A Nationwide Survey of Red Light Running: Measuring Driver Behaviors for the "Stop Red Light Running" Program
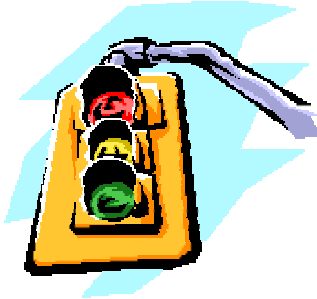
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Purpose of the Study

From June to August 1999, a 58-question telephone survey was administered to provide data for the national "Stop Red Light Running Week" in September. Data from the survey were also important to assess driving behaviors in 10 states of particular interest to DaimlerChrysler: Alabama, Arizona, Colorado, Florida, Michigan, New Jersey, New York, South Carolina, and Texas.

Sampling Strategies

Overall, 5,024 respondents completed the survey. Of these, 4,007 were concentrated in the 10 target states, leaving 1,017 from the remaining 40 states as a comparison group. Second, a "national" sample of 880 respondents was constructed from the overall sample, re-weighted to include a proportional number of respondents from each of the 50 states.

The Typical Red Light Runner

Red light running behavior generalized across state boundaries. Based on national data, the typical red light runner has the following *general* characteristics:

- Is younger, is driving alone, has no children, and is in a rush to work or school in the morning hours on weekdays. If a parent, most likely has children less than 20-years-old.
- Is employed in jobs requiring less education (i.e., blue collar, lower technology), or is unemployed.
- Is more than two miles from home and is more likely to have been ticketed for red light running (although, the rate of receiving tickets is low).
- Is *NOT* necessarily frustrated.

Future Research Considerations

Red light running research is still sparse compared to literature for other risky driving behaviors. This study was badly needed to provide a national perspective on what drivers perceive to be the red light running issue. Even so, many questions remain that are worthy of attention. These include, but are not limited to:

- How do perceptions change as a result of the "Stop Red Light Running" program?
- How does driver behavior actually change as a result of the program?
- Is red light running an aggressive driving act?

Acknowledgements

In addition to the individuals listed on the cover page, the following were significant contributors to this research:

- James Bernard of Golin/Harris International: James was a partner in all phases of the research, from hypothesis and survey development, to suggesting many lines of analysis. He was also the main client contact for the Project Director. Andrea Wood, Betsy Slemmons, Sarah May, and Akieva Harrell of Golin/Harris International were also significant collaborators.

- Kimberly Shults of Golin/Harris International: Kimberly became the main contact at Golin/Harris International after James Bernard accepted a new position with a different company. She was responsible for adapting data from this report for Stop Red Light Running 1999.

- Sonja Bultynck and Sheila Gruber McLean of DaimlerChrysler Corporation: Sonja worked with the Project Director and James Bernard to develop the initial ideas for the project. Sheila is the main DaimlerChrysler contact and was very helpful in suggesting questions for analysis.

- Kathy Krupa, Nicole Mazzarella, Glenda Rose, and Brooks Small with the Social Science Research Center at Old Dominion University: These graduate students were responsible for the day-to-day supervision of telephone interviewers. Kathy and Nicole also played large roles in providing feedback on the telephone survey and setting it up for computer administration.

- The 30 students of the Social Science Research Center who made the telephone calls and encouraged over 5,000 citizens to participate in an extended and complicated survey.

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The potential dangers of red light running are severe. With ever increasing frequency, drivers around the country do not stop at intersections when the light turns red. This careless and reckless behavior is responsible for a significant number of intersection crashes, particularly in urban areas (Retting, Williams, Preusser, & Weinstein, 1995). In recent years, the problem has led to an interest in understanding who red light runners are (Deutsch, Sameth, & Akinyemi, 1980; Porter & England, 1999; Retting & Williams, 1996), where and when red light running occurs (Retting et al., 1995; Wilson-John, 1999), and what interventions can be mobilized to reduce this risky driving behavior (Porter, England, Berry, & Hebert, 1999; Retting, Williams, Farmer, & Feldman, 1998).

