Car crashes rank among the leading causes of death in the United States.

Prevalence of Self-Reported Aggressive Driving Behavior: United States, 2014

July 2016

AAA Foundation for Traffic Safety

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Title

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About the Sponsor

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Founded in 1947, the AAA Foundation in Washington, D.C. is a not-for-profit, publicly supported charitable research and education organization dedicated to saving lives by preventing traffic crashes and reducing injuries when crashes occur. Funding for this report was provided by voluntary contributions from AAA/CAA and their affiliated motor clubs, from individual members, from AAA-affiliated insurance companies, as well as from other organizations or sources.

Executive Summary

According to previous research, aggressive driving behavior in the United States contributes to a substantial proportion of fatal crashes, is perceived to be a serious threat to safety, and appears to be increasingly prevalent.

The purpose of this study was to provide estimates of the prevalence of aggressive driving behaviors. The data analyzed were collected via a nationally-representative online survey of 2,705 licensed drivers aged 16 and older conducted in the United States in 2014.

More than 78% of U.S. drivers reported having engaged in at least one aggressive driving behavior at least once in the past year. The most common such behaviors, reported by roughly half of all drivers, were purposely tailgating another vehicle, yelling at another driver, and honking their horn "to show annoyance or anger." Approximately one-third of all respondents indicated that they had made an angry gesture at another driver. Approximately one in four drivers reported that they had purposely tried to block another driver from changing lanes, and 11.9% reported that they had cut off another vehicle on purpose. A small proportion of drivers even admitted to engaging in behaviors beyond the scope of general aggressive driving and which may be considered road rage: 3.7% of drivers reported that they had exited their vehicle to confront another driver, and 2.8% reported that they had bumped or rammed another vehicle on purpose.

Methods

The data reported here were collected as part of the AAA Foundation's 2014 *Traffic Safety Culture Index*, a survey of U.S. residents 16 years of age and older, conducted in English and in Spanish from August 29 through October 6, 2014 by GfK for the AAA Foundation. The questionnaire was administered online to a sample of members of KnowledgePanel®, an online research panel which consists of members of households recruited by the research firm GfK using standard probability-based random digit dial and address-based sampling methods. The data were weighted to account for differences in respondents' probability of being invited to join the panel, differences in probability of being asked to complete this specific questionnaire, and non-response at both stages (GfK, 2013).

The AAA Foundation's annual *Traffic Safety Culture Index* includes a core series of questions pertaining to the respondent's attitudes about traffic safety, perceptions of social norms, and self-reported driving behavior (AAA Foundation for Traffic Safety, 2015). The 2014 survey included a special series of questions regarding driving behaviors that would generally be regarded as aggressive. These asked the respondent how frequently, in the past year, the respondent had:

- *Driven very close to another vehicle to get that driver to speed up or move over* (hereafter *tailgated another vehicle*)
- *Made an angry gesture (for example: middle finger) at another driver*
- *Yelled at another driver*
- *Tried to block another driver from changing lanes*
- *Cut off another vehicle on purpose*
- *Honked their horn to show annoyance or anger (not to avoid an accident)*
- *Bumped or rammed another vehicle on purpose*
- *Gotten out of their vehicle to confront another driver*.

Response options were *regularly, fairly often*, *rarely*, *just once,* and *never*.

In addition, the core survey includes questions regarding respondents' frequency of speeding and running red lights in the past 30 days, and about the respondents' general driving style such as how carefully and fast they drive compared to other drivers on the roads where they drive, which may also be associated with aggressive driving.

This study examines the prevalence of each of the aggressive driving behaviors listed above overall and in relation to driver demographic characteristics and other characteristics. The study is based on data from 2,705 respondents who reported that they were licensed drivers and had driven at least once in the 30 days before they completed the questionnaire. All analyses were performed on weighted data, and all reported statistics (except sample size) are based on weighted data.

