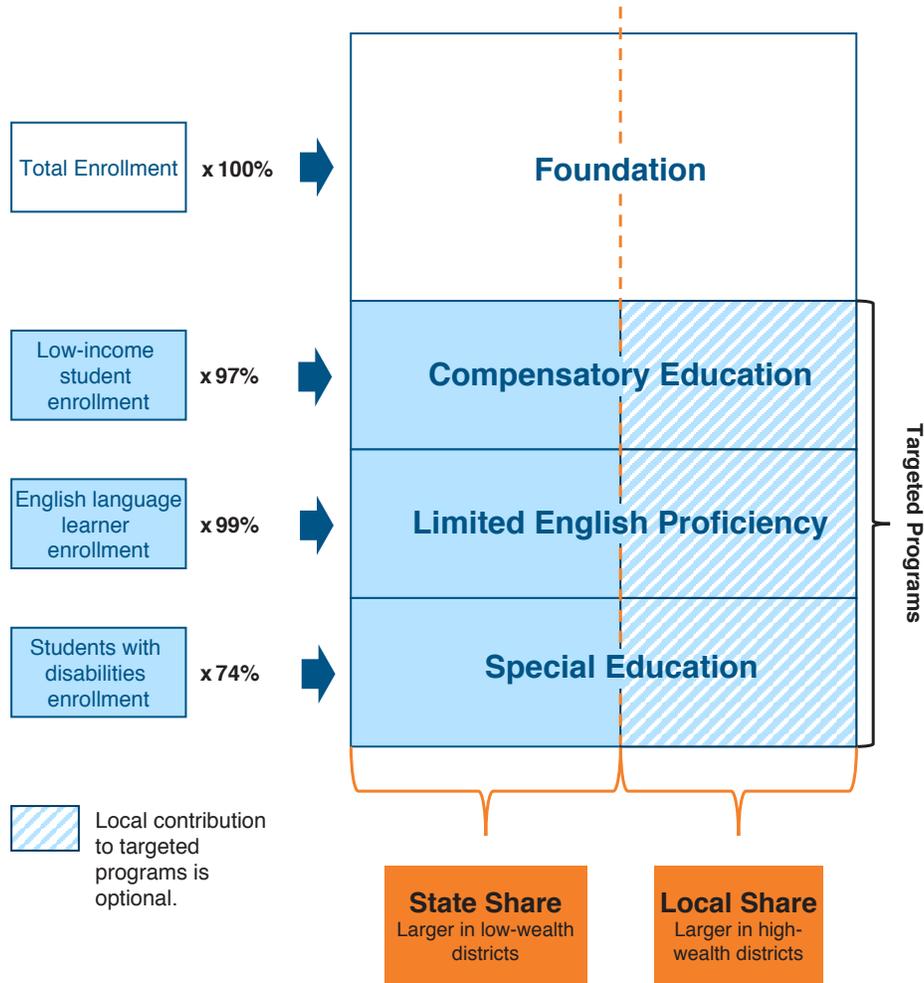
Compensatory education aid is one of the four core components of the state’s current school funding system. Figure 4 shows a simplified schematic of this system.⁷⁴

The largest funding component is **foundation aid**, the base level of funding the state considers necessary to provide every student an effective education. For the 2017–2018 school year, the per-pupil foundation amount is \$7,012, which is split between the state and the

⁷⁴ Figure 1 and the accompanying discussion omit several parts of the funding formula that are not directly relevant to compensatory education.

counties plus Baltimore City. The state pays a larger share of costs for less-wealthy counties, while wealthier counties are responsible for a larger share of their own costs.

Figure 4: Simplified Schematic of Core Education Funding Components



Compensatory education is one of three **targeted programs** that add funding on top of foundation aid. The other targeted programs provide aid for English learners and students with disabilities. Each school district’s compensatory education funding is based on the number of low-income students in that district, defined as students who are eligible for free or reduced-price meals under the National School Lunch Program. This is equivalent to an income threshold of 185 percent of the federal poverty line, or about \$37,800 for a family of three.⁷⁵ The number of low-income students is multiplied by the foundation amount,

75 “National School Lunch Program Fact Sheet,” United States Department of Agriculture, 2017, <https://www.fns.usda.gov/sites/default/files/cn/NSLPFactSheet.pdf>. These are the income standards for individual student eligibility for free and reduced-price meals. They do not apply at community eligibility schools, which provide free meals to all students. See Section 4 for a more detailed discussion of community eligibility.

adjusted by a **student weight**. For compensatory education, the weight is 97 percent. This means that during the 2017–2018 school year the formula calls for \$6,802 in compensatory education funding and \$7,012 in foundation funding per low-income student.

