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Fatal and Serious Injury Traffic Crash

Trends in Michigan: 1995-1999

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16. Abstract

This is the latest report in a series documenting five-year trends in Michigan traffic crashes. This report provides background information necessary for the Michigan Office of Highway Safety Planning to set and evaluate traffic safety goals and to prioritize program efforts. In prior years, this report was quite a large document that many readers found unwieldy. Readers also noted that they were satisfied with the information presented in the executive summary representing the most relevant findings from the complete set of analyses.

The goal of this year's report is to present findings from those analyses sufficiently relevant to have been summarized in the executive summary of reports from previous years. The significantly longer and more detailed portion of the report from previous years has been omitted to increase usability of the report and the findings detailed within.

The most significant areas for improving traffic safety in Michigan include:

- Alcohol-impaired driving
- Crashes involving inappropriate driver behavior like speeding, following too close
- Occupant restraint use
- Roadway safety issues like intersection safety, red light running
- Male drivers age 16-20
- Male Drivers age 21-34
- Crashes on city/county roads
- Crashes during peak travel seasons
- The growing elderly driver population
- Vehicle occupants age 0-15

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Introduction

This is the latest report in a series documenting five-year trends in Michigan traffic crashes. The purpose of this report is to provide background information necessary for the Michigan Office of Highway Safety Planning to set and evaluate traffic safety goals and to prioritize program efforts.

Readers familiar with reports from previous years may notice that some of the reported rates (i.e., rates per driver of record, rates per registered vehicle) differ from previous reports. This is due to changes made this year in the manner in which the Michigan Department of State reports some of its data. While some of the rates from this report may not be the same as in previous reports, the figures within this report were calculated in a consistent manner and can be compared directly. Comparisons between results detailed in this report and reports from prior years may lead to confusion because of the changes in rate denominators and such comparisons are discouraged.

A more obvious change implemented this year involves the actual content of this report. In previous years, it was our intent to provide a wide range of traffic crash trend data broken out in a number of different ways. This was done to examine a broad range of possible problems and within these problems, to identify specific subgroups to target (e.g., age group, sex). This created quite a large document that many readers found unwieldy. However, these same readers noted that they were satisfied with the information presented in the executive summary representing the most relevant findings from the complete set of analyses.

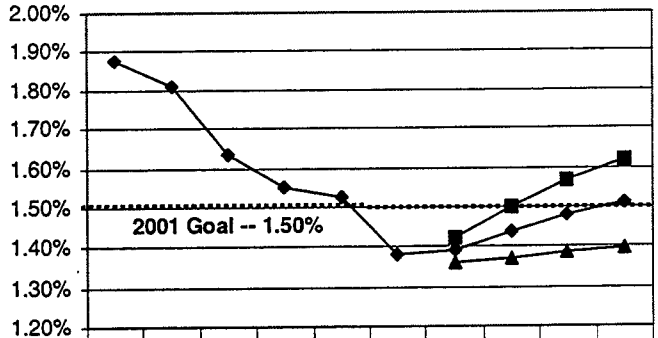
The goal of the report this year is to present findings from those analyses sufficiently relevant to have been summarized in the executive summary of reports from previous years. The significantly longer and more detailed portion of the report from previous years has been omitted to increase usability of the report and the findings detailed within.

Statistical Trend Analysis

The focus of the statistical trend analyses was to examine trends related to two central goals for OHSP:

- reducing the proportion of fatal and severe injury (KA) crashes to 3% by the year 2001, and
- reducing the proportion of crash-involved occupants who experience fatal or serious (KA) injury to 1.5% by the year 2001.

Proportion of Occupants Receiving KA Injury



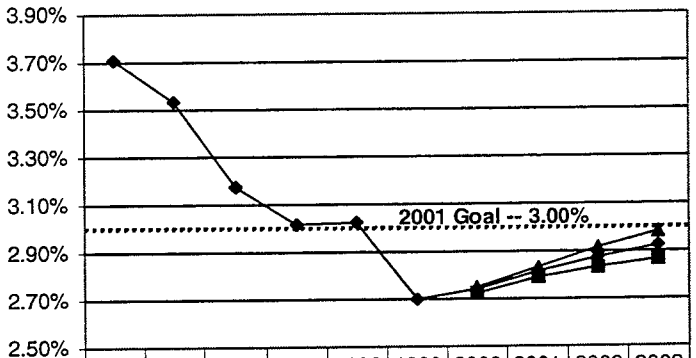
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Estimate	1.88	1.81	1.64	1.55	1.52	1.38	1.39	1.44	1.48	1.51
Low er Bound							1.36	1.37	1.38	1.40
Upper Bound							1.42	1.50	1.56	1.62

The statistical methods used to calculate the predictions presented here are nearly identical to those used in previous reports in this series. Data on the proportion of KA crashes or injuries for each month for the period 1994-1999 were included in a statistical time-series model that estimated what Michigan could expect in the future, based on past statistical experience observed in the data. These statistical procedures result in data describing the "best" estimate of what is expected, as well as 95% confidence limits. These limits describe the range within which we can be 95% confident that the future KA crash and injury rates will fall if there is no change in the statistical pattern.

The charts on this page show the proportion of crashes resulting in KA injury and the proportion of crash-involved occupants experiencing KA injury for the period 1994-1999 and predicted proportions for 2000-2003.

The charts show a general decline in the proportion of KA crashes and crash-involved persons experiencing KA injury from 1994 to 1999. As can be seen, the goals for 2001 were achieved by year-end 1999. Having achieved these goals, the new challenge is establishing goals that consider the accomplishments to date and predictions of future rates. Predictions about future proportions show that a slight increase from 1999 levels may be anticipated.

Proportion of Crashes Resulting in KA Injury



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Estimate	3.71	3.54	3.17	3.02	3.02	2.70	2.74	2.82	2.88	2.93
Low er Bound							2.73	2.80	2.84	2.86
Upper Bound							2.75	2.84	2.91	2.99

How do these findings impact OHSP planning? First, the statistical analyses suggest that the goals selected by OHSP have been achieved and should be revised for future plans. These goals must be established so that they are not beyond what one could expect to achieve given the efforts that can be exerted by OHSP and its partners. Furthermore, goals established must be beyond that which could be expected to occur in the absence of new program efforts from OHSP. If the apparent decline in these proportions from 1994 to 1999 is due in part to OHSP and partner efforts, then it may well be the case that OHSP and its partners must not only continue their current program efforts, these efforts will need to be increased in intensity, focus, or efficiency to achieve the newly revised goals. In addition, it would appear that absent an increase in program intensity, focus or efficiency, Michigan may experience increasing numbers and rates of KA crash involvement.

Fatal or Serious Injury (KA) Crashes

All Drivers

Table 1 - Number and Rate by Year

Number and Rate of Fatal or Serious Injury Crashes					
Year	Number of Crashes	Rate per 100 Million VMT	Rate per 1000 Registered Vehicles	Rate per 1000 Population	Rate per 1000 Drivers of Record
95	14,890	17.376	1.732	1.554	2.157
96	13,820	15.765	1.538	1.431	1.980
97	12,843	14.393	1.420	1.319	1.810
98	12,201	13.727	1.328	1.247	1.706
99	11,206	12.042	1.191	1.141	1.552
Change 95 to 99	-24.74%	-30.70%	-31.21%	-26.55%	-28.05%
Change 98 to 99	-8.16%	-12.28%	-10.31%	-8.48%	-9.02%

Number and Rate of Fatal or Serious Injury Crashes

The table above lists the number of crashes in which the most serious injury noted on the police crash report was a fatal injury (Killed) or a serious (A-level) injury (hereafter identified together as KA injuries) along with associated rates as indicated. Rates were calculated by dividing the number of crashes by the appropriate denominator. For example, rate per 100 million VMT was calculated by dividing the number of crashes in a given year by the VMT expressed in units of 100 million miles. The value for the rate per 100 million VMT in 1999 (12.042) is interpreted to mean that in 1999 Michigan experienced 12.042 crashes resulting in a death or serious injury for every 100 million miles of travel.

The last row of the table shows the percent increase or decrease in the indicated measure in the 1-year period 1998 to 1999. For example, in the column titled 'Number of Crashes' you can see that the figure in the last row, 'Change 98 to 99', is -8.16%. This means that there were 8.16 percent fewer KA crashes in 1999 than in 1998. The highlighted row shows the percent increase or decrease in the indicated measure over the 5-year period 1995 to 1999. For example, in the column titled 'Number of Crashes' you can see that the figure in the next-to-last row, 'Change 95 to 99', is -24.74%. This means that there were 24.74 percent fewer KA crashes in 1999 than in 1995.

Because the 95% confidence band for each percentage reported in this table is +/- 7%, we can say that the observed declines from 1995 to 1999 and from 1998 to 1999 represent statistically significant declines and are greater than would have been expected from year-to-year fluctuations alone.

Table 1 shows that there have been significant declines in KA crashes and crash rates since 1995. It also shows that the number and rates of KA crashes declined significantly between 1998 and 1999.

Table 2 - Number and Rate by Age, Sex, and Year

When interpreting the change percentages presented in this table and its continuation on the following page, note that the 95% confidence band for the percentages reported is +/-15%. What this means is that percentages under 15% in these tables are not different than we would have expected given observed year-to-year fluctuations.

Fatal or Serious Injury Crash Frequency and Rates By Age, Sex, and Year					
Driver Age	Sex	Year	Count	Rate per 1000 Population	Rate per 1000 Drivers of Record
16-20 yr	F	95	1626	0.170	6.090
		96	1533	0.159	11.299
		97	1396	0.143	4.814
		98	1323	0.135	4.499
		99	1210	0.123	4.104
		Change 95 to 99	-25.58%	-27.37%	-32.62%
		Change 98 to 99	-8.54%	-8.87%	-8.79%
	M	95	2533	0.264	8.774
		96	2288	0.237	7.395
		97	2195	0.225	6.972
		98	2026	0.207	6.357
		99	1771	0.180	5.530
		Change 95 to 99	-30.08%	-31.76%	-36.97%
		Change 98 to 99	-12.59%	-12.90%	-13.01%
21-34 yr	F	95	3056	0.319	3.169
		96	2826	0.293	3.136
		97	2663	0.273	2.847
		98	2335	0.239	2.531
		99	2053	0.209	2.250
		Change 95 to 99	-32.82%	-34.43%	-28.99%
		Change 98 to 99	-12.08%	-12.39%	-11.08%
	M	95	5408	0.564	5.329
		96	4818	0.499	4.791
		97	4375	0.449	4.417
		98	4134	0.422	4.218
		99	3675	0.374	3.776
		Change 95 to 99	-32.05%	-33.68%	-29.15%
		Change 98 to 99	-11.10%	-11.42%	-10.50%

The data in this table (which continues on the next page) shows that declines in crashes and crash rates were not distributed evenly across age groups.

In general, the largest reductions (1995-1999) were observed in the 16-20 and 21-34 age groups. Other age groups had smaller, but significant declines from 1995 as well. None of the age-sex groups described on this page experienced a significant decline from 1998 to 1999.

