

DOCUMENT RESUME

ED 271 879

EA 018 669

TITLE School Transportation Costs, Policies and Practices: A Review of Issues in New York and Selected States.

INSTITUTION New York State Education Dept., Albany. Educational Research Services Unit.

PUB DATE Jun 86

NOTE 44p.

PUB TYPE Information Analyses (070)

EDRS PRICE MF01/PC02 Plus Postage.

DESCRIPTORS Comparative Analysis; *Cost Effectiveness; Disabilities; *Educational Policy; Educational Practices; Efficiency; Elementary Secondary Education; Operations Research; Private Schools; Public Schools; *School Buses; State Aid; State Legislation; State School District Relationship; State Surveys; *Student Transportation

IDENTIFIERS *New York

ABSTRACT

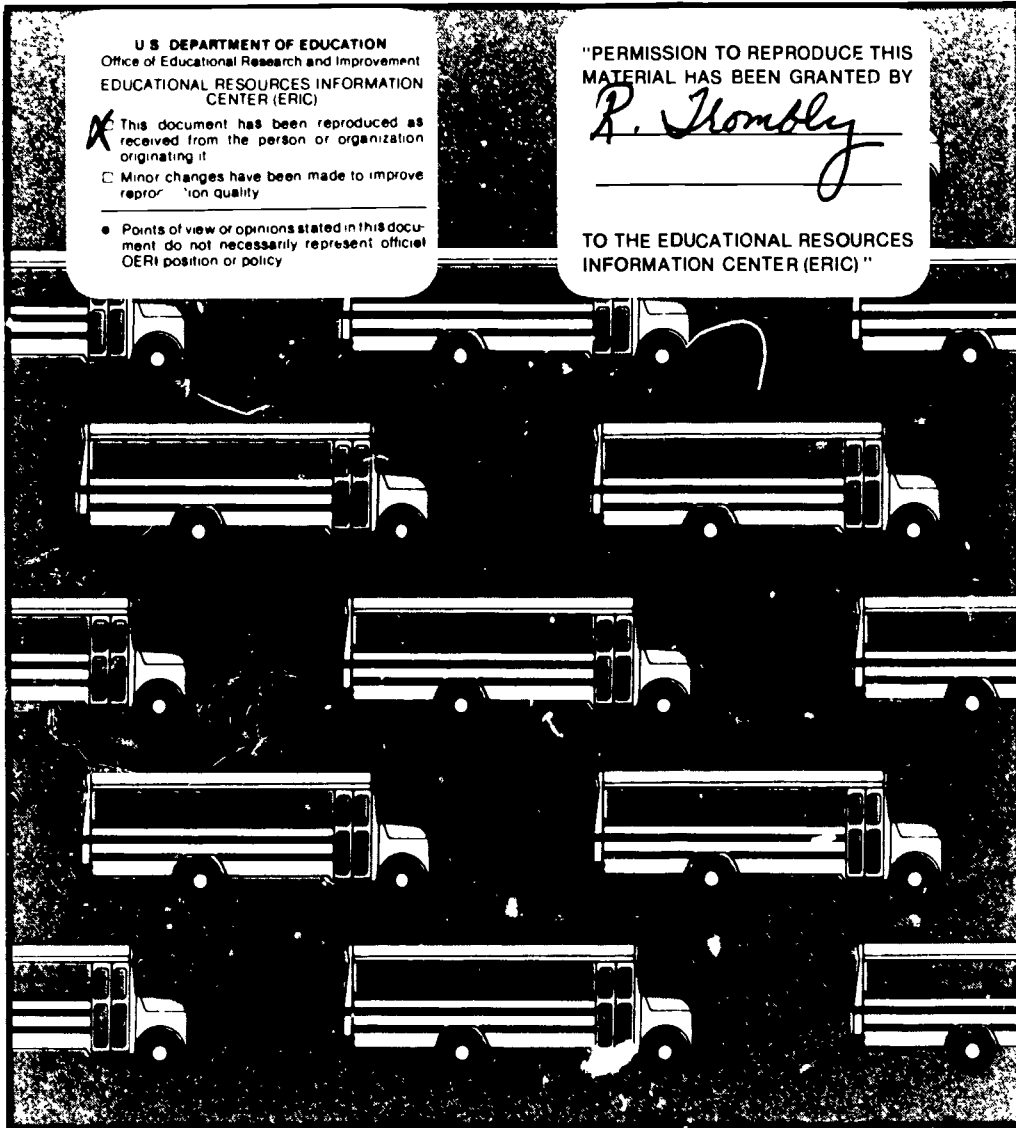
To draw comparisons for assessing transportation costs and developing recommendations for legislative action in New York, this study compares school transportation policies and practices that may be related to differences in transportation costs in eight states having the largest public school enrollments for 1980. Data were obtained from existing publications and from a survey of transportation directors in California, Florida, Michigan, New Jersey, New York, Ohio, Pennsylvania, and Texas. The report reviews literature relating to school transportation costs, describes the methodology used to collect data, and presents findings from the study and recommendations for legislative action. Factors such as the scope of state mandates, the extent of the transportation system, practices concerning public versus private ownership of transportation fleets, and state reimbursement policies for school transportation were examined. Higher transportation cost per pupil was associated with more transportation mandates, more frequent use of smaller buses, greater miles traveled per pupil, and larger nonpublic school transportation systems. Lower cost per pupil was related to larger numbers of pupils transported, larger number of pupils transported per bus, larger percentages of district-owned versus private contractor transportation fleets, and the use of formula mechanisms that limited spending and encouraged efficiency in state transportation reimbursement. Included are 8 tables, 2 figures, and 39 references. (MLF)

 * Reproductions supplied by EDRS are the best that can be made *
 * from the original document. *

ED271879

School Transportation Costs, Policies and Practices

A Review of Issues in New York
and Selected States



The University of the State of New York / THE STATE EDUCATION DEPARTMENT
Educational Research Services Unit
Albany, New York 12234

June 1986

EA 018 669



SCHOOL TRANSPORTATION COSTS, POLICIES AND PRACTICES

A Review of Issues in New York and Selected States

This report compares school transportation policies and practices that may be related to differences in school transportation costs in eight states with the largest 1980 public school enrollments. The study:

- compares the states' mandates, practices, and operational policies for school transportation and their effect on overall cost; and
- presents recommendations to improve efficiency in school transportation in New York State.

The University of the State of New York/**THE STATE EDUCATION DEPARTMENT**
Educational Research Services Unit/Albany, New York 12234
June 1986

THE UNIVERSITY OF THE STATE OF NEW YORK

Regents of The University (with years when terms expire)

1987	MARTIN C. BARELL, <i>Chancellor</i> , B.A., I.A., LL.B., LL.D.	Muttontown
1987	R. CARLOS CARBALLADA, <i>Vice Chancellor</i> , B.S., L.H.D., D.Sc.	Rochester
1988	WILLARD A. GENRICH, LL.B., L.H.D., LL.D., Litt.D., D.C.S., D.C.L., Sc.D. . .	Buffalo
1989	EMLYN I. GRIFFITH, A.B., J.D., L.H.D., Sc.D.	Rome
1991	JORGE L. BATISTA, B.A., J.D., LL.D.	Bronx
1986	LAURA BRADLEY CHODOS, B.A., M.A.	Vischer Ferry
1991	LOUISE P. MATTEONI, B.A., M.A., Ph.D.	Bayside
1988	J. EDWARD MEYER, B.A., LL.B., L.H.D.	Chappaqua
1988	FLOYD S. LINTON, A.B., M.A., M.P.A., D.C.L., LL.D.	Miller Place
1988	SALVATORE J. SCLAFANI, B.S., M.D.	Staten Island
1989	MIMI LEVIN LIEBER, B.A., M.A.	Manhattan
1992	SHIRLEY C. BROWN, B.A., M.A., Ph.D.	Albany
1990	NORMA GLUCK, B.A., M.S.W., LL.D., L.H.D.	Manhattan
1990	THOMAS R. FREY, A.B., LL.B.	Rochester
1990	JAMES W. MCCABE, Sr., A.B., M.A.	Johnson City
1993	ADELAIDE L. SANFORD, B.A., M.A., P.D.	Hollis

President of The University and Commissioner of Education

GORDON M. AMBACH

Executive Deputy Commissioner of Education

ROBERT J. MAURER

Assistant to the Commissioner for Policy Analysis

CLAUDIO R. PRIETO

Administrator, Educational Research Services Unit

WILLARD C. VAN HORNE

Principal Education Planner

NANCY W. CROCE

PREFACE

This study compares school transportation policies and practices that may be related to differences in transportation costs in eight states having the largest 1980 public school enrollments. It was undertaken at the request of the Regents Task Force on Education and Economic Development in order to draw comparisons that may be helpful in assessing transportation costs and developing recommendations for legislative action in New York. Factors such as the scope of state mandates, the extent of the transportation system, practices concerning public versus private ownership of transportation fleets, and state reimbursement policies for school transportation were examined due to their hypothesized impact on cost. An attempt was made to examine transportation costs in the context of states' objectives in the operation of pupil transportation systems; namely, safety, equity, economy and efficiency. The report reviews literature relating to school transportation costs, describes the methodology used to collect data, and presents findings from the study and recommendations for legislative action.

The study shows that among the eight states studied, cost per pupil transported in 1981-82 ranged from \$198 in Ohio to \$381 in California; however, major differences in expenditure items prevented direct comparisons of total transportation costs. Three states did not mandate public school transportation and three states did not mandate transportation for nonpublic school pupils. All states mandated the transportation of handicapped pupils, as required by Federal law, but only Pennsylvania and New York mandated the transportation of handicapped pupils to nonpublic schools. Five of the eight states provided state aid for nonmandated transportation.

The size of transportation systems varied from approximately 60 percent of enrolled public and nonpublic school pupils in three states to one-quarter or less of enrolled pupils in two states. States varied considerably in the use of smaller buses; states which used smaller buses more tended to have higher costs per pupil transported. Costs were also higher for states with greater mileage per pupil transported and for states that mandated nonpublic school transportation and had larger nonpublic school enrollments.

Examination of state aid policies for school transportation revealed that New York and New Jersey had policies that were broad in scope while California and Michigan had more restrictive policies. The ratio of state transportation aid to transportation costs ranged from 40 percent in Michigan to 78 percent in Texas.

All of the characteristics studied were examined for their relationship to cost. The following factors tended to be related to costs. Higher transportation cost per pupil was associated with more transportation mandates, more frequent use of smaller buses, greater miles traveled per pupil, and larger nonpublic school transportation systems. Lower cost per pupil was related to larger numbers of pupils transported, larger numbers of pupils transported per bus, larger percentages of district-owned versus private contractor transportation fleets, and the use of formula mechanisms that limited spending and encouraged efficiency in state transportation reimbursement.