The margin of error varies by question depending on the number of respondents that answered the question and the distribution of responses. The margin of error is larger in this survey than it would have been for a simple random sample of the same size due to the design of the panel from which the sample was drawn and stratification by Census

Division (U.S. Census Bureau, n.d.). The approximate margin of error for statistics derived from all respondents is plus or minus 1.5, 2.0, 2.3, 2.4, and 2.5 percentage points for percentages near 90 or 10, 80 or 20, 70 or 30, 60 or 40, and 50, respectively; the margin of error is larger for items asked of only a subset of respondents. The margin of error reflects a range of percentages that would be expected to include the result that would be obtained if the survey were administered to the entire population from which the sample was drawn, rather than to a sample, 19 times out of 20. Note that the margin of error reflects only the statistical variability associated with using the survey sample to draw inferences about the entire population. It does not reflect errors related to systematic non-coverage of certain segments of the population (e.g., people who cannot read in English nor in Spanish), non-response (i.e., eligible respondents who either cannot be contacted or refuse to participate), differences in respondents' understanding of survey questions or response options, or deliberate misreporting of information (e.g., underreporting of behaviors that may be perceived as undesirable).

Results

More than three in four drivers (78.1%) reported having engaged in at least one of the aggressive driving behaviors examined at least once in the past year: 50.8% had tailgated another vehicle; 46.6% had yelled at another driver; 44.5% had honked their horn to show annoyance or anger; 32.5% had made an angry gesture at another driver; 24.2% had tried to block another driver from changing lanes; 11.9% had intentionally cut off another vehicle; 3.7% had exited their vehicle to confront another driver; and 2.8% had bumped or rammed another vehicle on purpose (Table 1). While few drivers reported engaging in most of the included behaviors regularly or fairly often, nearly 12% reported yelling at other drivers fairly often or regularly, and nearly 10% reported tailgating another vehicle fairly often or regularly. Drivers were more likely to report engaging in each of the behaviors rarely than regularly, fairly often, or just once.

Table 1. Self-reported frequency of aggressive driving behaviors in the past year, United States, 2014.

	Regularly	Fairly often	Rarely	Just once	At least once
	Row %, weighted				*%, weighted*
Tailgated another vehicle	1.8	7.4	37.1	4.5	50.8
Yelled at another driver	2.7	9.1	27.9	6.9	46.6
Honked to show annoyance or anger	1.3	5.7	28.0	9.4	44.5
Made an angry gesture	1.0	3.4	19.5	8.7	32.5
Tried to block from changing lanes	0.7	3.1	14.1	6.2	24.1
Cut off another vehicle on purpose	0.3	1.1	7.3	3.1	11.9
Exited vehicle to confront another driver	0.2	0.7	1.6	1.3	3.7
Bumped/rammed another vehicle on purpose	0.1	0.4	1.9	0.5	2.8

Base: 2,705 drivers age 16+ who reported driving in the past 30 days, weighted to reflect the US population. Drivers with missing values were excluded where relevant.

The mean number of aggressive driving behaviors that drivers reported having engaged in was 2.2 for all drivers. The mean number of behaviors reported increased as the proportion of drivers reporting each behavior decreased. That is, most drivers who engaged in the less common behaviors—which also tended to be the more extreme behaviors (e.g., bumping another vehicle on purpose, or exiting their vehicle to confront another driver)—engaged in many of the other behaviors as well, whereas the majority of drivers who engaged in more common behaviors such as tailgating or honking their horn did not also engage in the less common/more extreme behaviors. Among drivers who reported having tailgated another vehicle, the most commonly reported of the aggressive driving behaviors examined, the mean number of behaviors reported was 3.2. Among drivers who reported having exited their vehicle to confront another driver, or having bumped or rammed another vehicle, the mean numbers of aggressive driving behaviors reported were 6.9 and 7.5, respectively.

Many of the behaviors examined varied with respect to driver demographic and other characteristics. Each of the behaviors varied significantly with respect to driver age ($p<0.001$), with exception for exiting one's vehicle to confront another driver ($p=0.082$) and bumping or ramming another vehicle ($p=0.095$) (Table 2). Drivers ages 25-39 were the most likely to report tailgating, yelling, honking, gesturing, cutting off, and exiting to confront,

while drivers ages 19-24 were the most likely to report trying to block another vehicle from changing lanes and bumping or ramming. Male drivers were more likely than female drivers to report having engaged in each of these behaviors ($p<0.001$ for all except yelling, for which $p=0.020$). Drivers who rated themselves as less careful than other drivers were more likely than those who rated themselves as about the same or more careful than other drivers to report each of the behaviors ($p\leq0.049$ for all except having yelled at another driver, for which $p=0.081$). Drivers who rated their speed as faster than other drivers were more likely than those who rated their speed as about the same or slower than other drivers to report each of the behaviors, which all varied significantly with respect to self-rated speed compared to others ($p<0.001$), with the exception of exiting one's vehicle to confront another driver ($p=0.077$).

