

VEHICLE TYPE CRASH INVOLVEMENT

TYPES	MOST SEVERE OUTCOME IN CRASH						MOST SEVERE OUTCOME IN VEHICLE			
	Motor Vehicles		Fatal Crash		Injury	PDO	Fatality in Veh		Injury	PDO
	Number	% of Total	Number	% of Total			Number	% of Total		
Passenger Car and Station Wagon	446,069	73.8	1,260	57.7	114,202	330,607	732	61.0	73,707	327,413
Van and Motorhome	32,069	5.3	103	4.7	7,653	24,313	42	3.5	3,973	25,148
Pickup	69,501	11.5	235	10.8	15,495	53,771	110	9.2	8,648	55,145
Small Truck	5,557	0.9	19	0.9	1,260	4,278	6	0.5	597	4,445
Cycle	2,300	0.4	44	2.0	1,793	463	44	3.7	1,748	387
Moped	338	0.1	4	0.2	256	78	3	0.3	247	58
Go Cart	42	0.0	0	0.0	17	25	0	0.0	14	14
Snowmobile	558	0.1	14	0.6	381	163	12	1.0	333	168
Off Road Vehicle	175	0.0	4	0.2	133	38	3	0.3	128	39
Medium Truck	2,342	0.4	20	0.9	590	1,732	13	1.1	279	1,828
Commercial Vehicle: Group A	6,869	1.1	68	3.1	1,375	5,426	4	0.3	345	6,094
Commercial Vehicle: Group B	3,764	0.6	27	1.2	744	2,993	4	0.3	230	3,332
Commercial Vehicle: Group C	483	0.1	5	0.2	102	376	0	0.0	40	420
Unknown	34,463	5.7	379	17.4	9,031	25,053	227	18.9	5,905	8,651
Totals	604,530	100.0	2,182	100.0	153,032	449,316	1,200	100.0	96,194	433,142

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.

ACTION PRIOR TO CRASH

MOST SEVERE OUTCOME IN CRASH

DRIVER ACTION	All Drivers		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Going straight ahead	289,840	55.8	1,211	12,328	20,952	44,946	210,403
Turning left	45,421	8.7	95	2,007	3,766	7,389	32,164
Turning right	15,380	3.0	8	284	697	1,618	12,773
Stopped on roadway	47,745	9.2	37	1,137	2,505	11,382	32,684
Changing lanes	11,070	2.1	30	296	476	1,241	9,027
Backing	13,705	2.6	8	82	180	514	12,921
Slowing/stopping on roadway	29,035	5.6	16	479	1,208	6,181	21,151
Starting up on roadway	6,709	1.3	7	239	471	1,277	4,715
Entering parking	1,144	0.2	1	15	25	101	1,002
Leaving parking	2,914	0.6	2	90	129	307	2,386
Entering roadway	8,311	1.6	21	277	571	1,265	6,177
Leaving roadway	3,842	0.7	47	402	558	503	2,332
Making U-turn	1,818	0.4	8	83	121	255	1,351
Overtaking or passing	6,632	1.3	34	286	454	823	5,035
Avoiding object	2,274	0.4	5	109	222	287	1,651
Avoiding pedestrian	272	0.1	10	37	36	38	151
Lost load from vehicle	217	0.0	0	3	11	17	186
Avoiding vehicle (front/back)	4,030	0.8	28	198	306	631	2,867
Avoiding vehicle (angle)	2,278	0.4	15	123	205	370	1,565
Driverless moving	232	0.0	0	4	21	23	184
Driverless parked	7,029	1.4	12	95	182	266	6,474
Other	4,925	0.9	60	338	447	649	3,431
Unknown	14,292	2.8	42	468	761	1,885	11,136
TOTAL	519,115	100.0	1,697	19,380	34,304	81,968	381,766

The majority (55.8%) of all drivers are *going straight ahead* at the time of the crash. Driver action *going straight ahead* occurs in a higher percentage (63.6%) of “A” injury crashes and (71.4%) of fatal crashes. *Slowing or stopping on the roadway*, and *being stopped* account for 14.8% of all crashes, but only 3.1% of fatal crashes. Drivers *turning left* are involved in only 8.7% of all crashes, and 5.6% of fatal crashes, but are involved in 10.4% of “A” injury crashes.