The study showed that New York's costs were higher than those of the median state studied and that it ranked third highest among the eight high enrollment states. Factors associated with higher transportation costs were: relatively more mandates and broader state aid policies, a relatively large nonpublic school enrollment for which transportation was mandated, a relatively low percentage of district-owned transportation fleets, and relatively greater use of smaller, i.e., Type II buses. New York's relatively large proportion of pupils transported probably served to lower cost per pupil transported.

Recommendations to improve efficiency in school transportation in New York State were made with a view to promoting cost-efficiency without reducing services or student safety. The proposals relate to three areas of the study: the extent of the system, allowable costs for state transportation aid, and public versus privately owned transportation fleets. Recommendations include reducing miles traveled per pupil and increasing efficient use of transportation resources through regional transportation systems and maintenance, computerized bus routing, the location of transportation facilities, and elimination of the bus capacity calculation for determinations of state aid on new buses. Other recommendations include reducing cost by eliminating state aid on premiums paid for collision insurance, requiring periodic audits of private contractor accounts for school transportation, and requiring public disclosure of cost per mile information of public versus privately owned transportation systems.

CONTENTS

LIST OF TABLES	v
LIST OF FIGURES	v
BACKGROUND AND ORGANIZATION	1
Literature Review	1
Methodology	1
Data Collection	2
Limitations of Transportation Data for Comparative Purposes	2
TRANSPORTATION MANDATES, PRACTICES AND POLICIES	4
Mandates	4
Provision of Nonmandated Transportation Services	8
Extent of the System	8
Summary of Transportation Mandates, Practices and Policies	14
STATE REIMBURSEMENT POLICIES	15
Formulas for State Reimbursement	15
Allowable Costs	15
Formula Mechanisms to Control Costs	15
Efficiency Factors	15
Summary of State Reimbursement Policies	20
PRINCIPAL FINDINGS	20
RECOMMENDATIONS TO IMPROVE EFFICIENCY IN SCHOOL TRANSPORTATION IN NEW YORK STATE	22
BIBLIOGRAPHY	25

LIST OF TABLES

I	Different Types of Expenditures Covered Under Total School Transportation Costs for Eight States in 1981-82	3
II	State Mandates in Eight States Concerning School Transportation For Public School, Nonpublic School and Handicapped Pupils— 1981-82	5
III	Provision of Nonmandated Transportation Services	7
IV	Enrollment and Transportation Data for Eight Large States— 1981-82	9
V	Buses and Miles Traveled for Eight Large States— 1981-82	10
VI	State Reimbursement for School Transportation Costs in Eight States— 1981-82	16
VII	Allowable Costs For State School Transportation Reimbursement— 1981-82	19
VIII	Transportation Cost and Selected Variables in Eight States— 1981-82	21

LIST OF FIGURES

I	Scatter Plot of Cost per Pupil Transported and the Percentage of Type II Buses in Eight States	12
II	Scatter Plot of Cost per Pupil Transported and the Percent of District-Owned Transportation Fleets	13

SCHOOL TRANSPORTATION COSTS, POLICIES AND PRACTICES

A Review of Issues in New York and Selected States

BACKGROUND AND ORGANIZATION

The study was undertaken at the request of the Regents Task Force on Education and Economic Development in order to draw comparisons that may be helpful in assessing transportation costs and developing recommendations for legislative action. The report reviews literature relating to school transportation costs, describes the methodology used to collect data, presents findings from the study and recommendations for legislative action.

Literature Review

A review of the literature was conducted in order to identify variables that may be related to school transportation costs. The literature on transportation suggests many factors that may have significant effects on transportation costs: reimbursement policies, number of pupils transported, size of buses used, and transportation of nonpublic and handicapped pupils. The present study examined many of these details for the eight states under study in order to get a full picture of the factors influencing costs in these states. Although state mandates concerning transportation have not been discussed in the literature, they have been examined due to their impact on a state's transportation system. The entire transportation system, aimed at meeting a state's needs, is determined by mandates of pupil transportation services, policy directions, state aid procedures, and options that localities select in the operation of their transportation system.

Much of the literature on school transportation is directly related to cost with a large part being devoted to the topic of energy conservation (Anderson 1979, Baacke and Frankel 1979, Grasham 1984, Giesguth 1980, Here's the Case 1979, Shannon 1980, Fuel Economy 1977, Colorado State Department of Education 1976, ESTEEM 1977). Due to Federal mandates regarding transportation of handicapped pupils, the costliness of transporting these pupils, articles concerning procedures for the transportation of handicapped pupils have direct implications for overall pupil transportation costs (Illinois State Board of Education 1983, Trudeau 1972, How to Get Ready 1977, Brody 1971). A comprehensive evaluation of pupil transportation systems is the topic of two articles: (1) of New York State's pupil transportation system in particular (Hennigan et al. 1978) and (2) as guidelines for the

evaluation of local transportation systems (Comeau 1980). Considerable discussion has focused on the relative cost efficiency of district-owned and-operated transportation fleets versus transportation systems operated by private companies through contract with a school district (Savitz 1979, Hennigan et al. 1978, Reynolds 1972, Should You Rent 1976, Surveys Show 1970).

Many reports concern issues related to cost savings or efficiency such as charging pupils for transportation (Bosse 1983, Kennedy 1980), computerization of fleet operation (Edwards 1983), transportation cooperatives among districts (Plante 1981, Bayliss 1974, Zorn 1973) and tips for cutting costs (Humphries and Vincent 1981). Two studies describe transportation expenditures per pupil (Kucera 1979 and Johns 1978). Another study which compared the characteristics of high transportation expenditure districts with low expenditure districts found that low cost districts transport more pupils, operate more buses, and operate in more densely populated districts (Hennigan et al. 1978). In two articles, the authors discuss the funding of transportation systems (Johns 1978 and Hennigan et al. 1978). Hennigan et al. (1978) also present a review of the literature concerning state reimbursement formulas for transportation expenditures. Three reports present descriptive statistics, including cost information, on school transportation in the United States (Grant 1976, National Association of State Directors of Pupil Transportation Services 1982, and National School Transportation Association, 1984).

Methodology

As suggested in the literature (Hennigan et al. 1978 and Johns 1978), factors were examined which were independent of transportation policy (e.g., number of pupils enrolled in school); subject to state transportation policy decisions (e.g., state mandates and reimbursement policies); and subject to local district decisions (e.g., number of buses used reflecting both bus purchases and routing). It was expected that each of these types of factors would influence costs. Hennigan et al. (1978) warned, however, that factors that cannot be controlled, such as pupil density, may have more influence on efficiency than other logical efficiency measures.

The questions asked in the present study were as follows:

1. What are the state mandates and laws concerning

school transportation for public school, nonpublic school and handicapped pupils?

2. How much school transportation occurs outside of state mandates and do districts receive state aid for non-mandated services?
3. How large is the school transportation system and how many different types of services (or pupils served) are provided?
4. How many buses were used and what was the number of smaller versus regular sized buses?
5. What percentage of school transportation systems are public (i.e., district owned and operated) versus private contractors?
6. What are state policies and practices concerning state reimbursement for school transportation costs?
 - a. How much state aid is given as determined by the percentage of state aid to total transportation costs?
 - b. What is the formula for state aid reimbursement?
 - c. Are any mechanisms used to limit the amount of reimbursement to school districts?
 - d. Are there any factors related to state reimbursement for school transportation that encourage districts to be efficient in their spending on school transportation?

The above research questions were addressed through an analysis of existing data and a data collection effort by the New York State Education Department.

School transportation systems were examined in the nine states with the largest 1980 public school enrollments. Illinois did not respond to the survey so the study was revised to review policies in the eight remaining states. The states surveyed were California, Florida, Michigan, New Jersey, New York, Ohio, Pennsylvania, and Texas. High enrollment states were examined because they were thought to have similar school transportation needs and problems that might not necessarily be shared by smaller states. The review also excluded data on pupils transported on public transit systems such as in New York City and Albany.

Data Collection

The data come from three sources: Statistics on School Transportation, 1981-82, prepared by the National Association of State Directors of Pupil Transportation Services; *The Digest of Education Statistics, 1983-84* (Tables 36 and 37) published by the National Center for Education Statistics, United States Department of Education; and a survey designed and administered specifically for this study.

If data gathered by the survey conflicted with published data, survey data were used since it was thought that informa-

tion currently available from the states would be more up-to-date and accurate. School year 1981-82 was selected for analysis since it was the most recent year for which states had complete information.

Telephone follow-up to the survey was done to collect missing information and to aid in the interpretation of the responses provided. Examination of the completed surveys revealed additional questions that needed to be answered to fully understand the issues.

Limitations of Transportation Data for Comparative Purposes

Previous analyses have compared school transportation costs of states by examining total transportation costs per enrolled public school pupil. This statistic is misleading to the extent that states provide transportation to different percentages of their enrolled pupils and to the extent that states provide services to different groups of pupils (e.g., nonpublic pupils). For example, if one state transports 59 percent of their pupils (as does New York) and another state transports only 19 percent (as does California), cost per public school pupil for the state transporting fewer pupils will appear much lower than for the state transporting more students. Cost per enrolled public school pupil is a valid measure for cost items such as instruction, operation and maintenance, and administration, which are provided for all public school pupils, but it is not as useful when one is interested in comparing what it costs to transport pupils. For this reason, cost per pupil *transported* was examined in the present study rather than cost per *enrolled* public school pupil. Even with the use of this statistic, however, problems still remain when making comparisons state by state.

Transportation directors from each state were asked to report their total transportation costs for public and nonpublic school students during the school year 1981-82. They were asked to include costs for debt service, purchase of vehicles, operational expense and fringe benefits but not to include costs for field trips, athletic events and administrative costs (such as a proration of chief school officer or business administrator costs).

Table I presents the results that were obtained. It shows that three states, California, Florida and Texas, did not include costs for transporting nonpublic school pupils. One state, Texas, recorded the state allocation rather than total costs for public school pupils. One state's expenditures, Ohio's, were lower than usual, since the amount for bus purchases was approximately \$19 million less than for other years. For three states, New Jersey, Ohio and Pennsylvania, total costs included public school transportation including transportation of handicapped public school pupils and nonpublic school transportation (excluding nonpublic handicapped pupils). Two states, New York and Michigan, included the transporta-

tion of public and nonpublic school students plus that of handicapped students in both sectors.

