

Final Report of the Study of Increasing and Declining Enrollment in Maryland Public Schools

Prepared for
Maryland State Department of Education

By

William Hartman & Robert Schoch

Education Finance Decisions

Submitted by
APA Consulting

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The Maryland General Assembly enacted Chapter 288, Acts of 2002 – the Bridge to Excellence in Public Schools Act, which established new primary state education aid formulas based on adequacy cost studies using the professional judgment and successful schools methods and other education finance analyses that were conducted in 2000 and 2001 under the purview of the Commission on Education Finance, Equity and Excellence. State funding to implement the Bridge to Excellence Act was phased-in over six years, reaching full implementation in fiscal 2008. Chapter 288 required a follow up study of the adequacy of education funding in the State to be undertaken approximately 10 years after its enactment. The study must include, at a minimum, adequacy cost studies that identify a base funding level for students without special needs and per pupil weights for students with special needs to be applied to the base funding level, and an analysis of the effects of concentrations of poverty on adequacy targets. The adequacy cost study will be based on the Maryland College and Career-Ready Standards (MCCRS) adopted by the State Board of Education and include two years of results from new state assessments aligned with the standards, which are scheduled to be administered beginning in the 2014-2015 school year.

There are several additional components mandated to be included in the study. These components include evaluations of: the impact of school size, the Supplemental Grants program, the use of Free and Reduced Price Meal eligibility as the proxy for identifying economic disadvantage, the federal Community Eligibility Program in Maryland, prekindergarten services and funding, the current wealth calculation, and the impact of increasing and decreasing enrollment on local school systems. The study must also include an update of the Maryland Geographic Cost of Education Index.

APA Consulting (APA), in partnership with Picus, Odden and Associates (POA), and the Maryland Equity Project (MEP) at the University of Maryland, will submit a final report to the State no later than October 31, 2016.

This report, required under Section 3.2.3.4 of the Request for Proposals (RFP R00R4402342), presents the findings of the study on increasing and decreasing enrollment. This report examines the impacts of changing enrollment in local Maryland school systems. The scope of the study includes analysis of enrollment trends and their relationship to local school system characteristics, and transportation and operational costs. Transportation was singled out for additional study to evaluate the transportation costs in conjunction with the numbers and types of students served, operating characteristics, and state funding.

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Introduction

The purpose of this study is to review the effects of enrollment changes on district operations in Maryland. This study includes analyses of various aspects of district operations:

- enrollment trends, by grade level and special program type;
- transportation trends, including characteristics of students being transported, district transportation system operating features, and costs to transport students;
- trends in district operating cost factors such as the number of schools and staff;
- relationship of enrollment changes on transportation operations and expenditures, and on key district operating factors; and
- recommendations for improvements in general education and student transportation subsidies for districts with decreasing enrollment.

Methodology

The analyses described in this report are derived from numerous datasets provided by the Maryland State Department of Education (MSDE) for the period from 2005 to 2014. The research team obtained additional enrollment and demographic information from the Maryland Department of Planning's Public School Enrollment Report (September, 2014)¹.

The research team carried out multiple analyses to examine enrollment trends from 2004-05 to 2013-14. The team examined enrollment changes over time at the district and state levels, both in terms of the numbers of students served and in terms of percentage changes in enrollment numbers. The team also performed analyses of enrollment across grade-level groupings ranging from prekindergarten to grades 7-12 and for several different program populations: special education program students, English Language Learners (ELL), and students served by Title I programs (participation in Title I programs is used as a measure of poverty in this report).

The research team also analyzed the relationship between enrollment and other district operating areas and examined the effects of enrollment changes on some of the key drivers of costs in districts, including the number of schools by level and the number of staff by type of position (both instructional and non-instructional). Particular attention was paid to the results for small enrollment but geographically large districts.

To illustrate the impact of enrollment changes on district operations and efficiencies, the team developed a descriptive cost model at the school level to accompany the analytical results. This model presents fixed and variable costs to demonstrate which of the cost elements in a school remain constant amidst

¹ Maryland Department of Planning. (2014). *Public School Enrollment Projections 2014-2023*. Baltimore, MD: Author

reasonable enrollment changes and which may change in response to changes in enrollment. The model provides a useful tool to help state and district decision makers to understand the interactions between enrollment changes and resource levels in schools and the options available to administrators in responding to changing enrollment. Examples are also provided to demonstrate the fixed and variable costs of district level functions, such as transportation, and district level decisions such as the closing of schools.

This study also included a review of public school transportation in the state, focusing on factors (e.g. number of students transported and miles traveled) influencing transportation operations, costs, and levels of state funding. The analysis examined transportation for general education students as well as for students with special transportation needs (e.g. disabled students). The analysis also looked at a variety of district transportation operating practices and other factors influencing transportation costs. The research team conducted phone interviews with transportation directors from a sample of four districts to collect additional information on district transportation operating policies and practices influencing costs and efficiencies. As a part of the transportation analysis, the research team also reviewed the Maryland Transportation Subsidy funding formula, including examinations of the key components of the subsidy, trends in funding over time, the effects of enrollment changes on the subsidy, the impact of the subsidy on district budgets, and recommendations for improvement.

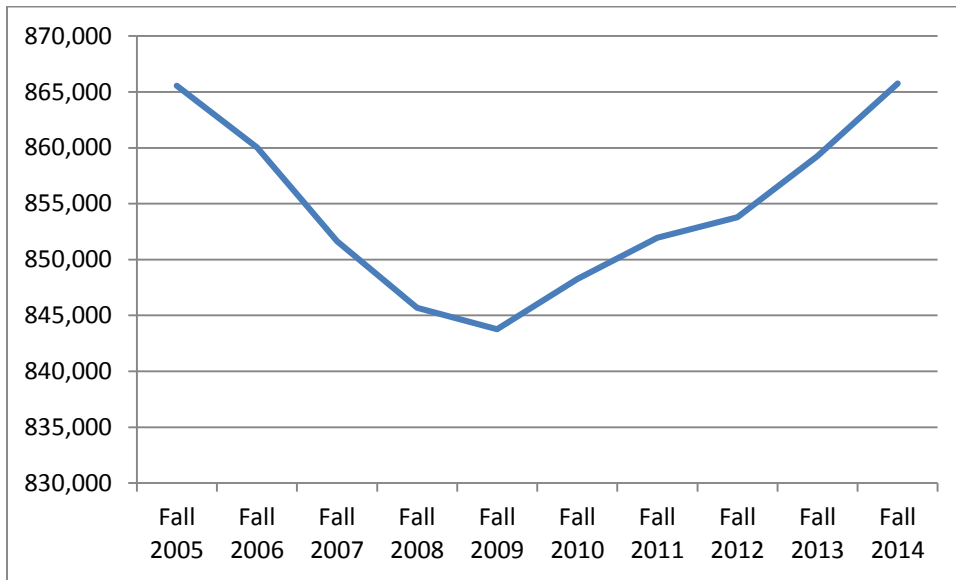
Enrollment Change

The following section provides a detailed analysis on enrollment trends in the state between 2005 and 2014. The analysis examines changes in total state and district enrollment, enrollment by grade level, enrollment by special programs, and projections of enrollment over the next decade.

Trends in Total Enrollment Over the Past 10 Years

Looking only at 2005 and 2014, it would seem that overall enrollment in the Maryland school system have been exceedingly stable with only a 207 student difference between 2005 enrollments and 2014 enrollment. However, this is a misleading picture. Enrollment in the state represent two significantly different time periods. During the first five years, school systems in Maryland have experienced a decline of more than 20,000 students, reaching a low of 844,000 students in 2009, followed by an increase of more than 20,000 students over the next five-year period. The trend in total enrollment from 2005 to 2014 is shown in Chart 1, below.

**Chart 1: Trends in Maryland Public School Enrollment
Fall 2005 to Fall 2014**



Source: MSDE

Annual enrollment by district is shown in Table A1 in the Appendix. The enrollment results are highlighted in Table 1 below. In the table districts are ordered by size and separated into three categories, based on size, to show the results more clearly. For each district the Table includes the latest enrollment, the percent change in enrollment for the initial five years, the second five years, and the overall ten year changes, plus the increase or decrease in the number of students during the period. District enrollment in the state range from 2,100 students (Kent County) to 151,000 students (Montgomery County). As a result, the implications of enrollment change vary widely for districts. A number of the districts with enrollment over 25,000 students have had more gain or loss of students than the total enrollment of several of the smaller districts. For example, the 10,900 student reduction in Prince George’s County was the enrollment equivalent of eliminating Kent, Somerset, and Garrett counties from the state system entirely. Likewise, the 11,900 student gain in Montgomery County was the enrollment equivalent of adding those same counties to the state system.

Overall, the state total enrollment percent changes follow a pattern of decreases in the first half of the study period followed by equivalent gains during the second half. Although, there are many exceptions to the general pattern, smaller districts as a group show more losses overall, with three of the districts (Kent County, Garrett County, and Allegany County) experiencing reductions of 10 percent or more. Middle-sized districts tend to show opposite patterns, with more districts having larger growth rates. However, there are others that show relatively high losses as well. The larger districts were balanced; for every district that showed a higher enrollment decline, there was another district that had a similar large gain. The conclusion is that size alone is not a valid predictor of enrollment changes.

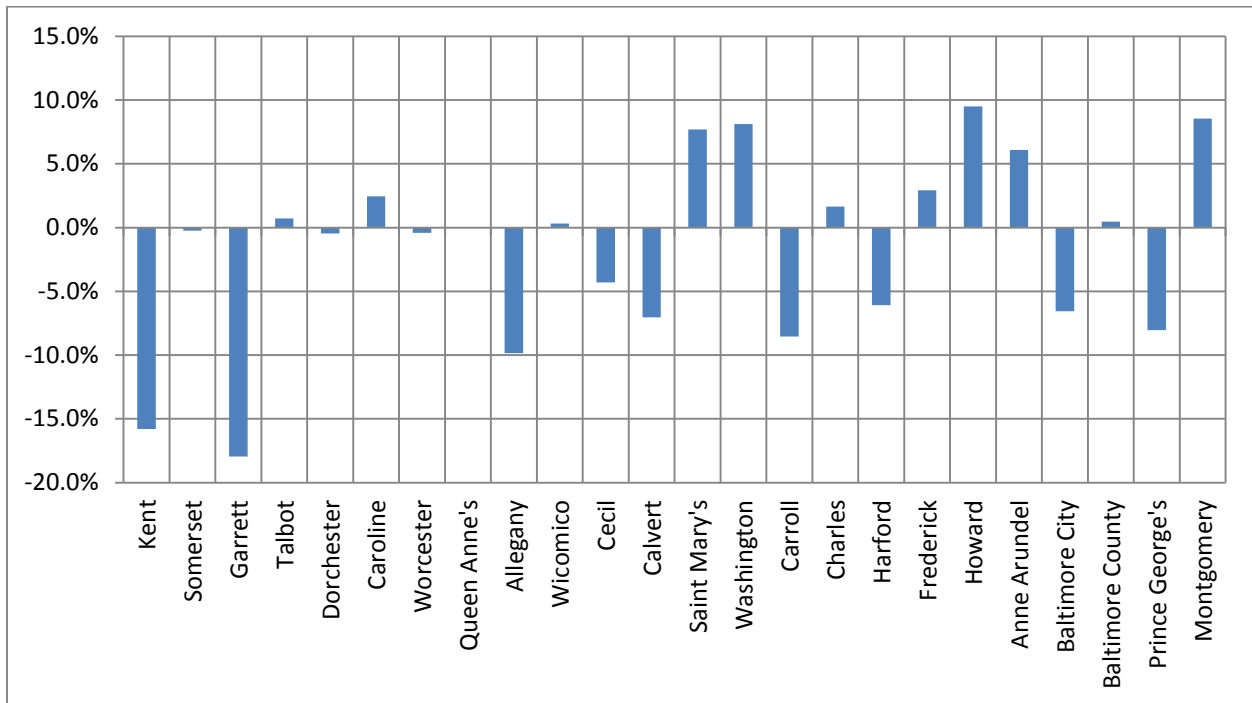
Table 1: Fall Enrollment, Percent and Number Changes in Total Enrollment

District	Enrollment Fall 2014	Percent Change 2005-06 to 2010-11	Percent Change 2010-11 to 2014-15	Percent Change 2005-06 to 2014-15	Enrollment Change 2005-06 to 2014-15
Districts Under 10,000 Students					
Kent	2,117	-13.1	-3.1%	-15.8%	-397
Somerset	2,945	-1.8%	1.6%	-0.2%	-7
Garrett	3,886	-9.0%	-9.9%	-18.0%	-851
Talbot	4,537	-0.2%	0.9%	0.7%	32
Dorchester	4,766	-3.3%	3.0%	-0.5%	-22
Caroline	5,545	2.6%	-0.1%	2.5%	133
Worcester	6,649	-0.3%	-0.2%	-0.4%	-27
Queen Anne's	7,716	1.0%	-1.0%	0.0%	3
Allegany	8,872	-7.0%	-3.1%	-9.8%	-968
Total or Average	47,033	-3.5%	-1.3%	-4.6%	-2,104
Districts Between 10,000 and 60,000 Students					
Wicomico	14,431	1.6%	-1.3%	0.3%	44
Cecil	15,824	-2.0%	-2.4%	-4.3%	-711
Calvert	16,221	-2.5%	-4.6%	-7.0%	-1,230
Saint Mary's	17,841	3.7%	3.8%	7.7%	1,274
Washington	22,495	5.3%	2.7%	8.1%	1,688
Carroll	26,331	-3.7%	-5.0%	-8.5%	-2,461
Charles	26,455	2.9%	-1.2%	1.6%	429
Harford	37,842	-4.1%	-2.1%	-6.1%	-2,452
Frederick	40,648	1.7%	1.2%	2.9%	1,159
Howard	52,806	5.0%	4.3%	9.5%	4,587
Total or Average	270,894	0.8%	-0.5%	0.4%	2,327
Districts Greater Than 60,000 Students					
Anne Arundel	78,489	1.1%	5.0%	6.1%	4,498
Baltimore City	84,730	-8.6%	2.2%	-6.6%	-5,947
Baltimore County	108,191	-4.1%	4.7%	0.5%	490
Prince George's	125,136	-6.7%	-1.5%	-8.1%	-10,959
Montgomery	151,295	1.7%	6.8%	8.5%	11,902
Total or Average	547,841	-3.3%	3.4%	0.1%	-16

Source: MSDE

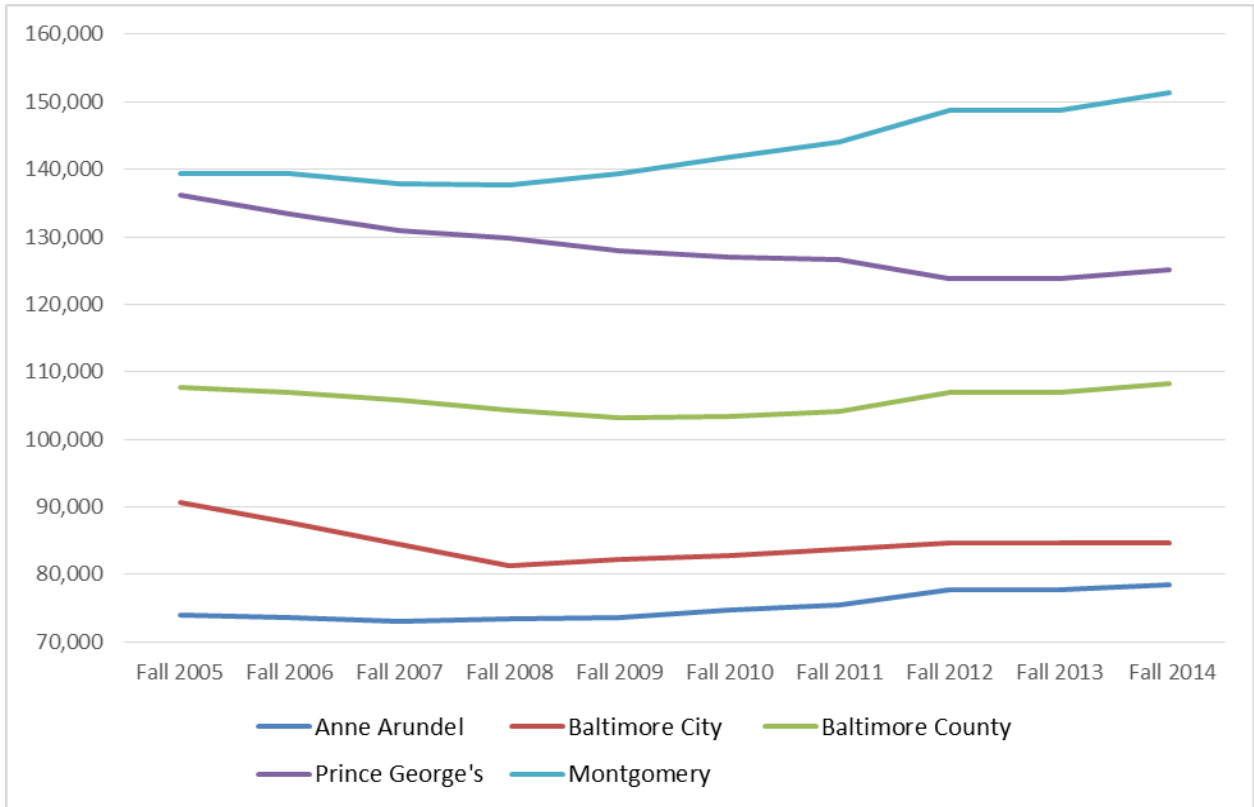
To illustrate the difference in enrollment patterns among districts, the overall 10-year percentage enrollment change is shown in Chart 2, below. This chart is arranged by enrollment with the smallest districts on the left and the largest on the right.

Chart 2: Percent Changes in Total Enrollment, Fall 2005 to Fall 2014



There are 24 districts in the state, but the five largest districts dominate the enrollment numbers, comprising approximately two-thirds of the state’s total student enrollment. The trends in enrollment in these five districts from 2005 to 2014 tend to dominate the overall state patterns for the same time period. For the most part, four of the five largest districts follow these common enrollment trends - declining or steady enrollment in the early years, followed by enrollment increases in the later years. The exception is Prince George’s County, which showed declining enrollment throughout most of the 10-year period. Chart 3, below, illustrates the enrollment trends of the state’s five largest districts. As a result, state subsidy requirements for enrollment-based state funding formulas are more sensitive to enrollment variations in these five districts.

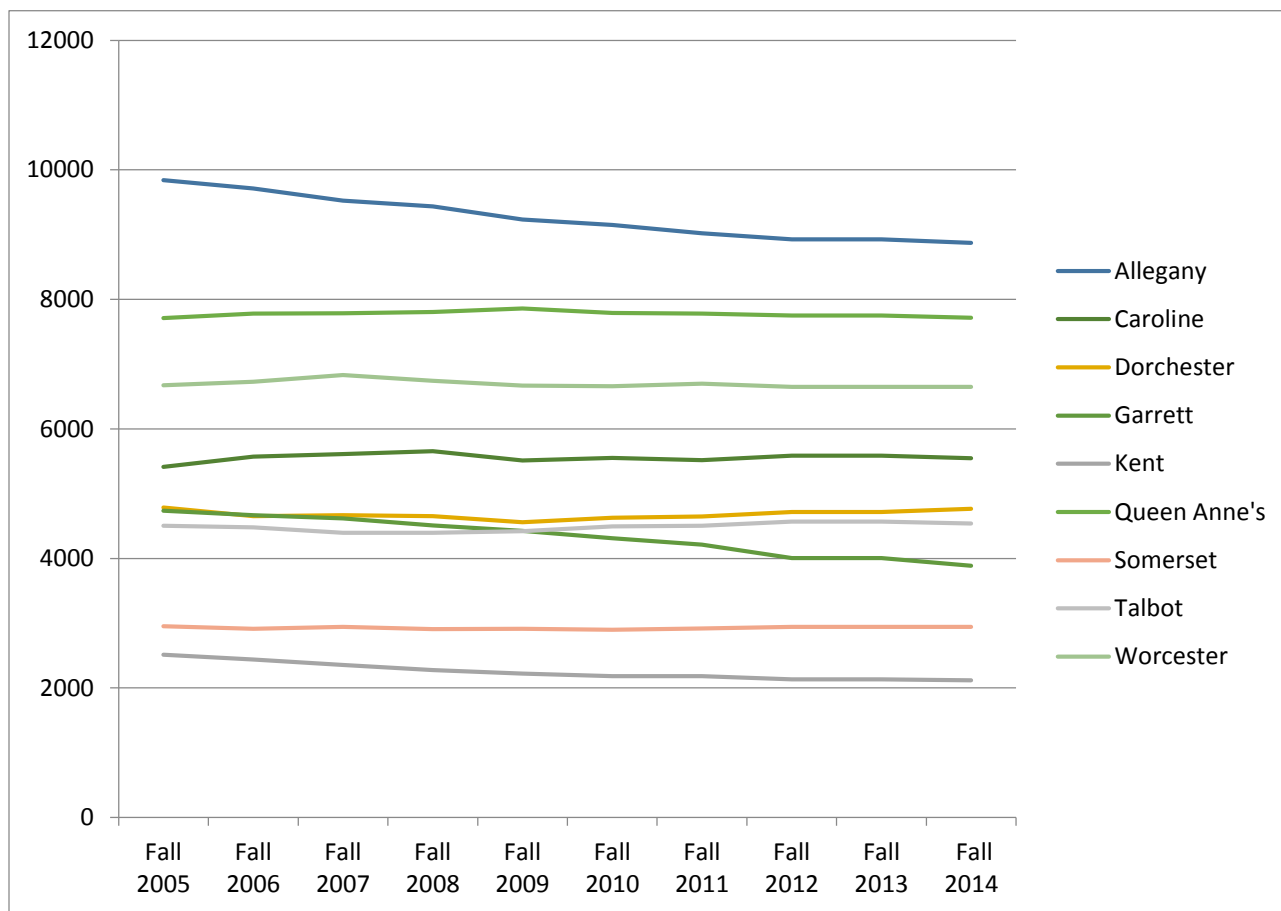
Chart 3: Enrollment Trends for Districts Greater than 60,000 Students



Source: MSDE

The enrollment trends in school districts with less than 10,000 students are important to understand because the funding formulas must recognize the challenges that smaller, rural school systems face in adjusting to enrollment change. For the analysis shown in Chart 4, a 10,000 student threshold has been selected because of the 9.8 percent enrollment decrease in Allegany County from 2005 to 2014. This enrollment decreased at a time when birth rates in the county peaked in 2009. After that point, birth rates decreased and are projected to continue to decrease by 18 percent from 2009 to 2016. In Garrett County enrollment decreased by 18 percent from 2005 to 2014, from a total enrollment of 4,737 to 3,886. Kent County enrollment decreased by 15.8 percent, from 2,514 to 2,117, during the same period. Enrollment in most of the other districts with less than 10,000 students remained more constant.

Chart 4: Enrollment Trends for Districts with Less Than 10,000 Students



Source: MSDE

Trends in Grade-Level Enrollment

The research team conducted a more detailed analysis of the overall enrollment changes by grade-level groupings – prekindergarten, kindergarten, grades one through six (elementary), and grades seven through 12 (secondary). These grade-level enrollment trends can be different across the districts due to differences in the size of the age-range cohorts moving through the districts’ schools. These different-sized cohorts can have important influences on facilities, staffing, transportation, and other functions of the districts. Similar to the overall enrollment changes, these grade-level enrollment patterns were analyzed over two periods of time.

Prekindergarten Enrollment

The data on enrollment trends for prekindergarten programs indicate two main patterns (for more detail, see Table A2 in the Appendix). First, there has been steady growth for most districts throughout the last 10 years. With only two exceptions (Garrett County and Queen Anne’s County), districts had higher prekindergarten enrollment in 2014-15 than in 2005-06. Second, enrollment was relatively small, totaling

between 23,000 and 30,000 students during this time period. The statewide increases generally occurred through 2010-11, and then leveled off for the remaining years.

The total statewide enrollment gain over the 10-year period was over 6,400 students and only two districts had increases of over 1,000 students (Prince George's County, with an increase of 1,511 and Baltimore City, with an increase of 1,281). Across the districts the numbers of new students were generally small with many districts experiencing growth of less than 100 prekindergarten students. Although the state total increased by 27.5 percent and the enrollment for prekindergarten programs grew at significant rates for most districts, ranging up to a 72 percent increase, the initial baseline of small enrollment resulted in fairly large percentage growth rates. Table A3 in the Appendix shows the percentage change in prekindergarten enrollment by county over the first and second five year periods and the ten year study period along with the numerical change in prekindergarten enrollment. While the reasons behind the growth of prekindergarten enrollment could not be identified from the available data, changes in programs, such as expansion of early education seats, may increase enrollment. In most counties, most of the program expansion occurred between 2005-06 and 2010-11, and slowed down after that period.

The size of the prekindergarten population and its growth has significant implications for school districts since it is one of the best predictors of the size of incoming kindergarten and early elementary cohorts. It is one indicator for the number of schools and instructional staff that will be needed in the near future. Although there was substantial variation by district, these results indicate a potentially smaller group of incoming students than in prior years.

Kindergarten Enrollment

Compared to prekindergarten programs, kindergarten programs enrolled about twice the number of students. Table A4 in the Appendix shows patterns in kindergarten enrollment from the 2005-06 school year to the 2014-15 school year. Enrollment in kindergarten grew steadily throughout the study period, with only two instances where enrollment decreased from one school year to the next. (These two instances were minor exceptions, and resulted in an enrollment decline of just six students.) In total the kindergarten enrollment grew by 12,700. The pattern of changes varied among the districts (See Table A5 in the appendix for detail by district). Most districts showed higher gains in the first five-year period than the second, other districts saw an opposite pattern of higher gains in the second five-year period than the first. However, 75 percent of the growth came from the largest five districts. Individually they showed gains ranging from 1,330 in Baltimore City to over 2,700 in Montgomery County with all of these districts posting over 20 percent gains over the ten year study period.

The rapidly growing kindergarten enrollment cohorts will continue to progress through the following grades. They represent additional students that will require additional teachers, classrooms, and possibly school buildings. The number of increased staff would be determined by how many elementary schools a district operated and if current class sizes could be increased to accommodate additional students.

Grades One through Six Enrollment

Overall, enrollment for grades one through six dropped from 2005-06 to 2008-09, with a decline of about 20,000 students, which represented a decline of 5.1 percent (See Table A6 in the Appendix for district detail). Elementary enrollment numbers bottomed out in 2008-09, but a new growth cycle has appeared since then. Enrollment grew from 2009-10 to 2014-15, adding about 30,000 students back into statewide enrollment. This addition of students resulted in a net increase of 10,000 students in grades one through six throughout the state for the ten year period. On a percentage change basis, 18 of the 24 districts saw declines in their elementary populations from 2005-06 through 2008-09. This pattern reversed from 2009-11 to 2014-15, when 17 out of 24 of the counties experienced enrollment increases in grades one through six and the state showed an overall gain of 7.7 percent. Table A7 in the Appendix shows the percent changes in enrollment for grades one through six by district over the 10-year period. However, the new growth in grades 1-6 is not uniform. Two of the five largest districts had overall ten year declines (Prince George's County and Baltimore City) and the other districts showed a mixed pattern.

Grades Seven through 12 Enrollment

Generally over the last ten years enrollment in grades seven through 12 has been in decline. Nineteen districts experienced a reduction in secondary enrollment and total secondary enrollment decreased by about 30,000 statewide. The largest five school districts led the decline with decreases in their enrollment, accounting for approximately 23,000 (77 percent) of the total reductions. Table A8 in the Appendix provides enrollment over the 10-year period.