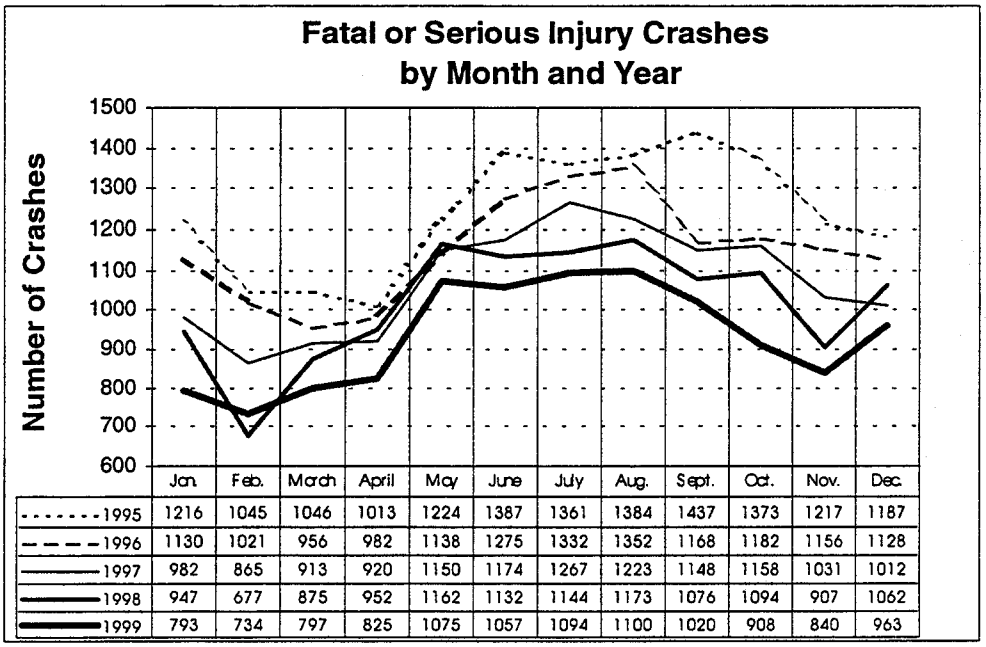
It appears that programs and policies designed to reduce KA crashes involving drivers younger than age 35 have been successful. However, these remain the groups with the highest rates of KA crashes per 1000 drivers of record. This means that while there have clearly been successes in affecting drivers under age 35, these drivers should remain the focus of crash injury reduction programs.

Fatal or Serious Injury Crash Frequency and Rates By Age, Sex, and Year					
Driver Age	Sex	Year	Count	Rate per 1000 Population	Rate per 1000 Drivers of Record
35-54 yr	F	95	2894	0.302	2.183
		96	2754	0.285	1.925
		97	2558	0.263	1.854
		98	2500	0.255	1.785
		99	2282	0.232	1.604
		Change 95 to 99	-21.15%	-23.04%	-26.52%
		Change 98 to 99	-8.72%	-9.04%	-10.12%
	M	95	4715	0.492	3.554
		96	4478	0.464	3.298
		97	4176	0.429	3.021
		98	4137	0.423	2.947
		99	3939	0.401	2.758
		Change 95 to 99	-16.46%	-18.46%	-22.40%
		Change 98 to 99	-4.79%	-5.12%	-6.41%
55-69 yr	F	95	767	0.080	1.473
		96	716	0.074	1.231
		97	699	0.072	1.303
		98	666	0.068	1.210
		99	619	0.063	1.106
		Change 95 to 99	-19.30%	-21.23%	-24.92%
		Change 98 to 99	-7.06%	-7.39%	-8.64%
	M	95	1358	0.142	2.657
		96	1226	0.127	2.381
		97	1188	0.122	2.262
		98	1171	0.120	2.178
		99	1024	0.104	1.873
		Change 95 to 99	-24.59%	-26.41%	-29.50%
		Change 98 to 99	-12.55%	-12.86%	-13.97%
70+ yr	F	95	540	0.056	1.686
		96	542	0.056	1.281
		97	536	0.055	1.589
		98	548	0.056	1.581
		99	455	0.046	1.280
		Change 95 to 99	-15.74%	-17.76%	-24.08%
		Change 98 to 99	-16.97%	-17.26%	-19.01%
	M	95	831	0.087	2.937
		96	800	0.083	2.772
		97	731	0.075	2.461
		98	708	0.072	2.315
		99	654	0.067	2.113
		Change 95 to 99	-21.30%	-23.19%	-28.07%
		Change 98 to 99	-7.63%	-7.95%	-8.75%

While the bulk of the KA crash involved drivers are below age 35, drivers age 35-54 are involved in a large number of KA crashes as well. This is especially true for males in this age group who are involved in KA crashes at a little less than twice the rate of females in this age group.

Each of these age-sex groups experienced a significant decline in KA crashes and crash rates from 1995 to 1999. Only females age 70+ experienced significant declines in KA crashes and crash rates from 1998 to 1999.

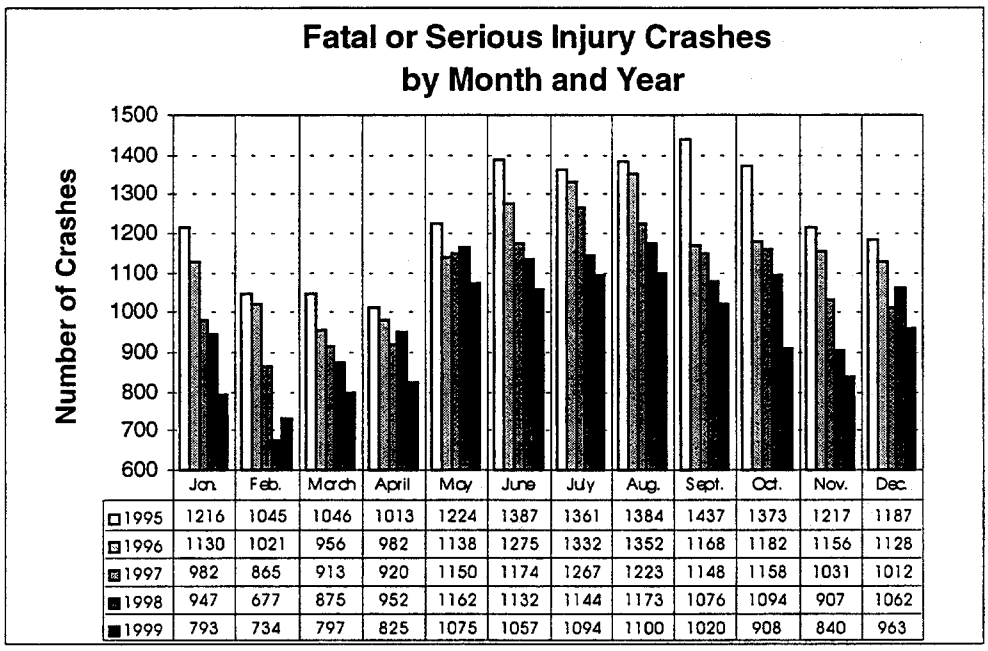
Chart 1 - Number by Month and Year



	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1995	1216	1045	1046	1013	1224	1387	1361	1384	1437	1373	1217	1187
1996	1130	1021	956	982	1138	1275	1332	1352	1168	1182	1156	1128
1997	982	865	913	920	1150	1174	1267	1223	1148	1158	1031	1012
1998	947	677	875	952	1162	1132	1144	1173	1076	1094	907	1062
1999	793	734	797	825	1075	1057	1094	1100	1020	908	840	963

Number of Crashes by Month and Year

Based on the data from the charts on this page, there are generally more KA crashes during the summer months. The number of crashes begins to pick up in May with the months of June, July and August showing an increasing number of crashes. The number of KA crashes begins to taper back down in the months of October and November, then increasing again briefly in December.



	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
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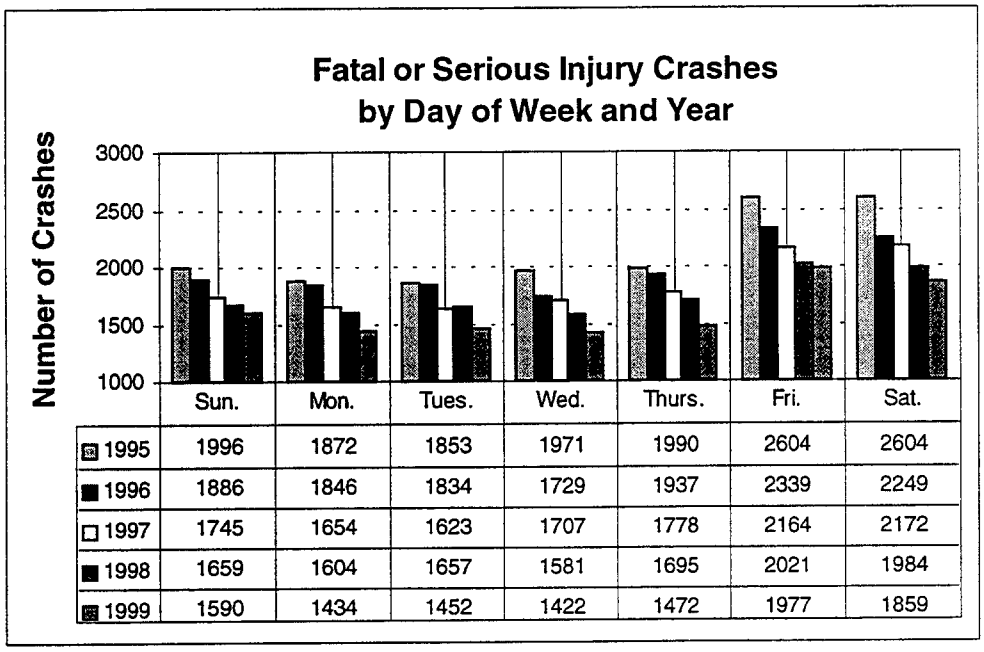
1996	1130	1021	956	982	1138	1275	1332	1352	1168	1182	1156	1128
1997	982	865	913	920	1150	1174	1267	1223	1148	1158	1031	1012
1998	947	677	875	952	1162	1132	1144	1173	1076	1094	907	1062
1999	793	734	797	825	1075	1057	1094	1100	1020	908	840	963

Based on these data and those in Table 2, an emphasis on traffic safety programs focusing on key demographic group (drivers age 16-35, especially males) during the peak summer travel months and around the winter holidays is warranted. However, note that the difference between crash experience in the summer months versus all other months is becoming smaller.

