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## *School Bus Collisions 1988-1997*

### **Introduction**

This report provides a statistical summary of collisions involving school buses over the 10-year period from 1988-1997. The report reviews the number of collisions involving at least one school bus, the number of school buses involved in collisions, and the resulting fatalities and personal injuries inside and outside the school bus.

Collision analysis also addresses ages of casualties; type and time of day of collision; number of incidents by year and point of impact on the school bus; and the vehicle manoeuvre that preceded the collision.

### **Summary Findings**

Over the 10-year period, 1988 to 1997:

- A total of 29,488 school buses were involved in 29,193 collisions – 177 fatal, 5,659 personal-injury and 23,357 property-damage collisions.
- School bus collisions have resulted in 204 fatalities and 10,480 injuries – an average of 20 fatalities and 1,048 injuries per year.
- Of the 204 total fatalities, eight were school bus occupants (less than 19 years old) – an average of one death per year. Five of these eight fatalities occurred between 1989 to 1991; the remaining three occurred in 1994.
- The 5,836 casualty-producing collisions (i.e. fatal and injury-producing) involving at least one school bus represent approximately 0.3 percent of the 1,734,244 casualty-producing collisions involving all vehicle types.

## Detailed Findings

All casualties of school bus collisions are presented in Table 1, with a breakdown by occupants of school buses (drivers and passengers), occupants of other vehicles and pedestrians. This is the only table in this report to include the occupants of other vehicles involved in collisions with school buses.

From 1988 to 1997, school buses were involved in 29,193 collisions: 177 fatal, 5,659 personal-injury and 23,357 property-damage collisions. The 29,193 collisions involved 29,488 school buses: 180 were involved in fatal collisions, 5,745 in personal-injury, and 23,563 in property-damage collisions.

In the 177 fatal collisions involving 180 school buses, there were 204 fatalities (an average of 20 per year). Of the 204 fatalities, 11 (5 percent) were school bus occupants (8 passengers and 3 drivers); 51 (25 percent) were pedestrians; and 142 (70 percent) were occupants of other vehicles involved in collisions with school buses.

Over the 10-year period, 5,745 school buses were involved in 5,659 personal injury collisions, resulting in 10,480 personal injuries (an average of 1,048 per year). Of the 10,480 injuries, 4,741 (45 percent) were school bus occupants; 650 (6 percent) were pedestrians; and 5,089 (49 percent) were occupants of other vehicles. Injuries<sup>1</sup> varied from minimal (where no treatment was required for minor abrasions and bruises) to major (where the victim was admitted to hospital for treatment or observation). Not all provinces and territories, however, report this level of breakdown.

**Table 1. All Casualties in School Bus Collisions, 1988-1997**

Year	Occupants of School Buses						Occupants of Other Vehicles		Pedestrians		Total Casualties	
	Driver		Passenger		Total		Killed	Injured	Killed	Injured	Killed	Injured
	Killed	Injured	Killed	Injured	Killed	Injured						
1988	1	106	0	317	1	423	19	523	8	76	28	1,022
1989	1	123	2	338	3	461	21	587	6	83	30	1,131
1990	0	126	1	460	1	586	14	589	7	80	22	1,255
1991	1	91	2	516	3	607	21	560	8	73	32	1,240
1992	0	109	0	329	0	438	14	490	8	66	22	994
1993	0	88	0	309	0	397	10	466	2	62	12	925
1994	0	102	3	444	3	546	17	492	1	56	21	1,094
1995	0	108	0	384	0	492	11	490	2	69	13	1,051
1996	0	95	0	310	0	405	6	420	7	41	13	866
1997	0	87	0	299	0	386	9	472	2	44	11	902
<b>Total</b>	<b>3</b>	<b>1,035</b>	<b>8</b>	<b>3,706</b>	<b>11</b>	<b>4,741</b>	<b>142</b>	<b>5,089</b>	<b>51</b>	<b>650</b>	<b>204</b>	<b>10,480</b>

Table 2 presents 10-year totals of school bus occupant and pedestrian fatalities and injuries by age. Most school bus occupant fatalities were between the ages of 8 and 12, while the majority of occupants injured were between 5 and 17 years of age.