ACTION PRIOR TO CRASH (continued)

CYCLIST - INJURY SEVERITY

CYCLIST ACTION	All Cyclists		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Going straight ahead	1,369	53.4	14	163	517	463	171
Turning left	108	4.2	2	18	46	31	8
Turning right	46	1.8	0	6	24	9	5
Stopped on roadway	13	0.5	0	1	4	5	3
Changing lanes	61	2.4	3	15	22	12	5
Backing	1	0.0	0	0	1	0	0
Slowing/stopping on roadway	11	0.4	0	2	5	3	1
Starting up on roadway	7	0.3	0	3	1	1	1
Entering parking	7	0.3	0	0	2	4	1
Leaving parking	9	0.4	0	2	3	1	2
Entering roadway	222	8.7	2	34	82	63	30
Leaving roadway	6	0.2	0	0	1	4	1
Making U-turn	13	0.5	0	1	9	3	0
Overtaking or passing	14	0.5	0	2	4	6	1
Avoiding object	2	0.1	0	0	1	1	0
Avoiding pedestrian	1	0.0	0	0	1	0	0
Lost load from vehicle	0	0.0	0	0	0	0	0
Avoiding vehicle (front/back)	8	0.3	0	1	2	3	1
Avoiding vehicle (angle)	9	0.4	0	1	6	2	0
Driverless moving	1	0.0	0	0	0	0	1
Driverless parked	1	0.0	0	0	0	0	1
Other	81	3.2	1	13	31	22	11
Unknown	576	22.4	9	79	209	189	59
TOTAL	2,566*	100.0	31	341	971	822	302

* Includes 99 cyclists with unknown injury severity

As with motor vehicles, *going straight ahead* represents the majority of cyclist actions (53.8%) before the crash. *Entering the roadway, turning, and changing lanes*, all actions on the part of the cyclist that may be difficult for motor vehicle drivers to anticipate, combine to represent 17% of actions prior to all crashes and nearly 23% of fatal crashes.

ACTION PRIOR TO CRASH (continued)

PEDESTRIAN - INJURY SEVERITY

PEDESTRIAN ACTION	All Pedestrians		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Crossing at intersection	418	16.0	10	107	127	135	17
Crossing not at intersection	740	28.3	46	227	243	164	19
Getting on/off vehicle	38	1.5	5	6	13	8	2
In roadway with traffic	84	3.2	10	24	20	24	2
In roadway against traffic	32	1.2	4	8	6	9	1
Standing\lying in roadway	80	3.1	13	22	20	17	1
Pushing\working on vehicle	36	1.4	4	10	11	7	3
Other working in roadway	24	0.9	2	4	6	10	0
Playing in roadway	54	2.1	2	16	22	8	2
In roadway other reason	94	3.6	5	32	34	19	1
Not in roadway	98	3.7	5	38	28	21	1
Other	67	2.6	3	17	24	18	2
Unknown	852	32.6	61	193	204	209	76
TOTAL	2,617*	100.0	170	704	758	649	127

* Includes 209 pedestrians with unknown injury severity

MOST HARMFUL EVENT

MOST SEVERE OUTCOME IN CRASH

NONCOLLISION	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Overturn	8,618	1.5	114	1,005	1,526	1,712	4,261
Fire/explosion	692	0.1	11	31	36	64	550
Immersion	309	0.1	1	7	6	22	273
Jackknife	2,082	0.4	4	68	113	345	1,552
Ran off road	4,260	0.7	15	246	412	524	3,063
Downhill runaway	258	0.0	2	8	20	36	192
Cargo loss/shift	724	0.1	0	16	31	64	613
Separation of units	260	0.0	0	4	13	21	222
Other noncollision	3,011	0.5	8	176	282	404	2,141
NONCOLLISION Sub-Total	20,214	3.4	155	1,561	2,439	3,192	12,867

MOST SEVERE OUTCOME IN CRASH

HAD A COLLISION WITH NONFIXED OBJECT	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Pedestrian	2,613	0.4	146	616	600	510	741
Pedalcycle	2,107	0.4	26	276	728	589	488
Railway train	270	0.0	22	29	30	26	163
Animal	36,687	6.2	6	60	226	546	35,849
Motor vehicle in transport	364,696	62.0	934	12,260	22,495	63,937	265,070
Parked motor vehicle	23,835	4.1	23	430	925	1,444	21,013
Other nonfixed objects	11,968	2.0	56	454	733	1,625	9,100
COLLISION NONFIXED Sub-Total	442,176	75.2	1,213	14,125	25,737	68,677	332,424