Our growing understanding of red light running suggests it is not an isolated risky driving phenomenon. Red light runners take other risks as well. They are less likely to wear safety belts (Deutsch et al., 1980; Porter & England, 1999) and tend to have more driving violations on their records (Retting & Williams, 1996). They also may be "typical" aggressive drivers. Williams (1997) suggested that red light running was one aggressive driving act that should be targeted by the safety community. More recently, Porter & Berry (1998) reported that safety officials in Virginia considered red light running as one of several typical aggressive driving acts. Others included tailgating, weaving in and out of traffic, speeding excessively, and gesturing angrily at other drivers. It may be likely that aggressive drivers are those more likely to run red lights and carry out these other behaviors as well.

These previous studies have been helpful in understanding red light running behavior on local levels, but national-level information would be useful. Particularly, what do the nation's drivers think about red light running? Do they perceive red light running to be a problem and dangerous? How frequently do they think red light running occurs? What are the perceived consequences of this behavior? How many people have been in crashes involving a red light runner? What should we as public-safety experts do about solving this problem? This study attempted to address these questions by creating and implementing a nationwide telephone survey on red light running. The data found were useful for (a) understanding red light running, (b) designing programs to reduce red light running, and (c) designing public relations material for the "Stop Red Light Running" Program sponsored by DaimlerChrysler Corporation, the American Trauma Society, and the Federal Highway Administration.

"Stop Red Light Running" Program

The "Stop Red Light Running" Program is a nationwide effort to increase driver awareness of the dangers and consequences of running red lights. Sponsored by

DaimlerChrysler Corporation, the American Trauma Society, and the Federal Highway Administration, the program was developed in 1995 and has been growing in influence since that time. Stop Red light Running Week 1999 will begin September 23. The nationwide telephone survey was developed to provide extensive data for this program and its messages.

Ten Target States

In addition to evaluating data from a national perspective, study leaders were asked to focus upon 10 states of particular interest to DaimlerChrysler. The corporation has recently spent much effort to increase driver safety in:

- Alabama
- Arizona
- California
- Colorado
- Florida

- Michigan
- New Jersey
- New York
- South Carolina
- Texas

Therefore, these 10 states were sampled more heavily than the remaining 40 states.

Hypotheses

There were three specific hypotheses that program leaders wished to test. Additional questions of an exploratory nature were directed toward to the 10 target states.

Hypothesis 1: Most drivers have been guilty of red light running. It was expected that all types of drivers engage in red light running. There may be sub-groups (e.g., males) that were more likely than others to run red lights, but in general red light running was expected to be a problem for which most drivers could benefit from education and intervention. In evaluating this hypothesis, program leaders assessed the percentage of red light runners from various segments of the community (e.g., parents, different age groups, various occupations).

Hypothesis 2: Predictors of red light running included feeling rushed, frustrated, and concerned about time. Some evidence has suggested that people may run red lights because they are in a hurry and feel stopping would prevent on-time arrival to jobs or other events. Frustration seems to play a role, too, particularly when traffic congestion is concerned or drivers perceive they are thwarted by too many red lights (and so decide to run them). It was therefore expected that red light runners would report running these lights because of their driving frustration and perceived shortage of time.

Hypothesis 3: Drivers would be cited for red light running within two miles of their homes. It has been suggested that crashes occur close to home, so it seems logical that many risk-taking behaviors occur with great frequency near home. The project attempted to assess whether this assertion was true with red light running.

Methods

Based on the above objectives and hypotheses, and the understanding that program leaders were interested in obtaining data from all 50 states (with a concentration in 10 target states), a nationwide telephone survey was deemed the most appropriate and expeditious means for obtaining data. The survey focused on what drivers reported to be their red light running behaviors (as opposed to what they believed about red light running).

National Telephone Survey

The survey (**see Appendix A**) consisted of 58 questions. It was developed throughout the month of May with the help of project leaders and contacts at Golin/Harris International and DaimlerChrysler. The survey was pilot-tested to determine any problems with questions and the length of time needed for completion. On average, the piloted survey took 15 minutes to complete; actual completion times were closer to 12 minutes.

Survey Implementation

On June 16, 1999, the Social Science Research Center (SSRC) at Old Dominion University in Norfolk, Virginia began making calls with the survey. Between June 16 and August 23, 5,024 surveys were completed. These surveys were separated into two different samples: (a) the 10 target states (n = 4,007; mean per state = 400.7) and (b) the remaining 40 non-emphasized states[1] (n = 1,017), with each state's contribution weighted to reflect the population differences in 16-year-olds and older as of 1997[2].

