

prevalence of disability needs, program type, and costs also has implications for any changes in special education costs or budgets over time.

The foregoing discussion also provides a sense that although much of the data in this article (derived from the Expenditures Survey and other sources) provide cost variation in aggregate (averages by program type, disability), costs often can and do vary within and between school districts. Such variation is based on the individualized needs of children with disabilities in each district and school area. We indicated that, given these needs, factors affecting such variation may include placement policies for arrangements within the school district that affect the marginal costs for the next child or group of children requiring special education services, and that costs are largely dependent on the student-teacher ratio (class size). These decisions are localized and frequently reflect the social or economic (and budgetary) situation of the area, and may also be indicative of a range of equity goals within and between districts. The Expenditures Survey assessed the variability of expenditures by district size, wealth, and urbanization. The researchers concluded that although "no single demographic characteristic examined demonstrates clear enough differences in average per-pupil expenditures to justify statements that one type of district generates more statistically significant differences in per-pupil expenditures for special education than another," there are "noticeable relationships between average per-pupil expenditures and district characteristics for specific programs and services (Moore et al., 1988, p. 93) (see Note 3).

State-Reported Data. The second source for measuring relatively current national special education costs uses data reported to the U.S. Department of Education by the states and published in the annual reports to Congress on the implementation of IDEA (for the most recent of these, see U.S. Department of Education, 1991). These data provide national, overall measures of expenditures for special education, as well as for the source of those funds (federal, state, or local). Per-pupil measures can also be determined from these data by dividing the reported total expenditures by reported pupil counts. However, these cost data are limited in several respects: They are available only on an annual basis between school years 1982-83 and 1986-87; they are aggregate in nature (i.e., there is no information on specific disabling conditions, program types, or service providers); there may be inaccurate reporting in several states of funds derived from state and local sources; and there are several instances of missing or unreported data (see Note 4).

Table 5 provides a summary of total and average per-pupil expenditures derived from state-reported data for 1985-86 (the year for which data were reported for the Expenditures Survey), while Table 6 compares these data over the span of years available (see Note 5). These data show that in 1985-86, the states reported total special education expenditures of \$16 billion in excess of their regular education costs. On average, these expenditures translate into \$3,696 per pupil served. Between the 1983-84 school year and the 1986-87 school year (the last year for which these data are available), these per-pupil expenditures grew at an 8.5% rate, on average, each year over the 3-year period, and at an annualized 5.6% rate in real dollars (with the effects of inflation removed) (see Table 6).

TABLE 5
TOTAL AND AVERAGE PER-PUPIL STATE-REPORTED EXPENDITURES FOR
SPECIAL EDUCATION AND RELATED SERVICES, 1985-86 SCHOOL YEAR,
50 STATES AND DC, ALL DISABLING CONDITIONS

Type of expenditure/source	All reported data		Adjusted data	
	1985-86 dollars	Constant 1989-90 dollars	1985-86 dollars	Constant 1989-90 dollars
Total expenditures (in billions of dollars)	\$15.956	\$18.638	\$15.956	\$18.638
Federal	\$ 1.237	\$ 1.445	\$ 1.237	\$ 1.445
State	\$ 9.263	\$10.820	\$ 8.686	\$10.146
Local	\$ 5.456	\$ 6.373	\$ 5.419	\$ 6.330
Average total per-pupil expenditures (in dollars)	\$ 3,696	\$ 4,317	\$ 3,696	\$ 4,317
Source:				
Federal	\$ 287	\$ 335	\$ 287	\$ 335
State	\$ 2,146	\$ 2,507	\$ 2,117	\$ 2,473
Local	\$ 1,264	\$ 1,476	\$ 1,323	\$ 1,545

Note. State and local expenditures for several states have been excluded from the adjusted state and local totals due to missing data. See text for methodology. Source of data: State-reported data published in annual reports to Congress (U.S. Department of Education, 1991, and various prior years).

We note here that several states exhibit some large year-to-year variations in their reported expenditure data, especially data for state and local expenditures. These variations might exist due to, for example, differences in district accounting practices that frequently obscure direct special education cost measurement and make data collection and cost comparisons difficult within states over time (and potentially among the various states as well). Often, for example, state and local expenditures are reported on the basis of unique bookkeeping entries attributable specifically to special education programs; in other instances, however, aspects of such costs may be lost due to inseparable commingling of state and local special education expenditures with those for regular education. We did attempt to calculate average costs from these data by omitting states whose data exhibited certain degrees of variation. However, we had no a priori means for judging whether these changes were the result of specific legislation, extraordinary program changes, budgetary timing, random reporting error, or other factors. Hence, we included all states that had complete reported data in our calculation of average costs, assuming that any such errors offset each other.

