Grand Valley Metropolitan Council

Traffic Crash Facts 2009

April 2010

Introduction

The Grand Valley Metro Council (GVMC) is the designated MPO for Grand Rapids Metro area and is responsible for the traffic safety planning in this area. The crash data assembled by GVMC staff can provide information to the MPO stakeholder and public for the future safety planning and selection of future road projects.

This report include statistics of crash data for the Grand Rapids Metropolitan Area such as crash facts in 2009, top 50 crash intersections, top 50 crash segments, and graphic displays of crash locations with number of crashes.

Definition

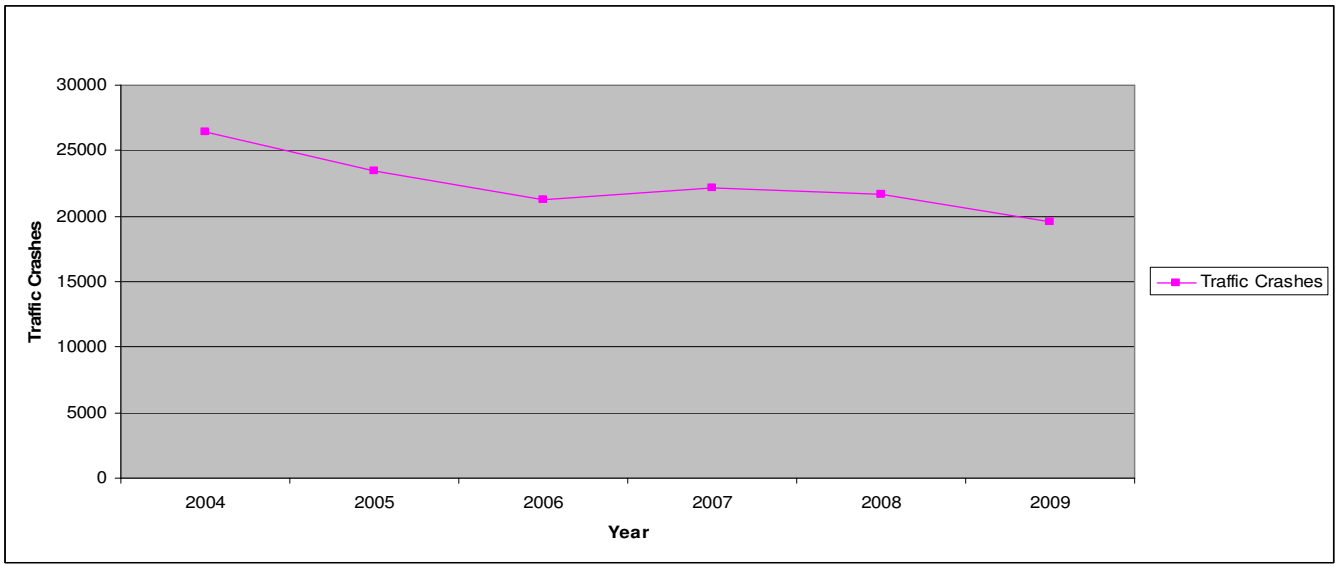
The terms defined in this report as applied to the crash facts are as follows,

PDO: Number of crashes involving Property Damage Only
Injury: Number of crashes involving injuries, not the number of injuries
A-Type: Number of crashes involving incapacitating injuries
B-Type: Number of crashes involving non-incapacitating injuries
C-Type: Number of crashes involving possible injuries
Fatal: Number of crashes involving fatalities, not the number of fatalities

All Traffic Crashes

In 2009, there are 19586 traffic crashes reported in GVMC area. This is a decrease of 9.7 percent from 2008 and 25.9 percent from 2004. Figure 1 below shows total traffic crashes form 2000 to 2009.

Figure 1 **Traffic Crashes, 2004-2009**



Source: www.michigantrafficcrashfacts.org

Traffic Crashes by Jurisdiction

Table 1 shows the number of total crashes by jurisdiction in GVMC area from 2004-2009.

Local Governments	2004	2005	2006	2007	2008	2009
Ada	422	412	370	430	380	327
Algoma	398	372	380	376	403	350
Allendale	371	400	327	376	393	368
Alpine	442	454	386	380	368	333
Bowne	123	116	97	102	101	109
Byron	663	631	518	619	642	626
Caledonia	468	448	368	403	395	363
Cannon	321	291	282	286	280	263
Cascade	849	824	737	844	767	655
Casnovia	9	7	3	4	3	5
Cedar Springs	95	79	86	90	64	64
Courtland	210	206	224	176	211	187
East Grand Rapids	187	201	175	190	174	158
Gaines	483	478	469	514	504	434
Georgetown	972	981	822	949	850	828
City of Grand Rapids	9103	7432	6927	7280	6840	6257
Grand Rapids Township	719	649	610	602	604	563
Grandville	1027	815	784	717	891	726
Grattan	153	177	121	114	118	125
Hudsonville	200	161	149	184	184	165
Jamestown	192	176	151	190	196	165
Kent City	19	18	19	13	18	10
Kentwood	1652	1373	1214	1253	1262	1055
Lowell	376	369	341	353	366	322
Nelson	144	149	159	137	137	129
Oakfield	170	174	143	154	166	154
Plainfield	1206	1076	887	1018	1004	824
Rockford	156	152	135	141	150	121
Sand Lake	17	8	10	9	9	4
Solon	215	190	196	158	183	172
Sparta	284	273	229	237	221	209
Spencer	117	106	94	89	91	91
Tallmadge	314	256	297	281	278	245
Tyrone	142	142	136	114	111	115
Vergennes	167	149	154	158	145	130
Walker	1580	1463	1332	1275	1166	1086
Wyoming	2480	2213	1951	1895	2006	1848

Traffic Crashes by Severity

Of the 19,586 traffic crashes in GVMC area in 2009, there are 3760 crashes causing fatalities or injuries. A total of 57 fatal crashes resulted in 145 deaths, and a total of 3703 injury crashes resulted in some degree of injuries of 9419 people. Figure 2 shows traffic crashes distribution by injury severity in 2009. Table 2 shows the number of each severity and the number of fatalities and injuries caused by the crashes.

Figure 2 **Traffic Crash Severities in 2009**

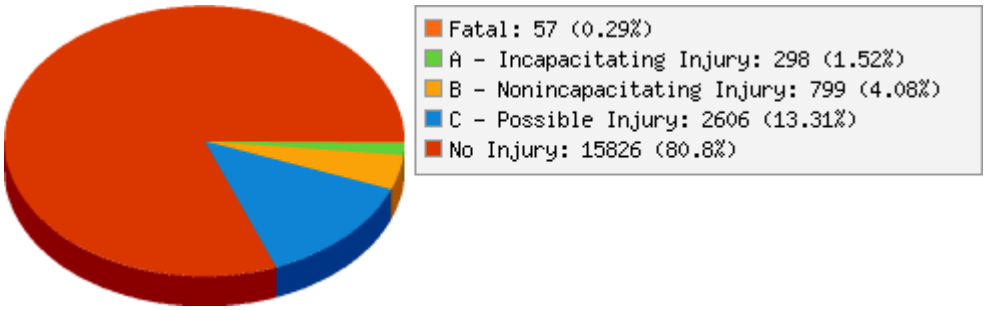


Table 2 **Traffic Crash Severity in 2009**

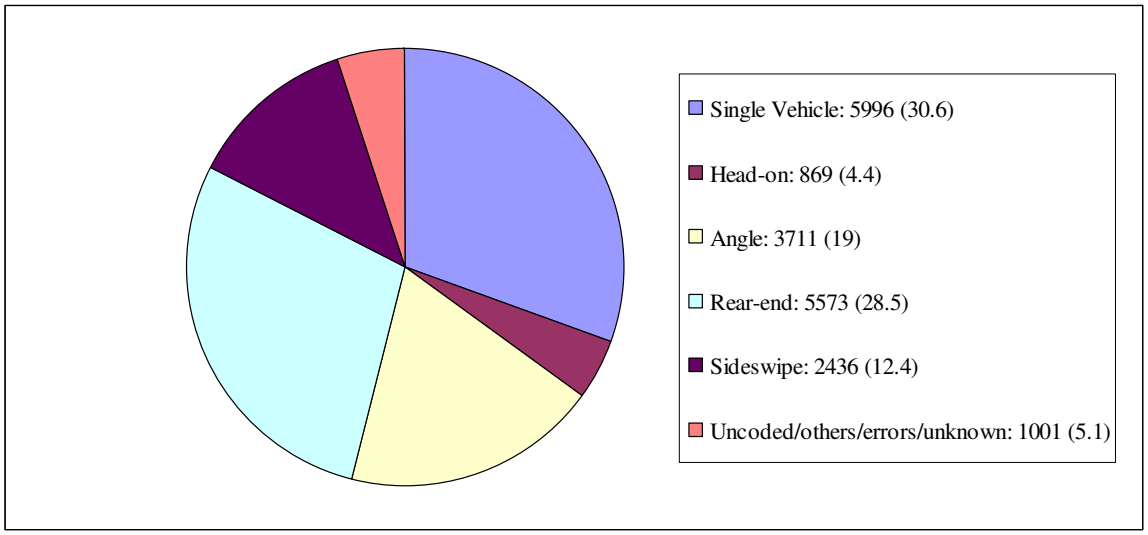
Crash Severity	Number of Traffic Crashes	Number of Injuries
Fatal	57	145
A-Type Injury	298	747
B-Type Injury	799	1957
C-Type Injury	2606	6715
Injury and Fatality subtotal	3760	9564
PDO	15826	
Total	19586	

Source: www.michigantrafficcrashfacts.org

Traffic Crashes by Crash Type

Figure 3 shows traffic crash distribution by crash type in 2009. As shown in the figure, the most common type of crash was single motor vehicle crash, which accounted for 30.6% of all traffic crashes, and the least common type crash was head-on, which accounted for 4.4%.

Figure 3 **Traffic Crashes by Crash Type in 2009**

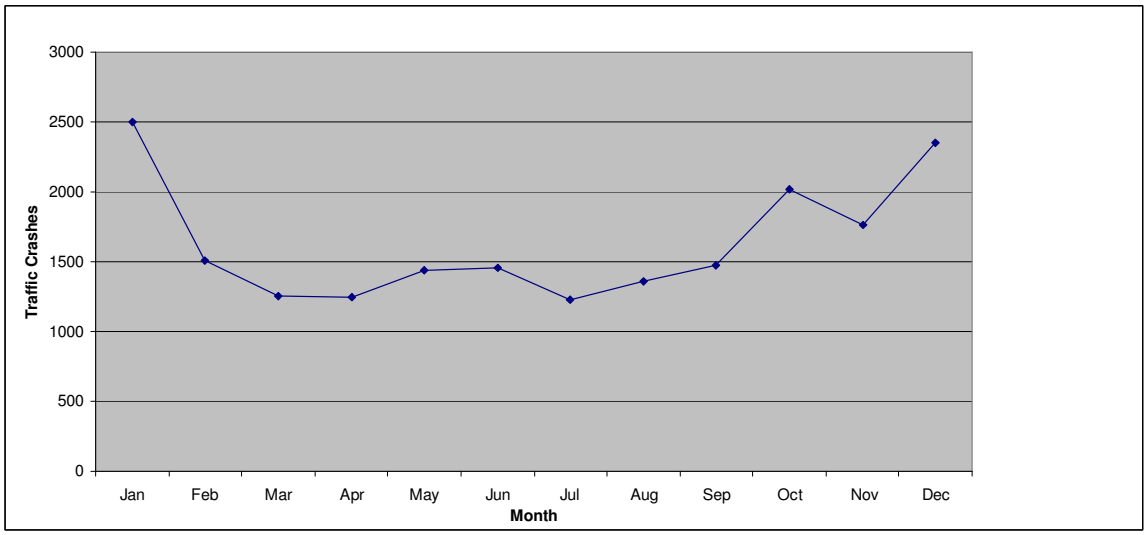


Source: www.michigantrafficcrashfacts.org

Traffic Crashes by Month, Day, and Hour

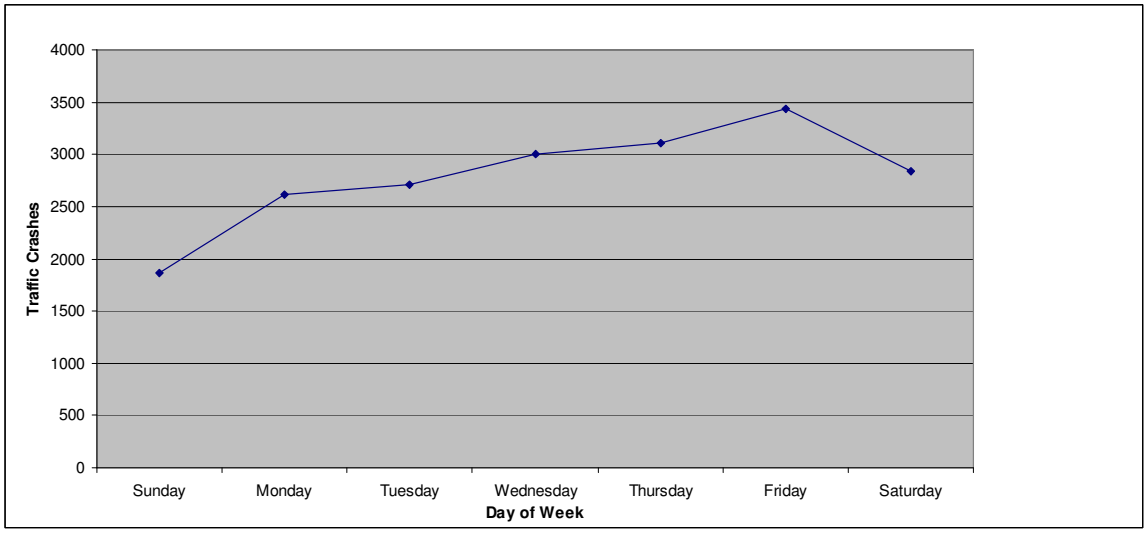
Figure 4-6 show traffic crashes distribution by month, day and hour, respectively. As shown in Figure 4, there were more traffic crashes in January than any other month in 2009(2499). July had the fewest crashes (1227) in 2009. Figure 5 shows that more traffic crashes occurred on Fridays than any other day of the week (3434) in 2009, and Sunday had the fewest traffic crashes (1867). Figure 6 shows that more traffic crashes occurred between 5 pm and 6 pm than any other hour interval in 2009 (1649), and the time of day with the fewest crashes was between 4 am and 5 am (180 crashes).

Figure 4 **Traffic Crashes by Month in 2009**



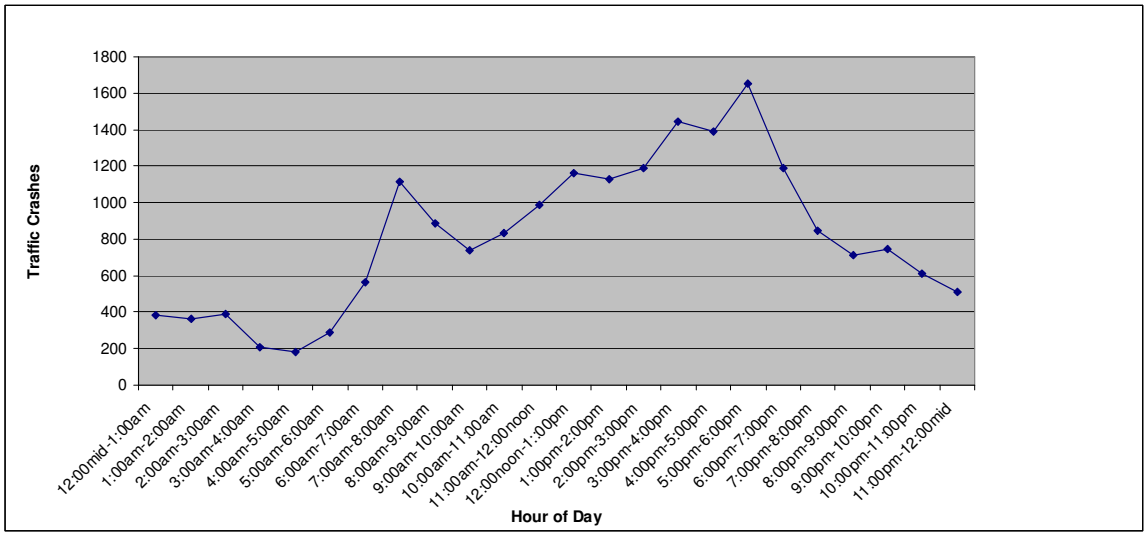
Source: www.michigantrafficcrashfacts.org

Figure 5 **Traffic Crashes by Day of Week in 2009**



Source: www.michigantrafficcrashfacts.org

Figure 6 **Traffic Crashes by Hour of Day in 2009**



Source: www.michigantrafficcrashfacts.org

Injury Traffic Crashes

Injury traffic crash is defined as a crash resulting in an injury, but not a fatality. Figure 7 below shows injury traffic crash in GVMC area keep consecutive down from 2004 to 2009, with a exception of 2007, which had only 17 more injury crashes than in 2006. Injury traffic crashes decreased 28 percent from 2004 to 2009, and Figure 8 shows a 30.5 percent decline in number of injuries from 2004 to 2009.