The sampling scheme was designed so that each target state could be compared with the remaining 40 states. For example, California could be compared with the remaining 40 to determine if red light running was uniquely different in California than in other parts of the country. California could also be compared to Arizona, or any other state from the 10 target group. In addition, a national sample was created from the 5,024 respondents by randomly selecting cases so that each state's contribution was weighted by population differences in 16-year-olds and older as of 1997. The resulting national sample included 880 respondents. This sample was necessary to answer questions such as "What percent of the nation runs red lights?"

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[1] The District of Columbia was supposed to add to this group, but no respondent from DC agreed to participate.
[2] In actuality, only respondents 18-years-old and older participated. Per research ethics younger respondents would have required parental or guardian permission to participate.

Individual sample sizes and margins of error are given in **Table 1**. Main analyses are organized by:

- hypotheses;
- other items interesting to the "Stop Red Light Running" program; and
- target and comparison state results.

Table 1. Sample sizes and margins of error for each group of interest for 95% confidence.

State/Group	N	Margin of Error (%)
Alabama	474	4.50
Arizona	410	4.80
California	353	5.20
Colorado	442	4.70
Florida	359	5.20
Michigan	460	4.60
New Jersey	348	5.30
New York	336	5.30
South Carolina	432	4.70
Texas	393	4.90
Comparison 40	1,017	3.10
National Sample	880	3.00

Hypothesis 1: Most Drivers Have Been Guilty of Red Light Running

To evaluate this hypothesis, the national sample was used. Specifically, **Table 2** gives the percent of respondents reporting running red lights and running at least one red light in the last 10 intersections they crossed. These data were broken down into different demographic categories.

Significance tests (χ^2 procedures) evaluated differences within each demographic category. For example, males and females were compared to determine if one group or the other was more likely to run red lights. Another test evaluated whether males or females were more likely to have run a red light within the last 10 intersections. Similar comparisons were made for the other categories, with significance results reported in footnotes.

All categories of individuals run red lights. Overall, 55.8% of the respondents reported running red lights. There were some groups that reported significantly more red light running. Younger drivers, non-parents, and those in lower technology or blue collar jobs (or unemployed) tended to report more red light running. For parents, interestingly, those with children less than 20-years-old were more likely to run red lights than were parents of older children.

Table 2. Demographic comparisons of percent of red light runners in sample, and percent of respondents reporting to have run at least one red light in the last 10 intersections.

Comparisons	N	Red Light Runners (Percent)	Recency: At Least 1 Red Light Run in Last 10 (Percent)
Gender[3]:			
Male	335	65.1	21.2
Female	545	50.1	18.3
Parent[4]:			
Yes	663	52.8	16.4
Children ≤ 19 yr.	*320*	*65.6*	*21.6*
Children > 20 yr.	*343*	*40.8*	*11.7*
No	217	65.0	28.6
Age Group[5]:			
18-25	99	74.7	32.3
26-35	132	72.7	29.5
36-45	194	62.9	20.6
46-55	186	55.9	14.0
Over 55	269	35.3	12.6

(table continues)

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[3] χ^2 test for red light runners significant at $p < .001$.

[4] For parents vs. non-parents, χ^2 tests for red light runners and recency significant at $p < .01$ and $p < .001$, respectively; for within-parent comparisons, χ^2 tests for red light runners and recency significant at $p < .001$ and $p < .01$, respectively.

[5] χ^2 tests for red light runners and recency significant at $p < .001$.

Table 2. (continued)

Comparisons	N	Red Light Runners (Percent)	Recency: At Least 1 Red Light Run in Last 10 (Percent)
Education[6]:			
Some H.S.	36	44.4	30.6
H.S. Degree	202	50.5	15.8
Tech/Vocational	62	53.2	24.2
Some College	218	58.7	22.9
Associates Deg.	60	65.0	20.0
Bachelors Deg.	161	58.4	19.9
Post-graduate	141	56.0	13.5
Occupation[7]:			
Professional/Mgr.	273	59.7	17.2
Lower Tech/Mgr.	82	68.3	22.0
Clerical/Sales	70	58.6	24.3
Homemaker	93	54.8	15.1
Blue Collar	103	61.2	30.1
Household/Service	23	56.5	17.4
Retired	162	34.0	11.1
Unemployed	16	68.8	43.8
Other	56	66.1	25.0
Urban Size[8]:			
100K+ population	210	55.2	21.9
< 100K population	670	56.0	18.7
National Sample	880	55.8	19.4

In **Table 3**, data are presented from questions asking respondents about their tendencies to run red lights given the presence of passengers. Red light running tendencies were higher when drivers were alone than when they were with passengers, particularly child passengers. This is interesting because red light running prediction and likelihood calculations may be linked to an easily observable factor (presence or absence of passengers).