Drivers who reported having driven 15 miles per hour over the speed limit on a freeway, having driven 10 miles per hour over the limit on a residential street, and having driven through a light that had just turned red when they could have stopped safely were more likely than those who did not report each of these behaviors to have reported engaging in each of the aggressive behaviors ($p<0.001$ for all). Drivers who reported having received one or more citations for a moving violation in the past two years were significantly more likely to report tailgating and yelling at other drivers, compared with drivers who received no moving violations ($p<0.015$ for both); however, engagement in the remaining aggressive driving behaviors did not differ significantly in relation to moving violations ($p\geq0.075$). None of the behaviors varied significantly with respect to crash involvement ($p\geq0.2$). The only behavior which varied significantly with respect to the type of community was honking ($p=0.005$ for honking; $p\geq0.1$ for all other behaviors); drivers who live out in the country were less likely than those in towns or cities to report having done so. Engagement in yelling, honking, and gesturing at other drivers varied significantly with respect to region of the country ($p<0.025$ for all): drivers in the Northeast were the most likely to report having engaged in each of these behaviors, while the remaining behaviors did not vary significantly by region ($p\geq0.2$).

Table 2. Aggressive driving behaviors reported in the past year by driver demographic and other characteristics, United States, 2014.

		Tailgate	Yell	Honk	Gesture	Block from changing lanes	Cut off	Confront	Bump/ ram
	N				*%, weighted*				
All drivers	2,705	50.8	46.6	44.5	32.5	24.2	11.9	3.7	2.8
Driver age									
16-18	514	48.5	40.5	34.4	26.2	12.0	9.2	2.1	3.4
19-24	111	45.5	51.8	43.5	39.8	28.0	14.8	4.4	4.4
25-39	452	66.7	51.9	53.6	42.8	27.5	16.8	6.2	4.3
40-59	1,017	51.2	50.2	46.7	33.4	26.3	12.2	3.4	2.5
60-74	478	38.9	40.1	37.4	23.2	19.3	7.3	2.0	1.0
75+	133	35.6	24.1	26.6	14.6	17.9	5.0	2.4	2.8
Driver sex									
Male	1,335	55.5	49.5	49.0	40.0	28.6	15.5	5.7	4.3
Female	1,370	46.1	43.7	39.9	25.0	19.8	8.3	1.8	1.3
Carefulness compared to other drivers									
More careful	2,241	48.0	45.9	43.9	30.8	22.7	10.5	3.0	1.9
About the same	437	62.0	49.6	46.6	39.6	30.4	17.1	6.9	6.6
Less careful	24	94.2	69.1	70.4	77.2	48.4	59.1	7.1	7.1
Speed compared to other drivers									
Faster	469	80.8	57.4	62.2	49.2	39.6	24.4	5.8	4.5
About the same	1,548	49.8	47.3	43.7	31.4	22.5	10.3	3.7	3.0
Slower	677	29.5	36.7	32.7	22.0	16.4	6.2	2.2	0.8
Drove 15 mph over limit on freeway in past month									
Yes	1,171	63.6	56.6	57.0	44.6	34.8	19.8	6.4	4.9
No	1,526	39.8	38.1	33.6	22.1	15.0	5.0	1.5	1.0
Drove 10 mph over limit on residential street in past month									
Yes	1,151	63.6	53.7	55.2	41.0	34.4	18.5	6.3	5.4
No	1,541	40.8	41.1	36.1	25.9	16.3	6.8	1.7	0.8
Ran red light in past month									
Yes	928	62.5	57.2	55.7	40.8	35.1	20.7	6.9	5.4
No	1,770	44.1	40.6	38.0	27.7	18.0	7.0	2.0	1.3
Citations for moving violations in past 2 years									
none	2,434	49.2	45.3	43.7	31.7	23.8	11.2	3.7	2.8
1 or more	253	64.5	56.1	51.1	38.5	27.1	17.0	3.6	2.4
Crash involvement in past 2 years									
none	2,379	51.0	46.2	44.0	32.3	23.6	11.5	3.8	2.8
1 or more	310	49.4	49.2	46.6	33.1	27.7	13.0	2.8	2.2
Type of community									
Out in the country	368	49.6	42.5	35.5	27.0	20.8	9.4	2.9	2.4
Small/med. town	1,104	53.9	48.6	44.2	34.5	23.6	12.6	4.6	3.6
Small/large city	1,223	48.8	46.2	47.5	32.5	25.6	11.9	3.1	2.1
Region[1]									
Northeast	515	52.9	51.9	51.0	39.6	25.7	13.3	5.3	4.8
Midwest	666	53.8	51.0	46.0	33.9	24.3	12.3	3.3	2.4
South	915	49.2	43.8	40.2	30.2	22.2	10.1	3.5	2.6
West	609	48.7	42.8	44.9	29.5	26.2	13.3	3.3	1.9

