

ED 374 532

EA 026 106

TITLE A Summary of Selected Nationwide School Bus Crash Statistics in 1989. Technical Report.

INSTITUTION National Highway Traffic Safety Administration (DOT), Washington, D. C.

REPORT NO DOT-HS-807-734

PUB DATE May 91

NOTE 27p.

AVAILABLE FROM National Technical Information Service, Springfield, VA 22161.

PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC02 Plus Postage.

DESCRIPTORS Accidents; *Bus Transportation; Death; Elementary Secondary Education; *School Buses; Service Vehicles; *Student Transportation; *Traffic Accidents; Transportation

ABSTRACT

This document provides a summary of selected school bus crash statistics for 1989. Information was obtained from the following data sources: the Fatal Accident Reporting System (FARS), the General Estimates System (GES), and the School Bus Fleet Annual Fact Book. The data are organized into four sections: (1) a summary of national and selected state use statistics; (2) a summary of the total school-bus accidents reported to police in 1989; (3) a profile of fatal school bus accidents; and (4) statistical information on fatalities. When available, data are provided for three types of vehicles--school buses, school vehicles, and private buses. The data for 1989 indicate that school transportation-related fatalities continue to represent only a small portion of total motor vehicle-related deaths. Of the 45,555 motor vehicle related fatalities occurring in 1989, only 33 involved occupants of vehicles used to provide transportation for these purposes. There is no evidence to suggest that either the character or magnitude of crashes involving school buses, private buses, or school vehicles changed significantly in 1989 when compared to their experience over the time period 1977-1989. School-related transportation continues to remain a very safe form of ground transportation. Twenty tables are included. (LMI)

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

EA



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

ED 374 532

DOT HS 807 734
Technical Report

May 1991

A Summary of Selected Nationwide School Bus Crash Statistics in 1989

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

- This document has been reproduced as received from the person or organization originating it.
- Minor changes have been made to improve reproduction quality.
- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

EA 026 106

This document is available to the public from the National Technical Information Service, Springfield, Virginia 22161.

The United States Government does not endorse products or manufactures. Trade or manufacturer's names appear only because they are considered essential to the object of this report.

1. Report No. DOT HS 807 734		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle A Summary of Selected Nationwide School Bus Crash Statistics in 1989				5. Report Date May 1991	
				6. Performing Organization Code NRD-31	
				8. Performing Organization Report No.	
7. Author's Mark Lee Edwards				10. Work Unit No. (TRAI5)	
9. Performing Organization Name and Address Mathematical Analysis Division National Center for Statistics and Analysis 400 7th St. S.W. Washington, D.C. 20590				11. Contract or Grant No.	
				13. Type of Report and Period Covered NHTSA Technical Report	
12. Sponsoring Agency Name and Address Research and Development National Highway Traffic Safety Administration 400 7th St. S.W. Washington, D.C. 20590				14. Sponsoring Agency Code	
				15. Supplementary Notes	
16. Abstract <p>Crashes involving vehicles used in the noncommercial transport of persons for either school related or private group transportation present a small, but important, portion of the nation's motor vehicle crash experience each year. However, in 1989, police reported crashes involving vehicles used for these purposes represented less than 1 percent of total police reported crashes. Further, of the 45,555 motor vehicle related fatalities occurring in 1989, only 33 involved occupants of vehicles used to provide such transportation.</p> <p>This report provides a detailed summary of the crash experience of these vehicles from a variety of sources. Data are provided on vehicle use, their total police reported crash experience, and their fatal crash experience. Data are provide for the period 1977-1989.</p>					
17. Key Words School Bus Crash Statistics, Buses, Motor Vehicle Crashes			18. Distribution Statement Document is available to the public through the National Technical Information Service Springfield, VA 22161		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages	22. Price