Figure 7 **Injury Traffic Crashes, 2004- 2009**

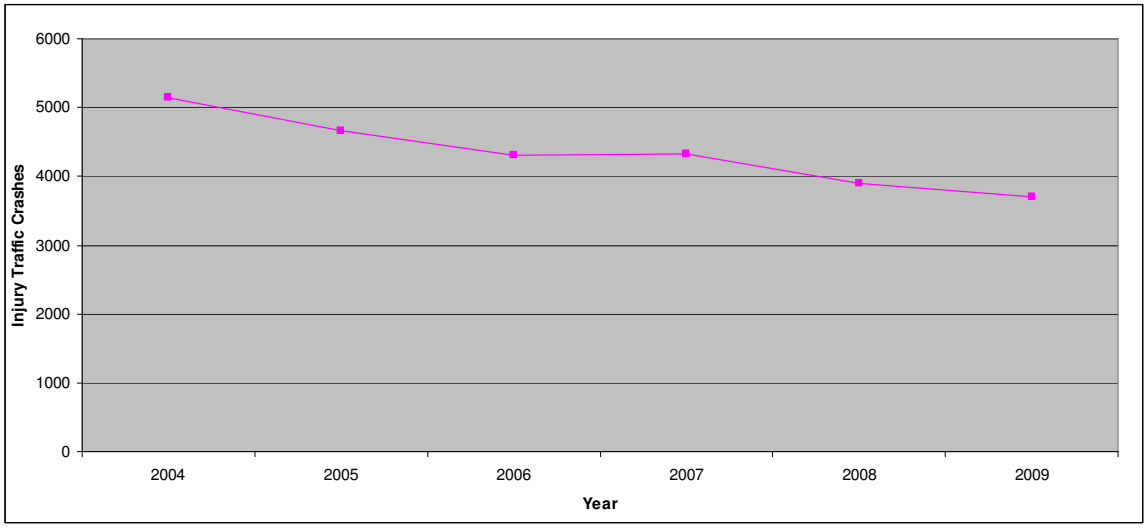
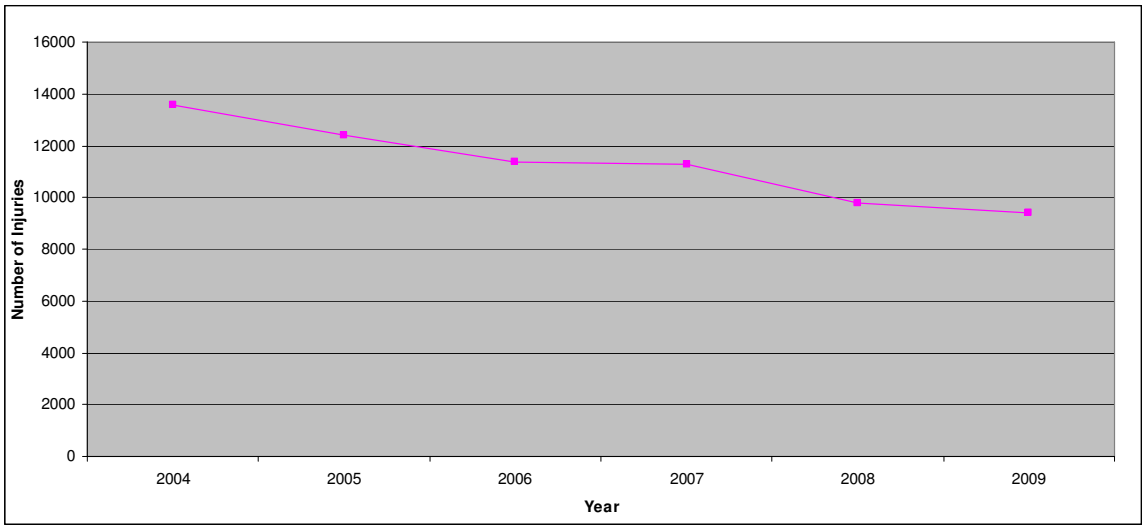


Figure 8 **Numbers of Injuries in 2009**



Injury Traffic Crashes by Jurisdiction

Table 3 shows the number of injury traffic crashes by jurisdiction in GVMC area from 2004-2009.

Local Governments	2004	2005	2006	2007	2008	2009
Ada	75	87	60	75	61	58
Algoma	78	64	78	70	65	57
Allendale	62	75	57	67	71	69
Alpine	98	100	81	86	75	82
Bowne	17	17	15	14	16	22
Byron	128	123	108	146	118	124
Caledonia	78	77	64	71	63	62
Cannon	57	56	49	56	36	44
Cascade	150	129	135	147	120	114
Casnovia	1	2	1	1	1	1
Cedar Springs	18	19	18	23	12	10
Courtland	31	35	50	36	40	36
East Grand Rapids	23	31	20	27	25	20
Gaines	99	116	99	108	89	95
Georgetown	207	188	174	180	154	156
City of Grand Rapids	1732	1512	1417	1395	1172	1157
Grand Rapids Township	133	132	136	123	113	98
Grandville	194	145	152	150	155	146
Grattan	19	31	14	14	14	15
Hudsonville	36	34	32	26	25	40
Jamestown	38	29	21	36	33	31
Kent City	0	4	6	4	7	4
Kentwood	365	293	270	289	295	248
Lowell	70	72	57	73	70	57
Nelson	23	33	28	23	19	20
Oakfield	39	36	32	28	39	37
Plainfield	248	241	199	190	176	149
Rockford	25	25	25	24	17	20
Sand Lake	4	2	2	1	0	1
Solon	38	30	39	24	41	34
Sparta	51	51	52	37	38	42
Spencer	22	19	13	17	16	14
Tallmadge	54	37	59	42	49	31
Tyrone	24	32	27	24	15	11
Vergennes	23	25	32	30	19	15
Walker	309	298	259	249	232	195
Wyoming	578	472	423	415	411	388

Injury Traffic Crashes by Crash Type

Figure 9 shows that rear-end crashes was the most common type of injury crashes (31.9%) in 2009, and sideswipe crashes was the least common type of injury crashes (4.5)

Table 4 shows head-on crashes are more likely to cause injury than any other type of crashes, with 34.4 percent of head-on crashes resulting in injury. Only 6.9% of sideswipe crashes causes injury in 2009.

Figure 9 **Injury Traffic Crashes by Crash Type in 2009**

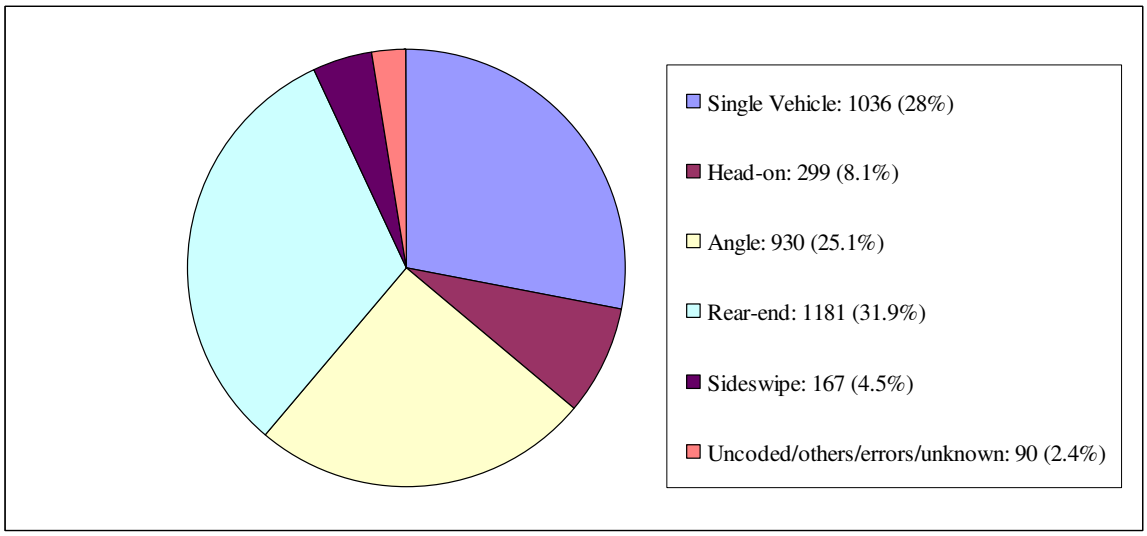


Table 4 **Traffic Crash Type by Percent Resulting in Injury in 2009**

Crash Type	**Injury Crashes**	**All Crashes**	**Percent Resulting in Injury**
Head-on	299	869	34.4%
Angle	930	3711	25.1%
Rear-End	1181	5573	21.2%
Single-Vehicle	1036	5996	17.3%
Sideswipe	167	2436	6.9%
Uncoded/others/errors/unknown	90	1001	9%
Total	**3703**	**19586**	**18.9%**

Source: www.michigantrafficcrashfacts.org

Injury Traffic Crashes by Month, Day, and Hour

Figure 10 shows more injury traffic crashes occurred in January than any other months in 2009, with 372 injury traffic crash, and Figure 11 shows that Fridays was the day of week in 2009 with the most injury traffic crashes (682).

Figure 10 **Injury Traffic Crashes by Month in 2009**

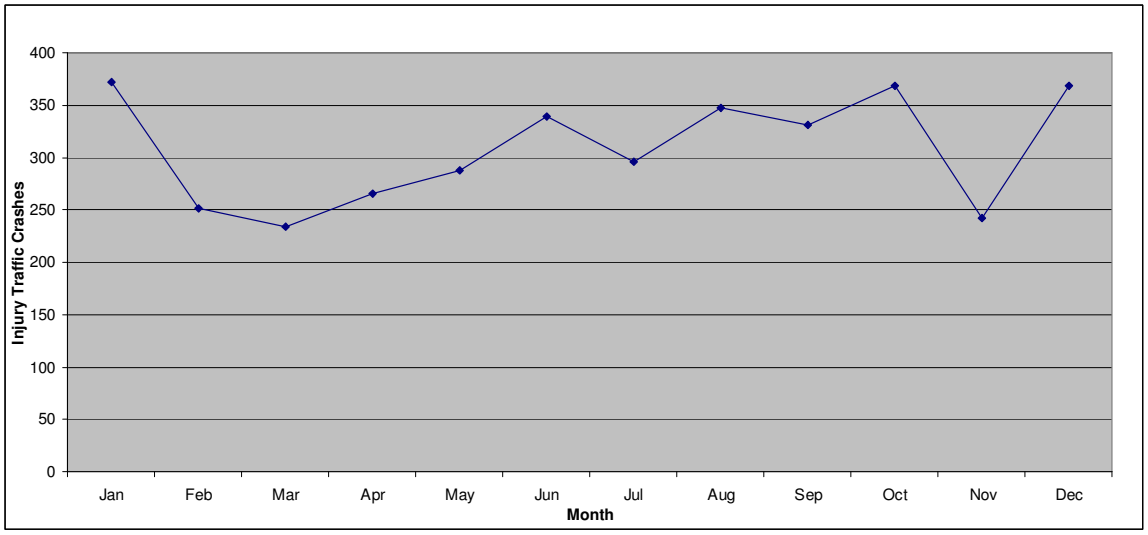
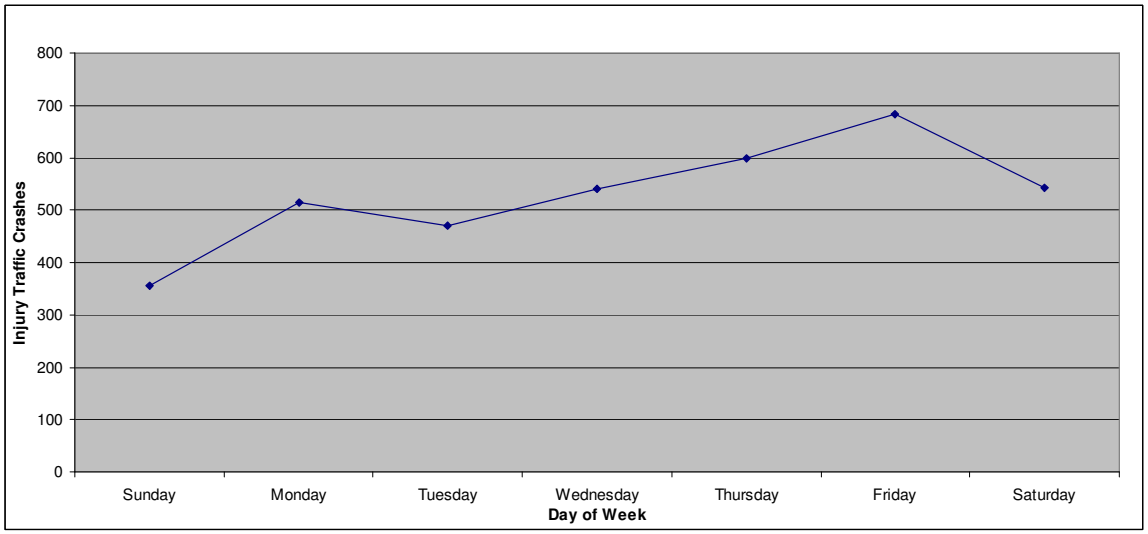


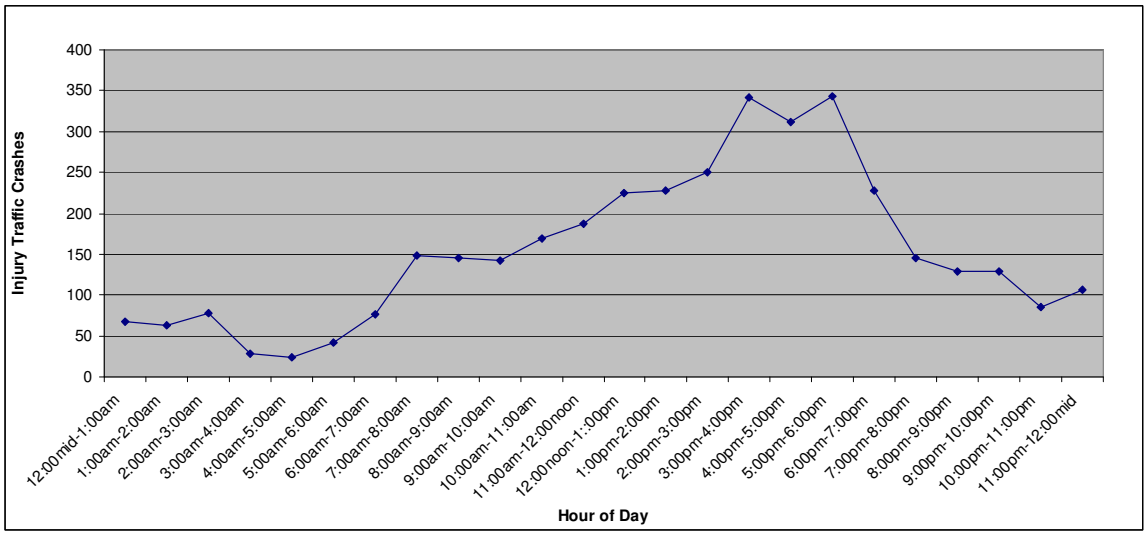
Figure 11 **Injury Traffic Crashes by Day of Week in 2009**



Source: www.michigantrafficcrashfacts.org

Figure 12 indicates that most injury traffic crashes occurred between 5 pm to 6 pm during each hour interval in 2009, with 343 injury crashes.

Figure 12 **Injury Traffic Crashes by Hour of Day in 2009**



Source: www.michigantrafficcrashfacts.org

Fatal Traffic Crashes

As shown in Figure 13, fatal crash is defined as a crash that causes death within 30 days of the crash. There was 57 fatal crashes in GVMC area in 2009, a slight increase from 2008, which had 55 fatal crashes. Figure 14 shows the number of fatalities caused by traffic crashes from 2004 to 2009.

Figure 13 **Fatal Traffic Crashes, 2004-2009**

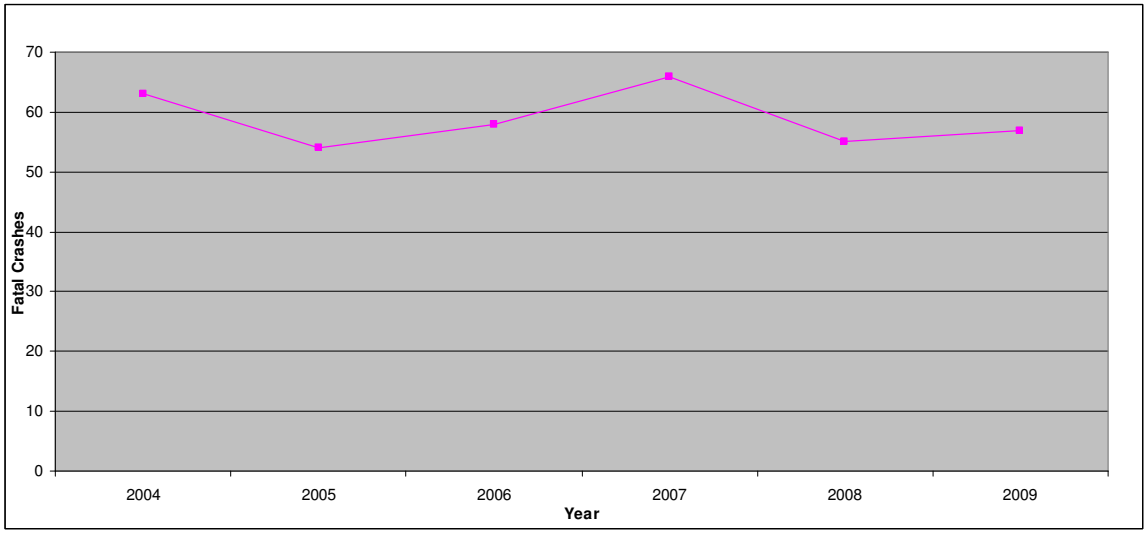
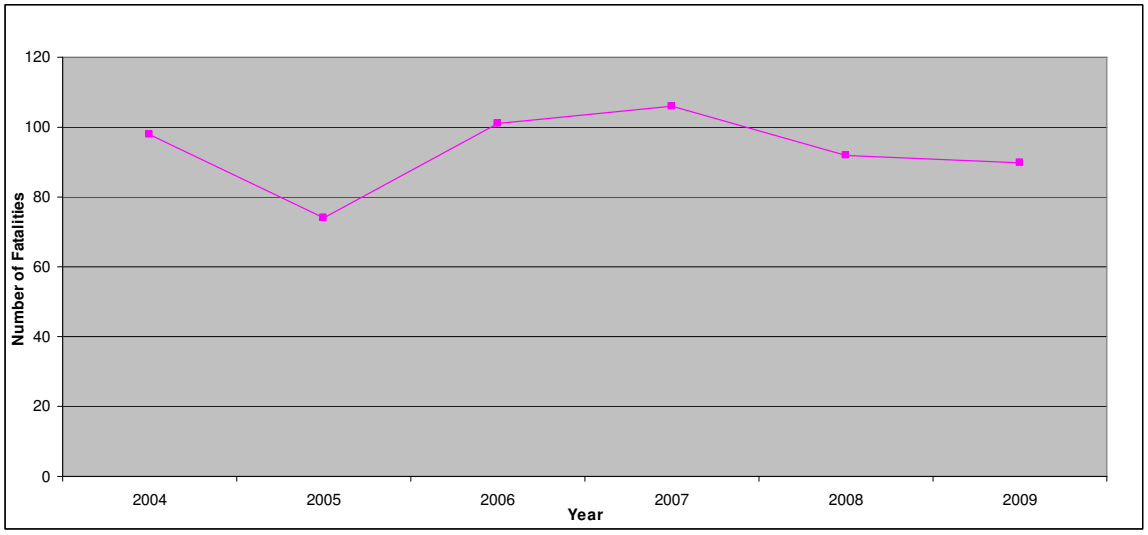


Figure 14 **Traffic Crash Fatalities, 2004-2009**



Source: www.michigantrafficcrashfacts.org

Fatal Traffic Crashes by Crash Type

Figure 15 shows that the most common type of crash causing fatalities in 2009 was single vehicle crash, which accounts for 43.9 percent of all fatal crashes. But Head-on crashes were more likely to result in a fatality, with one out of every 79 head-on crashes causing a death.