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[6] χ^2 tests for red light runners and recency not significant.

[7] See **Appendix B** for occupation descriptions. Two respondents did not provide occupation data; therefore, adding the n-sizes for occupation does not equal the total for the overall sample. χ^2 tests for red light runners and recency significant at $p < .001$ and $p < .01$, respectively.

[8] χ^2 tests for red light runners and recency not significant. Size of respondents' cities derived from 1998 population estimates by the U.S. Census Bureau (1999).

Table 3. Tendencies to run red lights (1 to 10 scale, with 10 being very likely) given various passenger conditions; data also categorized into the percent who would "be at least somewhat likely" to run red lights.

Condition	Percent At Least Somewhat Likely	M	SD
When Alone	25.6	1.77	1.74
When One Adult Passenger	15.8	1.38	1.14
When Child Passengers	4.8	1.11	0.66

Hypothesis 2: Predictors of Red Light Running Included Feeling Rushed, Frustrated, and Concerned about Time

Several survey questions assessed respondents' concerns about time and their frustration on urban roads. **Table 4** shows some of these results, demonstrating most notably that a large number of drivers, although not a majority, are willing to speed up to beat a red light that is oncoming. When asked why they would speed up, the most common responses were to save time and being in a rush. Drivers who slowed down typically did so for safety reasons.

One of the more interesting findings in the study involved urban frustrations. The majority of drivers were more frustrated with *discourtesy* on the roads than they were with any other problem, including congestion.

This finding was surprising given the general assumptions among safety experts that congestion is a leading and perhaps most important factor in predicting risky driving actions such as red light running or aggressive driving.

So, if drivers are frustrated, what will they be more likely to do as a result of that frustration? **Table 5** first shows that an overwhelming majority of drivers were at least somewhat frustrated (80.5%). What they reported being more likely to do, however, were other behaviors *besides* red light running. This, too, was a surprising finding. Respondents reported that they would be more likely to weave in and out of traffic, tailgate, speed, and gesture angrily than run red lights. This finding is explored more thoroughly in the section immediately following results for Hypothesis 3 (see text relevant to Figure 1).

Table 4. Respondents' choices for how time constraints and frustration affect risky driving on urban roads.

Comparisons[9]	N	Percent
Late and approaching intersection that is about to have a red light: What do you do?		
Slow down and prepare to stop	628	71.4
Speed up to beat light	252	28.6
If slowed down: Reason? (for $\underline{n} = 628$)		
Safe thing to do	364	58.0
Afraid of getting hurt in crash	71	11.3
Following the law	97	15.4
My responsibility to stop	49	7.8
Other	47	7.5
If sped up to beat the light: Reason? (for $\underline{n} = 252$)		
In a rush	89	34.9
To save time	87	34.1
Frustrated with having to stop again	30	11.8
Enjoy the thrill of beating the light	7	2.7
Other	42	16.5
What makes you frustrated on urban roads? (for $\underline{n} = 708$, those who were frustrated)		
Discourteous drivers	308	43.5
Congestion	147	20.8
Drivers not following the law	90	12.7
Too many stop lights	28	4.0
Long commute	7	1.0
Other	128	18.1

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[9] In response to the slow down or speed up question, respondents were allowed to select more than one response for why they slowed down or sped up. Similarly, respondents were allowed to select more than one urban frustration. However, for simplicity the percentages listed reflect the percent of respondents choosing each reason or frustration as their first reaction.

Table 5. Extent of frustration on urban roads and the likelihood of various risky driving acts when frustrated.

Condition	Percent At Least Somewhat Likely	M	SD
Frustrated on urban roads: 1 to 10, with 10 being very frustrated	80.5	4.32	2.63
Likelihood of doing the following when frustrated: 1 to 10, with 10 being very likely			
Weaving	43.2	2.36	2.14
Tailgating	36.5	2.06	1.89
Speeding	32.7	1.98	1.93
Gesturing Angrily	28.0	1.88	1.92
Running Red Lights	22.8	1.49	1.19

Hypothesis 3: Drivers Were Cited for Red Light Running Within Two Miles of Their Homes

The last hypothesis received less support than the other two. Specifically, as seen in **Table 6**, respondents who remembered and did not refuse to answer said they were more likely to run red lights and receive tickets for doing so when they were at least two miles away from home. Almost half reported they were more than five miles from home.

