



**BLUEPRINT**  
FOR MARYLAND'S FUTURE

Blueprint for Maryland's Future:  
**Report on Neighborhood  
Indicators of Poverty**

Maryland State  
Department of Education

October 2022 Update Report



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## Table of Contents

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Executive Summary .....	4
Part One: Background, Policy Context, Research, and Data Sources .....	5
Legislative Background.....	6
Background and Policy Context.....	8
Incorporating an Alternative Income Eligibility Form .....	12
Compensatory Education State Aid and Fiscal Equity .....	13
Neighborhood Measures of Poverty .....	14
MLDS Geolocation Data Collection.....	18
Data Sources for Neighborhood Indicators.....	19
National Review of Neighborhood Indicators Of Poverty .....	21
Maryland Neighborhood Tiers .....	23
Part Two: Calculation Method, Fiscal Models, and Impact Assessment .....	29
Maryland Neighborhood Tiers (MNT) Calculation Methods .....	30
Calculation Method One .....	36
Calculation Method Two.....	43
Calculation Method Three.....	52
MSDE Recommendation for the Compensatory Education Formula.....	61
Further Policy Considerations.....	64
Concentration of Poverty Grants.....	65
Timeline and Next Steps.....	66
References.....	68
Appendix: Methodology.....	70

# Executive Summary

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In this updated report on Neighborhood Indicators of Poverty, the Maryland State Department of Education (MSDE) presents its recommended methodology to develop and apply a system of neighborhood indicators of poverty, known as Maryland Neighborhood Tiers (MNT). The report also includes multiple detailed options of how to operationalize the MNTs for use in the Compensatory Education and Concentration of Poverty grant funding formulas. Ultimately, MSDE suggests its final methodology recommendation for how to calculate Compensatory Education and Concentration of Poverty funding based on the Maryland Neighborhood Tiers. The final recommendation of this report does not include the specific dollar amounts and relative weights that should be used in the funding formula due to the absence of necessary data before November 15, 2022. After that first full data collection has been completed, MSDE will continue its analyses to determine the proper funding levels to recommend to be included in the Compensatory Education and Concentration of Poverty funding formulas.

MSDE previously submitted an interim version of this report on November 1, 2021 to the General Assembly that included progress on analyzing and incorporating neighborhood indicators of poverty and updates on incorporating Medicaid data into the direct certification of students eligible for the Compensatory Education program. This updated report expands on those discussions and provides updates on those workstreams that have occurred in the past year.

While studying the incorporation of neighborhood indicators of poverty and developing a methodology that may be used for calculating Compensatory Education and Concentration of Poverty funding, MSDE set to meet the following guiding objectives:

- Include neighborhood indicators of poverty, to account for additional factors other than individual family income.
- Enable additional students to be included in the measure of poverty through addressing the issues that cause eligible students to be undercounted, including not solely relying on families completing paperwork to be counted.
- Create more variation and differentiation within the students who are counted, to recognize the different effects of concentrations of poverty.
- Ensure the new measures of Compensatory Education and Concentration of Poverty funding are transparent, comprehensible, and easily communicated.

Throughout the process, MSDE also analyzed the financial implications of implementing the proposed methodologies, detailing the overall cost, as well as the change in funding for each school, location education agency, and Maryland as a whole. MSDE will use the complete data collection being submitted by the LEAs on November 15, 2022 to further refine and finalize its recommendations for new funding formulas.

## Part One

# Background, Policy Context, Research, and Data Sources

# Legislative Background

The Maryland Commission on Innovation and Excellence in Education was created in part to review and update the current funding formula for the schools in Maryland. The Commission and subsequent Blueprint for Maryland's Future legislation, as a part of the "More Resources for Students Who Need Them" Blueprint Pillar, created a new Concentration of Poverty Grant program for schools with a high concentration of poverty.

Under the Blueprint for Maryland's Future, the Maryland State Department of Education is tasked to complete a study on incorporating neighborhood indicators of poverty to determine a school's eligibility for the Concentration of Poverty grant and the Compensatory Education program and submit a report on the results.

## Section §5-223 of the Education Article requires that:

(g)(1) On or before November 1, 2021, the Department shall submit an interim report to the General Assembly, in accordance with § 2-1257 of the State Government Article, and the Accountability and Implementation Board on:

- (i) The progress on analyzing neighborhood indicators of poverty under paragraph (2) of this subsection;
- (ii) The fiscal year for which Medicaid data can be incorporated into the direct certification of students eligible for the Compensatory Education program under § 5-222 of this subtitle and under this section; and
- (iii) The plan for developing and using the State alternative income eligibility form to determine eligibility for the Compensatory Education program under § 5-222 of this subtitle.

(2)(i) On or before October 1, 2022, the Department shall submit a report to the Accountability and Implementation Board on incorporating neighborhood indicators of poverty to determine a school's eligibility for the Compensatory Education program and the concentration of poverty grant based on the study required under this subsection.

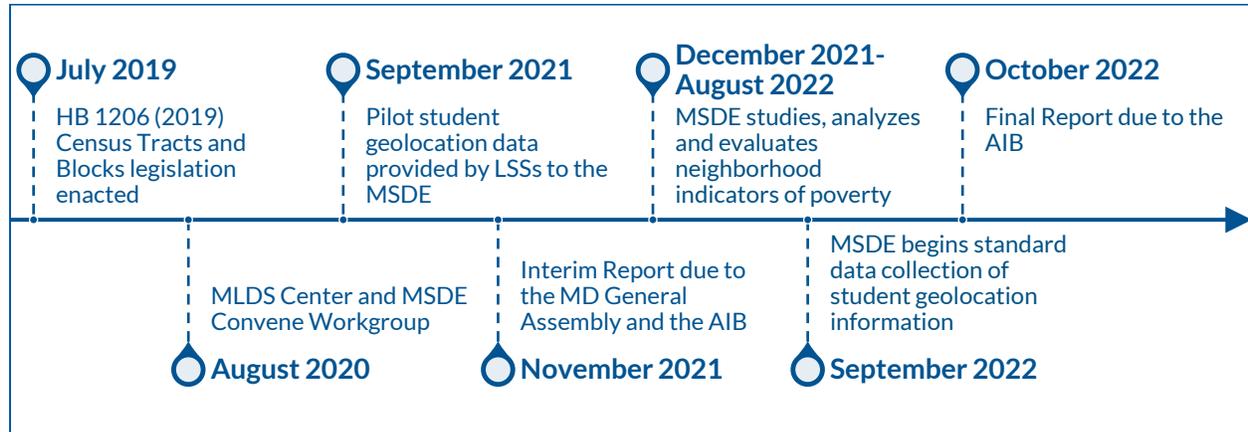
- (ii) The study shall evaluate:
  - 1. The American Community Survey data available across geographic areas in the Small Area Income and Poverty Estimates Program to provide school district poverty estimates; and
  - 2. The Area Deprivation Index developed by the University of Wisconsin--Madison to rank neighborhoods by socioeconomic status disadvantage.

(3) On or before December 1, 2022, the Department shall:

- (i) Collect the data necessary to implement the neighborhood poverty indicator methodology recommended by the Department to calculate the Compensatory Education formula under § 5-222 of this subtitle and the Concentration of Poverty School Grants under this section; and
- (ii) Submit a report to the General Assembly, in accordance with § 2-1257 of the State Government Article, the Accountability and Implementation Board, and the Department of Budget and Management.

In addition to the directives included in the Blueprint legislation enacted in 2021, Maryland has been establishing the statutory provisions necessary to collect, report, and analyze geolocation data for public school students since 2019, two years before the full Blueprint legislation was enacted. HB 1206 of 2019 directed each local education agency to “convert a student's home address and geolocation information into census tract and block numbers in a manner and format that are consistent with the protocol developed by the Maryland Longitudinal Data System Center” and to submit this data to MSDE and the Maryland Longitudinal Data System Center (MLDSC).

**Figure 1: Timeline of Progress Towards a Neighborhood Indicator of Poverty**



The MLDSC and MSDE created a Census Tract and Block Data Workgroup made up of local education agency level users of address data from four LEAs, Anne Arundel, Caroline, Frederick, and Baltimore City. Workgroup members were to assist in establishing protocols and developing technical assistance for local education agencies. In 2020 the Workgroup met twice, developed and reviewed an outline for the data collection, and created a draft protocol. In subsequent years, meetings occurred about every two months, a pilot administration of the student geolocation data collection was conducted, and protocols were revised for full implementation to begin in fall 2022.

Based on the successful establishment of protocols and preliminary analysis completed through the collaboration between the MLDSC, LEAs, MSDE, and other partners, MSDE is now able to complete the analysis and recommendations included in this report.

# Background and Policy Context

The impact of poverty and socioeconomic status on student achievement, educational attainment, and other educational outcomes has long been a concern for educators and policymakers. State aid formulas, grant programs, and legislation have all used available economic data to focus resource allocation to help mitigate the effects of poverty on students.

The educational community has traditionally relied on the count of students eligible for free or reduced-price meals (FARMS) under the United States Department of Agriculture's (USDA's) National School Lunch Program (NSLP) to measure poverty. Students are determined to be eligible for free or reduced price meals based on their family's income. The U.S. Department of Agriculture makes annual adjustments to the Income Eligibility Guidelines used to determine eligibility for free or reduced-price meals based on the federal income poverty guidelines. Students are eligible for free meals if the household income is no more than 130% of the federal poverty level and a student is eligible for reduced-price meals if their household income is up to 185% of the federal poverty level. Students in a family of four, in school year 2022-2023, making less than \$36,075 per year are eligible for free meals, and students in families making less than \$51,338 are eligible for reduced price meals.

Students are determined as eligible for free or reduced-price meals in one of two ways:

- **Annual household applications.** Annual forms are used to collect information from families on household size and family income to determine eligibility.
- **Direct Certification.** Eligible students are identified based on participation in programs such as the Temporary Assistance for Needy Families (TANF), which in Maryland is known as Temporary Cash Assistance (TCA), Supplemental Nutrition Assistance Program (SNAP), and Medicaid. Students in Foster Care and students experiencing homelessness are also directly certified.

The annual household applications are historically the most commonly used method to collect household income data and determine eligibility for FARMS. However, this annual data collection process creates a large burden on families, schools, and districts. On the other hand, Direct Certification removes nearly all of this burden on families and school-based staff. Direct Certification is an automated process where families are matched up with authoritative datasets of participants in public assistance programs. If a family participates in the Supplemental Nutrition Assistance Program (SNAP), they will also automatically be determined to be eligible for free meals while at school.

## INCORPORATING MEDICAID INTO DIRECT CERTIFICATION

As part of the provisions related to analyzing neighborhood indicators of poverty, the Blueprint for Maryland's Future directs MSDE to work to incorporate Medicaid data into the direct certification of students eligible for the free or reduced-price meals program. Traditionally, direct certification identifies families that participate in Temporary Assistance for Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), Foster Care, or status as a student experiencing homelessness. Incorporating Medicaid into the list of programs will increase the number of students that can be directly identified as eligible.

In compliance with the directive to incorporate Medicaid, as well as strong positive results of the program for other states, MSDE led the cross-agency application for participation in the [United States Department of Agriculture Medicaid Demonstration Project](#) for the 2022-2023 school year. Maryland was approved for this program, with implementation starting on July 1, 2022. Maryland has joined Alabama, Illinois, Kansas, Louisiana, Minnesota, North Carolina, and South Carolina in the demonstration project for SY 2022-2023 bringing the total to 26 states participating.

To be eligible for the demonstration project, state agency applicants were required to have an automated data matching system. The matching also required coordination with the state agency administering Medicaid benefits, which in Maryland is the Maryland Department of Health (MDH). As MDH does not share its protected medical information to an external party, matching was facilitated through MD THINK, a cloud-based platform allowing multiple state agencies to share and manage data in one convenient and secure location.

The Maryland Direct Certification System (MDCS) will supply MD THINK weekly with a student enrollment file of students who are unmatched by SNAP, TCA (Maryland's TANF program), or Foster Care to be processed against active Medicaid recipients stored in the MD THINK Data Repository. MD THINK sends the data to the Maryland Health Benefit Exchange (MHBE) for processing to include matching against income. Once completed, the MHBE returns the data to MD THINK. This file is sent to the MDCS for processing. The MDCS produces LEA-specific reports of students who are eligible for Medicaid at two income eligibility levels, free and reduced priced. These reports are then disseminated to the LEAs.

The Office of Health Care Financing, that is within the Maryland Department of Health, is coordinating with the MHBE, Maryland's state-based health insurance exchange, to ensure applicable Medicaid data is shared with MSDE. MSDE coordinated with the Maryland Health Benefits Exchange to establish a new Interagency Data Use Agreement.

As of July 1, 2022, Maryland is now a full participant in the USDA Direct Certification with Medicaid for Free and Reduced Price Meals program. Starting in this current 2022-2023 school year, students may qualify for free or reduced-price meals based on Medicaid data files. Within Maryland, "direct certification" now includes the use of information provided through the Medicaid data matching files, in addition to the data from Temporary Assistance for Needy Families (TANF), Supplemental Assistance Nutrition Program (SNAP), Foster Care, and status as a student experiencing homelessness. A student's income eligibility included as part of data collections that the LEA submits to MSDE will now include outcomes from Medicaid data matching. The data matching to Medicaid will provide identification of eligibility for free meals as well as reduced-price meals, in comparison to only eligible for free meals through the other direct certification programs.

### **THE COMMUNITY ELIGIBILITY PROVISION (CEP)**

The Community Eligibility Provision (CEP), enacted as part of the Healthy, Hunger-Free Kids Act of 2010, is a recent addition to the federal National School Lunch Program (NSLP). It allows schools and districts serving low-income populations to provide free meals for all students, regardless of students' individual circumstances. The CEP expands meal access to students while reducing the paperwork burden from families.

To be eligible for participation in CEP, a school or district needs to have at least 40% of its students eligible for free meals, using the direct certification process described above. Any school with an Identified Student

Percentage (ISP) of at least 40% may choose to participate in CEP and offer free meals to all students in the school, including students who would not otherwise be eligible.

In the 2021-2022 school year, there were four local education agencies (Baltimore City and Dorchester, Somerset, and Wicomico counties) in Maryland that implement CEP in all schools in the district, and an additional ten counties that implement CEP in some of their schools. A total of 354 schools in 2021-2022 had implemented CEP.

As more schools and districts participate in CEP, more students have access to free meals at school. Ensuring more children have access to nutritious meals during the school day is vital to providing them with an equitable and excellent education. However, the expansion of the CEP program creates issues related to the FARMs data that has traditionally been used to identify low-income students, especially for funding allocation purposes. Schools that participate in CEP do not collect individual annual household applications with family income data. This means that any student who is not identified through direct certification is not included in any FARMs counts or statistics. These CEP schools will then intrinsically have a lower FARMs rate than other schools who are not participating in CEP, even if the student population is identical.

The inevitable disparity in FARMs rates between CEP schools and other schools creates an imbalance for any funding allocation that is based on these rates.

#### **PROBLEM OF PRACTICE: LIMITATIONS OF EXISTING INDICATORS OF POVERTY**

Using the existing convention of measuring poverty based on free or reduced-price meals (FARMs) eligibility has some advantages that explain its continued use. The income eligibility thresholds for FARMs are updated annually, the data is accessible and widely available, and it has historically had easy and universal participation. However, the use of FARMs participation data is merely a proxy for a family's socioeconomic status. Furthermore, there are limitations in the use of FARMs data in the quality, and accessibility of the data:

- **The family income information on Free and Reduced Price Meal applications is intended only to determine a student's eligibility for the National School Lunch Program (NSLP).** FARMs eligibility data has been interpreted as a representation of a student's family income rather than the student's eligibility for free or reduced-price meals. Due to NSLP guidelines<sup>1</sup> requiring that state education agencies, local school systems, and schools ensure that their data systems, school records, and other means of viewing a student's FARMs eligibility status are accessible only to officials directly connected with the administration of the meals program, access to FARMs eligibility data is often limited. Teachers, guidance counselors, principals, and education staff who are not providing such assistance may not have access to FARMs data.
- **FARMs eligibility data provides little variation in income.** FARMs eligibility data is severely limited in its ability to capture variation in income as it focuses only on three categories: not eligible, eligible for free lunch, or eligible for reduced-price lunch. These categories are also often combined into "free or reduced price lunch," without variation within this term.

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<sup>1</sup> Disclosure of Children's Free and Reduced Price Meals and Free Milk Eligibility Information in the Child Nutrition Programs, A Rule by the Food and Nutrition Service on 03/12/2007

- **FARMs eligibility data are becoming less applicable as a measure of income.** In 2010, the federal Healthy, Hunger-Free Kids Act was amended to provide an alternative to household applications for Free and Reduced Price meals in high-poverty school systems and schools. The new Community Eligibility Provision (CEP) allows local education agencies to elect CEP on behalf of a single school, group, group of schools, or all schools in the system to provide free meals to all students. To be eligible for CEP, schools are required to have at least 40% of enrolled students certified for free school meals. When schools implement the CEP, they are prohibited from collecting NSLP household income applications. The expansion of CEP participation has meant that the reporting on students from low-income households through using FARMs status is less accurate due to the elimination of NSLP annual household applications.<sup>2</sup> During the 2020-2021 and 2021-2022 school years, because of the Covid-19 pandemic, the USDA also waived the need to collect the household forms and provided free meals for all students.<sup>3</sup> This has further exacerbated the issue of relying on collecting household forms to measure poverty within a school.
- **Measures of an individual household's poverty likely undercount students.**<sup>4</sup> The students and families that are undercounted tend to be poorer and may choose not to participate in government programs. Some families may also simply choose to not request free or reduced price meals for their own reasons. The data from the annual household applications is also self-reported and may not be accurate due to any manual process that does not have built-in verifications and checks at every step.

Based on these reasons and other policy context, it would be advantageous for Maryland to move beyond its reliance on annual household applications to serve as the proxy for estimating a student's or school's socioeconomic status level, especially for use in any funding allocation formulas or other school data analysis.

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<sup>2</sup> National Forum on Education Statistics, 2015

<sup>3</sup> <https://frac.org/blog/make-healthy-school-meals-for-all-the-new-normal-in-maryland>

<sup>4</sup> Data Quality Campaign (2022). Toward a Better Measure: Recommendations for State Policy and Education Leaders on Measuring Student Need.

# Incorporating an Alternative Income Eligibility Form

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The Blueprint for Maryland's Future directs the Maryland State Department of Education to develop an alternative income eligibility form, separate from the standard income eligibility forms that are used to identify Free and Reduced Price Meals as part of the National School Lunch Program (NSLP). The alternative form must include a statement indicating that the income information requested on the form is used to determine local and state funding for education. MD Code, Education, § 5-222 states that the form must be used by all schools participating in the Community Eligibility Provision (CEP) and may be collected by all other schools, beginning in the 2022-2023 school year.

## Development of State Alternative Income Eligibility Form

The regulations around the CEP prohibit the collection of the standard FARMs forms used for the NSLP. Therefore, states and local education agencies can no longer rely on federal resources to collect household forms from students' families to determine the family's income level or other socioeconomic status levels. To remedy this, some states require household alternative income forms to be administered to gather information on a family's income level.

MSDE will develop a state alternative income eligibility form and make it available to all schools and districts, including those participating in CEP, by January 1, 2023.

While MSDE will make this alternative form available to districts, the MSDE recommended methodology to identify eligibility for Compensatory Education funding – discussed in later sections in this report – does not require the collection of these forms or any other forms from each household. The collection process of these alternative forms will be subject to the same complications and difficulties that the collection of FARMs forms is subject to. Mandating the distribution and collection of these forms will create a labor burden for families, schools, and districts to facilitate the collection of the forms. Additionally, the information collected from these forms at CEP schools will have no effect on individual students having access to free meals. This reduces the incentive for the individual family to complete and submit their form, leading to a lower response rate. Also, as the applicability of these forms differ depending on whether the school participates in CEP or not, mandating the collection of these forms and applying that data to funding formulas leads to funding allocations for each school that may not accurately reflect student need in those schools.