Across the two five-year periods, the statewide total percent decreases in grades seven through 12 enrollment was relatively balanced. There was a 4.0 percent decrease over the first five-year period and a 3.5 percent decrease over the second five-year period, yielding a 7.3 percent decrease in secondary enrollment over the 10-year period. Within the overall results, individual district results varied, but tended to be generally balanced between the two five-year periods. Table A9, in the Appendix, provides detail on the percent and enrollment changes from 2006-06 to 2014-15.

However, change is coming in grades 7 through 12 enrollment for most school districts since the enrollment in elementary schools has been generally increasing. The pattern of increasing elementary enrollment has not yet influenced secondary school enrollment but it should soon. With this advance information from their elementary schools, secondary schools should prepare for a turnaround in their secondary enrollment.

Projected Enrollment Over the Next 10 Years

According to the Maryland Department of Planning's Public School Enrollment Projections 2014-23 (September, 2014)², school enrollment in the next 10 years will change as follows:

² Maryland Department of Planning. (2014). *Public School Enrollment Projections 2014-2023*. Baltimore, MD: Author

Elementary school enrollment (grades [kindergarten through five]) is projected to experience decreasing gains over the next three years, achieving a peak total in 2016. This peak total will be followed by small declines for four years before growth resumes again in 2021. Despite the slower growth and small declines in the middle part of the projection period, elementary school enrollment is expected to have a small increase at the end of the 10-year period (918 [additional students], or [a] 0.2 percent [increase]).

Middle school enrollment (grades [six through eight]) is projected to grow substantially between 2013 and 2023, with a nearly 13,400 (7.2 percent) gain. Despite this overall increase over the 10-year period, middle school enrollment is projected to grow only in the first seven years, before beginning to decline in 2021. The projected growth over the next seven years is a reversal of enrollment declines which occurred in eight out of the last 10 years between 2004 and 2013. These declines were mostly due to the lower birth years during the 1990s.

High school enrollment (grades [nine through] 12) is projected to be over 39,600 (or 15.6 percent) higher in 2023 compared to 2013, leading to a new peak total for Maryland. Growth is anticipated to begin in 2015, aided by the raising of the age of compulsory public school attendance from age 16 to age 17 in 2015. Growth will be strongest for the years 2017 through 2022, with a small part of this increase due to the final raising of the age of compulsory attendance to age 18 by 2017. (9-10)

District Enrollment

The Maryland Department of Planning's Public School Enrollment Projections 2014-23 (September, 2014)³, also project that the anticipated enrollment changes for county school systems are as follows:

Twenty-one of 24 jurisdictions in Maryland are expected to have a larger enrollment in 2023 compared to 2013. The largest numeric increases are anticipated for Montgomery(11,945), Baltimore (10,786), Anne Arundel (7,088) and Howard (6,849) counties, while the largest percentage increases are seen for Dorchester (15.4 percent), St. Mary's (14.2 percent), Howard (13.3 percent) and Charles (11.6 percent) counties.

Howard (1,905), Charles (1,213), Anne Arundel (804) and Cecil (558) counties are expected to have the four largest numeric increases in elementary enrollment by the end of the 10-year period. However, several jurisdictions will have larger gains during the 10-year period than at the end of the 10 years. For example, the gain to Baltimore County is expected to reach nearly 1,750 by 2016, but only be 142 higher by 2023 as a result of subsequent declines. Twelve jurisdictions are expected to have less elementary enrollment in 2023 than in 2013, with the largest decline in Prince George's (-1,839, or -3.2 percent) and Carroll (-851, or -7.6 percent) counties.

The largest percentage increases for elementary school enrollment are expected to be in Charles (11.0 percent) Somerset (9.4 percent) and Howard (8.2 percent) counties.

Baltimore (3,444), Montgomery (3,270), Anne Arundel (2,147) and Howard (1,611) counties are expected to have the largest middle school enrollment gains over the next 10 years. In all four cases, however, peak middle school enrollment will occur at higher levels before the end of the 10-year period. For Montgomery County and Howard County, middle school enrollment will top out in 2019, while for Anne Arundel and Baltimore County the high point is expected in 2020. Five jurisdictions are expected to have lower middle school enrollment in 2023 compared to 2013, with the largest decline projected for Carroll County (-925).

³ Ibid.

The largest percentage increases for middle school enrollment between 2013 and 2023 are anticipated for St. Mary's (19.6 percent), Dorchester (18.2 percent) and Baltimore (15.0 percent) counties. For all three counties, the largest cumulative percentage gains actually come prior to 2023, with Dorchester and Baltimore peaking in 2020 and St. Mary's in 2022.

The four largest numeric increases in high school enrollment over the 10-year projection period are seen for Montgomery (8,848), Baltimore (7,200) and Prince George's (4,976) counties and Baltimore City (4,218). Unlike middle school enrollment gains, however, the largest gains will occur at the end of the projection period. And, for all four jurisdictions, the bulk of the increases will be during the 2017 to 2022 period as larger middle school cohorts work their way into their high school years. Three jurisdictions are expected to have smaller high school enrollments at the end of the 10-year projection period, with the largest declines anticipated for Carroll County (-643).

The largest percentage increases in high school enrollment are projected for Dorchester (34.3 percent), St. Mary's (29.1 percent) and Caroline (26.6 percent) counties. (12-13)

Birth Rates and Kindergarten and First Grade Enrollment

Prior year birth rates provide an important leading indicator of school systems' future enrollment. Most children born in a given year will enter kindergarten five years later. For example, children born in 2010 will enroll in kindergarten in 2015. Not all children will follow the five-year pattern, and there will also be some migration of children into and out of the state. Nonetheless, the bulk of children who will enter schools between the 2015-16 school year and the 2019-20 school year have already been born. This provides districts with important information to plan for future operations. Declining birth rates will lead to fewer students in schools in future years and these lower student numbers will persist as students move from one grade to the next over their 13 years of attending school.

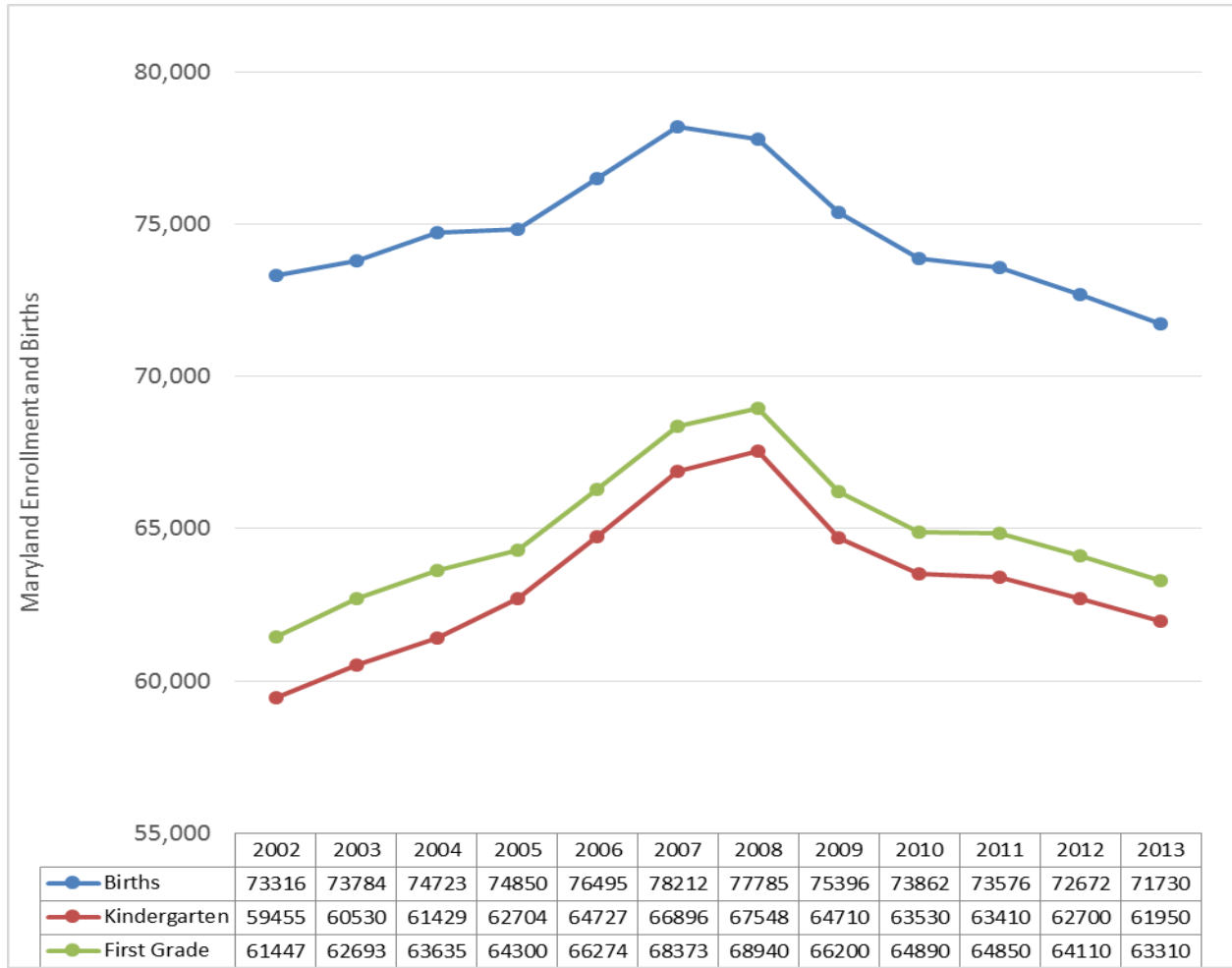
Birth rates in Maryland were increasing steadily until the economic recession of 2007 through 2009, at which point they began declining. The number of students born from 2002 to 2007 increased by 5,000 over earlier years. By the time this cohort of births reached kindergarten and grade one, five and six years later, respectively, the enrollment in these grades had increased by 7,000 to 8,000 students. The increase in enrollment over birth rate gains is likely due to the migration of students into the state and to the recession. The economic impact of the recession may have caused more families to enroll their children in free public schools rather than private schools with required tuition.

The Maryland Department of Health and Mental Hygiene compiles all birth rates. When the Maryland Department of Planning issued its report on public school enrollment in November 2014, the birth rate information for 2012 was available but all birth rates from 2013 and future years were projected. In most counties, birth rates peaked between 2007 and 2009 and then declined in subsequent years. From the birth rate peak, the number of births in the state has declined by more than 6,000. The Maryland Department of Planning projected birth rate declines for another six to eight years followed by a return of slow rates of increase. In Allegany County, the birth rates are projected to decline by 18 percent from the peak in 2009 until small increases are projected to begin in 2016. In Baltimore City, the projected decline is 9.8 percent, peaking in 2007 and declining through 2015. Births throughout the state peaked in 2007 at 78,212 and are projected to decline through 2013 to 71,730, an 8.3 percent decline. If these projections are correct, a

reduction of approximately 6,500 students will be experienced, and if all grade levels are affected as these lower birth rates progress through the system, enrollment declines of over 90,000 students will occur.

This decline in potential students will translate to lower enrollment over a decade or more. Various factors – birth rates, the ratio of public school enrollment to private school enrollment, and net migration of students into the State – will have a bearing on school operations. These factors will likely require at least some districts to make significant adjustments to their educational programs and spending patterns within the next decade. Chart 5, below, shows the patterns of birth rates and school enrollment in the State from 2002 to 2013. For example, in 2002 births totaled 73,316 and five years later kindergarten enrollment totaled 59,455. The following year 61,447 students enrolled in grade one.

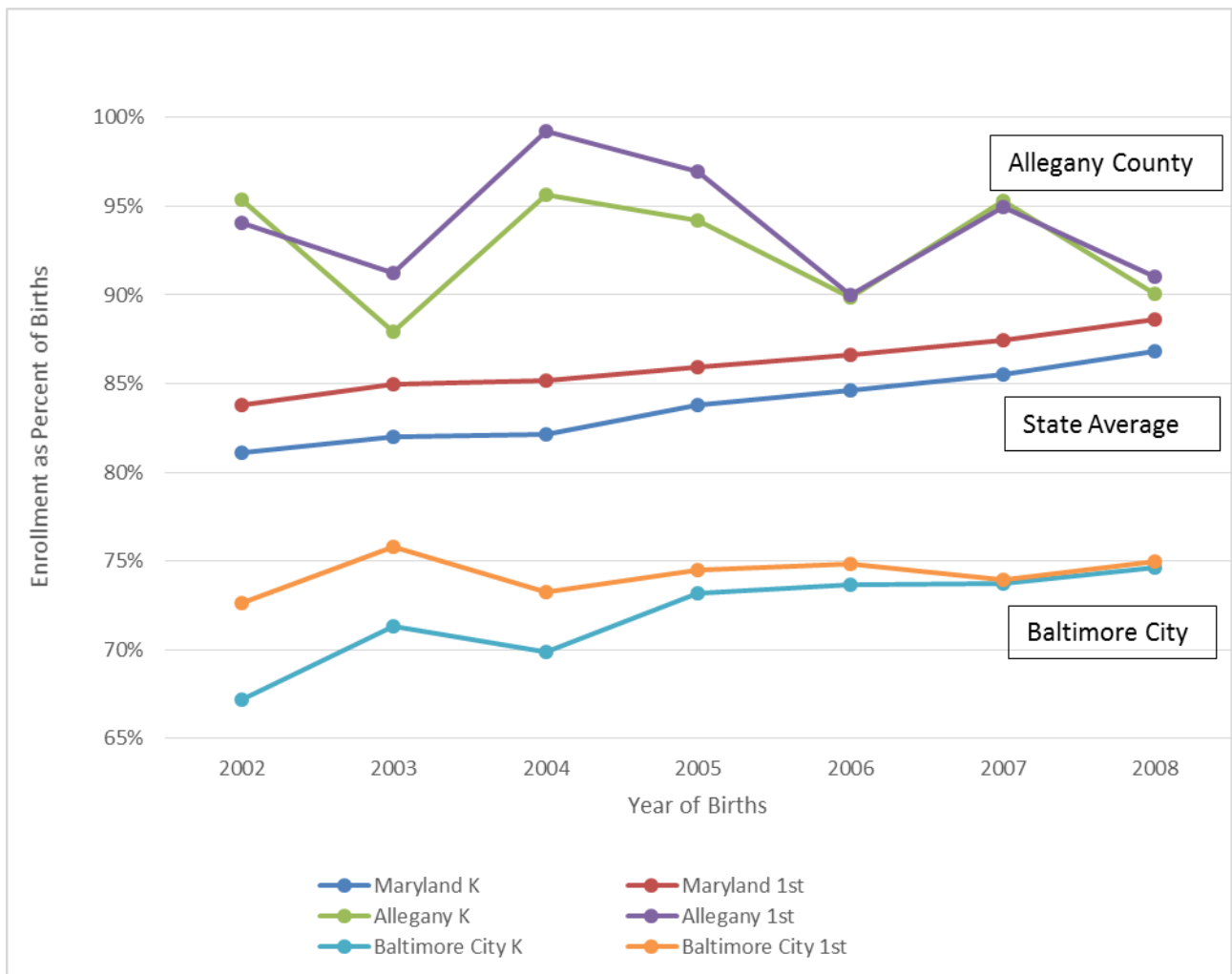
Chart 5: Birth Rates and Enrollment in Kindergarten and First Grade Five or Six Years Later



Source: Public School Enrollment Report 2013-23

Chart 6, below, compares enrollment transitions in two districts – Allegany County and Baltimore City – with statewide average enrollment transitions between 2002 and 2008. Across the state there has been a steady rise in the percentage of students, born five or six years earlier, who are now enrolling in kindergarten (87 percent) and grade one (89 percent). In Allegany County, the rates have varied between 88 percent and 99 percent over the past 10 years and are now at approximately 90 percent. Baltimore City rates have risen substantially during this period, from 67 percent for kindergarten and 73 percent for first grade to 75 percent for both. If these transition rates improve for Baltimore City, there could be substantially more students in the early grades than are currently enrolled and this will create demands for additional resources to serve these students.

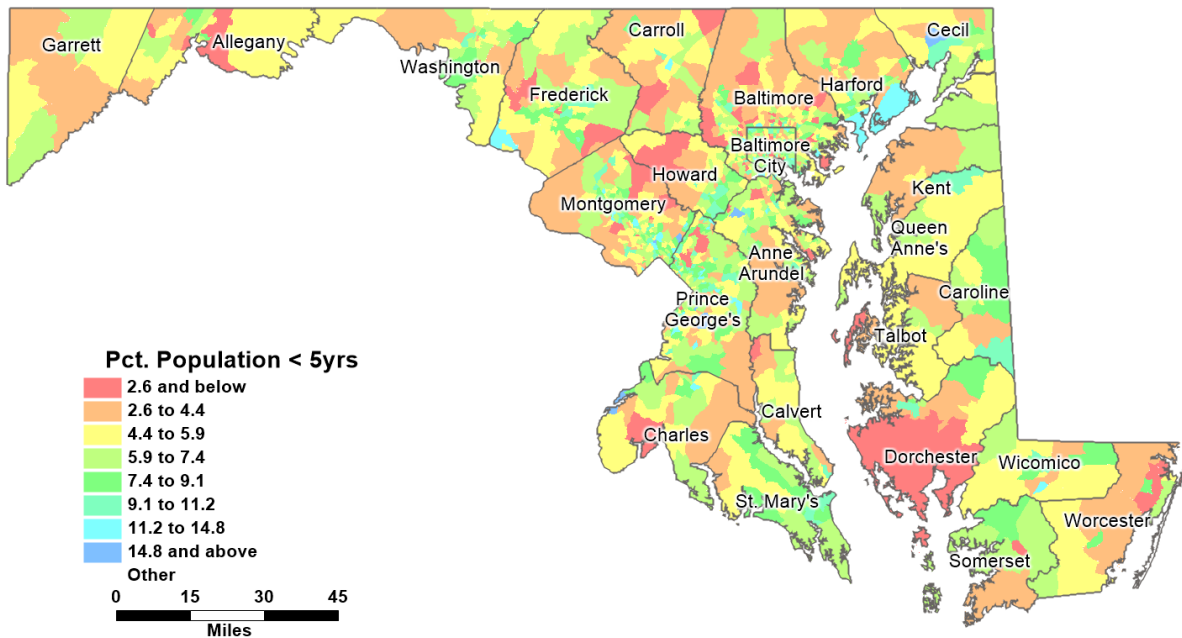
Chart 6: Enrollment in Kindergarten and First Grade as Percentages of Births Five or Six Years Earlier District Examples



Source: Public School Enrollment Report 2013-23

Figure 1, below, presents the number of students under five years old in 2013 by census tract. These census tracts provide a finer level of detail of population data than the district boundaries. The map indicates the anticipated future school populations at the census tract level. As these cohorts of children under five years of age progress through the state's education system, areas shown in blue and green can expect school enrollment growth, while areas shown in red and brown can expect school enrollment decreases. These data provide an advance warning system for school districts, giving them an alert to enrollment changes in the near future. This information should allow districts sufficient time to implement the necessary actions needed to expand programs and staff, or to cut back more smoothly and efficiently over several years. Districts could also decide to simply wait out short-term enrollment changes rather than making inappropriate decisions such as selling off a low-capacity school building that could be used to house expanded enrollment in the district in a few years.

Figure 1: Percentage of Population under Five Years Old in 2013



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Source: U.S. Census Bureau, 2013 American Community Survey

Trends in Special Program Enrollment

The following section examines enrollment trends, by district and for the state as a whole, for the following special programs: special education, ELL, and Title I. Changes in enrollment for these programs are described over the period of 2005-06 through 2014-15. Because the focus of this section is on the number

of students served in special programs, the number of students served by Title I provides a better indicator of program enrollment trends than counts of students eligible for the free-and reduced-price meal program.

Special Education

Special education enrollment totaled approximately 100,000 students in the state in 2014-15. Special education enrollment by county are shown by district over the ten year period in Table A10 in the Appendix. The highest concentrations of special education students can be found in the larger districts. The five largest districts have two-thirds of the state's special education enrollment. The state lost a total of 6,450 special education students over the past decade, representing a 6.2 percent decrease in overall special education enrollment. Only six districts across the state saw increases over this time. This statewide trend can be attributed to declines in special education enrollment in the smaller districts, since the larger districts, with one exception, have maintained stable enrollment over this time period.

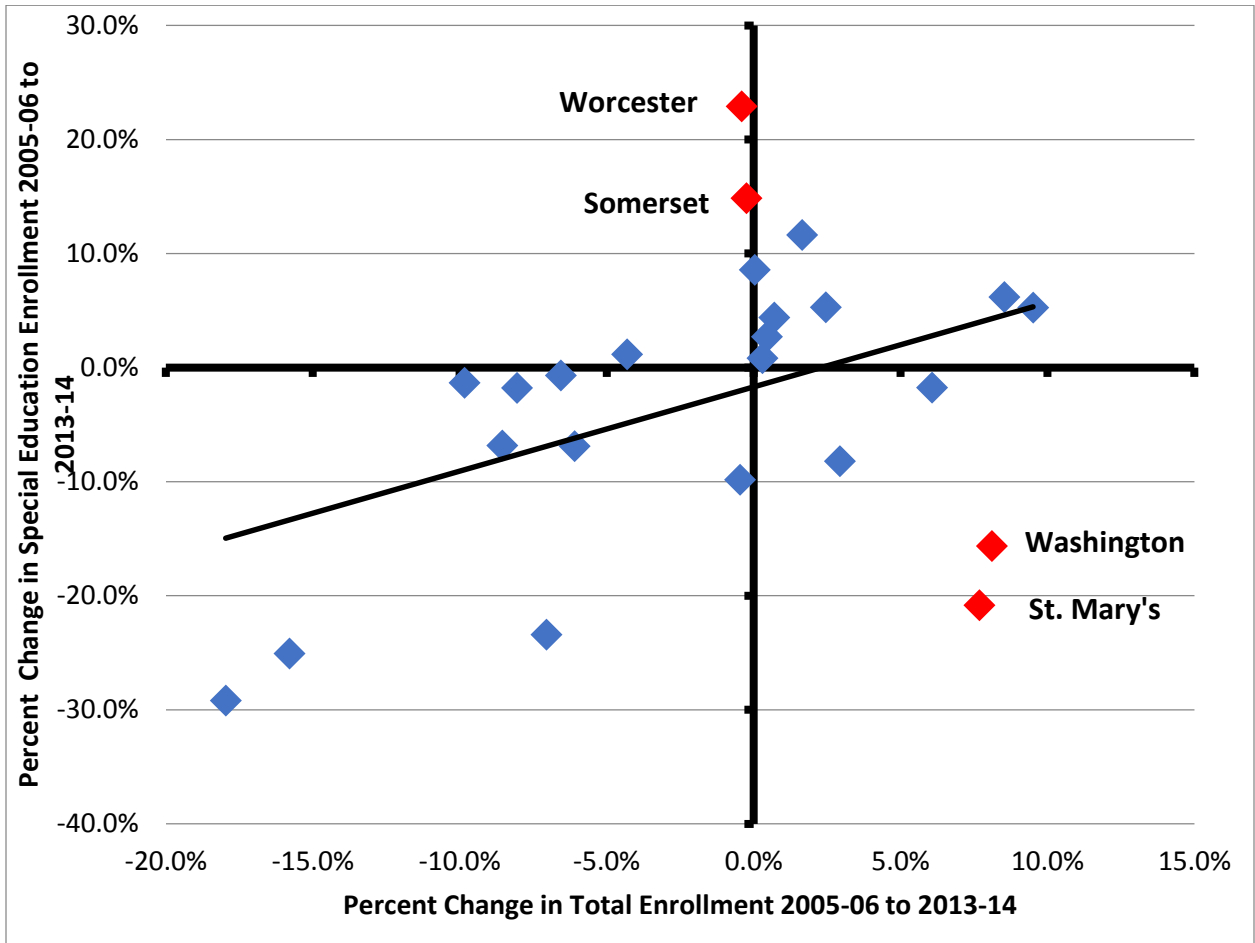
For individual districts, the percent changes in special education enrollment from 2005-06 to 2014-15 range from a percent increase of 34.3 (Somerset County) to a percent decrease of 37.7 (Garrett County). The numerical changes range from an increase of 453 (Montgomery County) to a decrease of 2,052 (Anne Arundel County). Table A11 in the Appendix shows the percent changes and numerical changes in special education enrollment over the last 10 years.

One measure of the significance for special education enrollment is the percentage of special education students of the total student population. Across districts, percentages of special education students are fairly similar, with a few outliers. From 2005-06 to 2014-15, most districts experienced a percent change of between 11 percent and 13 percent, with a few outliers above and below this range. The highest percentages of special education enrollment in 2014-15 were in Somerset County (15.6 percent), Baltimore City (15.3 percent), and Allegheny County (14.6 percent). On the other end of the range, those with the lowest percentage were Calvert County (8.3 percent), Howard County (8.6 percent), and Washington County (8.9 percent). Over the past 10 years, there has been little change across districts in terms of the proportions of special education enrollment to total enrollment. The average change during this period was a decrease of 0.9 percent, though some districts saw decreases or increases in the four percent range. Table A12 in the Appendix provides additional detail on special education enrollment as a percentage of total enrollment.

The scattergram in Chart 7, below, compares changes in total enrollment and changes in special education enrollment between 2005-06 and 2014-15. These data indicate that little relationship exists between the two variables. The correlation coefficient is modest (0.23), indicating a weak relationship. Looking at the most extreme points on the scattergram (red dots), Garrett County, with close to a 40 percent decrease in special education enrollment, had only an 18 percent decrease in total enrollment. Worcester County, with essentially no change in total enrollment, experienced a 22.9 percent increase in special education enrollment. Looking at the less extreme points on the scattergram (green dots), several districts (Washington County and St. Mary's County) with 20 to 30 percent changes in special education enrollment had five to 10 percent increases in total enrollment. Results for other districts between these extremes

(blue dots) are varied. Thus, the change in districts' total enrollment is not a good predictor of changes in districts' special education enrollment.

Chart 7: Relationship Between Changes in Special Education Enrollment and Change in Total Enrollment (Correlation Coefficient = 0.42)



Source: MSDE

English Language Learners

English language learner enrollment is highly concentrated in two districts (Montgomery County and Prince George's County). When combined, these districts contain two-thirds of the State's total ELL enrollment. Maryland's ELL population has doubled in the past 10 years, increasing from approximately 30,000 ELL students in 2005-06 to more than 60,000 in 2014-15. Table A13 in the Appendix shows enrollment of ELL students for each county and for the State from 2005-06 through 2014-15.

Statewide, the number of ELL students increased by 107 percent over the past 10 years (See Table A14 in the Appendix for percent and number changes for ELL students by county). Seven counties saw increases of more than 100 percent, and another seven saw increases of more than 50 percent. The greatest increases occurred in the first five-year period. The two districts with the largest numbers of ELL students

(Montgomery County and Prince George's County) each added approximately 10,000 new ELL students over the past decade. Other districts with relatively large increases in ELL enrollment (Anne Arundel County, Baltimore City, Baltimore County, and Howard County) each added more than 2,000 ELL students, leaving an increase of fewer than 2,000 ELL students in all of the other districts combined. If this population continues to increase, substantial new resources will be required to serve them adequately. State funding to districts to support these students will come through the LEP formula calculation, which is tied directly to the LEP enrollment of the prior year and adjusted by a district wealth per pupil factor. A minimum grant is available and it was applied in 2014-15 to four districts of varying sizes (Anne Arundel County, Garrett County, Kent County, Montgomery County, Talbot County, and Worcester County).

