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# **Maryland Special Education Expenditure Project**

## **Final Report**

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**February 7, 2003**

*Submitted to:*  
Maryland State Department of Education

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# Executive Summary

## Background

In the fall of 1999, the Thornton Commission on Education Finance, Equity, and Excellence was established in Maryland. It was charged with reviewing current education funding formulas and accountability measures, and providing recommendations in six areas of policy concern, the first of which is “ensuring adequacy of funding for students in public schools.” The Commission subsequently contracted with Augenblick & Myers, Inc. (A&M) to conduct an adequacy study for the State, using the “professional judgment” and the “successful schools” approaches.<sup>1</sup> In result, A&M produced a base per pupil cost, “an estimate of what it costs to adequately educate a student who has no special needs,” as well as an additional cost associated with adequately educating a student with special needs. At the same time, Management Analysis and Planning, Inc. (MAP) conducted a study on adequacy in Maryland for the New Maryland Education Coalition.<sup>2</sup> As it was deemed outside the scope of this study to derive an expenditure for special education services, MAP recommended that the state participate in the Special Education Expenditure Project, which would “allow decision makers to begin to relate special education spending to student outcomes, and provide sufficient information for informed policymaking.”

Taking the aforementioned studies’ recommendations into account, the Commission’s Final Report recommended a base per pupil amount and an additional expenditure amount for special education students, and the Maryland State Department of Education (MSDE) contracted with the Center for Special Education Finance (CSEF) at the American Institutes for Research to conduct a SEEP. Based upon the recommendations provided in the Thornton Report, the Maryland State Legislature passed adjustments to the special education funding formula in Senate Bill 856, entitled the Bridge to Excellence in Public Schools Act. This Act, signed into law in May of 2002, increases state aid for special education beginning in fiscal year 2004.

## Objective of the Study

The purpose of the Maryland Special Education Expenditure Project is to develop special education expenditure information for the state and to compare this information with the expenditure recommendations provided in the final report of the state’s Thornton Commission on Education Finance, Equity, and Excellence, as enacted into law by the Bridge to Excellence in Public Schools Act of 2002. Special education expenditure information was derived through analysis of extant databases and survey data designed to supplement existing files. These data were then compared to the estimated allocation of

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<sup>1</sup> Augenblick & Myers, Inc. (2001).

<sup>2</sup> Management Analysis & Planning, Inc. (2001).

state special education aid, as delineated in the Bridge to Excellence Act, to determine the state's contribution to special education funding through FY 08.

## **General Approach**

The Maryland SEEP involves both the examination of existing databases at the state and district levels and self-administered surveys at the district and teacher levels. In order to ensure representation of the five geographic regions across the state, the MSDE proposed a sample of nine LEAs across these regions (one of which declined to participate, resulting in a sample of eight LEAs). Across the eight districts, approximately 219 schools were randomly selected to participate. District special education administrators, school administrators, staff knowledgeable about special education programs and services, general education teachers who interacted with students with disabilities, special education teachers and related service providers, and special education aides were surveyed about how they spent their time and about the resources available in their classrooms. In addition, special education teacher and related service providers filled out surveys about students with disabilities for whom they provided services. Documents and databases requested include budgets, salary reports, enrollment reports, personnel listings, rosters, and schedules.

## **Summary of Findings**

During the school year 2001-2002, 111,543 special education students received special education services in Maryland. The total education spending on all special education students amounted to \$1.8 billion (see Exhibit 1). Approximately 73 percent of the total (\$1.3 billion) was spent on special education services. Regular education services for special education students approximated \$465.8 million, and an additional \$13.6 million was spent on other special needs programs (e.g., Title I, programs for English language learners, and Gifted and Talented Education) for special education students.

The total per pupil expenditure amounts to \$15,925 (see Exhibit 3a). This amount includes \$11,626 per special education pupil on special education services, and \$4,176 on regular education services. If one excludes expenditures on capital facilities and transportation services, the total per pupil expenditure amounts to \$13,287, with an average special education expenditure of \$10,169.

The ratio of total spending to educate a special education student to the spending to a school-aged regular education student is estimated to be 2.67. This suggests that, on average, Maryland spends 167 percent more on a special education student than on a regular education student.

Of the \$1.3 billion spent on special education services, 66 percent (\$855.1 million) was allocated to instructional programs operated within public school, 21 percent (\$270.8 million) was allocated to instructional programs operated outside public schools, 8 percent (\$102.0 million) was allocated for transportation services, 4 percent (\$57.9 million) was allocated to administration and support services, and 1 percent (\$11.0

million) was allocated to other instructional programs such as homebound and summer school.

Formal tests of whether the average per pupil expenditure on each disability category differs from one another reveal that there is not much variation across the different groups of students. The average expenditures for students with traumatic brain injury (TBI), speech/language impairment (SL), emotional disturbance (ED), mental retardation (MR), and specific learning disability (LD) students are not statistically different from each other.

There is also a second group of disabilities that are not statistically significantly different from each other. This group is composed of students with hearing impairment (HI), autism (AT), multiple disability (MU), other health impairment (HL), orthopedic impairment (OI), visual impairment (VI), developmental delay (DD), and preschool (PR) students.

This report finds that there are two clusters of disabilities in terms of expenditures: the first one with an average expenditure between \$10,441 and \$12,594, and a second cluster with an average expenditure between \$17,560 and \$26,230.

In order to examine how variations across disability categories may be associated with variations in severity of disability, the ABILITIES Index was used. The Index is a measure of a student's functional abilities and was used as a survey instrument in SEEP to obtain additional information about the special education students sampled for the Maryland study. A student with a more severe disability will have a higher score on the ABILITIES Index than a student with a less severe disability. These scores were compared with expenditures, and higher ABILITIES scores were found to be associated with higher special education expenditures.

In addition to providing special education expenditure information, the research team was charged with linking these data with the recommendations for funding formula changes made by the state's Thornton Commission. Specifically, the research team was to project estimated changes in the state's share of special education spending over time. Toward this end, the research team examined expenditures, funding, and expected enrollment changes over time for various types of students.

The research team first examined enrollment levels (from the 1998-1999 school year to the 2001-2002 school year) to forecast changes that could affect special education expenditures. Throughout these four years, special education enrollment has remained fairly constant. Meanwhile, total enrollment of all students across the state has increased slightly, which indicates that the percentage of students receiving special education services has decreased slightly but steadily each year from 13.27 percent in 1998-99 to 13.06 percent in 2001-02.

If special education enrollments continue to remain at their current rate, special education spending might be expected to remain fairly constant. Before drawing final conclusions,

however, it is necessary to look at the composition of special education enrollments. The research team divided the special education students into three groups: high expenditures (which consists of TBI, SL, ED, MR, and LD), low expenditures (HI, AT, MU, HL, OI, VI, and DD), and preschool. The low expenditure group, which accounts for the majority of special education students in the state, is decreasing at a rate of 1.6 percent per year, while the high expenditure group is increasing at a rate of over 8 percent per year. The number of preschool students is increasing at a rate of approximately 3 percent per year. Students placed in schools outside the public school district (i.e., external placements) are another category of students that the research team examined. The enrollment of these students has grown at a rate of 4.7 percent per year, which will affect special education expenditures in the coming years due to the fact that the expenditures for these students' services are quite high.

The research team also created forecasts of special education spending, based on the SEEP estimate of \$1.1 billion for special education services in 2001-02 (which does not include capital outlay or transportation expenditures), compared to estimates of state special education revenues through FY 08. As such, the state supported 22.6 percent of total special education spending in FY 02. After the new funding formula is implemented in 2004, it is estimated that the state's share will rise to 24.6 percent, increasing to 32.8 percent in 2008.

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# Chapter I. Introduction

## Overview of the Study

### Background

In the fall of 1999, the Thornton Commission on Education Finance, Equity, and Excellence was established in Maryland. It was charged with reviewing current education funding formulas and accountability measures, and providing recommendations in six areas of policy concern, the first of which is “ensuring adequacy of funding for students in public schools.” The Commission subsequently contracted with Augenblick & Myers, Inc. (A&M) to conduct an adequacy study for the State, using the “professional judgment” and the “successful schools” approaches.<sup>3</sup> In result, A&M produced a base per pupil cost, “an estimate of what it costs to adequately educate a student who has no special needs,” as well as an additional cost associated with adequately educating a student with special needs. At the same time, Management Analysis and Planning, Inc. (MAP) conducted a study on adequacy in Maryland for the New Maryland Education Coalition.<sup>4</sup> As it was deemed outside the scope of this study to derive an expenditure amount for special education services, MAP recommended that the state participate in the Special Education Expenditure Project, which would “allow decision makers to begin to relate special education spending to student outcomes, and provide sufficient information for informed policymaking.” Taking the aforementioned studies’ recommendations into account, the Commission’s Final Report recommended a base per pupil amount and an additional expenditure amount for special education students, and the Maryland Department of Education contracted with the Center for Special Education Finance (CSEF) at the American Institutes for Research to conduct a SEEP.

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<sup>3</sup> Augenblick & Myers, Inc. (2001).

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## **Purpose of the Study**

The purpose of the Maryland Special Education Expenditure Project is to develop special education expenditure information for the state and to compare this information with the expenditure recommendations provided in the final report of the state's Thornton Commission on Education Finance, Equity, and Excellence, as enacted into law by the Bridge to Excellence in Public Schools Act of 2002. Special education expenditure information was derived through analysis of extant databases and survey data designed to supplement existing files. These data were then compared to funding recommendations delineated in the Bridge to Excellence Act to determine the state's contribution to special education funding through fiscal year 2008.

## **Research Questions and Conceptual Framework**

The conceptual framework for this study is two-tiered in approach. First, the study team was charged to develop the following expenditure-related comparisons at the local school system level: total special education expenditures by fund source (federal, state, and local); expenditures related to staffing categories; expenditures related to environmental settings; and, expenditures related to student disabilities. Second, the study team was charged with linking local expenditures to the recommendations for systemic funding formula changes made by the state's Thornton Commission.

## **The National Special Education Expenditure Project (SEEP)**

Interest in, and concern about, special education finance policy are not unique to Maryland. Indeed, such concerns have increased across the states, as well as at the federal level, in recent years. According to *State Special Education Finance Systems and Expenditures, 1999-2000*, "over one-half of the reporting states (28 of 46) have reformed the way they fund special education over the past six years. In addition, 46% of the reporting states (21 of 46) are considering future formula changes, and 11 of these are states that have already made changes in the past six years."<sup>5</sup> In addition, the reauthorized *Individuals with Disabilities Education Act* (IDEA-97) changed special education funding provisions at the federal level.

Generally, however, special education expenditure data have been lacking. Prior to the current national SEEP, the most recent national study on special education expenditures and their relationship to regular education was conducted by Decision Resources Corporation for the 1985-86 school year (Moore et al., 1988). Reflecting the need for updated, comprehensive, and accurate information regarding special education expenditures and their relationship to regular education, IDEA-97 required studies to measure and evaluate the impact of the IDEA and the effectiveness of state efforts to provide a free, appropriate public education to all children with disabilities (per Sections 618 of Part B and 674). Under this authorization, the Office of Special Education Programs (OSEP), U.S. Department of Education, funded the National Special Education

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<sup>5</sup> Draft, *State Special Education Finance Systems, 1999-2000*. Parrish, et al. (October 2001). Center for Special Education Finance.



Expenditure Project (SEEP)—the first national study of special education expenditures in 15 years.

Currently in the final analysis and dissemination phase,<sup>6</sup> the national SEEP is providing OSEP with total expenditures to educate special education students, including the additional expenditure to educate this group of students as compared to regular education students, with breakdowns by type of state, district, school, and student. The national SEEP is also examining such factors as the relationship between student poverty and the level of spending for students with disabilities, expenditures relating to inclusion, assessment, and the provision of services to preschool children, as well as detailed analyses regarding the relationship between regular and special education spending.

## Study Approach

### ***The Maryland Special Education Expenditure Project***

#### *Sampling Design*

A key objective of the Maryland SEEP study was to estimate expenditures of special education and related services, by funding source, staffing categories, types of placement settings, and student disabilities. Survey data was collected during the 2001-02 school year to accomplish this objective (respondents completed surveys with 2001-02 information). The primary focus of the data collection effort was at the Local Educational Agency (LEA) level, as only the individual LEAs can provide much of the detailed information required, such as what specific services were provided, where they were provided, and who was involved in the provision of these services.

To address this objective, the research team worked with the MSDE to select a sample of counties for participation in the study. In order to produce data that could be considered representative of the state, the MSDE proposed a sample of LEAs selected from the five regions in Maryland (the Eastern Shore, Central Maryland, Western Maryland, Washington suburbs, and Baltimore City). Although nine LEAs were initially selected, one declined to participate. This sample of eight LEAs allows for some generalization of findings across the state.

There are approximately 700 schools in the 8 selected districts. A random sample of elementary, middle, and high schools was selected from within the 8 districts. Larger numbers of schools were selected from larger districts. For example, if one district had twice as many elementary schools as another, then twice as many elementary schools were selected from that district. To ensure a sufficient number of respondents, approximately 30 percent of schools in the sample districts (219 total) were selected. In

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<sup>6</sup> Reports on project results are continually made available at [csef.air.org](http://csef.air.org) as they are released.

order to reflect the statewide proportion of primary and secondary schools, more elementary schools were selected than secondary schools.

Samples of regular education teachers, special education teachers/related service providers, and special education students were selected from within each selected school. The sample of regular education teachers included up to nine teachers from each selected secondary school and up to six teachers from each selected primary school. The sample of special education teachers included up to eight teachers from each selected secondary school and up to eight teachers from each primary school. Teachers were selected randomly by the principal using a teacher roster and a set of written instructions from the SEEP study team.

In addition, a sample of special education students was selected. Each selected special education teacher or related service provider was asked to follow a set of instructions as to how to select two of their students and to complete a questionnaire for these two students. Sampling instructions were included with each teacher and related service provider survey to ensure that students were selected properly, as well as to ensure appropriate representation of students with low-incidence disabilities. Special education students being served across county lines were also included in the sample. District directors of special education randomly selected up to three students who were served across county lines, selecting students with low-incidence disabilities first.

#### *The Resource Cost Model, or “Ingredients,” Approach*

To determine the patterns of expenditure on students with disabilities, detailed information on the allocation and utilization of personnel and non personnel resources was needed. The data collection was organized around two major questions:

- What specific ingredients (i.e., resources) are used to serve students with disabilities?
- How are these ingredients organized for service delivery?

To address these two questions, we used counts of full-time equivalents, or FTEs, of self-contained classroom and resource teachers, as well as their class sizes or caseloads. By combining these data with information on rates of compensation (i.e., salaries and benefits for full-time personnel), we estimated expenditures for various services. Moreover, depending on which rates of compensation are selected for costing out these resources, one could ascertain the extent to which observed variations in expenditures reflect variation in the intensity and levels of services, as opposed to the variation in the prices paid for comparable personnel or non-personnel inputs.

This ingredients approach is referred to as the “Resource Cost Model” (RCM), which is a bottom-up approach to the collection of data on education service delivery systems. It organizes detailed information on individual resources according to the services they are designed to provide. The services might include consultation of resource teachers with regular classroom teachers, pull-out programs in resource rooms in specific curricular

areas, or integrated/inclusionary services provided in regular classrooms to students with special needs.<sup>7</sup>

An important feature of the RCM is that it focuses on the service delivery system as the primary unit of analysis. This is among the features that distinguish the RCM from traditional fiscal or accounting-based approaches that tend to organize information by objects and functions of expenditure. The service delivery system is more than just a way of organizing information. The service delivery system is a reflection of the way resources are organized for production, and for this reason, it creates a useful foundation for the analysis of educational productivity, student need, and the adequacy and equity of school funding. See Appendix G for a detailed description of the Resource Cost Model approach.

