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ABSTRACT

The document describes findings of a study of the cost of special education and related services for handicapped children, using information from a national survey taken in 1977-1978. Twenty chapters cover the following study components: objective of the study; summary of study findings; description of sample states and localities; data collection and analysis methods; personnel salaries and work years; age, handicapping condition, and type of educational placement of the handicapped student population; instructional costs of special education teachers; special education aide costs; instructional costs of regular education teachers and aides; costs for related services personnel; screening costs; assessment costs; admission and individualized education program development costs; staff inservice training costs; technical assistance costs; transportation costs; other costs of educating handicapped children; other costs of educating nonhandicapped children; total and added costs of special education; and total cost of special education by size of local education agency enrollment. Tables with statistical data are provided throughout the report. (SB)

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PREFACE

This Note describes the findings of a Rand study of the cost of special education and related services for handicapped children, using information from a national survey taken in 1977-1978. A summary of the findings of this study appears in J.S. Kakalik, W.S. Furry, M.A. Thomas, and M.F. Carney, The Cost of Special Education: Summary of Study Findings, The Rand Corporation, R-2858-ED, and in Chap. II of this Note. The work was performed under Contract No. 300-79-0733 from the U.S. Department of Education, Office of Special Education.

The objective of the study is to assist in the formulation of policies and the allocation of resources for the education of handicapped children by providing accurate information on the cost of various types of special education and related services. This cost information is to be provided by age level, type of handicapping condition, and type of educational placement, and is to be based on data from a nationally representative sample of localities of various sizes.

SUMMARY

The objective of this study is to assist in the formulation of policies and the allocation of resources for the education of handicapped children by providing accurate information on the cost of various types of special education and related services.

Information about the cost of special education will aid in determining the levels of financing required to provide an appropriate education for handicapped children; facilitate setting policies on service requirements and related matters by enhancing understanding of the costs of different types of services and educational placements, and allow adjustment of state and federal special education finance formulas to match local need and reduce fiscal incentives for inappropriate classification and placement of children. We believe that using this study's more accurate and detailed cost information will yield major improvements in special education policies and programs.

Using data collected in person from a nationally representative sample of localities in 1977-1978, this study addresses the following questions:

1. What are the total costs of special education and related services for (a) different age levels, (b) different handicapped populations, (c) various educational placements, and (d) various sizes of school districts?
2. What are the costs of such services for handicapped students as assessment and placement, instructional services, related services, and administrative services?

3. What are the added costs of special education and related services for handicapped children above the cost of regular education services for nonhandicapped children?

How much do various types of special education and related services for handicapped children cost? For the 1977-1978 school year, total nationwide expenditures for the "added cost" of special education (those costs above the cost of regular education) were over \$7 billion. The total cost of special education and related services per handicapped child served in 1977-1978 was an estimated \$3577. This was 2.17 times greater than the cost of regular education per nonhandicapped child.

The added cost of special education and related services above the cost of regular education for a nonhandicapped child was an estimated \$1927 per handicapped child served.

In the three-year time span from the 1977-1978 school year to the 1980-1981 school year, the estimated annual current expenditures per pupil in average daily attendance in public elementary and secondary days schools increased 37 percent. Assuming that both the cost of regular education per pupil and the cost of special education per pupil increased by the same 37 percent during that period, then over \$10 billion was spent nationwide in the 1980-1981 school year for the added cost of special education. For that school year total and added costs of special education and related services per handicapped pupil were an estimated \$4898 and \$2638, respectively.

Various breakdowns of the estimated total cost of educating handicapped children during the 1977-1978 school year are presented below. Unless otherwise indicated, the costs are per handicapped child.

Instruction by special education teachers and aides cost \$551 and \$106, respectively, including salaries and fringe benefits. Instruction by regular education teachers cost an estimated \$743, of which \$206 was for time spent per handicapped child above and beyond the average time spent per nonhandicapped child. Related services, such as physical therapy or speech therapy, cost an average of \$191. Assessment of the children's handicapping conditions and special education needs cost an estimated \$100 per child. Admission to special education, placement, and individual education program development cost \$103 per child in salaries and fringe benefits. Technical assistance from one staff member to another regarding special education and related services cost \$135. Regular and special transportation of handicapped students cost estimated averages of \$48 and \$111, respectively, per child. Special education administrative costs were \$87 per child. General district-level administration and school level administration cost \$200 and \$209, respectively. Food services cost \$88. Facility operations and maintenance costs totaled \$378, and interest plus debt retirement was \$245. All other types of costs combined totaled \$282 out of the grand total of \$3577 per handicapped child.

By age level, the costs were a total of \$3526 (\$3526 added cost) at the preschool level, a total of \$3267 (\$1617 added cost) at the elementary level, and a total of \$4099 (\$2449 added cost) at the secondary level per handicapped child in 1977-1978.

By type of handicap, the range in the total cost per child was from a low of \$2253 (\$603 added cost) for speech impaired children up to \$9664 (\$8014 added cost) for functionally blind children. The more

severe the handicap of the average child in a category, the higher the average cost. For example, providing an education for severely retarded children cost \$5926, while serving educable mentally retarded children cost \$3795.

By type of educational placement, the range in total cost was from a low of \$901 (a savings of \$749 instead of an added cost) per handicapped child who worked full time under the auspices of the special education program rather than attending classes, up to \$5352 (\$3702 added cost) per child in a special day school only for handicapped children.

Other children in the lower-cost placements were in a regular class receiving indirect special services only (\$2550 total cost and \$900 added cost) or in a regular class receiving related services only (\$2267 total cost and \$617 added cost). The homebound placements (\$2228 total cost and \$578 added cost) and short-term, hospital-bound placements (\$1981 total cost and \$331 added cost) were also lower-cost placements because the children were away from school for only a small fraction of the year. Also, the short-term homebound and short-term hospital bound children often received no related services from the school district and often did not have an individualized education program written for them.

Children in regular class who received itinerant special teacher services were in the second most expensive placement (\$5218 total cost and \$3568 added cost), and entailed costs just slightly less than those of children in special day schools. The reason for the high cost of the itinerant special teacher placement was the expensive one-to-one teaching that was usually provided.

The two "mainstream" placements of regular class plus part time special class (\$4709 total cost and \$3059 added cost), and special class plus part time regular class (\$4345 total cost and \$2695 added cost) were nearly as expensive as a full time special class (\$4733 total cost and \$3083 added cost). Much of the cost of the "mainstream" placements was not in the special education budget, but in the regular education budget (e.g., the cost of the time spent by regular education teachers who teach handicapped children in the regular education classroom). Mainstreaming, as currently implemented, should not be looked upon as a way to reduce costs, but rather should be used when it is the most appropriate placement for a child.

Within each handicap, total cost per pupil varied widely depending on the educational placement. Similarly, within each educational placement, there was a great variation in total cost per pupil depending on the child's handicapping condition.

Within the highest-cost handicap category--functionally blind children--the cost varied from \$11,189 per pupil receiving itinerant special teacher services down to \$5966 per pupil in a full time special class. Within the lowest-cost handicap category--speech handicapped children--the total cost per child in a regular class who received only speech therapy was \$2244, whereas the cost per speech impaired child in a full time special class was \$5439. Within the full time special class placement, the cost per educable mentally retarded child was \$3265, whereas the cost per severely mentally retarded child was \$7695.

The message is that if only age level, or only handicapping condition, or only type of placement, is considered in estimating the average

total cost per child, the estimate will not indicate the thousands of dollars of variation in cost per child within each of the categories, and therefore will not differentiate among districts whose needs depart sharply from the average. If one district has a disproportionate number of severely handicapped children who need high cost placements, for example, it will need higher than average funding per child.

We indicated above that it cost an estimated 2.17 times as much to educate the average handicapped child as it did to educate the average nonhandicapped child in 1977-1978. This cost weighting factor varied by age level from 1.98 at the elementary level to 2.48 at the secondary level. It varied by type of handicap from 1.37 for speech impaired children up to 5.86 for functionally blind children. It varied by type of educational placement from 0.55 for students working full time under the auspices of the special education program rather than attending classes, up to 3.24 for students in special day schools for only handicapped pupils. The highest cost category, considering both type of handicap and educational placement combined, was the functionally blind child in regular education class receiving itinerant special teacher services at a cost weighting factor of 6.78 (a total cost of \$11,189 per child during the 1977-1978 school year).

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The state directors of special education from California, Indiana, Michigan, Minnesota, Montana, New Jersey, New York, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, and Texas have cooperated throughout this and related studies. They provided data to help in the selection of a stratified probabilistic sample of local education agencies, assisted in gaining the cooperation of the selected localities, and provided data on state education agency costs of education for handicapped children.

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I. DESCRIPTION OF THE STUDY

INTRODUCTION

Information about the cost of special education is needed to aid in determining the levels of financing required to provide an appropriate education for handicapped children, to facilitate setting policies on service requirements and related matters by enhancing understanding of the costs of different types of services and educational placements, and to allow adjustment of state and federal special education finance formulas to match local need and to reduce fiscal incentives for inappropriate classification and placement of children.

A major study of the cost of special education was essential for three reasons: Recent federal and state court rulings and legislation have resulted in rapid expansion of special education programs; knowledge of cost that would be useful in deciding on special education policies and funding levels has been deficient because research conducted before this study was limited and inadequate; and education agencies' collection and reporting of data on the cost of special education has been inadequate.

The 1975 Federal Education for All Handicapped Children Act, P.L. 94-142, as well as recent federal and state court rulings and legislation, mandated and stimulated the provision of appropriate special education for all handicapped children. These rulings and legislation greatly affected both the special education service delivery system and the total cost of special education. Ongoing reforms in the delivery

system for special education services have major implications for cost. Special education costs and finance policy can strongly influence implementation of desired reforms in the special education delivery system. Consequently, the cost of special education is an especially relevant policy issue at this time.

Several studies on the cost of special education have been conducted in recent years,[1] but their results have been of limited usefulness. Most were small studies conducted in limited geographic areas (such as a single state), and hence were not generalizable. The few multistate studies used aggregated reported data or subjective estimates, or a nonrepresentative sample, rather than collecting detailed new empirical data from a nationally representative sample of localities.

Local education agencies seldom compile and report cost data separately for a particular type of educational placement for a particular type of handicapped child. Also, before this study the available data invariably combined some expenditures for handicapped children with those for nonhandicapped children and combined some expenditures for one type of special education placement with those for another. Hence, research was needed to collect and analyze new expenditure and resource-use data from local education agencies to learn the costs of providing various types of special education and related services.

[1] For a review of these studies, see J.S. Kakalik, Issues in the Cost and Finance of Special Education, The Rand Corporation, P-6217, Santa Monica, September 1978.

OBJECTIVE OF THE STUDY

The objective of the study is to assist in the formulation of policies and the allocation of resources for the education of handicapped children by providing accurate information on the cost of various types of special education and related services.

The study uses data collected in person from a nationally representative sample of localities of various sizes during the 1977-1978 school year. [2] The study was designed to answer the following questions:

1. What are the total costs of special education and related services for the following categories: various age levels, various handicapped populations, various educational placements, and various sizes of school districts?
2. What are the costs of such types of services for handicapped children as assessment and placement, instructional services, related services, and administrative services?
3. What are the added costs of special education and related services for handicapped children above the cost of regular education services for nonhandicapped children?

This study is concerned with the costs of special education and related services actually provided to handicapped children. Policy concerns that are beyond the scope of this study include: the amount of funding required to provide all needed services or the most effective

[2] Data collection and some preliminary data analysis were conducted under Grant Nos. G007701354 and G007902507 from the U.S. Department of Education, Office of Special Education. Final data analysis was conducted under Contract No. 300-79-0733 from the U.S. Department of Education, Office of Special Education.

services; the types of services that should be provided to various categories of handicapped children if available funding is insufficient to provide all needed services; the funding roles of different levels of government; and the design of state and federal fund-distribution formulas. However, the results of this cost study can be helpful in addressing these policy concerns in the future.

II. SUMMARY OF STUDY FINDINGS

OVERVIEW OF FINDINGS

For the 1977-1978 school year, total nationwide expenditures for the "added cost" of special education (those costs above the cost of regular education) were over \$7 billion. The total cost of special education and related services per handicapped child served in 1977-1978 was an estimated \$3577. This was 2.17 times greater than the cost of regular education per nonhandicapped child. The added cost of special education and related services above the cost of regular education for a nonhandicapped child was an estimated \$1927 per handicapped child served.

In the three-year time span from the 1977-1978 school year to the 1980-1981 school year, the estimated annual current expenditures per pupil in average daily attendance in public elementary and secondary day schools increased 37 percent. [1] Assuming that both the cost of regular education per pupil and the cost of special education per pupil increased by the same 37 percent during that period, then over \$10 billion was spent nationwide in the 1980-1981 school year for the added cost of special education. For that school year, total and added costs of special education and related services per handicapped pupil were an estimated \$4898 and \$2638, respectively.

[1] National Center for Educational Statistics, "Statistics of Public Elementary and Secondary Schools: 1977-1978 School Year," p. 34; and "Estimates for Financial Statistics of Public Elementary and Secondary Education: 1980-1981 School year," Table 3 (Draft).

DESCRIPTION OF SAMPLE STATES AND LOCALITIES

A stratified probabilistic sample of education agencies was selected to be representative of the nation, the variety of local conditions that influence the provision of special education and related services, and the range of age levels, handicapping conditions, and educational placements found in special education programs. We sampled and collected empirical data in person from 14 states, 46 localities within the states, and nearly 900 teachers within these localities.

The sample consisted of all publicly provided nonresidential special education and related services programs serving all handicapped children from a "locality," which was defined as a geographic boundary of the local education agency (LEA) selected to be in the sample. If any of the children from the locality (i.e., who lived within the boundaries of the sample LEA) were served by some other intermediate, cooperative, regional, or state agency, then the sample of agencies included that other agency. However, the sample of children served by the other agencies included only children from the sample LEA.

The localities in the sample consisted of 42 unified school districts, four elementary districts and their four associated secondary districts, and 22 intermediate education agencies. In addition, the sample included 35 cooperating LEAs, state-operated programs, and other organizations that provided services to students who resided in the 46 localities. Given the amount of funding available for this project, the size of the sample was as large as it could be and still allow us to collect high-quality data in each locality. The probabilistically selected sample is nationally representative from a statistical

viewpoint and permits estimates to be made about the cost of special education and related services in the nation.

The 46 localities were probabilistically selected to be representative on the following variables: geographic region, total state school enrollment, population density, personal income per capita, average enrollment per LEA, type of state special education funding formula, and percentage of special education funds from local sources.

In selecting the LEAs, we drew a stratified probabilistic sample from the set of all unified LEAs plus all nonunified elementary LEAs within each of the 14 states. If we selected a nonunified elementary district, then we also selected the corresponding secondary LEA. In selecting localities within states, districts were stratified by total enrollment, per capita income, percent minority enrollment, and the degree to which they were urban or rural.

The U.S. Office of Special Education requested that we exclude districts that were not providing even minimally comprehensive programs for handicapped children. Accordingly, we applied four comprehensiveness criteria to screen out certain districts: those that served, or made arrangements with other districts to serve, only zero, one, or two handicaps (including speech therapy); less than 4 percent of the district's enrollment; handicapped students in only one educational placement; or handicapped students of only one age level. The districts excluded by these criteria were typically small, remote rural districts. The districts that passed the screens represented 96 percent of the special education students in the nation--a statistically representative sample that should be adequate for the purposes of most readers.

The 46 localities were well distributed geographically: 9 were in the northeast census region, 12 in the southern region, 14 in the north-central region, and 11 in the western region.

The sample included 18 major urban localities (defined as urban districts with student enrollments of 15,000 or more), 14 rural districts (defined as districts with student enrollments of less than 2,500 that were located at least 50 miles from an urban center of 100,000 or more population and at least 50 miles from each of the three largest cities in the state) and 14 residual category localities (defined as neither major urban nor rural.)

In terms of 1974 personal income per capita, the localities ranged from a low of \$3200 to a high of \$6100, with a weighted average of \$4993. (1978 data were not available for the localities.) Nationwide, the 1974 average was \$5434.

The 1977-1978 elementary and secondary school enrollment in our sample LEAs ranged from a low of 91 to a high of over 200,000 pupils. Fifteen were districts of less than 2500 enrollment. Of the 23 U.S. cities with a total population of over 500,000 in 1977, five were in our sample.

The minority school enrollment in the sample localities ranged from 0 to 86 percent, with a weighted average of 19 percent. Nationwide the percentage was known to be 20.2.

The average teacher's salary without fringe benefits ranged from a low of \$9,000 to a high of \$19,000 per year for the localities in the sample, with a weighted average of \$14,949. The comparable national average for the 1977-1978 school year was \$15,027, according to the National Center for Educational Statistics.

DATA COLLECTION AND ANALYSIS METHODS

In estimating the total cost of special education and related services, we took the types of service one at a time. For example, total cost was estimated separately for screening for handicapping conditions, preparing individualized education programs, and providing direct instructional services. In arriving at total costs, we estimated the cost per child for each service by age level, handicapping condition, and type of educational placement. This was done in three major steps. First, we estimated the minutes of each type of service per child (or equivalently, the full-time-equivalent--FTE--personnel per child) in each district, for each different type of personnel, and for each age level, handicapping condition, and type of educational placement. Second, we took the sample weights and salaries and fringe benefits per FTE staff member and estimated the national average cost for that particular service and type of personnel. Third, we estimated the support services costs (such as for facility operations and district administration) and nonpersonnel costs (such as for instructional supplies per handicapped pupil) by age level, handicapping condition, and type of educational placement.

Calculations of the added cost of special education and related services per handicapped child above the costs of regular education per nonhandicapped child required two major steps. First, we estimated the total cost of regular education per nonhandicapped child from detailed data collected in this study. Second, we estimated the added cost of

special education and related services by subtracting the total cost of regular education per nonhandicapped child from the total cost of special education and related services per handicapped child.

After defining the program by its services, its types of students, its personnel and other resource requirements, we determined the cost of the program on a comparable basis across districts by using national average salaries developed from our sample data to calculate personnel costs. We used standard prices or salaries for each specific type of personnel in this study because we needed to be able to compare programs across districts without having local salary variations obscure differences among programs. When we are comparing alternative programs across districts nationwide, the use of national average salaries and national average work-hours per year allows the comparison of service levels of programs consistently across districts using the same scale. However, the actual costs in individual localities may justifiably vary from our nationwide average estimates. Our data base also contains local salaries, and those can be used for specialized analyses if desired in the future.

All education agency costs are included in the analysis except for the costs of summer and adult evening school and the added costs of other target population programs such as those for disadvantaged and bilingual children. No costs were counted more than once; for example, any duplicate costs of new building construction and debt retirement were not double-counted. All estimates are per child enrolled, not per child in average daily attendance, because student enrollment data were more readily available by type of handicapping condition, age level, and

type of educational placement. The estimated cost of special education included all the costs for all types of services provided for handicapped children whether or not they were paid for by the "special education" budget.

Data were collected and analyzed for prekindergarten, elementary, and secondary age levels, and for the following categories of handicapping condition: learning disability, educable mental retardation, trainable mental retardation, severe mental retardation, serious emotional disturbance, profound deafness, partial hearing, functional blindness, partial sightedness, orthopedic impairment, other health impairment, speech impairment, and multiple impairment.

Data were collected and analyzed for several types of educational placements: full time regular education class plus indirect services only, regular education class plus special related services only, regular education class plus itinerant special instruction, regular education class a majority of the time plus part time special class, special education class a majority of the time plus part time regular education class, full time special class, special public day school for only handicapped children, homebound instruction, short-term hospital instruction, and full time work under the auspices of the special education program instead of class attendance. The study did not include any private or residential placements.

Data were collected and analyzed for various types of direct educational and related services including: instruction by special education teachers and aides, services by regular education teachers and aides

(including the extra time spent on handicapped children), adapted physical education, counseling, occupational therapy, physical therapy, medical-related services, mobility training, psychological services, special vocational services, social services, and speech therapy.

Indirect services on which data were collected and analyzed included screening for handicapping conditions, assessment of handicapping conditions and service needs, admission and placement into a special education program, individual education program development, technical assistance to professionals regarding special education, staff in-service training, supplies and equipment, transportation, food services, facility operations and maintenance, and district and school administration.

The probabilistic sampling technique used to select the sample localities allowed the calculation of a weighted national average for all types of costs for all groups of students classified by age level, handicapping condition, type of educational placement, size of school district, and type of service. Viewed in simple terms, the weight we assigned can be interpreted as the total number of handicapped children in the nation that the average individual child of a particular type in the sample locality represented.

PERSONNEL SALARIES AND WORKYEARS

Based on nationwide estimates obtained by appropriately weighting 1978 data from our national sample, all teachers combined had an average annual salary of \$14,949. Special education teachers and aides earned an average of \$13,877 and \$4,854 per year, respectively. The lowest-paying 10 percent of the districts in our sample paid their professionals

less than \$11,500, which was approximately half the salary paid by the highest-paying 10 percent. Related services personnel typically were paid salaries that were comparable to those of teachers, although there were exceptions. For example, speech therapists averaged \$14,727, psychologists \$18,737, and medical doctors \$40,461 per year.

Fringe benefits averaged 18 percent of salary for teachers and 29 percent for aides (higher for aides because certain fringe benefits such as health insurance were usually a fixed dollar amount per staff member).

Nationwide, teachers worked an average of 74,808 minutes per year. This represented approximately a seven-hour workday based on a workyear of 180 days.

All teachers averaged ten years' experience; special education teachers averaged seven years' experience, which accounted for their lower average salaries. The percentages of all teachers and special education teachers with Master's degrees or the equivalent number of credits was approximately the same, 46 percent and 48 percent, respectively. Fully 70 percent of the speech therapists and 98 percent of the psychologists had advanced degrees or the equivalent number of credits.

In districts that paid special education teachers a bonus above the standard salary schedule, the extra pay averaged \$371 per year. The average extra pay for all districts, including those that did and did not pay such a bonus, was \$96 per year.

EDUCATIONAL PLACEMENTS AND AGE LEVELS OF HANDICAPPED STUDENTS

Of all handicapped students in special education in public schools nationwide during the 1977-1978 school year (excluding public residential schools and institutions), 2 percent were preschool age, 66 percent were elementary age, and 32 percent were secondary age. Of those handicapped students served in public schools, 1 percent were in regular education class full time and received indirect services only, 41 percent were in regular education class and received special related services only (including speech impaired children who received speech therapy only), 2 percent were in regular education class and received itinerant special teaching services, 31 percent were in a regular class a majority of the time and in a special class a minority of the time, 11 percent were in a special class a majority of the time, 5 percent were in a special class full time, 5 percent were in a special day school for only handicapped pupils, and 3 percent were homebound. Of the special education students, 87 percent spent at least part of the school day in regular education programs with nonhandicapped children, and they were usually counted as part of the normal class size. However, the educational placement of the children depended significantly on the nature and severity of their handicapping condition. For example, 98 percent of the children who were speech impaired and had no other handicap were in a regular education class full time and received speech therapy only, while 91 percent of the severely mentally retarded children were placed in special day schools that served only handicapped children.

INSTRUCTIONAL COSTS OF SPECIAL EDUCATION TEACHERS

The total salary and fringe benefits cost for instructional services provided by special education teachers was estimated to be \$551 per handicapped child during the 1977-1978 school year. This estimate includes the cost of all paid work-time by special education teachers, with the exception of time spent on screening children to detect potential handicaps; assessing the needs of handicapped children; admitting children to special education, placement, and individual education program development; special education inservice training; and consulting with other professionals relative to special education.

The estimated cost for instructional services varied from \$0 for handicapped students placed in a regular education class full time up to \$1578 per handicapped student in a full time special class. In general, children served in less restrictive educational placements received less instructional service time from special education teachers.

The more severely handicapped students received the most instructional services from special education teachers, with the highest cost per child estimated to be \$2336 per year for profoundly deaf children and \$2516 per year for functionally blind children. The least instructional services went to speech impaired children, estimated to cost only \$6 per year.

SPECIAL EDUCATION AIDE COSTS

The total salary and fringe benefits cost for special education aides was estimated to be \$106 per handicapped child per year. This varied from \$0 for handicapped students placed in a regular education

class full time up to \$598 per child who was placed in a special day school for only handicapped children. In general, those children served in less restrictive educational placements were provided less aide assistance. The most severely handicapped students received the most special education aide assistance, with the highest costs per child estimated to be \$1210 per severely mentally retarded student and \$1143 per multiple handicapped child per year. The least special education aide assistance went to other health impaired children, estimated to cost \$5 per year. Considering both the type of handicap and the educational placement, the highest special education aide cost was \$1586 per year per multiple handicapped child placed in a special day school.

INSTRUCTIONAL COSTS OF REGULAR EDUCATION TEACHERS AND AIDES

In estimating the total cost of special education for handicapped children, we found it necessary to estimate the cost of services provided by regular education teachers and aides during any time the handicapped pupil spent in the regular education classroom. In addition, the cost of regular education was needed to estimate the added cost of special education for handicapped pupils.

The national average school year was estimated to be 177 days. The length of the school day was approximately 3.3 hours at the preschool level, 5.6 hours at the elementary level, and 6.0 hours at the secondary level during 1977-1978.

To estimate the cost of services provided to handicapped students by regular education teachers, it was necessary to estimate the proportions of time that different types of handicapped students spent in the

regular classroom (as opposed to the special education classroom). Handicapped students who were in a regular class full time, and received indirect or related services only, spent no time with special teachers and hence incurred the same regular education teachers' cost as nonhandicapped students (with the exception of certain special services provided by the regular education teachers that are described below). Students served by an itinerant special teacher spent an estimated 8 percent of their school week with that teacher. Children who were in regular class the majority of time, plus a part time special class, spent 22 percent of their time in that special class on the average. Children who were in the special class the majority of time with part time regular class placement generally spent 77 percent of their time in the special education class. Homebound students averaged 46 percent of the school year at home and the remainder of the school year at the public school facility. Short term hospital students spent 18 percent of their time at the hospital during the school year.

The estimated total cost per nonhandicapped pupil for regular education instructional activities was \$761 per year. This varied by age level from \$632 at the preschool level to \$708 at the elementary level to \$808 at the secondary level. Before dividing the cost of the FTE regular education teachers by the number of FTE regular education children, we first excluded the cost of special services to handicapped children provided by regular teachers such as assessment, screening, special education inservice training time, and extra time spent on the handicapped children in the regular education classroom above and beyond the average time spent on nonhandicapped children.

The regular education teacher instructional cost per handicapped pupil per year (not including the costs noted above) varied considerably by handicap, from \$1 for severely mentally retarded students who were almost never "mainstreamed" into a regular education classroom up to \$694 per year for speech impaired children who were almost always served in the regular classroom full time with related speech services only. The range by type of educational placement was from \$0 for children in special classes and special day schools up to \$761 per year for those handicapped students who were placed in regular classes full time and received indirect services only.[2]

Regular education aides cost an average of \$8 per year per nonhandicapped child in 1977-1978. This figure does not include the cost of aides paid for by "other target population" programs such as compensatory education. The cost of regular education aides for handicapped children during the time they were in the regular education classroom was \$8 per year or less on the average for all types of handicaps and educational placements.

When handicapped children were placed in regular education classrooms, the regular education teacher sometimes spent extra time on the handicapped child above and beyond the time spent on the average nonhandicapped child. The average handicapped child received five minutes per day extra attention from regular education teachers at an

[2] When a handicapped student spends time in a regular education classroom, a portion of the regular education teacher's time is devoted to serving that handicapped child. Consequently, a portion of the cost of that regular teacher should be included in the total cost of educating the handicapped child.

estimated extra cost per year of \$206.[3] This was above and beyond any other costs reported for any other services. This extra cost varied by type of handicap from \$5 extra per year for other health impaired children up to \$928 extra per year for functionally blind children. It varied by type of educational placement from \$0 for those students who were not served in a regular education classroom at all up to \$746 extra per year for those students in regular education classes who were also served by an itinerant special education teacher. Emotionally disturbed and functionally blind children were the two categories of handicaps that received the most extra attention. However, most handicapped children placed in regular education classrooms received very little extra attention from the regular education teacher, as the average of five minutes extra per day for all types of handicapped children combined reveals.

We estimated an extra expenditure by regular education aides of \$14 per handicapped child per year and an extra amount of service of one minute per day per special education child.

COSTS FOR RELATED SERVICES PERSONNEL

Various types of related services personnel often provided services for special education students. Services most frequently provided were adaptive physical education, counseling, nursing, occupational therapy, physical therapy, psychological services, social work services, special vocational services, and speech therapy services. Services provided by

[3] The amount of extra time spent on handicapped children was estimated by the teachers we interviewed; we recognize that those teachers' estimates may not be entirely accurate, but they are both reasonable and the best information available.

some of these types of personnel, especially by counselors, librarians, and school nurses, were also provided to nonhandicapped students.

The 1977-1978 national average cost of various related services was estimated to total \$61 per nonhandicapped child and \$191 per handicapped child, including both salary and fringe benefits. These cost estimates were for all time spent by all types of related services personnel, except for time spent on screening, assessment, admission of children to special education, individual education program (IEP) development, staff inservice training, and consulting with other professionals relative to special education. (Those related service costs that were excluded here are discussed separately later.) Also excluded from the above cost estimate was all time spent providing related services for "other target population" programs such as those for disadvantaged or bilingual children.

For nonhandicapped children, the three types of personnel who provided the greatest amount of related services were counselors (\$29 per year), librarians (\$22 per year), and nurses (\$4 per year). For handicapped children, the largest amount of service per child was provided by speech therapists (\$81 per year for every child in special education, whether or not that child received speech therapy). Other types of personnel who provided major related services for handicapped children included adaptive physical education specialists (\$5 per year for every child in special education), counselors (\$29 per year), librarians (\$22 per year), nurses (\$8 per year), occupational therapists (\$3 per year), physical therapists (\$5 per year), psychologists (\$6 per year), social workers (\$9 per year), special vocational personnel (\$12 per year), and related services aides (\$4 per year).

The amount of related services per pupil varied greatly by type of educational placement. Nonhandicapped students received \$61 per year of these related services, as did handicapped students placed in regular education classes full time who received indirect special services only. The largest amount of these related services by type of educational placement went to students in special day schools for only handicapped students, at an estimated cost of \$630 per year.

Considering the costs by type of handicap, the lowest costs were for services to learning disabled students (\$120 per year) and other health impaired students (\$123 per year). Speech impaired students received \$196 per year in related services, including speech therapy. The greatest estimated cost was for children with multiple handicaps (\$1179 per year). In general, the more severe the handicap, the more related services provided.

SCREENING COSTS

All or part of the general student population may be screened each year to identify children who might benefit from screening--namely those who need special education and related services and those with less than handicapping conditions whose parents may need to obtain certain assistance, such as glasses, that will enable their children to make the most effective progress in school. Screening does not include time spent assessing students who are referred as possibly handicapped but rather includes the brief screening of segments of the entire student population, such as all students at a certain grade level.

Nationwide, 50 percent of the student population was screened for hearing impairment during the 1977-1978 school year. This was usually done by nurses or speech therapists and took an average of eight minutes per student screened at a cost of \$1.48. When these costs were allocated to the categories of students receiving the benefits, the cost for the average nonhandicapped student was 85 cents, and the cost for the average deaf or partial hearing student was approximately \$22.

About half of the student population was also screened for vision impairments, usually by nurses. This took an average of eight minutes and cost \$1.73 per child. When these costs were allocated to the categories of students receiving the benefits, the cost for the average nonhandicapped student was 84 cents, and the cost for the average visually handicapped student was approximately \$6.

Physical screening was less prevalent, encompassing only 19 percent of the general student population. The screening was usually by nurses or medical doctors and took an average of 29 minutes per student at a cost of \$5.84. Considering that not all students were screened, this amounted to approximately \$1 for the average student per year.

Approximately 12 percent of the general student population was screened by speech therapists for speech impairments. This took 15 minutes per student on the average at a cost of \$3.51. Considering that not all students were screened each year, and that only handicapped students benefited from the program, the cost of the screening program for the average handicapped student was approximately \$6 per year.

Nationwide, less than 4 percent of the general student population was screened for learning disabilities or mental retardation. None of

the districts in our sample screened for emotional disturbances. The mental screening was usually done by psychologists or teachers and took an average of 21 minutes per student at a cost of \$5.20.

In total, considering all five types of screening combined, the cost for the average nonhandicapped student in the nation was only \$2.66 per year, and for the average handicapped student was only \$8.34 per year.

ASSESSMENT COSTS

Children's handicapping conditions and service needs in the special education and related services areas were assessed both for children who were known to be handicapped and for children who were referred as possibly handicapped.

Assessment by related services professionals and nonclassroom teachers such as psychologists, speech therapists, and homebound teachers took 164 minutes on the average and cost \$43 per child, including salary and fringe benefits. The lowest cost per assessment was \$8 by adaptive physical education teachers and the highest was \$108 by psychiatrists. The average special education child nationwide received 1.6 assessments per year by all related services professionals and nonclassroom teachers combined. The total cost per child per year for all assessments by all types of related services professionals and nonclassroom teachers combined averaged \$72.

Related services aides assessed less than 1 percent of the handicapped children.

Assessment by special education teachers took 233 minutes per child on the average (about a half day) and cost \$51. The percent of handicapped children assessed each year by special education classroom and resource room teachers was 100 percent for the children who received direct instructional services from these teachers, but was near zero for certain educational placements (such as a full time regular education classroom placement with special related services only). Considering that not every handicapped child was assessed by special education teachers, the cost per year for the average handicapped child was \$26.

Only about 1.4 percent of the handicapped students had their special education and related services needs formally assessed by regular education teachers during the 1977-1978 school year.

Considering all types of personnel combined, the average handicapped child was assessed 2.1 times during the year, at a combined total cost per child of \$100, including salary and fringe benefits. This varied by age level from 1.8 assessments per year (\$95) for preschool children up to 2.5 assessments per year (\$127) for secondary age children. It ranged by handicap from 1.0 assessment per year (\$36) for a speech impaired child up to 3.5 assessments per year (\$198) for an emotionally disturbed child. It ranged by educational placement from 1.0 assessment per year (\$33) for children who were in a regular education class full time and were receiving special related services only up to 2.6 assessments per year (\$190) for children in special day schools for only handicapped children.

ADMISSION AND IEP DEVELOPMENT COSTS

Children who are referred to the special education program because they may have some type of physical or mental impairment must proceed through an admission, placement, and individualized education program (IEP) development process prior to the provision of special education and related services.

The estimated cost for the admission and IEP development process, excluding assessment costs, was \$103 per child in 1977-1978. This cost included the salaries and fringe benefits of all personnel attending the meetings, the costs of documenting the results of the meetings and decisions, and the time spent writing and revising the IEP for each child.

The typical admission and IEP development process in the average district involved three people, usually one teacher, one administrator, and one related services person.

The average admission meeting took 42 minutes. If a special education teacher was involved in preparing an IEP for the child, that teacher generally spent about three hours on the IEP.

While the cost per child averaged \$103, it ranged by type of handicap from \$60 for speech impaired children up to \$177 for partially sighted children, and it ranged from \$33 for each child placed in a short term hospital up to \$170 for each child placed in a regular education class who received special indirect services only.

STAFF INSERVICE TRAINING COSTS

Nearly all local education agencies had an inservice training program for professional staff members to help them maintain and improve

their teaching and related service skills in the area of special education.

The total costs for inservice training in special education and related services provided to education agency staff members during the 1977-1978 school year was estimated to be \$40 per special education student. This included \$27 for the time spent during work hours by the staff who received the inservice training, \$7 for the time spent by the education agency staff who provided the inservice training, and \$6 for other miscellaneous inservice training costs such as consultants and materials.

TECHNICAL ASSISTANCE COSTS

Various types of special education teachers and other related services personnel (e.g., psychologists) often gave technical assistance in the area of special education to other professional staff members within a district.

The national average cost of giving and receiving technical assistance in the area of special education by all types of professional staff members was estimated to be \$135 per handicapped child per year in salary and fringe benefits. The largest components of this total were for special education teachers (\$38), regular education teachers (\$40), and psychologists (\$16).

TRANSPORTATION COSTS

Pupils were provided transportation by education agencies for a number of reasons. Both handicapped and nonhandicapped students sometimes lived too far from school to walk. Some handicapped students were

provided transportation because they had some physical, mental, or behavioral disorder that made it impossible or inadvisable to have them go to school on their own. Two types of transportation costs were estimated. The first, called special transportation, was provided at education agency expense and involved handicapped students only. The second, called regular transportation, involved either nonhandicapped students or both handicapped and nonhandicapped students in the same vehicle.

During the 1977-1978 school year, the estimated cost of regular transportation divided by the total number of nonhandicapped children (whether or not they were provided regular transportation) was \$73 per year.

The estimated cost of both regular and special transportation provided for the average handicapped student was \$159--\$48 for regular and \$111 for special transportation. The latter two figures would be higher if we counted only children who actually received transportation at education agency expense: \$187 for regular and \$720 for special transportation.

The total cost of regular and special transportation combined varied from \$0 per handicapped child working full time and not attending classes, up to \$581 per handicapped child in a special day school. (These estimates are averages for all handicapped children, whether or not they received any transportation at education agency expense.) The total transportation cost per child by type of handicap varied from less

than \$100 per year for speech impaired and other health impaired children, up to \$980 per year for children with multiple handicaps. Again, the cost per child increased with the severity of the handicapping condition.

OTHER COSTS OF EDUCATING HANDICAPPED CHILDREN

The national average estimated cost of instructional supplies and texts (including both those used in the regular and in the special education classrooms) totaled \$55 per handicapped child. Supplies for related services staff and nonclassroom teachers cost an estimated \$10. Instructional equipment cost \$21 and equipment for related services staff and nonclassroom teachers cost \$7 per handicapped child. Transportation for related services staff and nonclassroom teachers cost \$3. The estimated cost of special education administrators and secretaries was \$76. Other special education nonclassroom administrative costs totaled \$11. Special education program specialists cost an estimated \$9. Related services staff and nonclassroom teacher administrators, secretaries, and clerks cost \$18. General district administration per handicapped child cost an estimated \$200. [4] School administration cost an estimated \$209. [4] Food services for handicapped children cost an estimated \$88. Facility operations and maintenance costs totaled \$378. [5] Facility modification and improvement for special education

[4] These administrative costs were totaled by age level for each district and then allocated equally to each FTE teaching and related services professional staff member by age level. We then estimated the cost per handicapped or nonhandicapped child by multiplying the administrative costs per FTE staff member times the average fraction of an FTE staff member per student by age level, handicap, and placement.

[5] These facility operations and maintenance costs were totaled by age level for each district and then allocated equally to each FTE teacher. We then estimated the cost per handicapped or nonhandicapped child by multiplying the facility operations and maintenance costs per

cost an estimated \$12, whereas facility modification and improvement of general education facilities cost an estimated \$44 per handicapped child. (To avoid double-counting of costs of new facility construction and debt retirement, the \$152 cost of new facility construction for both special and general education per handicapped child was not included.) Interest and debt retirement cost an estimated \$245 per handicapped child. [6] All other miscellaneous costs totaled \$25 per handicapped child during the 1977-1978 school year.

OTHER COSTS OF EDUCATING NONHANDICAPPED CHILDREN

Cost estimates presented previously included the costs of all teachers, aides, related service personnel, and transportation for nonhandicapped children. This section contains estimates of all other costs of educating nonhandicapped children during the 1977-1978 school year.

Instructional supplies and texts cost an estimated \$34 per nonhandicapped child per year and instructional equipment cost an estimated \$14. Supplies and equipment combined for related services staff cost \$3 per nonhandicapped child. Related services staff administrators, secretaries, and clerks cost an estimated \$5. General district level and school level administrative costs were estimated to be \$105 and \$96 per nonhandicapped child, respectively. Food services cost \$84.

teacher times the fraction of an FTE teacher per student by age level, handicap, and placement.

[6] This estimate was made by allocating the total debt service cost for each district equally per FTE teacher. We then estimated the cost per handicapped or nonhandicapped child by multiplying the debt service cost per FTE teacher times the average fraction of an FTE teacher per student by age level, handicap, and placement.

All facility operations, maintenance, and utility costs totaled \$207 per child. Facility modification and improvement cost \$26 (not including the \$93 per child in new general education facility construction costs). Interest and debt retirement totaled \$147, and all other miscellaneous costs were an estimated \$23 per nonhandicapped child during the 1977-1978 school year.

TOTAL COST OF REGULAR EDUCATION

The estimated total cost of regular education per nonhandicapped child during the 1977-1978 school year was \$1650. This was \$0 per pre-kindergarten child, \$1500 per elementary age child, and \$1782 per secondary age child.

A breakdown of our estimate of the total cost of regular education per nonhandicapped child by the type of cost is shown in Table 2.1.

For readers who might be interested, we compared one of our estimates with a similar estimate prepared by the U.S. National Center for Educational Statistics (NCES). Because NCES does not fully separate the cost of special education and the cost of regular education from the total cost of general education, however, a valid comparison between Rand and NCES numbers can be made only for the total cost of general education. NCES data[7] show a figure of \$1854 as the total general education expenditure per pupil enrolled in public elementary and secondary day schools during 1977-1978. This NCES estimate included all current expenditures, capital outlay, and interest. It is an average

[7] The U.S. Bureau of the Census, Statistical Abstract of the United States, 1980, p. 153.

Table 2.1
 COST OF REGULAR EDUCATION PER NONHANDICAPPED
 CHILD IN 1977-1978

Type of Cost	Cost per Year (\$)
Regular education teachers	761
Facility operations and maintenance	207
Debt service	147
General district administration	105
School administration	96
Food services	84
Transportation	73
Related services personnel	61
Instructional supplies and texts	34
Facility modification and improvement	26
Miscellaneous costs	23
Instructional equipment	14
Regular education aides	8
Related services staff administrators, secretaries, and clerks	5
Related services staff supplies and equipment	3
Screening for nonhandicapping physical impairments	3
Total	1650

per enrolled pupil for all education costs of regular education, special education, and other target population programs combined. Using our sample data to make an estimate that is comparable in definition to that \$1854 estimate by NCES, we arrive at a figure of \$1878. The difference is 1 percent.

TOTAL AND ADDED COSTS OF SPECIAL EDUCATION

The estimated total cost of educating handicapped children during the 1977-1978 school year was \$3577 per pupil. A breakdown of this total by the type of cost is shown in Table 2.2.

The \$3577 total cost of special education and related services per handicapped child was an estimated 2.17 times larger than the \$1650 total cost of regular education per nonhandicapped child during the 1977-1978 school year. The added cost of special education and related services above the cost of regular education was an estimated \$1927 (\$3577 minus \$1650) per handicapped pupil.

TOTAL AND ADDED COSTS OF SPECIAL EDUCATION BY AGE LEVEL,
HANDICAP, AND TYPE OF EDUCATIONAL PLACEMENT

Our cost estimate for the average of all handicapped students includes not only the high cost of severely handicapped students served in special schools, but also the fairly low cost of every speech impaired student and every temporarily homebound student served at any time during the school year.

For financing authorities such as state legislatures and local school boards to allocate funds effectively for special education and related services, it is desirable for them to know the cost per child by age level, handicap, and type of educational placement. Tables 2.3-2.5 display both the total cost and the added cost of special education and related services per child above the cost of regular education for various combinations of age level, handicap, and type of educational placement.

By age level, the costs were a total of \$3526 (\$3526 added cost) at the preschool level, [8] a total of \$3267 (\$1617 added cost) at the

[8] At the preschool level, the added cost equals the total cost since nonhandicapped children do not attend prekindergarten public school programs, hence the cost of regular education at the preschool

Table 2.2

TOTAL COST OF SPECIAL EDUCATION PER HANDICAPPED CHILD IN 1977-1978

Type of Cost	Cost per Year (\$)
Regular education teachers'	
instructional services	743
Instructional costs of special	
education teachers	551
Facility operations and maintenance	378
Debt service	245
School administration	209
General district administration	200
Related services	191
Technical assistance to staff members ...	135
Special transportation	111
Special education aides	106
Admission, placement, IEP development ...	103
Assessment	100
Food services for handicapped children...	88
Special education administrators	
and secretaries	76
Instructional supplies and texts	66
Regular transportation	48
Facility modification and improvement	
for general education	44
Staff inservice training	40
Miscellaneous costs	25
Instructional equipment	21
Regular education aides	19
Related services staff and nonclassroom	
teacher secretaries and clerks	14
Facility modification and improvement	
for special education	12
Special education nonpersonnel	
administrative costs	11
Related services staff and nonclassroom	
teacher supplies	10
Special education program specialists ...	9
Screening for handicapping conditions ...	8
Related services staff and nonclassroom	
teacher equipment	7
Related services staff and nonclassroom	
teacher administrators	4
Related services staff and nonclassroom	
teacher transportation	3
Total	3577

Table 2.3

ESTIMATED TOTAL AND ADDED COST OF SPECIAL EDUCATION PER CHILD BY AGE LEVEL AND TYPE OF HANDICAPPING CONDITION IN 1977-1978

Handicapping Condition ^a	Age Level and Cost (\$)							
	Preschool		Elementary		Secondary		All Ages Combined	
	Total	Added	Total	Added	Total	Added	Total	Added
LD	3392	3392	4488	2838	4856	2936	4525	2875
EMR	3465	3465	3958	2308	3684	2034	3795	2145
TMR	4715	4715	5078	3428	6008	4358	5519	3869
SMR	5352	5352	6013	4363	5935	4285	5926	4276
Emotional	3260	3260	5871	4221	6845	5195	6289	4639
Deaf	7676	7676	8523	6873	5200	3550	7311	5661
Partial hear	5853	5853	4861	3211	5204	3554	5091	3441
Blind	6603	6603	11725	10075	8917	7267	9664	8014
Partial sight	3254	3254	4063	2413	5253	3603	4519	2869
Orthopedic	5097	5097	3350	1700	3545	1895	3546	1896
Other health	2319	2319	2148	498	2748	1098	2502	852
Speech	2490	2490	2214	564	2580	930	2253	603
Multiple	9382	9382	7165	5515	7773	6123	7642	5992
All	3526	3526	3267	1617	4099	2449	3577	1927

^aHandicapping conditions are defined in Chap. IV.

Table 2.4

ESTIMATED TOTAL AND ADDED COST OF SPECIAL EDUCATION PER CHILD, BY AGE LEVEL AND TYPE OF EDUCATIONAL PLACEMENT, IN 1977-1978

Type of Educational Placement ^a	Age Level and Cost (\$)							
	Preschool		Elementary		Secondary		All Ages Combined	
	Total	Added	Total	Added	Total	Added	Total	Added
Regular class plus:								
Indirect services	N.A.	N.A.	2362	712	2710	1060	2550	900
Related services	1871	1871	2231	581	2601	951	2267	617
Itinerant special teacher	1167	1167	5588	3938	4247	2597	5218	3568
Part-time special class	2307	2307	4481	2831	4916	3266	4709	3059
Special class plus								
part-time regular class	2311	2311	5038	3388	3778	2128	4345	2695
Full-time special class	5352	5352	5008	3358	3710	2060	4733	3083
Special day school	5841	5841	4444	2794	6669	5019	5352	3702
Homebound	1629	1629	2106	456	2660	1010	2228	578
Short-term hospital	1921	1921	1804	154	2310	660	1981	331
Full-time work	N.A.	N.A.	N.A.	N.A.	901	(-749)	901	(-749)
All placements	3526	3526	3267	1617	4099	2449	3577	1927

NOTE: N.A. = data not available for this combination of age level and placement.

^aEducational placements are defined in Chap. IV.

Table 2.5

ESTIMATED TOTAL AND ADDED COST OF SPECIAL EDUCATION PER CHILD IN 1977-1978
BY HANDICAPPING CONDITION AND TYPE OF EDUCATIONAL PLACEMENT

Handicapping Condition	Type of Cost	Type of Educational Placement										
		Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Home-bound	Short-term Hospital	Full Time Work	All Placements Combined
LD	Total	2552	3338	4456	4714	4011	4432	7252	2268	NA	830	4525
	Added	902	1688	2806	3064	2361	2782	5602	618	NA	(-820)	2875
EMR	Total	3113	2488	3884	3874	4058	3265	3049	2629	2844	1069	3795
	Added	1463	838	2234	2224	2408	1615	1399	979	1194	(-581)	2145
TMR	Total	NA	NA	NA	5283	5660	5853	5354	2400	NA	807	5519
	Added	NA	NA	NA	3633	4010	4203	3704	750	NA	(-843)	3869
SMR	Total	NA	NA	NA	NA	6600	7695	5997	2302	NA	NA	5926
	Added	NA	NA	NA	NA	4950	6045	4347	652	NA	NA	4276
Emot.	Total	3147	6501	7946	6904	5417	5750	6206	3167	2624	2899	6289
	Added	1497	4851	6296	5254	3767	4100	4556	1517	974	1249	4639
Deaf	Total	NA	9301	9276	5380	5963	7691	7909	NA	NA	NA	7311
	Added	NA	7651	7626	3730	4313	6041	6259	NA	NA	NA	5661
Part. Hear	Total	2181	2480	4701	6979	5901	6631	6896	2167	3273	NA	5091
	Added	531	830	3051	5329	4251	4981	5246	517	1623	NA	3441
Blind	Total	NA	NA	11189	9874	8779	5966	9126	NA	NA	NA	9664
	Added	NA	NA	9539	8224	7129	4316	7476	NA	NA	NA	8014
Part. Sight	Total	2936	2740	4097	6369	5711	5220	7913	2078	NA	NA	4519
	Added	1286	1090	2447	4719	4061	3570	6263	428	NA	NA	2869
Ortho	Total	2772	4884	4986	7175	5031	5495	5731	2137	1911	NA	3546
	Added	1122	3234	3336	5525	3381	3845	4081	487	261	NA	1896
OHI	Total	NA	2403	2021	4973	4937	4664	3676	2611	1951	NA	2502
	Added	NA	753	371	3323	3287	3014	2026	961	301	NA	852
Speech	Total	2477	2244	2360	4025	3500	5439	2936	1509	NA	NA	2253
	Added	827	594	710	2375	1850	3789	1286	(-141)	NA	NA	603
Multi	Total	NA	2004	NA	10187	8778	5183	9048	3376	1956	NA	7642
	Added	NA	354	NA	8537	7128	3533	7398	1726	306	NA	5992
All	Total	2550	2267	5218	4709	4345	4733	5352	2228	1981	901	3577
	Added	900	617	3568	3059	2695	3083	3702	578	331	(-749)	1927

elementary level, and a total of \$4099 (\$2449 added cost) at the secondary level per handicapped child.