# Compensatory Education State Aid and Fiscal Equity

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The equitable allocation of resources to schools is a longstanding federal, state, and local policy issue. State policymakers have long used weighted-funding formulas (WFF) to address inter-district fiscal equity issues.<sup>5</sup> The Blueprint Compensatory Education Program constitutes a weighted-funding formula in that the State Aid calculation provides additional resources to Local Education Agencies that enroll students who meet certain criteria. Understanding the underlying conceptual framework of a weighted formula drives home the importance of properly capturing the eligible students for the Compensatory Education formula weight.

The underlying equity concepts behind a weighted-funding formula are vertical equity and horizontal equity. Specifically, vertical equity is the notion that unequal student subgroups should be given an appropriately unequal treatment.<sup>6</sup> Put differently: different students require different resources. Horizontal equity, in contrast, refers to the equal treatment of like student subgroups, or, that similar student subgroups require similar resources.<sup>7</sup> WFF attend to these equity concepts through the weights in the formula. Each weight constitutes a 'like' group of students who should receive similar dollars; the use of multiple weights results in the allocation of different resource amounts to different groups of students.<sup>8</sup> In sum, WFF seek to advance both horizontal and vertical forms of equity: vertical equity in the use of different weights to correspond to different student subgroups; and horizontal equity in the grouping of 'like' students within subgroups that receive the same or similar weight.

Within the Blueprint for Maryland's Future funding formula, the Compensatory Education is the largest (in terms of total dollars) non-foundation formula program. In Fiscal Year 2023, the State share of State Aid for Compensatory Education was \$1.3 billion. The presence of Compensatory Education in the Blueprint for Maryland's Future funding formula constitutes the recognition that students in circumstances of poverty require additional support compared to students who are not in circumstances of poverty. For that reason, properly capturing eligible children in the enrollment counts that determine State Aid is essential.

Extant scholarship related to the impacts of poverty, particularly concentrated poverty, on student outcomes indicate that, absent intervention, poverty affects lifetime earnings, social mobility, college attendance rates.<sup>9</sup>

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<sup>5</sup> Augenblick, Myers, & Anderson, 1997; B. D. Baker, 2018; Chingos & Blagg, 2017; Duncombe, Ruggiero, & Yinger, 1996; Hanushek, 2006; Odden & Picus, 2014; U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service, 2019; Roza & Hagan, 2018

<sup>6</sup> B. Baker & Green, 2015; Berne & Stiefel, 1984, p.13, 1999; Odden & Picus, 2014

<sup>7</sup> Berne & Stiefel, 1984, 1999; Odden & Picus, 2014

<sup>8</sup> Chambers, Levin, & Shambaugh, 2010; Malen et al., 2015; Odden & Picus, 2014

<sup>9</sup> Chetty R., Hendren, Kline, & Saez (2014)

# Neighborhood Measures of Poverty

Poverty is “the extent to which an individual does without resources.”<sup>10</sup> However, the current prevailing indicator of poverty, FARMs eligibility, reflects the availability of only one resource – household income.<sup>11</sup> Instead of relying on income as the only measure of poverty, incorporating other measures of socioeconomic status and identifying concentrations of poverty will create a more equitable and accurate identification of students and schools in need.

Access to financial, social, cultural, and human capital resources are broadly defined under the term “socioeconomic status” (SES).<sup>12</sup> Understanding the socioeconomic status of local communities allows policymakers and practitioners to:

- Equitably allocate financial, instructional, and support resources to groups of people (e.g., students, schools, and communities).
- Identify individuals who are eligible to participate in a range of supplemental programs and services or otherwise receive public benefits.
- Understand potential socioeconomic differences when comparing educational conditions across students, schools, and school systems.
- Report on the effectiveness of schools, programs, and services for a wide range of student groups.<sup>13</sup>

SES is correlated with skill development, academic achievement, work and life outcomes, and overall psychological and behavioral well-being across a lifespan. High SES has particularly positive effects on children and students. Young children from high SES households and communities are less likely to develop learning-related behavior problems than those from environments with lower SES.<sup>14</sup> Higher levels of SES have positive effects on individual and school-level literacy indicators, as well as correlations with the quality of students’ home learning environments and their classroom instruction.<sup>15</sup>

## CONCENTRATION OF POVERTY

The socioeconomic status of a student’s parents or guardians is the strongest predictor of academic achievement and educational attainment but the concentration of poverty within a neighborhood in which an individual resides has an additional negative effect. In other words, both poverty and place matter. Research indicates that poor families in a neighborhood with a high percentage of poor families have a double disadvantage; it is significantly more challenging to grow up poor in a poor neighborhood than to grow up poor in a better resourced neighborhood.<sup>16</sup> The concentration of poverty within an area can further limit individuals’ and families’ lack of access to resources and support to overcome the challenges of individual poverty in different ways, including through social interactive effects (e.g. social networks),

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<sup>10</sup> Payne, 2005

<sup>11</sup> National Forum on Education Statistics, 2015

<sup>12</sup> National Center for Education Statistics, 2012

<sup>13</sup> National Forum on Education Statistics, 2015

<sup>14</sup> Morgan, Farkas, Hillemeier, & Maczuga, 2009

<sup>15</sup> Buckingham, Wheldall, & Beaman-Wheldall, 2013

<sup>16</sup> Jargowsky, 2015

environmental effects (e.g. exposure to violence), geographical effects (e.g. inferior public services), and institutional effects (e.g. local institutional resources).<sup>17</sup>

There is a substantial body of research on the impact of concentrated poverty in neighborhoods on economic mobility:

- Economic mobility varies substantially by geography across the United States; areas with less residential segregation by race and income and less income inequality had higher rates of economic mobility.<sup>18</sup>
- Neighborhood poverty was found to be the most important factor explaining a lack of economic mobility among African American children, more so than parental education, employment, or marital status. The outcomes of better off children raised in areas of concentrated poverty were also negatively affected by their neighborhood.<sup>19</sup>
- Children whose families moved to a higher income neighborhood have better outcomes, including higher earnings and college attendance rates, and the magnitude of the improvement increases with the amount of time they spend growing up in the new neighborhood.<sup>20</sup> Specifically, moving out of a neighborhood with low economic mobility into a neighborhood with higher mobility increases lifetime earnings for low-income children by an average \$200,000.<sup>21</sup> Low-income boys who grew up in Baltimore earn approximately 25 percent less as adults compared to similar low-income boys who were born in the city but moved as small children to an average income neighborhood.<sup>22</sup>

In recognition of the importance of the role that place plays in limiting economic mobility, policymakers have implemented various efforts to assist low-income families in moving from neighborhoods with concentrated poverty to low-poverty areas. Research on these efforts have documented the positive effects on families that moved to lower poverty neighborhoods:

- From 1976 to 1998, randomly selected low-income African American families were provided housing vouchers to move to urban or suburban areas as a result of a court order. Researchers found that families that stayed in urban areas were more likely to remain on welfare and their children were more likely to drop out of school while families that moved to suburban areas were more likely to find employment and leave welfare and their children were more likely to graduate high school and enroll in college.<sup>23</sup>

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<sup>17</sup> Galster, G.C. (2012). The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications. In: van Ham, M., Manley, D., Bailey, N., Simpson, L., Maclennan, D. (eds) *Neighbourhood Effects Research: New Perspectives*. Springer, Dordrecht. [https://doi.org/10.1007/978-94-007-2309-2\\_2](https://doi.org/10.1007/978-94-007-2309-2_2)

<sup>18</sup> Chetty, R., Hendren, N., Kline, P., & Saez, E. (2014). Where is the land of opportunity? The geography of intergenerational mobility in the United States. *The Quarterly Journal of Economics*, 129(4), 1553-1623.

<sup>19</sup> Sharkey, P. (2009). *Neighborhoods and the Black-White mobility gap*. Washington, D.C. The Economic Mobility Project, The Pew Charitable Trusts.

<sup>20</sup> Chetty, R. & Hendren, N. (2018). The impacts of neighborhoods on intergenerational mobility I: Childhood exposure effects. *The Quarterly Journal of Economics*, 133(3), 1107-1162.

<sup>21</sup> <https://www.npr.org/2018/10/01/649701669/the-american-dream-is-harder-to-find-in-some-neighborhoods>

<sup>22</sup> <https://www.nytimes.com/2015/05/04/upshot/an-atlas-of-upward-mobility-shows-paths-out-of-poverty.html>

<sup>23</sup> Rubinowitz, L. & Rosenbaum, J. (2000). *Crossing the Class and Color Line: From Public Housing to White Suburbia*. University of Chicago Press.

- A study of the long-term effects of the federally sponsored Moving to Opportunity program found that moving young children from a high-poverty housing project to a lower-poverty neighborhood increased college attendance and earnings and reduced single parenthood rates.<sup>24</sup>

The concept of neighborhood concentrated poverty can also be applied to schools. High proportions of students coming from low-income households have been found to have a negative impact on student outcomes. The socioeconomic composition of a school influences students' educational outcomes above and beyond the students' own family background, prior achievement, race, gender, and levels of effort or motivation.<sup>25</sup> In fact, one study found low-poverty schools were 22 times more likely to consistently display high academic achievement than high-poverty schools.<sup>26</sup>

Given the negative effects of concentrated poverty in schools, policymakers have instituted school integration programs in various school districts:

- The Metropolitan Council for Education Opportunity (METCO), the largest and second-longest continuously running voluntary school desegregation program, enrolls children from the city of Boston in suburban public schools. Recent research found that METCO students scored higher in English and writing in elementary and middle school than Boston Public School (BPS) students, comparably in math, and were substantially more likely to graduate from high school and enroll in college than BPS students.<sup>27</sup>
- In Montgomery County, Maryland, the nation's oldest inclusionary zoning program allows the local housing authority to purchase a third of homes as federally funded public housing, permitting low-income families to live in higher-income neighborhoods and their children to attend schools in which a majority of students do not live in poverty. Research on the effects of this housing policy found that elementary school students that lived in public housing and attended their district's most advantaged schools outperformed similar students that attended the least advantaged schools. The achievement gap between students who lived in public housing and non-poor students in the district was reduced by half in math and by a third in reading.<sup>28</sup>
- In Hartford, Connecticut, a final settlement agreement has recently been reached and approved in the *Sheff v. O'Neill* case. The settlement establishes a permanent injunction enforcing the key terms of a long-term Comprehensive Choice Plan intended to redress the consequences of decades of disinvestment and exclusion. Among other provisions, the Comprehensive Choice Plan commits Connecticut to significantly expand the number of available seats for students from Black, Latinx, and/or low-income families who have been the victims of entrenched and systemic segregation. Integrated magnet schools, like that identified in the approved case settlement, have long demonstrated positive student outcomes.<sup>29</sup> Additionally, the agreement would require Connecticut's Department of Education to publicly report data on educational equity and to commit to greater diversity in its hiring practices.<sup>30</sup>

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<sup>24</sup> Chetty, R., Hendren, N., & Katz, L. (2016). The effects of exposure to better neighborhoods on children: New evidence from the moving to opportunity experiment. *American Economic Review*, 106(4), 855-902.

<sup>25</sup> Mickelson, 2018

<sup>26</sup> Harris, 2007

<sup>27</sup> Mantil, A. (2018). Evaluating the impact of nontraditional school choices. Doctoral dissertation, Harvard Graduate School of Education. Retrieved from <http://nrs.harvard.edu/urn-3:HUL.InstRepos:37679891>

<sup>28</sup> Schwart, H. (2012). Housing policy is school policy: Economically integrative housing promotes academic success in Montgomery County, Maryland. The Century Foundation, New York, NY.

<sup>29</sup> <https://education.uconn.edu/2010/06/01/magnet-schools-provide-academic-and-social-benefits-study-reports/#>

<sup>30</sup> <https://www.naacpldf.org/case-issue/sheff-v-oneill/>

Neighborhoods do not exist in social or physical isolation and are often surrounded by other socioeconomically similar neighborhoods with residents of neighborhoods also visiting other neighborhoods in their everyday routines. Triple neighborhood disadvantage is a concept that builds on the idea that resources and well-being of a neighborhood are also dependent on the conditions in the neighborhoods its residents visit and are visited by. A triple neighborhood disadvantage may lack the needed public or private investment as well as proximity to organizational resources further exaggerating the concentration of poverty.<sup>31</sup>

Concentrated poverty and neighborhoods have a demonstrated and significant impact on a student's educational career. However, to incorporate the effect of a student's neighborhood into a school funding model, each student must be assigned to a geographic location. This data has historically not been collected at the state level in Maryland. To address this, the Maryland Longitudinal Data System Center (MLDSC) developed the process and protocols to collect the student neighborhood data.

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<sup>31</sup> Levy, Phillips, & Sampson, 2020

# MLDS Geolocation Data Collection

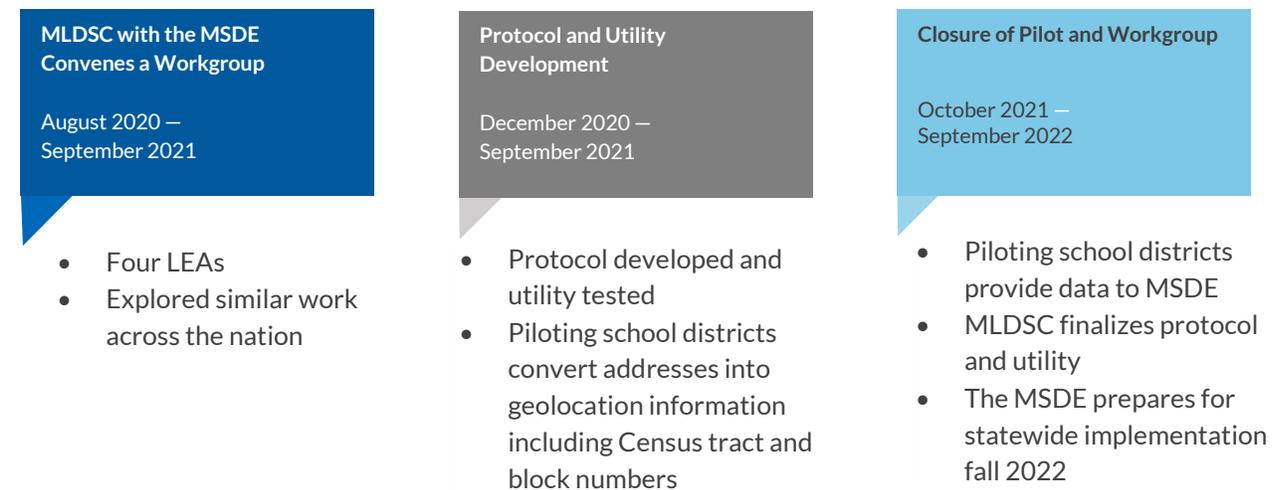
Pursuant to Education Article §24-703.3, enacted in 2019, the Maryland Longitudinal Data System Center (MLDSC) is required to develop a protocol for geocoding K-12 student data. Specifically, the requirements are as follows:

- The Maryland Longitudinal Data System Center is required to develop a protocol for a county or city board to convert a student's home address and geolocation information into Census tract and block numbers.
- LEAs are required to convert student addresses into Census tract and block numbers.
- The MSDE is required to collect student-level Census tract and block numbers from local education agencies, and to provide the collected student-level Census tract and block numbers to the MLDSC.

The MLDSC and the MSDE collaborated with four local education agencies (LEAs) to pilot a protocol to fulfill the requirements of the law; the pilot was completed September 2021. The LEAs included in the pilot – Anne Arundel County, Frederick County, Caroline County, and Baltimore City – represent a cross-section of Maryland in geographic area, number of students enrolled, and socioeconomic status of the schools.

As part of the pilot, the four LEAs have provided data to the MSDE to support the analysis and study of neighborhood indicators of poverty. Figure 2 highlights the activities as part of the Geocoding of K-12 Student Data workgroup.

**Figure 2: Geocoding of K-12 Student Data Workgroup (Pilot Program)**



Following the completion of the pilot program with the four LEAs, the MLDSC formalized the data collection process and developed a tool for LEAs to convert student addresses to Census tract and block numbers and easily submit the requested data. Over summer 2022, two informational webinars on the new data collection were provided and MLDSC staff provided one-on-one technical assistance meetings. In fall 2022, all 24 LEAs will submit the Census tract and block numbers for all students enrolled on September 30, 2022. Each LEA will submit their data to MSDE by November 15, 2022. Additional details on the data submission process, including data elements to be collected and the technical guidance, can be found on the MLDSC website.<sup>32</sup>

<sup>32</sup> <https://mldscenter.maryland.gov/CensusProtocol.html>

# Data Sources for Neighborhood Indicators

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The geolocation data collection protocol that MLDC has developed identifies the Census block that the students live in. This connection of each student – and the school that they attend – matched with the Census block of their residence creates the ability to place students on a map and visualize where they live. The next step in the process of incorporating neighborhood indicators of poverty into State education aid programs is to identify the quantitative measures that are indicative of the socioeconomic status of a neighborhood, are viable inputs for funding models, and that represent the diversity of Maryland. There are a variety of data sources available that include measures connected to different Census blocks or other geographies.

The Blueprint for Maryland's Future requires MSDE to evaluate two neighborhood indicators of poverty data sources that may be used to identify economically-disadvantaged students eligible for the Compensatory Education program:<sup>33</sup>

- (g)(2)(ii)(1) The American Community Survey data available across geographic areas in the Small Area Income and Poverty Estimates Program to provide school district poverty estimates; and
- (g)(2)(ii)(2) The Area Deprivation Index developed by the University of Wisconsin – Madison to rank neighborhoods by socioeconomic status disadvantage

The United States Census Bureau administers the [Small Area Income and Poverty Estimates \(SAIPE\)](#) program that produces model-based estimates annually of income and poverty for school districts, counties, and states. The SAIPE program uses statistical models to create the estimates. The models combine estimates of income and poverty from the American Community Survey (ACS) to other indicators of income based on summary data from federal income tax returns, SNAP benefits data, decennial census data, postcensal population estimates, Supplemental Security Income reciprocity, and economic data from the Bureau of Economic Analysis (BEA). While the program pulls from multiple sources of income, it does not include other indicators of socioeconomic status. The results also only provide an estimated number of relevant school age children in poverty by school district, which does not allow for differentiation between schools or even students.

The [Area Deprivation Index \(ADI\)](#) developed by the University of Wisconsin-Madison uses the American Community Survey (ACS) to rank neighborhoods by socioeconomic disadvantage status. The ADI calculates a composite of 17 measures at the Census block group level. The measures include education, income/employment, housing, and household characteristics. Block groups are ranked in nationwide percentiles and statewide deciles. Assigning state deciles to block groups is a limitation because each block group will only be identified by one of ten options, which significantly reduces the differentiation that could have been applied to the 4,035 block groups in Maryland. The ADI incorporates a range of neighborhood characteristics and includes differentiation between neighborhoods, but it was primarily created for and used in health outcomes research, which makes the use of ADI for developing a new neighborhood indicator of poverty for measuring school-level concentration of poverty very tenuous.

In addition to evaluating the data sources that were identified in the Blueprint, MSDE explored creating its own measure using public data released by the United States Census Bureau. The advantage of this data source is that it can be modified to include indicators that most impact residents in Maryland, including

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<sup>33</sup> (Ed. §5-223)

weighting indicators differently as needed for Maryland’s unique context. The [American Community Survey](#) (ACS) is administered annually by the Census to a stratified random sample of approximately 2.5% of households across the United States. The ACS collects and publishes data on demographics, ancestry, household income, household size and composition, computer and internet use, occupancy rates, educational attainment, employment, industry, home ownership, among many others. Each of these topics is available to the public for download on the Census website at several levels, including the block group, tract, and county levels. The ACS also published 1-year estimates for each topic, as well as 5-year estimates which are more reliable, have a smaller margin of error, and can provide a stable look into very small geographic areas.

After evaluating and identifying the limitations of the Small Area Income and Poverty Estimates Program (SAIPE) and the Area Deprivation Index (ADI) from the University of Wisconsin-Madison, MSDE recommends that Maryland use the data published directly from the Census Bureau through its American Community Survey. With this approach, Maryland will have the flexibility and control necessary to integrate a measure that is specifically tailored to the unique needs of Maryland’s schools. Details on how MSDE proposes to operationalize the ACS data will be discussed in later sections.