Care also must be taken in making comparisons between the average special education per-pupil costs presented in the Expenditures Survey and those derived from these annual state-reported data. It is expected that the average costs derived for special education from the two sources will be similar, but differences will persist. These differences can be attributable to a variety of factors, including variation in definitions and concepts between state-reported data and those used in

TABLE 6
ADJUSTED TOTAL AVERAGE PER-PUPIL STATE-REPORTED EXPENDITURES
FOR SPECIAL EDUCATION AND RELATED SERVICES, 1983-84 THROUGH 1986-87,
50 STATES AND DC, AND TOTAL AND ANNUAL PERCENTAGE CHANGES

Source	1983-84	1984-85	1985-86	1986-87		
Current year dollars						
Federal	\$ 269	\$ 266	\$ 287	\$ 298		
State	\$1,709	\$1,859	\$2,117	\$2,173		
Local	\$1,137	\$1,200	\$1,323	\$1,526		
Total	\$3,118	\$3,276	\$3,696	\$3,986		
Constant 1989-90 dollars						
Federal	\$ 333	\$ 318	\$ 335	\$ 340		
State	\$2,117	\$2,221	\$2,473	\$2,478		
Local	\$1,408	\$1,434	\$1,545	\$1,740		
Total	\$3,862	\$3,914	\$4,317	\$4,546		
Percentage change					3-Year percentage change	Annualized 3-year percentage change
Current year dollars						
Federal		-1.12%	7.89%	3.83%	10.78%	3.47%
State		8.78%	13.88%	2.65%	27.15%	8.34%
Local		5.54%	10.25%	15.43%	34.21%	10.31%
Total		5.07%	12.82%	7.85%	27.84%	8.53%
Constant 1989-90 dollars						
Federal		-4.63%	5.49%	1.37%	1.99%	0.66%
State		4.91%	11.34%	0.21%	17.07%	5.39%
Local		1.79%	7.80%	12.61%	23.57%	7.31%
Total		1.34%	10.31%	5.29%	17.70%	5.58%

Note. Adjusted data have been corrected for missing data. See text for methodology. Percentage changes are from previous year. Three-year percentage change is the total over the period. The annualized change is the average yearly change over the period. Source of data: State-reported data published in annual reports to Congress (U.S. Department of Education, 1991, and various prior years).

the Expenditures Survey, as well as in any reporting or sampling error. For example, some states might include the full value of equipment in any one year (and other states might not), while the Expenditures Survey was consistent in including only the amortized value of replacement costs in the current year. Further differences might occur because states and school districts use different versions of the school finance reporting handbook (a newer version is currently in the process of adaptation), while the Expenditures Survey used the resource cost methodology noted (see Note 6). However, despite these potential difficulties, the Expenditures Survey shows that \$3,649 was spent per pupil in 1985-86, very close to the \$3,696 per-pupil cost reported by the states.

More pronounced differences are apparent between the measure of resource costs calculated strictly for the average pupil in regular education in the Expenditures Survey and in the average per-pupil current expenditure information reported by the National Center for Education Statistics (NCES). For example, the Expenditures Survey reports the average per-pupil cost for only regular education in 1985-86 to be \$2,780, compared to the NCES reported \$3,479 per-pupil current expenditures based on fall enrollment (U.S. Department of Education, 1990a). Important reasons for this difference are that the resource-based cost for regular education does not include the much higher per-pupil cost for special education, compensatory education, bilingual education, or other special programs, nor does it include the costs of summer school or food services. In addition, the Expenditures Survey counts capital costs, as noted, as an amortized value of the replacement costs for school buildings instead of current debt service payments, and equipment costs are also amortized over their expected lives rather than included as current expenditures for their total costs (see Moore et al., 1988). However, on a comparative basis, the Expenditures Survey found that if the resource cost computation were adjusted to account for all these items, the average per-pupil cost would be \$3,395, an amount that compared favorably with the NCES current fall per-pupil cost of \$3,479.