Because of confidentiality regulations, the State does not report the number of ELL students when it is fewer than five students. As a result, calculation of ELL students as a percentage of total enrolled students was not possible for some districts for some years. Statewide, the majority of ELL students in 2014 were in elementary schools (10.6 percent average of total enrollment). Middle schools and high schools had lower percentages of ELL students, at 4.1 percent and 3.5 percent respectively. Enrollment in Montgomery and Prince George's Counties clearly represent the pattern of higher elementary ELL enrollment. In both of these districts, ELL students accounted for over 20 percent of elementary students in 2014. The ELL student percentages in Montgomery and Prince George's Counties' middle and high schools are lower, at about nine percent for middle schools and seven percent for high schools. Table A15 in the Appendix provides detail on the percentages of ELL students in districts at the elementary, middle, and high school levels in 2014 by district.

Title I Program

Similar to special education and ELL enrollment, Title I program students are concentrated in the larger districts. When combined, the four districts with largest numbers of Title I enrollment (Baltimore City, Prince George's County, Baltimore County, and Montgomery County) account for 75 percent of all Title I students in the state. Over the past 10 years the number of Title I students in the state has varied from a low of 145,000 (2009-10) to a high of 171,000 (2014-15). Annual swings of plus or minus 10,000 to 15,000 were not unusual. No clear enrollment trends were apparent. Table A16 in the Appendix provides detail on Title I program enrollment for each school year from 2005-06 to 2014-15

Free- and reduced-price meal counts are used to establish funding levels for several federal funding programs. In 2005, the percentage of students eligible for free- and reduced- priced meals ranged from a low of 9.4 percent of total enrollment in Carroll County to a high of 75.6 percent in Baltimore City. In 2005, the state average was 32.5 percent amounting to 278,905 students. By 2014, Carroll County's percentage had more than doubled to 19.8 county of total enrollment, but still remained the lowest percentage in the state. Baltimore City's percentage remained the highest at 85.7 percent, an increase of 10.1 percent from 2005 to 2014. The state average increased by 12.8 percent to 45.3 percent, which was an increase of 113,620 eligible students. By 2014, 392,525 students were eligible for free- and reduced-price meals.

Across districts, there was no definite pattern in the percent change in Title I program enrollment over either five-year period. Some districts experienced large percent decreases, while others had large percent

increases. Even the statewide percentages were mixed and did not show patterns over either five-year period. There was a statewide decrease (-3.2 percent) over the first five-year period and a statewide increase (14.0 percent) over the second five-year period. Combined, these two five-year periods resulted in a statewide increase (10.4 percent, or a net addition of 16,179 Title I students) from 2005-06 to 2014-15. Table A17 in the Appendix provides details on the changes in Title I enrollment from 2005-06 to 2014-15. As was the case with ELL student data, some Title I student data (i.e. data on Title I students as percentages of total district enrollment) was suppressed due to the small number of students. For those districts where Title I student data were fully available at the elementary, middle, and high school levels, Title I students were most concentrated at the elementary level, followed by the middle school level and then the high school level. Table A18 in the Appendix provides detail on the number of Title I students as a percentage of total enrollment where data were available.

Conclusions from Enrollment Data Analysis

All of the district enrollment data analyzed – total enrollment, enrollment by grade level, and special population enrollment (e.g. special education, ELL, and Title I enrollment) – indicate significant variation among districts. Many districts have experienced both increases and decreases in enrollment at some point during the past 10 years. Even if the changes in enrollment numbers had been predictable, adjusting to the changes would have been difficult for these districts. When enrollment increases, it is relatively easy to justify added expenditures. When enrollment decreases, however, it is more difficult to justify reductions in expenditures due to the fixed nature of some expenditures (fixed costs, variable costs, and overall expenditures, are explained in more detail in the *Adjusting to Changing Enrollment* section). Until enrollment decreases are confirmed as longer-term phenomena, district administrators tend to be reluctant to reduce expenditures, especially when this requires reductions in staff or closing school buildings.

Enrollment projections indicate that the increase in birth rates that occurred prior to the 2007-2009 economic recession will lead to growing secondary enrollment in the future. In the next 10 years, secondary enrollment will reach the highest levels ever. At the same time, the decrease in birth rates that occurred in the wake of the economic recession will influence elementary enrollment. In the next 10 years, elementary enrollment will decrease. As these birth rate trends begin to influence different grade levels, school systems may face difficult operational decisions (e.g. staff cuts and/or additions, changes in attendance boundaries, and/or school closures).

The recession's impact on birth rates varies among districts, making future enrollment projections uncertain. The prevalent enrollment projection methodology – grade progression or cohort survival – forecasts trends of the recent past into the future. Cohort survival projections may not adequately react to rapid changes in birth rates. For example, when birth rates that had been steadily rising suddenly declined due to the economic uncertainty of the recession, enrollment projections became much less certain. As another example, if birth rates were to increase due to an economic rebound, then enrollment projections might become similarly uncertain. Thus, it is critically important that birth rates and enrollment projections

are regularly calculated, monitored, and analyzed over the next few years. It is also critically important that these calculations and analyses are communicated to district administrators.

Recommendations on Enrollment Data and Analysis

The economic recession of 2007 through 2009 had a number of impacts on school enrollment in Maryland. In many areas of the state birth rates declined. Many people chose to remain in their homes rather than purchase new homes, so construction of new homes slowed dramatically. As the economy improves birth rates should also increase. Additionally, demand for new housing could increase. Potential increases in birth rates and in housing demand could have significant impacts on school enrollment and school attendance boundaries, particularly at the elementary level. This potential for population growth and migration across communities is another factor that needs to be monitored and assessed regularly in the next few years. Enrollment projections can be enhanced using the latest versions of Geographic Information Systems (GIS) software. Enhanced projections could better take into account factors such as neighborhood population change and its impact on enrollment at the school attendance area level.

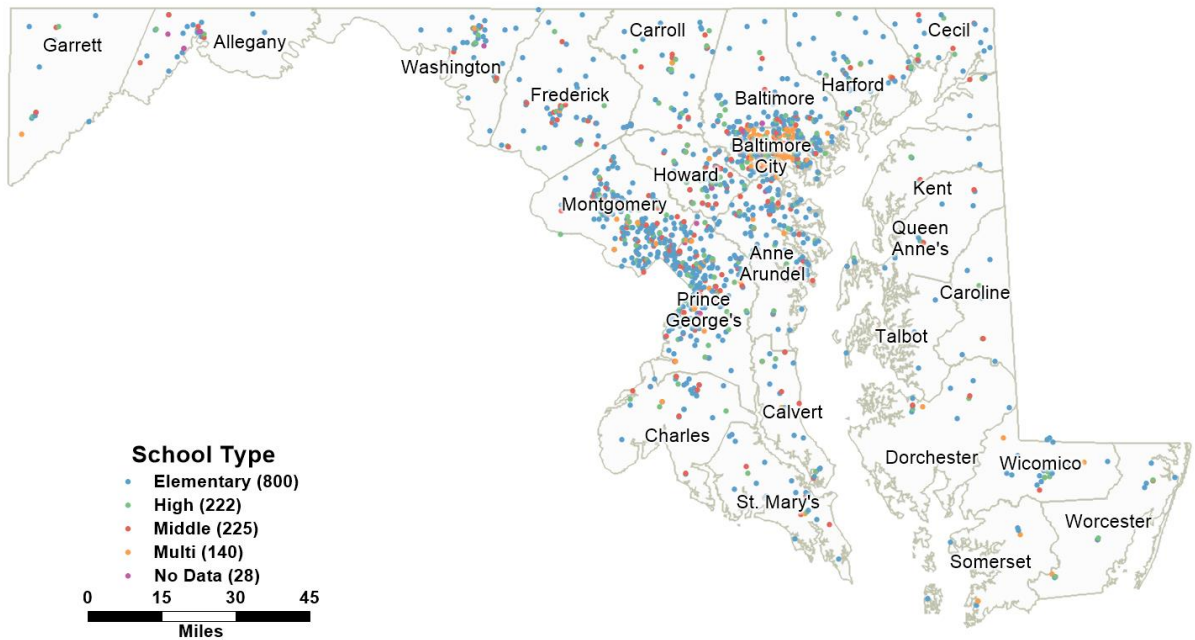
Change in Operating Factors

Over time, districts are expected to adjust their operations to account for changes in enrollment. As enrollment increases, additional resources are needed; as enrollment declines, some portion of resources may be reduced. The following analysis examines district responses from 2005-06 through 2014-15 to enrollment changes as they relate to several key school system operating measures: number of school buildings, number of instructional staff, and number of non-instructional staff.

Changes in the Number of School Buildings

Figure 2, below, shows the distribution of elementary, middle, and high schools throughout Maryland. There are definite concentrations of all levels of schools in the more populated districts (Baltimore City, Baltimore County, Montgomery County, and Prince George's County). In the more sparsely populated districts, there are very few school buildings. Kent, Somerset, and Talbot each have fewer than 10 schools each.

Figure 2: School Locations in Maryland



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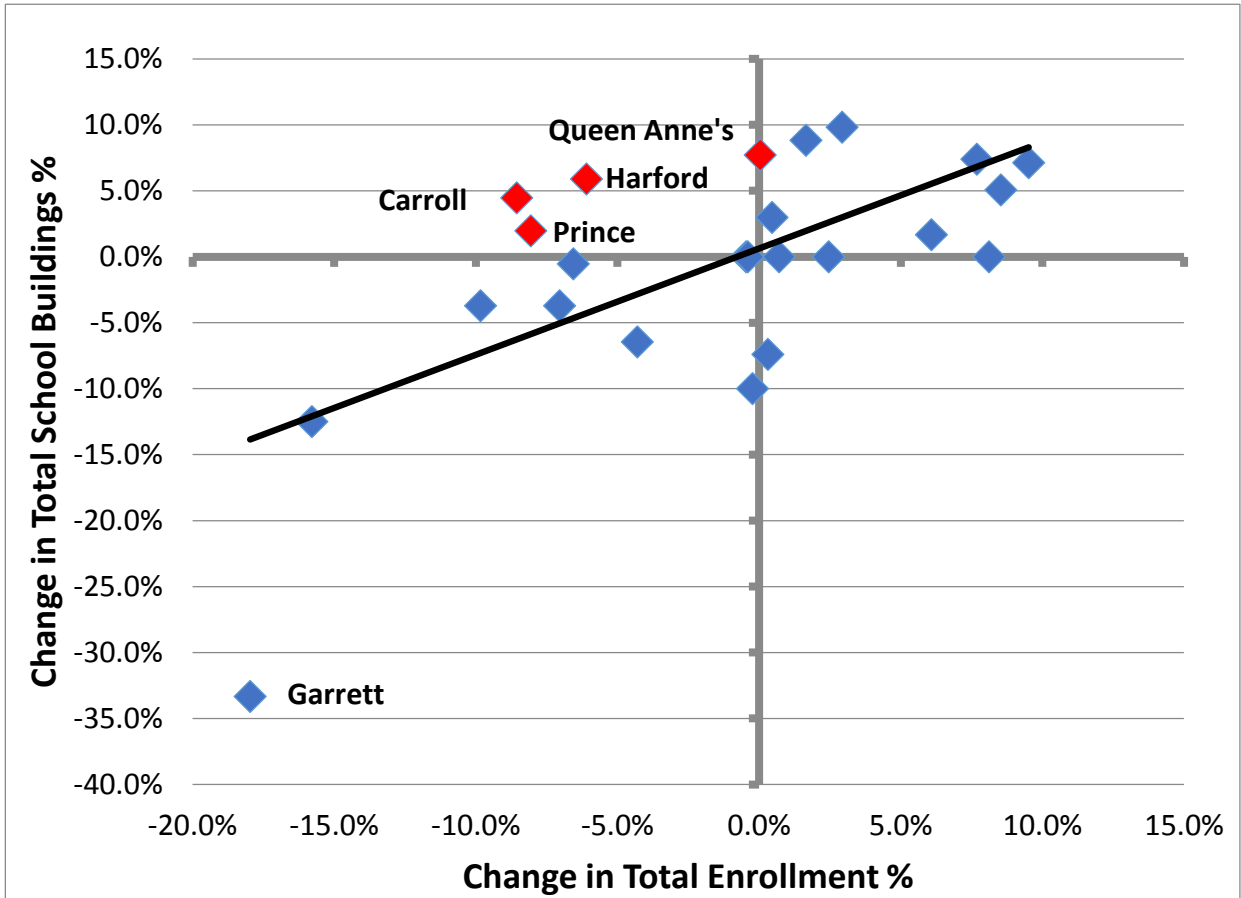
Between 2005-06 and 2014-15, most districts had very little change in the number of schools. In contrast, several districts added new buildings that accompanied enrollment growth, while other districts added schools even as enrollment declined. Table A19 in the Appendix shows the number of school buildings in each district in 2005-06 and in 2014-15, as well as the percent change and numerical change in the number of school buildings in each district over the ten year period. However, of the nine smaller districts only Garrett County went strongly in the other direction. It lost one-third of its total number of schools while experiencing an enrollment decline of 851 students (18 percent) over the decade. All of the other smaller districts lost only one school, added one school, or had no change over the ten year period. Table 2 below shows those districts with the greatest change in the number of school buildings between 2005-06 and 2014-15 along with the change in district enrollment over the same time period.

**Table 2: Districts with the Greatest Change in the Number of School Buildings
2005-06 to 2014-15**

District	Change in Schools	Change in Enrollment
Montgomery	+10	11,902
Frederick	+6	1,159
Baltimore County	+5	490
Prince George's	+4	-10,959
Garrett	-6	-851

Chart 8, below, shows the overall relationship between changes in district total enrollment and changes in the numbers of schools for all districts in the state. The chart shows a relatively strong correlation between the two variables. In general, as a district's total enrollment increases, the number of schools in that district tends to increase as well. Likewise, as a district's total enrollment declines, the number of schools in that district tends to also decline. This pattern indicates that most districts are managing their school facilities to account for changes in total enrollment. However, the chart also indicates some exceptions. These exceptions – districts that had either no change or a decrease in total enrollment (plotted on or to the left of the vertical axis), coupled with an increase in the number of schools (plotted above the horizontal axis) – are represented with red markers. However, with the exception of Prince George's County the other districts added only one to three schools during this time.

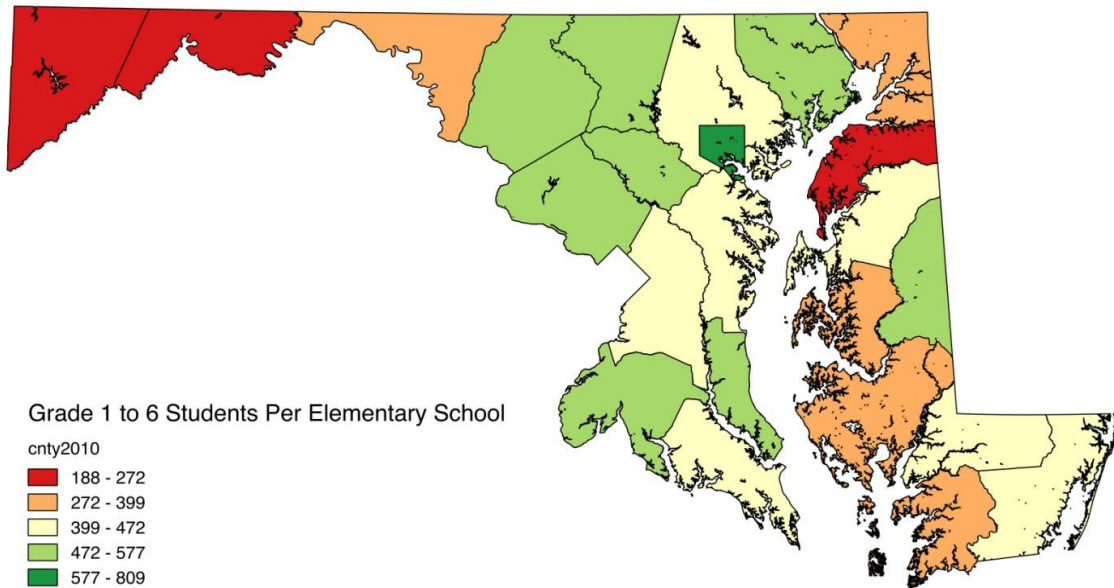
Chart 8: Relationship Between Changes in Total Enrollment and Change in the Number of School Buildings
(Correlation Coefficient = .65)



Source: MSDE

Districts may have certain limitations to how much they can reduce their number of schools. This is especially true in geographically large, sparsely populated districts with large distances between schools. Large, sparsely populated districts need to maintain enough classrooms to serve their students, but they should also carefully consider the potential outcomes of operating fewer schools. Operating fewer schools may decrease costs in one area while increasing costs in other areas (e.g. transportation). Figure 3, below, shows the number of students per elementary school in each district. Figure 3 indicates that rural, sparsely populated areas generally have lower school enrollment even though students attend from a large geographical area.

Figure 3: Number of Students per Elementary School by LEA



Conclusions on Changes in the Number of School Buildings

The cost of owning and operating school buildings amounts to five to 10 percent of district budgets, including both debt service and operating costs (e.g. utilities and maintenance). The vast majority of building costs are fixed, meaning that costs remain the same regardless of whether a building is fully or partially utilized. In many cases, it is possible for districts to close a school building and redistribute its students to other schools. However, school closures are often delayed or thwarted because of factors such as community resistance to school closures or transportation issues that arise from the need to bus students to other, possibly distant, schools.

The recent declines in birth rates in many areas across Maryland since 2008 will lead to commensurate declines in school enrollment, creating the possibility that a number of school buildings could be underutilized for a number of years. This is true even though the economy, and possibly birth rates, may begin to rebound. Over the next several years, birth rates and elementary school attendance should be monitored by district administrators to determine whether birth rates are beginning to rise. Even if birth rates remain low, thus warranting school building closures, it may be wise to retain school buildings rather than sell them in the event that an economic rebound results in increasing birth rates. This is particularly true for secondary schools. If birth rates and subsequent school enrollment increase to prior levels over time, the school buildings will be available to accommodate the increased numbers of students.

Recommendations on Changes in the Number of School Buildings

School building capacities should be calculated with a modern school program in mind – a program including small group instruction and tailored instruction for students with special education needs. Enrollment projections should be updated annually and measured against school building capacities. Socioeconomic and demographic factors that affect ELL program requirements should also be researched and monitored because an increasing number of immigrant students entering Maryland schools would require higher capacity school buildings as well as higher numbers of specialized staff to work with ELL students. School systems may need technical assistance to help create and analyze detailed enrollment projections, both by school attendance area and by student subgroups (e.g. Title I, ELL, and special education). During this especially uncertain period of birth rate fluctuation, other state agencies should make efforts to collect and share relevant information as quickly as possible. If these enrollment projections warrant redistricting and/or school closures, then school systems may need additional technical assistance to implement these difficult changes.

Changes in the Number of Staff

This section examines the relationship between enrollment and staffing levels at the state and district levels. The analysis covers both instructional and non-instructional staff.

Instructional Staff

Instructional staff are at the core of district operations. They provide both teaching and direct academic support services for students. The total number of instructional staff in the state has remained fairly stable since the 2005-06 school year, ranging from about 78,000 to 80,000 between 2005-06 and 2013-14. However, among individual districts, numbers of instructional staff have varied. Instructional staff numbers in some districts have remained constant, while numbers of staff in other districts have increased in some cases, decreased in others, or fluctuated between increases and decreases over time (See Table A20 in the Appendix for more details).

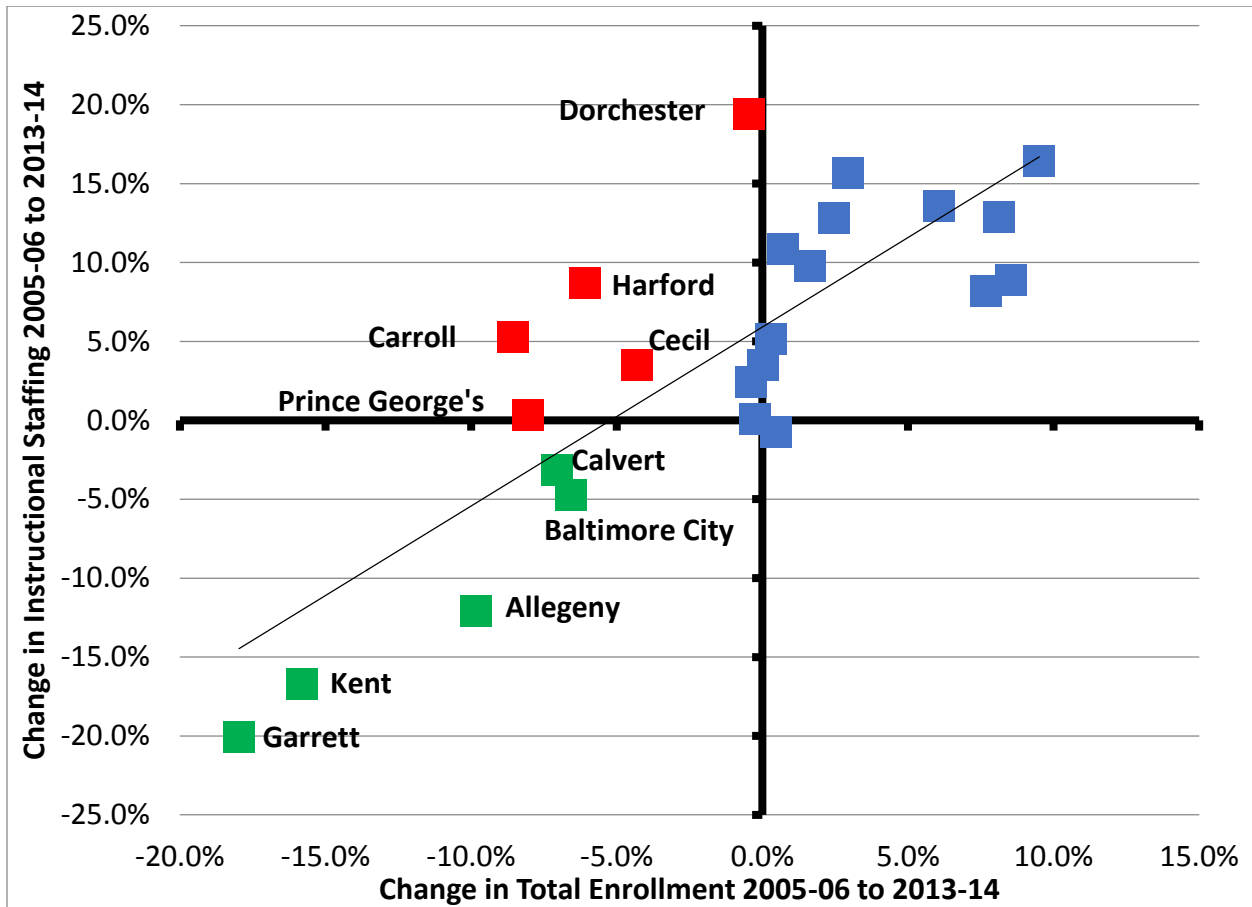
Table 3 below focuses on the smaller enrollment/larger geographic area districts to compare their changes in enrollment with the changes in instructional staff over the period 2005-06 to 2013-14. There are no clear patterns across the nine districts. Three districts, Kent County, Garrett County, and Allegany County, showed responsiveness to changing conditions, e.g. as their enrollment declined so did instructional staff. Talbot County, Dorchester County, and Caroline County had small changes in enrollment but had large increases in instructional staff. In the remaining three districts there were small changes in both enrollment and instructional staff, which remained relatively balanced during the study period. There was no apparent uniform relationship for smaller enrollment/larger geographic area districts between and the direction or magnitude of changes in enrollment and instructional staff during this time period.

**Table 3: Changes in District Enrollment and Instructional Staff
2005-06 to 2013-14**

District	Percent Change 2005-06 to 2013-14	
	Enrollment	Instructional Staff
Kent	-15.8%	-16.7%
Somerset	-0.2%	0.1%
Garrett	-18.0%	-20.1%
Talbot	0.7%	10.9%
Dorchester	-0.5%	19.4%
Caroline	2.5%	12.8%
Worcester	-0.4%	2.4%
Queen Anne's	0.0%	3.5%
Allegany	-9.8%	-12.1%

Chart 9, below, shows the relationship between changes in enrollment and changes in instructional staffing for all districts. From 2005-06 to 2014-15, there is a strong positive relationship between the two variables, a correlation of 0.82. When enrollment increased over the 10-year period, total instructional staff numbers also tended to increase. (This is a logical outcome, since increasing enrollment typically calls for increasing numbers of instructional staff.) However, in several districts, total enrollment showed a decline of five percent or more over the 10-year period, but instructional staff either remained constant or increased. These outlier districts are identified and represented with red markers. There were also several districts where total enrollment declined, and instructional staff declined proportionately. These districts are represented with green markers.

Chart 9: Relationship Between Percent Change in Total Enrollment and Percent Change in Instructional Staffing (Correlation Coefficient = .82)



Source: MSDE

Non-Instructional Staff

Non-instructional staff include central office administrators; school administrators; support professionals, including nurses, librarians, and social workers; aides; custodial and maintenance staff; clerical staff; food service personnel; and other support staff. The state's total number of non-instructional staff has remained stable, almost constant, ranging from 36,000 to 38,000 over the 10-year period. Individual district patterns vary from this more general stable pattern. Approximately two-thirds of non-instructional staff are employed by the five largest districts. Table A21 in the Appendix provides detail on non-instructional staff by district.

Table 4, below, focuses on the districts with smaller enrollment and larger geographic area to compare their changes in enrollment with the changes in non-instructional staff over the period 2005-06 to 2013-14. There are no clear patterns across the nine districts. Although four of the districts Kent County, Somerset County, Dorchester County, and Caroline County, had decreases or small increases in enrollment, but had large increases in non-instructional staff. Note that Kent County had the opposite relationship with

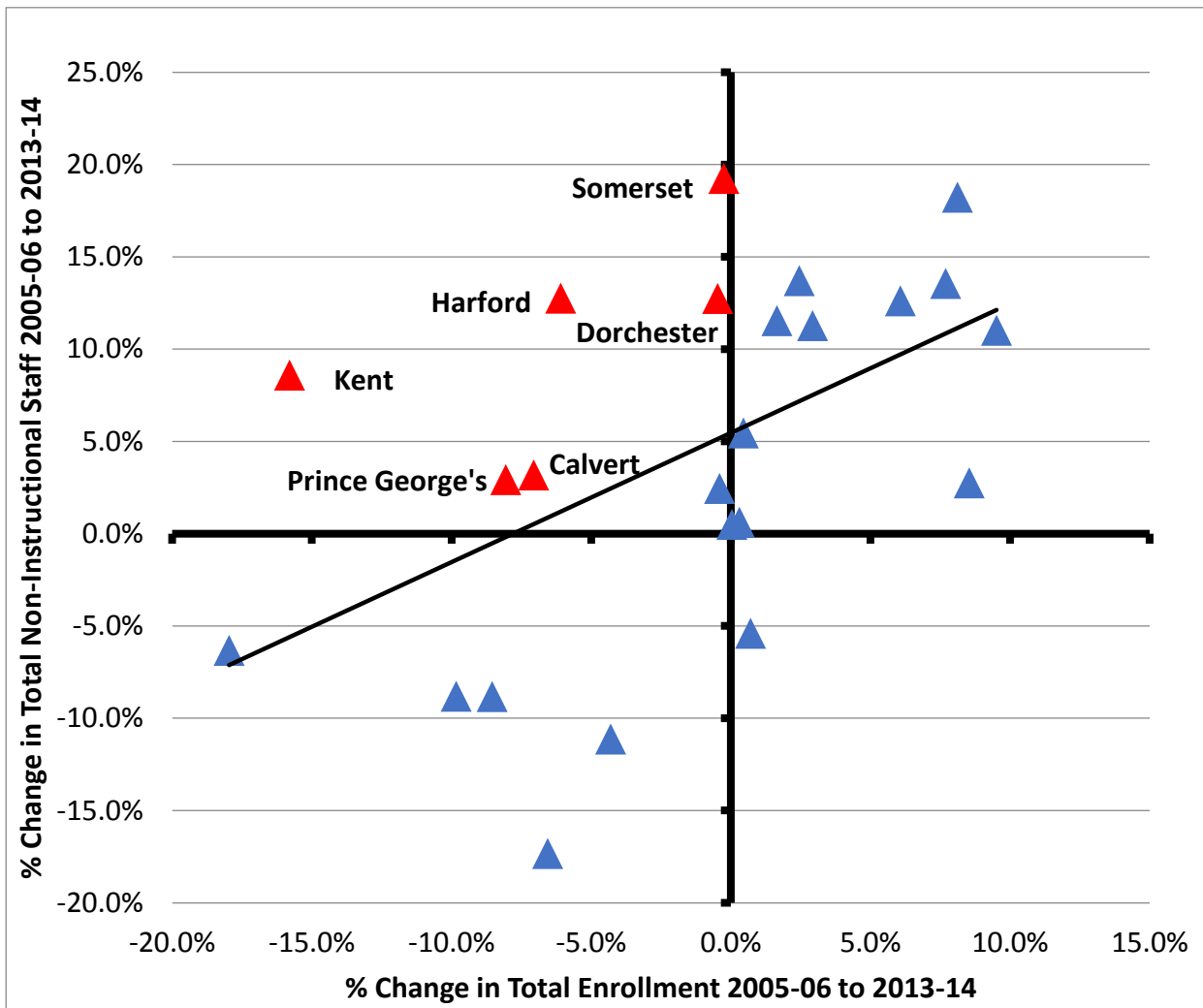
instructional staff above. Two districts, Garrett County and Allegany County, had similar decreases in enrollment and non-instructional staff. These districts also had the same relation with instructional staff above. In the remaining three districts, there were small changes in both enrollment and instructional staff and they remained relatively balanced during the study period. For non-instructional staff there was no apparent uniform relationship for smaller enrollment/larger geographic area districts between the direction or magnitude of changes in enrollment and non-instructional staff during this time period.

