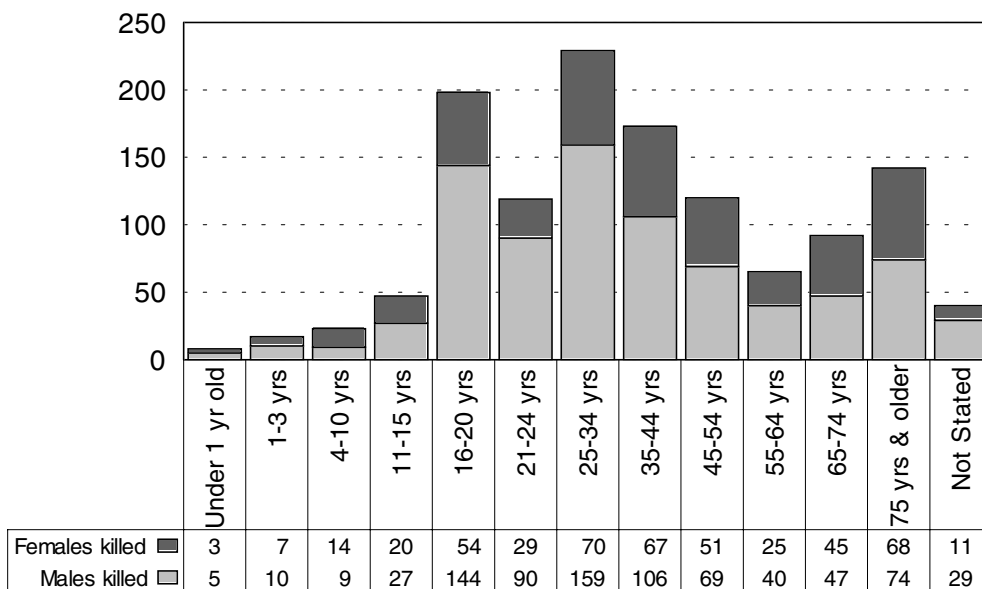


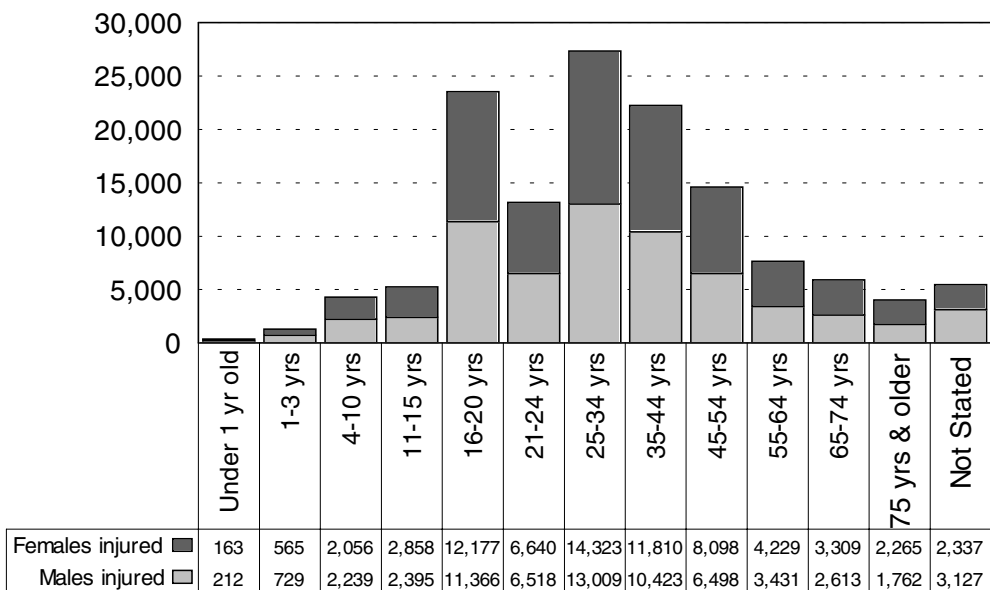
## AGE AND GENDER OF OCCUPANTS KILLED & INJURED IN MOTOR VEHICLE CRASHES

### Occupants Killed



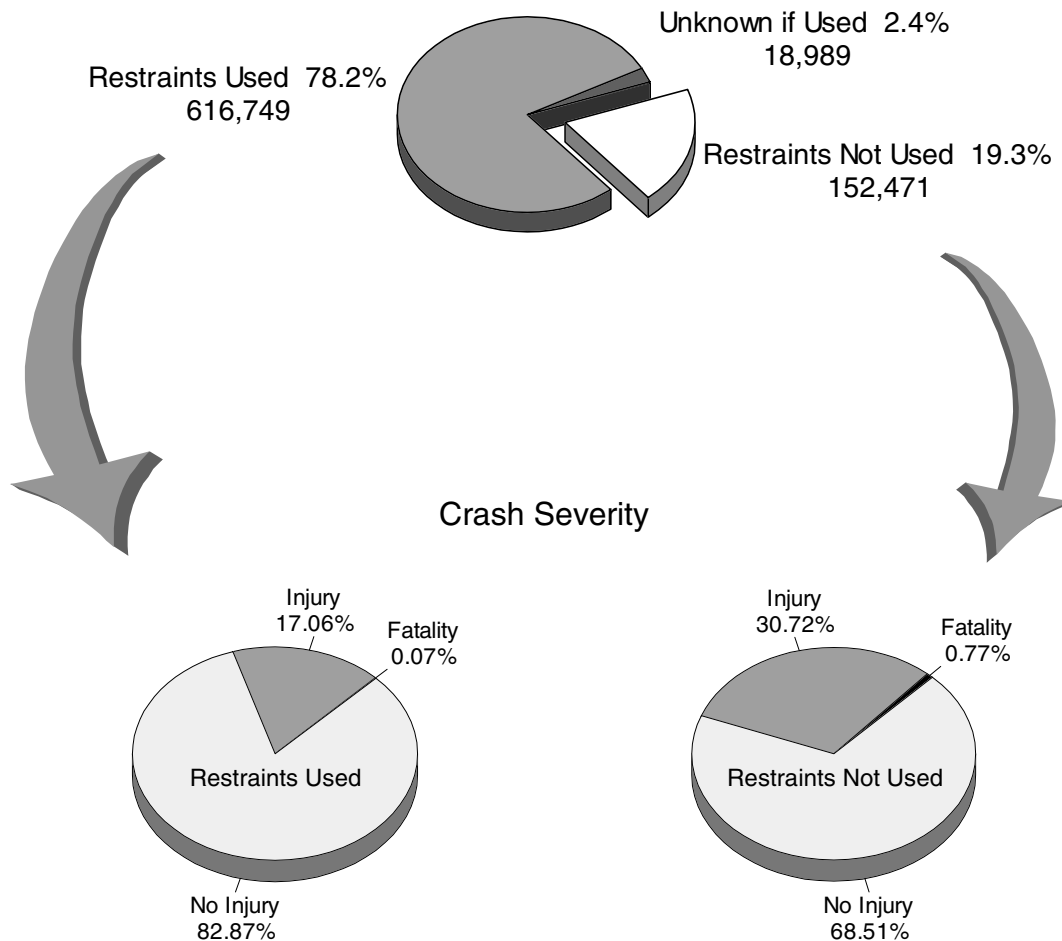
The majority (63.6%) of occupants killed in traffic crashes in 1996 were male.

### Occupants Injured



The majority (52.4%) of occupants injured in traffic crashes in 1996 were female.

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

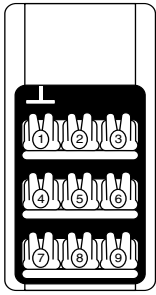


Restraint use by motorists is measured two ways: by what motorists REPORT to police at the scene of a traffic crash (reported usage), and by DIRECT OBSERVATION studies where motorists are totally unaware of the presence of researchers (observed usage). As expected, reported usage is routinely much higher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

Of the 788,209 drivers and injured passengers involved in crashes, 616,749 (78.2%) were REPORTED to be using occupant restraints.

However, a DIRECT OBSERVATION study by the University of Michigan Transportation Research Institute [13] estimated 70.8 percent of motorists overall used safety belts in 1996.