Like foundation funding, responsibility for compensatory education is divided between the state and the counties, with the state paying a larger share for less-wealthy counties.⁷⁶ Unlike foundation aid, local contributions to compensatory education and the other targeted programs are optional. This means that school districts do not necessarily receive the full funding amount the formula calls for.

MARYLAND SHOULD MODERNIZE THE WAY LOW-INCOME STUDENTS ARE IDENTIFIED

The most basic prerequisite for effective compensatory education aid is an accurate count of the low-income students in each school district. Maryland’s historical method for counting low-income students is quickly becoming outdated. Policymakers should choose a replacement method that can be used consistently across the state and that preserves the main advantages of the current method.

Maryland has historically defined low-income students for the purpose of calculating compensatory education aid as those who are eligible for free and reduced-price meals (FARMS) under the National School Lunch Program. This is equivalent to a family income less than 185 percent of the federal poverty line, or \$37,800 for a family of three. This has traditionally been an effective method for identifying low-income students because of three key advantages:

- **Administration:** All schools have traditionally collected income information from students’ families in order to determine which students are eligible for free or reduced-price meals. By incorporating these data into the school funding formula, the state sidestepped the need to collect income data a second time. This administrative convenience factor has made free and reduced-price meals a popular proxy for low-income status across states.
- **Concreteness:** Because individual students were traditionally required to submit income information to qualify for free or reduced-price meals, the program provided individualized data on low-income status and exact counts of qualifying students. Individual income data are required to meet federal reporting standards.⁷⁷ Exact counts of low-income students are also valuable because they establish a clear relationship between funding and conditions in schools.

76 The state and local shares of the targeted programs are calculated using a different formula from the foundation program.

77 Robert Croninger, Jennifer King Rice, and Laura Checovich, “Evaluation of the Use of Free and Reduced-Price Meal Eligibility as a Proxy for Identifying Economically Disadvantaged Students. Alternative Measures and Recommendations,” Augenblick, Palaich, and Associates, 2015, <http://marylandpublicschools.org/Documents/adequacystudy/EvaluationFRPMEligibilityProxyEconomicDisadvantage.pdf>

- **Validity:** A measurement method is considered *valid* if it accurately measures the concept it is intended to capture. Because compensatory education funding is provided as a response to the educational barriers facing low-income students and high-poverty schools, a valid measurement of low-income status should accurately measure these barriers. One way to test this is to calculate the correlation between the percentage of FARMS-eligible students in a school district and a measure of student achievement.⁷⁸ The closer this correlation is to -1 , the more valid FARMS eligibility is as a measure of barriers to learning. During the 2013–2014 school year, the correlation between FARMS eligibility and a composite student achievement measure was -0.866 , indicating a high level of validity.⁷⁹

Despite these historical advantages, FARMS eligibility is now a less useful measure of low-income status because of a change in the National School Lunch Program. The **Community Eligibility Provision** allows schools that serve large shares of low-income students to provide lunch to all students at no charge and with no paperwork. Community eligibility ensures that all students in high-poverty schools are well fed and ready to learn. As of March 2017, 228 Maryland schools participated in community eligibility—including every school in Baltimore City and Somerset County—and 31 more schools were likely eligible to participate.⁸⁰ Community eligibility is a major boon to Maryland children, and the benefits will only grow as more eligible schools participate.

As one of the benefits of community eligibility, participating schools no longer collect income information from students' families. This reduces the administrative burden on both schools and parents, eliminates the stigma associated with applying for subsidized meals, and ensures that no child goes hungry because of a paperwork error. At the same time, this means that community eligibility schools do not have up-to-date information on low-income student enrollment. The state currently uses a temporary method to approximate the number of low-income students in participating schools. However, this method treats community eligibility schools differently from other schools and has limited ability to respond to future changes in school demographics. For this reason, policymakers will need to find a permanent solution that generates consistent data for all schools.

Policy advocates have suggested four alternative ways the state can identify low-income students:

- **Direct certification:** This method involves matching school records with data from other public agencies that already collect income information. Programs that can be used as data sources for direct certification include the Supplemental Nutrition Assistance Program, Temporary Assistance for Needy Families, Medicaid, and the

78 Specifically, this is a measure of predictive validity.

79 The achievement measure used is the average passing rate (proficient or advanced) across four standardized tests: MSA math (grades 3–8), MSA reading (grades 3–8), HSA algebra, and HSA English. All school districts are weighted equally in this calculation. FARMS eligibility from Croninger et al. 2015, achievement data from www.mdreportcard.org.

80 Scott Gates, "Fiscal and Policy Note: HB 287 Hunger-Free Schools Act of 2017," Department of Legislative Services, 2017, http://mgaleg.maryland.gov/2017RS/fnotes/bil_0007/hb0287.pdf

Children’s Health Insurance Program.⁸¹ Schools already use direct certification to identify some students who are eligible for free and reduced-price meals, and the process is central to the administration of community eligibility. All school districts could use the count of directly certified students as the measure of low-income status.