Several other components of special education costs reported in the Expenditures Survey do not corroborate with those reported by the states. Particular interest is often expressed in the cost for related and other services provided to children with disabilities by the schools or districts. The Expenditures Survey reported per-pupil costs for a category of *supplemental services*, which are defined as services in addition to primary instructional services. They include assessments, transportation, adaptive physical education, occupational therapy, psychological services, social work, and school health services, among others. For the two most prevalent types of programs—resource rooms and self-contained classrooms—supplemental services were shown to be 22% and 19% of total special education per-pupil costs, respectively, or 46% and 24% of average special education expenditures, excluding regular education costs. These services range from \$1,583 per pupil for transportation services for the 30% of the special education population that requires such services, to \$1,206 for assessment services for the 6% of all students receiving such assessment during a particular year (Moore et al., 1988). Other services for each pupil average \$1,444 for special vocational services, \$595 for related services, and \$615 for adaptive physical education. State-reported data show that in the 1985-86 school year, \$3 billion was spent for related services. State-reported data also show that related services, in aggregate, constitute 19% of special education expenditures. We note that the Expenditures Survey's concept of supplemental services is more inclusive than the categorization of related services reported by the states in their annual reports to Congress.

Comparisons with Previous Cost Findings

The Expenditures Survey provides the most recent, comprehensive cost data for special education. These data can be contrasted with data from two previous national studies of special education expenditures. In doing so, we can gain insight

about similarities over time in the costs of special education services and, potentially, about the changing nature of such services. The two previous studies are those by Kakalik et al. (1981) (hereafter Kakalik), providing data for the 1977-78 school year, and by Rossmiller et al. (1970) (Rossmiller) on costs in the 1968-69 school year. These studies offer data on total or aggregate costs of special and regular education that are comparable to those in the Expenditures Survey, although comparisons for disaggregated groups (i.e., by disability or by program type) are more difficult, due in part to the different ways these groups are categorized across the various studies.

Kakalik surveyed a nationally representative, stratified sample of 46 localities in 14 states, including both unified and intermediate school districts. The study used a resource cost model similar to that used in the Expenditures Survey, resulting in total and added costs for special education that are closely comparable in aggregate to those in the Expenditures Survey. According to the Expenditures Survey, the methodology used in the Kakalik study was "sufficiently similar at the aggregate level" (Moore et al., 1988, p. 66) (see Note 7) to their study to permit comparison between the two. Kakalik found the total per-pupil special education costs to be \$7,090, on average in 1977-78, measured in constant 1989-90 dollars, and added (or excess) costs to be \$3,820 (see Table 7). Comparing the data in the Kakalik and Expenditures Survey studies shows that between 1977-78 and 1985-86, total per-pupil costs for special education rose a total of 4.4% in constant dollars and the excess or added costs increased 8.7% (see Note 8).

Because the Rossmiller study was predicated on somewhat different assumptions than the Moore and Kakalik studies, comparisons between Rossmiller and the others involve less common ground than between the two most recent reports. Rossmiller surveyed 24 school districts said to have exceptional special education programs, and provided median costs for selected groups of children enrolled in special programs (as well as costs for regular education) for the 1968-69 school year. Because neither the total cost for all disabilities combined nor the percentages of each disability served among the entire special education population were reported in Rossmiller, we needed to make certain assumptions to obtain an estimate of total and excess costs for special education for comparison purposes. Specifically, we estimated total costs by multiplying Rossmiller's median program cost for each disability across all school districts providing such services in 1968-69 by his estimate of the prevalence of such disabilities among the entire population (these estimates are shown in Table 7). These incidence rates were those assumed by Rossmiller in his own estimates and are based on Census Projection series I-D (see Rossmiller et al., 1970, Table 4.4). The median and marginal costs for each disability excluded measures for gifted and homebound/hospitalized students (see Rossmiller et al., 1970, Table 4.1).

Although the resulting measures are not nationally representative of all special education programs, they do appear to provide the best estimates for such costs in 1968-69 that can be compared to the cost information for later years. Thus estimated, these total special education costs (see Table 7) were \$4,490 in constant 1989-90 dollars for the 1968-69 school year, with the marginal or excess costs estimated to at \$2,103. In constant dollars, according to these studies, the

TABLE 7
 COMPARISON OF SUMMARY SPECIAL EDUCATION COST INFORMATION, SCHOOL YEARS 1985-86, 1977-78, AND 1968-69,
 IN CURRENT YEAR AND CONSTANT 1989-90 DOLLARS, ALL STUDENTS WITH DISABILITIES AND REGULAR EDUCATION STUDENTS

Type of expenditure	Moore		Kakalik		Rossmiller	
	1985-86 dollars	Constant 1989-90 dollars	1977-78 dollars	Constant 1989-90 dollars	1968-69 dollars	Constant 1989-90 dollars
Average total per-pupil expenditures for special education students	\$6,335	\$7,400	\$3,577	\$7,090	\$1,257	\$4,390
Excess per-pupil cost for special education students	\$3,555	\$4,153	\$1,927	\$3,820	\$ 602	\$2,103
Average total per-pupil expenditures for regular education students	\$2,780	\$3,247	\$1,650	\$3,270	\$ 655	\$2,288
Cost ratio (ratio of total special education costs to regular education costs)		2.28		2.17		1.92

Note: Cost ratios are from sources (for Moore, Kakalik) and derived by authors (for Rossmiller). See text for details. Sources of data: Moore et al., 1988; Kakalik et al., 1981; Rossmiller et al., 1970.

average percentage increase in excess per-pupil special education costs (costs excluding changes in expenditures in the regular education component of total costs) grew by an average of 4.17 per year over the entire 17-year (1968-69 to 1985-86) period.