What are the implications of these differences? Comparisons can be misleading to the extent that cost per pupil transporter¹ varies for the different categories of transportation service provided by the states, and to the extent that these categories of service exist in different proportions in the states. As a case in point, estimates¹ are available for the cost of various transportation categories for the State of New York. Transportation cost per pupil transported for handicapped pupils, in both public and nonpublic schools, was estimated to be more than five times as much as cost per regular public school pupil transported in 1981-82. A published source (Hennigan et al. 1978) estimates that the cost of transporting

a handicapped pupil is between five and eight times that of transporting a regular pupil. Cost estimates for the transportation of handicapped students in New York State were approximately 26 percent of estimated total costs in 1981-82. Estimates of transportation cost for regular nonpublic pupils (excluding pupils ineligible for transportation aid) were 26 percent higher than the corresponding cost for public school pupils.

¹ New York public school districts were asked to provide estimates of the numbers of pupils transported in 1981-82 and transportation cost for public, nonpublic and handicapped pupils who were considered allowable and nonallowable for State aid purposes. Districts were not asked for actual data at the end of the year. The estimated data come from the 1984-85 State aid data base of the New York State Education Department

Table I
Different Types of Expenditures Covered Under Total School Transportation Costs For Eight States in 1981-82

STATE	Total School Transportation Costs	Types of Expenditures Covered
California	\$332,596,155	Transportation for public school pupils including handicapped; nonpublic data are not available. (Some nonpublic school pupils were transported at public expense. The cost is unknown but considered negligible.)
Florida	151,996,575	Transportation for public school pupils including handicapped; nonpublic data are not available. (Some nonpublic school pupils were transported at public expense. The cost is unknown but considered negligible.)
Michigan	200,000,000	Public and nonpublic school transportation including regular, vocational and handicapped transportation for both sectors.
New Jersey	202,369,721	Public school transportation including handicapped and nonpublic school transportation.
New York	628,443,417	Public and nonpublic pupil transportation including handicapped pupils from both sectors.
Ohio	253,367,466	Public school transportation including handicapped and nonpublic school pupil transportation. Costs for bus purchase were abnormally low, almost 50 percent of cost for 1984-85. This accounts for approximately \$19 million.
Pennsylvania	300,797,722	Public school transportation including handicapped and nonpublic school pupil transportation.
Texas	110,539,409	State allocation only for public school transportation. Does not include handicapped or nonpublic school transportation.

Although the extent of the differences among these cost categories is not known for each of the states under examination, it is expected that the relationships reported above will roughly hold true for other states, i.e., transportation costs for handicapped pupils are expected to be several times as much as for public school pupils and costs for nonpublic school pupils are expected to be slightly higher than corresponding costs for public school pupils. Therefore, real cost estimates for the three states who do not report nonpublic school data should be slightly lower compared to states who do report such data. Cost estimates for the state which does not include handicapped transportation services should be considerably lower than those states that do report such data. Cost estimates for two states, Michigan and New York, should also be higher as a result of transporting handicapped nonpublic school pupils.

Transportation cost comparisons among the eight states can be hard to interpret for two reasons: record-keeping systems are often different even if similar services are provided, and transportation services provided by states may differ resulting in cost estimates that represent qualitatively different services. In the first instance, an attempt has been made to estimate costs in situations in which services are provided but cost data are unavailable so that in all cases, basic to- and from-school transportation costs are compared for public and nonpublic school pupils and for handicapped pupils from both sectors. In the second place, state policy differences that result in qualitatively different transportation systems may well explain cost differences and are described to this end.

TRANSPORTATION MANDATES, PRACTICES AND POLICIES

Mandates

Table II describes transportation mandates in the eight states for public school, nonpublic school and handicapped pupils for the 1981-82 school year.

Public school pupils. Table II shows that three states, California, Michigan and Pennsylvania, had no state mandate concerning the transportation of public school pupils. The decision to transport public school pupils in these states is made by the local school board. Ohio had no mandate for transporting students in grades 9 through 12 but did mandate school transportation for pupils in kindergarten through grade 8 who lived more than two miles from school. New Jersey mandated transportation for public school pupils in grades Kindergarten to 8 who lived more than two miles from school. New York mandated transportation for pupils in

grades Kindergarten to 8 who lived between two and 15 miles from school. Transportation was mandated for grades 9 through 12 in New Jersey for pupils living more than two and a half miles from school and in New York for pupils living between three and 15 miles from school. Florida mandated the transportation of pupils in grades Kindergarten to 12 who lived more than two miles from school and in grades Kindergarten to 6 also under two miles if hazardous conditions were determined to make walking to school unsafe. Texas mandated the transportation of all pupils in grades Kindergarten to 12 who lived more than two miles from school and for those who lived less than two miles from school where hazardous conditions existed.

Nonpublic school pupils. Three states, California, Florida and Texas, did not mandate the transportation of nonpublic school pupils. Transportation costs for nonpublic school pupils in these states were negligible. Two states, Michigan and Pennsylvania, did not mandate public school pupil transportation but required that nonpublic school pupils be transported if public school pupils were transported. Ohio mandated the transportation of nonpublic pupils in grades Kindergarten to 8 for resident pupils attending a school within 30 minutes from the public school the pupil would attend. Two states, New Jersey and New York, mandated the transportation of nonpublic school pupils who lived more than two miles from school (for grades K-8) and of pupils in grades 9 to 12 who lived more than 2.5 miles from school (New Jersey) and three miles from school (New York). New York mandated the transportation of these pupils whose residence was up to a maximum of 15 miles from school. New York also mandated that districts provide school transportation from a centralized pick-up point to their resident nonpublic school pupils who lived more than 15 miles from their school, if the district was already transporting pupils to that school.

Handicapped pupils. As required by Federal law, all states mandated the transportation of handicapped pupils as indicated by the pupil's individualized education program regardless of the distance from home to school, including transportation to out-of-state programs if needed. In most states, out-of-state transportation occurred only rarely and placements called for by students' individualized education programs and transportation services were solely to programs operated by public schools for public school students. In Ohio, transportation was provided to handicapped pupils from public and nonpublic schools to programs primarily operated by public schools. Students were placed in and transported to programs operated by nonpublic schools in two of the eight states. In Pennsylvania, handicapped students were transported to nonpublic schools if they were placed by the public school district in one of 42 state-approved nonpublic schools. New York mandated transportation of nonpublic school handicapped pupils to programs

Table II

State Mandates in Eight States Concerning School Transportation For
Public School, Nonpublic School and Handicapped Pupils
1981-82

STATE	MANDATE FOR		
	Public School Pupils	Nonpublic School Pupils	Handicapped Pupils
California	No mandate	No mandate	Public school pupils age 3-21 are eligible for transportation from home to school regardless of the distance according to the pupil's individualized educational program.
Florida	K-12 more than 2 miles from school; K-6 under 2 miles if hazardous conditions.	No mandate	K-12 public school pupils are eligible for transportation from home to school regardless of the distance.
Michigan	No mandate	Equal treatment required. If the district provides transportation to public school pupils, similar service to nonpublic school pupils living more than 1.5 miles from the public school must be provided.	Transportation provided to public school pupils up to age 26 regardless of the distance from home to public school, according to the pupil's individualized educational program.
New Jersey	K-8 more than 2 miles from school; 9-12 more than 2.5 miles from school.	K-8 more than 2 miles; 9-12 more than 2.5 miles from school.	Transportation provided to public school pupils from ages 3-21 to schools according to the child's individualized educational program.

Table II (Continued)

State Mandates in Eight States Concerning School Transportation For
Public School, Nonpublic School and Handicapped Pupils
1981-82

STATE	MANDATE FOR		
	Public School Pupils	Nonpublic School Pupils	Handicapped Pupils
New York	K-8 more than 2 miles from school up to 15 miles; 9-12 more than 3 miles from school up to 15 miles.	K-8 2-15 miles from school; 9-12 3-15 miles from school with centralized pick-up points.	Service depends on child's individual education program. Transportation is provided for public and nonpublic schools.
Ohio	K-8 more than 2 miles from school; no mandate for 9-12 pupils.	All nonpublic K-8 pupils must be transported if 30 minutes from the public school they would attend.	Transportation provided to all pupils age 3-21 attending public and nonpublic schools (to programs typically held in the public schools) according to the pupil's IEP.
Pennsylvania	No mandate	Nonpublic pupils must be transported if they live in a district in which public school pupils are being transported.	Transportation provided to public school pupils and those placed by public school districts in an approved private school age 4-21 according to the pupil's IFP which is approved by the district and the Education Department.
Texas	K-12 more than 2 miles from school and under 2 miles if hazardous conditions.	No mandate	Transportation provided to public school pupils to and from school according to the pupil's individualized educational program.

Table III

Provision of Nonmandated Transportation Services

STATE	Transportation Mandates		PUBLIC SCHOOLS		NONPUBLIC SCHOOLS		Reimbursement for Nonmandated Service?	Percent Transported Who Are Not Required by Mandate
	Public	Nonpublic	Do Districts	Funding	Do Districts	Funding		
			Provide Non-Mandated Service?	Sources	Provide Non-Mandated Service?	Sources		
California	No	No	Yes	State, local	Yes	Local	Yes ^a	91
Florida	Yes	No	Yes	Local	No		No	8.5
Michigan	No	No ^b	Yes	State, local	No		Yes	97
New Jersey	Yes	Yes	Yes	Local	Yes	Local	No	18
✓ New York	Yes	Yes	Yes	State, local	Yes	State, local	Yes	17 ^c
Ohio	Yes ^d	Yes ^d	Yes	State, local	Yes	State, local	Yes	35
Pennsylvania	No	No ^b	Yes	State, local	No		Yes	N/A
Texas	Yes	No	Yes	Local	No		No	N/A

a Reimbursement to public schools, however, is limited to prior year costs plus a cost of living adjustment.

b Equal treatment is required. If the district provides transportation to public school pupils, they must provide similar services to nonpublic pupils in similar circumstances.

c The actual figure is higher since data are collected only on those transported who live less than a mile and a half from school and not on those who live between a mile and a half and the two (K-8) and three (high school) mile minimum distance from school as required by the state mandate.

d Transportation is mandated for grades K-8 only.

provided either in public or nonpublic schools, if the programs were provided by the public school in accordance with the pupil's individualized education program developed by the public school. In addition, New York mandated the provision of transportation to nonpublic school handicapped pupils who were not placed by the public school but who attended such nonpublic school to receive special education programs and services similar to those recommended by the public school on the pupil's individualized education program.

Federal law requires that each pupil with a handicapping condition be provided a free appropriate public education in the least restrictive environment. The law does not restrict the location of such program provision to public schools. If it is determined that an appropriate program can only be provided in a nonpublic school, and the school in question meets standards of the state educational agency, the cost of such nonpublic placement, including transportation, must be paid by the public school.

