

# **Florida Department of Highway Safety & Motor Vehicles**

**October 1999**

## **AGGRESSIVE Driver study**

### **INTRODUCTION**

This special report, one of a series based on data from Florida traffic crash reports, presents a quantitative analysis of aggressive driving. Aggressive driving is a phenomenon, which has only recently raised public concern. The media coverage on safety of driving indicates that it is more hazardous today than it was three years ago, reflecting increasing concerns about aggressive driving behavior. Some even consider aggressive driving as one of the major causes of crashes. The fact that statistical evidence is not systematically collected at present, the incidence of traffic injuries and fatalities, resulting from aggressive driving, is difficult to ascertain. The purpose of this report is to look at unsafe driving behavior, especially behaviors associated with “aggressive driving”, its consequences in terms of crashes, injuries, and fatalities. In addition, suggest improvements including public information and education, and enforcement to improve driving behavior.

### **DATA SOURCE**

Data for this report are drawn from the long-form traffic crash reports filed by police officers investigating traffic crashes, which occurred in Florida during the period 1988-1997. These data include traffic violations involving running red lights, improper passing, overtaking on the right, improper lane change, failing to yield, improper turn/wrong lane, running a stop sign, careless driving, following too closely, and excessive speed (Table 1) reported on the long form at the investigating officers’ discretion. This report considers the violations listed in Table 1 as indicators of aggressive driving. In order to examine the consequences of aggressive driving, those violations involving crashes (Table 2), injuries (Table 3), and fatalities (Table 4) were included.

### **AGGRESSIVE DRIVER**

While there is no general consensus as to the meaning of the term “aggressive driving”, it is plausible to include actions such as weaving in and out of traffic to get ahead, tailgating, speeding... etc., as indicators of aggressive driving. Given this crude definition, aggressive drivers tend to exceed safe speed limits, change lanes frequently, cut off other drivers, and force their way ahead.

Media coverage typically provides qualitative and anecdotal accounts rather than quantitative results regarding aggressive drivers. From the media it appears that the concept of “aggressive driving” and “road rage” are used interchangeably. To be more specific, an “aggressive driver” is generally defined as a driver who forces his way ahead in traffic by engaging in reckless and dangerous maneuvers. Furthermore, anger, impatience, competitiveness, and vindictiveness in frequently driving situations characterize aggressive drivers. This definition excludes alcohol and drug related crashes. Road rage, on the other hand, refers to an incident in which a driver physically attacks another motorist because of a traffic dispute. The underlying assumption is that road rage results from aggressive driving.

Given the anecdotal nature of media accounts of aggressive driving, they can not be used to establish a quantitative research tradition with policy implications. However, the objective in this report is to begin a quantitative analysis of aggressive driving.

If we accept the definition of aggressive driving presented above, then actions such as running red lights, improper passing, overtaking on the right, improper lane change, failing to yield, improper turn, running stop signs, following too closely, careless driving, and speeding can be used as indicators of aggressive driving. These are also considered traffic violations, which incur financial and legal penalties. The next step is to examine the consequences of these violations (aggressive driving) in terms of the number of crashes, injuries, and fatalities that they cause. A longitudinal study of these variables should indicate whether aggressive driving and the resulting road rage is on the rise and cause crashes, injuries, and fatalities as depicted in the media. It should be noted that variables selected in this study are more representative of aggressive driving than road rage because violation data do not lend themselves to the study of road rage. Road rage can only be studied through systematic data collection and analysis. We can only assume that an increase in aggressive driving will result in an increase in road rage.

This study has two major goals. First, to explore the topic of aggressive driving in more depth and to raise potential questions for more in-depth quantitative research. Second, to assist law enforcement agencies to formulate new plans to combat aggressive driving and ultimately road rage.