Occupants in crashes were eleven 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

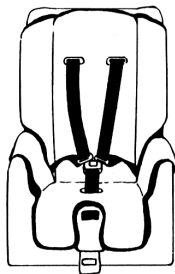
Seating Position	Belts Used*		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Left Front	582,287	95.6	308	6,197	15,205	55,593	504,984
Center Front	701	0.1	3	48	165	447	38
Right Front	19,907	3.3	101	1,699	4,039	13,839	229
Left Rear	2,201	0.4	7	155	450	1,445	144
Center Rear	535	0.1	1	41	126	358	9
Right Rear	2,437	0.4	7	176	569	1,685	0
Left Rear Third Seat	321	0.1	0	33	83	190	15
Center Rear Third Seat	119	0.0	0	13	35	69	2
Right Rear Third Seat	354	0.1	1	26	93	229	5
Unknown	121	0.0	0	5	20	40	56
<b>TOTAL</b>	<b>608,983</b>	<b>100.0</b>	<b>428</b>	<b>8,393</b>	<b>20,785</b>	<b>73,895</b>	<b>505,482</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 appear in separate tables on pages 100-101.

Seating Position	Belts Not Used*		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Left Front	25,108	73.4	386	2,546	4,031	4,189	13,956
Center Front	390	1.1	9	75	137	153	16
Right Front	4,662	13.6	101	990	1,691	1,801	79
Left Rear	1,418	4.1	19	176	344	558	321
Center Rear	448	1.3	7	95	133	204	9
Right Rear	1,250	3.7	27	181	346	693	3
Left Rear Third Seat	167	0.5	0	25	52	90	0
Center Rear Third Seat	93	0.3	1	17	38	37	0
Right Rear Third Seat	174	0.5	2	21	54	93	4
Unknown	504	1.5	14	104	113	200	73
<b>TOTAL</b>	<b>34,214</b>	<b>100.0</b>	<b>566</b>	<b>4,230</b>	<b>6,939</b>	<b>8,018</b>	<b>14,461</b>

\* No belts available or no belts used. Children who were coded as using or not using a child restraint appear in separate tables on page 100-101.

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



## REPORTED CHILD RESTRAINT USE

*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	52	15.0	0	4	10	37	1
No Belts Used	19	5.5	0	3	6	10	0
CRD Used	252	72.6	5	14	54	179	0
CRD Not Used	16	4.6	2	3	5	6	0
Restraint Failed	1	0.3	0	1	0	0	0
Restraint Use Unknown	3	0.9	1	0	0	2	0
Uncoded & Errors	4	1.2	0	1	0	2	1
<b>TOTAL</b>	<b>347</b>	<b>100.0</b>	<b>8</b>	<b>26</b>	<b>75</b>	<b>236</b>	<b>2</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	186	47.2	2	16	56	111	1
No Belts Used	51	12.9	1	7	21	22	0
CRD Used	105	26.6	1	5	38	61	0
CRD Not Used	34	8.6	1	6	13	14	0
Restraint Failed	3	0.8	0	0	0	3	0
Restraint Use Unknown	7	1.8	1	1	2	3	0
Uncoded & Errors	8	2.0	0	0	3	5	0
<b>TOTAL</b>	<b>394</b>	<b>100.0</b>	<b>6</b>	<b>35</b>	<b>133</b>	<b>219</b>	<b>1</b>

## REPORTED CHILD RESTRAINT USE

*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	318	35.5	2	31	85	200	0
No Belts Used	80	8.9	2	21	18	39	0
CRD Used	419	46.7	5	45	103	266	0
CRD Not Used	43	4.8	2	2	24	15	0
Restraint Failed	1	0.1	0	0	0	1	0
Restraint Use Unknown	14	1.6	0	0	6	8	0
Helmet Use	2	0.2	0	0	0	2	0
Uncoded & Errors	20	2.2	0	0	6	14	0
<b>TOTAL</b>	<b>897</b>	<b>100.0</b>	<b>11</b>	<b>99</b>	<b>242</b>	<b>545</b>	<b>0</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	6,400	70.8	27	464	1,580	4,327	2
No Belts Used	1,992	22.0	25	312	742	912	1
CRD Used	91	1.0	0	5	32	54	0
CRD Not Used	27	0.3	0	6	14	7	0
Restraint Failed	8	0.1	0	1	2	5	0
Restraint Use Unknown	266	2.9	10	53	71	131	1
Helmet Use	45	0.5	0	11	21	12	1
Helmet Not Used	34	0.4	0	5	16	12	1
Uncoded & Errors	174	1.9	3	16	50	101	4
<b>TOTAL</b>	<b>9,037</b>	<b>100.0</b>	<b>65</b>	<b>873</b>	<b>2,528</b>	<b>5,561</b>	<b>10</b>