#### *Data Sources*

In addition to using existing data from state sources containing information about the implementation of special education programs (e.g., the revenues received and numbers of children who are eligible or being served by the program), we developed structured surveys at the LEA and teacher levels to collect more detailed information. We outline below the various levels of data collection at the state and LEA levels. In general, the state and LEA data collection involved a request for documents and the distribution of surveys.

#### *State Data Sources*

As part of the feasibility study conducted by AIR, we examined existing databases available from the Maryland State Department of Education. We have explored fiscal data systems, personnel data systems, and student data systems. All of these data systems have elements that facilitate the study and provide sources of some of the data that would have otherwise been collected from LEAs. For example, the student data system as represented in the Special Services Information System (SSIS) provides valuable information on individual students with respect to their background characteristics, disabilities, and types and amounts of services received. However, it does not provide information on the intensity of services as would be reflected through class sizes or caseloads associated with the specific service providers.

The fiscal data system provides basic information on special education spending by LEA, but provides no way to link expenditures to specific services or students. However, it does provide an overview of spending patterns and broad breakdowns of personnel and non-personnel components of spending.

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<sup>7</sup> For a more detailed description of the resource cost model approach to education cost analysis, see the following: Chambers, J., & Parrish, T. (1994). "Modeling Resource Costs." In H. Walberg & S. Barnett (eds.), *Cost Analysis for Education Decisions: Methods and Examples*. Greenwich, CT: JAI Press. For a description of the potential policy applications of the results of RCM analyses, see Parrish's "K-12 Categorical Programs" in the same volume.

The personnel reports are in an aggregate form and provide some information on the total numbers of full-time equivalent staff who provide various types of services within and outside of special education. However, this database does not link staff precisely to specific types of services or students. Moreover, salaries and benefits are separated from staff counts.

Each of these databases provides a piece of the puzzle from which special education spending patterns are derived. Unfortunately, there is no explicit linkage between these databases.

#### *Local Educational Agency (LEA) Level Data Sources*

Many of the data elements that are needed for the RCM approach can only be obtained at the LEA level. We worked with the MSDE to determine if some of this data could be obtained from existing sources at the LEA level to minimize the need for surveys to be completed. We determined that there is not a uniform data system used by the LEAs and much of the data we needed was not accessible through existing sources. As an alternative, we developed a set of survey instruments that we administered to LEA staff and teachers. The survey instruments were designed to collect data at various levels within the LEA.

#### *Survey Instruments*

One of the objectives of the district-level data collection is to obtain a comprehensive picture of the allocation of resources used to provide special education services at the central office. The surveys used within the LEAs are briefly described below:

**Part I. Special Education Program.** Through Part I, we obtained expenditures on the administration and support of the special education program, on special education programs at the school site as well as homebound/hospital programs, and on services provided to students served outside the district.

**Part II. Transportation Program.** Transportation is a significant part of special education spending, particularly for those students with disabilities who require special transportation services. Part II was designed to collect information on district spending on transportation and the numbers of special education students requiring transportation services.

**Part III. Fiscal Information.** Part III facilitated the calculation of total revenues and expenditures for the districts. These are total district revenues and expenditures, not just those related to special education services.

**Central Office Special Education Professional Staff Questionnaire.** Another objective of LEA data collection was to obtain a comprehensive picture of the allocation of resources at the central office. A survey was developed to collect information related to a

professional central office staff member's job title and responsibilities, education background and experience, and compensation. This survey was administered to a sample of up to 6 central office special education staff in each participating district. Examples of such staff include: district level special education administrators, psychologists, social workers, counselors, and nurses.

A critical part of the Maryland SEEP was the collection of information about the services provided to special education students by regular and special education teachers, and related service providers, and detailed information about the services provided to specific students, as reported by their teachers.

**Information About a Special Education Student with an External Placement.** To capture a comprehensive picture of all special education services provided by districts, this questionnaire collected detailed information about special education students whose needs cannot be met within the district and therefore are served across county lines. This includes students placed in a non-public school or in a public school in a different district. The information requested included information about the student's background, the tuition paid, placement type, and other special services provided to the student.

**General Education Teacher and Special Education Teacher/Related Service Provider.** A general education teacher questionnaire was designed to collect information about a teacher's employment status, the direct services he or she provides to students, the settings in which he or she provides those services, assessment, evaluation, IEP-related activities, educational background and experience, and compensation. A similar survey was administered to special education teachers/related service providers. In addition to the information listed above, special education teachers/related service providers were asked about the disability categories of the students they serve and the proportion of their time spent providing services in various special education settings, such as resource and special day classes.

**Information about a Special Education Student.** The SEEP study team also designed a questionnaire to collect information about special education students. This questionnaire was completed by special education teachers and related service providers. Questions were included about each student's background, the nature of his or her disability, the educational services provided, the contexts in which each service is provided, and the professionals involved in providing each service.

#### *Collaboration with LEAs*

One of the most challenging issues involved in data collection was in gaining the cooperation of the respondents. In several of the LEAs, we were required to submit a separate request to do research within the county. Although this was time consuming, we were granted permission to conduct research in each county where we made the request. Each county also has their own requirements for principal consent and parental consent. Again, these requirements delayed the study, but did not prove to be insurmountable. To recruit and sustain meaningful participation among selected LEAs, the MSDE offered a monetary incentive to participating LEAs and teachers. We believe this incentive served

to improve the response rate for this study. The MSDE also provided support by informing the participants of the importance of the study and making them aware of the significance of their contribution.

The SEEP study team mailed the surveys to the school districts and schools between January 28 and February 8, 2002. A team of four data collectors contacted the districts and some schools by phone, fax, or email immediately after the mailing. After the initial contacts, there were a series of follow-up contacts made to ensure that the surveys would be complete by the March 15, 2002 due date. For some schools with special circumstances, the due date was extended until April 15.

## **Organization of Report**

- Chapter II. SEEP-Derived Estimates of Special Education Spending
- Chapter III. Estimated Changes in State Share of Special Education Spending Over Time
- References
- Appendices

## Chapter II. SEEP Estimates of Expenditures on Special Education Students

This chapter presents expenditure estimates derived from data collected for the Maryland Special Education Expenditure Project (SEEP) and compares them with data from the national SEEP and ten other states that contracted for independent SEEP analyses.<sup>8</sup>

### A Conceptual Framework for Analyzing Expenditures on Special Education Students

Before discussing findings, it is important to distinguish between two concepts: *total special education spending* and *total spending to educate a special education student*. The first, total special education spending, includes amounts used to employ special education teachers, related service providers, and special education administrators, as well as spending on special transportation services and non-personnel items (e.g., materials, supplies, technological supports) purchased for the special education program. Some of these total special education expenditures may actually replace the expenditures on services that special education students would have received if they had been enrolled in a regular education program.

In contrast, the *total spending to educate a special education student* includes all school resources, including special education, regular education, and other special needs programs (e.g., Title I, programs for English language learners, and Gifted and Talented Education (GATE)) used to provide a comprehensive educational program to meet student needs.

With this distinction in mind, the additional expenditure attributable to special education students is measured by the difference between the *total spending to educate a special education student* (i.e., a student who receives any special education services) and the *total spending to educate a regular education student* (i.e., a student who does not receive any special education services). This concept of additional expenditure emphasizes that what is being measured is a reflection of actual spending patterns on special and regular education students and not a reflection of some ideal concept of what it should cost to educate either student. The numbers presented in this report represent “*what is*” rather than “*what ought to be*.”

An example helps clarify this concept: consider a student who is served entirely within a special class designed for students with disabilities. This kind of placement is typically provided only to students with severe disabilities and with the most significant special needs. In such cases, virtually all of the instructional and related service personnel would be included under special education spending. However, some of the services these

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<sup>8</sup> The ten other states include: Alabama, Delaware, Indiana, Kansas, Missouri, New Jersey, New York, Ohio, Rhode Island, and Wyoming. The states are not named in the tables in order to ensure confidentiality.



students receive in a special class replace instruction that is provided to other students in a regular education classroom. Thus, the only way to measure the additional expenditures is to compare the total spent to educate these students to the total spent to educate their regular education counterparts.

Another important conceptual issue that needs to be addressed arises from the use of the term *expenditure*. Previous national studies of special education have used the term *cost* rather than *expenditure*.<sup>9</sup> However, all of these previous studies and this current study are actually *expenditure* studies. This report has deliberately used the term *expenditure* instead of *cost* to emphasize the fact that all that is being measured is the flow of dollars. The word *cost*, in contrast to *expenditure*, implies that one knows something about results. To say it *costs* twice as much to educate a special versus a regular education student implies that one is holding constant what is meant by the term “educate.” All of these studies (including the present study) are focused on expenditures, with no considerations of outcomes. Expenditure figures that follow represent an estimate of the current behavior of the schools and districts across the nation and imply nothing about what spending is required to provide similar results for students with disabilities.

This chapter is divided into the following sections:

- Total Spending on Special Education Students
- Total Per Pupil Spending on Special Education Students
- Additional Expenditures to Educate a Special Education Student
- Allocation of Special Education Expenditures in Maryland
- Variations in Per Pupil Expenditures by and Within Disability Categories
- Variations in Per Pupil Expenditures by ABILITIES Index Score (a measure of students’ functional abilities)

Generally, these sections focus on the total spending to educate special education students, except for the *Allocations of Special Education Expenditures in Maryland* section, which focuses on total special education spending.

## **Total Spending on Special Education Students**

During the 2001-02 school year, total education spending on all special education students amounted to \$1.8 billion in Maryland (see Exhibit 1). Approximately 73 percent of the total (\$1.3 billion) was spent on special education services. \$465.8 million was spent on regular education services for special education students, and an additional \$13.6 million was spent on other special needs programs (e.g., Title I, programs for English language learners, and GATE) for special education students.

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<sup>9</sup> See Rossmiller et al. (1970), Kakalik et al. (1981), and Moore et al. (1988).

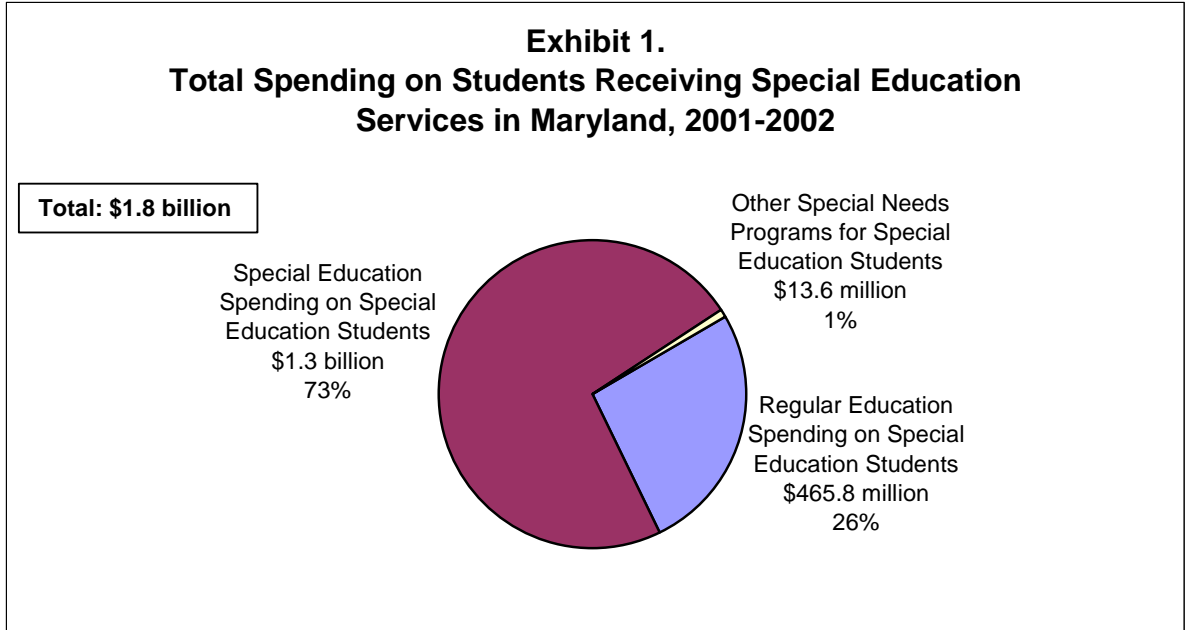
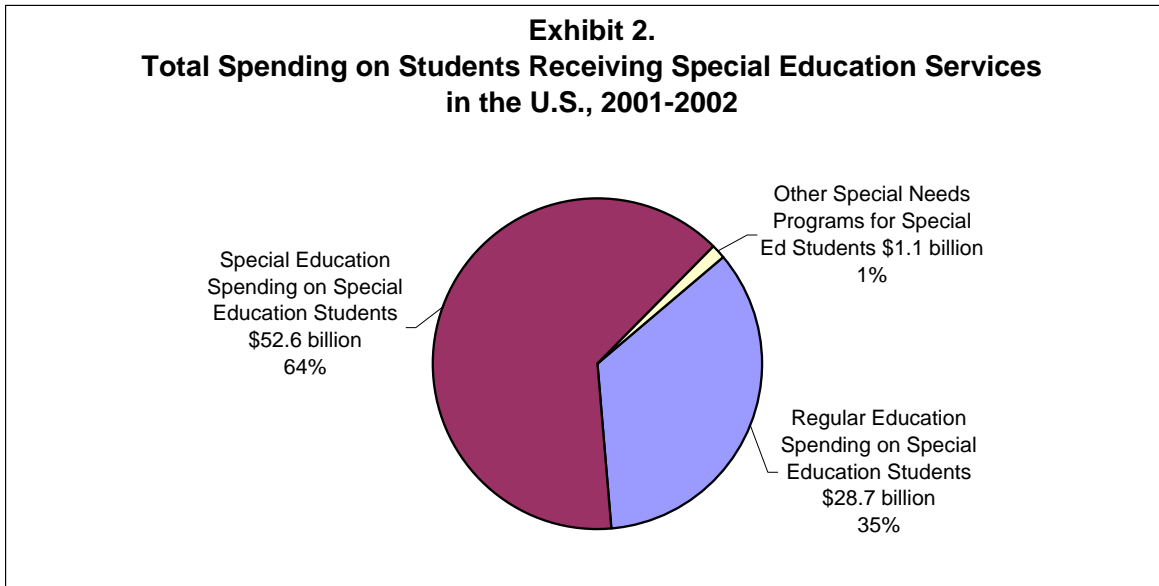


Exhibit 2 shows the national figures for the expenditures on special education students for the 2001-02 school year.<sup>10</sup> Of the total expenditures on special education students, the country as a whole spent a smaller percentage on special education services, about 64 percent, compared to Maryland's 73 percent.



<sup>10</sup> U.S. expenditures were calculated for the 1999-2000 school year and adjusted for 5.3 percent inflation over the two school years for comparison to Maryland 2001-02 data.

## Total Per Pupil Spending on Special Education Students

Total spending to educate a special education student in Maryland amounts to, on average, \$15,925 (see Exhibit 3a). This amount includes \$11,626 per special education pupil on special education services, and \$4,176 on regular education services. An estimated population of 111,543 special education students received these educational services in Maryland during the 2001-02 school year.<sup>11</sup>

Fewer than 4 percent of special education students (4,191) also received other special needs services, such as Title I, programs for English language learners, and GATE. The average expenditure per student served in these other special programs was approximately \$3,256.