A SUMMARY OF SELECTED NATIONWIDE SCHOOL BUS CRASH STATISTICS IN 1989

TABLE OF CONTENTS

Table of Contents	iii
List of Tables	iv
Executive Summary	v
Introduction	1
Section I: Use Statistics	3
Section II: Police Reported Crash Experience	7
Section III: Fatal Crash Experience	11
Section IV: Fatalities	17

LIST OF TABLES

	<u>Page</u>
Table 1 -- National Use Statistics	3
Table 2 -- State Use Statistics -- 1987-1989	5
Table 3 -- Crashes by Manner of Collision -- 1989	8
Table 4 -- Crashes by First Harmful Event -- 1989	9
Table 5 -- Injuries Sustained in Crashes Involving School Buses -- 1989	9
Table 6 -- Fatal Crashes by Manner of Collision -- 1977-1989	12
Table 7 -- Fatal Crashes by Manner of Collision -- 1989	12
Table 8 -- Vehicles Involved in Fatal Crashes -- 1977-1989	13
Table 9 -- Vehicles Involved in Fatal Crashes -- 1989	13
Table 10 -- Fatal Crashes by Time of Day -- 1977-1989	14
Table 11 -- Fatal Crashes by Time of Day -- 1989	14
Table 12 -- Fatal Crashes Involving Fire by Vehicle Type -- 1977-1989	15
Table 13 -- Fatal Crashes Involving Fire by Vehicle Type -- 1989	15
Table 14 -- Fatalities by Use and Vehicle Type -- 1977-1989	17
Table 15 -- Fatalities by Person and Bus Body Type -- 1977-1989 ...	18
Table 16 -- Fatalities by Person and Bus Body Type -- 1989	19
Table 17 -- Occupant Fatalities by Age Group -- 1977-1989	20
Table 18 -- Occupant Fatalities by Age Group -- 1989	20
Table 19 -- Nonoccupant Fatalities by Age Group -- 1977-1989	21
Table 20 -- Nonoccupant Fatalities by Age Group -- 1989	22

EXECUTIVE SUMMARY

Crashes involving vehicles used in the transport of persons for either school related or private group transportation represent a small, but important, portion of the nation's motor vehicle crash experience each year. During the 1988-1989 school year alone, approximately 22 million public school students were transported in school related activities. Uncounted more persons were transported by private schools, churches, civic groups, and other private organizations. However, in 1989 police reported crashes involving vehicles used for any of these purposes represented less than 1 percent of total police reported crashes.

These crashes resulted in 181 fatalities, 2,900 severe injuries and 18,600 moderate injuries. The majority of injured persons were occupants of the vehicle being used to provide group transportation, while the majority of fatalities were occupants of other vehicles involved in the collision.

The objective of this report is to combine available data in a single source which summarizes the major characteristics of these vehicles' crash experience on an annual basis. Data are provided which describe vehicle use, the magnitude of the crash problem, and their major characteristics.

A SUMMARY OF SELECTED NATIONWIDE SCHOOL BUS CRASH STATISTICS IN 1989

Crashes involving vehicles used in the noncommercial transport of persons for either school related or private group transportation represent a small, but important, portion of the nation's motor vehicle crash experience each year. During the 1988-1989 school year alone, approximately 22 million public school students were transported in school related activities. Uncounted more persons were transported by private schools, churches, civic groups, and other private organizations. However, in 1989 police reported crashes involving vehicles used for any of these purposes represented less than 1 percent of total police reported crashes. Further, of the 45,555 motor vehicle related fatalities occurring in 1989, only 33 involved occupants of vehicles used to provide transportation for these purposes.

The objective of this annual report is to provide a summary of selected crash statistics from presently available sources. Data are provided which describe the magnitude of the safety problem and its major characteristics. Information contained in this report has been extracted from a number of data sources including:

Fatal Accident Reporting System (FARS) -- A census of all police reported crashes resulting in a fatality within 30 days of the crash and occurring on a public roadway.