Provision of Nonmandated Transportation Services

Table III presents findings concerning the provision of transportation services not required by state mandate. For public and nonpublic school transportation combined, five states provided state reimbursement for nonmandated transportation services and three states did not. The percentage of pupils transported who were not required to be transported varied from 8.5 percent to 97 percent. The large variation in the extent of nonmandated transportation services provided appears to be primarily due to the differences in mandates for the transportation of public school pupils. That is, states with no mandates for regular public school pupil transportation had high percentages of nonmandated pupil transportation. Another contributor to differences in nonmandated transportation services among the states may be a result of whether or not state reimbursement was provided for these services.

Extent of the System

In addition to state mandates that define the scope of services provided, factors concerning the extent of the system such as size, variety of services provided, and type of ownership of transportation fleets, may have an influence on cost.

A study made by the New York State Legislative Commission on Expenditure Review (reported in Hennigan et al. 1978) compared 120 school districts with low "cost per pupil bus mile"² with 165 school districts with high "cost per pupil bus mile." The low cost districts were found to:

- Transport an average of 21 times more pupils
- Operate more buses and drive more miles
- Operate larger buses and transport more pupils per bus
- Operate in more densely populated districts (with nine times more pupils per square mile)

These findings suggest that lower expenditures may be related in large part to a scale phenomenon independent of transportation policies: the higher the density of pupils transported, the lower the cost.

Several scale characteristics that may affect costs were examined in the present study. These characteristics included pupils transported, buses used, miles traveled and transportation for nonpublic school pupils. The New York State Legislative Commission study suggests that greater numbers of pupils transported and the transportation of greater percentages of pupils enrolled would be expected to decrease costs per pupil. Greater numbers of buses used and greater miles traveled per pupil would be expected to increase costs. The extent to which different types of services were provided was also expected to increase costs. The provision of transportation services to nonpublic school pupils and the extent to which smaller buses were used are evidence that the transportation system is providing different types of services that may increase costs. The percentage of district owned versus private contractor transportation systems was also examined to test the commonly held opinion that contracted operations are more costly (Hennigan et al. 1978).

Pupils transported. Table IV shows that New York State transported the largest absolute number of pupils of the eight states in 1981-82 (1,977,152) and had the second largest total enrollment. In terms of the percentage of enrolled public and nonpublic school pupils transported, the states divided into three groups: 1) states transporting approximately 60 percent of their enrolled school pupils: New York (59.3 percent), Ohio (59.3 percent) and Pennsylvania (62.8 percent); 2) states transporting approximately 45 percent of their student bodies: New Jersey (42.3 percent), Florida (43.1 percent), and Michigan (48.0 percent); and 3) states transporting approximately one quarter or less of their enrolled pupils: Texas (27.2 percent) and California (19.4 percent). The idea that the bigger the system the less the cost is supported by the fact that two of the largest systems, Ohio and Pennsylvania, had relatively low costs per pupil transported and California, with the smallest system, had the highest cost. New York with a large system had a relatively high cost per pupil transported. This is probably related to three separate factors: first, a large proportion of nonpublic students, whose transportation costs as estimated locally are 26 percent higher than those of public school students; second, a relatively low proportion of district-owned transportation fleets; and third, relatively greater use of smaller buses. Texas had a small system and relatively low costs probably because it did not have a nonpublic school transportation system.

Buses used. New York State had the most buses of the eight states with 24,999 buses as shown in Table V. Although more

² Cost per pupil bus mile is defined as cost divided by the product of the number of weighted pupils transported and the number of bus miles traveled (Hennigan et al. 1978, p. 60)

Table IV

Enrollment and Transportation Data for Eight Large States—1981-82

STATE	ENROLLMENT AND TRANSPORTATION DATA									
	Public School Enrollment	Nonpublic School Enrollment	Total Enrollment	% Nonpublic Enrollment is to Total Enrollment	Total Transportation Costs	Pupils Transported	Cost Per Pupil Enrolled	Cost Per Pupil Transported	% Pupils Transported are to Total Enrollment	% District Operated (vs. Private Fleets)
California	3,976,676	529,013	4,505,689	11.7	\$332,596,155 ^a	874,069 ^b	\$ 73.82	\$380.51	19.4 ^f	70
Florida	1,409,315	218,163	1,627,478	13.4	151,996,575 ^a	702,154 ^a	93.39	216.47	43.1	93
Michigan	1,803,034	230,000	2,033,034	11.3	200,000,000	975,904	98.38	205.15	48.0	98.5
New Jersey	1,204,718	200,616	1,405,334	14.3	202,369,721 ^g	593,807	144.00	340.80	42.3	40
New York	2,773,014	560,099	3,333,113	16.8	628,443,417	1,977,152	188.55	317.85	59.3	50
Ohio	1,901,661	254,525	2,156,186	11.8	253,367,466 ^c	1,277,855	117.51	198.28	59.3	97
Pennsylvania	1,839,015	394,099	2,233,114	17.6	300,797,722 ^g	1,404,343	134.70	214.19	62.8	33.3
Texas	3,074,505	148,534 ^d	3,223,039	4.6	177,146,488 ^{a,e}	875,670 ^a	54.96	202.30	27.2	99.8

SOURCE: New York State Education Department Survey on School Transportation Costs, Practices and Policies unless otherwise indicated.

a Data are available only for public school pupils.

b Data are available only for public school pupils transported on school buses.

c Costs for bus purchase were approximately \$19 million below average compared with costs for bus purchase from 1979-80 to 1983-84.

d Source: U. S. Department of Education, National Center for Education Statistics, derived from the survey of private elementary and secondary schools, 1980-81, as reported in the Digest of Education Statistics 1983-84, Table 37.

e Estimated from the figure for state allocation for regular public school transportation (\$110,539,409) which is approximately 80% (rough estimate) of State aid for handicapped and regular public school transportation which, in turn, is approximately 78% (rough estimate) of total costs for regular and handicapped transportation. This estimate does not include costs for nonpublic transportation.

f This percentage may be low since the number of nonpublic school pupils transported, which is unknown, was estimated as zero. Another estimate is the percentage of public school pupils transported to public school enrollment which is 21.9%.

g Costs include the cost of transportation of pupils on public transit systems, although this is estimated to be a small portion of total costs.

Table V

Buses and Miles Traveled for Eight Large States—1981-82

STATE	Pupils Transported	Number of Buses	Pupils Transported per Bus	Type I Buses	Type II Buses	Type II Buses as Percent of Total Buses	Annual Miles Traveled	Annual Miles Traveled Per Pupil Transported	Annual Miles Traveled per Bus
California	874,069 ^a	11,434	76	8,929	2,505	28	188,520,227	216	16,488
Florida	702,154 ^b	7,320	96	7,220	100	1	111,678,660 ^c	157	15,257
Michigan	975,904	11,498	85	11,150	348	3	105,576,809	108	9,182
New Jersey	593,807	11,295	53	7,224	4,071	36	60,717,815 ^c	102	5,376
New York	1,567,261 ^c	24,999	63	16,812	8,187	33	279,569,354 ^{c d}	178	11,183
Ohio	1,277,152	14,371	89	14,001	370	3	151,264,620	118	10,526
Pennsylvania	1,404,343	15,298	92	13,961	1,337	9	233,286,489 ^c	166	15,249
Texas	875,670 ^b	20,904	42	18,522	2,382	11	149,747,150 ^c	171	7,164

SOURCE: Statistics on School Transportation, 1981-82, National Association of State Directors of Pupil Transportation Services, except where otherwise indicated.

a Data are available for public school pupils transported on school buses.

b Data are available only for public school pupils.

c Source: Survey from the present study.

d Since private contractor mileage is not available and is estimated to be roughly equal to the mileage of district-owned fleets, miles traveled are estimated based on doubling miles traveled by district-owned fleets.

buses increase absolute costs, cost per pupil is reduced for states which transported more pupils per bus. The states varied in bus usage from 42 pupils per bus (Texas) to 96 pupils per bus (Florida);³ New York ranked fifth highest, with an average of 63 pupils per bus. Comparing these data with cost data presented in Table IV shows that the two states with the highest cost per pupil transported, California and New Jersey, have relatively low bus usage, 51 and 53 pupils per bus, respectively.

Table V also shows the numbers of Type I and II buses used by the states. Type I buses are regular size buses which typically seat 60 passengers; Type II buses are smaller buses which generally seat 19 passengers or less. Type I buses are usually used for regular transportation to and from public schools while Type II buses are usually used for transportation to nonpublic schools, for handicapped pupils requiring special transportation services, and for the transportation of other small groups of pupils. Greater use of Type I buses was expected to decrease overall costs; greater use of Type II buses was expected to increase overall costs.

The percentage that Type II buses are of the total fleet varies from 1 percent (Florida) to 36 percent (New Jersey). The hypothesis that the greater use of Type II buses drives costs up is confirmed by the fact that the higher cost-per-pupil states, California, New Jersey and New York (Table IV), also have the largest percentages of Type II buses: 28, 36 and 33 percent, respectively. Figure 1 is a scatter plot of these data which illustrate that the states fall into two groups: (1) high cost-high percent of Type II buses and (2) low cost-low percent of Type II buses.

Miles traveled. The more miles a bus travels per pupil, the greater the costs are expected to be. Greater mileage per pupil could result, for example, from routing in areas of sparsity requiring buses to travel greater distances per pupil, from inefficient routing patterns, or from transportation to many, rather than few, destinations.⁴ In 1981-82, the states reported mileage figures for regular school transportation (excluding field trips and interscholastic events and miles traveled in public transit systems) of from 60,717,815 (New Jersey) to 279,569,354 (New York). Miles traveled per pupil transported ranged from 102 (New Jersey) to 216 (California). States with higher mileage per pupil transported, California, New York and Texas, had a considerably higher average cost per pupil transported (\$305) than did the states (Ohio, Michigan and New Jersey) with lower mileage per pupil (\$230).

Miles traveled per bus ranged from 5,376 (New Jersey) to 15,257 (Florida). New York ranked sixth highest of the eight states with an average of 11,183 miles traveled per bus. Although it might be speculated that states who put more miles on their buses would have lower costs per mile, the data do not support this conclusion.

³ Pupil counts greater than the occupancy of the bus may be due to buses making more than one run per day

Nonpublic school pupil transportation. Data were not available from all of the states on the number of nonpublic pupils transported, but other information allows some general conclusions concerning the extent of nonpublic school pupil transportation in the states. Tables II and III show that three states, California, Florida and Texas, provide neither state nor local support for transportation services to nonpublic school pupils. The other states mandated the transportation of nonpublic school pupils and provided state aid for such services. Ohio and New York also provided state aid for certain nonmandated transportation services to nonpublic school pupils. For states that transport nonpublic school pupils, those with larger nonpublic enrollments were assumed to have larger nonpublic school transportation systems. It was expected that states with larger nonpublic school transportation systems would have higher transportation costs.