By type of handicap, the range in the total cost per child was from a low of \$2253 (\$603 added cost) for speech impaired children up to \$9664 (\$8014 added cost) for functionally blind children. As indicated in Table 2.3, the more severe the handicap of the average child in a category, the higher the average cost. For example, providing an education for severely retarded children cost \$5926, while serving educable mentally retarded children costs \$3795.

By type of educational placement, the range in total cost per child was from a low of \$901 (a savings of \$749 rather than an added cost) per handicapped child who worked full time under the auspices of the special education program rather than attending classes, up to \$5352 (\$3702 added cost) per child in a special day school for only handicapped children.

Other children in the lower-cost placements were in a regular class receiving indirect special services only (\$2550 total cost and \$900 added cost) or in a regular class receiving related services only (\$2267 total cost and \$617 added cost). The homebound placement (\$2228 total cost and \$578 added cost) and short-term hospital bound placements (\$1981 total cost and \$331 added cost) were also lower-cost placements because the children were away from school for only a fraction of the year. Also, the short-term homebound and short term hospital bound level is zero. (The cost of preschool programs for other target populations, such as disadvantaged children, are not considered part of the cost of regular education).

children often received no related services from the school district and often did not have an individualized education program written for them.

Children in regular class who received itinerant special teacher services were in the second most expensive placement (\$5218 total cost and \$3568 added cost) and cost just slightly less than those in special day schools. The reason for the high cost of the itinerant special teacher placement was the expensive one-to-one teaching that was usually provided.

Two "mainstream" placements--regular class plus part time special class (\$4709 total cost and \$3059 added cost), and special class plus part time regular class (\$4345 total cost and \$2695 added cost)-- were nearly as expensive as a full time special class (\$4733 total cost and \$3083 added cost). Note that much of the cost of the "mainstream" placements was not in the special education budget, but in the regular education budget (e.g., the cost of the time required by regular education teachers who have handicapped children in the regular education classroom). Mainstreaming, as currently implemented, should not be looked upon as a way to reduce costs, but rather should be used when it is the most appropriate placement for a child.

Within each handicap, total cost per pupil varied greatly, depending on the educational placement. Similarly, within each educational placement, total cost per pupil varied greatly, depending on the child's handicapping condition. Table 2.5 shows the variation in total cost, considering both the type of handicap and the type of educational placement.

Within the highest-cost handicap category--functionally blind children--the cost varied from \$11,189 per pupil receiving itinerant

special teacher services down to \$5966 per pupil in a full time special class. Within the lowest-cost category--speech handicapped children--the total cost for children in regular class receiving speech therapy only was \$2244; the cost for such children in a full time special class was \$5439.[9] Within the full time special class placement--the cost per pupil for educable mentally retarded children was \$3265, whereas the cost per pupil for severely mentally retarded children was \$7695.

The message is that if only age level, or only handicapping condition, or only type of placement is considered in estimating the average total cost per child, the estimate will not indicate the thousands of dollars of variation in cost per child within each of the age level, handicap, and placement categories. Such an estimate may put districts with special needs at a disadvantage. If a district has a disproportionate number of severely handicapped children who need high-cost placements, it will need higher funding per child than the average school district.

Other major factors influencing the cost per child are the average teacher's salary,[10] the average fraction of an FTE teacher per child and the average fractions of FTE related services professionals per child.

[9] The cost for homebound speech handicapped children was only \$1509, which was less than the cost of regular education, because in our sample of school districts only preschool-age, speech-handicapped children were in homebound placement. It is reasonable to assume that school age speech handicapped children can be more appropriately served at school than at home.

[10] Salaries for other professional personnel are generally related to the teacher's salary scale in a systematic way.

Finally, the estimated cost figures per child reflect the cost of services actually provided in 1977-1978. They do not necessarily indicate the costs of all needed services or the most effective services, which may differ from the cost of those actually provided.

COST WEIGHTING FACTORS BY AGE LEVEL, HANDICAPPING CONDITION, AND TYPE OF EDUCATIONAL PLACEMENT

Since inflation is a current fact of life, any data on total cost per pupil collected in the past will cause low estimates of current costs unless adjusted upward. One common method of adjustment is to assume that the rate of cost inflation is the same for special education as it is for regular education. Although this is not absolutely true, because programs change somewhat with time, it is a reasonable, if conservative, assumption. New data collection every year would provide better estimates, but would be costly and time consuming; once every five years would probably suffice.

This section presents cost-weighting factors that can be used to compare cost-estimates of special education and related services per handicapped child with those of regular education per nonhandicapped child. The cost-weighting factors are shown in Tables 2.6, 2.7, and 2.8 by combinations of age level, handicapping condition, and type of educational placement. These factors are arrived at by dividing the total cost of special education and related services (by age level, handicapping condition, and placement) by the \$1650 cost of regular education in 1977-1978.

Averaged over all handicapped children receiving special education and related services, the cost-weighting factor was 2.17. In other

Table 2.6

RATIO OF TOTAL COST OF SPECIAL EDUCATION TO TOTAL COST OF
REGULAR EDUCATION PER CHILD, BY AGE LEVEL AND
TYPE OF HANDICAPPING CONDITION

Handicapping Condition ^a	Age Level and Ratio			
	Preschool	Elementary	Secondary	All Ages Combined
LD	2.06	2.72	2.78	2.74
EMR	2.10	2.40	2.23	2.30
TMR	2.86	3.08	3.64	3.34
SMR	3.24	3.64	3.60	3.59
Emotional	1.98	3.56	4.15	3.81
Deaf	4.65	5.17	3.15	4.43
Partial hear	3.55	2.95	3.15	3.09
Blind	4.00	7.11	5.40	5.86
Partial sight	1.97	2.46	3.18	2.74
Orthopedic	3.09	2.03	2.15	2.15
Other health	1.41	1.30	1.67	1.52
Speech	1.51	1.34	1.56	1.37
Multiple	5.69	4.34	4.71	4.63
All	2.14	1.98	2.48	2.17

^aHandicapping conditions are defined in Chap. IV.

Table 2.7

RATIO OF TOTAL COST OF SPECIAL EDUCATION TO TOTAL COST OF
REGULAR EDUCATION PER CHILD, BY AGE LEVEL AND
TYPE OF EDUCATIONAL PLACEMENT

Type of Educational Placement ^a	Age Level and Ratio			
	Preschool	Elementary	Secondary	All Ages Combined
Regular class plus:				
Indirect services	N.A.	1.43	1.64	1.55
Related services	1.13	1.35	1.58	1.37
Itinerant special teacher	0.71	3.39	2.57	3.16
Part-time special class	1.40	2.72	2.98	2.85
Special class plus				
part-time regular class	1.40	3.05	2.29	2.63
Full-time special class	3.24	3.04	2.25	2.87
Special day school	3.54	2.69	4.04	3.24
Homebound	0.99	1.28	1.61	1.35
Short-term hospital	1.16	1.09	1.40	1.20
Full-time work	N.A.	N.A.	0.55	0.55
All placements	2.14	1.98	2.48	2.17

NOTE: N.A. = data not available for this combination of age level and placement.

^aEducational placements are defined in Chap. IV.

Table 2.8

**RATIO OF TOTAL COST OF SPECIAL EDUCATION TO TOTAL COST OF
REGULAR EDUCATION PER CHILD, BY HANDICAPPING CONDITION
AND TYPE OF EDUCATIONAL PLACEMENT**

Type of Educational Placement ^a	Handicapping Condition ^a													
	LD	EMR	TMR	SMR	Emo- tional	Deaf	Partial Hearing	Blind	Partial Sight	Ortho- pedic	Other Health	Speech	Multiple	All
Regular class plus:														
Indirect services	1.55	1.89	N.A.	N.A.	1.91	N.A.	1.32	N.A.	1.78	1.68	N.A.	1.50	N.A.	1.55
Related services	2.02	1.51	N.A.	N.A.	3.94	5.64	1.50	N.A.	1.66	2.96	1.46	1.36	1.21	1.37
Itinerant special teacher	2.70	2.35	N.A.	N.A.	4.82	5.62	2.85	6.78	2.48	3.02	1.22	1.43	N.A.	3.16
Part-time special class	2.86	2.35	3.20	N.A.	4.18	3.26	4.23	5.98	3.86	4.35	3.01	2.44	6.17	2.85
Special class plus														
part-time regular class	2.43	2.46	3.43	4.00	3.28	3.61	3.58	5.32	3.46	3.05	2.99	2.12	5.32	2.63
Full-time special class	2.69	1.98	3.55	4.66	3.48	4.66	4.02	3.62	3.16	3.33	2.83	3.30	3.14	2.87
Special day school	4.40	1.85	3.24	3.63	3.76	4.79	4.18	5.53	4.80	3.47	2.23	1.78	5.48	3.24
Homebound	1.37	1.59	1.45	1.40	1.92	N.A.	1.31	N.A.	1.26	1.30	1.58	0.91	2.05	1.35
Short-term hospital	N.A.	1.72	N.A.	N.A.	1.59	N.A.	1.98	N.A.	N.A.	1.16	1.18	N.A.	1.19	1.20
Full-time work	0.50	0.65	0.49	N.A.	1.76	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.55
All placements	2.74	2.30	3.34	3.59	3.81	4.43	3.09	5.86	2.74	2.15	1.52	1.37	4.63	2.17

NOTE: N.A. = data not available for this combination of handicap and type of educational placement.

^aEducational placements and handicapping conditions are defined in Chap. IV.

words, it cost an estimated 2.17 times as much to educate the average handicapped child as it did to educate the average nonhandicapped child in 1977-1978.

The cost-weighting factor varied by age level, from 1.98 at the elementary level to 2.48 at the secondary. It varied by type of handicap from 1.37 for speech impaired children up to 5.86 for functionally blind children. It varied by type of educational placement from 0.55 for students working full time under the auspices of the special education program rather than attending classes, up to 3.24 for students in special day schools for only handicapped pupils. The highest-cost category, considering type of handicap and educational placement combined, was the functionally blind child in regular education class receiving itinerant special teacher services at a cost-weighting factor of 6.78 (\$11,189 per child during the 1977-1978 school year).

COST OF SPECIAL EDUCATION BY SIZE OF LEA ENROLLMENT

The cost per child of both regular and special education varies greatly from one education agency to another for many reasons. A better understanding of the causal factors should enable federal and state policymakers to "fine tune" their funding formulas and other policies in order to control costs while allocating scarce funds according to districts' needs.

Because research funds were limited for analyzing our data base, we could only calculate how the cost of special education varies by the size of enrollment of the local education agency (LEA). Future analyses using the same data base could provide information on many other factors

that influence costs. To facilitate our calculations, we grouped the LEAs in our sample into three categories containing distinct types of LEAs. The magnitudes of the estimated average costs could be used in adjusting state special education finance formulas to reflect higher and lower costs for various sizes of districts.

Small LEAs enrolled fewer than 2500 total students each. All were rural districts. With the exception of one district that was about 20 miles from a large city, all were located at least 50 miles away from a major urban center of 100,000 or greater population. Large LEAs enrolled more than 15,000 students. All were major urban school districts with the exception of one large suburban district. This group included one of the largest school districts in each of the 14 states in our sample and five of the 23 largest U.S. cities. The remaining category of enrollment size, 2500 to 15,000 pupils, consisted of LEAs that were neither rural nor large major urban districts.

The small districts had an estimated total cost per pupil of \$3238; the large districts had a lower cost per pupil of \$2938. The highest estimated total cost of special education and related services was \$4178 per pupil in the intermediate size districts.

Costs were higher for secondary than for elementary age pupils in all three categories. Costs per preschool pupil were less than costs per elementary pupil in small and intermediate size districts, but considerably higher than costs per elementary pupil for the large districts.

The patterns of variation in cost by type of handicap for the three size categories generally resembled the pattern for all sizes of districts combined. Functionally blind children had the highest cost per

pupil regardless of district size. Speech impaired children had the lowest cost per pupil of any type of handicapped child in each of the three size categories. The highest-cost type of pupil placement was associated with special day schools for only handicapped children, regardless of LEA size.

Although the nationwide cost of special education and related services per pupil was 2.17 times greater than the cost of regular education per nonhandicapped pupil, this ratio varied by size of LEA enrollment from 1.78 in large LEAs, to 1.96 in small LEAs, to 2.53 in intermediate size districts.

III. DESCRIPTION OF SAMPLE STATES AND LOCALITIES

This chapter describes the method used to select a nationally representative sample of education agencies for participation in this study, as well as the characteristics of those education agencies. The stratified probabilistic sample is nationally representative of the variety of local conditions that influence the provision of special education and related services, and of the range of age levels, handicapping conditions, and educational placements found in special education programs.

OVERVIEW OF THE SAMPLE

The sample consists of all publicly provided nonresidential special education and related services programs serving all handicapped children from a "locality," which is defined as the geographic boundary of the local education agency (LEA) in the sample. If any children from the locality (who lived within the boundaries of the sample LEA) were served by some other intermediate, regional, or state agency, then the sample of agencies included that other agency (which we call an IEA for brevity). The sample of children served by the IEA included only children from the sample LEA.

The localities in the sample consist of 42 unified school districts, four elementary districts and their four associated secondary districts, and 22 intermediate education agencies. In addition to these 72 LEAs and IEAs, the sample includes 35 cooperating LEAs, state-operated programs, and other organizations that provided services to

students who resided in the 46 localities. Given the amount of funding available for this project, the size of the sample is as large as it could be while still allowing us to collect high quality data in each locality in the sample. The probabilistically selected sample is nationally representative from a statistical viewpoint and permits statements about the cost of special education and related services in the nation.

SAMPLE OF STATES

The sample of 46 localities in 14 states (see Table 3.1) was selected in two steps: first, the states were chosen; and then three to five localities were selected within each state.

Table 3.1

STATES BY GEOGRAPHIC REGION

Region	State
West	California
	Oregon
	Montana
Northcentral	Indiana
	Michigan
	Minnesota
	South Dakota
Northeast	Rhode Island
	New Jersey
	New York
South	Oklahoma
	South Carolina
	Tennessee
	Texas

State selection relied on guidelines from the theory of sample design, including objectives such as minimizing sampling variability in our statistical estimates and obtaining sample representation over certain subuniverses of policy relevance. The following variables were incorporated into a probabilistic stratified sampling scheme to assure as representative a sample as possible:

1. Geographic Region of the United States. The data collection was conducted on a nationwide geographic basis for both political and scientific reasons. First, a project of national significance carries a public expectation of wide geographic distribution of data collection. If the results of the project are to be accepted and applied nationally, there are major advantages to the involvement of communities throughout the country. Second, geographic differences exist in special education programming, in the relative prices of resources, and in the demographic and socioeconomic characteristics of the states. Accordingly, special education programs and their cost will differ from place to place and these differences should be represented.
2. State Elementary and Secondary Enrollments. A measure of the size of the population of children in each state was desired so that states could be stratified to assure representation of both "big" and "small" states in the sample. Although nearly all states have some small local education agencies, few have very large LEAs. Picking some states with large populations assured inclusion of some very large LEAs in our sample.

3. Population Density. To assure representation of both densely and sparsely populated states, and hence the feasibility of obtaining adequate representation of urban and rural localities, the state sample was stratified on population density. In addition, for a locality of a given geographic size, the size of the group of handicapped children needing a particular type of service will depend on population density and should affect costs because of economies of scale.
4. Wealth. Since past studies have shown that wealthier states spend more on special education, [1] we stratified the sample to assure it would be representative of per capita income. We did not use assessed property value per capita in selecting states because the relationship between assessed value and true market value varies from state to state, and we did not have data on that variation. The correlation between per capita income and assessed property value per capita is 0.5.
5. Minority Enrollment. Since service to racial or ethnic minority groups is of major concern nationwide, we stratified states on percent minority. This assured that we would be able to obtain some localities with large percentages of minority students.
6. Average Enrollment per Local Education Agency. Since the total enrollment in a local education agency should influence the cost of special education because of economies of scale, we

[1] See, for example, G. D. Brewer and J. S. Kakalik, Handicapped Children: Strategies for Improving Services, McGraw-Hill, New York, 1979.

stratified the state sample by the average enrollment per LEA in the state to assure that we would be able to pick both large and small localities.

7. Type of State Special Education Finance Formula. Since finance formulas contain explicit and implicit incentives that influence special education costs and programming, we stratified the state sample to assure representation of each of the three major classes of special education finance formulas: payment for all or part of the excess cost of special education, payment of a flat or weighted grant per pupil served, and payment per unit of service such as a special education teacher or classroom.

8. Percent of Total Special Education Funds from Local Sources. On the assumption that localities may spend more for special education if a larger percentage of the cost is paid by state and federal sources, we stratified the state sample by the percentage of total special education funds that come from local sources. This variable is difficult to use because for many states reliable data do not exist on local expenditures for special education and hence must be estimated. Although the estimates we used were of questionable accuracy, we are sure we have some states with high local contributions and some with low ones.

A primary factor in designing the method for selecting states was the sample size relative to the number of strata (different sets of state characteristics) that we wanted represented in the sample. In

conventional stratified sampling, the number of strata cannot exceed the sample size. In our case, the sample size (14 states) is small relative to the number of strata of interest.

Rather than drastically reduce the number of desired stratifying variables, each of which are of substantive interest, we decided to translate the stratifying variables into a three-dimensional sampling frame, and then select 14 states using the technique of probability lattice sampling (PLS) introduced by Jessen.[2] Each of the three dimensions of the frame would be a composite of two or more stratifying variables; the total number of levels for each such "superstratifier" described in the next section could not exceed 14. PLS provides a method for selecting a probabilistic sample from such a frame in a way that guarantees a specific sample allocation for each level of each superstratifier simultaneously. That is, states are grouped into these "superstrata" based on their characteristics, and a specified number of states are simultaneously selected from each stratum.

One problem we had to address early in the sample design was the weighting of states. We considered three alternatives: equal weighting, weighting proportional to the state's total school enrollment, and a simple differential weighting for "large" and "small" states. Equal weighting would have been the simplest but would have limited the chances of obtaining enough of the very large states (and enough of the very large LEAs) to support comparisons between very large and small LEAs. Proportional-to-enrollment weighting would have had the opposite

[2] R. J. Jessen (1973), "Some Properties of Probability Lattice Sampling," Journal of the American Statistical Association, 68, pp. 20-28.

effect of limiting the inclusion of small population states; to illustrate, the combined population of the 18 smallest states is less than that of California alone. We ultimately decided to use total state elementary and secondary school enrollment as a stratifying variable, putting the eight largest states in one stratum and the remainder in the other; the sample allocation among the two strata was set at four and ten, respectively, effectively giving the larger states twice the probability of selection as the smaller states.[3]

Details of Construction of the Sampling
Frame for Selection of States

Before selection of the states, several steps were involved in preparing the sampling frame from the potential stratifying variables. We first examined the variables for possible mutual redundancy by preparing and examining a correlation matrix for the continuous variables (such as total state enrollment and per capita income), and by visual inspection of map diagrams plotted from the noncontinuous variables (such as region and state finance formula). Based on this analysis, we eliminated the "percent minority" variable from explicit inclusion in the state frame; states with highest percent minorities coincided almost exactly with the southern geographic stratum, and states with large percentages of Spanish surname residents were highly represented among the eight double-weighted, large-enrollment states. After the sample was selected, we checked and found high percent minority

[3] Alaska and Hawaii were excluded from the sample because they are both unique, and costs in those two states will probably not be representative of those in the rest of the United States.

states to be adequately represented in the sample, without having used this variable as an explicit stratifier. However, percent minority was included in the local sampling frame.

The next step was to determine three subsets of the seven remaining stratifying variables for which the analyses of interactions of combinations of these variables are most important to policymakers in order to determine the composition of the three superstratifiers. PLS guarantees joint representation of all levels of variables (which is necessary for analyzing interactions) only for those stratifying variables combined together in the same superstratifier. The component stratification variables designated for the three superstratifiers were:

1. Superstratifier 1: geographic region (4 levels) and total state school enrollment (2 levels)
2. Superstratifier 2: population density (3 levels), per capita income (2 levels), and average enrollment per LEA (2 levels)
3. Superstratifier 3: state funding formula (3 levels), and percent special education funding from local sources (2 levels)

Finally, we used probability lattice sampling (PLS) to obtain the sample specified in Table 3.1. Without describing PLS in detail, we simply note that PLS provides a method for selecting a probabilistic sample from a multidimensional matrix where the sampling population is nonuniformly distributed across the matrix, and where the number of cells can be greater than the sample size; sample allocations specified for each level of all stratifying dimensions are selected simultaneously.

Only one of the original sample of 14 states declined to voluntarily participate in this study; it was replaced in the sample by another state that most closely matched its characteristics.

Characteristics of the Selected States[4]

The states are well distributed geographically. Each of the four major census regions of the United States has three or four states in the sample. At least one state in each region is a large population state.

The population density of the states ranges from 5 (Montana) up to 974 (New Jersey) people per square mile, with an average of 75.[5] Nationwide in 1978 the range for all 50 states was 0.7 up to 974 people per square mile, with an average of 62.[6]

The 1978 average personal income per capita of the states in the sample ranged from \$6242 (South Carolina) up to \$8850 (California), with an average of \$7980. Nationwide, the range for all 50 states was from \$5736 (Mississippi) up to the second highest state of \$9096 (Wyoming) and the highest state at \$10,851 (Alaska), with an average of \$7810.[7]

The minority school enrollment in the 14 states was 22.4 percent. Nationwide, the percentage is 20.2.[8]

[4] The state characteristics, summarized in this section, are presented in detail in Appendix A.

[5] The sample of states was selected from strata with unequal probabilities, and the averages shown in this section have been calculated with the appropriate sample weights for each state.

[6] U.S. Bureau of the Census, Statistical Abstract of the United States, 1979, p. 14.

[7] Ibid., p. 445.

[8] Ibid., p. 143.

The average state in the sample had a total elementary and secondary school enrollment of 985,000 children in 1978. The average for all 50 states was 850,000.[9]

The average enrollment per LEA in the sample was 2375 in 1978. The national average was 2627.[10]

The various generic types of state special education finance formulas were also well represented: four of the 14 states used an excess-cost formula, five used a flat or weighted grant per pupil, and the remaining five used some type of unit reimbursement formula.

Of the total of state plus local funds expended for special education (excluding federal funds), the 14 states contribute an estimated 62 percent. The comparable national figure for all 50 states was 64 percent.[11]

The average public school current expenditure per pupil in FY 1978 in the 14 sample states was \$1789, which is reasonably close to the national average of \$1739.[12]

State funds expended for special education per handicapped child

[9] National Center for Educational Statistics, Statistics for Public Elementary and Secondary Day Schools, Fall 1978, No. 5, Department of Health, Education, and Welfare, Washington, D.C., 1979.

[10] Ibid., and National Association of State Directors of Special Education, State Profiles in Special Education, Washington, D.C., August 1977.

[11] W. H. Wilken et al., "State Aid for Special Education: Who Benefits?" National Foundation for the Improvement of Education and the National Conference of State Legislatures, Washington, D.C., May 21, 1976, estimate that the federal, state, and local shares are 14 percent, 55 percent, and 31 percent, respectively.

[12] U.S. Bureau of the Census, Statistical Abstract of the United States, 1979, p. 157.

served in 1976 averaged \$676 in the 14 sample states, and \$731 nationwide.[13]

Finally, 7.2 percent of the school age children were served in special education in 1977-78 in the sample states. This figure is quite close to the nationwide average of 7.4 percent for all 50 states.[14]

SAMPLE OF LOCAL EDUCATION AGENCIES WITHIN THE SAMPLE STATES

Since we are concerned with the cost of providing special education to handicapped children in a set of nationally representative localities, whether those children happen to be served by a local education agency or a regional or intermediate education agency, we first selected a probabilistic sample of LEAs. The geographic boundaries of the selected LEA defined the locality, and then if any handicapped child from that locality was sent to a public agency outside the LEA for special educational service, that other public agency was automatically included in the sample.

In selecting the sample LEAs, we drew a stratified probabilistic sample from the set of all unified (combination elementary and secondary) LEAs plus all nonunified elementary LEAs within each state. If a nonunified elementary district was selected, then we also automatically selected the secondary LEA that received students after they graduated from the selected elementary LEA.

In selecting localities within individual states, we stratified districts by total enrollment, per capita income, percent minority

[13]National Association of State Directors of Special Education, State Profiles in Special Education, Washington, D.C., August 1977.

[14]Progress Toward a Free Appropriate Public Education, Office of Education, U.S. Department of Health, Education, and Welfare, January 1979, p. 160.

enrollment, and the degree to which they were urban or rural, before selection of the sample.[15] The 46 localities were then selected using the technique of probability lattice sampling discussed earlier in connection with the selection of the states.

The U.S. Office of Special Education asked us to explore the possibility of excluding districts with programs that clearly lacked even minimal comprehensiveness.

What is an appropriate education? Two basic components make up the federal Education for All Handicapped Children Act's definition of an appropriate education for all handicapped children. The first component has to do with the "comprehensiveness" of the special education program. For example, an education agency will come closer to the goal of an appropriate education for all handicapped children as:

- o the fraction of the handicapped children in the agency's jurisdiction being served increases,
- o the range of the types and severities of handicapping conditions being served increases,
- o the range of service placement alternatives is broadened so children can receive special education in the least restrictive environment appropriate to their needs, and

[15] Data on the stratifying variables was obtained from several sources: state departments of education; Education Directory, Public School Systems, 1975-1976, National Center for Educational Statistics, U.S. Department of Health, Education, and Welfare, Washington, D.C., 1976; Population Estimates and Projections, Series P-25, No. 653, Department of Commerce, Bureau of the Census, May 1977. Superstratifiers were not used in the locality sample frame.

- o the age range of handicapped children being served increases.

The second "individualized" component of the definition of "appropriate" under P.L. 94-142 concerns the appropriateness of the types and intensity of services for a particular child. Appropriate services for the individual are defined as whatever is specified in the child's "individual education program," which is developed at the local level.

In selecting our sample, we were able to exclude only localities whose special education programs were either nonexistent or lacked even minimal comprehensiveness. We had no reasonable nationally accepted standard on which to judge the appropriateness of the local decisions on an individual child's education program. Objective data were not available to allow us to select among localities based on the effectiveness of their programs in improving the functional abilities of handicapped children on various dimensions. Since objective data do not exist in a form that is comparable across districts, use of such effectiveness measures in selecting the localities would itself require a large and expensive survey, carefully instrumented to assess program quality in a consistent manner. Such a survey could lead to the selection of "effective" programs, but the expense would have been beyond the budget for this project.

Another alternative that we did not use for selection of states and localities is expert opinion regarding the quality or effectiveness of special education programs. In his 1970 study of the cost of special

education,[16] Richard Rossmiller subjectively identified districts thought to have "exemplary" programs, by using a panel of experts. Neither he, nor any of our other consultants, nor the cognizant OSE project officer recommended the use of such a panel in this study. The 1970 Rossmiller experience highlighted some of the deficiencies of the use of such a panel. First, it is difficult to define and achieve consensus on what constitutes a quality or exemplary program. Second, it is difficult to find people who have current knowledge of all 50 states and who are therefore able to make informed comparative judgments among them. Third, it is difficult to select exemplary programs because an agency's reputation may be based on a program that no longer exists or an individual no longer connected to the agency. Fourth, selection is difficult because an agency's program may be excellent in one area of special education but poor in another. Finally, an agency's reputation may be based on an individual's reputation, publications, or public relations efforts that do not represent the quality of the current program. The objective of this study also implies that we are not interested only in those localities that have exemplary programs.

The 46 localities were selected from the 14 states as follows: five localities were selected from each of the two large states where field testing of our data collection instruments was conducted (California and Michigan), and three localities were selected from each of the other 12 states in the sample.

[16] R. A. Rossmiller et al., Educational Programs for Exceptional Children: Resource Configurations and Costs, The University of Wisconsin Department of Educational Administration, Madison, August 1970.

Selection of localities was done within each state individually rather than from the pool of all localities in all states. There were several reasons for our adopting this procedure. First, data necessary to select the localities were not available for all states at the time data collection was scheduled to begin. Second, to initiate field testing, California localities were selected individually; subsequently the other localities were selected individually within each state for consistency. Third, even though analysis at the state level was not conducted, many state directors of special education desired that we have representation in terms of locality size within their states.

Within states, district selection proceeded in two phases. Phase I involved the selection of a subset of all LEAs in each state. The subsets were selected because it would have been extremely time consuming and costly and burdensome on the State Education Agencies (SEAs) to collect the data on the four stratifying variables (enrollment, wealth, minority enrollment, and urban/rural character) and on the program "comprehensiveness" criteria for each district in the 14 states.

In the Phase I selection, districts in each state in our sample were stratified in two or three categories according to size. This was done to assure that large districts in each state were included in the sample; if the subset had been selected randomly without stratification, probably the few large districts in each state would not have been included in the subset. Thus, all of the largest districts in each state were included in the subset--this ranged from one to six districts in each of the 14 states. The remaining smaller districts were randomly

sampled with varying probabilities depending on the total number of districts in the state. For example, in one state, one of every 16 districts was chosen, and in another state one of every five districts was selected, to yield a total subset of about 50 districts for both states. Table 3.2 displays the universe of districts and the size of the subset selected in each state.

Table 3.2
RESULTS OF PHASE I SELECTION AND DISTRICT SCREENING

State	Number of Districts in State	Number of Districts in Subset Sample ^a	Number of Districts Screened out by Comprehensiveness Criteria	Number of Districts Eligible for Phase II Selection
	^b			
California	1042	34	3	31
Indiana	304	47	11	36
Michigan	577	49	18	31
Minnesota	439	51	1	50
Montana	579	46	32	14
New Jersey	593	49	7	42
New York	737	62	16	46
	^b			
Oklahoma	623	48	30	18
	^b			
Oregon	332	20	8	12
Rhode Island	40	37	2	35
South Carolina	92	20	0	20
South Dakota	196	53	37	16
Tennessee	147	26	0	26
Texas	1116	47	4	43
TOTAL	6817	588	169	419

^a As of 1976, the year of the list used to draw the subset sample.

^b In these states the subset of districts was selected only from those providing special education. Districts that provide no special education are usually very small, remote districts. They would have been screened out by the "comprehensiveness" criteria had they been selected in the subset.

Four program "comprehensiveness" criteria were applied following the Phase I selection process.[17] As noted earlier, the intent was to eliminate localities from this cost study that were either providing no special education or were providing an inadequate, noncomprehensive program for handicapped children. Localities were screened out if they served in special education or related programs (or made arrangements with other districts to serve): (1) two or fewer handicaps (including speech therapy);[18] (2) less than 4 percent of the district enrollment;[19] (3) handicapped students in only one educational placement;[20] and (4) handicapped students of only one age level (e.g., elementary but not secondary). The numbers of districts in the subset that

[17] Information on the four criteria was obtained from the state departments of education.

[18] The U.S. Office of Special Education defines various categories of handicapping conditions: hearing, vision, speech, orthopedic, and other health impairments, serious emotional disturbances, specific learning disabilities, and mental retardation. Smaller districts are not expected to have children with each of these various conditions. However, they can be expected to have children in the more prevalent categories such as speech impaired (a 3.5 percent national incidence rate according to OSE), mentally retarded (2.3 percent), emotionally disturbed (2.0 percent) and learning disabled (3.0) percent. Considering variations in definitions of handicapping conditions at the local level, especially concerning the milder forms of retardation, learning disability, and emotional disturbance, it would not be unreasonable to expect small local districts to serve at least three different types of handicapped children, one of which may be speech impaired.

[19] The U.S. Office of Special Education estimates a national incidence rate of 12.035 percent for handicapping conditions in children aged 6-19. Thus, districts screened out were those serving less than a third of that 12 percent. Even considering reasonable variation and the uncertainty about incidence rates by state and locality, it seems unlikely that less than 4 percent of a district's population of children will be handicapped.

[20] If a locality did not directly provide (or make arrangements with other organizations or agencies to provide) at least one type of special class placement and one type of regular class placement with supplementary assistance, then the locality could not be offering service to handicapped children in the least restrictive environment appropriate to the individuals' needs, and the locality was not selected.

failed to pass these criteria in each state are shown in Table 3.2. Such districts are typically small and remote, and together they represent only 4 percent of the student population, although they represent 29 percent of the 588 districts in the subset. Even though all districts had to pass four screens and demonstrate that they had at least a minimally comprehensive special education program to be in the sample, the localities that passed the screens represented 96 percent of the special education students in the nation. Readers should find this sample adequate for most of their purposes.

Of the 46 districts originally selected in the sample, 44 voluntarily agreed to participate in the study. The two districts that declined were in different states. One was a rural district whose superintendent (also the principal) said he was too overburdened administratively to spend time on this research. The other was a major urban district that was suffering a severe financial deficit and trying to implement a major court order, so they did not want to participate in the study. Each of these districts was replaced by another district that was from the Phase I sample, from the same state, and most closely matched its characteristics.

Important characteristics of the selected localities are discussed later in this chapter. Table 3.3 displays the joint probability of selection of each of the localities.

Table 3.3

JOINT PROBABILITY OF SELECTION OF LOCALITIES

a			
Locality	Joint Probability of Selection	Locality	Joint Probability of Selection
1	1/320	24	1/80
2	1/128	25	1/160
3	1/128	26	1/320
4	1/320	27	1/320
5	1/6	28	1/8
6	1/12	29	1/8
7	1/120	30	1/192
8	1/120	31	1/48
9	1/2	32	1/8
10	1/480	33	1/88
11	1/10	34	1/44
12	1/120	35	1/240
13	1/480	36	1/120
14	1/8	37	1/12
15	1/1664	38	1/4
16	1/832	39	1/40
17	1/8	40	1/80
18	1/40	41	1/80
19	1/80	42	1/360
20	1/20	43	1/16
21	1/140	44	1/120
22	1/64	45	1/1000
23	1/4	46	1/6

a
 Joint Probability = state probability x Phase I probability
 x Phase II probability.

Characteristics of the Selected Localities[21]

The 46 localities selected are well distributed geographically. Nine are in the northeastern census region, 12 are in the southern region, 14 are in the northcentral region, and 11 are in the western census region.

[21] The characteristics of the localities summarized in this section are presented in detail for each locality individually in App. B.

The sample includes 18 major urban localities (defined as urban districts with student enrollments of 15,000 or greater), 14 rural localities,[22] and 14 other residual category localities (defined as neither major urban nor rural).

The smallest locality in the sample encompassed a two square mile geographic area and the largest over 1200 square miles. Thirteen of the localities are greater than 200 square miles in size.

In terms of 1974 personal income per capita, the localities ranged from a low of \$3200 up to a high of \$6100, with a weighted average of \$4993. Nationwide, the 1974 average was \$5434.[23]

The 1977-1978 elementary and secondary school enrollment in the LEAs in our sample ranged from a low of 91 to a high of over 200,000 pupils. Fifteen were small districts of less than 2500 enrollment and six had over 50,000 enrollment. Of the 23 U.S. cities with a total population of over 500,000 in 1977, five are in our sample.

The minority school enrollment in the sample localities ranged from 0 to 86 percent, with a weighted average of 19.0 percent. Nationwide, the percentage was 20.2.[24]

The number of different handicapped children receiving special education and related services during the 1977-1978 school year as a percentage of total enrollment ranged from a low of 5 percent to a high of

[22] Rural localities were defined as districts with student enrollments of less than 2500 that are located at least 50 miles from an urban center with a population of 100,000 or greater and that are located at least 50 miles from each of the three largest cities in the state.

[23] U.S. Bureau of the Census, Statistical Abstract of the United States, 1976, p. 388.

[24] U.S. Bureau of the Census, Statistical Abstract of the United States, 1979, p. 143.

24 percent (the high was a small rural district with a substantial percentage of speech impaired children). The weighted sample average was 8.9 percent. The difference between our average of 8.9 percent and the 7.4 percent reported by the federal government under P.L. 94-142 is due to our inclusion of children who were served during the year in special education but not on the days of the federal count. P.L. 94-142 requires a count of the number of children in special education on the specific day of the count, rather than the number of different children served in special education during the school year. The difference is mainly due to turnover of speech impaired children, who often require less than a full year of special service, and children who are homebound or hospital bound for less than a full year.

The average teacher's salary without fringe benefits ranged from a low of \$9,000 to a high of \$19,000 per year for the localities in the sample. The weighted average for the sample localities was \$14,949. The comparable national average for the 1977-1978 school year was \$15,027. [25]

Teacher Sample

For some data required in this study (e.g., related services personnel assessment time per child and teacher instructional time per handicapped child), district records were insufficient and we needed to interview a sample of teachers. In order to select teachers at random so as to represent each of the different age level, handicap, and

[25] U.S. Department of Education, National Center for Educational Statistics, "The Condition of Education: Statistical Report," 1980 Edition, Washington, D.C., p. 76.

placement combinations of students, we first determined which such combinations existed in the locality. Next, we obtained lists of the names of special education teachers and related service personnel, along with the numbers of children each staff member served by age level, handicap, and placement combination (A/H/P). Then, to select an individual teacher to represent a particular A/H/P combination for the study, we grouped the teachers by the types of A/H/P combinations they served.[26] We randomly selected one of the teachers whom we knew served a particular A/H/P combination.

For some A/H/P combinations (such as an elementary age, speech impaired child who was in a regular class full-time except when receiving speech therapy), it was more appropriate from the viewpoint of data available at the district office to make the selection of the teacher by using a list of "related service" personnel (such as speech therapists) to pick a random student and then to interview his or her teacher.

[26] District records almost always contain sufficient information to identify the ages, placements, and handicap groups served by teachers.

Appendix A

CHARACTERISTICS OF THE SELECTED STATES

GEOGRAPHIC REGION

The four major United States Bureau of the Census regions in which the sample states fall are shown in Table A.1.

Table A.1

STATES BY GEOGRAPHIC REGION

Region	State
West	California
	Oregon
	Montana
Northcentral	Indiana
	Michigan
	Minnesota
	South Dakota
Northeast	Rhode Island
	New Jersey
	New York
South	Oklahoma
	South Carolina
	Tennessee
	Texas

POPULATION DENSITY

Of the 50 states, the most densely populated has 974 people per square mile (New Jersey), and the least densely populated has 0.7 person per square mile (Alaska). Data for the 14 sample states for 1978 are shown in Table A.2.

Table A.2
1978 STATE POPULATION DENSITY

State	Population per ^a Square Mile
New Jersey	974
Rhode Island	891
New York	371
Michigan	162
Indiana	149
California	143
Tennessee	105
South Carolina	97
Minnesota	51
Texas	50
Oklahoma	42
Oregon	25
South Dakota	9
Montana	5

^a
U.S. Bureau of the Census,
Statistical Abstract of the
United States, 1979, p. 14.

PERSONAL INCOME PER CAPITA

Of the 50 states, the highest average 1978 per capita personal income was \$10,851 (Alaska), the second highest was \$9,096 (Wyoming), and the lowest was \$5,736 (Mississippi). Personal income data for the 14 sample states are shown in Table A.3.

Table A.3

1978 PERSONAL INCOME PER CAPITA
IN THE STATES

State	Per Capita Personal Income ^a
California	8850
New Jersey	8818
Michigan	8442
New York	8267
Minnesota	7847
Oregon	7839
Texas	7697
Indiana	7696
Rhode Island	7526
Montana	7051
Oklahoma	6951
South Dakota	6841
Tennessee	6489
South Carolina	6242

^a
U.S. Bureau of the Census,
Statistical Abstract of the
United States, 1979, p. 445.

PERCENT MINORITY ENROLLMENT

Of the 50 states, the highest minority school enrollment is 51 percent and the lowest is less than 1 percent. Nineteen states have more than 20 percent total minority and 6 states have more than 10 percent hispanic. The percentages for the 14 sample states for 1972 are shown in Table A.4.

Table A.4

PERCENT MINORITY SCHOOL ENROLLMENT
IN THE STATES

	Total Percent a Minority	Percent a Hispanic
South Carolina	41.7	0
Texas	38.9	23
California	29.2	17
New York	26.6	10
Tennessee	21.6	0
New Jersey	21.3	5
Oklahoma	17.6	1
Michigan	16.0	2
Indiana	11.0	1
South Dakota	6.6	0
Montana	5.9	1
Rhode Island	5.2	1
Oregon	4.8	1
Minnesota	3.1	1

a

Office for Civil Rights, Directory of Public Elementary and Secondary Schools in Selected Districts: Enrollment and Staff by Racial/Ethnic Group, U.S. Department of Health, Education, and Welfare, Washington, D.C., Fall 1972.

SIZE OF TOTAL ELEMENTARY AND SECONDARY SCHOOL ENROLLMENT

The largest of the 50 states had 4,188,000 (California), and the smallest had 91,000 (Alaska) enrollment in 1978. Enrollments in the 14 sample states are shown in Table A.5.

Table A.5

SCHOOL ENROLLMENT IN THE STATES

State	Region	Enrollment ^a
California	West	4,188,000
New York	Northeast	3,094,000
Texas	South	2,867,000
Michigan	Northcentral	1,911,000
New Jersey	Northeast	1,337,000
Indiana	Northcentral	1,113,000
Tennessee	South	873,000
Minnesota	Northcentral	808,000
South Carolina	South	625,000
Oklahoma	South	589,000
Oregon	West	471,000
Montana	West	164,000
Rhode Island	Northeast	161,000
South Dakota	Northcentral	138,000

a

National Center for Educational Statistics, Statistics of Public Elementary and Secondary Day Schools, Fall 1978, U.S. Department of Health, Education, and Welfare, Washington, D.C., 1979.

AVERAGE ENROLLMENT PER LEA

Of the 50 states, the highest average 1978 elementary and secondary school enrollment per local education agency was 34,000 in Maryland (exclusive of Hawaii, which has no LEAs) and the lowest was 255 in Nebraska. Only five states average over 10,000. Data for the 14 sample states are shown in Table A.6.

Table A.6

AVERAGE 1978 ENROLLMENT PER
LOCAL EDUCATION AGENCY
IN THE STATES

State	Average Total Enrollment ^a per LEA
South Carolina	6800
Tennessee	5900
New York	4200
Rhode Island	4000
Michigan	3800
Indiana	3700
California	3400
Texas	2500
New Jersey	2200
Minnesota	1800
Oregon	1400
Oklahoma	900
South Dakota	600
Montana	300

^a
Calculated from enrollment data presented earlier in this Appendix, and LEA data from National Association of State Directors of Special Education, State Profiles in Special Education, Washington, D.C., August 1977.

TYPE OF SPECIAL EDUCATION FINANCE FORMULA

The 50 states use three generic types of formulas: payment for all or part of the excess cost (21 states); payment of a flat or weighted grant per pupil served (11 states); and payment per unit of service such as a special education teacher or classroom (18 states). The generic types of formulas used in the 14 sample states in 1978 are shown in Table A.7. Note that most states in reality use some hybrid formula, so the table indicates only the broad generic type of formula that is closest to the specific formula used by the state.

Table A.7

1978 STATE SPECIAL EDUCATION
FINANCE FORMULA

State	Type of Formula ^a
Rhode Island	Excess cost
Michigan	Excess cost
Montana	Excess cost
Oregon	Excess cost
New Jersey	Grant per pupil
New York	Grant per pupil
Indiana	Grant per pupil
South Dakota	Grant per pupil
Tennessee	Grant per pupil
California	Unit
Minnesota	Unit
Oklahoma	Unit
South Carolina	Unit
Texas	Unit

^a

Esther O. Tron, Public School Finance Programs, 1978-1979, Bureau of School Systems, Office of Education, Washington, D.C., 1980; and National Association of State Directors of Special Education, State Profiles in Special Education, Washington, D.C., August 1977.

ESTIMATED PERCENT OF SPECIAL EDUCATION FUNDS FROM LOCAL SOURCES

Of all the 50 states, the smallest percentage local expenditure for the excess cost of special education is 0 percent (Montana) and the largest is 71 percent (South Dakota). Since data on local expenditures are not available for many states, the percentages shown in Table A.8 are based on available data and estimates of questionable accuracy.

Table A.8

PERCENT OF SPECIAL EDUCATION FUNDS FROM
LOCAL SOURCES IN THE STATES

State	Estimated Percent Local Funds	a Special Education Finance Formula
South Dakota	71	Grant per pupil
Rhode Island	63	Excess cost
California	50	Unit
New Jersey	50	Grant per pupil
Oregon	46	Excess cost
New York	42	Grant per pupil
Indiana	41	Grant per pupil
Tennessee	38	Grant per pupil
Michigan	37	Excess cost
Minnesota	37	Unit
Oklahoma	30	Unit
Texas	20	Unit
South Carolina	1	Unit
Montana	0	Excess cost

a
Estimated from data contained in National Association of State Directors of Special Education, State Profiles in Special Education, Washington, D.C., August 1977; and in W. H. Wilken et al., "State Aid for Special Education: Who Benefits?" National Foundation for the Improvement of Education and the National Conference of State Legislatures, May 31, 1976.

GENERAL EDUCATION FUNDS PER CHILD

Of the 50 states, the highest total general education expenditure per child in FY 1978 was \$3,341 (Alaska), the second highest was \$2,527 (New York), and the lowest was \$1,189 (Georgia). Note that this variable was not used in sample selection. Data are presented in Table A.9 for information purposes only.

Table A.9
1978 GENERAL EDUCATION EXPENDITURES
PER CHILD IN THE STATES

State	General Education Expenditures ^a per Child
New York	2527
New Jersey	2333
Michigan	1975
Minnesota	1962
Oregon	1929
Montana	1906
Rhode Island	1840
California	1674
Oklahoma	1461
Indiana	1449
South Dakota	1385
Texas	1352
South Carolina	1340
Tennessee	1209

^a
U.S. Bureau of the Census,
Statistical Abstract of the
United States, 1979, p. 157.

STATE SPECIAL EDUCATION FUNDS PER HANDICAPPED CHILD

Of the 50 states, the highest expenditure of state funds per handicapped child served was \$2370 (Montana), and the lowest was \$136 (South Dakota). Note that this variable was not used in sample selection. Data are presented in Table A.10 for information purposes only.

Table A.10

STATE SPECIAL EDUCATION FUNDS PER
HANDICAPPED CHILD SERVED IN 1976

State	State Special Education Funds Per Handicapped Child Served ^a
Montana	2370
New York	1061
Texas	1001
Rhode Island	944
Michigan	881
California	838
New Jersey	548
Minnesota	545
Tennessee	396
Indiana	343
South Carolina	338
Oklahoma	219
Oregon	169
South Dakota	136

^a

National Association of State
Directors of Special Education, State
Profiles in Special Education,
Washington, D.C., August 1977.

NUMBER AND PERCENTAGE OF CHILDREN IN SPECIAL EDUCATION

Of the 50 states, the largest number of handicapped children served in any state in FY 1978 (averaging the October 1977 and February 1978 child counts under P.L. 94-142 for each state) was 325,000 (California); the smallest was 7600 (Vermont). Considering the number served as a percentage of the aged 5-17 population in each state, the largest was 11.5 percent (Utah) and the smallest was 5.2 percent (Wisconsin). Note that this variable was not used in sample selection. Data are presented in Table A.11 for information purposes only.

Table A.11

NUMBER AND PERCENTAGE OF CHILDREN
IN SPECIAL EDUCATION, BY STATE IN
1977-1978

State	Handicapped Children a Served	Number Served as Percent of Aged 5-17 Population b
South Carolina	69,000	10.2
Tennessee	95,000	10.0
Texas	267,000	9.5
New Jersey	142,000	8.9
Oklahoma	48,000	8.2
Minnesota	73,000	7.5
Oregon	32,000	7.0
Michigan	142,000	6.8
California	325,000	6.7
Rhode Island	13,000	6.6
Indiana	79,000	6.6
New York	215,000	5.7
Montana	10,000	5.6
South Dakota	8,000	5.5

a

Average of the P.L. 94-142 child count data for October 1977 and February 1978 for ages 3-21 years, U.S. Office of Education, Bureau of Education for the Handicapped.

b

Progress Toward a Free Appropriate Public Education, Office of Education, U.S. Department of Health, Education, and Welfare, January 1979, p. 160.