**Table 1: Comparison of Data Sources for a Neighborhood Indicator of Poverty**

	Small Area Income and Poverty Estimates (SAIPE)	Area Deprivation Index (ADI)	MSDE Measure based on American Community Survey (ACS)
Measures and weights can be changed	No	No (Composite measure)	Yes
Captures measures other than income	No	Yes	Yes
Geographic Level	School District	Census Block Group	Census Block Group
Unit of Measure	Count of students	State decile	Specific to indicator

# National Review of Neighborhood Indicators Of Poverty

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MSDE has reviewed available and emerging models of neighborhood indicators of poverty across the nation. Highlights of state and district measures from Texas, New Mexico, Colorado, Chicago, and Los Angeles are included below.

1. **Texas Education Agency Statewide Socioeconomic Tier Model for Texas School-Age Residents**

In Texas, a statewide five-tier socioeconomic status (SES) classification model was developed based on four factors using ACS data including household income, home ownership, household composition, and educational attainment. A composite SES score was calculated for each of the 15,286 Texas Census block groups that contained family households and for which the most recent 5-year ACS provided a median household income estimate.

- Calculated each student's economically disadvantaged status by the Census block group where their home/residence is located.
- Increased Compensatory Education funding for students in lower socioeconomic tiers. The compensatory funding is based on a tiered multiplier with the highest weight resulting in the greatest amount of additional funding provided for students in the lowest SES tier. Students experiencing homelessness are automatically assigned to the lowest SES tier.
- Funding must be used for programs that meet the needs of educationally disadvantaged students including childcare services, assistance with childcare for students at risk of dropping out of school, life skills programs, programs eligible under Title I, and other permitted programs depending on needs of students.
- Via House Bill 3, the Texas Legislature also created the [Teacher Incentive Allotment \(TIA\)](#), a statewide career ladder initiative to recruit, retain, and reward highly impactful teachers to teach in rural and high-needs schools and to compensate those teachers accordingly. That compensation is tied directly to need, as measured by Neighborhood Tier, and to performance. Under the TIA, districts can create local systems that designate accomplished teachers on three different levels: Recognized, Exemplary, and Master. Nationally Board Certified teachers are automatically considered Recognized. Districts receive additional state funding of \$3,000 to \$32,000 per year for every designated teacher they employ. The larger dollar amounts are allocated for those designated teachers who teach at rural and/or high-needs campuses, and 90 percent of the funds must be used on teacher compensation at the designated teacher's campus.

2. **New Mexico Public Education Department Family Income Index**

In New Mexico, a statewide five-tier family income index is calculated for every school in the state based on data from other state agencies as well as the Census data. For every school, the percentage of students in five income categories is calculated, which results in a ranked list of schools with the highest populations of low-income students.

- Calculated each school's Family Income Index, or the percentage of students in families with the lowest incomes.

- Allocated \$15 million to 108 schools, with awards ranging from \$20,000 to \$434,174, to fight concentrated poverty in schools.
  - Funding must be used for specified purposes such as reading and math interventions, hiring school counselors and social workers, creating family information and resource centers, adopting culturally and linguistically diverse classroom texts, offering innovative professional learning opportunities, or after-school enrichment.
3. **Colorado School Finance**  
In the 2022 legislative session, the Colorado General Assembly passed a bill that requires that a new at-risk measure in the school finance formula to identify students who are at risk of below-average academic outcomes due to socioeconomic disadvantage or poverty be used beginning in FY 2023-24. The new measure includes: a district's percentage of students certified as eligible for free lunch based on receipt of public benefits (SNAP, TANF, Food Distribution Program on Indian Reservation) or categorical eligibility (foster, homeless, migrant, runaway or Head Start), supplemented by the direct certification of students participating in Medicaid or Children's Basic Health Plan; and a neighborhood socioeconomic status index that weights student needs based on at least five socioeconomic status neighborhood factors, linked to each student's Census block group.
  4. **Chicago Public School Tiers**  
The Chicago Public Schools (CPS) developed a socioeconomic score (SES) four-tier methodology to increase diversity in the student body at selective schools. The CPS model used six factors from ACS data: household income, home ownership, household composition, educational attainment, percentage of households where English is not the primary language, and school performance.
  5. **LAUSD Student Equity Needs Index**  
The Los Angeles Unified School District created the Student Equity Needs Index (SENI) in response to the district board's passage of Equity is Justice 1.0 in 2014 and successive board resolutions. The index directs funding to schools to close equity gaps for students, particularly English Learners, students in foster care, and low-income students. In the 2022-2023 school year, the SENI funds distributed \$700 million across the 640,000 plus student district. The Index is composed of 17 school level measures, within the four main categories of school demographics, academic indicators, school climate indicators, and community indicators, which includes the asthma severity rate in the school neighborhood, the number of non-fatal gunshot injuries in the school neighborhood, the COVID-19 case rate, and the COVID-19 death rate.

# Maryland Neighborhood Tiers

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Informed by national examples, academic research, and rigorous analysis of neighborhood indicator data sources, MSDE developed a process to utilize American Community Survey (ACS) measures to develop a methodology that assigns a "Maryland Neighborhood Tiers (MNT)" to each Census block group.

MSDE's research included a detailed investigation of existing and emerging methodologies used to create socioeconomic scores and tiers. The foundation of these models is the use of Census block groups to identify neighborhoods and the use of ACS measures to identify multiple dimensions of socioeconomic status for each block group.

As discussed earlier, concentrated poverty and neighborhoods have a demonstrated and significant impact on a student's educational career. However, to incorporate the effect of a student's neighborhood into a school funding formula requires specific quantitative measures be used to identify different neighborhoods. A meaningful neighborhood need tier may include any or all of the following measures:

- family or household income
- highest level of education completed by parent or guardian
- occupation of parent or guardian
- home ownership
- neighborhood factors
- household composition

## Maryland Neighborhood Tier Methodology

MSDE's Maryland Neighborhood Tiers (MNT). The MNT system assigns specific socioeconomic status scores and tiers to each neighborhood, defined by the Census block group. The MNT tiers build on the approach used by Texas that focuses on four neighborhood factors, as measured by the ACS. These four measures represent distinct elements of poverty that are used in existing methodologies and are correlated with student achievement.<sup>34</sup> The following four ACS metrics across each Census block group in Maryland are included in the Maryland Neighborhood Tiers model:

- median household income
- adult education level
- home ownership
- household composition (single parent household status)

A composite index of these four measures was calculated for 4,035 Census block groups in Maryland using the 2020 ACS 5-year estimates.<sup>35</sup> The 4,035 Census block groups were ranked from high poverty to low poverty and assigned to one of five MNT tiers where each tier contains a similar number of school-age residents (not necessarily a similar number of block groups). Tier 1 is high socioeconomic status (low

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<sup>34</sup> (Davis-Kean, 2005) (Ghimire, 2021) (Milne, Myers, Rosenthal, & Ginsburg, 1986) (Pong, 1997).

<sup>35</sup> Maryland has 4,079 Census block groups but 44 block groups were missing all four measures and were not assigned a score or tier.

poverty), and Tier 5 is low socioeconomic status (high poverty). Additional details on the methodology of the MNT tier calculations are available in the Appendix of this report.

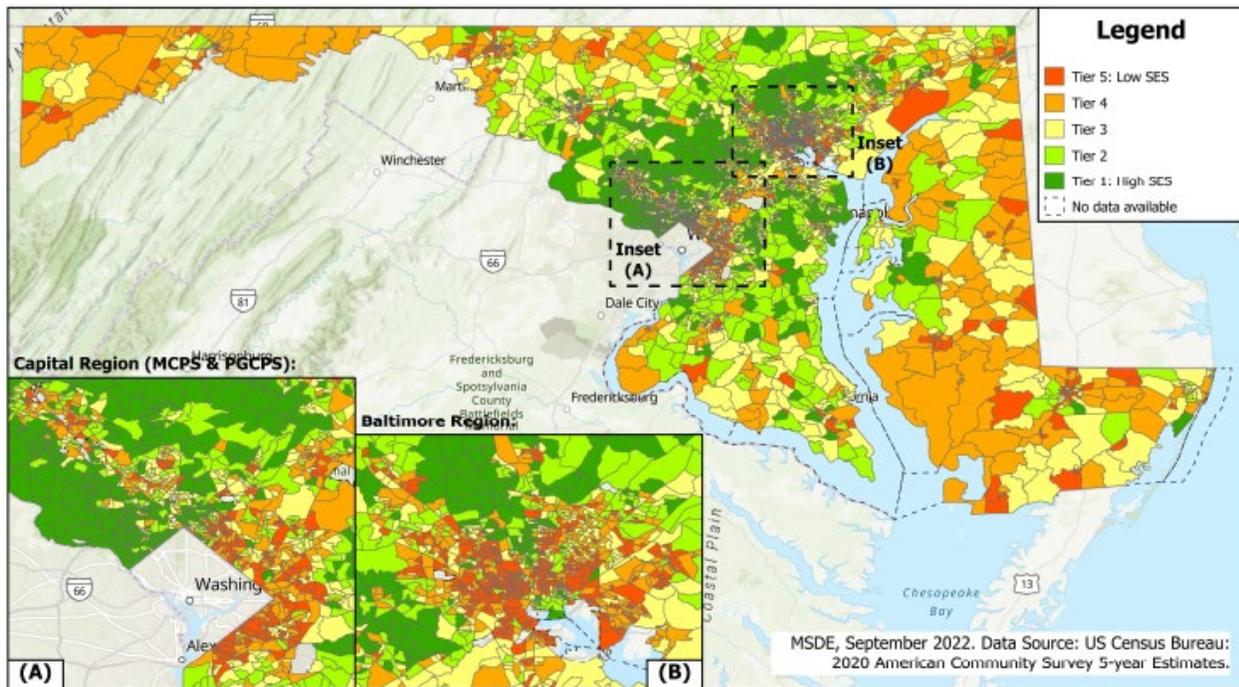
Each Census block group in Maryland is classified into one of five MNT tiers (1 to 5) so that each tier contains about one-fifth of all school-age residents in Maryland. This means that each tier does not consist of the same number of Census block groups. Statewide, 16.2% of block groups fall in Tier 1, 19.1% in Tier 2, 20.5% in Tier 3, 21.9% in Tier 4, and 22.3% in Tier 5.

### Exploration of Maryland through MNT Tiers

The MNT model presents a new way to assess the depth of poverty and school and neighborhood needs is established. By mapping the MNT Tiers by using five color-coded neighborhood tiers across the State now has 5 different categories of neighborhoods, but each of these categories is mixed in together with the others, and not divided along familiar boundaries such as county borders. Each tier represents a different level of Social Economic Status (SES).

The map in Figure 3 shows the MNT tiers across the state of Maryland. Census block groups are colored according to the assigned tier, with red indicating the lowest SES Tier 5 and dark green indicating the highest SES Tier 1.

Figure 3: Map of Maryland Census block groups by MNT Tier



The visualization of the five MNT Tiers is a representation of the different characteristics of the neighborhoods in each tier. Table 2 details the average characteristics of the neighborhoods in each tier, across each of the ACS metrics that are used.

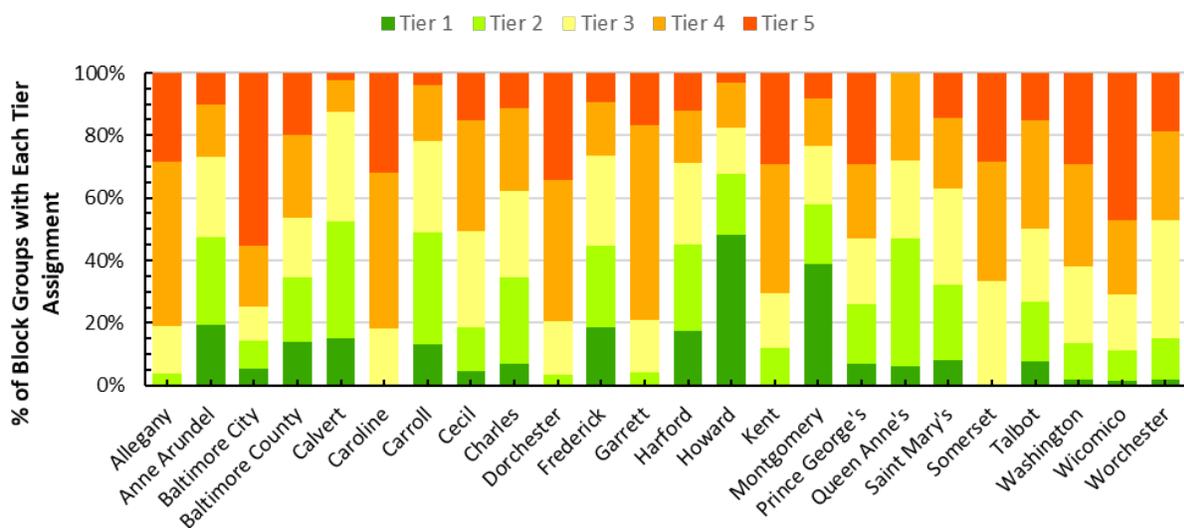
**Table 2: Average Census Block Group Characteristics By MNT Tiers**

MNT Tier	Median household income (\$)	% Home ownership	% Single Parent Households	Educational Score <sup>36</sup>	Average SES score <sup>37</sup>	N School-age residents
Tier 1	\$173,503	92.8%	8.3%	0.78	1.16	195,580
Tier 2	\$115,395	85.2%	15.1%	0.68	0.53	195,466
Tier 3	\$90,277	76.1%	24.3%	0.62	0.12	195,622
Tier 4	\$70,339	60.9%	38.9%	0.58	-0.33	195,534
Tier 5	\$48,048	34.9%	70.7%	0.50	-1.12	194,863

While each tier has about one-fifth of the Census block groups in the state, the tiers are not distributed equally in each county. Figure 4 shows the considerable variation of tier composition across the school districts. Some school districts are comprised of many neighborhoods with a high socioeconomic status, while other districts have a larger proportion of low socioeconomic status neighborhoods:

- While more than half (55.4%) of the Census block groups in Baltimore City are classified as Tier 5 (low SES), only one (2.5%) Census block group in Calvert County is classified as Tier 5.
- Six local school systems (Allegany, Caroline, Dorchester, Garrett, Kent, and Somerset) have zero high SES Census block groups (Tier 1).
- More than 50% of Census block groups in Calvert, Howard, and Montgomery Counties are in Tiers 1 or 2 (higher SES).

**Figure 4: Distribution of Socioeconomic Tiers By Local School System**

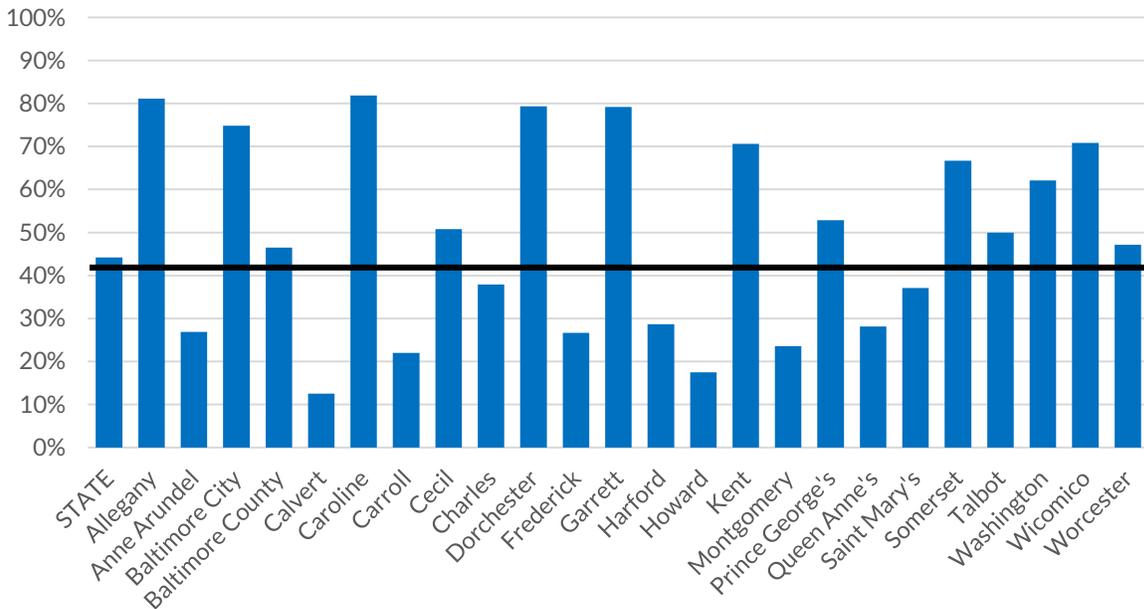


<sup>36</sup> Education score is calculated as a weighted percentage of adult in a Census block group who have attained different levels of education, from 0 for no education to 100 for an advanced degree. See Appendix A for more information.

<sup>37</sup> SES Score is the average of the z scores of the four indicators and ranges from -2.40 (low SES) to 2.15 (high SES).

Figure 5 shows the percentage of Census block groups in each local education agency that are classified as high poverty, or Tiers 4 or 5. Across the state, 44% of block groups fall into these two categories. In Baltimore City, and Allegany, Garrett, Kent, and Wicomico counties, 70% or more of the Census block groups are in Tiers 4 or 5. However, in Calvert, Carroll, Frederick, Harford, Montgomery, and Queen Anne's counties, less than 30% of block groups are in these high poverty tiers.

**Figure 5: Percentage of High Poverty Tier Block Groups By Local School System**



**Table 3: Distribution of Census block groups by MNT Tiers and local school system**

Local education agency	Tier 1: High SES	Tier 2	Tier 3	Tier 4	Tier 5: Low SES	Total
Allegany	0	2	8	28	15	53
Anne Arundel	66	94	87	57	34	338
Baltimore City	33	54	67	119	339	612
Baltimore County	77	115	106	148	111	557
Calvert	6	15	14	4	1	40
Caroline	0	0	4	11	7	22
Carroll	13	36	29	18	4	100
Cecil	3	9	20	23	10	65
Charles	6	24	24	23	10	87
Dorchester	0	1	5	13	10	29
Frederick	37	52	57	34	19	199
Garrett	0	1	4	15	4	24
Harford	30	47	45	28	21	171
Howard	80	32	25	24	5	166
Kent	0	2	3	7	5	17
Montgomery	252	125	119	99	54	649
Prince George's	37	103	113	127	157	537
Queen Anne's	2	13	8	9	0	32
Saint Mary's	5	15	19	14	9	62
Somerset	0	0	7	8	6	21
Talbot	2	5	6	9	4	26
Washington	2	12	25	34	30	103
Wicomico	1	7	13	17	34	72
Worcester	1	7	20	15	10	53
<b>Total</b>	<b>653</b>	<b>771</b>	<b>828</b>	<b>884</b>	<b>899</b>	<b>4,035</b>

**APPLYING MNT TIERS TO MLDS PILOT PROGRAM DISTRICTS**

As described in the earlier section, the MLDS Center and the MSDE collaborated with four school districts to pilot a protocol to collect the Census block group data for each student. The LEAs included in four school districts – Anne Arundel County, Frederick County, Caroline County, and Baltimore City – represented a cross-section of the State based on geographic area and socio-economic status of the schools. As part of the pilot, the four LEAs provided the student geolocation data to the MSDE to support the analysis and study of neighborhood indicators of poverty.

In the four LEAs which participated in the pilot program, 93.2% of enrolled students had a geographic identifier and 93.2% were able to be matched with ACS data. Specifically, of the 208,606 students in the pilot LEAs, 194,401 were matched with ACS data at the block group level. Of the remaining students, 14,117 did not have a geographic identifier, 56 had out of state addresses, and 32 were in block groups that were missing all four measures in the ACS data.

Using the provided geographic identifiers, students in the four pilot LEAs were assigned to one of five SES tiers. Working with datasets of this size and nature requires applying business rules for exception cases. With this set of student data from the pilot LEAs, two special case business rules were applied. First, students who are identified as homeless were assigned to Tier 5 (Low SES). This ensures that students experiencing homelessness are statistically counted in the most high-need category. The second business

rule assigned students without a geographic identifier to Tier 1 (High SES). This rule establishes the default condition including students in the lowest-need category.