**Table 2. School Bus Occupant and Pedestrian Casualties by Age, 1988-1997**

Age	School Bus Occupants		Pedestrians		Total	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
1	0	7	0	0	0	7
2	0	4	0	7	0	11
3	0	19	3	5	3	24
4	0	39	5	9	5	48
5	1	133	7	43	8	176
6	0	141	8	64	8	205
7	0	232	6	52	6	284
8	1	214	3	38	4	252
9	1	260	1	36	2	296
10	1	282	0	28	1	310
11	2	314	0	14	2	328
12	1	322	2	27	3	349
13	0	342	0	43	0	385
14	0	235	1	26	1	261
15	0	199	0	22	0	221
16	0	165	0	16	0	181
17	1	144	1	9	2	153
18	0	65	0	11	0	76
19+	3	1,342	13	183	16	1,525
Unknown	0	282	1	17	1	299
<b>Total</b>	<b>11</b>	<b>4,741</b>	<b>51</b>	<b>650</b>	<b>62</b>	<b>5,391</b>

School-age casualties can be determined from the above table; however, Table 3 is the only one in this report that focuses solely on school-age casualties (less than 19 years of age). The other tables include casualties of all ages.

Over the 10-year period, eight school bus occupants less than 19 years old were fatally injured – an average of one school bus occupant fatality per year. Of the school-age occupant fatalities, five were fatally injured from 1989 to 1991 and three occupants suffered fatal injuries in 1994.

From 1988 to 1997, 37 school-age pedestrians died in school bus collisions and 450 were injured. More than 70 percent of all school-age pedestrian fatalities in school bus collisions were between the ages of 4 and 7. Slightly more than half (52 percent) of all school-age pedestrians injured were between the ages of 5 and 9.

Table 3 presents the number of school-age (less than 19 years old) occupant and pedestrian fatalities and injuries by time of day. An average of five school-age children died in school bus collisions each year and 357 were injured. Of the fatalities, an average of one per year was a school bus occupant and four were pedestrians. Of the injuries, an average of 312 were school bus occupants and 45 were pedestrians.

More school-age pedestrian fatalities and injuries occurred in the afternoon than in the morning, with approximately one-third of the casualties occurring in collisions between 3:00 p.m. and 4:00 p.m. Seventy-five percent of school-age occupant fatalities occurred between 7:00 a.m. and 9:00 a.m. on the journey to school. Almost 42 percent of school-age occupant injuries occurred between 7:00 a.m. and 9:00 a.m. followed by 34 percent of occupant injuries occurring between 3:00 p.m. and 5:00 p.m.

**Table 3. School-Age Casualties (Less Than 19 Years Old) by Time of Day, 1988-1997**

Time of Day	School Bus Occupants		Pedestrians		Total	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
12:00 - 6:59 a.m.	0	20	0	3	0	23
7:00 - 7:59 a.m.	4	237	2	21	6	258
8:00 - 8:59 a.m.	2	1,061	7	81	9	1,142
9:00 - 9:59 a.m.	0	179	1	5	1	184
10:00 - 10:59 a.m.	0	11	0	3	0	14
11:00 - 11:59 a.m.	0	123	3	35	3	158
12:00 - 12:59 p.m.	0	168	3	28	3	196
1:00 - 1:59 p.m.	0	42	0	8	0	50
2:00 - 2:59 p.m.	0	114	1	19	1	133
3:00 - 3:59 p.m.	1	712	12	147	13	859
4:00 - 4:59 p.m.	0	351	8	79	8	430
5:00 - 11:59 p.m.	1	88	0	16	1	104
Unknown	0	11	0	5	0	16
<b>Total</b>	<b>8</b>	<b>3,117</b>	<b>37</b>	<b>450</b>	<b>45</b>	<b>3,567</b>

Tables 4 and 5 present the number of school buses having at least one occupant casualty in single- and multi-vehicle collisions. Table 4 shows the number of buses and casualties by principal point of impact on the school bus. In collisions involving casualties to occupants of a school bus, the principal point of impact on the school bus was known for 73 percent of the buses involved. The greatest number of impact points (68 percent) were divided among the front (16 percent), rear (14 percent), left side (20 percent) and right side (18 percent). The number of principal points of impact reported as unknown, at 27 percent, includes one province and one territory that do not report this variable.

Between 1988 and 1997, 1,927 school buses were involved in collisions in which at least one occupant of a school bus was injured. The vast majority of those collisions (81 percent) involved another vehicle. In the 361 single-vehicle collisions, one occupant died and 1,163 occupants were injured. In the multi-vehicle collisions involving 1,566 school buses, 10 occupants perished and 3,578 were injured.

Although this information is not shown in a table, the first harmful events in the 361 single-vehicle collisions were as follows: running off the road – 98 collisions; striking a fixed object (ditch, post, guardrail, etc.) – 89 collisions; some other non-collision event – 86 collisions; striking a moving object (pedestrian, animal, train, etc.) – 18 collisions; overturning – 13 collisions; and other or unknown event – 57 collisions.