- **Alternative form:** The state could develop a form to collect income information from families whose children attend community eligibility schools. Several other states use this option, and a version of it is currently available to Maryland school districts as part of the state’s temporary response to community eligibility. The State Department of Education’s consultant group has recommended the use of an alternative form, arguing that it would avoid changing the distribution of compensatory education funding.
- **Census poverty:** The state could use county-level estimates of the poverty rate among children ages 5 to 17, which are published by the U.S. Census Bureau. The U.S. Department of Education uses census poverty as part of its formula for calculating Title I grants.⁸²
- **Parental education:** The state could identify economically disadvantaged students by their parents’ educational level rather than family income, an approach used in some international school systems.⁸³

Table 1 compares these four methods with respect to administration, concreteness, and validity. The cells in Table 1 are shaded to indicate how well each measurement method performs with respect to the three criteria. Blue shading indicates strong performance; orange shading indicates relatively poor performance; gray shading indicates moderate or ambiguous performance. **Taking all three factors into consideration, direct certification is the best method for counting low-income students. Direct certification minimizes the administrative burden on schools and families, identifies individual low-income students, and has a demonstrable relationship with barriers to learning.**

81 For detailed discussion of direct certification, see Madeleine Levin and Zoë Neuberger, “Improving Direct Certification Will Help More Low-Income Children Receive School Meals,” Center on Budget and Policy Priorities, 2014, <https://www.cbpp.org/research/improving-direct-certification-will-help-more-low-income-children-receive-school-meals>.

82 William Sonnenberg, “Allocating Grants for Title I,” United States Department of Education, 2016, <https://nces.ed.gov/surveys/AnnualReports/pdf/titleI20160111.pdf>

83 Tucker 2017.

TABLE 1. COMPARISON OF METHODS FOR COUNTING LOW-INCOME STUDENTS

MEASUREMENT METHOD	ADMINISTRATION	CONCRETENESS	VALIDITY ¹
Direct certification	School districts already use direct certification to administer the National School Lunch Program and identify schools that qualify for community eligibility.	Direct certification produces a list of individual qualifying students.	Correlation with 2013-2014 composite achievement is -0.806, indicating strong validity.
Alternative form	Would require the annual administration of a self-reported form measuring family income. Without any direct incentive to fill out this form (unlike FARMS), a significant number of families may choose not to respond.	An alternative form would produce a list of individual qualifying students.	Largely speculative; depends on nonresponse rates. Higher nonresponse would lead to underestimates and underfunding.
Census poverty	The U.S. Census Bureau publishes easily accessible local poverty estimates.	Census poverty produces only a district-wide poverty rate.	Correlation with 2013-2014 composite achievement is -0.692, indicating a moderate level of validity.
Parental education, aggregate	Aggregate county-level data on the educational level of adults with school-age children could be generated at minimal cost using census data. Data would have to be averaged over multiple years to obtain reliable estimates.	Aggregate parental education would produce only a district-wide count.	Correlation with 2013-2014 composite achievement is -0.851, indicating strong validity. ²
Parental education, alternative form	Individual data would require the development and annual administration of a form measuring parents' level of education. Without any direct incentive to fill out this form (unlike FARMS), a significant number of families may choose not to respond.	If the state developed a form to measure the education level of individual parents, this method would produce a list of qualifying students.	Data are not available to directly test the validity of this measure. While research suggests high validity, ³ nonresponse could lead to underestimation.

Note: Two scenarios are considered for parental education to represent alternative implementation approaches.

- 1 Validity tests other than for parental education use data on poverty measures from Croninger et al. 2015 and achievement data from www.mdreportcard.org.
- 2 The measure of parental education used is the 2011 ACS five-year estimate of the share of women ages 25 to 64 without a high school diploma, by county. Data from 2011 are used because this is the most recent year that would have been available to calculate grants for school year 2013-2014. Men are excluded because research suggests that student achievement is most strongly related to mother's educational attainment. Other measures of parental education performed less well, ranging from 0.435 for the share of adults ages 25 to 64 with a college degree to -0.815 for the share of adults ages 25 to 64 without a high school diploma.
- 3 For example, Fantuzzo et al. (2014) found a strong relationship between mother's educational level and reading and math achievement at both the student and school level, controlling for FARMS eligibility.