Figure 15 **Fatal Traffic Crashes by Crash Type in 2009**

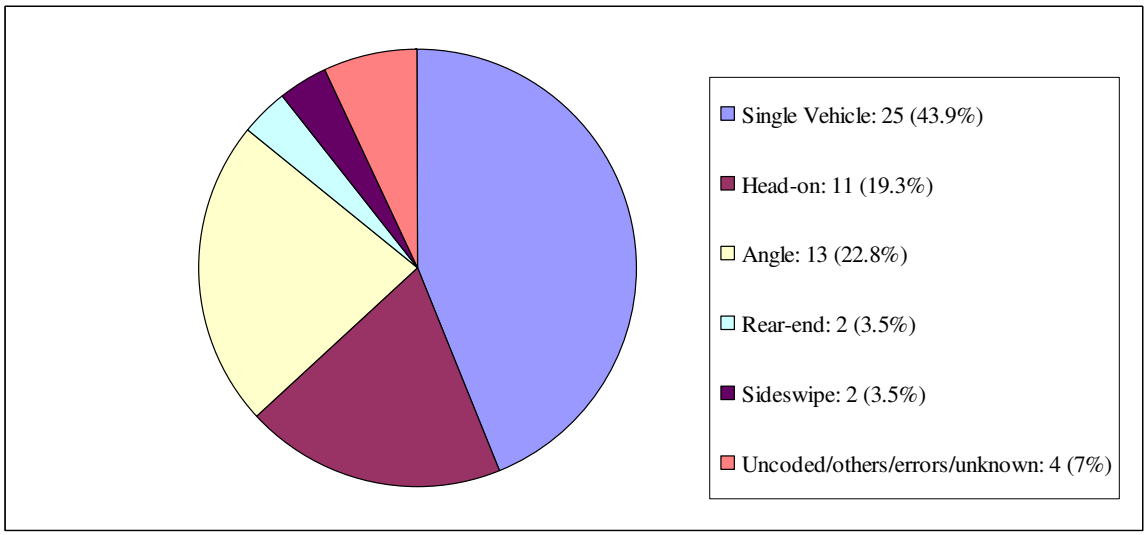


Table 5 **Crash Type by Percent Resulting in Fatality in 2009**

Crash Type	**Injury Crashes**	**All Crashes**	**Percent Resulting in Injury**
Head-on	11	869	1.27%
Single-Vehicle	25	5,996	0.42%
Angle	13	3,711	0.35%
Sideswipe	2	2,436	0.082%
Rear-End	2	5,573	0.036%
Uncoded/others/errors/unknown	4	1,001	0.4%
Total	**57**	**19,586**	**0.29%**

Source: www.michigantrafficcrashfacts.org

Fatal Traffic Crashes by Month, Day, and Hour

Figure 17 shows that fatal crashes were more likely to occur in July than any other month in 2009, and Figure 18 indicates Saturdays had the most fatal crashes in 2009.

Figure 16 **Fatal Traffic Crashes by Month in 2009**

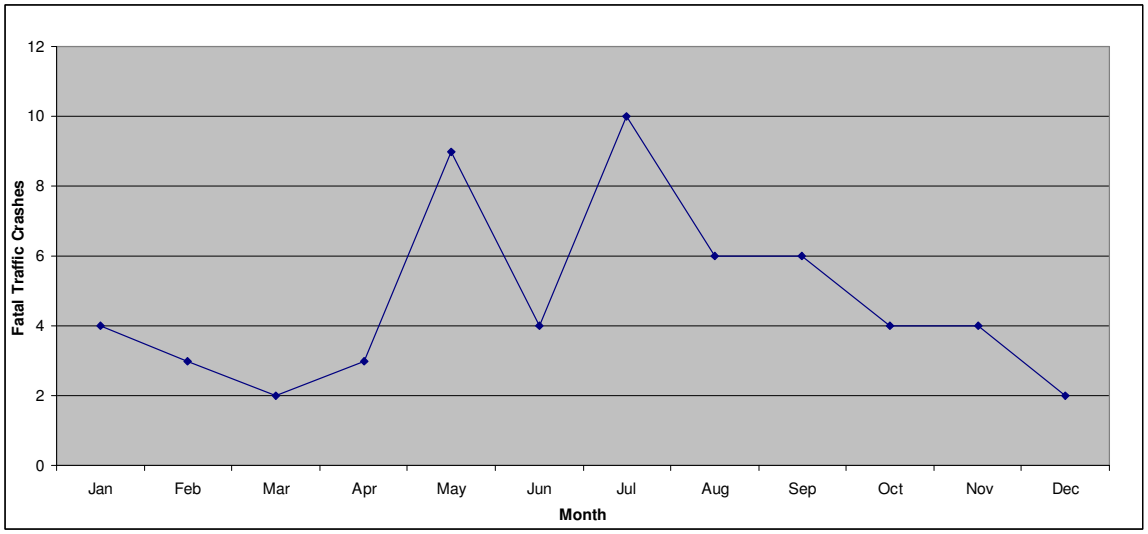
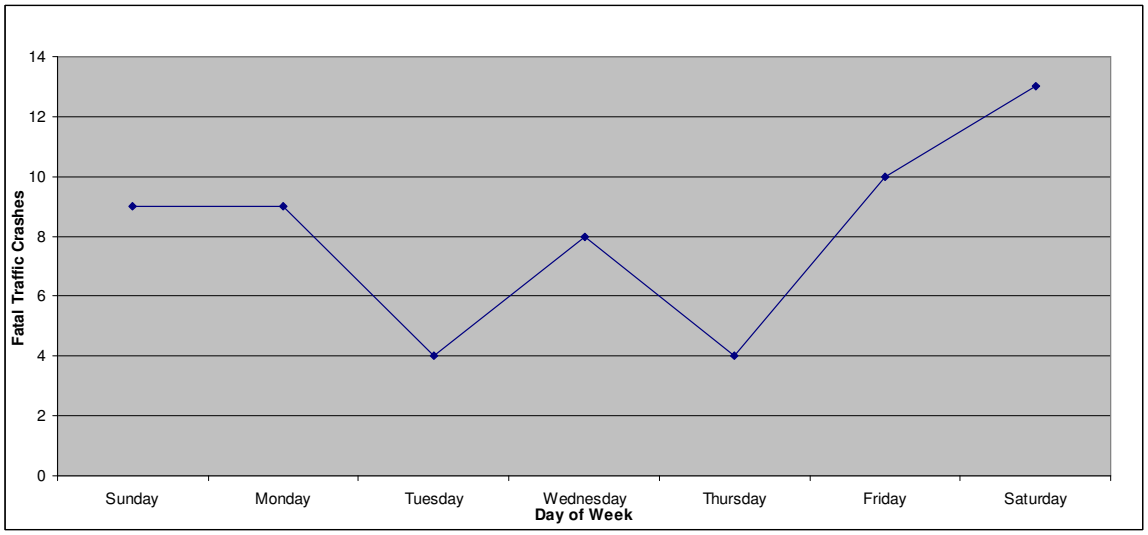


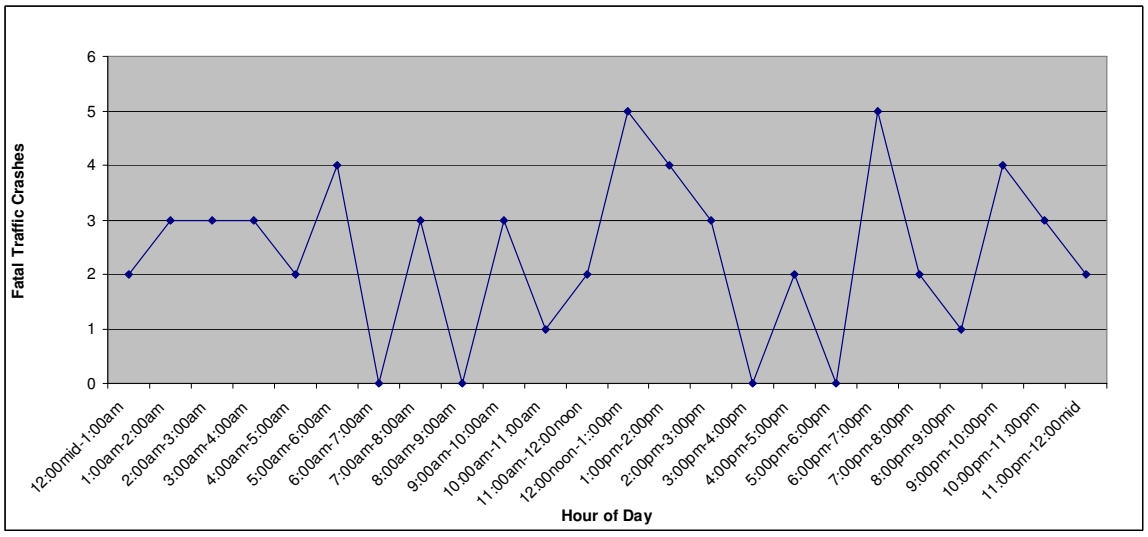
Figure 17 **Fatal Traffic Crashes by Day of Week in 2009**



Source: www.michigantrafficcrashfacts.org

Figure 18 shows the distribution of fatal traffic crashes in GVMC area in 2009.

Figure 18 **Fatal Traffic Crashes by Hour of Day in 2009**



Source: www.michigantrafficcrashfacts.org

Alcohol-Involved Traffic Crashes

An alcohol-involved crash is defined as a crash in which a driver, pedestrian or bicyclist had any measurable alcohol in their system. Figure 19 shows the decreasing trend of alcohol-involved traffic crashes in GVMC area, down from 1122 in 2004 to 821 in 2007. Figure 20 shows that alcohol-involved crashes accounted for 4.3 percent of all traffic crashes in 2009.

Figure 19 **Alcohol-Involved Traffic Crashes, 2004-2007**

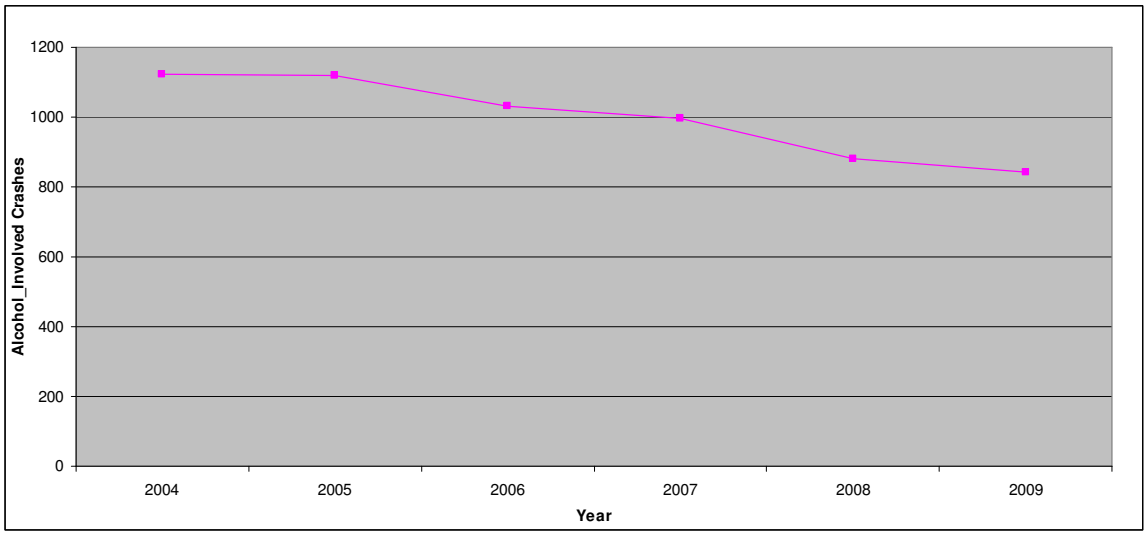


Figure 20 **Percentages of Alcohol-Involved Traffic Crashes**

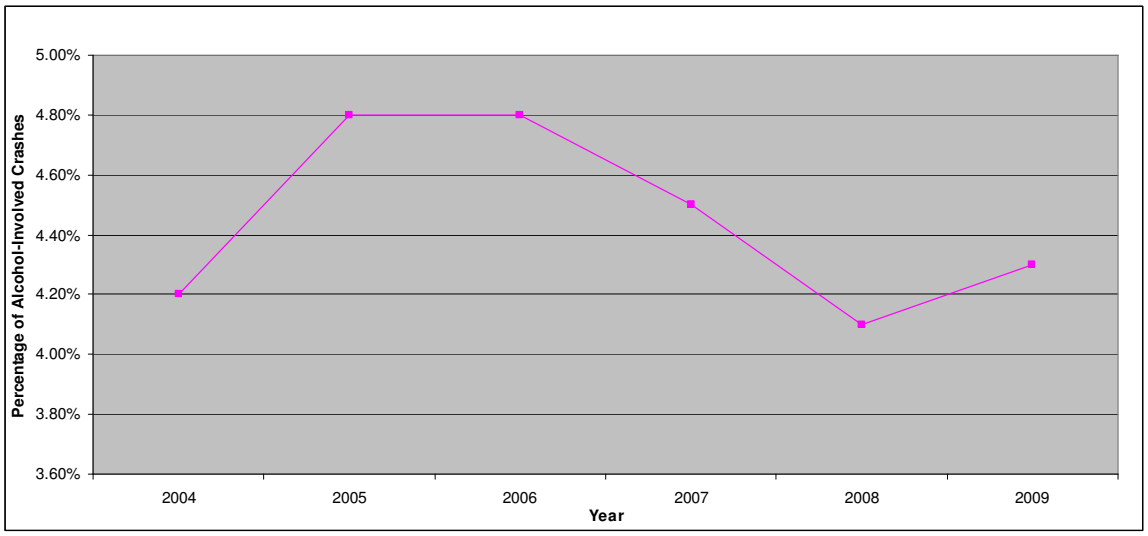


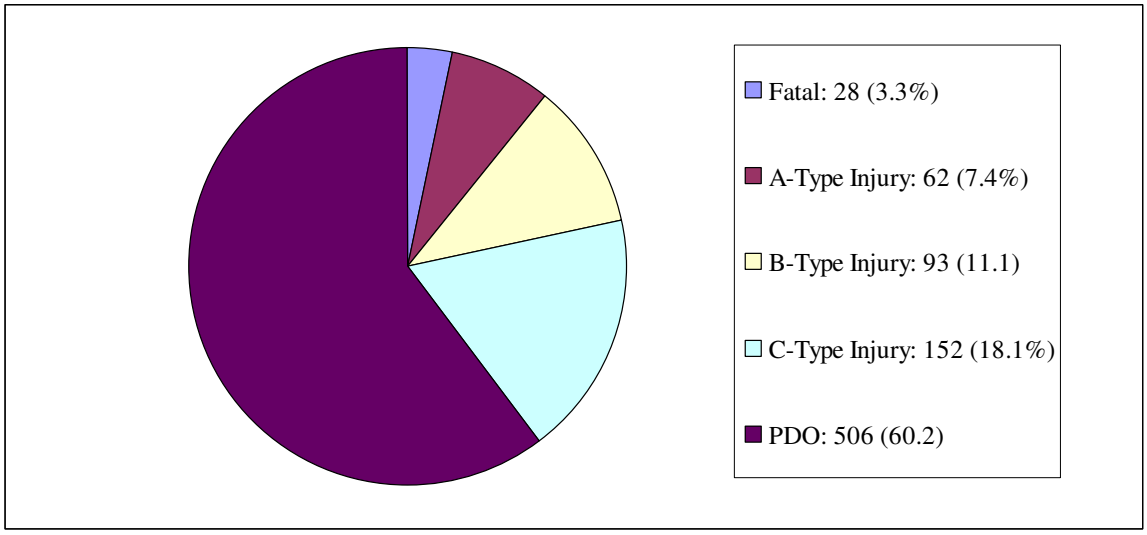
Table 6 shows the number of Alcohol-Involved traffic crashes by jurisdiction in GVMC area from 2004-2009.

Local Governments	2004	2005	2006	2007	2008	2009
Ada	18	29	20	17	10	9
Algoma	9	20	18	20	19	7
Allendale	11	19	23	15	17	19
Alpine	22	24	26	22	25	20
Bowne	6	10	5	4	4	12
Byron	32	31	18	19	15	37
Caledonia	20	19	13	18	16	8
Cannon	14	13	19	14	10	12
Cascade	21	29	24	28	19	16
Casnovia	1	0	0	0	0	1
Cedar Springs	2	1	4	2	2	3
Courtland	12	19	9	11	9	11
East Grand Rapids	6	6	6	4	5	2
Gaines	19	21	19	12	9	9
Georgetown	23	35	37	27	26	30
City of Grand Rapids	443	389	390	369	313	290
Grand Rapids Township	29	27	21	29	19	19
Grandville	35	26	24	29	30	22
Grattan	9	8	6	4	8	7
Hudsonville	1	2	3	4	3	2
Jamestown	9	6	6	7	6	4
Kent City	2	3	1	1	1	1
Kentwood	51	40	43	32	47	32
Lowell	16	28	14	17	10	16
Nelson	7	5	8	7	5	8
Oakfield	9	9	11	10	12	14
Plainfield	55	55	42	60	55	37
Rockford	4	3	8	6	1	5
Sand Lake	2	1	0	0	0	1
Solon	9	10	11	10	14	9
Sparta	14	18	18	10	7	15
Spencer	6	9	7	8	8	6
Tallmadge	23	22	17	12	12	13
Tyrone	7	9	15	13	7	4
Vergennes	4	6	10	9	3	6
Walker	60	56	48	52	37	59
Wyoming	111	110	86	94	95	75

Alcohol-Involved Traffic Crashes by Severity

Although alcohol-involved traffic crashes only accounts for 4.3 percent of all traffic crashes in 2009, there were 49.1 percent fatal crashes related to alcohol, and 20.8 percent of all A-Type injuries involved alcohol. As shown in the table below, alcohol-involved crashes are more likely to cause death or serious injuries compared to other non-alcohol-involved crashes.