Table 4 shows the distribution of students in the four pilot LEAs across the five MNT tiers. The majority of students in Anne Arundel and Frederick counties live in neighborhoods with MNT Tiers 1, 2, or 3, and the majority of students in Caroline County and Baltimore City live in neighborhoods with MNT tiers 4 or 5. Across the four pilot LEAs, almost half of students live in tier 4 or 5 neighborhoods and almost a third live in the highest poverty tier 5 neighborhoods.

**Table 4. Distribution of MLDS Pilot LEA Students by MNT Tier**

SES Tier	Anne Arundel	Baltimore City	Caroline	Frederick	Total
1 (Low Poverty)	 19.6%	 1.8%	 0.0%	 25.5%	 13.9%
2	 25.8%	 4.5%	 0.1%	 29.6%	 18.2%
3	 29.7%	 7.0%	 12.0%	 22.8%	 19.5%
4	 16.5%	 19.6%	 49.0%	 12.7%	 17.7%
5 (High Poverty)	 8.5%	 67.1%	 38.8%	 9.4%	 30.7%
Students	77,283	70,285	5,175	41,658	194,401

#### DATA VALIDATION OF MNT TIER METHODOLOGY

In addition to starting from best in class research and learning from existing systems across the country, MSDE conducted a rigorous analysis and a series of validation checks into each component of the model used to create the Maryland Neighborhood Tiers (MNT) tiers. These analyses included:

- Testing the indicator and the number of tiers.** The exploratory model used in this report includes four available ACS measures. Over the past year, the MSDE analyzed other available ACS measures, including employment rates and percentages of households speaking a language other than English, to ensure the robustness of the selected model. The inclusion of additional ACS measures in the composite block group level did not substantially alter socioeconomic scores.
- Studying the relationship between SES tiers, school outcomes, and school resources.** Since the model was designed to determine Compensatory Education funding, the neighborhood indicator at its base should differentiate between student outcomes. To test this notion, MSDE explored the relationship between school level SES tiers and school level outcomes. Table 5 shows the average percentage of students proficient in ELA and math in 2019 for schools with most of their students residing in high poverty neighborhoods and for schools with most of their students residing in low poverty neighborhoods. Schools with a majority of students from low poverty neighborhoods had at least three times as many of their students score proficient in ELA and math in 2019.

**Table 5: School average of percent proficient by subject and student population**

School Characteristic	Number of Schools	Percent Proficient, 2019	
		ELA	Math
Schools with 50% or more students from Tier 1 or 2 neighborhoods	83	64.5%	53.4%
Schools with 50% or more students from Tier 4 or 5 neighborhoods	174	19.3%	14.2%

## Part Two

# Calculation Method, Fiscal Models, and Impact Assessment

# Maryland Neighborhood Tiers (MNT) Calculation Methods

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After the development of the Maryland Neighborhood Tiers (MNT) as described in the sections above, MSDE then developed different methodological approaches to use the MNTs to provide more insight of students and the schools that they attend, as well as how to utilize the MNTs to equitably allocate Compensatory Education and Concentration of Poverty funding.

To understand how the MNTs can be used to measure a student's and a school's socioeconomic status for funding allocation purposes, MSDE analyzed the data provided by the MLDSC pilot data collection from the four LEAs that participated in the MLDSC Census Tract and Block Data Workgroup: Anne Arundel County, Frederick County, Caroline County, and Baltimore City. These LEAs submitted the Census Tract and Block information for each student enrolled in their schools. The following analyses and recommendations are based on these data from these four districts. Additional analyses based on statewide data will be completed after the first full data collection is completed on November 15, 2022. More information on further research is included in the last section of this report.

## PROJECT OBJECTIVES

When developing a methodology that may be used for calculating Compensatory Education and Concentration of Poverty funding, MSDE set out to meet the following objectives:

- Include neighborhood indicators of poverty, to account for additional factors other than individual family income.
- Enable additional students to be included in the measure of poverty through addressing the issues that cause eligible students to be undercounted, including not solely relying on families completing paperwork to be counted.
- Differentiate the students who are counted amongst levels of concentrated poverty to recognize the differential effects of concentrations of poverty.
- Ensure the new measures of Compensatory Education and Concentration of Poverty funding are transparent, comprehensible, and easily communicated.

### CONNECTING STUDENTS WITH MARYLAND NEIGHBORHOOD TIERS

MSDE analyzed the Maryland Neighborhood Tiers (MNT), which indicate the socioeconomic status of a neighborhood, in conjunction with traditional measures of student economic disadvantage, identified by direct certification. Each student was analyzed based on both the MNT of their residence and their individual economically-disadvantaged status. When students' neighborhoods are matched with the individual student's family economic disadvantage, three patterns emerged:

1. As expected, most economically-disadvantaged students live in low SES neighborhoods.
2. Many non-economically-disadvantaged students also live in low SES neighborhoods.
3. Some economically-disadvantaged students live in high SES neighborhoods.

**Figure 6: Distribution of SES Scores by Student Economic Disadvantage Status\***

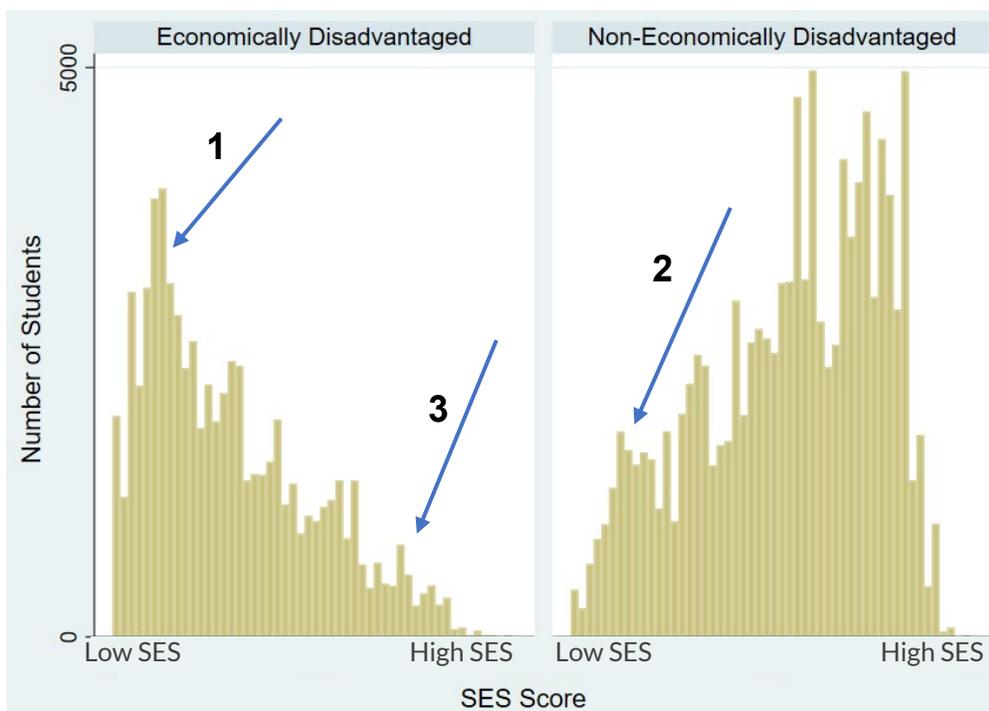


Figure 6 illustrates the patterns described above. These data provide evidence that a neighborhood measure of poverty can provide more variation and nuance than a dichotomous measure of student poverty. Low SES neighborhoods are made up of economically disadvantaged families, however that does not mean that every family living in a low SES neighborhood is economically disadvantaged. This analysis also supports the notions that an identification system of individual poverty relying on families filling out paperwork may not capture all students in need and may lead to overlooking many students in need.<sup>38</sup> Pattern #2, as indicated in Figure 5 shows the students who live in low SES neighborhoods but are not identified as economically disadvantaged and are not eligible for Free and Reduced Price Meals. As neighborhoods are not homogeneous, these may be higher-income families living in low SES neighborhoods. It is also possible these families are economically disadvantaged, but do not participate in programs designed to assist low-income families.

<sup>38</sup> (DQC, 2022)

## CALCULATION METHODOLOGY OVERVIEW

MSDE has developed three different methods to aggregate individual student data up to the school level for funding calculation purposes. Each of the three methods that are described below start with the same four preliminary steps to combine the neighborhood MNT measures, individual student and family economic disadvantage, and school enrollment to acquire all elements needed to calculate Compensatory Education and Concentration of Poverty funding:

1. Calculate the Maryland Neighborhood Tiers for all Census block groups in Maryland, as described above in this report.
2. For each student enrolled in a school, determine the Census block group of their residence.
3. Find the assigned MNT (Tier 1 to Tier 5) for each student's residential Census block group.
4. Determine the student's family economic disadvantage status, based on direct certification (including Medicaid).

After completing these preliminary steps, the calculations continue by completing the steps described in one of the three methods. Each of the three MSDE calculation methods includes different combinations and uses of the data sources, so each has different advantages and disadvantages. A very brief overview of the three methods is introduced here and then more detail is provided in the subsequent chapters.

### Calculation Methods Overview:

1. Calculation Method One: The first method assigns all students to their Maryland Neighborhood Tier (Tier 1 to Tier 5). Economically-disadvantaged status is not considered.
2. Calculation Method Two: The second method assigns only economically-disadvantaged students (those identified through direct certification) to their Maryland Neighborhood Tier (Tier 1 to Tier 5). Non-economically-disadvantaged students are not included in the calculation.
3. Calculation Method Three: The third method assigns all students to their Maryland Neighborhood Tier (Tier 1 to Tier 5) and further subcategorizes students based on whether or not those students are economically-disadvantaged.

**Table 6: Comparison of Calculation Methods**

	Method 1 MNTs Only	Method 2 MNTs for Economically- disadvantaged students	Method 3 MNTs and Economically disadvantaged Status
Calculation includes neighborhood indicator of poverty (MNT)?	Yes	Yes	Yes
Calculation includes an individual/family indicator of poverty (Economically disadvantaged status)?	No	Yes	Yes
Differentiates between Economically-disadvantaged students?	No	Yes	Yes
Attempts to account for missed Economically-disadvantaged students?	Yes	No	Yes
Number of levels of student socioeconomic status?	5	6	10

**Comparing The Models and School Outcomes**

Using the data from the four pilot LEAs, each model was tested for how well it accounted for differences in student outcomes between schools. Table 7 indicates that all three models explain at least 70% of the variance in proficiency rates across schools in 2019 but Calculation Method Three explains the largest percentage of variance in both English Language Arts and math.

**Table 7. Proportion of variance in school outcomes explained by each model**

	Percent Proficient, 2019	
	English Language Arts	Math
Calculation Method One	76%	71%
Calculation Method Two	80%	71%
Calculation Method Three	83%	76%

Data based on pilot data from Anne Arundel County, Baltimore City, Caroline County, and Frederick County.

## FINANCIAL COSTS OF EACH CALCULATION METHOD

While the above calculation methods have implicit benefits and limitations, the full financial cost must be considered. To fully understand the implications of using these proposed calculation models to determine a school's Compensatory Education and Concentration of Poverty funding, MSDE then analyzed the three calculation methods described above applied to a variety of financial formulas. These financial analyses are described in the next section of this report.

### Implementing a Fiscal Impact Assessment

Compensatory Education eligibility determines the amount of related Compensatory Education State Aid a Local education agency receives each fiscal year. Consequently, full evaluation of potential methods of calculating Local education agency Compensatory Education eligibility requires assessment of the potential fiscal impact of adopting and implementing a given method. In the deep dive chapters that follow, MSDE presents estimations of fiscal impact related to adopting each method. This section describes the method necessary to calculate those fiscal impact assessments.

Currently, Compensatory Education and Concentration of Poverty funding amounts are based on the number of eligible students. Both funding amounts are based on one count of eligible students per school – the number is not differentiated in any way. MSDE explored financial formulas that follow this same schema, as well as financial formulas that differentiate the funding amount each student can generate based on the student's MNT.

This report presents two options for funding formulas that may be applied to each of the three calculation methods described above. MSDE explores the potential fiscal impact of using each of these funding formulas to determine Compensatory Education funding allocations. The first funding formula uses the Maryland Neighborhood Tiers and the three calculation methods to determine eligibility for Compensatory Education, and then applies a per-pupil amount for each student. The second funding formula reflects a more nuanced approach that applies different weights to eligible students based on their MNT. Both methods present different but viable pathways to operationalizing neighborhood tier calculations into State Aid calculations for Compensatory Education and Concentration of Poverty Major Aid programs.

### Funding Formulas Overview

1. **Funding Formula One:** The calculation methods determine a student's eligibility for Compensatory Education. The per-pupil funding amount is applied to all eligible students.
2. **Funding Formula Two:** The calculation methods determine a student's eligibility for Compensatory Education and the relative weight of how much per-pupil funding the student will generate.

Funding Formula One, although simpler to communicate and understand, falls short of the intent of this report, which is to examine Neighborhood Indicators as a pathway to better identify and capture the broad range of factors, including but not limited to poverty, for which Compensatory Education Aid is designed to provide supplemental resources to Local Education Agencies. That is, this method assumes that all students within the various Tiers require the same support (and related resources). In Fiscal Year 2023, the Compensatory Education Per-Pupil Amount is \$7,396 for each eligible student. However, proper capture of eligible student counts requires further differentiation between students in respective Tiers.

Funding Formula Two incorporates a weighted full-time equivalent (FTE) student count that reflects differentiated need by Tier. A student's FTE rate is determined by which MNT they live in. For example, students who are identified as economically disadvantaged and reside in Tiers with more concentrated poverty can generate 130% of the current per-pupil amount.

Benchmarking against standard practice, the per-pupil amounts could be adjusted from 60% of the current per-pupil amount up to 140% of the current per-pupil amount. These differences reflect the construction of similar weight distributions used in other State- and District-level weighted-student formulas from across the country.<sup>39</sup>

### Fiscal Impact Assessment Results

Fiscal impact assessments are detailed in the next sections. This report stops short of making a full estimation of fiscal impact for Statewide adoption due to the lack of complete data. The information in this analysis reflects data from the four LEAs that participated in the MLDSC pilot data collection. Those data are insufficient to generalize a broader estimation of fiscal impact when including and accounting for the full set of twenty-five LEAs that receive State Aid from these Major Aid programs.<sup>40</sup> MSDE will finalize its recommended specific relative weights and dollar amounts after the first data collection from the full state is completed on November 15, 2022.

Each of the next three sections contain detailed explanations of a calculation method, the fiscal impact of the two funding formulas, and case studies of example schools.

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<sup>39</sup> See, for example:

Chambers, J. G., Levin, J. D., & Shambaugh, L. (2010). Exploring weighted student formulas as a policy for improving equity for distributing resources to schools: A case study of two California school districts. *Economics of Education Review*, 29(2), 283–300;

Chingos, M. M., & Blagg, K. (2017). Do Poor Kids Get Their Fair Share of School Funding?

Of, U. S. D., & Education, Office of Planning, Evaluation and Policy Development, P. and P. S. S. (2019). *Districts' Use of Weighted Student Funding Systems to Increase School Autonomy and Equity: Findings From a National Study Volume 1-Final Report (Vol. 1)*. Washington, DC.

<sup>40</sup> LEAs eligible for formula funding associated with Compensatory Education and the Concentration of Poverty Program include the twenty-three counties, Baltimore City, and the SEED School.

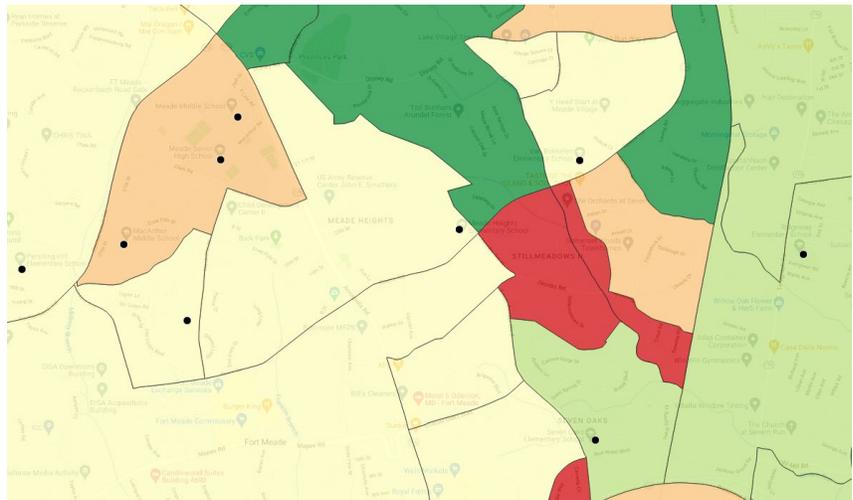
# Calculation Method One

## MARYLAND NEIGHBORHOOD TIERS ONLY

The first calculation method developed by MSDE is the simplest of the three methods. The only inputs for this method are the student's enrollment status at the school and the Maryland Neighborhood Tier (MNT) of the student's residence. The student's economically disadvantaged status is not considered. Therefore, all students are included in this model, regardless of individual family socioeconomic status. For example, in Figure 7 and Table 8 below, Free State Elementary School has 12 students. The map on the right shows a partial visualization of where each student lives. Based on the location of each student's residence, they are assigned to the Maryland Neighborhood Tier (MNT) of that Census block group. Students living in Tiers 4 or 5 live in lower SES neighborhoods than students living in Tiers 1 or 2. The school then counts up how many students live in each MNT.

Figure 7 and Table 8: Free State Elementary School: MNT Distribution

MNT	# Students
1	1
2	3
3	5
4	3
5	0
<b>Total</b>	<b>12</b>



## FISCAL IMPACT ASSESSMENT

The fiscal impact of implementing Calculation Method One for use in the Compensatory Education funding formula is detailed below, for each of the two funding formulas:

1. **Funding Formula One:** Calculation Method One determines a student's eligibility for Compensatory Education. Eligible students are all students living in Tiers 3, 4, or 5. The student's economically disadvantaged status is not considered. The per-pupil funding amount (\$7,396) is applied to all eligible students.
2. **Funding Formula Two:** Calculation Method One determines a student's eligibility for Compensatory Education and the relative weight of how much per-pupil funding the student will generate.

### Funding Formula One

MNT Calculation Method One assigns all students to one of the five Tiers, regardless of their economically disadvantaged status. Students living in Tiers 3, 4, or 5 are eligible for Compensatory Education funding. Under Funding Formula One, each of these students generates the per-pupil amount of \$7,396.

The tables and figures below provide more detail into the potential impact of implementing Calculation Method One and Funding Formula One as Maryland's Compensatory Education funding formula. The change in the number of students eligible for Compensatory Education and the change in the funding amount is provided for each of the four LEAs in the pilot data collection and the total for these districts. Full state impact will be calculated after the first full data collection is completed by November 15, 2022.

**Table 9: Impact on Students Eligible for Compensatory Education**

LEA	Students Eligible for Compensatory Education: Current Statute	Students Eligible for Compensatory Education: Calculation Method 1 and Funding Formula 1	Students Eligible for Compensatory Education: Change from Current	Students Eligible for Compensatory Education: Percent Change from Current
Anne Arundel	30,809	40,828	10,019	33%
Caroline	3,017	5,187	2,170	72%
Frederick	12,559	18,838	6,279	50%
Baltimore City	68,023	64,781	(3,242)	-5%
<b>Total</b>	<b>114,408</b>	<b>129,634</b>	<b>15,226</b>	<b>13%</b>

The number of eligible students is more, overall, than the current identification processes but not for all LEAs in the pilot. Baltimore City experiences a decrease in the number of students eligible for Compensatory Education under Calculation Method One and Funding Formula One. The omission of students in Tiers 1 and 2 likely generates this difference. For that reason, the weighted FTE used in Funding Formula Two likely generates a more accurate estimation for Calculation Method One.

