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ABSTRACT

Tennessee data were analyzed longitudinally from 1979-80 to 1987-88 to compare statewide special education practice associated with two student-based formulas for funding disbursement: "flat" versus "weighted." "Flat" grants, used from 1979-80 to 1982-83, provided a fixed amount of funds per child, teacher, or classroom unit. "Weighted" pupil calculations, used from 1983-84 to 1987-88, are based on types of children with specific disabilities multiplied by an average per pupil cost weighted to the type of service or degree of disability. Data were examined in terms of numbers of children placed in a variety of service options, including consultation, partial resource, comprehensive resource, and self-contained. Results indicated that the weighted formula was associated with a statistically significant decrease in less restrictive placements and a reliable increase in more restrictive placements. A statewide survey of 90 district special education directors suggested that service needs may have been more likely than monetary incentives to explain the observed changes in the use of special placements. Implications for policy planning concerning least restrictive environment are discussed. (Contains 21 references.)
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Reimbursement Formulas

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"Flat" versus "Weighted"

Reimbursement Formulas: A Longitudinal Analysis of State-Wide Special Education Funding Practices

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Running head: REIMBURSEMENT FORMULAS

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Abstract

We compared state-wide special education practice associated with two student-based formulas for funding disbursement: "flat" vs. "weighted." Tennessee data were analyzed longitudinally from 1979-80 to 1987-88 in terms of numbers of children placed in a variety of service options. From 1979-80 through 1982-83, the flat rate was used; between 1983-84 and 1987-88, inclusive, a weighted formula was implemented. Results indicated that the weighted formula was associated with a statistically significant decrease in less restrictive placements and a reliable increase in more restrictive placements. A state-wide survey of district special education directors suggested that service needs may have been more likely than monetary incentives to explain the observed changes in the use of special placements. Implications for policy planning concerning least restrictive environment are discussed.

"Flat" versus "Weighted"

Reimbursement Formulas: A Longitudinal Analysis
of State-Wide Special Education Funding Practices

Since passage of P.L. 94-142, special education funding has increased dramatically, reaching \$16 billion in 1985-86 (Decision Resources Corporation, 1988). By 1984-85 the federal share of average per-pupil cost was 8.2%. Contrastingly, the local and state shares were 35.1% and 56.7%, respectively (National Association of State Directors of Special Education [NASDSE], 1989). This large responsibility of states to fund special education services, coupled with increased emphasis on equity issues and caps on state and local tax revenues, has generated important questions about effects of funding patterns in special education.

For more than a decade there has been speculation that reimbursement strategies exert different effects on special education service delivery (Weintraub & Higgins, 1980). Federal funding of special education always has been disbursed in accordance with a flat, student-based formula; that is, each child served in special education triggers an equal number of dollars from Washington, regardless of type, cost, or duration of service. In response to the continued shortfall in federal allocations, the states have

developed alternative reimbursement patterns. Nevertheless, there has been infrequent empirical analysis of the effects of these different reimbursement strategies on state-wide placement patterns or on decision making in special education at the local level.

Reimbursement Formulas

Several types of allocation formulas have been implemented at the state level to distribute special education funds to Local Education Agencies (LEAs). These include (a) flat grants, (b) resource-based disbursements, (c) weighted-pupil versions, and (d) cost-based calculations (NASDSE, 1989). Fiscal and programmatic considerations are associated with each type. That is, just as they vary in how they are calculated, it has been suggested that these formulas also differ in terms of their impact on classification, placement, and distribution of services for students with disabilities (e.g., Bernstein, Hartman, Kirst, & Marshall, 1976; Jordan & McKeown, 1980; Hartman & Harber, 1981; McCarthy & Sage, 1982; Moore, Walker, & Holland, 1982; NASDSE, 1989).

Flat grants provide a fixed amount of funds per child, teacher, or classroom unit. They are relatively simple to administer and do not require labeling of students by handicapping condition (Moore, Walker, & Holland, 1982).

However, since funds increase in direct proportion to the number of students served, there is an inherent incentive to overclassify students and leave them in low cost placements (Hartman, 1980). According to Thomas (1973), flat funding encourages identification of mildly handicapped children since (a) each child generates the same amount of money and (b) mildly handicapped children generally are less expensive to serve.

