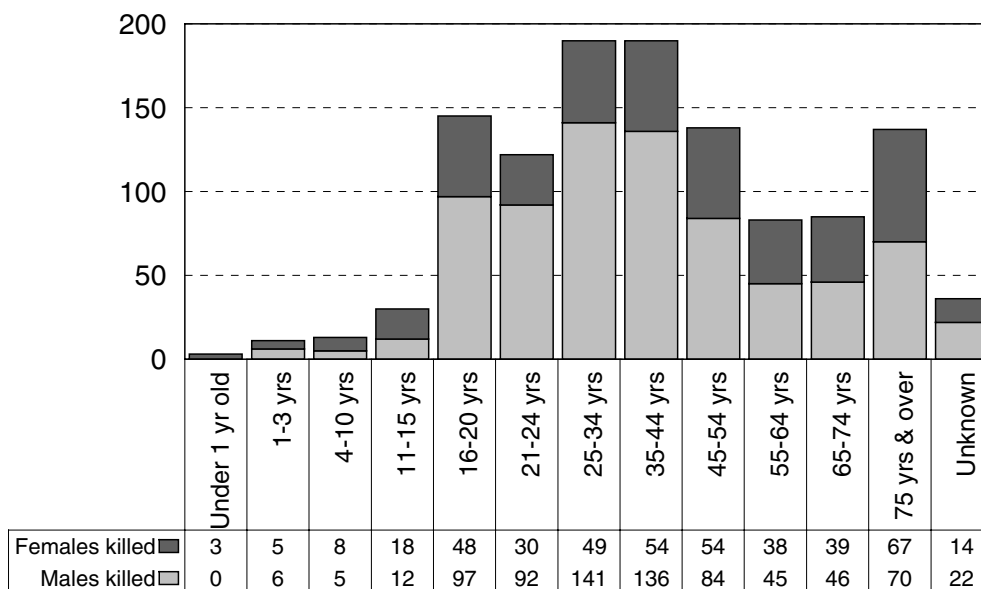


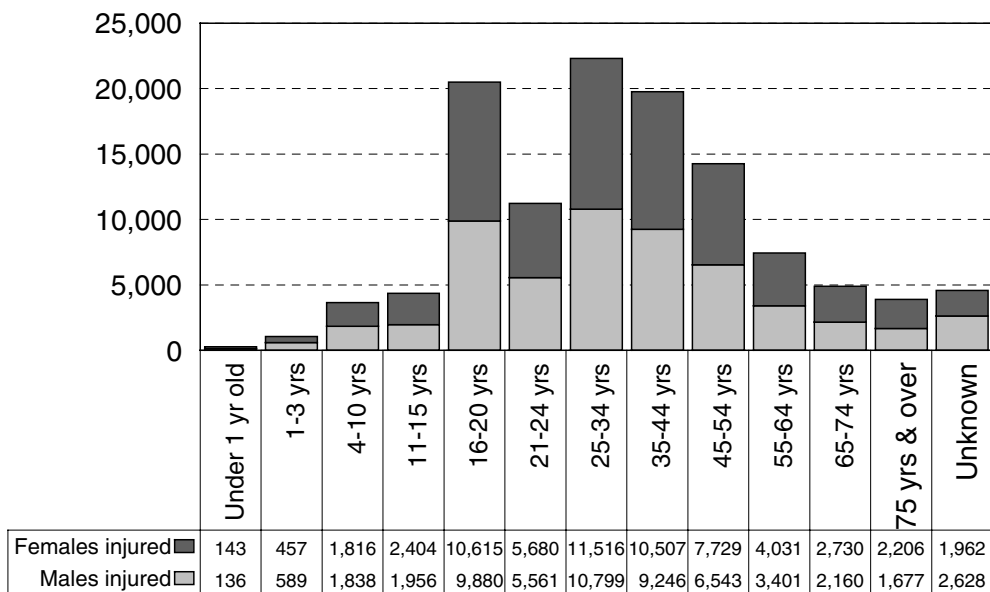
## AGE AND GENDER OF OCCUPANTS KILLED & INJURED IN MOTOR VEHICLE CRASHES

### Occupants Killed



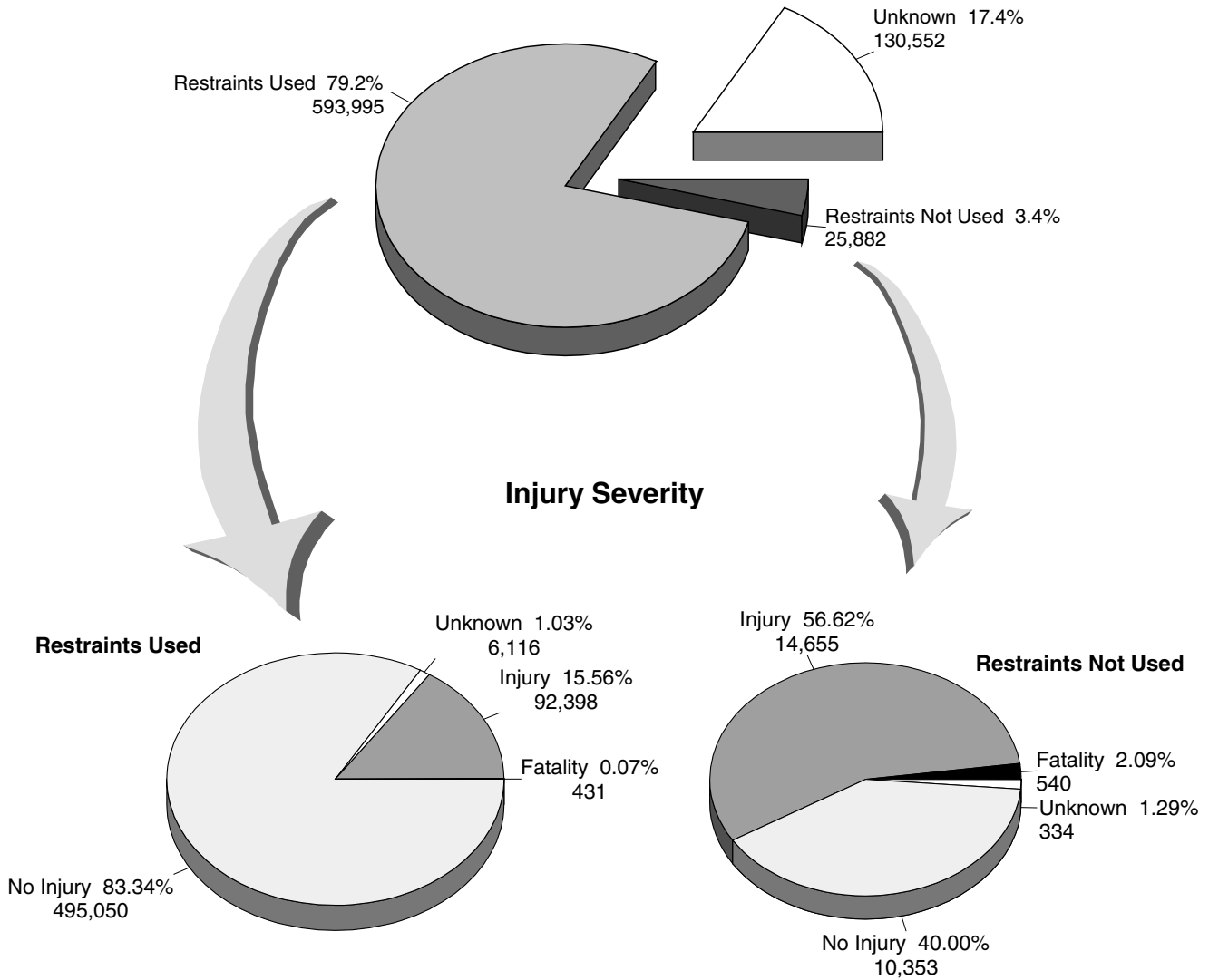
The majority (63.9%) of occupants killed in traffic crashes in 1999 were male.

### Occupants Injured



The majority (52.3%) of occupants injured in traffic crashes in 1999 were female.

## REPORTED OCCUPANT RESTRAINT USAGE FOR ALL DRIVERS AND INJURED PASSENGERS

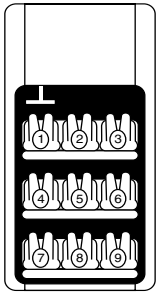


Restraint use by motorists is measured two ways: by what motorists REPORT to police at the scene of a traffic crash (reported usage), and by DIRECT OBSERVATION studies where motorists are totally unaware of the presence of researchers (observed usage). As expected, reported usage is routinely higher than observed usage.