Cost Ratios—A Rule of Thumb? Up to this point we have presented an overview of the evidence of special education costs in dollars. The ranges of dollars (even in constant dollars) and their changes over time, as well as the variations in classifications of disabilities, can make comparisons cumbersome, especially for policymakers. One way to present this information in a useful way—providing a rule of thumb on special education costs—is to convert these dollars into special education cost ratios. A cost ratio is merely the ratio of the average total per-pupil cost for special education to the average total per-pupil cost for regular education, where the regular education costs used for the denominator of this ratio exclude costs for other special programs (such as special education, Chapter 1 dollars for the educationally needy, or funds for bilingual programs). Such ratios allow a clearer comparison across different studies conducted at different points in time. Data on aggregate cost ratios for each study are presented in Table 7. Overall, these cost ratios range from 2.28 in Moore to 2.17 in Kakalik to 1.92 in Rossmiller (we calculated the latter ratio following the methodology for computing average per-pupil costs from Rossmiller's data as described above). These ratios thus can be interpreted as being relatively stable—or as only rising slowly; a remarkable consistency nevertheless, in aggregate, over a period when programmatic changes were occurring rapidly, and taking into account the differing methodologies of the studies cited. Explanations for an apparent upward trend, other than methodological differences—if this is indeed an upward trend—include the possibility that there may indeed be some relative increase in the costs of providing special education services over time, due, possibly, to increased service requirements, changing program needs, an aging or more highly specialized teaching force, or the need for more specialized facilities (see Note 9).

Policy Discussion and Conclusions

The goal of this article has been to summarize information about special education costs in a way that will be useful to special education practitioners, administrators, and policymakers. We have shown fairly strong agreement about the current magnitude of average costs for special education services and relative consistency in costs over time. There is, however, room both for additional research related to special education costs and for improvement in special education cost data.

One potential area for further research, for example, might be the relationship between the costs of special education and outcomes, especially outcomes that evaluate the acquisition of skills necessary to be competitive in future education and employment. Because the various program types have different cost implications, a pertinent issue for any given disability is how much of a difference program types make on skill acquisition. That is, do relatively higher cost, self-contained classrooms result in higher achievement for a child with a specific disability when

compared to outcomes for those served in resource rooms, if either type of environment can serve the specific disability?

Another analytical issue might involve assessment of how related and other supplemental services to children with disabilities (e.g., health care costs, psychological testing and consultations, physical therapy, nutritional programs, etc.) are provided and paid for. One question of current concern for policymakers involves who should bear the costs for these services—for example, the educational system or the health care system?—and how they may be more efficiently provided to best meet the needs of children with disabilities and their families. Questions of efficiency also arise from the data indicating that related and other supplemental services account for between 19% and 23% of average special education costs. One such service, for example, is student assessment, which includes initial screening and evaluation, reevaluation, referrals, preparation and annual reviews of individualized education programs (IEPs), and other activities. These assessments were found by the Expenditures Survey to cost an average of \$1,206 in 1985-86 for those receiving them (although this is not a recurring cost, as a full assessment normally occurs every 3 years). Much of this cost is for teacher and other staff time during development of the IEP, referrals, and reviews of the assessments, as well as for the time of other, non-school-connected personnel. Hence, an examination by policymakers of how these assessments are developed, and of the flexibility in using teacher and staff time in the activity, may indicate ways to improve special education program efficiency.

Further research is also imperative in assessing and comparing less-aggregated data over time. Although special education costs, overall, have remained fairly stable (or risen slightly) in relation to regular education costs, we cannot yet make any a priori statements about such cost changes over the past 20 years among different program types and disabilities. Although all three national studies examined in this article include data for specific disabilities, comparisons among them are complicated by methodological, definitional, and data issues and have not been presented here. The entire issue of special education trends, including enrollment patterns for children with specific disabilities and potential cost changes for each group, needs to be assessed in greater detail. Knowledge of these trends can be valuable to the special education community in formulating expectations about special education programs, as well as in planning for more optimal programs to meet the needs of future generations. Such information, for example, may indicate possible shifts in student needs, district eligibility, and placement policies over time. In addition, knowledge of cost trends at the program and disability levels will enable a better understanding of the changing nature of services provided, program efficiencies, economies of scale, and resource use in special education programs.