**Table 4: Changes in District Enrollment and Non-Instructional Staff
2005-06 to 2013-14**

District	Percent Change 2005-06 to 2013-14	
	Enrollment	Non-Instructional Staff
Kent	-15.8%	8.6%
Somerset	-0.2%	19.2%
Garrett	-18.0%	-6.3%
Talbot	0.7%	-5.4%
Dorchester	-0.5%	12.7%
Caroline	2.5%	13.7%
Worcester	-0.4%	2.4%
Queen Anne's	0.0%	0.5%
Allegany	-9.8%	-8.8%

Percent changes in total enrollment are less strongly related to percent changes in non-instructional staff (correlation coefficient = .52) than to percent changes in instructional staff (correlation coefficient = .82). As seen in Chart 10, below, the relationships between percent changes in total enrollment and percent changes in non-instructional staff are more dispersed and the general pattern is not as distinct. This is also an expected outcome. Many non-instructional staff positions remain relatively fixed, despite moderate changes in enrollment. For example, every school is likely to have a principal, nurse, office manager, custodians, and food service personnel. These positions will remain within a school even if enrollment fluctuates. These positions are unlikely to be cut unless it is determined that workloads are too low to require such roles. These positions are unlikely to be increased unless it is determined that workloads are so great that a new position is justified. Districts shown in the upper right quadrant of Chart 10 have had both enrollment increases and non-instructional staff increases. Those shown in the lower left quadrant have had both enrollment decreases and non-instructional staff decreases. In these cases, changes in staffing levels have followed from changes in enrollment levels, though the relationship has not been entirely precise. The upper left quadrant identifies the districts that had decreases in enrollment and increases in staff (represented with red markers). In these outlier districts, the instructional staffing levels did not follow the enrollment trends.

Chart 10: Relationship Between Change in Total Enrollment and Change in Non-Instructional Staff
 (Correlation Coefficient = .52)



Source: MSDE

Conclusions on Changes in the Number of Staff

For the 10-year period analyzed, most Maryland districts adjusted both instructional and non-instructional staffing to respond to enrollment changes. Six districts increased non-instructional staffing despite decreases or no growth in enrollment. These districts may have had low staff numbers at the start of the analysis period, or they may have experienced major program changes (e.g. implementation of an early childhood program). It is typically more difficult to cut non-instructional staff, since non-instructional staff tend to fill one-of-a-kind positions (e.g. principal, office manager, nurse).

Recommendations on Changes in the Number of Staff

School funding should maintain a direct relationship to enrollment, though revenue adjustments could be used in select cases to lessen the fiscal impact of enrollment declines. Changes in the State's funding formula calculations could be implemented to give districts additional time to adjust to enrollment decreases. For example, the student count used in the foundation formula could incorporate a multi-year rolling average so that decreases in enrollment are spread out over several years. The State should provide technical assistance to school systems that must make difficult decisions due to declining enrollment. This technical assistance would involve strategies for enhancing the accuracy of district enrollment projections that more accurately forecast the impacts of declining birth rates and changes to program enrollment. It would also be beneficial to provide technical assistance for decision making on staffing level adjustments and the relationship to school facility utilization and redistricting of attendance boundaries. Modern geographic information system (GIS) software could be very useful in helping forecast enrollment and subsequent staffing adjustments.

Transportation

Transportation expenditures amounted to 5.3 percent of total public school spending in 2012-13.⁴ Overall transportation costs are determined by the number of pupils transported, driver compensation, maintenance costs, vehicle fuel costs, and other operating costs. The population density of a district influences costs because areas with lower population densities tend to require buses to drive more miles than areas with higher population densities. Even with longer miles, the need to maintain reasonable ride times may not allow the seating capacity to be used fully. In urbanized areas traffic congestion may also require longer drive times at higher labor rates. More strategic travel routes and better utilization of available seats can influence bus route efficiency.

Number of Pupils Transported

Statewide, the total number of non-disabled pupils being transported declined only slightly between 2005-06 and 2014-15. However, significant changes have occurred at the district level. Some of these changes have resulted from changes in school system policies and practices that have made more students eligible for transportation services. Shifts in district total enrollment have also driven changes at the district level.

Statewide, there was a 2.7 percent decrease in the number of regular students transported. However, two districts experienced large changes. Calvert County experienced a 25.7 percent decrease (a reduction of 4,430 pupils), while Talbot County saw a 58.8 percent increase (a gain of 1,599 pupils). Other districts that also saw large decreases in numbers, but not percentages included Baltimore City (-1,372), Carroll County (2,380), Frederick County (5,046), Harford County (3,292), and Prince George's County (7,115).

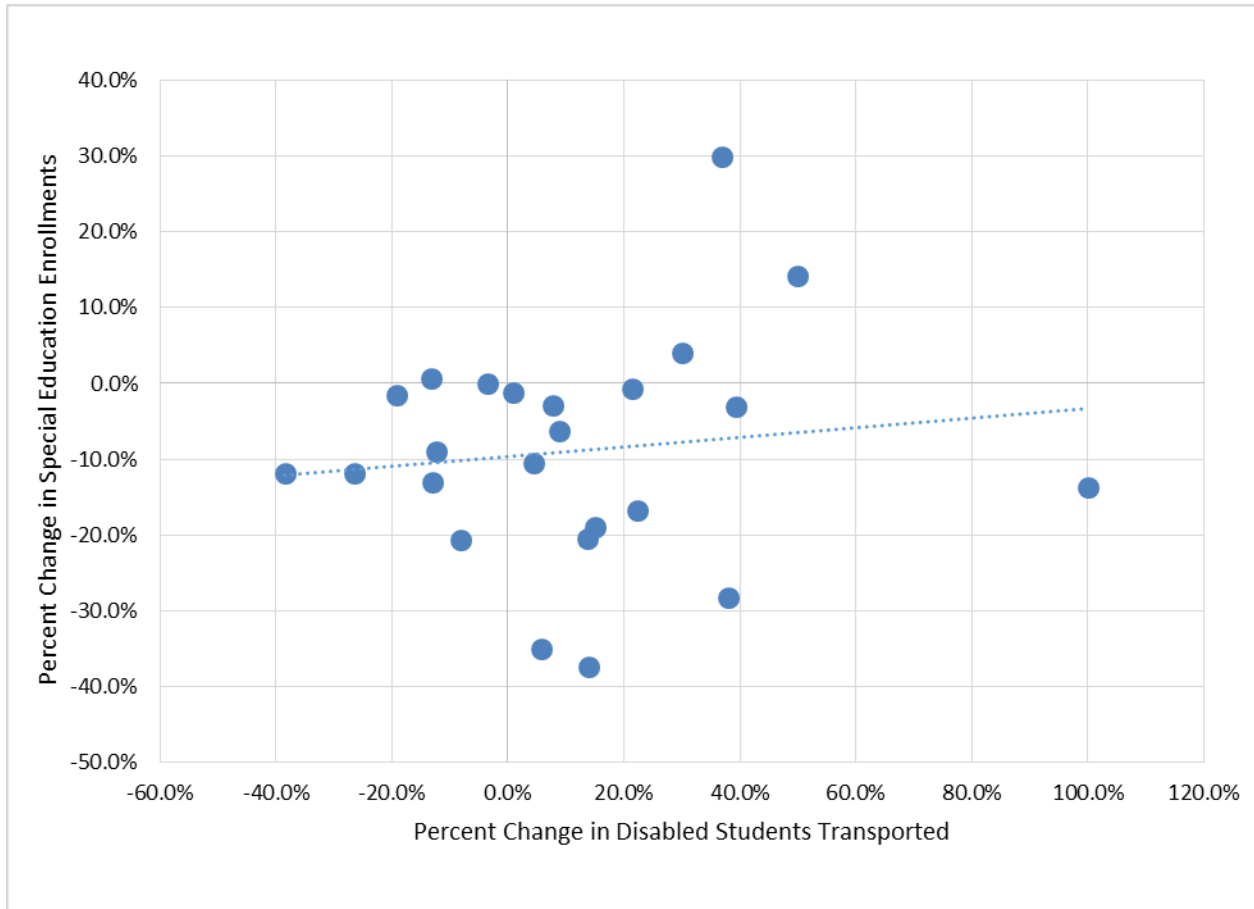
⁴ The most recent year of data available at the time of these analyses.

For more detailed information on the numbers of non-disabled pupils transported by district between 2005-06 and 2014-15 and the percent changes in the number of students transported over this same period, see Table A22 and Table A23 in the Appendix.

Transportation of disabled pupils is often very expensive. Disabled students tend to be placed in highly specialized programs in distant locations. These students may require wheelchair-accessible vehicles or other specialized vehicles. The passenger capacity of such vehicles is typically low. In recent years, some large districts have experienced decreases in the number of disabled pupils requiring transportation from the school system. Meanwhile, some smaller districts have experienced significant increases in the number of disabled pupils requiring transportation from the school system. Table A24 in the Appendix shows the number of disabled pupils transported for the years 2005-06 through 2013-14. Over this period, six districts (Charles County, Queen Anne’s County, St. Mary’s County, Somerset County, Talbot County, and Worcester County) have seen the numbers of disabled pupils requiring transportation increase by 30 percent or more. In other districts, the numbers of disabled pupils requiring transportation are very small. Additionally, Table A25 in the Appendix shows the changes in percent and number of disabled students transported by districts over this time period.

Chart 11, below, is a scattergram indicating a weak relationship between special education enrollment and number of disabled pupils transported. Over the last 10 years, most districts have experienced both a decrease in special education enrollment and an increase in numbers of disabled pupils transported. For example, in Talbot County, special education enrollment decreased by more than 10 percent, while the number of disabled pupils transported increased by 100 percent.

Chart 11: Relationship Between Percent Change in Special Education Enrollment and Percent Change in Disabled Pupils Transported



Source: MSDE

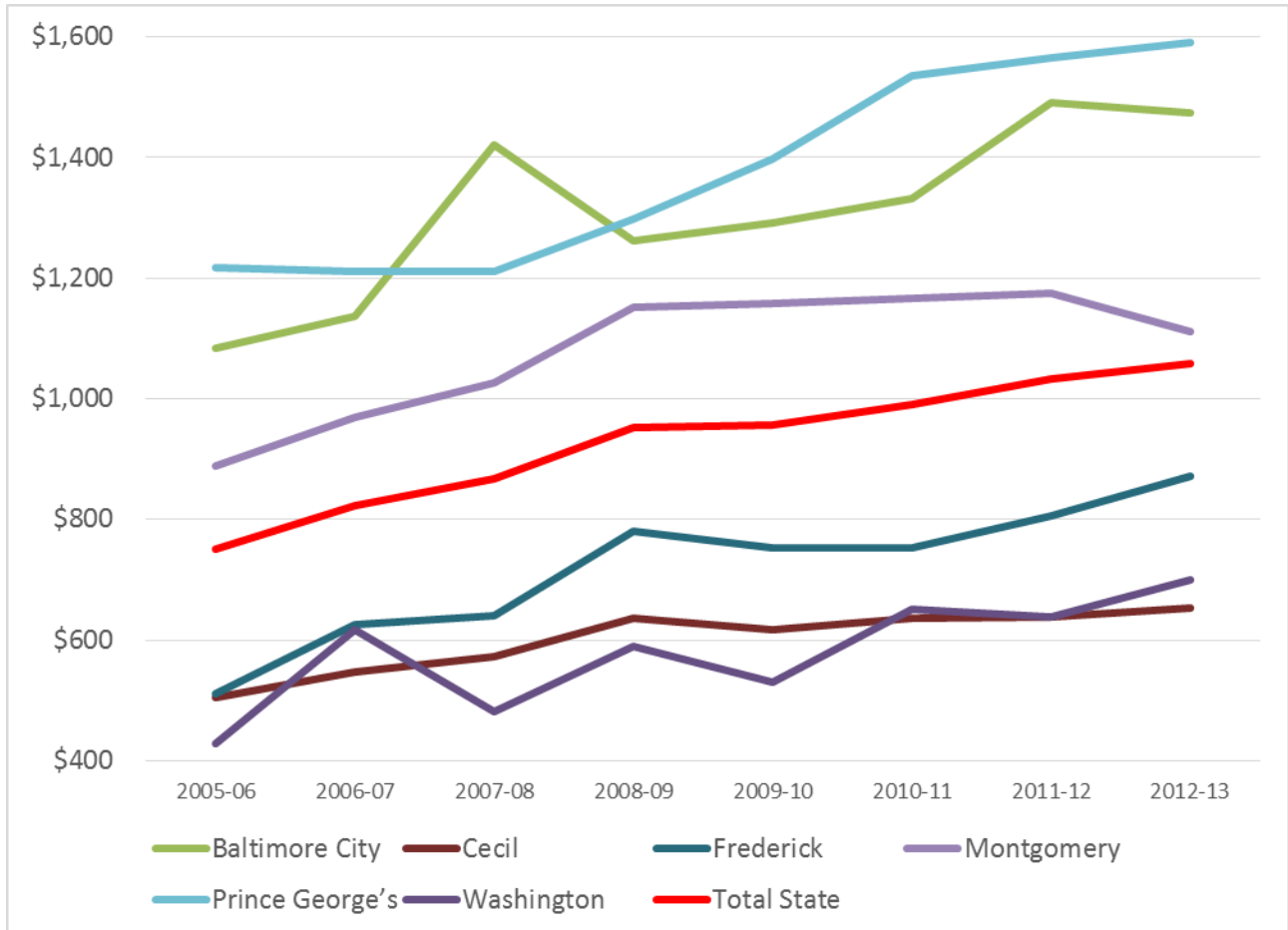
Transportation Costs

Transportation costs for the total number of combined regular (non-disabled) and disabled students transported increased by 41 percent between 2005-06 and 2012-13. The average cost per pupil transported in 2005-06 was \$751 compared to \$1,058 in 2012-13 (transportation costs were not available broken out by each category). Prince George’s County had the highest per pupil transportation costs in both five-year periods (\$1,589). Cecil County had the lowest cost in both five-year periods (\$564). In both five-year periods, the per pupil transportation costs were 2.4 times higher in Prince George’s County than in Cecil County (See Table A26 for more detail on district per pupil transportation costs from 2005-06 to 2012-13).

Chart 12, below, illustrates the per pupil transportation costs in six districts, ranging from the highest to the lowest. The chart compares the statewide average per pupil transportation costs to the districts with the highest transportation costs (Baltimore City and Prince George’s County), the lowest transportation costs (Cecil and Washington Counties), and those counties with close-to-average transportation costs (Frederick

County and Montgomery County). Per pupil transportation costs have generally trended upward, increasing significantly in some cases. As more students are transported, per pupil transportation costs tend to decrease. Thus, the upward trend in per pupil transportation costs results from a combination of changes in numbers of students transported and changes in total transportation expenditures.

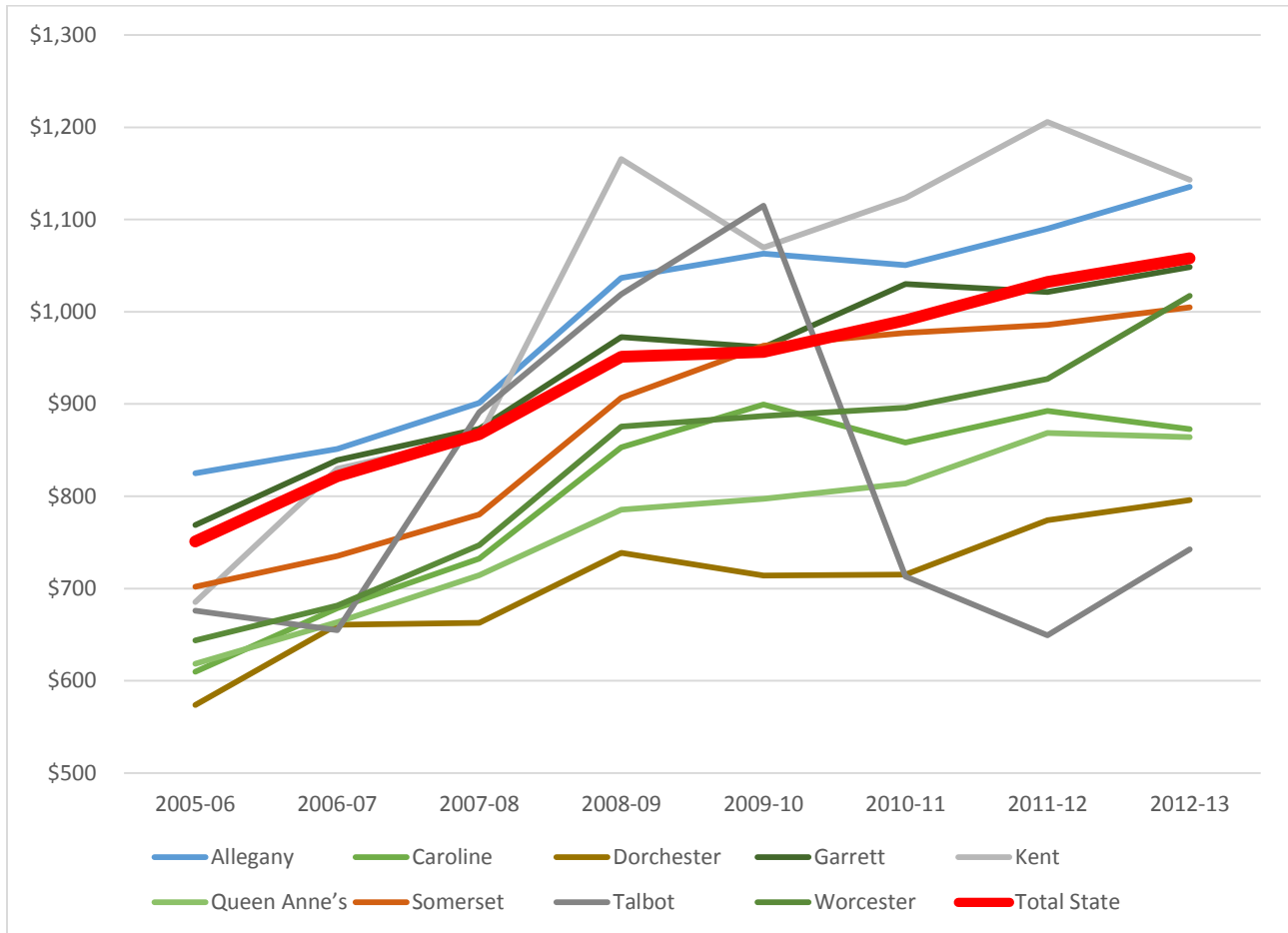
Chart 12: Per Pupil Transportation Costs



Source: MSDE

The per pupil transportation costs for districts with enrollment of less than 10,000 pupils are shown in Chart 13. As indicated by the red chart line for the state average per pupil cost, the majority of this group of districts operates at per pupil costs below the state average. Two districts, Talbot and Kent Counties, had significant fluctuations in cost during the period. Possible reasons for this fluctuation include changes in district policies and practices, which are discussed in detail later. In addition, it is possible that specialized transportation required for a few students drove costs higher for a brief period. Higher labor costs in urban and suburban areas may also be a reason for higher costs than found in rural areas.

Chart 13: Per Pupil Transportation Costs for Districts with Enrollment less than 10,000



Source: MSDE

From 2005-06 to 2012-13, the percent change in per pupil transportation costs ranged from a low of a 10 percent increase (Talbot County) to a high of an 85 percent increase (Charles County). The statewide average change over the same time period was a 41 percent increase (See Table A27 in the Appendix for more details). As transportation expenditures increased, per pupil transportation costs also increased.

From 2005-06 to 2012-13, the students transported as a percentage of total enrollment increased significantly (See Table A28 in the Appendix for district-level detail). These changes resulted from policy and practice decisions at the district level. Some local policies and practices, such as increasing the walking distance, could lead to decreases in the number and percent of students transported, while others may increase ridership. Eight districts transported 95 percent or more of their students. Only one district, Baltimore City, transported fewer than 40 percent of its students, and Baltimore City’s transportation service grew from serving 30 percent of the total enrollment in 2005-06 to 38 percent in 2012-13.

The state average of students transported as a percent of total enrollment fluctuated over time, with a 1 percent increase during the five-year period of 2005-06 to 2009-10 followed by a 1 percent decrease during the period 2010-11 to 2012-13 (See Table A29 in the Appendix for district-level detail). From 2005-

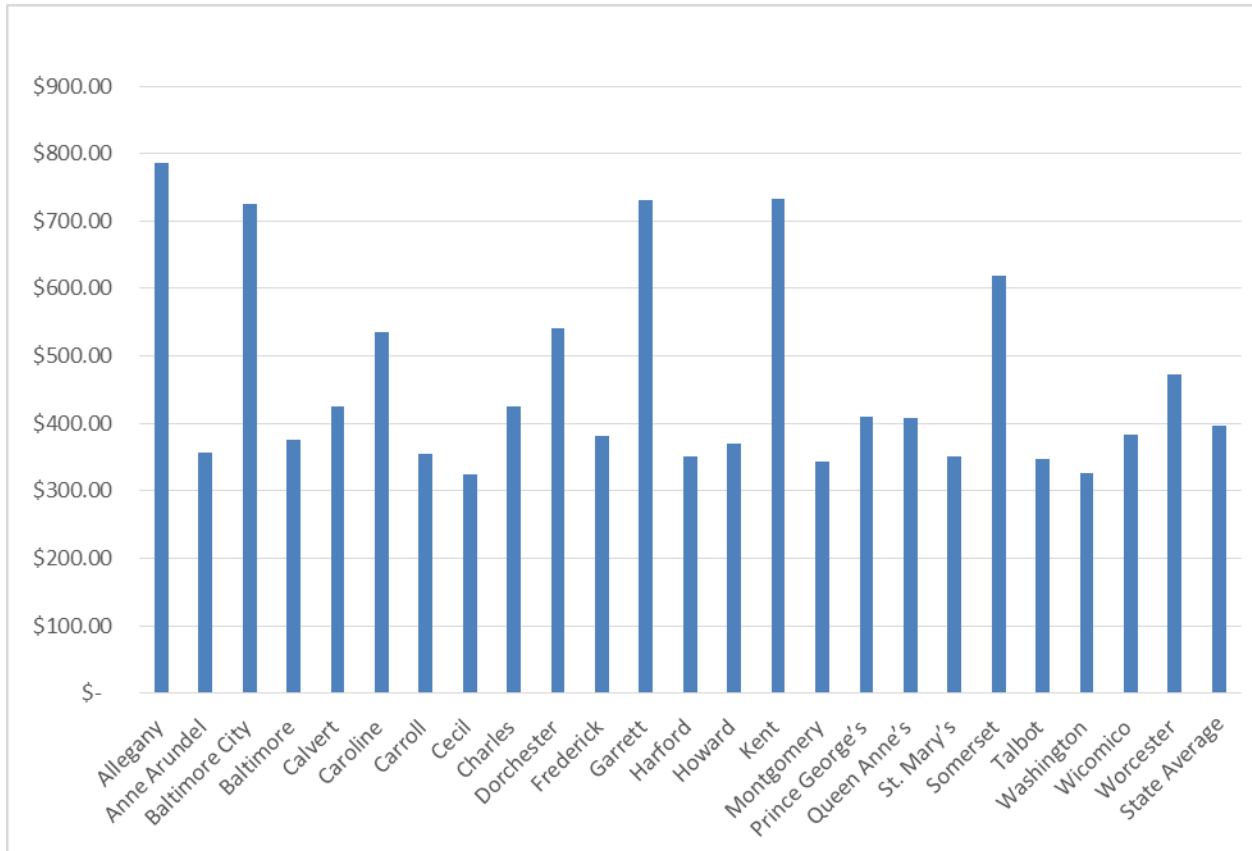
06 to 2012-13, most districts had relatively little change in the percent of pupils transported. However, several districts had more substantial changes in one or both of the time periods in the study. Talbot County had a 35 percent increase, Wicomico County saw a 14 percent increase while Frederick County had a 13 percent decrease.

Implications of Enrollment Change on the State Transportation Subsidy

In the past decade, a number of Maryland districts have expanded transportation services. The number of students eligible for transportation has increased along with the levels of transportation services offered. According to interviews with transportation managers, service level expansion could include more frequent bus stops, more stops located at homes, and more air conditioned vehicles. All of these factors affect transportation costs. The following pages present an analysis of the Transportation Base Grant in relation to a number of factors that affect transportation costs. The purpose of the analysis is to see what factors, if any, are related to the transportation grant subsidies. These factors include route miles traveled, vehicles utilized, and population densities. Although each of these factors is discussed individually, it should be noted that no factor alone has a strong influence on current funding.

As shown in Chart 14, below, the State's average transportation grant for regular pupils in 2013-14 was \$396 per pupil transported. Transportation grants during that year ranged from \$325 (Cecil County) to \$785 (Allegany County). Sparsely populated rural counties and Baltimore City received the largest amounts per pupil transported. Suburban areas generally received between \$350 and \$400 per pupil transported.