### Exhibit 3a. Total Education Spending to Educate Special Education Students in Maryland, 2001-02

Spending Components	Total Expenditures	Total Population of Special Education Students	Expenditure Per Student Served
Total Special Education Expenditures	\$1,296,818,531	111,543	\$11,626
Total Regular Education Expenditures	\$465,832,615	111,543	\$4,176
Total Other Special Needs Programs	\$13,645,178	4,191	\$3,256
<b>Total Expenditure to Educate Special Education Students</b>	<b>\$1,776,296,324</b>	<b>111,543</b>	<b>\$15,925<sup>12</sup></b>

Exhibit 3b shows total education spending to educate school-aged students, or in other words, this exhibit excludes total spending to educate preschool students in Maryland. During the school year 2001-2002, the total population of school-aged students in Maryland amounts to 105,571, and the total expenditure amounts to \$1.6 billion.

<sup>11</sup> The population of special education students used in this analysis for the school year 2001-02 was 111,543 students. MSDE provided data from the December 1, 2001 SSIS child count, which included 111,551 students. Since no data were collected for students with deaf-blindness, the eight students with deaf-blindness in the state could not be represented in this study, bringing the total number of students represented in this study to 111,543.

<sup>12</sup> This figure is not the sum of the cells in the column because the “other special needs programs” figure is based only on the 4,191 students actually receiving other special needs services.

The average per pupil spending to educate school-aged students is \$15,340, with a per pupil special education average of \$10,924, and a regular education per pupil average of \$4,287. Formal tests show that the school-aged per pupil average is not statistically significantly different than the per pupil average for the whole population of students in Maryland.

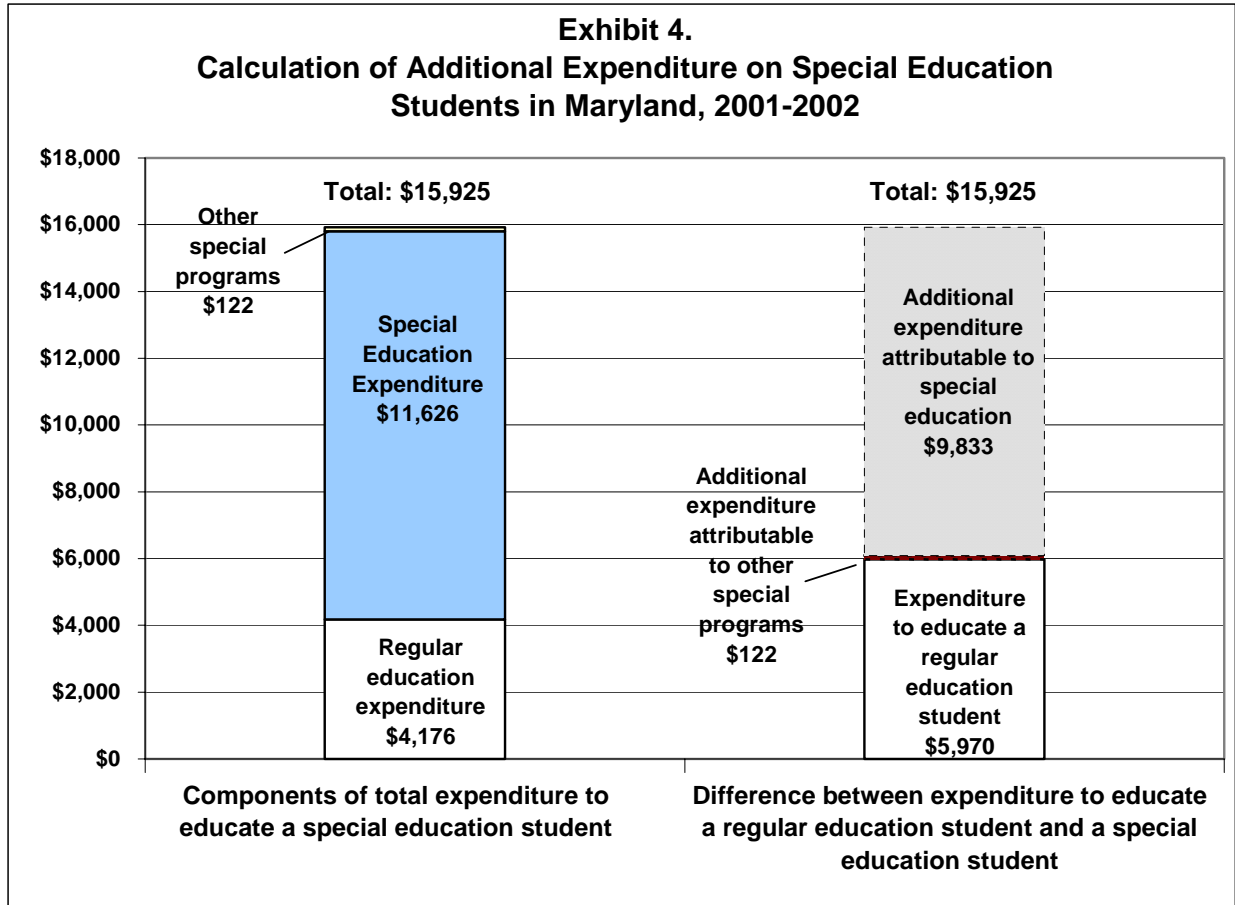
**Exhibit 3b. Total Education Spending to Educate School-Aged Special Education Students in Maryland, 2001-02**

Spending Components	Total Expenditures	Total Population of School-Aged Special Education Students	Expenditure Per School-Aged Student Served
Total Special Education Expenditures	\$1,153,275,539	105,571	\$10,924
Total Regular Education Expenditures	\$452,538,943	105,571	\$4,287
Total Other Special Needs Programs	\$13,645,178	4,191	\$3,256
<b>Total Expenditure to Educate School-Aged Special Education Students</b>	<b>\$1,619,459,660</b>	<b>105,571</b>	<b>\$15,340</b>

**Additional Expenditure to Educate a Special Education Student**

How much more is being spent to educate a special education student compared to a student who receives no special education services in Maryland? In other words, what is the *additional expenditure* on a student receiving special education services? Addressing this question requires a comparison of the special education student to a consistent benchmark—the regular education student who requires *no* services from any special program.

The data derived from this SEEP study indicate that the base expenditure on a regular education student in Maryland amounts to \$5,970 per pupil (Exhibit 4). Comparing this figure to the average expenditure for a student receiving special education services in Maryland, the additional expenditure amounts to \$9,955 per pupil (i.e., \$15,925 - \$5,970 = \$9,955). Note that this additional expenditure reflects the amounts attributable to not only the special education and related service needs of the typical student with disabilities, but also the needs of this student for other special programs such as those designed for economically disadvantaged students, English language learners, and GATE students. If one excludes the other special needs programs, the additional expenditure attributable to special education and related services for this student amounts to \$9,833 per pupil (i.e., \$15,925 - \$5,970 - \$122 = \$9,833).



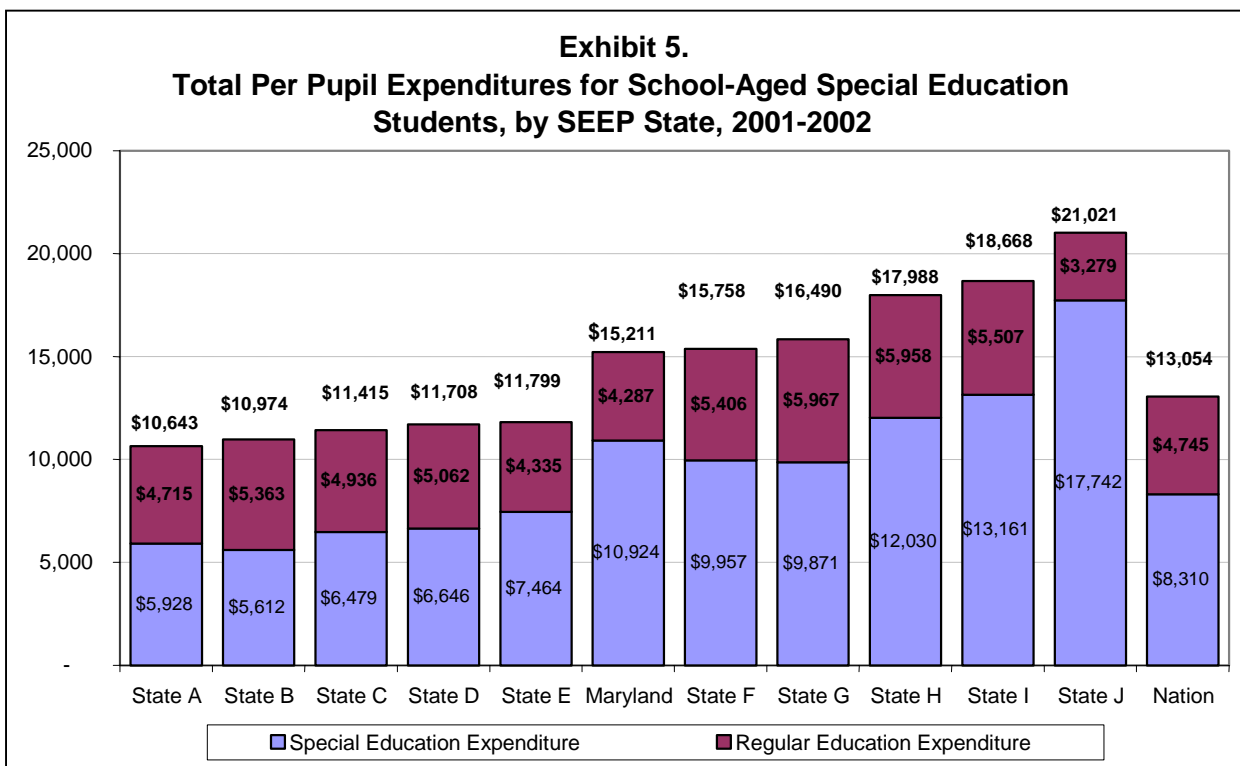
Alternatively, this additional expenditure can be measured as the ratio of the total spending to educate a special education student to the total spending on a regular education student in the state of Maryland. As stated above, the total spending of \$15,925 on a typical student receiving special education services is a comprehensive figure that includes special and regular education services, as well as other special needs programs. The ratio of the expenditure to educate a special education student to the expenditure on a regular education student (with no special needs) is estimated to be 2.67 ( $\$15,925 / \$5,970 = 2.67$ ). Without spending on other special needs programs, the spending ratio is estimated at 2.65 ( $(\$15,925 - \$122) / \$5,970 = 2.65$ ). That is, the total spending on a special education student is 2.65 times the spending on a regular education student in Maryland. In other words, on average, Maryland spends 165 percent more on a special education student than on a regular education student.

In most states, school funding formulas are designed to provide revenues necessary to support current operating expenditures for schools and school districts.<sup>13</sup> In Maryland, expenditures on capital facilities, such as school and central office buildings are funded separately from the standard school funding formulas, as are expenditures for special

<sup>13</sup> Current operating expenditures include salaries, employee benefits, purchased services, supplies, tuition, and other annual expenditures for operations. Examples of items not included are capital outlays, debt service, facilities acquisition and construction, and property expenditures.

transportation. The total per pupil expenditure figures reported in Exhibit 4 include both current operating expenditures and estimates of capital expenditures and transportation. If one excludes expenditures on capital facilities and transportation from the figures above, the total per pupil expenditure is \$13,287, the special per pupil expenditure amounts to \$10,169 (See appendices C-1 and C-2).

Exhibit 5 provides total spending to educate school-aged special education students in Maryland, ten other states that have contracted similar special education expenditure studies, and the nation.<sup>14</sup> Nine of the state studies were conducted using data for the 1999-2000 school year, while the Maryland and Wyoming studies were conducted with data for the 2001-02 school year, so the values for the nine states were adjusted to 2001-02 dollars using a 5.3 percent inflation rate for the two years combined.



For the 2001-2002 school year, the national spending to educate a school-aged special education student amounted to \$13,054; the Maryland school-aged average expenditure per pupil amounted to \$15,211, 17 percent higher than the national average.<sup>15</sup> Of the eleven states shown, Maryland is ranked sixth highest.

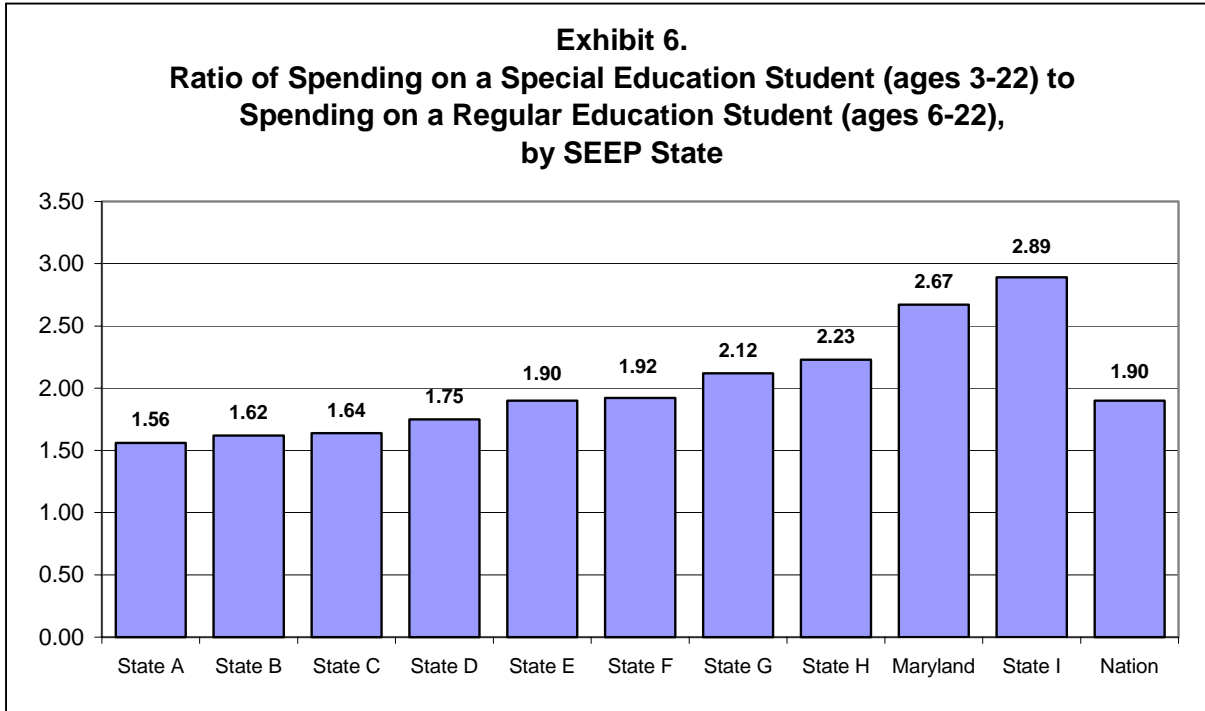
Exhibit 5 also shows the components of the total spending to educate a special education student: regular and special education expenditures. The average regular education

<sup>14</sup> Total spending in this exhibit includes special education and regular education school resources, and does not include other special needs programs (e.g., Title I, programs for English language learners, and Gifted and Talented Education (GATE)).

<sup>15</sup> This figure differs from the figure presented in Exhibit 3b (\$15,340), since this latter includes other special programs such as Title I, ESL, and GATE programs.

expenditure for a school-aged special education student in Maryland is \$4,287 per year, lower than the national average (\$4,745). Comparing the regular education expenditures with the ten states, Maryland is ranked second to lowest. Maryland special education expenditure is \$10,924, almost 31 percent higher than the national special education average (\$8,310).

This exhibit suggests that Maryland spends more than the national average in special education services for special education students, but does not spend more than the average in regular education services for special education students.



As mentioned before, the additional expenditure (i.e., the difference between the total spending to educate a special education student and a regular education student) can be measured as the ratio between the total spending to educate a special education student to the regular education student. Exhibit 6 compares Maryland’s ratio with the 9 SEEP states.