Resource-based formulas support a percentage of personnel salaries or weighted costs of specific program types or units. Funds for a certain number of resource classes (or teachers) oblige the school system to fill those slots (Hartman, 1980). Mainstreaming typically is not encouraged since failure to fill special classes can result in the loss of funded units (Moore, Walker, & Holland, 1982). Because classrooms (or teachers) are counted instead of children, classes tend to be filled to capacity, and children's needs are defined by existing program types. Insufficient numbers of "low incidence" students may result in the failure to generate reimbursement necessary to establish special units. Resource-based formulas cause little incentive for overclassification because the start-up of given programmatic units is based on expected state averages, and may be limited by a funding or population cap (NASDSE, 1989).

Weighted-pupil calculations are based on types of specific children multiplied by an average per pupil cost, or on a type of weighted formula tied to the type of service or degree of disability. The range of weights can encourage a purposeful misclassification of students into more restrictive categories, which in turn, generally triggers higher reimbursements (Hartman, 1980; Moore, Walker, & Holland, 1982). Weighted formulas often are not responsive to wide variations in program costs, but encourage identification of more severely handicapped students by providing higher allocations for more intensive service (Thomas, 1973).

Finally, there are cost-based formulas, which fund a portion of the overall cost of services provided by a district. They reimburse a partial percentage of the actual cost of providing special education. It is believed this type of formula encourages more reasonable identification of children since local cost is minimized or eliminated (Hartman, 1980); however, cost containment becomes an issue for the state (Moore, Walker, & Holland, 1982). Under a cost-based arrangement mainstreaming should be encouraged because reimbursement would be tied to actual services provided (Hartman, 1980).

Effects on Local Decision Making

As mentioned, in theory, alteration of state funding

mechanisms results in important changes in how and where special-needs children are served (e.g., Hartman, 1980; Fuhrman, 1979; McCarthy, 1980). Such speculation has received some empirical support by Singer and Raphael (1988) who found that, when keyed to funding categories, placement was a critical factor in children's performance at the local level. However, most state funding studies of special education have addressed other concerns such as equity issues through examination of expenditures, resource allocations, and type of label assigned identified children (e.g. Bruininks & Lewis, 1986; Decision Resources Corporation, 1988; Kakalik, Furry, Thomas, & Carney, 1981; Singer & Raphael, 1988).

In practice, then, there have been few empirical analyses of state-wide strategies to fund special education. There has been virtually no empirical research conducted to test the validity of hypothesized effects of various funding formulas on statewide placement and service provision (Albright, 1988; Gaughan, 1976; Guarino, 1971). The lack of such research is all the more surprising and important because 13 states have switched funding formulas between 1982 and 1989 (see Table 1). In the same period, an additional 26 states (and the District of Columbia) either modified or contemplated changes in their current reimbursement strategies. Only 11 states during the past

decade took no action in this regard (NASDSE, 1989).

Insert Table 1 about here

The purpose of our research was to explore possible changes from one type of student-based formula to another within the state of Tennessee. Relations between the two funding formulas and student placement were investigated across all LEAs in the state for a period of 9 consecutive years. More specifically, we asked three questions concerning Tennessee's change in reimbursement formulas. First, was there a difference in numbers of children placed in special education? Second, was there a difference in numbers of children placed in more restrictive environments? And finally, what was the perceived rationale for decision-making at the local level?

Method

Archival Data

In collaboration with the Tennessee State Office of Special Education, we examined relations between reimbursement formulas and student placement during a 9-year period. Archival data were collected from annual state summaries and reports submitted to the Office of Special Education Programs in the U.S. Department of Education, which display numbers of children placed in consultation,

partial resource, comprehensive resource, and self-contained programs from 1979-80 to 1987-88, inclusive. During this period, Tennessee changed how it funded special education, moving from a flat student-based formula to a weighted one. These reimbursement formulas require explanation.