**Table 10: Impact on Compensatory Education Funding**

LEA	Compensatory Education Funding: Current Statute	Compensatory Education Funding: Calculation Method 1 and Funding Formula 1	Compensatory Education Funding: Change from Current	Compensatory Education Funding: Percent Change from Current
Anne Arundel	\$227,863,364	\$301,963,888	\$74,100,524	33%
Caroline	\$22,313,732	\$38,363,052	\$16,049,320	72%
Frederick	\$92,886,364	\$139,325,848	\$46,439,484	50%
Baltimore City	\$503,098,108	\$479,120,276	\$(23,977,832)	-5%
<b>Total</b>	<b>\$846,161,568</b>	<b>\$958,773,064</b>	<b>\$112,611,496</b>	<b>13%</b>

### Funding Formula Two

In addition to the Funding Formula One approach of a single per-pupil amount generated by each student eligible for Compensatory Education, Funding Formula Two uses a weighted approach to provide differentiated funding depending on the relative need of the student. Maryland Neighborhood Tiers 4 and 5 have a lower socioeconomic status than the other tiers and therefore have a greater need. To operationalize this, students in each Tier generate a different relative weight of the per-pupil funding amount. Under Calculation Method One, students living in Tiers 3, 4, and 5 are eligible for Compensatory Education funding. Students in Tier 3 will continue to generate the same \$7,396 per-pupil amount. Students in Tier 4 have a slightly greater need, and will earn 110% of the per pupil amount, or \$8,136. Students in Tier 5 have a slightly greater need still, and will earn 120% of the per pupil amount, or \$8,875.

**Table 11: Calculation Method One, Funding Formula Two: Tier Weights**

MNT	Relative Weight and Dollar Amount
1	0% \$0
2	0% \$0
3	100% \$7,396
4	110% \$8,136
5	120% \$8,875

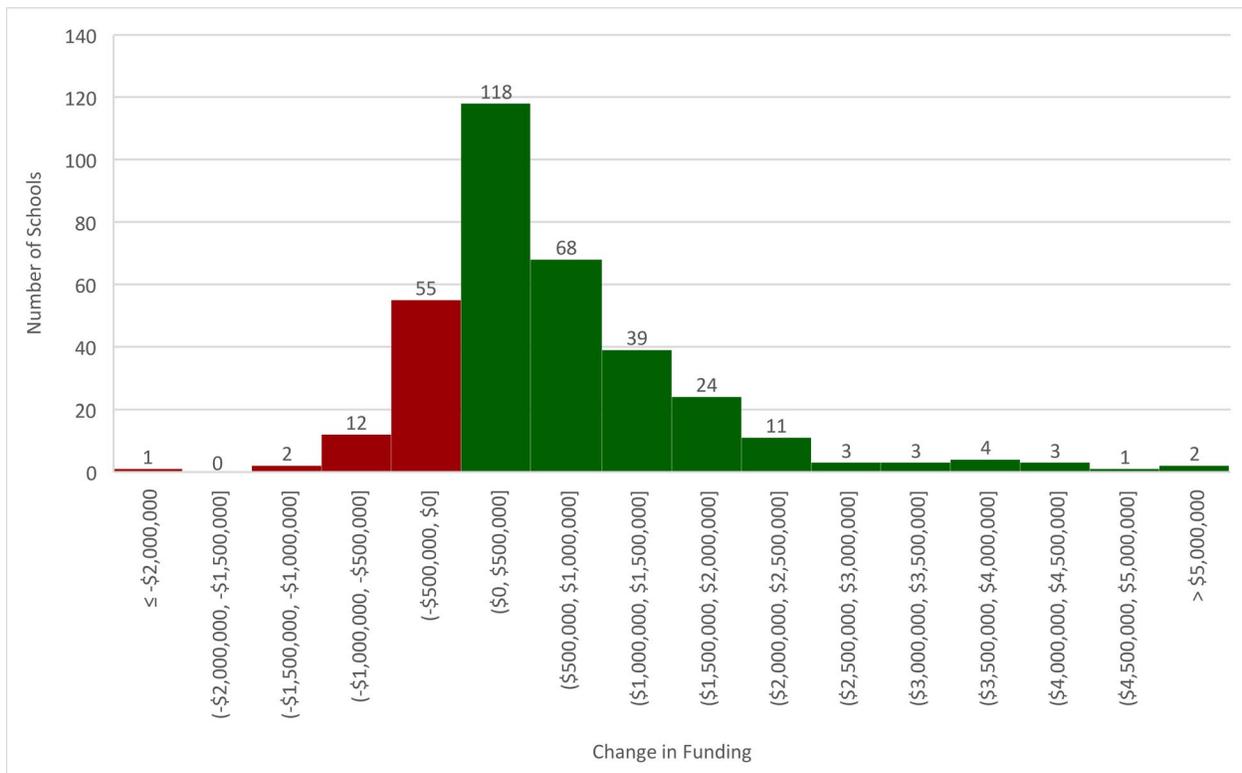
Applying Funding Formula Two to Calculation Method One as described above results in a total increase of Compensatory Education funding for the four pilot LEAs in the amount of \$225,339,109.

**Table 12: Impact on Compensatory Education Funding**

LEA	Compensatory Education Funding: Current Statute	Compensatory Education Funding: Calculation Method 1 and Funding Formula 2	Compensatory Education Funding: Change from Current	Compensatory Education Funding: Percent Change from Current
Anne Arundel	\$227,863,364	\$321,354,721	\$93,491,357	41%
Caroline	\$22,313,732	\$43,264,381	\$20,950,649	94%
Frederick	\$92,886,364	\$149,427,305	\$56,540,941	61%
Baltimore City	\$503,098,108	\$557,454,270	\$54,356,162	11%
<b>Total</b>	<b>\$846,161,568</b>	<b>\$1,071,500,677</b>	<b>\$225,339,109</b>	<b>27%</b>

In addition to the district level totals displayed above, the impact of applying Funding Formula Two to Calculation Method One for each school in the four pilot LEAs is shown in Figure 8. Of the 346 schools in the pilot, 276 schools will see an increase in funding under this approach and 70 schools will see a decrease in funding. The largest positive change from the current formula for a single school is an additional \$5,946,384, while the largest negative change from the current formula for a single school is \$2,566,412 less than the current allocation. In Figure 8, the bins colored green will see an increase in funding and the bins colored red will see a decrease in funding.

**Figure 8: Change of Compensatory Education Funding: School-level**



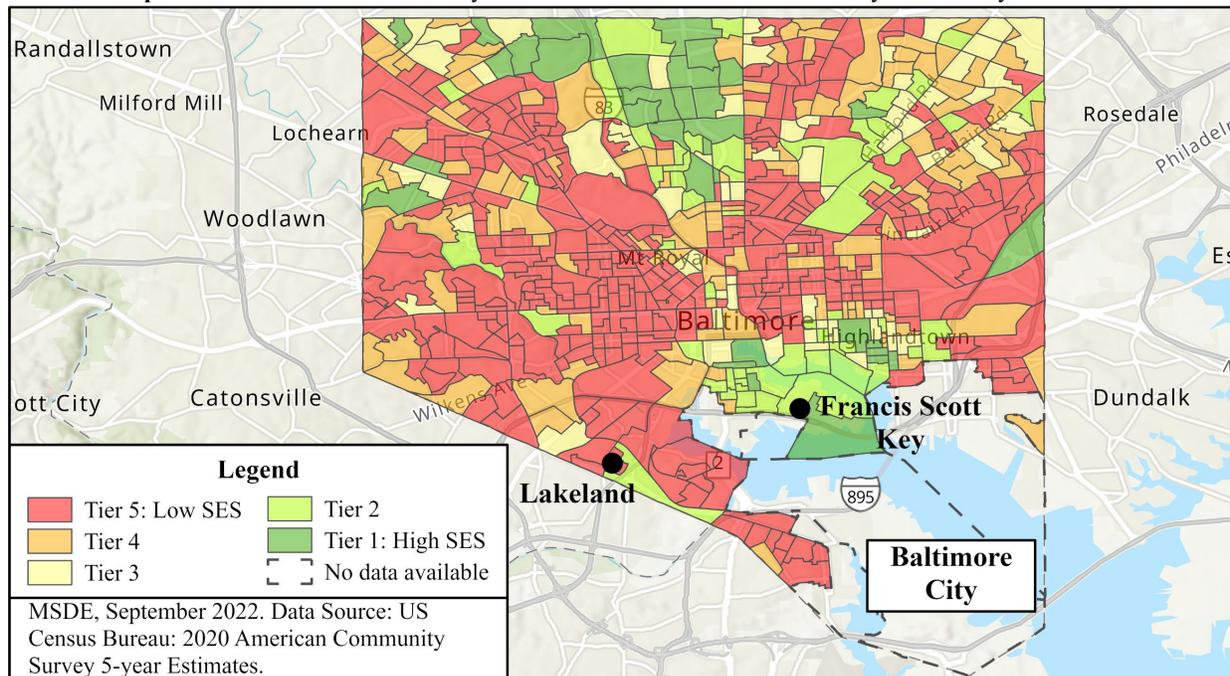
### Case Studies: Calculation Method One

Understanding the context behind changes in resource allocation is essential when examining fiscal impact. Key to assessing impact is ensuring that the change occurs in accordance with the objectives of the new funding system. MSDE's guiding objectives are:

- Include neighborhood indicators of poverty, to account for additional factors other than individual family income.
- Enable additional students to be included in the measure of poverty through addressing the issues that cause eligible students to be undercounted, including not solely relying on families completing paperwork to be counted.
- Create more variation and differentiation within the students who are counted, to recognize the different effects of concentrations of poverty.
- Ensure the new measures of Compensatory Education and Concentration of Poverty funding are transparent, comprehensible, and easily communicated.

While the discussion about of the financial impact of Method One provides aggregate results and district-level figures, to understand the impact on a more granular level, this case study explores the impact of the proposed Calculation Method One on the Compensatory Education funding for two individual schools: Francis Scott Key Elementary/Middle School and Lakeland Elementary/Middle School, both in Baltimore City.

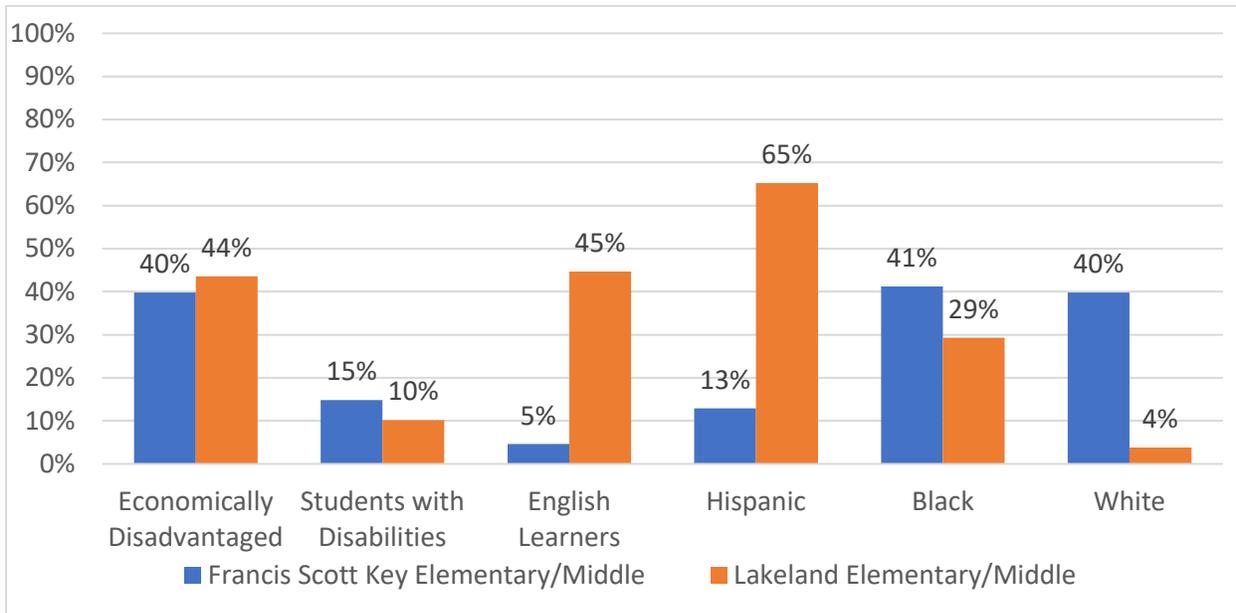
#### School Comparison I: Lakeland Elementary/Middle School and Francis Scott Key Elementary/Middle School



Both of these schools have a roughly equal percentage of economically-disadvantaged students. This means that under the current Compensatory Education funding formula, they would receive the same amount of relative funding. However, the difference of these schools is revealed by digging deeper into the schools' demographics and the MNT Tiers that the students live in.

Francis Scott Key Elementary/Middle School is a school that enrolls both elementary and secondary students through middle school. In total, the school enrolls 527 students, 40% of which are students identified as economically disadvantaged. Lakeland Elementary/Middle School also enrolls both elementary and secondary students through middle school. In total, the school enrolls 970 students, 44% of which are identified as economically disadvantaged. Additional details on the school demographics are available in Figure 9 below.

**Figure 9: Case Study School Demographics**



Even though these two schools enroll similar proportions of economically-disadvantaged students, Figure 10 demonstrates that nearly all of Lakeland's students live in Tier 5, while students at Francis Scott Key have a more equal split among the five tiers. Given that difference, and the objective to allocate the funds to the schools that need it most, both schools should see an increase in funding, but Lakeland should experience a larger increase in funding compared to Francis Scott Key.

**Figure 10: Student Enrollment Percentage by Maryland Neighborhood Tier**

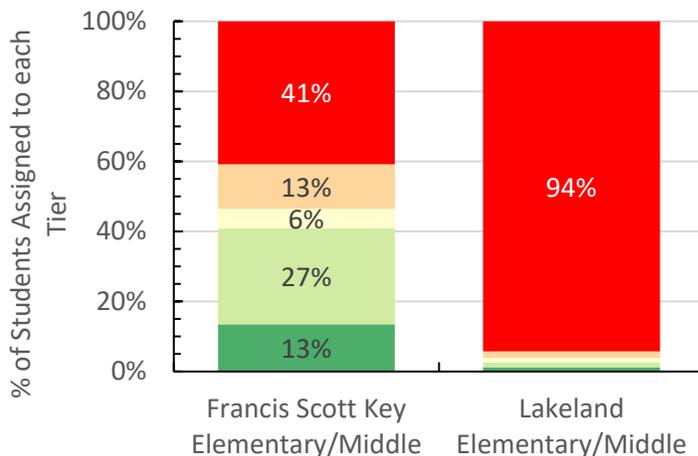
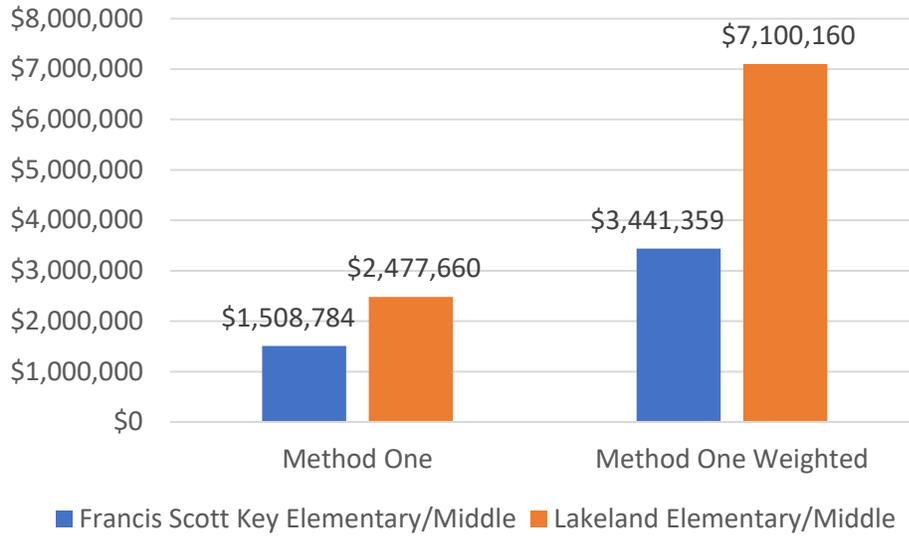


Figure 11 demonstrates the different impact on each school. The weighted approach increases the amount for both schools, but the increase is greater for Lakeland, the school with more students in Tier 5. This represents a positive result for these inputs.

**Figure 11: Difference in Compensatory Education Formula Funding, by School when Using Method One for Formula Eligibility Count**



# Calculation Method Two

## MARYLAND NEIGHBORHOOD TIERS FOR ECONOMICALLY-DISADVANTAGED STUDENTS

Calculation Method Two builds on the Compensatory Education funding model implemented by the state of Texas after the passage of Texas' HB3 in 2019. The methodology now in place in Texas changed the Compensatory Education allotment from a single per-pupil amount to a tiered amount based on the socioeconomic status tier of the student's residence. Only students who are identified as economically disadvantaged through direct certification or a Free and Reduced Price Meal application form generate funding. Non-economically-disadvantaged students do not generate any funding under Texas' methodology.

**Table 13: Texas Compensatory Education Funding Weights**

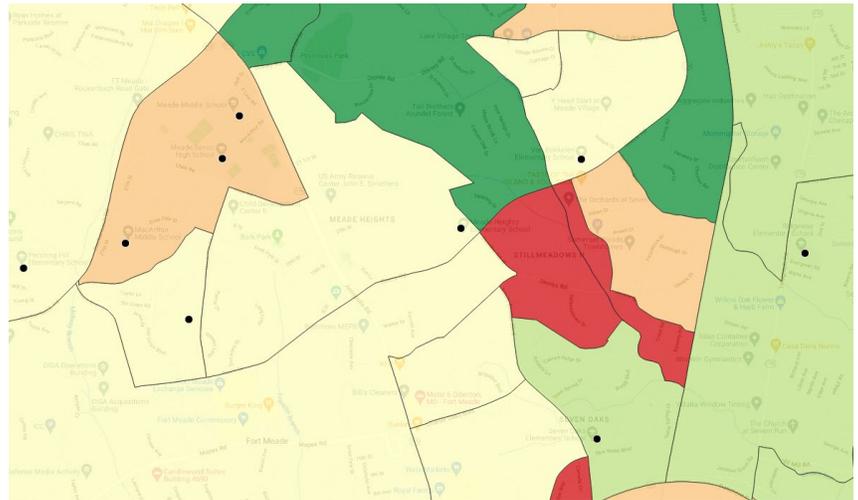
	Student does not qualify as Economically disadvantaged	Student qualifies as Economically disadvantaged				
Tier	Non - Economically disadvantaged	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Point Value	0	.225	.2375	.25	.2625	.2750

Mirroring the methodology utilized in Texas, in MSDE's Calculation Method Two, only economically-disadvantaged students receive Compensatory Education funding; however, the funding amount for each economically disadvantaged student is based on the tier in which they reside.

Returning to the example of Free State Elementary School from Calculation Method One, a similar process is used, except that a sixth option is added. If students are not identified as economically disadvantaged through direct certification, the students will then be assigned to the "Non-economically disadvantaged" category. In Free State Elementary School, there were 4 students who fit this category, reducing the number of students in the other tiers.

Figure 12 and Table 14: Free State Elementary School: MNT Distribution – Calculation Method Two

MNT	# Students
Non – Economically disadvantaged	4
1	0
2	2
3	5
4	1
5	0
<b>Total</b>	<b>12</b>



Under Calculation Method Two, students may be designated as economically disadvantaged through direct certification, which is the automated data matching to other public assistance programs including SNAP, TANF, and Medicaid. Calculation Method Two does not allow for identification of Economically disadvantaged based on the submission of application forms for Free and Reduced Price Meals. This restriction is made to ensure fairness between all schools, including those who participate in the Community Eligibility Provision, where the meal benefit forms are not collected. More discussion on the collection of these meal benefit applications is available in the Community Eligibility Provision (CEP) section and the Alternative Income Eligibility Form section of this report.

To compensate for the reduced number of students who will be identified as economically disadvantaged by only allowing for direct certification and to make the method more directly comparable to the Texas method, one additional step is added to the process. The number of eligible students in each tier is multiplied by 1.6, which estimates the number of students eligible for Free and Reduced Price Meals if the meal benefit applications were collected in that school. This 1.6 multiplier is commonly used in CEP schools to make this estimation, and the multiplier is also used by the USDA for this same purpose of determining the reimbursement rate for free meals based on the number of students directly certified.<sup>41</sup>

### FISCAL IMPACT ASSESSMENT

The fiscal impact of implementing Calculation Method Two for use in the Compensatory Education funding formula is detailed below, for each of the two funding formulas:

1. **Funding Formula One:** Calculation Method Two determines a student's eligibility for Compensatory Education. Eligible students are all economically-disadvantaged students, who are therefore assigned to Tiers 1 through 5. The per-pupil funding amount (\$7,396) is applied to all eligible students.
2. **Funding Formula Two:** Calculation Method Two determines a student's eligibility for Compensatory Education and the relative weight of how much per-pupil funding the student will generate, mirroring the methodology implemented in Texas.