As an addendum to these findings, analyses were conducted to determine when red light running was most likely to occur, where drivers were most likely going, and whether weekdays or weekends were most likely involved. Perhaps distance from home was not as important as these other variables. In fact, this was the case.

Table 6. Distance from home when running red lights or being ticketed for running red lights (only for respondents who reported that they ran red lights).

Distance from Home: (miles)	Percent Where Running Red n = 460	Percent Where Ticketed n = 50
Up to 1	11.5	12.0
More than 1, up to 2	14.1	12.0
More than 2, up to 5	27.0	28.0
More than 5, up to 20	33.5	36.0
More than 20	13.9	12.0

Table 7 shows that drivers were most likely to run red lights on weekday mornings while going to work or school. Given previous findings that being in a rush predicted their behavior, it makes sense that these times of day and destinations would predict red light running. We are in a hurry to get to work or school on time, but we are not on a deadline to get home (or if we are late, there are different consequences than getting fired or professionally reprimanded).

Table 7. Percent of respondents reporting where and when they were most likely to run red lights (only for respondents who reported that they ran red lights).

Category	Percent
Where going most of the time when running a red light:	
To work or school in the morning	40.8
To shops or running errands in the middle of the day	24.4
Home in the afternoon	13.3
Recreation activities on weekends	9.3
Other	12.1
Time of day when most red light running occurs:	
12:01 a.m. – 6:00 a.m.	8.7
6:01 a.m. – 12:00 p.m.	34.3
12:01 p.m. – 6:00 p.m.	46.9
6:01 p.m. – 12:00 a.m.	10.1
What type of day is red light running occurring?	
Weekday	83.8
Weekend	16.2

An interesting comparison for these data, particularly with time of day, is to consider when fatal crashes at intersections are most likely to occur. According to NHTSA's Fatality Analysis Reporting System (1999), 59.1% of fatal intersection crashes occur between 6:00 a.m. and 6:00 p.m., the same interval when most respondents report being likely to run red lights. However, the FARS data also indicate more fatalities at intersections in the 6-hour period after the evening rush hour than they do for the 6-hour period before noon. This was contrary to the respondents' reports of their red light running.

Is Red Light Running a Problem or Dangerous?

Two interesting questions involved asking respondents whether they believed red light running was a problem or dangerous. After all, what may be most important for any public-education effort such as the "Stop Red Light Running" program is whether people believe there is a problem worthy of a program. **Table 8** provides the percent of respondents reporting that red light running was a problem or dangerous. Notice that there were no significant differences between red light runners and those reporting never to have run red lights, but a majority of respondents believed red light running was a problem and dangerous. Interestingly, respondents believed that red light running was more dangerous than it was a problem.

Table 8 also provides information on the percentage of respondents who had been involved in red light running crashes or had been ticketed for red light running. A significant number of respondents had been involved in red light running crashes, while fewer had actually been ticketed for the behavior. As one would expect, more red light runners had been ticketed than people responding that they had never run red lights. However, note that 3.3% of the respondents who reported to have never run red lights *had been ticketed* for doing do. These and other findings highlighted the fact that many people claimed early in the survey to have never run red lights, but later admitted to having done so in their past.

Table 8. Percent of respondents who believed red light running (RLR) was dangerous or a problem, as well as the percent who had been involved in a RLR crash or had been ticketed for RLR.

Category	Believe RLR a Problem[10]	Believe RLR Dangerous[11]	Involved in RLR Crash[12]	Received RLR Ticket[13]
Red light Runners	81.3	98.6	9.6	7.7
Never Run Red Light	77.9	99.0	12.6	3.3
Overall	79.8	98.8	10.9	5.8

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[10] χ^2 test between two red light running categories was not significant.

[11] χ^2 test between two red light running categories was not significant.

[12] χ^2 test between two red light running categories was not significant.

[13] χ^2 test between two red light running categories was significant at $p < .01$. Notice that 3.3% of the respondents reporting they had never run red lights received a ticket for doing so.