No matter what method policymakers ultimately choose to count low-income students, the state must address two issues to ensure a successful transition:

- Adjust for a new unit of measurement:** Some methods for identifying low-income students are more stringent than others and therefore produce lower counts of low-income students. For example, while the income threshold for FARMS eligibility is 185 percent of the federal poverty line, most programs used for direct certification use a threshold of 135 percent. As a result, direct certification will count fewer students as low income than FARMS eligibility. However, these different counts do not reflect differences in students' needs—FARMS eligibility and direct certification are simply two ways of describing the same population. For this reason, transitioning from FARMS eligibility to direct certification (or any other measurement method) will require adjusting the resulting count of low-income students to maintain the same level of funding.⁸⁴ During the 2013–2014 school year, the ratio of FARMS-eligible students to direct certification students in Maryland was 1.8.⁸⁵ This would be the most appropriate adjustment factor to ensure the current FARMS-based system is comparable to a new direct certification-based system (see Table 2).

**TABLE 2. UNIT-OF-MEASUREMENT ADJUSTMENT
IN A HYPOTHETICAL SCHOOL DISTRICT**

	FARMS	DIRECT CERTIFICATION
Initial Low-Income Student Count	10,000	5,556
Adjusted Count (Initial Count x 1.8)	N/A	10,001
Foundation Amount	\$7,012	\$7,012
Compensatory Education Student Weight	97%	97%
Total Compensatory Education Funding	\$68 million	\$68 million

- Accurately count immigrant students:** Some methods for counting low-income students may undercount students who are immigrants or whose parents are immigrants. For example, children who are undocumented are not eligible for programs used in direct certification, and parents who are undocumented may hesitate

⁸⁴ As Baker (2006) notes, changing the measurement method without this adjustment would result in “multiplying apples by oranges” because the student weight used to calculate compensatory education funding is defined in terms of a specific measurement method.

⁸⁵ Croninger et al. 2015.

to apply even if their children are eligible.⁸⁶ Similar concerns would apply if the state counted low-income students using census data.⁸⁷ The state should study this issue to identify steps to fully count low-income students in each school district, regardless of their families' immigration status.

MARYLAND SHOULD STRENGTHEN SUPPORT FOR HIGH-POVERTY DISTRICTS

Providing additional funding to school districts that serve many low-income students is a necessary and effective way to help these students succeed. The question that naturally follows is, how much additional funding is needed for each low-income student? In answering this question, policymakers should consider two criteria:

- **Adequacy:** Every district should have sufficient funding to meet state achievement standards—in this case the Maryland College- and Career-Ready Standards—taking into account that district's specific needs. Adequacy is a function of each district's *absolute* funding level.
- **Equity:** Districts with greater needs should be at least as well-funded relative to their needs as their more-advantaged counterparts.⁸⁸ Equity is a function of the *relative* funding levels of low- and high-need districts.

Adequacy and equity are distinct concepts, and neither one guarantees the other. A school finance system is equitable but not adequate if all districts are equally underfunded. A school finance system is adequate but not equitable if every district has the minimum funding needed to meet state standards, but the most advantaged districts are better-equipped to meet and exceed standards than the districts with the greatest needs. This could happen if the state guarantees all districts a minimally adequate level of funding, but the wealthiest jurisdictions are able to provide substantially more local funding for their schools than other districts. Policymakers should build a system that is both adequate and equitable. There are three reasons why even an adequate school finance system should also be equitable:⁸⁹

86 Note that all children in Maryland who have legal status in the United States can immediately receive Medicaid and SNAP benefits if they meet eligibility criteria. See "Medicaid and CHIP Coverage of Lawfully Residing Children and Pregnant Women," Centers for Medicare and Medicaid Services, 2017, <https://www.medicaid.gov/medicaid/outreach-and-enrollment/lawfully-residing/index.html> and Vicky Robinson and Jessica Dziengowski, "Supplemental Nutrition Assistance Program Guidance on Non-Citizen Eligibility," United States Department of Agriculture, 2011, https://fns-prod.azureedge.net/sites/default/files/Non-Citizen_Guidance_Presentation_Webinar_092711.pdf.

87 Peter O'Dowd, "Illegal Immigrants Reluctant to Fill Out Census Form," *NPR*, March 31, 2010, <http://www.npr.org/templates/story/story.php?storyId=125380052>

88 In the terminology of education policy, this is a measure of *vertical equity* because it takes the varying needs of different school districts into account. Weaker "horizontal equity" criteria would classify a funding system as equitable if the system distributes equal per-pupil funding to low- and high-need districts. Such a system should not be viewed as truly equitable because it does not equip high-need districts to provide the same quality of education as their more-advantaged counterparts.

89 For a detailed discussion of the need for both equity and adequacy, see William Koski and Rob Reich, "When 'Adequate' Isn't: The Retreat from Equity in Educational Law and Policy and Why it Matters," *Emory Law Journal* 56 no. 3, 2007, http://web.stanford.edu/group/scspi/_media/working_papers/koski_william_wp_20070330a.pdf.