MOST HARMFUL EVENT (continued)

MOST SEVERE OUTCOME IN CRASH

HAD A COLLISION WITH FIXED OBJECT	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Fire Hydrant	538	0.1	3	19	47	60	409
Impact attenuator	152	0.0	0	12	15	21	104
Bridge/pier/abutment	589	0.1	8	45	65	94	377
Bridge parapet end	55	0.0	1	4	7	7	36
Bridge rail	529	0.1	2	19	40	55	413
Guardrail face	1,890	0.3	1	61	142	210	1,476
Guardrail end	407	0.1	3	26	49	79	250
Median barrier	1,573	0.3	7	109	221	348	888
Highway traffic sign post	2,083	0.4	2	31	56	108	1,886
Luminaire/light support	484	0.1	2	30	65	56	331
Utility pole	3,534	0.6	24	275	558	555	2,122
Other pole	847	0.1	6	49	51	76	665
Culvert	589	0.1	8	68	100	85	328
Curb	1,473	0.3	2	57	78	135	1,201
Ditch	3,966	0.7	19	228	497	588	2,634
Embankment	1,378	0.2	9	129	212	227	801
Fence	1,204	0.2	1	35	57	79	1,032
Mailbox	1,619	0.3	0	18	49	62	1,490
Tree	8,279	1.4	150	960	1,327	1,240	4,602
Highway/rail crossing signal	206	0.0	0	8	13	18	167
Building	854	0.1	8	82	120	94	550
Traffic island	76	0.0	0	1	5	6	64
Other fixed object	2,596	0.4	9	106	203	224	2,054
COLLISION FIXED Sub-Total	34,921	5.9	265	2,372	3,977	4,427	23,880

MOST SEVERE OUTCOME IN CRASH

	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Unknown Event	90,784	15.4	319	3,271	5,504	12,452	69,238
TOTAL MOST HARMFUL EVENT	588,095	100.0	1,952	21,329	37,657	88,748	438,409

VEHICLE DEFECTS IN CRASH INVOLVEMENT

MOST SEVERE OUTCOME IN CRASH

VEHICLE DEFECTS	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Brakes	2,058	0.3	12	84	154	436	1,372
Lights/reflectors	528	0.1	3	23	44	83	375
Steering	308	0.1	1	16	35	47	209
Tires/wheels	915	0.2	8	49	81	122	655
Windows	64	0.0	1	2	6	8	47
Other	1,279	0.2	5	55	89	144	986
Unknown/None	582,943	99.1	1,922	21,100	37,248	87,908	434,765
TOTAL	588,095	100.0	1,952	21,329	37,657	88,748	438,409