General Estimates System (GES) -- A nationally representative annual sample of approximately 45,000 police reported crashes containing data extracted directly from information on the police accident report.

School Bus Fleet Annual Fact Book -- A publication of school bus industry statistics by Bobit Publications.

Data from the Fatal Accident Reporting System are provided for all reporting years in which data on school bus crashes are available (1977-1989), and the latest individual year (1989). Comparisons of the latest available yearly data with past years provides an indication of the degree to which the recent fatality experience of these vehicles reflects their general history.

GES data are presented for 1989 only. Future reports will contain additional years of GES data, providing the information necessary to assess trends in the overall crash experience of school buses.

Report Organization

Data summarizing crash statistics are organized into three sections. Section I contains a brief summary of national and selected state use statistics. Section II summarizes the total police reported crash experience of these vehicles and Section III characterizes their fatal crash experience. Where available, data are provided for three types of vehicles:

School Buses -- Any bus body type vehicle being used to provide school related group transportation.

School Vehicles -- Any vehicle other than a bus body type, e.g. van, station wagon, etc. being used to provide school related group transportation.

Private Buses -- Vehicles identified as school bus body type vehicles that are being used to provide group transportation for private groups, e.g. churches, civic groups, etc.

SECTION I: USE STATISTICS

The estimated total number of school buses and school vehicles in operation in the United States, number of pupils transported, and average number of pupils transported per vehicle per school year are presented in Table 1 for the period 1969 through 1989. These data were obtained from "School Bus Fleet" magazine's Annual Fact Book, and are for any vehicle used to transport persons in school related activities. Care should be exercised in interpreting these data as reporting criteria vary from state to state. Nevertheless, these data do provide some general information regarding the overall trends in school bus utilization.

Table 1 National Use Statistics*			
School Year	Number Pupils Transported	Number of Vehicles	Pupils Per Vehicle
1969-70	18,752,735	239,973	78.1
1970-71	19,191,483	245,608	78.1
1971-72	20,047,589	257,804	77.8
1972-73	20,791,737	262,579	79.2
1973-74	21,169,633	271,552	77.9
1974-75	22,398,556	282,834	79.2
1975-76	22,757,316	312,030	72.9
1976-77	23,156,006	298,173	77.7
1977-78	21,923,780	315,468	69.5
1978-79	22,882,191	323,333	70.8
1979-80	22,578,280	329,808	68.5
1980-81	22,598,975	334,461	67.6
1981-82	22,836,272	335,160	68.1
1982-83	20,952,506	332,453	63.0
1983-84	21,821,947	326,392	66.9
1984-85	23,378,605	352,434	66.3
1985-86	21,945,021	352,557	62.2
1986-87	22,602,499	361,998	62.4
1987-88	21,157,060	372,133	56.9
1988-89	22,633,708	369,334	61.3

*1991 School Bus Fleet Annual Fact Book, Bobit Publications

These data reflect a steady increase in both the number of vehicles in operation and pupils transported over the years 1969-1989. The rate of increase in the number of vehicles is, however, greater than the rate at which the total number of pupils transported increased. In comparison to 1969-70, the number of vehicles in use in the 1988-89 school year increased by approximately 54 percent whereas the number of children transported increased by only 21 percent, reflecting an almost continual reduction in the average number of pupils transported annually on a per vehicle basis over this period.

1987-88 school related transportation statistics for each state are presented in Table 2. These are the latest years for which complete data are available. The average number of vehicles operated by a single state in the 1987-88 school year was 7,098. The largest fleet was operated by the State of New York (27,202 vehicles), followed by Texas with 25,146. The nation's smallest fleet, 148 vehicles, belongs to Washington D.C.