Flat vs. weighted formulas. As with many states, Tennessee's education funding pivots on a base rate for each school-age child determined year-to-year by the legislature. Special education funding rests on a "multiple constant" of the base rate, which is also negotiated annually. For example, in 1982-83 the base rate was \$439.00 per child. Special education's multiple constant for 1982-83 was 1.0, which meant the state earmarked an equal amount of money for children with and without disabilities. From 1979-80 to 1982-83, the multiple constant changed yearly, but, in each year, it was the same for all special needs children, regardless of type of disability or amount of service provided. Hence, the term "flat-rate reimbursement." In 1983-84, however, the state began to fund special education in a manner proportionate to the type of services provided. It did so by assigning different multiple constants to various options of service; service options were "weighted" to reflect intensity of effort and cost.

Service options. By state regulation, Tennessee defines 10 special education service options in terms of the number of hours provided. For purposes of analysis, we eliminated two: homebound and the provision of special materials in the regular classroom. This resulted in the loss of less than 1500 children state-wide. The remaining eight options were regrouped into four: consultation, 3 hours or less of service per week (Option I); partial resource, or more than 3 to 21 hours (Option II); comprehensive resource, more than 21 hours to 27 hours (Option III); and self-contained, more than 27 hours, or full time self-contained programs in the public school, including special transportation and at least two other related services (Option IV). This regrouping permitted more straightforward comparisons between less and more restrictive placements, and represented options that also parallel the types of service reported in the First through Tenth Annual Reports to Congress on the Implementation of P.L. 94-142.

Flat versus weighted reimbursements and service options. From 1979-80 through 1982-83, LEAs' flat-rate reimbursement per student with a disability averaged \$512.38 (SD = \$15.19). From 1983-84 to 1987-88, multiple constants for Option I through Option IV were 0.57, 1.03, 4.61, and 6.35, respectively. Tennessee LEAs received the

following mean reimbursements per special needs child: for Option I, \$333.80 (SD = \$32.63); for Option II, \$600.60 (SD = \$52.58); for Option III, \$2,693.40 (SD = \$235.65); and for Option IV \$3,714.80 (SD = \$324.53).

Numbers of children. In our analysis we included all special education students receiving K-12 public instruction in Tennessee. Special education enrollment decreased from 123,900 in 1979-80 to 113,671 in 1987-88. In the same period, 14 states in addition to Tennessee experienced declining special education enrollments or growth from 0% to 10% (U. S. Department of Education, 1990).

Each of the 140 Tennessee school districts reports the number of students with disabilities four times annually by amount of service received. Our figures were obtained from February census counts, the legal tabulation used to calculate state funds received by the districts for the following year. Total numbers of actual children and type of special education service provided per child were collected.

Survey of Special Education Directors

Survey instrument. Data on state-wide changes in special education placement from 1979-80 to 1987-88 were presented to an annual gathering of 30 Tennessee special education directors. Afterwards, they completed a

questionnaire. Their written and extemporaneous comments were used to help formulate questions for a state-wide survey. When mailed, it included a cover letter, two figures, a response form, and a return envelope. The response form postulated two contrasting reasons for the state-wide changes in special education placement, and contained four questions (see Appendix).

Sample. A total of 100 of 140 special education directors in the state in charge or with direct knowledge of LEA programs during the 1979-80 to 1987-88 period were surveyed. That is, 40 were eliminated from the survey because they were judged unknowledgeable about the period in question. We promised anonymity to those targeted to receive the survey, and gave them figures showing state-wide shifts to more restrictive placements concurrent with a change in reimbursement formula. Next, they were asked to explain from their perspective what occurred state-wide and in their own districts. Our initial selection of the 100 directors was verified independently by both current and former state department administrators and officers of the state association of special education directors. Districts of the directors selected were representative of the geographic regions, wealth, and population density of the state as a whole.

Results

Archival Data

Figure 1 displays the relation between reimbursement formula and children counted. For both flat-rate and weighted-rate years two types of child-count data are presented: "actual children" and "weighted children." "Actual children" refers to a straightforward unweighted count of students served in special education. As explained previously, "weighted children" in the flat-rate years refers to a multiple constant applied to each special needs child for reimbursement purposes. Whereas the value of this factor changed from year to year, under the flat reimbursement formula it was the same across all categories of service in a given year. By contrast, in the weighted-rate years, students with disabilities counted more or less, depending on their service option placement.