Appendix B

CHARACTERISTICS OF THE SELECTED LOCALITIES

GEOGRAPHIC REGION

The four major United States Bureau of the Census regions that the sample localities are in are shown in Table B.1. Nine of the 46 localities in the sample are in 3 northeastern census region states, 12 are in four south census region states, 14 are in four northcentral census region states, and 11 are in three western census region states.

Table B.1

LOCALITIES BY GEOGRAPHIC REGION

Locality	Region	Locality	Region
1	West	24	Northeast
2	West	25	Northeast
3	West	26	South
4	West	27	South
5	West	28	South
6	Northcentral	29	West
7	Northcentral	30	West
8	Northcentral	31	West
9	Northcentral	32	Northeast
10	Northcentral	33	Northeast
11	Northcentral	34	Northeast
12	Northcentral	35	South
13	Northcentral	36	South
14	Northcentral	37	South
15	Northcentral	38	Northcentral
16	Northcentral	39	Northcentral
17	West	40	Northcentral
18	West	41	South
19	West	42	South
20	Northeast	43	South
21	Northeast	44	South
22	Northeast	45	South
23	Northeast	46	South

LOCATION (MAJOR URBAN-RURAL-OTHER RESIDUAL)

The localities include representation from major urban districts (defined as urban districts with student enrollments of 15,000 or greater), rural districts (defined as districts with student enrollments of less than 2500 that are located at least 50 miles from an urban center of 100,000 or more population and that are located at least 50 miles from each of the three largest cities in the state), [1] and other residual districts (defined as neither rural nor major urban). For each of the 14 states, at least one rural and one major urban locality was selected in the stratified probabilistic sample. In total, the sample of 46 localities contains 14 rural localities, 18 major urban localities, and 14 residual category localities. The location category of each locality is shown in Table B.2.

GEOGRAPHIC SIZE

The smallest locality in our sample encompassed a 2 square mile geographic area, the largest over 1200 square miles. Data for the 46 sample localities for 1978 are shown in Table B.3 and have been coded into size ranges to help prevent identification of the localities in our sample.

[1] The one exception was in Rhode Island, where the small geographic size of the state required us to relax the 50 mile limit to 20 miles. The use of a "distance from an urban area" criterion means that those districts classified as rural in our sample are not near an urban area where specialized educational services can be readily obtained.

Table B.2

LOCALITIES BY LOCATION (MAJOR URBAN-RURAL-RESIDUAL)

Locality	Location	Locality	Location
1	Residual	24	Residual
2	Major urban	25	Rural
3	Major urban	26	Rural
4	Rural	27	Major urban
5	Major urban	28	Major urban
6	Major urban	29	Major urban
7	Residual	30	Residual
8	Rural	31	Rural
9	Major urban	32	Major urban
10	Residual	33	Residual
11	Major urban	34	Rural
12	Rural	35	Residual
13	Residual	36	Rural
14	Major urban	37	Major urban
15	Residual	38	Major urban
16	Rural	39	Residual
17	Major urban	40	Rural
18	Residual	41	Rural
19	Rural	42	Residual
20	Major urban	43	Major urban
21	Residual	44	Residual
22	Rural	45	Rural
23	Major urban	46	Major urban

Table B.3
LOCALITIES BY GEOGRAPHIC SIZE
(Square miles)

Locality	Geographic	Locality	Geographic
	^a Size		Size
1	>200	24	<100
2	<100	25	>200
3	<100	26	>100, ≤200
4	>200	27	<100
5	>200	28	>100, ≤200
6	<100	29	>200
7	>200	30	>200
8	>100, ≤200	31	<100
9	>100, ≤200	32	<100
10	>100, ≤200	33	<100
11	<100	34	<100
12	<100	35	>200
13	<100	36	>100, ≤200
14	<100	37	>200
15	<100	38	<100
16	>100, ≤200	39	>200
17	<100	40	<100
18	>200	41	<100
19	>200	42	>200
20	<100	43	<100
21	<100	44	<100
22	<100	45	>100, ≤200
23	<100	46	<100

a

Data provided by LEA personnel

PERSONAL INCOME PER CAPITA

The 1974 personal income per capita in the localities in our sample ranged from a low of \$3200 to a high of \$6100. Data for each of the 46 sample localities are shown in Table B.4 and have been rounded to the nearest \$1000 to help prevent identification of the localities in our sample.

Table B.4

LOCALITIES BY PER CAPITA INCOME in 1974
(Dollars rounded to nearest 1000)

Locality	Per	Locality	Per
	Capita		Capita
	^a Income		Income
1	5000	24	5000
2	5000	25	3000
3	5000	26	4000
4	4000	27	5000
5	5000	28	6000
6	5000	29	5000
7	4000	30	5000
8	4000	31	4000
9	5000	32	5000
10	5000	33	5000
11	5000	34	5000
12	4000	35	4000
13	6000	36	4000
14	5000	37	5000
15	6000	38	5000
16	4000	39	5000
17	5000	40	3000
18	5000	41	4000
19	4000	42	3000
20	5000	43	5000
21	6000	44	4000
22	5000	45	4000
23	5000	46	4000

^a
U.S. Bureau of the Census,
Current Population Reports, Series
P-25, Nos. 649-699, 1977.

TOTAL ELEMENTARY AND SECONDARY STUDENT ENROLLMENT

The 1977-1978 elementary and secondary school enrollment in the local education agencies in our sample ranged from a low of 91 to a high of over 200,000 pupils. Data for each of the 46 sample localities are shown in Table B.5 and have been coded into ranges to help prevent identification of the localities.

Table B.5

LOCALITIES BY TOTAL STUDENT ENROLLMENT
IN LOCAL EDUCATION AGENCY

a			
Locality	Enrollment	Locality	Enrollment
1	<2,500	24	>15,000, ≤50,000
2	>15,000, ≤50,000	25	<2,500
3	>15,000, ≤50,000	26	<2,500
4	<2,500	27	>15,000, ≤50,000
5	>50,000	28	>50,000
6	>50,000	29	>15,000, ≤50,000
7	<15,000, ≥2,500	30	<15,000, ≥2,500
8	<2,500	31	<2,500
9	>50,000	32	>15,000, ≤50,000
10	<15,000, ≥2,500	33	<15,000, ≥2,500
11	>15,000, ≤50,000	34	<2,500
12	<2,500	35	<15,000, ≥2,500
13	<15,000, ≥2,500	36	<2,500
14	>15,000, ≤50,000	37	>50,000
15	<15,000, ≥2,500	38	>15,000, ≤50,000
16	<2,500	39	<15,000, ≥2,500
17	>15,000, ≤50,000	40	<2,500
18	<15,000, ≥2,500	41	<2,500
19	<2,500	42	<15,000, ≥2,500
20	>15,000, ≤50,000	43	>15,000, ≤50,000
21	<15,000, ≥2,500	44	<15,000, ≥2,500
22	<2,500	45	<2,500
23	>15,000, ≤50,000	46	>50,000

a
Data provided by LEA personnel.

PERCENT MINORITY ENROLLMENT

The percent minority enrollment ranged from a low of 0 to a high of 86 percent. Data for each of the 46 sample localities are shown in Table B.6 and have been coded into ranges to help prevent identification of the localities.

Table B.6
LOCALITIES BY PERCENT MINORITY ENROLLMENT

Percent		Percent	
a			
Locality	Minority	Locality	Minority
1	<40, ≥10	24	<10
2	<40, ≥10	25	<10
3	>40	26	<40, ≥10
4	<40, ≥10	27	<40, ≥10
5	<40, ≥10	28	<40, ≥10
6	>40	29	<10
7	<10	30	<10
8	<10	31	<10
9	>40	32	<40, ≥10
10	<10	33	<40, ≥10
11	<40, ≥10	34	<10
12	<10	35	<40, ≥10
13	<10	36	>40
14	<40, ≥10	37	<40, ≥10
15	<10	38	<10
16	<10	39	<10
17	<10	40	<10
18	<10	41	<40, ≥10
19	<10	42	<10
20	>40	43	<40, ≥10
21	<10	44	>40
22	<10	45	<10
23	>40	46	>40

a
Data provided by LEA personnel.

ANNUAL PERCENTAGE OF STUDENTS ENROLLED IN SPECIAL EDUCATION

The number of different handicapped children receiving special education and related services during the 1977-1978 school year as a percentage of total school enrollment ranged from a low of 5 percent to a high of 24 percent. Data for each of the 46 sample localities are shown in Table B.7.

Table B.7

LOCALITIES BY ANNUAL PERCENT OF STUDENTS
ENROLLED IN SPECIAL EDUCATION

a			
Locality	Percent	Locality	Percent
1	6	24	6
2	11	25	8
3	7	26	12
4	7	27	9
5	7	28	8
6	12	29	8
7	8	30	11
8	13	31	7
9	7	32	10
10	5	33	7
11	15	34	5
12	9	35	15
13	9	36	10
14	12	37	12
15	7	38	8
16	9	39	8
17	9	40	7
18	8	41	9
19	16	42	8
20	10	43	14
21	9	44	20
22	5	45	24
23	11	46	11

a
Calculated from data provided by
LEA personnel.

DISTANCE TO CITY OF 100,000 OR GREATER POPULATION

The maximum distance from any locality in the sample to a city of 100,000 or greater population was 400 miles. Data for each of the 46 sample localities are shown in Table B.8.

Table B.8

LOCALITIES BY DISTANCE TO CITY OF 100,000 POPULATION
(Miles)

a			
Locality	Distance	Locality	Distance
1	20	24	50
2	0	25	110
3	0	26	90
4	45	27	0
5	0	28	0
6	0	29	0
7	45	30	176
8	45	31	101
9	0	32	0
10	18	33	12
11	0	34	15
12	95	35	60
13	10	36	48
14	0	37	0
15	20	38	0
16	185	39	125
17	400	40	140
18	170	41	30
19	180	42	95
20	0	43	0
21	15	44	80
22	60	45	90
23	0	46	0

a

Data provided by LEA personnel.

TEACHER'S AVERAGE SALARY

The average teacher's salary without fringe benefits ranged from a low of \$9000 to a high of \$19,000 per year. Data for each of the 46 sample localities are shown in Table B.9 and have been rounded to the nearest \$1000 to help prevent identification of the localities.

Table B.9

TEACHERS AVERAGE SALARY WITHOUT FRINGE BENEFITS
(Dollars rounded to nearest 1000)

a			
Locality	Salary	Locality	Salary
1	16,000	24	19,000
2	17,000	25	15,000
3	18,000	26	10,000
4	19,000	27	12,000
5	19,000	28	14,000
6	14,000	29	15,000
7	14,000	30	14,000
8	13,000	31	12,000
9	19,000	32	17,000
10	19,000	33	15,000
11	14,000	34	16,000
12	14,000	35	11,000
13	17,000	36	10,000
14	17,000	37	12,000
15	18,000	38	14,000
16	13,000	39	12,000
17	15,000	40	9,000
18	13,000	41	12,000
19	12,000	42	10,000
20	16,000	43	13,000
21	17,000	44	13,000
22	14,000	45	11,000
23	19,000	46	13,000

a
Data provided by LEA personnel.

IV. DATA COLLECTION AND ANALYSIS METHODS

ANALYSIS METHODS

The term "cost" does not have a universally acceptable specific definition for cost accounting purposes, since in practice it is used in many different ways. In many cases, cost can be meaningfully expressed in dollar terms. In some cases, however, dollar terms alone are insufficient, and multivariate measures of cost must be utilized. In this study, we were able to express the cost of special education exclusively in dollar terms. However, if this were a study of the effectiveness of special education (which it is not), then more than monetary criteria certainly would be required.

One of the first questions that arises in cost analysis is what type of cost is of interest. For example, does one want to know the added cost of implementing a specific type of program in a specific local district, or does one want to compare the costs of different types of programs independent of the districts? From an era when student-teacher ratios were used as a measure of total resource utilization in an education program, and when the use of varied local prices of resources confounded the interpretation of data, cost analysis in education took a major step forward when the notions of comparable replication cost and incremental cost were transferred from previous areas of application to the area of education.[1]

[1] S. Haggert, Program Cost Analysis in Education Planning, The Rand Corporation, P-4744, Santa Monica, December 1971.

In estimating the increase in cost if a particular new program is to be implemented in a specific district, one should use the district specific costs such as salaries for the additional resources required by the proposed program, and the resulting estimated program cost is the incremental cost for that district.

To evaluate and compare both regular and special education programs nationwide and independent of the district as this study does, the cost of interest is the comparable replication cost for the program. After defining a program by its services, its types of students, its personnel and other resource requirements (etc.), we determine the cost of replicating the program on a comparable basis across districts by using national average salaries and other resource prices developed from our sample data.

The reason for the use of standard prices or salaries in this study is that programs can be compared across districts without having local variations in salaries obscure the differences in the programs. The use of local salaries and workhours per year in a nationwide analysis could obscure the fact that two different districts are providing exactly the same amount of service, or conversely could make it appear that two different districts are providing the same level of service when they are really not. In a comparison of alternative programs across districts nationwide, the use of national average salaries and national average workhours per year allows the comparison of service levels of programs consistently across districts with the same scale. The standard salaries used in this study are presented in Chap. V.

Of course, for particular purposes the standard prices or salaries used might need to be adjusted to reflect justified and systematic variations across districts. We made such adjustments for the analysis presented in Ch. XX showing variation in cost by size of school district.

The magnitude of the problem that exists if one uses local salaries instead of national average salaries, and if one uses local workyears instead of national average workyears, is best illustrated by an example. Consider a local education agency that pays an average teacher's salary of \$10,000 for a 7.5 hour work day and a 190-day workyear. In this agency one hour of educational service by the teacher requires \$7.02 in salary expenditures. If the same agency paid an average salary of \$20,000, the teacher's salary expenditures per hour would be \$14.04. Now consider another local education agency that pays an average teacher's salary of \$10,000 for a six-hour work day and a 180-day workyear. In this agency one hour of educational service requires \$9.26 in salary expenditures. If the same agency were to pay an average salary of \$20,000, the teacher's salary expenditures per hour of service would be \$18.52.

These two reasonable and typical cases illustrate that simply looking at expenditures using local salaries and local work hours per year can result in the same one hour of service costing anywhere from approximately \$7.00 to approximately \$18.50 in salary expenditures per hour of service.

We stress that when analyzing and comparing programs for local purposes one should use local salaries and work hours per year. However,

in comparisons of alternative programs across districts nationwide, the use of national average salaries and national average work hours per year allows the comparison of service levels and programs consistently across districts using the same scale.

In estimating the total cost of special education and related services, we took each type of service one at a time. For example, total cost was estimated separately for screening for handicapping conditions, preparing Individualized Education Programs, and providing direct instructional service. In arriving at total costs, we estimated the cost per child for each type of service by age level, handicapping condition, and type of educational placement. This was done in three major steps. First, we estimated the minutes of each type of service per child (or equivalently, FTE personnel per child) in each district, for each different type of personnel, and for each age level, handicapping condition, and type of educational placement. Second, we took the sample weights and salaries and fringe benefits per FTE staff member and estimated the national average cost for that particular service by type of personnel. Third, we estimated the support services costs (such as for facility operations and district administration) and nonpersonnel costs (such as for instructional supplies per handicapped child) by age level, handicapping condition, and type of educational placement. (Details of the analysis method for each type of service are presented in the subsequent chapter of this report where the analysis results for that type of service are presented.)

In calculating the added cost of special education and related services for handicapped children above the cost of regular education for

nonhandicapped children, we performed two major steps. First, we estimated the total cost of regular education per nonhandicapped child from detailed data collected in this study. And second, we estimated the added cost of special education and related services by subtracting the total cost of regular education per nonhandicapped child from the total cost of special education and related services per handicapped child.

All education agency costs are included in the analysis with the exceptions of (1) the costs of summer and adult evening school and (2) the added costs of other target population programs such as those for disadvantaged and bilingual children. No costs are counted more than once--e.g., any duplicate costs of new building construction and debt service are not double counted. All estimates are per child enrolled, not per child in average daily attendance (ADA).[2]

The estimated costs of special education are all the costs for all types of services for handicapped children, whether or not they are paid for by the "special education" budget. Note that many of the costs of educating handicapped children are not recorded in "special education" expenditure accounts--e.g., the cost of the regular education teacher who serves the handicapped child in the regular education classroom. By interviewing hundreds of personnel and focusing on how those personnel spent their time, we were able to estimate all the costs of educating handicapped children and to separate those costs from the costs of educating nonhandicapped children, even if they were not separated in the education agency budget.

[2] Student enrollment data were more readily available than ADA data by type of handicapping condition, age level, and type of educational placement.

Both within and across localities, one unit of analysis was groups of students with similar characteristics. Our ability to group students was limited by data availability in the localities. We were able to obtain data on two important dimensions of student characteristics in most localities; these were (1) age level and (2) type and severity of handicapping condition.

We would like to have been able to group students in terms of their functional abilities, but these data were not available in comprehensive or comparable form in localities across the nation. To obtain functional level data on students in each locality would have required a level of effort beyond the resources available for this study.

Weighting Sample Data to Obtain National Averages

Weighted averages rather than simple averages were necessary in going from data collected in a stratified sample to nationwide time and cost estimates. The probabilistic sampling technique used to select the 46 localities allowed the calculation of weighted national averages for all measures at the age level, handicapping condition, and educational placement (A/H/P) group level. The weight used was the reciprocal of the respective sampling probability.

$$\bar{Y} = \frac{\sum_{i=1}^n Y_i / P_i}{\sum_{i=1}^n 1/P_i}$$

where \bar{Y} = estimated average for a variable.

n = sample size.

Y_i = measurement taken for the variable on sample unit i .

P_i = sampling probability of sample unit i .

The numerator in the above formula can be interpreted as an unbiased estimate of the national total for the variable Y . The denominator term can be interpreted as an unbiased estimate of the total number of units in the entire nation.

Viewed in simple terms, the weight we assigned can be interpreted as the total number of handicapped children in the nation that the average individual child in the sample locality represented. Alternatively, if we were calculating a national average for particular types of staff members, the weight can be interpreted as the total number of staff members in the nation that one staff member in the sample locality represented.

Viewing the above weighting discussion in terms of an example, suppose we have collected data on the total minutes per week of speech therapy that a typical individual handicapped child received in each locality. Suppose there were 20 children in the locality who got speech therapy, that this locality was selected to be representative of 50

other localities in the same state, and that this state was selected to be representative of four other states in the nation. An unbiased way to weight the data for these children is to say that the children from this district are representative of $20 \times 50 \times 4 = 4000$ children in the nation who receive speech therapy. The weight for the service data per child would be 4000, which is the reciprocal of the probability that one child was selected ($P = 1/20 \times 1/50 \times 1/4 = 1/4000$).

Because the sample was selected in three stages as outlined in Chap. III, the number of localities in the nation that one particular locality in the sample represented was the reciprocal of the probability that the locality's state was selected times the probability that the locality was in the Phase I local sample times the probability that the locality was selected in the Phase II local sample.

By definition, all children from the local education agency were in the sample. However, for an intermediate, regional, or cooperative education agency, only those children sent to the intermediate, regional, or cooperative education agency by the sample local education agency were in the sample and were used in calculating nationwide averages.

Age Groups

Data were collected and analyzed for three age level groups: preschool, elementary, and secondary. Preschool age students were considered to be about 0-4 years old; elementary age students were about 5-11 years old; secondary age students were about 12-18 years old. Age levels were used rather than grade levels because many handicapped students are in ungraded programs.

Type and Severity of Handicapping Condition

Data were collected and analyzed for several categories of handicapping condition.

In this study we followed the federal definition of handicapped children contained in P.L.94-142. According to that definition, handicapped children are

mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired, or other health impaired children, or children with specific learning disabilities who by reason thereof require special education and related services. [3]

This study excluded other very important groups of students whose exceptional educational needs were not primarily due to a mental or physical handicap. Those categories of students that were beyond the scope of this study, unless they were also mentally or physically handicapped, included the following: gifted and talented students; pregnant students; socially maladjusted students; juvenile offenders; and environmentally, culturally, or economically disadvantaged students.

The federal definition of handicapped children is general and flexible, hence compatible with the variety of definitions used in practice by nearly all states and localities. Those state and local definitions vary from one educational jurisdiction to another. In addition to differences among jurisdictions in the words used in definitions, nearly all definitions of handicapped children (including the detailed federal definitions specified in the Code of Federal Regulations) are non-specific in the sense that they permit a great deal of latitude on the

[3] 20 U.S.C. 1402 as amended.

part of state and local education agencies and personnel in deciding who actually are handicapped children. Because the interpretations of definitions are not necessarily comparable across jurisdictions, an individual child might be "handicapped" if he lived in one location but "normal" if he lived elsewhere. Or, he might be categorized as having one type of handicap in one location and another type in another location, even if both locations had the same set of possible categories of handicapping conditions. Especially nebulous terms in common use include "learning disabled," "educationally handicapped," and "emotionally disturbed."

This study did not attempt to reevaluate children's handicapping conditions in the localities in which we collected data. Rather, we asked local education personnel to provide data on children they felt were handicapped under the federal definitions, and to translate their categories of handicapping conditions to the nearest equivalent federal categories. This was not too difficult for most local education agencies, since under P.L. 94-142 the count of handicapped children must be reported using federal categories. [4]

To the extent they were found in common usage, we used categories that indicated the severity of the handicapping condition, since severity is correlated with service requirements and costs. Thus, we had three categories for retardation, two for visual handicaps, and two for hearing handicaps. However, we relied on the district's determination of severity because it was beyond the scope of this project to

[4] A notable exception would be localities in the "noncategorical" Commonwealth of Massachusetts, which was not selected in our probabilistic sample of states.

independently assess the severity of the student's handicaps in the selected localities.

In order to select and develop definitions for our study, we reviewed those used by the federal government,[5] by each state education agency,[6] and by major special education textbook authors.[7]

In the remainder of this section we summarize the definitions of handicapping conditions used in this study. In all cases but two, the definitions of handicapping conditions were those used by the federal government, which were also those most often used in practice throughout the United States. In the remaining two categories (Mentally Retarded and Visually Impaired) the federal definition was used, supplemented by a breakdown by severity found to be used in many of the states. We were able to find meaningful and commonly used subcategories of handicapping conditions by degree of severity only for hearing impairment, mental retardation, and vision impairment.

Learning Disabled. Those children having "a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write,

[5] Federal Register, Vol. 42, No. 163, August 23, 1977, pp. 42478-79.

[6] Based on information contained in Diane Newkirk, "An Analysis of Categorical Definitions, Diagnostic Methods, Diagnostic Criteria, and Personnel Utilization in the Classification of Handicapped Children," The Council for Exceptional Children, Reston, Virginia, March 1978.

[7] Lloyd M. Dunn (ed.), Exceptional Children in the Schools, Special Education in Transition (2d ed.), Holt, Rinehard & Winston, Inc., New York, 1973; Sam A. Kirk, Educating Exceptional Children (2d ed.), Houghton Mifflin, Boston, 1972; and Robert M. Smith and John T. Neisworth, The Exceptional Child, A Functional Approach, McGraw-Hill Book Company, New York, 1975.

spell, or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, or of environmental, cultural, or economic disadvantages." [8]

Mentally Retarded. Those children with "significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested during the developmental period, which adversely affects their educational performance." [9]

State definitions often make distinctions between Educable and Trainable, or between Educable, Trainable, and Severely Retarded children, based on one or a combination of the following types of characteristics: intelligence scores, adaptive behavior, predicted learning rates, predicted functioning levels, or inability to benefit from certain types of placements. We have adapted Kirk's definition of these three subcategories of severity of retardation. [10]

Educable. Those children who are considered to have potential for development in three areas: (A) educability in academic subjects at a minimum level, (B) educability in social adjustment

[8] Federal Register, Vol. 42, No. 163, August 23, 1977., p. 42478.

[9] Ibid.

[10] S. A. Kirk, Educating Exceptional Children (2d ed.), Houghton Mifflin, Boston, 1972, pp. 164-166.

to a point where they can get along independently in the community, and (C) ability to achieve minimal occupational development to such a degree that they can later support themselves partially or totally at the adult level.

Trainable. Those children who have potential for learning: (A) self-help skills, (B) social adjustment in the family and in the neighborhood, and (C) economic usefulness in the home or in a sheltered work environment.

Severe. Those children unable to be trained in total self-care, socialization, or economic usefulness and who need continued help in taking care of their personal needs.

Seriously Emotionally Disturbed. Those children "exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects educational performance: (A) an inability to learn which cannot be explained by intellectual, sensory, or health factors, (B) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers, (C) inappropriate types of behavior or feelings under normal circumstances, (D) a general pervasive mood of unhappiness or depression, or (E) a tendency to develop physical symptoms or fears associated with personal or school problems. The term includes children who are schizophrenic or autistic. The term does

not include children who are socially maladjusted, unless it is determined that they are seriously emotionally disturbed." [11]

Hearing Impaired. Children having hearing impairments, that after correction adversely affect their educational performance.

Profoundly Deaf. Children with "a hearing impairment which is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification, which adversely affects educational performance." [12]

Partially Hearing. Those children with "a hearing impairment, whether permanent or fluctuating, which adversely affects their educational performance but which is not included under the definition of 'deaf'." [13]

Visually Impaired. Those children having "a visual impairment which, even with correction, adversely affects [their] educational performance. The term includes both partially seeing and blind children." [14]

In the federal definition, the subcategories of Partially Seeing and Blind are mentioned but are not defined. Upon examining the definitions used by various states, we found three major types of definitions: (1) definitions making no distinction between Partially Seeing and Blind, (2) definitions citing the legal definition of blindness (which has very limited usefulness in educational

[11] Federal Register, Vol. 42, No. 163, August 23, 1977, p. 42478.

[12] Ibid.

[13] Ibid.

[14] Federal Register, Vol. 42, No. 163, August 23, 1977, p. 42479.

programing since some legally blind people are functionally blind but most have some degree of functional vision),[15] and (3) functional definitions. The functional definitions are most relevant for educational purposes.

Functionally Blind. Children with a visual impairment so severe that their vision is nonfunctional for the purposes of educational performance.

Partially Sighted. Children with a visual impairment that adversely affects their educational performance but which is not included under the definition of "blind."

Orthopedically Impaired. Children having "a severe orthopedic impairment which adversely affects [their] educational performance. The term includes impairments caused by congenital anomaly (club-foot, absence of some member, etc.) impairments caused by disease (poliomyelitis, bone tuberculosis, etc.) and impairments from other causes (cerebral palsy, amputations and fractures or burns which cause contractures)."[16]

Other Health Impaired. Those children with "limited strength, vitality or alertness, due to chronic or acute health problems such as a heart condition, tuberculosis, rheumatic fever, nephritis, asthma, sickle cell anemia, hemophilia, epilepsy, lead poisoning,

[15] G. D. Brewer, and J. S. Kakalik, Handicapped Children: Strategies for Improving Services, McGraw-Hill, New York, 1979.

[16] Federal Register, Vol. 42, No. 163, August 23, 1977, p. 42478.

leukemia, or diabetes, which adversely affects [their] educational performance." [17]

Speech Impaired. Those children with "a communication disorder, such as stuttering, impaired articulation, a language impairment, or a voice impairment, which adversely affects [their] educational performance." [18]

Multi-Impaired. Those children "with concomitant impairments (such as mentally retarded-blind, mentally retarded-orthopedically impaired, etc.), the combination of which causes such severe educational problems that they cannot be accommodated in special education programs solely for one of the impairments." [19]

Included for purposes of this study are children who are both deaf and blind. Excluded from this definition are children with relatively mild secondary handicapping conditions that do not require a substantial change in their individualized educational programs because of their secondary impairments.

Type of Educational Placement

A major determinant of the cost of educating a handicapped child is the type of educational placement used. For example, alternative educational placements might include regular class placement with various types of supplementary service, various types of special classes, a special day school, hospital or homebound instruction, or a residential institution.

[17] Ibid.

[18] Ibid.

[19] Ibid.

Our discussion with our advisors and U.S. Office of Special Education personnel resulted in a consensus that we should collect data on public education agency, nonresidential education programs only. The decision to exclude private and residential placements was made because they are separate organizational universes for data collection purposes, because they pose different and difficult data access problems, and because the data collection costs would have exceeded our project's budget. [20]

For the purposes of data collection and analysis of the cost of special education, we have defined ten educational placement categories. This categorization scheme is patterned after one developed by Reynolds, [21] and one used by the U.S. Office of Special Education. [22]

In certain cases, however, we felt additional subcategories were useful in collecting and analyzing cost information. First, we distinguish three subcategories within regular class placement: those with

[20] In his 1970 study of special education costs, Rossmiller experienced problems in obtaining financial and cost data from private school personnel. (Richard Rossmiller, James Hale, and Lloyd Frohreich, Educational Programs for Exceptional Children: Resource Configurations and Costs, Department of Educational Administration, The University of Wisconsin, Madison, August 1970; and interview with Richard Rossmiller, August 4, 1977.) Public residential institutions would also require significant additional research time and costs because they usually would require obtaining cooperation and working with personnel in agencies outside the primary state education agency, and because of the difficulty in separating educational costs from residential living and other service costs.

[21] M. C. Reynolds, "A Framework for Considering Some Issues in Special Education," Exceptional Children, Vol. 28, 1962, pp. 367-370.

[22] Bureau of Education for the Handicapped, "Amended Annual Program Plan Data Requirements, FY 1978," in Fiscal Year 1978, Annual Program Plan Amendment for Part B of the Education of the Handicapped Act as Amended by P.L. 94-142, Department of Health, Education, and Welfare, Washington, D.C., March 1977.

only indirect special services; those with ancillary or related direct services; and those with an itinerant special teacher part time.

(Detailed definitions are provided below.) Second, we distinguish three subcategories of special day class placement; full time in special classes; majority but not full time in special classes; and minority of time in special instructional settings.

In addition, we excluded three subcategories included in the federal classification scheme (private day schools,[23] private residential school facilities),[24] and public residential school facilities),[25] since both private organizations and residential institutions were beyond the scope of this study.

^In the remainder of this subsection, we summarize the educational placement categories used in this study.

1. Full-Time Regular Class Plus Indirect Services. Education is provided in "a general type of class in which most students receive instruction, including most classes other than those

[23] A school that is controlled by an individual or by an agency other than a local, state, or federal government that usually is supported by other than public funds, and the operation of whose program rests with other than publicly elected or appointed officials, and that students attend during a part of the day, as distinguished from a residential school where students are boarded and lodged as well as taught.

[24] An educational institution in which students are boarded and lodged as well as taught, and that is controlled by an individual or an agency other than a local, state, or federal government that usually is supported by other than public funds, and the operation of whose program rests with other than publicly elected or appointed officials.

[25] An educational institution in which students are boarded and lodged as well as taught and that is supported by public funds and operated by publicly elected or appointed school officials who control the school programs and activities.

that are composed of handicapped children." [26] Additional indirect services provided may include identification of the handicapped child, assessment of the child's special educational needs and development of an "individual education program," and the provision of support services (such as special materials, consultant assistance, and inservice teacher training) to the regular class teacher to enable the handicapped child to perform in the regular class with nonhandicapped students. Note that regular and special classes are defined in terms of types of students, not in terms of types of certification of the teachers.

2. Regular Class Plus Related Direct Services. Education is provided in a regular class, plus direct provision to the child of ancillary related services such as speech and language services, psychological services, physical therapy, occupational therapy, school health services, and social work services. Children may also benefit from the assessment and other indirect services described above in placement Category 1.
3. Itinerant Special Instruction. Education is provided in a regular class, plus direct provision of instructional services to the handicapped student by an itinerant special education teacher. Children may also benefit from the indirect and related direct services described above in placement Categories 1 and 2.

[26] Bureau of Education for the Handicapped, "Amended Annual Program Plan Data Requirements, FY 1978," in Fiscal Year 1978, Annual Program Plan Amendment for Part B of the Education of the Handicapped Act as Amended by P.L. 94-142, Department of Health, Education, and Welfare, Washington, D.C., March 1977.

4. Regular Class Plus Part-Time Special Class. Education is provided a majority of the time in a regular class, plus part-time special instruction in a setting designed or adapted as a place in which handicapped children receive a part of their schooling, such as a resource room or a special classroom for individual or group instruction.
5. Special Class Plus Part-Time Regular Class. Education is provided a majority of the time in a special class, plus part-time in a regular class.
6. Full-Time Special Class. Education is provided in a class that has a special education teacher for all or most of the daily session and that is composed of only handicapped children for whom a program of special education is provided.
7. Special Public Day School. A program of special education is provided in a nonresidential school attended only by handicapped children, operated by publicly elected or appointed school officials who have control over the school's programs and activities, and supported primarily by public funds.
8. Homebound Instruction. Individual instruction is provided by a teacher (or other education agency staff member), usually at the home of a student who is unable to attend classes.
9. Short-term Hospital. Formal instructional activities are provided during a short-term hospitalization. [27]

[27] The National Center for Health Statistics in its publication Hospitals (Department of Health, Education, and Welfare, Washington, D.C., 1976, pp. 1-3), defines hospitals as general or short-term hospitals and specialty or long-term hospitals. "A general hospital (short-

10. Full-Time Work. Handicapped student works full time under at least partial supervision of the education agency, and does not attend any classes.

Types of Educational and Related Services

Direct services are instructional or related services in which the handicapped child participates that are designed to produce cognitive, affective, or physical development. Service categories upon which we collected data included, but were not limited to, the following:

- o instruction by special education teachers and aides
- o instruction by regular education teachers and aides (including the extra time spent on handicapped children)
- o adapted physical education
- o counseling
- o occupational therapy
- o physical therapy
- o medical related services
- o mobility training
- o psychological services

term) is an establishment that provides, through an organized medical staff, permanent facilities that include at least six inpatient beds, medical services, and continuous nursing services, and diagnosis and treatment, both surgical and nonsurgical, for patients who have any of a variety of medical conditions." Short-term means that "the average length of stay for all patients in the hospital is less than 30 days." (Note that an individual child may stay more than 30 days in a short-term hospital.) Long-term hospitals are grouped by NCHS into four categories: psychiatric, chronic disease, tuberculosis, and others.

- o special vocational services
- o social services
- o speech therapy

Indirect services are activities designed to support the implementation of direct services. Service categories upon which we collected data included the following:

- o screening for handicapping conditions
- o assessment for handicapping conditions and service needs
- o admission and placement into a special education program
- o individual education program (IEP) development
- o technical assistance to professionals regarding special education
- o staff in-service training
- o supplies and equipment
- o transportation
- o food services
- o facility operations and maintenance
- o district and school administration

The principal measure of the quantity of each type of service being delivered was the time spent by various types of personnel in delivering that service. The total amount of a service received by a particular child was the sum of all the time spent by personnel delivering that service, expressed in terms of fractions of FTE personnel per year. By translating all services into FTE personnel, and then multiplying by annual salary plus fringe benefits, we could easily compare costs and

services between different groups of children. These measures of service took into account other measures including: the length of service sessions, the frequency of sessions, the duration of a service, and the group size receiving the service.

Service costs were analyzed in terms of a three dimensional categorization of students involving age level, type of handicapping condition, and type of educational placement. The probabilistic sampling technique used to select the sample localities allowed the calculation of a weighted national average for all measures for all groups of students classified according to the three dimensions.

DATA COLLECTION METHODS

In determining the methods and sources of data collection, four criteria were carefully weighed and balanced: data collection cost, respondent burden, data validity, and data comparability. We attempted to minimize costs and respondent burden while maintaining high validity and comparability through extensive use of sampling, careful selection of sources for each datum, and use of different collection methods for different types of data.

Two different data collection methods were used in this study: on-site inspection of district records and in-person interviews.

Inspection of records by our research staff on site in the localities placed the least burden on the respondents and was the method used whenever the required data were found in district documents. Primary records contained data that were more accurate than that in the memories of district personnel. Also, record data provided large amounts of information at fairly low cost to both researcher and respondent.

Much of the information we sought required extraction from district records (e.g., personnel, student enrollment, income, budget, and expenditure records). This was done by the Rand researchers; local personnel were not asked to compile large amounts of information. Rather, local respondents directed the interviewer to the data source. The researcher then transformed the available record data into the format required for this survey. For example, local expenditure accounts were translated by Rand researchers into a common set of accounts used for all localities in the sample. This procedure enhanced the comparability of information across localities, and the respondents were not burdened with the task of preparing data in the required format.

Interviews placed greater burden on respondents but were necessary to obtain information that was not recorded in standard district documents (e.g., the average related services personnel time needed to assess a handicapped child and the average teacher time spent instructing a handicapped child). Interviews were also needed when interpretation of the information (e.g., the definition of a local expenditure account) was necessary to ensure validity and comparability across localities. Interviews were costly to both researcher and respondent but were necessary to explore the subtleties and fine points in the desired data. The director of special education directed us to or provided us with much of the information needed. Other central office administrators had the best information on expenditures, salaries and fringe benefits, transportation, regular education personnel, district enrollment, and district characteristics. Questions concerning related

services personnel, such as FTE staff, organization of services by age level and type of handicapping condition, contracted services, and aide activities, were best answered by the supervisor in each related service area. (Over 500 such interviews were conducted.) We asked questions about special day schools for only handicapped children of principals in those schools. The teachers were, of course, the appropriate respondents for much of the information concerning student services.

Data collection methods were field tested and revised in the early fall of 1977. Data collection was completed by June of 1978. Data within each locality were gathered by a team of one to three members; team size was adjusted to allow complete data collection in five business days or less in each district. The principal investigators led the data collection team in the largest, most complex districts.

Upon return to Rand, data collectors coded all data into a comparable format for keypunching. Data were checked by the collectors and by computer programs for inconsistencies and missing data and, whenever essential, a telephone callback was made to the district in order to resolve the inconsistency or to fill in the data gaps. The amount of time required for data reduction and cleaning for each site was approximately equal to the person-days on site.

After the data sets were prepared, they were keypunched and processed by computer check programs. As errors were identified by these data check programs, the collectors responsible for the data set corrected the data errors. The data check programs contained over 300 checks for simple errors (e.g., the wrong district code number) and for complex errors (e.g., the amount of time devoted to services exceeded

the available staff time). The data check programs assured that all variable values fell within valid ranges, that different responses from individuals were consistent, and that data from different sources within the locality were consistent.

After all data collection, coding, checking, and correction work was complete, the computer-readable data file was ready for analysis. For a complete description of the data file, which contains information on over 15,000 variables for each school district in the sample, see "The Cost of Special Education: Documentation of Data Analysis Tape," by J. S. Kakalik et al., N-1778-ED, November 1981.

V. PERSONNEL SALARIES AND WORKYEARS

NATIONAL AVERAGE SALARIES

In order to estimate the comparable replication cost of special education programs, we obtained cost information by multiplying the amount of local personnel time and other resources by the estimated national average salary or price of those other resources. Appropriately weighting the local numbers gives a national cost estimate. Our rationale for using national average salaries and workyears was the following: if actual local salaries were used, the resulting program cost would have diminished meaning when we compared programs across districts, since the differences among programs' costs would reflect both the programs' service levels and personnel salaries and workyears.

We collected data on the average salary of every different type of personnel employed by each of the local and intermediate education agencies in our sample. This included 64 different types of related service personnel, several types of teachers, and several types of aides and other district support and administrative personnel. The national average salaries for illustrative types of personnel are shown in Table 5.1 for the school year 1977-1978. All teachers combined had an estimated average salary of \$14,949 based on taking the weighted average from our nationally representative data. We note that this estimate is very close to the \$15,027 reported by the National Center for Educational Statistics[1] for the average teacher's salary during the same school

[1]U.S. Department of Education, National Center for Educational Statistics, "The Condition of Education: Statistical Report," 1980 edition, Washington, D.C., Table 2.11, p. 76.

Table 5.1

NATIONAL AVERAGE SALARIES FOR EDUCATION AND RELATED SERVICES PERSONNEL

Type of Personnel	Salary Only (\$)	Salary with Fringe Benefits (\$)
All Teachers	14949	17644
Special Education Teachers	13877	16441
Regular Education Teachers	15110	17834
Itinerant Special Teachers	13336	16003
Homebound Teachers	11265	13440
Hospital Teachers	13111	15066
All Aides	4788	6179
Special Education Aides	4854	6264
District Administrators	23927	28386
Special Education Directors	22737	26733
Special Education Handicap/ Program Specialists	19006	22714
School Administrators	23751	28140
Secretaries and Clerks	8063	9906
Special Education Secretaries and Clerks	7754	9626
Operations and Maintenance Managers	15451	18298
Operations and Maintenance Workers	10874	13095
Custodians	9236	11253
Transportation Managers	13417	15921
Transportation Drivers *	5102	6316
Transportation Aides	3556	4573
Transportation Support Staff	7985	9711
Food Service Managers	13070	15406
Food Service Workers	4543	5691
Adaptive Physical Education Teachers	15366	18239
Audiologists	17154	20284
Behavior Modification Specialists	12000	14580
Contract Screening Personnel	16406	19368
Counselors	17719	20893
Daily Living Specialists	14829	17034
Deaf Interpreters	7542	8703
Diagnostic Prescriptive Specialists	16113	19127
Due Process Specialists	18200	21840
Librarians	16484	19616

Table 5.1--continued

Type of Personnel	Salary Only (\$)	Salary with Fringe Benefits (\$)
Media Specialists	17021	20597
Medical Doctors	40461	48858
Mobility Specialists	16249	18995
Nurses	13959	16508
Occupational Therapists	13559	16203
Physical Therapists	15815	18953
Psychiatrists	33336	39764
Psychologists	18737	22308
"Search and Serve" Personnel	17680	20759
Social Workers	17045	20335
Special Vocational Personnel	18556	21982
Speech Therapists	14727	17567

year. The difference between the NCES estimate of the average teacher's salary and ours is 1/2 percent.

Note that special education teachers made slightly less per year than regular education teachers, an indication of their lesser average years of experience since they were typically paid on the same salary schedule (with perhaps a slight bonus of \$300 to \$500 per year paid to the special teachers). Special education aides averaged \$4,854 per year. Related services personnel typically were paid salaries that were roughly comparable to salaries for teachers, although there were exceptions. For example, medical doctors were typically paid approximately \$40,000 per year.

Table 5.1 also presents data on the salaries with fringe benefits, which were obtained by taking each locality separately and calculating the average salary including fringe for that district by type of personnel. The national average of salaries with fringe was then obtained using the same weighting procedure as was used for salaries without fringe.

The fringe benefits included in the total were social security, other retirement plans, life insurance, health insurance, dental insurance, long-term disability insurance, unemployment compensation, workmen's compensation, and other similar items. Fringe benefits in each locality were calculated based on the cost per person for the fringe benefit and the percentage of the people of each particular type in that district who received them. Hence, these are representative of the actual expenditures at local levels for fringe benefits plus any

expenditures at the state level for fringe benefits for local employees that did not show up in the local budget (for example, some states paid for teachers' retirement directly into a state retirement fund and this fringe benefit expenditure for local personnel did not show up in the local budget). We did not include in the package expenditures for vacation or holiday pay, since these expenditures were included in our salary data.

Fringe benefits for all teachers nationwide averaged 18 percent of salary. For all aides nationwide they averaged 29 percent of salary. There are several reasons for the difference in fringe benefit percentages by type of personnel. One reason is that some fringe benefits, for example health insurance, were a flat amount for each person (such as \$500 per staff member). Those would obviously be a higher percentage of a low paid person's salary than they were of a highly paid person's salary. A second reason for a difference in the fringe benefits as a percentage of salary is that some personnel, such as certificated staff members, received fringe benefits that noncertificated staff members did not. Finally, in some districts some types of personnel, for example food service workers or bus drivers, who worked less than half-time, received no fringe benefits.

In computing the average salaries for personnel in a local district, sometimes the local district had only employees of a particular type, sometimes they had only consultant or contract workers of a particular type, and sometimes they had both. Whenever employees of a particular type existed in a district, we used the employees' salary to compute the national average. If only contract or consultant workers

existed in that local district, we annualized the consultant's daily rate and included it in the calculation of the national average. In most cases there was little difference in the national average that was obtained with or without this method of incorporating consultants' salaries. For a few types of related services personnel where there were frequently consultants rather than employees, there was a significant difference, however. The two largest differences observed in the national averages were for medical doctors, where for doctors who were employees of districts the average salary without fringe was \$32,987; the comparable figure averaging in consultant doctors was \$40,461. The second large difference occurred for audiologists where the average of employees only was \$13,543, and the average including consultants was \$17,154. For all other types of personnel the averages with or without consultants were quite close to one another.

DISTRIBUTION OF SALARIES

The distributions of district average salaries with fringe benefits for various types of personnel are shown in Table 5.2. The average is a weighted average of each of the district's salaries for the particular type of personnel and is the same as was shown on Table 5.1. The percentiles shown on Table 5.2 are not weighted but rather are raw percentiles of the average district salaries for those districts in our sample. Although the average special education teacher in the United States made \$16,441 in 1977-1978, 10 percent of the districts in our sample had special education teachers receiving an average salary of \$11,800 or less while 10 percent of the districts in our sample had

Table 5.2

DISTRIBUTION OF DISTRICT AVERAGE SALARY WITH FRINGE BENEFITS FOR VARIOUS PERSONNEL

Average or Percentile	All Teachers	Special Education Teachers	All Aides	Special Education Aides	Psychologists	Special Therapists	Nurses	Special Education Directors
10th	12,400	11,800	3,900	3,900	13,800	11,100	9,200	18,600
25th	14,200	13,100	4,800	4,900	17,500	13,500	12,300	22,700
Average	17,644	16,441	6,179	6,264	22,308	17,567	16,508	26,733
75th	18,800	18,400	7,600	7,800	25,700	18,400	18,400	31,600
90th	21,200	20,900	9,200	9,500	28,600	20,800	21,200	35,800

teachers receiving an average salary of \$20,900 or more. The lowest 10 percent of the districts, then, paid their professionals approximately half the salary paid by the highest 10 percent of the districts. However, for aides the range between the lowest and the highest 10 percent was even greater, closer to 2.5 times. These wide ranges on salaries between the lower paying and the higher paying districts graphically illustrate the difficulties one would have in interpreting the results of a nationwide study if only local salaries rather than national average salaries were used. Of course, the analyses can be done both ways if desired.

NATIONAL AVERAGE WORKYEAR

The 1977-1978 contract workyears for various types of personnel are shown in Table 5.3. The data are weighted national averages and represent the amount of time the teachers or other types of personnel were supposed to work--their official workyear based on their official work day times their official number of days of work per year.

Nationwide, teachers worked an average of approximately 75,000 minutes per year. Based on a typical 180 day workyear, this represented approximately a seven hour workday. District level administrative personnel had the longest average workyear. Their average workyear was slightly less than 110,400 minutes, which was what a full-time eight hour per day, 230 day per year person would work. Aides typically worked approximately 71,000 minutes per year, which was approximately a 6-1/2 hour day for the 180 day workyear. Other types of personnel who normally worked less time than teachers were bus drivers and food service workers. Personnel whose average workyear was longer than teachers

Table 5.3
**NATIONAL AVERAGE WORKYEAR FOR EDUCATION
 AND RELATED SERVICES PERSONNEL**

Type of Personnel	Average Workyear (minutes)
All Teachers	74,808 ^a
Homebound Teachers	72,777
Hospital Teachers	73,219
All Aides	71,084
District Administrators	106,519
Special Education Directors	106,796
Special Education Handicap/ Program Specialists	107,733
School Administrators	99,294
Secretaries and Clerks Special Education	99,063
Secretaries and Clerks Operations and Maintenance Managers	104,598
Operations and Maintenance Workers	107,957
Custodians	107,957
Transportation Managers	102,893
Transportation Drivers	98,645
Transportation Aides	60,648
Transportation Support Staff	56,199
Food Service Managers	81,395
Food Service Workers	94,473
Adaptive Physical Education Teachers	70,166
Audiologists	74,808
Behavior Modification Specialists	74,808
Contract Screening Personnel	74,808
Counselors	73,110
Daily Living Specialists	77,624
Deaf Interpreters	74,808
Diagnostic Prescriptive Specialists	73,735
Due Process Specialists	82,453
Librarians	77,700
Media Specialists	74,808
Medical Doctors	99,665
Mobility Specialists	74,749
	74,808

Table 5.3--continued

Type of Personnel	Average Workyear (minutes)
Nurses	77,100
Occupational Therapists	74,808
Physical Therapists	74,808
Psychiatrists	74,749
Psychologists	77,662
"Search and Serve" Personnel	76,544
Social Workers	77,934
Special Vocational Personnel	84,048
Speech Therapists	74,808

^aA 180-day workyear and a 7-hour day equals 75,600 minutes. A 230-day workyear and an 8-hour workday equals 110,400 minutes. A 180-day workyear and a 4-hour workday equals 43,200 minutes.

but less than full-time year round were typically related services personnel, some of whom worked year-round and some of whom worked the school year. So, nationwide, they averaged somewhere in between.