Figure 21 **Alcohol-Involved Traffic Crashes by Severity**



Source: www.michigantrafficcrashfacts.org

Table 7 **Alcohol-Involved Traffic Crash by Severity in 2009**

Crash Severity	**Alcohol-Involved Traffic Crashes**	**All Traffic Crashes**	**Alcohol-Involved Percentage**
Fatal	28	57	49.1%
A-Type Injury	62	298	20.8%
B-Type Injury	93	799	11.6%
C-Type Injury	152	2,606	5.8%
PDO	506	15,826	2.6%
Total	**841**	**19,586**	**4.3%**

Source: www.michigantrafficcrashfacts.org

Alcohol-Involved Traffic Crashes by Crash Type

Figure 22 shows that the most common type of alcohol-involved crashes were single-vehicle crashes, accounting for 55.5 percent of all alcohol-involved crashes. Table 8 shows the percentage of alcohol-involved crashes in all traffic crashes .

Figure 22 **Alcohol-Involved Traffic Crashes by Type in 2009**

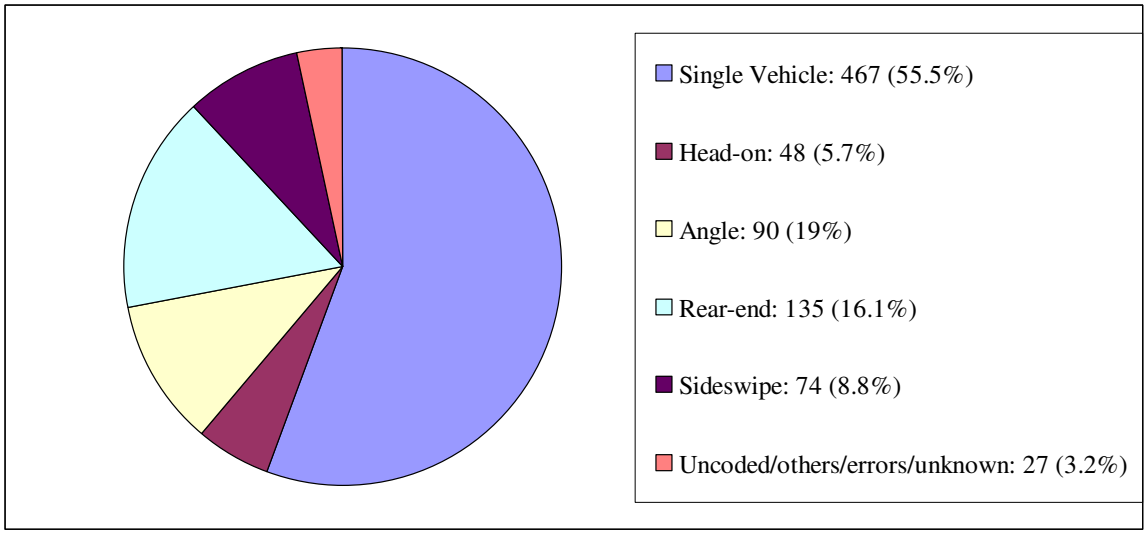


Table 8 **Percentage of Alcohol-Involved Traffic Crashes**

Crash Type	**Alcohol-Involved Traffic Crashes**	**All Crashes**	**Percentage of Alcohol-Involved Crash**
Single-Vehicle	467	5996	7.8%
Head-on	48	869	5.5%
Angle	90	3711	2.4%
Rear-End	135	5573	2.4%
Sideswipe	74	2436	3%
Uncoded/others/errors/unknown	27	1001	2.7%
Total	**841**	**19586**	**4.3%**

Source: www.michigantrafficcrashfacts.org

Alcohol-Involved Traffic Crashes by Month, Day and Hour

Figure 23 shows that most alcohol-involved crashes occurred in December (82) and the fewest took place in February and March (63). Figure 24 indicates Saturdays had the most alcohol-involved traffic crashes (195) compared to any other days of week, while Mondays had the fewest alcohol-involved crashes (69) in 2009.

Figure 23 **Alcohol-Involved Traffic Crashes by Month in 2009**

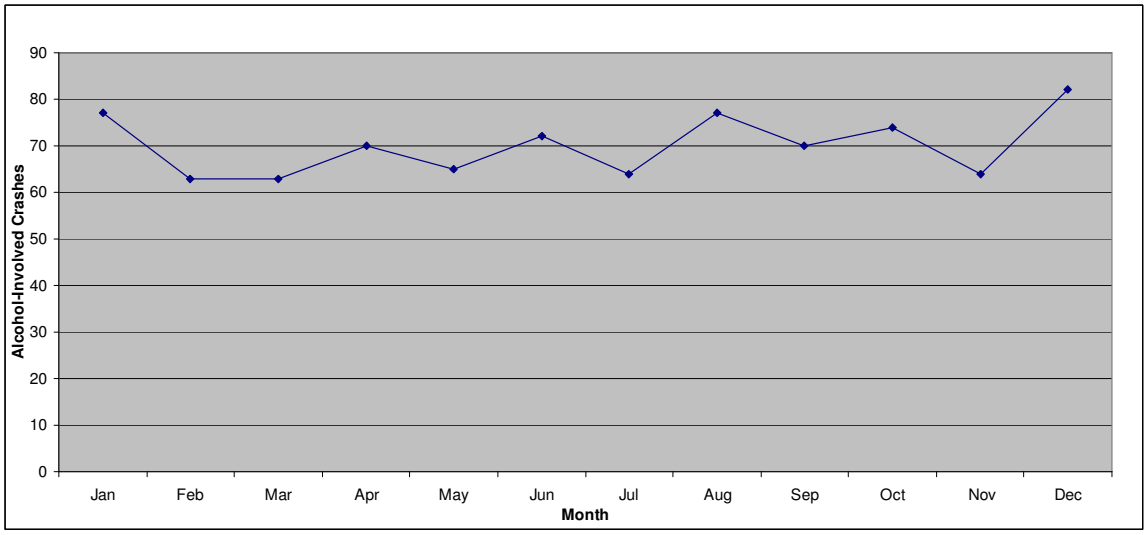
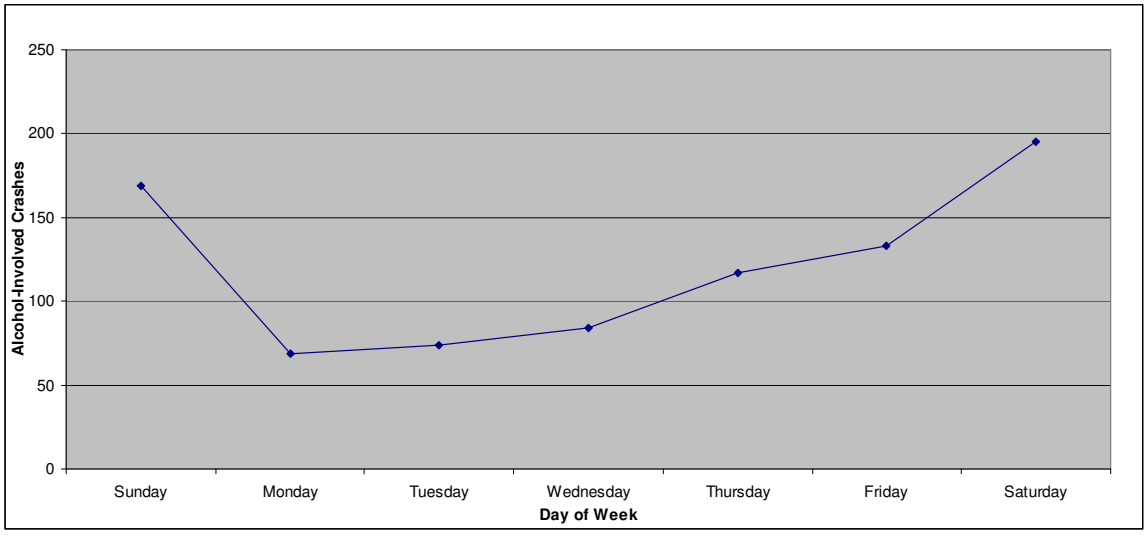


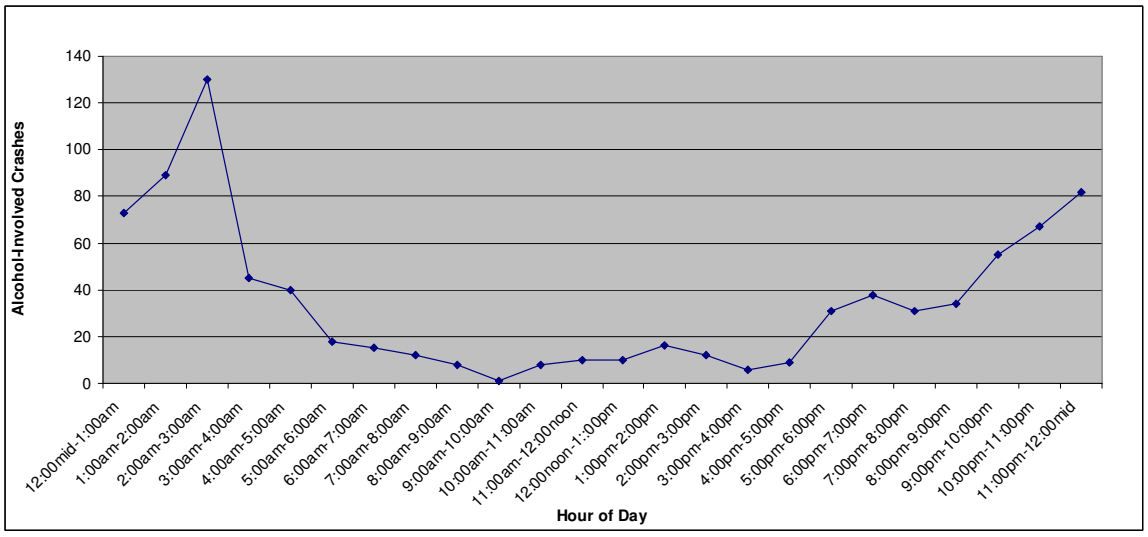
Figure 24 **Alcohol-Involved Traffic Crashes by Day of Week in 2009**



Source: www.michigantrafficcrashfacts.org

As shown in Figure 25, most alcohol-involved crashes occurred between 2 a.m. to 3 a.m. (130) in 2009, and the fewest alcohol-involved crashes took place between 9 a.m. to 10 a.m. (only 1).

Figure 25 **Alcohol-Involved Traffic Crashes by Hour of day in 2009**



Source: www.michigantrafficcrashfacts.org

Vehicle-Deer Traffic Crashes

There were 2541 traffic crashes between vehicle and deer in GVMC area in 2009, a 6.9 percent increase from 2008. As shown in Figure 27, the percentage of vehicle-deer crash in GVMC area increased from 11 percent in 2008 to 13 percent in 2009.

Figure 26 **Vehicle-Deer Traffic Crashes, 2004-2009**

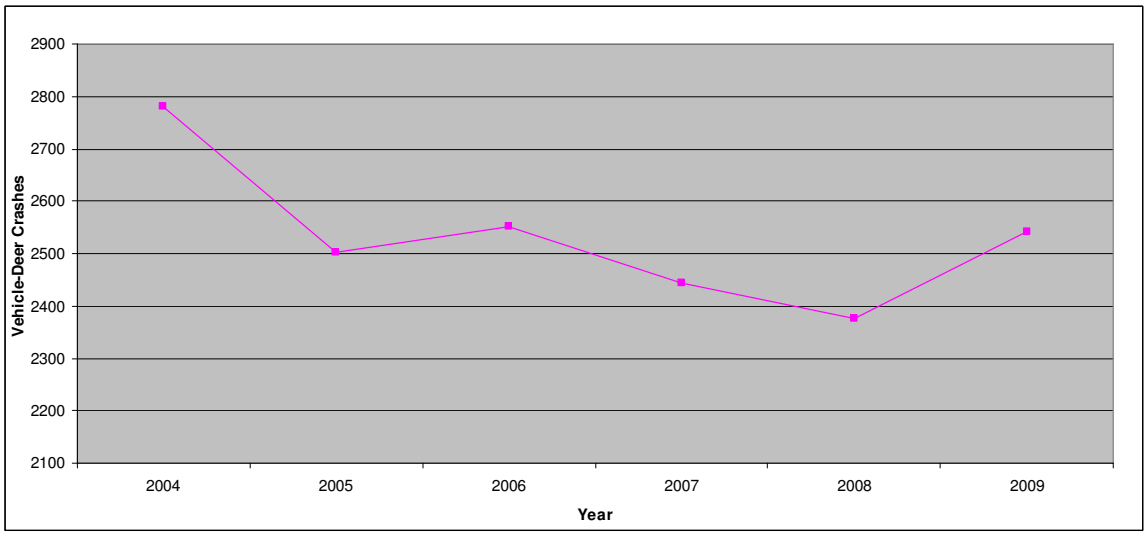
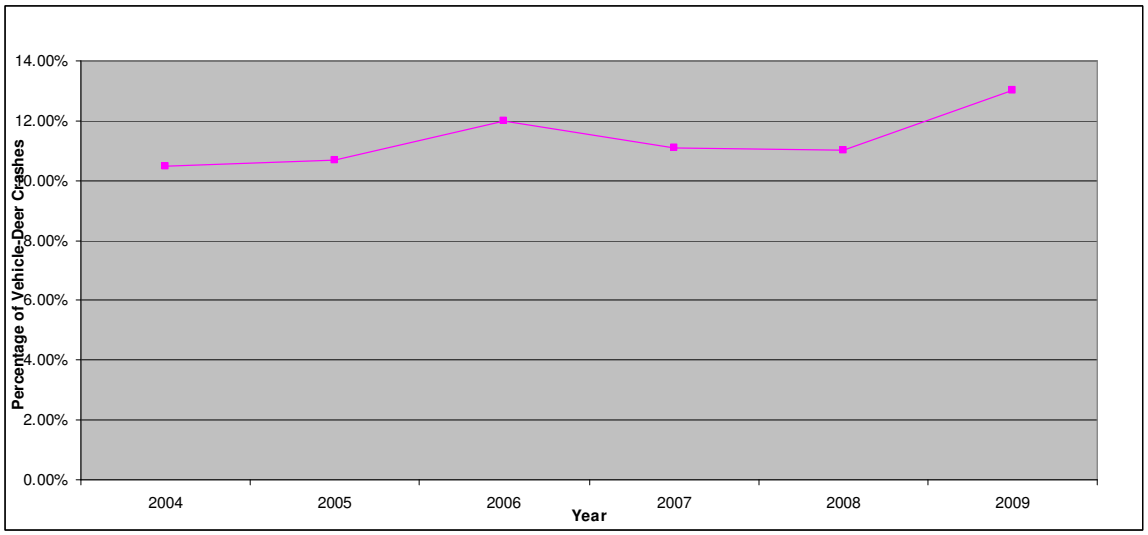


Figure 27 **Percentages of Vehicle-Deer Crashes in 2009**



Source: www.michigantrafficcrashfacts.org

Vehicle-Deer Traffic Crashes by Severity

As shown in Figure 28 and Table 9, most vehicle-deer crashes are PDO in GVMC area in 2009, which accounted for 96.9% of all vehicle-Deer crashes and 15.5% of all PDO crashes.

Figure 28 **Vehicle-Deer Traffic Crashes by Type in 2009**

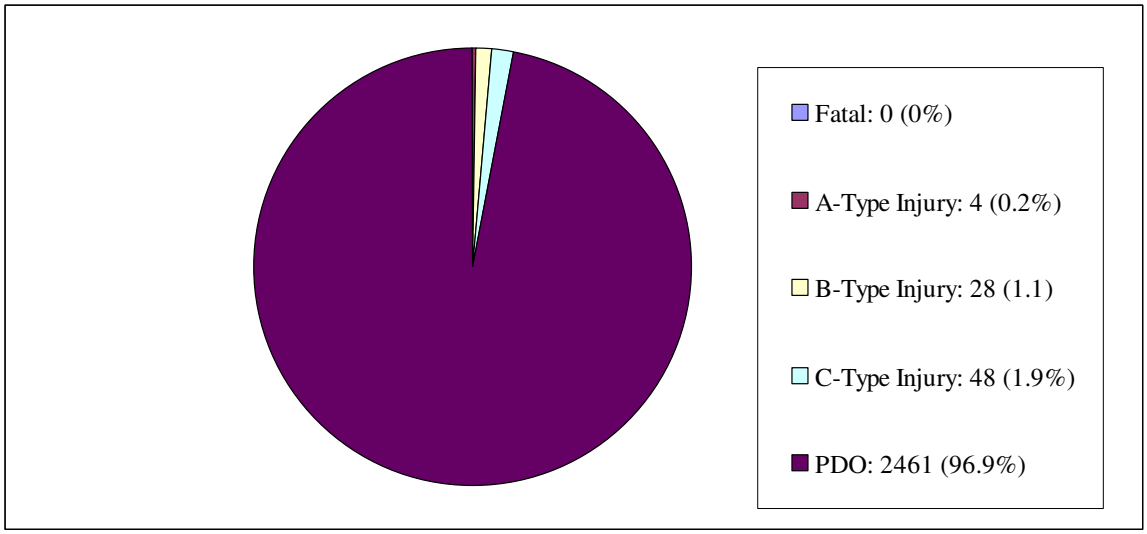


Table **9 Vehicle-Deer Traffic Crashes by Severity in 2009**

Crash Severity	**Vehicle-Deer Traffic Crashes**	**All Traffic Crashes**	**Vehicle-Deer Percentage**
Fatal	0	57	0%
A-Type Injury	4	298	1.3%
B-Type Injury	28	799	3.5%
C-Type Injury	48	2,606	1.8%
PDO	2461	15,826	15.5%
Total	**2541**	**19,586**	**4.3%**

Source: www.michigantrafficcrashfacts.org

Vehicle-Deer Traffic Crashes by Month, Day and Hour in 2009

Figure 29 shows that November had the most vehicle-deer crashes at 596in 2009, and August had the fewest vehicle-deer crashes at 90. Figure 30 shows that more deer crashes took place on Mondays than any other days of week.