Table 9 shows additional data providing insight into respondents' perceptions of the red light running problem. Particularly, respondents were given the opportunity to report how many red light runners they thought ran red lights on purpose and how many would actually be ticketed. Out of 10 red light runners, respondents believed more than half ran red intentionally. That is, these drivers *planned* to run the red. Most discouragingly, of these 10 drivers running red, respondents believed that no more than two would be stopped and ticketed by police. There were no differences between red light running and non-red light running respondents in these estimates. Clearly, drivers believed red light running was often a choice with few legal consequences.

Another means of investigating whether red light running was a problem was to look beyond questions that directly assessed respondents' perceptions. Recall from Table 5 respondents' measures of urban frustration and likelihood of performing various acts when frustrated. We created a new variable called the "Aggressive Driving Composite" which combined the likelihoods of performing each of the five behaviors (weaving, tailgating, speeding, gesturing angrily, and red light running) into one likelihood scaled 1 to 10, with 1 being "not at all likely" and 10 being "very likely." Then, as seen in **Figure 1**, we plotted the average Aggressive Driving Composite for each level of reported urban frustration. For example, respondents who reported that they were "not at all frustrated" on urban roads (a score of 1) had an average Aggressive Driving Composite score of 1.43, or a low likelihood of driving aggressively. Notice that as urban frustration increased toward a score of 10, the likelihood of performing aggressive driving behaviors increased. The likelihood particularly increased once a score of 6 on urban frustration was reached. These data may be helpful in identifying individuals needing additional coping interventions to deal with stress on the roadway.

The second set of bars plotted in **Figure 1** represent the separate likelihood of running red lights when frustrated. Notice that for every level of urban frustration red light running likelihoods were less than the Aggressive Driving Composite. Put directly, respondents reported being more likely to engage in other risky driving acts when frustrated than red light running. Red light running, unlike aggressive driving at-large, may <u>not</u> be so much a function of frustration as a function of other factors. If so, then interventions designed to change red light running behaviors need to consider what the most likely function is. More research is likely needed in this endeavor.

Table 9. Average estimated red light runners out of 10 who run red intentionally or who will be ticketed by police for their behavior.

Category[14]	Number of Intentional Red light Runners Out of 10		Number of Red Light Runners Out of 10 Who Will Be Ticketed	
	M	SD	M	SD
Red light Runners	5.64	2.65	1.92	1.78
Never Run Red Light	5.69	2.91	1.92	1.89
Overall	5.66	2.77	1.92	1.83
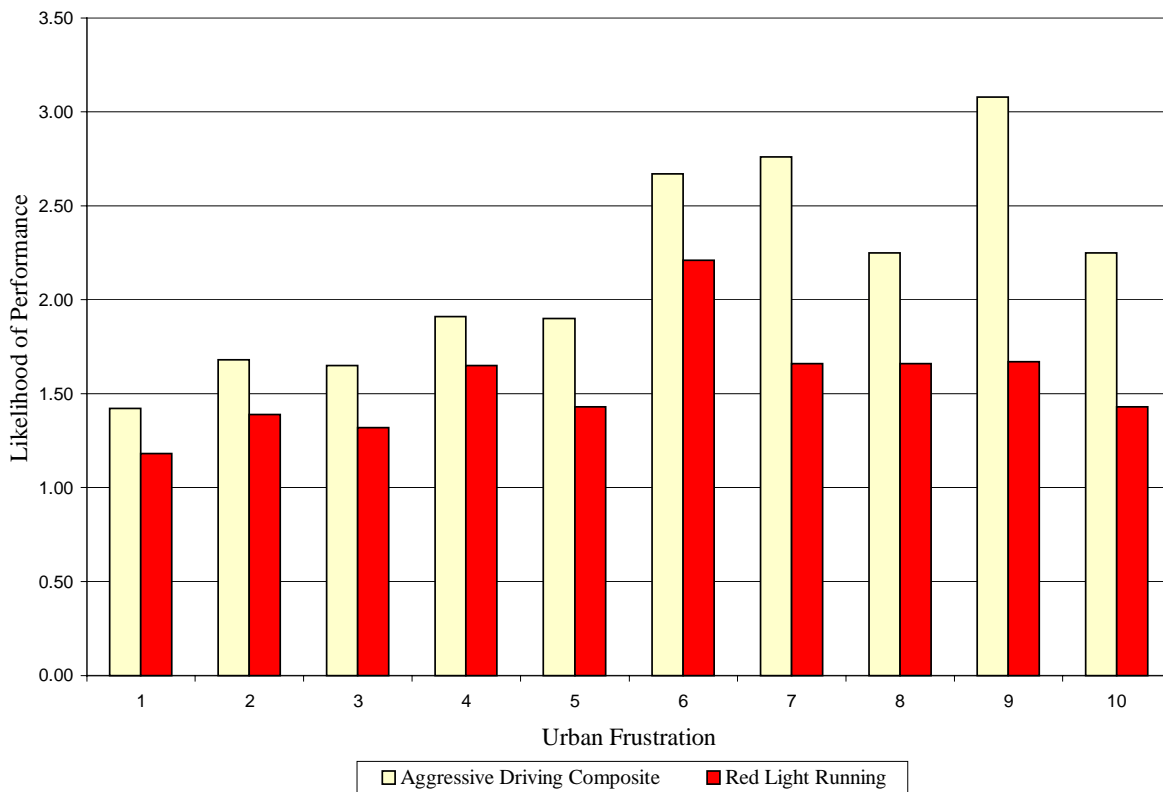
Figure 1. The average likelihood of performing "aggressive driving behaviors" (a composite of weaving, tailgating, speeding, gesturing angrily, and red light running) when frustrated, compared to the separate likelihood of running red lights.