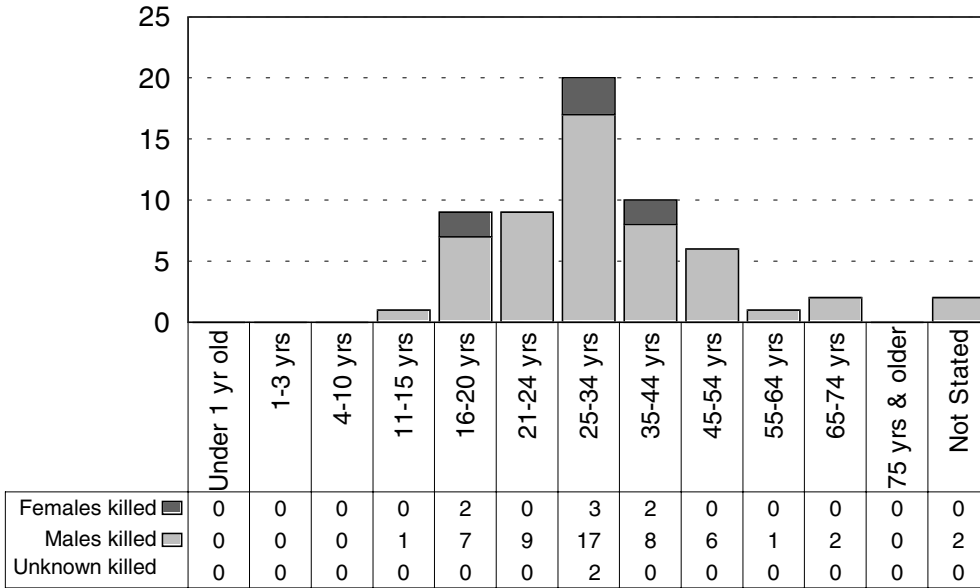
Note: Safety equipment usage is often self-reported and may not reflect actual usage.

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

In a pilot study of Child Restraint Device (CRD) use and misuse in Michigan [14] 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.

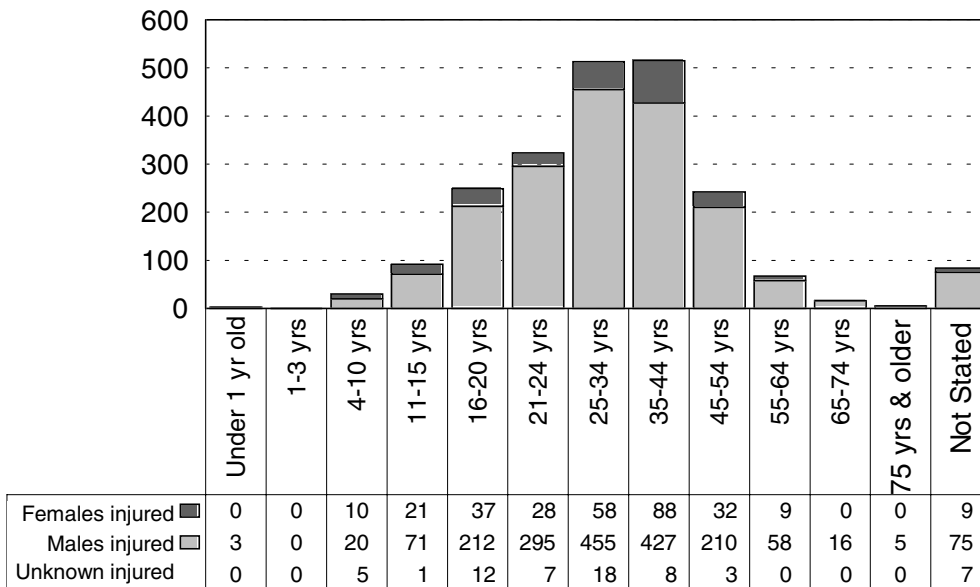
## AGE AND GENDER OF MOTORCYCLISTS KILLED & INJURED IN MOTOR VEHICLE CRASHES

### Motorcyclists Killed



85.5 percent of the motorcyclists killed in traffic crashes in 1996 were male.  
 In comparison, 64.5 percent of all persons killed in crashes were male.

