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## *School Bus Collisions 1992-2001*

### **Introduction**

This report provides a statistical summary of collisions involving school buses over the 10-year period from 1992-2001. 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, 1992 to 2001:

- A total of 26,039 school buses were involved in 25,806 collisions – 129 fatal collisions, 4,971 personal-injury and 20,706 property-damage collisions.
- School bus collisions have resulted in 145 fatalities and 9,359 injuries – an average of 14.5 fatalities and 936 injuries per year.
- Of the 145 total fatalities, six were school bus occupants (less than 19 years old) – an average of one (0.6) death per year. Three of these six fatalities occurred in 1994, one in 1999, and two in 2000.
- The 5,100 casualty-producing collisions (i.e. fatal and injury-producing) involving at least one school bus represent approximately 0.3 percent of the 1,609,927 casualty-producing collisions involving all vehicle types.

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## 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, pedestrians and bicyclists. This is the only table in this report to include the occupants of other vehicles involved in collisions with school buses.

From 1992 to 2001, school buses were involved in 25,806 collisions: 129 fatal collisions, 4,971 personal-injury and 20,706 property-damage collisions. The 25,806 collisions involved 26,039 school buses: 130 were involved in fatal collisions, 5,037 in personal-injury, and 20,872 in property-damage collisions.

In the 129 fatal collisions involving 130 school buses, there were 145 fatalities (an average of 14.5 per year). Of the 145 fatalities, seven (5 percent) were school bus occupants (6 passengers and 1 driver); 38 (26 percent) were pedestrians; eight (6 percent) were bicyclists; and 92 (63 percent) were occupants of other vehicles involved in collisions with school buses.

Over the 10-year period, 5,037 school buses were involved in 4,971 personal-injury collisions, resulting in 9,359 personal injuries (an average of 936 per year). Of the 9,359 injuries, 4,336 (46 percent) were school bus occupants; 534 (6 percent) were pedestrians; 197 (2 percent) were bicyclists; and 4,292 (46 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).

**Table 1 All Casualties in School Bus Collisions, 1992-2001**

Year	Occupants of School Buses						Occupants of Other Vehicles		Pedestrians		Bicyclists		Total Casualties	
	Drivers		Passengers		Total		Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
	Killed	Injured	Killed	Injured	Killed	Injured								
1992	0	109	0	329	0	438	12	465	8	66	2	25	22	994
1993	0	88	0	309	0	397	9	439	2	62	1	27	12	925
1994	0	102	3	444	3	546	16	473	1	56	1	19	21	1,094
1995	0	108	0	384	0	492	10	472	2	69	1	18	13	1,051
1996	0	95	0	312	0	407	6	401	7	41	0	19	13	868
1997	0	87	0	299	0	386	8	450	2	44	1	22	11	902
1998	1	80	0	262	1	342	6	361	3	54	1	25	11	782
1999	0	89	1	297	1	386	7	387	5	55	0	13	13	841
2000	0	107	2	381	2	488	8	479	5	44	1	14	16	1,025
2001	0	102	0	352	0	454	10	365	3	43	0	15	13	877
<b>Total</b>	<b>1</b>	<b>967</b>	<b>6</b>	<b>3,369</b>	<b>7</b>	<b>4,336</b>	<b>92</b>	<b>4,292</b>	<b>38</b>	<b>534</b>	<b>8</b>	<b>197</b>	<b>145</b>	<b>9,359</b>

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

Table 2 presents 10-year totals of school bus occupant, pedestrian and bicyclist fatalities and injuries by age. Most school bus occupants killed were 11 years of age, while the majority of occupants injured were between 5 and 17 years of age.