### INDICATORS OF AGGRESSIVE DRIVING

Table 1 shows the total traffic violations reported in Florida, during the past ten years, which are considered aggressive driving based on the definition established on page 1 of this report. Table 2 provides the number of crashes resulting from aggressive driving reported in Table 1. Table 3 presents the number of injuries attributed to aggressive driving and Table 4 lists the number of traffic fatalities attributed to aggressive driving. In short, figures in Tables 2 through 4 are derived from Table 1.

**Total Traffic Violations in Florida 1988 through 1997**

**Table 1**

Year	Ran Red Light	Improper Passing	Overtaking On Right	Improper Lane Change	Failed to Yield	Improper Turn/Wrong Lane	Ran Stop Sign	Careless Driving	Follow Too Closely	All Speeding
1988	6,584	534	163	4,689	8,911	1,558	18,050	53,718	2,284	17,250
1989	7,024	576	136	4,737	8,571	1,469	17,493	54,092	2,488	16,889
1990	6,096	537	109	3,844	7,736	1,283	14,763	45,611	2,203	13,893
1991	5,545	378	106	3,369	6,919	1,177	12,746	40,639	2,064	11,995
1992	5,138	322	113	3,409	7,367	1,164	12,110	40,414	2,218	12,013
1993	4,974	310	102	3,382	7,498	1,158	11,162	39,242	2,164	12,067
1994	5,154	281	108	3,475	7,174	1,159	11,795	41,283	2,231	12,634
1995	5,652	330	123	4,096	7,842	1,438	13,839	46,965	2,862	13,562
1996	5,709	359	148	4,414	8,440	1,470	14,668	50,477	2,988	13,753
1997	5,871	348	134	4,625	8,233	1,558	14,203	53,430	3,262	13,920

**Number of Crashes Resulting from Aggressive Driving in Florida 1988 through 1997**

**Table 2**

Year	Ran Red Light	Improper Passing	Overtaking On Right	Improper Lane Change	Failed to Yield	Improper Turn/Wrong Lane	Ran Stop Sign	Careless Driving	Follow Too Closely	All Speeding
1988	6,551	528	163	4,666	8,895	1,554	18,006	52,897	2,197	16,793
1989	6,992	574	136	4,714	8,556	1,465	17,452	53,257	2,353	16,450
1990	6,054	533	109	3,826	7,721	1,280	14,731	44,837	2,101	13,533
1991	5,526	378	106	3,352	6,908	1,174	12,728	40,054	1,969	11,691
1992	5,116	321	113	3,394	7,359	1,163	12,083	39,805	2,127	11,743
1993	4,947	307	102	3,374	7,485	1,155	11,132	38,595	2,065	11,769
1994	5,118	281	107	3,461	7,163	1,158	11,773	40,635	2,130	12,410
1995	5,628	328	122	4,083	7,825	1,434	13,814	46,317	2,740	13,254
1996	5,675	357	147	4,405	8,424	1,463	14,633	49,778	2,883	13,453
1997	5,844	348	131	4,609	8,224	1,557	14,175	52,640	3,155	10,877

**Number of Injuries Attributed to Aggressive Driving in Florida 1988 through 1997**

**Table 3**

Year	Ran Red Light	Improper Passing	Overtaking On Right	Improper Lane Change	Failed to Yield	Improper Turn/Wrong Lane	Ran Stop Sign	Careless Driving	Follow Too Closely	All Speeding
1988	8,573	474	142	4,900	11,241	1,445	23,616	57,637	2,515	19,747
1989	9,287	543	128	4,802	10,787	1,403	22,583	58,736	2,602	19,951
1990	8,453	581	122	4,312	11,398	1,295	20,717	54,814	2,572	17,924
1991	8,100	433	106	3,920	10,043	1,248	18,289	49,609	2,366	15,444
1992	7,806	399	111	4,109	11,118	1,322	17,826	51,900	2,695	16,362
1993	7,599	339	110	4,238	11,506	1,338	16,917	51,911	2,746	16,129
1994	8,031	304	116	4,368	11,223	1,452	17,930	54,532	2,849	17,647
1995	8,371	355	144	4,802	11,155	1,482	19,546	58,118	3,426	17,664
1996	8,334	347	149	5,132	11,942	1,595	19,855	61,788	3,478	17,391
1997	8,208	336	145	5,054	11,303	1,646	19,231	63,534	3,711	17,272