The distribution of the workyear for teachers and aides is illustrated in Table 5.4. Note that in approximately 10 percent of the districts in our sample, teachers worked 6-1/4 hours or less and in approximately 10 percent of the districts teachers worked 7-3/4 hours per day or more.

In calculating the national averages for workyears, we grouped together all types of teachers before calculating the average workyear since the contract year was almost always the same for all types of teachers within a single district. Also, before taking national averages we grouped certain types of related services personnel such as medical doctors and psychiatrists.

Table 5.4
DISTRIBUTION OF WORKYEAR FOR TEACHERS AND AIDES

Average or Percentile	Teachers		Aides	
	^a Minutes/Year	^b Hours/Day	^a Minutes/Year	^b Hours/Day
10th	67,500	6.25	63,400	5.87
25th	71,000	6.57	67,700	6.27
Average	74,808	6.93	71,084	6.58
75th	79,400	7.35	78,500	7.27
90th	83,300	7.71	85,100	7.88

^a Calculated using actual days per year times hours per day.

^b We assumed a 180 day workyear, which was typical.

EXTRA DOLLARS PAID TEACHERS WHO SERVE HANDICAPPED CHILDREN

Although regular education teachers and special education teachers were almost always paid on the same salary scale, many districts paid special education teachers a small annual salary "bonus." This extra payment averaged \$96 per year nationwide if both districts that paid and districts that didn't pay the extra amount were included in the weighted average. If only districts that paid an extra amount were considered in the weighted average, those districts averaged \$371 per year extra per special education teacher.

We investigated whether regular education teachers were paid any extra amount for service to handicapped children placed at least part-time in the regular classroom. None of the districts in our representative nationwide sample paid any regular teacher any extra amount when they served a handicapped child in the regular classroom, but that handicapped child was counted as part of the normal class size.

NATIONAL AVERAGE YEARS EXPERIENCE AND PERCENT WITH GRADUATE EDUCATION

As two of the indicators of the quality of personnel and as two possible reasons for variation in salary levels between districts, we collected data on the national average years of experience by type of personnel and on the percent of each type of personnel who possessed a master's degree or the equivalent number of credits of graduate education.

As shown in Table 5.5, in 1977-78 all teachers averaged ten years experience whereas special education teachers averaged seven years experience. The percentage of all teachers and of special education teachers with master's degrees or the equivalent number of credits or more was approximately the same at 46 percent and 48 percent respectively. In the section of this chapter on national average salaries, we indicated that all teachers nationwide averaged \$14,949 whereas special education teachers nationwide averaged \$13,877 per year. One reason for the lower salaries paid to special education teachers was the average of three years less experience those special education teachers possessed than the average.

With the exception of school nurses, the principal types of related services personnel had a proportion of the staff with graduate degrees or the equivalent credits that was larger than it was for teachers. As shown in Table 5.5, for example, 70 percent of speech therapists and 98 percent of psychologists had advanced degrees or the equivalent number of credits but only 22 percent of the nurses possessed advanced degrees or the equivalent number of credits. In terms of the average years of experience, most related services personnel had more experience than special education teachers.

Table 5.5

NATIONAL AVERAGE PERCENT WITH GRADUATE DEGREES
AND YEARS OF EXPERIENCE BY TYPE OF PERSONNEL

Type of Personnel	Average Years of Experience	Percent with Master's Degrees (or the Equivalent Number of Credits) or More Graduate Education
All Teachers	10	46
Special Education Teachers	7	48
Adaptive P.E. Teachers	12	86
Audiologists	9	74
Counselors	11	96
Diagnostic Prescriptive Specialists	7	87
Homebound Teachers	7	56
Hospital Teachers	8	61
Itinerant Special Teachers	7	85
Media Specialists	4	100
Medical Doctors	(a)	100
Mobility Specialists	11	100
Nurses	13	22
Occupational Therapists	4	(a)
Physical Therapists	10	(a)
Psychiatrists	(a)	100
Psychologists	5	98
Search and Serve Personnel	5	95
Social Workers	8	94
Special Vocational Personnel	11	77
Speech Therapists	7	70

^a

Data not available.

VI. AGE, HANDICAPPING CONDITION, AND TYPE OF EDUCATIONAL
PLACEMENT OF THE HANDICAPPED STUDENT POPULATION

In analyzing services and their costs for handicapped children by age level, handicap, and educational placement of the student, we found it was necessary to collect information on the number of students in each category. This descriptive information goes beyond that obtained from the P.L. 94-142 reporting forms that describe only the students served at one point in time according to their type of handicap.

For each of the 13 categories of handicapped students (plus all combined) used in this study, Tables 6.1.1-6.1.15 provide estimates of the percentage of the handicapped population of each age level served during 1977-1978 in each different educational placement. We used the percentages of numbers of different children served during the entire school year (annual student count) for all placements except the four involving full or part time special classes and special day schools. For those four placements school districts usually did not have student turnover data so we were forced to use the current student count for the day of data collection instead of the count for the entire year.

Note from Table 6.1.1 that nationwide, of all handicapped students in special education in public schools (excluding public residential schools and institutions), 2 percent were school age, 66 percent were elementary age, and 32 percent were secondary age. Excluding speech impaired children, the comparable figures were 2, 50, and 49 percent for the preschool, elementary, and secondary age levels.

Nationwide, of those handicapped students in public schools, 1 percent of all handicapped students were in regular education classes full time and received indirect services only, 41 percent were in regular education classes and received special related services only (this category includes the annual caseload of speech impaired children who received only speech therapy), and 2 percent were in regular education classes and received itinerant special teacher services. Thirty-one percent of the special education students were in a regular class a majority of the time and in a special class a minority of the time, 11 percent were in a special class a majority of the time, 5 percent were in a special class full time, 5 percent were in a special day school, and 3 percent were homebound. Note that all but 13 percent of the special education students spent at least part of the school day in a regular education program with nonhandicapped children.

The comparable percentages for all types of handicapped children combined excluding speech impaired children are as follows: 2 percent received indirect services only, 2 percent received related services only, 4 percent received itinerant teacher services, 53 percent were in a regular class a majority of the time, 18 percent were in a special class a majority of the time, 8 percent were in a full time special class, 8 percent were in a special day school, 5 percent were homebound, and 1 percent were in a short term hospital.

For several types of handicaps, no children were served in a regular education class full time with only special indirect services. The

types of handicapped children with the maximum percentage in this placement were hard of hearing children (8 percent) and partial sighted children (11 percent).

For several categories of handicapping conditions no students were in regular education classes full time and received special related services only. However, 98 percent of the speech impaired children and 39 percent of the other health impaired children were in this placement.

Placement in a regular education class plus itinerant special teacher services was the most likely placement for partially hearing children (43 percent), for functionally blind children (42 percent), and for partial sighted children (48 percent).

Placement in a regular education class a majority of the time and in a special education class a minority of the time was the most likely placement for learning disabled children (77 percent), emotionally disturbed children (46 percent), and educable mentally retarded children (41 percent). Some functionally blind (28 percent) and partially sighted children (20 percent) were also in this placement.

Placement in a special education class the majority of the time and in a regular education class a minority of the time was the most likely placement for deaf children (28 percent). Many educable mentally retarded (38 percent), emotionally disturbed (27 percent), and hard of hearing children (24 percent) were also in this placement.

Placement in a full time special education class was not the most likely placement for any category of handicapped children although it was the second most likely placement for trainable mentally retarded (34 percent) and profoundly deaf children (23 percent).

Placement in a special day school where only handicapped children are served was the most likely placement for trainable mentally retarded children (60 percent), severely mentally retarded children (91 percent), and multiple handicapped children (52 percent). No other categories of handicapping condition had more than 15 percent of the children in special day schools.

Service in the homebound setting was the most likely placement for orthopedically impaired children (49 percent) and other health impaired children (47 percent).

Service in a short term hospital was not the most likely placement for any category of handicapped children, although approximately 7 percent of the orthopedically and other health impaired children were served in this setting.

Full time work under the supervision of the special education program was the educational placement for less than 1 percent of the children, usually those of secondary age who were learning disabled, educable mentally retarded, or trainable mentally retarded.

Table 6.1.1

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF ALL TYPES OF HANDICAPPED STUDENTS COMBINED
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0.38	0.02	0	0.01	0.70	0.32	0.65	0.02	0	2.10
Elementary Age	0.52	26.48	1.71	14.89	4.76	2.87	2.67	1.51	0.24	0	65.64
Secondary Age	0.61	4.35	0.59	16.39	5.78	1.19	1.72	1.33	0.17	0.12	32.25
All Ages Combined	1.13	41.21	2.31	31.28	10.55	4.76	4.71	3.49	0.44	0.12	100

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Table 6.1.2

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF ALL TYPES OF HANDICAPPED STUDENTS,
EXCEPT SPEECH IMPAIRED

(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0.13	0.02	0	0.02	0.83	0.50	0.16	0.04	0	1.70
Elementary Age	0.85	0.57	2.88	25.13	8.06	4.84	4.52	2.55	0.41	0	49.82
Secondary Age	1.04	1.25	1.00	27.73	9.78	2.02	2.92	2.25	0.29	0.21	48.48
All Ages Combined	1.89	1.95	3.90	52.87	17.86	7.69	7.93	4.96	0.74	0.21	100

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Table 6.1.3

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF LEARNING DISABILITY STUDENTS

(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0.13	0.02	0	0	0.40	0.11	0	0	0	0.66
Elementary Age	1.50	0.04	2.42	41.04	5.88	2.57	0.46	0.66	0	0	54.56
Secondary Age	1.79	0	0.45	36.33	4.97	0.09	0.30	0.57	0	0.29	44.77
All Ages Combined	3.28	0.17	2.90	77.37	10.85	3.05	0.86	1.23	0	0.29	100

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Table 6.1.4

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF EDUCABLE MENTALLY RETARDED STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0	0	0	0.05	0.38	0.46	0.09	0	0	0.99
Elementary Age	0.04	0.17	0.89	14.29	12.55	7.10	6.36	0.01	0	0	41.42
Secondary Age	0.02	0.05	0.06	26.95	25.09	3.61	1.52	0.08	0	0.22	57.59
All Ages Combined	0.06	0.22	0.95	41.24	37.69	11.09	8.34	0.19	0	0.22	100

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Table 6.1.5

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF TRAINABLE MENTALLY RETARDED STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0	0	0	0	0.98	0.53	0.43	0	0	1.94
Elementary Age	0	0	0	0.12	1.58	17.64	30.53	0	0	0	49.87
Secondary Age	0	0	0	0.05	3.71	15.63	28.60	0	0	0.20	48.19
All Ages Combined	0	0	0	0.17	5.29	34.25	59.66	0.43	0	0.20	100

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Table 6.1.6

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF SEVERELY MENTALLY RETARDED
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0	0	0	0	0.32	4.18	3.74	0	0	8.24
Elementary Age	0	0	0	0	1.65	2.97	45.16	0	0	0	49.77
Secondary Age	0	0	0	0	0	0.19	41.80	0	0	0	41.98
All Ages Combined	0	0	0	0	1.65	3.48	91.13	3.74	0	0	100

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Table 6.1.7

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF EMOTIONALLY DISTURBED STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0	0.11	0	0	1.27	0.75	0.58	0	0	2.71
Elementary Age	0.07	0.41	7.40	11.70	20.29	5.40	1.42	0.29	0.13	0	47.13
Secondary Age	0.12	0	0.17	34.50	6.99	2.82	3.27	1.26	1.02	0.02	50.16
All Ages Combined	0.19	0.41	7.67	46.20	27.28	9.49	5.45	2.13	1.15	0.02	100

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Table 6.1.8

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF FUNCTIONALLY DEAF STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0	0	0	0	5.03	0.86	0	0	0	5.89
Elementary Age	0	5.27	5.87	6.81	11.81	17.72	11.65	0	0	0	59.13
Secondary Age	0	0.85	10.62	5.41	16.44	0.09	1.58	0	0	0	34.98
All Ages Combined	0	6.12	16.48	12.22	28.25	22.84	14.09	0	0	0	100

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Table 6.1.9

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF HARD OF HEARING STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0	0	0	0.53	4.29	0.67	1.38	0	0	6.87
Elementary Age	2.99	1.97	18.71	2.18	14.77	4.52	0.90	0	0.03	0	46.07
Secondary Age	5.00	0.61	24.68	6.18	8.79	0	0.99	0.82	0	0	47.06
All Ages Combined	7.98	2.58	43.39	8.36	24.10	8.81	2.55	2.20	0.03	0	100

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Table 6.1.10

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF FUNCTIONALLY BLIND STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0	0	0	0	14.78	4.64	0	0	0	19.42
Elementary Age	0	0	31.96	4.81	3.61	1.72	0.52	0	0	0	42.61
Secondary Age	0	0	9.97	23.02	0.34	0	4.64	0	0	0	37.97
All Ages Combined	0	0	41.92	27.84	3.95	16.49	9.79	0	0	0	100

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Table 6.1.11

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF PARTIALLY SIGHTED STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0	0.06	0	0	1.81	1.17%	3.93	0	0	6.97
Elementary Age	6.67	0	33.38	3.58	1.10	4.15	0.51%	0.60	0	0	50.00
Secondary Age	4.73	1.93	14.21	16.59	3.21	0	1.90	0.48%	0	0	43.03
All Ages Combined	11.39	1.93	47.65	20.17	4.30	5.96	3.58	5.01%	0	0	100

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Table 6.1.12

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF ORTHOPEDICALLY IMPAIRED STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0	0	0	0	4.69	1.28	0.25	0.86	0	7.08
Elementary Age	0.09	3.82	7.65	0.76	0.22	2.19	8.56	27.58	4.84	0	55.71
Secondary Age	0.45	2.12	1.74	3.84	0.72	1.33	4.05	21.58	1.37	0	37.21
All Ages Combined	0.54	5.94	9.39	4.61	0.94	8.21	13.89	49.41	7.07	0	100

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Table 6.1.13

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF OTHER HEALTH IMPAIRED STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	1.96	0	0	0	0	0.03	0.01	0	0	2.00
Elementary Age	0	5.08	0.59	0.17	0.09	0.21	0	23.54	4.32	0	34.02
Secondary Age	0	32.17	1.27	2.68	0.19	0	0	23.84	3.82	0	63.97
All Ages Combined	0	39.20	1.87	2.85	0.29	0.21	0.03	47.40	8.14	0	100

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Table 6.1.14

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF SPEECH IMPAIRED STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0.73	0.01	0	0	0.51	0.07	1.35	0	0	2.68
Elementary Age	0.03	88.30	0.01	0.10	0.02	0.02	0	0	0	0	88.48
Secondary Age	0	8.83	0	0.01	0	0	0	0	0	0	8.84
All Ages Combined	0.03	97.86	0.02	0.11	0.02	0.53	0.07	1.35	0	0	100

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Table 6.1.15

AGE LEVELS AND EDUCATIONAL PLACEMENTS OF MULTIPLE HANDICAPPED STUDENTS
(in percent)

Age Level	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	0	0	0	0	0	1.80	10.58	0.05	0	0	12.43
Elementary Age	0	1.51	0	3.25	11.99	8.27	20.79	6.81	1.88	0	54.50
Secondary Age ^a	0	0	0	1.19	3.21	5.15	20.80	0.50	2.22	0	33.08
All Ages Combined	0	1.51	0	4.44	15.19	15.22	52.17	7.36	4.10	0	100

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VII. INSTRUCTIONAL COSTS OF SPECIAL EDUCATION TEACHERS

INTRODUCTION

The total cost for instructional services provided by special education teachers to handicapped children is estimated in this chapter. Included as special education teachers are the full-time-equivalent number of teachers who taught in special day schools for handicapped children, who taught in self-contained special education classes, who taught in special education resource rooms or special classrooms where students attended for part of the school day, who taught in an itinerant program that involved visiting more than one school for the purpose of providing special instructional services for handicapped children, who taught handicapped children at home, and who taught handicapped children in short term hospitals. If the school district employed part time or hourly teachers, such as frequently was done to provide instructional services to homebound handicapped children, then we converted those part time and hourly personnel to full-time-equivalent personnel.

The information used to estimate the cost was obtained through interviews with a stratified random sample of teachers in each district, through an interview with the director of personnel in each school district, and through an interview with the special education administrator in each school district. The information used included the number of special education teachers, the number of each type of handicapped student served by each teacher (the type of student was defined by age level, handicap, and type of educational placement), and salaries and

fringe benefits. In addition, when individual special education teachers served more than one type of special education student, we collected data in our interviews on the relative amount of time that they spent on each different type of special education student.

We define instructional services time to be the total workyear of the special education teacher excluding the time spent on: (1) screening children to detect potential handicaps; (2) assessment of the needs of handicapped children; (3) admission of children to special education, placement, and IEP development; (4) staff inservice training; and (5) consultation with other professionals relative to special education. Instructional services time is all teacher work time not specifically excluded and hence includes any preparation time during the work day, and travel time between schools or between school and the student's home during the work day.

In order to estimate the cost per pupil for instructional services provided by special education teachers, we first had to calculate the number of FTE special education teachers in the school district by the age levels, handicapping conditions, and types of educational placements of the students served by the teachers. Special education students were defined to be the number of different children who were enrolled for special education and related services at any time during the school year. Thus, if a child was homebound for two months out of the school year, he or she was counted as one special education student. If a child was in a special classroom half time and was in a regular classroom half time, he or she was counted as one special education student for purposes of the estimates in this chapter.

The estimates of the cost of instruction by special education teachers per handicapped child were obtained by dividing the FTE number of special education teachers (excluding the time on certain services described above) by the number of different students in special education and then multiplying the estimated number of instructional minutes spent per child by the cost per minute. The cost estimates in this chapter utilize national average workyears and salaries with fringe benefits estimated from our sample.

COST OF INSTRUCTIONAL SERVICES BY SPECIAL EDUCATION TEACHERS

The estimated average total cost of instructional services provided by special education teachers, including both salary and fringe benefits, was \$551 per handicapped child in 1977-1978. This was the equivalent of an average of 2514 minutes per special education student per year. These special education teacher instructional costs are not the total of all teacher instructional costs for handicapped pupils, because the great majority of these students received part of their education in a regular education classroom. Regular education teacher instructional cost estimates for handicapped students are presented in Ch. IX.

Estimates of the special education teacher instructional time and cost per pupil are shown in Table 7.1 by age level and educational placement. In general the more restrictive the educational placement, the higher the cost for the special education teacher's instructional time. This was because the more severely handicapped students who required more attention per student were usually in the more restrictive

Table 7.1

SPECIAL EDUCATION TEACHERS ESTIMATED AVERAGE INSTRUCTIONAL TIME
AND COST PER PUPIL BY EDUCATIONAL PLACEMENT AND AGE LEVEL
(Minutes per year and dollars)

Age Level	Educational Placement ^a										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Preschool Age	0 min \$0	0 min \$0	1172 min \$251	3755 min \$825	3796 min \$834	4990 min \$1096	5489 min \$1206	367 min \$68	344 min \$71	0 min \$0	2626 min \$576
Elementary Age	0 min \$0	0 min \$0	2803 min \$600	3630 min \$798	6494 min \$1428	8168 min \$1795	6645 min \$1460	2367 min \$438	811 min \$167	0 min \$0	2046 min \$448
Secondary Age	0 min \$0	0 min \$0	3761 min \$805	3604 min \$791	4603 min \$1011	6085 min \$1337	6904 min \$1517	3821 min \$707	635 min \$131	0 min \$0	3458 min \$758
All Ages Combined	0 min \$0	0 min \$0	3037 min \$650	3615 min \$794	5456 min \$1198	7182 min \$1578	6660 min \$1463	2545 min \$471	718 min \$148	0 min \$0	2514 min \$551

^aEducational placements are defined in Chap. IV.

placements. Those students who were in a regular education class full time and received only indirect or related services incurred no special education teacher instructional costs. Those students in regular education classes who received services from an itinerant special education teacher cost an estimated \$650 annually. Those who were in full time special education classes cost an estimated \$1578 annually. The yearly cost for children in special schools for handicapped students was slightly less at \$1463. However, as will be seen in Ch. VIII, those students in special day schools for handicapped students incurred substantially higher special education aide costs than those students in full time special class placement, and hence the total cost of instructional services by both special education teachers and aides combined was highest for those students in the most restrictive placement, the special day school serving only handicapped children. Children in homebound or short term hospital placements incurred less cost per year (\$471 and \$148 per child, respectively) because those students were usually not homebound or hospital bound for the entire year.[1]

The instructional cost per pupil for special education teachers was estimated to vary by age level from \$576 at the preschool age to \$448 at the elementary age to \$758 at the secondary age level. One of the major reasons why the elementary age cost per pupil was significantly less than the secondary age cost per pupil was because of the large numbers of speech impaired students served at the elementary level who received

[1] The proportion of the year that those students spent in the regular education class as opposed to being homebound or in a short term hospital is described in Ch. IX.

no direct instructional services from a special education teacher but who were included in the average.

The variations by handicapping condition and age level in the estimated instructional time and cost per pupil for special education teachers are shown in Table 7.2. The estimated cost per pupil varied from a low of \$6 per year (29 minutes) for speech impaired children up to \$2336 per year (10,691 minutes) for profoundly deaf children, and \$2516 per year (11,612 minutes) for functionally blind children. In general, the greater the severity of the handicap the greater the cost of direct instructional services by special education teachers. In some cases, however, more severely handicapped children appeared to receive fewer instructional services. For example, the instructional cost of special education teachers for severely mentally retarded students was less than that for trainable mentally retarded students. But this was compensated for because the school districts were substituting special education aide services for instructional services of special education teachers in situations where the districts felt those aides could provide the services effectively. The cost of instructional services of special education teachers and aides combined for severely mentally retarded students was \$2500, whereas the comparable cost for trainable mentally retarded students was \$2430.[2]

The variation by educational placement and handicap in the estimated average special education teacher instructional time and cost per pupil is shown in Table 7.3. Considering the combination of both handicap and type of educational placement, the highest estimated annual

[2] Special education aide cost estimates are presented in Ch. VIII.

Table 7.2
 SPECIAL EDUCATION TEACHERS ESTIMATED AVERAGE INSTRUCTIONAL TIME
 AND COST PER PUPIL BY HANDICAP AND AGE LEVEL
 (minutes per year and dollars)

Age Level	Handicapping Conditions ^a													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Orcho	OHI	Speech	Multi	All
Preschool Age	3164 min \$695	4088 min \$898	5675 min \$1247	3332 min \$731	3049 min \$668	9506 min \$2089	9097 min \$1996	11943 min \$2623	4717 min \$1026	3712 min \$815	78 min \$17	899 min \$197	6784 min \$1491	2526 min \$576
Elementary Age	3833 min \$841	4510 min \$991	9464 min \$2079	6851 min \$1505	5923 min \$1300	12915 min \$2821	6002 min \$1311	15884 min \$3414	4557 min \$984	3142 min \$681	1139 min \$244	8 min \$2	8347 min \$1827	2046 min \$448
Secondary Age	3551 min \$780	3778 min \$830	6786 min \$1491	5213 min \$1145	4547 min \$998	7140 min \$1560	5512 min \$1195	6646 min \$1454	6028 min \$1316	4221 min \$914	1292 min \$277	1 min \$0	7977 min \$1751	3458 min \$758
All Ages Combined	3704 min \$813	4084 min \$897	8102 min \$1780	5873 min \$1290	5154 min \$1131	10691 min \$2336	5982 min \$1303	11612 min \$2516	5200 min \$1129	3584 min \$777	1216 min \$261	29 min \$6	8031 min \$1760	2514 min \$551

^aHandicapping conditions are defined in Chap. IV.

Table 7.3

SPECIAL EDUCATION TEACHERS ESTIMATED AVERAGE INSTRUCTIONAL TIME
AND COST PER PUPIL BY EDUCATIONAL PLACEMENT AND HANDICAP
(minutes per year and dollars)

Handicapping Condition	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
LD	0 min \$0	0 min \$0	1635 min \$350	3643 min \$800	5049 min \$1109	6363 min \$1398	8070 min \$1773	2335 min \$432	0 min \$0	0 min \$0	3704 min \$813
EMR	0 min \$0	0 min \$0	2271 min \$486	3145 min \$691	4777 min \$1049	5155 min \$1132	4653 min \$1022	2583 min \$478	7849 min \$1617	0 min \$0	4084 min \$897
TMR	0 min \$0	0 min \$0	0 min \$0	5145 min \$1130	6999 min \$1538	10343 min \$2273	7002 min \$1539	184 min \$34	0 min \$0	0 min \$0	8102 min \$1780
SMR	0 min \$0	0 min \$0	0 min \$0	0 min \$0	17248 min \$3791	15283 min \$3358	5542 min \$1218	232 min \$43	0 min \$0	0 min \$0	5873 min \$1290
Emot.	0 min \$0	0 min \$0	1514 min \$324	3820 min \$839	7135 min \$1568	8742 min \$1921	6925 min \$1521	5562 min \$1029	1533 min \$316	0 min \$0	5154 min \$1131
Deaf	0 min \$0	0 min \$0	11411 min \$2442	10442 min \$2277	10976 min \$2410	11231 min \$2468	3289 min \$2920	0 min \$0	0 min \$0	0 min \$0	10691 min \$2336
Part. Hear	0 min \$0	0 min \$0	4457 min \$954	6378 min \$1401	9485 min \$2084	10921 min \$2400	9084 min \$1996	1951 min \$361	7849 min \$1617	0 min \$0	5962 min \$1303
Blind	0 min \$0	0 min \$0	14037 min \$3004	7513 min \$1649	12504 min \$2736	12707 min \$2790	10683 min \$2346	0 min \$0	0 min \$0	0 min \$0	11612 min \$2516
Part. Sight	0 min \$0	0 min \$0	4336 min \$928	8702 min \$1911	9752 min \$2140	9001 min \$1975	8316 min \$1817	2913 min \$539	0 min \$0	0 min \$0	5200 min \$1129
Ortho	0 min \$0	0 min \$0	2331 min \$499	6065 min \$1332	7972 min \$1752	5707 min \$1254	7602 min \$1670	3383 min \$626	582 min \$120	0 min \$0	3584 min \$777
OHI	0 min \$0	0 min \$4	1644 min \$352	4645 min \$1020	6755 min \$1484	3395 min \$746	3093 min \$679	2416 min \$447	456 min \$94	0 min \$0	1216 min \$261
Speech	0 min \$0	0 min \$0	967 min \$207	4930 min \$1083	4805 min \$1056	3790 min \$832	4296 min \$944	135 min \$25	0 min \$0	0 min \$0	29 min \$6
Multi	0 min \$0	0 min \$0	0 min \$0	8506 min \$1856	10492 min \$2301	8349 min \$1833	8305 min \$1824	6129 min \$1134	1616 min \$333	0 min \$0	8031 min \$1760
All	0 min \$0	0 min \$0	3037 min \$650	3615 min \$794	5456 min \$1198	7182 min \$1578	6660 min \$1463	2545 min \$471	718 min \$148	0 min \$0	2514 min \$551

cost per student for instructional services of special education teachers was \$3791 for severely mentally retarded students who were in special classes most of the time with a small amount of part time regular class attendance and \$3358 for severely mentally retarded students attending special classes full time.

The estimated costs of other special education teacher services such as screening, assessment, IEP development, inservice training, and technical assistance will be described in subsequent chapters.

VIII. SPECIAL EDUCATION AIDE COST

The information used to estimate special education aide costs was obtained through interviews with a stratified random sample of teachers in each district, with the Director of Personnel in each school district, and with the special education administrator in each district. This information included the number of special education aides, the type of handicapped students served by each aide (the type of student was defined by age level, handicap, and type of educational placement), and salaries and fringe benefits. We also collected information on the number of each different type of special education student in each district. In addition, if aides generally served more than one type of special education student, then the interview data we collected from teachers indicated the relative amount of time the aides spent on each different type of special education student.

We obtained the special education aide cost estimates by first using the above types of information to calculate the FTE number of special education aides serving each different type of handicapped student. Then we divided the FTE number of aides by the number of students to estimate the amount of service provided by aides per handicapped student. Finally, we estimated the total cost by multiplying the estimated average number of minutes spent per child by the cost per minute. The cost estimates in this chapter utilize national average workyears and salaries with fringe benefits estimated from our sample.

The annual total cost of special education aides, including both salary and fringe benefits, was estimated to be \$106 per handicapped

child. This was the equivalent of an average of 1203 minutes per special education student per year.

Estimates of the special education aide time and cost per pupil are shown in Table 8.1 by age level and educational placement. The cost of special education aides and the time spent helping special education students varied by age level from \$402 (4564 minutes) at the preschool level to \$87 (987 minutes) at the elementary level to \$125 (1419 minutes) at the secondary level.

With respect to placement, the estimates varied from \$0 for those handicapped students placed in a regular education class full time up to \$598 per child (6787 minutes) who was placed in a special day school for handicapped children. In general, those children served in the less restrictive educational placements were provided less aide assistance.

Estimates of the time spent per pupil, and the cost of the special education aide per pupil, are shown in Table 8.2 by handicap and age level. In general, the more severely handicapped the student, the more the special education aide assistance that was provided. The highest annual cost estimates per child were \$1210 (13737 minutes) per severely mentally retarded student and \$1143 (12977 minutes) per multiple handicapped child. The least special education aide assistance, estimated to be \$5 per year per child (52 minutes), was for "other health impaired" children.

The estimated time and cost per pupil for special education aides are shown by type of educational placement and handicap in Table 8.3. The largest amount of service was estimated to be 17999 minutes per child at a cost of \$1586 for multiple handicapped children placed in special day schools.

Table 9.2

PROPORTION OF TIME STUDENTS SPENT WITH SPECIAL EDUCATION TEACHERS
BY HANDICAP AND AGE LEVEL

Age Level	Handicap ^a													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear.	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Preschool Age	.80	.98	1.00	1.00	.96	1.00	.97	1.00	.99	.85	1.00	.71	1.00	.81
Elementary Age	.31	.66	1.00	1.00	.61	.67	.41	.28	.22	.43	.23	.00	.83	.22
Secondary Age	.29	.53	.99	1.00	.45	.49	.22	.31	.29	.46	.01	.00	.92	.39
All Ages Combined	.30	.59	.99	1.00	.54	.63	.35	.43	.31	.48	.09	.02	.89	.29

^aHandicapping conditions are defined in Chap. IV.

Table 8.2

ESTIMATED AVERAGE SPECIAL EDUCATION AIDE TIME AND COST PER PUPIL
BY HANDICAP AND AGE LEVEL
(minutes per year and dollars)

Age Level	Handicap ^a													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Preschool Age	3644 min \$321	5835 min \$514	8015 min \$706	12103 min \$1056	3746 min \$330	9552 min \$841	5370 min \$473	11228 min \$989	3599 min \$317	4473 min \$394	83 min \$7	2509 min \$221	24096 min \$2123	4564 min \$402
Elementary Age	1237 min \$109	1769 min \$155	7506 min \$661	14430 min \$1271	3403 min \$299	11115 min \$979	1242 min \$109	6312 min \$556	295 min \$26	1862 min \$164	68 min \$6	4 min \$0	11319 min \$997	987 min \$87
Secondary Age	874 min \$77	799 min \$70	7231 min \$637	13239 min \$1166	3918 min \$345	650 min \$57	5041 min \$444	1328 min \$117	1737 min \$153	1827 min \$161	50 min \$4	0 min \$0	11546 min \$1017	1419 min \$125
All Ages Combined	1089 min \$96	1248 min \$110	7379 min \$650	13737 min \$1210	3667 min \$323	7357 min \$648	3303 min \$291	5370 min \$473	1135 min \$100	2043 min \$180	52 min \$5	68 min \$6	12977 min \$1143	1203 min \$106

^aHandicapping conditions are defined in Chap. IV.

Table 8.3

ESTIMATED AVERAGE SPECIAL EDUCATION AIDE TIME AND COST PER PUPIL
BY EDUCATIONAL PLACEMENT AND HANDICAP
(minutes per year and dollars)

Handi- cap	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short- term Hospital	Full Time Work	All Place- ments Combined
LD	0 min \$0	0 min \$0	215 min \$19	808 min \$71	2518 min \$221	4135 min \$364	7374 min \$649	0 min \$0	0 min \$0	0 min \$0	1089 min \$96
EMR	0 min \$0	0 min \$0	158 min \$14	727 min \$64	1694 min \$149	2047 min \$180	943 min \$83	3735 min \$329	0 min \$0	0 min \$0	1248 min \$110
TMR	0 min \$0	0 min \$0	0 min \$0	0 min \$0	2835 min \$249	9558 min \$842	6580 min \$579	8038 min \$708	0 min \$0	0 min \$0	7379 min \$650
SMR	0 min \$0	0 min \$0	0 min \$0	0 min \$0	17999 min \$1586	16531 min \$1456	13809 min \$1216	7527 min \$663	0 min \$0	0 min \$0	13737 min \$1210
Emot.	0 min \$0	0 min \$0	11 min \$1	2713 min \$239	5151 min \$453	5745 min \$506	8072 min \$711	1192 min \$105	0 min \$0	0 min \$0	3667 min \$323
Deaf	0 min \$0	0 min \$0	17893 min \$1576	1458 min \$128	2765 min \$243	8887 min \$783	10124 min \$892	0 min \$0	0 min \$0	0 min \$0	7357 min \$648
Part. Hear	0 min \$0	0 min \$0	5041 min \$444	249 min \$22	2548 min \$224	4362 min \$384	4074 min \$359	0 min \$0	0 min \$0	0 min \$0	3303 min \$291
Blind	0 min \$0	0 min \$0	3235 min \$285	4462 min \$393	4633 min \$408	8878 min \$782	11544 min \$1017	0 min \$0	0 min \$0	0 min \$0	5370 min \$473
Part. Sight	0 min \$0	0 min \$0	193 min \$17	2837 min \$250	2010 min \$177	1703 min \$150	8142 min \$717	0 min \$0	0 min \$0	0 min \$0	1135 min \$100
Ortho	0 min \$0	0 min \$0	1998 min \$176	4956 min \$436	8212 min \$723	6633 min \$584	5880 min \$606	0 min \$0	669 min \$59	0 min \$0	2043 min \$180
OHI	0 min \$0	0 min \$0	0 min \$0	959 min \$84	5568 min \$490	3483 min \$306	5474 min \$482	11 min \$1	0 min \$0	0 min \$0	52 min \$5
Speech	0 min \$0	0 min \$0	1271 min \$112	1624 min \$143	4879 min \$429	4993 min \$440	3132 min \$276	2895 min \$255	0 min \$0	0 min \$0	68 min \$6
Multi	0 min \$0	0 min \$0	0 min \$0	9026 min \$795	13772 min \$1213	7164 min \$631	17999 min \$1586	0 min \$0	0 min \$0	0 min \$0	12977 min \$1143
All	0 min \$0	0 min \$0	2270 min \$200	934 min \$82	2520 min \$222	5113 min \$453	6787 min \$598	579 min \$51	306 min \$27	0 min \$0	1203 min \$106

IX. INSTRUCTIONAL COSTS OF REGULAR EDUCATION TEACHERS AND AIDES

INTRODUCTION

In order to estimate the total cost of special education for handicapped children, it is necessary to estimate the cost of educational services provided by regular education teachers and aides during any time the handicapped pupil may spend in the regular education classroom. In addition, we need the cost of regular education in order to estimate the added cost of special education for handicapped pupils above and beyond the cost of regular education for nonhandicapped pupils.

This chapter estimates two major costs of regular education (the costs of regular education teachers and aides) for both handicapped and nonhandicapped students. Data on the length of the school year and day and the fraction of time different types of handicapped students spend with special education teachers are also presented because they are necessary to estimate the other costs.

The information contained in this chapter was obtained through interviews with a stratified random sample of teachers in each district, through interviews with the personnel and financial offices in each district, and through interviews with both regular and special education administrators in each district. The information collected included the number of teachers and aides of various types, the number of students of various types (nonhandicapped and handicapped students by age level, handicap, and type of educational placement), the fraction of time students spend with special education personnel, and salaries and fringe

benefits. The regular education teacher and aide cost estimates were then obtained by multiplying the estimated average number of minutes spent per child by the cost per minute for the type of personnel spending the time. The cost estimates in this chapter utilize national average workyears and salaries with fringe benefits obtained from our sample.

In order to estimate the cost per pupil for regular education teachers, we first had to calculate the number of FTE regular education teachers in the school district by grade level (preschool, elementary, secondary) and the number of FTE regular education students. Given those two components, we were then able to estimate the FTE teachers per pupil and the associated costs.

Regular education teachers are defined in our analysis to be all those personnel who are called teachers in the school district who are: (1) not special education teachers; (2) not teachers in "other target population" programs such as compensatory education, who provide services above and beyond those provided by some other regular education classroom teacher; and (3) not district level or school level administrators in practice.

Regular education students are defined in our analysis to be the entire enrollment of the district with the exception of the FTE number of handicapped students not in regular education classrooms. This means that if a handicapped child never attends a regular education class at any time during the week, that child is not counted as a regular education student. However, if the handicapped child attends the regular education class full time with the exception of the time a related services

person works with the child, then that child is counted as a regular education student full time. Finally, If the handicapped child divides his or her time between special and regular education classes, then the fraction of the child's time that is spent in the regular education class is added to the total of the number of FTE regular education students. For example, if a child spends 1/2 time in a regular education class and 1/2 time in a special education class, we count that child as 1/2 of a FTE regular education student.

NATIONAL AVERAGE SCHOOL YEAR AND DAY

For some of the cost estimates, it is necessary to know the length of time that children attend school each day and the number of days in the school year. In estimating these variables for 1977-1978, we used data from the local education agencies in our sample appropriately weighted as described in Chap. IV.

The average number of days in the school year nationwide was estimated to be 177 days.

The national average length of the school day varied for different age levels. At the preschool level the estimated average was 200 minutes per day (3.33 hours). At the elementary level the average school day was 337 minutes (5.62 hours), excluding lunch. At the secondary level the length of the school day was 358 minutes (5.95 hours), excluding lunch.

REDUCTION IN REGULAR EDUCATION CLASS SIZE DUE TO "MAINSTREAMING"

Since working with a handicapped child in a regular education classroom may require additional time by the regular education teacher, some teachers' organizations and others have suggested that the regular education class size be reduced whenever one or more handicapped children are placed in the regular education classroom. We specifically asked every district in our sample whether they made any such reductions in regular education class size, and only two reported making any. In one of the districts, they had two schools that were approximately half handicapped students and half nonhandicapped students. In this large metropolitan school district, the regular education class sizes were reduced from 30 to 26 students for these two schools only. In the second district that reported making some adjustment, any handicapped children placed into regular education were placed into classes designed for slow learners rather than into classes designed for the general student population. Those slow learner classes were smaller than normal, but there was no additional reduction because of the presence of the handicapped child.

PROPORTION OF TIME STUDENTS SPENT WITH SPECIAL EDUCATION TEACHERS

In order to estimate the cost of services provided to handicapped students by regular education and special education teachers, it was necessary to estimate the proportions of time different types of handicapped students spent in regular education and special education classes during the total school day. The data were obtained from a stratified random sample of teachers in our national sample. Time spent with

itinerant special teachers, special education resource room teachers, special education classroom teachers, and special handicapped day school teachers was considered to be time spent with special education teachers. The generally small amount of time spent with related services personnel, such as speech or physical therapists, was considered to be time spent with the teacher with whom the child spent the major portion of his or her day.

Estimates of the proportion of time students spent in 1977-1978 with special education teachers are shown in Tables 9.1-9.3 by various combinations of educational placement, age level, and handicap of the special education student. Handicapped students who were in regular class full time and received either indirect or related services only were classified as spending no time with special teachers. Students served by an itinerant special teacher spent an estimated 8 percent of their day with that itinerant teacher. Children who were in regular class the majority of the time plus a part time special class spent 22 percent of their time in that special class on the average. Children who were in a special class the majority of the time with part time regular class placement generally spent 77 percent of their time in the special education class. Those students who are in full time special classes and special day schools for handicapped pupils spent all of their time with special education teachers. Homebound and short term hospital special education students spent 100 percent of the time with a special education teacher but only during the time period when they were either homebound or in a short-term hospital. Those homebound and short-term hospital students generally did not spend the entire year at home

Table 9.1

PROPORTION OF TIME STUDENTS SPENT WITH SPECIAL EDUCATION TEACHERS
BY EDUCATIONAL PLACEMENT AND AGE LEVEL

Age Level	Educational Placement ^a									
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	All Placements Combined
Preschool Age	NA ^b	.00	.04	.18	.69	1.00	1.00	1.00	.02	.81
Elementary Age	.00	.00	.08	.20	.82	1.00	1.00	.33	.28	.22
Secondary Age	.00	.00	.07	.24	.73	1.00	1.00	.33	.07	.39
All Ages Combined	.00	.00	.08	.22	.77	1.00	1.00	.46	.18	.29

^a Educational placements are defined in Chap. IV.

^b Data not available for this educational placement and age level combination.

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Table 9.2

PROPORTION OF TIME STUDENTS SPENT WITH SPECIAL EDUCATION TEACHERS
BY HANDICAP AND AGE LEVEL

Age Level	Handicap ^a													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear.	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Preschool Age	.80	.98	1.00	1.00	.96	1.00	.97	1.00	.99	.85	1.00	.71	1.00	.81
Elementary Age	.31	.66	1.00	1.00	.61	.67	.41	.28	.22	.43	.23	.00	.83	.22
Secondary Age	.29	.53	.99	1.00	.45	.49	.22	.31	.29	.46	.01	.00	.92	.39
All Ages Combined	.30	.59	.99	1.00	.54	.63	.35	.43	.31	.48	.09	.02	.89	.29

^aHandicapping conditions are defined in Chap. IV.

Table 9.3
 PROPORTION OF TIME STUDENTS SPENT WITH SPECIAL EDUCATION TEACHERS
 BY HANDICAP AND PLACEMENT

Handicap ^a	Educational Placement									
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	All Placements Combined
LD	0	0	.08	.21	.77	1.0	1.0	.33	NA ^b	.30
EMR	0	0	.03	.25	.75	1.0	1.0	.61	1.0	.59
TMR	0	0	NA ^b	.25	.89	1.0	1.0	.98	NA ^b	.99
SMR	0	0	NA ^b	NA ^b	.98	1.0	1.0	1.0	NA ^b	1.00
Emot.	0	0	.10	.25	.84	1.0	1.0	.83	.19	.54
Deaf	0	0	.06	.45	.78	1.0	1.0	NA ^b	NA ^b	.63
Part. Hear.	0	0	.06	.21	.76	1.0	1.0	.98	1.0	.35
Blind	0	0	.21	.22	.75	1.0	1.0	NA ^b	NA ^b	.43
Part. Sight	0	0	.12	.34	.77	1.0	1.0	.83	NA ^b	.31
Ortho	0	0	.10	.23	.62	1.0	1.0	.42	.22	.48
OHI	0	0	.16	.14	.77	1.0	1.0	.19	.07	.09
Speech	0	0	.03	.36	.58	1.0	1.0	.01	NA ^b	.02
Multi	0	0	NA ^b	.26	.89	1.0	1.0	.69	.54	.89
All	0	0	.08	.22	.77	1.0	1.0	.46	.18	.29

^aHandicapping conditions are defined in Chap. IV.

^bData not available for this handicap and placement combination.

or in the hospital, but were typically back in the regular education program for the remainder of the year. The time that they spent with special education teachers during the entire year was 46 percent for homebound students and 18 percent for short-term hospital students. [1]

We estimated that 81 percent of the preschool age children's time was spent with special education teachers. This contrasted with 22 percent at the elementary age level and 39 percent at the secondary age level. The overall average percentage of time students spent with special education teachers, considering all handicapped students in special education, was 29 percent.

The proportion of time spent with special education teachers varied considerably by handicap from 2 percent for those who were speech impaired (who were usually provided speech services only) up to 100 percent for severely mentally retarded students (who were usually served either in a special class or special handicapped-day school setting).

COST OF INSTRUCTIONAL SERVICES PROVIDED BY REGULAR EDUCATION TEACHERS

In estimating the cost of regular education teachers' instructional services for both handicapped and nonhandicapped children, recall that we used the total FTE number of regular education teachers (excluding all special education teachers, "other target population" program teachers,

[1] Because we did not collect information on where homebound and short-term hospital students were placed during the portion of the school year when they attended school rather than being at home or in the hospital, we arbitrarily assumed that that time spent in school was spent in the regular education classroom. This is not unreasonable because most of the homebound and short-term hospital students who returned to school had some type of disability such as a broken leg or a surgical operation necessitating only a short-term hospital stay.

and persons classified as teachers who are working in nonteaching positions). The FTE number of regular education students was estimated by taking the total students minus the FTE special education students after adjusting the number of special education students for the fraction of time spent in the regular education classroom. The time estimates shown in Tables 9.4-9.5 for nonhandicapped students (column 1) and for handicapped students (columns 2-10 in Table 9.4 and columns 2-14 in Table 9.5) are in minutes per child per year and were derived by first taking the FTE number of regular education teachers at each age level, multiplying by the length of the workyear to get a total workyear in minutes, and dividing by the FTE number of regular education students. To obtain the instructional services time presented in the tables, we excluded all the time that the regular education teachers spent per child on: (1) assessment of the needs of handicapped children; (2) screening children to detect potential handicaps; (3) admission of children to special education, placement, and IEP development; (4) special education inservice training; (5) consultation with other professionals relative to special education; and (6) extra time spent on the handicapped children in the regular education classroom above and beyond the average time spent on nonhandicapped children. Thus, the instructional services time and costs presented in this section represent the "normal" amount of time that the regular education teacher spends on all regular education activities during the workyear, excluding those activities specifically mentioned above.

After estimating the cost of regular education teacher instructional services for each nonhandicapped student, (shown in column 1 of

Table 9.4

REGULAR EDUCATION TEACHER INSTRUCTIONAL TIME AND COST PER PUPIL
BY EDUCATIONAL PLACEMENT AND AGE LEVEL
(Minutes per year and dollars)

Age Level	Educational Placement ^a										
	Regular Class (Non-hand.)	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Home-bound	Short-term Hospital	All Hand. and Non-hand. Place-ments Combined
Preschool Age	2719 min \$632	NA ^b	2719 min \$632	2543 min \$607	2434 min \$581	817 min \$195	0 0	0 0	0 0	2594 min \$619	2144 min \$512
Elementary Age	2971 min \$708	2971 min \$708	2960 min \$703	2333 min \$555	2493 min \$593	539 min \$127	0 0	0 0	2072 min \$470	2234 min \$511	2930 min \$691
Secondary Age	3385 min \$808	3385 min \$808	3347 min \$793	3125 min \$746	2723 min \$653	979 min \$234	0 0	0 0	2267 min \$538	3164 min \$754	3340 min \$792
All Ages Combined	3191 min \$761	3191 min \$761	3002 min \$710	2648 min \$600	2614 min \$624	783 min \$186	0 0	0 0	1723 min \$409	2669 min \$622	3142 min \$742

^a Educational placements are defined in Chap. IV.

^b Data not available for this educational placement and age level combination.

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Table 9.5

REGULAR EDUCATION TEACHER INSTRUCTIONAL TIME AND COST PER PUPIL
 BY HANDICAP AND AGE LEVEL
 (minutes per year and dollars)

Age Level	Handicap ^a														All Handi-capped and Non-handi-capped
	Non-handi-capped	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	
Preschool Age	2719 min \$632	528 min \$126	54 min \$13	0 min \$0	0 min \$0	105 min \$25	0 min \$0	84 min \$20	0 min \$0	25 min \$6	407 min \$97	0 min \$0	767 min \$183	0 min \$0	2144 min \$512
Elementary Age	2971 min \$708	2199 min \$525	1005 min \$240	17 min \$4	4 min \$1	1093 min \$261	691 min \$165	1504 min \$359	2090 min \$499	1973 min \$471	1680 min \$401	2287 min \$546	2941 min \$702	498 min \$119	2930 min \$691
Secondary Age	3385 min \$808	2530 min \$604	1772 min \$423	42 min \$10	0 min \$0	1936 min \$462	1303 min \$311	2751 min \$659	2581 min \$616	2480 min \$592	1822 min \$435	3339 min \$797	3280 min \$783	270 min \$64	3340 min \$792
All Ages Combined	3191 min \$761	2333 min \$557	1437 min \$343	30 min \$7	4 min \$1	1487 min \$355	863 min \$206	2002 min \$478	1868 min \$446	2057 min \$491	1642 min \$392	2916 min \$696	2907 min \$694	360 min \$86	3142 min \$742

^aHandicapping conditions are defined in Chap. IV.

Tables 9.4-9.5) we then estimated the cost for each of the various groups of handicapped students. This was done by taking the cost for a nonhandicapped regular education student in the district and multiplying by the fraction of time that the handicapped child in the particular age level, educational placement, and handicap group spent in the regular education classroom. For example, if a handicapped child spent $\frac{2}{3}$ of the day in the regular education classroom, he or she was allocated $\frac{2}{3}$ of the cost of the full time nonhandicapped student. The extra time regular education teachers spent above and beyond that spent on the typical nonhandicapped child will be discussed in a later section of this chapter.