Insert Figure 1 about here

During the flat-rate years, actual and weighted child counts were similar and exhibited a downward trend (see Figure 1). In 1984-85, the first weighted-rate year, there was a dramatic jump in the number of weighted children, an increase that continued in subsequent years. Contrastingly, the actual child count in 1984-85 dropped in relation to

the preceding year and did not rebound in the next 4 years.

An important exception to this pattern occurred in 1982-83, when there was a marked increase in actual and weighted children. Two historical considerations appear to explain the anomaly. First, in 1981-82, the state eliminated a funding category for (nonhandicapped) students with learning problems, resulting in the reclassification of many as learning disabled. Second, with the impending change from flat to weighted formulas well known, the state delayed for one year its verification of children served in special education. Anecdotal information suggests this grace period encouraged at least some districts to retain speech-impaired children as a hedge against an anticipated loss of state monies.

Table 2 provides means and standard deviations of the proportions of actual children placed in Options I through IV under flat and weighted reimbursement formulas. A two-between (Option I vs. II vs. III vs. IV and flat vs. weighted) analysis of variance (ANOVA) resulted in a significant main effect for service option, $F(3,28) = 3299.24$, $p < .001$, but not for reimbursement formula, $F(1,28) = .02$, ns.

Insert Table 2 about here

There was a significant service option by reimbursement formula interaction, $F(3,28) = 21.45, p < .001$. Scheffe analysis indicated that the proportions of children per service option were significantly different from each other. Thus, the two reimbursement formulas within each service option were contrasted to identify possible shifts in population. Proportions of children in Option I did not vary significantly from one reimbursement formula to another, $t(7) = .67, ns$. However, numbers of students in Options II and IV decreased significantly under the weighted formula: Option II, $t(7) = 4.10, p < .01$; Option IV, $t(7) = 3.54, p < .01$. Conversely, numbers of students in Option III increased significantly under the weighted formula, $t(7) = -4.86, p < .01$. (Figure 2 illustrates this interaction.)

Insert Figure 2 about here

Survey of Special Education Directors

Surveys were mailed to 100 selected special education directors; 67% returned completed usable forms. A second mailing resulted in an overall response of 90%. We compared the districts of the 90 survey respondents to the districts of the nonrespondents and failed to discern any difference on such dimensions as geographic region, wealth, population

density or tenure of the director.

Directors were asked whether documented shifts in placement of children in Options II through IV (a) were a result of increased need for more restrictive service (Service), (b) were a response to monetary incentive (Money), or (c) were the result of another reason (AR). Eight responses in the last category, AR, were categorized as either "Service" or "Money" on the basis of written explanations. Four additional responses suggesting a combination of reasons (Service and Money) were interpreted as a "Money" response. This reflected the more conservative view that admitted recognition of financial incentive outweighed service needs in placement decisions.

Of 90 directors, 59 (65.55%) believed the changes observed state-wide paralleled change in their own district. Forty-seven (79.66%) of this subgroup claimed the shift in use of service options in their districts reflected efforts to obtain genuinely needed services; 12 (20.33%) stated it was motivated by a desire to attract more dollars to their system. By contrast, 53 (58.88%) and 37 (41.11%) of the directors believed the state-wide change in use of service options was due to service needs and monetary incentives, respectively.

Discussion

This longitudinal study analyzed relations between how

a state reimburses its LEAs and the types of service LEAs provide to students with disabilities. Overall, results indicate a shift in placement from lower funded (less expensive) to higher funded (more costly) service options concurrent with the change from a flat to weighted reimbursement formula. Proportions of children in partial resource (Option II) and self-contained (Option IV) programs declined, whereas assignments to the consultation category (Option I) remained steady. Only in comprehensive resource (Option III) did a large increase of student placements occur (see Table 2).

Where did these additional comprehensive resource students come from? This question cannot readily be answered in terms of "newly-found" children with disabilities because Tennessee experienced a decrease of 10,000 students from special education rosters between 1979-80 and 1987-88. In all likelihood, the answer is elsewhere.

There was a mean decline of 0.49%, or 800.70 students, in self-contained programs and some, or many, of these children may have moved into comprehensive resource. Even if this were true, however, such an explanation is insufficient to account for the average increase of 4.57%, or 4,316.05 placements in this option. A more important and likely explanation may involve partial resource. This placement option lost an average 3.84%, or 8,216.85

students, in the weighted-reimbursement years. Furthermore, it represents the category from which children most easily could be moved into comprehensive resource. For example, a student receiving special education instruction in three subjects daily, or 15 hours per week (partial resource), would require the addition of only 6 more special education hours to reach 21 hours and qualify for comprehensive resource. Such a placement change would generate an additional \$2,092.80 per student for an LEA.