HAZARDOUS ACTION

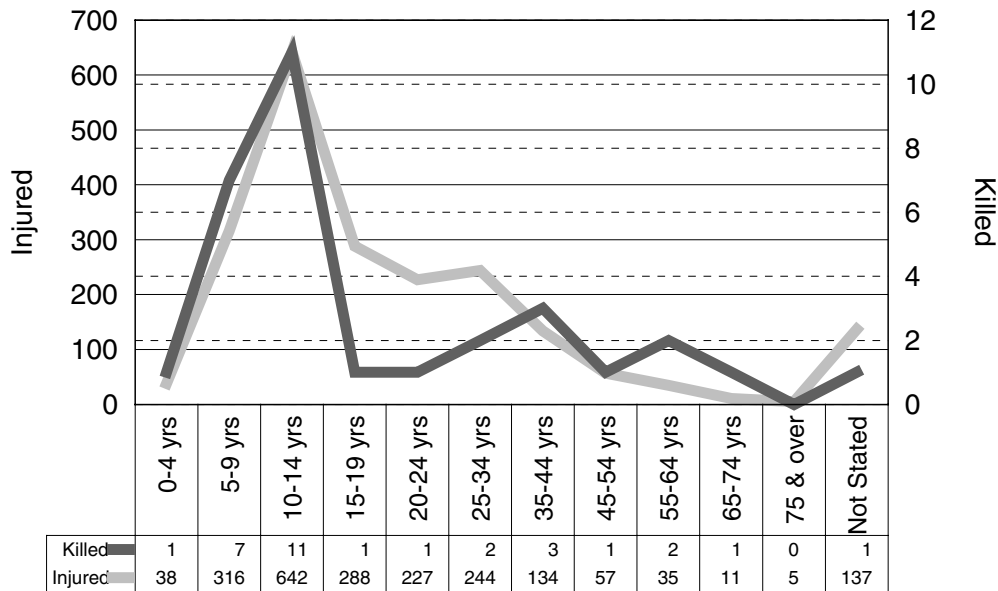
MOST SEVERE OUTCOME IN CRASH

HAZARDOUS ACTION	All Drivers		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
None	212,711	36.2	532	6,788	12,202	31,054	162,135
Speed too fast	32,726	5.6	309	2,390	3,650	4,863	21,514
Speed too slow	1,111	0.2	3	41	77	199	791
Failed to yield	54,289	9.2	135	2,562	4,630	8,969	37,993
Disregard traffic control	15,530	2.6	115	1,087	1,846	3,334	9,148
Drove wrong way	617	0.1	16	48	67	69	417
Drove left of center	5,079	0.9	110	579	556	672	3,162
Improper passing	4,973	0.8	11	136	244	458	4,124
Improper lane use	13,119	2.2	13	228	483	1,093	11,302
Improper turn	10,100	1.7	17	318	584	1,200	7,981
Improper/no signal	1,123	0.2	0	22	40	138	923
Improper backing	12,846	2.2	6	63	113	429	12,235
Unable to stop in clear distance	72,289	12.3	66	1,499	3,536	15,796	51,392
Other	30,701	5.2	150	1,851	3,012	4,101	21,587
Unknown	120,881	20.6	469	3,717	6,617	16,373	93,705
TOTAL	588,095	100.0	1,952	21,329	37,657	88,748	438,409



MICHIGAN BICYCLE CRASHES

1992 Bicycle Crash Information



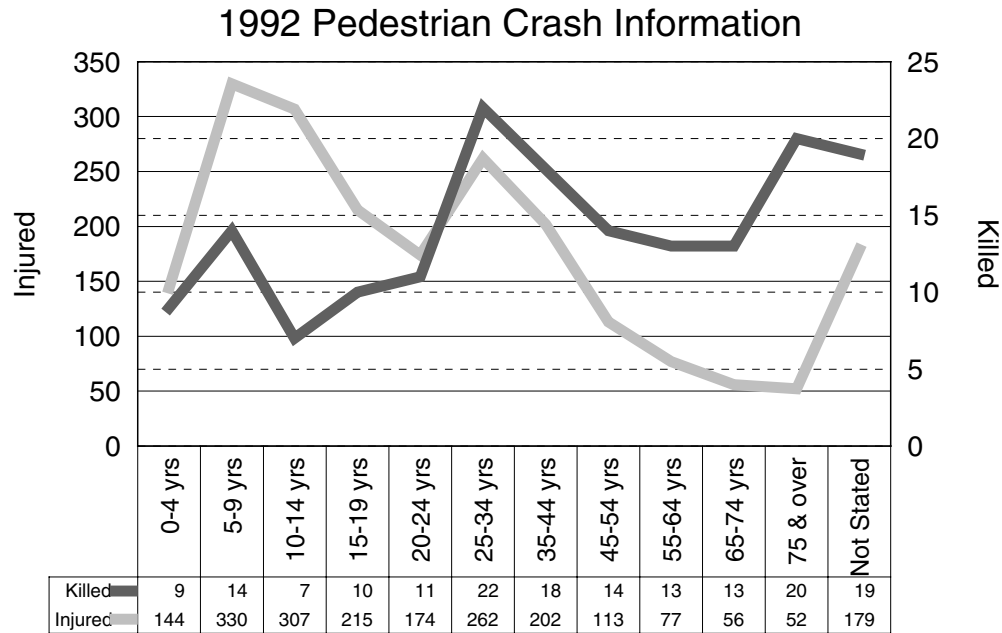
In 1992, there were 31 bicyclists killed and 2,134 injured in 2,566 total reported crashes involving bicyclists and motor vehicles. These numbers represent a 22.5% decrease in fatalities from 1991.

Of the 31 bicyclists killed in 1992, 5 were involved in a Had Been Drinking (HBD) crash and in 2 of these the bicyclist had been drinking. Of the 2,134 bicyclists injured, 106 were involved in a HBD crash and in 64 of these the bicyclist had been drinking. Of the 2,566 total reported crashes involving bicyclists and motor vehicles, 118 involved drinking and in 72 of these the bicyclist had been drinking.