As shown in column 1 of Tables 9.4-9.5, the total amount of time per nonhandicapped pupil for these regular education instructional activities is 3191 minutes (\$761 per year). This varied by age level from a low of 2719 minutes per year (\$632) at the preschool level to 2971 minutes per year (\$708) at the elementary level to 3385 minutes per year (\$808) at the secondary school level. For handicapped children, as shown in Tables 9.4-9.6, the range by type of educational placement is from \$0 for children in special classes and special day schools up to \$761 per year for those handicapped students who were placed in regular classes full time and received indirect special services only. Note that since homebound or hospital bound children were usually not in that setting for the entire year, they incurred some costs for instruction by a regular education teacher during the portion of the year that they were not homebound or in a short-term hospital. The regular education teacher instructional cost per pupil per year varies by handicap considerably from \$1 for severely mentally retarded students who were almost

Table 9.6

REGULAR EDUCATION TEACHER INSTRUCTIONAL TIME AND COST PER PUPIL
BY HANDICAP AND EDUCATIONAL PLACEMENT
(minutes per year and dollars)

Handicap ^a	Educational Placement								
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital
LD	3191 min \$761	3191 min \$761	2634 min \$621	2626 min \$628	826 min \$196	0 min \$0	0 min \$0	2136 min \$510	NA ^b
EMR	3191 min \$761	3191 min \$761	2499 min \$596	2650 min \$632	824 min \$196	0 min \$0	0 min \$0	1248 min \$298	0 min \$0
THR	3191 min \$761	3191 min \$761	NA ^b	2902 min \$691	446 min \$106	0 min \$0	0 min \$0	67 min \$16	NA
SMR	3191 min \$761	3191 min \$761	NA	NA ^b	113 min \$27	0 min \$0	0 min \$0	0 min \$0	NA
Emot.	3191 min \$761	3191 min \$761	2871 min \$667	2381 min \$570	535 min \$127	0 min \$0	0 min \$0	553 min \$132	2576 min \$615
Deaf	3191 min \$761	3191 min \$761	3063 min \$712	1879 min \$436	796 min \$167	0 min \$0	0 min \$0	NA	NA
Part. Hear.	3191 min \$761	3191 min \$761	2999 min \$681	2755 min \$656	723 min \$172	0 min \$0	0 min \$0	75 min \$18	0 min \$0
Blind	3191 min \$761	3191 min \$761	2426 min \$578	2972 min \$708	701 min \$167	0 min \$0	0 min \$0	NA	NA
Part. Sight	3191 min \$761	3191 min \$761	2808 min \$653	2097 min \$500	774 min \$184	0 min \$0	0 min \$0	536 min \$128	NA
Ortho	3191 min \$761	3191 min \$761	2871 min \$667	2498 min \$595	1240 min \$261	0 min \$0	0 min \$0	1851 min \$442	2501 min \$597
OHI	3191 min \$761	3191 min \$761	2391 min \$570	3031 min \$722	838 min \$199	0 min \$0	0 min \$0	2589 min \$618	2966 min \$708
Speech	3191 min \$761	3191 min \$761	2626 min \$610	2315 min \$540	1329 min \$317	0 min \$0	0 min \$0	4 min \$1	NA
Multi	3191 min \$761	3191 min \$761	NA	2839 min \$677	347 min \$83	0 min \$0	0 min \$0	980 min \$234	1453 min \$347

^aHandicapping conditions are defined in Chap. IV.

^bData not available for this handicap and placement.

never "mainstreamed" into a regular education classroom up to \$694 per year for speech impaired children who are almost always served in the regular classroom full time with related speech services only.

Most analyses by other researchers of the cost of special education include only those funds specifically earmarked for special education and exclude the cost of any time the regular education teacher may spend on the child. Our analysis does not exclude the cost of the regular education teacher from the cost of special education because regular education teachers provide substantial instructional services to the great majority of handicapped students, and because the amount of those services varies considerably by age level, educational placement, and handicap. Using our methodology, we estimate the amount of regular education teacher cost based on the amount of time the handicapped children spent in the regular education classroom. We will calculate the added cost of education per handicapped child in a later chapter by totaling all expenditures for the education of the handicapped child and subtracting all expenditures for the education of the average nonhandicapped child.

COST OF INSTRUCTIONAL SERVICES PROVIDED BY REGULAR EDUCATION AIDES

The analysis of data on regular education aides was conducted in the same way as the analysis for regular education teachers described above. The time and costs per child estimated here are for all activities by regular education aides other than the extra time provided to handicapped children while they were in the regular education classroom

that was above and beyond the amount of time the aide spent on the average nonhandicapped child.

Tables 9.7-9.8 display our estimates of the number of minutes per year and the associated cost per year for regular education aide time per pupil for both nonhandicapped students (column 1) and for handicapped students (columns 2-10 in Table 9.7 and columns 2-14 in Table 9.8). For nonhandicapped children, regular education aides spent an average of 92 minutes per year (\$8), which indicates that there was very little regular education aide assistance in regular education classrooms during 1977-1978. Recall that our analysis excludes from the category of regular education aides all those aides who are paid from either special education or "other target population" program funds, such as compensatory or bilingual education funds. For handicapped children, our estimates of the regular education aide time and cost per pupil are presented for various combinations of age level, educational placement, and handicap in Tables 9.7-9.9.

Note that for all students combined, there are slightly more regular education aides at the elementary level (103 minutes per child and \$9 per year) than at the secondary level (69 minutes per child and \$6 per year). None of the districts in our sample had any regular education aides at the preschool level. All aides at the preschool level were either paid with special education or "other target population" program funds.

Table 9.7

REGULAR EDUCATION AIDE INSTRUCTIONAL TIME AND COST PER PUPIL
 BY EDUCATIONAL PLACEMENT AND AGE LEVEL
 (Minutes per year and dollars)

Age Level	Educational Placement										
	Regular Class (Non-hand.)	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Home-bound	Short-term Hospital	All Hand. and Non-hand. Placements Combined
Preschool Age	0 min \$0	NA ^a	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0
Elementary Age	103 min \$9	103 min \$9	103 min \$9	92 min \$8	81 min \$7	23 min \$2	0 min \$0	0 min \$0	58 min \$5	103 min \$9	103 min \$9
Secondary Age	69 min \$6	69 min \$6	69 min \$6	58 min \$5	34 min \$3	12 min \$1	0 min \$0	0 min \$0	46 min \$4	69 min \$6	69 min \$6
All Ages Combined	92 min \$8	92 min \$8	92 min \$8	81 min \$7	58 min \$5	23 min \$2	0 min \$0	0 min \$0	46 min \$4	92 min \$8	92 min \$8

^aData not available for this educational placement and age level combination.

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Table 9.8

REGULAR EDUCATION AIDE INSTRUCTIONAL TIME AND COST PER PUPIL
 BY HANDICAP AND AGE LEVEL
 (minutes per year and dollars)

Age Level	Handicap ^a														All Handi-capped and Non-handi-capped
	Non-handi-capped	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	
Preschool Age	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0
Elementary Age	103 min \$9	69 min \$6	23 min \$2	0 min \$0	0 min \$0	23 min \$2	12 min \$1	23 min \$2	12 min \$1	46 min \$4	92 min \$8	69 min \$6	92 min \$8	23 min \$2	103 min \$9
Secondary Age	69 min \$6	23 min \$2	35 min \$3	0 min \$0	0 min \$0	35 min \$3	12 min \$1	35 min \$3	69 min \$6	46 min \$4	35 min \$3	58 min \$5	58 min \$5	12 min \$1	69 min \$6
All Ages Combined	92 min \$8	46 min \$4	23 min \$2	0 min \$0	0 min \$0	35 min \$3	12 min \$1	23 min \$2	46 min \$4	46 min \$4	58 min \$5	58 min \$5	92 min \$8	23 min \$2	92 min \$8

^aHandicapping conditions are defined in Chap. IV.

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Table 9.9

REGULAR EDUCATION AIDE INSTRUCTIONAL TIME AND COST PER PUPIL
BY HANDICAP AND EDUCATIONAL PLACEMENT
(minutes per year and dollars)

Handicap ^a	Educational Placement								
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital
LD	23 min \$2	69 min \$6	58 min \$5	58 min \$5	12 min \$1	0 min \$0	0 min \$0	12 min \$1	NA ^b
EMR	92 min \$8	92 min \$8	0 min \$0	140 min \$4	32 min \$2	0 min \$0	0 min \$0	0 min \$0	0 min \$0
TMR	0 min \$0	0 min \$0	NA ^b	92 min \$8	12 min \$1	0 min \$0	0 min \$0	0 min \$0	NA
SMR	0 min \$0	0 min \$0	NA	NA ^b	12 min \$1	0 min \$0	0 min \$0	0 min \$0	NA
Emot.	69 min \$6	35 min \$3	0 min \$0	46 min \$4	23 min \$2	0 min \$0	0 min \$0	12 min \$1	92 min \$8
Deaf	0 min \$0	0 min \$0	0 min \$0	46 min \$4	23 min \$2	0 min \$0	0 min \$0	NA ^b	NA
Part. Hear.	0 min \$0	0 min \$0	35 min \$3	69 min \$6	12 min \$1	0 min \$0	0 min \$0	0 min \$0	0 min \$0
Blind	0 min \$0	0 min \$0	58 min \$5	69 min \$6	35 min \$3	0 min \$0	0 min \$0	NA	NA
Part. Sight	35 min \$3	46 min \$4	46 min \$4	81 min \$7	23 min \$2	0 min \$0	0 min \$0	0 min \$0	NA
Ortho	92 min \$8	92 min \$8	69 min \$6	46 min \$4	23 min \$2	0 min \$0	0 min \$0	46 min \$4	92 min \$8
OHI	0 min \$0	35 min \$3	12 min \$1	81 min \$7	12 min \$1	0 min \$0	0 min \$0	58 min \$5	92 min \$8
Speech	0 min \$0	92 min \$8	69 min \$6	69 min \$6	35 min \$3	0 min \$0	0 min \$0	0 min \$0	NA
Multi	0 min \$0	92 min \$8	NA	92 min \$8	12 min \$1	0 min \$0	0 min \$0	0 min \$0	81 min \$7

^aHandicapping conditions are defined in Chap. IV.

^bData not available for this handicap and placement combination.

EXTRA TIME REGULAR EDUCATION TEACHERS SPENT WITH HANDICAPPED CHILDREN

Although handicapped children are placed in regular education classrooms, the regular education teacher sometimes must spend additional or extra time on the handicapped child above and beyond the time spent on the average nonhandicapped child. We obtained information on the amount of extra time spent through interviews with a stratified random sample of teachers in our nationwide sample. For those regular education teachers who were interviewed, we asked about the amount of extra time they spent per child. For those special education teachers who were interviewed, we also always asked that teacher to estimate the amount of extra time the regular education teachers spent per day per child. Whenever time permitted at the conclusion of an interview with a special education teacher, we sought out and briefly interviewed a regular education teacher who also served the same child or children and asked him or her directly about the amount of extra time spent. In each case in making our national estimates we used the best available data, giving preference to information from regular education teachers, but in the absence of that, using the estimate provided by special education teachers.

Our estimates of the costs of the extra time regular education teachers spent with handicapped children are shown in Tables 9.10-9.12 by various combinations of age level, educational placement, and handicap. The average handicapped child received an estimated five minutes per day extra from regular education teachers (an extra cost of \$206 per year). This varied by type of handicap from nearly 0 extra time for other health impaired children (an extra \$5 per year) up to 22 minutes

Table 9.10

**COST OF EXTRA TIME REGULAR EDUCATION TEACHERS SPEND WITH
HANDICAPPED CHILDREN BY EDUCATIONAL PLACEMENT AND AGE LEVEL
(Minutes per day and dollars per year)**

Age Level	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Preschool Age	NA ^a	5 min \$198	0 min \$12	0 min \$0	0 min \$7	0 min \$0	0 min \$0	NA	NA	0 min \$0	1 min \$36
Elementary Age	1 min \$42	3 min \$125	22 min \$962	11 min \$449	2 min \$80	0 min \$0	0 min \$0	NA	NA	0 min \$0	5 min \$203
Secondary Age	0 min \$19	0 min \$16	3 min \$139	9 min \$368	4 min \$181	0 min \$0	0 min \$0	NA	NA	0 min \$0	5 min \$224
All Ages Combined	1 min \$29	3 min \$115	18 min \$746	10 min \$406	3 min \$135	0 min \$0	0 min \$0	NA	NA	0 min \$0	5 min \$206

^aData not available for this educational placement and age level combination.

Table 9.11

COST OF EXTRA TIME REGULAR EDUCATION TEACHERS SPEND WITH
HANDICAPPED CHILDREN BY HANDICAP AND AGE LEVEL
(Minutes per day and dollars per year)

Age Level	Handicap ^a													
	LD	EMP	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Preschool Age	0 min \$1	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$1	0 min \$0	0 min \$0	0 min \$0	0 min \$0	2 min \$68	0 min \$0	1 min \$36
Elementary Age	9 min \$374	6 min \$255	0 min \$1	0 min \$1	11 min \$446	2 min \$103	3 min \$116	27 min \$1152	6 min \$253	5 min \$191	0 min \$6	3 min \$121	1 min \$40	5 min \$203
Secondary Age	7 min \$314	4 min \$162	0 min \$1	0 min \$0	18 min \$767	2 min \$78	2 min \$92	27 min \$1151	2 min \$82	1 min \$25	0 min \$6	0 min \$17	1 min \$27	5 min \$224
All Ages Combined	8 min \$345	5 min \$199	0 min \$1	0 min \$1	14 min \$595	2 min \$88	2 min \$96	22 min \$928	4 min \$161	3 min \$115	0 min \$5	3 min \$111	1 min \$30	5 min \$206

^aHandicapping conditions are defined in Chap. IV.

Table 9.12

**COST OF EXTRA TIME REGULAR EDUCATION TEACHERS SPEND WITH HANDICAPPED CHILDREN
BY HANDICAP AND EDUCATIONAL PLACEMENT
(Minutes per day and dollars per year)**

Handicap ^a	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
LD	0 min \$9	2 min \$87	19 min \$808	10 min \$405	2 min \$71	0 min \$0	0 min \$0	NA ^b	NA ^b	0 min \$0	8 min \$345
EMR	9 min \$389	4 min \$153	5 min \$199	7 min \$302	5 min \$191	0 min \$0	0 min \$0	NA	NA	0 min \$0	5 min \$199
TMR	0 min \$0	0 min \$0	NA ^b	5 min \$215	0 min \$7	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$1
SMR	0 min \$0	0 min \$0	NA	0 min \$0	1 min \$43	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$1
Emot.	5 min \$224	60 min \$2538	51 min \$2176	20 min \$844	2 min \$100	0 min \$0	0 min \$0	NA	NA	0 min \$0	14 min \$595
Deaf	0 min \$0	9 min \$360	4 min \$149	1 min \$29	3 min \$135	0 min \$0	0 min \$0	NA	NA	0 min \$0	2 min \$88
Part. Hear	2 min \$98	2 min \$81	3 min \$147	6 min \$238	0 min \$12	0 min \$0	0 min \$0	NA	NA	0 min \$0	2 min \$96
Blind	0 min \$0	0 min \$0	28 min \$1203	36 min \$1522	0 min \$6	0 min \$0	0 min \$0	NA	NA	0 min \$0	22 min \$928
Part. Sight	4 min \$166	0 min \$0	6 min \$254	2 min \$96	1 min \$50	0 min \$0	0 min \$0	NA	NA	0 min \$0	4 min \$161
Ortho	2 min \$84	15 min \$652	19 min \$800	1 min \$29	1 min \$28	0 min \$0	0 min \$0	NA	NA	0 min \$0	3 min \$115
OHI	0 min \$0	0 min \$0	1 min \$61	4 min \$157	1 min \$36	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$5
Speech	10 min \$429	3 min \$113	0 min \$1	1 min \$53	0 min \$2	0 min \$0	0 min \$0	NA	NA	0 min \$0	3 min \$111
Multi	0 min \$0	0 min \$0	NA	12 min \$526	1 min \$50	0 min \$0	0 min \$0	NA	NA	0 min \$0	1 min \$30
All	1 min \$29	3 min \$115	18 min \$746	10 min \$406	3 min \$135	0 min \$0	0 min \$0	NA	NA	0 min \$0	5 min \$206

^aHandicapping conditions are defined in Chap. IV.

^bData not available for this handicap and placement combination.

per day extra for functionally blind children (an extra \$928 per year). This varied by type of educational placement from 0 minutes for those students who are not served in a regular education classroom at all up to 18 minutes per day (an extra \$746 per year) for those students in regular education classes who were also served by an itinerant special education teacher.

The largest number shown in Table 9.12 for any handicap and placement combination is an extra 60 minutes per day for emotionally disturbed children who are in a regular education classroom full time and receiving related services only. Only two districts in our national sample had children with that handicap and educational placement, and in both cases the regular education teacher provided substantial extra time. Inspection of Table 9.12 reveals a tendency for emotionally disturbed children and blind children to be provided more extra time when they are placed in the regular education classroom than other types of handicapped children were provided. Most handicapped children placed in regular education classrooms, however, received very little extra attention from the regular education teacher, as the five minutes extra per day estimate for all types of handicapped children combined reveals.

EXTRA TIME REGULAR EDUCATION AIDES SPENT WITH HANDICAPPED CHILDREN

In addition to the extra time regular education teachers spent with handicapped children, we also investigated how much extra time was provided for handicapped children by regular education aides above that spent on nonhandicapped children. In total, we estimate an expenditure of \$14 per handicapped child in special education per year and an extra

amount of service of one minute per day per special education child by regular education aides. As shown in Tables 9.13-9.15, the expenditure rate varies from \$0 for those children not placed in regular education up to \$25 per year per child for those in regular classrooms receiving related services only. It varies by handicap from nearly \$0 for those types of handicapped children who are seldom placed in regular classrooms up to \$118 per year (eight extra minutes per day) for profoundly deaf children.

When the combination of handicap and educational placement are considered, we estimate that the largest expenditure was an extra two hours per day (\$1843 per year) for profoundly deaf children placed in regular education classrooms full time with related services only. This particular estimate is higher than that for any other handicap or placement combination by a factor of three. It is a rare combination of handicap and placement that was observed in only two districts in our sample and one of those two districts provided an unusually high level of support by regular education aides. Given the amount of time spent by regular education aides in that district, they could be considered special education aides. After profoundly deaf children, orthopedically impaired children receive the most extra service.

Table 9.13

COST OF EXTRA TIME REGULAR EDUCATION AIDES SPEND WITH HANDICAPPED CHILDREN
 BY EDUCATIONAL PLACEMENT AND AGE LEVEL
 (Minutes per day and dollars per year)

Age Level	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Preschool Age	NA ^a	13 min \$204	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	NA	NA	0 min \$0	2 min \$37
Elementary Age	0 min \$7	2 min \$26	0 min \$5	1 min \$19	0 min \$1	0 min \$0	0 min \$0	NA	NA	0 min \$0	1 min \$19
Secondary Age	0 min \$0	0 min \$3	2 min \$30	0 min \$0	0 min \$3	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$2
All Ages Combined	0 min \$3	2 min \$25	1 min \$12	1 min \$10	0 min \$2	0 min \$0	0 min \$0	NA	NA	0 min \$0	1 min \$14

^aData not available for this educational placement and age level combination.

Table 9.14

**COST OF EXTRA TIME REGULAR EDUCATION AIDES SPEND WITH
HANDICAPPED CHILDREN BY HANDICAP AND AGE LEVEL
(Minutes per day and dollars per year)**

Age Level	Handicap ^a													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Preschool Age	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	5 min \$70	0 min \$0	2 min \$37.
Elementary Age	1 min \$11	1 min \$17	0 min \$0	0 min \$0	0 min \$4	11 min \$163	0 min \$3	1 min \$9	1 min \$10	4 min \$57	0 min \$0	1 min \$22	1 min \$10	1 min \$19
Secondary Age	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$1	4 min \$63	2 min \$30	0 min \$0	1 min \$21	0 min \$7	0 min \$1	0 min \$0	0 min \$0	0 min \$2
All Ages Combined	0 min \$6	0 min \$7	0 min \$0	0 min \$0	0 min \$2	8 min \$118	1 min \$15	0 min \$4	1 min \$14	2 min \$34	0 min \$0	1 min \$21	0 min \$5	1 min \$14

^aHandicapping conditions are defined in Chap. IV.

Table 9.15

COST OF EXTRA TIME REGULAR EDUCATION AIDES SPEND WITH HANDICAPPED CHILDREN
BY HANDICAP AND EDUCATIONAL PLACEMENT
(Minutes per day and dollars per year)

Handicap ^a	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
LD	0 min \$0	0 min \$0	0 min \$6	1 min \$8	0 min \$2	0 min \$0	0 min \$0	NA ^b	NA ^b	0 min \$0	0 min \$6
EMR	0 min \$0	2 min \$27	0 min \$6	1 min \$16	0 min \$1	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$7
TMR	0 min \$0	0 min \$0	NA ^b	0 min \$0	0 min \$0	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$0
SMR	0 min \$0	0 min \$0	NA	0 min \$0	0 min \$0	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$0
Emot.	0 min \$0	0 min \$7	0 min \$6	0 min \$3	0 min \$2	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$2
Deaf	0 min \$0	120 min \$1843	0 min \$5	1 min \$20	1 min \$9	0 min \$0	0 min \$0	NA	NA	0 min \$0	8 min \$118
Part. Hear	0 min \$0	2 min \$35	2 min \$33	0 min \$0	0 min \$0	0 min \$0	0 min \$0	NA	NA	0 min \$0	1 min \$15
Blind	0 min \$0	0 min \$0	1 min \$10	0 min \$0	0 min \$0	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$4
Part. Sight	0 min \$6	0 min \$0	2 min \$24	1 min \$9	0 min \$0	0 min \$0	0 min \$0	NA	NA	0 min \$0	1 min \$14
Ortho	3 min \$45	32 min \$501	0 min \$2	3 min \$39	15 min \$228	0 min \$0	0 min \$0	NA	NA	0 min \$0	2 min \$34
OHI	0 min \$0	0 min \$0	0 min \$7	1 min \$12	0 min \$0	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$0
Speech	15 min \$226	1 min \$22	0 min \$0	0 min \$0	0 min \$0	0 min \$0	0 min \$0	NA	NA	0 min \$0	1 min \$21
Multi	0 min \$0	0 min \$0	NA	8 min \$117	0 min \$0	0 min \$0	0 min \$0	NA	NA	0 min \$0	0 min \$5
All	0 min \$3	2 min \$25	1 min \$12	1 min \$10	0 min \$2	0 min \$0	0 min \$0	NA	NA	0 min \$0	1 min \$14

^aHandicapping conditions are defined in Chap. IV.

^bData not available for this handicap and placement combination.

X. COSTS FOR RELATED SERVICES PERSONNEL

INTRODUCTION

Various types of related services personnel often provide services for special education students. The most frequent are adaptive physical education, counseling, nursing, occupational therapy, physical therapy, psychological services, social work services, special vocational services, and speech therapy services. Some of these types of personnel, especially counselors, librarians, and school nurses, also provide services to nonhandicapped students.

This chapter contains estimates for the cost of all time spent by each of these different types of related services personnel excluding the time spent on: (1) screening children to detect potential handicaps; (2) assessment of the needs of handicapped children; (3) admission of children to special education, placement, and individual education program development; (4) staff inservice training; (5) consulting with other professionals relative to special education; and (6) providing services for "other target population" programs such as those for disadvantaged or bilingual children. Nonpersonnel costs such as those for facilities, equipment, supplies, staff travel, and overhead are also excluded. (All of these costs that are excluded from this chapter will be discussed in subsequent chapters of this report). The cost estimates are for all related services personnel work time that is not specifically excluded. Hence, these above estimates include any preparation time and travel time between schools during the work day.

The estimates in this chapter include not only special related services provided to handicapped children (such as a school nurse administering some special medication to a handicapped child), but also the regular related services that are normally provided to both nonhandicapped and handicapped children (such as services provided by a school nurse to any child who becomes ill or is injured at school). Estimates for both of the above types of services are needed in order to estimate (1) the average total cost of educating handicapped children, (2) the average total cost of educating nonhandicapped children, and (3) the added cost of educating handicapped children (which is the difference between (1) and (2) above.)

The information contained in this chapter was obtained in part through interviews with supervisors of each of the different types of related services personnel and with the director of special education in each district in our nationwide sample. Additional information needed to estimate the costs of related services personnel was obtained from the director of personnel and the director of finance and budgeting in each district.

Interviews were conducted with the supervisors of each different type of related services personnel in each of the school districts in the sample if that type of personnel provided any special services for handicapped children or spent any time for handicapped children above the time that was normally spent providing the same services for the average nonhandicapped child. We conducted no interview in some districts for some types of related services personnel, most frequently school librarians and counselors. In those cases, the district director

of special education had assured us that that type of related services personnel served all nonhandicapped and handicapped children equally, hence we allocated the cost of those personnel equally to every student.

The information used in making the cost estimates included the FTE number of each different type of related services personnel both employed by the district and hired on a contract or consulting basis. The information used also included the amount of time spent by each of these different types of related services personnel providing services for each different type of handicapped student (the type of student was defined by age level, handicap, and type of educational placement).

In order to estimate the cost per pupil for related services, we first calculated the number of FTE related services staff members in the school district by the age levels, handicaps, and types of educational placements of the students served. Special education students were defined to be the number of different children who were enrolled for special education and related services at any time during the school year. Thus, if a child was in a special classroom half time, he or she was counted as one special education student for purposes of the estimates in this chapter.[1] Regular education students were then defined as total students minus special education students so that each child is counted only once. Estimates of the cost per handicapped child were

[1] Most local education agencies and state funding agencies use "head counts" of children as we have done rather than FTE children when they collect statistics and distribute funds. Thus, our estimates of the costs per handicapped child are compatible with current education agency operating and funding procedures. Our data base does contain information that would enable a secondary data analysis to produce estimates of the cost per handicapped child receiving related services and the cost per FTE handicapped student.

then obtained by dividing the FTE related services personnel time in minutes (excluding the time spent on certain services described above) by the number of different students in special education and then multiplying the estimated number of minutes spent per child by the salary and fringe benefits cost per minute for the type of personnel providing the service. The cost estimates in this chapter utilize national average workyears and salaries with fringe benefits estimated from our sample.

RELATED SERVICES COSTS BY TYPE OF PERSONNEL

The 1977-1978 national average cost of the various "related services" described above was estimated to be \$61 per nonhandicapped child and \$191 per handicapped child including both salary and fringe benefits. These costs were for the equivalent of 239 minutes of service per nonhandicapped child per year and 806 minutes of service per handicapped child per year.

The estimated time and cost of the various related services per child are shown in Table 10.1 by type of personnel. Recall that these costs exclude certain services that will be discussed in subsequent chapters. For nonhandicapped children, the three types of personnel who provided the greatest amount of related services were counselors (\$29 per year), librarians (\$22 per year), and nurses (\$4 per year). For handicapped children, the largest amount of service per child was provided by speech therapists (\$81 per year for every child in special education, whether or not that child received speech therapy). Other types of personnel who provided major related services for handicapped children included adaptive physical education specialists (\$5 per year for

Table 10.1

ESTIMATED TIME AND COST OF VARIOUS "RELATED SERVICES"
PER CHILD BY TYPE OF PERSONNEL

Type of Personnel	Dollar Cost Per Non- handicapped Child Per Year ^a	Dollar Cost Per Handicapped Child Per Year ^a	Minutes Per Non- handicapped Child Per Year	Minutes Per Handicapped Child Per Year
Adaptive physical educa- tion specialist	0	5	0	21
Counselor	29	29	108	108
Librarian	22	22	84	84
Nurse	4	8	19	37
Occupational therapist	0	3	0	14
Physical therapist	0	5	0	20
Psychologist	2	6	7	21
Social worker	3	9	12	34
Special vocational personnel	0	12	0	46
Speech therapist	0	81	0	345
Other related service professional ^b	0	7	0	28
Related service aide	1	4	9	48
All of the above types of personnel	\$67	\$191	239 min	806 min

^a Including salary and fringe benefits.

^b Such as activities of daily living specialist, behavior modification specialist, deaf interpreter, mental health specialist, and mobility trainer.

every child in special education), counselors (\$29 per year), librarians (\$22 per year), nurses (\$8⁴ per year), occupational therapists (\$3 per year), physical therapists (\$5 per year), psychologists (\$6 per year), social workers (\$9 per year), special vocational personnel (\$12 per year), and related services aides (\$4 per year). All other types of

related services professionals combined cost an estimated \$7 per child per year. These other types of personnel included activities of daily living specialists, behavior modification specialists, deaf interpreters, mental health specialists, and mobility trainers, among others.

RELATED SERVICES COSTS BY AGE LEVEL, HANDICAP, AND TYPE OF EDUCATIONAL PLACEMENT

As shown in Table 10.2, the estimated time and cost of various related services per pupil varied considerably for students differing in age level and type of educational placement. Although the average handicapped student in special education nationwide received \$191 of various related services per year, this varied by age level from \$497 per child at the preschool level to \$164 per child at the elementary level to \$202 per child at the secondary level. The preschool estimate is higher primarily because the average preschool child served tended to be more severely handicapped than the average child served at the older age levels. Recall that certain specific types of related services such as screening and assessment will be discussed in subsequent chapters and hence the dollar figures presented here are not the total for all services by these personnel.

There was great variation in the amount of related services per pupil by type of educational placement. Nonhandicapped students received \$61 per year of these related services, as did handicapped students placed in regular education classes full time who received indirect special services only. The largest amount of these related services by type of educational placement went at an estimated cost of \$630 per year to students in special day schools serving only handicapped students.

Table 10.2

ESTIMATED TIME AND COST OF VARIOUS RELATED SERVICES PER PUPIL
BY EDUCATIONAL PLACEMENT AND AGE LEVEL
(Minutes per year and dollars)

Age Level	Educational Placement ^a											
	Regular Class (Non-hand.)	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Special Education Placements Combined
Freschool Age	142 min \$35	NA ^b	1124 min \$277	686 min \$169	711 min \$175	122 min \$30	4111 min \$806	4259 min \$1049	539 min \$133	32 min \$8	0 min \$0	2324 min \$497
Elementary Age	183 min \$45	183 min \$45	755 min \$186	917 min \$226	430 min \$106	804 min \$198	670 min \$165	1843 min \$454	252 min \$62	154 min \$38	0 min \$0	666 min \$164
Secondary Age	321 min \$79	321 min \$79	1210 min \$298	1112 min \$274	706 min \$174	824 min \$203	1145 min \$282	3345 min \$824	276 min \$68	430 min \$106	1583 min \$413	820 min \$202
All Ages Combined	239 min \$61	247 min \$61	803 min \$198	962 min \$237	576 min \$142	812 min \$200	1165 min \$287	2557 min \$630	305 min \$75	263 min \$65	1583 min \$413	806 min \$191

^aEducational placements are defined in Chap. IV.

^bData not available for this educational placement and age level combination.

Estimates of the time and cost of various related services per pupil are shown by type of handicap in Table 10.3. The lowest costs were for services to learning disabled students (\$120 per year) and other health impaired students (\$123 per year). The greatest estimated cost was for children with multiple handicaps (\$1179 per year). As can be seen by inspecting the breakdowns within mental retardation and within hearing and vision impairments, in general the more severe the handicap, the greater the amount of related services provided.

The variation in the estimated time and cost of various related services per pupil is shown by educational placement and handicap in Table 10.4. Considering the combination of both handicap and type of educational placement, the highest annual cost per student for various related services was estimated to be \$2113 for profoundly deaf children placed in regular education classes full time who were also receiving related services, such as those provided by deaf interpreters. The second highest cost was estimated to be \$1620 for children with multiple handicaps placed in special day schools serving only handicapped children.

The estimated costs of other related services personnel activities such as screening, assessment, IEP development, inservice training, and technical assistance will be described in subsequent chapters.

Table 10.3

ESTIMATED TIME AND COST OF VARIOUS RELATED SERVICES PER PUPIL
BY AGE LEVEL AND TYPE OF HANDICAP
(Minutes per year and dollars)

Age Level	Handicapping Conditions ^a													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear.	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All Hand.
Preschool Age	2099 min \$517	909 min \$224	1140 min \$281	3262 min \$649	1124 min \$277	767 min \$189	414 min \$102	2679 min \$660	2164 min \$533	6576 min \$1222	572 min \$141	1546 min \$381	8550 min \$2106	2324 min \$497
Elementary Age	394 min \$97	633 min \$156	1425 min \$351	2606 min \$642	690 min \$170	2602 min \$641	1111 min \$281	1749 min \$431	483 min \$115	1384 min \$341	207 min \$51	770 min \$181	3633 min \$895	666 min \$164
Secondary Age	560 min \$138	718 min \$177	2748 min \$677	2971 min \$732	1449 min \$357	1822 min \$449	1380 min \$340	2805 min \$691	897 min \$221	1246 min \$307	654 min \$161	1197 min \$281	5287 min \$1295	820 min \$202
All Ages Combined	487 min \$120	714 min \$176	2066 min \$509	2777 min \$684	1079 min \$266	2224 min \$548	1263 min \$311	2346 min \$578	779 min \$192	1862 min \$391	499 min \$123	834 min \$196	4786 min \$1179	806 min \$191

^aHandicapping conditions are defined in Chap. IV.

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Table 10.4

ESTIMATED TIME AND COST OF VARIOUS RELATED SERVICES PER PUPIL
BY HANDICAP AND TYPE OF EDUCATIONAL PLACEMENT
(Minutes per year and dollars)

Handi- capping Condi- tion	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short- term Hospital	Full Time Work	All Sp. Ed. Place- ments Combined
LD	247 min \$61	580 min \$143	414 min \$102	459 min \$113	426 min \$105	820 min \$202	2180 min \$537	183 min \$45	0 min \$0	2371 min \$584	487 min \$120
EMR	247 min \$61	280 min \$69	292 min \$72	613 min \$151	958 min \$236	637 min \$157	406 min \$100	146 min \$36	77 min \$19	1989 min \$490	714 min \$176
TMR	247 min \$61	0 min \$0	0 min \$0	1027 min \$253	2086 min \$514	1205 min \$297	2586 min \$637	101 min \$23	0 min \$0	1514 min \$373	2066 min \$509
SMR	247 min \$61	0 min \$0	0 min \$0	0 min \$0	247 min \$61	945 min \$233	2984 min \$735	101 min \$25	0 min \$0	0 min \$0	2777 min \$684
Emot.	247 min \$61	1266 min \$312	443 min \$109	1478 min \$364	682 min \$168	816 min \$201	1453 min \$358	207 min \$51	414 min \$102	3288 min \$810	1079 min \$266
Deaf	247 min \$61	8578 min \$2113	3999 min \$985	1408 min \$347	544 min \$134	459 min \$113	4457 min \$1098	0 min \$0	0 min \$0	0 min \$0	2224 min \$548
Part. Hear	247 min \$61	1189 min \$293	1579 min \$389	2984 min \$735	552 min \$136	917 min \$226	2862 min \$705	166 min \$41	81 min \$20	0 min \$0	1263 min \$311
Blind	247 min \$61	0 min \$0	2419 min \$596	1985 min \$489	1762 min \$434	726 min \$179	5452 min \$1343	0 min \$0	0 min \$0	0 min \$0	2346 min \$578
Part. Sight	247 min \$61	2042 min \$503	585 min \$144	544 min \$134	637 min \$157	771 min \$190	5789 min \$1426	49 min \$12	0 min \$0	0 min \$0	779 min \$192
Ortho	247 min \$61	2464 min \$607	1929 min \$367	3060 min \$607	2236 min \$435	6073 min \$1127	5556 min \$1245	223 min \$55	211 min \$52	0 min \$0	1862 min \$391
OHI	247 min \$61	1027 min \$253	463 min \$114	264 min \$65	633 min \$156	893 min \$220	718 min \$177	187 min \$46	296 min \$73	0 min \$0	499 min \$123
Speech	247 min \$61	787 min \$194	455 min \$112	816 min \$201	438 min \$108	5456 min \$1033	1449 min \$357	702 min \$173	0 min \$0	0 min \$0	834 min \$196
Multi	247 min \$61	247 min \$61	247 min \$61	5606 min \$1381	4835 min \$1191	990 min \$244	6577 min \$1620	2980 min \$734	158 min \$39	0 min \$0	4786 min \$1179
All Hand.	247 min \$61	803 min \$198	962 min \$237	576 min \$142	812 min \$200	1165 min \$287	2557 min \$630	305 min \$75	263 min \$65	1583 min \$413	806 min \$191

XI. SCREENING COSTS

INTRODUCTION

Various types of personnel may screen all or part of the general student population for handicapping conditions or impairments that are less than handicapping. The purposes of a screening program are twofold: first, children who need special education and related services because of a physical or mental handicap need to be identified before they can be served; and children with less than handicapping impairments need to be identified so that they may receive certain assistance that will enable them to make the most effective progress in school. Examples of children who fall into the latter category and benefit from the screening even though they are not handicapped are children who need glasses, children with a mild hearing impairment that is medically correctable, and children with a mild physical impairment that is medically correctable.

Screening does not include time spent assessing students who are referred as possibly handicapped, but rather includes the brief screening of segments of the entire student population such as all students at a certain age or grade level or all students entering the school district for the first time. The data in this chapter are a combination of the time spent testing the child being screened; the time spent interpreting, recording, and reporting the screening test results; and the time spent in preparation and travel related to the tests.

We collected data on the number of children screened per year in each district categorized by the type of impairment being screened for and by the type of personnel doing the screening. We also collected data on the total person-days per year spent by each type of personnel for each type of screening. For example, if the professional whom we interviewed indicated that he or she spent the equivalent of ten person-days for all activities related to screening 800 children for physical impairments, then the amount of time spent on those screening activities would be $1/80$ of a day per child.

We collected screening data from all types of related services professionals, from aides, and from classroom teachers. This information is reported in the remaining sections of this chapter.

From a methodological standpoint, we developed information on screening costs by first collecting information on the type of handicap or impairment being screened for, the total amount of time spent on this screening, and the number of students screened per year. This was done during interviews with supervisors of each different type of personnel in the school district. The district's data files on screening were used whenever possible. We also collected data on the length of the workday, the length of the workyear, and the salary and fringe benefits for each type of personnel. The cost information was then obtained by multiplying the number of minutes spent screening each child by the cost per minute for the type of personnel conducting the screening. The information in this chapter utilizes national average workyears and salaries with fringe benefits obtained from our sample to calculate costs.

In the school districts, five general types of screening programs were aimed at discovering impairments of hearing, mental, physical, speech, and vision abilities. Each was analyzed separately.

For vision screening programs, two major categories of students benefited and hence each of those two categories of students was allocated a portion of the costs of the vision screening. Children who were visually handicapped and needed special education and related services benefited when their need was identified. Children who were visually impaired and needed corrective lenses but who were not so impaired that they were handicapped and in need of special education or related services also benefited by being identified so that their parents could obtain help for them.

Since the philosophy underlying this cost analysis is to allocate service costs to those students who were intended to benefit from the services, it was necessary to estimate the number of visually handicapped children and the number of visually impaired but not handicapped children in each district. We did not collect data on the percent of children in each district who "failed" the screening test, or on the percent of those who "failed" who had a vision disorder confirmed by subsequent in-depth diagnosis. We also did not collect data on the percent of those children with confirmed vision disorders who needed special educational and related services. However, from a review of the literature on vision screening, approximately 10 percent of the children screened "fail" the school vision screening programs on the average.[1]

[1] Garry D. Brewer and James S. Kakalik, Handicapped Children: Strategies for Improving Services, McGraw-Hill, New York, 1979.

Most of these 10 percent require corrective lenses, but the majority do not require special education. Thus, the benefits of the vision screening program accrue to visually handicapped students new to special education programs each year as well as to visually impaired students who are identified but do not require special education. Nationwide 0.06 percent of the age 5-17 year old population are visually handicapped in special education.[2] We assumed that of the 10 percent who "fail" 0.06 percent need special education or related services. The fraction of the total screening cost allocated to special education students was $0.06/10$ or 0.6 percent. The time and cost associated with special education was then allocated equally to each student who was either visually handicapped or had some other primary handicap but who received services due to a concurrent visual problem (for example, a mentally retarded student who was served by the itinerant vision teacher or the itinerant mobility instructor). The cost allocated to the impaired students was divided among all nonhandicapped students in the district. We also analyzed the cost to screen one individual child.

For the hearing screening analysis, we followed a similar procedure. Nationwide, approximately 3.5 percent of the children screened for hearing "fail" the test.[3] Since 0.16 percent of the aged 5-17 year old population in the United States is hard of hearing or deaf and in special education,[4] we allocated $0.16/3.5$ or 4.57 percent of the

[2] U.S. Department of Education, National Center for Educational Statistics, "The Condition of Education: Statistical Report," 1980 edition, p. 68.

[3] Brewer and Kakalik, Handicapped Children, 1979.

[4] U.S. Department of Education, National Center for Educational Statistics, "The Condition of Education: Statistical Report," 1980 edition, p. 68.

hearing screening cost to the hearing handicapped children and the remainder to the hearing impaired children who were not in need of special education or related services. For hearing handicapped children, the screening costs were allocated equally among all deaf and hard of hearing children and all children with other handicaps who also received hearing-related services such as itinerant hearing teacher services.

For physical screening, every student in the school district could potentially benefit from detection of an impairment and so we divided the costs between the handicapped and the nonhandicapped students in proportion to the numbers of such students. The reason for analyzing physical screening in this manner is that the great majority of the physical screening programs we found in the school districts were either the general "height and weight and ask a few questions" type of cursory physical or they were scoliosis screening. As such, they would not normally detect a physical handicap that required special education and that was not already obvious to the teachers.

For the speech screening analysis, it was assumed that only those students who are or will be placed into special education or related services programs benefit, and hence none of the speech screening costs were allocated to nonhandicapped students. Rather, the speech screening costs were allocated among age level, handicap, and educational placement groups in proportion to the number of students in each of those groups who received speech services.

For mental screening, none of the costs were allocated to the nonhandicapped population. Rather, all the costs were allocated to handicapped students who were either learning disabled or mentally

retarded. None of the school districts in our sample screened the general student population looking for children with serious emotional disturbances.

In calculating national average data, data on children in each age level, handicap, and placement group in each district were combined using the appropriate sample weights.

AVERAGE SCREENING TIME AND COST BY TYPE OF PERSONNEL

Nationwide, we estimate that 50 percent of the student population were screened during the 1977-1978 school year for hearing impairment. An estimated 61 percent of that screening was done by nurses, and 14 percent was done by speech therapists, as shown in Table 11.1. Note that audiometrists screened only approximately 7 percent of the population, because audiometrists usually assessed children who had been referred rather than screening the general student population.

Screening for vision impairments was also quite prevalent, encompassing 49 percent of the student population nationwide in 1977-1978. Seventy-eight percent of the vision screening was done by nurses.

Physical screening was much less prevalent, encompassing only 19 percent of the general student population. Two-thirds of the physical screening was done by nurses, and 23 percent of the screening was done by medical doctors.

Approximately 12 percent of the general student population was screened by professionals for speech impairments, and all of this screening was done by speech therapists.

Table 11.1

SCREENING BY TYPE OF PERSONNEL

Type of Personnel	Percent of Students Screened for Handicaps					Percent of Each Type of Screening Done				
	Hear. (%)	Ment. (%)	Phys. (%)	Sp. (%)	Vis. (%)	Hear. (%)	Ment. (%)	Phys. (%)	Sp. (%)	Vis. (%)
Teachers	0.0	2.6	0.0	0.0	2.5	0	68	0	0	5
Adaptive P.E. Teach.	0.0	0.0	1.1	0.0	0.0	0	0	6	0	0
Audiometrist	3.4	0.0	0.0	0.0	0.0	7	0	0	0	0
Diagnostician	0.0	0.1	0.0	0.0	0.0	0	3	0	0	0
Itinerant Teach.	0.3	0.0	0.0	0.0	0.0	1	1	0	0	0
M.D.	0.0	0.0	4.5	0.0	0.0	0	0	23	0	0
Nurse	30.8	0.0	13.0	0.0	38.1	61	1	67	0	78
Psychologist	0.0	1.1	0.0	0.0	0.0	0	29	0	0	0
Speech Therapist	7.0	0.0	0.0	11.7	0.0	14	0	0	100	0
Other	8.6	0.0	0.6	0.0	8.1	17	0	4	0	17
Total	50.1	3.8	19.2	11.7	48.7	100	100	100	100	100

NOTE: Parts may not exactly sum to totals because of rounding off.

Nationwide, only 3.8 percent of the general student population was screened for mental impairments such as learning disabilities and mental retardation. None of the districts in our study screened for emotional disturbances. Nearly all mental screening was done by psychologists (29 percent) and teachers (68 percent).

SCREENING TIME AND COST BY TYPE OF HANDICAP

In our analysis we calculated the cost and the time to screen one child by each type of personnel, and by age level, handicap, and type of educational placement. In this section we discuss the results by type of impairment screened for and by type of handicap of the child to whom the cost of screening was allocated.

In Table 11.2 the time and cost per student screened is shown by the type of impairment being screened for. Screening for either hearing or vision took approximately eight minutes, and costs of salary plus fringe benefits per student screened were less than \$2.00. Mental, physical, and speech screening each took between 15 and 29 minutes and

Table 11.2
TIME AND COST PER STUDENT SCREENED

Type of Impairment Screened for	Minutes per Student Screened	Salary Plus Fringe Per Student Screened
Hearing	8	\$ 1.48
Mental	21	5.20
Physical	29	5.84
Speech	15	3.51
Vision	8	1.73
All Types	81	17.76

cost between \$3.51 and \$5.84 depending on which of the three handicaps was being screened for. Note that screening one child for all five types of impairments cost \$17.76, given the time spent per child.

Recall that about half of the general student population was screened for hearing and vision, but only a small minority was screened for physical impairment, speech impairment, a learning disability, or mental retardation. In the area of screening for learning disabilities and mental retardation, for example, less than 4 percent of the students were screened and the 21 minutes spent per child screened indicates that the screening mechanism used was not an extensive one. In a few districts, aides assisted the professionals with screening. When this occurred, we added their time and cost to the figures in Table 11.2.

The results of our analysis of cost for handicapped and nonhandicapped students according to the impairment screened for are shown in Table 11.3. Nonhandicapped students were allocated none of the costs of mental or speech screening, but each nonhandicapped student was allocated \$0.85, \$0.97, and \$0.84 for hearing, physical, and vision screening, respectively. Those costs were considerably less than the cost of screening one child because only a fraction of all the children were screened during the year.

Hearing screening added approximately \$22 to the cost of educating a hearing handicapped child. Vision screening added approximately \$6 to the cost of educating the average visually handicapped child in the nation. Physical screening added approximately \$1 per year to the cost of educating each handicapped child.

Table 11.3

COST ALLOCATED PER PUPIL FOR SCREENING^a

Type of Impairment Screened for	Handicap ^b														
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear.	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All Handicaps Combined	Non-handi-capped
Hearing	0.00	0.00	0.00	0.00	0.00	22.14	22.60	0.00	0.00	0.00	0.00	0.00	0.05	.41	.85
Mental	4.79	6.02	3.17	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.85	0.00
Physical	1.11	1.00	0.81	0.12	1.01	.89	1.16	.65	1.07	.82	1.42	.59	0.79	1.00	.97
Speech	2.03	3.08	2.42	1.38	1.50	4.66	3.03	1.41	0.37	1.11	0.01	11.46	2.60	6.02	0.00
Vision	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.84	6.12	0.00	0.00	0.00	.17	.06	.84
All Types	7.93	10.10	6.40	1.72	2.51	27.69	26.79	7.90	7.56	1.93	1.43	12.05	3.61	8.34	2.66

^aSalary plus fringe benefits, in dollars.

^bHandicapping conditions are defined in Chap. IV.

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Mental screening also added an insignificant amount, \$6 or less per year, for each learning disabled and mentally retarded child. The cost per child for the mental screening would have been considerably higher if more than 4 percent of the school population had been screened. Note that even though we allocated the mental screening cost to each learning disabled and mentally retarded child equally in each district, the cost for those handicaps shown in the table are not the same. This is because different districts had different mixes of students and the districts that were doing the mental screening, for example, did not tend to be those with significant numbers of trainable or severely retarded students.

Screening for speech impairments added \$11.46 to the cost of educating each speech impaired child and between \$0.01 and \$4.66 for each other type of handicapped child depending on the fraction of children with that major handicap who also received speech services.[5] The cost allocated to other health impaired children was low, and the cost allocated to deaf children was higher because a much smaller fraction of the other health impaired children than the deaf children received speech services.

In total, considering all five types of screening combined, the cost for the average nonhandicapped student in the nation was only \$2.66 per year, and for the average handicapped student was only \$8.34 per year.

[5] Recall that this does not include assessment costs, which are described in the next chapter.