Therefore, as funding shifted from a flat to weighted rate, the data and the nature of the service options suggest that many students state-wide moved from partial to comprehensive resource, or from less to more financially supportive, and more restrictive, school programs. If true, this finding would contribute to a growing literature on relations between reimbursement formulas and special education services. It would also corroborate a long-held belief that such formulas can have state-wide impact on student placements (Weintraub & Higgins, 1980).

Despite the potential importance of this corroborative finding, one should also recognize at least three features of the database that place serious constraints on interpretations that might be made. First, we make deliberate use of the just-mentioned term "corroborate" to mean "parallel," rather than to convey the notion that the

data "confirm" or "verify" or "authenticate" any belief or hypothesis. This is because the database is correlational, not causative; at best it may be understood as in accord with prevailing ideas about the connection between funding and practice. Second, we did not track over time the educational placements of individual children with disabilities. Thus, when we suggest many students moved from partial to comprehensive resource, we may only infer this movement. And third, because the archival data are highly aggregated, they may mask the existence of school districts for which the general pattern does not pertain. How many, which ones, and why are all questions that our archival database cannot answer.

These caveats notwithstanding, we attempted to understand possible motives behind the shift in use of service options. Specifically, we examined how change in reimbursement formulas was perceived by local decision makers. In this case, they were LEA special education directors who are obligated by law to report to their State Education Agency (SEA) which children they serve and how. This information is the basis for the state's allocation of special education monies. Thus, the typical LEA director is knowledgeable, if not expert, about budgetary matters including constraints and incentives within which service delivery systems function. It would seem the directors'

perceptions are potentially pivotal to understanding placement decisions at the local level.

Among the directors who believed changes observed state-wide paralleled changes in their own districts, more than half (59.88%) indicated that the state-wide changes were due to legitimate service needs of children; 41.11% believed the shift represented a bid by their colleagues to attract more money to their respective systems. Yet, when explaining their own motives, nearly 80% believed local change in placement was based on legitimate service needs; only 20% stated that generating increased dollars was the primary motive. In other words, respondents perceived other directors more likely than themselves to place money ahead of service as factors in student placement decisions.

In a sense, it is encouraging that a majority of directors seems motivated by a desire to provide appropriate service, rather than by a desire to acquire funds. Yet, even the more uplifting explanation is troubling. The close temporal connection between (a) the change in Tennessee's reimbursement formula and (b) the special education directors' changes in student placements suggests that the directors' decision making was influenced by financial concerns. And financial concerns -- the cost of programs and the availability of funds -- have been deemed inappropriate considerations by landmark legislation

and litigation. Rather, PL 94-142 and *Roncker v. Walter* (1983) require that a balance be struck between the service needs of a child and placement in the least restrictive environment. These are the only two factors determined by the federal government and the courts as pertinent to placement considerations.

Our correlational archival and survey data indicate, however tentatively, that placement decisions can depend on a state's policy for distributing special education monies. Underscoring the importance of this possibility is that the states, not the federal government, provide the majority of funds for special education at the local level. In light of the possibility that reimbursement policy may tilt placement decisions away from least restrictive settings and toward more financially rewarding and restrictive service options, we call for further analysis of the role that state reimbursement policy plays and for consideration of ways of making it more neutral with regard to special education placement decisions.

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Appendix

Data on Special Education Funding in Tennessee

The graph on the next page shows change over years in numbers of actual children in relation to numbers of weighted children served in Tennessee from 1980 to 1988. As you can see, there has been a drop in the number of actual children, but an increase in weighted children since 1982. In that year we shifted from paying an essentially flat rate per child to weighted payment by the type of service option provided. Numbers of actual children decreased for Options I, II, and IV under weighted payment. However, if we look at the second graph it shows that the number of actual children in Option III greatly increased at the same time. This suggests that, overtime, children were moved into Option III from other options. There are at least two possible explanations for this trend.