Of the 750,429 drivers and injured passengers involved in crashes, 593,995 (79.2%) were REPORTED to be using occupant restraints.

However, a DIRECT OBSERVATION study by the University of Michigan Transportation Research Institute [15] estimated overall safety belt use was 74.8 percent for passenger cars, 70.2 percent for sport-utility vehicles, 73.6 percent for vans, and 53.7 percent for pickup trucks in 1999.

**Occupants in crashes were thirty times more likely to be killed if they were not wearing their restraints.**



## MOTOR VEHICLE OCCUPANTS & INJURY SEVERITY BY SEATING POSITION AND KNOWN BELT USAGE

Seating Position	Belts Used*		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Left Front	563,765	96.1	314	4,705	13,748	50,567	494,431
Center Front	553	0.1	1	40	122	361	29
Right Front	16,892	2.9	92	1,276	3,519	11,823	182
Left Rear	2,056	0.4	8	132	478	1,309	129
Center Rear	549	0.1	0	42	127	371	9
Right Rear	2,025	0.3	5	144	456	1,419	1
Left Rear Third Seat	304	0.1	1	21	70	196	16
Center Rear Third Seat	126	0.0	0	11	34	77	4
Right Rear Third Seat	341	0.1	1	24	81	224	11
Unknown	198	0.0	0	9	12	30	147
<b>TOTAL</b>	<b>586,809**</b>	<b>100.0</b>	<b>422</b>	<b>6,404</b>	<b>18,647</b>	<b>66,377</b>	<b>494,959</b>

\* Lap belt, shoulder belt or a combination of lap and shoulder belts used. Children who were coded as using or not using a child restraint device appear in separate tables on pages 162-163.

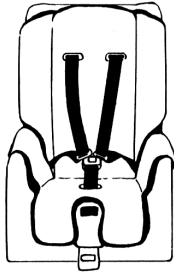
\*\*This total does not include 6,112 occupants with unknown injury severity.

Seating Position	Belts Not Used*		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Left Front	18,176	71.6	370	1,920	3,172	3,042	9,672
Center Front	257	1.0	5	50	96	92	14
Right Front	3,418	13.5	103	673	1,279	1,291	72
Left Rear	1,300	5.1	16	139	271	436	438
Center Rear	349	1.4	8	68	118	143	12
Right Rear	950	3.7	19	154	312	463	2
Left Rear Third Seat	150	0.6	2	31	42	74	1
Center Rear Third Seat	87	0.3	2	9	26	50	0
Right Rear Third Seat	162	0.6	4	30	43	72	13
Unknown	538	2.1	10	85	106	254	83
<b>TOTAL</b>	<b>25,387**</b>	<b>100.0</b>	<b>539</b>	<b>3,159</b>	<b>5,465</b>	<b>5,917</b>	<b>10,307</b>

\* No belts available or no belts used. Children who were coded as using or not using a child restraint device appear in separate tables on page 162-163.

\*\*This total does not include 331 occupants with unknown injury severity.

*Michigan law requires that all persons must wear a safety belt  
when riding in the front seat of a motor vehicle*



## REPORTED RESTRAINT USE - CHILDREN

*Michigan law requires:*

*Any child **under one year of age** riding in either the front or back seat of a vehicle must be in a Child Restraint Device (CRD).*

*Sitting in all seats excluding Left Front Seats:*

Restraint Usage	Children age 0		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Belts Used	32	11.9	0	0	4	28	0
No Belts Used	13	4.8	0	3	3	6	1
CRD Used	193	71.7	3	3	38	149	0
CRD Not Used	15	5.6	0	3	3	9	0
Restraint Failed	3	1.1	0	0	2	1	0
Unknown	13	4.8	0	0	1	10	2
<b>TOTAL</b>	<b>269</b>	<b>100.0</b>	<b>3</b>	<b>9</b>	<b>51</b>	<b>203</b>	<b>3</b>

*Any child between the **ages of one and four** must be in a CRD when riding in the front seat of a vehicle and must either be in a CRD or restrained with a safety belt when riding in the back seat.*