- School districts compete with one another to attract and retain qualified teachers. Districts that can offer the most attractive working conditions and salaries have the easiest time recruiting teachers, which leaves other districts with a smaller and less-qualified applicant pool. Research shows that high-poverty schools have higher turnover and more difficulty filling vacancies.⁹⁰ In Maryland, schools that serve large numbers of students of color employ more inexperienced and uncertified teachers than other schools.⁹¹ Equitable funding would ensure that the districts with the greatest needs are not put at a disadvantage.
- After students graduate, they will enter a competitive college and career landscape. In this landscape, it is not enough to meet minimum standards—“good enough” isn’t.⁹² To have an equal chance of college and career success, students must be offered equal opportunities to learn. This is only possible when their schools are equitably funded.
- The way we invest our shared resources is a reflection of our priorities as a state. If we value the contributions all children can make to their communities, we must put them on an equal footing to achieve their full potential. This requires putting their schools on an equal footing to provide an excellent education.

Maryland’s current school funding system is neither adequate nor equitable.

Twenty of the state’s 24 school districts were underfunded as of the 2014–2015 school year, according to an analysis by the Maryland Department of Legislative Services.⁹³ This underfunding is largely the result of the state’s response to the Great Recession. As tax revenues fell, the state skipped or capped annual inflation adjustments in the school funding formula. Because inflation builds on itself from each year to the next, every year the state skipped the inflation adjustment was a new *permanent* cut to education funding. While gambling revenues earmarked for schools grew during this period, the state used this money to replace general funding for schools rather than supplement it. Finally, the state’s adoption of Maryland College- and Career-Ready Standards and the PARCC assessment system raised the bar for schools at the same time that the state was cutting back funding. These funding cuts and rising standards fell hardest on the districts with the greatest needs, which are especially reliant on state funding (see Figure 5⁹⁴).

Multiple independent analyses have also found that Maryland’s current education funding system is inequitable:

- A 2017 MDCEP report found that Maryland school districts with more low-income children, lower median incomes, more Black students, more students of color

90 Wool, Fermanich, and Reichardt 2015.
PRRAC 2015.

91 Sutchter, Darling-Hammond, and Carver-Thomas 2016.

92 Ibid.

93 Department of Legislative Services 2016.

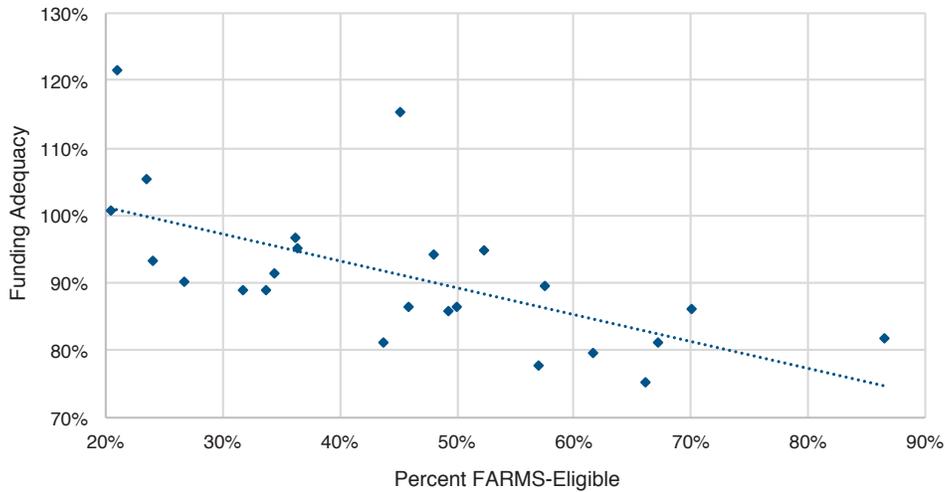
94 MDCEP analysis of data from Department of Legislative Services 2016 and 2014–2015 FARMS eligibility data available at www.mdreportcard.org.

overall, and more students with disabilities are less well funded than other districts, relative to their needs.⁹⁵

- A 2017 analysis by the National Center on Education and the Economy found that Maryland spends less on low-income school districts than on high-income school districts when state and local funding are combined.⁹⁶ Only 15 states fared worse than Maryland in NCEE’s analysis.
- A 2017 analysis by the Education Law Center gave Maryland a “C” for funding fairness, placing the state 29th in the nation.⁹⁷

Figure 5. Higher-Need Maryland School Districts Are Less Adequately Funded

Funding adequacy and FARMS eligibility by school district, 2014-2015 school year



Source: MDCEP analysis of DLS 2015 and MD Report Card data. Negative relationship is statistically significant, $p < 0.01$.

Maryland should ensure that high-poverty school districts in Maryland have sufficient resources to provide an excellent education—and are at least as well equipped to do so as other school districts—by strengthening its support for compensatory education.