Figure 29 **Vehicle-Deer Traffic Crashes by Month in 2009**

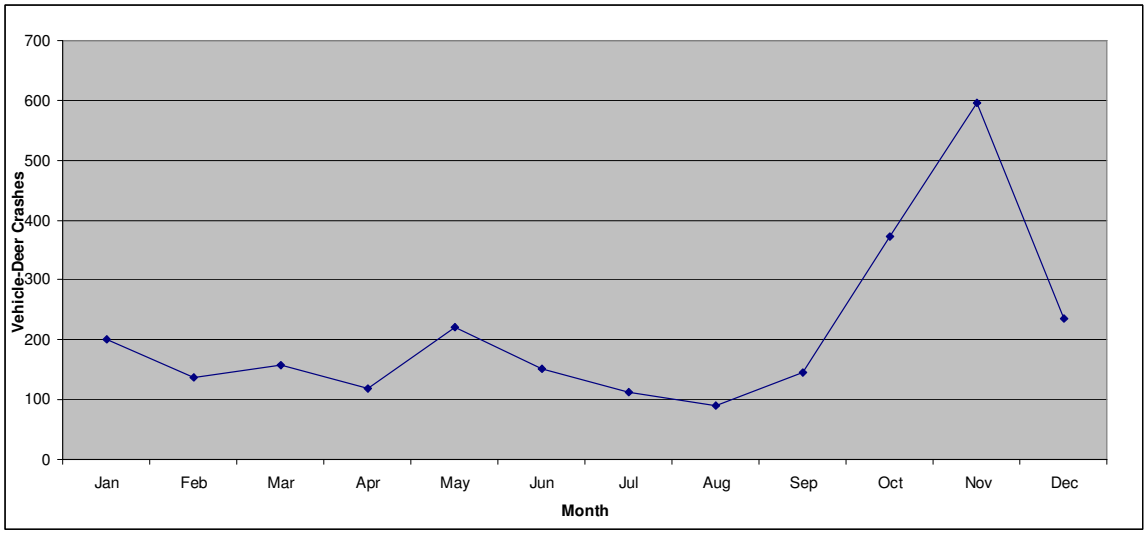
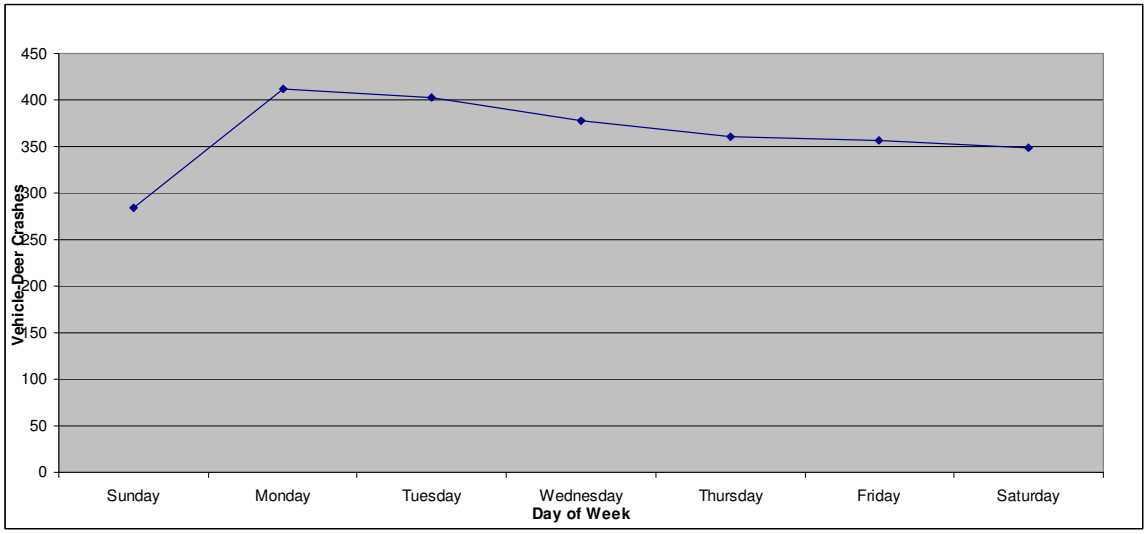


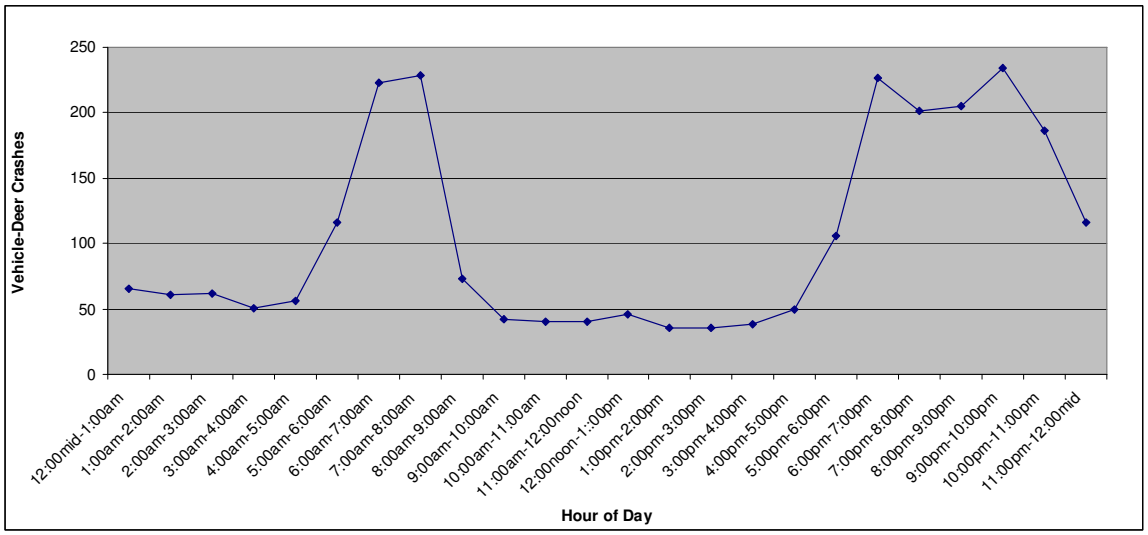
Figure 30 **Vehicle-Deer Traffic Crashes by Day of Week in 2009**



Source: www.michigantrafficcrashfacts.org

Figure 31 shows that deer crashes were most likely to occur during early mornings and early evenings, and much fewer deer crashes occurred between 9 am and 5 pm.

Figure 31 **Vehicle-Deer Traffic Crashes by Hour of Day in 2009**

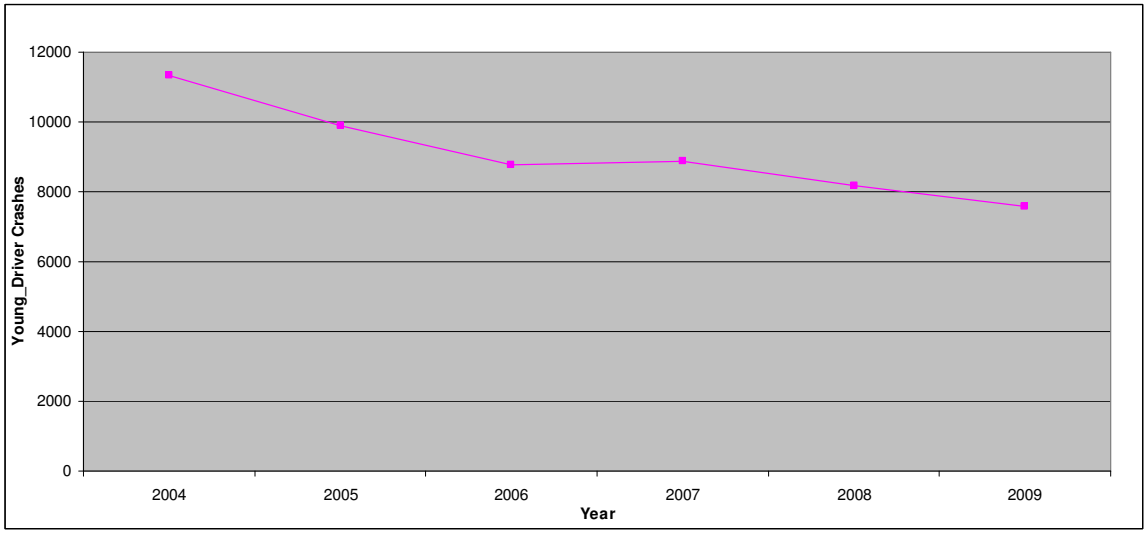


Source: www.michigantrafficcrashfacts.org

Young-Driver Traffic Crashes

A young driver is defined as a driver whose age is between 16 and 24. Figure 32 shows the decreasing trend of young-driver crashes from 2004 to 2009 in GVMC area, down from 11337 in 2004 to 7563 in 2009. Table 10 shows the percentage of young-driver traffic crashes for 2004-2009.

Figure 32 **Young-Driver Traffic Crashes, 2004-2009**



Source: www.michigantrafficcrashfacts.org

Table 10 **Percentages of Young-Driver Traffic Crashes, 2004-2009**

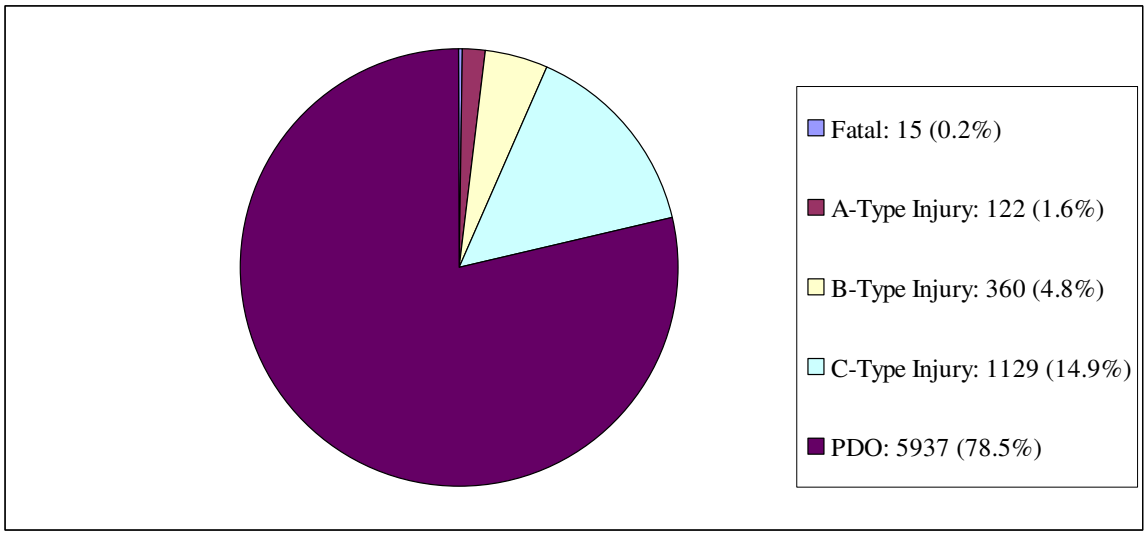
Year	Young-Driver Traffic Crashes	All Traffic Crashes	Percentage of Young-Driver Traffic Crashes
2004	11337	26446	42.9%
2005	9886	23421	42.2%
2006	8778	21283	41.2%
2007	8891	22111	40.2%
2008	8180	21681	37.7%
2009	7563	19586	38.6%

Source: www.michigantrafficcrashfacts.org

Young-Driver Traffic Crashes by Severity

Figure 33 shows the distribution of traffic crashes severity involving young driver in 2009. Table 11 indicates young driver crashes caused a large percentage of fatalities or injuries.

Figure 33 Young-Driver Traffic Crashes Severity in 2009



Source: www.michigantrafficcrashfacts.org

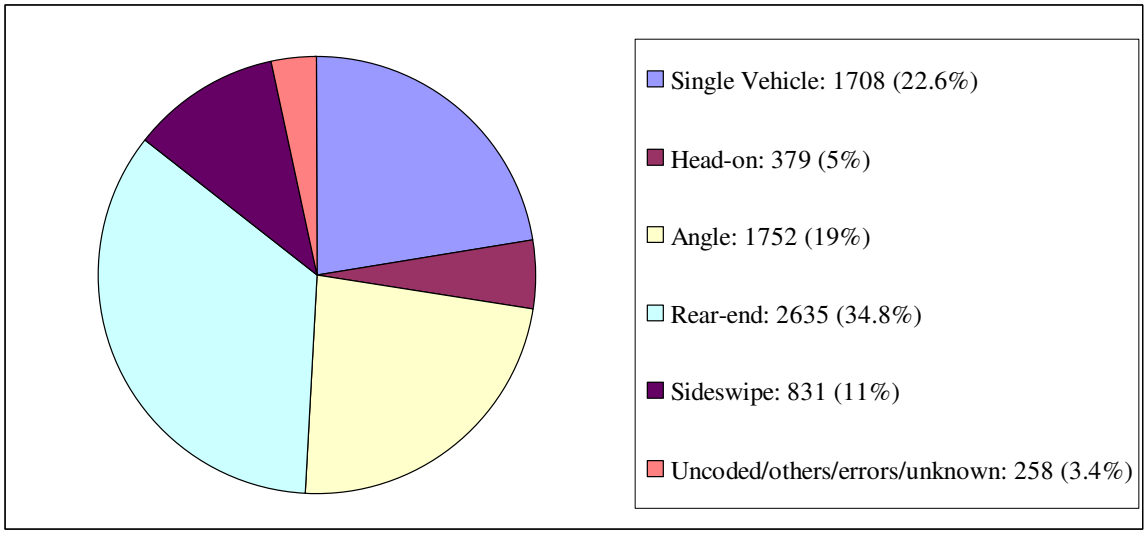
Table 11 **Young-Driver Traffic Crash by Severity in 2009**

Crash Severity	**Young-Driver Traffic Crashes**	**All Traffic Crashes**	**Young-Driver Percentage**
Fatal	15	57	26.3%
A-Type Injury	122	298	40.9 %
B-Type Injury	360	799	45.1%
C-Type Injury	1129	2,606	43.3%
PDO	5937	15,826	37.5%
Total	**7563**	**19,586**	**38.6%**

Source: www.michigantrafficcrashfacts.org

Figure 34 below shows that young drivers were more likely to have rear-end, single vehicle and angel crashes, and less likely to have sideswipe and head-on crashes.

Figure 34 **Young-Driver Traffic Crashes by Crash Type in 2009**



Source: www.michigantrafficcrashfacts.org

Young-Driver Traffic Crashes by Month, Day and Hour

As shown in Figure 35, young-driver crashes were more likely to occur in January than any other months in 2009.

Figure 35 Young-Driver Traffic Crashes by Month in 2009

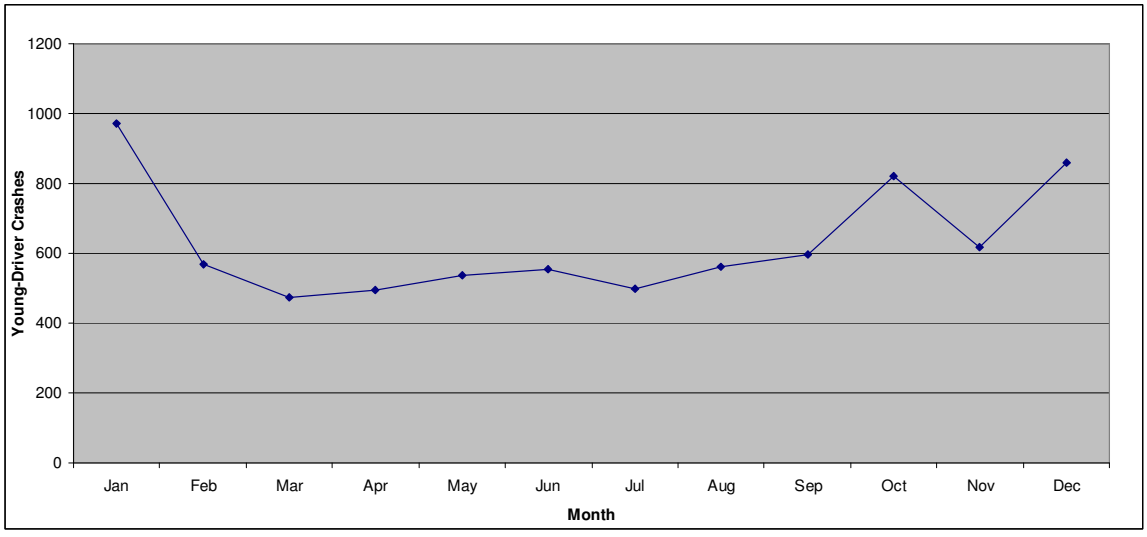
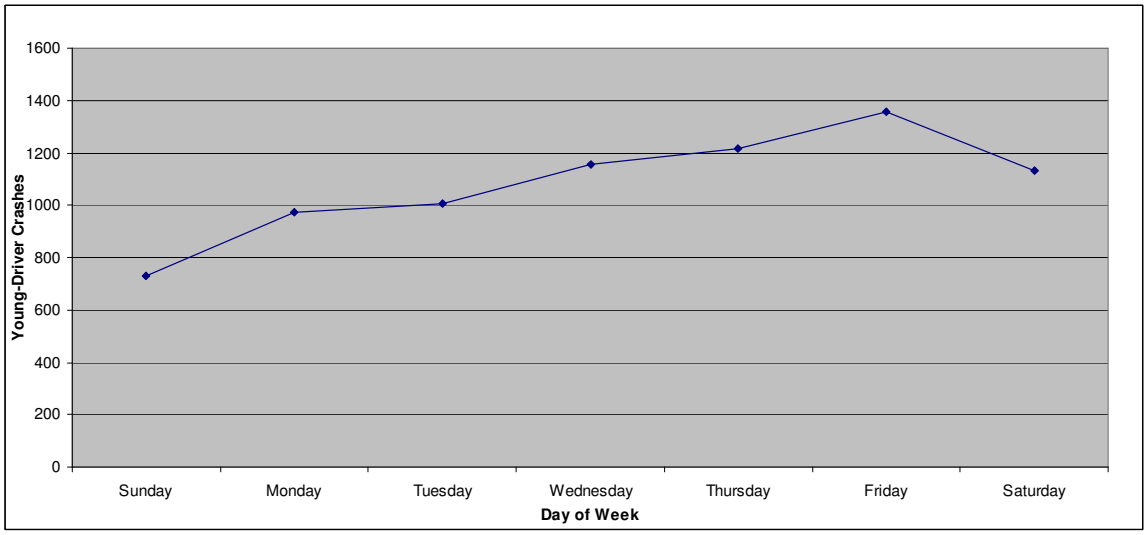


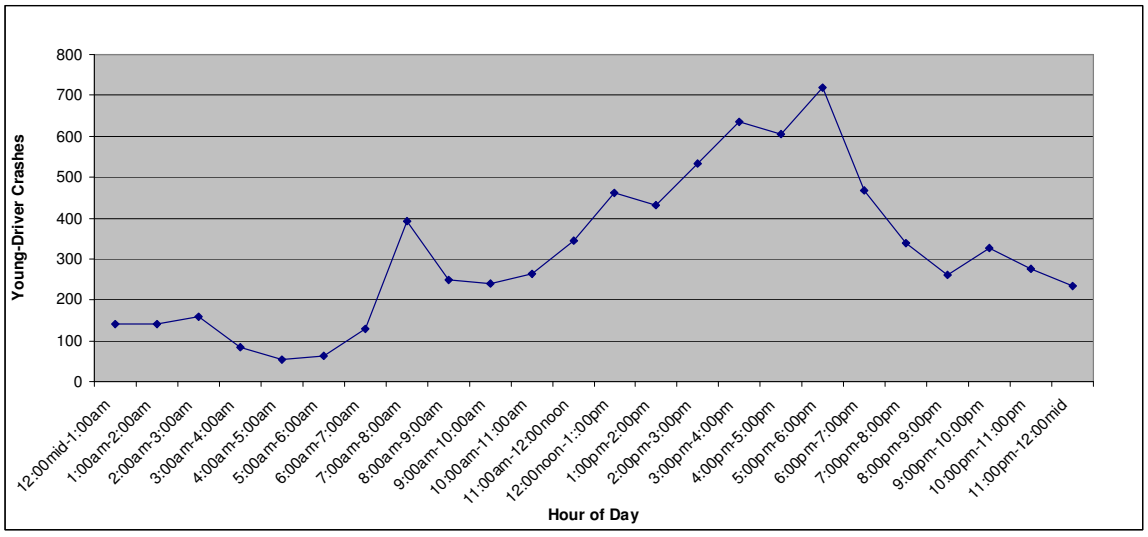
Figure 36 shows that Fridays had the most young-driver traffic crashes, and Mondays had the least crashes in 2009. Figure 37 shows that young –driver crashes were more likely to occur during afternoon, and were less likely to occur during early morning.