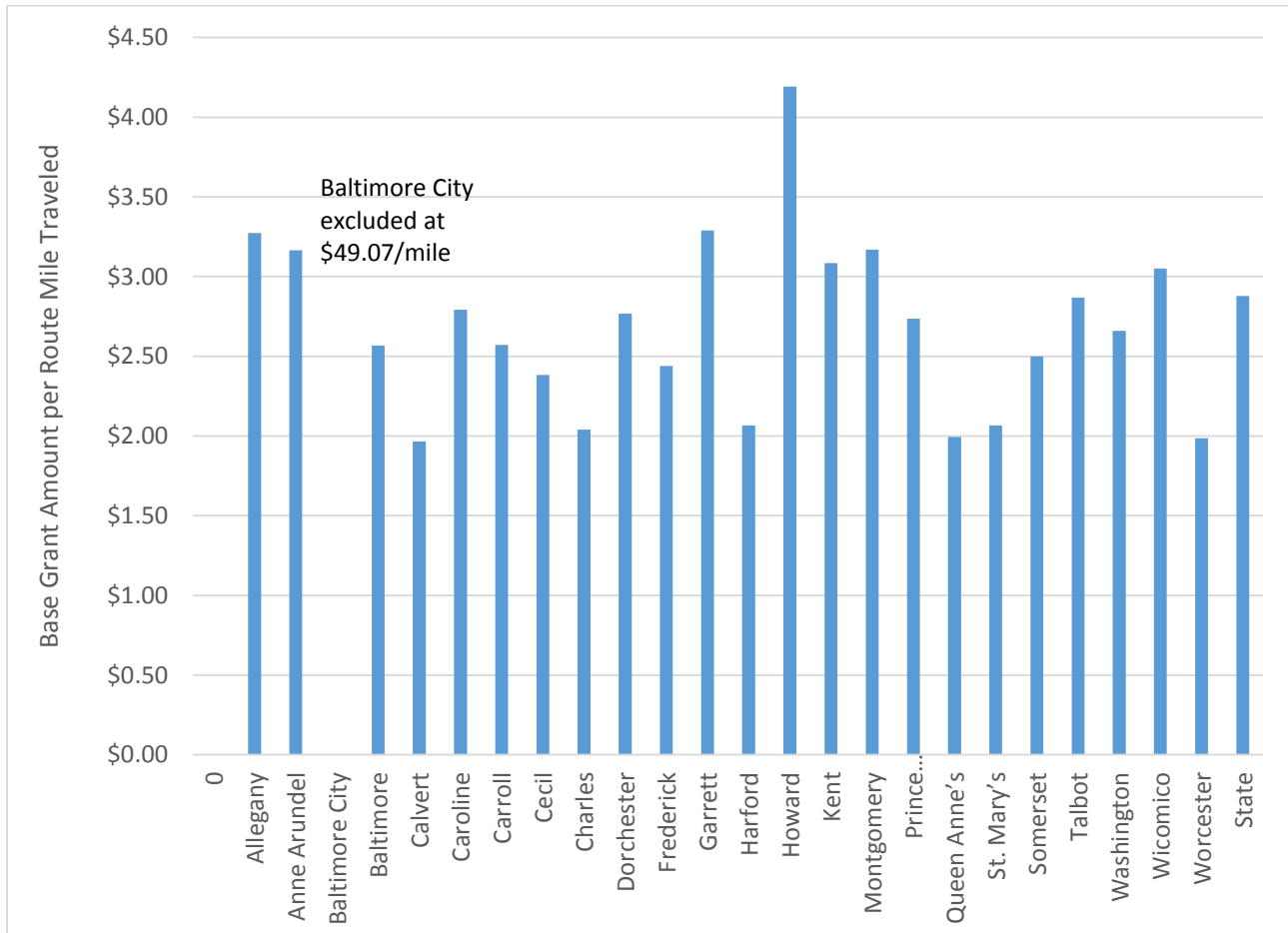
**Chart 14: Transportation Base Grant Amount per Regular Pupils Transported
2013-14**



Source: MSDE

Chart 15, below, shows the Transportation Base Grant amount provided per route mile traveled in 2013-14. Baltimore City, which received \$49.07 per mile, is a clear outlier because high numbers of regular pupils transported and vehicles used are combined with high population density. When Baltimore City is removed from the analysis, the Transportation Base Grant provided an average \$2.88 per mile, with individual districts receiving between \$1.96 (Calvert County) and \$4.19 (Howard County) per mile. (Baltimore City has been excluded from the chart to illustrate more clearly the range of amounts received by the other districts.)

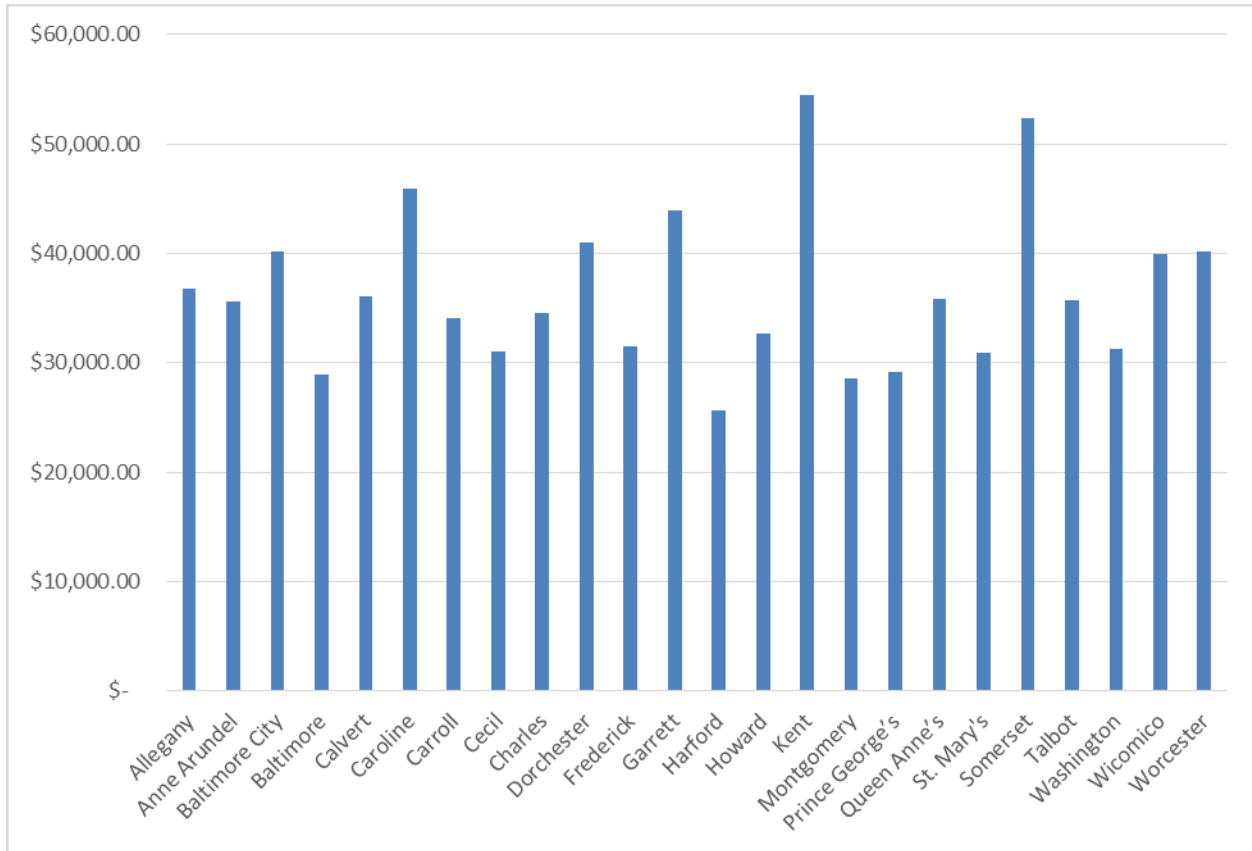
**Chart 15: Transportation Base Grant Amount per Route Mile Traveled
2013-14**



Source: MSDE

Chart 16, below, illustrates the Transportation Base Grant amount provided per route vehicle utilized in 2013-14. The Transportation Base Grant provides a state average of \$32,034 per route vehicle utilized, with individual districts receiving between \$25,635 (Harford County) and \$54,462 (Kent County).

**Chart 16: Base Grant Amount per Total Route Vehicles
2013-14**



Source: MSDE

Population density influences mileage traveled for student transportation. Figure 4, below, illustrates population density in terms of students per square mile. In more sparsely populated areas, school system vehicles tend to travel more miles to pick up and drop off students while in more densely populated areas, vehicles tend not to travel as far to pick up and drop off students. Mileage traveled affects variable costs such as fuel, maintenance, and other operating costs. Population density also influences the number of students who can be picked up within a reasonable amount of bus ride time. In less dense areas, it is difficult to achieve full seating capacity without having very long ride times. Therefore, more buses are required, and this adds to the fixed costs of the entire transportation system.

Figure 4: Student Population Density

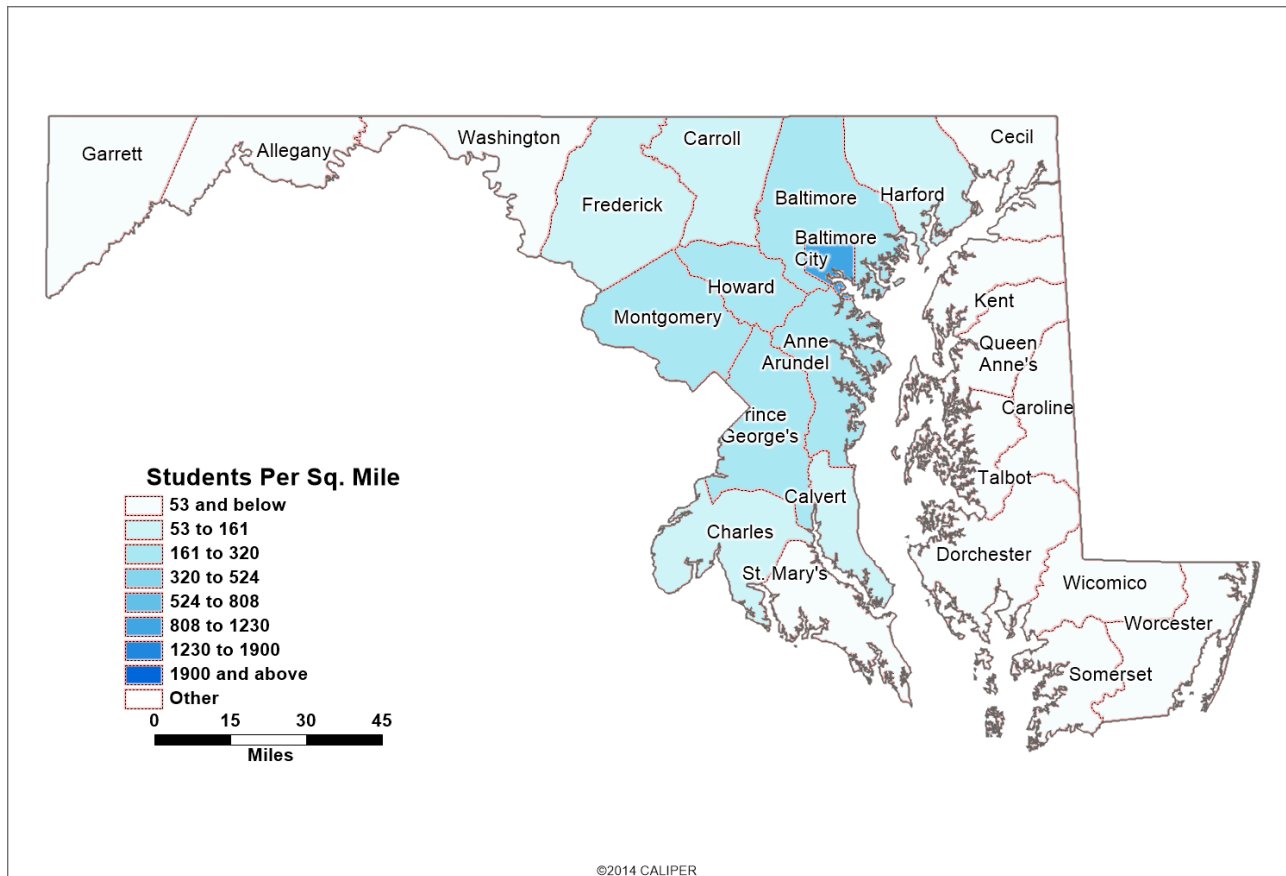
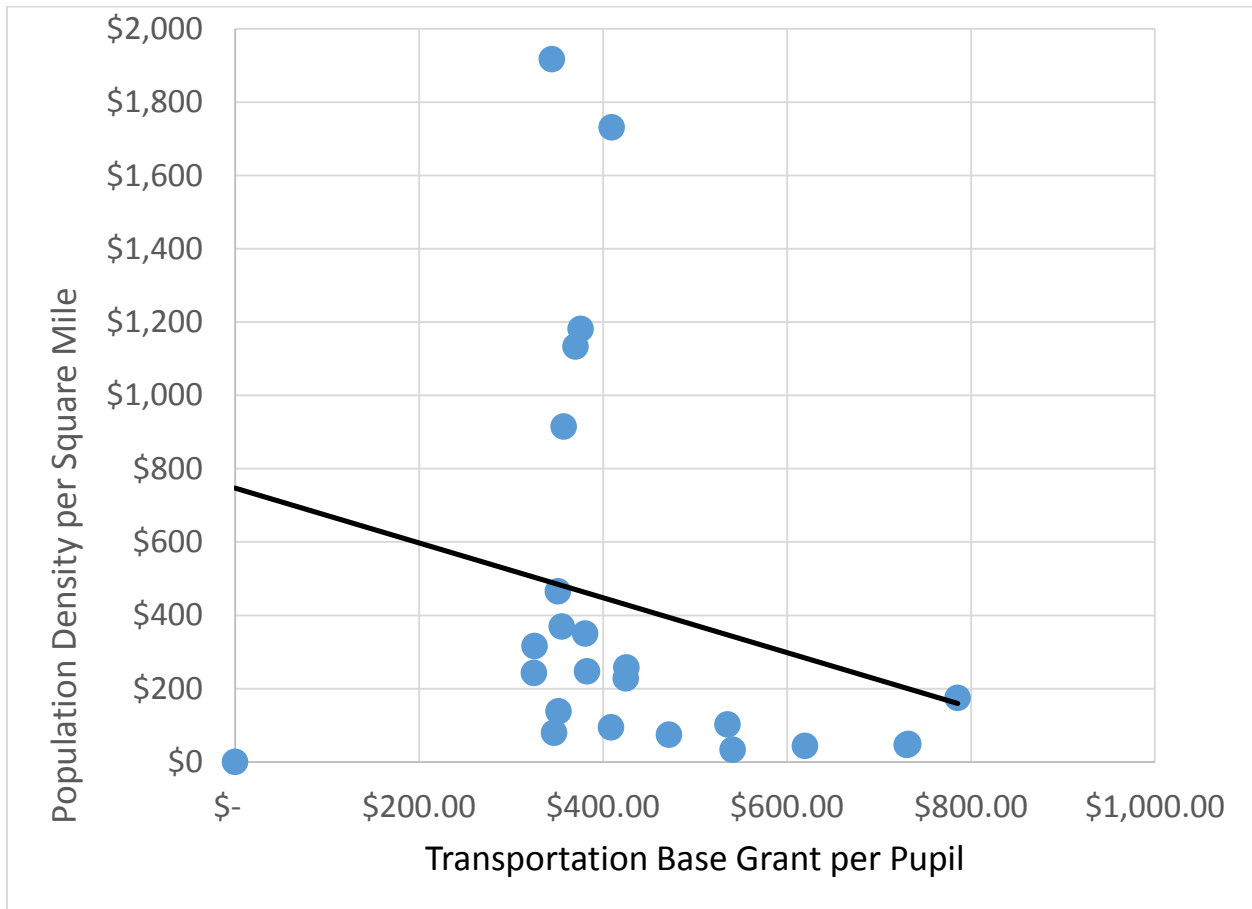


Chart 17, below, illustrates the relationship between population density and the Transportation Base Grant. Because, as noted earlier, Baltimore City is such an outlier, the scattergram excludes data for Baltimore City. Although population density has a significant influence on transportation costs, there is a relatively low statistical relationship (a negative correlation of -0.228 when Baltimore City is excluded from the analysis and a positive correlation of 0.21 when Baltimore City is included) between population density and Maryland's Transportation Base Grant. This chart shows widely varying Transportation Base Grant amounts for districts with similar population densities and similar grant amounts for districts with widely varying population densities.

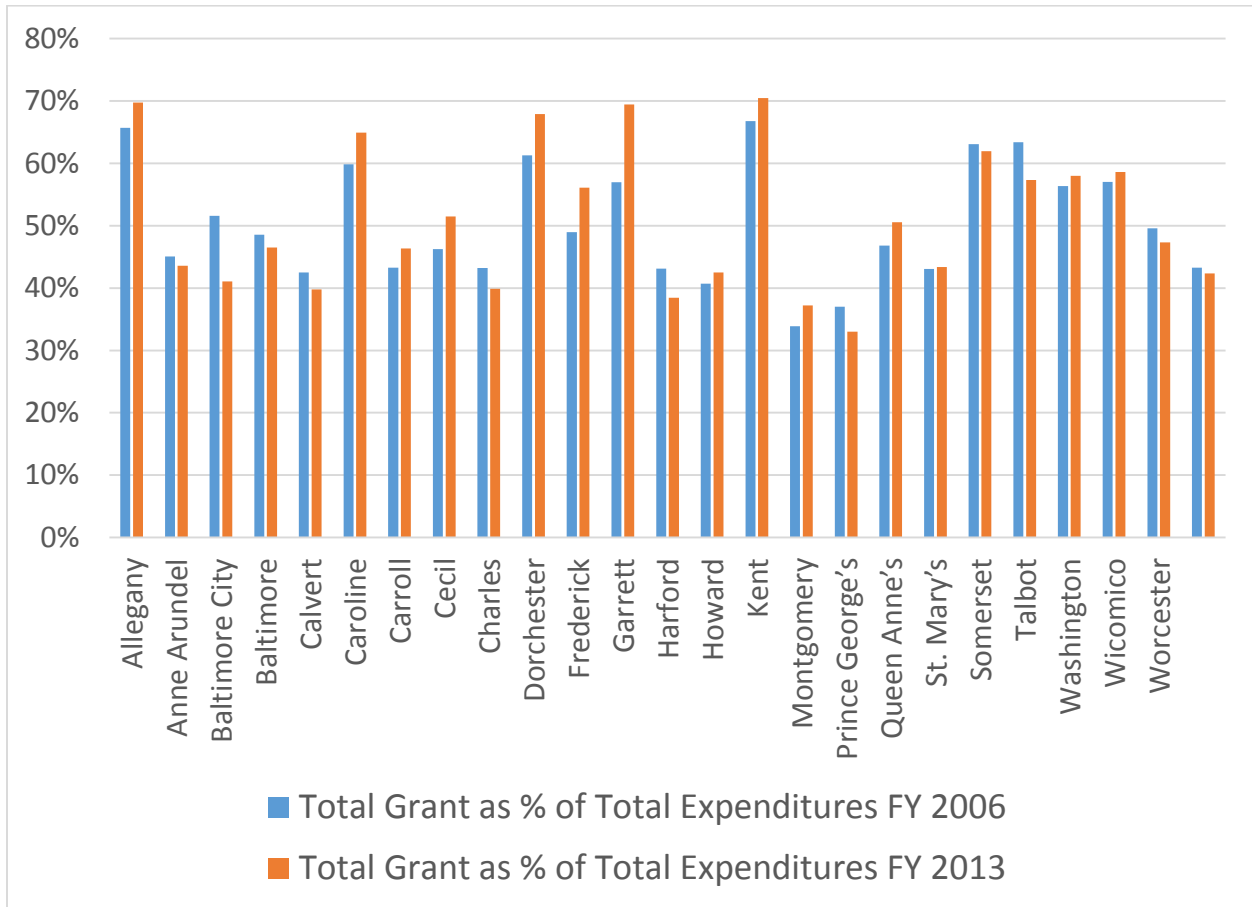
Chart 17: Relationship Between Population Density and the Transportation Base Grant (Excluding Baltimore City)



Source: MSDE

Chart 18, below, shows that in 2005-06 and 2012-13, the Transportation Base Grant provided varying percentages of reimbursement for each district’s actual transportation expenditures. Some districts received greater percentages of reimbursement for their transportation expenditures as their total enrollment declined. This occurred because the transportation formula adjusts for increasing enrollment. However, the formula does not adjust for decreasing enrollment. Further, the formula was originally established in the 1980’s and has been carried forward since that time.

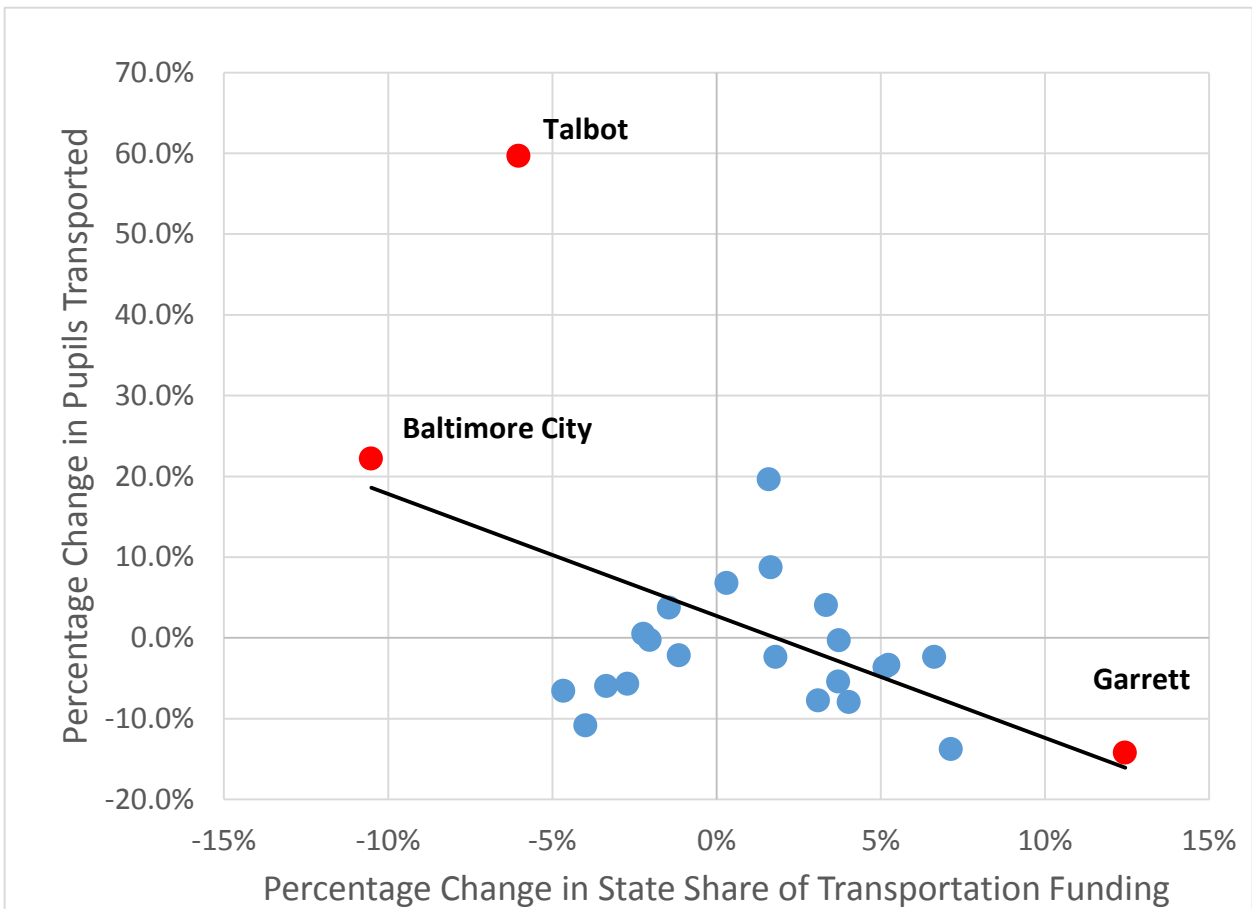
Chart 18: Transportation Revenue as a Percentage of Transportation Expenditures



Source: MSDE

While Maryland’s funding formula is adjusted based on total enrollment, the scattergram in Chart 19, below, indicates that some school systems have experienced increases in the number of pupils transported and decreases in their share of state-funded transportation expenses. A statistical analysis shows that there is a modest, negative relationship between changes in the number of pupils transported and changes in funding provided by the Transportation Base Grant (a correlation of -0.49).

Chart 19: Relationship Between the Change in Pupils Transported and the Change in the Percentage of State Funding from 2005-06 to 2012-13 (Correlation Coefficient = -.49)



Source: MSDE

Conclusions from Transportation Data Analysis

Based on an analysis of all of the factors that impact transportation costs and revenues, no single factor appeared to strongly influence the Transportation Base Grant amounts provided to districts. Because a large number of factors affect transportation cost, many states use a more complex transportation formula in an attempt to account for a variety of cost factors when calculating transportation funding. Under Maryland’s current transportation funding formula, the highest-funded county received approximately double the amount of the lowest-funded county. Table 5, below, summarizes the wide variations across districts in the amounts provided by the transportation funding formula factors examined for this analysis.

Table 5: Summary of Transportation Base Grant Amounts by Factor

Transportation Funding Formula Measure	State Average	Low	High
Per Regular Student Transported in 2013-14	\$396	\$325	\$785
Per Route Vehicle in 2013-14	\$32,034	\$25,635	\$54,462
Per Route Mile in 2013-14	\$2.88	\$1.96	\$49.07
Transportation Grant as a Percentage of Total Transportation Expenditures 2005-06	43	34	67
Transportation Grant as a Percentage of Total Transportation Expenditures 2012-13	42	33	70

Source: MSDE

Transportation Subsidy Analysis

Maryland’s Current Transportation Funding System

Maryland’s Transportation Subsidy Formula is comprised of a Transportation Base Grant for regular (non-disabled) riders and an additional amount for disabled riders (currently set at \$1000 per disabled rider). The Transportation Base Grant is adjusted according to the transportation component of the Consumer Price Index, and then adds a factor for enrollment increases of \$277.55 (for fiscal year 2013-14) for each additional student over the prior fiscal year’s enrollment. However, the formula does not decrease funding in response to enrollment decreases. Until 1982, a committee of the State Board of Education established the per district funding amount. The current formula was adopted by the Legislature in 1982. In 2002, the formula was further adjusted to increase the base student transportation grant for the 15 districts that experienced enrollment increases between 1980 and 1995 – a time during which the formula did not adjust funding in response to enrollment increases.⁵

Transportation Funding in Other States

Several states have recently studied and revised their transportation funding formulas to address historical inequities and promote cost effective transportation services. Studies done in the states of Washington and West Virginia have identified as many as six approaches to transportation funding.

1. Provide funding to support all K-12 educational programs but no funds explicitly for pupil transportation.
2. Allocate block grant funding for transportation separate from the basic education funding. These funds can be distributed based on total enrollment or pupils transported.

⁵ Department of Legislative Services. (2014). *Legislative Handbook Series: Volume IX, Education in Maryland 2014*. Baltimore, MD: Library and Information Services, Office of Policy Analysis, Department of Legislative Services.

3. Allocate state funds based on approved costs, identifying each specific type of expenditure that will be reimbursed. States may reimburse all or a percentage of approved costs.
4. Provide per unit funding for specified and measurable units. The units used vary from the total miles driven, the number of pupils transported, the number of trips per day, and other measurable units related to costs.
5. Allocate funds based on expected costs. A set of factors defining demographic and geographic differences as well as transportation activities is analyzed with a multivariate statistical methodology that computes the expected costs for each district. The state then funds a district's expected, rather than actual, costs. These formulas are intended to promote certain transportation service levels and efficiencies.
6. Provide funding levels based on efficiency and best practice. This approach provides adjustments for factors beyond the control of local school districts.