The ratio of special education student spending to regular education student spending is estimated to be 2.67 for Maryland, while the national ratio is estimated at 1.90. In other words, Maryland spends 167 percent more on a special education student than on a regular education student, while the nation spends 90 percent more.

### **Allocation of Special Education Expenditures in Maryland**

This section explores the expenditure allocation of the special education portion of the total expenditure to educate students who receive special education services. This section is divided into two parts. The first part presents the components of total special education

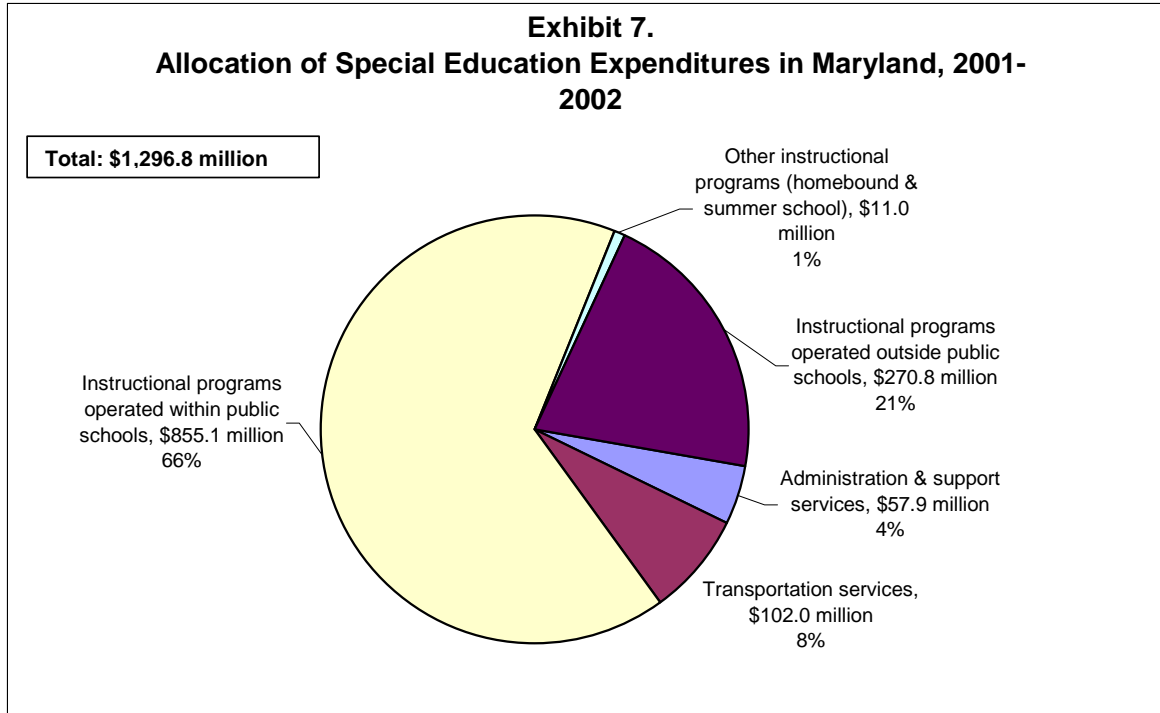
spending, explaining in detail what these components are, and their relative importance as a part of total special education spending. The second shows the expenditure allocation of the per pupil spending estimates for special education programs.

**Components of Special Education Spending**

As shown in Exhibit 7, total special education expenditures on special education students reached \$1,296.8 million in Maryland during the 2001-02 school year. These funds are allocated among the following spending components:

- Direct Instruction and Instruction-Related Services
  - Within the Public Schools
  - Outside the Public Schools
  - Homebound/Hospital Services and Summer School Services
- Administration and Support
- Transportation Services

Exhibit 7 shows the amount spent on each of these components and the percentage of special education spending represented by each component.



*Direct Instruction and Instruction-Related Services*

During the 2001-02 school year, 88 percent (\$1,136.9 million) of the total special education expenditure was allocated to direct instruction and instruction-related services. This includes three of the five categories shown in Exhibit 7: instructional programs operated within public schools (66 percent), homebound and extended school year



programs (1 percent), and instructional programs in out-of-district placements (21 percent).

- Instructional programs within the public schools (direct instruction and instruction-related services for programs operated by the student's district of residence) accounted for \$855.1 million in Maryland during the 2001-02 school year. This value includes the salaries of special education teachers, related service personnel, and special education teaching assistants. Also included are non-personnel expenditures (i.e., supplies, materials, and capital outlay for specialized equipment) and the capital cost of school classrooms.
- Total expenditures amount to \$270.8 million for students served in out-of-district placements for whom the district of residence pays tuition. This figure includes tuition and fees paid to non-public schools or other public agencies providing the education service, and the resources allocated to other related services provided by the home district.
- Other instructional programs include homebound and hospital programs and summer school programs for special education students. Homebound and hospital programs amounted to \$1.6 million in the 2001-2002 school year in Maryland while summer school programs accounted to \$9.4 million.

#### *Administration and Support*

Overall, administration and support services accounted for 4 percent (\$57.9 million) of total special education spending in the 2001-02 school year, as shown in Exhibit 7. This expenditure included the following components:

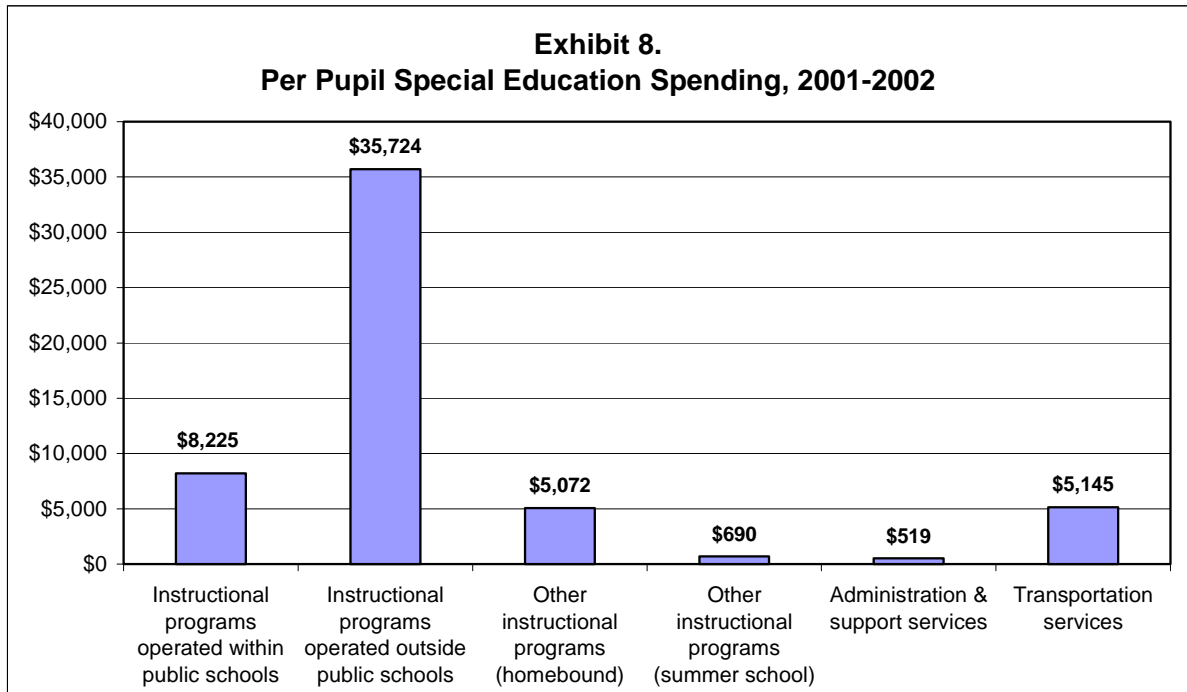
- Central office administration and support of the special education programs was \$46.5 million, representing 3.6 percent of the total special education expenditure. It includes salaries of central office employees, fees for contractors, and non-personnel expenditures to support staff in the performance of central office functions for the special education programs. These functions include administration, coordination, staff supervision, monitoring and evaluation, due process, mediation, litigation support, assessment of student progress, and eligibility determination. It also includes the capital cost of the facilities used for the administration of the special education programs at the central office.
- Approximately \$11.4 million was spent on certain categories of related service personnel assigned to the school site. These school-site staff spent a substantial portion of their time involved in various indirect support activities related to assessment and evaluation of special education students.

*Transportation*

The total special transportation expenditure (this includes the expenditure for students riding special buses as well as aides who accompany students on either special or regular buses) was \$102 million, 8 percent of the total special education expenditure. Special transportation expenditures make up almost 84 percent of the total expenditure on all transportation services provided in the state of Maryland for special education students.<sup>16</sup>

**Per Pupil Spending on Special Education Services**

As presented in Exhibit 3, the total spending used to educate a special education student amounted to \$15,925 in Maryland during the 2001-02 school year, including the other special needs programs. Of that amount, \$11,626 was spent per pupil on special education services, for a total special education expenditure of \$1.3 billion. Exhibit 8 shows the distribution of the special education expenditures in greater detail.



The per pupil numbers presented in this exhibit are obtained by dividing the total expenditure on each special education program by the *number of students served* within each program, not the entire population of special education students. It is important to keep in mind that these estimates only include special education expenditures. They do not include regular education instruction or regular school administration expenditures and therefore do not represent the full expenditure to educate these students.

<sup>16</sup> According to figures reported by districts, it is estimated that the total transportation expenditure for special education students in Maryland amounted to more than \$121.8 million in 2001-02. This includes the special transportation portion plus expenditures associated with special education students who rode regular buses.

Per pupil special education spending on instructional programs operated within the public schools was \$8,225 during the 2001-02 school year in Maryland. The number of students served was 103,962.

For the 7,581 students who are served in an out-of-district placement, and for whom their district of residence pays tuition, the total special education expenditure per pupil served is \$35,724. This figure includes spending on tuition and fees for non-public schools or other public agencies, and expenditures on any direct related services that might be provided by the district of residence.

The total per pupil expenditure for the 325 students who received homebound or hospital services was \$5,072. Approximately 12 percent (13,610 students) of the special student population received summer school program services in Maryland, with a per pupil expenditure of \$690.

The expenditures on special education administration (i.e., the operation expenditure of the office of the director of special education within local education agencies) and support services received by special education students amounted to \$519 per pupil for the 2001-2002 school year.

It is estimated that 19,822 special education students, 17.8 percent of all special education students, received special transportation services in Maryland during the 2001-02 school year. The special transportation expenditure for the average student receiving special transportation was \$5,145 for the 2001-02 school year. This includes transportation on special buses and aides that accompany special education students on regular or special school buses.

## **Variations in Per Pupil Expenditures by and Within Disability Category**

This section is divided into three parts. The first part describes the distribution of the sample and the population of special education students served by the public school district of residence, by disability category, for the 2001-2002 school year. The second part shows variations in expenditures by disability category, and the third part shows variations within each of the disability categories.

### ***Distribution of Special Education Students***

The analysis by disability category focuses only on the 103,962 students served by the public school district of residence, and does not include the 7,581 students in out-of-district placements for whom the district pays tuition.

Exhibit 9 shows the distribution of special education students by the 14 primary disability categories, with a separate category for preschool students. Students with low-incidence disabilities were over-sampled (i.e., a higher-than-proportionate number were included) to ensure adequate sample sizes for these less common disability categories. To derive

total spending estimates, however, these generally higher-expenditure students were only counted in accordance with their distribution in the population. In spite of the over-sampling of low-incidence disabilities, the number of students with deafness in the sample was only five, and there were no students with deaf-blindness. For this reason, this report does not estimate expenditures for these two categories.

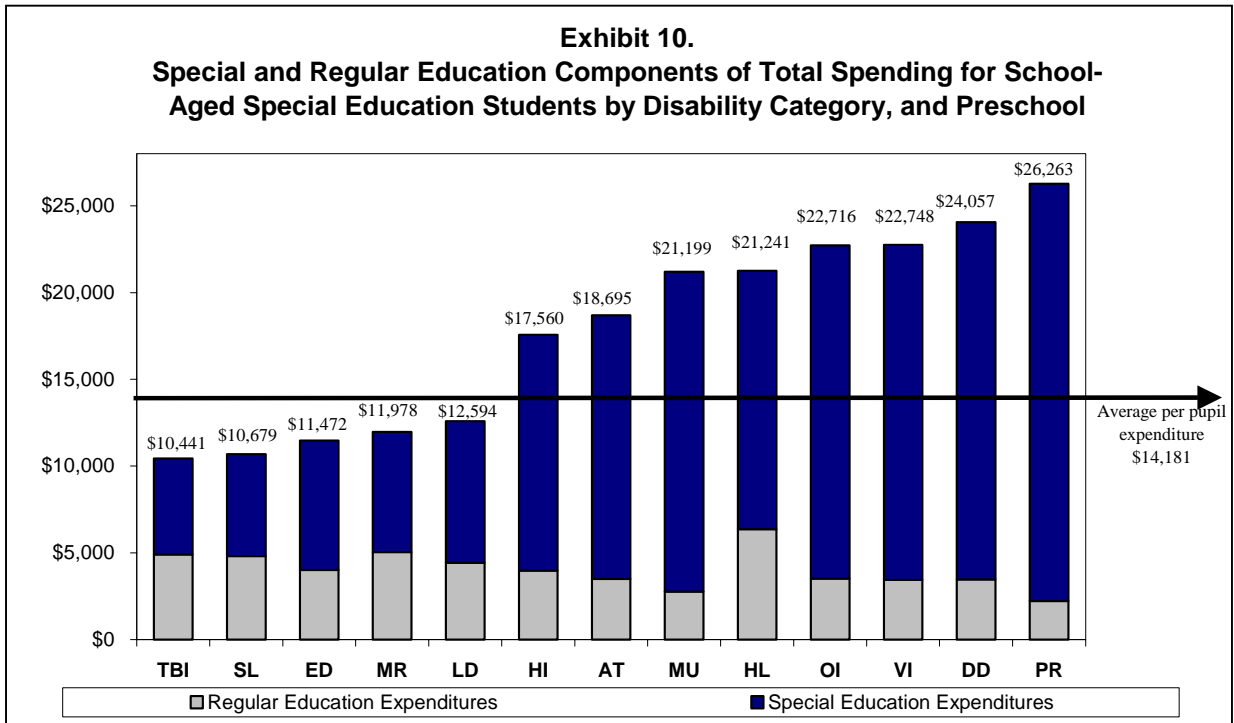
**Exhibit 9. Number of Students by Primary Disability Category in Maryland, 2001-2002**

<b>Disability Category</b>	<b>Abbreviation</b>	<b>Number of Districts Reporting Data</b>	<b>Number of Special Education Students in Sample</b>	<b>Number of Special Education Students in Population</b>	<b>Percent of Special Education Students</b>
Autism	AT	8	130	1,910	1.84%
Deaf-Blindness	DB	0	0	0	0.00%
Deafness	DF	3	5	250	0.24%
Emotional Disturbance	ED	2	13	6,221	5.98%
Hearing Impairment	HI	7	167	637	0.61%
Mental Retardation	MR	7	24	5,758	5.54%
Multiple Disabilities	MU	8	117	4,159	4.00%
Orthopedic Impairment	OI	8	155	439	0.42%
Other Health Impairment	HL	6	18	8,286	7.97%
Specific Learning Disability	LD	8	135	42,804	41.17%
Speech/Language Impairment	SL	8	341	26,056	25.06%
Traumatic Brain Injury	TBI	8	152	283	0.27%
Visual Impairment/Blindness	VI	6	26	373	0.36%
Developmental Delay	DD	5	15	814	0.78%
Preschool	PR	8	71	5,972	5.74%
<b>Total</b>			<b>1,369</b>	<b>103,962</b>	<b>100%</b>

The last column shows the percentage of students across the different disability categories. Specific learning disability is the most common disability in the population, with 42,804 students in Maryland representing 41 percent of the total population of special education students. Students with speech/language impairment are the second most common disability (25 percent) with 26,056 students. The third largest disability category of students is other health impairment, representing almost 8 percent of the population, with 8,286 students.