Chart 2 - Number by Day of Week and Year

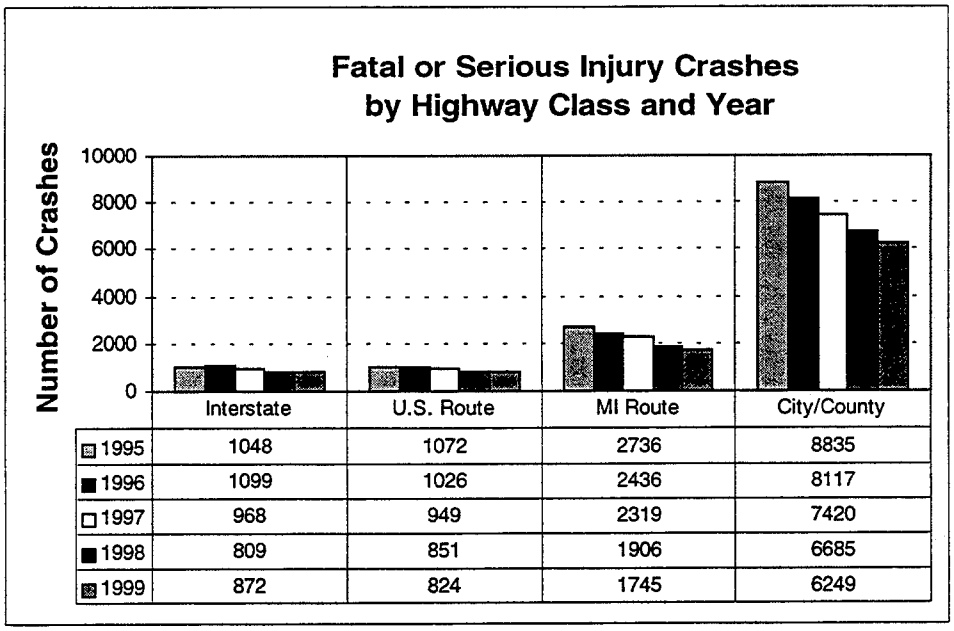


	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
1995	1996	1872	1853	1971	1990	2604	2604
1996	1886	1846	1834	1729	1937	2339	2249
1997	1745	1654	1623	1707	1778	2164	2172
1998	1659	1604	1657	1581	1695	2021	1984
1999	1590	1434	1452	1422	1472	1977	1859

Number of Crashes by Day of Week and Year

KA crashes occur more frequently on Friday and Saturday than other days of the week. Also note that the greatest decreases in crashes from 1995 to 1999 occurred on Friday and Saturday. Based on these data, one may conclude with some justification that program emphasis should be concentrated on Friday and Saturday. However, as the difference in crash frequencies between Friday/Saturday and the rest of the week becomes smaller, the justification for targeting Friday and Saturday is reduced.

Chart 3 - Number by Highway Class and Year

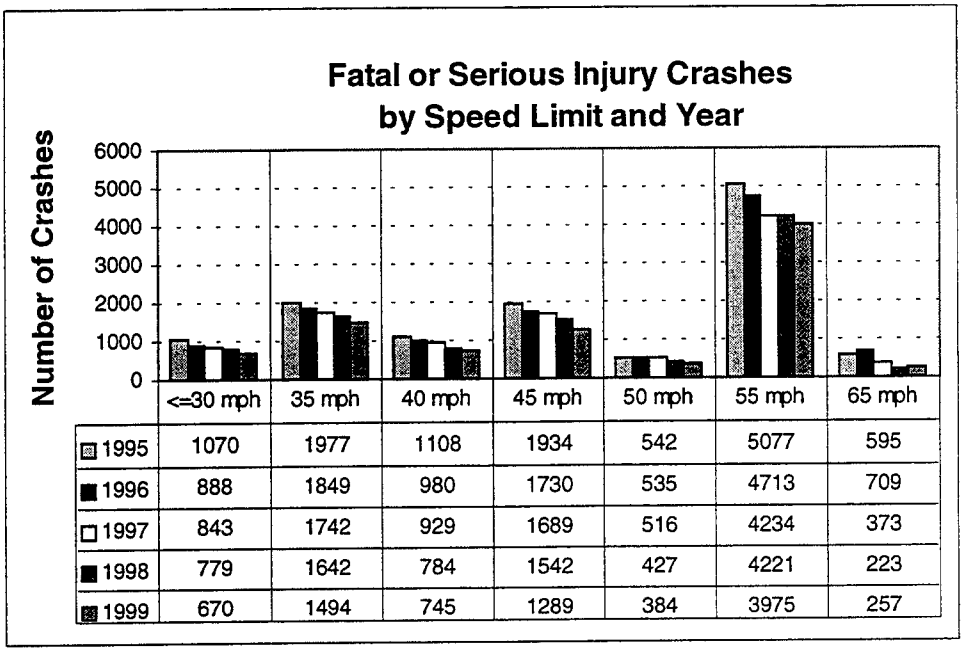


	Interstate	U.S. Route	MI Route	City/County
1995	1048	1072	2736	8835
1996	1099	1026	2436	8117
1997	968	949	2319	7420
1998	809	851	1906	6685
1999	872	824	1745	6249

Number of Crashes by Highway Class and Year

City/County roads continue to predominate the KA crash picture in Michigan, with 64.35% of all KA crashes occurring on City/County roads. Interstate and U.S. routes combined account for only 16.42% of all KA crashes. City/County roads are an obvious target to focus effort for Michigan to achieve its injury reduction goals.

Chart 4 - Number by Speed Limit and Year



	<=30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	65 mph
1995	1070	1977	1108	1934	542	5077	595
1996	888	1849	980	1730	535	4713	709
1997	843	1742	929	1689	516	4234	373
1998	779	1642	784	1542	427	4221	223
1999	670	1494	745	1289	384	3975	257

Number of Crashes by Speed Limit and Year

When examining crash experience by speed limit, roads with a 55 mph speed limit had by far the most KA crashes. In addition, it would appear that the steady annual declines in KA crashes seen on roads with a speed limit below 55 mph are not reflected on roads signed at 55. While there have been annual decreases in the number of KA crashes that occurred on roads with a 55 mph speed limit from 1995 to 1999, it would appear that the rate of decline on these roads has gotten smaller and may have reached a plateau.

Table 3 - Number of Vehicles Involved in KA Injury Crashes by Vehicle Type

Number of Vehicles Involved in KA Injury Crashes by Vehicle Type		
Vehicle Type	Year	Count
Car	1995	17732
	1996	16462
	1997	15001
	1998	13791
	1999	12331
Heavy Truck	1995	885
	1996	924
	1997	811
	1998	788
	1999	791
Light Truck	1995	333
	1996	320
	1997	319
	1998	393
	1999	387
Motorcycle	1995	725
	1996	657
	1997	665
	1998	718
	1999	677
Pickup	1995	3438
	1996	3159
	1997	3095
	1998	3055
	1999	2866
Van	1995	1799
	1996	1684
	1997	1573
	1998	1560
	1999	1380

Number of Vehicles Involved in KA Injury Crashes by Vehicle Type

The largest number of vehicles involved in KA crashes are passenger cars (over twice the number of all other KA crashes combined). The next largest number of vehicles involved in KA crashes are pickup trucks. On a positive note, both these categories have shown a substantial reduction in KA crashes from 1998 to 1999. KA crashes for cars decreased from 13,791 in 1998 to 12,331 in 1999 (1,460 fewer crashes), while KA crashes for pickups decreased from 3,055 in 1998 to 2,866 in 1999 (189 fewer crashes). From these observations it is clear that the focus of OHSP program efforts should focus on passenger cars followed by pickup trucks. Note that because of changes in the manner in which vehicle registrations are reported by the Department of State, it was not possible to calculate crash rates per registered vehicle type as has been possible in the past.

Table 4 - Number by Hazardous Action and Year (Single-Vehicle)

Number of Vehicles Involved in Single-Vehicle Crashes by Hazardous Action and Year																
	Year	None	Speed Too Fast	Speed Too Slow	Fail to Yield	Traffic Control	Wrong Way	Left of Center	Improper Passing	Improper Lane Use	Improper Turn	Improper Signal	Improper Backing	Clear Distance	Other	Unknown
Number of Vehicles	1995	494	1889	12	20	41	4	74	9	47	6	3	5	168	1190	254
	1996	476	1749	10	23	44	3	78	14	40	4	2	3	168	1174	215
	1997	446	1627	10	15	32	2	59	21	33	6	1	0	155	1047	218
	1998	410	1559	6	20	43	5	57	13	34	11	3	7	138	1045	229
	1999	379	1441	10	11	32	2	64	10	50	3	0	5	134	1097	242

Number of Vehicles Involved in Single Vehicle Crashes by Hazardous Action and Year

The table above illustrates that according to the officer completing the crash report, most single-vehicle crashes are the result of excessive speed. Even though the number of KA crashes due to excessive speed has declined from 1,889 crashes in 1995 to 1,441 crashes in 1999, this individual category alone accounts for over 40% of all single vehicle crashes.

Table 5 - Number by Hazardous Action and Year (Multiple-Vehicle)

Number of Vehicles Involved in Single-Vehicle Crashes by Hazardous Action and Year																
	Year	None	Speed Too Fast	Speed Too Slow	Fail to Yield	Traffic Control	Wrong Way	Left of Center	Improper Passing	Improper Lane Use	Improper Turn	Improper Signal	Improper Backing	Clear Distance	Other	Unknown
Number of Vehicles	1995	494	1889	12	20	41	4	74	9	47	6	3	5	168	1190	254
	1996	476	1749	10	23	44	3	78	14	40	4	2	3	168	1174	215
	1997	446	1627	10	15	32	2	59	21	33	6	1	0	155	1047	218
	1998	410	1559	6	20	43	5	57	13	34	11	3	7	138	1045	229
	1999	379	1441	10	11	32	2	64	10	50	3	0	5	134	1097	242

Number of Vehicles Involved in Multiple Vehicle Crashes by Hazardous Action and Year

In contrast to single-vehicle crashes in which the most common hazardous action was excessive speed, among multiple-vehicle crashes the most common hazardous action reported by police was 'none.' A possible explanation for this finding is that many of the vehicles involved in these multiple-vehicle crashes were just innocent bystanders that were hit by drivers who committed the hazardous action that resulted in the crash. Among the known hazardous actions listed, 'clear distance,' 'failure to yield,' 'traffic control,' and 'speed too fast' lead the list after 'none.' Also note that all the four hazardous action categories listed above have shown a steady decline each year from 1995 to 1999.

Table 6 - Number and Rate Among Pedestrians and Bicyclists

Number and Rate of Fatal or Serious Injuries Among Pedestrians and Bicyclists			
	Year	Number of KA Injuries	Rate per 1000 Population
Bike	95	427	4.455
	96	397	4.110
	97	389	3.994
	98	375	3.832
	99	333	3.391
Pedestrian	95	1271	13.261
	96	1189	12.309
	97	1073	11.017
	98	1084	11.078
	99	969	9.867

Number and Rate Among Pedestrians and Bicyclists

Bicycle and pedestrian crashes have changed little from 1995. During this period of time, KA pedestrian crashes have outnumbered KA bicycle crashes by about 3 to 1. To put these figures in perspective, the number of KA pedestrian injuries in 1999 (969 KA injuries) was about the same as the number of KA injured in the rear seat of crash-involved vehicles (899 KA injuries).