Table 2
State Use Statistics -- School Year 1987-1988

State	Pupils Transported	Total Vehicles	Miles Travelled
Alabama	441,115	6,536	53,815,195
Alaska	41,576	652	5,805,000
Arizona	205,251	3,522	32,961,729
Arkansas	264,474	4,179	38,202,000
California	1,094,367	20,316	277,969,108
Colorado	226,563	4,422	44,613,987
Connecticut	348,763	4,656	N/A
Delaware	83,683	1,308	16,427,596
Florida	759,388	8,991	123,150,130
Georgia	1,094,802	10,340	89,119,080
Hawaii	40,237	763	7,240,558
Idaho	122,400	2,084	20,665,380
Illinois	928,200	21,230	250,004,393
Indiana	681,491	9,951	65,796,194
Iowa	244,618	6,887	62,384,262
Kansas	162,633	5,271	41,671,097
Kentucky	454,501	7,819	78,831,900
Louisiana	536,765	7,240	65,108,194
Maine	170,240	2,395	29,436,474
Maryland	447,399	5,136	79,450,533
Massachusetts	496,688	7,496	56,531,103
Michigan	781,874	13,580	128,520,000
Minnesota	854,347	10,210	116,473,000
Mississippi	361,580	5,202	41,322,249
Missouri	456,156	10,109	107,787,266
Montana	60,106	1,321	16,678,152
Nebraska	263,588	3,552	29,927,872
Nevada	60,478	966	13,513,522
New Hampshire	100,000	2,000	13,500,000
New Jersey	619,246	13,234	119,191,000
New Mexico	136,792	2,117	29,260,071
New York	1,917,619	27,202	30,000,000
North Carolina	686,089	13,153	118,429,680
North Dakota	49,619	1,908	25,676,000
Ohio	1,296,806	11,958	162,371,000
Oklahoma	298,862	6,788	58,139,408
Oregon	215,831	4,636	43,170,484
Pennsylvania	1,337,637	20,589	252,957,803
Rhode Island	90,000	1,350	N/A
South Carolina	438,783	6,319	67,309,575
South Dakota	47,466	1,657	18,707,420
Tennessee	552,996	6,551	74,273,760
Texas	1,010,000	25,146	200,899,300
Utah	153,273	1,576	18,176,856
Vermont	71,567	1,846	11,531,429
Virginia	735,553	9,567	84,194,110
Washington	365,920	6,400	69,293,757
Washington DC	5,161	148	2,020,000
West Virginia	278,380	3,080	37,746,950
Wisconsin	469,413	7,083	73,508,025
Wyoming	42,203	1,556	15,145,940

SECTION II: POLICE REPORTED CRASH EXPERIENCE

Estimates from the National Highway Traffic Safety Administration's GES are that approximately 22,100 crashes involving a school bus were reported to police in 1989.

1989 GES data on the police reported crash experience of school vehicles and private buses are insufficient for producing reliable national estimates for 1989, reflecting the rarity with which these vehicles were involved in motor vehicle crashes. A total of 2 crashes involving school vehicles and 1 crash involving a private bus were recorded in GES for 1989.

GES estimates are based on a national probability based sample of approximately 45,000 police accident reports collected annually. Data extracted from these reports are electronically stored and form the basis for statistically weighted estimates of the nation's crash experience. By convention, GES estimates are rounded to the nearest one hundred, and estimated values less than 500 should be interpreted with care because of the large statistical variance associated with such small estimates. In some instances, no estimates are available for a particular crash characteristic because there were no cases present in the GES sample on which to base an estimate. These cases are indicated as "NE" (No Estimate) where appropriate.

Manner of Collision

The distribution of police reported crashes for school buses in 1989 by manner of collision is presented in Table 3.

Table 3 Crashes by Manner of Collision -- 1989		
Manner of Collision	School No.	Bus Pct.
Non Collision	2,600	11%
Rear End	6,800	31%
Head On	100	1%
Angle	8,700	39%
Sideswipe	3,800	17%
Unknown	100	1%
Total	22,100	100%

These data indicate that rear end and angle crashes are the most prevalent manner of collision for school buses, collectively representing 70 percent of the police reported crash experience in 1989.