**Table 4. School Buses Having Occupant Casualties by Principal Point of Impact on School Bus, 1988-1997**

Primary Impact Location on School Bus	Type of Collision								
	Single-Vehicle			Multi-Vehicle			Total		
	# of Buses	Fatalities	Injuries	# of Buses	Fatalities	Injuries	# of Buses	Fatalities	Injuries
Front	50	0	139	257	1	617	307	1	756
Top	9	1	44	2	1	4	11	2	48
Rear	4	0	5	274	3	629	278	3	634
Left	38	0	112	350	0	862	388	0	974
Right	65	0	294	277	4	647	342	4	941
Undercarriage	9	0	17	3	0	4	12	0	21
Extensive	51	0	262	19	0	43	70	0	305
Unknown	135	0	290	384	1	772	519	1	1,062
<b>Total</b>	<b>361</b>	<b>1</b>	<b>1,163</b>	<b>1,566</b>	<b>10</b>	<b>3,578</b>	<b>1,927</b>	<b>11</b>	<b>4,741</b>

Table 5 shows the number of school buses having occupant casualties, by single and multi-vehicle collisions by year.

**Table 5. School Buses Having Occupant Casualties by Year, 1988-1997**

Year	Type of Collision								
	Single-Vehicle			Multi-Vehicle			Total		
	# of Buses	Fatalities	Injuries	# of Buses	Fatalities	Injuries	# of Buses	Fatalities	Injuries
1988	29	1	54	172	0	369	201	1	423
1989	46	0	105	177	3	356	223	3	461
1990	36	0	238	185	1	348	221	1	586
1991	42	0	172	144	3	435	186	3	607
1992	40	0	109	148	0	329	188	0	438
1993	44	0	113	137	0	284	181	0	397
1994	26	0	89	178	3	457	204	3	546
1995	45	0	154	148	0	338	193	0	492
1996	31	0	65	138	0	340	169	0	405
1997	22	0	64	139	0	322	161	0	386
<b>Total</b>	<b>361</b>	<b>1</b>	<b>1,163</b>	<b>1,566</b>	<b>10</b>	<b>3,578</b>	<b>1,927</b>	<b>11</b>	<b>4,741</b>

Table 6 shows the number of pedestrian casualties by vehicle manoeuvre of the striking vehicle. Over the 10-year period, an average of four pedestrians were fatally injured and 50 were injured each year when struck by school buses. An average of one fatality and 15 injuries occurred when pedestrians were struck by another vehicle or where the striking vehicle was not recorded.

Seventy-eight percent of the fatally injured pedestrians were struck by school buses and 10 percent were struck by another vehicle. In the remaining 12 percent of the pedestrian fatalities, the striking vehicle was not recorded.

**Table 6. Pedestrian Casualties by Vehicle Manoeuvre of Striking Vehicle, 1988-1997**

Vehicle Manoeuvre	Striking Vehicle							
	School Bus		Other Vehicle		Unknown Vehicle		Total	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
Going Straight	16	214	5	62	1	16	22	292
Turning Left	4	79	0	0	0	1	4	80
Turning Right	6	71	0	0	0	5	6	76
Changing Lanes	0	1	0	0	0	0	0	1
Merging or Overtaking	0	6	0	9	0	5	0	20
Reversing	2	17	0	1	0	1	2	19
Slowing or Stopping	0	31	0	7	1	3	1	41
Stopped or Parked	2	7	0	2	1	13	3	22
Starting in Traffic	8	39	0	0	0	0	8	39
Starting from Parked Position	1	9	0	0	0	1	1	10
Entering Parked Position	0	9	0	0	0	0	0	9
Swerving to Avoid Object	0	0	0	0	0	0	0	0
Unknown	1	14	0	1	3	26	4	41
<b>Total</b>	<b>40</b>	<b>497</b>	<b>5</b>	<b>82</b>	<b>6</b>	<b>71</b>	<b>51</b>	<b>650</b>

Footnote: <sup>1</sup>Not all provinces and territories report a breakdown of the data element “Injury Severity of person”.

Source: Transport Canada, Road Safety and Motor Vehicle Regulation Directorate, Traffic Accident Information Database (TRAID)

To find out more about national road safety programs and initiatives, call Transport Canada toll free at 1-800-333-0371, or e-mail comments or questions to [roadsafetywebmail@tc.gc.ca](mailto:roadsafetywebmail@tc.gc.ca). You can also visit the Transport Canada web site at [www.tc.gc.ca/roadsafety/](http://www.tc.gc.ca/roadsafety/).

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