Children under 15 years of age accounted for 19 (61.3%) of the bicycle deaths in 1992.



MICHIGAN PEDESTRIAN CRASHES



In 1992, there were 170 pedestrians killed and 2,111 injured in 2,617 total reported crashes involving pedestrians and motor vehicles. These numbers represent a 5.6% decrease in fatalities from 1991.

Of the 170 pedestrians killed in 1992, 43 were involved in a Had Been Drinking (HBD) crash and in 28 of these the pedestrian had been drinking. Of the 2,111 pedestrians injured, 266 were involved in a HBD crash and in 188 of these the pedestrian had been drinking. Of the 2,617 total reported crashes involving pedestrians and motor vehicles, 337 involved drinking and in 229 of these the pedestrian had been drinking.

Children under 15 years of age accounted for 30 (17.6%) of the pedestrian deaths in 1992.



MICHIGAN SNOWMOBILE CRASHES

MOST SEVERE OUTCOME IN CRASH

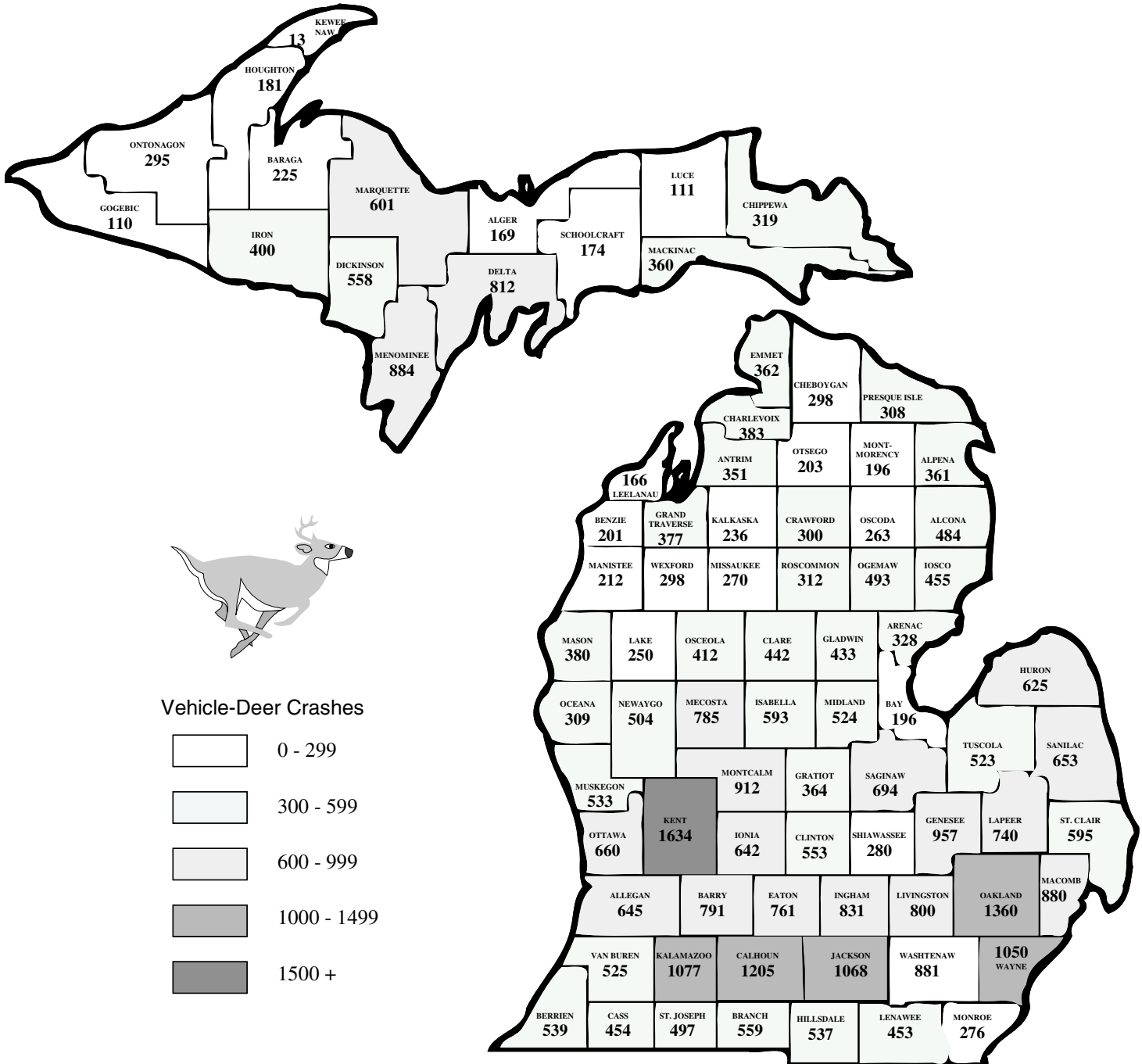
Most Harmful Event	Snowmobiles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
NONCOLLISION							
Overturn	55	9.7	1	17	14	13	10
Fire/explosion	1	0.2	0	1	0	0	0
Immersion	5	0.9	0	0	2	2	1