**Number of Traffic Fatalities Attributed to Aggressive Driving in Florida 1988 through 1997**

**Table 4**

Year	Ran Red Light	Improper Passing	Overtaking On Right	Improper Lane Change	Failed to Yield	Improper Turn/Wrong Lane	Ran Stop Sign	Careless Driving	Follow Too Closely	All Speeding
1988	34	2	0	19	27	4	73	130	3	65
1989	35	1	1	12	33	2	71	136	1	62
1990	25	2	0	20	21	3	71	128	5	56
1991	18	1	0	17	32	1	54	100	3	58
1992	19	1	0	17	26	2	58	76	1	40
1993	23	1	1	14	28	8	62	120	1	46
1994	24	2	1	20	27	2	66	119	1	54
1995	23	1	1	8	14	4	68	111	2	49
1996	13	0	0	11	27	0	61	91	3	39
1997	19	1	2	12	20	3	54	100	0	54

**PERCENT OF CRASHES CAUSED BY AGGRESSIVE DRIVING**

As the data contained in Table 5 shows, between 78 percent (excessive speed, 1997) and 100 percent (improper passing, 1991) of the cases of aggressive driving, reported in table 1, resulted in traffic crashes. Between 94 percent (1989) and 96 percent (1997) of the drivers cited for “following too closely” caused crashes as a result of their aggressive driving. “Excessive speed” and “careless driving” caused even more crashes somewhere between 78 percent and 98 percent. “Running stop signs”, “improper turn”, and “improper lane change” caused even more crashes. As percentages in Table 5 indicate, “running red light”, “improper passing”, and “overtaking on right” topped the other categories of aggressive driving in contributing to traffic crashes.

**Table 5** Percent of Crashes Attributed to Aggressive Driving 1988 through 1997

Year	Percent of Crashes caused by: *									
	Running Red Light	Improper Passing	Overtaking on Right	Improper Lane Change	Failed to Yield	Improper Turn/Wrong Lane	Running Stop Sign	Careless Driving	Follow Too Closely	Excessive Speeding
1988	99.50	98.88	100.00	99.51	99.82	99.74	99.76	98.47	96.19	97.35
1989	99.54	99.65	100.00	99.51	99.82	99.73	99.77	98.46	94.57	97.40
1990	99.31	99.26	100.00	99.53	99.81	99.77	99.78	98.30	95.37	97.41
1991	99.66	100.00	100.00	99.50	99.84	99.75	99.86	98.56	95.40	97.47
1992	99.57	99.69	100.00	99.56	99.89	99.91	99.78	98.49	95.90	97.75
1993	99.46	99.03	100.00	99.76	99.83	99.74	99.73	98.35	95.43	97.53
1994	99.30	100.00	99.07	99.60	99.85	99.91	99.81	98.43	95.47	98.23
1995	99.58	99.39	99.19	99.68	99.78	99.72	99.82	98.62	95.74	97.73
1996	99.40	99.44	99.32	99.80	99.81	99.52	99.97	98.62	96.49	97.82
1997	99.54	100.00	97.76	99.65	99.89	99.94	99.80	98.52	96.72	78.14

\* These percentages are computed based on Tables 1 and 2 above.

**PERCENT OF INJURIES CAUSED BY AGGRESSIVE DRIVING**

As shown in Table 6, percentages of injuries caused by aggressive driving are, in almost all categories of aggressive driving, above 100 percent. This is due to the fact that each motor vehicle crash accounts for one or more injuries. Of the ten categories of aggressive driving, “running red light”, “failing to yield”, and “running stop sign” are the most serious factors contributing to injuries. The percentages of injuries for these three categories range from 125 to 156. “Careless driving”, “following too closely”, and “excessive speed” are a close second in causing injuries. The percentages range between 107-139. “Improper passing”, “overtaking on right”, “improper lane change”, and “improper turn” contribute between 87 percent and 125 percent of injuries reported due to aggressive driving.