First Harmful Event

The distribution of crashes by first harmful event for school buses is presented in Table 4. An estimated 97 percent of all police reported school bus crashes involved collisions with other motor vehicles that were either parked or in transport. No crashes involving rollover were reported in the 1989 GES for school buses.

Table 4 Crashes by First Harmful Event -- 1989		
Collision With	School Bus	
	No.	Pct.
M.V. in Transport	19,500	88%
Pedestrian	200	<1%
Cyclist	40	<1%
Animal	NE	-
Parked Vehicle	2,000	9%
Other Object Not Fixed	NE	-
Traffic Barrier	NE	-
Sign or Pole	300	<1%
Other Fixed Object	NE	-
Non Collision	100	<1%
Rollover	NE	-
Total	22,140*	100%

*Differences in totals between tables are due to the lack of an estimate for some crash characteristics

Injuries In School Bus Crashes

An estimated 128,500 persons were involved in police reported crashes involving school buses in 1989, the vast majority (91 percent) receiving no injuries as a result of their involvement.

The estimated number of injured persons in police reported crashes for 1989 involving school buses are presented in Table 5.

Table 5 Injuries Sustained in Crashes Involving School Buses -- 1989				
Person Type	None	Injury Severity		Unknown
		Moderate	Severe	
Bus Driver	20,400	700	30	1,000
Bus Passenger	71,400	5,100	200	300
Nonoccupant	NE	100	70	NE
Occ. Other Vehicle	24,800	2,500	900	1,000
Total	116,600	8,400	1,200	2,300

SECTION III: FATAL CRASH EXPERIENCE

Fatal crashes involving vehicles used to transport students are rare, regardless of the particular body type or use. Because coding conventions in FARS permit a distinction among these vehicles as a function of both their body style and use, data are provided for three classes of vehicles.

School Bus -- Any bus body type vehicle being used to provide school related group transportation.

School Vehicle -- Any vehicle other than a bus body type, e.g. van, station wagon, etc. being used to provide school related group transportation.

Private Bus -- Vehicles identified as school bus body type vehicles that are being used to provide group transportation for private groups, e.g. churches, civic groups, etc.

For the period 1977-1989, there were a total of 547,246 fatal motor vehicle crashes of which slightly less than 1,700 involved vehicles were used for these purposes. School buses were involved in most of these crashes, representing 1,366 fatal crash involvements over this period as compared to 145 for other school vehicles used in school related activities, and 175 fatal crashes involving private buses used for private group transportation.

Presented in the following section are summaries of selected fatal crash statistics for these three vehicle classes. Due to rounding, differences may exist between the sum of individual column percents, and the total percent shown for that column.

Manner of Collision

The distribution of fatal crashes for each of the three classes of vehicles for the period 1977-1989 is presented in Table 6. Data represent number of subject vehicles involved in fatal crashes by manner of collision, not total number of vehicles involved.

Manner of Collision	School Bus		School Vehicle		Subtotal		Private Bus	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Non Collision	516	38%	66	46%	582	39%	61	35%
Rear End	122	9%	7	5%	129	9%	18	10%
Head On	293	21%	32	23%	325	22%	44	25%
Angle	396	29%	37	26%	433	29%	48	27%
Sideswipe	38	3%	2	1%	40	3%	4	2%
Unknown	1	<1%	1	1%	2	<1%	0	0%
Total	1,366	100%	145	100%	1,511	100%	175	100%

As is the case with their total crash experience, the majority of fatal crashes involve collisions with other vehicles, although to a lesser extent than is the case for all police reported crashes. For all of these vehicle types combined, 62 percent of fatal crashes are collisions with other motor vehicles.

Data for 1989, presented in Table 7, reflect a similar experience.