Reason 1

It reflects efforts to provide more appropriate service; that is, districts provided additional services because they had children who needed more restrictive placements.

Reason 2

It reflects efforts to generate additional funds; that is, districts saw an opportunity to retain or place children in options that generate a greater amount of service dollars.

SURVEY QUESTIONS

1. In your opinion was the statewide increase in Option III the result of: (Please Check One)

Reason 1 _____ Reason 2 _____

Another Reason _____

If you checked Another Reason, please explain _____

2. In terms of your district, would you say that there was a similar increase in Option III?

_____ Yes

_____ No

3. If yes, was it the result of: (Please Check One)

Reason 1 _____ Reason 2 _____

Another Reason _____

If you checked Another Reason, please explain _____

4. If you answered "no," please describe briefly how the the switch from flat to weighted payment affected the numbers of children in Option III in relation to the other options in your district. _____

Table 1

States' Changed (and Unchanged) Reimbursement Formulas over Time^a

STATE	1982			1989				
	Flat (n = 19)	Weighted (n = 12)	Resource (n = 9)	Cost (n = 11)	Flat (n = 10)	Weighted (n = 17)	Resource (n = 9)	Cost (n = 15)
Alabama	X							
California	X				X			
Delaware	X				X			
Georgia	X				X			
Idaho	X							
Illinois	X					b		
Kansas	X				X			
Kentucky	X				X			
Louisiana	X				X			
Missouri	X							
Mississippi	X				X			
North Carolina	X				X			
North Dakota	X				X			
New Hampshire	X				X			
Nevada	X							
Rhode Island	X				X			
Tennessee	X							
Texas	X							
Virginia	X							
Arkansas								
Arizona			X					
Florida			X					
Iowa			X					
Indiana			X					
Massachusetts			X					

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Table 1 continued

STATE	1982				1989			
	Fiat (n=19)	Weighted (n=12)	Resource (n=9)	Cost (n=11)	Fiat (n=10)	Weighted (n=17)	Resource (n=9)	Cost (n=15)
New Jersey		X				X		
New Mexico		X				X		
New York		X				X		
Oklahoma		X				X		
South Carolina		X				X		
Utah		X				X		
Colorado			X				X	•
Montana			X				X	
Ohio			X				X	
Hawaii			X				X	
Vermont			X					•
Washington			X				X	
Wisconsin			X				X	
West Virginia			X				X	
Wyoming			X					•
Arkansas				X		•		
Connecticut				X				X
Maine				X				X
Maryland				X				X
Michigan				X				X
Minnesota				X				X
Nebraska				X				X
Oregon				X				X
Pennsylvania				X				X
South Dakota				X				X
District of Columbia				X				X

a All placements based on interpretation of published descriptions of state finance mechanisms reported by Project FORUM (1982) and in State Special Education Finance Systems (NASDSE, 1989).

b Denotes a changed reimbursement formula.

Table 2
Proportion of Students with Disabilities by Service Option and Reimbursement Formula^{a, b}

Formula	Option I		Option II		Option III		Option IV	
	<u>M</u>	(<u>SD</u>)	<u>M</u>	(<u>SD</u>)	<u>M</u>	(<u>SD</u>)	<u>M</u>	(<u>SD</u>)
Flat	35.03	(.81)	52.15	(1.91)	9.25	(1.05)	3.57	(.09)
Weighted	34.57	(1.14)	48.31	(.80)	13.82	(1.62)	3.08	(.26)