Figure 36 **Young-Driver Traffic Crashes by Day of Week in 2009**



Source: www.michigantrafficcrashfacts.org

Figure 37 **Young-Driver Traffic Crashes by Hour of Day in 2009**

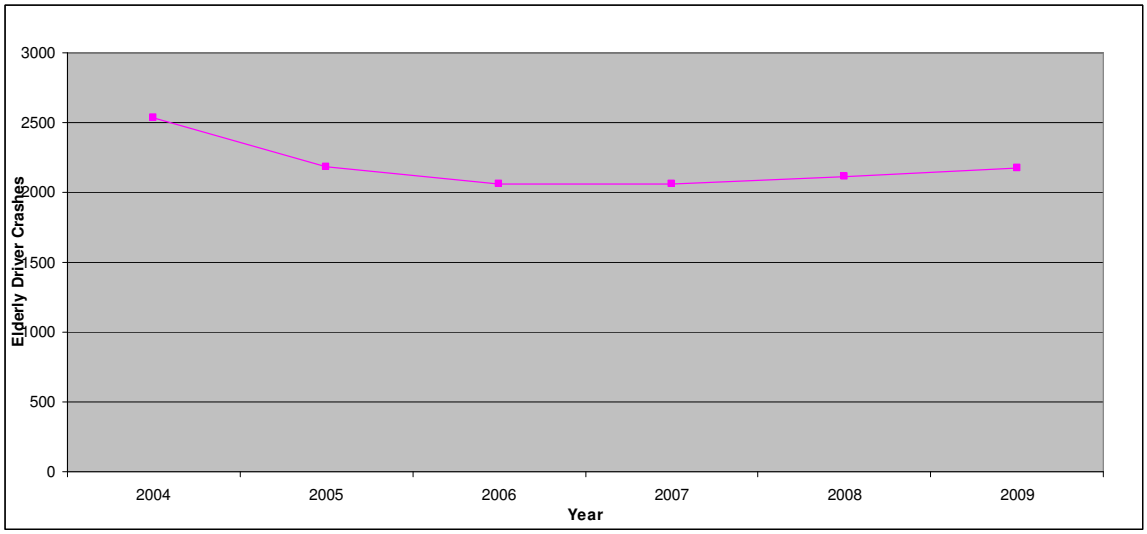


Source: www.michigantrafficcrashfacts.org

Elderly Driver Traffic Crashes

Elderly Driver is defined as a driver aging 65 or over. Figure 38 shows lightly increase in elderly driver traffic crashes between 2006 and 2009. Table 12 shows the percentages of elderly driver crashes from 2004 to 2009.

Figure 38 **Elderly Driver Traffic Crashes, 2004-2009**



Source: www.michigantrafficcrashfacts.org

Table 12 **Percentages of Elderly Driver Traffic Crashes, 2004-2009**

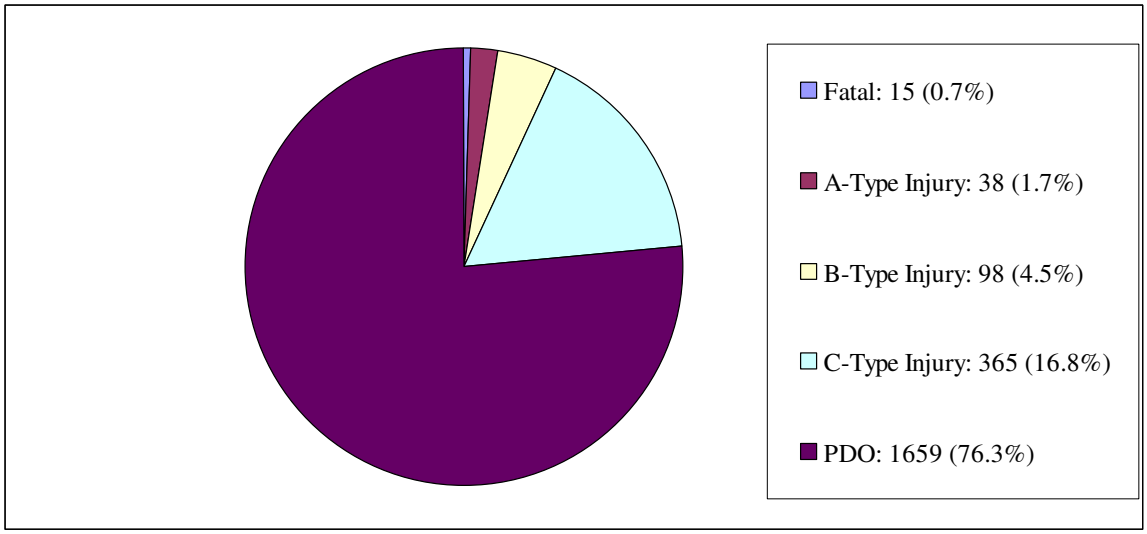
Year	Elderly Driver Traffic Crashes	All Traffic Crashes	Percentage of Elderly Driver Traffic Crashes
2004	2535	26446	9.6%
2005	2186	23421	9.3%
2006	2059	21283	9.7%
2007	2064	22111	9.3%
2008	2112	21681	9.7%
2009	2175	19586	11.1%

Source: www.michigantrafficcrashfacts.org

Elderly Driver Traffic Crashes by Severity

Figure 39 shows the distribution of traffic crash severity involving elderly driver in 2009. As shown in Table 13, fatal crashes caused by elderly driver accounted for 26.3 percent in all fatal traffic crashes in 2009.

Figure 39 **Elderly Driver Traffic Crashes Severity in 2009**



Source: www.michigantrafficcrashfacts.org

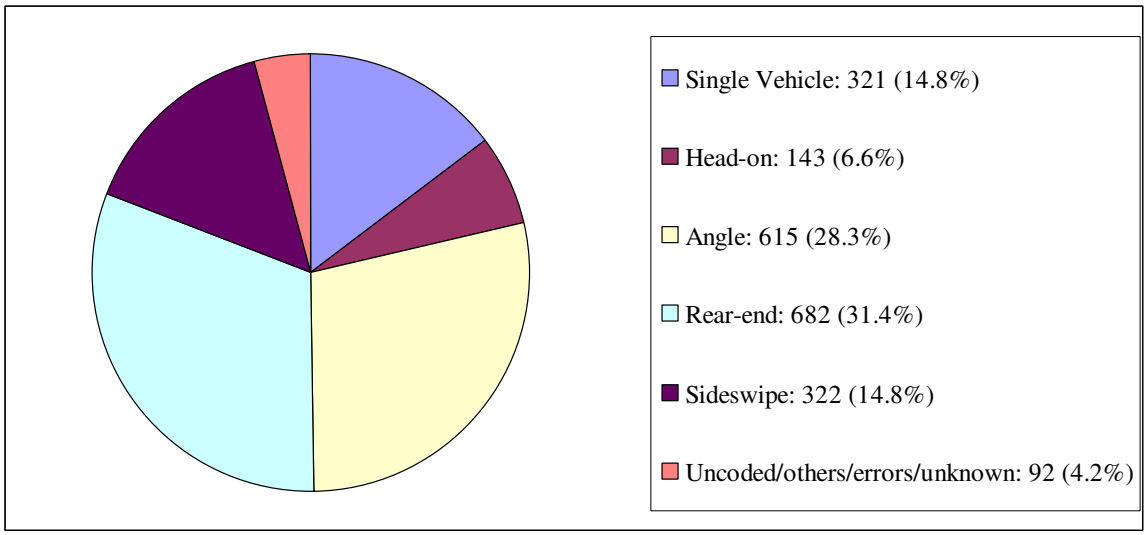
Table 13 **Elderly Driver Traffic Crash by Severity in 2009**

Crash Severity	**Elderly-Driver Traffic Crashes**	**All Traffic Crashes**	**Elderly-Driver Percentage**
Fatal	15	57	26.3%
A-Type Injury	38	298	12.8 %
B-Type Injury	98	799	12.3%
C-Type Injury	365	2,606	14%
PDO	1659	15,826	10.5%
Total	**2175**	**19,586**	**11.1%**

Source: www.michigantrafficcrashfacts.org

Figure 40 shows that elderly driver were most likely to have rear-end crashes, and were least likely to have head-on crashes.

Figure 40 **Elderly Driver Traffic Crashes by Crash Type in 2009**

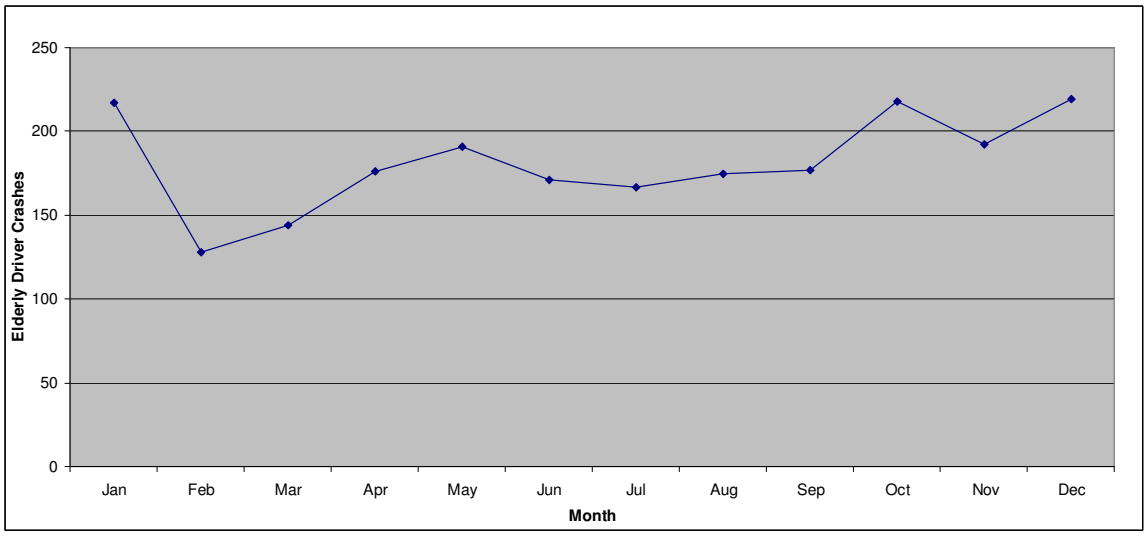


Source: www.michigantrafficcrashfacts.org

Elderly Driver Traffic Crashes by Month, Day and Hour

As shown in Figure 41, elderly driver traffic crashes were more likely to occur in January, October, and December, and were less likely to occur in March.

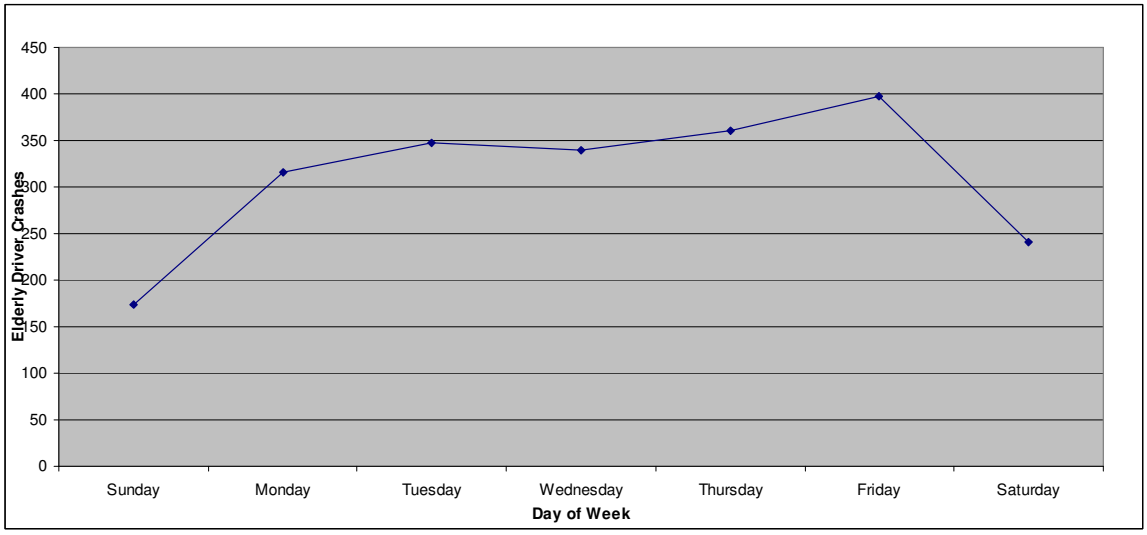
Figure 41 **Elderly Driver Traffic Crashes by Month in 2009**



Source: www.michigantrafficcrashfacts.org

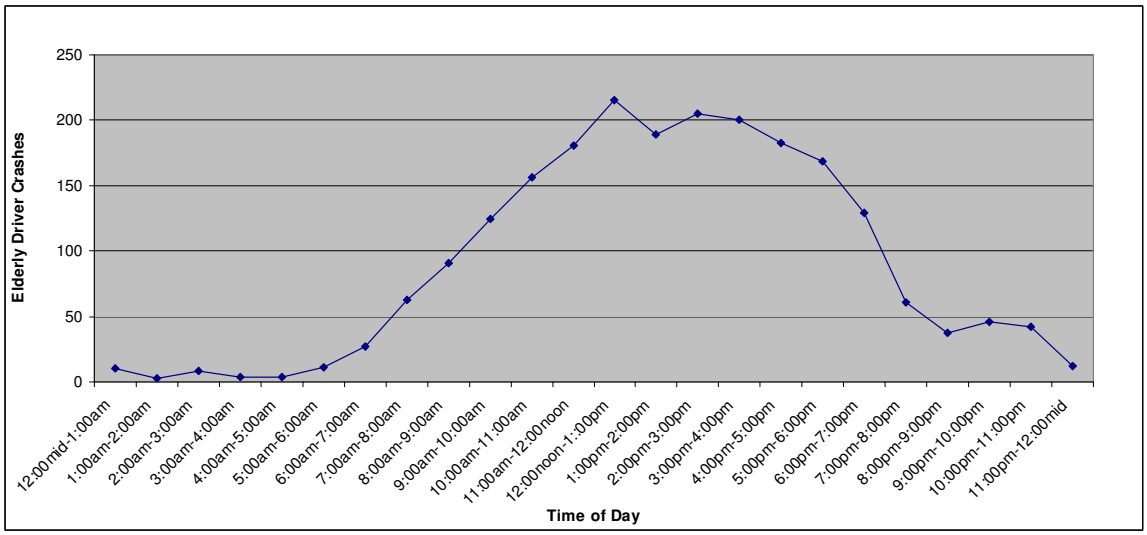
Figure 42 shows that Fridays had most elderly driver traffic crashes, and Sundays the least. Figure 43 indicates the most elderly driver crashes took place between 12 pm and 1 pm, and the least elderly driver crashed took place between 1am to 2 am.

Figure 42 **Elderly Driver Traffic Crashes by Day of Week in 2009**



Source: www.michigantrafficcrashfacts.org

Figure 43 **Elderly Driver Traffic Crashes by Hour of Day in 2009**

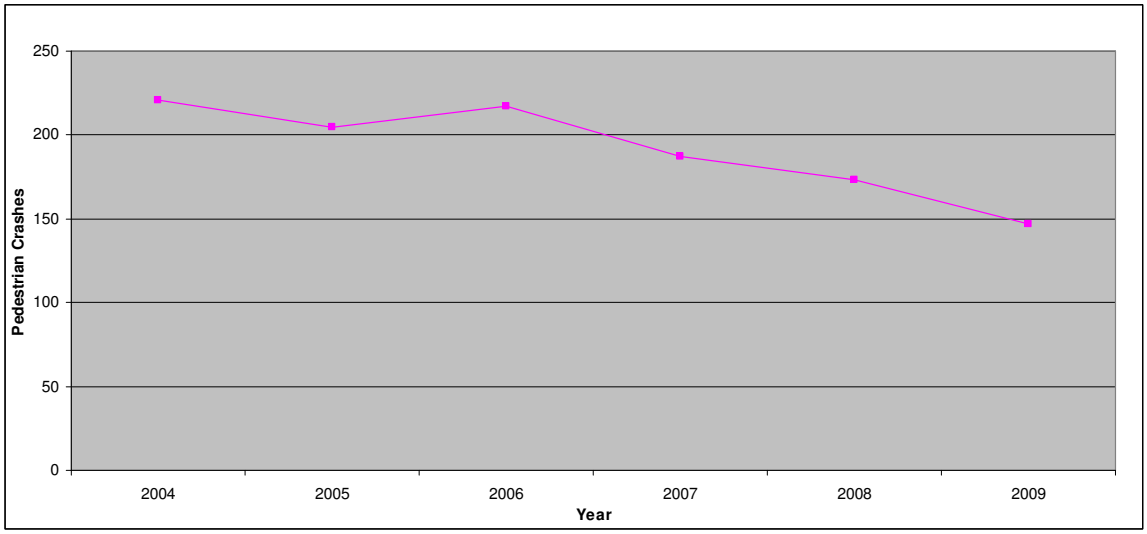


Source: www.michigantrafficcrashfacts.org

Pedestrian Traffic Crashes

As shown in Figure 44, there was a 33.5 percent decrease of pedestrian traffic crashes between 2004 and 2009 in GVMC area, down from 221 in 2004 to 147 in 2009. Figure 45 and Table 13 show that pedestrian traffic crashes usually caused more serious injury compared with other crashes.