Typically, transportation funding formulas aim to provide transportation funding that: 1) is understandable, 2) rewards efficiency or penalizes inefficiency, 3) promotes student safety, and 4) accommodates special circumstances. The most sophisticated formulas incorporate statistical analyses of the factors influencing transportation costs into their financial models. In this way, these formulas determine the appropriate state and local shares of transportation funding. Using formulas effectively requires accurate data, usually transportation operations information from the prior school year.

Determining Eligibility for School Transportation Funding

Many states establish restrictions on approved transportation costs (i.e. transportation costs that are eligible for state funding or reimbursement). Generally, states will not fund transportation for students who live close to their school. States usually establish mileage thresholds at which students become eligible for state-funded school transportation. These mileage thresholds vary depending on the age of the student, but are often set at within one or two miles from home. Most states offer exceptions for students whose routes to school are deemed hazardous, based on subjective evaluations of hazard or risk.

States have various policies regarding which students will be eligible for state-funded transportation. For example, some states fund transportation for students in private schools (in addition to funding for students in public schools, charter schools, and/or special education programs). Transportation for these private school students is usually limited by distance factors (e.g. students 10 miles beyond district boundaries may not be eligible for state-funded transportation).

Reimbursement Levels

Reimbursement levels depend on a state's specific legislative policies. Some states limit the maximum local contribution to the school system's transportation program. Some states establish maximum amounts of funding per mile, depending on the type of school served. Some states reimburse for bus replacement either directly or through formulas that favor newer buses. Formulas often reimburse for either actual costs or reimburse up to a specified, per mile limit – whichever is less. States use various methods to

calculate the number of students transported, including counting the number of riders on a monthly basis, a quarterly basis, and/or at a specified date. Many of the state formulas adjust funding annually based on a transportation cost index.

Population Density and Sparsity

A number of states provide additional funding for low-density, sparsely populated school systems. These states may establish maximum local contributions, so that when school systems reach the maximum contribution, state funding is provided to cover excess costs. States may define density in terms of students per square mile rather than total population per square mile, in terms of linear student density (or the number of students per mile of roadway), in terms of student proximity to school, or in terms of other factors.

Promoting Efficiency

States use a variety of approaches to promote efficient transportation services. States may limit reimbursement to loaded mileage rather than total mileage to encourage more efficient routing and assignment of bus runs to routes. Utilization of seating capacity can also affect the amount of reimbursement states offer. Funding methods can also promote newer, more fuel efficient vehicles. Some transportation funding systems provide special funding for shared, regional cooperative transportation services, while other funding systems support the use of public transit.

Impact of Local School System Policies/Guidelines

Transportation costs are influenced by local decisions regarding the level of transportation services provided. These decisions, which can be included in school board policies, often reflect guidelines and practices that reflect historic decisions of the school board and administration that are not evaluated on a regular basis. These guidelines govern items such as the following:

Number of transportation-eligible students. Local decisions establish walking distances to schools. The greater the acceptable walking distance, the fewer buses the local school system will require. Most school systems designate different maximum distances for elementary and secondary students. Most school systems also define criteria for hazardous walking areas. Some schools have utilized the Safe Routes to Schools Program and the Walking School Bus Program to increase the number of students who walk to school. Criteria for establishing hazardous walking areas generally include the absence of sidewalks, high speed limits for vehicles, narrow road widths, restricted sight distances, and high traffic volumes. Certain school sites (e.g. school sites in large, open areas outside of existing residential areas) may require the transportation of nearly all students. The locations used for providing special education services can also affect school transportation costs, resulting in transportation costs that can exceed program revenues.

Maximum ride time. Maximum ride times can vary depending on age of student (where younger students tend to have shorter maximum ride times) and depending on population density (where students in more

sparingly populated areas tend to have longer maximum ride times). Maximum ride times can limit a school system’s ability to fully utilize seating capacity.

Seating capacity. While manufacturers rate bus capacity at three students per seat, many school systems establish capacities for secondary students at two students per seat. Some districts in Maryland use variations on these typical seating capacities to increase efficiency. For example, a district may purchase buses that allow three secondary students to share a 45-inch seat and two secondary students to share a 30-inch seat. Using this configuration, buses can fit five students per bus seat row instead of the typical four students, thereby increasing capacity by 25 percent at very minimal additional cost.

Door-side-only stops. To avoid potential accidents for students crossing streets, some school systems establish guidelines requiring that buses be routed so that all stops pick students up and drop them off on the door side of the bus. Planning bus routes so that no student has to walk across a street or around a bus to get to the bus door requires that buses make more turns and travel both ways on the same street. Some school systems only require door-side stops for morning runs. The reasoning for this is that, in the afternoon, a bus driver can control when students leave the bus. He or she can make sure students do not exit the bus until all traffic has stopped. Some school systems establish a door-side-only requirement based on travel speeds, road widths, sight distances, and other factors. A door-side-only requirement adds to bus run times and to mileage amounts, increasing costs.

Routing buses based on ridership. With good historic information and registration processes, it is possible to adjust the number of students assigned to buses to maximize the use of seating capacity. For example, districts should be aware of the number of high school students who will drive to school along a bus route, or of the number of elementary students transported by parents or child care providers.

To obtain additional information on local transportation policies, the research team conducted telephone interviews with a sample of transportation managers in four school systems in Maryland. These interviews discussed policies and practices that affect the levels of service provided and the costs of transportation. The results of these interviews are summarized in Table 6.

Table 6: Local Transportation Policies and Practices

Policy or Guideline	County A	County B	County C	County D
Written policies	Yes, general	Yes, detailed		
Established walking distance zones from homes to schools:		Very few walk.	Only if safe walking routes	Exceptions if hazardous walking areas
Pre K-Kindergarten	1 mile	0.5 mile	1 mile	0.5 mile
Elementary	1 mile	0.5 mile	1 mile	1 miles
Middle School	1 mile	1 mile	1.5 miles	1.5 miles

Policy or Guideline	County A	County B	County C	County D
High School	1.5 miles	1.5 miles	2 miles	1.5 miles
Driving distance between bus stops	0.25 miles with safety exceptions			No policy, reviewing now
Maximum walking distance to bus stop	Elementary-1 mile Middle School-1 mile High School-1 mile	1/8 mile	Same as walking zones, but seldom over one-half mile	No policy
Allows stops at homes	Yes	Based on safety	Yes, for special education and if safety concerns for regular education students	Yes, because of rural area and special education
Maximum bus ride times	1 hour in county	No policy, but practice is 75 to 80 minutes due to rural area	1 hour, with some exceptions	1 hour maximum is goal, but some over 1 hour
Elementary students allowed to ride with secondary students	Yes	Yes	Yes	Only in emergencies. Bell times differ
Require door-side only stops	On State highways, other high speed roadways, and other areas for safety			
Maximum walking distance along roads	None, depends on traffic speed, safe walking area		Age appropriate with maximum set at walking zone limit.	None, stop at house if over 45 mph road
Maximum capacity riders per bus seat	With manufacturer's capacity of 66: Elementary-60 Middle School-55 High School-44	In rural area, average of 40 to 45 due to long ride times	Use 45 inch seats for 3 students and 32 inch seats for 2 students	Elementary-3 Secondary-2
Bus routes are planned based on typical ridership rather than eligibility	Yes, within 10 to 15 because of daycare delivery and high school students with cars	In rural areas, seldom have enough time to fill seats. Do not assign more than capacity	Uses historical ridership data to establish future routes	Route based on eligibility. Questionnaire being sent to all parents for next year
After school visits permitted	No	Allowed if current stop, same school, space available	If space available with permit	If approved by school administration
Large items are prohibited on bus	If fit on lap without using seating capacity	Allow if space available	Prohibit if bus is full	Must fit on lap or floor without obstructing others

Policy or Guideline	County A	County B	County C	County D
Require air conditioning	Very few for regular education, 50% for special education	No	Buying air conditioned buses for special education per replacement schedule	Only 5 of 44 buses are air conditioned
Assign bus monitors	All special education buses	Only if IEP requires	On most special education buses per IEP.	All special education buses and some alternative education buses as required
Use public transportation	No	No	After 2 p.m. students ride free	Possible in future on limited basis
Provide late buses	Eliminated due to budget limitations		Secondary-yes; Elementary-only if reimbursed	No
Criteria for disposing of older buses	15 years per county law with additional inspections	12 years per state law	12 years per state law	15 years per county law with additional inspections
Follow NHTSA guidelines for bus stops	Yes, NHTSA are consistent with local judgment			
Use Walking School Bus program	No	No	Yes, coordinated by Safe Routes to Schools Coordinator	Trying to promote through parent organizations

The interviews of selected transportation managers revealed wide variation in the practices that control transportation cost. Some of these decisions on policies and practices can increase costs significantly. For example, a decision to assign a bus monitor to all buses serving special education students, rather than only when a rider’s IEP requires a bus monitor, can nearly double the labor cost of driving this type of vehicle, which often serves very few riders. The practice of routing buses based on those who ride rather than for all eligible students avoids driving to stops unnecessarily and reserving seating capacity that is not used. These interviews also provided many best practices that could be applied more widely. For example, one district purchases buses with seats for two large students on one side of the aisle and three on the other. Typically, bus manufacturers use two seats of the same size and a center aisle, but those seats, which are rated by manufacturers for a capacity of three students, are frequently only used by two students. Therefore, the atypical seating configuration potentially increases a buss’ capacity from four to five riders. This represents a 25 percent increase incapacity at a minimal additional cost when purchasing the vehicle with a 12 to 15 year life. A properly designed funding system can identify and promote this and other cost effective approaches. Such a funding system also avoids methods of funding that support ineffective and unnecessarily costly transportation.

Conclusions on Transportation Funding and Operations

Maryland's transportation costs vary widely based on geographic and spatial factors, including population density and school location. These factors should be of primary consideration in any kind of transportation funding formula. Some local decisions greatly affect transportation costs. For example, districts influence their transportation costs depending on whether they: 1) fully utilize bus capacity, 2) specify threshold walking distances, 3) specify maximum ride times, and 4) specify which transportation services will be state-provided. The research team's interviews of several transportation managers identified variations in these local decisions. Factors that depend on local school system decisions should not be as important to the transportation funding formula as factors that are beyond the control of the local school systems. If the state places more importance on factors outside of local control, then it will be able to fund districts transportation services more equitably.

Maryland's funding formula does not incorporate some of the features that other states commonly use to promote efficiency. For example, unlike some state formulas, Maryland's formula increases funding when total enrollment increases, but does not decrease funding when total enrollment declines. In addition, the formula was developed in the 1980's using the experience and knowledge of a committee of the State Board of Education. This was at a time before modern computing capabilities were available to help make better and more cost effective decisions on complex systems like school transportation. For these reasons, the State's funding formula does not provide the most equitable transportation funding across districts and should be modernized to support and promote the safest and most cost effective transportation possible.

Recommendations on Transportation Funding and Operations

Maryland should consider modifying its current funding formula to better incorporate factors that impact the costs of providing transportation services. Several states are using sophisticated, multivariate statistical analyses and financial modeling to inform their funding systems. These systems can determine the cost of transporting students based on all factors affecting transportation services in each district. Many of the factors in a transportation cost index, applicable in different amounts for regular and disabled transportation, will be incorporated by the statistical analyses. Costs that are affected by local decisions regarding transportation service levels should be given less weight than those beyond the control of districts in a new funding formula because these factors may create inequity in funding and inefficiency in operations.

Implementation of a new transportation system will require careful planning and a transition period. Districts will need to provide extensive data on transportation services. These data generally reside in transportation software used by most school systems and could be provided by data reporting and data exchange software that will need to be developed and tested. A multivariate statistical model will need to be selected based on experiences in other states with such formulas, several of which have geographical and operational characteristics similar to Maryland. Experienced transportation planners from other sectors could also provide assistance in this selection. Once the model is run to determine the costs of transportation in each district, the difference between current funding and the model's funding level may

require a phase-in period to give districts time to align their transportation systems with the components of the new formula.

Adjusting to Changing Enrollment

Numerous factors affect a district's ability to adjust to either increasing or decreasing enrollment. School expenditures include both fixed and variable costs. Little adjustment is possible if costs are fixed. Some costs vary directly with enrollment changes. Other costs are subject to increments reflecting capacities such as school enrollment capacity, class size capacity, bus seat capacity, caseload limits, and other factors. The following sections define fixed and variable costs and how each is impacted differently by enrollment changes and describe the options and limitations districts face when experiencing enrollment changes.

Fixed and Variable Costs

Fixed costs in schools are independent of enrollment or the level of educational services provided. Fixed costs include buildings, equipment, most utilities, grounds keeping, and many service contracts. Variable costs are costs that vary with the number of students served or programs provided.

The operating costs of districts include a mix of both fixed and variable costs.

Examples of fixed costs in education include:

- one-of-a-kind positions (principal, school building secretary, school custodian, school nurse, librarian, etc.);
- school building construction debt service;
- school building utilities (heating/cooling fuels, electricity, water/sewer, etc.);
- contracted maintenance services (HVAC maintenance, fire and security alarm maintenance, etc.);
- grounds keeping costs (mowing, landscaping maintenance, snow removal, etc.);
- bus transportation costs when ride times would be excessive if all seats were filled to capacity;
- textbook series purchased for maximum enrollment;
- library books; and
- computer lab equipment.

Examples of typical variable costs in education, that is, those that can be adjusted with enrollment changes include:

- teaching staff for both regular and special education students;
- instructional aides/assistants/paraprofessionals; and
- consumable instructional supplies.

However, even some variable costs are difficult to adjust over short periods of time. These costs include changes that occur in one-unit increments, such as personnel changes based on caseload regulations or class sizes limits. Bus capacities are another example of a hard-to-adjust-for variable cost. These may include:

- guidance counselors;
- specialist teachers (these are teachers, such as art, music, and physical education teachers, who provide classroom coverage according to the instructional schedule for regular teachers during planning and lunch periods); and
- central administrative positions (payroll, human resources, curriculum, administration).

Table 7, below, categorizes the cost elements of an elementary school (600 student capacity) at 350 students served and at 500 students served. This example assumes that an additional 12 percent of students are eligible for special education services.

Table 7: Example of Fixed and Variable School Costs

Fixed and Variable School Costs-Elementary School (Capacity of 600)			
Enrollment Regular Education	350	500	
Enrollment Special Education	42	60	
			Notes
Staffing			
Principal	1	1	Fixed-One-of-a-kind position
Secretary	1	1	Fixed-One-of-a-kind position
Custodian (based on square footage)	2	2	Fixed-One-of-a-kind position
Teachers, regular education (class size of 25)	14	20	Variable
Teachers, special education (class size limits of 12)	4	5	Variable-subject to class size limits
Specialists (art, music, physical education)	3	4.5	Fixed-Based on schedule
Guidance Counselor	1	1	Fixed-One-of-a-kind position
Nurse	1	1	Fixed-One-of-a-kind position
Total	26	34	
Total Staffing Ratio (students per staff member)	15.1	16.5	
Instructional Supplies			
Textbooks	Variable		Variable based on enrollment
Library Books	Variable		Purchased for maximum enrollment
Instructional Equipment	Fixed		
Heating/Cooling	Variable		
Electricity	Fixed		Based on building size, not enrollment
Water/Sewer	Variable		Based on building size, not enrollment
Transportation (capacity of 72)	6 buses	8 buses	Depends on billing method
Contracted Services			
HVAC Maintenance	Variable		Variable-subject to seating capacity
Fire and Security Alarms	Fixed		
Groundskeeping	Fixed		
Building Maintenance (roofing, painting, repaving)	Fixed		

The example presented in Table 7 shows that even with an enrollment that is 30 percent smaller, the 350 student school must still pay for the same number of fixed costs as the larger 500 student school. For

personnel, these include the principal, school secretary, custodians (assuming the two school buildings are of similar size), and one-of-a-kind support staff such as a guidance counselor and school nurse. Also fixed are costs for library books, utilities, and building-related maintenance and services.

In this example, the fixed personnel costs make up about 15 percent of all personnel costs and most of the non-personnel costs are also fixed. As a result, if the school had to reduce its budget by 30 percent – the same amount as the difference in enrollment – most of the reductions would have to come from personnel who make up the school’s personnel variable costs, including instructional staff such as classroom teachers, special education teachers, and specialist teachers. But, even the reduction of “variable” cost personnel may not be entirely possible. This will depend in part on how students are distributed across the grade levels. In some grade levels, the number of students may not allow for the reduction of a teacher. For example, if the maximum capacity of a school’s classroom is 30 students and the school had 50 students in grade four in the prior year, but only 40 in the current year, the school cannot reduce its teaching staff by one teacher and consolidate all 40 students into a single classroom. It must still pay for two grade four teachers.

At the district level, the same percentage change in enrollment provides large districts more options to adjust costs than small districts. The examples that follow assume that school functions are operating at capacity for facilities, buses, class size, caseloads, and other factors. A 10 percent change in a 5,000 student district amounts to 500 students while a 10 percent change in a 100,000 student district amounts to 10,000 students. Assuming 14 grade levels (Prekindergarten, Kindergarten, and Grades 1 to 12), the smaller district would have 36 students per grade level while the larger district would have 714 per grade level. For a prekindergarten to grade six elementary school configuration, the smaller district would have a total of 288 students, which is generally not enough to change the number of school buildings needed. If the 288 students are distributed evenly across six elementary buildings, the 48 students at each school are not enough to change the number of 72 passenger buses needed. At each of the six elementary schools, 48 students amounts to six students per grade level, not enough to adjust the number of regular education teachers or classrooms at typical ratios of one teacher for every 20 to 25 students. If 10 percent of the students require special services, including special education or ELL services, a change of five students are more likely to require additional staff due to class size and caseload regulations than it is likely to result in a reduction of staff.

In contrast to the 5,000 student district, which tend to be rural and sparsely populated, a 10 percent change in a 100,000 student district amounts to 10,000 students, or 714 per grade level, assuming the change is equally distributed across grade levels. In a school district with Prekindergarten to grade six elementary schools, the total across the eight grade levels amounts to 5,712 elementary students. This is enough to adjust approximately 10 elementary schools. It is also enough to adjust nearly 80 elementary bus runs or approximately 228 teachers at a ratio of one regular education teacher for each 25 students. In more densely populated areas, the logistical difficulties of adjusting the number of schools or buses is less difficult.

Conclusions for Enrollment Changes, Operating Costs, and Funding Formulas

Enrollment Changes

Enrollment changes vary significantly for districts across the state in total enrollment, in grade level enrollment, and in program enrollment. Over the period between 2005 and 2014, total enrollment in the state declined by 20,000 students but then rebounded by roughly the same amount. The economic recession of 2007 to 2009 affected birth rates in many communities, which will likely lead to lower enrollment in most districts over time. It is possible that it may take a decade or more for enrollment to rebound to prior levels. If this is correct, school systems could face a prolonged period of lower enrollment. As mentioned earlier, the enrollment projection method used in recent public school enrollment projections has difficulty incorporating rapid change such as the turnaround in birth rates caused by the economic downturn.

Operating Costs

Operating costs for schools include staffing, supplies, equipment, contracted services for education and operation, transportation, facility maintenance, and debt service. Some of these costs are fixed while others are variable and can be adjusted with changing enrollment. A third category of costs are dependent on capacities of buildings, class size regulations, buses, and other items that require an additional unit (teacher, bus, building) when enrollment increases by the required amount. Because of the different types of costs, the ability to adjust to changing enrollment is highly dependent on how fully capacities were utilized before the enrollment change. While it is easy to justify adding costs when enrollment increases, decreasing enrollment is unpredictable and it is often risky to reduce costs in advance of a known amount of decrease. For this reason, delays in implementing cost reductions can be expected, especially if birth rate and enrollment projection information is not updated and communicated regularly.

Funding Formulas

Maryland's formula for school funding adjusts directly with enrollment changes because it is driven by pupil counts. Additional supplements for at-risk students are also adjusted by enrollment in those subgroups. The transportation funding formula adjusts only with increasing total enrollment, but not with decreasing total enrollment. This may be one reason why the amount of transportation costs funded varies substantially across districts.

Based on birth rate decreases from the economic downturn, a number of school systems will face decreasing enrollment, and thus state support, in future years. In the past, very limited transitional funding has been provided to a few school systems that met the criteria for decreasing enrollment. This provision recognized the difficulty for school systems to adjust costs based on unpredictable enrollment decreases.

Recommendations

Enrollment Change

The economic effects of the 2007-2009 recession resulted in significant impacts on birth rates in the past few years. School enrollment should be monitored carefully for each school system and each attendance area as the impact will vary by geography and socioeconomic factors. The standard methods of projecting school enrollment, cohort survival or grade progression, typically fail to account for these impacts during periods of declining birth rates and will not adjust quickly enough in the event of a rebound in birth rates. Therefore, more sophisticated enrollment projection methods are recommended to better understand these changes. Geographic Information Systems (GIS) can enhance the standard enrollment projection methodologies with valuable information on neighborhood change, mobility, and changing socioeconomic and demographic factors. GIS capabilities should be utilized by Maryland to help understand the impacts of recessions on birth rates as well as mobility and neighborhood change. Maryland should also provide technical assistance to districts on the difficult decisions regarding school closings, redistricting of school attendance areas, transportation efficiency, and staffing changes. For example, if continued monitoring of recent birth rates indicates a sustained rebound after a full economic recovery, it would be best that buildings that may be unused for a few years are maintained for future reuse rather than sold.

Operating Costs

Given the birth rate decline of the recent past, a number of school systems will experience enrollment declines as well as a decline in state funding under the current funding methods. The economic downturn caused most school systems to reduce spending on staff and in some cases on buildings. At this point, further reductions may present a challenge for some districts, requiring more sophisticated approaches to reducing spending. A financial model and set of best practices should be developed and provided to school systems to assist with these difficult decisions.

Funding Formulas

During the uncertainties of this period, it is important that funding formulas are based on a realistic understanding of the ability to economize to decreasing enrollment. The recommendations for funding formulas include suggestions for both the general education foundation formula for general operations and the student transportation funding formula.

General Education Foundation Formula

Maryland's general education foundation formula currently does not have a "built-in" mechanism for accommodating declining enrollment in districts. Currently, the State provides for grants to districts with declining enrollment. Total funding for this program was \$593,055 in fiscal year 2014-15.

Under this program, districts were provided a grant equal to 50 percent of the decrease in education aid if they meet the following three criteria: 1) a district's full-time equivalent enrollment is less than 5,000, 2) a district's full-time equivalent enrollment in the current fiscal year is less than it was in the prior year, and 3)

a district's total education aid in the current fiscal year decreases by more than 1 percent from its prior year's education aid. At this time, only two districts, Garrett and Kent counties, are eligible for the grant under these three criteria.

Given this study's findings regarding the future outlook for declining enrollment, and the possibility that the number of districts facing the fiscal challenges presented by declining enrollment will increase over the next decade, Maryland should consider adopting a more permanent, and automatic, mechanism for giving districts temporary relief from revenue reductions driven by falling enrollment.

A survey of states' general education funding formulas found that states take a number of different approaches to addressing the funding consequences of school enrollment declines.⁶ These policies typically aim to buffer school districts from drastic funding decreases resulting from declining enrollment. The strategies used by different states include providing supplemental grant funding, using prior year student counts to determine funding, and adjusting the formula to calculate funding based on enrollment covering several years, or providing a hold harmless provision that guarantees funding at previous levels regardless of the enrollment. Sixteen states, as of December 2014, had no provisions to accommodate declining enrollment in their funding formulas.

The approach suggested here is to change the student count used in the foundation formula calculations to a multi-year rolling average of the full-time equivalent enrollment count currently used. This rolling average, which would average a district's full-time equivalent enrollment count over several years (the most common periods used in other states' funding formulas range from two to four years), would work to temporarily reduce the funding impact of declining enrollment to give districts the time needed to make necessary changes to their operating costs (e.g. reducing staff, closing school buildings, or adopting other cost saving or efficiency strategies). As an example, a three-year rolling average student count would take the three most recent counts, for example counts from the fall of 2012, 2013, and 2014, average them, and then use the greater of the actual fall 2014 count or the three-year average count. Using the higher of the two numbers prevents penalizing districts experiencing enrollment growth. The formula count used in the next fiscal year would be the higher of the fall 2015 count or the average of the 2013, 2014, and 2015 counts.

Student Transportation Funding Formula

Serious consideration should be given to modernizing the State's transportation funding formula. The current formula does not appear to account for many of the major factors that drive transportation costs in districts. It also only adjusts funding amounts when district enrollment is increasing, but provides no adjustment when enrollment declines. The current formula was developed in the 1980's at a time when modern computer systems had not been applied widely to operational and financial issues in the public

⁶ Atherton, M. J. and Rubado, M. E. (December, 2014). *Policy Brief Hold Harmless Education Finance Policies in the U.S.: A Survey*. Center on Regional Politics, Temple University: Philadelphia, PA.

sector. Since then, public transit systems have expanded in some areas. Roads have become more congested and commuting patterns are much different in many areas. Vehicle navigation systems did not exist. Special education services were not as extensive. For all of these reasons, a modernization of the transportation funding formula is recommended.

A number of examples of state transportation formulas are currently in use that take into account relevant cost factors and unique local circumstances beyond the control of districts. North Carolina and Washington State provide two examples of such formulas in states with similar urban and rural geographic and socioeconomic factors. Some of the measures found in these and other states' transportation formulas may be particularly relevant to the rural, sparsely populated districts found in Maryland, as well as the more urban districts with high population densities and access to extensive public transit systems.

Implementing a more sophisticated funding formula will require timely submission of extensive data on transportation cost factors. In addition, the model may result in a significant redistribution of funding. For both of the reasons, a transition period will be required. The data collection will be much easier if software programs currently used by school systems can provide the information directly without additional manual effort. Software programs may need a year or more to provide that capability. Another year should be anticipated to review and improve data quality. At that time, the model will be ready to provide valid estimates of transportation costs in each school district. Comparing those estimates with existing funding levels for each district may indicate the need for a period of transition from current to new funding levels.

Summary Conclusion

In conclusion, this report has documented significant changes in enrollment faced by districts in Maryland. Further, the changes in enrollment documented impact districts differently, leading to the conclusion that any one measure or adjustment method is not likely to completely solve the challenges faced by districts experiencing enrollment declines. It is also true that the declining enrollment grant offered by Maryland today is limited and not dynamic enough to address the challenges many districts are facing.

Two formula adjustments are suggested here, the first to the general operating formula and the second to the transportation funding formula. For the general operating funding formula, a more transparent and multi-year adjustment is recommended. There are several good options used in other states that should be given consideration. The second recommendation is to modernize the transportation funding structure. A multivariate statistical model provides the most comprehensive and effective approach to account for distinctions between densely populated urban areas and more rural or sparsely populated districts in an effort to equalize the allocation process. Reporting features allow comparative analysis among districts and provide methods to measure compliance with state laws, regulations and policies concerning school bus transportation. In addition, the extensive data required to operate these models provide an opportunity to research and disseminate information on best practices in cost effective transportation.