Drivers Age 14-18

Table 7 - Number and Rate by Year

Number and Rate of Fatal or Serious Injury Crashes Drivers Age 14-18		
Year	Number of Crashes	Rate per 1000 Drivers of Record
95	2915	7.428
96	2681	6.616
97	2565	5.633
98	2319	5.220
99	2004	4.489
Change 1995 to 1999	-31.25%	-39.57%
Pre-Post GDL Change (1995 & 1996 vs. 1998 & 1999)	-12.83%	-18.25%

Number and Rate of Fatal or Serious Injury Crashes: Drivers Age 14-18

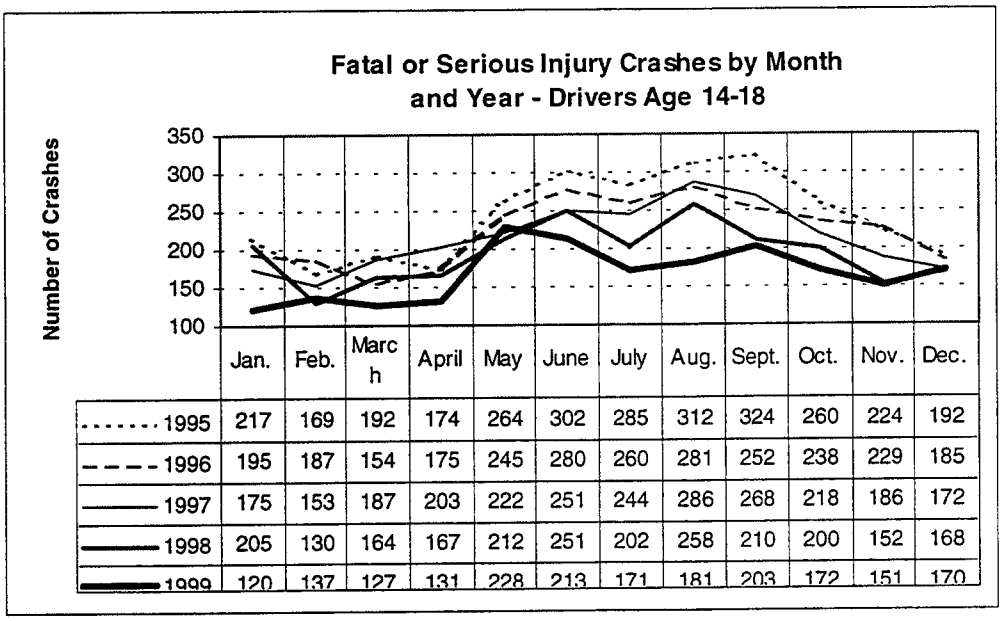
This table shows that the number of KA crashes and crash rate both declined each year since 1995. With the relatively new graduated licensing system having gone into place on April 1, 1997, we may now be seeing some of its effects. The number of KA crashes for drivers age 14-18 that occurred in the two full years after the GDL law went into effect (1998 and 1999) were nearly 13% lower than that of the two complete years prior to the law implementation (1995 and 1996). The steeper decrease in crashes between 1998 and 1999 may be another indication of the benefits of the graduated licensing program. The table on the following page describes possible effects of the GDL in greater detail through a separate analysis of crashes for each age 14-18.

Table 8 - Number and Rate by Age, Sex, and Year

Fatal or Serious Injury Crash Frequency and Rate by Year, Age and Sex Drivers Age 14-18				
Driver Age	Sex	Year	Count	Rate per 1000 Drivers of Record
14	F	95	37	3.3240
		96	26	5.3105
		97	34	2.9655
		98	21	2.5560
		99	34	3.5376
		Change Pre-Post GDL	-6.78%	-17.25%
	M	95	82	6.6743
		96	49	9.0289
		97	68	5.7457
		98	62	6.9258
		99	40	3.9471
		Change Pre-Post GDL	-12.45%	-18.18%
15	F	95	40	1.5439
		96	45	2.0242
		97	39	0.9617
		98	42	1.1333
		99	42	1.0887
		Change Pre-Post GDL	-0.59%	-23.25%
	M	95	85	3.0726
		96	90	3.6793
		97	58	1.3958
		98	63	1.6398
		99	76	1.8954
		Change Pre-Post GDL	-11.46%	-31.27%
16	F	95	372	9.3958
		96	369	7.1598
		97	332	6.7429
		98	267	5.1878
		99	227	4.5231
		Change Pre-Post GDL	-20.00%	-26.06%
	M	95	485	11.3647
		96	426	7.9135
		97	432	8.1577
		98	303	5.6044
		99	256	4.8179
		Change Pre-Post GDL	-23.95%	-29.82%
17	F	95	327	6.0229
		96	325	5.7053
		97	304	5.3173
		98	313	5.6800
		99	267	4.8143
		Change Pre-Post GDL	-5.84%	-5.55%
	M	95	514	8.8769
		96	477	7.8148
		97	468	7.6151
		98	442	7.3694
		99	354	5.8685
		Change Pre-Post GDL	-10.91%	-11.54%
18	F	95	347	5.9802
		96	312	5.2134
		97	317	5.1308
		98	293	4.6784
		99	272	4.4323
		Change Pre-Post GDL	-7.68%	-10.26%
	M	95	560	8.8941
		96	513	7.8924
		97	467	6.9318
		98	487	7.1279
		99	409	6.0549
		Change Pre-Post GDL	-8.99%	-12.02%

These tables show that the largest decreases in KA crashes since implementation of the GDL law (number and rate of KA crashes in 1995 and 1996 compared to the same numbers for 1998 and 1999) occurred among drivers age 16; that is, those specifically targeted by the graduated licensing system. This is an indication that the graduated licensing system is having a positive safety effect.

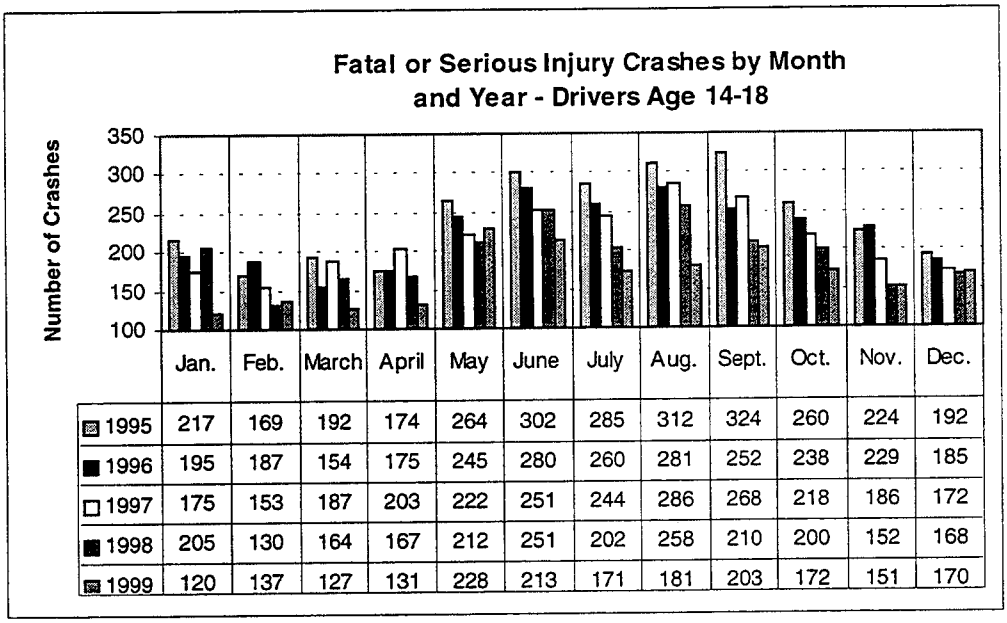
Chart 5 - Number by Month and Year



	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1995	217	169	192	174	264	302	285	312	324	260	224	192
1996	195	187	154	175	245	280	260	281	252	238	229	185
1997	175	153	187	203	222	251	244	286	268	218	186	172
1998	205	130	164	167	212	251	202	258	210	200	152	168
1999	120	137	127	131	228	213	171	181	203	172	151	170

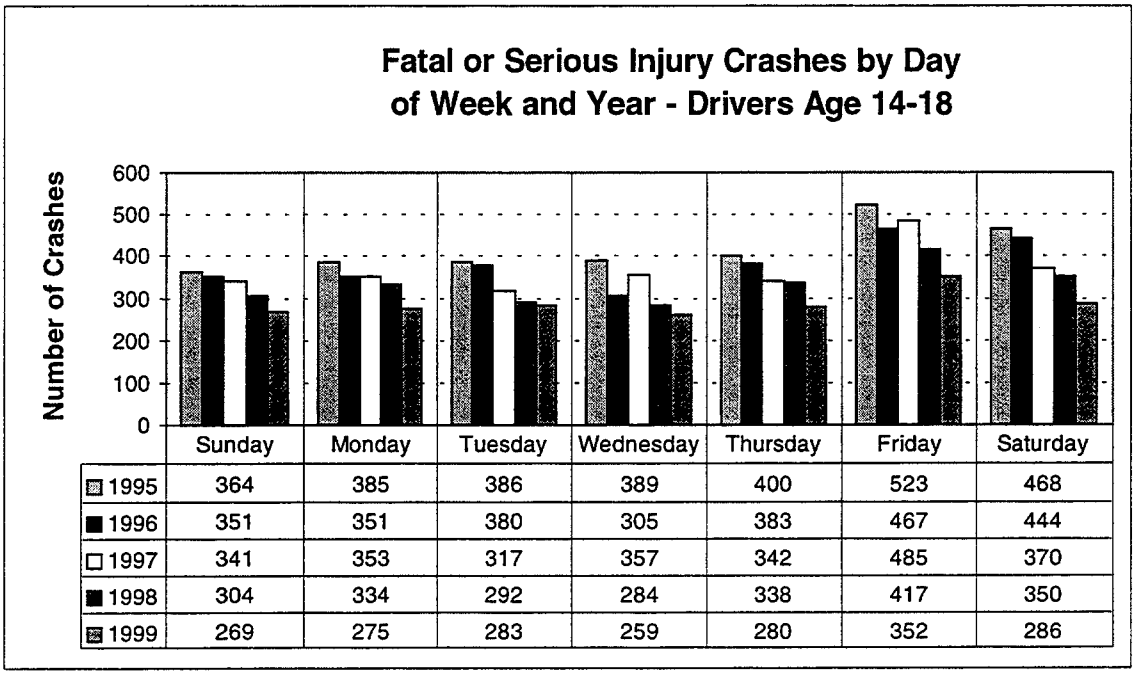
Fatal or Serious Injury Crashes by Month and Year: Drivers Age 14-18

These charts show that among this age group of drivers, declines were highest in the summer months and lowest during winter months. June, July and August show a steep drop in KA crashes between 1998 and 1999 while KA crashes during November and December remain fairly constant. The sharp decline in January KA crashes between 1998 and 1999 may be explained by the larger amounts of snow received during 1999. Based on these observations, it is recommended that program activities held in the summer months be continued to maintain the positive change. Because the crash experience in winter months has leveled off in the last two years, special programs in winter may also be warranted.