Base: licensed drivers age 16+ who reported driving in the past 30 days, weighted to reflect the US population. Drivers with missing values for row variables were excluded where relevant.

[1]Northeast: CT, ME, MA, NH, RI, VT, NJ, NY, PA; Midwest: IL, IN, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD; South: DE, DC, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, AR, LA, OK, TX; West: AZ, CO, ID, MT, NV, NM, UT, WY, AK, CA, HI, OR, WA

Discussion

More than three in four drivers reported having engaged in at least one of the aggressive driving behaviors included in the special series in the past year. Several of the behaviors were reported by nearly half or more of drivers: having tailgated another vehicle to try to get the other driver to speed up or move over; having yelled at another driver; and having honked their horn to show annoyance or anger.

While only a small proportion of all drivers reported more extreme behaviors that might be considered road rage, such as getting out of their vehicle to confront another driver or bumping or ramming another vehicle on purpose, the results of this study suggest that a substantial number of drivers may engage in these behaviors. According to the Federal Highway Administration, there were approximately 214 million licensed drivers in the United States in 2014 (FHWA, 2015). After accounting for the 4.5% of licensed drivers in the current study who reported not driving in the past 30 days, the 2.8% of drivers in the current study who reported that they had bumped or rammed another vehicle on purpose at least once in the past year suggests that roughly 5.7 million drivers in the United States intentionally bumped or rammed another vehicle in the past year. Similarly, the 3.7% of drivers in the current study who reported having gotten out of their vehicle to confront another driver at least once in the past year suggests that roughly 7.6 million drivers have done this. In total, an estimated 3.9% of all drivers, or approximately 8.0 million drivers, reported having engaged in either or both of these behaviors at least once.

Male drivers were more likely than female drivers to report each of the aggressive driving behaviors examined, and the differences in engagement in each of the aggressive behaviors examined with respect to gender were greatest for the least common/most extreme behaviors. Drivers ages 25-39 were the most likely to report the majority of the behaviors, including tailgating, yelling, honking, gesturing, cutting off, or exiting their vehicle to confront, while those ages 19-24 were the most likely to report trying to block another vehicle from changing lanes and bumping or ramming another vehicle.

The prevalence of aggressive driving is notable given perceptions about aggressive driving that were captured in the same 2014 survey (AAA Foundation for Traffic Safety, 2015). Nearly nine out of ten drivers perceived aggressive drivers to be a serious threat to their personal safety. More than half of drivers perceived that "road rage" was a bigger problem at the time of the survey than three years earlier, while nearly two in three perceived that aggressive drivers were a bigger problem relative to three years prior.

Drivers may underreport engaging in aggressive driving behaviors due to social desirability bias. Thus, the true prevalence may be higher than the estimates reported here.

A previous survey conducted by the AAA Foundation in 2008 included questions about engagement in some of the same behaviors in the past month, among drivers who reported having driven in the past six months, and 22% reported having tailgated another vehicle, while 41% reported having honked at other drivers (AAA Foundation for Traffic Safety, 2008). An earlier survey conducted by Wells-Parker et al. found that 2.45% of drivers reported involvement in direct confrontation with another driver or vehicle in their lifetime (2002). Previous research has also shown that male drivers are more likely than female

drivers to drive aggressively; as in the present study, the differences are greatest for the least common and more extreme behaviors (Shinar & Compton, 2004).