Finally, as we have already indicated, the data used in this article should be both continued and expanded. For example, annual special education expenditure data for each state have been collected by the U.S. Department of Education for only 5 years (and presented in the annual reports to Congress); current legislation does not require the continuation of this series. The evidence is that, although they are problematic and somewhat difficult to collect, these data provide useful

information on special education costs that can lead to informed policy making. Furthermore, subsequent periodic special studies need to be undertaken to update the range of detail on programs and services and their costs. These studies should ensure that the data collected are comparable to those found in past studies. In doing so, more informed decisions about special education can be made.

Authors' Notes

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2. The authors wish to thank E. William Strang of Westat Corporation for his contributions over the course of this project.

Notes

1. This act is now called the Individuals with Disabilities Education Act (IDEA) subsequent to the passage of its October 1990 reauthorization; it was previously entitled the Education of the Handicapped Act (EHA).
2. Categorization of program types in this article follow those in the Moore et al. study. These types include resource rooms, self-contained classrooms, residential schools, and home/hospital programs. Resource programs are those in which students spend most of their time in regular classrooms, receiving special services for under 15 hours per week in either the regular classroom or a resource room. Self-contained programs serve students for longer periods of time each week and may include programs in special schools.
3. The researchers point out that the small sample size limits the statistical significance of district measures disaggregated by size, wealth, or urbanization.
4. The reporting problems were particularly apparent in the first year of collection; hence, data provided in this article begin with the 1983-84 school year expenditure information.
5. The averages in Tables 5 and 6 have been adjusted to account for missing data in several states (the unadjusted totals are also shown in Table 5 for comparison purposes). Four states (Idaho, Missouri, Rhode Island, and Oklahoma) did not report local special education expenditures for the years covered by the annual report data utilized here; one state (Hawaii) had missing local data for the last year (1986-87). Because these data were missing for the entire period or for the end point, imputations were not possible. We therefore deleted these states' reported state and local expenditures when calculating state and local average costs, but included their total and federal expenditures when calculating average costs derived from these sources. We based this approach on the assumption that any difficulties encountered in state-reported special education expenditures are less likely to occur in their reported total or federal expenditures (federal special education appropriations are distributed to states based on a detailed formula and set of regulations) than in their state or local data. This approach should yield truer average expenditure information by source.
6. Additional detail on some of the unique features in each state's reported data can be found in a set of footnotes following the expenditure data in the various annual reports to Congress.
7. Minor differences led to some adjustments in the Kakalik study's data before they were compared in the Expenditures Survey; these adjustments were extremely small and were not made here. For example, the Kakalik study found the excess cost of special education to be \$1,927 in 1977-78; the Expenditures Survey's adjustment resulted in a cost of \$1,923.
8. These 4.4% and 8.7% changes in real growth rates for total and excess costs, respectively, differ somewhat from the 4.0% and 10.0% changes between 1977-78 and 1985-86 that were reported in the Moore study. First, we compare the Moore excess cost concept to the Kakalik study's added cost concept—yielding the 8.7% growth over the time period, since both excess and added costs are obtained in the respective studies by subtracting the average cost of regular education from total costs. Moore, however, compares the resource cost with the Kakalik added costs concept. In addition, we did not

adjust costs for other minor differences, such as the different treatments of food service costs in the Moore and Kakalik studies.

Furthermore, we note that the inflation-adjusted growth rates between the two most recent studies appear to differ from those derived from state-reported data for a shorter time span. That is, Moore reports 10.0% average real growth in excess costs over the 8-year (1977-78 to 1985-86) period, while the state-reported data show an 11.8% increase in the latter 2 years of that same time period (1983-84 to 1985-86). There are several potential explanations for this difference. First, it is possible that most of the real growth indicated by the 1977-78 to 1985-86 period occurred in the latter part of the time span, with declines occurring in the earlier part of the time period—a trend that might be confirmed had expenditure data been collected in earlier years from the states. Second, the concepts used in each of the studies differ, slightly affecting the reported growth rates between the studies. A third possibility is that there is some incompatibility factor or error in one of the special studies' data and/or problems in the state-reported data, or both, leading to differences of the magnitude shown. We thank an anonymous referee for indicating the need to express this possible interpretation of the cost ratios over time.

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