	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1995	217	169	192	174	264	302	285	312	324	260	224	192
1996	195	187	154	175	245	280	260	281	252	238	229	185
1997	175	153	187	203	222	251	244	286	268	218	186	172
1998	205	130	164	167	212	251	202	258	210	200	152	168
1999	120	137	127	131	228	213	171	181	203	172	151	170

Chart 6 - Number by Day of Week and Year

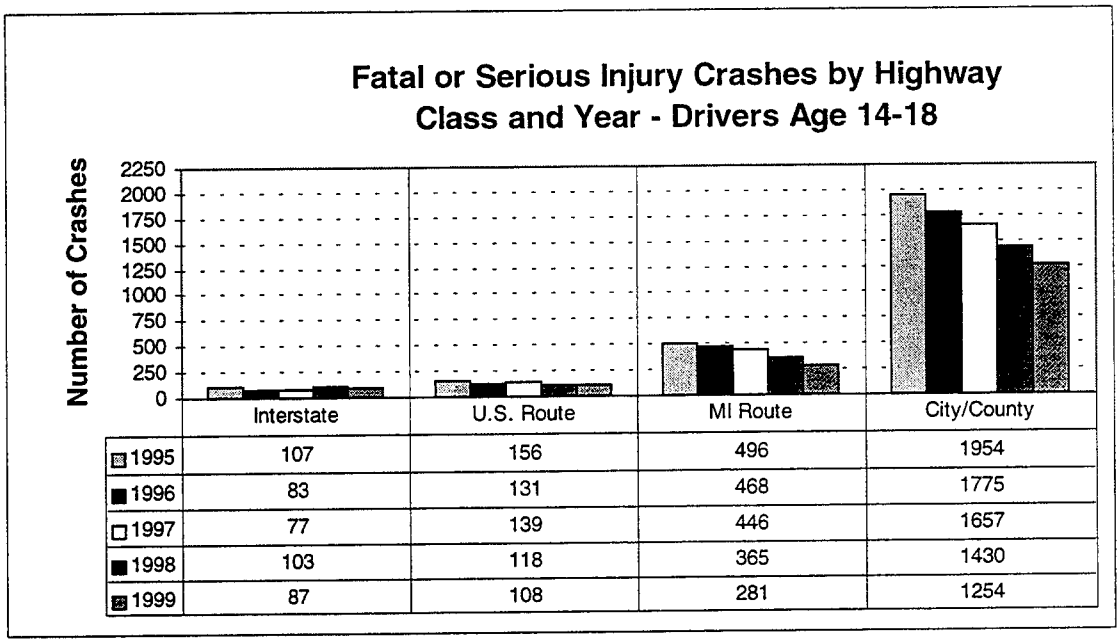


	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1995	364	385	386	389	400	523	468
1996	351	351	380	305	383	467	444
1997	341	353	317	357	342	485	370
1998	304	334	292	284	338	417	350
1999	269	275	283	259	280	352	286

Fatal or Serious Injury Crashes by Day of Week and Year: Drivers Age 14-18

Declines were observed for each day of the week, with the smallest declines occurring on Tuesday and Wednesday. The most crashes occur on Friday and Saturday, and these weekend days should be specifically targeted for safety programs that are focused on this age group. However, one should note that the difference in crash experience between Friday/Saturday and the rest of the week has narrowed considerably since 1995.

Chart 7 - Number by Highway Class and Year

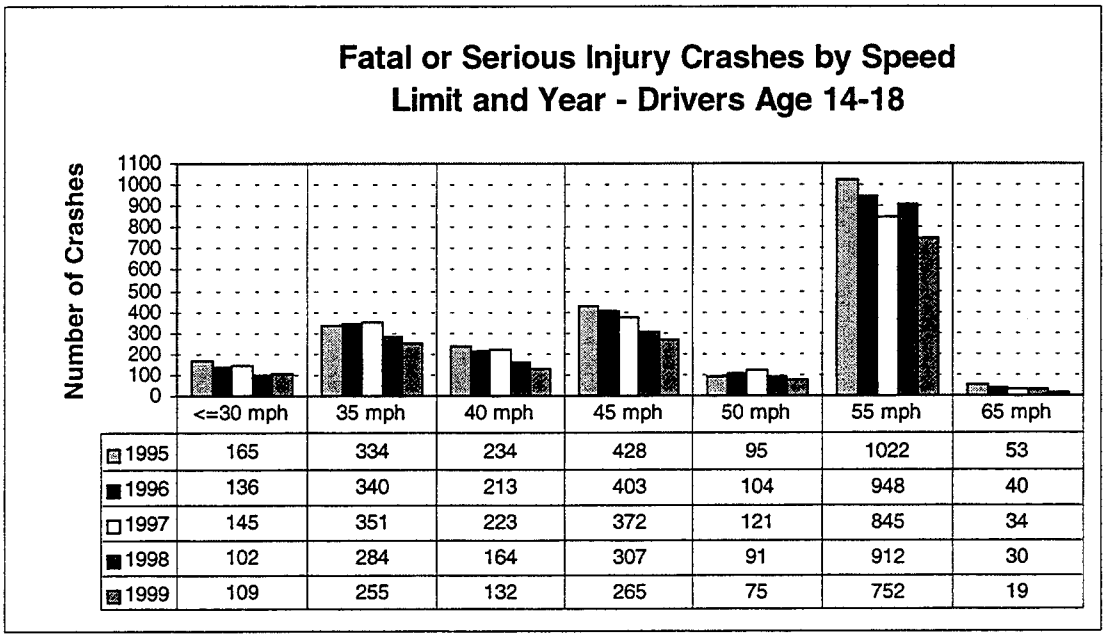


	Interstate	U.S. Route	MI Route	City/County
1995	107	156	496	1954
1996	83	131	468	1775
1997	77	139	446	1657
1998	103	118	365	1430
1999	87	108	281	1254

Fatal or Serious Injury Crashes by Highway Class and Year: Drivers Age 14-18

The vast majority of KA crashes involving drivers age 14-18 occur on City/County roads, as was the case for drivers overall. Safety programs designed for this group must focus on driving on city/county roads.

Chart 8 - Number by Speed Limit and Year



	<=30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	65 mph
1995	165	334	234	428	95	1022	53
1996	136	340	213	403	104	948	40
1997	145	351	223	372	121	845	34
1998	102	284	164	307	91	912	30
1999	109	255	132	265	75	752	19

Fatal or Serious Injury Crashes by Speed Limit and Year: Drivers Age 14-18

KA crashes among drivers age 14-18 occur mostly on roads with a 55 mph speed limit. Indeed, crashes on these roads number more than twice that of roads with any other speed limit. It appears that there is a general downward trend in crash frequencies for all roads regardless of speed limit.

Table 9 - Number by Vehicle Type and Year

Number of Vehicles Involved in KA Injury Crashes by Vehicle Type Drivers Age 14-18		
Vehicle Type	Year	Count
Car	1995	2164
	1996	1945
	1997	1841
	1998	1644
	1999	1444
Heavy Truck	1995	1
	1996	2
	1997	4
	1998	2
	1999	0
Light Truck	1995	19
	1996	23
	1997	23
	1998	27
	1999	24
Motorcycle	1995	49
	1996	44
	1997	43
	1998	43
	1999	22
Pickup	1995	305
	1996	309
	1997	297
	1998	283
	1999	229
Van	1995	78
	1996	86
	1997	94
	1998	74
	1999	66

Number of Vehicles Involved in KA Injury Crashes by Vehicle Type: Drivers Age 14-18

Nearly all drivers age 14-18 are driving a passenger car at the time of a KA crash. While representing a small fraction of crash-involved vehicles, pickup trucks are the next most common crash-involved vehicle among drivers age 14-18.

Table 10 - Number by Hazardous Action and Year (Single-Vehicle)

Number of Vehicles Involved in Single-Vehicle Crashes by Hazardous Action and Year Drivers Age 14-18															
	Year	None	Speed Too Fast	Speed Too Slow	Fail to Yield	Traffic Control	Wrong Way	Left of Center	Improper Passing	Improper Lane Use	Improper Turn	Improper Signal	Improper Backing	Clear Distance	Other	Unknown
Number of Vehicles	1995	52	364	2	2	3	0	6	4	5	0	0	1	22	175	23
	1996	49	315	2	2	9	0	8	5	1	0	1	1	27	175	21
	1997	41	307	3	1	4	0	11	5	1	0	0	0	14	138	22
	1998	37	301	1	2	1	0	9	4	1	1	1	2	17	148	29
	1999	41	258	2	1	1	0	8	0	4	2	0	0	18	149	16

Number of Vehicles Involved in Single Vehicle Crashes by Hazardous Action and Year: Drivers Age 14-18

Excessive speed was the reason for most single vehicle crashes in drivers age 14-18. Crashes due to excessive speed declined about 30% from 1995 to 1999.

Table 11 - Number by Hazardous Action and Year (Multiple-Vehicle)

Number of Vehicles Involved In Single-Vehicle Crashes by Hazardous Action and Year Drivers Age 14-18																
	Year	None	Speed Too Fast	Speed Too Slow	Fail to Yield	Traffic Control	Wrong Way	Left of Center	Improper Passing	Improper Lane Use	Improper Turn	Improper Signal	Improper Backing	Clear Distance	Other	Unknow n
Number of Vehicles	1995	52	364	2	2	3	0	6	4	5	0	0	1	22	175	23
	1996	49	315	2	2	9	0	8	5	1	0	1	1	27	175	21
	1997	41	307	3	1	4	0	11	5	1	0	0	0	14	138	22
	1998	37	301	1	2	1	0	9	4	1	1	1	2	17	148	29
	1999	41	258	2	1	1	0	8	0	4	2	0	0	18	149	16

Number of Vehicles involved in Multiple Vehicle Crashes by Hazardous Action and Year: Drivers Age 14-18

'Failure to yield' is the most common hazardous action in multiple vehicle crashes involving drivers age 14-18. Crashes in this category decreased 25.4% from 1995 to 1999.

An interesting finding is that there are fewer crashes due to excessive speed in multiple vehicle crashes than single vehicle crashes among drivers age 14-18. This may imply that drivers age 14-18 often speed when they see a clear road in front of them, and at some point lose control resulting in a single vehicle crash. This may be a promising area for future crash prevention program efforts.

Drivers Age 70+

Table 12 - Number and Rate by Year

Number and Rate of Fatal or Serious Injury Crashes Drivers Age 70+		
Year	Number of Crashes	Rate per 1000 Licensed Drivers
95	1394	2.311
96	1380	2.237
97	1292	2.037
98	1277	1.957
99	1115	1.677
Change 95 to 99	-20.01%	-27.45%
Change 98 to 99	-12.69%	-14.32%

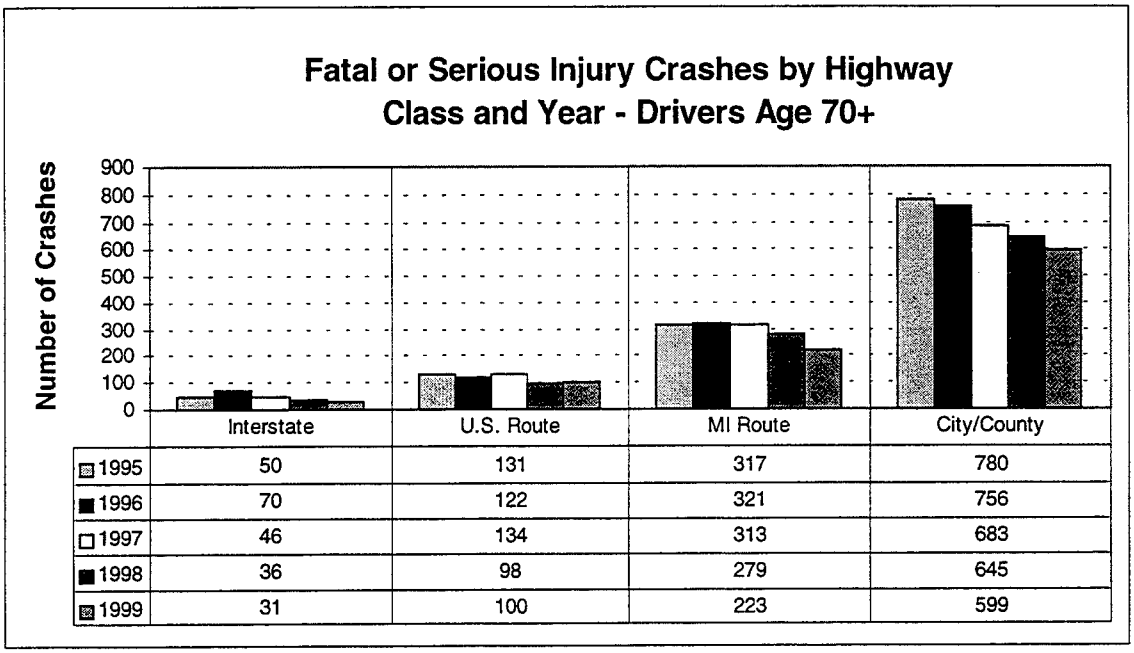
Number and Rate of Fatal or Serious Injury Crashes: Drivers Age 70+

Despite the increasing number of licensed drivers age 70+, the number and rate of KA crashes for drivers age 70+ has dropped about 20% from 1995 to 1999. While this is encouraging, we must continue to examine closely this growing demographic.