*Sitting in the Front Right and Front Center Seats:*

Restraint Usage	Children age 1-3		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Belts Used	89	44.5	0	5	28	56	0
No Belts Used	31	15.5	3	7	15	6	0
CRD Used	55	27.5	0	5	19	31	0
CRD Not Used	20	10.0	0	2	13	5	0
Restraint Failed	1	0.5	0	0	0	1	0
Unknown	4	2.0	0	1	1	2	0
<b>TOTAL</b>	<b>200</b>	<b>100.0</b>	<b>3</b>	<b>20</b>	<b>76</b>	<b>101</b>	<b>0</b>

## REPORTED RESTRAINT USE - CHILDREN (continued)

*Sitting in the Rear Seats and Other:*

Restraint Usage	Children age 1-3		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Belts Used	256	30.3	1	19	60	176	0
No Belts Used	58	6.9	1	13	25	19	0
CRD Used	462	54.7	5	27	126	303	1
CRD Not Used	29	3.4	1	5	13	10	0
Restraint Failed	2	0.2	0	0	0	2	0
Unknown	37	4.4	0	3	12	22	0
<b>TOTAL</b>	<b>844</b>	<b>100.0</b>	<b>8</b>	<b>67</b>	<b>236</b>	<b>532</b>	<b>1</b>

*Any child between the **ages of four and sixteen** must wear a safety belt when riding in either the front or back seat of a vehicle.*

*Sitting in all seats excluding Left Front Seats:*

Restraint Usage	Children age 4-15		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Belts Used	5,442	72.9	12	364	1,401	3,664	1
No Belts Used	1,427	19.1	23	231	514	656	3
CRD Used	134	1.8	0	3	27	104	0
CRD Not Used	26	0.3	0	2	11	13	0
Restraint Failed	9	0.1	0	1	5	3	0
Unknown	427	5.7	1	75	120	228	3
<b>TOTAL</b>	<b>7,465</b>	<b>100.0</b>	<b>36</b>	<b>676</b>	<b>2,078</b>	<b>4,668</b>	<b>7</b>

Note: Safety equipment usage is often self-reported and may not reflect actual usage.

In a pilot study of child restraint device (CRD) use and misuse in Michigan [16] at the University of Michigan Transportation Research Institute, researchers discovered at least some degree of improper CRD use in 88.5 percent of case studies.

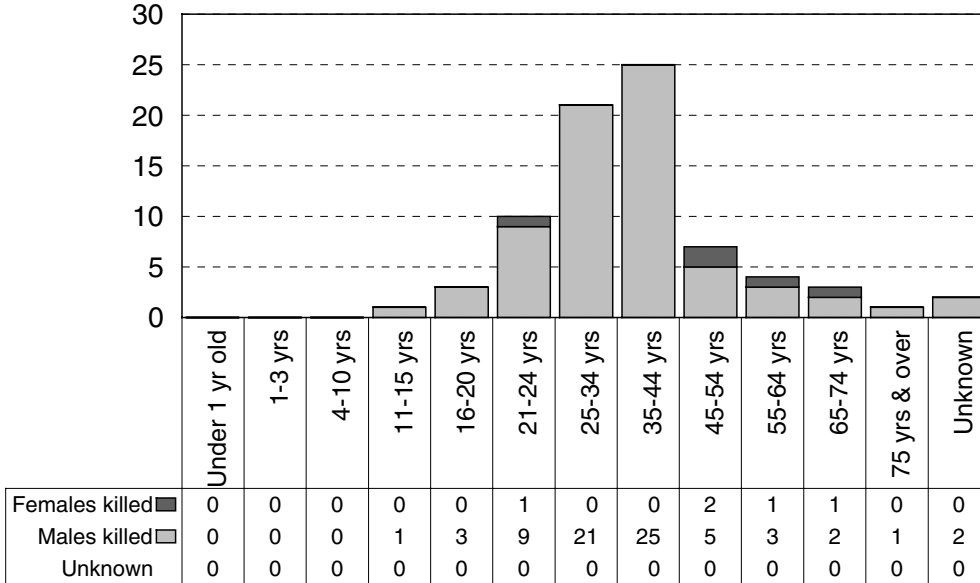
In a study of patterns of child restraint use [17] at the University of Michigan Transportation Research Institute, researchers found that overall child occupant restraint use for ages 0-15 in Michigan was 81.1 (+/- 1.8 percent). In addition, child occupant restraint use closely followed the driver belt use, with child occupant restraint use more than 86 percent when the driver was using a safety belt.