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[14] t-tests comparing red light running categories for each variable were not significant.

Ideas for Reaching Red Light Runners

Near the survey's conclusion, respondents were asked to suggest ideas for changing red light runners' behavior, particularly the behavior of such drivers who may not change easily. **Table 10** provides information on offered ideas. To simplify the analysis and interpretation, the first idea offered by a respondent was considered the main contribution of that person. **Table 10** breaks the suggestions down into those offered by red light runners and non-red light runners, and those from big city drivers and drivers from smaller cities. However, neither of these comparisons yielded significant differences. Therefore, inspecting the overall percentages for each idea, it was clear that the largest solution type was legal. Combining police enforcement, increased fines, and photo enforcement strategies, 38.1% suggested greater legal consequences for red light runners. Education was the second most-mentioned solution type, with 16.7% of the respondents suggesting either more education or driver improvement clinics as their first ideas. Discouragingly, more than 1 in 5 respondents claimed to have no ideas to prevent red light running.

Table 10. Percent of respondents offering various ideas for preventing red light running.

First Idea[15]	Red Light Runners	Never Run Red	Small City[16]	Big City	Overall
None	21.2	25.4	24.6	18.1	23.1
Education	16.1	14.1	15.5	14.3	15.2
Police Enforcement	14.5	13.9	14.3	13.8	14.2
Increase Fines	13.4	12.6	12.2	15.7	13.1
Photo Enforcement	12.6	10.0	10.4	14.8	11.5
Change Signal Timings	2.6	3.1	2.4	4.3	2.8
Driver Clinics	1.4	1.5	1.2	2.4	1.5
Other	18.1	19.3	19.3	16.7	18.6

Target and Comparison States

Turning to the larger sample that was collected, particularly the sample that allowed statements to be made about each individual target state versus other target states and the remaining 40 states, no differences were found in the percent of respondents reporting that they ran red lights. Specifically, as **Table 11** shows, each of the 10 states and Comparison 40 states had roughly the same percentage of red light runners (between 50% and 60%). Likewise, there

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[15] χ^2 tests comparing first ideas with red light runner status and first ideas with city size were not significant.
[16] Small cities had less than 100,000 occupants as of 1998 Census estimates; big cities had 100,000 plus.

were no differences in the percent of respondents receiving red light running tickets (approximate range: 4% to 8%).

There were, however, significant differences for percent reporting to have (a) run at least one red light in the last 10 intersections and (b) been in a crash involving a red light runner. Inspection of the data show that drivers in Texas and Alabama had higher rates of running recent red lights. Texas also had the highest rate of involvement with red light running crashes, followed by Colorado. Further, it should be noted the group of Comparison 40 states had a lower crash rate than all target states. Additional data for the target states are provided in the **Appendices**.

Table 11. Percent of respondents from target states and the comparison group who have been involved in various types of red light running behaviors and consequences.