Table 13 - Number and Rate by Age, Sex, and Year

Fatal or Serious Injury Crash Frequency and Rate by Year, Age and Sex Drivers Age 70+				
Driver Age	Sex	Year	Count	Rate per 1000 Drivers of Record
70-74	F	95	210	1.4857
		96	194	1.3740
		97	190	1.3306
		98	172	1.1961
		99	183	1.2787
	M	95	318	2.4640
		96	316	2.4402
		97	268	2.0395
		98	251	1.8868
		99	255	1.9386
75-79	F	95	173	1.7465
		96	186	1.8022
		97	170	1.5991
		98	178	1.6299
		99	131	1.1529
	M	95	252	2.9703
		96	227	2.5846
		97	227	2.4899
		98	233	2.4862
		99	174	1.7943
80-84	F	95	97	1.7706
		96	121	2.1046
		97	111	1.8524
		98	137	2.1463
		99	99	1.4939
	M	95	169	1.9920
		96	171	1.9470
		97	145	1.5905
		98	133	1.4192
		99	141	1.4540
85-89	F	95	53	2.5904
		96	33	1.5347
		97	50	2.1754
		98	45	1.8693
		99	38	1.4526
	M	95	70	4.0000
		96	61	3.3949
		97	73	3.8118
		98	70	3.4196
		99	61	2.8433
90-94	F	95	7	1.7027
		96	7	1.5653
		97	13	2.7117
		98	16	3.0852
		99	4	0.7177
	M	95	20	4.4934
		96	20	4.4753
		97	16	3.4108
		98	21	4.2109
		99	20	3.8088
95+	F	95	0	0.0000
		96	1	2.0704
		97	2	3.9841
		98	0	0.0000
		99	0	0.0000
	M	95	2	2.7894
		96	5	6.8871
		97	2	2.5674
		98	0	0.0000
		99	3	3.2397

Chart 9 - Number by Highway Class and Year

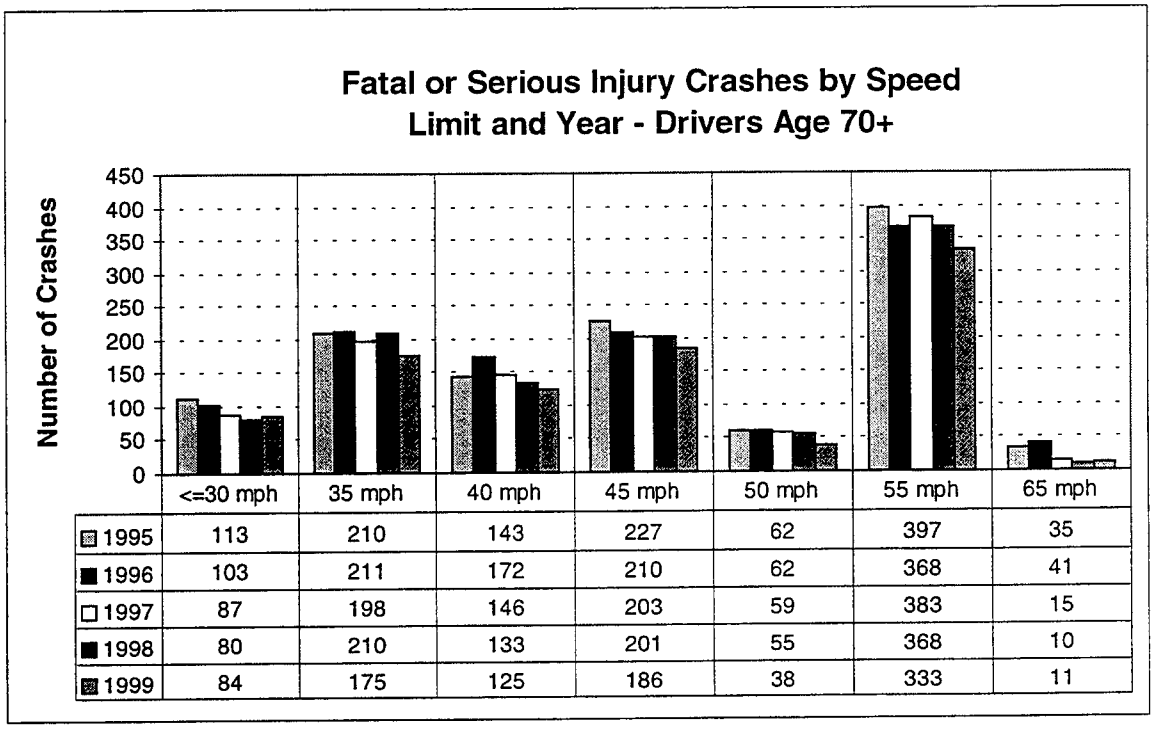


	Interstate	U.S. Route	MI Route	City/County
1995	50	131	317	780
1996	70	122	321	756
1997	46	134	313	683
1998	36	98	279	645
1999	31	100	223	599

Fatal or Serious Injury Crashes by Highway Class and Year: Drivers Age 70+

Most crashes involving drivers age 70+ occur on city/county roads. Crashes on all road classes for this age group have decreased since 1995.

Chart 10 - Number by Speed Limit and Year

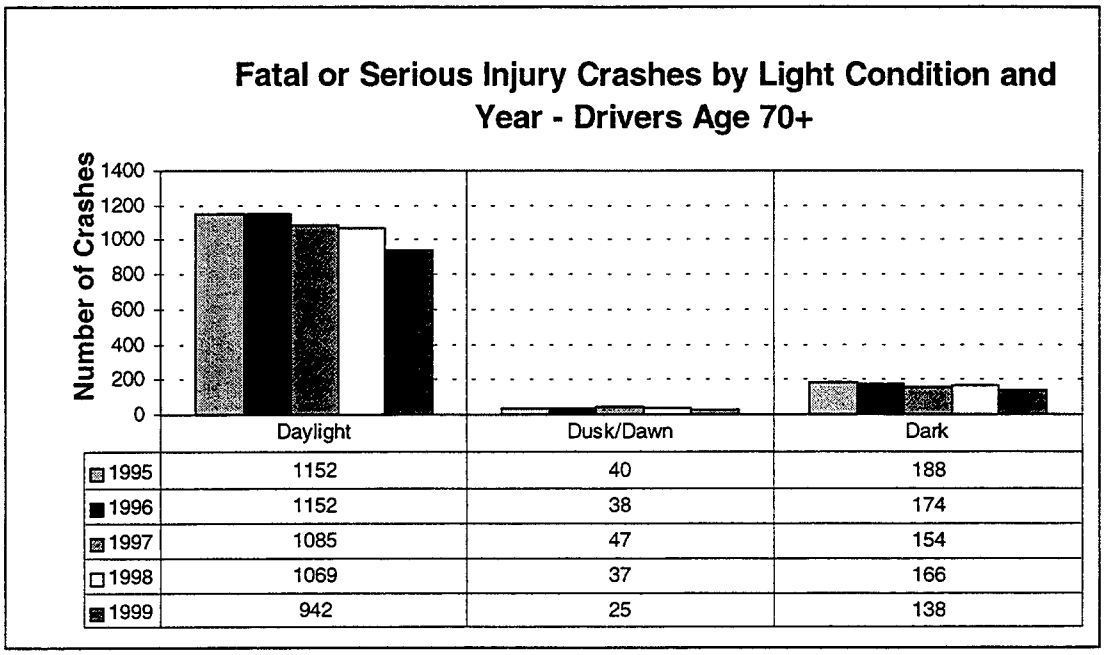


	<=30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	65 mph
1995	113	210	143	227	62	397	35
1996	103	211	172	210	62	368	41
1997	87	198	146	203	59	383	15
1998	80	210	133	201	55	368	10
1999	84	175	125	186	38	333	11

Fatal or Serious Injury Crashes by Speed Limit and Year: Drivers Age 70+

The pattern of KA crashes by speed limit among drivers age 70+ differs little from that of drivers of other age groups. Between 1998 and 1999, KA crashes for the major speed limit categories 35 mph, 45 mph, and 55 mph all went down, while the categories <=30 mph and 65 mph show stabilization in the number of KA crashes.

Chart 11 - Number by Light Condition and Year



	Daylight	Dusk/Dawn	Dark
1995	1152	40	188
1996	1152	38	174
1997	1085	47	154
1998	1069	37	166
1999	942	25	138

Fatal or Serious Injury Crashes by Light Condition and Year: Drivers Age 70+

Drivers age 70+ show a different pattern than do younger drivers. Specifically, daylight crashes comprised 60% of all KA crashes among drivers age 14-69, while daylight crashes comprised over 80% of all KA crashes involving drivers age 70+ occurred in daylight conditions. These findings reflect the oft-cited fact that many older drivers reduce their crash propensity by reducing their nighttime driving as their vision begins to decline.

Table 14 - Number by Vehicle Type and Year

Number of Vehicles Involved in KA Injury Crashes by Vehicle Type Drivers Age 70+		
Vehicle Type	Year	Count
Car	1995	1124
	1996	1130
	1997	1026
	1998	992
	1999	860
Heavy Truck	1995	5
	1996	2
	1997	6
	1998	3
	1999	5
Light Truck	1995	12
	1996	4
	1997	7
	1998	12
	1999	5
Motorcycle	1995	5
	1996	0
	1997	4
	1998	3
	1999	4
Pickup	1995	103
	1996	97
	1997	85
	1998	97
	1999	104
Van	1995	54
	1996	53
	1997	67
	1998	65
	1999	65

Number of Vehicles Involved in KA Injury Crashes by Vehicle Type: Drivers Age 70+

Passenger cars are clearly the most common type of vehicle involved in drivers age 70+ KA crashes. This is probably the result of older drivers selecting cars as their primary vehicle. Pickup trucks are a distant second with roughly 90% fewer KA crashes as compared to cars.