Table IV shows that nonpublic school enrollment ranged from 200,616 (New Jersey) to 560,099 (New York) for the five large states that provided nonpublic school transportation in 1981-82: Michigan, New Jersey, New York, Ohio and Pennsylvania. The percentage of nonpublic school pupil enrollment to total enrollment ranged from 11.3 percent (Michigan) to 17.6 percent (Pennsylvania) for these states. New York's nonpublic school system was the second largest of these five states, with its enrollment 16.8 percent of total enrollment.

Transportation costs per pupil transported for the two states, Pennsylvania and New York, with large nonpublic school systems were higher (a weighted average of \$281) than corresponding costs for the two states, Michigan and Ohio, with small nonpublic systems (a weighted average of \$201).

District-owned versus private contractor transportation systems.⁵ A commonly held opinion among school transportation officials is that contractor-owned systems are more costly than district-owned transportation systems, although this was not confirmed by a 70-district study in New York State (see Hennigan et al., 1978). The states included in this study varied considerably in the percentage of district-owned versus private transportation fleets (see Table IV) — from 33.3 percent (Pennsylvania) to 99.8 percent (Texas). New York had the third smallest percentage of district-owned transportation systems with 50 percent. Comparing costs per pupil transported for the three states with the highest percentages of

⁴ Mileage per pupil may be artificially low to the extent that the pupil count is increased by occasional users. That is, a state that transports all of its pupils daily throughout the school year would have greater mileage per pupil (but not necessarily greater cost per pupil) than a state which transported a portion of its pupils only once or twice a year. To allow valid comparisons among states, the pupil count for this study reflects pupils who are transported regularly throughout the school year. Caution should be taken when interpreting mileage-per-pupil data since differences exist in the way that states collect mileage data.

⁵ Data on pupils transported on public transit systems, such as New York City's, were excluded from this analysis

Figure I: Scatter Plot of Cost Per Pupil Transported and the Percentage of Type II Buses in Eight States

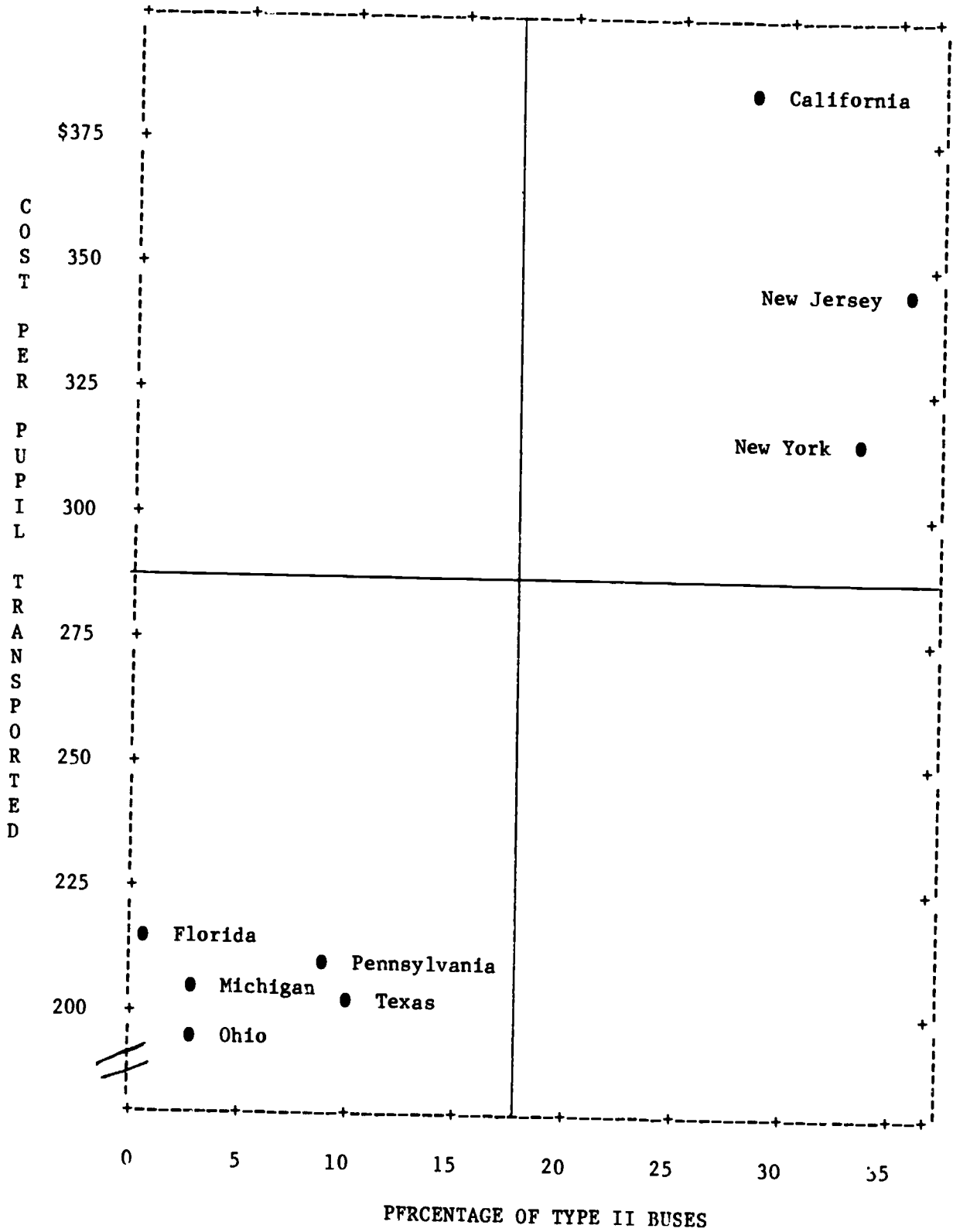
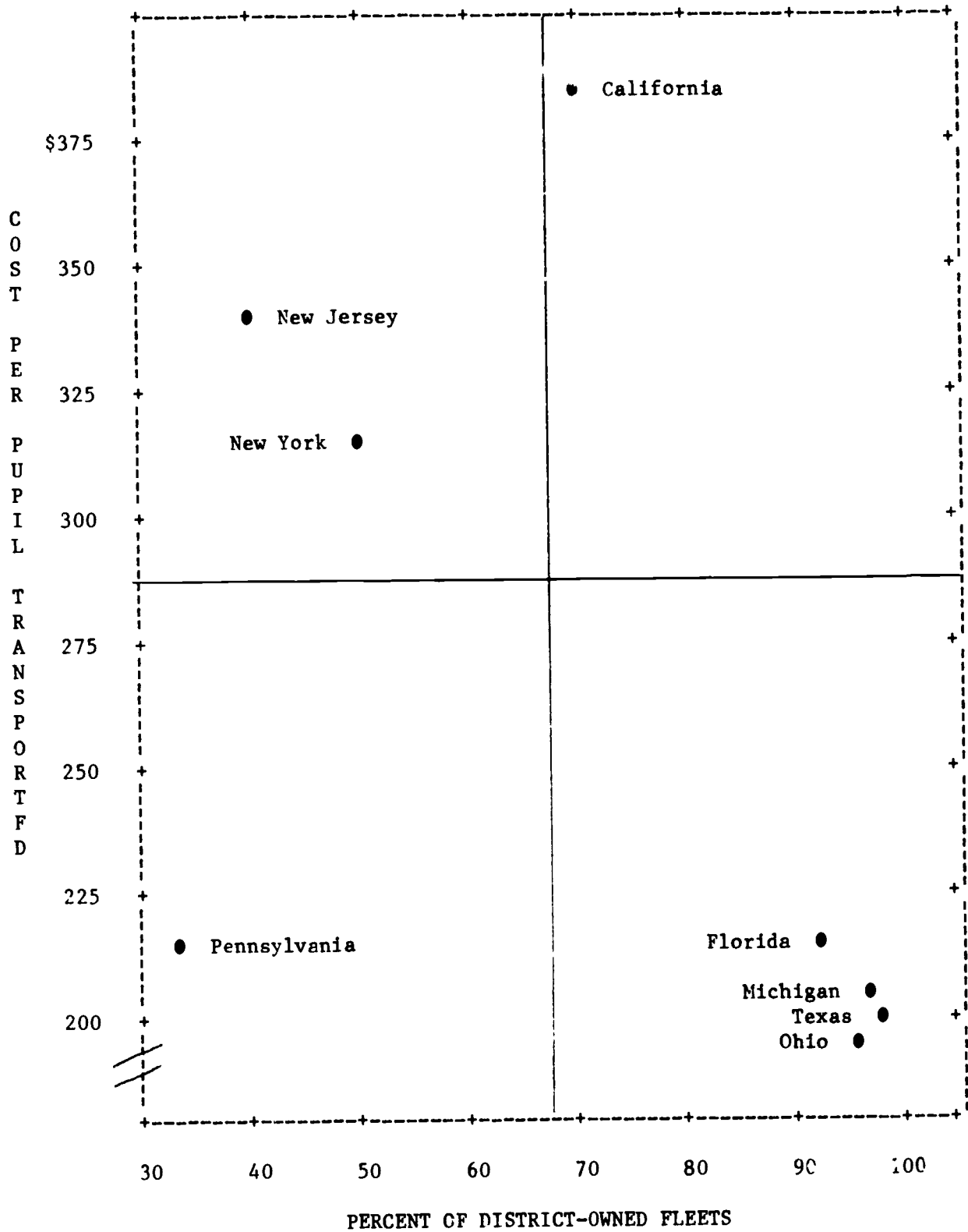


Figure II: Scatter Plot of Cost Per Pupil Transported and the Percent of District-Owned Transportation Fleets



district-owned fleets, Texas, Ohio and Michigan, with the three states with the lowest percentages, Pennsylvania, New Jersey and New York, revealed a considerable difference: \$201 per pupil versus \$290 respectively, or a 44 percent difference in cost. It was found that states with larger percentages of district-owned systems had lower costs per pupil transported. Figure II shows that, with the exception of Pennsylvania, the states fall into two groups: (1) high cost-low percent of district-owned fleets and (2) low cost-high percent of district-owned fleets. It may be, however, that cost differences are due more to factors such as state mandates and types of services provided, than to whether the service provider is public or private. In other words, certain types of services or mandated policies which drive down cost per pupil transported, may tend to be found in states with higher percentages of district-owned systems.

Summary of Transportation Mandates, Practices and Policies

California, Michigan and Pennsylvania did not mandate transportation for public school pupils and California, Flor-

ida and Texas did not mandate transportation for nonpublic school students. According to Federal law, all states mandated transportation for handicapped pupils but Pennsylvania and New York were the only states that mandated transportation of handicapped pupils to nonpublic schools. Five states, except Florida, New Jersey and Texas, provided state aid for transportation of pupils not required by state mandates.