Maryland currently calculates compensatory education funding by applying a weight of 97 percent to the number of low-income students in each district. The state could strengthen its support for low-income students by increasing this weight, which would result in more compensatory education funding and improved equity. Research supports using a higher

95 Meyer 2017. Note that the district-level funding distribution provides an incomplete description of funding equity, because some schools face greater challenges than other schools within the same district. However, a school-level equity analysis would require school-level financial data, which are not readily available.

96 Tucker 2017.

97 Baker et al. 2017.

weight for low-income students. Education researchers in multiple states have constructed statistical models known as education cost functions to estimate the impact of certain student characteristics, such as being part of low-income family, on school funding needs.⁹⁸ One advantage of this approach is that it uses longitudinal data from real school districts to create empirically grounded cost estimates rather than relying on hypothetical districts. Maryland's current weight is within the range supported by this research, but it is well below the top of this range.⁹⁹ By adopting a higher weight, the state could improve adequacy and equity while maintaining a school finance system that uses research-based practices.

A 2016 report by Augenblick, Palaich, and Associates, a consulting firm hired by the Maryland State Department of Education, recommended a different approach. The group recommends reducing the student weight used to calculate compensatory education aid to 35 percent while increasing the level of foundation funding provided for every student. Reducing Maryland's low-income student weight would be counterproductive.¹⁰⁰ This change would reduce the relative funding of districts with the greatest needs, in comparison to their more-advantaged counterparts, making it harder to achieve funding equity. This would make it more difficult for the districts with the greatest needs to hire and retain qualified teachers; reduce the college and career options available to the students in these districts; and push us further away from a vision of Maryland with equal opportunity for all.

MARYLAND SHOULD ADDRESS CONCENTRATIONS OF POVERTY

An effective compensatory education system must address the needs of two overlapping groups of students:¹⁰¹

- **Low-income students** face an array of individual barriers to learning, like inadequate nutrition, dangerous neighborhoods, and high stress levels. Because of these

98 For detailed discussion of the cost function method, see Bruce Baker, "Evaluating the Reliability, Validity, and Usefulness of Education Cost Studies," *Journal of Education Finance* 32 no. 2, 2006, <http://www.jstor.org/stable/40704290> and Thomas Downes, "What Is Adequate? Operationalizing the Concept of Adequacy for the State of New York," Tufts University, 2004, https://www.researchgate.net/profile/Thomas_Downes/publication/267974846_What_Is_Adequate_Operationalizing_the_Concept_of_Adequacy_for_New_York/links/5523c53a0cf27b5dc3796eec.pdf

99 See for example Bruce Baker "The Emerging Shape of Educational Adequacy: From Theoretical Assumptions to Empirical Evidence," *Journal of Education Finance* 30 no. 3, 2005, <http://www.jstor.org/stable/40704236>. Baker surveyed existing cost function studies and concluded that the range of low-income student weights supported by this research spans from 35 percent to above 100 percent, with school districts in large metropolitan areas falling in the higher end of this range. (Half of Maryland's school districts are located in top-20 United States metropolitan statistical areas.) See also William Duncombe and John Yinger, "How Much More Does a Disadvantaged Student Cost?" *Economics of Education Review* 24 no. 5, 2005, <http://surface.syr.edu/cgi/viewcontent.cgi?article=1102&context=cpr>. The authors used calculated student weights from a cost function under multiple assumptions and found weights greater than 100 percent in all cases. The authors noted that only Maryland's low-income student weight was in the range supported by their research.

100 Note that the question of whether to reduce the state's low-income student weight is separate from the question of whether policymakers should increase the foundation amount. The current foundation amount understates Maryland students' needs because of the state's history of suspending routine inflation adjustments. Additional foundation funding is also likely necessary because the state has increased academic standards since the current formula was established in 2002. There is no reason why policymakers should make a reduction in compensatory aid a precondition to providing all school districts sufficient resources.

101 See Section 2 for a detailed discussion of the barriers facing each group.

barriers, low-income students have more difficulty succeeding academically than their peers within the same school.

- **Students in high-poverty schools** face a distinct set of barriers to learning, like high teacher turnover and little access to advanced classes. Because of these barriers, students in high-poverty schools have more difficulty succeeding academically than their peers in other schools, regardless of their individual family income level.