Figure 44 **Pedestrian Traffic Crashes, 2004-2009**



Pedestrian Traffic Crashes by Severity

Figure 45 **Pedestrian Traffic Crashes by Severity in 2009**

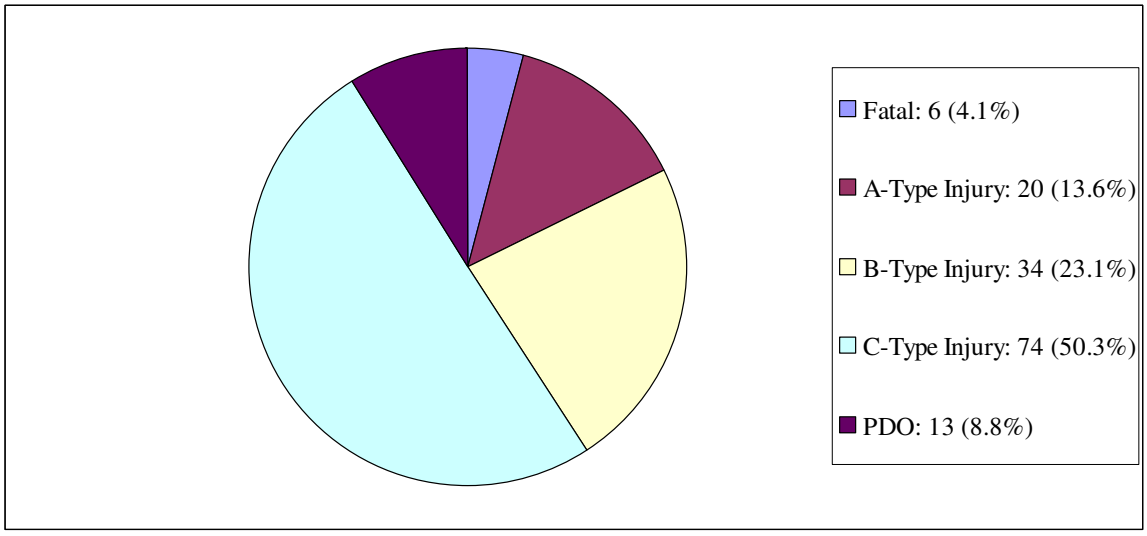


Table 13 **Pedestrian Traffic Crash by Severity in 2009**

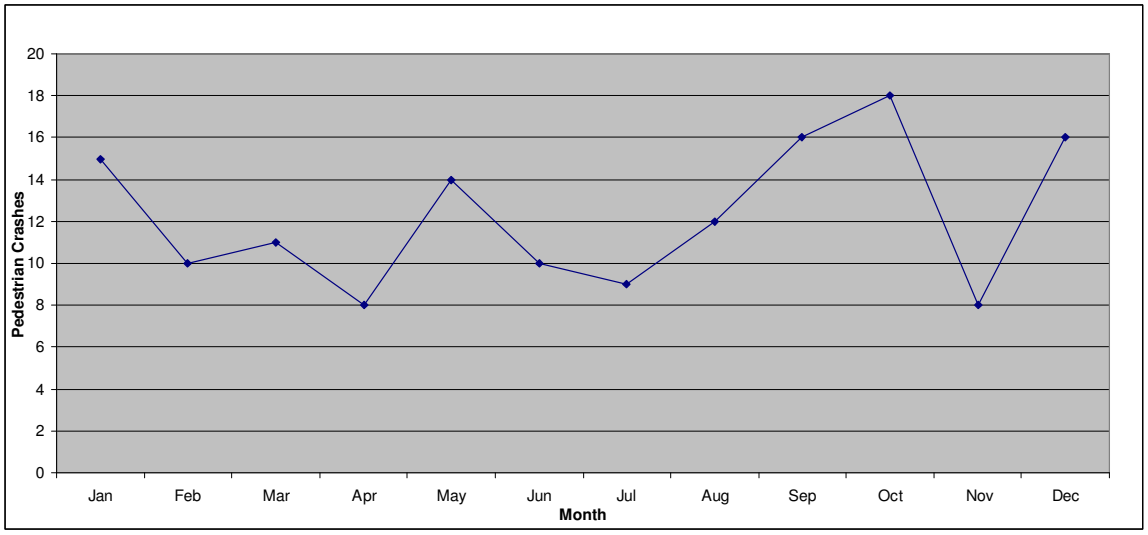
Crash Severity	Pedestrian Traffic Crashes	All Traffic Crashes	Pedestrian Crashes Percentage
Fatal	6	57	10.5 %
A-Type Injury	20	298	6.7 %
B-Type Injury	34	799	4.33%
C-Type Injury	74	2,606	2.8%
PDO	13	15,826	0.08%
Total	**147**	**19,586**	**0.75%**

Source: www.michigantrafficcrashfacts.org

Pedestrian Traffic Crashes by Month, Day and Hour

Figure 46 shows pedestrian traffic crashes were more likely to occur on October than any other months in 2009..

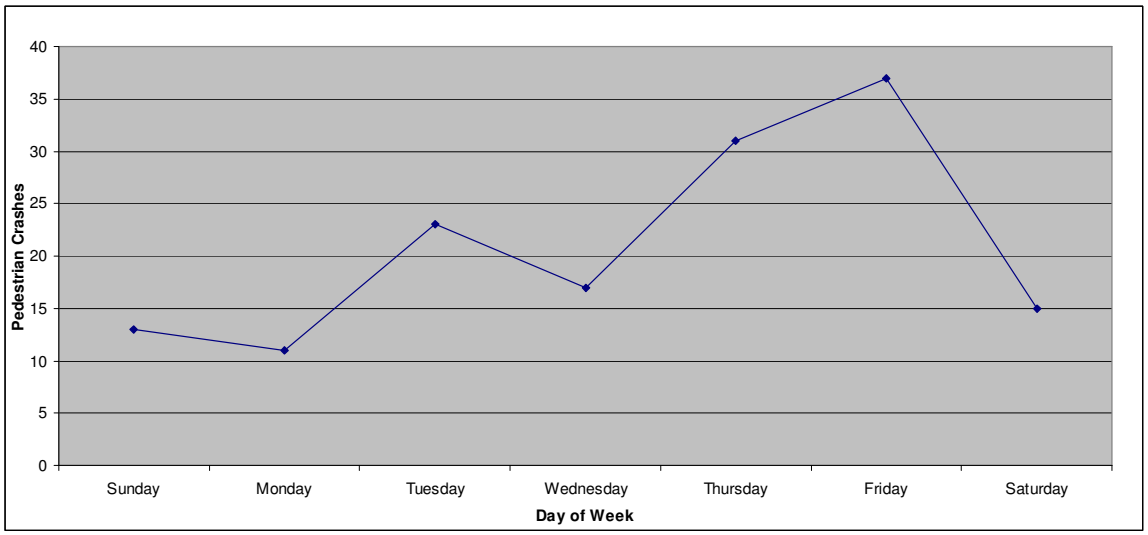
Figure 46 **Pedestrian Traffic Crashes by Month in 2009**



Source: www.michigantrafficcrashfacts.org

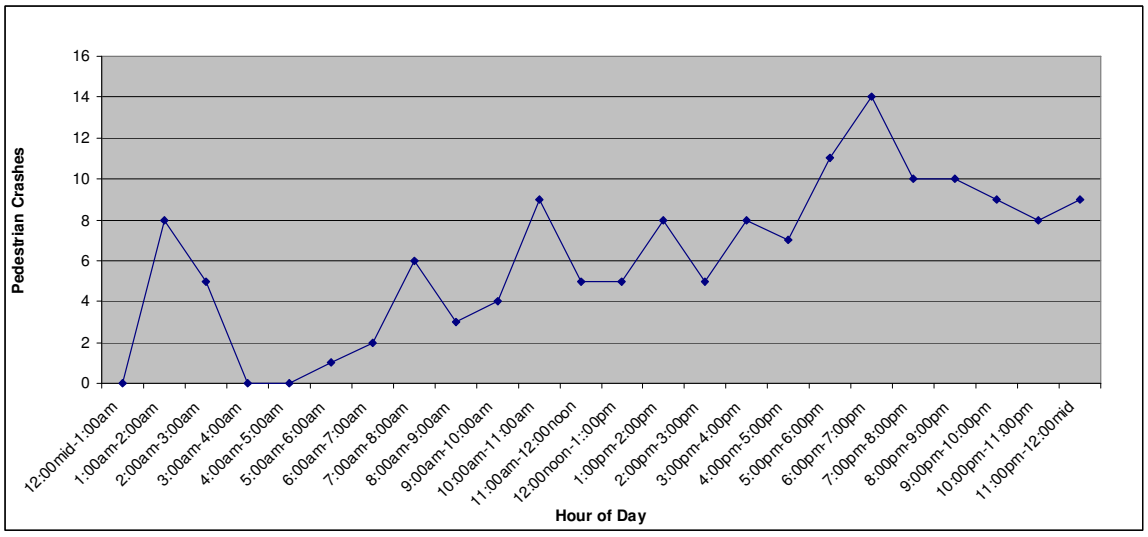
It can be seen from Figure 47 that Fridays had the most pedestrian crashes and Mondays the fewest. As shown in Figure 48, pedestrian crashes were most likely to occur early evenings.

Figure 47 **Pedestrian Traffic Crashes by Day of Week in 2009**



Source: www.michigantrafficcrashfacts.org

Figure 48 **Pedestrian** Traffic Crashes by Hour of Day in 2009

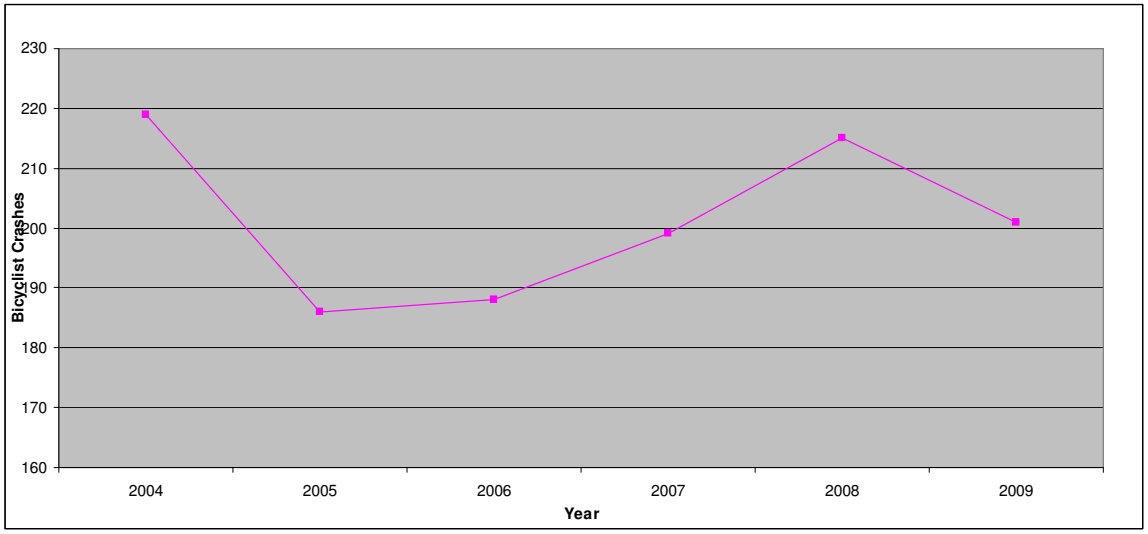


Source: www.michigantrafficcrashfacts.org

Bicyclist Traffic Crashes

Figure 49 shows bicyclist traffic crashes between 2004 and 2009. It can be seen that bicyclist crashes increased from 2005 to 2008 in GVMC area. Although there was a decrease in 2009 compared with 2004 and 2008, the number of bicyclist crashes in 2009 was higher than in 2005, 2006 and 2007.

Figure 49 **Bicyclist Traffic Crashes, 2004-2009**

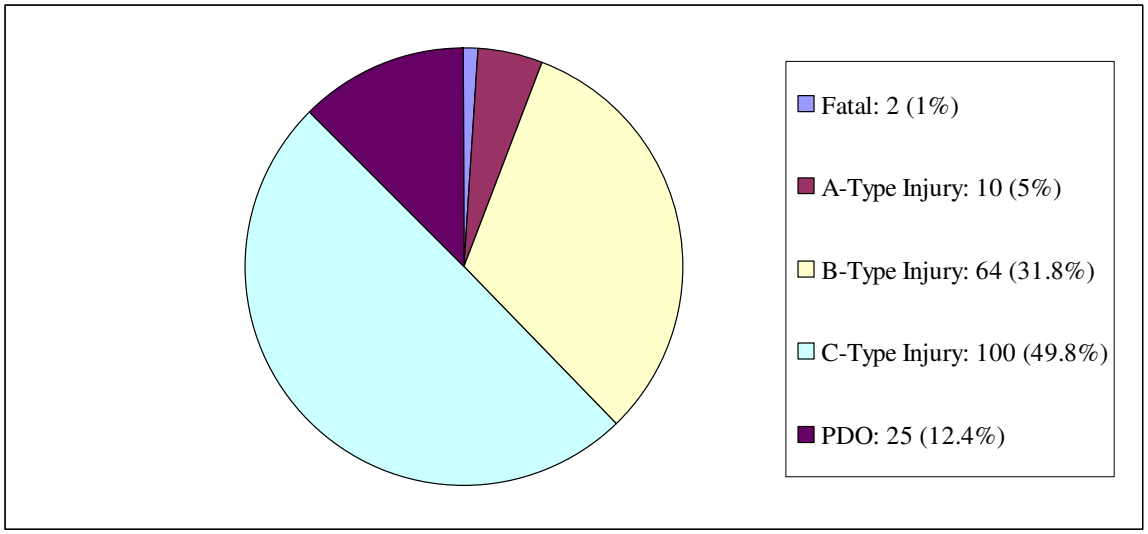


Source: www.michigantrafficcrashfacts.org

Bicyclist Traffic Crashes by Severity

Figure 50 indicates that bicyclists are easily to be injured when involved in traffic crashes, since PDO only accounted for 12.4 percent of all bicyclist traffic crashes. Table 14 shows the distribution of bicyclist severity in 2009.

Figure 50 **Bicyclist Traffic Crashes by Severity in 2009**



Source: www.michigantrafficcrashfacts.org

Table 14 **Bicyclist Traffic Crash by Severity in 2009**

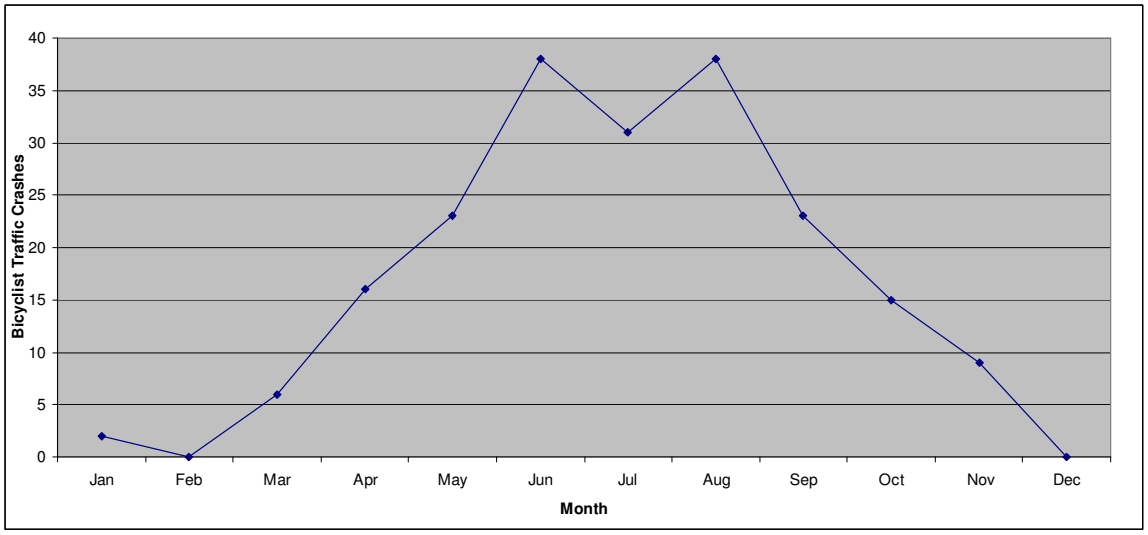
Crash Severity	**Bicyclist Traffic Crashes**	**All Traffic Crashes**	**Bicyclist Crashes Percentage**
Fatal	2	57	3.5 %
A-Type Injury	10	298	3.4%
B-Type Injury	64	799	8%
C-Type Injury	100	2,606	3.8%
PDO	25	15,826	0.16%
Total	**201**	**19,586**	**1%**

Source: www.michigantrafficcrashfacts.org

Bicyclist Traffic Crashes by Month, Day and Hour

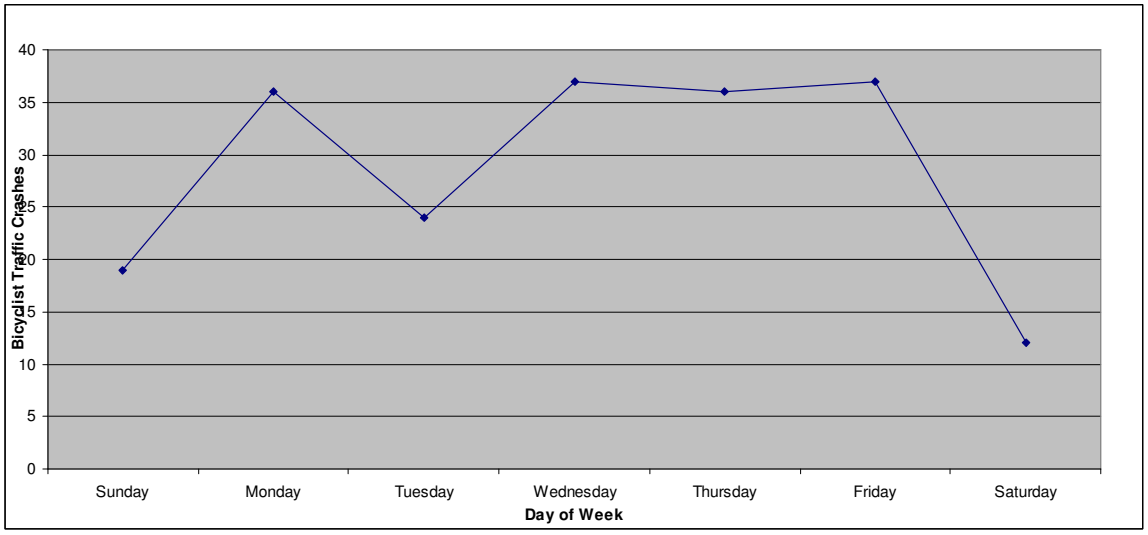
As shown in Figure 51, bicyclist traffic crashes were more likely to occur during summer time and least likely to occur during winter season due to the harsh weather condition. Figure 52 shows weekdays had more bicyclist traffic crashes than weekends.