**Table 2 School Bus Occupant, Pedestrian and Bicyclist Casualties by Age, 1992-2001**

Age	School Bus Occupants		Pedestrians		Bicyclists		Total	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
1	0	6	0	0	0	0	0	6
2	0	4	0	5	0	0	0	9
3	0	15	2	5	0	1	2	21
4	0	39	3	9	0	1	3	49
5	0	106	5	24	0	2	5	132
6	0	117	6	31	1	9	7	157
7	0	175	4	33	0	8	4	216
8	0	187	1	24	1	7	2	218
9	0	207	2	22	0	4	2	233
10	0	260	0	19	0	9	0	288
11	3	293	0	16	0	9	3	318
12	1	311	1	31	0	8	2	350
13	0	297	1	36	0	9	1	342
14	0	215	0	22	0	14	0	251
15	0	203	0	23	1	7	1	233
16	0	190	0	9	0	4	0	203
17	1	137	1	14	0	7	2	158
18	1	58	0	8	0	6	1	72
19+	1	1,206	12	185	5	70	18	1,461
Unknown	0	310	0	18	0	22	0	350
<b>Total</b>	<b>7</b>	<b>4,336</b>	<b>38</b>	<b>534</b>	<b>8</b>	<b>197</b>	<b>53</b>	<b>5,067</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, six school bus occupants less than 19 years old were fatally injured – an average of one (0.6) school bus occupant fatality per year. Of the school-age occupant fatalities, three were fatally injured in 1994, one in 1999 and two in 2000.

From 1992 to 2001, 26 school-age pedestrians died in school bus collisions and 331 were injured. Almost 70 percent of all school-age pedestrian fatalities in school bus collisions were between the ages of 4 and 7. Approximately 85 percent of all school-age pedestrians injured were between the ages of 5 and 15, with the four ages: 6, 7, 12 and 13, each accounting for between 9 and 11 percent.

Table 3 presents the number of school-age (less than 19 years old) occupant, pedestrian, and bicyclist fatalities and injuries by time of day. An average of 3.5 school-age children died in school bus collisions each year and 326 were injured. Of the 35 fatalities, six were school bus occupants, 26 were pedestrians, and three were bicyclists. Of the injuries, an average of 282 were school bus occupants, 33 were pedestrians, and 11 were bicyclists.

More school-age pedestrian fatalities and injuries occurred in the afternoon than in the morning, with approximately 50 percent of fatalities and 51 percent of injuries occurring in collisions between 3:00 p.m. and 5:00 p.m. Two-thirds of school-age occupant fatalities occurred between 7:00 a.m. and 9:00 a.m. on the journey to school. Almost 43 percent of school-age occupant injuries occurred between 7:00 a.m. and 9:00 a.m., followed by 36 percent of occupant injuries occurring between 3:00 p.m. and 5:00 p.m. About 60 percent of school-age bicyclist injuries occurred between 2:00 p.m. and 5:00 p.m., while about 26 percent of these injuries occurred on the journey to school between 7:00 a.m. and 9:00 a.m.

**Table 3 School-Age Casualties (Less Than 19 Years Old) by Time of Day, 1992-2001**

Time of Day	School Bus Occupants		Pedestrians		Bicyclists		Total	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
12:00 – 6:59 a.m.	0	26	0	7	0	2	0	35
7:00 – 7:59 a.m.	2	228	2	17	0	5	4	250
8:00 – 8:59 a.m.	2	979	4	53	0	22	6	1,054
9:00 – 9:59 a.m.	0	63	1	7	0	0	1	70
10:00 – 10:59 a.m.	0	20	0	2	0	0	0	22
11:00 – 11:59 a.m.	0	98	2	20	0	4	2	122
12:00 – 12:59 p.m.	0	141	3	14	1	6	4	161
1:00 – 1:59 p.m.	0	37	0	10	0	1	0	48
2:00 – 2:59 p.m.	1	130	1	12	0	9	2	151
3:00 – 3:59 p.m.	1	655	11	107	2	37	14	799
4:00 – 4:59 p.m.	0	347	2	61	0	16	2	424
5:00 – 11:59 p.m.	0	80	0	17	0	1	0	98
Unknown	0	16	0	4	0	2	0	22
<b>Total</b>	<b>6</b>	<b>2,820</b>	<b>26</b>	<b>331</b>	<b>3</b>	<b>105</b>	<b>35</b>	<b>3,256</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 numbers of impact points (69 percent) were divided among the front (18 percent), rear (15 percent), left side (19 percent) and right side (17 percent). The number of principal points of impact reported as unknown, at 27 percent, includes data from one province and one territory that do not report this variable.