XII. ASSESSMENT COSTS

INTRODUCTION

Various types of personnel may assess children's handicapping conditions and service needs in the education and related services areas. Assessments are done both for children who are known to be handicapped and for children who have been referred by some mechanism as possibly handicapped. In assessment time and cost data in this chapter we include time spent: testing and observing the child to diagnose handicapping conditions and service needs; analyzing information about the child; writing up information related to the activities just described; and preparing assessment-related information for admission, discharge, and placement meetings for children who are handicapped or possibly handicapped. Assessment as we have defined it does not include screening of the general student population. Nor does assessment include the routine evaluations of the student's progress that are not connected with decisions to admit the child to special education, to determine the child's educational placement, to discharge the child from special education, or to establish components of the individualized education program for the child. The assessment time and cost figures reported here include not only the time the professional spent directly in contact with the child but also all preparation, write up, and travel time associated with the assessment activity. For example, if the professional we interviewed indicated that he or she spent the equivalent of 10 person-days during the year assessing 20 children's needs (including

preparation, travel, and write up), then the amount of time spent on the assessment activity would be one-half day per child.

We collected data on the number and type of handicapped children assessed by each type of related services professional, by aides, and by classroom teachers. This information is reported in the remaining sections of this chapter.

ASSESSMENT BY RELATED SERVICES PROFESSIONALS AND NONCLASSROOM TEACHERS

In this section we discuss the assessment of handicapped children by related services professionals such as nurses, psychologists, and speech therapists. Also included here are assessments by certain types of teachers who were not assigned full time to a standard classroom, such as those who provided adaptive physical education, homebound, short-term hospital, and itinerant special education teaching services. Regular education and special education classroom teachers who worked only at one school are discussed in a later section of this chapter.

From a methodological standpoint, we developed information on assessment costs by first collecting information on the type of handicap or possible handicap of the children being assessed, the total amount of time spent on those assessments, and the number of students assessed per year. This was done for each different type of personnel in the school district. We also collected data on the length of the work day, the length of the work year, and the salary and fringe benefits for that type of personnel. We then obtained the cost information by multiplying the number of minutes spent assessing the child by the cost per minute for the type of personnel conducting the assessment. The information in

this chapter utilizes national average work years and salaries with fringe benefits obtained from our sample to obtain the costs.

In analyzing the interview data for each type of handicapped child assessed, we assumed that the children assessed included those who also received direct education or related services from the personnel being interviewed. However, the number of children assessed by a particular type of personnel often exceeded the number of children directly served by that type of personnel. One reason for this was that it was normal for some of the children who were assessed to be determined to be nonhandicapped. Another reason was that some personnel provided no direct education or related services, such as psychologists in many districts, and hence none of the children they assessed appeared on their direct service caseload. For our analysis, if the number of children assessed by the type of personnel was not more than twice the number receiving direct education or related services from that type of personnel, then the analysis assumed that the number of children assessed for each age, handicap, and placement group was proportional to the number of children in that age, handicap, and placement group on the direct service caseload of that type of personnel. If the number of children assessed was more than twice the direct service caseload, or if the direct service caseload was zero, then the analysis assumed that the number of children assessed who exceeded twice the direct service caseload were distributed across the age and placement groups for the handicap being assessed in proportion to the distribution across the age and placement groups of all children in the district with that handicap who were not on the direct service caseload of this type of personnel.

In a few cases the analysis of the ages and educational placements of the handicapped children who were assessed was made in recognition of the fact that certain types of personnel did not serve certain age children and certain educational placements. For example, special vocational personnel usually did not serve preschool or elementary age children and most related services personnel usually did not assess home-bound children.

In calculating national average data, we combined data on children in each age, handicap, and placement group who were assessed by each type of personnel in each local district using the appropriate sample weights that were described in an earlier chapter. Also, since we had interview data covering 95 percent of the related services professionals in the sample who assessed handicapped children, the national average data on the number of assessments done was adjusted upward to compensate for the missing 5 percent.

Average Assessment Time and Cost by Type of Related Services Professional and Nonclassroom Teacher

Nationwide, the average related services professional spent 164 minutes completing an assessment for one child. The cost of this one assessment of one child by a related services person, including fringe benefits, was \$43. Table 12.1 displays the minutes per child per assessment and the dollar cost per child per assessment by type of personnel. Of those types of personnel shown, the shortest amount of time spent assessing a child was 33 minutes by adaptive physical education teachers whereas the longest was by "search and serve" personnel who spent nearly six hours. The lowest cost per assessment was approximately

Table 12.1

NATIONAL AVERAGE ASSESSMENT TIME AND COST PER
HANDICAPPED CHILD ASSESSED BY TYPE OF RELATED
SERVICES PERSONNEL AND NONCLASSROOM TEACHER

Type of Personnel	Minutes Per Child Assessed	Dollar Cost Per Child Assessed ^a
Adaptive P.E. Teachers	33	\$ 8.11
Audiologists	99	26.80
Counselors	334	89.79
Daily Living Specialists	142	32.38
Diagnostic Prescriptive Specialists	264	61.29
Homebound	184	34.03
Hospital	76	15.60
Itinerant Special Teachers	146	31.45
Media Specialists	205	42.33
Medical Doctors	41	26.72
Mobility Specialists	43	11.16
Nurses	63	13.48
Occupational Therapists	68	14.69
Physical Therapists	104	26.37
Psychiatrists	205	108.90
Psychologists	267	76.83
Search and Serve Personnel	350	94.97
Social Workers	165	42.97
Special Vocational Personnel	122	32.28
Speech Therapists	129	30.32
All of the Above Types of Personnel	164	\$ 42.69

^a

Including salary and fringe benefits.

\$8 by adaptive physical education teachers and the highest cost per assessment was \$108 by psychiatrists. The assessment time and cost for other types of commonly employed related services personnel were one hour (\$13) by nurses, approximately four and one-half hours (\$77) by psychologists, and approximately two hours (\$30) by speech therapists.

Assessment Time and Cost for Related Services Personnel and Non-classroom Teachers by Age, Handicap, and Type of Educational Placement

In our analysis we calculated the cost and the time to assess one child by each type of related service and nonclassroom teaching personnel, and by age level, handicap, and type of educational placement. The results by type of personnel only have already been discussed. In this section we will discuss the results in a set of tables showing various age level, handicap, and educational placement combinations.

The average time to complete one assessment of one child by the average related services professional and nonclassroom teacher is shown in Table 12.2 by age and type of handicap. Note that assessing the typical preschool age handicapped child took the typical such person 183 minutes. The comparable times of assessment for elementary and secondary age children were 155 minutes and 177 minutes respectively. The grand average across all ages and handicaps was 164 minutes per child assessed. The amount of time to complete an assessment of one child varied by handicap from a low of 146 minutes for a speech impaired child up to a high of 206 minutes for a multiply handicapped child.

The average time to complete assessment of one child by the average related services professional and nonclassroom teacher varied by educational placement as shown in Table 12.3. The shortest amount of assessment time was 143 minutes for those children who were in regular classes full time and were also receiving related services. The longest assessment time was for those children who worked full time under the auspices of the school district's special vocational personnel, and the assessment time for them was 224 minutes.

Table 12.2

AVERAGE TIME TO COMPLETE ONE ASSESSMENT OF ONE CHILD BY RELATED SERVICES
PROFESSIONALS AND NONCLASSROOM TEACHERS^a

Age Level	Handicap ^b													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Pre-school Age	207	190	191	169	180	145	165	172	194	175	53	185	163	183
Elementary Age	157	170	185	159	178	136	155	197	173	145	191	136	219	155
Secondary Age	168	189	197	155	170	124	173	176	191	172	153	219	199	177
All Ages Combined	162	181	191	160	174	132	163	182	183	156	166	146	206	164

^aIncludes all professionals other than regular education teachers and special education teachers who work at one school. Homebound, hospital, and itinerant special teachers are included.

^bHandicapping conditions are defined in Chap. IV.

Table 12.3

AVERAGE TIME TO COMPLETE ONE ASSESSMENT OF ONE CHILD BY RELATED SERVICES
PROFESSIONALS AND NONCLASSROOM TEACHERS,^a ALL HANDICAPS COMBINED

Age Level	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	--	58	208	121	124	200	185	194	114	--	183
Elementary Age	202	137	158	153	169	193	157	197	166	--	155
Secondary Age	222	187	165	169	171	185	247	210	190	224	177
All Ages Combined	213	143	159	162	170	192	199	203	170	224	164

^aIncludes all professionals other than regular education teachers and special education teachers who work at one school. Homebound, hospital, and itinerant special teachers are included.

The cost, including fringe benefits, to complete the assessment of one child by the average related services professional and nonclassroom teacher was \$43. As shown in Table 12.4, this varied from \$40 per elementary age child up to \$47 per secondary age child. By type of handicap, the cost varied from a low of \$34 for a speech impaired child up to a high of \$54 for a multiply handicapped child. By type of educational placement, as shown in Table 12.5, the cost of assessing one child varied from a low of \$33 for children in regular classes who received related services up to a high of \$60 for those children who worked full time under the auspices of the school district's special vocational personnel.

Since children typically received more than one assessment per year, another cost that was of interest was the total cost for the average child of all assessments by all types of related services professionals and nonclassroom teachers combined. While the cost of one assessment for the average child by the average type of these personnel was \$43, when you allow for the fact that the average child received 1.6 assessments per year, the average assessment cost per child per year for all assessments that the child received combined by related services professionals and by homebound, hospital, and itinerant teachers was \$72.

The number of assessments and the cost per child per year by the related services professionals and nonclassroom teachers varied by age from 1.3 for preschool age children (\$60), to 1.5 for elementary age children (\$57), up to 1.7 for secondary age children (\$94). As shown in Tables 12.6 and 12.8, the average number of assessments and the cost per

Table 12.4

AVERAGE COST TO COMPLETE ONE ASSESSMENT OF ONE CHILD BY RELATED SERVICES
PROFESSIONALS AND NONCLASSROOM TEACHERS
(in dollars)^a

Age Level	Handicap													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Pre-school Age	55	49	50	43	50	38	41	43	48	46	14	40	43	46
Elementary Age	42	45	50	45	48	35	40	52	46	39	50	31	56	40
Secondary Age	44	51	53	45	47	33	44	46	50	47	46	50	54	47
All Ages Combined	43	49	51	45	48	34	42	48	48	42	47	34	54	\$43

^aIncludes all professionals other than regular education teachers and special education teachers who work at one school. Homebound, hospital, and itinerant special teachers are included.

Table 12.5

AVERAGE COST TO COMPLETE ONE ASSESSMENT OF ONE CHILD BY RELATED SERVICES
PROFESSIONALS AND NONCLASSROOM TEACHERS, ALL HANDICAPS COMBINED
(in dollars)^a

Age Level	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	--	14	62	34	34	51	51	42	33	--	46
Elementary Age	54	32	39	41	45	54	44	51	46	--	40
Secondary Age	61	43	43	45	46	51	69	62	56	60	47
All Ages Combined	58	33	40	43	46	53	56	55	49	60	\$43

^a Includes all professionals other than regular education teachers and special education teachers who work at one school. Homebound, hospital, and itinerant special teachers are included.

Table 12.6

AVERAGE NUMBER OF ASSESSMENTS PER CHILD PER YEAR BY RELATED SERVICES
PROFESSIONALS AND NONCLASSROOM TEACHERS^a

Age Level	Handicap													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Pre-school Age	2.2	2.4	2.9	2.9	2.8	1.9	1.6	3.2	1.4	2.2	1.1	0.9	0.8	1.3
Elementary Age	1.8	1.9	1.7	1.7	2.7	2.0	2.1	1.8	1.6	1.6	1.3	1.0	1.2	1.5
Secondary Age	1.7	1.5	1.3	1.5	2.6	1.7	1.8	3.2	1.8	1.4	1.8	1.0	1.6	1.7
All Ages Combined	1.8	1.7	1.6	1.8	2.6	1.9	1.9	2.4	1.6	1.6	1.7	1.0	1.3	1.6

^aIncludes all professionals other than regular education teachers and special education teachers who work at one school. Homebound, hospital, and itinerant special teachers are included.

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child per year varied by handicap from 1.0 for speech impaired children (\$35) up to 2.6 for emotionally disturbed children (\$165). As shown in Tables 12.7 and 12.9, the variation in the number of assessments and the cost per year per child by related services professionals and nonclassroom teachers varied by type of educational placement from 1.0 time per child for those in regular classes who were also receiving related services (\$33) up to 2.5 times per year for children who were in regular classes and also were receiving itinerant special education teacher services (\$120).

ASSESSMENT BY RELATED SERVICES AIDES

Related services aides, such as aides to psychometricians, sometimes assessed or helped to assess children's handicapping conditions and special education service needs.

The methodology used for this analysis was the same as was described for related services professionals. However, it is unnecessary to present detailed descriptive tables since the number of assessments and the cost for assessment by aides was so small.

Only four types of aides did any assessing in the school districts in our sample: psychologists', physical and occupational therapists', diagnosticians', and itinerant special education teachers' aides. Each of these four types of aides assessed less than 0.3 percent of the handicapped students and all four types combined assessed only 0.6 percent of the handicapped students in the nationwide sample. They averaged 90 minutes per child actually assessed for a cost of \$9.21 per child assessed. The cost per year for the average special education child, considering that only 0.6 percent were actually assessed by the aides, was \$0.07 per child.

Table 12.7

AVERAGE NUMBER OF ASSESSMENTS PER CHILD PER YEAR BY RELATED SERVICES
PROFESSIONALS AND NONCLASSROOM TEACHERS,^a ALL HANDICAPS COMBINED

Age Level	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	--	1.0	1.3	0.4	1.5	1.8	1.9	0.4	3.9	--	1.3
Elementary Age	1.4	1.0	2.7	1.8	2.3	1.7	1.7	1.3	1.7	--	1.5
Secondary Age	1.3	1.0	1.9	1.8	1.7	1.6	1.3	1.8	1.6	1.7	1.7
All Ages Combined	1.4	1.0	2.5	1.8	1.9	1.7	1.6	1.4	1.8	1.7	1.6

^aIncludes all professionals other than regular education teachers and special education teachers who work at one school. Homebound, hospital, and itinerant special teachers are included.

Table 12.8

AVERAGE ASSESSMENT COST PER YEAR PER CHILD IN SPECIAL EDUCATION FOR RELATED SERVICES
PROFESSIONALS AND NONCLASSROOM TEACHERS
(in dollars)^a

Age Level	Handicap ^c													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Pre-school Age	150	128	166	174	183	84	78	145	68	97	12	36	41	60
Elementary Age	86	98	85	78	166	85	101	119	85	80	86	31	71	57
Secondary Age	94	85	68	67	161	79	91	153	104	85	74	50	105	94
All Ages Combined	91	91	77	90	165	83	95	137	92	84	77	35	79	72

^aIncludes all professionals other than regular education teachers and special education teachers who work at one school. Homebound, hospital, and itinerant special teachers are included.

Table 12.9

AVERAGE ASSESSMENT COST PER YEAR PER CHILD IN SPECIAL EDUCATION FOR RELATED SERVICES
PROFESSIONALS AND NONCLASSROOM TEACHERS, ALL HANDICAPS COMBINED
(in dollars)^a

Age Level	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Pre-school Age	--	17	62	10	78	95	96	32	87	--	60
Elementary Age	77	32	126	82	123	97	76	97	83	--	57
Secondary Age	85	43	92	96	94	80	92	126	96	81	94
All Ages Combined	81	33	120	89	108	93	84	96	88	81	72

^a Includes all professionals other than regular education teachers and special education teachers who work at one school. Homebound, hospital, and itinerant special teachers are included.

ASSESSMENT BY CLASSROOM TEACHERS

From a methodological standpoint, we developed information on assessment costs by regular and special education teachers by first asking them[1] how many hours they spent per child per year assessing educational needs, not including meeting or writing time for the child's individualized education program. We then obtained cost information by multiplying the minutes spent per child times the salaries plus fringe benefits per minute for each type of teacher. It was assumed that each teacher interviewed assessed the same types of children (by age, handicap, and educational placement) as were in his or her classes.

In calculating national average data, we combined data on children in each age, handicap, and placement group who were assessed by each type of teacher in each local district using the appropriate sample weights that were described in an earlier chapter. Also, since we only had interview data for a sample of teachers in each district,[2] we assumed that all those teachers not interviewed had the same assessment time per child as those who were interviewed. The same assumption was made for the 4 percent of the teachers who were interviewed but for whom assessment data were too incomplete to use.

[1] The sample included 872 teachers.

[2] Selected at random from groups of teachers stratified by the age level, handicap, and educational placement of the children they teach.

Assessment by Special Education Teachers

Nationwide, the average special education teacher spent 233 minutes (about a half day) completing an assessment for one child. The cost of this assessment, including fringe benefits, was \$51. These figures are slightly higher than those for related services professionals, which were 164 minutes and \$43 respectively.

The average time for a special education teacher to assess a child is shown by age level and handicap in Table 12.10. Note that the time decreased with age from 313 minutes at the preschool level to 189 minutes at the secondary level. The amount of time by type of handicap ranged from 105 minutes for "other health impaired" to 350 minutes for multihandicapped children. Table 12.11 shows assessment time by type of educational placement. It ranged from zero for placements (such as regular class plus related services only) not served by special education teachers, up to 481 minutes per special day school student. Tables 12.12 and 12.13 show the cost for a special education teacher to assess one child. The range by handicap was from \$23 per other health impaired child up to \$77 per multihandicapped child. The range by placement was from 0 for placements not served by special education teachers up to \$106 per special day school child.

As shown in Tables 12.14 and 12.15, 51 percent of handicapped children were assessed per year by special education teachers. It was 100 percent for children directly served by special education classroom and resource room teachers, but a very small or zero percent for certain placements that were usually assessed only by nonclassroom teachers or related services personnel. Only 1 percent of the children whose only

Table 12.10

AVERAGE TIME TO COMPLETE ONE ASSESSMENT OF ONE CHILD
BY A SPECIAL EDUCATION TEACHER^a

Age Level	Handicap													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Pre-school Age	303	145	444	439	207	730	361	337	127	326	0	364	186	313
Elementary Age	238	369	411	352	173	218	124	114	103	271	234	282	506	278
Secondary Age	185	180	282	314	165	374	309	127	160	163	97	210	214	189
All Ages Combined	213	255	343	339	169	303	217	241	147	258	105	350	350	233

^aNot including homebound, hospital, and itinerant special teachers.

Table 12.11

AVERAGE TIME TO COMPLETE ONE ASSESSMENT OF ONE CHILD
BY A SPECIAL EDUCATION TEACHER,^a
ALL HANDICAPS COMBINED

Age Level	Educational Placement					
	Regular Class Plus Indirect Services	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	All Placements Combined
Pre-school Age	--	300	198	362	204	313
Elementary Age	300	200	294	342	686	278
Secondary Age	63	193	153	218	259	189
All Ages Combined	68	196	209	319	481	233

^aNot including homebound, hospital, and itinerant special teachers.

Table 12.12

AVERAGE COST TO COMPLETE ONE ASSESSMENT OF ONE CHILD
BY A SPECIAL EDUCATION TEACHER
(in dollars)^a

Age Level	Handicap													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Pre-school Age	66	32	97	96	46	160	79	74	28	71	0	80	40	69
Elementary Age	52	81	90	77	38	48	27	25	23	59	51	62	111	61
Secondary Age	40	40	62	69	36	82	68	28	35	36	21	46	47	42
All Ages Combined	47	56	75	75	37	66	48	53	32	57	23	77	77	\$51

^aNot including homebound, hospital, and itinerant special teachers.

Table 12.13

AVERAGE COST TO COMPLETE ONE ASSESSMENT OF ONE CHILD
BY A SPECIAL EDUCATION TEACHER,
ALL HANDICAPS COMBINED
(in dollars)^a

Age Level	Educational Placement					
	Regular Class Plus Indirect Services	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	All Placements Combined
Pre-school Age	--	67	44	80	45	69
Elementary Age	66	44	65	75	151	61
Secondary Age	13	43	34	48	57	42
All Ages Combined	15	43	46	70	106	\$51

^aNot including homebound, hospital, and itinerant special teachers.

Table 12.14

AVERAGE NUMBER OF ASSESSMENTS PER CHILD PER YEAR
BY SPECIAL EDUCATION TEACHERS^a

Age Level	Handicap													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Pre-school Age	.80	.90	.80	.59	.76	1.00	.81	1.00	.50	.85	.00	.22	1.00	.50
Elementary Age	.92	.97	1.00	1.00	.83	.81	.46	.25	.19	.21	.01	.00	.81	.38
Secondary Age	.93	.99	1.00	1.00	.95	.68	.33	.74	.50	.27	.04	.00	.92	.78
All Ages Combined	.92	.98	.99	.96	.89	.77	.42	.58	.34	.28	.03	.01	.87	.51

^aNot including homebound, hospital, and itinerant special teachers.

Table 12.15

AVERAGE NUMBER OF ASSESSMENTS PER CHILD PER YEAR
BY SPECIAL EDUCATION TEACHERS,^a
ALL HANDICAPS COMBINED

Age Level	Educational Placement					
	Regular Class Plus Indirect Services	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	All Placements Combined
Pre-school Age	--	1.00	1.00	1.00	1.00	.50
Elementary Age	.004	1.00	1.00	1.00	1.00	.38
Secondary Age	.15	1.00	1.00	1.00	1.00	.78
All Ages Combined	.08	1.00	1.00	1.00	1.00	.51

^aNot including homebound, hospital, and itinerant special teachers.

impairment was speech were assessed by special education teachers, whereas nearly all mentally retarded students were assessed annually by special education teachers.

Considering that not all special education students were assessed each year by special education teachers, we also calculated the assessment cost for the average special education student. As shown in Tables 12.16 and 12.17, it was \$26. The range by handicap was from less than \$1 for speech impaired up to \$74 for trainable mentally retarded children.

Assessment by Regular Education Teachers

Only a very small fraction, 1.4 percent, of the special education students were assessed by regular education teachers in our nationwide sample. Clearly, such assessments were left to special education teachers and related services personnel. Those few regular education teachers who did assess handicapped children reported spending an average of 751 minutes, or \$179 per child. Considering the small percentage of the children assessed, the cost for the average special education child was only \$2.

Table 12.16

AVERAGE ASSESSMENT COST PER YEAR PER CHILD IN SPECIAL EDUCATION
FOR SPECIAL EDUCATION TEACHERS
(in dollars)^a

Age Level	Handicap													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Pre-school Age	53	29	78	57	35	160	64	74	14	60	0	18	40	35
Elementary Age	48	79	90	77	32	39	12	7	4	12	1	0	90	23
Secondary Age	37	40	62	69	34	56	22	21	18	10	1	0	43	33
All Ages Combined	43	55	74	72	33	51	20	31	11	16	1	1	67	26

^a Not including homebound, hospital, and itinerant special teachers.

Table 12.17

AVERAGE ASSESSMENT COST PER YEAR PER CHILD IN SPECIAL EDUCATION
FOR SPECIAL EDUCATION TEACHERS, ALL HANDICAPS COMBINED
(in dollars)^a

Age Level	Educational Placement					
	Regular Class Plus Indirect Services	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	All Placements Combined
Pre-school Age	--	67	44	80	45	35
Elementary Age	0	44	65	75	151	23
Secondary Age	2	43	34	48	57	33
All Ages Combined	1	43	46	70	106	\$26

^aNot including homebound, hospital, and itinerant special teachers.

XIII. ADMISSION AND IEP DEVELOPMENT COSTS

INTRODUCTION

Children who are referred to the special education program because they may have some type of physical or mental impairment must proceed through an admission, placement, and individualized education program development process before the provision of special education and related services. P.L. 94-142, The Education for All Handicapped Children Act, requires that all handicapped students have an individualized education program (IEP) developed for them each year. This includes potential new special education students as well as those handicapped students continuing in the program.

As specified in P.L. 94-142, each IEP "shall include (a) a statement of the present levels of educational performance of such child, (b) a statement of annual goals, including short-term instructional objectives, (c) a statement of the specific educational services to be provided to such child, and the extent to which such child will be able to participate in regular educational programs, (d) the projected date for initiation and anticipated duration of such services, and appropriate objective criteria and evaluation procedures and schedules for determining, on at least an annual basis, whether instructional objectives are being achieved." [1]

The admission, placement, and IEP development process thus includes decisions on admission to the special education program, on long-term

[1] P.L. 94-142, Section 4(a).

objectives for the child, on educational placement, on the specific contents of the IEP, and finally, a decision on discharge of the student from special education.

The cost estimates in this chapter include the salary and fringe benefits for all time spent preparing for meetings relative to the above decisions, with the exception of assessment costs that were described in the previous chapter. The costs in this chapter also include the costs of all personnel attending the meetings, the costs of documentation of the results of the meetings and decisions, and the time spent writing and revising the IEP for each child. No direct services costs are included.

We found a wide variety of different procedures used in different school districts to accomplish the admission, placement, and IEP development process for the children. For example, some school districts have only one meeting for a child at which all decisions are made, including the full development of the IEP. Other districts have one meeting to decide on admission and placement and a separate meeting for development of the IEP for the child. In districts that have two separate meetings, the types of decisions mentioned above that are made at the first of the two meetings varies considerably. We also found that school districts sometimes used different procedures for different types of students. For example, an extensive process of admission, placement, and IEP development may be used for the majority of the students, but a much abbreviated process may be used for certain types of students, such as those who appear to need speech therapy only and those who probably need homebound services on a short-term basis only. In

four districts we found that during the 1977-1978 school year there were no IEPs written for short-term homebound students; for these students in those four districts the process consisted of one meeting at which a decision was made on admission of the child to the homebound program

In 88 percent of the districts in our nationwide sample, the admission, placement, and IEP development process involved at least two separate meetings for each child. In the remaining 12 percent of the districts in our sample, all decisions regarding the child's program were made in one comprehensive meeting.

When we refer to the admission and placement (A&P) costs in the following sections of this chapter, we are referring to the first meeting for a child each year at which at least the decision on admission is made. By the IEP development costs we mean all meetings and activities in the process that occur after the A&P meeting and that culminate in the final approved IEP for the child each year. Note that we have arbitrarily divided this process into at most two parts, and the division line between the two parts depends on the policies of the individual districts. In districts that revise each child's IEP one or more times after the initial IEP is written each year, the costs of those revisions are included in the IEP development costs reported here. In districts that hold an admission and placement meeting for all new students, and "as needed" for continuing students (with a meeting held at least once every two or three years for each child), the A&P costs reported here have been adjusted to account for the fact that not every child has an A&P meeting every year. Since the dividing line between A&P and IEP costs depends on the policies of the districts and creates a data

interpretation problem, we also report the sum of those two costs in this chapter.

The information contained in this chapter was obtained through interviews with a stratified random sample of teachers in each district, through interviews and inspection of recorded data available from supervisors of each of the different types of related services in each district, and through interviews with the special education administrator in each district. The types of information collected included the number of children who were the subject of A&P and IEP activities during the 1977-1978 school year, the amount of time spent on preparation, on meetings, and on writing (with the exception of assessment activities) by each different type of personnel in the school district that participated in the process. If the process in the district differed significantly by handicap, age level, or type of educational placement, then data on the differences were recorded.

We also collected data on the length of the work day, the length of the workyear, and the salary and fringe benefits for each type of personnel. The cost information was then obtained by multiplying the number of minutes spent on the A&P and IEP process for each child by the cost per minute for the type of personnel spending the time. The information in this chapter utilizes national average workyears and salaries with fringe benefits obtained from our sample to calculate costs. In calculating national average data, data on children in each age level, handicap, and placement group in each district were combined using appropriate sample weights.

A&P AND IEP TIME AND COSTS BY TYPE OF PERSONNEL

The total salary plus fringe benefit costs for the admission and IEP development process during the 1977-1978 school year was estimated from our nationally representative sample data to be \$103 per child. Approximately one-third of that total was expended for admission and placement and two-thirds for development of the IEP. As shown in Table 13.1, the largest component of the \$103 total was \$28 per child expended for the special education teacher's role--e.g., writing the IEP--in this process. The second largest component was \$19 expended for the school administrator's role. Other prominent participants in the process are regular education teachers, psychologists, speech therapists, and special education administrators. Secretarial work in producing the final version of the IEP cost \$2 for the average child.

The costs shown in Table 13.1 are for the average child receiving special education whether or not the particular type of personnel participated in the admission and IEP development process for all the children. The table also shows the fraction of children for whom each type of staff participated. Note that special education teachers participated in developing IEPs for 57 percent of the special education children. This was not 100 percent because special education teachers generally did not participate in developing the IEP for a child who was to receive related services only, such as speech therapy. In addition, in several of the districts in our sample, the IEP was developed by a committee that did not include the special education teacher who would eventually teach the child.

Table 13.1

ADMISSION AND IEP INFORMATION BY TYPE OF PERSONNEL

Type of Personnel	Cost per Child (in \$)			Proportion of Children for Whom This Type Staff Participated	
	A&P	IEP	Total	A&P	IEP
Special Education Teachers	5	23	28	.46	.57
Regular Education Teachers	4	4	8	.38	.22
Counselors	1	1	2	.13	.06
Diagnostic/Placement/IEP Specialists	1	1	1	.03	.08
Nurses	2	1	3	.23	.06
Psychologists	5	3	8	.35	.16
Social Workers	3	1	4	.18	.07
Speech Therapists	3	9	13	.39	.44
School Administrators	9	10	19	.56	.39
Special Education Administrators	2	2	5	.18	.08
Secretaries	NA	2	2	NA	.26
	a	a	a	b	b
Other	2	9	10	.21	.41
Total	37	66	103	3.10 ^c	2.80 ^c

NOTE: Parts may not exactly sum to totals because of rounding off.

a

No single type of personnel cost over \$0.50 per year.

b

No single type of personnel participated for over 3 percent of the children.

c

This number is the sum of the proportions in the column above.

In general, the average admission and placement committee in the typical district in our sample consisted of three or four people. Generally there was one teacher, one school or district administrator, and one or two related services staff members. If there was a separate meeting for development of the IEP, it was generally attended by three

people and consisted of one teacher, one administrator, and one related services person.

A&P AND IEP TIME AND COSTS BY TYPE OF HANDICAP AND EDUCATIONAL PLACEMENT

The amount of time spent on the admission and IEP development process by various types of personnel is shown by type of handicap in Table 13.2. Table 13.3 provides the same information by type of educational placement. In both of these tables the time is given in minutes for each child for whom the staff person actually assists in the admission and IEP development process. This is in contrast to the numbers presented in the previous section that were for all children in special education whether or not this type of personnel participated in the process for that child.

The average admission and placement meeting for a single child for whom such a meeting is held lasted approximately 42 minutes. The process of developing an IEP for a single child consumed 176 minutes of a special education teacher's time if that teacher was involved and 71 minutes of a regular education classroom teacher's time if that teacher was involved. A speech therapist generally spent 90 minutes developing the IEP if he or she participated in the process. If administrators were involved in the IEP development, they spent slightly more than one hour per child. If related services staff members or nonclassroom teachers (such as itinerant special teachers or homebound teachers) were involved, they spent approximately 1-1/2 hours per child on the IEP development. If a secretary was involved in producing the final IEP, this took approximately 50 minutes of effort. The amount of time

Table 13.2

ADMISSION AND IEP TIME PER CHILD BY TYPE OF HANDICAPPING CONDITION
(in minutes)

Type of Personnel	Type of Activity	Handicapping Condition ^a													
		LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear.	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Classroom Teachers	A&P	45	45	52	53	46	47	49	40	47	46	38	39	47	44
	IEP	141	152	176	169	138	170	188	211	168	158	168	136	193	146
Administrators	A&P	42	45	46	52	45	37	46	38	44	44	35	31	47	40
	IEP	65	86	86	63	79	58	103	75	118	82	84	61	72	71
Related Services Staff and Nonclassroom Teachers	A&P	45	48	49	55	46	38	43	42	42	45	41	36	56	43
	IEP	83	95	90	84	111	75	107	111	129	103	76	85	88	88
Secretaries	IEP	58	43	71	74	85	41	46	108	53	80	59	43	76	50

^aHandicapping conditions are defined in Chap. IV.

Table 13.3

ADMISSION AND IEP TIME PER CHILD BY TYPE OF EDUCATIONAL PLACEMENT
(in minutes)

Type of Personnel	Type of Activity	Educational Placement of Child										
		Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-Time Special Class	Special Class Plus Part-Time Regular Class	Full Time Special Class	Special Day School	Home-bound	Short-term Hospital	Full time Work	All Placements Combined
Classroom Teachers	A&P	58	38	45	45	40	48	60	41	39	13	44
	IEP	159	140	185	142	138	172	183	116	110	77	146
Administrators	A&P	58	31	46	44	38	44	59	35	42	13	40
	IEP	61	62	128	73	63	106	60	60	69	60	71
Related Services Staff and Non-classroom Teachers	A&P	51	35	38	46	43	47	57	49	40	37	43
	IEP	59	82	154	88	84	101	79	101	63	65	88
Secretaries	IEP	43	43	80	56	58	77	37	42	90	40	50

involved in the admission and placement meeting varied somewhat by type of handicap and educational placement but always averaged less than one hour.

Tables 13.4 and 13.5 show the sum of the proportions of children for whom various types of staff participated in the admission and IEP process by type of handicapping condition and educational placement. The sum of the proportions are greater than 1.0 if more than one staff member of a particular type usually participated in the process. Note that while there was usually a classroom teacher involved in the process for most types of handicaps and educational placements, classroom teachers were involved with half or less of the children who were speech impaired and with half or less of the children who were orthopedically impaired and who were served in a homebound or short-term hospital placement. While an administrator was usually involved in the A&P and IEP process for most handicapping conditions and placements, they were less likely to be involved in the process for those children who were to receive their education in a regular classroom with special related services only, or in a homebound or short-term hospital placement. No matter what the type of handicap or educational placement, one related services professional or nonclassroom teacher was usually involved in the admission and IEP development process.

Tables 13.6 and 13.7 present the cost per child by type of personnel, for the admission and placement and IEP development process. The cost per child averaged \$103 and ranges from \$60 for speech impaired children to \$177 for partially sighted children. The cost per child ranged by type of educational placement from a low of \$33 for those

Table 13.4

SUM OF PROPORTIONS OF CHILDREN FOR WHOM VARIOUS TYPES OF STAFF PARTICIPATED
IN THE ADMISSION AND PLACEMENT PROCESS BY TYPE OF HANDICAP^a

Type of Personnel	Type of Activity	Handicapping Condition													
		LD	EMR	THR	SMR	Emot.	Deaf	Part. Hear.	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Classroom Teachers	A&P	1.2	1.0	0.8	0.5	1.1	0.9	0.9	1.2	1.0	0.5	0.9	0.5	0.9	0.8
	IEP	1.2	1.2	1.0	1.0	0.9	1.0	1.0	0.7	0.9	0.5	0.7	0.3	1.1	0.8
Adminis- trators	A&P	1.1	1.0	0.6	0.6	1.3	0.7	0.7	1.0	0.9	0.6	0.8	0.5	0.9	0.8
	IEP	0.7	0.8	0.4	0.3	0.3	0.5	0.5	0.3	0.6	0.3	0.3	0.3	0.7	0.5
Related Services Staff and Nonclassroom Teachers	A&P	1.7	1.5	1.4	1.2	2.0	1.9	2.0	2.5	2.4	1.5	2.4	1.3	1.5	1.5
	IEP	1.3	1.4	0.9	0.7	1.4	1.0	1.5	1.4	1.7	0.8	1.0	1.0	1.4	1.2
Secretaries	IEP	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.1	0.0	0.3	0.2	0.3

^aThe numbers shown are the sum of the proportions for individual types of staff members and consequently may be greater than 1.0 if more than one staff member of that type usually participates in the process.

Table 13.5

SUM OF PROPORTIONS OF CHILDREN FOR WHOM VARIOUS TYPES OF STAFF PARTICIPATED
IN THE ADMISSION AND PLACEMENT PROCESS BY EDUCATIONAL PLACEMENT^a

Type of Personnel	Type of Activity	Educational Placement of Child										
		Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-Time Special Class	Special Class Plus Part-Time Regular Class	Full Time Special Class	Special Day School	Home-bound	Short-term Hospital	Full time Work	All Place-ments Combined
Classroom Teachers	A&P	1.2	0.5	1.0	1.3	1.1	0.9	0.7	0.4	0.1	1.8	0.8
	IEP	1.6	0.4	0.7	1.3	1.0	1.2	0.8	0.2	0.2	0.5	0.8
Adminis-trators	A&P	0.7	0.6	1.1	1.1	1.2	0.8	0.5	0.6	0.05	1.8	0.8
	IEP	0.9	0.3	0.6	0.7	0.5	0.7	0.4	0.2	0.1	0.5	0.5
Related Services Staff and Non-classroom Teachers	A&P	1.5	1.3	1.9	1.6	1.8	1.7	1.2	1.8	1.3	0.9	1.5
	IEP	1.6	1.0	1.6	1.3	1.3	1.3	0.9	0.9	0.9	1.0	1.2
Secre-taries	IEP	0.1	0.3	0.1	0.2	0.3	0.2	0.3	0.0	0.0	0.3	0.3

^aThe numbers shown are the sum of the proportions for individual types of staff members and consequently may be greater than 1.0 if more than one staff member of that type usually participates in the process.

Table 13.6

ADMISSION AND IEP DEVELOPMENT COST PER CHILD BY TYPE OF HANDICAP
(in dollars)

Type of Personnel	Type of Activity	Handicapping Condition													
		LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear.	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Classroom Teachers	A&P	13	10	10	5	12	10	9	12	10	5	8	4	10	8
	IEP	41	43	39	36	25	40	45	37	38	17	33	11	46	27
Administrators	A&P	16	15	13	13	24	9	11	16	16	10	11	5	20	12
	IEP	17	27	13	6	10	10	21	10	27	8	13	6	23	13
Related Services Staff and Nonclassroom Teachers	A&P	21	20	20	21	24	21	23	29	30	19	27	11	26	17
	IEP	23	30	19	16	29	19	42	40	54	20	22	22	36	24
Secretaries	IEP	2	1	2	1	3	1	1	6	2	1	0	2	2	2
All Types	Both	133	147	115	98	127	110	152	151	177	79	115	60	161	103

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Table 13.7

ADMISSION AND IEP DEVELOPMENT COST PER CHILD
BY TYPE OF EDUCATIONAL PLACEMENT
(in dollars)

Type of Personnel	Type of Activity	Educational Placement of Child										
		Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-Time Special Class	Special Class Plus Part-Time Regular Class	Full Time Special Class	Special Day School	Home-bound	Short-term Hospital	Full time Work	All Place-ments Combined
Classroom Teachers	A&P	16	4	10	13	10	10	10	4	1	6	8
	IEP	66	12	32	42	34	45	32	5	5	9	27
Adminis-trators	A&P	15	6	19	17	17	12	15	8	1	9	12
	IEP	22	7	26	20	13	26	9	3	2	12	13
Related Services Staff and Non-classroom Teachers	A&P	23	11	20	20	22	23	21	22	12	7	17
	IEP	28	21	53	24	22	37	18	23	13	15	24
Secre-taries	IEP	0	2	1	2	3	2	1	0	0	1	2
All Types	BOTH	170	62	161	140	120	156	106	66	33	60	103

placed in a short-term hospital up to \$170 for those children who were educated full time in a regular class with only special indirect services. One could hypothesize that the children in the "indirect services" placement had a more extensive admission and IEP development process because the special education professionals wanted to be sure that detailed guidance was given to the regular education teacher who would have to work directly with the child but who was usually not fully trained in special education.

When both handicap and educational placement were considered, the most costly process was that for multiply handicapped children who were in a regular education class plus a part time special class placement (\$307 per child) and multiply handicapped children who were in a special class plus a part time regular education class placement (\$274 per child).

XIV. STAFF INSERVICE TRAINING COSTS

Nearly all local education agencies have an inservice training program for professional staff members to help them maintain and improve their teaching and related service skills in the area of special education.

The cost estimates in this chapter include salary and fringe benefits for all paid time spent on inservice training related to special education. We excluded the cost of inservice training conducted outside of normal working hours for which professionals are not paid.

The information contained in this chapter was obtained through interviews with a stratified random sample of teachers in each district, with supervisors of each of the different types of related services in each district, and with the special education administrator in each district. The information collected included the number of hours per year various types of professional staff members spent receiving and giving inservice training related to special education during the 1977-1978 school year, the fraction of that time spent during paid working hours, and the nonpersonnel costs of special education inservice training programs.

The personnel cost information was then obtained by multiplying the number of minutes spent on inservice training by the cost per minute for the type of personnel spending the time and dividing by the number of special education students. The cost estimates in this chapter utilize national average workyears and salaries with fringe benefits obtained from our sample.

The total salary plus fringe benefit costs for inservice training related to special education and related services provided to education agency staff members during the 1977-1978 school year was estimated to be \$40 per special education student. This included \$27 for the time spent during work hours by the staff who received the inservice training, \$7 for the time spent by the education agency staff who provided the inservice training, and \$6 for other miscellaneous inservice training costs such as consultants and materials.

Nationwide, we estimate that the average special education teacher received 19 hours of inservice training per year, of which 89 percent was provided during working hours. The estimated cost per staff member was \$255. The estimated cost per special education student per year was \$9.06.

Some regular education teachers also received inservice training in special education. When such training was provided, it averaged 4.8 hours in length. During 1977-1978, 35 percent of the districts in our sample reported that they provided such training. Nationwide, we estimate that inservice training in special education for regular education teachers averaged 1.7 hours per teacher or approximately \$11 per special education student per year.

The time and cost for selected types of related services personnel who received inservice training are shown in Table 14.1.

The time and costs for the staff members who provided the inservice training related to special education to other staff members are shown in Table 14.2. Inservice training in special education was most often provided by special education administrators (an estimated cost of \$2.87

Table 14.1

STAFF INSERVICE TRAINING RECEIVED

Type of Personnel	Average Hours of Inservice Training Received Per Year ^a	Average Cost Per Staff Member ^a	Average Cost Per Special Education Child in the Nation ^c
Special Education Teachers ^b	19	255	9.06
Regular Education Teachers	5	69	11.32
Diagnostic/Placement/IEP Specialists	58	809	0.18
Nurses	17	219	0.29
Psychologists	22	372	0.89
Social Workers	28	441	0.53
Speech Therapists	36	508	3.27
All Except the Above Types	--	--	1.51

^a This average was calculated for those staff members who received such training, not for all staff members.

^b Inservice in special education only.

^c Largest component for any single type of staff member included was \$0.34.

Table 14.2

INSERVICE TRAINING STAFF MEMBERS GAVE

Type of Personnel	Average Hours of Inservice Training Given by Staff ^a	Average Cost Per Staff Member ^a	Average Cost Per Special Education Child in the Nation
Special Education Teachers	19	246	1.64
Special Education Administrators	NA	NA	2.87
Diagnostic/Placement/IEP Specialists	56	784	0.15
Nurses	44	562	0.07
Psychologists	20	358	0.73
Social Workers	20	314	0.08
Speech Therapists	30	425	0.61
All Except the Above Types	--	--	0.66 ^c

^a

This average was calculated for those staff members who gave such training, not for all staff members.

^b

Data not available.

^c

Largest component for any single type of staff member included was \$0.15.

per handicapped student) or the more highly skilled and experienced special education teachers (an estimated cost of \$1.64 per handicapped student).

In addition to the costs of the education agency's personnel time spent giving and receiving inservice training, there are certain other inservice training costs such as payments for travel expenses or fees to consultant instructors. Nationwide, we estimate these costs amounted to \$6 per year per special education student.

XV. TECHNICAL ASSISTANCE COSTS

INTRODUCTION

Various types of special education teachers and other related services personnel (e.g., psychologists) often give technical assistance in the area of special education to other professional staff members within a district. This chapter contains estimates of the total time spent on giving and receiving such technical assistance. For related services personnel, the cost estimates are for "technical advice and assistance to other staff members" for the benefit of special education students. For teachers, the cost estimates are for "consultation time with other teachers and specialists" regarding special education, but not including discussions relative to student assessment, admission to special education, or development of the students' individualized education program.

To obtain the information in this chapter, we interviewed a stratified random sample of teachers in each district and supervisors of each of the different types of related services in each district. The information collected included the number of hours per year various types of professional staff members spent on technical assistance during the 1977-1978 school year. We then obtained the cost estimates by multiplying the time by the cost per minute (including both salary and fringe benefits) for the type of personnel involved in the technical assistance. This resulting total cost was then allocated to different types of special education students in proportion to the amount of direct and other service time spent by that type of personnel for each different type of handicapped student.

TECHNICAL ASSISTANCE COSTS BY TYPE OF PERSONNEL

We estimated the national average time spent giving and receiving technical assistance in the area of special education by all types of professional staff members to and from other staff members in the same education agency during 1977-1978 to be 574 minutes per child per year (or nearly 10 hours per child). This amounted to \$135 per handicapped child per year in salary and fringe benefits. The largest components of this total were for special education teachers (\$38), regular education teachers (\$40), and psychologists (\$16). Time and cost estimates for other types of personnel are shown in Table 15.1.

TECHNICAL ASSISTANCE COSTS BY AGE LEVEL, HANDICAP,
AND TYPE OF EDUCATIONAL PLACEMENT

As shown in Tables 15.2-15.4, the estimates of technical assistance costs vary considerably for students differing in age level, handicap, and type of educational placement. By type of handicap, the lowest two costs were \$81 for orthopedically impaired children and \$85 for speech impaired children; the highest two were \$307 for emotionally disturbed children and \$378 for functionally blind children. By type of educational placement, the lowest cost was for those children in a short-term hospital (\$36) and the highest by far was for those children who were in a regular class full time except while being taught by an itinerant special education teacher (\$287).

Table 15.1

ESTIMATED AVERAGES FOR TECHNICAL ASSISTANCE TIME AND COST
PER HANDICAPPED CHILD BY TYPE OF PERSONNEL

Type of Personnel	Dollar Cost per Child per Year ^a	Minutes Per Child per Year
Regular education teachers	40	168
Special education teachers	38	173
Homebound teachers	2	11
Itinerant special teachers	4	19
Counselors	5	19
Nurses	4	19
Psychologists	16	56
Social workers	9	34
Speech therapists	9	38
Educational media specialists	2	10
All other related services staff	6	27
All of the above types of personnel	\$135	574 minutes

^a
Including salary and fringe benefits.

Table 15.2

ESTIMATED NATIONAL AVERAGE TECHNICAL ASSISTANCE TIME AND COST PER HANDICAPPED CHILD
BY AGE LEVEL AND TYPE OF EDUCATIONAL PLACEMENT
(Minutes and dollars per year)

Age Level	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Preschool Age	NA ^a	204 min \$48	298 min \$70	374 min \$88	586 min \$138	952 min \$224	412 min \$97	774 min \$182	111 min \$26	NA ^a	668 min \$157
Elementary Age	357 min \$84	361 min \$85	1424 min \$335	1003 min \$236	697 min \$164	582 min \$137	425 min \$100	408 min \$96	145 min \$34	NA	574 min \$135
Secondary Age	374 min \$88	264 min \$62	667 min \$157	706 min \$166	493 min \$116	459 min \$108	625 min \$147	344 min \$81	174 min \$41	251 min \$59	566 min \$133
All Ages Combined	357 min \$84	353 min \$83	1220 min \$287	851 min \$200	587 min \$138	604 min \$142	493 min \$116	451 min \$106	153 min \$36	251 min \$59	574 min \$135

^aData not available for this educational placement and age level combination.

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Table 15.3

ESTIMATED NATIONAL AVERAGE TECHNICAL ASSISTANCE TIME AND COST PER HANDICAPPED CHILD
 BY AGE LEVEL AND TYPE OF HANDICAP
 (Minutes and dollars per year)

Age Level	Handicap ^a													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Preschool Age	735 min \$173	395 min \$93	922 min \$217	1054 min \$248	1186 min \$279	2142 min \$504	1139 min \$268	786 min \$185	642 min \$151	778 min \$183	64 min \$15	527 min \$124	536 min \$126	668 min \$157
Elementary Age	961 min \$226	595 min \$140	565 min \$133	374 min \$88	1224 min \$288	1071 min \$252	527 min \$124	2470 min \$581	663 min \$156	404 min \$95	650 min \$153	357 min \$84	680 min \$160	574 min \$135
Secondary Age	638 min \$150	425 min \$100	650 min \$153	387 min \$91	1378 min \$324	982 min \$231	659 min \$155	1058 min \$249	566 min \$133	170 min \$40	340 min \$80	298 min \$70	629 min \$148	566 min \$133
All Ages Combined	816 min \$192	493 min \$116	616 min \$145	438 min \$103	1305 min \$307	1101 min \$259	638 min \$150	1607 min \$378	625 min \$147	344 min \$81	442 min \$104	361 min \$85	646 min \$152	574 min \$135

^aHandicapping conditions are defined in Chap. IV.