Manner of Collision	School Bus		School Vehicle		Subtotal		Private Bus	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Non Collision	31	34%	5	63%	36	37%	3	16%
Rear End	8	9%	0	0%	8	8%	4	21%
Head On	24	27%	0	0%	24	24%	7	37%
Angle	25	28%	3	38%	28	29%	5	26%
Sideswipe	2	2%	0	0%	2	2%	0	0%
Total	90	100%	8	100%	98	100%	19	100%

Number of Vehicles Involved

The majority of fatal crashes that occurred during the period 1977-1989 involved more than one vehicle, regardless of type (Table 8). The proportion of single vehicle fatal crashes involving private buses was slightly smaller than that for vehicles used in school related activities (32 versus 36 percent).

Crash Type*	School Bus		School Vehicle		Subtotal		Private Bus		Total	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Single	488	36%	61	42%	549	36%	56	32%	605	36%
Multi	876	64%	83	58%	959	64%	118	68%	1,077	64%
Total	1,364	100%	144	100%	1,508	100%	174	100%	1,682	100%

* Unknowns excluded from tabulations

The 1989 fatal crash experience for single- and multi-vehicle fatal crashes involving these vehicles is presented in Table 9.

Crash Type*	School Bus		School Vehicle		Subtotal		Private Bus		Total	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Single	30	33%	5	63%	35	36%	3	16%	38	32%
Multi	60	67%	3	38%	63	64%	16	84%	79	68%
Total	90	100%	8	100%	98	100%	19	100%	117	100%

* Unknowns excluded from tabulations

Fatal Crashes by Time of Day

As might be anticipated, data in Table 10 indicate that the largest portion of fatal crashes among these three classes of vehicles occurred during daylight hours (93 percent). Further, there were no substantial differences in the proportion of day and night crashes by vehicle type, although private buses and school vehicles other than school buses experience proportionally more nighttime crashes reflecting, perhaps, a greater proportion of their mileage being accumulated at night.

Table 10 Fatal Crashes by Time of Day -- 1977-1989										
Time of Day*	School Bus		School Vehicle		Subtotal		Private Bus		Total	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Day	1,287	94%	129	90%	1,416	94%	155	89%	1,571	93%
Night	76	6%	15	10%	91	6%	19	11%	110	7%
Total	1,363	100%	144	100%	1,507	100%	174	100%	1,681	100%

* Unknowns excluded from tabulations

Data for 1989 are presented in Table 11 and are typical in comparison to the period 1977-1989.

Table 11 Fatal Crashes by Time of Day -- 1989										
Time of Day*	School Bus		School Vehicle		Subtotal		Private Bus		Total	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Day	85	96%	7	88%	92	95%	18	95%	110	95%
Night	4	4%	1	13%	5	5%	1	5%	6	5%
Total	89	100%	8	100%	97	100%	19	100%	116	100%

* Unknowns excluded from tabulations

Fire Involvement in Fatal Crashes

Fatal crashes involving fire were extremely rare events, representing only one percent of fatal crashes involving any of the three types of vehicles addressed in this report for the period 1977-1989.

The total number of fatal crashes involving fire for this time period are presented in Table 12 for each of the three types of vehicles addressed in this report. Fire involvement in these crashes is not necessarily a result of the collision, the principal cause of the crash, or the direct cause of any fatality.

	School Bus		School Vehicle		Subtotal		Private Bus		Total	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
None	1,348	99%	142	99%	1,490	99%	172	99%	1,662	99%
Fire	16	1%	2	1%	18	1%	2	1%	20	1%
Total	1,364	100%	144	100%	1,508	100%	174	100%	1,682	100%

* Unknowns excluded from tabulations

Fire involvements in fatal crashes for 1989 are presented in Table 13.