Between 1992 and 2001, 1,767 school buses were involved in collisions in which at least one occupant of a school bus was injured. The vast majority of those collisions (approximately 80 percent) involved another vehicle. In the 314 single-vehicle collisions, no occupants died but 877 occupants were injured. In the multi-vehicle collisions involving 1,453 school buses, 7 occupants perished and 3,459 were injured.

Although this information is not shown in a table, the first harmful events in the 314 single-vehicle collisions, in which an occupant was killed or injured, were as follows: striking a fixed object (ditch, post, guardrail, etc.) – 87 collisions; running off the road – 75 collisions; some other non-collision event – 78 collisions; overturning – 15 collisions; striking a moving object (pedestrian, animal, train, etc.) – 12 collisions; and other or unknown event – 47 collisions.

**Table 4 School Buses Having Occupant Casualties by Principal Point of Impact on School Bus, 1992-2001**

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	49	0	186	262	1	980	311	1	1,166
Top	8	0	45	2	1	4	10	1	49
Rear	4	0	49	260	2	798	264	2	847
Left	35	0	73	300	0	465	335	0	538
Right	60	0	75	245	2	272	305	2	347
Undercarriage	6	0	10	1	0	1	7	0	11
Extensive	32	0	163	18	0	37	50	0	200
Unknown	120	0	276	365	1	902	485	1	1,178
<b>Total</b>	<b>314</b>	<b>0</b>	<b>877</b>	<b>1,453</b>	<b>7</b>	<b>3,459</b>	<b>1,767</b>	<b>7</b>	<b>4,336</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, 1992-2001**

Year	Type of Collision								
	Single-Vehicle			Multi-Vehicle			Total		
	# of Buses	Fatalities	Injuries	# of Buses	Fatalities	Injuries	# of Buses	Fatalities	Injuries
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	139	0	42	170	0	407
1997	22	0	64	139	0	322	161	0	386
1998	26	0	57	121	1	285	147	1	342
1999	25	0	82	135	1	304	160	1	386
2000	26	0	62	168	2	426	194	2	488
2001	29	0	82	140	0	372	169	0	454
<b>Total</b>	<b>314</b>	<b>0</b>	<b>877</b>	<b>1,453</b>	<b>7</b>	<b>3,459</b>	<b>1,767</b>	<b>7</b>	<b>4,336</b>

Table 6 shows the number of pedestrian casualties by vehicle manoeuvre of the striking vehicle. Over the 10-year period, an average of three pedestrians were killed and 41 were injured each year when struck by school buses. An average of one fatality and 13 injuries occurred when pedestrians were struck by another vehicle in a collision involving a school bus, or where the striking vehicle was not recorded.

In collisions involving school buses, 79 percent of the fatally injured pedestrians were struck by school buses and 16 percent were struck by another vehicle. In the remaining five percent of the pedestrian fatalities, the striking vehicle was not recorded.

**Table 6 Pedestrian Casualties by Vehicle Manoeuvre of Striking Vehicle, 1992-2001**

Vehicle Manoeuvre	Striking Vehicle							
	School Bus		Other Vehicle		Unknown Vehicle		Total	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
Going Straight	7	166	5	59	0	4	12	229
Turning Left	4	78	0	0	0	0	4	78
Turning Right	6	53	0	0	0	1	6	54
Changing Lanes	0	2	0	0	0	0	0	2
Merging or Overtaking	0	3	0	6	0	3	0	12
Reversing	1	15	0	2	0	0	1	17
Slowing or Stopping	1	24	1	8	0	1	2	33
Stopped or Parked	1	6	0	3	0	8	1	17
Starting in Traffic	8	28	0	0	0	0	8	28
Starting from Parked Position	2	7	0	0	0	0	2	7
Entering Parked Position	0	7	0	0	0	0	0	7
Swerving to Avoid Object	0	2	0	0	0	0	0	2
Unknown	0	14	0	0	2	34	2	48
<b>Total</b>	<b>30</b>	<b>405</b>	<b>6</b>	<b>78</b>	<b>2</b>	<b>51</b>	<b>38</b>	<b>534</b>

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

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