Table 15.4

ESTIMATED NATIONAL AVERAGE TECHNICAL ASSISTANCE TIME AND COST PER HANDICAPPED CHILD BY TYPE OF EDUCATIONAL PLACEMENT AND HANDICAP (Minutes and dollars per year)

Handicapping Condition	Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
LD	361 min \$85	106 min \$25	1113 min \$262	893 min \$210	544 min \$128	583 min \$137	332 min \$78	111 min \$26	0 min \$0	161 min \$38	816 min \$192
EMR	544 min \$128	349 min \$82	1441 min \$339	506 min \$119	506 min \$119	395 min \$93	421 min \$99	684 min \$161	774 min \$182	472 min \$111	493 min \$116
TMR	NA ^b	NA ^b	NA ^b	221 min \$52	901 min \$212	739 min \$174	519 min \$122	1246 min \$293	NA ^b	128 min \$30	616 min \$145
SMR	NA ^b	NA ^b	NA ^b	NA ^b	442 min \$104	353 min \$83	412 min \$97	1169 min \$275	NA ^b	NA ^b	438 min \$103
Emot.	808 min \$190	459 min \$108	2432 min \$572	1403 min \$330	1037 min \$244	1003 min \$236	1037 min \$244	1241 min \$292	234 min \$55	2045 min \$481	1305 min \$307
Deaf	NA ^b	2453 min \$577	2015 min \$474	1012 min \$238	816 min \$192	625 min \$147	867 min \$204	NA ^b	NA ^b	NA ^b	1101 min \$259
Part. Hear	30 min \$7	463 min \$109	642 min \$151	1050 min \$247	595 min \$140	493 min \$116	378 min \$89	2580 min \$607	897 min \$211	NA ^b	638 min \$150
Blind	NA ^b	NA ^b	2577 min \$606	1084 min \$255	604 min \$142	744 min \$175	735 min \$173	NA ^b	NA ^b	NA ^b	1607 min \$378
Part. Sight	565 min \$133	85 min \$20	612 min \$144	825 min \$194	701 min \$165	612 min \$144	408 min \$96	302 min \$71	NA ^b	NA ^b	625 min \$147
Ortho	493 min \$116	570 min \$134	1046 min \$246	617 min \$145	323 min \$76	731 min \$172	281 min \$66	136 min \$32	119 min \$28	NA ^b	344 min \$81
OHI	0 min \$0	68 min \$16	166 min \$39	689 min \$162	404 min \$95	1237 min \$291	166 min \$39	799 min \$188	98 min \$23	NA ^b	442 min \$104
Speech	468 min \$110	353 min \$83	115 min \$27	621 min \$146	1042 min \$245	719 min \$169	289 min \$68	617 min \$145	NA ^b	NA ^b	361 min \$85
Multi	NA ^b	98 min \$23	0 min \$0	1079 min \$254	557 min \$131	761 min \$179	668 min \$157	348 min \$82	485 min \$114	NA ^b	646 min \$152
All	357 min \$84	353 min \$83	1220 min \$287	851 min \$200	587 min \$138	604 min \$142	493 min \$116	451 min \$106	153 min \$36	251 min \$59	574 min \$135

^aHandicapping conditions are defined in Chap. IV.

^bData not available for this handicap and placement combination.

XVI. TRANSPORTATION COSTS

INTRODUCTION

Pupils are provided transportation by education agencies for a number of reasons. Both handicapped and nonhandicapped students may live too far from school to walk. Handicapped students may have some physical, mental, or behavioral disorder that makes it impossible or inadvisable to have them come to school on their own. Students may be bussed for desegregation. Finally, educational field trips frequently involve district-provided transportation.

In this chapter we have grouped transportation provided by education agencies into two categories. The first, which we call special transportation, is any type of transportation that involves handicapped students only. This may range from paying parents who transport their handicapped child to school, to private taxis, to small vans operated by or contracted for by the school district, to vehicles equipped with lifts and other features designed to handle passengers in wheel chairs, to full size standard school busses that are used for transporting handicapped students only.

The second type of transportation, which we call regular transportation, is all transportation that involves either nonhandicapped students or both handicapped and nonhandicapped students on the same vehicle. The regular transportation cost estimates include the costs of transporting handicapped children who ride the regular school bus with nonhandicapped children.

Included in our estimates are the costs of transportation administrators, transportation secretaries and clerks, transportation dispatchers, bus washers, mechanics, drivers, transportation aides, contract transportation expenses paid to other private or public agencies, insurance, fuel, maintenance, depreciation, and vehicle purchase. Personnel expenditures include salaries, overtime, and fringe benefits. The only transportation costs that are excluded are those for summer school and for "other target population" programs such as for disadvantaged and bilingual children. These two types of costs are not part of either the cost of regular education or the cost of special education during the school year. Bussing for desegregation purposes is considered to be part of the cost of regular education and hence is included.

The education agencies in our sample, in particular the transportation supervisors, directors of special education, and transport records (where possible) provided information on total expenditures in the above mentioned categories during the 1977-1978 school year. The education agencies divided this expenditure information into regular transportation and special transportation categories. The education agencies also provided information on the total number of students (handicapped and nonhandicapped combined) on regular transportation vehicles, but they were generally unable to give us separate counts for nonhandicapped children and for handicapped children. The education agencies also provided us with the total number and which categories of handicapped children were provided special transportation. (The categories were defined by the age levels, handicaps, and type of educational placements of the handicapped children.)

To estimate the cost per child for special transportation, we first prorated the transportation administrative expenses between regular and special transportation based on the number of students transported. Then we divided the total cost of special transportation plus the prorated portion of transportation administrative expenses by the sum total of the number of handicapped students in the age level, handicap, and educational placement categories for which special transportation was provided. We then estimated the national average costs of special transportation per pupil by taking the appropriate weighted average of the data from the individual education agencies in the sample.

The cost of regular transportation per child was estimated by dividing the total cost of regular transportation plus the prorated portion of transportation administration expenses by the sum total of the nonhandicapped children in the district plus the handicapped children who were in categories for which no special transportation was provided.

TRANSPORTATION COSTS FOR NONHANDICAPPED CHILDREN

During the 1977-1978 school year, the estimated cost of regular transportation for the average nonhandicapped child was \$73. This cost varied by age level: \$0 at preschool, \$80 at elementary, and \$68 per child at secondary. Recall that these numbers are the cost averages for all nonhandicapped students whether or not they are provided regular transportation by the education agencies.

REGULAR AND SPECIAL TRANSPORTATION COSTS FOR HANDICAPPED CHILDREN

During the 1977-1978 school year, the estimated total cost of both regular and special transportation provided for the average handicapped student was \$159. This figure, and all others shown in Tables 16.1-16.3, are estimates of the cost for all handicapped children whether or not they were provided any transportation at the education agency's expense. The \$159 includes \$48 per handicapped child for regular transportation and \$111 per handicapped child for special transportation. The \$48 per handicapped child for regular transportation is less than the \$73 per nonhandicapped child because a smaller proportion of the handicapped children ride on regular transportation.

Since many handicapped children do not need and do not receive any transportation to school by the school district, the cost per child estimated above is lower than the cost per child who actually received transportation at district expense. If we were to include in the estimated average only children who actually received transportation at education agency expense, then the estimates would be \$187 per handicapped child who received regular transportation and \$720 per handicapped child who received special transportation.

The costs of regular and special transportation per handicapped pupil are shown by educational placement and age level in Table 16.1. The regular transportation cost estimates per handicapped child varied by age level: \$0 at preschool, \$54 at elementary, and \$49 at secondary. Comparable figures for special transportation were \$288, \$87, and \$147.

The estimated cost of regular transportation for handicapped children varied by type of educational placement from \$0 for students who

Table 16.1

ESTIMATED AVERAGE COST OF REGULAR AND SPECIAL TRANSPORTATION PER PUPIL BY
EDUCATIONAL PLACEMENT AND AGE LEVEL

Age Level	Type of Trans.	Educational Placement ^a										All Special Education Placements Combined	
		Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-Time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Home-bound	Short-term Hospital	Full Time Work		
Preschool Age	Regular	\$ 0	\$ 0	\$ 0	\$ 55	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
	Special	\$ 0	\$ 0	\$ 9	\$ 0	\$ 67	\$ 624	\$ 531	\$ 0	\$ 0	\$ 0	\$ 0	\$ 288
Elementary Age	Regular	\$80	\$68	\$ 15	\$ 60	\$ 30	\$ 8	\$ 0	\$54	\$57	\$0	\$ 54	
	Special	\$ 0	\$ 0	\$299	\$ 73	\$424	\$418	\$326	\$ 0	\$ 0	\$0	\$ 87	
Secondary Age	Regular	\$68	\$62	\$ 52	\$ 55	\$ 28	\$ 23	\$ 1	\$45	\$63	\$0	\$ 49	
	Special	\$ 6	\$ 1	\$ 81	\$113	\$153	\$223	\$979	\$ 0	\$ 0	\$0	\$147	
All Ages Combined	Regular	\$73	\$67	\$ 25	\$ 57	\$ 29	\$ 10	\$ 1	\$50	\$59	\$0	\$ 48	
	Special	\$ 3	\$ 0	\$242	\$ 94	\$275	\$400	\$580	\$ 0	\$ 0	\$0	\$111	

NOTE: Regular = regular transportation used by both nonhandicapped and some handicapped students.
Special = special transportation used by handicapped students only.

^aEducational placements are defined in Chap. IV.

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Table 16.2

ESTIMATED AVERAGE COST OF REGULAR AND SPECIAL TRANSPORTATION
PER PUPIL BY AGE LEVEL AND TYPE OF HANDICAP

Age Level	Type of Trans.	Handicapping Condition ^a													
		LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear.	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All Hand.
Preschool Age	Regular	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
	Special	\$188	\$278	\$460	\$571	\$227	\$635	\$375	\$309	\$187	\$443	\$ 10	\$189	\$1134	\$288
Elementary Age	Regular	\$ 55	\$ 32	\$ 4	\$ 0	\$ 16	\$ 18	\$ 29	\$ 30	\$ 35	\$ 6	\$ 18	\$ 68	\$ 17	\$ 54
	Special	\$135	\$214	\$275	\$787	\$442	\$382	\$245	\$427	\$175	\$117	\$ 11	\$ 0	\$ 875	\$ 87
Secondary Age	Regular	\$ 54	\$ 42	\$ 9	\$ 1	\$ 24	\$ 21	\$ 53	\$ 35	\$ 37	\$ 1	\$ 38	\$ 63	\$ 14	\$ 49
	Special	\$ 95	\$102	\$852	\$977	\$376	\$213	\$ 92	\$449	\$211	\$139	\$ 1	\$ 0	\$1050	\$147
All Ages Combined	Regular	\$ 54	\$ 38	\$ 6	\$ 0	\$ 19	\$ 17	\$ 38	\$ 26	\$ 32	\$ 3	\$ 30	\$ 66	\$ 14	\$ 48
	Special	\$118	\$149	\$557	\$849	\$404	\$339	\$183	\$414	\$191	\$148	\$ 4	\$ 5	\$ 966	\$111

NOTE: Regular = regular transportation used by both nonhandicapped and some handicapped students.
Special = special transportation used by handicapped students only.

^aHandicapping conditions are defined in Chap. IV.

Table 16.3

ESTIMATED AVERAGE COST OF REGULAR AND SPECIAL TRANSPORTATION PER PUPIL
BY HANDICAP AND TYPE OF EDUCATIONAL PLACEMENT

Handi- cap	Type of Trans.	Educational Placement										
		Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part- time Special Class	Special Class Plus Part- time Regular Class	Full Time Special Class	Special Day School	Home- bound	Short- term Hospital	Full Time Work	All Sp. Ed. Placements Combined
LD	Regular	\$ 80	\$ 27	\$ 23	\$ 59	\$ 26	\$ 16	\$ 0	\$50	\$ 0	\$0	\$ 54
	Special	\$ 0	\$ 0	\$183	\$ 80	\$281	\$377	\$915	\$ 0	\$ 0	\$0	\$118
EMR	Regular	\$ 45	\$ 80	\$ 6	\$ 57	\$ 35	\$ 8	\$ 1	\$29	\$ 0	\$0	\$ 38
	Special	\$ 0	\$ 0	\$381	\$ 51	\$197	\$328	\$183	\$ 0	\$ 0	\$0	\$149
TMR	Regular	\$ 0	\$ 0	\$ 0	\$ 5	\$ 21	\$ 16	\$ 0	\$ 1	\$ 0	\$0	\$ 6
	Special	\$ 0	\$ 0	\$ 0	\$765	\$696	\$324	\$685	\$ 0	\$ 0	\$0	\$557
SMR	Regular	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$0	\$ 0
	Special	\$ 0	\$ 0	\$ 0	\$ 0	\$416	\$681	\$899	\$ 0	\$ 0	\$0	\$849
Emot.	Regular	\$ 56	\$ 19	\$ 2	\$ 29	\$ 21	\$ 4	\$ 0	\$13	\$59	\$0	\$ 19
	Special	\$ 0	\$ 0	\$461	\$349	\$477	\$467	\$584	\$ 0	\$ 0	\$0	\$404
Deaf	Regular	\$ 0	\$ 80	\$ 37	\$ 22	\$ 6	\$ 0	\$ 0	\$ 0	\$ 0	\$0	\$ 17
	Special	\$ 0	\$ 0	\$392	\$151	\$386	\$554	\$143	\$ 0	\$ 0	\$0	\$339
Part. Hear	Regular	\$ 24	\$ 80	\$ 55	\$ 75	\$ 13	\$ 0	\$ 0	\$ 1	\$ 0	\$0	\$ 38
	Special	\$ 1	\$ 0	\$ 97	\$ 92	\$339	\$446	\$446	\$ 0	\$ 0	\$0	\$183
Blind	Regular	\$ 0	\$ 0	\$ 33	\$ 43	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$0	\$ 26
	Special	\$ 0	\$ 0	\$354	\$401	\$828	\$321	\$685	\$ 0	\$ 0	\$0	\$414
Part. Sight	Regular	\$ 58	\$ 12	\$ 29	\$ 58	\$ 2	\$ 0	\$ 0	\$13	\$ 0	\$0	\$ 32
	Special	\$ 0	\$ 0	\$208	\$118	\$410	\$461	\$635	\$ 0	\$ 0	\$0	\$191
Ortho	Regular	\$ 16	\$ 50	\$ 5	\$ 0	\$ 5	\$ 0	\$ 0	\$42	\$57	\$0	\$ 3
	Special	\$272	\$106	\$310	\$680	\$168	\$415	\$323	\$ 0	\$ 0	\$0	\$148
OHI	Regular	\$ 0	\$ 67	\$ 64	\$ 80	\$ 17	\$ 0	\$ 6	\$59	\$68	\$0	\$ 30
	Special	\$ 0	\$ 0	\$ 0	\$ 0	\$568	\$122	\$34	\$ 0	\$ 0	\$0	\$ 4
Speech	Regular	\$ 42	\$ 67	\$ 11	\$ 80	\$ 40	\$ 1	\$ 0	\$72	\$ 0	\$0	\$ 66
	Special	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$957	\$ 78	\$ 0	\$ 0	\$0	\$ 5
Multi	Regular	\$ 0	\$ 80	\$ 0	\$ 42	\$ 39	\$ 26	\$ 0	\$23	\$33	\$0	\$ 14
	Special	\$ 0	\$ 0	\$ 0	\$1146	\$1093	\$561	\$1271	\$ 0	\$ 0	\$0	\$966
All Hand.	Regular	\$ 73	\$ 67	\$ 25	\$ 57	\$ 29	\$ 10	\$ 1	\$50	\$59	\$0	\$ 48
	Special	\$ 3	\$ 0	\$242	\$ 94	\$275	\$400	\$580	\$ 0	\$ 0	\$0	\$111

NOTE: Regular = regular transportation used by both nonhandicapped and some handicapped students.
Special = special transportation used by handicapped students only.

work full time and \$1 for students in special day schools (who usually received special rather than regular transportation) up to \$73 per child for students who were in regular classes full time receiving only indirect special education services. Note that homebound and short term hospital placement children incurred some cost of regular transportation because many of them attended regular education programs at least part of the school year. The estimated cost of special transportation per child varied from \$0 or near \$0 for those in regular class full time who received only indirect special services or related services up to a maximum of \$580 for each child in a special day school for handicapped children only. Thus, the total cost of both regular and special transportation combined varied from \$0 for children working full time up to \$581 for handicapped children in special day schools. The transportation cost per child generally increased as the educational placements became more restrictive because the more severely handicapped children and the lower incidence handicapped children who required very specialized services were generally placed in the more restrictive placements.

The estimated costs of regular and special transportation per handicapped pupil are shown by age level and type of handicap in Table 16.2. The variation in the total transportation cost per child was from less than \$100 per year for speech impaired and other health impaired children up to \$980 per year for children with multiple handicaps. Again, the cost per child increased as the severity of the handicapping condition increased.

The estimated costs of regular and special transportation per handicapped pupil are shown by handicap and type of educational placement in Table 16.3.

XVII. OTHER COSTS OF EDUCATING HANDICAPPED CHILDREN

INSTRUCTIONAL SUPPLIES AND TEXTS

The estimated national average expenditure per handicapped child for instructional supplies and texts during the 1977-1978 school year was \$66. This included \$28 per child in regular education instructional supplies and texts and \$38 per child in special education instructional supplies and texts.

We categorized supplies and texts into regular or special education depending on whether the supplies and texts were used in a regular education classroom or in a special education classroom. Children who spent part of the day in a regular education classroom and part of the day in a special education classroom were assumed to have the same amount of supplies and texts as other children in the same classroom.

In making these estimates, we divided the regular education expenditures for supplies and texts in each of the sample education agencies for each different age level equally among children of that age level who attended regular education classes all or part of the school year. If special education teachers utilized the regular education supplies and texts in the special education classroom, then we prorated a portion of the regular education supplies and texts expenditures to special education if the school district had not already done so.

Special education supplies and texts expenditures were allocated among the different age levels, handicaps, and types of educational placements of special education students in accordance with information

provided during interviews with the directors of special education and finance in each education agency.

All supplies and texts costs were included in these estimates with one exception. Visually handicapped students nationwide each received an average of approximately \$113 in educational materials and apparatus from the American Printing House for the Blind during fiscal year 1978. [1] These funds were excluded from the totals because they were provided at no expense to state and local education agencies by the American Printing House for the Blind.

Tables 17.1-17.3 display the variations in supplies and texts costs by age, handicap, and type of educational placement respectively. The costs of supplies and texts increased with age level from a total of \$31 per child at the preschool level to \$44 at the elementary level to \$105 at the secondary level. The variation in the estimated cost per child by type of handicap ranged from a low of \$30 per speech impaired child to a high of \$137 per seriously emotionally disturbed child. Note that in Table 17.2 some children who were almost never in a regular education classroom (such as those who were severely mentally retarded) had almost no regular education instructional supplies and texts costs. Some students (such as those who were speech impaired), however, were almost never in a special education classroom and hence incurred no special education instructional supplies and texts costs. The estimated cost

[1] According to the U.S. Office of Management and Budget, The Budget of the United States Government FY 1979, Washington, D.C., 1978, Appendix pp. 457-458, Federal Expenditures for the American Printing House for the Blind program were \$3.5 million for FY 1978, and approximately 31,000 students were provided educational materials and apparatus nationwide. These students were all visually handicapped students at less than college grade level.

Table 17.1

ESTIMATED AVERAGE COSTS OF INSTRUCTIONAL SUPPLIES AND TEXTS PER HANDICAPPED PUPIL BY AGE LEVEL

Age Level	Regular Education Instructional Supplies and Texts	Special Education Instructional Supplies and Texts
Preschool	\$ 4	\$27
Elementary	23	21
Secondary	32	73
All ages combined	\$28	\$38

Table 17.2

ESTIMATED AVERAGE COSTS OF INSTRUCTIONAL SUPPLIES AND TEXTS PER PUPIL BY TYPE OF HANDICAPPING CONDITION

* Handicapping a Condition	Regular Education Instructional Supplies and Texts	Special Education Instructional Supplies and Texts
LD	\$31	\$ 66
EMR	24	67
TMR	3	50
SMR	< 1	53
Emot.	33	104
Deaf	15	54
Part. Hear	24	40
Blind	30	48
Part. Sight	27	46
Ortho	24	31
OHI	34	12
Speech	29	1
Multi	10	55
All combined	\$28	\$ 38

^a Handicapping conditions are defined in Chap. IV.

Table 17.3

ESTIMATED AVERAGE COSTS OF INSTRUCTIONAL SUPPLIES
AND TEXTS PER HANDICAPPED PUPIL BY
TYPE OF EDUCATIONAL PLACEMENT

Type of Educational Placement ^a	Regular Education Instructional Supplies and Texts	Special Education Instructional Supplies and Texts
Regular Class Plus Indirect Services	\$34	\$34
Regular Class Plus "Related Services"	30	< 1
Regular Class Plus Itinerant Special Teacher	26	< 1
Regular Class Plus Part-time Special Class	33	79
Special Class Plus Part-time Regular Class	30	61
Full-time Special Class	0	77
Special Day School	0	77
Homebound	30	15
Short-term Hospital	25	24
Full-time Work	0	0
All combined	\$28	\$38

^a Educational placements are defined in Chap. IV.

per child by type of educational placement ranged from \$0 for those who worked full time under the auspices of the special education program up to \$112 per child who spent a majority of the time in a regular education classroom but also spent part time in a special education classroom. Note that the expenditure estimates for special education instructional supplies and texts for children who were in a regular education classroom full time but receive related services or itinerant special education teacher services are low because the cost of supplies used by such personnel are shown in a separate section of this chapter.

RELATED SERVICES STAFF AND NONCLASSROOM TEACHER SUPPLIES

The estimated national average expenditures per handicapped child for supplies for related services staff members and nonclassroom teachers, such as itinerant special education teachers and homebound teachers, was \$10 during the 1977-1978 school year.

Based on information provided during interviews with the directors of special education and finance in each education agency in our sample, we first computed an estimate of the supply expenses per FTE staff member for each different type of related services staff and nonclassroom teacher. Supplies were then allocated among the different age levels, handicaps, and types of educational placements of special education students in proportion to the FTE number of related services staff and nonclassroom teachers per child. The cost of supplies per child equalled the cost of supplies per FTE staff member times the fraction of a FTE staff member's time devoted per handicapped child. Tables 17.4-17.6 display the variations in supply costs by age level, handicap, and

Table 17.4

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER SUPPLIES PER HANDICAPPED PUPIL BY AGE LEVEL

Age Level	Supply Costs
Preschool	25
Elementary	10
Secondary	10
All ages combined	10

* Table 17.5

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER SUPPLIES BY TYPE OF HANDICAPPING CONDITION

Handicapping ^a Condition	Supply Costs
LD	9
EMR	8
TMR	8
SMR	6
Emot.	23
Deaf	8
Part. Hear	14
Blind	34
Part. Sight	19
Ortho	19
OHI	10
Speech	10
Multi	19
All combined	10

^a
Handicapping conditions are defined in Chap. IV.

Table 17.6

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER SUPPLIES BY TYPE OF OF EDUCATIONAL PLACEMENT

Type of Educational Placement ^a	Supply Costs
Regular Class Plus Indirect Services	6
Regular Class Plus "Related Services"	9
Regular Class Plus Itinerant Special Teacher	48
Regular Class Plus Part-time Special Class	9
Special Class Plus Part-time Regular Class	9
Full-time Special Class	11
Special Day School	7
Homebound	14
Short-term Hospital	6
Full-time Work	13
All Combined	10

^a
Educational placements are defined in Chap. IV.

type of educational placement respectively. The variation by age level ranges from \$25 per handicapped child at the preschool level to \$10 at the elementary level and secondary level. The variation in supply cost per child ranged from \$6 per severely mentally retarded child up to \$34 per functionally blind child. The variation by type of educational placement was from \$6 for those students placed in regular classes full time and receiving only indirect special services up to \$48 per child for those children placed in regular classes and receiving itinerant special teacher services. Note that the expenditure estimates for children in the itinerant special teacher placement were highest because they included the special instructional supplies for these children. The special instructional supplies utilized by special classroom teachers and resource room teachers were reported in a previous section of this chapter.

INSTRUCTIONAL EQUIPMENT

The estimated national average expenditure per handicapped child for instructional equipment during the 1977-1978 school year was \$21. This included \$10 per child for regular education instructional equipment and \$11 per child for special education instructional equipment. The data sources and methodology for these equipment cost estimates were the same as was discussed for instructional supplies. Note that instructional equipment almost always has a useful life of more than one year. The methodology used in making these estimates assumes that the actual annual expenditures for equipment are uniform from year to year

throughout the nation and hence are a reasonable approximation of the estimate that would be obtained if one were to itemize all the equipment purchased and annualize the purchase cost over the life of the equipment for all equipment currently in use.

The variations in regular education and special education instructional equipment costs per child are shown in Tables 17.7-17.9 by age level, handicap, and type of educational placement. Total instructional equipment costs were \$25 per child at the preschool level, \$12 at the elementary level, and \$35 at the secondary level. The costs by handicap for total instructional equipment ranged from a low of \$10 per speech impaired child up to a high of approximately \$50 for profoundly deaf and for seriously emotionally disturbed children. The cost by type of educational placement ranged from \$0 for students who worked full time up to \$34 per child who was in a special education classroom a majority of the time and also attended a regular education classroom part of the day. Special education instructional equipment cost estimates are lower than might be expected for children who were in a regular classroom full time but also received related services or itinerant special teacher services because the cost of equipment used by those special personnel are described in the next section of this chapter.

RELATED SERVICES STAFF AND NONCLASSROOM TEACHER EQUIPMENT

The estimated national average expenditure per handicapped child for related services and nonclassroom teacher equipment during the 1977-1978 school year was \$7. The data sources and methodology for these equipment cost estimates were the same as was discussed for related services and nonclassroom teacher supplies in a previous section.

Table 17.7

ESTIMATED AVERAGE COSTS OF INSTRUCTIONAL
EQUIPMENT PER HANDICAPPED PUPIL
BY AGE LEVEL

Age Level	Regular Education Instructional Equipment	Special Education Instructional Equipment
Preschool	\$ 6	\$19
Elementary	6	6
Secondary	15	20
All ages combined	\$10	\$11

Table 17.8

ESTIMATED AVERAGE COSTS OF INSTRUCTIONAL
EQUIPMENT PER PUPIL BY TYPE
OF HANDICAPPING CONDITION

Handicapping Condition ^a	Regular Education Instructional Equipment	Special Education Instructional Equipment
LD	\$13	\$18
EMR	9	11
TMR	1	21
SMR	< 1	25
Emct.	13	40
Deaf	7	40
Part. Hear	10	18
Blind	8	25
Part. Sight	8	15
Ortho	8	11
OHI	14	< 1
Speech	10	< 1
Multi	3	37
^o All combined	\$10	\$11

^a Handicapping conditions are defined in Chap. IV.

Table 17.9

ESTIMATED AVERAGE COSTS OF INSTRUCTIONAL
EQUIPMENT PER HANDICAPPED PUPIL BY TYPE
OF EDUCATIONAL PLACEMENT

Type of Educational Placement ^a	Regular Education Instructional Equipment	Special Education Instructional Equipment
Regular Class Plus Indirect Services	\$14	\$<1
Regular Class Plus "Related Services"	10	<1
Regular Class Plus Itinerant Special Teacher	8	<1
Regular Class Plus Part-time Special Teacher	14	19
Special Class Plus Part-time Regular Class	11	23
Full-time Special Class	0	29
Special Day School	0	29
Homebound	9	0
Short-term Hospital	9	0
Full-time Work	0	0
All combined	\$10	\$11

^a
Educational placements are defined in Chap. IV.

Note that equipment almost always has a useful life of more than one year. The method used in making these estimates assumes that the actual annual expenditures for equipment are uniform from year to year throughout the nation, hence are a reasonable approximation of the estimate that would be obtained if one were to itemize all of the equipment purchased and annualize the purchase cost over the life of all the equipment currently in use.

The variations in related services staff and nonclassroom teacher equipment cost per child are shown in Tables 17.10-17.12 by age level, handicap, and type of educational placement. Equipment cost was \$27 at the preschool level, \$5 at the elementary level, and \$8 at the secondary level. They ranged from \$5 per child for three handicaps up to \$43 per child for functionally blind children. The equipment costs ranged by type of educational placement from 0 for those working full time under the auspices of the school district up to \$20 per child for those students in regular classes who were receiving itinerant special teacher's services.

RELATED SERVICES STAFF AND NONCLASSROOM TEACHER TRANSPORTATION

The estimated national average expenditure per handicapped child for teacher and related services staff transportation was \$3 per handicapped child during the 1977-1978 school year. This primarily covered travel expenses for the use of staff member's personal automobiles when they traveled between schools or between school and a child's home to provide related services, itinerant special teaching services, and home-bound teaching services. The variation in estimated average costs of

Table 17.10

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER EQUIPMENT PER HANDICAPPED PUPIL BY AGE LEVEL

Age Level	Equipment Costs
Preschool	27
Elementary	5
Secondary	8
All ages combined	7

Table 17.11

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER SUPPLIES PER PUPIL BY TYPE OF HANDICAPPING CONDITION

Handicapping a Condition	Equipment Costs
LD	5
EMR	6
TMR	5
SMR	6
Emot.	13
Deaf	5
Part. Hear	10
Blind	43
Part. Sight	27
Ortho	13
OHI	10
Speech	7
Multi	19
All combined	7

a

Handicapping conditions are defined in Chap. IV.

Table 17.12

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER EQUIPMENT BY TYPE OF EDUCATIONAL PLACEMENT

Type of Educational Placement ^a	Equipment Costs
Regular Class Plus Indirect Services	3
Regular Class Plus "Related Services"	6
Regular Class Plus Itinerant Special Teacher	20
Regular Class Plus Part-time Special Class	5
Special Class Plus Part-time Regular Class	8
Full-time Special Class	7
Special Day School	7
Homebound	17
Short-term Hospital	2
Full-time Work	0
All Combined	7

^a Educational placements are defined in Chap. IV.

staff transportation are shown in Tables 17.13-17.15 by age level, handicap, and type of educational placement. As could be expected, the highest expenditure per child was \$16 for those receiving itinerant special teacher services, followed closely by \$13 per child for homebound handicapped children.

SPECIAL EDUCATION ADMINISTRATORS AND SECRETARIES

The estimated national average cost per handicapped pupil for special education administrators during the 1977-1978 year was \$47, including both salaries and fringe benefits. Special education secretaries and clerks added an estimated \$29 per handicapped child.

These personnel include staff with titles such as "Director of Special Education" and "Assistant Director of Special Education" and include all professionals and secretaries who have general administrative responsibilities for the entire special education program rather than some component of that program. If the person who was administratively in charge of special education also was in charge of other program areas because of the small size of the district, then only that portion of the personnel time that was devoted to special education was counted here. These cost estimates do not include nonadministrative staff time if the special education administrator performed a direct pupil service role as well as an administrative role. They also do not include special education school administrators, related service supervisors, and program specialists such as the director of the preschool special education program. All of these personnel excluded here are included in cost estimates elsewhere in this report. These administrative

Table 17.13

ESTIMATED AVERAGE COSTS OF TEACHER AND
RELATED SERVICES STAFF TRANSPORTATION
PER HANDICAPPED PUPIL BY AGE LEVEL

Age Level	Staff Transportation Costs
Preschool	7
Elementary	3
Secondary	4
All ages combined	3

Table 17.14

ESTIMATED AVERAGE COSTS OF TEACHER
AND RELATED SERVICES STAFF
TRANSPORTATION PER PUPIL BY TYPE
OF HANDICAPPING CONDITION

Handicapping ^a Condition	Staff Transportation Costs
LD	2
EMR	3
TMR	4
SMR	4
Emot.	5
Deaf	17
Part. Hear	18
Blind	36
Part. Sight	17
Ortho	8
OHI	8
Speech	2
Multi	18
All combined	3

^a
Handicapping conditions are
defined in Chap. IV.

Table 17.15

ESTIMATED AVERAGE COSTS OF TEACHER AND
RELATED SERVICES STAFF TRANSPORTATION
PER PUPIL BY TYPE OF EDUCATIONAL PLACEMENT

Type of Educational ^a Placement	Staff Transportation Costs
Regular Class Plus Indirect Services	2
Regular Class Plus "Related Services"	2
Regular Class Plus Itinerant Special Teacher	16
Regular Class Plus Part-time Special Class	3
Special Class Plus Part-time Regular Class	3
Full-time Special Class	4
Special Day School	4
Homebound	13
Short-term Hospital	2
Full-time Work	9
All Combined	3

^a
Educational placements are defined
in Chap. IV.

nonpersonnel costs were allocated equally to all handicapped pupils in special education in each of the sample education agencies, and then appropriately weighted to obtain the national average estimated costs.

SPECIAL EDUCATION NONPERSONNEL ADMINISTRATIVE COSTS

The estimated national average cost per handicapped pupil for the nonpersonnel costs of special education administration during the 1977-1978 year was \$11. These costs included administrative supplies, equipment, contracted administrative services, and travel for administrative staff members and were allocated equally to all handicapped pupils in special education in each of the sample education agencies, then appropriately weighted to obtain the national average estimated cost.

SPECIAL EDUCATION PROGRAM SPECIALISTS

Special education program specialists include people with such titles as "Director of Preschool Special Education," "Mental Retardation Program Specialist," and "Director of Homebound Program." These personnel were mostly all performing administrative and technical assistance roles. If any of them also performed a direct pupil service role, then that portion of their time was not included. Their roles were often similar to that of the special education director except their responsibility was for some segment of the special education program rather than the whole program. Again, the special education school administrators and related services supervisors were not included here.

The estimated national average expenditure per handicapped child for special education program specialists during the 1977-1978 school

year was \$9. These funds were concentrated most heavily on preschool age handicapped children and on children with hearing and vision handicaps.

Tables 17.16-17.18 display the variation in cost by age, handicap, and type of educational placement respectively. The variation by age was from \$140 per preschool child to \$6 per elementary child and \$7 per secondary child. The variation by handicap ranged from a high of \$91 per profoundly deaf child down to \$4 per other health impaired child. The variation by educational placement was from \$60 per homebound child down to \$1 per child placed in regular class full time and receiving special related services only. The estimate for children in special day schools is lower than might be expected since the cost of the special school administrators was not included here.

RELATED SERVICES STAFF AND NONCLASSROOM TEACHER ADMINISTRATORS

The estimated average annual expenditure for related services personnel supervisors and nonclassroom teacher supervisors was \$4 per handicapped child during the 1977-1978 school year. This includes only supervisors identified as such in expenditure records--e.g., the directors of nursing or counseling. If related services staff members or nonclassroom teachers were supervised by the special education administrator or by some other district or school administrator who was not explicitly a full time supervisor of that type of related service or nonclassroom teacher, then those expenditures were not included here. The cost per child was obtained by multiplying the supervisory cost per FTE staff member of each different type of related service and nonclassroom teaching personnel times the fraction of a FTE staff member's time

Table 17.16

ESTIMATED AVERAGE COST OF
SPECIAL EDUCATION PROGRAM
SPECIALISTS PER PUPIL
BY AGE LEVEL

Age Level	Special Education Program Specialist Cost
Preschool	\$140
Elementary	6
Secondary	7
All ages combined	\$ 9

Table 17.17

ESTIMATED AVERAGE COST OF
SPECIAL EDUCATION PROGRAM
SPECIALISTS PER PUPIL
BY TYPE OF HANDICAP

Handicapping a Condition	Special Education Program Specialist Cost
LD	\$ 7
EMR	8
TMR	8
SMR	11
Emot.	18
Deaf	91
Part. Hear	59
Blind	23
Part. Sight	9
Ortho	13
OHI	4
Speech	7
Multi	17
All combined	\$ 9

a

Handicapping conditions are defined in Chap. IV.

Table 17.18

ESTIMATED AVERAGE COST OF SPECIAL
EDUCATION PROGRAM SPECIALISTS
PER PUPIL BY TYPE OF
EDUCATIONAL PLACEMENT

Type of Educational Placement ^a	Special Education Program Specialist Cost
Regular Class Plus Indirect Services	\$ 9
Regular Class Plus "Related Services"	1
Regular Class Plus Itinerant Special Teacher	4
Regular Class Plus Part-time Special Class	6
Special Class Plus Part-time Regular Class	14
Full-time Special Class	43
Special Day School	16
Homebound	60
Short-term Hospital	24
Full-time Work	28
All combined	\$ 9

^a
Educational placements are defined in Chap. IV.

devoted per handicapped child by age level, handicap, and type of educational placement. The variation in the estimated average costs of related services staff and nonclassroom teacher supervisors per handicapped pupil are shown by age level, handicap, and type of educational placement in Tables 17.19-17.21.

RELATED SERVICES STAFF AND NONCLASSROOM TEACHER
SECRETARIES AND CLERKS

The estimated average annual expenditure for salaries and fringe benefits for secretaries and clerks who work with related services staff members and nonclassroom teachers was \$14 per handicapped child in 1977-1978. The methodology for obtaining the cost per child was the same as was described for supervisory personnel in the previous section. The variations in the average cost of related services staff and nonclassroom teacher secretaries and clerks per handicapped pupil are shown by age level, handicap, and type of educational placement in Tables 17.22-17.24 respectively.

GENERAL DISTRICT ADMINISTRATION

The estimated average annual expenditure for general district administration was \$200 per handicapped student in 1977-1978. This included salaries, fringe benefits, administrative supplies and equipment, travel, contracted administrative services, etc. It excluded administrative costs of special education and other target programs such as those for disadvantaged and Lilingual children.

Table 17.19

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER ADMINISTRATORS PER HANDICAPPED PUPIL BY AGE LEVEL

Age Level	Administrators' Salaries and Fringe Benefits
Preschool	5
Elementary	3
Secondary	6
All ages combined	4

Table 17.20

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER ADMINISTRATORS PER PUPIL BY TYPE OF HANDICAPPING CONDITION

Handicapping Condition ^a	Administrators' Salaries and Fringe Benefits
LD	4
EMR	5
TMR	6
SMR	4
Emot.	6
Deaf	6
Part. Hear	16
Blind	16
Part. Sight	14
Ortho	6
OHI	6
Speech	2
Multi	10
All combined	4

^a
Handicapping conditions are defined in Chap. IV.

Table 17.21

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER ADMINISTRATORS PER PUPIL BY TYPE OF EDUCATIONAL PLACEMENT

Type of Educational Placement ^a	Administrators' Salaries and Fringe Benefits
Regular Class Plus Indirect Services	4
Regular Class Plus "Related Services"	3
Regular Class Plus Itinerant Special Teacher	16
Regular Class Plus Part-time Special Class	4
Special Class Plus Part-time Regular Class	5
Full-time Special Class	6
Special Day School	6
Homebound	6
Short-term Hospital	6
Full-time Work	5
All Combined	4

^a
Educational placements are defined in Chap. IV.

Table 17.22

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER SECRETARIES AND CLERKS PER HANDICAPPED PUPIL BY AGE LEVEL

Age Level	Secretaries and Clerks' Salaries and Fringe Benefits
Preschool	9
Elementary	10
Secondary	21
All ages combined	14

Table 17.23

ESTIMATED AVERAGE COSTS OF RELATED SERVICES STAFF AND NONCLASSROOM TEACHER SECRETARIES AND CLERKS PER PUPIL BY TYPE OF HANDICAPPING CONDITION

Handicapping Condition ^a	Secretaries and Clerks' Salaries and Fringe Benefits
LD	19
EMR	19
TMR	21
SMR	8
Emot.	24
Deaf	13
Part. Hear	33
Blind	89
Part. Sight	52
Ortho	20
OHI	35
Speech	4
Multi	30
All combined	14

^a
Handicapping conditions are defined in Chap. IV.

Table 17.24

ESTIMATED AVERAGE COSTS OF RELATED
SERVICES STAFF AND NONCLASSROOM
TEACHER SECRETARIES AND CLERKS
PER PUPIL BY
TYPE OF EDUCATIONAL PLACEMENT

Type of Educational a Placement	Secretaries and Clerks Salaries and Fringe Benefits
Regular Class Plus Indirect Services	27
Regular Class Plus "Related Services"	4
Regular Class Plus Itinerant Special Teacher	22
Regular Class Plus Part-time Special Class	17
Special Class Plus Part-time Regular Class	26
Full-time Special Class	22
Special Day School	20
Homebound	28
Short-term Hospital	23
Full-time Work	3
All Combined	14

a
Educational placements are de-
fined in Chap. IV.

These general district administrative costs were totaled by age level and then allocated equally to each FTE teaching and related services professional staff member by age level. The cost per child was then estimated by age level, handicap, and type of educational placement by multiplying the cost per FTE professional staff member times the average total fraction of an FTE professional staff member per handicapped student by age level, handicap, and type of educational placement in each of the districts in our nationwide sample. We then obtained the national estimates by taking appropriate weighted averages of the estimates for each of the individual districts in our sample. In the case of students working full time under the auspices of the special education program, the total FTE staff members of all types serving those children was so low that the estimated average cost of general district administration was less than that for a regular education student. In this one case, the estimate was adjusted upward to equal that of a regular education student.

The variations in general district administrative costs per handicapped pupil by age level, handicap, and type of educational placement are shown in Tables 17.25-17.27 respectively. The range by age level was from \$148 at the preschool level to \$194 at the elementary level to \$231 at the secondary age level. The range by type of handicap was from a low of \$106 for severely mentally retarded students[2] up to a high of \$556 for functionally blind students. The range by type of educational placement was from \$105 for those working full time under the auspices

[2] However, severely mentally retarded students were usually served in special day schools and had the highest school administration cost of any handicap group.

Table 17.25

ESTIMATED AVERAGE COSTS OF GENERAL DISTRICT ADMINISTRATION PER HANDICAPPED PUPIL BY AGE LEVEL

Age Level	General District Administration Cost
Preschool	148
Elementary	194
Secondary	231
All ages combined	200

Table 17.26

ESTIMATED AVERAGE COSTS OF GENERAL DISTRICT ADMINISTRATION PER PUPIL BY TYPE OF HANDICAPPING CONDITION

Handicapping Condition ^a	General District Administration Cost
LD	275
EMR	203
TMR	216
SMR	106
Emot.	316
Deaf	433
Part. Hear	308
Blind	556
Part. Sight	284
Ortho	202
OHI	152
Speech	125
Multi	339
All combined	200

^a Handicapping conditions are defined in Chap. IV.

Table 17.27

ESTIMATED AVERAGE COSTS OF GENERAL DISTRICT ADMINISTRATION PER PUPIL BY TYPE OF EDUCATIONAL PLACEMENT

Educational ^a Placement	General District Administration Cost
Regular Class Plus Indirect Services	184
Regular Class Plus "Related Services"	128
Regular Class Plus Itinerant Special Teacher	302
Regular Class Plus Part-time Special Class	278
Special Class Plus Part-time Regular Class	243
Full-time Special Class	235
Special Day School	191
Homebound	150
Short-term Hospital	109
Full-time Work	105
All Combined	200

^a

Educational placements are defined in Chap. IV.

of the special education program up to \$302 per handicapped pupil who was in a regular class and receiving itinerant special teacher services. It should be noted that the method used to allocate general district administrative costs assumes that district administrators spend their time in proportion to the number of professional staff members rather than the number of students in a given area. Thus, a student who received two times the amount of FTE professional staff attention than the average student received would be allocated two times the general district administrative costs.

SCHOOL ADMINISTRATION

The estimated average annual expenditure for school administration was \$209 per handicapped pupil in 1977-1978. This included salaries and fringe benefits for principals, assistant principals, secretaries, and other administrative personnel at the school site, administrative supplies and equipment, travel expenses, contracted school administrative services, etc. This included both general education school administrators and special day school administrators who worked in schools for the handicapped only.

The general education school administrative costs were totaled by age level and then allocated equally to each FTE teaching and related services professional staff member by age level. The cost per child was then estimated by age level, handicap, and educational placement by multiplying the cost per FTE professional staff member times the average fraction of an FTE professional staff member per student in each of the age levels, handicaps, and types of educational placements in each of

the districts in our nationwide sample. We then made national estimates by taking appropriate weighted averages of the district estimates. It was assumed that general school administrators served children in all placements with the exception of special day schools for handicapped children only. It was also assumed that special day school administrators for the handicapped only served students in that special day school placement.

Tables 17.28-17.30 display the variation in cost of school administration per handicapped pupil by age level, handicap, and type of educational placement respectively. The range by age level is from \$143 at the preschool level to \$188 at the elementary level to \$252 at the secondary level. The range by type of handicap is from \$129 for speech impaired children up to a high of \$535 for severely mentally retarded children. The range by type of educational placement is from 0 for those students working full time under the auspices of the special education program at the district level up to \$385 per handicapped child placed in a special day school for handicapped children only. Note that we have allocated the school administration expenses in proportion for FTE professional staff members rather than in proportion to students on the assumption that the school administration time will be spent primarily in interaction with staff members. This means that if a student receives two times the FTE staff attention as another type of student, then he or she will be allocated two times the school administrative expense.

Table 17.28

ESTIMATED AVERAGE COSTS OF SCHOOL
ADMINISTRATION PER HANDICAPPED
PUPIL BY AGE LEVEL

Age Level	School Administration Costs
Preschool	143
Elementary	188
Secondary	252
All ages combined	209

Table 17.29

ESTIMATED AVERAGE COSTS OF
SCHOOL ADMINISTRATION PER
PUPIL BY TYPE OF
HANDICAPPING CONDITION

Handicapping a Condition	School Administration Costs
LD	272
EMR	207
TMR	319
SMR	535
Emot.	387
Deaf	442
Part. Hear	266
Blind	504
Part. Sight	284
Ortho	201
OHI	155
Speech	129
Multi	331
All combined	209

a

Handicapping conditions
are defined in Chap. IV.

Table 17.30

ESTIMATED AVERAGE COSTS OF SCHOOL
SCHOOL ADMINISTRATION PER PUPIL
BY TYPE OF EDUCATIONAL PLACEMENT

Type of Educational ^a Placement	School Administration Costs
Regular Class Plus Indirect Services	149
Regular Class Plus "Related Services"	133
Regular Class Plus Itinerant Special Teacher	350
Regular Class Plus Part-time Special Class	283
Special Class Plus Part-time Regular Class	228
Full-time Special Class	181
Special Day School	385
Homebound	136
Short-term Hospital	92
Full-time Work	0
All Combined	209

^a
Educational placements are de-
fined in Chap. IV.

FOOD SERVICES FOR HANDICAPPED CHILDREN

The estimated national average expenditure per handicapped pupil for food services during the 1977-1978 school year was \$88. The data for this estimate were provided by the food services departments in all sample localities and appropriately weighted to obtain a national estimate. All expenditures for food services were included--e.g., food, supplies, equipment repair, salaries and fringe benefits of food service workers. However, the value of food that was provided free or at reduced cost to the local education agency was included only to the extent paid for through the education agency's budget. Revenues from the sale of meals to pupils have not been deducted from the expenditures reported above.

Since most education agencies do not separate food service expenditures for handicapped and nonhandicapped students (except for those handicapped students in preschool and in special day schools), we assumed that these food service costs were the same (except for those handicapped students in preschool and in special day schools). Food service directors assured us that with the exception of special day schools the cost per pupil to the food service department was approximately the same for both handicapped and nonhandicapped pupils. If handicapped pupils outside of special day schools needed assistance or supervision while eating, that assistance or supervision was generally provided by either special education teachers or special education aides and was counted as part of the cost of those personnel rather than as part of the cost of the food services department.

The variation in food service cost per child is shown in Table 17.31 by age level. The estimated food service cost was \$102 per handicapped child at the preschool level, \$94 per handicapped child at the elementary level, and \$83 per handicapped child at the secondary level. The average cost to the food service department of providing food services to handicapped children in special day schools was estimated to be \$88 per child.

FACILITY OPERATIONS AND MAINTENANCE

The estimated national average annual expenditure for facility operations and maintenance was \$378 per handicapped child in 1977-1978. This included salaries and fringe benefits for custodial, facility operations, and maintenance personnel. It also included related supplies, equipment, contract custodial and maintenance service, grounds maintenance, and all utilities. To calculate an estimated cost per child, we first totaled all facility operations and maintenance costs at

Table 17.31

ESTIMATED AVERAGE COSTS OF
FOOD SERVICES PER PUPIL
BY AGE LEVEL

Age Level	Food Services for Handicapped Children
Preschool	102
Elementary	94
Secondary	83
All ages combined	88

each age level in each district and then allocated those costs equally to each teacher at the relevant age level to arrive at a cost per teacher. The cost per child was then estimated to be the cost per teacher times the fraction of an FTE teacher per child by age level, handicap, and type of educational placement. Facility operations and maintenance for special day schools only for handicapped children were calculated separately from facility operations and maintenance for general education school facilities. Note that this methodology allocates facility operations and maintenance funds for both the regular classroom and the special classroom if the child attends more than one classroom.

The variations in facility operations and maintenance costs by age level, handicap, and type of educational placement are shown in Tables 17.32-17.34. By age level, the costs were \$393 per handicapped child at the preschool level, \$330 at the elementary level, and \$480 at the secondary level. The variation by type of handicap was from \$207 for other health impaired children up to \$768 per severely emotionally disturbed child. The range by type of educational placement was from \$2 per child who works full time under the auspices of the special education program up to \$567 per child placed in a special day school for handicapped children only.