Type*	School Bus		School Vehicle		Subtotal		Private Bus		Total	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
None	88	98%	8	100%	96	98%	19	100%	115	99%
Fire	2	2%	0	0%	2	2%	0	0%	2	2%
Total	90	100%	8	100%	98	100%	19	100%	117	100%

* Unknowns excluded from tabulations

SECTION IV: FATALITIES

In 1989, 181 fatalities resulted from crashes involving either school buses, school vehicles, or private buses. These fatalities include occupants of the bus or other vehicle being used as a bus, occupants of other vehicles colliding with the bus, nonoccupants struck by either the bus or another vehicle operating in close proximity to the bus, and occupants of other vehicles involved in a school related crash that did not collide with the bus. This latter category includes crashes in which a vehicle passing a school bus strikes a disembarked passenger without colliding with the bus and those in which a vehicle swerves to avoid a school bus and strikes a fixed object. Because the bus is not physically involved in these types of school related collisions, there is no information available as to the body type of the bus.

A total of 2,383 fatalities involving these vehicles have occurred over the period 1977-1989, an average of 183 per year. The annual number of fatalities for each of these three types of vehicles is presented in Table 14 for the period 1977-1989.

Table 14 Fatalities by Use and Type -- 1977-1989					
Year	School Bus	School Vehicle	Unk Body*	Private Bus	Total
1977	138	16	40	5	199
1978	162	8	77	1	248
1979	153	8	44	7	212
1980	116	10	24	20	170
1981	103	16	25	17	161
1982	92	22	23	14	151
1983	118	14	28	8	168
1984	131	14	17	13	175
1985	130	7	21	23	181
1986	91	14	23	19	147
1987	128	22	28	21	199
1988	91	15	36	49	191
1989	119	8	30	24	181
Total	1,572	174	416	221	2,383
Average	121	13	32	17	183

* Includes crashes where body type of bus is unknown because it was not physically involved in crash.

Ninety-one percent (2,163) of these fatalities involved vehicles being used in a school related activity, an average of 166 per year over the period 1977-1989. Nineteen percent of school related fatalities (416/2162) were pedestrians struck by other vehicles, or occupants of other vehicles involved in crashes which occurred in the immediate vicinity of a school bus or other school vehicle that was not involved in the crash. Body type is unknown for these crashes.

Approximately 90 percent (1,572/1,746) of school related fatalities where body type is known involved bus body type vehicles. This type of vehicle is involved in the bulk of school related fatalities, averaging 121 annually over the period 1977-1989 as compared to an average of 13 fatalities per year involving school vehicles.

Fatalities Involving Bus Body Type Vehicles

An overview of the number and types of persons fatally injured in crashes involving bus body type vehicles used for either school related or private group transportation is presented in Table 15. Nonoccupants fatally injured in collisions with bus body type vehicles are not necessarily persons struck while in the process of boarding or disembarking from the bus. Data describing specific characteristics of the fatality experience of school vehicles are not presented because of their extremely small number, an average of 13 per year since 1977, the vast majority of which are drivers.

Person Type	School Bus		Private Bus		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
Bus Driver	25	2%	3	1%	28	2%
Bus Passenger	162	10%	43	19%	205	11%
Occupant of other Vehicle	916	58%	124	56%	1,040	58%
Pedestrian Struck by Bus	428	27%	46	21%	474	26%
Other Nonoccupants	41*	3%	5	3%	46	3%
Total	1,572	100%	221	100%	1,793	100%

* Struck by bus or other vehicle in vicinity of bus

These data indicate that occupants of other vehicles involved in crashes with bus body type vehicles are most likely to be fatally injured (58 percent of total fatalities) followed by nonoccupants struck by either the bus or the other vehicle involved in the crash (29 percent). Persons least likely to be fatally injured are occupants of the bus, representing only 13 percent of the total fatalities. Data for 1989, the latest year available, are presented in Table 16.