### Expenditure Variations by Disability Category

Exhibit 10 shows how total per pupil spending to educate a special education student varies across 12 of the 14 disability categories<sup>17</sup> and preschool.<sup>18</sup> The top portion of the bar represents the special education expenditure (i.e., special education teachers, related service providers, aides, and special education administrators, as well as spending on special transportation services and non-personnel items). The bottom portion represents the regular education expenditure (i.e., regular education teachers, regular education aides, school administration, spending in regular transportation and non-personnel items used in regular education programs).



For the school year 2001-2002, the average per pupil expenditure to educate a special education student served in the public schools in Maryland was \$14,181. This figure differs from the \$15,925 shown in the *Per Pupil Spending on Special Education* section because it excludes students served in non-public schools and homebound/hospitalization services.

Exhibit 10 shows the average per pupil expenditure by disability category, arranged from the least expensive to the most expensive category. Formal tests of whether the average per pupil expenditure on each disability category differs from one another reveal that there is not much variation across the different groups of students (see Appendix E for significance tests).

<sup>17</sup> Expenditures for the categories deafness and deaf-blindness are not included due to insufficient sample size.

<sup>18</sup> While some special education students receive services from other special needs programs such as Title I, programs for English language learners, and GATE, these expenditures are excluded from the present analysis.

However, from these figures we can conclude that there are two clusters of disabilities in terms of expenditures. Average expenditures between these two groups of students are statistically significantly different from each other at the 5 percent level. The first cluster includes the first five disability categories shown in Exhibit 10, with an average expenditure between \$10,441 and \$12,594, which are below the per pupil average (represented by the horizontal line). Formal tests show that the five least expensive disability categories shown in Exhibit 10 are not statistically significantly different from each other at the 5 percent level; in other words, the average expenditures for these students with disabilities are not statistically different from each other. This cluster includes traumatic brain injury (TBI), speech/language impairment (SL), emotional disturbance (ED), mental retardation (MR), and specific learning disability (LD).

A second cluster of students is formed by the subsequent eight disability categories, with an average expenditure between \$17,560 and \$26,230, above average for all the categories. This group is composed of students with hearing impairment (HI), autism (AT), multiple disability (MU), other health impairment (HL), orthopedic impairment (OI), visual impairment (VI), developmental delay (DD), and preschool (PR) students. The average expenditures for these students are not statistically different from each other.

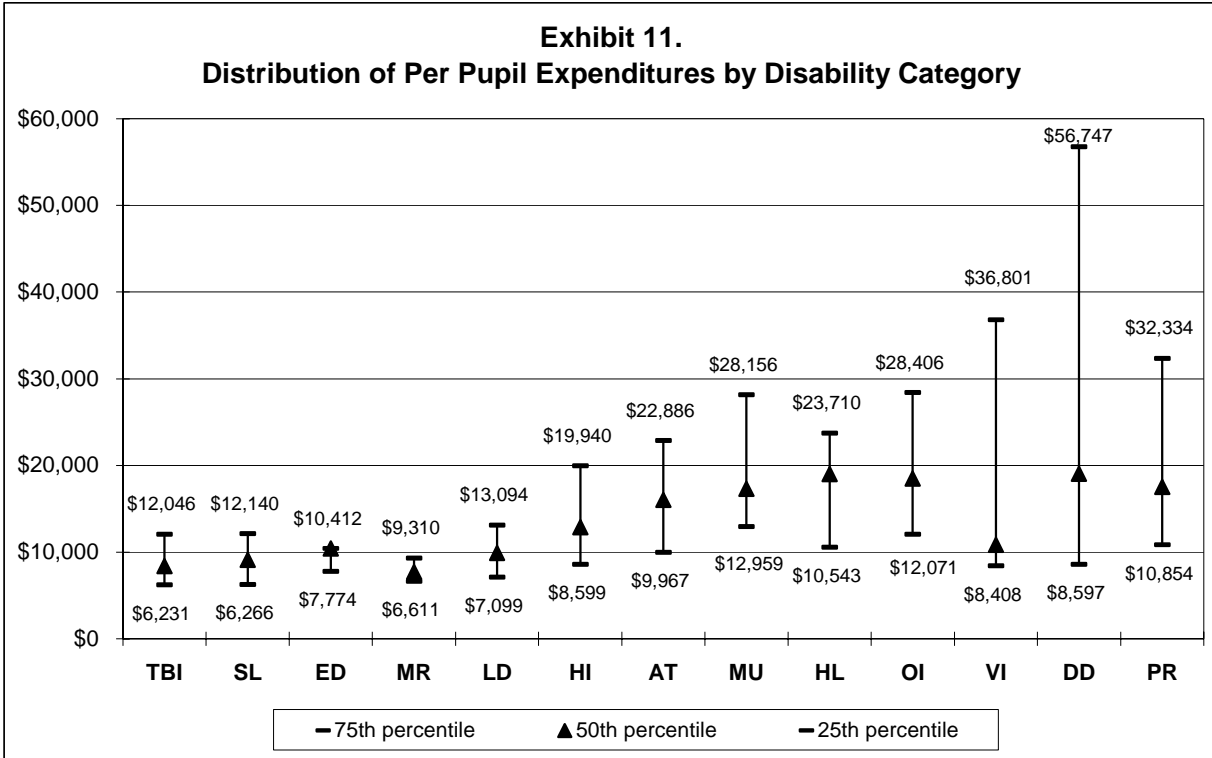
### ***Expenditure Variations Within Disability Category***

This section looks at the range of expenditures within a disability category and asks the question: how heterogeneous are students within a disability category? For instance, is there a wide range of expenditures for students with visual impairment? In order to address this question, it is necessary to examine the distribution of expenditures within each disability category.

Exhibit 11 follows from Exhibit 10, showing the interquartile range for expenditures in each disability category. Disability categories are arranged in the same order as Exhibit 10, from the least expensive to the most expensive category. The triangles mark the 50<sup>th</sup> percentile, or the median, where half of the students in the disability category have higher expenditures and half have lower expenditures. The vertical lines represent the range of students from the 25<sup>th</sup> to the 75<sup>th</sup> expenditure percentile for each disability category.<sup>19</sup>

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<sup>19</sup> The 25<sup>th</sup> percentile represents the expenditure on the student whose education expenditure was higher than only 25 percent of the students. Likewise, the 75<sup>th</sup> percentile represents the expenditure on the student whose expenditures were higher than 75 percent of the students.



The cluster of lower-expenditure students (the first five disability categories) does not show much variation in expenditures; the higher-expenditure cluster shows much more variation within each category. Students with developmental delay (DD) have the highest variation in expenditures, ranging from \$8,597 at the 25<sup>th</sup> percentile to \$56,747 at the 75<sup>th</sup> percentile. Students with visual impairment (VI) show the second highest variation, showing a per pupil expenditure of \$8,408 for a student in the 25<sup>th</sup> percentile, and \$36,801 for a student in the 75<sup>th</sup> percentile.

Students with emotional disturbance (ED) and mental retardation (MR) have much smaller variations than the other categories. A student at the 25<sup>th</sup> percentile of the ED disability category has an expenditure of \$7,774, while a student at the 75<sup>th</sup> percentile has an expenditure of \$10,412. Students with MR range from \$6,611 at the 25<sup>th</sup> percentile to \$9,310 at the 75<sup>th</sup> percentile.

### Variations in Per Pupil Expenditure by ABILITIES Index Score

As seen in the previous section, there is variation within many of the disability categories. An alternative approach is to categorize students based on a measure of their functional abilities, rather than by their disability category. This section uses assessments of students' ABILITIES Index scores<sup>20</sup> as an alternative to the traditional approach of categorizing students by disability category. The ABILITIES Index measures the severity of a student's disability in several areas. Exhibit 12 sheds light on the relationship

<sup>20</sup> Developed by Rune J. Simeonsson and Donald B. Bailey of the Frank Porter Graham Child Development Center, University of North Carolina at Chapel Hill.

between the severity of a student's disability as measured by the ABILITIES Index and the expenditure required to serve that student. As the use of the ABILITIES Index in connection with expenditure data is currently still in an exploratory stage, neither Maryland nor any other state yet uses this assessment system to rate student abilities for identification and expenditure purposes. Therefore, the information in this section should be viewed in conjunction with the other expenditure data provided in this report. In fact, the SEEP studies are the first to use the ABILITIES Index in this manner.<sup>21</sup>

Appendix B provides a copy of the ABILITIES Index instrument used in the Maryland SEEP Student Information Survey, which teachers and related service providers filled out on behalf of their students. Using this form, teachers rated each domain or area of functioning based upon their students' characteristics. The ABILITIES Index focuses on nine areas or domains: audition (A), behavior and social skills (B), intellectual functioning (I), limbs (L), intentional communication (I), tonicity (T), integrity of physical health (I), eyes (E), and structural status (S). For each variable the student is ranked between 0 (meaning normal functioning in that domain) and 5 (meaning profound disability in that domain). Each student receives a score in each variable or area of measure. Some of the domains have multiple variables; there are a total of 19 variables in the 9 domains (see Appendix B). Adding up the scores obtained in the different variables provides a total ABILITIES Index score that can vary from 0 (normal in all the domains) to 95 (profound disability in all of the domains).

To examine the relationship between functional abilities and expenditures, Exhibit 12 divides students into four groups of equal size, based on their ABILITIES Index scores.<sup>22</sup> Average total expenditures rise with ABILITIES Index scores. Students in Quartile I have scores between 0 and 17, and an average per pupil expenditure of \$9,446. The ABILITIES Index scores of students in Quartile II vary between 17 and 27, and this group has a total average per pupil spending of \$11,187 per year. Quartiles III and IV, with average expenditures of \$11,677 and \$25,143, respectively, have scores that range from 27 to 37 and from 37 to 95, respectively.

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<sup>21</sup> Florida and Ontario, Canada are currently using other systems which are based on independent assessments of student abilities and need.

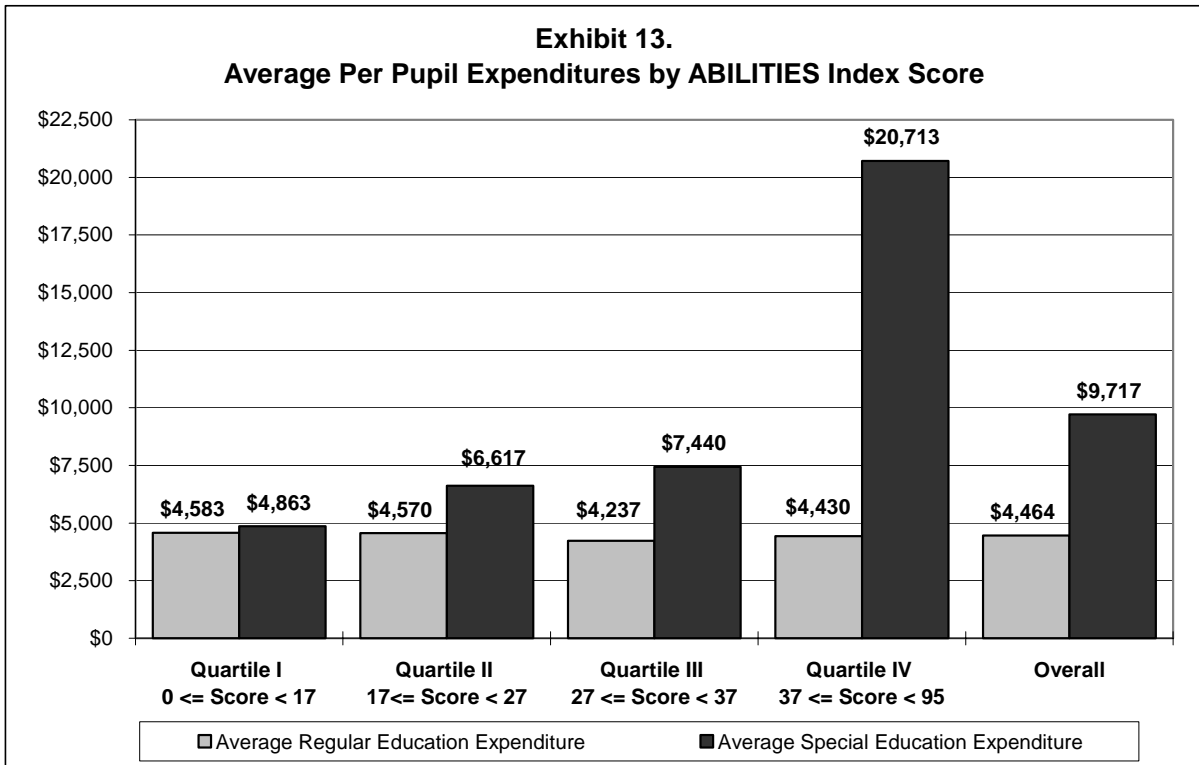
<sup>22</sup> This analysis focuses only on the 103,962 students served by the public school district of residence, and does not include the 7,581 students in out-of-district placements.



**Exhibit 12. Average Total Per Pupil Expenditure by ABILITIES Index Score**

<b>ABILITIES Index Score Quartiles</b>	<b>Average Total Per Pupil Expenditure</b>	<b>Number of Students in the Population</b>
Quartile I	\$9,446	29,361
Quartile II	\$11,187	25,822
Quartile III	\$11,677	23,642
Quartile IV	\$25,143	25,137
<b>Overall</b>	<b>\$14,181</b>	<b>103,962</b>

While Exhibit 12 shows that average total expenditures to educate special education students increase with higher ABILITIES Index score, Exhibit 13 shows how the components of the total per pupil expenditures (i.e., regular education expenditures and special education expenditures) vary by ABILITIES Index score.



This exhibit shows that special education expenditures increase with higher ABILITIES Index scores. Significance tests show that the average special education expenditure for students in Quartile I, \$4,863, is statistically significantly different than the average special education expenditures for students in Quartile III and IV, \$7,440 and \$20,713 respectively. This suggests that higher ABILITIES Index scores are associated with higher special education expenditures, but the scenario is different when we look at the average regular education expenditures across quartiles.

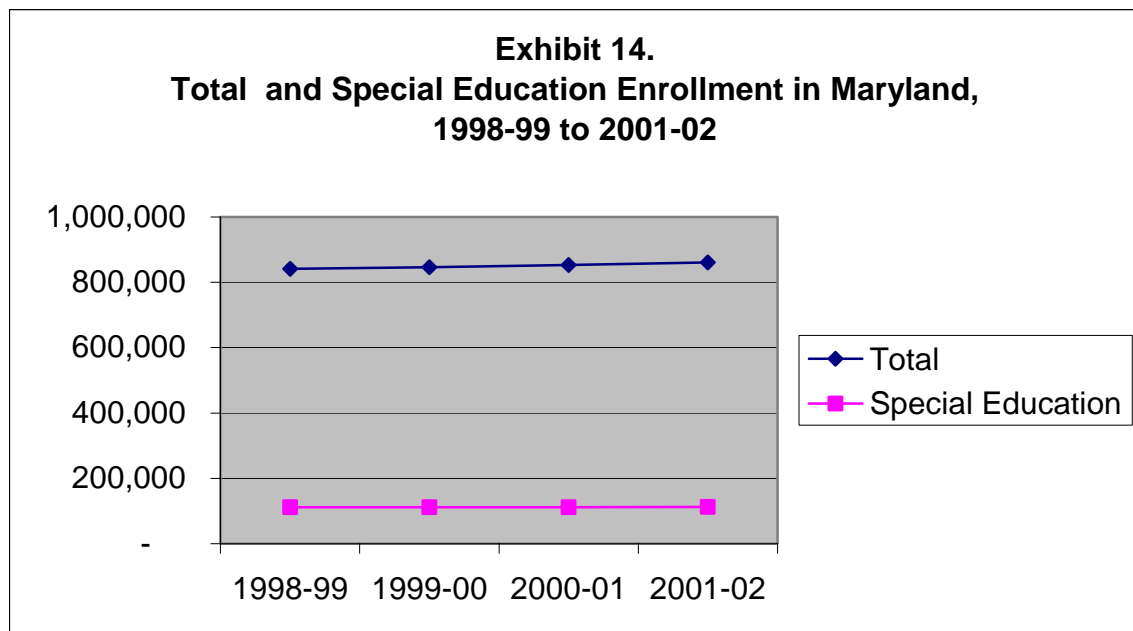
Average regular education expenditures do not seem to vary with higher ABILITIES Index scores. Exhibit 13 shows that students in Quartile I, II, III and IV have an average regular education expenditure around \$4,400. Formal tests show that differences in regular education expenditures across quartiles are not statistically significant.