Table 15 - Number by Hazardous Action and Year (Single-Vehicle)

Number of Vehicles Involved in Single-Vehicle Crashes by Hazardous Action and Year Drivers Age 70+																
	Year	None	Speed Too Fast	Speed Too Slow	Fail to Yield	Traffic Control	Wrong Way	Left of Center	Improper Passing	Improper Lane Use	Improper Turn	Improper Signal	Improper Backing	Clear Distance	Other	Unknow n
Number of Vehicles	1995	22	29	0	1	0	0	6	0	1	1	0	1	13	46	16
	1996	21	38	0	0	2	0	4	0	3	0	0	1	8	43	11
	1997	19	34	0	1	3	0	4	0	3	0	0	0	5	44	9
	1998	11	37	0	1	4	0	2	0	1	0	0	0	4	44	15
	1999	11	17	0	1	1	0	3	0	1	0	0	2	6	34	15

Number of Vehicles Involved in Single-Vehicle Crashes by Hazardous Action and Year: Drivers Age 70+

In single vehicle KA crashes for drivers age 70+, the most common hazardous action category is 'Other,' 'Speed too fast' is the second most common hazardous action. This is in contrast to drivers from other age groups where speed is the most common factor in single-vehicle KA crashes.

Table 16 - Number by Hazardous Action and Year (Multiple-Vehicle)

Number of Vehicles Involved in Single-Vehicle Crashes by Hazardous Action and Year Drivers Age 70+																
	Year	None	Speed Too Fast	Speed Too Slow	Fail to Yield	Traffic Control	Wrong Way	Left of Center	Improper Passing	Improper Lane Use	Improper Turn	Improper Signal	Improper Backing	Clear Distance	Other	Unknown
Number of Vehicles	1995	22	29	0	1	0	0	6	0	1	1	0	1	13	46	16
	1996	21	38	0	0	2	0	4	0	3	0	0	1	8	43	11
	1997	19	34	0	1	3	0	4	0	3	0	0	0	5	44	9
	1998	11	37	0	1	4	0	2	0	1	0	0	0	4	44	15
	1999	11	17	0	1	1	0	3	0	1	0	0	2	6	34	15

Number of Vehicles Involved in Multiple-Vehicle Crashes by Hazardous Action and Year: Drivers Age 70+

'None' and 'Failure to Yield' are the two categories most often identified by police as hazardous actions in KA crashes involving multiple vehicles for drivers age 70+. Speed is again less of a factor in KA, multiple-vehicle crashes for drivers age 70+ as compared to other age groups.

'Had-Been-Drinking' KA Crashes

All Drivers

Table 17 - Number and Rate by Year

Number and Rate of Fatal or Serious Injury 'Had-Been-Drinking' Crashes					
Year	Number of Crashes	Rate per 100 Million VMT	Rate per 1000 Registered Vehicles	Rate per 1000 Populat.	Rate per 1000 Drivers of Record
95	3198	3.732	0.372	0.334	0.463
96	2781	3.172	0.310	0.288	0.398
97	2635	2.953	0.291	0.271	0.371
98	2518	2.833	0.274	0.257	0.352
99	2363	2.539	0.251	0.241	0.327
Change 95 to 99	-26.11%	-31.96%	-32.46%	-27.88%	-29.36%
Change 98 to 99	-6.16%	-10.37%	-8.36%	-6.49%	-7.04%

Number and Rate of Fatal or Serious Injury 'Had-Been-Drinking' Crashes

Between 1995 and 1999 the number of had-been-drinking (HBD) KA crashes decreased 26.11% (or about 5.22% each year). To put this in perspective, consider the following table. It shows that the number of had-been-drinking crashes each year is larger than three out of four age groups and driver behaviors often considered as problems. This finding emphasizes the importance of reducing alcohol-impaired driving crashes in order for Michigan to achieve its traffic safety goals.

Crash SubGroup	Number of KA Crashes in 1999	
Had-Been-Drinking	2,363	
Drivers Age 70+	1,115	1,248 more HBD crashes
Drivers Age 14-18	2,004	359 more HBD crashes
Fail to Yield	2,432	69 fewer HBD crashes
Speed too Fast	2,089	274 more HBD crashes

Table 18 - Number and Rate by Age, Sex, and Year

Fatal or Serious Injury Crash Frequency and Rates 'Had-Been-Drinking' Crashes by Age Group, Sex and Year

KA Crash Frequency and Rates 'Had-Been-Drinking' Crashes By Age Group, Sex, and Year					
Driver Age	Sex	Year	Count	Rate per 1000 Population	Rate per 1000 Drivers of Record
16-20 yr	F	95	65	0.007	0.243
		96	75	0.008	0.553
		97	53	0.005	0.183
		98	70	0.007	0.238
		99	71	0.007	0.241
		Change 95 to 99	9.23%	0.066	-0.011
		Change 98 to 99	1.43%	0.011	0.012
	M	95	299	0.031	1.036
		96	260	0.027	0.840
		97	237	0.024	0.753
		98	230	0.024	0.722
		99	224	0.023	0.699
		Change 95 to 99	-25.08%	-0.269	-0.325
		Change 98 to 99	-2.61%	-0.030	-0.031
21-34 yr	F	95	2262	0.027	0.272
		96	2258	0.027	0.286
		97	223	0.023	0.238
		98	204	0.021	0.221
		99	180	0.018	0.197
		Change 95 to 99	-31.30%	-0.329	-0.274
		Change 98 to 99	-11.76%	-0.121	-0.108
	M	95	1143	0.119	1.126
		96	958	0.099	0.953
		97	938	0.096	0.947
		98	848	0.087	0.865
		99	743	0.076	0.763
		Change 95 to 99	-35.00%	-0.366	-0.322
		Change 98 to 99	-12.38%	-0.127	-0.118

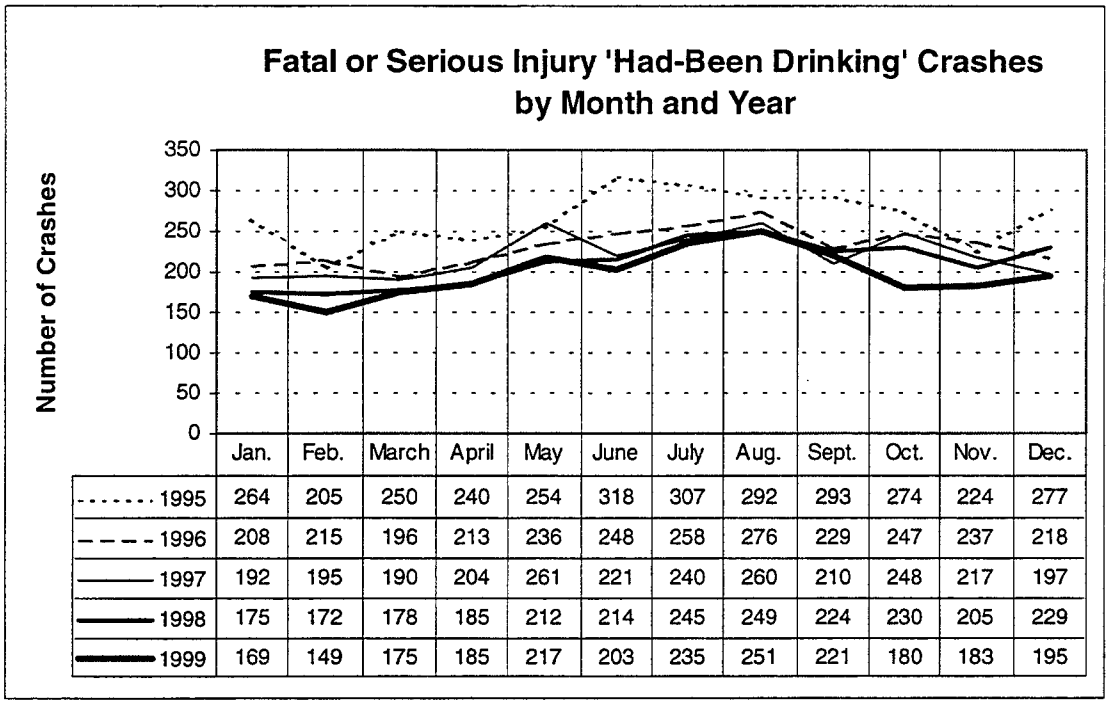
The group with the largest number of KA-HBD crashes is males age 21-34 (about 750 crashes/year), followed by males age 35-54 (about 700 crashes/year) and three groups with about the same number of KA-HBD crashes (about 200 crashes/year: males age 16-20, females age 21-34, and females age 35-54).

When KA-HBD rate per 1000 drivers of record is considered, males age 21-34 have the highest rate (.763 per 1000 drivers), followed by males age 16-20 (.699 per 1000 drivers), and males age 35-54 (.479 per 1000 drivers).

The primary targets for the reduction of KA-HBD crashes must be the male driver age 16-34, and male drivers age 35-54. A promising subgroup is males age 16-20. Secondary target groups include groups with KA-HBD crash numbers similar to that of males age 16-20 (i.e., females age 21-54).

KA Crash Frequency and Rates 'Had Been Drinking' Crashes By Age Group, Sex, and Year					
Driver Age	Sex	Year	Count	Rate per 1000 Population	Rate per 1000 Drivers of Record
35-54 yr	F	95	225	0.023	0.170
		96	194	0.020	0.136
		97	167	0.017	0.121
		98	190	0.019	0.136
		99	176	0.018	0.124
		Change 95 to 99	-21.78%	-0.237	-0.271
		Change 98 to 99	-7.37%	-0.077	-0.088
	M	95	759	0.079	0.572
		96	670	0.069	0.493
		97	666	0.068	0.482
		98	655	0.067	0.467
		99	684	0.070	0.479
		Change 95 to 99	-9.88%	-0.120	-0.163
		Change 98 to 99	4.43%	0.041	0.026
55-69 yr	F	95	22	0.002	0.042
		96	18	0.002	0.031
		97	16	0.002	0.030
		98	15	0.002	0.027
		99	26	0.003	0.046
		Change 95 to 99	18.18%	0.153	0.099
		Change 98 to 99	73.33%	0.727	0.704
	M	95	138	0.014	0.270
		96	103	0.011	0.200
		97	116	0.012	0.221
		98	108	0.011	0.201
		99	80	0.008	0.146
		Change 95 to 99	-42.03%	-0.434	-0.458
		Change 98 to 99	-25.93%	-0.262	-0.271
70+ yr	F	95	10	0.001	0.031
		96	7	0.001	0.017
		97	13	0.001	0.039
		98	13	0.001	0.038
		99	8	0.001	0.023
		Change 95 to 99	-20.00%	-0.219	-0.279
		Change 98 to 99	-38.46%	-0.387	-0.400
	M	95	36	0.004	0.127
		96	38	0.004	0.132
		97	30	0.003	0.101
		98	31	0.003	0.101
		99	22	0.002	0.071
		Change 95 to 99	-38.89%	-0.404	-0.441
		Change 98 to 99	-29.03%	-0.293	-0.299