<sup>41</sup> <https://fns-prod.azureedge.us/sites/default/files/cn/SP35-2015av2.pdf>

### Funding Formula One

The tables and figures below provide more detail into the potential impact of implementing Calculation Method Two and Funding Formula One as Maryland's Compensatory Education funding formula. The change in the number of students eligible for Compensatory Education and the change in the funding amount is provided for each of the four LEAs in the pilot data collection and the total for these districts. Full state impact will be calculated after the first full data collection is completed by November 15, 2022.

**Table 15: Impact on Students Eligible for Compensatory Education**

LEA	Students Eligible for Compensatory Education:			
	Current Statute	Calculation Method 2 and Funding Formula 1	Change from Current	Percent Change from Current
Anne Arundel	30,809	26,037	(4,772)	-15%
Caroline	3,017	3,096	79	3%
Frederick	12,559	10,576	(1,983)	-16%
Baltimore City	68,023	76,133	8,110	12%
<b>Total</b>	<b>114,408</b>	<b>115,842</b>	<b>1,434</b>	<b>1%</b>

The number of eligible students is roughly equivalent to the current identification processes. While some districts did have a decrease in the number of students eligible for Compensatory Education under Calculation Method Two and Funding Formula One, others saw an increase for about the same amount. This decrease is expected – given that the design of the Calculation Method Two, as implemented in Texas, also requires differentiation in funding driven through weighted FTEs or through weighted formula dollars. Funding Formula Two below captures parity with the Texas method. In Funding Formula One, the districts who have a smaller number of students who are eligible for Compensatory Education likely had many students who qualified through a meal benefits application, and not through direct certification. The recent inclusion of Medicaid in the direct certification process will likely mitigate some of these variances.

**Table 16: Impact on Compensatory Education Funding**

LEA	Compensatory Education Funding: Current Statute	Compensatory Education Funding: Calculation Method 2 and Funding Formula 1	Compensatory Education Funding: Change from Current	Compensatory Education Funding: Percent Change from Current
Anne Arundel	\$227,863,364	\$192,568,173	\$(35,295,191)	-15%
Caroline	\$22,313,732	\$22,898,016	\$584,284	3%
Frederick	\$92,886,364	\$78,220,096	\$(14,666,268)	-16%
Baltimore City	\$503,098,108	\$563,078,189	\$59,980,081	12%
<b>Total</b>	<b>\$846,161,568</b>	<b>\$856,764,474</b>	<b>\$10,602,906</b>	<b>1%</b>

**Funding Formula Two**

In addition to the Funding Formula one approach of a single per-pupil amount generated by each student eligible for Compensatory Education, Funding Formula Two uses a weighted approach to provide differentiated funding depending on the relative need of the student. Maryland Neighborhood Tiers 4 and 5 have a lower socioeconomic status than the other tiers and therefore have a greater need. To operationalize this, students in each Tier generate a different relative weight of the per-pupil funding amount. Under Calculation Method Two, all economically-disadvantaged students are eligible for Compensatory Education funding, with the nuance of which tier they live in. The number of students in each tier is then multiplied by 1.6 to ensure an equivalent measure to current practices. Students in Tier 5 have a greater need than students in Tier 1, so they will generate a relatively higher funding amount.

As all students included in the calculation have been identified as economically disadvantaged, the relative weights of each tier are higher than they were in Calculation Method One. With this Calculation Method Two and Funding Formula Two, Tier 1 is equated to 100% of the current per-pupil Compensatory Education funding amount of \$7,396. The relative weights increase by 10% each tier through Tier 5 where eligible students generate 140% of the current per-pupil amount.

**Table 17: Calculation Method Two, Funding Formula Two: Tier Weights**

MNT	Relative Weight and Dollar Amount
Non – Economically disadvantaged	0% \$0
1	100% \$7,396
2	110% \$8,136
3	120% \$8,875
4	130% \$9,615
5	140% \$10,354

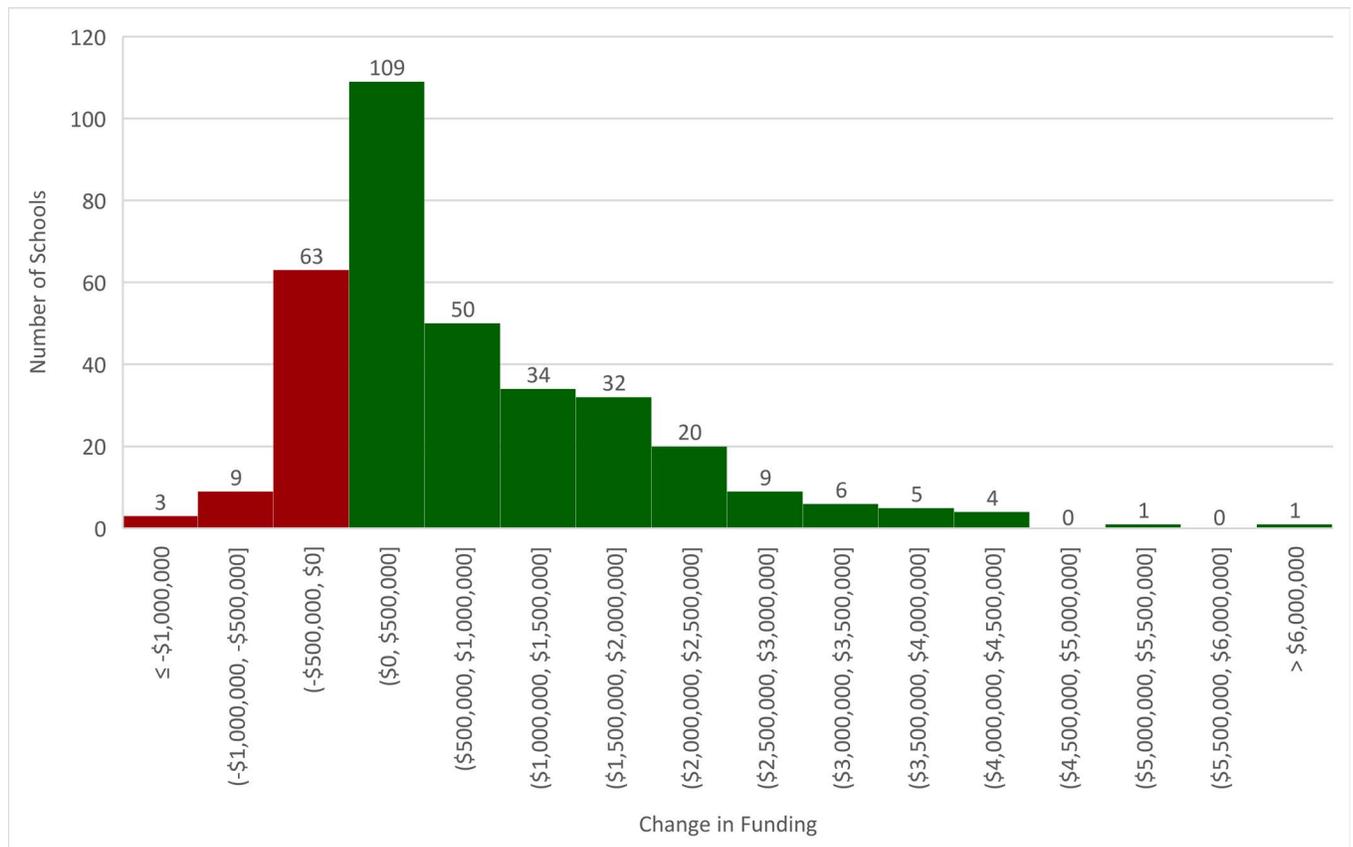
Applying Funding Formula Two to Calculation Method Two as described above results in a total increase of Compensatory Education funding for the four pilot LEAs in the amount of \$269,500,773.

**Table 18: Impact on Compensatory Education Funding**

LEA	Compensatory Education Funding: Current Statute	Compensatory Education Funding: Calculation Method 2 and Funding Formula 2	Compensatory Education Funding: Change from Current	Compensatory Education Funding: Percent Change from Current
Anne Arundel	\$227,863,364	\$236,049,553	\$8,186,189	4%
Caroline	\$22,313,732	\$30,137,812	\$7,824,080	35%
Frederick	\$92,886,364	\$95,295,981	\$2,409,617	3%
Baltimore City	\$503,098,108	\$754,178,995	\$251,080,887	50%
<b>Total</b>	<b>\$846,161,568</b>	<b>\$1,115,662,341</b>	<b>\$269,500,773</b>	<b>32%</b>

In addition to the district level totals displayed above, the impact of applying Funding Formula Two to Calculation Method Two for each school in the four pilot LEAs is shown in Figure 13. Of the 346 schools in the pilot, 271 schools will see an increase in funding under this approach and 75 schools will see a decrease in funding. The largest positive change from the current formula for a single school is an additional \$6,875,913, while the largest negative change from the current formula for a single school is \$1,967,928 less than the current allocation. In Figure 13, the bins colored green will see an increase in funding and the bins colored red will see a decrease in funding.

Figure 13: Change of Compensatory Education Funding: School-level



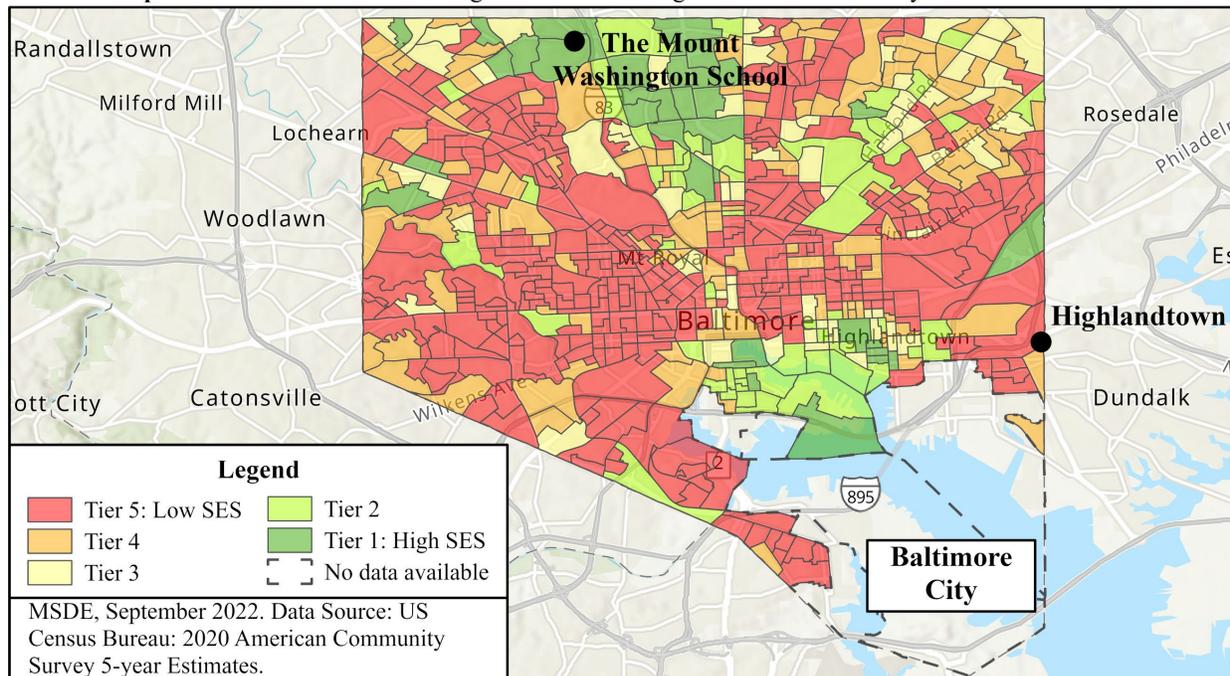
### Case Studies: Calculation Method Two

Understanding the context behind changes in resource allocation is essential when examining fiscal impact. Key to assessing impact is ensuring that the change occurs in accordance with the objectives of the new funding system. MSDE's guiding objectives are:

- Include neighborhood indicators of poverty, to account for additional factors other than individual family income.
- Enable additional students to be included in the measure of poverty through addressing the issues that cause eligible students to be undercounted, including not solely relying on families completing paperwork to be counted.
- Create more variation and differentiation within the students who are counted, to recognize the different effects of concentrations of poverty.
- Ensure the new measures of Compensatory Education and Concentration of Poverty funding are transparent, comprehensible, and easily communicated.

While the discussion of the financial impact of Calculation Method Two provides aggregate results and district-level figures, to understand the impact on a more granular level, this case study explores the impact of the proposed Calculation Method Two on the Compensatory Education funding for two individual schools: The Mount Washington School and Highlandtown Elementary/Middle School #237, both in Baltimore City.

#### School Comparison II: The Mount Washington School and Highlandtown Elementary/Middle School #237

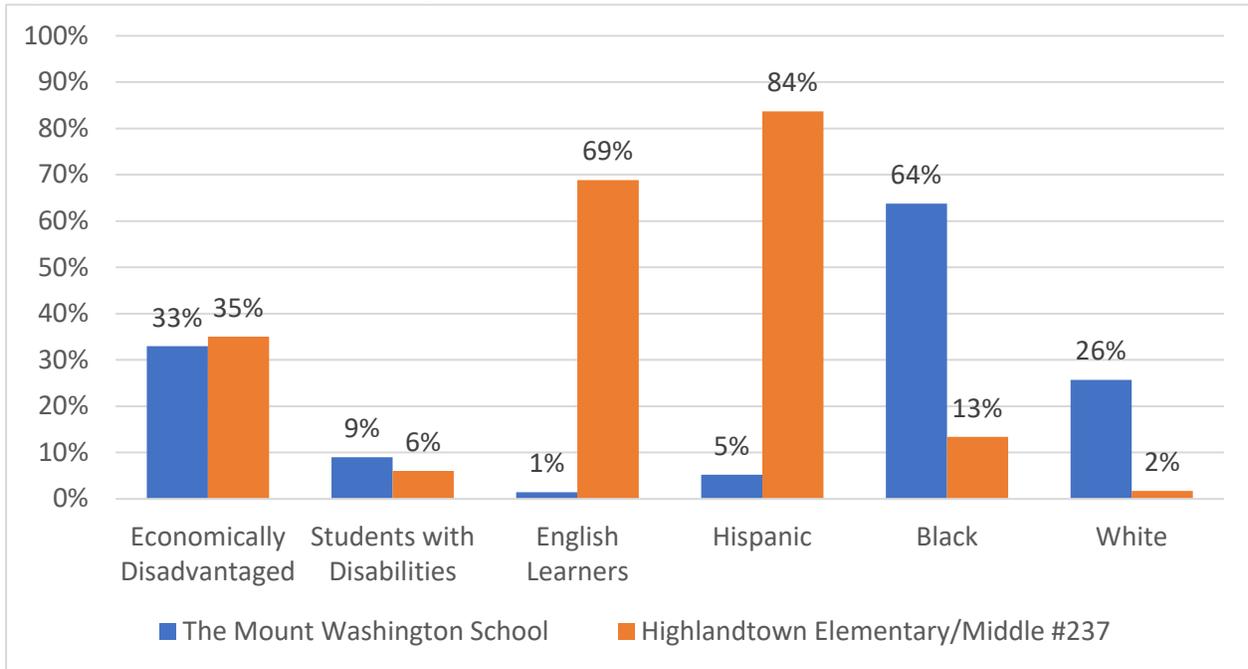


Both of these schools have a roughly equal percentage of economically-disadvantaged students. This means that under the current Compensatory Education funding formula, they would receive the same amount of relative funding. However, the difference of these schools is revealed by digging deeper into the schools' demographics and the MNT Tiers that the students live in.

The Mount Washington School is a school that enrolls both elementary and secondary students through middle school. In total, the school enrolls 533 students, 33% of which are students identified as

economically disadvantaged. Highlandtown Elementary/Middle School #237 also enrolls both elementary and secondary students through middle school. In total, the school enrolls 783 students, 35% of which are identified as economically disadvantaged. Additional details on the school demographics are available in Figure 14 below.

**Figure 14: Case Study School Demographics**



Even though these two schools enroll similar proportions of economically-disadvantaged students, Figure 15 demonstrates that significantly more of Highlandtown’s students live in Tier 5, while students at Mount Washington have a more equal split among the five tiers. Given that difference, and the objective to allocate the funds to the schools that need it most, both schools should see an increase in funding, but Highlandtown should experience a larger increase in funding compared to Mount Washington.

**Figure 15: Student Enrollment Percentage by Maryland Neighborhood Tier**

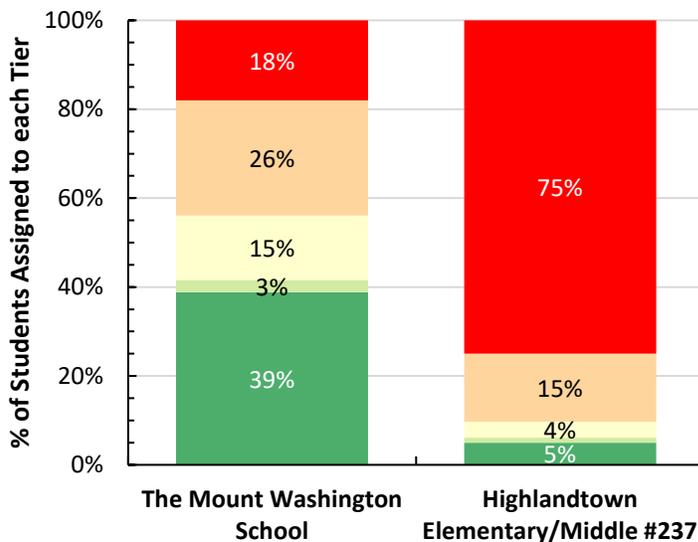
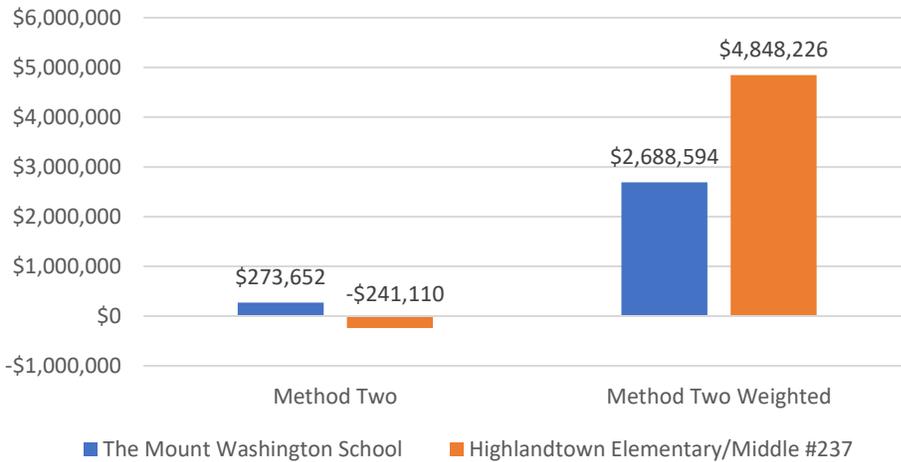


Figure 16 demonstrates the different impact on each school. Method two is much more sensitive to the distribution of students in each Tier given its inclusion of economically-disadvantaged students only. This effect is evident in the fiscal impact based on the unweighted eligible student counts. The direction of change matches the expected impact. Likewise, the weighted approach increases the amount for both schools, but the increase is much greater for Highlandtown, the school with more students in Tier 5, as expected.

**Figure 16: Difference in Compensatory Education Formula Funding, by School when Using Method One for Formula Eligibility Count**



# Calculation Method Three

## MARYLAND NEIGHBORHOOD TIERS AND ECONOMICALLY DISADVANTAGED STATUS

Calculation Method Three provides the most nuanced approach of the three methods by creating ten different categories that students can be assigned to, with each category able to generate a unique level of funding.