*The driver of the vehicle will receive a citation for any child not restrained.*

*Placing a CRD in the front seat is not recommended in vehicles with passenger side airbags.*

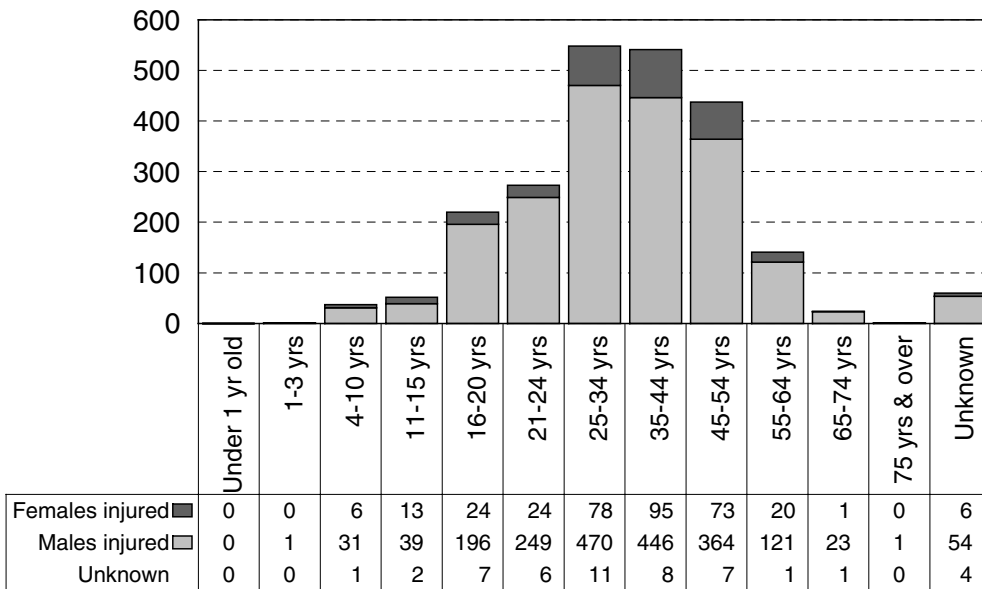
## AGE AND GENDER OF MOTORCYCLISTS KILLED & INJURED IN MOTOR VEHICLE CRASHES

### Motorcyclists Killed



93.5 percent of the motorcyclists killed in traffic crashes in 1999 were male.  
 In comparison, 68.5 percent of all persons killed in crashes were male.

### Motorcyclists Injured



83.7 percent of the motorcyclists injured in traffic crashes in 1999 were male.  
 In comparison, 50.9 percent of all persons injured in crashes were male.

## MOTORCYCLE HELMET USE AND INJURY SEVERITY

Helmet Worn Age of Motorcyclist	Fatality	Injury			No Injury
		A	B	C	
3 years and under	0	0	0	0	0
4 - 10 years	0	1	6	3	0
11 - 15 years	0	5	11	6	4
16 - 20 years	2	38	70	41	35
21 - 24 years	7	43	95	48	59
25 - 34 years	13	103	175	97	85
35 - 44 years	19	106	143	111	105
45 - 54 years	4	88	144	98	75
55 - 64 years	3	29	51	26	16
65 - 74 years	2	2	7	6	0
75 years and over	1	0	0	1	0
Unknown	0	3	0	5	4
<b>Subtotal</b>	<b>51</b>	<b>418</b>	<b>702</b>	<b>442</b>	<b>383</b>



Drivers killed 49  
Passengers killed 2

Helmet Not Worn Age of Motorcyclist	Fatality	Injury			No Injury
		A	B	C	
3 years and under	0	0	1	0	0
4 - 10 years	0	1	5	4	0
11 - 15 years	0	5	7	5	0
16 - 20 years	0	3	8	3	2
21 - 24 years	0	4	5	2	1
25 - 34 years	2	8	2	4	0
35 - 44 years	1	4	4	4	2
45 - 54 years	0	2	3	0	0
55 - 64 years	0	0	0	1	0
65 - 74 years	0	0	0	0	0
75 years and over	0	0	0	0	0
Unknown	0	0	0	0	1
<b>Subtotal</b>	<b>3</b>	<b>27</b>	<b>35</b>	<b>23</b>	<b>6</b>