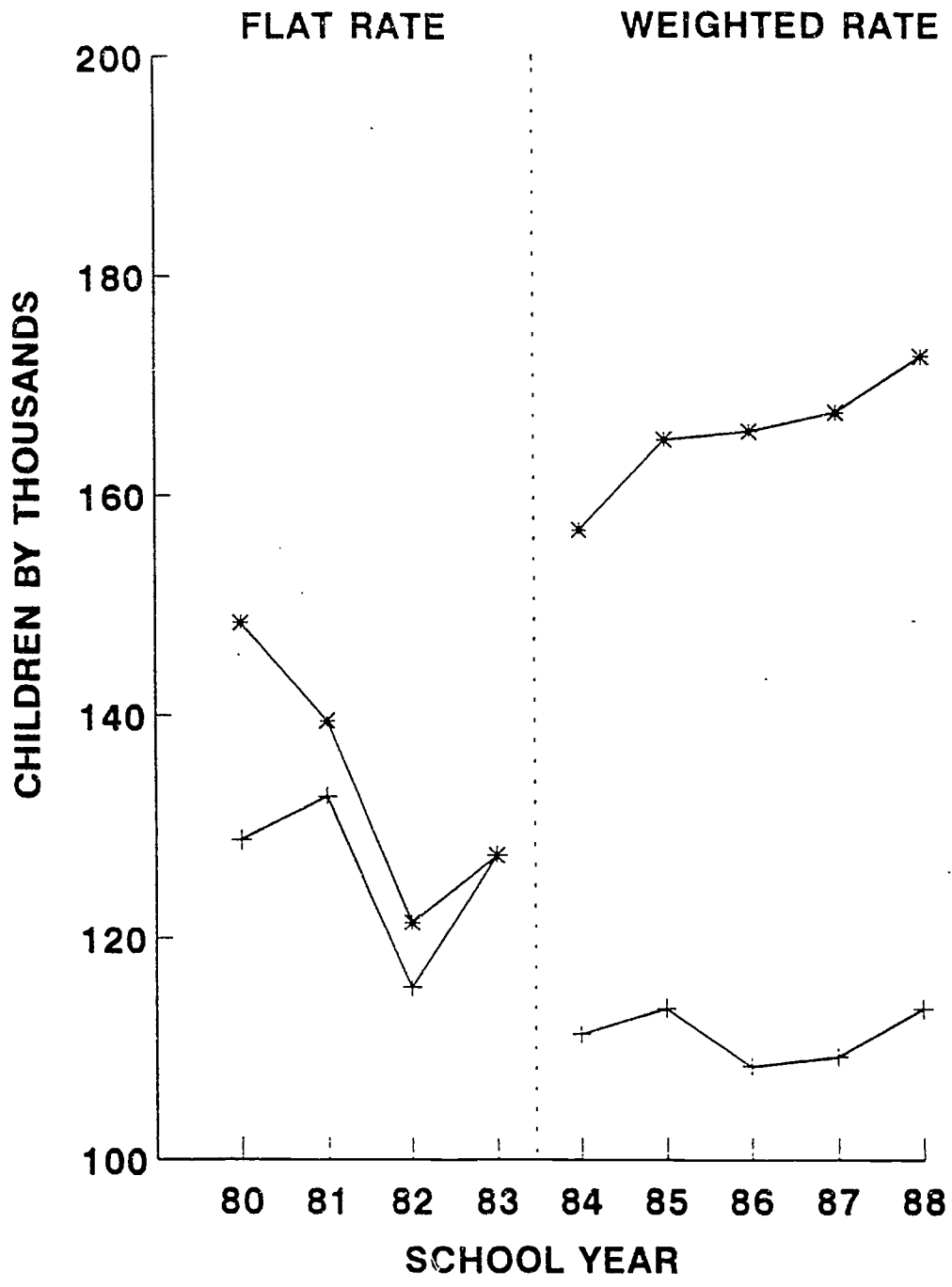
a Option I refers to children in regular classrooms on consultation; Option II signifies children in partial resource placements (3 to 20 hours); Option III represents children in comprehensive resource placements (21 to 27 hours); Option IV refers to children in self-contained programs (more than 27 hours).

b Changes in mean actual numbers of children from flat-rate to weighted-rate formulas by service option: for Option I, 40,989.75 (SD=2,640.89) to 38,062.00 (SD=1,666.15); for Option II, 61,108.25 (SD=5,437.29) to 52,891.40 (SD=1,281.81); for Option III, 10,807.75 (SD=815.23) to 15,123.80 (SD=1,744.51); for Option IV, 4,175.50 (SD=264.41) to 3,374.80 (SD=259.80).

Figure Caption

Figure 1. Relations between types of reimbursement formulas and numbers of children in special education state-wide. Each school year encompasses parts of two calendar years. Thus, "1980" signifies "1979-1980" and so on.

Figure 2. The mean number of actual children placed in each special education service option under two reimbursement formulas.



+ ACTUAL CHILDREN * WEIGHTED CHILDREN