Figure 51 **Bicyclist** Traffic Crashes by Month in 2009



Source: www.michigantrafficcrashfacts.org

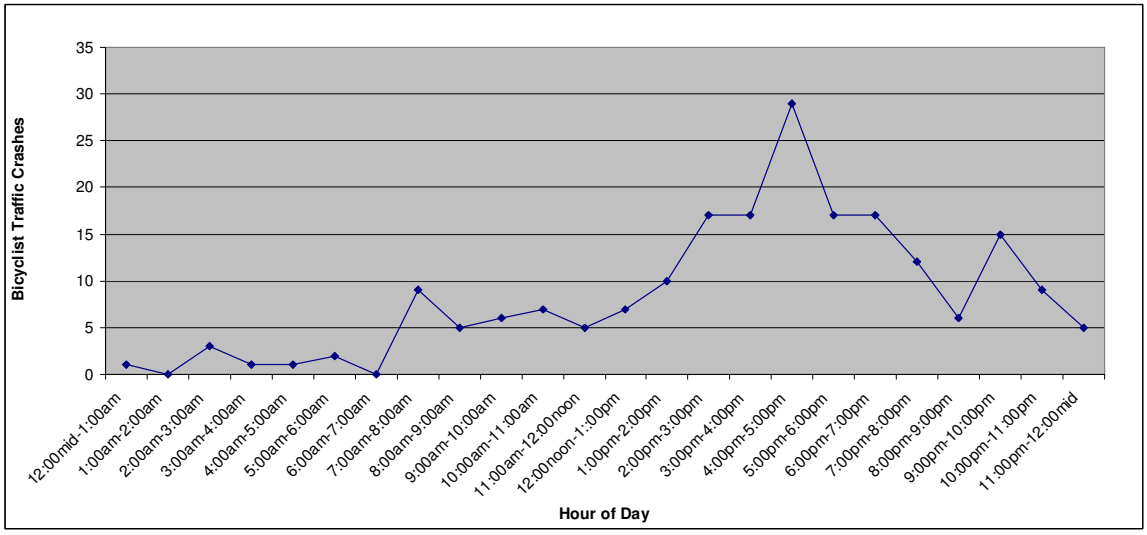
Figure 52 **Bicyclist** Traffic Crashes by Day of Week in 2009



Source: www.michigantrafficcrashfacts.org

It can be seen from Figure 53 that bicyclist traffic crashes were more likely to take place during late afternoon and early evening.

Figure 53 **Bicyclist** Traffic Crashes by Hour of Day in 2009

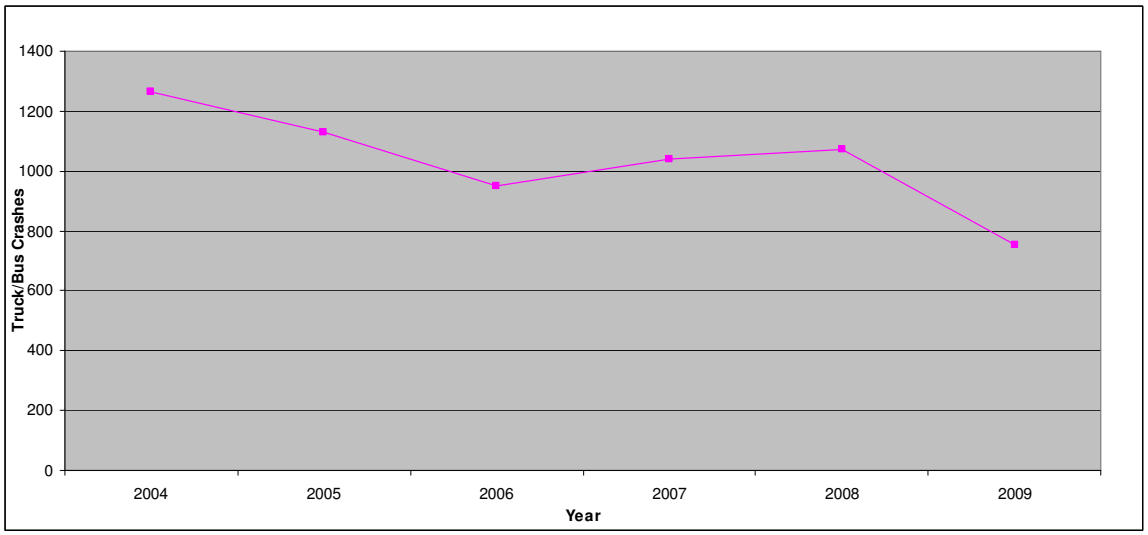


Source: www.michigantrafficcrashfacts.org

Truck/Bus Traffic Crashes

Figure 54 shows the decrease trend of truck/bus crashes between 2004 and 2009 in GVMC area, despite of slight increase in 2007 and 2008.

Figure 54 **Truck/Bus Traffic Crashes, 2004-2009**

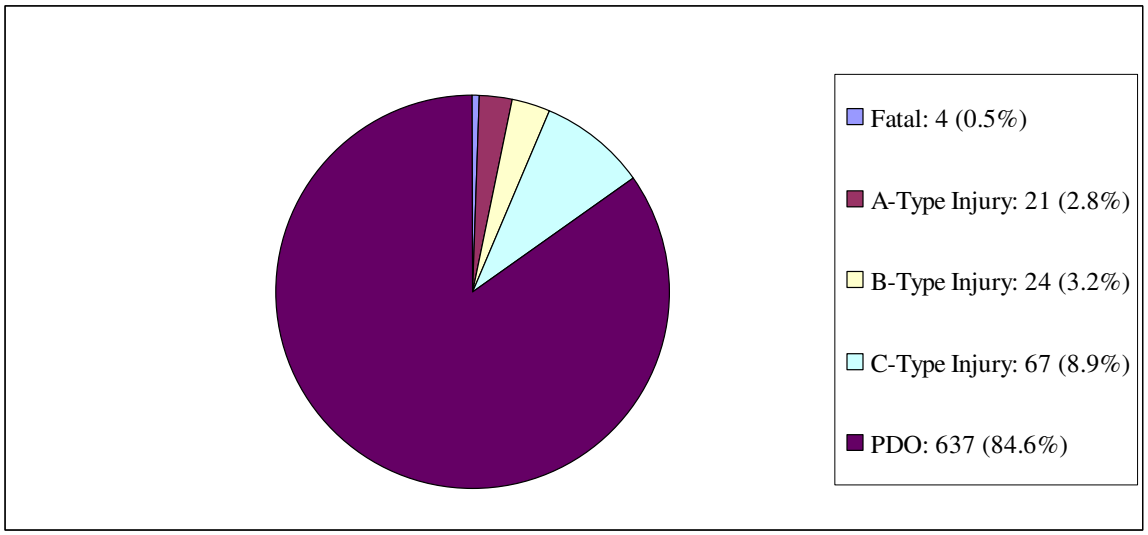


Source: www.michigantrafficcrashfacts.org

Truck/Bus Traffic Crashes by Severity

Figure 55 shows truck/bus traffic crashes by severity in 2009. Most of the crashes were PDO crash (84.6%). As shown in Table 15, fatalities and A-type injuries in truck/bus crashes accounted for 7 percent of all traffic crashes, respectively.

Figure 55 **Truck/Bus Traffic Crashes by Severity in 2009**



Source: www.michigantrafficcrashfacts.org

Table 15 **Truck/Bus Traffic Crash by Severity in 2009**

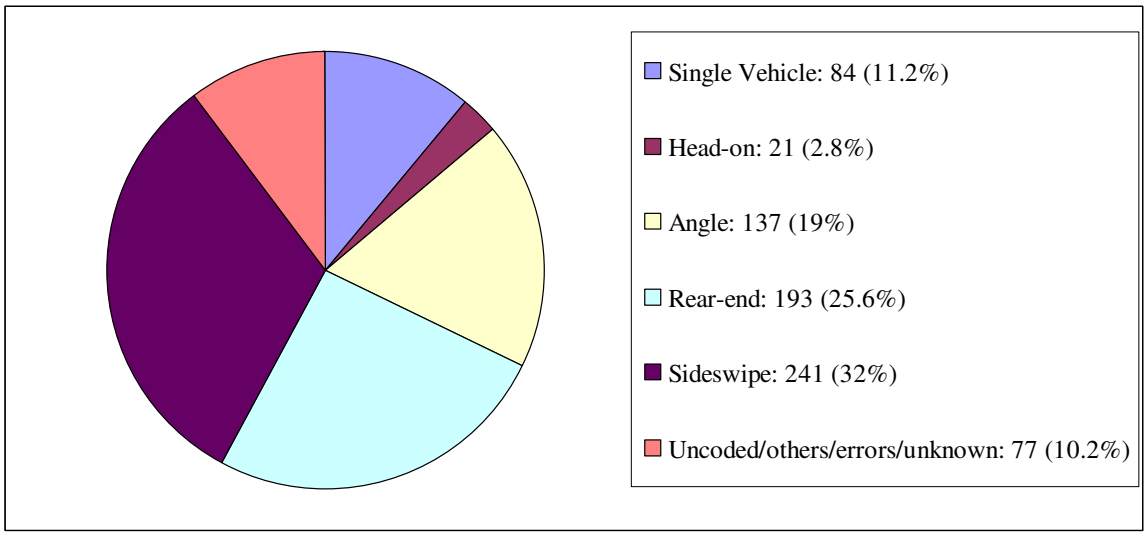
Crash Severity	**Truck/Bus Traffic Crashes**	**All Traffic Crashes**	**Truck/Bus Crashes Percentage**
Fatal	4	57	7%
A-Type Injury	21	298	7%
B-Type Injury	24	799	3%
C-Type Injury	67	2,606	2.6%
PDO	637	15,826	4.2%
Total	**753**	**19,586**	**3.8%**

Source: www.michigantrafficcrashfacts.org

Truck/Bus Traffic Crashes by Crash Type

Figure 56 shows the crash type distribution of truck/bus crashes. It can be seen that sideswipe accounted for more truck/bus crashes (32%) than any other crash type in 2009, and head-on were the fewest crash type (2.8%).

Figure 56 **Truck/Bus** Traffic Crashes by Crash Type in 2009

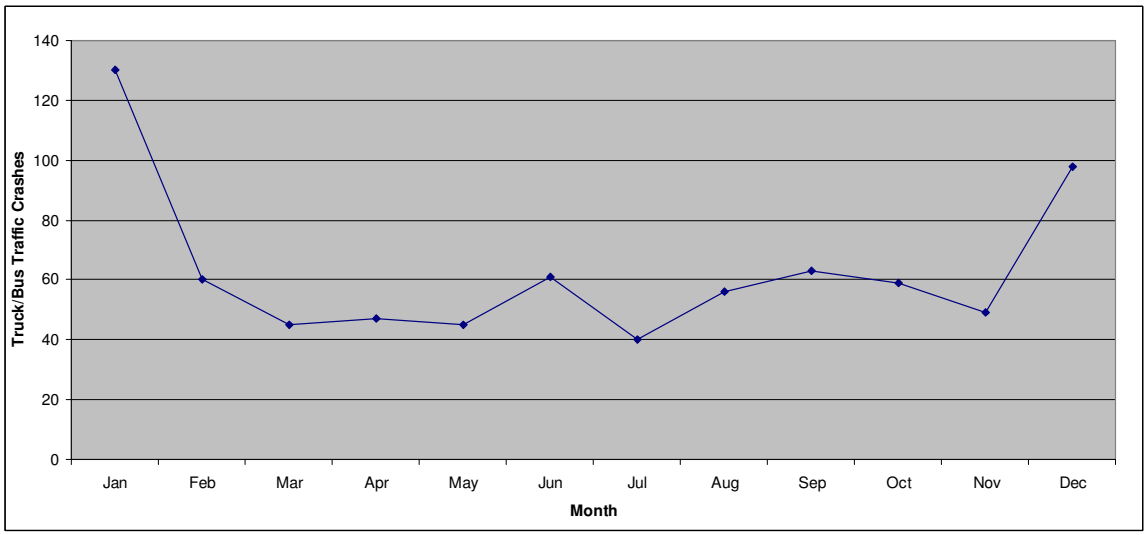


Source: www.michigantrafficcrashfacts.org

Truck/Bus Traffic Crashes by Month, Day and Hour

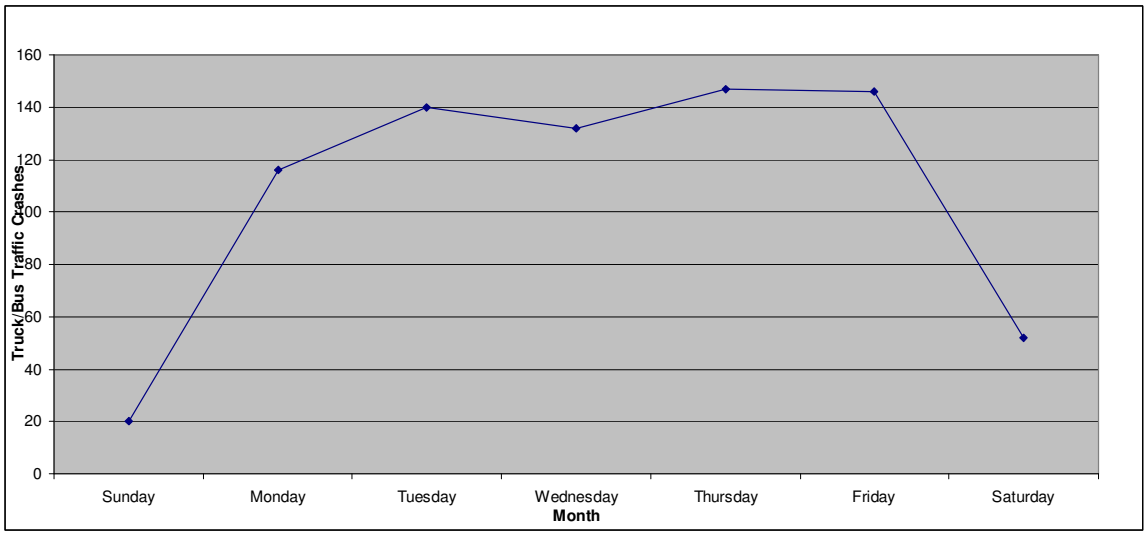
Figure 57 shows that truck/bus crashes were more likely to take place in January and December, and less likely to occur in July. As shown in Figure 58, weekdays had much more truck/bus crashes than weekend.

Figure 57 **Truck/Bus** Traffic Crashes by Month in 2009



Source: www.michigantrafficcrashfacts.org

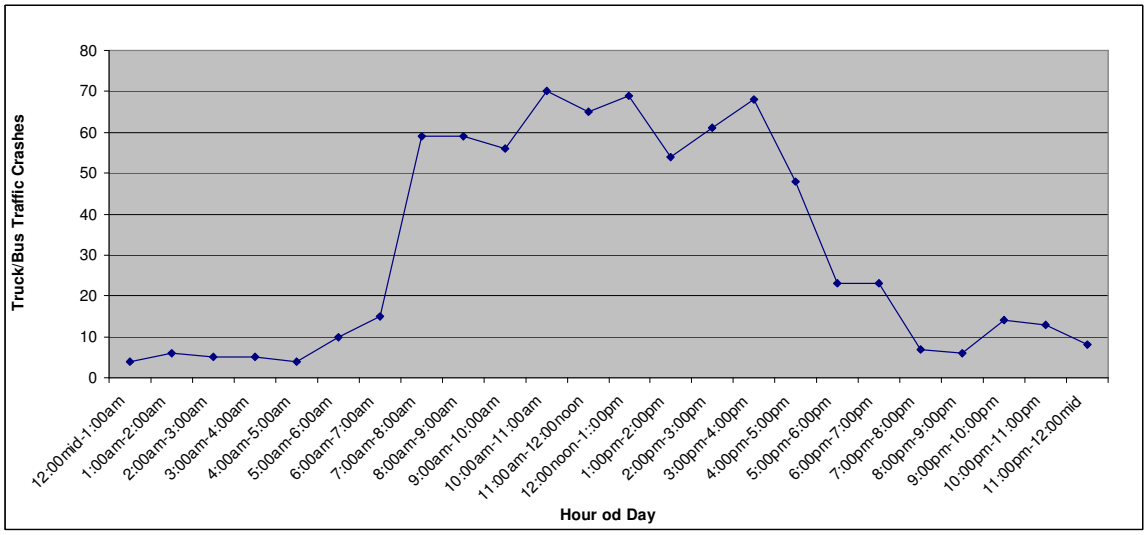
Figure 58 **Truck/Bus** Traffic Crashes by Day of Week in 2009



Source: www.michigantrafficcrashfacts.org

Figure 59 indicates that truck/bus crashes were more likely to occur during daytime than other hour intervals.

Figure 59 **Truck/Bus** Traffic Crashes by Hour of Day in 2009



Source: www.michigantrafficcrashfacts.org