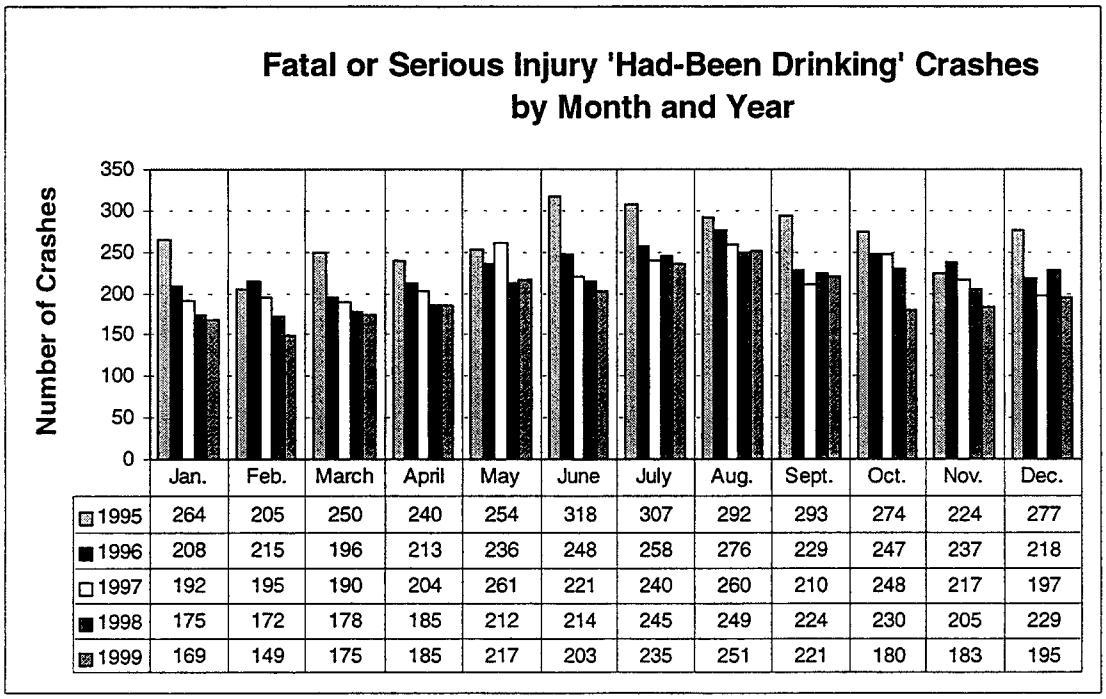
Chart 12 - Number by Month and Year



	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1995	264	205	250	240	254	318	307	292	293	274	224	277
1996	208	215	196	213	236	248	258	276	229	247	237	218
1997	192	195	190	204	261	221	240	260	210	248	217	197
1998	175	172	178	185	212	214	245	249	224	230	205	229
1999	169	149	175	185	217	203	235	251	221	180	183	195

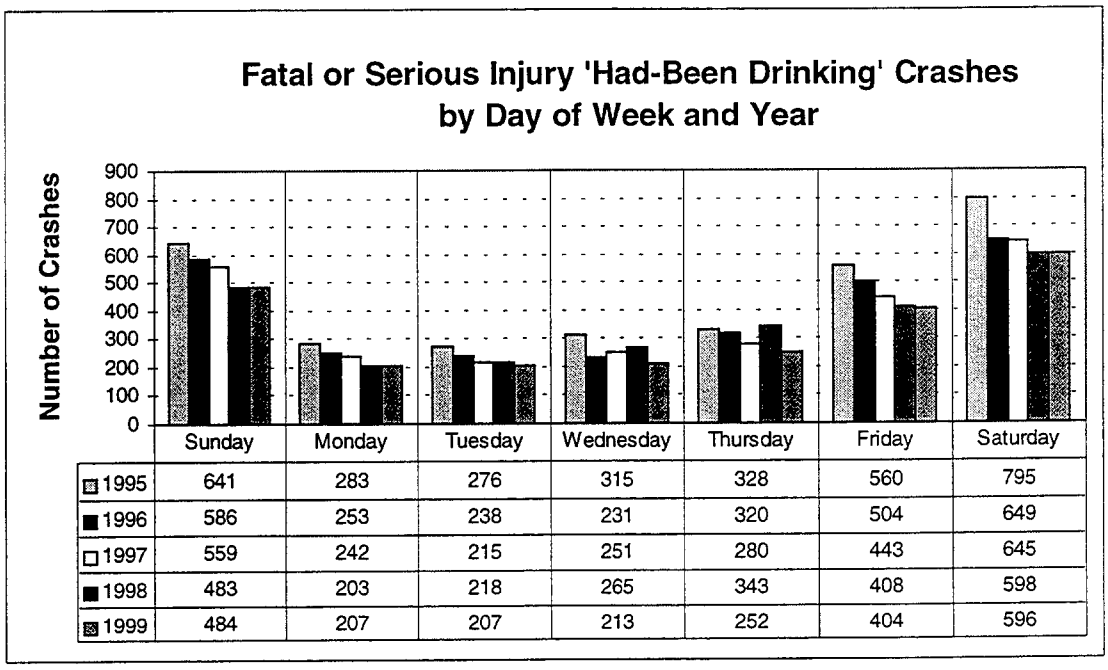
Fatal or Serious Injury 'Had-Been-Drinking' Crashes by Month and Year

The results shown in these charts seems to show a continuation of the phenomenon described in last year's trend report. Declines that had been observed, particularly in summer and traditional holiday months, are showing signs of tapering off. It is possible that we have reached those persons whose drinking and driving behavior is relatively easy to modify, and we are left with the more difficult cases. It is too early to assess the impact of the repeat alcohol-offender laws that went into effect October 1999.



	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1995	264	205	250	240	254	318	307	292	293	274	224	277
1996	208	215	196	213	236	248	258	276	229	247	237	218
1997	192	195	190	204	261	221	240	260	210	248	217	197
1998	175	172	178	185	212	214	245	249	224	230	205	229
1999	169	149	175	185	217	203	235	251	221	180	183	195

Chart 13 - Number by Day of Week and Year

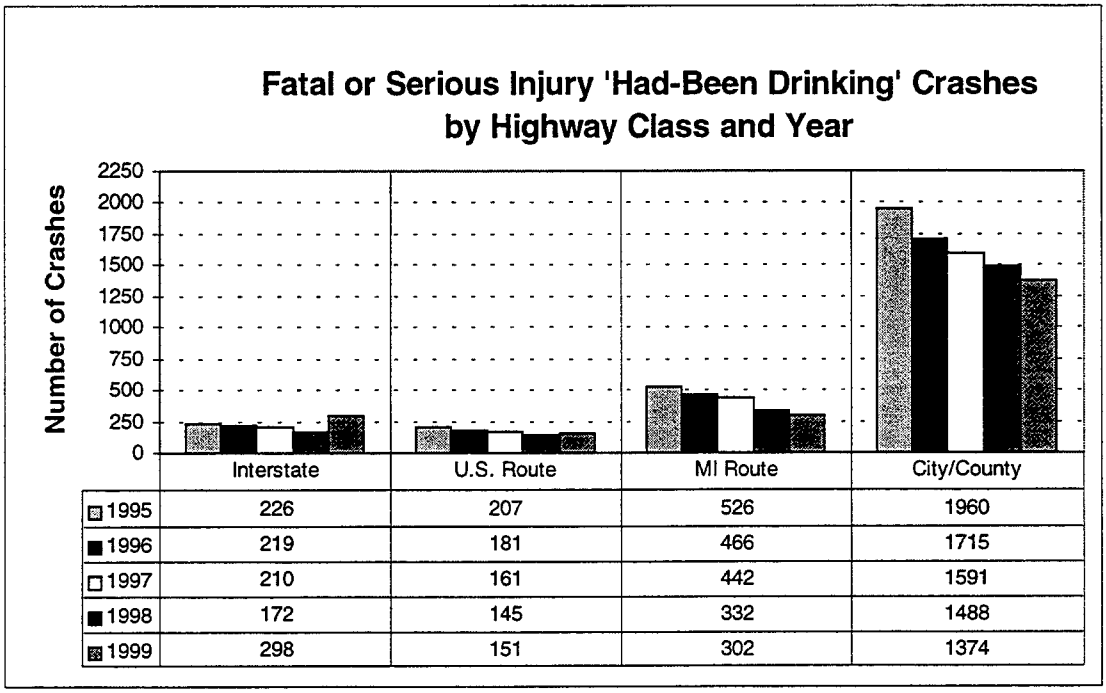


	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1995	641	283	276	315	328	560	795
1996	586	253	238	231	320	504	649
1997	559	242	215	251	280	443	645
1998	483	203	218	265	343	408	598
1999	484	207	207	213	252	404	596

Fatal or Serious Injury 'Had-Been-Drinking' Crashes by Day of Week and Year

The number of KA-HBD crashes on weekends (Friday, Saturday, and Sunday) has stabilized after 3-4 years of decline. As was the case when discussing monthly KA-HBD crashes, it is probable that this stabilization is the result of changing behavior among 'social' drinkers. If in fact this is the case, many if not most of the remaining KA-HBD crashes involve 'hard-core' drinking drivers and possibly alcohol-dependent persons. The recently enacted 'Repeat Offender' legislation may in part reduce this toll.

Chart 14 - Number by Highway Class and Year



	Interstate	U.S. Route	MI Route	City/County
1995	226	207	526	1960
1996	219	181	466	1715
1997	210	161	442	1591
1998	172	145	332	1488
1999	298	151	302	1374

Fatal or Serious Injury 'Had-Been-Drinking' Crashes by Highway Class and Year

This chart shows that about twice as many KA-HBD crashes occur on city/county roads than all other road types combined.

Occupant Protection

All Drivers

Table 19 - Belt Use by Seat Position and Year

Belt Use Among Persons Involved in Fatal or Serious Injury Crashes by Seat Position and Year					
Seat Position	Year	Belted	CRD Used	Not Belted	% Belted
Driver	95	15848	NA	4373	78.37%
	96	15166	NA	3580	80.90%
	97	13961	NA	3355	80.62%
	98	13314	NA	3071	81.26%
	99	11926	NA	2722	81.42%
Passenger	95	3722	152	2474	60.07%
	96	3603	150	2159	62.53%
	97	2835	130	1679	62.80%
	98	2888	118	1701	62.93%
	99	2851	122	1541	64.91%

Belt Use by Seat Position and Year

The proportion of people buckling up (both drivers and passengers) in KA crashes has changed little from 1995. As mentioned in last year's report, police-reported belt use in crashes is known to over-represent actual belt use as measured by observation surveys. Thus, the percentages given in the above table must not be taken at face value but interpreted with caution. Even though there are some problems with these findings, crash data from calendar year 2000 should show an increase in reported belt use in KA crashes associated with the implementation of Michigan's primary belt use law.

Table 20 - Helmet Use by Seat Position and Year

Motorcycle Helmet Use in Fatal or Serious Injury Crashes by Seat Position and Year				
Seat Position	Year	Helmet Worn	Helmet Not Worn	% Wearing Helmet
Driver	95	569	60	90.46%
	96	533	75	87.66%
	97	537	65	89.20%
	98	624	81	88.51%
	99	559	58	90.60%
Passenger	95	80	15	84.21%
	96	77	16	82.80%
	97	76	12	86.36%
	98	97	15	86.61%
	99	93	6	93.94%

Helmet Use by Seat Position and Year

Helmet use among both drivers and passengers has been relatively high and stable. Only one out of every ten drivers or passengers fails to wear a helmet.