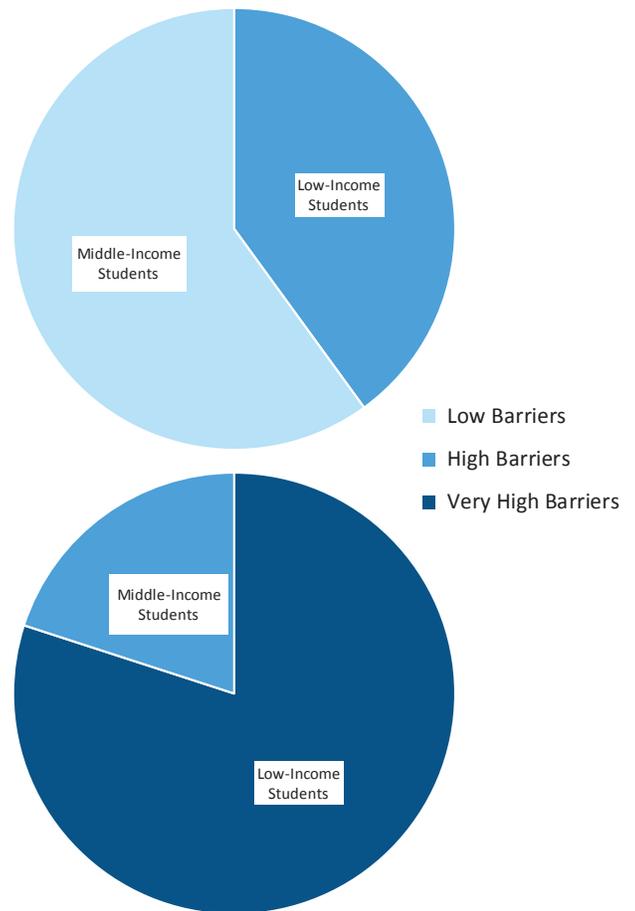
Many children are members of both groups—they belong to low-income families and also attend high-poverty schools. These children are doubly disadvantaged, facing both individual and school-level barriers to learning. Because these children are by definition a large share of the student body at high-poverty schools, such schools are also doubly disadvantaged. Put another way, if the share of low-income students in a school doubles from 40 percent to 80 percent, the challenges facing that school are likely to more than double in severity (see Figure 6).

To provide an excellent education, high-poverty schools therefore need additional resources to respond effectively to the range of obstacles their students face. The state should provide these resources in the form of concentrated poverty funding.

Maryland currently uses a linear compensatory education formula in which each school district receives the same amount of additional funding for each low-income student in that district (\$6,802 in the 2017–2018 school year). Concentrated poverty funding would modify this formula by introducing higher per-pupil funding for low-income students in areas with the highest levels of poverty. There are several precedents for this approach:

- The federal Title I system consists of multiple grants, each with its own eligibility rules.¹⁰² Title I Basic Grants are available to all school districts in which at least 2 percent of students belong to low-income families or meet other eligibility criteria. Targeted Grants are available to school districts in which

Figure 6. High-Poverty Schools Face Dual Disadvantages



¹⁰² Sonnenberg 2016. Note that each of the eligibility rules discussed above includes a minimum absolute number of eligible students required for a district to qualify. These requirements are not applicable to Maryland’s large school districts.

at least 5 percent of students are eligible. Targeted Grants are distributed on a weighted scale, with funding increasing as the share of eligible students increases. Concentration grants are available to school districts in which at least 15 percent of students are eligible. Together, these grants effectively create a sliding scale, with more funding available in districts with higher poverty rates.

- Thirteen states varied the level of funding school districts receive per low-income student according to their level of poverty, as of a 2002 survey of state compensatory education systems compiled by the Center on Budget and Policy Priorities.¹⁰³
- Ohio counts low-income students using a weighted census poverty measure.¹⁰⁴ Per-pupil compensatory education aid calculated using this measure is proportional to the square of the share of low-income students in each district. This means that high-poverty Ohio districts receive more compensatory aid per low-income student than other districts.



Research also supports concentrated poverty funding. Education cost function studies (see earlier subsection, “Maryland Should Strengthen Support for High-Need Districts”) generally produce a unique low-income student weight for each school district rather than a single statewide weight. These district-specific weights depend on the share of low-income students in each district as well as other characteristics. For example, a 2002 cost function study using data from school districts in New York found that the additional cost per low-income student ranged from 30 percent to 292 percent.¹⁰⁵ Similarly, a 2007 study

103 Kevin Carey, “State Poverty-Based Education Funding: A Survey of Current Programs and Options for Improvement,” Center on Budget and Policy Priorities, 2002, <https://www.cbpp.org/archiveSite/11-7-02sfp.pdf>

104 Croninger 2015.

105 William Duncombe, “Estimating the Cost of an Adequate Education in New York,” Center for Policy Research, 2002, <http://surface.syr.edu/cgi/viewcontent.cgi?article=1113&context=cpr>. Note that it is common for cost function studies to report a single statewide student weight calculated by averaging district-specific weights.

using data from Missouri found that the additional cost per low-income student in St. Louis was more than double the statewide average.¹⁰⁶

A simple approach to concentrated poverty funding would involve three steps:

STEP 1: Decide whether to calculate concentrated poverty funding at the district level or the school level.

- A school-based calculation may distribute concentrated poverty funding more accurately, as research suggests that students in high-poverty schools experience the greatest barriers to learning.¹⁰⁷
- A district-based calculation has the advantage of simplicity, as it would not require the funding formula to incorporate data from every school separately. However, because some high-poverty schools are located in relatively low-poverty districts, this method may distribute funding less accurately than a school-based calculation.