Jackknife	4	0.7	0	0	2	0	2
Ran off road	6	1.1	0	0	2	2	2
Downhill runaway	0	0.0	0	0	0	0	0
Cargo loss/shift	3	0.5	0	0	1	0	2
Separation of units	2	0.4	0	0	1	0	1
Other noncollision	29	5.1	1	9	9	4	6
NONCOLLISION Subtotal	105	18.6	2	27	31	21	24
HAD A COLLISION WITH NONFIXED OBJECT							
Pedestrian	4	0.7	0	1	0	0	3
Railway train	3	0.5	0	1	1	0	1
Animal	7	1.2	0	1	1	0	5
Motor vehicle in transport	140	24.8	2	25	18	13	82
Parked motor vehicle	8	1.4	0	2	2	0	4
Other nonfixed objects	42	7.4	1	19	6	7	9
COLLISION NONFIXED Subtotal	204	36.1	3	49	28	20	104
HAD A COLLISION WITH FIXED OBJECT							
Bridge/pier/abutment	2	0.4	0	0	0	1	1
Guardrail face	1	0.2	0	0	0	0	1
Guardrail end	1	0.2	0	0	0	1	0
Utility pole	2	0.4	1	0	0	1	0
Other pole	3	0.5	0	1	0	0	2
Culvert	1	0.2	0	0	0	0	1
Ditch	4	0.7	0	1	2	1	0
Embankment	11	1.9	0	4	4	3	0
Fence	11	1.9	0	7	3	1	0
Mailbox	2	0.4	0	2	0	0	0
Tree	86	15.2	2	48	20	10	6
Highway/rail crossing signal	2	0.4	0	0	0	1	1
Building	1	0.2	0	0	0	0	1
Other fixed object	27	4.8	0	10	11	3	3
COLLISION FIXED Subtotal	154	27.3	3	73	40	22	16
Unknown Event	102	18.1	5	22	17	13	45
TOTAL MOST HARMFUL EVENT	565	100.0	13	171	116	76	189