**Percent of Injuries Attributed to Aggressive Driving 1988 through 1997**

**Table 6**

Year	Percent of Injuries Caused by: *									
	Running Red Light	Improper Passing	Overtaking on Right	Improper Lane Change	Failed to Yield	Improper Turn/Wrong Lane	Running Stop Sign	Careless Driving	Follow Too Closely	Excessive Speeding
1988	130.21	88.76	87.12	104.5	126.15	92.75	130.84	107.3	110.11	114.48
1989	132.22	94.27	94.12	101.37	125.85	95.51	129.1	108.59	104.74	118.13
1990	138.66	108.19	111.93	112.17	147.34	100.94	140.33	120.18	116.75	129.01
1991	146.08	114.55	100.00	116.36	145.15	106.03	143.49	122.07	114.63	128.75
1992	151.93	123.91	98.23	120.53	150.92	113.57	147.2	128.42	121.51	136.2
1993	152.77	109.35	107.84	125.31	153.45	115.54	151.56	132.28	126.89	133.66
1994	155.82	108.19	107.41	125.70	156.44	125.28	152.01	132.09	127.7	139.68
1995	148.11	107.58	117.07	117.24	142.25	103.06	141.24	123.75	119.71	130.25
1996	145.98	96.66	100.68	116.27	141.49	108.5	135.36	122.41	116.4	126.45
1997	139.81	96.55	108.21	116.86	137.29	105.65	135.40	118.91	113.76	124.08

\* These percentages are computed based on Tables 1 and 3 above.

**PERCENT OF FATALITIES CAUSED BY AGGRESSIVE DRIVING**

Table 7 shows the percentage of fatalities resulting from aggressive driving presented in Table 1. “Overtaking on right” appears to be the most important contributing factor in traffic fatalities as it relates to aggressive driving. This is particularly true for the period 1993 through 1997, excluding 1996. “Improper lane change”, “running stop sign”, and “running red light” rank second through four in terms of their contribution to traffic fatalities. While “excessive speed”, and “failing to yield” rank behind the categories identified above, they are still considered as unsafe driving behavior. “Improper turn”, “improper passing”, “careless driving”, and “following too closely” were less frequent causes of fatalities.

**Percent of Fatalities Attributed to Aggressive Driving 1988 through 1997**

**Table 7**

Year	Percent of Fatalities Caused by: *									
	Running Red Light	Improper Passing	Overtaking on Right	Improper Lane Change	Failed to Yield	Improper Turn/Wrong Lane	Running Stop Sign	Careless Driving	Follow Too Closely	Excessive Speeding
1988	0.52	0.37	0.00	0.41	0.3	0.26	0.40	0.24	0.13	0.38
1989	0.50	0.17	0.74	0.25	0.39	0.14	0.41	0.25	0.04	0.37
1990	0.41	0.37	0.00	0.52	0.27	0.23	0.48	0.28	0.23	0.40
1991	0.32	0.26	0.00	0.50	0.46	0.08	0.42	0.25	0.15	0.48
1992	0.37	0.31	0.00	0.50	0.35	0.17	0.48	0.19	0.05	0.33
1993	0.46	0.32	0.98	0.41	0.37	0.69	0.56	0.31	0.05	0.38
1994	0.47	0.71	0.93	0.58	0.38	0.17	0.56	0.29	0.04	0.40
1995	0.41	0.30	0.81	0.20	0.18	0.28	0.49	0.24	0.07	0.36
1996	0.23	0.00	0.00	0.25	0.32	0.00	0.42	0.18	0.10	0.28
1997	0.32	0.29	1.49	0.28	0.24	0.19	0.38	0.19	0.00	0.39

\* These percentages are computed based on Tables 1 and 4 above.