NEW FACILITY CONSTRUCTION FOR SPECIAL EDUCATION

The estimated national average expenditure per handicapped pupil for new facility construction for special education during the 1977-1978 year was \$59. These funds were concentrated on special day school facilities for preschool age handicapped children. They also were concentrated on facilities for elementary age learning disabled, mentally

Table 17.32

ESTIMATED AVERAGE COSTS OF
FACILITY OPERATIONS AND
MAINTENANCE PER HANDICAPPED
PUPIL BY AGE LEVEL

Age Level	Facility Operations and Maintenance
Preschool	393
Elementary	330
Secondary	480
All ages combined	378

Table 17.33

ESTIMATED AVERAGE COSTS OF
FACILITY OPERATIONS AND
MAINTENANCE PER PUPIL BY
BY TYPE OF
HANDICAPPING CONDITION

Handicapping a Condition	Facility Operations and Maintenance
LD	530
EMR	408
TMR	472
SMR	507
Emot.	768
Deaf	507
Part. Hear	404
Blind	765
Part. Sight	400
Ortho	270
OHI	207
Speech	219
Multi	628
All combined	378

a
Handicapping condi-
tions are defined in
Chap. IV.

Table 17.34

ESTIMATED AVERAGE COSTS OF
FACILITY OPERATIONS AND
MAINTENANCE PER PUPIL
BY TYPE OF
EDUCATIONAL PLACEMENT

Type of Educational Placement ^a	Facility Operations and Maintenance
Regular Class Plus Indirect Services	233
Regular Class Plus "Related Services"	233
Regular Class Plus Itinerant Special Teacher	458
Regular Class Plus Part-time Special Class	558
Special Class Plus Part-time Regular Class	456
Full-time Special Class	408
Special Day School	567
Homebound	112
Short-term Hospital	190
Full-time Work	2
All Combined	378

^a
Educational placements are defined in Chap. IV.

retarded, and emotionally disturbed children who were placed in regular classrooms a majority of the time but who spent part time in special education classrooms or resource rooms. The additional facility expansion in these areas was due to the trends toward serving more preschool age handicapped children and toward serving all handicapped children in less restrictive types of educational placements. Tables 17.35-17.37 display the variations in cost by age, handicap, and type of educational placement respectively. New construction costs were highest at the elementary age level (\$88 per elementary child), in contrast to \$8 per preschool and \$3 per secondary school age handicapped child. By type of handicap, these costs were highest for learning disabled children (\$151 per child) and educable mentally retarded children (\$83 per child). And by type of educational placement, these costs were highest for children who were in regular class most of the time but spent part time in a special class setting (\$178 per child).

It should be noted that these new facility construction costs are for physical plant that is expected to last decades. School districts are still using and paying off debts for buildings constructed in prior years. These construction costs are highly variable from year to year. Further, they are generally financed through some type of debt instrument or a fund covering depreciation of physical plant.

Since this study is primarily concerned with financing the annual expenditures required for education, we will not include these 1977-1978 new construction costs in the total cost of education, but rather we

Table 17.35

ESTIMATED AVERAGE COSTS OF SPECIAL EDUCATION
FACILITY MODIFICATION, IMPROVEMENT, AND NEW
CONSTRUCTION PER PUPIL BY AGE LEVEL

Age Level	Facility Modification and Improvement for Special Education	New Facility Construction for Special Education
Preschool	\$ 4	\$ 8
Elementary	12	88
Secondary	13	3
All ages combined	\$12	\$59

Table 17.36

ESTIMATED AVERAGE COSTS OF SPECIAL EDUCATION
FACILITY MODIFICATION, IMPROVEMENT, AND NEW
CONSTRUCTION PER PUPIL BY TYPE
OF HANDICAPPING CONDITION

Handicapping ^a Condition	Facility Modification and Improvement for Special Education	New Facility Construction for Special Education
LD	\$ 7	\$151
EMR	6	83
TMR	43	11
SMR	32	24
Emot.	2	38
Deaf	7	1
Part. Hear	3	0
Blind	1	13
Part. Sight	3	5
Ortho	35	2
OHI	0	0
Speech	16	0
Multi	8	11
All combined	\$12	\$ 59

^a
Handicapping conditions are defined in
Chap. IV.

Table 17.37

ESTIMATED AVERAGE COSTS OF SPECIAL EDUCATION
FACILITY MODIFICATION, IMPROVEMENT, AND NEW
CONSTRUCTION PER PUPIL BY TYPE
OF EDUCATIONAL PLACEMENT

Type of Educational Placement ^a	Facility Modification and Improvement for Special Education	New Facility Construction for Special Education
Regular Class Plus Indirect Services	\$0	\$ 0
Regular Class Plus "Related Services"	16	0
Regular Class Plus Itinerant Special Teacher	12	0
Regular Class Plus Part-time Special Class	4	178
Special Class Plus Part-time Regular Class	14	23
Full-time Special Class	9	0
Special Day School	43	16
Homebound	0	0
Short-term Hospital	0	0
Full-time Work	0	0
All Combined	\$12	\$ 59

^a Educational placements are defined in Chap. IV.

will include the annual expenditures for the entire physical plant measured in terms of debt service and depreciation allowances in the sample school districts.

FACILITY MODIFICATION AND IMPROVEMENT FOR SPECIAL EDUCATION

The estimated national average expenditure per handicapped child for special education school facility modifications and improvements during the 1977-1978 school year was \$12. These funds were concentrated most heavily on special day schools for all categories of children (\$43 per child), and on orthopedically handicapped children in all categories of educational placement (\$35 per child). Tables 17.35-17.37 display the variations in cost by age, handicap, and type of educational placement.

The estimates presented here and in the next section on new facility construction for special education were made by taking the appropriate weighted averages of expenditure information obtained from the budget director and the special education director in each of the education agencies in our nationwide sample. These estimates include all expenditures identifiable explicitly as being for special education. If a regular school was constructed, modified, or improved and both nonhandicapped and handicapped children benefited by attending that school, then those costs are included in the next section of this chapter rather than here.

NEW FACILITY CONSTRUCTION FOR GENERAL EDUCATION

The estimated national average expenditure per handicapped pupil for new general education facility construction during the 1977-1978

year was \$93. Tables 17.38-17.40 display the variations in general education new facility construction cost per handicapped pupil by age level, handicap, and type of educational placement respectively. The variation by age level was from \$44 per handicapped child at the preschool level to \$74 at the elementary level to \$138 at the secondary level. When the cost of new general education facility construction per pupil is added to the cost of special education new facility construction that was discussed in a prior section, the total for all new facility construction per handicapped child equals \$152. This total varies by age level from \$52 at the preschool level to \$162 at the elementary level to \$141 at the secondary level. It should be noted that these new facility construction costs are for facility plant that is expected to last decades. School districts are still using and paying off debts for buildings constructed in prior years. These costs are generally financed by some type of debt instrument or a fund covering depreciation of facility plant. Since this study is primarily concerned with financing the annual expenditures required for education, we will not include these 1977-1978 new construction costs in the total cost of education, but rather we will include the annual expenditures for the entire facility plant measured in terms of debt service and depreciation allowances in the sample school districts.

FACILITY MODIFICATION AND IMPROVEMENT FOR GENERAL EDUCATION

The estimated national average expenditure per handicapped child for general education school facility modifications and improvements during the 1977-1978 school year was \$44.

Table 17.38

ESTIMATED AVERAGE ANNUAL COSTS OF GENERAL EDUCATION FACILITIES AND DEBT SERVICE PER HANDICAPPED PUPIL BY AGE LEVEL

Age Level	Facility Modification and Improvement for General Education	New Facility Construction for General Education	All Debt Service
Preschool	26	44	162
Elementary	38	74	218
Secondary	63	138	315
All ages combined	44	93	245

Table 17.39

ESTIMATED AVERAGE ANNUAL COSTS OF GENERAL EDUCATION FACILITIES AND DEBT SERVICE BY TYPE OF HANDICAPPING CONDITION

Handicapping Condition ^a	Facility Modification and Improvement for General Education	New Facility Construction for General Education	All Debt Service
LD	73	141	386
EMR	41	149	215
TMR	34	28	155
SMR	1	39	147
Emot.	42	106	477
Deaf	71	54	511
Part. Hear	66	99	364
Blind	260	262	419
Part. Sight	50	337	264
Ortho	21	59	126
OHI	45	41	154
Speech	25	48	126
Multi	14	46	147
All combined	44	93	245

^a Handicapping conditions are defined in Chap. IV.

Table 17.40

ESTIMATED AVERAGE COSTS OF GENERAL EDUCATION
FACILITIES AND DEBT SERVICE PER HANDICAPPED
PUPIL BY TYPE OF EDUCATIONAL PLACEMENT

Type of Educational Placement ^a	Facility Modification and Improvement for General Education	New Facility Construction for General Education	All Debt Service
Regular Class Plus Indirect Services	47	109	238
Regular Class Plus "Related Services"	27	47	149
Regular Class Plus Itinerant Special Teacher	26	89	298
Regular Class Plus Part-time Special Class	71	157	394
Special Class Plus Part-time Regular Class	56	131	290
Full-time Special Class	64	136	224
Special Day School	0	0	147
Homebound	21	41	126
Short-term Hospital	21	42	126
Full-time Work	0	0	0
All combined	44	93	245

^a Educational placements are defined in Chap. IV.

The estimates presented here and in the above section on new facility construction for general education are concerned with facility funds that were not earmarked for special education but rather were for facilities that were to be used by both nonhandicapped and handicapped pupils. Facility modification, improvement, and new construction specifically earmarked for special education in the budget was discussed in two previous sections of this chapter.

We made the estimates presented here by dividing the total expenditures for general education facility modification and improvement by the total number of teachers in the school district to arrive at an annual cost per teacher. We then converted to a cost per pupil by utilizing data on the number of pupils per teacher in each district in the sample. To make national estimates we took appropriate weighting averages of data from each of the education agencies in our nationwide sample. The same methodology was used in the section on new construction.

Tables 17.38-17.40 display the variations in cost by age level, handicap, and type of educational placement respectively. The variation by age level was from \$26 at the preschool level to \$38 at the elementary level to \$63 per handicapped child at the secondary level for general education facility modification and improvement. When the expenditures for special education facility modification and improvement discussed in an earlier section were added to the general education estimates presented here, the totals per handicapped pupil for all facility modification and improvement were estimated to be \$56. This total ranged by age level from \$30 at the preschool level to \$50 at the elementary level to \$76 at the secondary level.

The variation in general education facility modification and improvement expenditures by type of handicap ranged from \$1 for severely mentally retarded children up to \$260 for functionally-blind children. The variation by type of educational placement ranged from 0 for handicapped children in special day schools up to \$71 for handicapped children placed in a regular class a majority of the time and also attending a part time special class.

DEBT SERVICE

The estimated average annual expenditure for all debt service was \$245 per handicapped child in 1977-1978. This included payments of interest and principal on all long term indebtedness for facility construction for both general education and special education, as well as interest paid on any short term loans that may have been needed to finance current operating expenditures.

The variations in debt service cost per pupil are shown in Tables 17.38-17.40 by age level, type of handicap, and type of educational placement respectively. The variation by age level was from \$162 per handicapped child at the preschool level to \$218 at the elementary level to \$315 at the secondary level.

We made these estimates by dividing the total debt service cost for each of the sample education agencies by the total number of teachers to obtain a cost per teacher. We then obtained the cost for debt service per pupil utilizing data on the average numbers of various types of handicapped pupils per teacher in each district in the sample.

MISCELLANEOUS COSTS

The estimated average annual expenditure for miscellaneous costs not accounted for anywhere else in this report was \$25 per nonhandicapped pupil in 1977-1978. This varied by age level from \$20 at the elementary level to \$29 at the secondary level. These were generally small discretionary accounts that could be used for miscellaneous or unanticipated expenditures.

XVIII. OTHER COSTS OF EDUCATING NONHANDICAPPED CHILDREN

INSTRUCTIONAL SUPPLIES AND TEXTS

The estimated average annual expenditure for instructional supplies and texts was \$34 per nonhandicapped pupil in 1977-1978. This varied by age level from \$29 at the elementary level to \$39 at the secondary level.

INSTRUCTIONAL EQUIPMENT

The estimated average annual expenditure for instructional equipment was \$14 per nonhandicapped pupil in 1977-1978. This varied by age from \$8 at the elementary level to \$19 at the secondary level.

RELATED SERVICES STAFF SUPPLIES AND EQUIPMENT

The estimated average annual expenditure for supplies used by related services personnel (such as psychologists, school nurses, and counselors) was \$2 per nonhandicapped pupil in 1977-1978.

The estimated average annual expenditure for new equipment used by related services personnel was \$1 per nonhandicapped pupil.

RELATED SERVICES STAFF ADMINISTRATORS, SECRETARIES, AND CLERKS

The estimated average annual expenditure for related services personnel administrators was \$1 per nonhandicapped pupil in 1977-1978. This included only administrators identified as such in expenditure records--e.g., the directors of nursing or counseling. If related

services staff members were supervised by the special education administrator or by some other district or school administrator who was not explicitly a full time related services administrator, then those expenditures were not included here. Administrative expenditures were divided between handicapped and nonhandicapped pupils in proportion to the division of related services staff time between those two groups of pupils.

The estimated average annual expenditure for salaries and fringe benefits for related services secretaries and clerks was \$4 per nonhandicapped pupil in 1977-1978. Secretarial and clerical expenditures were divided between handicapped and nonhandicapped pupils in proportion to the division of related services staff time between those two groups of pupils.

GENERAL DISTRICT ADMINISTRATION

The estimated average annual expenditure for general district administration was \$105 per nonhandicapped pupil in 1977-1978. This varied from \$94 at the elementary age level to \$114 at the secondary age level. This included salaries, fringe benefits, administrative supplies and equipment, travel, contracted administrative services, etc., and excluded administrative costs of special education and other target population programs such as those for disadvantaged and bilingual children. These general district administrative costs were totaled by age level and then allocated equally to each FTE teaching and related services professional staff member by age level. We then estimated the cost per child by age level by multiplying the general district administrative costs per FTE teaching and related services professional staff

member times the average fraction of an FTE teaching and related services professional staff member per student in each of the districts in our nationwide sample.

SCHOOL ADMINISTRATION

The estimated average annual expenditure for school administration was \$96 per nonhandicapped pupil in 1977-1978. This varied from \$82 at the elementary age level to \$108 at the secondary age level. This included salaries and fringe benefits of principals, assistant principals, secretaries, and other administrative personnel at the school level, administrative and supplies and equipment, travel, contracted administrative services provided at the school level, etc., and excluded administrative costs of special education and other target population programs at the school level. These general school administrative costs were totaled by age level and then allocated equally to each FTE teaching and related services professional staff member by age level. The cost per child was then estimated by age level by multiplying the school administration cost per FTE teaching and related services professional staff member times the average fraction of an FTE teaching and related services professional staff member per student in each of the districts in our nationwide sample.

FOOD SERVICES

The estimated average annual expenditure for food services was \$84 per nonhandicapped pupil in 1977-1978. This varied little by age level

from \$86 at the elementary level to \$83 at the secondary level. All expenditures for food services were included--e.g., food, supplies, equipment repair, salaries, and fringe benefits of all food service workers. However, the value of food that was provided free or at reduced cost by the federal government to the local education agencies was included only to the extent paid for through the education agency's budget. Revenues from the sale of meals to pupils have not been deducted from the expenditures reported above.

FACILITY OPERATIONS AND MAINTENANCE

The estimated average annual expenditure for facility operations and maintenance was \$207 per nonhandicapped pupil in 1977-1978. This varied by age level from \$187 at the elementary level to \$226 at the secondary level.

These estimates included salaries and fringe benefits for custodial, facility operations, and facility maintenance personnel. They also included related supplies, equipment, contract custodial and maintenance services, grounds maintenance, and all utilities. To calculate an estimated cost per child, we first totaled all facility operations and maintenance costs at each age level in each district and then allocated those costs equally to each teacher at the relevant age level to arrive at a cost per teacher. The cost per child was then estimated to be the cost per teacher times the fraction of an FTE teacher per child by age level.

NEW FACILITY CONSTRUCTION

The estimated average annual expenditure for new facility construction was \$93 per nonhandicapped pupil in 1977-1978. This varied by age level from \$41 at the elementary level to \$138 at the secondary level.

It should be noted that these new facility construction costs are for physical plant that is expected to last decades. School districts are still using and paying off debts for buildings constructed in previous years, and these construction costs are highly variable from year to year. Further, they are generally financed through some type of debt instrument or a fund covering depreciation of physical plant.

Since this study is primarily concerned with financing the annual expenditures required for education, we will not include these 1977-1978 new construction costs in the total cost of education. Rather, we will include the annual expenditures for the entire physical plant measured in terms of debt service and depreciation allowances in the sample school districts.

FACILITY MODIFICATION AND IMPROVEMENT

The estimated average annual expenditure for modification and improvement of existing facilities was \$26 per nonhandicapped pupil in 1977-1978. This varied by age level from \$21 at the elementary level to \$30 at the secondary level.

DEBT SERVICE

The estimated average annual expenditure for debt service was \$147 per nonhandicapped child in 1977-1978. This varied by age level from

\$126 at the elementary level to \$165 at the secondary level. This included payments of interest and principal on long term indebtedness for facility construction, as well as interest paid on any short term loans that may have been needed to finance current operating expenditures.

MISCELLANEOUS COSTS

The estimated average annual expenditure for miscellaneous costs not accounted for anywhere else in this report was \$23 per nonhandicapped pupil in 1977-1978. This varied by age level from \$18 at the elementary level to \$27 at the secondary level. These were generally small discretionary accounts that could be used for miscellaneous or anticipated expenditures.

XIX. TOTAL AND ADDED COSTS OF SPECIAL EDUCATION

INTRODUCTION

The national average costs of special education and related services per handicapped pupil during 1977-1978 are estimated here. Cost components developed in previous chapters are added to arrive at the total cost of special education and the variation in the total cost by age level, handicapping condition, and the type of educational placement. The estimated total cost of regular education during 1977-1978 is also estimated. Then the added cost of special education and related services above the cost of regular education is calculated. Finally, cost weighting factors are developed showing the total cost of special education and related services as a multiple of the total cost of regular education for various combinations of age levels, handicapping conditions, and types of educational placement.

All education agency costs are included with the exceptions of (1) the costs of summer and adult evening school and (2) the added costs of other target population programs such as those for disadvantaged and bilingual children. No costs are counted more than once--e.g., any duplicate costs of new building construction and debt service are not double counted. The estimated costs of special education are all the costs for all types of services for handicapped children, whether or not they are paid for by the "special education budget." All estimates are per child enrolled, not per child in average daily attendance.

TOTAL COST OF REGULAR EDUCATION

The estimated total cost of regular education for nonhandicapped children during the 1977-1978 school year was an estimated \$1650 per pupil. This was \$0 per prekindergarten child, \$1500 per elementary age child, and \$1782 per secondary age child.

A breakdown of this total cost by the type of cost (e.g., teachers, supplies, transportation) is shown in Table 19.1. Nearly half of the total cost of regular education, \$761 per nonhandicapped child, was for the salaries and fringe benefits of teachers. Teaching aides and related services personnel (such as counselors, psychologists, and school nurses) accounted for \$8 and \$61 per nonhandicapped child respectively. Transportation cost an estimated \$73. General district level administration and school level administration cost an estimated \$105 and \$96 per nonhandicapped child respectively. Food services cost \$84, facilities operations and maintenance cost \$207, and debt service cost \$147 per nonhandicapped child. All other types of costs combined totaled \$108 out of the grand total of \$1650 per nonhandicapped child.

TOTAL AND ADDED COSTS OF SPECIAL EDUCATION

The total cost of educating handicapped children during the 1977-1978 school year was an estimated \$3577 per pupil.

A breakdown of this total by the type of cost is shown in Table 19.2. Instruction by special education teachers and aides cost \$551 and \$106 per child respectively, including salaries and fringe benefits. Instruction of handicapped students by regular education teachers cost an estimated \$743, of which \$206 was for time spent above and beyond the

Table 19.1

COST OF REGULAR EDUCATION IN 1977-1978

Type of Cost	Dollars Per Year
Regular education teachers	761
Regular education aides	8
Related services personnel	.61
Transportation	73
Screening for nonhandicapping physical impairments	3
Instructional supplies and texts	34
Instructional equipment	14
Related services staff supplies and equipment	3
Related services staff adminis- trators, secretaries, and clerks	5
General district administration	105
School administration	96
Food services	84
Facility operations and maintenance	207
Facility modification and improvement	26
Debt service	147
Miscellaneous costs	23
Total cost per nonhandicapped child	\$1650

Table 19.2

TOTAL COST OF SPECIAL EDUCATION
IN 1977-1978

Type of Cost	Dollars Per Year
Instructional costs of special education teachers	551
Special education aides	106
Regular education teachers instructional services	743
Regular education aides	19
Related services	191
Screening for handicapping conditions	8
Assessment	100
Admission, placement, and IEP development	103
Technical assistance to staff members	135
Staff inservice training	40
Regular transportation	48
Special transportation	111
Instructional supplies and texts	66
Related-services staff and nonclassroom teacher supplies	10
Instructional equipment	21
Related services staff and non-classroom teacher equipment	7
Related services staff and non-classroom teacher transportation	3
Special education administrators and secretaries	76
Special education nonpersonnel administrative costs	11
Special education program specialists	9
Related services staff and non-classroom teacher administrators	4
Related services staff and non-classroom teacher secretaries and clerks	14
General district administration	200
School administration	209
Food services for handicapped children	88
Facility operations and maintenance	378
Facility modification and improvement for special education	12
Facility modification and improvement for general education	44
Debt service	245
Miscellaneous costs	25
Total cost per handicapped child	\$3577

average time spent per nonhandicapped child. Related services, such as physical therapy or speech therapy, cost an average of \$191 per handicapped child. Assessment of the children's handicapping conditions and special education needs cost an estimated \$100 per child. Admission to special education, placement, and individual education program development cost \$103 per child in salaries and fringe benefits. Technical assistance from one staff member to another regarding special education and related services cost \$135. Regular and special transportation of handicapped students cost an estimated average of \$48 and \$111, respectively, for all handicapped pupils. Special education administrative costs were \$87 per child. General district level administration and school level administration cost \$200 and \$209 per child respectively. Food services cost \$88. Facility operations and maintenance costs totaled \$378, and debt service was \$245 per handicapped child. All other types of costs combined totaled \$282 out of the grand total of \$3577 per handicapped child, which was an estimated 2.17 times larger than the \$1650 total cost of regular education per nonhandicapped child during the 1977-1978 school year. The added cost of special education and related services was an estimated \$1927 (\$3577 minus \$1650) per handicapped pupil.

TOTAL AND ADDED COSTS OF SPECIAL EDUCATION BY AGE-LEVEL, HANDICAP, AND TYPE OF EDUCATIONAL PLACEMENT

Our cost estimate for the average of all handicapped students includes not only the high cost of severely handicapped students served in special schools, but also the low cost of every speech impaired student and every temporarily homebound student served at any time during the school year.

In order for financing authorities, such as state legislatures and local school boards, to effectively allocate funds for special education and related services, it is desirable to know the cost per child by age level, handicap, and type of educational placement. Tables 19.3-19.5 display both the total cost and the added cost of special education and related services per child above the cost of regular education for various combinations of age level, handicap, and type of educational placement.

By age level, the costs were a total of \$3526 (\$3526 added cost) at the preschool level, [1] a total of \$3267 (\$1617 added cost) at the elementary level, and a total of \$4099 (\$2449 added cost) at the secondary level per handicapped child.

By type of handicap, the range in the total cost per child was from a low of \$2253 (\$603 added cost) for speech impaired children up to \$9664 (\$8014 added cost) for functionally blind children. As indicated in Table 19.3, the more severe the handicap of the average child in a

[1] Note that at the preschool level the added cost equals the total cost since all nonhandicapped children do not attend prekindergarten public school programs and hence the cost of regular education at the preschool level is zero (recall that the cost of preschool programs for other target populations such as disadvantaged children are not considered part of the cost of regular education).

Table 19.3

ESTIMATED TOTAL AND ADDED COST OF SPECIAL EDUCATION PER CHILD BY
AGE LEVEL AND TYPE OF HANDICAPPING CONDITION IN 1977-1978

Age Level	Type of Cost	Handicapping Condition ^a													
		LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Preschool Age	Total	3392	3465	4715	5352	3260	7676	5853	6603	3254	5097	2319	2490	9382	3526
	Added	3392	3465	4715	5352	3260	7676	5853	6603	3254	5097	2319	2490	9382	3526
Elementary Age	Total	4488	3958	5078	6013	5871	8523	4861	11725	4063	3350	2148	2214	7165	3267
	Added	2838	2308	3428	4363	4221	6873	3211	10075	2413	1700	498	564	5515	1617
Secondary Age	Total	4856	3684	6008	5935	6845	5200	5204	8917	5253	3545	2748	2580	7773	4099
	Added	2936	2034	4358	4285	5195	3550	3554	7267	3603	1895	1098	930	6123	2449
All Ages Combined	Total	4525	3795	5519	5926	6289	7311	5091	9664	4519	3546	2502	2253	7642	\$3577
	Added	2875	2145	3869	4276	4639	5661	3441	8014	2869	1896	852	603	5992	\$1927

^aHandicapping conditions are defined in Chap. IV.

Table 19.4

ESTIMATED TOTAL AND ADDED COST OF SPECIAL EDUCATION PER CHILD BY
AGE LEVEL AND TYPE OF EDUCATIONAL PLACEMENT IN 1977-1978

Age Level	Type of Cost	Type of Educational Placement ^a										
		Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Home-bound	Short-term Hospital	Full Time Work	All Placements Combined
Preschool Age	Total	NA	1871	1167	2307	2311	5352	5841	1629	1921	NA	3526
	Added	NA	1871	1167	2307	2311	5352	5841	1629	1921	NA	3526
Elementary Age	Total	2362	2231	5588	4481	5038	5008	4444	2106	1804	NA	3267
	Added	712	581	3938	2831	3388	3358	2794	456	154	NA	1617
Secondary Age	Total	2710	2601	4247	4916	3778	3710	6669	2660	2310	901	4099
	Added	1060	951	2597	3266	2128	2060	5019	1010	660	(-749)	2449
All Ages Combined	Total	2550	2267	5218	4709	4345	4733	5352	2228	1981	901	\$3577
	Added	900	617	3568	3059	2695	3083	3702	578	331	(-749)	\$1927

NOTE: NA = Data not available for this combination of age level and placement.

^aEducational placements are defined in Chap. IV.

Table 19.5

ESTIMATED TOTAL AND ADDED COST OF SPECIAL EDUCATION PER CHILD IN 1977-1978
BY HANDICAPPING CONDITION AND TYPE OF EDUCATIONAL PLACEMENT

Handi- capping Condition	Type of Cost	Type of Educational Placement										
		Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part- time Special Class	Special Class Plus Part- time Regular Class	Full Time Special Class	Special Day School	Home- bound	Short- term Hospital	Full Time Work	All Place- ments Combined
LD	Total	2552	3338	4456	4714	4011	4432	7252	2268	NA	830	4525
	Added	902	1688	2806	3064	2361	2782	5602	618	NA	(-820)	2875
EMR	Total	3113	2488	3884	3874	4058	3265	3049	2629	2844	1069	3795
	Added	1463	838	2234	2224	2408	1615	1399	979	1194	(-581)	2145
ISR	Total	NA	NA	NA	5283	5660	5853	5354	2400	NA	807	5519
	Added	NA	NA	NA	3633	4010	4203	3704	750	NA	(-843)	3869
SIR	Total	NA	NA	NA	NA	6600	7695	5997	2302	NA	NA	5926
	Added	NA	NA	NA	NA	4950	6045	4347	652	NA	NA	4276
Emot.	Total	3147	6501	7946	6904	5417	5750	6206	3167	2624	2899	6289
	Added	1497	4851	6296	5254	3767	4100	4556	1517	974	1249	4639
Deaf	Total	NA	9301	9276	-5380	5963	7691	7909	NA	NA	NA	7311
	Added	NA	7651	7626	3730	4313	6041	6259	NA	NA	NA	5661
Part. Hear	Total	2181	2480	4701	6979	5901	6631	6896	2167	3273	NA	5091
	Added	531	830	3051	5329	4251	4981	5246	517	1623	NA	3441
Blind	Total	NA	NA	11189	9874	8779	5966	9126	NA	NA	NA	9664
	Added	NA	NA	9539	8224	7129	4316	7476	NA	NA	NA	8014
Part. Sight	Total	2936	2740	4097	6369	5711	5220	7913	2078	NA	NA	4519
	Added	1286	1090	2447	4719	4061	3570	6263	428	NA	NA	2869
Ortho	Total	2772	4884	4986	7175	5031	5495	5731	2137	1911	NA	3546
	Added	1122	3234	3336	5525	3381	3845	4081	487	261	NA	1896
OHI	Total	NA	2403	2021	4973	4937	4664	3676	2611	1951	NA	2502
	Added	NA	753	371	3323	3287	3014	2026	961	301	NA	852
Speech	Total	2477	2244	2360	4025	3500	5439	2936	1509	NA	NA	2253
	Added	827	594	710	2375	1850	3789	1286	(-141)	NA	NA	603
Multi	Total	NA	2004	NA	10187	8778	5183	9048	3376	1956	NA	7642
	Added	NA	354	NA	8537	7128	3533	7398	1726	306	NA	5992
All	Total	2550	2267	5218	4709	4345	4733	5352	2228	1981	901	3577
	Added	900	617	3568	3059	2695	3083	3702	578	331	(-749)	1927

category, the higher the average cost. For example, providing an education for severely retarded children cost \$5926 per year, while serving educable mentally retarded children cost \$3795.

By type of educational placement, the range in total cost per child was from a low of \$901 (a savings of \$749 rather than an added cost) per handicapped child who worked full time under the auspices of the special education program rather than attending classes up to \$5352 (\$3702 added cost) per child in a special day school for only handicapped children.

Other children in the lower cost placements were in a regular class receiving indirect special services only (\$2550 total cost and \$900 added cost) or in a regular class receiving related services only (\$2267 total cost and \$617 added cost). The homebound placement (\$2228 total cost and \$578 added cost) and short-term hospital bound placements (\$1981 total cost and \$331 added cost) were also lower cost placements because the children were away from school for only a fraction of the year. Also, the short-term homebound and short term hospital bound children often received no related services from the school district and often did not have an individualized education program written for them.

Children in regular class who received itinerant special teacher services were in the second most expensive placement (\$5218 total cost and \$3568 added cost) and cost just slightly less than those in special day schools. The reason for the high cost of the itinerant special teacher placement was the expensive one-to-one teaching that was usually provided.

The two "mainstream" placements of regular class plus part time special class (\$4709 total cost and \$3059 added cost) and special class

plus part time regular class (\$4345 total cost and \$2695 added cost) were nearly as expensive as a full time special class (\$4733 total cost and \$3083 added cost). Note that much of the cost of the "mainstream" placements was not in the special education budget, but rather in the regular education budget (e.g., the cost of the usual time and the extra time required by regular education teachers who have handicapped children in the regular education classroom). Mainstreaming, as currently implemented, should not be looked upon as a way to reduce costs but rather should be used when it is the most appropriate placement for an individual child.

Within each handicap, there was a great variation in total cost per pupil depending on the educational placement. Similarly, within each educational placement there was a great variation in total cost per pupil depending on the child's handicapping condition. The variation in total cost considering both the type of handicap and the type of educational placement is shown in Table 19.5.

Within the highest cost handicap category of functionally blind children, the cost varied from \$11,189 per pupil receiving itinerant special teacher services down to \$5966 per pupil in a full time special class. Within the lowest cost handicap category of speech impaired children, the total cost for children in regular class receiving speech therapy only was \$2244 whereas the cost in a full time special class was \$5439. [2] Within the full time special class placement, for example,

[2] The cost for homebound speech handicapped children was only \$1509, which was less than the cost of regular education, because in our sample of school districts only preschool age speech handicapped children were in that homebound placement. It is reasonable to assume that school age speech handicapped children can be more appropriately served at school than at home.

the cost per pupil for educable mentally retarded children was \$3265 whereas the cost per pupil for severely mentally retarded children was \$7695.

The message is that if only age level or only handicapping condition or only type of placement is considered in estimating the average total cost per child, the estimate will not indicate the thousands of dollars of variation in cost per child within each of the categories. If one district happens to have relatively more severely handicapped children who need high cost placements than other districts, then that district will need higher funding per child than the typical school district.

Other major factors influencing the cost per child are the average teacher's salary, [3] the average fraction of an FTE teacher per child, and the average fraction of an FTE related services professional per child.

Finally, the estimated cost figures per child reflect the cost of services actually provided in 1977-1978. They do not necessarily indicate the costs of all needed services or the most effective services, which may differ from the cost of those actually provided.

COST WEIGHTING FACTORS BY AGE LEVEL, HANDICAPPING
CONDITION, AND TYPE OF EDUCATIONAL PLACEMENT

Since inflation is a current fact of life, any data on total cost per pupil collected in the past will provide low estimates of current

[3] Salaries for other professional personnel are generally related to the teacher's salary scale in a systematic way.

costs unless adjusted upward. One common method of doing this adjustment is to assume that the rate of cost inflation is the same for special education as it is for regular education. This is not absolutely true since programs change somewhat with time, but it is a reasonable, if conservative, assumption. New data collection every year would provide better estimates, but that is a very costly and time consuming process that probably does not need to be repeated more than once every five years.

In this section we present cost weighting factors that can be used to compare the costs of special education and related services per handicapped child with those of regular education per nonhandicapped child. The cost weighting factors are shown in Tables 19.6-19.8 by various combinations of age level, handicapping condition, and type of educational placement. These factors are the total cost of special education and related services (by age level, handicapping condition, and placement) divided by the \$1650 cost of regular education in 1977-1978.

Averaged over all handicapped children receiving special education and related services, the cost weighting factor was 2.17. In other words, it cost an estimated 2.17 times as much to educate the average handicapped child as it did to educate the average nonhandicapped child in 1977-1978.

The cost weighting factor varied by age level from 1.98 at the elementary level to 2.48 at the secondary level. It varied by type of handicap from 1.37 for speech impaired children up to 5.86 for functionally blind children. It varied by type of educational placement from 0.55 for students working full time under the auspices of the special education program up to 3.24 for students in special day schools for

Table 19.6

RATIO OF TOTAL COST OF SPECIAL EDUCATION TO TOTAL COST OF REGULAR EDUCATION
PER CHILD BY AGE LEVEL AND TYPE OF HANDICAPPING CONDITION

Age Level	Handicapping Condition ^a													
	LD	EMR	TMR	SMR	Emot.	Deaf	Part. Hear	Blind	Part. Sight	Ortho	OHI	Speech	Multi	All
Preschool Age	2.06	2.10	2.86	3.24	1.98	4.65	3.55	4.00	1.97	3.09	1.41	1.51	5.69	2.14
Elementary Age	2.72	2.40	3.08	3.64	3.56	5.17	2.95	7.11	2.46	2.03	1.30	1.34	4.34	1.98
Secondary Age	2.78	2.23	3.64	3.60	4.15	3.15	3.15	5.40	3.18	2.15	1.67	1.56	4.71	2.48
All Ages Combined	2.74	2.30	3.34	3.59	3.81	4.43	3.09	5.86	2.74	2.15	1.52	1.37	4.63	2.17

^aHandicapping conditions are defined in Chap. IV.

Table 19.7

RATIO OF TOTAL COST OF SPECIAL EDUCATION TO TOTAL COST OF REGULAR EDUCATION
PER CHILD BY AGE LEVEL AND TYPE OF EDUCATIONAL PLACEMENT

Age Level	Type of Educational Placement ^a										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
Preschool Age	NA	1.13	0.71	1.40	1.40	3.24	3.54	0.99	1.16	NA	2.14
Elementary Age	1.43	1.35	3.39	2.72	3.05	3.04	2.69	1.28	1.09	NA	1.98
Secondary Age	1.64	1.58	2.57	2.98	2.29	2.25	4.04	1.61	1.40	0.55	2.48
All Ages Combined	1.55	1.37	3.16	2.85	2.63	2.87	3.24	1.35	1.20	0.55	2.17

NOTE: NA = Data not available for this combination of age level and placement.

^aEducational placements are defined in Chap. IV.

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Table 19.8

RATIO OF TOTAL COST OF SPECIAL EDUCATION TO TOTAL COST OF REGULAR EDUCATION PER CHILD BY HANDICAPPING CONDITION AND TYPE OF EDUCATIONAL PLACEMENT

Handicapping Condition	Type of Educational Placement										
	Regular Class Plus Indirect Services	Regular Class Plus "Related Services"	Regular Class Plus Itinerant Special Teacher	Regular Class Plus Part-time Special Class	Special Class Plus Part-time Regular Class	Full Time Special Class	Special Day School	Homebound	Short-term Hospital	Full Time Work	All Placements Combined
LD	1.55	2.02	2.70	2.86	2.43	2.69	4.40	1.37	NA	0.50	2.74
EMR	1.89	1.51	2.35	2.35	2.46	1.98	1.85	1.59	1.72	0.65	2.30
THR	NA	NA	NA	3.20	3.43	3.55	3.24	1.45	NA	0.49	3.34
SYR	NA	NA	NA	NA	4.00	4.66	3.63	1.40	NA	NA	3.59
Emot.	1.91	3.94	4.82	4.18	3.28	3.48	3.76	1.92	1.59	1.76	3.81
Deaf	NA	5.64	5.62	3.26	3.61	4.66	4.79	NA	NA	NA	4.43
Part. Hear	1.32	1.50	2.85	4.23	3.58	4.02	4.18	1.31	1.98	NA	3.09
Blind	NA	NA	6.78	5.98	5.32	3.62	5.53	NA	NA	NA	5.86
Part. Sight	1.78	1.66	2.48	3.86	3.46	3.16	4.80	1.26	NA	NA	2.74
Ortho	1.68	2.96	3.02	4.35	3.05	3.33	3.47	1.30	1.16	NA	2.15
OHI	NA	1.46	1.22	3.01	2.99	2.83	2.23	1.58	1.18	NA	1.52
Speech	1.50	1.36	2.43	2.44	2.12	3.30	1.78	0.91	NA	NA	1.37
Multi	NA	1.21	NA	6.17	5.32	3.14	5.48	2.05	1.19	NA	4.63
All	1.55	1.37	3.16	2.85	2.63	2.87	3.24	1.35	1.20	0.55	2.17

NOTE: NA = Data not available for this combination of handicap and type of educational placement.

only handicapped pupils. The highest cost category, considering both type of handicap and educational placement combined, was the functionally blind child in regular education class receiving itinerant special teacher services at a cost weighting factor of 6.78 (\$11,189 per child during the 1977-1978 school year).

XX. TOTAL COST OF SPECIAL EDUCATION BY SIZE OF
LOCAL EDUCATION AGENCY ENROLLMENT

INTRODUCTION

The cost of both regular and special education varies greatly from one agency to another. Systematic variation in costs may be related to any number of variables such as the size of the enrollment of the education agency, the urban or rural character of the school district, the per capita income or property wealth, the availability of funds from nonlocal sources for both regular and special education, and the presence of cooperative or intermediate education agencies.

Because of the limitation of research funds available, the contract funding this study provided only for analysis of the variation in the cost of special education by size of the enrollment of the school district. Our data base contains data on many other variables that affect cost, and analysis of variations as a function of those other factors could be conducted in the future with this same data base.

In analyzing the variation in cost by size of school district, we selected the total local education agency enrollment as the measure of size. The presence of a large regional education agency that provided service for some children from a small rural local education agency did not move the classification of the size of the locality from small to large. However, the average cost of providing special education and related services to handicapped children from the locality included the average cost of children from the locality who were served in either the local education agency or the regional education agency.

Rather than using national average salaries for the calculations in this chapter, we utilized the average salaries within each of the three size groups described below. We calculated the costs for small districts using the salaries paid on the average by those small districts, and the costs for large major urban school districts using the salaries typically paid by those large major urban school districts.

To facilitate calculation of the total cost of special education by size of local education agency enrollment, we sought to group the local education agencies in our sample into a few categories that would have distinctly different types of local education agencies in each group and at the same time have potential use in making adjustments to state special education finance formulas to reflect higher or lower costs for certain size districts.

To this end, the LEAs in the first group had enrollments of less than 2500 total students each. This group consisted of 15 different localities out of the 46 in our sample. All of these small enrollment districts were rural districts with the exception of one that was located approximately 20 miles from a large city. These districts, with the one exception, were all located at least 50 miles away from an urban center of 100,000 or greater population and were located at least 50 miles from each of the three largest cities in their state.

The second group had LEA enrollments of more than 15,000. There were 19 such localities out of the 46. All were major urban school districts with the exception of one that was a large suburban district. This large size enrollment group included one of the largest school districts in each of the 14 states and included 5 of the 23 largest U.S. cities.

The remaining category of enrollment size, 2,500 to 15,000 pupils, consisted of localities that were neither rural nor major urban districts.

A better understanding of all the factors that contribute significantly to interdistrict differences in the cost per child should enable federal and state policymakers to "fine tune" their funding formulas and other policies in order to control costs while targeting scarce funds to areas of need. The analysis presented here by size of enrollment of the LEA is only a beginning of this process. Subsequent analyses, if conducted in the future, would provide information to help federal and state policymakers to revise both general and special education finance formulas to help equalize educational opportunities for handicapped children and to meet local financial needs.

In the analysis that follows, we will present the cost of special education not only by size of enrollment, but also by age level, handicap, and type of educational placement, so that any systematic variations in the types of students served or in the educational placements utilized in different size school districts will not confuse the interpretation of the cost data. By looking at single categories of handicapping condition or educational placement, we can compare districts doing similar things for similar types of children.

COST OF SPECIAL EDUCATION BY SIZE OF LEA ENROLLMENT

The analysis of cost according to LEA size was conducted in exactly the same fashion as the analysis for the entire sample with the exception

that the education agencies were separated into three different groups and each group was analyzed separately.

Table 20.1 presents the estimated total cost of special education and related services per handicapped pupil by age level and size of LEA enrollment. Small, generally rural districts had an estimated total cost per pupil of \$3238 whereas large, generally major urban districts had a lower cost per pupil of \$2938. However, the highest estimated total cost of special education and related services was \$4178 per pupil in the intermediate size districts, which were neither rural nor major urban. Costs for secondary age pupils were higher than costs for elementary age pupils for all size districts. Costs per preschool pupil were less than costs per elementary pupil in small and intermediate size districts but significantly higher than costs per elementary pupil for the large, generally major urban districts.

The estimated total cost of special education and related services by type of handicapping condition and size of LEA enrollment is shown in Table 20.2. The pattern of variation in cost by type of handicap for different size districts was similar to that for all districts combined. Functionally blind children had the highest cost per pupil where they were served. Speech impaired children had the lowest cost per pupil of any type of handicapped child regardless of district size.

The estimated total cost of special education and related services for handicapped pupils by type of educational placement and size of LEA enrollment is shown in Table 20.3. The highest cost was associated with special day schools for only handicapped children in each of the three different size enrollment groups.

For those readers interested in cost weighting factors, the ratios of the total cost of special education and added services to the total cost of regular education per pupil in the nation are shown in Tables 20.4-20.6 by size of LEA enrollment and by age level, handicapping condition, and type of educational placement, respectively. In each case, we obtained the numbers by taking the numbers in Tables 20.1-20.3 and dividing by \$1,650, which was the nationwide average total cost of regular education during 1977-1978.

Although the nationwide cost of special education and related services per pupil was 2.17 times greater than the cost of regular education per nonhandicapped pupil, this varied by size of LEA enrollment from 1.96 in small districts to 2.53 in intermediate size districts to 1.78 times the cost of regular education in larger size localities.

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Table 20.1

ESTIMATED TOTAL COST OF SPECIAL EDUCATION PER
PUPIL BY AGE LEVEL AND SIZE OF LEA ENROLLMENT

	Size of LEA Enrollment			
	Less Than 2,500	2,500 to 15,000	More Than 15,000	All Combined
Preschool	2,088	3,456	4,633	3,526
Elementary	2,960	3,836	2,658	3,267
Secondary	3,996	4,694	3,462	4,099
All ages combined	3,238	4,178	2,938	3,577

Table 20.2

ESTIMATED TOTAL COST OF SPECIAL EDUCATION PER PUPIL BY TYPE OF HANDICAPPING CONDITION AND SIZE OF LEA ENROLLMENT

Handicapping a Condition	Size of LEA Enrollment			
	Less Than 2,500	2,500 to 15,000	More Than 15,000	All Combined
LD	4,528	5,131	3,576	4,525
EMR	4,406	4,340	3,200	3,795
TMR	5,370	5,756	5,314	5,519
SMR	5,903	4,992	7,505	5,926
Emot.	4,350	6,930	5,176	6,289
Deaf	8,548	8,075	6,755	7,311
Part. Hear	6,384	4,375	5,581	5,091
Blind	NA	11,808	8,709	9,664
Part. Sight	5,411	3,150	5,531	4,519
Ortho	4,508	4,773	3,051	3,546
OHI	2,181	2,788	2,324	2,502
Speech	1,937	2,657	1,905	2,253
Multi	4,485	8,225	7,365	7,642
All combined	3,238	4,178	2,938	3,577

NOTE: NA = Data not available for this combination of handicapping condition and size of LEA enrollment.

a

Handicapping conditions are defined in Chap. IV.

Table 20.3

ESTIMATED TOTAL COST OF SPECIAL EDUCATION PER PUPIL
BY TYPE OF EDUCATIONAL PLACEMENT
AND SIZE OF LEA ENROLLMENT

Type of Educational Placement ^a	Size of LEA Enrollment			
	Less Than 2,500	2,500 to 15,000	More Than 15,000	All Combined
Regular Class Plus Indirect Services	2,741	2,588	2,533	2,550
Regular Class Plus "Related Services"	1,958	2,696	1,917	2,267
Regular Class Plus Itinerant Special Teacher	3,939	5,704	4,355	5,218
Regular Class Plus Part-time Special Class	4,580	5,384	3,455	4,709
Special Class Plus Part-time Regular Class	4,639	4,929	3,739	4,345
Full-time Special Class	5,006	4,685	4,751	4,733
Special Day School	5,800	6,045	5,066	5,352
Homebound	2,050	2,283	2,205	2,228
Short-term Hospital	NA	NA	1,981	1,981
Full-time Work	NA	819	1,844	901
All Combined	3,238	4,178	2,938	3,577

NOTE: NA = data not available for this combination of size of district and educational placement.

^a Educational placements are defined in Chap. IV.

Table 20.4

RATIO OF TOTAL COST OF SPECIAL EDUCATION TO TOTAL
COST OF REGULAR EDUCATION PER PUPIL BY AGE LEVEL
AND SIZE OF LEA ENROLLMENT

	Size of LEA Enrollment			
	Less Than 2,500	2,500 to 15,000	More Than 15,000	All Combined
Preschool	1.27	2.09	2.81	2.14
Elementary	1.79	2.32	1.61	1.98
Secondary	2.43	2.84	2.10	2.48
All ages combined	1.96	2.53	1.78	2.17

Table 20.5

RATIO OF TOTAL COST OF SPECIAL EDUCATION TO
TOTAL COST OF REGULAR EDUCATION PER PUPIL
BY TYPE OF HANDICAPPING CONDITION AND SIZE
OF LEA ENROLLMENT

Handicapping a Condition	Size of LEA Enrollment			
	Less Than 2,500	2,500 to 15,000	More Than 15,000	* All Combined
LD	2.74	3.11	2.17	2.74
EMR	2.67	2.63	1.94	2.30
TMR	3.25	3.49	3.22	3.34
SMR	3.58	3.03	4.55	3.59
Emot.	2.63	4.20	3.14	3.81
Deaf	5.18	4.89	4.09	4.43
Part. Hear	3.87	2.65	3.38	3.09
Blind	NA	7.16	5.28	5.86
Part. Sight	3.28	1.91	3.35	2.74
Ortho	2.73	2.89	1.85	2.15
OHI	1.32	1.69	1.41	1.52
Speech	1.17	1.61	1.15	1.37
Multi	2.72	4.98	4.46	4.63
All combined	1.96	2.53	1.78	2.17

NOTE: NA = Data not available for this combination of handicapping condition and size of LEA enrollment.

a
Handicapping conditions are defined in Chap. IV.

Table 20.6

RATIO OF TOTAL COST OF SPECIAL EDUCATION TO
TOTAL COST OF REGULAR EDUCATION PER PUPIL
BY TYPE OF EDUCATIONAL PLACEMENT *
AND SIZE OF LEA ENROLLMENT

	Size of LEA Enrollment			
	Less Than 2,500	2,500 to 15,000	More Than 15,000	All Combined
Regular Class Plus Indirect Services	1.66	1.57	1.54	1.55
Regular Class Plus "Related Services"	1.19	1.63	1.16	1.37
Regular Class Plus Itinerant Special Teacher	2.39	3.46	2.64	3.16
Regular Class Plus Part-time Special Class	2.79	3.27	2.09	2.85
Special Class Plus Part-time Regular Class	2.81	2.98	2.27	2.63
Full-time Special Class	3.03	2.84	2.88	2.87
Special Day School	3.51	3.66	3.07	3.24
Homebound	1.25	1.38	1.34	1.35
Short-term Hospital	NA	NA	1.20	1.20
Full-time Work	NA	0.50	1.12	0.55
All Combined	1.96	2.53	1.78	2.17

NOTE: NA = Data not available for this combination of size of district and educational placement.

^a

Educational placements are defined in Chap. IV.