A total of 506 crashes involving 565 snowmobiles were reported in Michigan during 1992. Of these crashes, 13 were fatal with 13 people killed.

MICHIGAN MOTOR VEHICLE-DEER INVOLVED/ASSOCIATED CRASHES

Michigan had 42,494 reported motor vehicle-deer crashes during 1992. 13 people were killed as a result of those collisions.

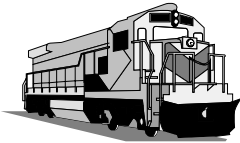
Contrary to common belief, motor vehicle-deer crashes are happening in Michigan's southern, heavily populated counties; Kent County had the highest number with 1,634 such crashes in 1992.





MICHIGAN FARM EQUIPMENT CRASHES

A total of 296 crashes involving farm equipment were reported on Michigan roadways during 1992. Of these crashes, 5 were fatal crashes with 2 drivers and 1 passenger of the farm equipment killed.



MICHIGAN VEHICLE-TRAIN CRASHES

According to Michigan Department of Transportation [4] figures, a total of 153 crashes involving trains were reported in Michigan during 1992. The National Highway Traffic Safety Administration's 1992 Fatal Accident Reporting System [5] reported 24 fatal crashes in Michigan. 30 persons were killed as a result of those collisions.

MOTORCYCLE AND MOTOR SCOOTER DATA

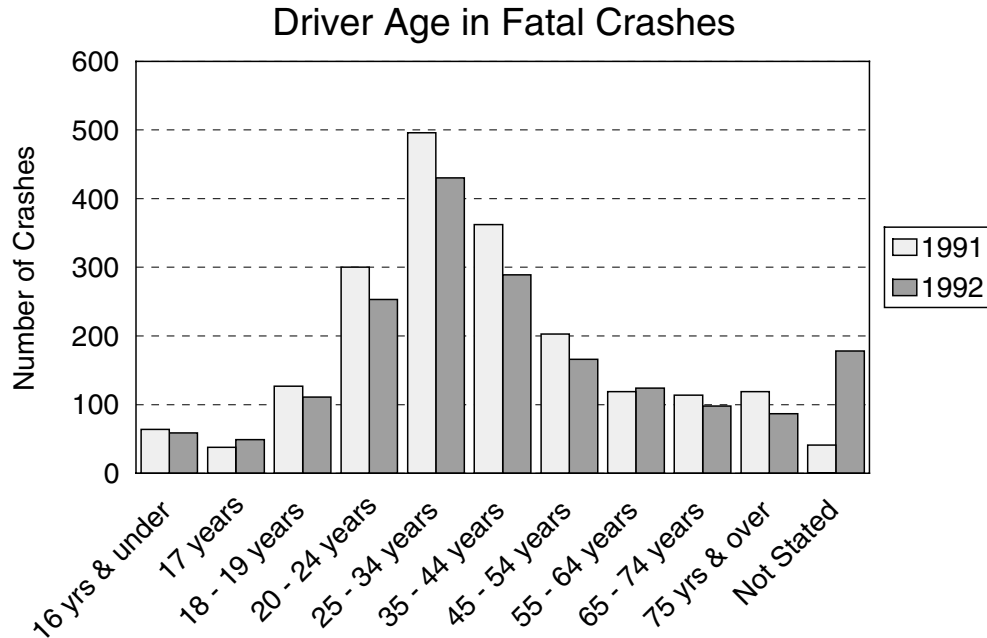
MOTORCYCLE & MOTOR SCOOTER DATA	1991	1992	% Change
Registrations	129,041.0	120,335.0	-6.7
Deaths	83.0	48.0	-42.2
Death Rate based on 10,000 cycle registrations	6.4	4.0	-37.5
Estimated Mileage based on 3,000 miles per cycle (millions)	387,123.0	361,005.0	-6.7
Death Rate based on deaths per 100 million vehicle miles traveled	21.4	13.3	-37.9

Motorcycle and motor scooter registrations declined by 6.7% in 1992. This reduction in exposure may have helped in the dramatic decline in the death rate.

DRIVER AGE

AGE OF DRIVERS IN FATAL CRASHES	1991	1992	% Change	% 1992 Fatal Crash Involvement	Percent Driving Population*
16 years and under	64	59	-7.8	3.2	3.1
17 year	38	49	28.9	2.7	1.6
18 - 19 years	127	111	-12.6	6.0	3.5
20 - 24	300	253	-15.7	13.7	10.7
Group Subtotal	529	472	-10.8	25.6	18.9
25 - 34 years	496	430	-13.3	23.3	24.1
35 - 44 years	362	289	-20.2	15.7	21.0
45 - 54 years	203	166	-18.2	9.0	13.4
55 - 64 years	119	124	4.2	6.7	10.0
65 - 74 years	114	98	-14.0	5.3	8.1
75 years and over	119	87	-26.9	4.7	4.6
Not Stated	41	178	334.1	9.7	---
Group Subtotal	1,454	1,372	-5.6	74.4	81.2
TOTALS	1,983	1,844	-7.0	100.0	100.0

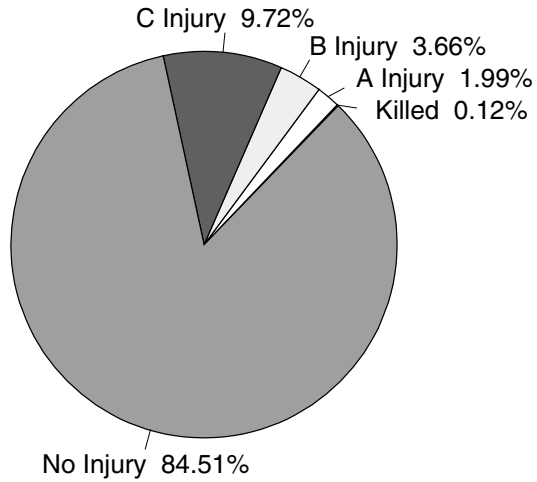
* Figures courtesy of the Michigan Department of State [6]