STEP 2: Set a threshold share of low-income students above which concentrated poverty funding kicks in.

- Some researchers suggest a threshold of 50 percent FARMS-eligible, roughly equivalent to a 28 percent low-income share based on direct certification.¹⁰⁸
- The threshold could be set at the overall statewide share of low-income students (43 percent FARMS in the 2016–2017 school year, or about 24 percent by direct certification).¹⁰⁹ This threshold would allocate concentrated poverty funding to all schools or districts with an above-average share of low-income students.
- The threshold could be set at the overall statewide low-income share, plus the standard deviation of low-income shares across schools (68 percent FARMS, or 38 percent by percent direct certification).¹¹⁰ This approach would target funding more directly to the schools or districts with the most severe concentrations of poverty.

STEP 3: Districts receive compensatory education funding for all low-income students up to the threshold based on the ordinary low-income student weight. Above the threshold,

106 William Duncombe, “Estimating the Cost of Meeting Student Performance Standards in the St. Louis Public Schools,” Center for Policy Research, 2007, <https://pdfs.semanticscholar.org/5ca8/943f31b00363e043ef067ba0ffae47c30d77.pdf>. Higher costs per low-income student in high-poverty districts are not merely an artifact of the log-linear specification used in cost function studies. See technical appendix in Timothy Gronberg, Dennis Jansen, Lori Taylor, and Kevin Book, “School Outcomes and School Costs: The Cost Function Approach,” Texas A&M University, 2004, https://www.researchgate.net/profile/Lori_Taylor/publication/266866526_School_Outcomes_and_School_Costs_The_Cost_Function_Approach/links/5492e6b70cf2302e1d074605.pdf. The authors in this study used a flexible modeling approach that allowed $\log(\text{per-pupil cost})$ to be a nonlinear function of district characteristics. Both the linear and quadratic coefficients on the share of FARMS-eligible students were positive and statistically significant, confirming that higher shares of low-income students are associated with higher costs per low-income student.

107 See Section 2 for a detailed discussion of barriers to learning in high-poverty schools.

108 PRRAC 2015. Direct certification equivalent is based on a statewide FARMS-to-direct certification ratio of 1.8.

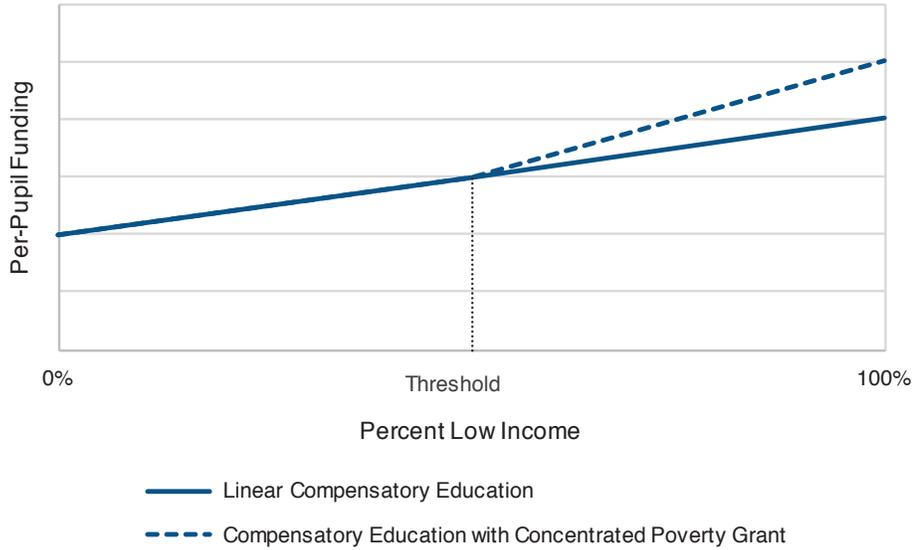
109 2017 Maryland Report Card, www.mdreportcard.org.

110 MDCEP analysis of data available at www.mdreportcard.org.

districts receive funding for additional low-income students based on a higher concentrated poverty weight. See Figure 7 for a graphical depiction of this method.

Figure 7. Concentrated Poverty Schematic

Hypothetical per-pupil funding with and without a concentrated poverty grant



Maryland has a long tradition of investing in education, and it shows in the quality of our state’s best schools. At the same time, not all Maryland children have the same access to a first-rate education. Fortunately, the current reform process offers an opportunity to strengthen Maryland schools and guarantee all children a chance to achieve their full potential. By augmenting our support for the school districts with the greatest needs, using accurate data to identify low-income students, and providing strong support to schools that face complex challenges, we can build an education system to be proud of.



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