This suggests that the ABILITIES Index used in conjunction with the disability categories may be a better measure of student's special educational needs, and therefore may assist in better understanding special education expenditure variations, than the more commonly used approach.

## CHAPTER III. Estimated Changes in State Share of Special Education Spending Over Time

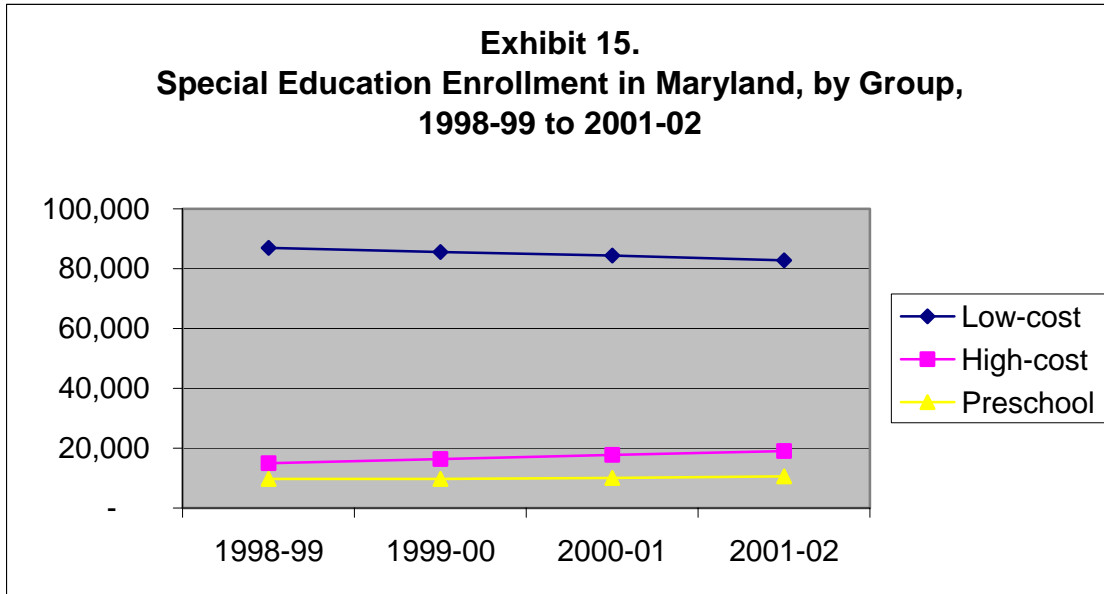
A goal of Maryland State's Bridge to Excellence in Public Schools Act (2002) was to increase the state share of special education funding, beginning in fiscal year 2004. This chapter attempts to predict how quickly Maryland will progress toward this goal. Toward this end, the research team examined expenditures, funding, and expected enrollment changes over time for various types of students.

The research team first examined enrollment levels to forecast changes that could affect special education expenditures. Exhibit 14 shows the changes in special education enrollment from the 1998-99 school year to the 2001-02 school year.<sup>23</sup> Through these four years, the number of students identified as receiving special education services has remained fairly constant, increasing only slightly from 111,688 special education students in FY 99 to 112,426 in FY 02. Meanwhile, total enrollment in Maryland has increased at a slightly higher rate, from 841,671 total students in FY 99 to 860,640 total students in FY 02. The percentage of students receiving special education services decreased slightly but steadily each year from 13.27 percent in 1998-99 to 13.06 percent of total enrollment in 2001-02.

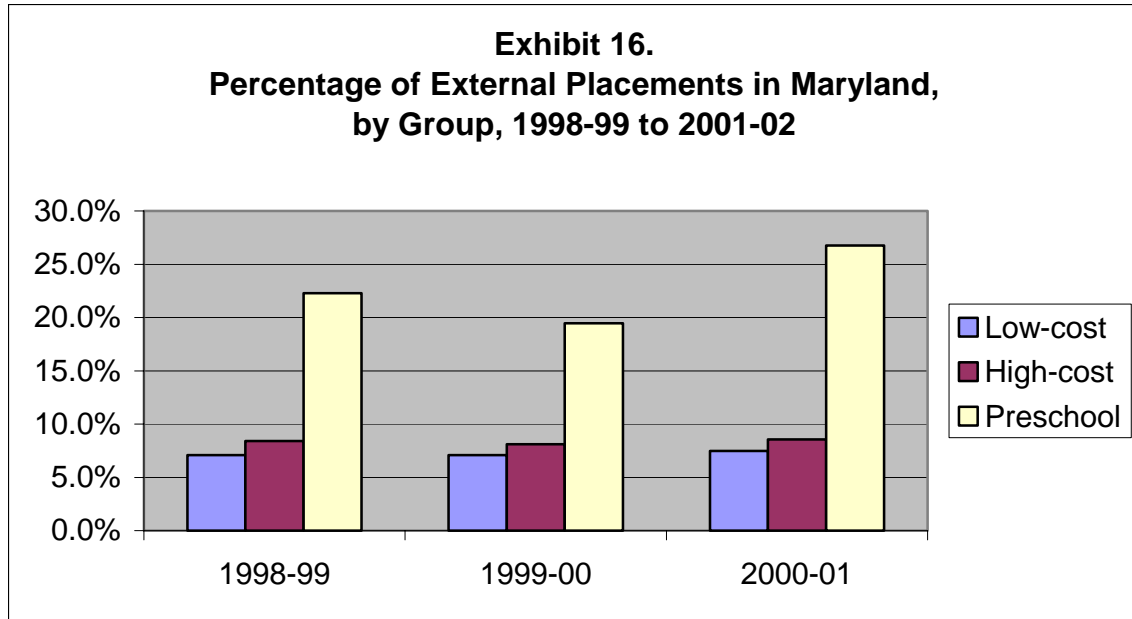


<sup>23</sup> Special education enrollment numbers come from annual OSEP Reports to Congress. These are different from the numbers used in previous chapters because we compare across years. The numbers used in the previous chapter and later in this chapter (for forecasting expenditures and funding amounts) are based on enrollments from SSIS data. Regular MD enrollments obtained from <http://www.msp.msde.state.md.us/enroll.asp?K=99AAAA>.

If special education enrollments continue to increase at their current rate, special education spending might be expected to remain fairly constant. Before drawing final conclusions, however, it is necessary to look at the composition of special education enrollments. In the previous chapter, we showed two clusters of students, one with higher average expenditures than the other. Exhibit 15 takes the special education enrollments shown in Exhibit 14 and breaks them into three groups: the higher (which consists of TBI, SL, ED, MR and LD) and lower (which consists of HI, AT, MU, HL, OI, VI, and DD) expenditure groups, and preschool. Exhibit 15 clearly shows that the number of students in the lower expenditure group, which accounts for the majority of the students, is decreasing at a rate of 1.6 percent per year. Most of this change is occurring in the categories of specific learning disabilities and speech and language impairment. In contrast, the higher expenditure group is increasing at a rate of over 8 percent per year, largely driven by the rising number of students identified with autism and those identified with other health impairment. The number of preschool students is increasing at a rate between the high and low expenditure groups, at approximately 3 percent per year.



The previous chapter showed that expenditures are higher for students who are placed in non-public schools or other public agencies. Enrollment changes in this population, therefore, will also affect special education expenditures in the coming years. Exhibit 16 shows the percentage of students in each of the three groups with placements outside of the public school district, for the school years 1998-99 through 2000-01. Over the course of these three years, external placements have grown at an average rate of 4.7 percent per year. (At the time of this report, the number of externally placed students for 2001-02 was not available.)



To calculate the percentage of special education expenditures funded by the state, we turn to the previous chapter, which provides an estimate of total spending on special education students during the 2001-02 school year (\$1.8 billion), as well as the special education portion of this total expenditure (\$1.3 billion). The total includes expenditures for both the special and regular education services received by special education students. For the purposes of this chapter, the research team has extracted expenditures for capital outlay and transportation services to allow comparability with Maryland’s special education funding formula. Excluding these expenditures, the total special education for special education students is \$1.1 billion.

According to MSDE officials, the state funds special education in three parts. The first two parts comprise what MSDE calls the “excess cost” of special education, which reflects special education expenditures for students served in public and non-public schools. The first portion of the “excess cost” allocation, based on student counts, currently includes \$81 million to be spread across the state; this is the portion that will change according to the new funding formula. The second portion is based upon the number of students served in nonpublic schools and the amount of the tuition charged. The third portion of funding for special education students is the basic cost, which specifically provides funding for students in separate special education classes. Although the basic cost is funded by general education, it is included in the following exhibit as a revenue source for special education. These three figures—the basic cost funded by the state and the two components of the “excess cost”—are forecast through FY 08, each shown separately.

Exhibit 17 (below) shows forecasts of special education spending, based on the SEEP estimate of \$1.1 billion for FY 02, compared to estimates of state special education revenues through FY 08. Dollar values for the state’s share of funding are available for FY 01. The research team forecast future expenditures based on 2.6 percent inflation (the

average over the previous two school years) and changes in special education enrollments.

Row A of Exhibit 17 shows the Thornton Commission's Bridge to Excellence Act funding through FY 08. Rows B and C show estimates of non-public tuition and basic cost revenues, based on FY 01 allocations. Estimated non-public school spending is adjusted each year for inflation and for 4.7 percent enrollment growth (based on the growth rate of external placements in previous years). The basic cost state funding is based on the number of students in special classes, and projections are adjusted for inflation and an average enrollment growth rate of 0.32 percent for all special education students. Estimated changes in special education spending are based on average enrollment growth and average expenditures for each of four groups: internally-placed students in the lower-expenditure group, internally-placed students in the higher expenditure group, internally-placed preschool students, and externally-placed students. Again, a 2.6 percent inflation rate is used.

Based on the SEEP estimate, the state supported 22.6 percent of total special education spending in FY 02. After the new funding formula is implemented in 2004, it is estimated that the state's share will rise to 24.6 percent, and increase to 32.8 percent through 2008.

**Exhibit 17. Forecast of Special Education Expenditures and State Funding Share**

<b>State Funding Type</b>		<b>FY01 (actual)</b>	<b>FY02</b>	<b>FY03</b>	<b>FY04</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>
Excess Cost:									
<b>A</b>	Bridge to Excellence	81,253,345	81,253,345	81,253,345	114,271,883	155,244,048	188,575,656	230,878,358	277,138,014
<b>B</b>	Non-public Tuition	84,859,016	91,157,422	97,923,308	105,191,372	112,998,886	121,385,889	130,395,393	140,073,599
<b>C</b>	Basic Cost	81,702,112	84,094,611	86,557,171	89,091,842	91,700,736	94,386,027	97,149,952	99,994,813
<b>D</b>	State Contribution	247,814,473	256,505,378	265,733,824	308,555,096	359,943,670	404,347,572	458,423,702	517,206,427
<b>E</b>	Special Expenditures		\$1,134,316,929	\$1,191,861,918	\$1,254,910,593	\$1,324,075,302	\$1,400,033,603	\$1,483,541,803	\$1,575,444,378
	State's Estimated Share	-	22.6%	22.3%	24.6%	27.2%	28.9%	30.9%	32.8%

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# **Appendix A**

## **District and School Response Rates**

**Total Response by District, 2001-2002**

District	District Part 1	District Part 2	District Part 3	Central Office	External Student
Baltimore City Pub Sch System	0	1	0	5	3
Carroll County Public Schools	1	1	1	6	3
Board Of Educ, Charles County	0	0	0	0	0
Frederick County Board Of Ed	1	1	1	6	3
Howard County Pub Schls System	1	1	1	6	3
Montgomery County Public Schls	1	1	1	6	3
Prince Georges County Pub Schs	1	1	1	5	0
Wicomico County Board Of Ed	1	1	1	5	0

**Total Response by School, 2001-2002**

District	School	GE Teachers	SE Teachers	SE Students
Baltimore City Pub Sch System	Abbottston Elementary	0	0	0
	Arundel Elementary	2	3	6
	Bentalou Elementary	6	4	8
	Cecil Elementary	6	3	5
	Cross Country Elementary	0	0	0
	Dallas F Nicholas Sr Elementary	0	0	0
	Dr Martin Luther King Jr Elem	0	0	0
	Edgecombe Circle Elementary	5	5	10
	Edgewood Elementary	3	1	2
	Furley Elementary	2	4	8
	General Wolfe Elementary	2	2	4
	George G Kelson Elementary	4	2	4
	James Mchenry Elementary	5	2	4
	Lafayette Elementary	4	3	6
	Langston Hughes Elementary	5	2	4
	Liberty Elementary	5	1	4
	Lyndhurst Elementary	4	1	0
	Margaret Brent Elementary	6	6	12
	Medfield Heights Elementary	4	1	2
	Patapsco Elementary	0	0	0
	Rosemont Elementary	4	5	10
	Samuel F B Morse Elementary	4	3	5
	Thomas G Hayes Elementary	0	0	0
	Windsor Hills Elementary	3	3	7
	Yorkwood Elementary	0	0	0
	Midtown Academy	0	0	0
	Frederick Elementary	4	6	12
	Baltimore City College	7	0	0
	Booker T Washington Middle	0	0	0
	Chinquapin Middle	8	2	4
	Fallstaff Middle	9	3	6
	Forest Park High	9	13	26
	Frederick Douglass High	8	2	4
	Garrison Middle	0	0	0
	Patterson High	9	18	35
	Southeast Middle	7	4	6
	Southwestern High	8	12	23
	Violetville Elementary/Middle	5	2	4
	Western High	3	1	2
	Stadium School	6	1	2
Youth Educ Academy At Woodbourne	0	0	0	
Claremont School	0	9	18	
George Wf Mcmechen Middle/High	0	7	14	
Harbor View Elementary	0	0	0	
Central Career Center At Briscoe	0	8	14	
Waverly Career Center	0	3	6	
William S Baer School	0	8	15	
Woodbourne Day School	0	7	13	