### Motorcyclists Injured



84 percent of the motorcyclists injured in traffic crashes in 1996 were male.  
 In comparison, 48.5 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	1	0	2	0
4 - 10 years	0	2	4	0	0
11 - 15 years	0	10	16	10	1
16 - 20 years	5	41	75	41	33
21 - 24 years	9	58	100	68	41
25 - 34 years	20	89	140	116	88
35 - 44 years	9	103	150	93	75
45 - 54 years	6	61	62	45	39
55 - 64 years	1	17	15	7	9
65 - 74 years	1	2	2	3	2
75 years and over	0	0	0	1	0
Not Stated	0	2	2	2	3
<b>Subtotal</b>	<b>51</b>	<b>386</b>	<b>566</b>	<b>388</b>	<b>291</b>



Drivers killed 47  
Passengers killed 4

Helmet Not 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	1	3	0
11 - 15 years	0	2	8	11	4
16 - 20 years	2	3	12	5	1
21 - 24 years	0	6	6	2	1
25 - 34 years	1	8	5	3	1
35 - 44 years	0	6	7	1	0
45 - 54 years	0	1	3	1	0
55 - 64 years	0	0	2	0	0
65 - 74 years	0	1	0	0	0
75 years and over	0	0	0	0	0
Not Stated	0	2	2	1	0
<b>Subtotal</b>	<b>3</b>	<b>30</b>	<b>46</b>	<b>27</b>	<b>7</b>

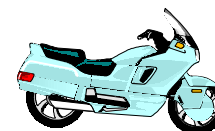


Drivers killed 2  
Passengers killed 1

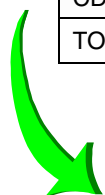
Helmet Use Unknown Age of Motorcyclist	Fatality	Injury			No Injury
		A	B	C	
3 years and under	0	0	0	0	0
4 - 10 years	0	6	13	5	2
11 - 15 years	1	11	9	16	8
16 - 20 years	2	19	42	23	17
21 - 24 years	0	20	35	35	33
25 - 34 years	1	49	71	50	38
35 - 44 years	1	56	62	45	54
45 - 54 years	0	21	26	25	28
55 - 64 years	0	8	12	6	8
65 - 74 years	1	2	6	0	1
75 years and over	0	0	2	2	0
Not Stated	2	25	31	24	30
<b>Subtotal</b>	<b>8</b>	<b>217</b>	<b>309</b>	<b>231</b>	<b>219</b>
<b>TOTAL</b>	<b>62</b>	<b>633</b>	<b>921</b>	<b>646</b>	<b>517</b>

In Michigan, helmet use law requires that all motorcycle riders wear a helmet. As a result, according to studies by UMTRI [15], 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	919	11,138	23,837	70,662	106,556	78.1
Van (Minivan) and Motorhome	64	957	1,875	6,207	9,103	6.7
Pickup	170	1,706	3,758	8,475	14,109	10.3
Small Truck (under 10,000 lbs.)	8	165	404	1,042	1,619	1.2
Cycle	61	602	870	586	2,119	1.6
Moped	1	58	104	63	226	0.2
Go Cart	0	3	0	0	3	0.0
Snowmobile	13	114	91	69	287	0.2
Off Road Vehicle	9	59	69	39	176	0.1
Other	5	33	58	94	190	0.1
Uncoded	8	100	150	427	685	0.5
CDL Truck/Bus (breakdown below)	15	145	286	906	1,352	1.0
<b>TOTAL</b>	<b>1,273</b>	<b>15,080</b>	<b>31,502</b>	<b>88,570</b>	<b>136,425</b>	<b>100.0</b>