Appendix: Data Tables

Table A1: Fall Enrollment by District

District	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014
Districts Under 10,000 Students										
Kent	2,514	2,440	2,356	2,274	2,219	2,184	2,183	2,130	2,130	2,117
Somerset	2,952	2,915	2,941	2,910	2,912	2,898	2,920	2,943	2,943	2,945
Garrett	4,737	4,668	4,617	4,510	4,425	4,311	4,212	4,004	4,004	3,886
Talbot	4,505	4,482	4,398	4,396	4,419	4,495	4,504	4,570	4,570	4,537
Dorchester	4,788	4,654	4,667	4,654	4,560	4,628	4,647	4,718	4,718	4,766
Caroline	5,412	5,570	5,611	5,658	5,513	5,551	5,517	5,585	5,585	5,545
Worcester	6,676	6,727	6,830	6,745	6,671	6,659	6,699	6,650	6,650	6,649
Queen Anne's	7,713	7,780	7,786	7,808	7,859	7,793	7,781	7,752	7,752	7,716
Allegany	9,840	9,715	9,526	9,436	9,232	9,152	9,022	8,929	8,929	8,872
Districts Between 10,000 and 60,000 Students										
Wicomico	14,387	14,490	14,427	14,399	14,590	14,619	14,382	14,489	14,489	14,431
Cecil	16,535	16,521	16,421	16,290	16,209	16,205	15,937	15,634	15,634	15,824
Calvert	17,451	17,468	17,474	17,394	17,052	17,006	16,795	16,323	16,323	16,221
Saint Mary's	16,567	16,649	16,665	16,890	16,752	17,186	17,271	17,453	17,453	17,841
Washington	20,807	21,141	21,594	21,703	21,734	21,902	22,206	22,403	22,403	22,495
Carroll	28,792	28,940	28,616	28,320	27,964	27,721	27,334	26,687	26,687	26,331
Charles	26,026	26,406	26,623	26,676	26,727	26,779	26,850	26,644	26,644	26,455
Harford	40,294	40,212	39,568	39,172	38,610	38,636	38,394	37,868	37,868	37,842
Frederick	39,489	39,672	40,224	40,487	40,070	40,159	40,188	40,456	40,456	40,648
Howard	48,219	48,596	49,048	49,542	49,905	50,641	50,994	52,053	52,053	52,806
Districts Greater Than 60,000 Students										
Anne Arundel	73,991	73,565	73,066	73,400	73,653	74,776	75,481	77,770	77,770	78,489
Baltimore City	90,677	87,643	84,515	81,284	82,266	82,866	83,800	84,747	84,747	84,730
Baltimore County	107,701	107,043	105,839	104,283	103,180	103,324	104,160	106,927	106,927	108,191
Prince George's	136,095	133,325	131,014	129,752	127,977	127,039	126,671	123,737	123,737	125,136
Montgomery	139,393	139,398	137,814	137,717	139,282	141,722	144,023	148,780	148,780	151,295
State Total	865,561	860,020	851,640	845,700	843,781	848,252	851,971	859,252	859,252	865,768

Table A2: Prekindergarten Enrollment

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Allegany	395	402	439	440	471	459	506	499	520	523
Anne Arundel	1,350	1,287	1266	1606	1684	1,699	1,670	1,892	2,182	2,157
Baltimore City	3,482	3,336	3503	3642	3999	4,712	4,874	4,852	4,890	4,763
Baltimore County	3,629	3,657	3924	3604	3505	3,585	3,613	3,631	3,658	3,667
Calvert	350	361	362	365	325	353	385	386	400	362
Caroline	241	250	302	298	258	327	343	324	365	310
Carroll	216	242	270	311	316	286	271	296	363	372
Cecil	493	485	497	521	578	585	590	590	627	720
Charles	734	782	801	798	840	865	858	891	911	921
Dorchester	229	204	195	216	229	214	268	256	270	253
Frederick	691	727	731	873	918	995	984	1,063	1,067	1,111
Garrett	163	94	87	110	122	122	122	131	86	100
Harford	939	895	902	874	879	902	782	779	760	770
Howard	756	811	900	956	1019	961	1,003	1,066	1,084	1,125
Kent	122	130	130	119	138	124	148	122	119	126
Montgomery	2,928	3,010	3027	3046	3167	3,426	3,503	3,627	3,779	3,770
Prince George's	4,130	4,934	5618	6640	5770	6,139	6,424	5,495	5,602	5,641
Queen Anne's	348	343	326	328	292	281	288	252	249	244
Saint Mary's	687	741	754	765	677	743	807	701	741	937
Somerset	158	155	169	176	196	191	214	201	214	217
Talbot	172	188	174	163	159	221	246	268	293	238
Washington	440	432	514	508	469	488	538	485	489	510
Wicomico	493	478	439	458	457	567	572	654	611	591
Worcester	234	275	344	362	353	381	368	389	391	383
Total	23,380	24,219	25,674	27,179	26,821	28,626	29,377	28,850	29,671	29,811

Source: MSDE

Table A3: Percent Changes in Prekindergarten Enrollment*

District	Percent Change 2005-06 to 2009-10	Percent Change 2010-11 to 2014-15	Percent Change 2005-06 to 2014-15	Numerical Change 2005-06 to 2014-15
Allegany	16.2	13.9	32.4	128
Anne Arundel	25.9	27.0	59.8	807
Baltimore City	35.3	1.1	36.8	1,281
Baltimore County	-1.2	2.3	1.0	38
Calvert	0.9	2.5	3.4	12
Caroline	35.7	-5.2	28.6	69
Carroll	32.4	30.1	72.2	156
Cecil	18.7	23.1	46.0	227
Charles	17.8	6.5	25.5	187
Dorchester	-6.6	18.2	10.5	24
Frederick	44.0	11.7	60.8	420
Garrett	-25.2	-18.0	-38.7	-63
Harford	-3.9	-14.6	-18.0	-169
Howard	27.1	17.1	48.8	369
Kent	1.6	1.6	3.3	4
Montgomery	17.0	10.0	28.8	842
Prince George's	48.6	-8.1	36.6	1,511
Queen Anne's	-19.3	-13.2	-29.9	-104
Saint Mary's	8.2	26.1	36.4	250
Somerset	20.9	13.6	37.3	59
Talbot	28.5	7.7	38.4	66
Washington	10.9	4.5	15.9	70
Wicomico	15.0	4.2	19.9	98
Worcester	62.8	0.5	63.7	149
Total	22.4	4.1	27.5	6,431

Source: MSDE

*In columns two through four, a negative sign (-) indicates a percent decrease, while no sign indicates either no change (0.0) or a percent increase. In column five, a negative sign indicates that this number of students left the district, while no sign indicates that this number of students joined the district.

Table A4: Kindergarten Enrollment

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Allegany	603	643	607	659	611	635	588	629	647	645
Anne Arundel	4,702	4,871	4,842	5,281	5,430	5,692	5,737	5,931	6,345	6,384
Baltimore City	6,021	6,146	6,057	6,124	6,353	6,420	6,722	7,064	7,271	7,349
Baltimore County	6,894	7,204	7,132	7,385	7,571	7,542	7,787	8,181	8,580	8,603
Calvert	1,034	1,070	1,096	1,125	1,121	1,046	1,049	1,038	1,055	1,053
Caroline	318	402	386	424	436	400	409	447	440	462
Carroll	1,757	1,885	1,854	1,952	1,890	1,888	1,852	1,782	1,744	1,757
Cecil	1,146	1,060	1,059	1,149	1,129	1,127	1,131	1,142	1,183	1,140
Charles	1,399	1,457	1,477	1,590	1,640	1,609	1,662	1,691	1,788	1,768
Dorchester	277	314	302	320	343	367	334	383	403	406
Frederick	2,569	2,694	2,744	2,885	2,835	2,826	2,986	2,947	3,031	2,962
Garrett	308	313	280	268	310	312	302	288	323	263
Harford	2,656	2,815	2,615	2,827	2,710	2,738	2,684	2,794	2,742	2,817
Howard	2,641	2,849	2,947	3,230	3,309	3,383	3,393	3,497	3,518	3,732
Kent	151	159	151	153	155	161	156	181	146	161
Montgomery	9,186	9,384	9,190	9,775	10,273	10,630	10,954	11,419	11,650	11,912
Prince George's	8,214	8,410	8,163	8,819	8,836	9,088	9,276	9,568	9,982	10,260
Queen Anne's	508	495	472	556	531	556	556	555	544	544
Saint Mary's	1,063	1,044	1,105	1,238	1,195	1,246	1,290	1,327	1,358	1,342
Somerset	211	220	221	222	225	244	226	244	232	235
Talbot	263	294	288	325	315	318	321	352	332	359
Washington	1,475	1,620	1,556	1,606	1,656	1,627	1,631	1,686	1,777	1,679
Wicomico	1,032	1,118	1,137	1,133	1,191	1,151	1,174	1,150	1,331	1,233
Worcester	410	391	452	409	465	422	484	431	474	482
Total State	54,838	56,858	56,133	59,455	60,530	61,428	62,704	64,727	66,896	67,548

Source: MSDE

Table A5: Percent Changes in Kindergarten Enrollment*

District	Percent Change 2005-06 to 2009-10	Percent Change 2010-11 to 2014-15	Percent Change 2005-06 to 2014-15	Numerical Change 2005-06 to 2014-15
Allegany	5.3	1.6	7.0	42
Anne Arundel	21.1	12.2	35.8	1,682
Baltimore City	6.6	14.5	22.1	1,328
Baltimore County	9.4	14.1	24.8	1,709
Calvert	1.2	0.7	1.8	19
Caroline	25.8	15.5	45.3	144
Carroll	7.5	-6.9	0.0	0
Cecil	-1.7	1.2	-0.5	-6
Charles	15.0	9.9	26.4	369
Dorchester	32.5	10.6	46.6	129
Frederick	10.0	4.8	15.3	393
Garrett	1.3	-15.7	-14.6	-45
Harford	3.1	2.9	6.1	161
Howard	28.1	10.3	41.3	1,091
Kent	6.6	0.0	6.6	10
Montgomery	15.7	12.1	29.7	2,726
Prince George's	10.6	12.9	24.9	2,046
Queen Anne's	9.4	-2.2	7.1	36
Saint Mary's	17.2	7.7	26.2	279
Somerset	15.6	-3.7	11.4	24
Talbot	20.9	12.9	36.5	96
Washington	10.3	3.2	13.8	204
Wicomico	11.5	7.1	19.5	201
Worcester	2.9	14.2	17.6	72
Total	12.0	10.0	23.2	12,710

Source: MSDE

*In columns two through four, a negative sign (-) indicates a percent decrease, while no sign indicates either no change (0.0) or a percent increase. In column five, a negative sign indicates that this number of students left the district, while no sign indicates that this number of students joined the district.

Table A6: Grades One through Six Enrollment

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Allegany	4,095	3,953	3,938	3,926	3,934	3,932	3,884	3,853	3,809	3,832
Anne Arundel	32,680	32,393	32,205	32,159	32,640	33,354	34,147	34,567	35,261	36,153
Baltimore City	41,843	39,778	37,818	36,465	36,605	36,842	37,056	37,412	38,025	38,549
Baltimore County	46,110	45,245	44,614	44,162	44,394	45,247	46,102	47,139	48,378	49,938
Calvert	7,563	7,440	7,330	7,254	7,176	7,205	7,082	7,050	6,914	6,951
Caroline	2,257	2,255	2,300	2,347	2,366	2,376	2,408	2,455	2,481	2,465
Carroll	12,557	12,309	12,041	11,888	11,795	11,889	11,806	11,843	11,612	11,510
Cecil	7,256	7,231	7,109	6,935	7,006	7,035	6,905	6,911	6,794	6,921
Charles	11,208	11,009	10,912	10,787	10,754	10,829	10,875	10,997	11,042	11,178
Dorchester	1,948	1,845	1,878	1,927	1,929	1,969	2,018	2,022	2,115	2,156
Frederick	17,598	17,414	17,658	17,506	17,325	17,395	17,496	17,765	17,789	18,138
Garrett	2,090	1,993	1,965	1,876	1,812	1,823	1,806	1,780	1,754	1,734
Harford	17,976	17,795	17,463	17,045	16,937	16,921	16,887	16,882	16,785	16,972
Howard	21,752	21,397	21,397	21,120	21,309	21,812	22,106	22,579	23,112	23,649
Kent	998	951	936	928	944	918	925	920	940	934
Montgomery	60,985	60,221	59,422	59,194	60,060	61,605	63,500	65,432	67,189	68,950
Prince George's	59,654	56,833	54,421	53,115	53,274	53,004	53,633	54,206	54,955	56,568
Queen Anne's	3,213	3,227	3,231	3,238	3,274	3,293	3,370	3,429	3,469	3,472
Saint Mary's	7,069	7,157	7,028	7,088	7,149	7,360	7,478	7,722	7,830	8,003
Somerset	1,283	1,235	1,237	1,253	1,213	1,256	1,308	1,315	1,369	1,348
Talbot	1,897	1,814	1,758	1,764	1,804	1,864	1,909	1,949	1,979	1,993
Washington	9,199	9,349	9,642	9,757	9,839	9,923	10,067	10,065	10,027	10,247
Wicomico	6,541	6,523	6,509	6,603	6,776	6,820	6,648	6,683	6,586	6,677
Worcester	2,641	2,691	2,656	2,714	2,725	2,718	2,742	2,757	2,836	2,809
Total	380,413	372,058	365,468	361,051	363,040	367,390	372,158	377,733	383,051	391,147

Source: MSDE

Table A7: Percent Changes and Numerical Changes in Grades One through Six Enrollment*

District	Enrollment Fall 2014	Percent Change 2005-06 to 2009-10	Percent Change 2010-11 to 2014-15	Percent Change 2005-06 to 2014-15	Student Change 2005-06 to 2014-15
Allegany	4,095	-4.1%	-2.6%	-6.4%	-263
Anne Arundel	32,680	-1.6%	10.8%	10.6%	3,473
Baltimore City	41,843	-12.9%	5.3%	-7.9%	-3,294
Baltimore County	46,110	-4.2%	12.5%	8.3%	3,828
Calvert	7,563	-4.1%	-3.1%	-8.1%	-612
Caroline	2,257	4.0%	4.2%	9.2%	208
Carroll	12,557	-5.3%	-2.4%	-8.3%	-1,047
Cecil	7,256	-4.4%	-1.2%	-4.6%	-335
Charles	11,208	-3.8%	3.9%	-0.3%	-30
Dorchester	1,948	-1.1%	11.8%	10.7%	208
Frederick	17,598	-0.5%	4.7%	3.1%	540
Garrett	2,090	-10.2%	-4.3%	-17.0%	-356
Harford	17,976	-5.2%	0.2%	-5.6%	-1,004
Howard	21,752	-2.9%	11.0%	8.7%	1,897
Kent	998	-7.0%	-1.1%	-6.4%	-64
Montgomery	60,985	-2.9%	14.8%	13.1%	7,965
Prince George's	59,654	-11.0%	6.2%	-5.2%	-3,086
Queen Anne's	3,213	0.8%	6.0%	8.1%	259
Saint Mary's	7,069	0.3%	11.9%	13.2%	934
Somerset	1,283	-2.3%	11.1%	5.1%	65
Talbot	1,897	-7.0%	10.5%	5.1%	96
Total	380,413	-5.1%	7.7%	2.8%	10,734
Washington	9,199	6.1%	4.1%	11.4%	1,048
Wicomico	6,541	0.9%	-1.5%	2.1%	136
Worcester	2,641	2.8%	3.1%	6.4%	168

Source: MSDE

*In columns two through four, a negative sign (-) indicates a percent decrease, while no sign indicates either no change (0.0) or a percent increase. In column five, a negative sign indicates that this number of students left the district, while no sign indicates that this number of students joined the district.

Table A8: Grade Seven through 12 Enrollment

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Allegany	4,747	4,717	4,542	4,411	4,216	4,126	4,044	3,932	3,953	3,872
Anne Arundel	35,259	35,014	34,753	34,354	33,899	34,031	33,927	33,913	33,982	33,795
Baltimore City	39,331	38,383	37,137	35,053	35,309	34,892	35,148	34,884	34,561	34,069
Baltimore County	51,068	50,937	50,169	49,132	47,710	46,950	46,658	46,202	46,311	45,983
Calvert	8,504	8,597	8,686	8,650	8,430	8,402	8,279	8,079	7,954	7,855
Caroline	2,596	2,663	2,623	2,589	2,453	2,448	2,357	2,319	2,299	2,308
Carroll	14,262	14,504	14,451	14,169	13,963	13,658	13,405	13,161	12,968	12,692
Cecil	7,640	7,745	7,756	7,685	7,496	7,458	7,311	7,184	7,030	7,043
Charles	12,685	13,158	13,433	13,501	13,493	13,476	13,455	13,199	12,903	12,588
Dorchester	2,334	2,291	2,292	2,191	2,059	2,078	2,027	1,986	1,930	1,951
Frederick	18,631	18,837	19,091	19,223	18,992	18,943	18,722	18,638	18,569	18,437
Garrett	2,176	2,268	2,285	2,256	2,181	2,054	1,982	1,878	1,841	1,789
Harford	18,723	18,707	18,588	18,426	18,084	18,075	18,041	17,769	17,581	17,283
Howard	23,070	23,539	23,804	24,236	24,268	24,485	24,492	24,413	24,339	24,300
Kent	1,243	1,200	1,139	1,074	982	981	954	939	925	896
Montgomery	66,294	66,783	66,175	65,702	65,782	66,061	66,066	65,981	66,162	66,663
Prince George's	64,097	63,148	62,812	61,178	60,097	58,808	57,338	54,564	53,198	52,667
Queen Anne's	3,644	3,715	3,757	3,686	3,762	3,663	3,567	3,525	3,490	3,456
Saint Mary's	7,748	7,707	7,778	7,799	7,731	7,837	7,696	7,699	7,524	7,559
Somerset	1,300	1,305	1,314	1,259	1,278	1,207	1,172	1,122	1,128	1,145
Talbot	2,173	2,186	2,178	2,144	2,141	2,092	2,028	1,978	1,966	1,947
Washington	9,693	9,740	9,882	9,832	9,770	9,864	9,970	10,004	10,110	10,059
Wicomico	6,321	6,371	6,342	6,205	6,166	6,081	5,988	6,033	5,961	5,930
Worcester	3,391	3,370	3,378	3,260	3,128	3,138	3,105	3,066	2,949	2,975
Total	406,930	406,885	404,365	398,015	393,390	390,808	387,732	382,468	379,634	377,262

Source: MSDE

Table A9: Percent Changes and Numerical Changes in Grade Seven through 12 Enrollment*

District	Percent Change 2005-06 to 2009-10	Percent Change 2010-11 to 2014-15	Percent Change 2005-06 to 2014-15	Numerical Change 2005-06 to 2014-15
Allegany	-13.1	-6.2	-18.4	-875
Anne Arundel	-3.5	-0.7	-4.2	-1,464
Baltimore City	-11.3	-2.4	-13.4	-5,262
Baltimore County	-8.1	-2.1	-10.0	-5,085
Calvert	-1.2	-6.5	-7.6	-649
Caroline	-5.7	-5.7	-11.1	-288
Carroll	-4.2	-7.1	-11.0	-1,570
Cecil	-2.4	-5.6	-7.8	-597
Charles	6.2	-6.6	-0.8	-97
Dorchester	-11.0	-6.1	-16.4	-383
Frederick	1.7	-2.7	-1.0	-194
Garrett	-5.6	-12.9	-17.8	-387
Harford	-3.5	-4.4	-7.7	-1,440
Howard	6.1	-0.8	5.3	1,230
Kent	-21.1	-8.7	-27.9	-347
Montgomery	-0.4	0.9	0.6	369
Prince George's	-8.3	-10.4	-17.8	-11,430
Queen Anne's	0.5	-5.7	-5.2	-188
Saint Mary's	1.1	-3.5	-2.4	-189
Somerset	-7.2	-5.1	-11.9	-155
Talbot	-3.7	-6.9	-10.4	-226
Washington	1.8	2.0	3.8	366
Wicomico	-3.8	-2.5	-6.2	-391
Worcester	-7.5	-5.2	-12.3	-416
Total	-4.0	-3.5	-7.3	-29,668

Source: MSDE

*In columns two through four, a negative sign (-) indicates a percent decrease, while no sign indicates either no change (0.0) or a percent increase. In column five, a negative sign indicates that this number of students left the district, while no sign indicates that this number of students joined the district.

Table A10: Special Education Enrollment by District

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Allegany	1,441	1,278	1,373	1,351	1,370	1,397	1,186	1,271	1,289	1,298
Anne Arundel	9,110	8,880	8,509	7,932	7,321	7,260	7,488	7,132	7,233	7,058
Baltimore City	13,524	14,713	14,217	13,845	12,813	13,623	14,088	13,242	13,306	13,004
Baltimore County	12,992	13,174	13,435	13,685	12,264	12,761	12,966	12,364	12,620	12,655
Calvert	2,098	2,025	1,936	1,801	1,724	1,610	1,576	1,414	1,362	1,348
Caroline	640	694	669	643	524	554	600	559	583	572
Carroll	3,329	3,279	3,230	3,155	3,107	3,107	3,113	3,030	2,937	2,860
Cecil	2,364	2,409	2,289	2,259	2,080	2,138	2,022	1,942	2,055	2,170
Charles	2,258	2,290	2,238	2,261	2,229	2,257	2,277	2,308	2,350	2,470
Dorchester	489	420	494	493	438	435	446	414	396	444
Frederick	4,314	4,575	4,391	4,299	4,217	4,384	4,223	4,072	4,042	4,124
Garrett	634	669	669	614	513	535	486	417	397	395
Harford	5,561	5,820	5,349	5,271	4,883	4,685	4,910	4,687	4,628	4,576
Howard	4,572	4,478	4,456	4,726	4,105	4,435	4,545	4,425	4,515	4,529
Kent	304	350	340	345	346	321	297	266	268	242
Montgomery	16,730	17,355	16,913	16,491	17,167	16,637	17,158	16,336	16,742	17,183
Prince George's	14,033	14,945	13,840	27,085*	13,912	14,042	14,415	13,757	14,122	14,104
Queen Anne's	1,053	1,028	993	967	960	1,012	992	974	1,020	968
Saint Mary's	2,216	2,174	2,202	2,218	2,007	1,892	1,851	1,708	1,590	1,627
Somerset	341	403	422	424	439	439	460	442	443	458
Talbot	445	460	417	391	368	387	398	376	384	410
Washington	2,699	2,806	2,725	2,855	2,308	2,396	2,369	2,143	2,145	1,992
Wicomico	1,620	1,657	1,645	1,633	1,626	1,699	1,704	1,622	1,610	1,677
Worcester	708	705	724	710	693	724	791	806	809	821
State	103,475	106,587	103,476	115,454	97,429	98,748	100,383	95,733	96,888	97,025

Source: MSDE

*The large increase in special education enrollment in 2008-09 followed by a significant decrease in 2009-10 may be the result of an error in the data in Prince George's County reported to MSDE.

Table A11: Percent Changes and Numerical Changes in Special Education Enrollment*

District	Percent Change 2005-06 to 2009-10	Percent Change 2010-11 to 2014-15	Percent Change 2005-06 to 2014-15	Numerical Change 2005-06 to 2014-15
Allegany	-3.1	-7.1	-9.9	-143
Anne Arundel	-20.3	-2.8	-22.5	-2,052
Baltimore City	0.7	-4.5	-3.8	-520
Baltimore County	-1.8	-0.8	-2.6	-337
Calvert	-23.3	-16.3	-35.7	-750
Caroline	-13.4	3.2	-10.6	-68
Carroll	-6.7	-7.9	-14.1	-469
Cecil	-9.6	1.5	-8.2	-194
Charles	0.0	9.4	9.4	212
Dorchester	-11.0	2.1	-9.2	-45
Frederick	1.6	-5.9	-4.4	-190
Garrett	-15.6	-26.2	-37.7	-239
Harford	-15.8	-2.3	-17.7	-985
Howard	-3.0	2.1	-0.9	-43
Kent	5.6	-24.6	-20.4	-62
Montgomery	-0.6	3.3	2.7	453
Prince George's	0.1	0.4	0.5	71
Queen Anne's	-3.9	-4.3	-8.1	-85
Saint Mary's	-14.6	-14.0	-26.6	-589
Somerset	28.7	4.3	34.3	117
Talbot	-13.0	5.9	-7.9	-35
Washington	-11.2	-16.9	-26.2	-707
Wicomico	4.9	-1.3	3.5	57
Worcester	2.3	13.4	16.0	113
State Total	-4.6	-1.7	-6.2	-6,450

Source: MSDE

*In columns two through four, a negative sign (-) indicates a percent decrease, while no sign indicates either no change (0.0) or a percent increase. In column five, a negative sign indicates that this number of students left the district, while no sign indicates that this number of students joined the district.

Table A12: Special Education as Percentage of Total Enrollment

District	Special Education as a Percentage of Total Enrollment 2005-06	Special Education as a Percentage of Total Enrollment 2014-15	Percent Change in Special Education Enrollment 2005-06 to 2014-15
Allegany	14.6	14.6	0.0
Anne Arundel	12.3	9.0	-3.3
Baltimore City	14.9	15.3	0.4
Baltimore County	12.1	11.7	-0.4
Calvert	12.0	8.3	-3.7
Caroline	11.8	10.3	-1.5
Carroll	11.6	10.9	-0.7
Cecil	14.3	13.7	-0.6
Charles	8.7	9.3	0.7
Dorchester	10.2	9.3	-0.9
Frederick	10.9	10.1	-0.8
Garrett	13.4	10.2	-3.2
Harford	13.8	12.1	-1.7
Howard	9.5	8.6	-0.9
Kent	12.1	11.4	-0.7
Montgomery	12.0	11.4	-0.6
Prince George's	10.3	11.3	1.0
Queen Anne's	13.7	12.5	-1.1
Saint Mary's	13.4	9.1	-4.3
Somerset	11.6	15.6	4.0
Talbot	9.9	9.0	-0.8
Washington	13.0	8.9	-4.1
Wicomico	11.3	11.6	0.4
Worcester	10.6	12.3	1.7

Source: MSDE

Table A13: English Language Learners Enrollment

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Allegany	18	18	21	32	26	20	13	17	14	14
Anne Arundel	1,405	1,407	1,603	1,858	2,202	2,568	2,968	3,115	3,268	3,646
Baltimore City	1,190	1,343	1,347	1,510	1,723	2,239	2,635	3,011	3,434	3,468
Baltimore County	2,471	2,863	3,258	3,651	3,797	4,280	4,224	4,051	4,541	4,597
Calvert	118	115	129	172	238	195	153	134	160	128
Caroline	83	111	0	156	157	181	191	220	244	293
Carroll	120	0	165	190	170	192	189	217	229	234
Cecil	124	177	109	118	142	161	189	163	173	169
Charles	370	436	434	464	214	235	232	223	262	285
Dorchester	82	116	90	91	79	90	74	69	92	115
Frederick	1,059	1,503	1,605	1,732	1,679	2,002	1,789	1,836	1,908	2,041
Garrett	0	3	0	2	3	6	4	1	2	3
Harford	343	374	430	514	549	528	496	421	454	425
Howard	0	1,443	1,643	2,078	2,056	2,117	2,233	2,269	2,217	2,163
Kent	56	77	62	70	59	70	78	66	92	80
Montgomery	13,161	13,589	14,636	16,925	17,509	18,704	19,797	22,867	23,805	23,123
Prince George's	7,736	9,333	11,790	13,825	12,991	13,955	15,169	15,372	16,997	18,268
Queen Anne's	75	107	122	141	159	152	140	155	172	189
Saint Mary's	124	110	129	137	167	175	155	151	177	208
Somerset	69	76	80	101	148	116	115	87	99	95
Talbot	137	166	130	170	217	203	199	206	244	285
Washington	224	321	387	379	421	467	429	360	376	384
Wicomico	332	324	319	336	389	427	488	495	569	633
Worcester	128	150	181	199	196	185	171	166	171	167
State	29,425	34,162	38,670	44,851	45,291	49,268	52,131	55,672	59,700	61,013

Source: MSDE

Table A14: Percent Changes and Numerical Changes in ELL Enrollment*

District	Percent Change 2005-06 to 2009-10	Percent Change 2010-11 to 2014-15	Percent Change 2005-06 to 2013-14	Numerical Change 2005-06 to 2014-15
Allegany	11.1	-30.0	-22.2	(4)
Anne Arundel	82.8	42.0	159.5	2,241
Baltimore City	88.2	54.9	191.4	2,278
Baltimore County	73.2	7.4	86.0	2,126
Calvert	65.3	-34.4	8.5	10
Caroline	118.1	61.9	253.0	210
Carroll	60.0	21.9	95.0	114
Cecil	29.8	5.0	36.3	45
Charles	-36.5	21.3	-23.0	(85)
Dorchester	9.8	27.8	40.2	33
Frederick	89.0	1.9	92.7	982
Garrett	100.0	-50.0	0.0	0
Harford	53.9	-19.5	23.9	82
Howard	46.7	2.2	49.9	2,163
Kent	25.0	14.3	42.9	24
Montgomery	42.1	23.6	75.7	9,962
Prince George's	80.4	30.9	136.1	10,532
Queen Anne's	102.7	24.3	152.0	114
Saint Mary's	41.1	18.9	67.7	84
Somerset	68.1	-18.1	37.7	26
Talbot	48.2	40.4	108.0	148
Washington	108.5	-17.8	71.4	160
Wicomico	28.6	48.2	90.7	301
Worcester	44.5	-9.7	30.5	39
State	67.4	23.8	107.4	31,588

Source: MSDE

*In columns two through four, a negative sign (-) indicates a percent decrease, while no sign indicates either no change (0.0) or a percent increase. In column five, a negative sign indicates that this number of students left the district, while no sign indicates that this number of students joined the district.