District	School	GE Teachers	SE Teachers	SE Students
	Francis M Wood Alterntive High	0	0	0
	Lois T Murray Elementary	0	5	10
	Dr Lillie M Jackson Elementary	0	1	2
	Sharp-Leadenhall Elementary	0	5	10
Carroll County Public Schools	Charles Carroll Elementary	4	2	4
	Elmer A Wolfe Elementary	5	4	6
	Hampstead Elementary	6	6	12
	Manchester Elementary	6	6	12
	Westminster Elementary	6	1	2
	Spring Garden Elementary	6	2	4
	Francis Scott Key Sr High	9	9	18
	South Carroll Sr High	7	7	14
	Oklahoma Road Middle	9	2	4
	Gateway School	3	1	2
	Carroll Springs School	0	3	6
Board Of Educ, Charles County	Mary Matula Elementary	6	3	6
	Dr Samuel A Mudd Elementary	3	1	0
	Eva Turner Elementary	6	2	4
	Indian Head Elementary	6	2	4
	J C Parks Elementary	5	4	8
	General Smallwood Middle	7	9	16
	La Plata High	9	4	8
	Milton M Somers Middle	9	12	22
Frederick County Board Of Ed	North Frederick Elementary	6	6	12
	South Frederick Elementary	6	2	4
	Valley Elementary	6	2	4
	Waverley Elementary	6	2	4
	Wolfsville Elementary	3	2	4
	Yellow Springs Elementary	6	1	2
	Orchard Grove Elementary	6	2	4
	Monocacy Elementary	6	3	6
	Brunswick High	9	2	4
	Gov Thomas Johnson High	8	2	4
	Middletown Middle	8	9	16
	Middletown High	9	9	18
	Rock Creek School	0	7	14
	Heather Ridge Middle	0	2	4
Howard County Pub Schls System	Bryant Woods Elementary	4	2	4
	Bushy Park Elementary	2	1	2
	Clarksville Elementary	6	1	2
	Elkridge Elementary	0	0	0
	Guilford Elementary	5	2	4
	Hammond Elementary	4	1	2
	Longfellow Elementary	6	2	4
	Swansfield Elementary	6	5	9
	Ilchester Elementary	6	4	8
	Clemens Crossing Elementary	6	5	10
	Elkridge Landing Middle	6	6	10
	Dunloggin Middle	3	4	8
	Howard High	4	9	18

District	School	GE Teachers	SE Teachers	SE Students
	Oakland Mills High	8	3	6
	Oakland Mills Middle	0	1	2
	Long Reach High	0	5	9
	Patuxent Valley Middle	9	1	2
	Cedar Lane Special Ctr	0	7	14
Montgomery County Public Schls	Dr Sally K Ride Elementary	2	2	4
	Thurgood Marshall Elementary	3	3	6
	Bells Mill Elementary	5	1	2
	Cannon Road Elementary	4	2	4
	Cedar Grove Elementary	6	2	4
	Dufief Elementary	6	2	4
	Fallsmead Elementary	4	4	8
	Germantown Elementary	6	4	8
	Highland Elementary	5	3	6
	Kemp Mill Elementary	4	2	4
	Meadow Hall Elementary	5	3	3
	Montgomery Knolls Elementary	5	2	4
	Oak View Elementary	6	4	8
	Oakland Terrace Elementary	6	1	2
	Kensington-Parkwood Elementary	4	6	12
	Piney Branch Elementary	6	1	2
	Poolesville Elementary	2	3	6
	Rock Creek Forest Elementary	5	1	2
	Rock Creek Valley Elementary	6	6	12
	Somerset Elementary	6	2	4
	Summit Hall Elementary	6	2	4
	Takoma Park Elementary	8	1	2
	Viers Mill Elementary	5	2	4
	Watkins Mill Elementary	4	4	7
	Whetstone Elementary	2	2	4
	Wm Tyler Page Elementary	1	5	10
	Woodlin Elementary	5	2	4
	Strawberry Knoll Elementary	3	8	16
	Clearspring Elementary	5	5	10
	Brooke Grove Elementary	5	7	12
	Burnt Mills Elementary	6	5	9
	Dr Charles R Drew Elementary	5	3	4
	Rocky Hill Middle	8	9	15
	Neelsville Middle	9	2	4
	Col Zadok Magruder High	0	0	0
	Julius West Middle	9	12	24
	John H. Poole Middle	7	1	2
	Paint Branch High	7	10	18
	Poolesville High	8	2	4
	Rockville High	5	8	15
	Takoma Park Middle School	5	2	4
	James Hubert Blake	8	3	6
	Damascus High	3	3	6
	Watkins Mill High	6	4	8
	Cabin John Middle School	8	7	13

District	School	GE Teachers	SE Teachers	SE Students
	Thomas W Pyle Middle School	8	9	18
	Briggs Chaney Middle	7	7	14
	Stephen Knolls School	0	5	10
	Carl Sandburg Center	0	6	12
	Longview School	0	4	8
	Mark Twain School	0	9	18
	Mckenney Hills Center	0	2	4
	Regional Inst For Child & Adol	0	7	14
	Rock Terrace School	0	7	14
Prince Georges County Pub Schs	Yorktown Elementary	6	2	4
	Avalon Elementary	4	3	6
	Barnaby Manor Elementary	3	2	3
	Berkshire Elementary	3	2	2
	Bladensburg Elementary	0	0	0
	Carole Highlands Elementary	6	1	2
	Carrollton Elementary	6	1	2
	Deerfield Run Elementary	5	4	8
	District Heights Elementary	4	6	11
	Flintstone Elementary	5	1	2
	Francis T Evans Elementary	5	2	4
	Gaywood Elementary	6	5	10
	Glenarden Woods Elementary	0	0	0
	Francis Scott Key Elementary	1	1	2
	High Bridge Elementary	5	3	6
	Hillcrest Heights Elementary	0	0	0
	Hyattsville Elementary	4	3	7
	Indian Queen Elementary	6	1	1
	John Eager Howard Elementary	5	5	12
	John H Bayne Elementary	5	4	6
	Lewisdale Elementary	5	1	2
	Magnolia Elementary	5	4	8
	Montpelier Elementary	6	1	2
	Oakcrest Elementary	1	0	0
	Oaklands Elementary	5	3	6
	Panorama Elementary	0	0	0
	Potomac Landing Elementary	0	0	0
	Robert Frost Elementary	6	6	11
	Rogers Heights Elementary	6	2	4
	Seat Pleasant Elementary	1	0	0
	Valley View Elementary	0	0	0
	Woodridge Elementary	6	3	5
	North End Academy	2	1	2
	Central High	0	0	0
	Charles Carroll Middle	0	0	0
	Duval High	1	4	8
	Eugene Burroughs Middle School	5	4	8
	High Point High	0	1	2
	Laurel High	7	3	6
	Martin Luther King Jr Middle Sch	7	4	8
	Potomac High	8	4	7

District	School	GE Teachers	SE Teachers	SE Students
	Suitland High	3	3	6
	Thomas Pullen School	0	0	0
	Croom Vocational	0	0	0
	Benjamin Stoddert Middle	6	3	6
	Walker Mill Middle School	0	0	0
	Chapel Forge Early Childhood Ctr	0	8	15
	Rica-Southern Md	0	5	10
	H W Wheatley Early Childhood Ctr	0	8	12
	Hillcrest Heights Special Ctr	0	5	8
	Frances Fuchs Early Childhood Ctr	0	8	16
	Tanglewood Regional Center	0	2	4
	James E Duckworth Regional Ctr	0	0	0
	C Elizabeth Rieg Regional Center	0	7	14
	Margaret Brent Regional Center	0	6	12
Wicomico County Board Of Ed	Fruitland Primary	3	2	4
	Delmar Elementary	6	2	4
	Fruitland Intermediate	4	2	4
	West Salisbury Elementary	4	2	4
	Willards Elementary	1	2	4
	Mardela Middle & High	8	2	4
	Parkside High	9	9	18



# **Appendix B**

## **The ABILITIES Index**

### The ABILITIES Index<sup>24</sup>

Please rate the student's abilities on the exhibit on the following page. Ratings in each area are made on a scale of 0 to 5, with **0 indicating normal ability, 1 (suspected disability) indicating some questions about the child's ability, and 5 indicating extreme or profound disability.** In making each rating, think about the child compared to other children the same age. Guidelines follow to assist you in making each rating.

**Audition (Hearing)** – Think about the child's ability to hear in everyday activities. Score hearing for each ear separately. A score of 5 (Profound Loss) means that the child has no hearing. Rate the child's hearing without a hearing aid. If the child uses a hearing aid, please check this box:

**Behavior and Social Skills** – Two ratings are made in this area, one for social skills and one for inappropriate or unusual behavior. Social skills refer to the child's ability to relate to others in a meaningful manner. Inappropriate and unusual behavior may include fighting, hitting, screaming, rocking, hand flapping, biting self, etc.

**Intellectual Function (Thinking and Reasoning)** – This rating reflects the child's ability to think and reason. Think about the way the child solves problems and plays with toys and compare this to other children of the same age.

**Limbs (Use of Hands, Arms, and Legs)** – Think about the child's ability to use his or her hands, arms, and legs in daily activities. Score left and right limbs separately. A Score of 5 (Profound difficulty) means that the child has no use of a limb.

**Intentional Communication (Understanding and Communicating with Others)** – Two ratings are made, one for the child's ability to understand others and one for the child's ability to communicate with others. This rating includes attempts to communicate in ways other than talking (signs, gestures, picture boards). Think about the child's ability to understand and communicate with others and compare this to other children of the same age.

**Tonicity (Muscle Tone)** – Think about the child's muscle tone. Normal means that the child's muscles are neither tight nor loose. If the child's muscle tone is not in the normal range, place an "X" in each box that indicates the degree of tightness or looseness or both. Two ratings should be made since, in some children, tightness or looseness can vary in different parts of the body or from one time to the next.

**Integrity of Physical Health (Overall Health)** – Think about the child's Regular health. Normal means the usual health problems and illnesses typical for a child this age. If there is a health problem, ratings should be made indicating the degree to which health problems limit activities. Ongoing health problems may include seizures, diabetes, muscular dystrophy, cancer, etc.

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<sup>24</sup>This section is based on "The Abilities Index" developed by Rune J. Simeonsson and Donald B. Bailey of the Frank Porter Graham Child Development Center, University of North Carolina at Chapel Hill.

**Eyes (Vision)** – Think about the child’s ability to see in everyday activities. Score both the left and right eye. A score of 5 (Profound Loss) means that the child has no vision. Rate the child’s vision without glasses. If the child uses glasses, please check this box:

**Structural Status (Shape, Body Form, and Structure)** – This rating reflects the form and structure of the child’s body. Normal means that there are no differences associated with form, shape, or structure of the body parts. Differences in form include conditions like cleft palate or clubfoot; differences in structure include conditions like curved spine and arm or leg deformity. Ratings should indicate how much these differences interfere with how the child moves, plays, or looks.

**Student Abilities Index<sup>25</sup>**

In each column, place an X in the space that best describes the child. Please note that multiple Xs should be recorded under A (Audition), B (Behavior), L (Limbs), I (Intentional Communication), T (Tonicity), and E (Eyes).

A		B		I	L						I		T		E		S	
Audition (Hearing) Rate Both		Behavior & Social Skills Rate Both		Intellectual Functioning	Limbs (Use of hands, arms, and legs) Rate All						Intentional Communication Rate Both		Tonicity (Muscle Tone) Rate Both		Integrity of Physical health		Eyes (Vision) Rate Both	Structural Status
Left Ear	Right Ear	Social Skills	Inapprop. Behavior	Thinking & Reasoning	Left Hand	Left Arm	Left Leg	Right Hand	Right Arm	Right Leg	Under- standing others	Communicating with others	Degree of tightness	Degree of looseness	Overall Health	Left Eye	Right Eye	Shape, Body Form & Structure
Normal		All behaviors typical & appropriate for age		Normal for age			Complete normal use				Normal	Normal	Normal	Normal	Regular good health	Normal		Normal
Suspected hearing loss		Suspected disability	Suspected inapprop. Behaviors	Suspected disability			Suspected difficulty				Suspected disability	Suspected disability	Suspected disability	Suspected disability	Suspected health problems	Suspected vision loss		Suspected difference or interference
Mild hearing loss		Mild disability	Mildly inapprop. Behaviors	Mild disability			Mild difficulty				Mild disability	Mild disability	Mild disability	Mild disability	Minor ongoing health problems	Mild vision loss		Mild difference or interference
Moderate hearing loss		Moderate disability	Moderately inapprop. Behaviors	Moderate disability			Moderate difficulty				Moderate disability	Moderate disability	Moderate disability	Moderate disability	Ongoing but medically-controlled health problems	Moderate vision loss		Moderate difference or interference
Severe hearing loss		Severe disability	Severely inapprop. Behaviors	Severe disability			Severe difficulty				Severe disability	Severe disability	Severe disability	Severe disability	Ongoing poorly-controlled health problems	Severe vision loss		Severe difference or interference
Profound hearing loss		Extreme disability	Extremely inapprop. Behaviors	Profound disability			Profound difficulty				Profound disability	Profound disability	Profound disability	Profound disability	Extreme health problems, near total restriction of activities	Profound vision loss		Extreme difference or interference

<sup>25</sup> This section is based on "The Abilities Index" developed by Rune J. Simeonsson and Donald B. Bailey of the Frank Porter Graham Child Development Center, University of North Carolina at Chapel Hill.

# **Appendix C**

## **Appendices C-1 and C-2**

### **Total Education Spending to Educate Special Education Students in Maryland, 2001-2002**

**Exhibit C-1**  
**Total Education Spending to Educate Special Education Students in Maryland, 2001-02**  
**(Including regular education, special education and other special needs programs)**

Spending Components	Expenditure per Student Served	Standard Error	Total Population of Special Education Students in this Category	Total Expenditures
<b>Regular Education Central Office Administration and Support</b>				
Total Regular District Administration and Support	\$219	\$14	111,543	\$24,427,917
<b>Special Education Central Office Administration and Support</b>				
Total Special Central Office Administration and Support	\$360	\$11	111,543	\$40,155,480
<b>Regular Education School Administration and Support</b>				
Total regular school administration and support	\$512	\$3	103,962	\$53,272,981
<b>Assessment Expenditures at the School Site on Selected Special Education Staff</b>				
Total Assessment	\$110		103,962	\$11,409,879
<b>Services in Schools Operated by Public School Districts</b>				
Regular Education Instructional Services	\$3,254	\$311	78,899	\$256,751,584
Special Education Instruction and Related Services	\$7,827	\$798	102,326	\$800,887,200
Other Instructional Programs (ESL, Title I, GATE)	\$3,807	\$1,561	3,483	\$13,260,037
Total Instructional Services in Public Schools	\$10,324	\$871	103,962	\$1,073,344,088
<b>Services in Operated in Non-public Schools or Other Public Agencies</b>				
Total Instructional Services in Non-Public Schools or Other Public Agencies	\$35,724	\$8,534	7,581	\$270,823,644
<b>Total Summer School Programs</b>				
Total Summer School	\$690	\$27	13,610	\$9,392,326
<b>Homebound and Hospital Programs</b>				
Total Homebound	\$5,072		325	\$1,648,400
<b>Annualized Facilities Expenditures</b>				
Annualized Facilities Expenditures--Central Ofc Administration of the District	\$919	\$41	94,885	\$87,231,921
Annualized Facilities Expenditures--Central Office Administration of Special Ed Program	\$697	\$24	9,075	\$6,321,440
Annualized Facilities Expenditures Generated by Regular Classroom Teachers	\$348	\$73	69,934	\$24,310,707
Annualized Facilities Expenditures Generated by Other Classroom Teachers (ESL, Title I, GATE)	\$231	\$29	1,668	\$385,141
Annualized Facilities Expenditures Generated by Special Education Teachers	\$858	\$87	36,384	\$31,216,818
Annualized Facilities Expenditures Generated Resource Specialist & Related Service Providers (pull out)	\$263	\$32	87,412	\$22,980,541
Total Annualized Facilities Expenditures	\$1,659		103,962	\$172,446,568
<b>Transportation Services</b>				
Special Transportation --Personal Aides	\$14,163	\$1,075	1,660	\$23,506,236
Special Bus Transportation	\$4,321	\$73	18,162	\$78,476,567
Regular Bus Transportation	\$472	\$35	42,016	\$19,837,505
Total Transportation Services	\$2,029	\$214	60,046	\$121,820,308
<b>TOTAL EXPENDITURES ON STUDENTS WITH DISABILITIES</b>				
Total Current Expenditures on Students With Disabilities (excl facilities and transportation)	\$13,287		111,543	\$1,482,029,448
<b>TOTAL SPECIAL EDUCATION EXPENDITURES</b>				
Total Current Special Education Expenditures (excl facilities and transportation)	\$11,626	\$946	111,543	\$1,296,818,531
<b>TOTAL REGULAR EDUCATION EXPENDITURES</b>				
	\$4,176	\$458	111,543	\$465,832,615
<b>RATIOS OF A SPECIAL EDUCATION STUDENT TO A REGULAR EDUCATION STUDENT</b>				
	2.67			