The size of the transportation system varied from approximately 60 percent of enrolled school pupils for New York, Ohio and Pennsylvania to one quarter or less for Texas and California. States varied considerably in the use of smaller buses and states which used smaller buses more had higher costs per pupil transported. Higher costs were also found for states with greater mileage per pupil, larger nonpublic school enrollments, and lower percentages of public owned transportation fleets.

STATE REIMBURSEMENT POLICIES

Several types of variables that contribute to an explanation of a state's transportation costs have been examined. State mandates affecting the scope of service, characteristics that determine the size of the transportation system, the size of nonpublic school transportation systems, and public versus private ownership of school transportation fleets. Since state aid is used to pay for a large portion of school transportation costs, the states' policies concerning reimbursement for transportation expense may also influence the manner in which a state spends on transportation and the amount spent. Reimbursement formulas can relate to cost by limiting aid to allowable items of expenditure, determining the state contribution to local costs, encouraging efficiencies, etc.

Formulas for State Reimbursement

Table VI summarizes the states' reimbursement formulas for school transportation costs.

State reimbursement school transportation formulas for New York and New Jersey were 90 percent of allowable costs.⁶ Michigan reimbursed school districts according to eligible costs or the state average transportation, whichever was less. Florida, Ohio, Pennsylvania and Texas administered transportation aid according to a formula based on some combination of the following: mileage, students transported and the density of students along school transportation routes. Pennsylvania's formula was also determined by the number of buses, passenger use per bus, excess driver hours and a cost of living adjustment. California's school transportation reimbursement was determined by prior year reimbursement plus a cost of living adjustment.

The states varied in the percentage of transportation costs that were reimbursed to school districts from 40 percent (Michigan) to 78 percent (Texas).⁷ New York ranked second highest, reimbursing districts for 77.5 percent of total transportation costs.

Allowable Costs

Table VII presents data concerning allowable costs for state school transportation reimbursement in 1981-82. States were asked if certain expenditure items were considered to be an allowable cost for state aid. All states did not consider

the transportation of team members to sports events to be an allowable cost. Most states considered the following to be allowable costs for state reimbursement: salaries of transportation personnel, contracted transportation services, insurance premiums related to transportation, replacement costs for a district's fleet (except Pennsylvania), fringe benefits (except Michigan), debt service on bus purchases (except California and Pennsylvania), and transportation to other learning sites during the day primarily for handicapped and vocational pupils (except California). In terms of the number of items examined that were considered to be allowable costs, the states showed little variability. The limited differences in allowable costs showed that Texas, Ohio, New York, New Jersey, and Florida had a slightly more lenient policy, and California and Pennsylvania had a slightly less lenient policy.

Formula Mechanisms to Control Costs

The states' transportation aid policies were also examined for factors designed to limit spending. Four states, New Jersey, New York, Ohio and Pennsylvania, did not have mechanisms to control costs in determining the amount to be reimbursed to school districts for school transportation. Texas also did not use any type of control for reimbursement for regular transportation but capped transportation aid for handicapped pupils at \$1.08 per mile in school buses or \$816 per pupil per year in private cars. California's reimbursement was limited to a cost of living adjustment over the prior year's transportation aid. Florida's transportation aid was limited by a maximum value on the density index of 4.70 students per route mile. Michigan's aid was capped by the annual state allocation for school transportation aid.

Efficiency Factors

The states' school transportation aid policies were examined for evidence of efficiency factors built into their reimbursement systems. Efficiency in six states, Florida, Michigan, New Jersey, New York, Ohio and Pennsylvania, was encouraged by criteria determining eligible pupils, mileage, and allowable costs for state transportation aid. Pennsylvania encouraged more efficient routing by providing an allowance based on the number of passengers. Similarly, Texas, Michigan, Ohio, and Florida encouraged efficient routing by allowing reimbursement according to the number of pupils transported so that districts received more reimbursement for densely populated routes. In California, districts were discouraged from increasing their costs above a cost of living increase by capping transportation aid at 103 percent of prior-year reimbursement. California districts were also discouraged by the aid system from reducing their costs below 95 percent of prior year reimbursement since they would have their reimbursement reduced proportionately.

Table VI

State Reimbursement for School Transportation Costs in Eight States—1981-82

STATE	Percent State Aid to Total Costs ^a	Formula for State Aid Reimbursement	Maximums Used in State Reimbursement	Efficiency Factor in State Reimbursement
California	71	103 percent of prior year reimbursement if expenses are at least 95 percent of prior year reimbursement. If expenses are less than 95 percent of prior year reimbursement, districts receive the percentage their expenses bear to their prior-year reimbursement plus 5 percentage points, all increased by a cost of living adjustment of 5 percent.	Reimbursement is capped at 103 percent of prior year reimbursement.	By capping reimbursement at 103 percent of prior-year reimbursement, districts are discouraged from increasing their costs above a cost of living increase. However, districts are also discouraged from reducing their costs below 95 percent since they will then receive a proportionate amount of prior year reimbursement.
Florida	54	The formula is based on eligible pupils, eligible miles and a density index of students per route mile.	The density index has perimeters, no greater than 4.70 and no less than 1.70 students per route mile. If funds appropriated are less than that required by the formula, funds paid are prorated on a percentage basis.	If districts reduce non-essential mileage (e.g., side trips with an unloaded bus) a district will lower its cost per mile and should therefore receive a greater percentage of their total expenditures funded by state dollars. Higher reimbursement for routes with greater density of students per mile encourages efficient routing.

^a Comparisons of the percent of state aid to total transportation costs are fraught with the same problems as are comparisons of total transportation costs. Since states include different cost items in "total transportation costs," interstate comparisons can be made only assuming considerable measurement error.

Table VI (Continued)

State Reimbursement for School Transportation Costs in Eight States—1981-82

STATE	Percent State Aid to Total Costs ^a	Formula for State Aid Reimbursement	Maximums Used in State Reimbursement	Efficiency Factor in State Reimbursement
Michigan	40 ^b	Reimbursement is paid based on (1) districts' eligible transportation costs or (2) the state average transportation cost per pupil prorated by the percentage of state allocation to total eligible costs, whichever is smaller.	Reimbursement is capped at the annual state allocation for school transportation aid.	Districts are encouraged to be more efficient by receiving state aid which is limited to eligible costs and to state allocation available.
New Jersey	68.8	90 percent of allowable costs.	None.	Mileage limitations for state aid reimbursement and limiting reimbursement to allowable costs only may encourage district efficiency.
New York	77.5	90 percent of allowable costs.	None.	Mileage limitations for state aid reimbursement and limiting reimbursement to allowable costs only may encourage district efficiency.
Ohio	46.5	\$55 per eligible pupil or \$.46 per eligible mile, whichever is greater.	None.	Criteria for pupil and mileage eligibility may encourage district efficiency to meet those criteria.

a Comparisons of the percent of state aid to total transportation costs are fraught with the same problems as are comparisons of total transportation costs. Since states include different cost items in "total transportation costs," interstate comparisons can be made only assuming considerable measurement error.

b For regular and vocational education transportation. The percentage of state aid to total costs for handicapped transportation is 37 percent.

Table VI (Continued)

State Reimbursement for School Transportation Costs in Eight States—1981-82

STATE	Percent State Aid to Total Costs ^a	Formula for State Aid Reimbursement	Maximums Used in State Reimbursement	Efficiency Factor in State Reimbursement
Pennsylvania	66	Reimbursement is determined for each bus in a district's transportation fleet by adding allowances for the vehicle, allowances for approved mileage, passenger use and excess driver hours plus a cost of living adjustment.	None.	Criteria for mileage and allowance for passenger use ^b may encourage district efficiency.
Texas	78 ^c	Reimbursement is based on an allocation per mile of approved route which varies according to the linear density of the route, or the number of students located along a linear mile. Reimbursement for transportation of handicapped pupils in school buses is based on the prior year's cost per mile not to exceed \$1.08 per mile and in private cars is allowed at \$.25 per mile, up to a maximum of \$816 per pupil per year.	None for regular transportation. Reimbursement for the transportation of handicapped pupils is capped at \$1.08 per mile in school buses and at \$816 per pupil per year in private cars.	Higher allocations for routes with higher linear density encourages efficient routing for regular school transportation. The caps on transportation reimbursement for handicapped pupils may also encourage districts to efficiently manage their handicapped transportation programs.

a Comparisons of the percent of state aid to total transportation costs are fraught with the same problems as are comparisons of total transportation costs. Since states include different cost items in "total transportation costs," interstate comparisons can be made only assuming considerable measurement error.

b Passenger use per bus is examined as the highest number of passengers carried by the bus on any one run during the day. The efficiency of this procedure may be less than if passenger use were examined for every run of the day.

c Estimate.

Table VII

Allowable Costs For State School Transportation Reimbursement—1981-82

Expenditure Item	ALLOWABLE COSTS BY STATE							
	Calif- ornia	Florida	Michigan	New Jersey	New York	Ohio	Pennsyl- vania	Texas
Transportation for team members to sports events								
Transportation of pupils to other learning sites during the school day		X ^a	X ^b	X ^c	X ^d	X ^c	X ^c	X
Insurance premiums related to transportation	X	X	X	X	X	X	X	X
19 Salaries of transportation personnel	X	X	X	X ^e	X	X	X	X
Contracted transportation services	X	X	X	X ^e	X	X	X	X
Replacement costs of a district's fleet	X	X	X	X	X	X		X
Fringe benefits	X	X		X	X	X	X	X
Debt service (principal and interest on bus purchases)		X	X	X	X	X		X

a Handicapped, gifted and occupational therapy students only.

b Handicapped, vocational, cooperative programming, and pregnant pupils only.

c Handicapped and vocational school pupils only.

d Handicapped, vocational and cooperative programming pupils only.

e To and from school only.

Summary of State Reimbursement Policies

The eight states were compared concerning policy for state aid for school transportation. Higher transportation costs were related to states with broader state reimbursement policies and lower transportation costs were related to states with more restrictive policies. New Jersey and New York tended to have broader policies and California and Michigan tended to have more restrictive policies. For New Jersey and New York, this is evidenced by a high fixed percentage (90 percent) of approved cost; a relatively large number of expenditure items that are allowable costs for state reimbursement; a relatively high percentage of state aid to total costs; the absence of maximums in state reimbursement; and the absence of efficiency factors other than limitations inherent in definitions of pupil and mileage eligibility and allowable costs. New York and New Jersey also had relatively high transportation costs per pupil transported.

California in contrast had transportation aid policies which limited increases in transportation aid to a cost of living adjustment rather than according to actual costs, and a relatively small number of expenditure items which were aidable costs. Despite the relatively restrictive nature of these policies California's cost per pupil transported was the highest of the eight states.