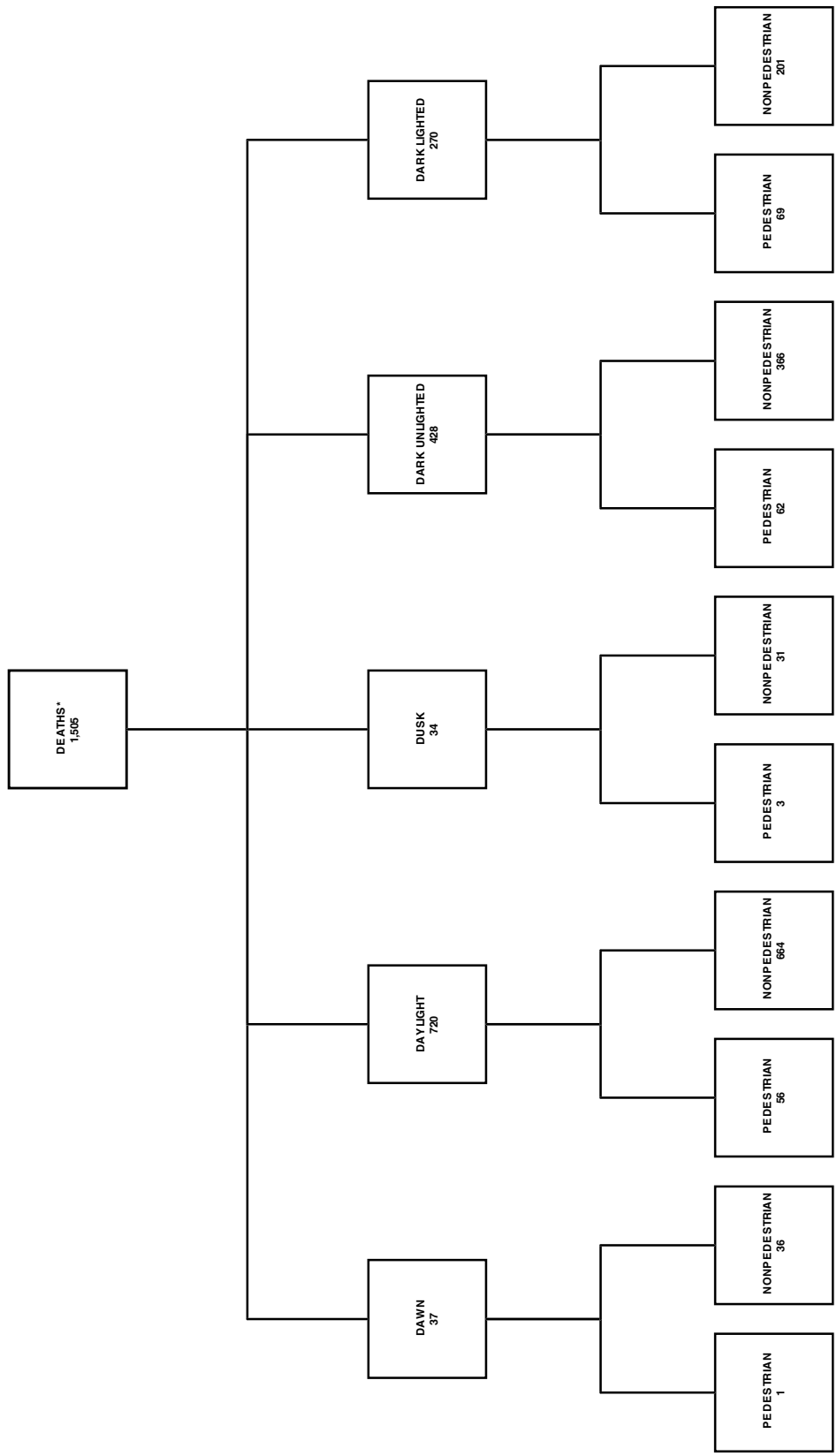
CDL Truck/Bus Sub-category Types	Killed	A Injured	B Injured	C Injured	Total KABC	% of All Crash Involved KABC Occupants
Uncoded Truck	0	8	20	76	104	7.7
Commercial Vehicle: Group A	9	61	105	294	469	34.7
Commercial Vehicle: Group B	3	52	91	371	517	38.2
Commercial Vehicle: Group C	0	6	22	38	66	4.9
Other Truck	3	9	21	49	82	6.1
Unknown Truck	0	9	27	78	114	8.4
<b>TOTAL</b>	<b>15</b>	<b>145</b>	<b>286</b>	<b>906</b>	<b>1,352</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.

# PRINCIPAL CLASSES OF MOTOR VEHICLE DEATHS



Of the 1,505 motor vehicle deaths in Michigan in 1996, almost half occurred in daylight crashes. Nonpedestrians (mostly occupants of motor vehicles) accounted for 87.2 percent of the deaths. \* 16 of the 1,505 cases were lost due to unknown lighting conditions.