In order to determine whether or not the incidence of aggressive driving is on the rise, a trend analysis was performed. Of the ten indicators of aggressive driving only “follow too closely”, and “improper turn/wrong way” have increased during the past ten years. Table 8 presents the actual data along with trend data. The rest of the indicators show a downward trend despite a gradual increase in the motoring environment in Florida.

While the past ten-year data indicate a decline in aggressive driving for eight of the ten indicators, crashes and injuries resulting from aggressive driving are on the rise. For example, from 1988 to 1997 “improper turn”, and “follow too closely” caused increases in crashes by 3 percent and 45 percent respectively (Table 9). More dramatic increases occurred in six out of ten categories of aggressive driving as they relate to injuries. These categories are “overtaking on right”, “improper lane change”, “failed to yield”, “improper turn/wrong way”, “careless driving”, and “follow too closely” (Table 10).

**TREND ANALYSIS OF AGGRESSIVE DRIVING**

**Table 8 1988 THROUGH 1997**

Year	Follow Too Closely		Improper Turn	
	Actual Data	Trend Data	Actual Data	Trend Data
1988	2,284	2,039	1,558	1,324
1989	2,488	2,136	1,469	1,328
1990	2,203	2,233	1,283	1,332
1991	2,064	2,331	1,177	1,337
1992	2,218	2,428	1,164	1,341
1993	2,164	2,525	1,158	1,346
1994	2,231	2,622	1,159	1,350
1995	2,862	2,719	1,438	1,354
1996	2,988	2,817	1,470	1,359
1997	3,262	2,914	1,558	1,363

**TREND ANALYSIS OF CRASHES  
RESULTING FROM AGGRESSIVE DRIVING**

**Table 9 1988 THROUGH 1997**

Year	Follow Too Closely		Improper Turn	
	Actual Data	Trend Data	Actual Data	Trend Data
1988	2,197	1,937	1,554	1,320
1989	2,353	2,034	1,465	1,325
1990	2,101	2,130	1,280	1,329
1991	1,969	2,227	1,174	1,334
1992	2,127	2,324	1,163	1,338
1993	2,065	2,420	1,155	1,343
1994	2,130	2,517	1,158	1,347
1995	2,740	2,614	1,434	1,351
1996	2,883	2,710	1,463	1,356
1997	3,155	2,807	1,557	1,360

**TREND ANALYSIS OF INJURIES  
RESULTING FROM AGGRESSIVE DRIVING**

**Table 10 1988 THROUGH 1997**

Year	Overtaking On Right	Improper Lane Change	Failed to Yield	Improper Turn/Wrong Lane	Careless Driving	Follow Too Closely
1988	119	4,356	10,862	1,294	53,374	2,278
1989	121	4,402	10,931	1,322	54,015	2,415
1990	123	4,448	11,000	1,351	54,656	2,553
1991	124	4,494	11,137	1,380	55,297	2,690
1992	126	4,541	11,206	1,408	55,937	2,827
1993	128	4,587	11,275	1,437	56,578	2,965
1994	130	4,633	11,344	1,465	57,219	3,102
1995	132	4,679	11,412	1,494	57,860	3,239
1996	134	4,725	11,481	1,523	58,501	3,377
1997	136	4,771	11,550	1,551	59,142	3,514

### **SUGGESTED IMPROVEMENTS**

In order to reduce if not eliminate aggressive driving, the following suggestions are recommended:

- Installing signs asking drivers to be courteous.
- Making public transportation a more attractive alternative to driving.
- Encourage carpooling.
- Encourage motorists to report aggressive drivers to law enforcement.
- To put cameras on the overpasses (an automated system which takes pictures of cars that are speeding, tailgating, and making abrupt lane changes).
- Keep better track of repeat offenders.
- Place tougher sanctions for repeat offenders.
- Double points for aggressive drivers.
- Place dummy law enforcement cars on the roads.
- Take congestion reduction measures.
- Conduct periodic coordinated law enforcement campaigns, such as “Smooth Operator” program.
- Make law enforcement more visible on the road.