Calculation Methods One and Two used one measure each to determine which students would generate funding or not: the Maryland Neighborhood Tiers (MNT) and economically disadvantaged status, respectively. However, Calculation Method Three enables either of the two measures to qualify the student to generate Compensatory Education funding. This means that students who live in low SES neighborhoods will still generate additional Compensatory Education funding, even if they do not participate in government assistance programs or complete an income eligibility form each year.

To assign a student to a category, students are first determined whether they are identified as economically disadvantaged, as measured by direct certification. Then, the student's MNT is identified. Finally, the combination of where the student's Tier and economically disadvantaged status meet in the chart below determines to which category the student will be assigned.

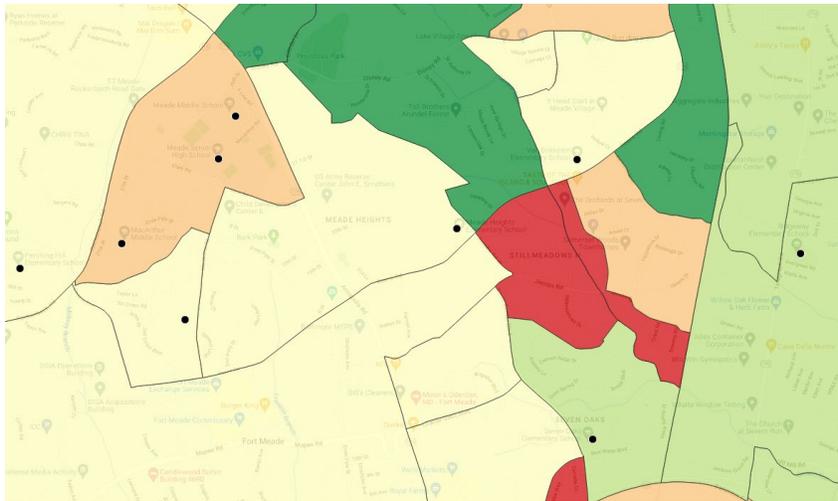
**Table 19: Categories for Calculation Method Three**

	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Not Economically disadvantaged	Category 1	Category 2	Category 3	Category 4	Category 5
Economically disadvantaged	Category 6	Category 7	Category 8	Category 9	Category 10

Looking back to the example school of Free State Elementary one more time, the 12 students are again assigned to their appropriate Tier based on where they live. The students are then further assigned to the top or bottom row of this table based on their economically disadvantaged status.

Figure 17 and Table 20: Free State Elementary School: MNT Distribution – Calculation Method Three

	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Not Economically disadvantaged	1 Student	1 Student	0 Students	2 Students	0 Students
Economically disadvantaged	0 Students	1 Student	5 Students	2 Students	0 Students



### FISCAL IMPACT ASSESSMENT

The fiscal impact of implementing Calculation Method Three for use in the Compensatory Education funding formula is detailed below, for each of the two funding formulas:

1. **Funding Formula One:** Calculation Method Three determines a student’s eligibility for Compensatory Education. Eligible students are all economically-disadvantaged students, as well as non-economically-disadvantaged students living in Tiers 3, 4, or 5. The per-pupil funding amount (\$7,396) is applied to all eligible students.
2. **Funding Formula Two:** Calculation Method Three determines a student’s eligibility for Compensatory Education and the relative weight of how much per-pupil funding the student will generate.

#### Funding Formula One

All students are included in one of the ten categories shown in Table 19. Therefore, to remain aligned with the Compensatory Education program’s intentions, Tiers 1 and 2 for not economically-disadvantaged students receive no Compensatory Education funding. All other students, which includes all economically-disadvantaged students, as well as non-economically-disadvantaged students living in Tiers 3, 4, or 5, are eligible for the Compensatory Education per-pupil funding amount of \$7,396.

The tables and figures below provide more detail into the potential impact of implementing Calculation Method Three and Funding Formula One as Maryland's Compensatory Education funding formula. The change in the number of students eligible for Compensatory Education and the change in the funding amount is provided for each of the four LEAs in the pilot data collection and the total for these districts. Full state impact will be calculated after the first full data collection is completed by November 15, 2022.

**Table 21: Impact on Students Eligible for Compensatory Education**

LEA	Students Eligible for Compensatory Education: Current Statute	Students Eligible for Compensatory Education: Calculation Method 3 and Funding Formula 1	Students Eligible for Compensatory Education: Change from Current	Students Eligible for Compensatory Education: Percent Change from Current
Anne Arundel	30,809	45,388	14,579	47%
Caroline	3,017	5,345	2,328	77%
Frederick	12,559	21,071	8,512	68%
Baltimore City	68,023	69,070	1,047	2%
<b>Total</b>	<b>114,408</b>	<b>140,874</b>	<b>26,466</b>	<b>23%</b>

Calculation Method Three and Funding Formula One increase the number of students that generate funding for all four of the LEAs included (Anne Arundel, Caroline, Frederick, and Baltimore City). This indicates that it aligns with the Statutory objective of providing additional mechanisms for identifying students in need that can generate Compensatory Education funding. The LEAs that have the largest increase in the number of students who generate funding likely have many students living in low SES neighborhoods but are not identified as economically disadvantaged.

**Table 22: Impact on Compensatory Education Funding**

LEA	Compensatory Education Funding: Current Statute	Compensatory Education Funding: Calculation Method 3 and Funding Formula 1	Compensatory Education Funding: Change from Current	Compensatory Education Funding: Percent Change from Current
Anne Arundel	\$227,863,364	\$335,689,648	\$107,826,284	47%
Caroline	\$22,313,732	\$39,531,620	\$17,217,888	77%
Frederick	\$92,886,364	\$155,841,116	\$62,954,752	68%
Baltimore City	\$503,098,108	\$510,841,720	\$7,743,612	2%
<b>Total</b>	<b>\$846,161,568</b>	<b>\$1,041,904,104</b>	<b>\$195,742,536</b>	<b>23%</b>

**Funding Formula Two**

In addition to the Funding Formula One approach of a single per-pupil amount generated by each student eligible for Compensatory Education, Funding Formula Two uses a weighted approach to provide differentiated funding depending on the relative need of the student. Maryland Neighborhood Tiers 3, 4, and 5 have a lower socioeconomic status than the other tiers and therefore have a greater need. To operationalize this, students in each Tier generate a different relative weight of the per-pupil funding amount. Under Calculation Method Three, all economically-disadvantaged students, as well as non-economically-disadvantaged students living in Tiers 3, 4, or 5, are eligible for Compensatory Education per-pupil funding. Non-economically-disadvantaged students in Tiers 3, 4, and 5 generate Compensatory Education funding under this formula based on the Concentration of Poverty of the student’s neighborhood as well as the probability that many of these students are eligible to be identified as economically disadvantaged but have not been identified as such due to data collection difficulties. Students in Tier 5 have a greater need than students in Tier 1, so they will generate a relatively higher funding amount. Additionally, students who are identified as economically disadvantaged and live in a low SES neighborhood have a double disadvantage, so they generate a greater funding amount. The funding amounts and relative weights compared to the current per-pupil funding amount are available in Table 23 below for each of the 10 combinations of the 5 tiers and the economically disadvantaged or not economically disadvantaged status.

**Table 23: Per-Pupil Amount Relative Weights and Dollar Amounts**

	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
<b>Not economically disadvantaged</b>	0% \$0	0% \$0	60% \$4,437	70% \$5,177	80% \$5,916
<b>Economically disadvantaged</b>	90% \$6,656	100% \$7,396	110% \$8,135	120% \$8,875	130% \$9,615

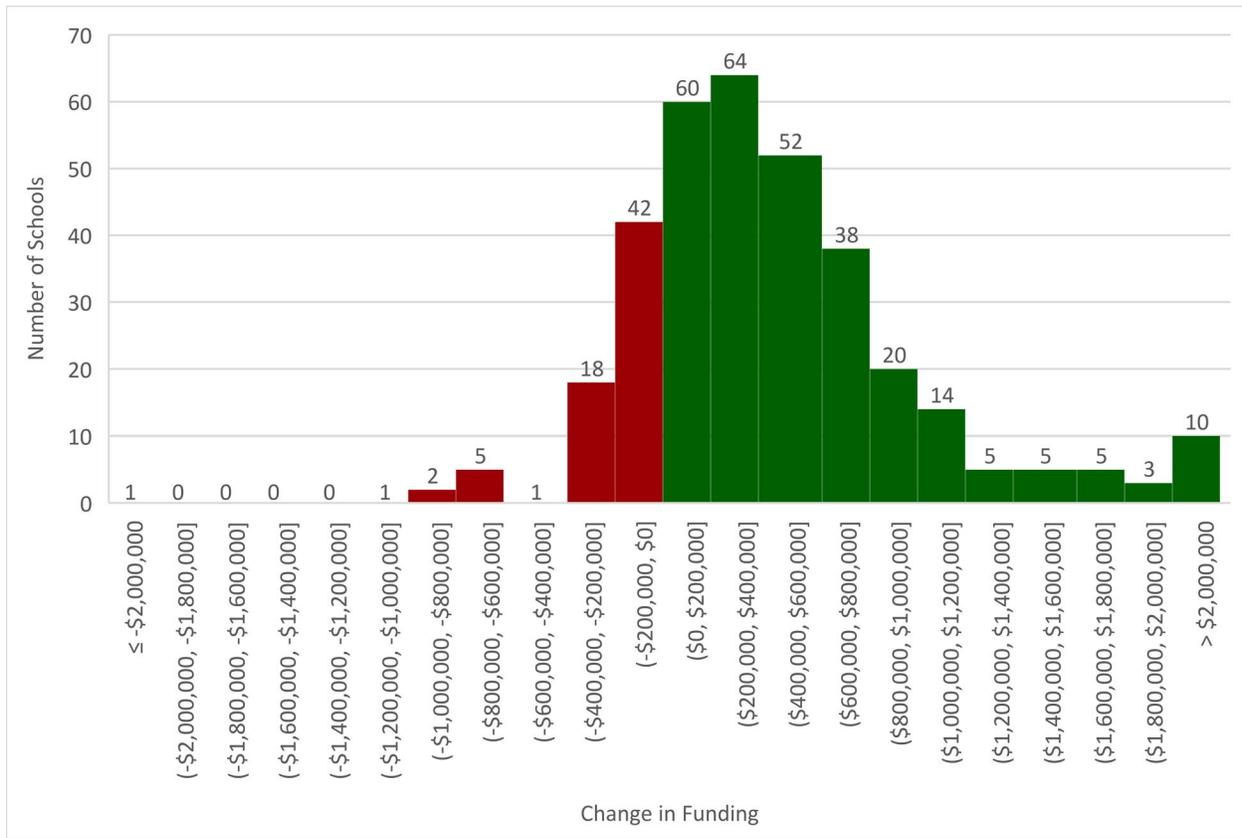
The fiscal impact of Calculation Method Three and Funding Formula Two shows an increase in Compensatory Education funding for the pilot LEAs totaling \$146,416,393. The difference, as with the previous impact assessments, is driven by the increase in eligible students identified through the Tier calculations.

**Table 24: Impact on Compensatory Education Funding**

LEA	Compensatory Education Funding: Current Statute	Compensatory Education Funding: Calculation Method 3 and Funding Formula 2	Compensatory Education Funding: Change from Current	Compensatory Education Funding: Percent Change from Current
Anne Arundel	\$227,863,364	\$276,169,598	\$48,306,234	21%
Caroline	\$22,313,732	\$35,542,218	\$13,228,486	59%
Frederick	\$92,886,364	\$125,570,767	\$32,684,403	35%
Baltimore City	\$503,098,108	\$555,295,378	\$52,197,270	10%
<b>Total</b>	<b>\$846,161,568</b>	<b>\$992,577,961</b>	<b>\$146,416,393</b>	<b>17%</b>

In addition to the district level totals displayed above, the impact of applying Funding Formula Two to Calculation Method Three for each school in the four pilot LEAs is shown in Figure 18. Of the 346 schools in the pilot, 276 schools will see an increase in funding under this approach and 70 schools will see a decrease in funding. The largest positive change from the current formula for a single school is an additional \$3,264,594, while the largest negative change from the current formula for a single school is \$2,374,856 less than the current allocation. In Figure 18, the bins colored green will see an increase in funding and the bins colored red will see a decrease in funding.

**Figure 18: School-Level Change of Compensatory Education Funding**



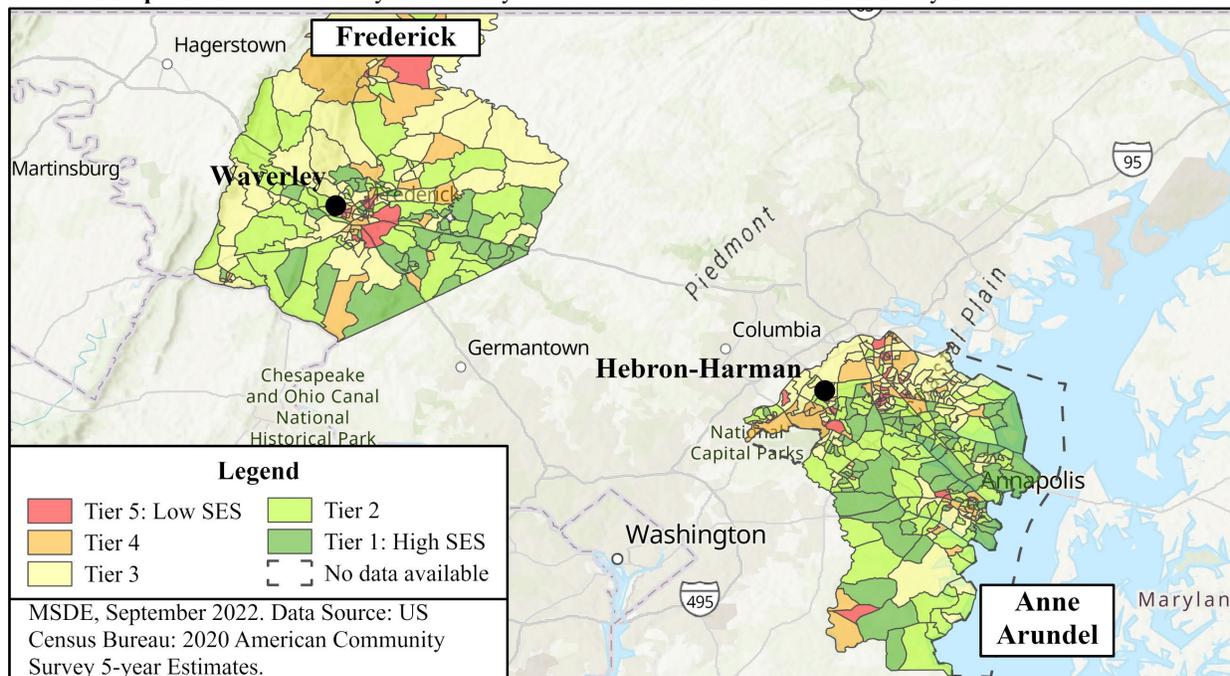
### Case Studies: Calculation Method Three

Understanding the context behind changes in resource allocation is essential when examining fiscal impact. Key to assessing impact is ensuring that the change occurs in accordance with the objectives of the new funding system. MSDE's guiding objectives are:

- Include neighborhood indicators of poverty, to account for additional factors other than individual family income.
- Enable additional students to be included in the measure of poverty through addressing the issues that cause eligible students to be undercounted, including not solely relying on families completing paperwork to be counted.
- Create more variation and differentiation within the students who are counted, to recognize the different effects of concentrations of poverty.
- Ensure the new measures of Compensatory Education and Concentration of Poverty funding are transparent, comprehensible, and easily communicated.

While the discussion of the financial impact of Method Three provides aggregate results and district-level figures, to understand the impact on a more granular level, this case study explores the impact of the proposed Calculation Method Three on the Compensatory Education funding for two individual schools: Waverly Elementary in Frederick County and Hebron-Harman Elementary in Anne Arundel County.

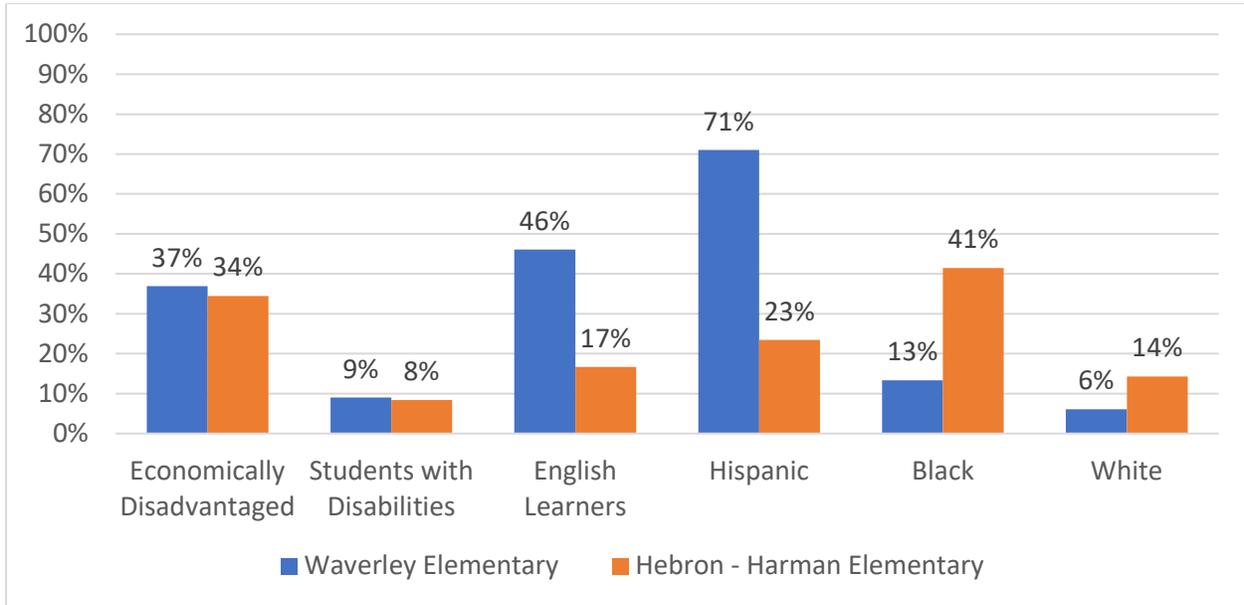
#### School Comparison III Waverly Elementary School and Hebron-Harman Elementary School



Both of these schools have a roughly equal percentage of economically-disadvantaged students. This means that under the current Compensatory Education funding formula, they would receive the same amount of relative funding. However, the difference of these schools is revealed by digging deeper into the schools' demographics and the MNT Tiers that the students live in.

Waverley Elementary School is a school that enrolls elementary students only. In total, the school enrolls 548 students, 37% of which are students identified as economically disadvantaged. Hebron-Harman Elementary School also enrolls only elementary school students. In total, the school enrolls 667 students, 34% of which are identified as economically disadvantaged. Additional details on the school demographics are available in Figure 19 below.

**Figure 19: Case Study School Demographics**



Even though these two schools enroll similar proportions of economically-disadvantaged students, Figure 20 demonstrates that Waverley enrolls many more students in Tier 5 than Hebron-Harman. Hebron-Harman's students are concentrated in Tiers 1 through 3. Given that difference, if Calculation Method Three is working as designed, while both schools should see an increase in funding, Waverley should demonstrate a substantially larger increase in funding compared to Hebron-Harman.