The restrictive nature of Michigan's state transportation reimbursement policies is evidenced by its limiting reimbursement according to state allocation, and a relatively low percentage of state aid to total costs. The relationship between state reimbursement policies and costs is confirmed by Michigan's case since it also has a relatively low cost per pupil transported.

PRINCIPAL FINDINGS

A number of factors have been studied for their relationship to the cost of school transportation systems. The following summarizes conclusions that can be drawn about the relationship between the several factors studied and cost based on the data studied from the eight high enrollment states. Table VIII presents data from selected quantitative variables, including cost, to display the figures from which some of the conclusions are drawn.

Mandates. The more mandates a state has concerning the provision of transportation services, the higher the cost will be. New York and New Jersey had more mandates than other states and had relatively high costs per pupil. States with the least state mandates, Florida, Michigan and California, tended to have lower costs per pupil except for California which, although having the least amount of state transporta-

tion mandates, had excessively high costs for handicapped transportation (reportedly spending 10 to 15 times as much on handicapped transportation as on regular transportation).

Provision of Nonmandated Transportation. No relationship could be drawn between the amount of nonmandated transportation and cost probably because states varied so much in terms of their mandates for school transportation. If one wished to compare states according to the relative provision of nonmandated transportation, in further research one could examine the amount of transportation provided to pupils living very close (e.g., less than two miles) and very far (e.g., further than 15 miles) from school, and the amount of transportation provided that is not for to- and from-school transportation.

Number of Pupils Transported. An inverse relationship was found between the number of pupils transported and cost. States transporting larger numbers of pupils, as in the case of Ohio and Pennsylvania, had relatively low costs per pupil transported. Conversely, California had the smallest transportation system and the greatest cost per pupil transported (see Table VIII).

Bus Usage. The fewer pupils transported per bus, the higher the cost. This was substantiated in that the two states with the highest cost per pupil transported, California and New Jersey, had relatively low bus usage.

Use of Smaller Buses. The greater the use of smaller buses, the higher the cost. California, New Jersey and New York used the largest percentage of smaller (Type II) buses and had the highest cost per pupil transported. As can be seen in Table VIII, a strong relationship is evidenced by a much greater use of smaller buses in high spending versus low spending states. Figure 1 graphically depicts this relationship.

Miles Traveled Per Pupil. The more miles traveled per pupil, the greater the cost. In Table VIII, the data suggest a weak positive relationship between cost and miles travelled. States with greater mileage per pupil transported, California, New York and Texas, had a considerably higher average cost per pupil transported than did states with lower mileage per pupil, Ohio, Michigan, and New Jersey. (Miles traveled per bus showed no relationship with cost.)

Nonpublic School Pupil Transportation. Among the states which mandated transportation to nonpublic schools, transportation costs per pupil transported were higher for the two states with larger nonpublic school systems, Pennsylvania and New York, than for the two states with small nonpublic systems, Michigan and Ohio. In Table VIII, the data suggest a weak positive relationship between cost and nonpublic enrollment for the five states⁹ which mandated nonpublic transportation.

⁹ Michigan, New Jersey, New York, Ohio, Pennsylvania and Texas

Table VIII

Transportation Cost and Selected Variables in Eight States
1981-82

STATE	COST PER PUPIL, TRANSPORTED	SELECTED VARIABLES					
		District Operated Fleets	Type II Buses/ All Buses	Pupils Transported As a Percent of All	Annual Miles Traveled Per Pupil Transported	Percent Nonpublic Enrollment	
HIGH COST	California	\$ 380.51	70.0%	28%	19.4	216	11.7
	New Jersey*	340.80	40.0	36	42.3	102	14.3
	New York*	317.85	50.0	33	59.3	178	16.8
LOW COST	Florida	216.47	93.0	1	43.1	57	13.4
	Pennsylvania*	214.19	33.0	9	62.8	166	17.6
	Michigan*	201.15	98.5	3	48.0	108	11.3
	Texas	202.30	99.8	11	27.2	171	4.6
	Ohio*	198.28	97.0	3	59.3	118	11.8

* States which mandated nonpublic school transportation.

District-Owned Versus Private Contractor Transportation Systems. States with relatively greater use of district-owned fleets had lower cost per pupil transported. Texas, Ohio and Michigan had larger percentages of district-owned fleets and had considerably lower transportation costs per pupil than states with lower percentages of district-owned transportation fleets, Pennsylvania, New Jersey, and New York. As shown in Table VIII, the data suggest an inverse relationship between cost and the percent of district-owned fleets in a state's transportation system. Figure II graphically depicts this relationship.

Allowable Costs for State Reimbursement. No relationship was found between the number of expenditure items allowable for state reimbursement and cost per pupil transported, perhaps because the states did not vary much for the expenditure items studied.

Mechanisms in State Reimbursement Formulas to Limit Spending. Comparing states with mechanisms in their state reimbursement formulas to control spending to those without such control factors showed no clear relationship. Two of the three states, Florida and Michigan, with mechanisms that limited spending, had relatively low cost per pupil transported, but a third such state, California, had the highest cost, reportedly as a result of unusually large costs for handicapped transportation.

Efficiency Factors. The use of efficiency factors in state reimbursement appeared to decrease costs slightly, except in California. States which encouraged efficiency by reimbursing according to the density of pupils transported, Pennsylvania, Texas and Florida, had slightly lower average costs per pupil than states without efficiency factors except for limitations inherent in definitions of pupil and mileage eligibility and allowable costs, Michigan, New Jersey, New York and Ohio. California encouraged efficiency by limiting reimbursement to a cost of living increase over prior year reimbursement, but had the highest cost per pupil transported.

Summary of New York's Transportation Costs. New York's school transportation costs were higher than the median state studied and ranked third highest of the eight high enrollment states. Higher school transportation costs in New York State was associated with relatively greater use of smaller (i.e., Type II) buses, a relatively low percentage of district-owned transportation fleets, a relatively large number of miles traveled per pupil, a relatively large proportion of enrolled nonpublic pupils for whom transportation is mandated, and relatively broad state aid policies for school transportation. The relatively large percentage of pupils transported in New York may have helped to contain costs since this factor is associated with lower cost per pupil.

RECOMMENDATIONS TO IMPROVE EFFICIENCY IN SCHOOL TRANSPORTATION IN NEW YORK STATE

This report has examined the effect of several practices and policies on the cost of school transportation: state mandates, policies and practices concerning nonmandated transportation, the extent and variety of the transportation service, practices concerning public versus private ownership of transportation fleets, and policies governing state reimbursement for school transportation expense. Data from eight high enrollment states have been examined with a special look at the findings for New York State.

A number of proposals to improve efficiency in school transportation could be formulated based on the findings of this report. The recommendations made in this section assume that the basic transportation policy is acceptable in terms of services provided and the balance between state and local funding and control. The proposals are positive approaches to cost efficiency rather than negative ones such as reducing services, reducing the amount of money spent, or increasing mandates. They are intended to reduce cost without reducing services or safety measures, and without changing the overall 90-10 aspects of the state reimbursement formula or mandates regarding school obligations to transport students. State mandates and reimbursement policies remain important parts of the data base, however, since they do explain much of how a state provides and pays for school transportation service.

The recommendations that follow relate to findings from this study concerning the extent of the transportation system, allowable costs for state aid, and ownership of transportation fleets.

I. Extent of the System

The findings concerning the extent of the system were that: the larger the numbers of students transported, the lower the cost; the more pupils transported per bus, the lower the cost; the greater the use of smaller buses, the higher the cost; the more miles traveled per pupil, the greater the cost; and the larger the nonpublic school enrollment among states which mandated transportation to nonpublic schools, the greater the cost.

A. Regional transportation proposals are aimed at making more transportation resources available to more users with a minimum amount of duplication or overlap between districts. More pupils would be transported per bus; larger numbers of pupils transported would result in less

need for smaller buses, particularly for populations such as nonpublic, handicapped, and BOCES pupils; maintenance facilities would serve more buses with less total maintenance staff and less overlap in purchasing and storage of supplies; and the number of miles driven per pupil transported would be reduced as a result of larger scale routing. The following recommendations are advanced:

1. Regional transportation systems

Proposal: Encourage the development of regional transportation systems for transporting nonpublic, handicapped and BOCES pupils by amending the Education Law to require districts that transport resident pupils out-of-district to request from their BOCES a regional transportation analysis to determine if cooperative transportation would result in a more efficient and economical provision of out-of-district transportation. Districts which fail to request the analysis or fail to implement the recommendations of the analysis would not receive Transportation Aid on the cost of out-of-district transportation.

2. Regional bus maintenance

a. Proposal: Encourage the development of regional school bus maintenance programs by making the following changes in the Education Law regarding Transportation Aid.

- 1) Aid 90 percent of actual regional maintenance expenses.
- 2) Aid the cost of constructing regional maintenance facilities.
- 3) Only allow Building Aid on the rental or lease of maintenance facilities serving a single district.
- 4) Allow no aid on the cost of maintenance for district-owned and-operated buses performed by private contractors where a regional maintenance facility is capable of performing the maintenance.

b. Proposal: The State Education Department, in cooperation with the Department of Transportation, should seek the resources to develop a computerized fleet maintenance software package that would be made available at little or no cost to regional school bus maintenance programs, school districts and BOCES.

3. Computerized bus routing

Proposal: The State Education Department, in cooperation with the Department of Transportation, should seek resources to develop a computerized routing software package that would be made available at little or no cost to all school districts and

BOCES. The software package should have the capability of dealing with both regional and individual district transportation systems.

B. Location of transportation facilities. The goal of this recommendation is to locate transportation facilities so that deadhead miles, and therefore, miles per pupil transported, are reduced.

Proposal: Ensure that efficiency and economy are considered in the selection of sites for new transportation facilities by amending the Education Law to require justification of site selection as a requirement for approval of the cost of new facilities for Building Aid.

C. Bus capacity formula. A school district that purchases buses for the transportation of pupils is eligible for transportation aid if a need can be demonstrated. Districts demonstrate need by submitting routing data sheets to the Department which report the number of quota (*i.e.*, handicapped and pupils who live more than 1-1/2 miles from home to school) and nonquota pupils being transported. This information is used to compute a capacity rating for each bus which determines whether and how much aid should be given. The capacity rating is the Department's assessment, as calculated by a bus capacity formula, of the extent to which the actual seating capacity of buses is used for quota pupils. A capacity rating which reflects 100 percent use of the actual seating capacity by quota pupils would result in the maximum aid possible; one which reflected partial use would result in a corresponding portion of the maximum aid possible.