While definitions of aggressive driving vary, estimates of the prevalence of aggressive driving behaviors in fatal crashes suggest a large contribution. Previous research by the AAA Foundation using data from the Fatality Analysis Reporting System (FARS) found that from 2003 to 2007, 55.7% of fatal crashes involved at least one driver who was reported to have performed at least one potentially aggressive action, including 8.4% of crashes in which two or more potentially aggressive actions were reported (2009). Earlier research which also used FARS also found that 56% of fatal crashes involved aggressive driving (Surface Transportation Policy Project, 1999). The National Highway Traffic Safety Administration estimated that approximately two-thirds of crash fatalities involve aggressive driving behaviors (Goodwin et al., 2015). These estimates, as noted by the AAA Foundation (2009) and Neuman et al. (2003), may overstate the actual contribution of aggressive driving behavior to fatal crashes; however, it is clear that the contribution is substantial.

Given that previous research has found that many fatal crashes likely involve aggressive driving, and a large majority of the motoring public admits to at least some driving behaviors that may be considered aggressive, interventions are necessary to decrease the prevalence of aggressive driving and related crashes. The basic behavioral strategy that has been applied to aggressive driving is deterrence through enforcement, typically high visibility, accompanied by public information campaigns, to enforce widely accepted and sound laws (Goodwin et al. 2015). Accordingly, the Transportation Research Board's *A Guide for Addressing Aggressive-Driving Collisions* suggests strategies that combine enforcement, education, and engineering to address aggressive driving (2003). The guide notes that most programs consisting of only one of the three elements will be unsuccessful, as well as that addressing any underlying issues in the driving environment, such as congestion, that are contributing to aggressive driving may be necessary (Neuman et al., 2003). Countermeasures that address aggressive driving may focus on specific violations or, as is most common among successful programs, focus intensely on all traffic law violations (Neuman et al., 2003). State laws addressing aggressive driving have been recommended, including enhanced penalties for recidivism and incidents with serious injuries, however there is no evidence available regarding the effectiveness of such laws or penalties from states that have implemented them (Goodwin et al., 2015).

References

AAA Foundation for Traffic Safety. (2009). *Aggressive Driving: Research Update*. Washington, DC: AAA Foundation for Traffic Safety.

AAA Foundation for Traffic Safety. (2015). *2014 Traffic Safety Culture Index*. Washington, DC: AAA Foundation for Traffic Safety.

GfK (2013). *Knowledge Panel® Design Summary*. Retrieved October 7, 2015, from http://www.knowledgenetworks.com/knpanel/docs/knowledgepanel(R)-design-summary-description.pdf

Goodwin, A., Thomas, L., Kirley, B., Hall, W., O'Brien, N., & Hill, K. (2015). *Countermeasures that work: A highway safety countermeasure guide for State highway safety offices, Eighth edition.* (Report No. DOT HS 812 202). Washington, DC: National Highway Traffic Safety Administration.

Neuman, T. R., Pfefer, R., Slack, K. L., Raub, R., Lucke, R., & Wark, R. (2003). *Volume 1: A Guide for Addressing Aggressive-Driving Collisions* (Guidance for Implementation of the AASHTO Strategic Highway Safety Plan No. 500). Washington, DC: Transportation Research Board.

Shinar, David, & Richard Compton. "Aggressive Driving: An Observational Study of Driver, Vehicle, and Situational Variables." *Accident; Analysis and Prevention* 36, no. 3 (May 2004): 429–37. doi:10.1016/S0001-4575(03)00037-X.

Surface Transportation Policy Project. (1999). Aggressive Driving: Are You At Risk? Retrieved June 7, 2016 from http://transact.org/wp-content/uploads/2014/04/Aggressive_Driving-Are_You_At_Risk.pdf

Federal Highway Administration. (2015). Table DL-22 (Highway Statistics 2014). Washington, DC. Retrieved from http://www.fhwa.dot.gov/policyinformation/statistics/2014/dl22.cfm

U.S. Census Bureau. Census Regions and Divisions of the United States (n.d.). Retrieved from http://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf

Wells-Parker, E., Ceminsky, J., Hallberg, V., Snow, R. W., Dunaway, G., Guiling, S., Williams, M., & Anderson, B. (2002). *An exploratory study of the relationship between road rage and crash experience in a representative sample of U.S. drivers.* Accident Analysis and Prevention, 34(3), 271-278.