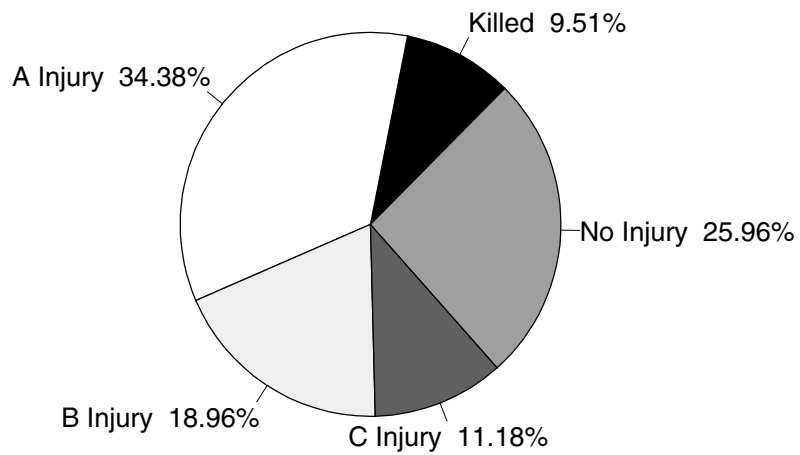
There was a dramatic drop in crash involvement for the elderly driver (75 and over) and also for younger driver age groups (except 17 years old).

DRIVER - NOT EJECTED vs. EJECTED

Driver Injury Severity - Not Ejected



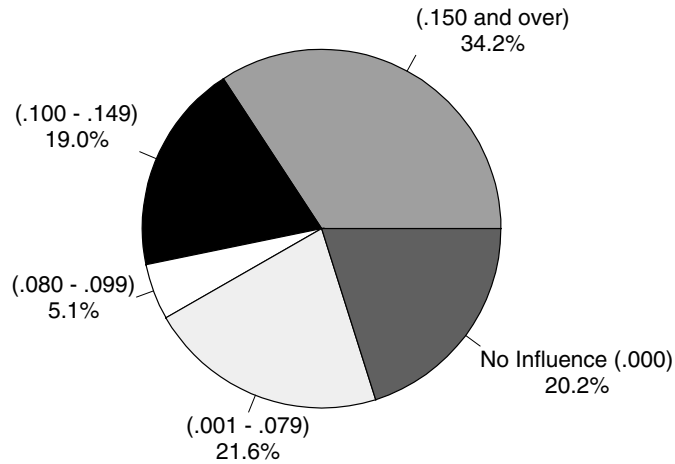
Driver Injury Severity - Ejected



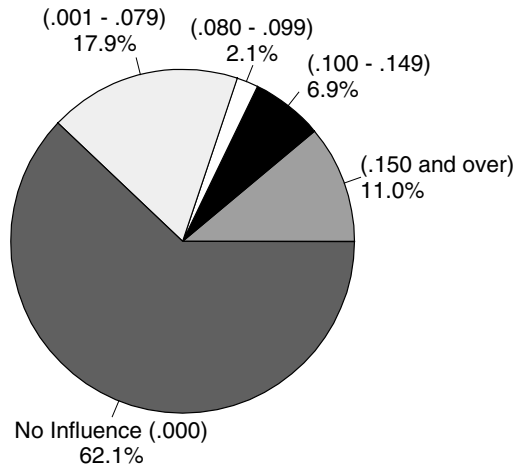
As can be seen in the two charts on this page, death and injury are much more likely when drivers are ejected from their vehicles.

DRIVER BLOOD ALCOHOL TEST RESULTS

Blood Alcohol Test Results
of Drivers Tested - All Crashes



Blood Alcohol Test Results
of Drivers Tested - Fatal Crashes



The risk of crash involvement increases rapidly as the concentration of alcohol in the blood increases. Compared to a not-drinking driver, the risk of fatal crash involvement doubles at a blood-alcohol level of .05, is seven times greater at .10 and 25 times greater at .15. Alcohol use also increases the severity of injuries in a given impact. [7]

A total of 1,841 drivers were involved in crashes with at least one fatality. Of these, 1,696 drivers were not tested for blood alcohol or there was no result given on the crash report. The results of those tested are shown in the fatal crash chart above.