**Exhibit C-2**  
**Total Education Spending to Educate Special Education Students in Maryland, 2001-02**  
**(Including regular education and special education)**

Spending Components	Expenditure per Student Served	Standard Error	Total Population of Special Education Students in this Category	Total Expenditures
<b>Regular Education Central Office Administration and Support</b>				
Total Regular District Administration and Support	\$219	\$14	111,543	\$24,427,917
<b>Special Education Central Office Administration and Support</b>				
Total Special Central Office Administration and Support	\$360	\$11	111,543	\$40,155,480
<b>Regular Education School Administration and Support</b>				
Total regular school administration and support	\$512	\$3	103,962	\$53,272,981
<b>Assessment Expenditures at the School Site on Selected Special Education Staff</b>				
Total Assessment	\$110		103,962	\$11,409,879
<b>Services in Schools Operated by Public School Districts</b>				
Regular Education Instructional Services	\$3,254	\$311	78,899	\$256,751,584
Special Education Instruction and Related Services	\$7,827	\$798	102,326	\$800,887,200
Total Instructional Services in Public Schools	\$10,197	\$843	103,962	\$1,060,084,051
<b>Services in Operated in Non-public Schools or Other Public Agencies</b>				
Total Instructional Services in Non-Public Schools or Other Public Agencies	\$35,724	\$8,534	7,581	\$270,823,644
<b>Total Summer School Programs</b>				
Total Summer School	\$690	\$27	13,610	\$9,392,326
<b>Homebound and Hospital Programs</b>				
Total Homebound	\$5,072		325	\$1,648,400
<b>Annualized Facilities Expenditures</b>				
Annualized Facilities Expenditures--Central Ofc Administration of the District	\$919	\$41	94,885	\$87,231,921
Annualized Facilities Expenditures--Central Office Administration of Special Ed Program	\$697	\$24	9,075	\$6,321,440
Annualized Facilities Expenditures Generated by Regular Classroom Teachers	\$348	\$73	69,934	\$24,310,707
Annualized Facilities Expenditures Generated by Special Education Teachers	\$858	\$87	36,384	\$31,216,818
Annualized Facilities Expenditures Generated Resource Specialist & Related Service Providers (pull out)	\$263	\$32	87,412	\$22,980,541
Total Annualized Facilities Expenditures	\$1,543		111,543	\$172,061,427
<b>Transportation Services</b>				
Special Transportation --Personal Aides	\$14,163	\$1,075	1,660	\$23,506,236
Special Bus Transportation	\$4,321	\$73	18,162	\$78,476,567
Regular Bus Transportation	\$472	\$35	42,016	\$19,837,505
Total Transportation Services	\$2,029	\$214	60,046	\$121,820,308
<b>TOTAL EXPENDITURES ON STUDENTS WITH DISABILITIES</b>				
Total Current Expenditures on Students With Disabilities (excl facilities and transportation)	\$13,168		111,543	\$1,468,769,411
<b>TOTAL SPECIAL EDUCATION EXPENDITURES</b>	<b>\$11,626</b>	<b>\$946</b>	<b>111,543</b>	<b>\$1,296,818,531</b>
Total Current Special Education Expenditures (excl facilities and transportation)	\$10,169		111,543	\$1,134,316,929
<b>TOTAL REGULAR EDUCATION EXPENDITURES</b>	<b>\$4,176</b>	<b>\$458</b>	<b>111,543</b>	<b>\$465,832,615</b>
<b>RATIOS OF A SPECIAL EDUCATION STUDENT TO A REGULAR EDUCATION STUDENT</b>	<b>2.65</b>			

## **Appendix D**

### **Total Average Per Pupil Spending for Students Served in Public Schools; Regular Expenditures and Special Expenditures, by Disability Category**



**Appendix D.**  
**Total Average Per Pupil Spending for Students Served in Public Schools; Regular Expenditures and Special Expenditures, by Disability Category**

<b>Disability Category</b>	<b>Abbreviation</b>	<b>Total Average Expenditure</b>	<b>Total Regular Expenditure</b>	<b>Total Special Expenditure</b>	<b>Total Estimated Population</b>
Autism	AT	\$18,695 (\$1,878)	\$3,504 (\$312)	\$15,191 (\$1,823)	1,910
Deafness	DF	*	*	*	250
Emotional Disturbance	ED	\$11,472 (\$2,632)	\$4,016 (\$650)	\$7,456 (\$3,282)	6,221
Hearing Impairment	HI	\$17,560 (\$2,654)	\$3,975 (\$493)	\$13,586 (\$2,680)	637
Mental Retardation	MR	\$11,978 (\$4,183)	\$5,041 (\$1,584)	\$6,937 (\$2,754)	5,758
Multiple Disabilities	MU	\$21,199 (\$2,493)	\$2,767 (\$609)	\$18,432 (\$2,443)	4,159
Orthopedic Impairment	OI	\$22,716 (\$2,238)	\$3,514 (\$542)	\$19,202 (\$2,276)	439
Other Health Impairment	HL	\$21,241 (\$5,041)	\$6,372 (\$3,486)	\$14,869 (\$2,036)	8,286
Specific Learning Disability	LD	\$12,594 (\$1,196)	\$4,436 (\$351)	\$8,158 (\$1,235)	42,804
Speech/Language Impairment	SL	\$10,679 (\$969)	\$4,824 (\$331)	\$5,855 (\$727)	26,056
Traumatic Brain Injury	TBI	\$10,441 (\$686)	\$4,904 (\$384)	\$5,537 (\$593)	283
Visual Impairment/Blindness	VI	\$22,748 (\$5,008)	\$3,435 (\$498)	\$19,313 (\$5,111)	373
Developmental Delay	DD	\$24,057 (\$9,813)	\$3,476 (\$1,967)	\$20,580 (\$11,764)	814
Preschool	PR	\$26,263 (\$6,273)	\$2,226 (\$129)	\$24,036 (\$6,282)	5,972
<b>Overall</b>		<b>\$14,181</b> <b>(\$733)</b>	<b>\$4,464</b> <b>(\$455)</b>	<b>\$9,717</b> <b>(\$727)</b>	<b>103,962</b>

\* Not sufficient sample size to report reliable numbers.

## **Appendix E**

### **Significance Levels (P-values) for Differences in Per Pupil Expenditures for Students Served in Public Schools, by Disability Category**

**Appendix E.**  
**Significance Levels (P-values) for Differences in Per Pupil Expenditures, by**  
**Disability**  
(Differences Statistically Significant at the 5 Percent Level are Highlighted)

	<b>AT</b>	<b>DF</b>	<b>ED</b>	<b>HI</b>	<b>MR</b>	<b>MU</b>	<b>OI</b>	<b>HL</b>	<b>LD</b>	<b>SL</b>	<b>TBI</b>	<b>VI</b>	<b>DD</b>	<b>PR</b>
<b>AT</b>	1.00	0.17	0.03	0.73	0.14	0.42	0.17	0.64	0.01	0.00	0.00	0.45	0.59	0.25
<b>DF</b>	0.17	1.00	0.05	0.14	0.06	0.28	0.36	0.34	0.04	0.02	0.02	0.42	0.61	0.66
<b>ED</b>	0.03	0.05	1.00	0.11	0.92	0.01	0.00	0.10	0.70	0.78	0.71	0.05	0.23	0.03
<b>HI</b>	0.73	0.14	0.11	1.00	0.26	0.32	0.14	0.52	0.09	0.02	0.01	0.36	0.52	0.20
<b>MR</b>	0.14	0.06	0.92	0.26	1.00	0.06	0.02	0.16	0.89	0.76	0.72	0.11	0.26	0.06
<b>MU</b>	0.42	0.28	0.01	0.32	0.06	1.00	0.65	0.99	0.00	0.00	0.00	0.78	0.78	0.45
<b>OI</b>	0.17	0.36	0.00	0.14	0.02	0.65	1.00	0.79	0.00	0.00	0.00	1.00	0.89	0.59
<b>HL</b>	0.64	0.34	0.10	0.52	0.16	0.99	0.79	1.00	0.10	0.04	0.04	0.83	0.80	0.53
<b>LD</b>	0.01	0.04	0.70	0.09	0.89	0.00	0.00	0.10	1.00	0.21	0.12	0.05	0.25	0.03
<b>SL</b>	0.00	0.02	0.78	0.02	0.76	0.00	0.00	0.04	0.21	1.00	0.84	0.02	0.18	0.01
<b>TBI</b>	0.00	0.02	0.71	0.01	0.72	0.00	0.00	0.04	0.12	0.84	1.00	0.02	0.17	0.01
<b>VI</b>	0.45	0.42	0.05	0.36	0.11	0.78	1.00	0.83	0.05	0.02	0.02	1.00	0.91	0.66
<b>DD</b>	0.59	0.61	0.23	0.52	0.26	0.78	0.89	0.80	0.25	0.18	0.17	0.91	1.00	0.85
<b>PR</b>	0.25	0.66	0.03	0.20	0.06	0.45	0.59	0.53	0.03	0.01	0.01	0.66	0.85	1.00

# **Appendix F**

## **Development of Student Weights**

## **Development of Student Weights for the Maryland SEEP**

Maryland provided the SEEP research team with the Special Services Information System (SSIS) database, which contains a record for each student with a disability in Maryland for the school year 2001-2002. According to the SSIS data, the population of students with disabilities from the state's twenty-four regular districts plus Edison Schools is 111,551 students. The 875 students enrolled in state operated programs, according to December 1, 2001 student counts, are therefore not included in this analysis. The 111,551 records were disaggregated to derive student enrollment by disability type at the district level. The number of students in the sample (for each district for each disability category) was then compared to the number of students in the population. As relatively few sample students were pre-school or externally placed (by the district), we placed these students into separate disability categories. Weights were calculated as follows:

**The weight for a student with autism = # students with autism in district / # of students with autism in district responding to survey.**

Due to a lack of low incidence sample students in certain regions, an adjustment was made so that the sum of weights equaled the number of students in the state of Maryland. The weights were adjusted such that their sum equaled the number of students with disabilities by region. That is, the weights were adjusted by multiplying by the following factor:

**# students with autism in region 1 / sum of autism weights in region 1**

This adjustment accounted for the fact that not every district in each region was part of the sample, and thus the students in the sample districts represented all districts in their region.

The final sum of weights for the Maryland SEEP is 111,543, which does not include the eight school-aged, internally-placed deaf-blind students in the state, as there are none in the sample.

# **Appendix G**

## **SEEP Analysis Methodology**

## **SEEP Analysis Methods**

The data collected from completed surveys were combined with other requested documents and data sets from states, districts, and schools to create a Student Resource Cost database, and were then analyzed using the Resource Cost Model.

### ***The Resource Cost Model***

To determine the patterns of expenditure on students with disabilities, SEEP uses an “ingredients” approach to data collection and analysis. This approach, referred to as the *Resource Cost Model* (RCM), organizes detailed information on individual resources according to the services they are designed to provide. These resources include the teachers, related service providers, or paraprofessionals providing these services; the class size or number of students receiving these services at the same time; special equipment; and supplies and materials. Services include classroom instruction, consultation of resource teachers with regular classroom teachers, pullout programs in resource rooms, integrated services provided in regular classrooms to students with special needs, and overall administration and support.<sup>26</sup>

The RCM requires detailed information on the allocation and utilization of both the personnel and non-personnel resources required to provide education services to students with disabilities. The approach organizes the data collection to address two major questions:

- What specific ingredients (i.e., resources) are used to serve students with disabilities?
- How are these ingredients organized for service delivery?

To estimate expenditures for serving individual students with disabilities, we collected detailed information from individual teachers about the allocation of their time, the students they serve, and the composition of services these students receive. This information was then used to create the SEEP Student Resource Cost Database.

### ***Student Resource Cost Database***

The Maryland SEEP Student Resource Cost Database includes a record of each ingredient used to educate the approximately 1,450 special education students in the sample. These ingredients make up all of the special education services and regular education services that each special education student receives. Ingredients differ from student to student and occur in a variety of combinations. For example, one student who receives a service (such as a third grade class) might share a regular education teacher with 18 other students and have a personal special education aide. The same service (a third grade class), when provided to another student, might be made up of a different combination of ingredients, such as an interpreter and a special education teacher shared with eight other students. Detailed knowledge of the services provided,

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<sup>26</sup>The RCM approach has a substantial history of applications to special as well as to regular education expenditure analysis. Perhaps most importantly, the RCM approach was used for the previous major special education expenditure survey conducted by Decision Resources Corporation (Moore et al., 1988). For a more complete description of the development of a resource cost database, the reader is referred to Chambers and Parrish (1994).

the ingredients used to provide these services, and the cost of each ingredient, along with the cost of school and district administration and support, allow for the calculation of the total expenditures required to educate each student.

The information contained in the Student Resource Cost Database comes from data collected from the district, school, teacher, and student questionnaires, as well as from the state's Division of Planning Results and Information Management (PRIM). The PRIM data includes district-level expenditure information for special education students, and was obtained from the Maryland State Department of Education website.

The special education student questionnaire was the primary source of information about the specific services students receive. Data collected through this questionnaire include the number and types of services a student receives, the number of hours a student spends receiving a given service, the number of teachers, aides, or related service providers involved in providing the service, and the number of other students receiving the service at the same time.

The hours of classroom services students receive were analyzed in conjunction with the estimated rates of compensation for the various categories of school personnel. Rates of pay were estimated using econometric models based on information provided in the Special Education Teacher/Related Service Provider questionnaire, the General Education Teacher questionnaire, and the Special Education Instructional Aide questionnaire.

Information from the student questionnaire was used to determine whether or not individual students received transportation or summer school services. Estimates of per pupil transportation expenditures were derived using information collected in the district questionnaire. Likewise, the average per pupil expenditures for extended school year services in each district were calculated using information provided in the district questionnaire. For districts that did not provide transportation or extended school year information, estimates of the per pupil expenditures on these services were generated using an econometric model. These expenditures were then added to individual student records in the database.

The student-level expenditures described above make up the bulk of the expenditure information represented in the database. Another element of the total expenditure for a student includes the school administration costs. The per pupil expenditures on school administration are calculated by dividing the estimate of total administration costs for the school by the total number of students in the school. A record for per pupil school administration cost is included for each student in the database.

Students in the Resource Cost Database have two records for per pupil district administration costs: one for administration costs specific to the special education program, and another for overall district administration. Information from the district surveys, along with the central office special education professional staff questionnaire, were combined to calculate these expenditures, as they contained information about such district administrative costs as general administration, fiscal administration, personnel and payroll administration, and district maintenance and operations expenses. The district level administrative expenditures specific to the special education program were estimated based on data provided in the district questionnaire. Total expenditures on special education administration were divided by the total number of special education students in the district, and the general district administration expenditures were divided by the total number of students in the district.



Information about expenditures and number of students who received homebound or hospital services came from the district questionnaire. These expenditures are not included in the Student Resource Cost Database, but they are a part of the total expenditures to educate students who receive special education services.

These records of ingredients and their costs, when taken together, provide a comprehensive picture of expenditures for providing education services to special education students.