Table A15: ELL Students as a Percentage of Total Enrollment, 2014

District	Percentage ELL Elementary Level	Percentage ELL Middle School Level	Percentage ELL High School Level
Allegany	*	*	*
Anne Arundel	6.8	<= 5.0	<= 5.0
Baltimore City	5.6	<= 5.0	<= 5.0
Baltimore County	6.4	<= 5.0	<= 5.0
Calvert	<= 5.0	<= 5.0	<= 5.0
Caroline	8	<= 5.0	<= 5.0
Carroll	<= 5.0	<= 5.0	<= 5.0
Cecil	<= 5.0	<= 5.0	<= 5.0
Charles	<= 5.0	<= 5.0	<= 5.0
Dorchester	<= 5.0	<= 5.0	<= 5.0
Frederick	8.7	<= 5.0	<= 5.0
Garrett	*	*	*
Harford	<= 5.0	<= 5.0	<= 5.0
Howard	6.5	<= 5.0	<= 5.0
Kent	5.1	<= 5.0	<= 5.0
Montgomery	23.2	9	6.3
Prince George's	20.9	9.3	7
Queen Anne's	<= 5.0	<= 5.0	<= 5.0
Saint Mary's	<= 5.0	<= 5.0	<= 5.0
Somerset	<= 5.0	*	*
Talbot	9.1	<= 5.0	<= 5.0
Washington	<= 5.0	<= 5.0	<= 5.0
Wicomico	5.7	<= 5.0	<= 5.0
Worcester	<= 5.0	<= 5.0	*
All Public Schools	10.6	4.1	3.2

Source: MSDE

Note: An “*” means that the count is very small and has been suppressed to protect student confidentiality. The symbol “<=5.0” means that there are fewer than five percent of all students.

Table A16: Title I Enrollment for the Years 2005-06 to 2014-15

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Allegany	3,602	3,715	3,705	3,119	3,396	3,333	3,156	2,799	2,823	2,878
Anne Arundel	4,063	4,173	4,724	4,461	4,515	5,261	4,858	4,537	5,278	5,511
Baltimore City*	49,937	50,688	50,650	49,032	45,716	43,177	43,371	41,108	46,482	47,999
Baltimore County	25,332	27,755	27,533	20,625	18,101	18,848	20,703	21,068	22,894	23,610
Calvert	626	650	378	393	385	450	213	172	197	237
Caroline	2,193	2,414	2,422	2,927	2,808	2,896	2,921	2,812	2,868	2,835
Carrroll	320	243	205	283	285	200	149	332	1,032	1,051
Cecil	3,324	3,263	3,212	3,086	3,248	3,242	3,345	3,646	3,632	3,528
Charles	2,845	3,537	3,408	2,839	2,632	2,629	2,669	2,596	2,834	2,942
Dorchester	1,464	1,391	1,566	1,605	1,627	1,755	1,764	1,687	1,764	1,862
Frederick	1,534	1,572	1,592	1,626	1,674	2,480	2,534	2,420	2,547	3,569
Garrett	1,907	1,564	1,531	1,490	1,488	1,538	1,500	1,479	854	784
Harford	4,009	3,412	3,325	3,318	3,376	3,385	3,136	2,838	2,583	2,649
Howard	280	472	435	544	566	*	1,370	2,931	4,387	4,709
Kent	964	919	885	855	817	850	935	876	874	1,334
Montgomery	8,610	10,691	10,717	10,724	13,698	15,359	16,150	13,739	15,247	17,827
Prince George's	31,584	36,038	25,567	25,834	26,150	31,833	34,048	25,844	30,251	34,052
Queen Anne's	293	233	288	272	606	506	513	548	481	522
Saint Mary's	1,477	1,839	1,765	1,593	2,284	2,161	2,248	2,260	2,221	2,392
Somerset	1,377	1,419	1,503	1,498	1,438	1,579	1,650	1,578	1,467	1,466
Talbot	981	1,102	1,080	1,120	1,194	1,113	1,185	1,141	1,185	1,179
Washington	3,886	4,346	4,249	4,317	4,094	2,939	3,002	2,656	2,719	2,775
Wicomico	3,097	3,400	3,210	3,696	3,766	3,954	4,899	3,879	4,564	4,614
Worcester	2,034	1,250	1,289	1,263	1,292	1,260	1,257	1,196	1,247	1,209
State Total	155,739	166,086	155,239	146,520	145,177	150,785	157,828	144,432	160,808	171,918

Source: MSDE. An “*” indicates missing data.

Table A17: Percent Changes and Numerical Changes in Title I Enrollment*

District	Percent Change 2005-06 to 2009-10	Percent Change 2010-11 to 2014-15	Percent Change 2005-06 to 2013-14	Numerical Change 2005-06 to 2014-15
Allegany	-7.5	-13.7	-20.1	-724
Anne Arundel	29.5	4.8	35.6	1,448
Baltimore City	-13.5	11.2	-3.9	-1,938
Baltimore County	-25.6	25.3	-6.8	-1,722
Calvert	-28.1	-47.3	-62.1	-389
Caroline	32.1	-2.1	29.3	642
Carroll	-37.5	425.5	228.4	731
Cecil	-2.5	8.8	6.1	204
Charles	-7.6	11.9	3.4	97
Dorchester	19.9	6.1	27.2	398
Frederick	61.7	43.9	132.7	2,035
Garrett	-19.3	-49.0	-58.9	-1,123
Harford	-15.6	-21.7	-33.9	-1,360
Howard	102.1	243.7	1581.8	4,429
Kent	-11.8	56.9	38.4	370
Montgomery	78.4	16.1	107.0	9,217
Prince George's	0.8	7.0	7.8	2,468
Queen Anne's	72.7	3.2	78.2	229
Saint Mary's	46.3	10.7	61.9	915
Somerset	14.7	-7.2	6.5	89
Talbot	13.5	5.9	20.2	198
Washington	-24.4	-5.6	-28.6	-1,111
Wicomico	27.7	16.7	49.0	1,517
Worcester	-38.1	-4.0	-40.6	-825
State	-3.2	14.0	10.4	16,179

Source: MSDE

*In columns two through four, a negative sign (-) indicates a percent decrease, while no sign indicates either no change (0.0) or a percent increase. In column five, a negative sign indicates that this number of students left the district, while no sign indicates that this number of students joined the district.

Table A18: Title I Students as Percentages of Total Enrollment, 2014

District	Percentage Title I Elementary School Level	Percentage Title I Middle School Level	Percentage Title I High School Level
Allegany	65.7	*	*
Anne Arundel	14.1	*	*
Baltimore City	79.3	67.1	6.2
Baltimore County	39.5	8.2	*
Calvert	<= 5.0	*	*
Caroline	>= 95.0	*	*
Carroll	9.1	*	*
Cecil	46.3	*	*
Charles	24.6	*	*
Dorchester	74.3	*	*
Frederick	18.5	*	*
Garrett	43.4	*	*
Harford	15	*	*
Howard	19	*	*
Kent	82.8	>= 95.0	*
Montgomery	23.9	*	*
Prince George's	40.3	31.4	*
Queen Anne's	14.3	*	*
Saint Mary's	26.4	*	*
Somerset	93.2	*	*
Talbot	52.4	*	*
Washington	25.9	*	*
Wicomico	61.4	*	*
Worcester	37.6	*	*
All Public Schools	34.6	11.9	0.6

Source: MSDE

Note: An "*" means that the count is very small and has been suppressed to protect the confidentiality of students. The symbol "<=5.0" means that there are fewer than five percent of all students. The symbol ">=95.0" means that at least 95 percent of all students were eligible for Title I services.

Table A19: Number of Schools, Percent Changes and Numerical Changes in the Number of Schools*

District	Number 2005-06	Number 2014-15	Percent Change 2005-06 to 2014-15	Number Change 2005-06-2014-15
Allegany	27	26	-3.7	-1
Anne Arundel	119	121	1.7	2
Baltimore City	191	190	-0.5	-1
Baltimore County	168	173	3.0	5
Calvert	27	26	-3.7	-1
Caroline	10	10	0.0	0
Carroll	45	47	4.4	2
Cecil	31	29	-6.5	-2
Charles	34	37	8.8	3
Dorchester	13	13	0.0	0
Frederick	61	67	9.8	6
Garrett	18	12	-33.3	-6
Harford	51	54	5.9	3
Howard	70	75	7.1	5
Kent	8	7	-12.5	-1
Montgomery	197	207	5.1	10
Prince George's	205	209	2.0	4
Queen Anne's	13	14	7.7	1
Saint Mary's	27	29	7.4	2
Somerset	10	9	-10.0	-1
Talbot	8	8	0.0	0
Washington	46	46	0.0	0
Wicomico	27	25	-7.4	-2
Worcester	14	14	0.0	0
Total	1420	1448	2.0	28

Source: MSDE

*In column four, a negative sign (-) indicates a percent decrease, while no sign indicates either no change (0.0) or a percent increase. In column five, a negative sign indicates that this number of schools closed or left the district, while no sign indicates that this number of new schools opened or moved to the district.

Table A20: Number of Instructional Staff 2005-06 to 2013-14

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Allegany	1,006	1,017	991	982	982	962	913	905	885
Anne Arundel	6,072	6,384	6,603	6,572	6,637	6,701	6,705	6,779	6,897
Baltimore City	7,678	8,035	8,162	8,193	8,019	8,071	7,791	7,503	7,315
Baltimore County	9,278	9,278	9,235	9,216	9,339	9,336	9,095	9,128	9,210
Calvert	1,506	1,502	1,568	1,567	1,531	1,527	1,484	1,443	1,458
Caroline	502	506	529	542	552	556	565	556	567
Carroll	2,355	2,474	2,537	2,447	2,512	2,500	2,502	2,480	2,480
Cecil	1,461	1,559	1,620	1,619	1,619	1,598	1,518	1,518	1,512
Charles	2,218	2,297	2,441	2,493	2,492	2,338	2,460	2,447	2,435
Dorchester	405	412	448	439	470	472	480	482	484
Frederick	3,344	3,410	3,601	3,646	3,655	3,678	3,825	3,794	3,868
Garrett	463	463	456	439	445	433	413	381	370
Harford	3,309	3,519	3,603	3,517	3,538	3,571	3,531	3,468	3,597
Howard	5,137	5,311	5,638	5,793	5,715	5,833	5,844	5,917	5,979
Kent	239	239	245	237	237	238	228	204	199
Montgomery	12,989	13,362	13,484	13,376	13,528	13,527	13,519	13,831	14,144
Prince George's	10,453	11,063	11,550	10,979	10,737	10,712	9,774	9,828	10,486
Queen Anne's	662	671	687	707	699	699	657	669	685
Saint Mary's	1,376	1,414	1,437	1,456	1,511	1,505	1,459	1,485	1,489
Somerset	314	321	348	339	331	329	326	307	314
Talbot	354	351	361	370	368	382	379	392	392
Washington	1,815	1,882	1,985	2,005	2,059	2,080	2,073	2,032	2,048
Wicomico	1,499	1,577	1,601	1,605	1,620	1,598	1,590	1,590	1,576
Worcester	831	857	884	860	858	859	849	848	851
State Total	75,267	77,902	80,013	79,408	79,472	79,530	78,014	78,035	79,288

Source: MSDE

Table A21: Number of Non-Instructional Staff 2005-06 to 2013-14

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Allegany	402	406	402	403	410	405	406	385	366
Anne Arundel	2,597	2,662	2,707	2,734	2,777	2,784	2,786	2,855	2,924
Baltimore City	3,610	3,767	3,859	3,599	3,263	3,218	3,185	3,061	2,984
Baltimore	4,809	4,897	4,987	5,036	5,013	5,021	5,079	5,057	5,071
Calvert	649	652	661	682	678	669	668	664	670
Caroline	221	239	254	244	239	237	236	250	251
Carroll	980	1,008	1,022	1,050	1,082	1,065	982	990	893
Cecil	651	626	656	642	627	600	579	585	579
Charles	777	814	851	880	886	854	883	871	866
Dorchester	200	219	213	217	218	214	219	219	225
Frederick	1,572	1,610	1,681	1,726	1,699	1,712	1,736	1,748	1,749
Garrett	200	201	205	200	201	207	201	187	187
Harford	1,688	1,517	1,659	1,717	1,691	1,754	1,756	1,756	1,903
Howard	1,681	1,784	1,856	1,900	1,846	1,828	1,819	1,822	1,866
Kent	100	103	110	117	115	116	111	106	109
Montgomery	6,558	6,734	6,861	6,800	6,756	6,773	6,667	6,656	6,738
Prince George's	6,476	6,679	7,139	6,745	6,459	6,525	6,187	6,103	6,666
Queen Anne's	250	246	264	263	267	266	253	249	251
Saint Mary's	555	562	596	620	646	650	617	631	630
Somerset	126	133	136	138	128	135	138	145	151
Talbot	243	240	241	244	233	241	236	230	230
Washington	751	778	815	880	893	879	894	875	887
Wicomico	625	629	642	649	648	648	624	638	629
Worcester	289	292	292	296	300	302	299	299	296
State Total	36,007	36,796	38,109	37,812	37,116	37,159	36,632	36,452	37,197

Source: MSDE

Table A22: Regular (Non-Disabled) Pupils Transported

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Allegany	6,137	6,124	6,105	5,947	5,850	5,805	5,745	5,649	5,392
Anne Arundel	53,698	53,512	54,254	54,207	55,033	54,254	54,541	55,714	56,274
Baltimore City	23,277	23,820	23,780	24,885	24,975	24,790	25,048	28,442	21,905
Baltimore	66,998	60,052	62,278	59,438	67,557	69,775	66,850	66,829	66,678
Calvert	16,519	13,137	13,039	13,726	16,598	16,006	15,800	15,577	12,279
Caroline	4,751	4,619	4,712	4,626	4,512	4,482	4,498	4,579	4,548
Carroll	27,538	27,274	27,178	27,124	26,145	25,885	25,577	25,404	25,158
Cecil	14,760	14,921	14,927	14,596	14,807	14,544	14,409	14,264	14,433
Charles	23,542	23,902	23,923	24,788	23,435	22,532	22,760	22,139	22,445
Dorchester	4,321	4,332	4,370	4,241	4,195	4,204	4,212	4,218	4,166
Frederick	33,502	31,727	32,609	30,781	28,709	28,733	28,743	28,882	28,456
Garrett	4,529	4,511	4,413	4,297	4,223	4,079	3,943	3,884	3,852
Harford	35,193	34,066	33,643	33,061	33,484	33,225	33,088	32,888	31,901
Howard	40,117	39,923	39,923	40,670	39,079	39,600	39,600	39,161	38,839
Kent	2,140	2,040	1,951	1,927	1,865	1,927	1,873	2,024	2,009
Montgomery	90,682	90,560	90,614	91,913	92,376	93,843	95,501	94,367	93,100
Prince George's	85,852	83,246	88,340	91,382	81,581	78,145	77,442	76,544	78,737
Queen Anne's	7,688	7,716	7,742	7,737	7,706	7,688	7,665	7,664	7,624
St. Mary's	16,080	16,133	16,370	16,380	16,755	16,812	17,022	17,173	17,428
Somerset	2,860	2,879	2,832	2,834	2,809	2,776	2,800	2,798	2,788
Talbot	2,721	3,164	2,838	2,806	2,764	4,341	4,369	4,344	4,320
Washington	17,384	14,407	18,568	18,672	19,046	18,663	19,013	18,901	19,748
Wicomico	10,366	12,262	12,333	12,128	12,201	12,223	12,313	12,399	12,416
Worcester	6,162	6,294	6,274	6,213	6,195	6,128	6,210	6,192	5,970
Total State	596,817	580,621	593,016	594,379	591,900	590,460	589,022	590,036	580,466

Source: MSDE

Table A23: Change in the Number of Regular Pupils Transported

District	Percentage 2005-06 to 2009-10	Percentage 2010-11 to 2013-14	Percentage 2005-06 to 2013-14	Number 2005-06 to 2013-14
Allegany	-4.7	-7.8	-12.1	-745
Anne Arundel	2.5	2.3	4.8	2,576
Baltimore City	7.3	-12.3	-5.9	-1,372
Baltimore	0.8	-1.3	-0.5	-320
Calvert	0.5	-26.0	-25.7	-4,240
Caroline	-5.0	0.8	-4.3	-203
Carroll	-5.1	-3.8	-8.6	-2,380
Cecil	0.3	-2.5	-2.2	-327
Charles	-0.5	-4.2	-4.7	-1,097
Dorchester	-2.9	-0.7	-3.6	-155
Frederick	-14.3	-0.9	-15.1	-5,046
Garrett	-6.8	-8.8	-14.9	-677
Harford	-4.9	-4.7	-9.4	-3,292
Howard	-2.6	-0.6	-3.2	-1,278
Kent	-12.9	7.7	-6.1	-131
Montgomery	1.9	0.8	2.7	2,418
Prince George's	-5.0	-3.5	-8.3	-7,115
Queen Anne's	0.2	-1.1	-0.8	-64
St. Mary's	4.2	4.0	8.4	1,348
Somerset	-1.8	-0.7	-2.5	-72
Talbot	1.6	56.3	58.8	1,599
Washington	9.6	3.7	13.6	2,364
Wicomico	17.7	1.8	19.8	2,050
Worcester	0.5	-3.6	-3.1	-192
Total State	-0.8	-1.9	-2.7	-16,351

Source: MSDE

Table A24: Disabled Pupils Transported

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Allegany	208	207	203	199	222	208	221	253	217
Anne Arundel	1,651	15,97	1,593	1,661	1,602	1,586	1,549	1,579	1,517
Baltimore City	3,815	3,682	3,437	3,275	3,030	3,542	2,757	3,587	3,086
Baltimore	3,108	2,872	2,916	2,947	3,027	3,043	3,292	3,395	3,352
Calvert	297	283	300	315	321	332	321	304	314
Caroline	105	108	87	70	67	71	97	90	92
Carroll	597	560	600	612	607	575	473	442	439
Cecil	270	248	219	222	226	225	255	270	235
Charles	483	449	446	474	480	521	539	593	628
Dorchester	80	82	81	86	74	89	94	94	92
Frederick	836	877	923	884	872	903	869	897	910
Garrett	36	46	45	46	46	41	46	54	41
Harford	702	757	754	741	752	767	785	828	859
Howard	1,213	1,131	1,179	1,295	1,343	1,295	1,309	1,270	1,224
Kent	52	44	47	37	45	29	43	39	32
Montgomery	5,180	5,151	5,189	4,808	4,724	4,692	4,657	4,933	4,998
Prince George's	5,464	5,323	5,273	5,338	5,019	4,647	4,624	4,737	4,742
Queen Anne's	66	74	81	77	87	94	96	88	92
St. Mary's	313	348	378	381	383	422	411	428	432
Somerset	57	65	77	77	63	62	52	65	78
Talbot	15	14	13	13	12	13	30	28	30
Washington	372	371	370	408	368	401	393	385	423
Wicomico	234	286	365	330	280	270	283	288	284
Worcester	50	61	64	67	76	62	68	70	75
Total State	25,204	24,636	24,640	24,363	23,726	23,890	23,264	24,717	24,192

Source: MSDE

Table A25: Change in Number of Disabled Pupils Transported

District	Percentage Change 2005-06 to 2009-10	Percentage Change 2010-11 to 2013-14	Percentage Change 2005-06 to 2013-14	Numerical Change 2005-06 to 2013-14
Allegany	6.7	-2.3	4.3	9
Anne Arundel	-3.0	-5.3	-8.1	-134
Baltimore City	-20.6	1.8	-19.1	-729
Baltimore	-2.6	10.7	7.9	244
Calvert	8.1	-2.2	5.7	17
Caroline	-36.2	37.3	-12.4	-13
Carroll	1.7	-27.7	-26.5	-158
Cecil	-16.3	4.0	-13.0	-35
Charles	-0.6	30.8	30.0	145
Dorchester	-7.5	24.3	15.0	12
Frederick	4.3	4.4	8.9	74
Garrett	27.8	-10.9	13.9	5
Harford	7.1	14.2	22.4	157
Howard	10.7	-8.9	0.9	11
Kent	-13.5	-28.9	-38.5	-20
Montgomery	-8.8	5.8	-3.5	-182
Prince George's	-8.1	-5.5	-13.2	-722
Queen Anne's	31.8	5.7	39.4	26
St. Mary's	22.4	12.8	38.0	119
Somerset	10.5	23.8	36.8	21
Talbot	-20.0	150.0	100.0	15
Washington	-1.1	14.9	13.7	51
Wicomico	19.7	1.4	21.4	50
Worcester	52.0	-1.3	50.0	25
Total State	-5.9	2.0	-4.0	-1,012

Source: MSDE

Table A26: Cost per Pupil Transported

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Allegany	\$825	\$851	\$901	\$1,037	\$1,063	\$1,051	\$1,090	\$1,135
Anne Arundel	\$617	\$657	\$658	\$696	\$709	\$748	\$808	\$869
Baltimore City	\$1,082	\$1,137	\$1,420	\$1,261	\$1,291	\$1,331	\$1,491	\$1,473
Baltimore	\$671	\$799	\$861	\$960	\$876	\$871	\$957	\$987
Calvert	\$541	\$749	\$790	\$851	\$757	\$826	\$812	\$873
Caroline	\$610	\$679	\$732	\$853	\$899	\$858	\$893	\$873
Carroll	\$562	\$603	\$639	\$703	\$732	\$749	\$795	\$838
Cecil	\$504	\$546	\$572	\$636	\$617	\$637	\$639	\$654
Charles	\$592	\$700	\$775	\$836	\$896	\$941	\$1,010	\$1,096
Dorchester	\$574	\$661	\$663	\$739	\$714	\$715	\$774	\$796
Frederick	\$510	\$625	\$641	\$781	\$752	\$752	\$805	\$870
Garrett	\$769	\$839	\$873	\$973	\$962	\$1,030	\$1,022	\$1,048
Harford	\$570	\$649	\$726	\$876	\$886	\$919	\$974	\$1,047
Howard	\$579	\$664	\$721	\$747	\$784	\$807	\$840	\$889
Kent	\$685	\$830	\$864	\$1,166	\$1,069	\$1,123	\$1,206	\$1,143
Montgomery	\$888	\$968	\$1,026	\$1,151	\$1,157	\$1,167	\$1,174	\$1,112
Prince George's	\$1,218	\$1,210	\$1,210	\$1,297	\$1,398	\$1,535	\$1,565	\$1,589
Queen Anne's	\$618	\$664	\$714	\$785	\$797	\$814	\$869	\$864
St. Mary's	\$585	\$661	\$700	\$807	\$820	\$843	\$860	\$892
Somerset	\$702	\$735	\$780	\$907	\$963	\$977	\$986	\$1,005
Talbot	\$676	\$655	\$891	\$1,019	\$1,115	\$713	\$649	\$743
Washington	\$428	\$617	\$481	\$590	\$529	\$652	\$638	\$700
Wicomico	\$568	\$516	\$544	\$640	\$652	\$665	\$653	\$656
Worcester	\$644	\$681	\$747	\$875	\$887	\$896	\$927	\$1,017
State Average	\$751	\$822	\$867	\$951	\$956	\$991	\$1,032	\$1,058

Source: MSDE

**Table A27: Percent Change in Per Pupil Transportation Costs
(Regular and Disabled)**

District	2005-06 to 2009-10	2010-11 to 2012-13	2005-06 to 2012-13
Allegany	29	7	38
Anne Arundel	15	23	41
Baltimore City	19	14	36
Baltimore	31	13	47
Calvert	40	15	61
Caroline	48	-3	43
Carroll	30	15	49
Cecil	22	6	30
Charles	51	22	85
Dorchester	24	11	39
Frederick	48	16	71
Garrett	25	9	36
Harford	55	18	84
Howard	35	13	54
Kent	56	7	67
Montgomery	30	-4	25
Prince George's	15	14	31
Queen Anne's	29	8	40
St. Mary's	40	9	52
Somerset	37	4	43
Talbot	65	-33	10
Washington	24	32	63
Wicomico	15	1	15
Worcester	38	15	58
State	27	11	41

Source: MSDE

**Table A28: Pupils Transported as a Percent of Total Enrollment
(Regular and Disabled Students Transported)**

District	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Allegany	64	65	66	65	66	66	66	66
Anne Arundel	75	75	76	76	77	75	74	75
Baltimore City	30	31	32	35	34	34	33	38
Baltimore	65	59	62	60	68	70	67	67
Calvert	96	77	76	81	99	96	96	96
Caroline	90	85	86	83	83	82	83	84
Carroll	98	96	97	98	96	95	95	95
Cecil	91	92	92	91	93	91	92	92
Charles	92	92	92	95	89	86	87	85
Dorchester	92	95	95	93	94	93	93	93
Frederick	87	82	83	78	74	74	74	74
Garrett	96	98	97	96	96	96	95	97
Harford	89	87	87	86	89	88	88	88
Howard	86	84	84	85	81	81	80	78
Kent	87	85	85	86	86	90	88	95
Montgomery	69	69	70	70	70	70	70	68
Prince George's	67	66	71	75	68	65	65	66
Queen Anne's	101	100	100	100	99	100	100	100
St. Mary's	99	99	100	99	102	100	101	101
Somerset	99	101	99	100	99	98	98	99
Talbot	61	71	65	64	63	97	98	96
Washington	85	70	88	88	89	87	87	87
Wicomico	74	87	88	87	86	85	88	87
Worcester	93	94	93	93	94	93	94	94
Total State	72	70	73	73	73	72	72	72

Source: MSDE

**Table A29: Percentage Change in Pupils Transported
As a Percent of District Total Enrollment**

District	2005-06 to 2009-10	2010-11 to 2012-13	2005-06- to 2012-13
Allegany	1	0	2
Anne Arundel	2	-2	0
Baltimore City	4	4	8
Baltimore	3	-2	2
Calvert	3	-3	0
Caroline	-7	1	-6
Carroll	-2	0	-2
Cecil	2	-1	1
Charles	-3	-5	-7
Dorchester	2	-1	1
Frederick	-13	0	-13
Garrett	0	0	0
Harford	0	0	-1
Howard	-5	-3	-7
Kent	-1	9	8
Montgomery	1	-2	-1
Prince George's	1	-2	-1
Queen Anne's	-1	1	-1
St. Mary's	3	-1	2
Somerset	0	1	1
Talbot	2	33	35
Washington	4	-3	1
Wicomico	12	2	14
Worcester	1	0	1
Total State	1	-1	0

Source: MSDE