Person Type	School Bus		Private Bus		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
Bus Driver	2	2%	0	0%	2	1%
Bus Passenger	30	25%	1	4%	31	22%
Occupant of other Vehicle	63	53%	18	75%	81	57%
Pedestrian Struck by Bus	23	19%	5	21%	28	20%
Other Nonoccupants	1	1%	0	0%	1	1%
Total	119	100%	24	100%	143	100%

Findings for 1989 are typical of those for the entire period 1977-1989, i.e. those persons experiencing the greatest fatality risk in a fatal crash involving a school bus body type vehicle are occupants of other vehicles involved in the crash and nonoccupants struck by the bus, collectively representing 78 percent of total school bus body type related fatalities in 1989.

Age of Fatally Injured Occupants

The majority of occupant fatalities (80 percent) over the period 1977-1989 are occupants of school buses (Table 17). Of these, the 81 percent are 10

years of age or older. In comparison, the proportion of fatally injured occupants 10 and older in private buses is 96 percent.

Age Group	School Bus		Private Bus		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
0- 4	5	3%	0	0%	5	2%
5- 9	30	16%	2	4%	32	14%
10-14	60	32%	23	50%	83	36%
15-19	53	28%	6	13%	59	25%
20+	39	21%	15	33%	54	23%
Total	187	100%	46	100%	233	100%

Bus body type occupant fatality data for 1989 are presented in Table 18.

Age Group	School Bus		Private Bus		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
0- 4	0	0%	0	0%	0	0%
5- 9	2	6%	1	100%	3	9%
10-14	18	56%	0	0%	18	55%
15-19	10	31%	0	0%	10	30%
20+	2	6%	0	0%	2	6%
Total	32	100%	1	100%	33	100%

These data are in general agreement with the occupant fatality data in different age groups reflected in Table 17. In 1989 the majority of fatalities involved passengers 10 years of age and older (96 percent).

Nonoccupant Fatalities

Nonoccupant fatalities in crashes involving school or private buses constitute one of the larger groups of fatal crash victims, representing approximately 29 percent of their collective fatalities during the period 1977-1989. Included in this statistic are pedalcyclists, pedestrians, and other nonoccupants struck either by a bus, or in the case of school related crashes, another vehicle. Examples of nonoccupants other than pedestrians and pedalcyclists are persons riding skateboards, roller skates, etc. Nonoccupant fatalities included in these tabulations are not necessarily those involving persons alighting from or boarding the bus.

The vast majority of fatally injured nonoccupants during the period 1977-1989 were pedestrians (91 percent), most of these were struck by a school bus (90 percent).

Age of Nonoccupant Fatalities

Presented in Table 19 are total nonoccupant fatalities by age group for the period 1977-1989 that involved either a school bus body type vehicle used for a school related activity or private group transportation.

Age Group	School Bus	Private Bus	Total	Percent
0- 4	40	4	44	9%
5- 9	282	20	302	61%
10-14	51	5	56	11%
15-19	7	4	11	2%
20+	68	18	86	17%
Total	448	51	499	100%

*Unknowns excluded from tabulations

These data indicate that nonoccupant fatalities are primarily young, 70 percent being less than ten years of age, compared to 16 percent of occupant fatalities involving this age group.

Data for 1989 are presented in Table 20, and indicate no particular departure from the cumulative experience for 1977-1989.

Age Group	School Bus	Private Bus	Total	Percent
0- 4	5	0	5	17%
5- 9	11	2	13	45%
10-14	0	1	1	3%
15-19	0	0	0	0%
20+	8	2	10	34%
Total	24	5	29	100%

*Unknowns excluded from tabulations

Conclusions

Data for 1989 indicate that school transportation related fatalities continue to represent only a small portion of total motor vehicle related fatalities. There is no evidence to suggest that either the character or magnitude of crashes involving school buses, private buses, or school vehicles changed significantly in 1989 when compared to their experience over the time period 1977-1989. School related transportation continues to remain a very safe form of ground transportation.

US Department
of Transportation

**National Highway
Traffic Safety
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

Official Business
Penalty for Private Use \$300

Postage and Fees Paid
National Highway
Traffic Safety
Administration
DOT 517



BEST COPY AVAILABLE