**Figure 20: Student Enrollment Percentage by Maryland Neighborhood Tier**

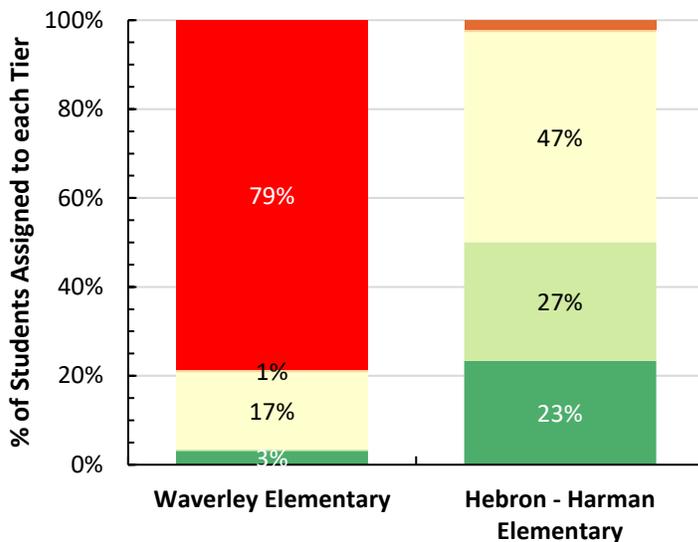
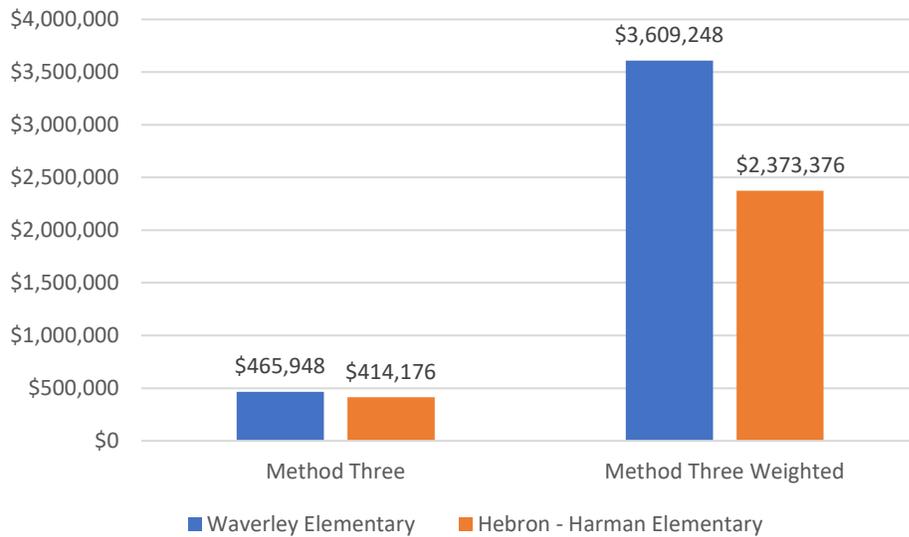


Figure 21 demonstrates the different impact on each school. Both schools see an increase in funding, but with the Calculation Method Three weighted approach, Waverly Elementary will see a significantly larger increase in funding, which is expected given the larger student population living in the more high-poverty MNT Tier of Tier 5.

**Figure 21: Difference in Compensatory Education Formula Funding, by School when Using Method One for Formula Eligibility Count**



# MSDE Recommendation for the Compensatory Education Formula

MSDE used the fiscal impact analyses in previous sections, student outcome data, national best practices, and academic research to make its final recommendation in this report. **Ultimately, MSDE recommends adoption of Calculation Method Three with Funding Formula Two to determine the Compensatory Education funding amounts allocated to each school.** However, MSDE is not proposing specific dollar amounts or relative funding weights due to the lack of a complete statewide dataset. The first full data collection of student level Census block and tract information for enrolled students is to be completed on November 15, 2022. Before that date, the necessary data does not exist, and a realistic cost estimate for the State cannot be completed.<sup>42</sup> The dollar amounts and relative funding weights that were used in the analysis and examples in this report may need to be adjusted once the statewide collection of data is complete. Based on budget constraints, the dollar amounts used in this small-scale analysis may prove to be untenable when applied to the full state. To transition to this model, MSDE also recommends a temporary (two to three year) hold harmless based on Fiscal Year 2023 existing counts of Compensatory Education eligibility or existing Compensatory Education program funding levels.

Once the full statewide data collection of student level Census block and tract information for enrolled students is completed, MSDE will continue its analysis process for the remaining missing elements of the funding formulas. More information on these next steps and the timeline to complete them is provided in the last section of this report.

## MARYLAND NEIGHBORHOOD TIER CALCULATION METHOD RECOMMENDATION JUSTIFICATION

All three calculation methods offer practicable policy options for Compensatory Education eligibility determination. However, the fiscal impact analyses and school outcome data assessment suggest that the Maryland Neighborhood Tier (MNT) Calculation Method Three with Funding Formula Two would be the most appropriate method to adopt. MSDE makes this recommendation based on the criteria in the expanded version of Table 25, below. Calculation Method Three with Funding Formula Two is the most cost-feasible of the proposed methods while still offering a better measure of capturing students (as indicated by the increase in eligible students for each LEA). Further, this method is most aligned to school outcome data. Given the tight coupling of poverty and student performance, this correlative relationship suggests that Calculation Method Three with Funding Formula Two is the most accurate measure of student need, amongst the three methods.

Additionally, Calculation Method Three with Funding Formula Two is the MSDE recommendation based on the following reasons:

- The ten possible categories that students can be assigned to provide the greatest amount of variation in the amount of funding a student can generate. This allows for the funding to be allocated more precisely and accurately. The students and schools that need the most funding will be capable of receiving it.

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<sup>42</sup> Simply multiplying the fiscal impact of each Method and Funding Formula across the remaining student population of the State assumes that students are distributed the same within each LEA in terms of Tier and income. LEA enrollments are systematically different and, as a result, any statewide assumptions would be misleading absent full data.

- Allocating greater amounts of funding for students living in low SES neighborhoods recognizes the impact that concentrated poverty has on families and students.
- Enabling students to generate funding for living in low SES neighborhoods, even without completing a meal benefit application or opting-in to a public assistance program reduces burden on families and schools while also identifying additional students that have been missed in historical methods.

**Table 25. Proportion of Variance in School Outcomes Explained By Each Model**

	Calculation Method 1		Calculation Method 2		Calculation Method 3	
	Funding Formula 1	Funding Formula 2	Funding Formula 1	Funding Formula 2	Funding Formula 1	Funding Formula 2
Calculation includes neighborhood indicator of poverty (MNT)?	Yes	Yes	Yes	Yes	Yes	Yes
Calculation includes an individual/family indicator of poverty (Economically disadvantaged status)?	No	No	Yes	Yes	Yes	Yes
Differentiates between Economically-disadvantaged students?	No	No	Yes	Yes	Yes	Yes
Attempts to account for missed Economically-disadvantaged students?	Yes	Yes	No	No	Yes	Yes
Number of levels of student socioeconomic status?	5	5	6	6	10	10
Does the Method and Formula properly capture more eligible students relative to the current Blueprint Formula? <sup>43</sup>	Yes	Yes	No	Yes	Yes	Yes
Is the cost of adoption likely to be feasible at scale? <sup>44</sup>	Yes	Yes	Yes	Yes	Yes	Yes
Which Calculation Method is most closely associated with increasing eligible student counts in schools that are lower performing than other schools? <sup>45</sup>	No	No	No	No	Yes	Yes

<sup>43</sup> Current eligibility counts, as established in Part One of this report, undercount eligible students. Proper capture of eligible students criterion is defined as any method that increases, beyond current identification methodologies the number of eligible students.

<sup>44</sup> Cost feasibility is defined as a change in State Aid resulting from Method and Funding Formula adoption of less than \$275 Million across all four pilot LEAs.

<sup>45</sup> This criterion is associated with the outcome analysis at the beginning of the “MNT Calculation Methods” section, above. Only one Method receives this designation and it reflects the Method that explains the largest percentage of variance in both ELA and math assessment performance.

## COMPENSATORY EDUCATION FUNDING FORMULA RECOMMENDATION

MSDE recommends adoption of Calculation Method Three with Funding Formula Two to determine the Compensatory Education funding amounts allocated to each school. As described earlier in this report, the process to determine the Compensatory Education funding allocations follows these steps:

1. Calculate a Maryland Neighborhood Tier (MNT) for each Census block group in Maryland based on a ranked composite index using the American Community Survey (ACS) measures of median household income, adult education level, home ownership, and household composition (single parent household status).
2. For each student enrolled in a school, determine the Census block group of their residence.
3. Find the assigned MNT (Tier 1 to Tier 5) for each student's residential Census block group.
4. Determine the student's family economic-disadvantage status, based on direct certification (including Medicaid).
5. Assign students to the appropriate category shown in Table 26, based on the student's MNT and economically disadvantaged status.
6. Allocate the corresponding funding amount for each student's category, as shown in Table 27.

**Table 26: Categories for Calculation Method Three**

	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Not Economically disadvantaged	Category 1	Category 2	Category 3	Category 4	Category 5
Economically disadvantaged	Category 6	Category 7	Category 8	Category 9	Category 10

**Table 27: Per-Pupil Amount Relative Weights and Dollar Amounts**

	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Not Economically disadvantaged	X% \$X	X% \$X	X% \$X	X% \$X	X% \$X
Economically disadvantaged	X% \$X	X% \$X	X% \$X	X% \$X	X% \$X

As mentioned above, MSDE is not proposing specific dollar amounts or relative funding weights at this time due to the lack of a complete statewide dataset. The first full data collection of student level Census block and tract information for enrolled students is to be completed on November 15, 2022. Details on MSDE's next steps and the timeline to provide a complete recommendation are provided in the last section of this report.

## Further Policy Considerations

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While this report focuses on applying the Maryland Neighborhood Tiers (MNT) to the Compensatory Education and Concentration of Poverty Grant funding formulas, similar methodologies can be used for other use cases as well. The MNTs can also be used for a variety of programmatic initiatives where Free and Reduced Price Meal data was previously used, or for school socioeconomic integration programs that have been hindered by the lack of access to meaningful data. The use of Free and Reduced Price Meals data to identify low-income students will continue to have limitations, particularly with the expansion of the Community Eligibility Provision. Prevailing research has also identified the compounding effects of concentrated poverty on the outcomes and opportunities of students, so there is a critical need for a measure to better allocate resources to drive student outcomes positively and at scale. Policy considerations for the use of the Maryland Neighborhood Tiers could include:

- **Equity and access.** The identification of MNTs may be used to develop policies that support disadvantaged students related to access and enrollment in schools and programs. A student's MNT could be used for eligibility or priority for lottery or other high-demand school and program placement. MNTs could also be used as a measure to identify students who are most at need without any additional paperwork or applications by the student or their family.
- **Teacher incentives and placement.** School-level scores based on the enrollment of students in various MNTs could be leveraged to recruit, retain, and reward highly impactful teachers to teach in high needs schools. An example of a successful program where this is already in place is Texas' Teacher Incentive Allotment program, where teachers can earn up to an additional \$32,000 in annual salary for teaching in a high-poverty school.
- **Title I.** As school systems across the country continue to identify new and alternative methods to identify a student's socioeconomic status, the use of the MNT methodology may provide an option for better calculating Title I eligible student counts for each school and for LEAs and to subsequently allocate funding through ESEA Title I.
- **Expansion of free meals through the Community Eligibility Provision.** One of the hesitations that schools or districts may have from adopting CEP and offering free meals for all students is that the school will no longer collect the individual meal benefit application forms, which will affect the funding the school receives. However, if the meal benefit application forms are not considered for other funding formulas – other than meal reimbursement from the USDA – then schools will have fewer reservations to participating in CEP and offering free meals for all students, which has been proven to support students' social, emotional, and academic success.

# Concentration of Poverty Grants

Concentration of Poverty Grants (CPG) are formula-based grants awarded to schools through The Blueprint for Maryland's Future. Concentration of Poverty Grants are awarded annually to schools that qualify and are used to establish and support community schools throughout the state. There are two types of Concentration of Poverty grants: personnel grants and per-pupil grants. Schools receive the grants based on a calculation of the percent of students living in poverty attending a given school. The implication of this report to the CPG eligibility calculation is that the proposed path forward would directly affect the number of eligible students, overall, but the impact would be felt over time.

Blueprint Statute defines CPG eligibility as the school-level eligibility as identified for the Compensatory Education Major Aid program. However, the percentage of students identified as CPG eligible in a given school will not directly reflect Compensatory Education enrollment. That difference is due to formula steps that mute year-to-year variation in CPG eligibility. The formula does this by:

1. Making the CPG eligibility a school-level proportion, not a number, of students.
2. Making the school-level proportion a three-year average of school-level eligibility.

The formula eligibility for CPG is, with these two steps, an average of averages. Both steps mitigate annual changes to CPG eligibility rates by school. Due to the data limitations of this report, MSDE is not prepared to offer a full impact assessment of CPG until data are available from all LEAs on November 15, 2022. However, the analysis in this report suggests that adopting Calculation Method Three will likely increase the number of Concentration of Poverty Grant-eligible schools in Maryland. That impact would not be immediate due to the multi-year average incorporated into the CPG formula. However, by increasing the number of students identified as Compensatory Education formula-weight eligible, Calculation Method Three also increases the percentage of eligible students in each school. That percentage is what drives school-level eligibility for CPG.

The recommendations laid out in this report do suggest that a revision to the CPG eligibility determination may be necessary. That is, one path to adopting Calculation Method Three is to use Funding Formula One for the Blueprint Compensatory Education program eligibility and related funding and then to use Funding Formula Two and its corresponding weights as the mechanism for establishing CPG eligibility for a given school and the amount of funding that school would receive through the CPG per-pupil grant. The analysis herein does not suggest need for a revision to the CPG personnel grant at this time. Further understanding of the impact of this recommendation requires full, statewide data.

## Timeline and Next Steps

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As discussed above, MSDE is recommending a calculation methodology to calculate the Compensatory Education funding amounts for each school. However, MSDE is not proposing specific dollar amounts or relative funding weights at this time due to the lack of a complete statewide dataset. The first full data collection of student level Census block and tract information for enrolled students is to be completed on November 15, 2022. Before that date, the necessary data does not exist, and a realistic cost estimate for the State cannot be completed. The dollar amounts and relative funding weights that were used in the analysis and examples in this report may need to be adjusted once the statewide collection of data is complete. Based on budget constraints, the dollar amounts used in this small-scale analysis may prove to be untenable when applied to the full state.

Once the full statewide data collection of student level Census block and tract information for enrolled students is completed, MSDE will continue its analysis process and will submit recommendations for the remaining missing elements of the funding formulas. This analysis process includes data validation and error checks, descriptive statistics and exploratory data analysis, applying the methods and formulas described in this report to the full statewide dataset, fiscal and programmatic impact analyses completed, individual case studies explored, additional data validation and anomalous data checks, preparation for publication and report writing, as well as further exploration of any additional methodologies that may arise before that time. Additionally, this funding formula change would have large implications for each of the local education agencies in the state, if it were to be instituted. Therefore, MSDE will engage with representatives of the LEAs to ensure that the new methodology aligns with the needs and priorities of those who will be entrusted with supporting students using these funds. While completing these analyses and engagement, MSDE will also ensure its compliance with the submission of the report with the data necessary to implement the neighborhood poverty indicator methodology, as required by MD Code, Education §5-223. By following these steps, MSDE will fulfill its duties to be responsible stewards of the data and only recommend the details of a new funding formula once able to fully assess the total cost of all methodologies statewide.

MSDE will complete the following steps in the timeline below to finalize its recommendations for incorporating neighborhood indicators of poverty to determine a school's eligibility for the Compensatory Education program and the Concentration of Poverty grant.

Date	Task
November 15, 2022	LEAs submit complete data of student enrollment and student Census Block and Tract locations to MSDE
November 15 - November 22, 2022	Data validation and error checks. Descriptive statistics and exploratory data analysis completed.
November 23 - November 30, 2022	Preparation of report on the data necessary to implement the neighborhood poverty indicators methodology, as required by §5-223.
December 1, 2022	Submission of report on data necessary to implement the neighborhood poverty indicators methodology, as required by §5-223.
December 1 - December 16, 2022	Possible methodologies and formulas described above are applied to full data set. Cost estimates are determined. Impact analysis at the school level is completed. Validation and error checks completed.
December 19, 2022 - January 7, 2023	Engagement with representatives from LEAs on new methodology and its implications.
January 10, 2023	MSDE completes final recommendations for incorporating neighborhood indicators of poverty to determine a school's eligibility for the Compensatory Education program and the Concentration of Poverty grant, utilizing a complete set of data.

MSDE's final recommendations for incorporating neighborhood indicators of poverty to determine a school's eligibility for the Compensatory Education program and the Concentration of Poverty grant, utilizing a complete set of data will include:

1. The methodology for calculating Maryland Neighborhood Tiers
2. The process for completing the recommended Calculation Method
3. The Funding Formula dollar amounts and relative funding weights that will generate funding
4. Cost estimates for each school, each local education agency, and Maryland as a whole
5. Funding comparisons of the new methodology compared to current formulas

MSDE continues to keep equity and excellence as its top priorities woven into all of its actions. As the funding formulas for Compensatory Education and Concentration of Poverty are some of the most influential factors toward maintaining equity for all Maryland students, MSDE looks forward to submitting its final recommendations for incorporating neighborhood indicators of poverty to determine a school's eligibility for the Compensatory Education program and the Concentration of Poverty grant.

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# Appendix: Methodology

The socioeconomic status (SES) tier measure uses data from the Census's American Community Survey (ACS) 5-year estimates from 2020. ACS data is reported at the Block Group level, which is the smallest unit that household data beyond demographics is publicly available. The following types of data are included in the SES tier measure:

- Median household income
- Home ownership
- Household composition
- Education level
- Student age population

Each ACS data table contained 4,079 records corresponding to the 4,079 Census Block Groups in Maryland. The data files were merged in Stata using the GeoID variable (a unique geographic identifier for each Block Group) which links the ACS data tables.

## 1. Calculation of measures

Five measures were calculated/compiled from the ACS data for each Census Block Group:

- Median household income
- Percent owner occupied housing = number of owner occupied housing divided by the total number of occupied housing units
- Percent single parent households = number of single parent households with children under 18 divided by the total number of households with children under 18
- Education score
  - After calculating a total socioeconomic score for each of 4,035 block groups with complete data, the block groups were ranked in order from lowest to highest. Census block groups were then divided so approximately 20% (~195,413) of school-age residents were in each of five tiers. The percentage of the population over the age of 25 was determined for each of 6 educational attainment categories: (i) no formal education, (ii) some education but less than a HS Diploma, (iii) HS Diploma or GED, (iv) some College (including Associates Degrees), (v) Bachelor's Degree, and (vi) Advanced Degree. These categories reflect the educational levels of individuals residing in the block group. Higher educational attainment was given more weight. The percentages were multiplied by the following numbers:
    - No education – 0.0
    - Some education but less than a HS Diploma – 0.2
    - HS Diploma or GED – 0.4
    - Some College – 0.6
    - Bachelor's Degree – 0.8
    - Advanced Degree – 1.0
  - Results were added to get a block group Education Score from 0.0 to 1.0.

- Student age population - the number of residents between 5 and 17 years of age

## 2. *Development of tiers*

SES Tiers were developed with the goal of having 20% of the school-age population in each Tier. From the 2020 ACS 5-year estimate data, there were 977,065 school-age individuals residing in Maryland as of mid-year 2020. Thus, approximately 195,413 school-age residents were placed in each Tier.

The SES score was calculated using the following metrics:

1. Median Household Income. There were 217 block groups missing Median Household Income.
2. Percent Owner Occupied Housing. There were 54 block groups missing housing ownership.
3. The percentage of Single-Parent Households, subtracted from 100%. There were 137 block groups missing household type.
4. An Education Score. There were 44 block groups missing education data.

For each metric, the average and standard deviation was calculated across all block groups. To place all four metrics on a comparable scale, Z scores were calculated by subtracting the metric mean from the individual block group score and dividing by the standard deviation of the metric. (Single parent family scores were reverse coded by taking the negative of the resulting Z score.) An example of this calculation is shown below.

$$\text{Education Z Score} = \frac{\text{education score} - \text{mean of all education scores}}{\text{standard deviation of all education scores}}$$

An overall SES Z score for each block group is calculated by averaging the Z score across all metrics. If a measure is missing for a block group, the average is taken of the remaining metrics. For example, if a block group is missing a single-parent family Z score, the total socioeconomic scores = (median household income Z score + owner occupied household Z score + educational Z score)/3.

After calculating a total socioeconomic score for each of the 4,035 block groups with data, they were then ranked in order from lowest to highest. Census block groups were then placed into Tier 5 (the lowest score) until approximately 20% (~195,413) of school-age residents populated that tier. The same process was followed until approximately 20% of students were in Tier 4, and so on for Tiers 3 through 1. The resulting quintile split was as even as possible given the distribution of scores and the number of school-age residents in each census block group.