Districts have engaged in certain practices to raise their capacity ratings to obtain increased aid on new buses. This represents a savings at the local level, but an increase in state-level cost due to inefficient routing. In some cases, these practices may threaten the safety of pupils. Examples of such practices are designing routes so that quota pupils will be transported on each run, carrying standees to increase the number of quota pupils transported, limiting the number of quota pupils on buses that have received all aid due on the purchase cost and maximizing the number of quota pupils on buses that have not received all aid due on the purchase cost, etc.

This proposal would eliminate the bus capacity calculation and give the authority to the Commissioner to establish criteria for efficient and safe bus routes. Abuses such as the examples given above would disappear, resulting in reduced mileage per pupil, more efficient use of buses and greater safety for pupils. The Commissioner's routing criteria would encourage even further achievement in these areas.

Proposal: Encourage more efficient and safer routing by amending the Education Law to eliminate the

bus capacity calculation in determining aid on the purchase of new school buses and give the Commissioner the authority to establish criteria for efficient and safe bus routes.

II. Allowable Costs for State Aid

Findings concerning allowable costs for state reimbursement for transportation expenses show little variation among states. All states consider insurance premiums related to transportation to be an allowable cost and all states but one, Pennsylvania, consider replacement costs to be an allowable state aid cost. In most cases of damage to vehicles, the costs to replace the buses are less than the costs for premiums for collision insurance. Since the expense of replacing buses and collision insurance is borne mostly by the state, districts have little incentive to terminate unnecessary insurance premiums. This proposal would reduce costs by eliminating an unnecessary item of expense to the state: state aid on premiums paid for collision insurance. It is expected that if such premiums were not aided that school districts would terminate their collision insurance policies, thus resulting in a savings at the local level also.

Proposal: Reduce the cost to the State by amending the Education Law to eliminate aid on the premiums paid for collision insurance.

III. Public or Private Ownership of Transportation Fleets

A review of the literature revealed conflicting evidence concerning the effect on cost of the type of ownership of

transportation fleets. The present study found that states with higher percentages of district-owned fleets tended to have lower costs. Data are not readily available from private contractors to assess the relative cost effectiveness of public versus private systems in New York State. The following recommendations are aimed at making the data available for an assessment of the relative cost-effectiveness of public versus privately owned systems and requiring boards of education to consider the relative cost effectiveness of public versus private systems when entering into or extending a transportation contract.

1. Transportation audits

Proposal: Verify data submitted to the State Education Department by private contractors as part of the contract approval process by amending the Education Law to require a periodic examination by an independent auditor of any and all accounts of the private contractor in connection with a contract existing between the contractor and a school district or BOCES.

2. Transportation contracts

Proposal: Encourage a thorough study by school districts of the possible methods of providing transportation by amending the Education Law to require that, before a board of education enters into or extends a competitively bid transportation contract, a public disclosure be made of the regional mean cost per mile for district-owned and operated systems and private contract systems. The New York State Education Department would supply the regional mean cost per mile for each system.

BIBLIOGRAPHY

- Anderson, W. Ways to prevent gasoline costs from burning your budget. *American School Board Journal* (November 1979) 166, No. 11, pp. 33-35. (ERIC Document Reproduction Service No. EJ 210936).
- Baacke, C.M. and Frankel, S.M. Cost-effectiveness of premium versus regular gasoline in MCPS buses. Rockville, Md.: Montgomery County Public Schools, 1979. (ERIC Document Reproduction Service No. ED 208048).
- Bayliss, E.T. *Cost analysis of a regional transportation system*: Bedford, Ma.: Concord Research Corp., April 1974.
- Bieber, R.M. School bus fleet safety: Planning and development. *School Business Affairs* (April 1984) 50, No. 4, pp. 24, 51. (ERIC Document Reproduction Service No. EJ 299454).
- Bosse, J. Transportation in the Millard School District. Paper presented at the Annual Meeting of the National School Board Association, San Francisco, Ca., April 23-26, 1983.
- Brody, Z.H. Transportation problems in special education programs in rural areas. Oak Ridge, Tn.: Council for Exceptional Children, 1971. (ERIC Document Reproduction Service No. ED 057509).
- Button, C. T. Administrative support is essential to a good transportation program. *School Business Affairs* (April 1984) 50, No. 4, pp. 22, 52. (ERIC Document Reproduction Service No. EJ 299453).
- Colorado State Department of Education. How to conserve energy in school transportation systems. Denver, Co.: Colorado State Department of Education, 1976. (ERIC Document Reproduction Service No. ED 128929).
- Comeau, L.F. How to make a critical analysis of your transportation system. Paper presented at the 66th Annual Meeting of the Association of School Business Officials, New Orleans, La., October 26-30, 1980. (ERIC Document Reproduction Service No. ED 196167).
- Crash scene: Screams and sirens. *American School Board Journal* (November 1983) 170, No. 11, pp. 40-41.
- Edwards, J.C. California's computerized pupil transportation systems. *School Business Affairs* (July 1983) 49, No. 7, pp. 48-49. (ERIC Document Reproduction Service No. EJ 283913).
- ESTEEM - Encouraging School Transportation Effective Energy Management. Washington, D.C.: Department of Transportation, 1977. (ERIC Document Reproduction Service No. ED 162907).
- Fuel economy through teamwork. Energy savings in school transportation publication series. 1. Pupil transportation and energy conservation 2. Purchasing for fuel economy 3. Driving for fuel economy 4. Operating for fuel economy 5. The science of saving fuel. Washington, D.C.: Department of Transportation, 1977. (ERIC Document Reproduction Service No. ED 165318).
- Giesguth, J. (Ed.) Energy conservation in school transportation systems. Energy conservation guidelines 4. Trenton, N.J.: New Jersey State Department of Education, 1980. (ERIC Document Reproduction Service No. ED 199841).
- Grant, W.V. Statistic of the Month. *American Education* (January/February 1976) 12, No. 1, p. 38.
- Gresham, R. Diesel powered school buses: An update. *School Business Affairs* (April 1984) 50, No. 4, page 38. (ERIC Document Reproduction Service No. EJ 299460).
- Gresham, R.L. Student management on school buses. Paper presented at the 69th Annual Meeting of the Association of School Business Officials in Phoenix, Az., October 2-6, 1983. (ERIC Document Reproduction Service No. ED 249608).
- Hennigan, R., Furro, O.F., and Gaughan, J.M. Occasional paper . 33. An analysis of the pupil transportation program in New York State. *New York State School Finance Law Study Project 842 PL-93-380*, Vol. VII, 1978.
- Here's the case for diesel engines. *American School Board Journal* (November 1980) 167, No. 11, p. 26. (ERIC Document Reproduction Service No. EJ 236561).

- How to get ready to transport more and more handicapped children to school. *American School Board Journal* (November 1977) 164, No. 11, pp. 37-39 (ERIC Document Reproduction Service No. EJ 167876).
- Humphries, K.W. and Vincent, R. Five tips for cutting transportation costs. *American School Board Journal* (November 1981) 168, No. 11, p. 25.
- Illinois State Board of Education. A safe ride to school; a safe ride home. Springfield, IL: Illinois State Board of Education, 1980. (ERIC Document Reproduction Service No. ED 196161).
- Illinois State Board of Education. Special Transportation Services: "A best practices guide." Washington, D.C.: Department of Education, 1983. (ERIC Document Reproduction Service No. ED 232402).
- Johns, R.L. The funding of school transportation in Tennessee. Washington, D.C.: Office of Education, 1978. (ERIC Document Reproduction Service No. ED 180094).
- Kennedy, P. Practice of charging for school bus rides grows. *Oakland Tribune*. Oakland, Ca., May 22, 1980. (Newsbank Article Reproduction No. NB 50:37).
- Kucera, M.A. Task force on declining enrollment. Data review for cluster V. Cedar Rapids, Ia.: Grant Wood Area Education Agency, 1979. (ERIC Document Reproduction Service No. ED 194238).
- Mawdsley, R.D. *Legal Aspects of Pupil Transportation*. Topeka, Ks.: National Organization on Legal Problems of Education, 1971. (ERIC Document Reproduction Service No. ED 249610).
- National Association of State Directors of Pupil Transportation Services. Statistics on pupil transportation, 1981-82.
- National School Resource Network. Reducing school bus violence: The Salem, Oregon warning/suspension system. Washington, D.C.: Department of Justice, Office of Juvenile Justice and Delinquency Prevention, 1979. (ERIC Document Reproduction Service No. ED 199859).
- National School Transportation Association. State directors pupils transportation survey. Springfield, Va.: National School Transportation Association, July 1984.
- Nesbitt, W. F. Manual of first aid practices for school bus drivers. Sacramento, Ca.: California State Department of Education, 1983. (ERIC Document Reproduction Service No. ED 195799).
- Plante, R. W. A plan for an out-of-district transportation cooperative in Rhode Island. A field project proposal submitted in partial fulfillment of the requirements for the Certificate of Advanced Graduate Study in the Department of Administration and Curriculum, Rhode Island College, 1981. (ERIC Document Reproduction Service No. ED 210799).
- Reynolds, B. Buy, lease, or contract? *American School Board Journal* (November 1972) 159, pp. 32-34.
- Savitz, R. and others. Report on Bureau of Pupil Transportation Contract Busing System. Brooklyn, N.Y.: New York City Board of Education, 1979. (ERIC Document Reproduction Service No. ED 190701).
- Shannon, T. A. Will your school buses rescue us from the energy crisis? *American School Board Journal* (November 1980) 167, No. 11, pp. 21-22.
- Should you rent or own your school bus fleet? *American School Board Journal* (November 1976) 163, No. 11, pp. 242-243.
- Soule, D. Seat belts on school buses: Some considerations. *PTA Today* (November 1982) 8, No. 2, pp. 13-14. (ERIC Document Reproduction Service No. EJ 271892).
- Surveys show bus fleet ownership costs less. *Nation's Schools* (May 1970) 85, p. 78.
- Trudeau, E. (Ed.). Legal and administrative procedures relating to the transportation of exceptional children. Washington, D.C.: Bureau of Education for the Handicapped, 1972 (ERIC Document Reproduction Service No. ED 081127).
- Zorn, R. L. Co-op buying: You pool your power and pocket your savings. *American School Board Journal* (April 1973) 160, pp. 42-43.

NEW YORK STATE EDUCATION DEPARTMENT
ALBANY, NEW YORK 12234

NON PROFIT ORG
U S POSTAGE

PAID

Albany NY
Permit No 293

The State Education Department does not discriminate on the basis of age, color, religion, creed, disability, marital status, veteran status, national origin, race, or sex in the educational programs and activities which it operates. Inquiries concerning this policy of equal opportunity and affirmative action should be referred to the Department's Affirmative Action Officer, Education Building, Albany, NY 12234. Phone (518) 473-1265