Drivers killed 3  
Passengers killed 0

Helmet Use Unknown Age of Motorcyclist	Fatality	Injury			No Injury
		A	B	C	
3 years and under	0	0	0	0	0
4 - 10 years	0	2	10	6	5
11 - 15 years	1	0	10	5	5
16 - 20 years	1	15	29	20	15
21 - 24 years	3	13	34	35	23
25 - 34 years	6	43	75	52	71
35 - 44 years	5	49	67	61	49
45 - 54 years	3	35	36	38	36
55 - 64 years	1	14	11	10	12
65 - 74 years	1	5	1	4	2
75 years and over	0	0	0	0	0
Unknown	2	12	30	14	36
<b>Subtotal</b>	<b>23</b>	<b>188</b>	<b>303</b>	<b>245</b>	<b>254</b>
<b>TOTAL</b>	<b>77</b>	<b>633</b>	<b>1,040</b>	<b>710</b>	<b>643</b>

In Michigan, helmet use law (Michigan Vehicle Code Public Act 300 of 1949, Section 257.658) requires that all motorcycle riders wear a helmet. As a result, according to studies by UMTRI [18], approximately 99 percent of the motorcyclists in Michigan wear helmets when riding. The fact that most fatalities (where helmet use is known) are wearing their helmets does not indicate that helmets are not an effective safety device.

## OCCUPANT INJURY OUTCOME BY VEHICLE TYPE



Vehicle Types	Killed	A Injured	B Injured	C Injured	Total KABC	% of All Crash Involved KABC Occupants
Passenger Car and Station Wagon	840	8291	20115	60516	89,762	75.2
Van (Minivan) and Motorhome	60	783	1844	5895	8,582	7.2
Pickup	156	1464	3672	8472	13,764	11.5
Small Truck (under 10,000 lbs.)	13	202	495	1368	2,078	1.7
Motorcycle	76	608	1000	664	2,348	2.0
Moped	6	36	99	59	200	0.2
Go Cart	0	4	5	3	12	0.0
Snowmobile	10	114	76	80	280	0.2
Off Road Vehicle	4	73	74	28	179	0.1
Other	2	31	71	112	216	0.2
Unknown	2	58	130	389	579	0.5
CDL Truck/Bus (breakdown below)	14	125	275	979	1,393	1.2
<b>Total Number of Occupants</b>	<b>1,183</b>	<b>11,789</b>	<b>27,856</b>	<b>78,565</b>	<b>119,393</b>	<b>100.0</b>

Special Note: School bus is not recorded on the UD-10 and cannot be broken out of CDL Truck/Bus.

CDL Truck/Bus Sub-category Types	Killed	A Injured	B Injured	C Injured	Total KABC	% of All Crash Involved KABC Occupants
Commercial Vehicle: Group A	9	45	123	324	501	36.0
Commercial Vehicle: Group B	2	33	90	335	460	33.0
Commercial Vehicle: Group C	1	10	5	61	77	5.5
Other Truck	0	20	19	55	94	6.7
Unknown Truck	2	17	38	204	261	18.7
<b>Total Number of Occupants</b>	<b>14</b>	<b>125</b>	<b>275</b>	<b>979</b>	<b>1,393</b>	<b>100.0</b>

Group "A" is any vehicle that is towing a vehicle or trailer that has a gross vehicle weight rating (GVWR) over 10,000 lbs.

Group "B" is any single vehicle (including buses) with a GVWR of 26,001 lbs. or more. This would include a combination of vehicles with a combined GVWR over 26,000 lbs. when towing a trailer that has a GVWR of 10,000 lbs. or less.

Group "C" is any single vehicle with a GVWR of less than 26,001 lbs. or a combination of vehicles having a combined GVWR under 26,001 lbs. when the vehicle is required to display placards for hazardous material or designed to carry 16 passengers (including driver). Group "C" is also any vehicle carrying 15 or less people (including driver) transporting children to or from school and home on a regular basis for compensation.