State/Group	N	Red light Runners[17]	≥ 1 Red Light Run in Last 10 Intersections[18]	Red light Run Crash[19]	Red light Run Ticket[20]
Alabama	474	58.4	26.2	15.2	5.9
Arizona	410	52.0	12.9	14.1	7.1
California	353	52.7	14.2	14.2	7.9
Colorado	442	60.2	17.6	16.7	5.0
Florida	359	52.6	18.9	14.2	5.8
Michigan	460	50.2	16.3	13.7	6.1
New Jersey	348	51.1	21.0	13.5	6.6
New York	336	56.0	22.0	14.3	7.1
South Carolina	432	56.7	23.1	11.1	5.8
Texas	393	57.5	28.5	17.8	7.4
Comparison 40	1017	55.5	20.6	10.3	4.6
National	880	55.8	19.4	10.9	5.8

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[17] χ^2 test of 10 targets with comparison 40 was not significant.

[18] χ^2 test of 10 targets with comparison 40 was significant at $p < .001$.

[19] χ^2 test of 10 targets with comparison 40 was significant at $p < .05$.

[20] χ^2 test of 10 targets with comparison 40 was not significant.

Conclusions

The Typical Red light Runner

The national telephone survey has added to our understanding of who runs red lights. Based on all data collected and analyzed, the typical red light runner has the following *general* characteristics:

- Is a younger driver.
- Is a person without children; but, if the person has children less than 20 years old he/she is more likely to run red lights than parents of older children.
- Is driving alone; passengers decrease red light running likelihood, particularly child passengers.
- Is employed in jobs requiring less education (i.e., blue collar, lower technology), or is unemployed.
- Is in a rush to work or school in the morning hours on weekdays.
- Is driving more than two miles from home.
- Is more likely to have been ticketed for red light running, but the overall rate of tickets is low (7.7% for red light runners, 5.8% for all respondents).
- Is *NOT* necessarily frustrated (recall data indicating urban frustration more likely leads to other aggressive driving actions).

Future Research Considerations

Red light running research is still sparse compared to the literature for other risky driving behaviors. This study was needed badly to provide a national perspective on the red light running issue. Even so, many questions remain that are worthy of attention by traffic-safety psychologists. These include, but are not limited to:

How do perceptions change as a result of the "Stop Red Light Running" Program?

- The data collected this year provided only a "pretest" for the 1999 September program. If program leaders want to evaluate the impact of this year's program on driver perceptions, then the survey should be re-administered shortly after its conclusion, but no later than January or February.
- The re-administration of the survey would act as a "posttest" evaluating change that may result from September's efforts.
- Such an effort would be useful for the program's Y2K implementation, giving suggestions for how to alter messages and initiatives to make a greater impact on driver perceptions.

How does driver behavior actually change as a result of the program?

- Like all surveys, the data reported here were self-reported. Survey respondents do not necessarily "lie" intentionally, but psychologists and other researchers have known for some time that the truth is often stretched. Specifically, respondents are sensitive to presenting themselves in the best light possible.
- Self-report data, although useful in many contexts, is only a proxy for actual driver behaviors. It is very likely that red light running is more frequent than reported here.
- Program leaders should consider conducting naturalistic observations of drivers at intersections in key cities across the country, both *before* and *after* the "Stop Red Light Running" program's implementation. The cities chosen should be those most targeted by, or of particular interest to, program leaders.

Is red light running an aggressive driving act?

- This study questioned the similarity of red light running with other traditionally-considered aggressive driving behaviors. Frustration, considered an integral component of aggressive driving, did not play as large a role with red light running.
- If red light running is a not a function of frustration, is it still "aggressive?" Or, perhaps, red light running is simply a "selfish" act on the part of a driver who feels he/she must run red lights to save time. Additional studies to address this issue would be useful and interesting.

We look forward to discussing these questions with leaders of the "Stop Red Light Running" program. As the program continues and grows in the future, research support from DaimlerChrysler Corporation, the American Trauma Society, and the Federal Highway Administration will be well-invested if we are to continue reducing red light running and its consequences on our roadways.

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Appendix A:

Telephone Survey

Automatically Entered Variables

Time Zone
City
State
Date
Time

<u>Introduction</u>

#1. Hello. My name is _____ (INSERT FULL NAME). I am conducting a brief survey for the Social Science Research Center at Old Dominion University on behalf of traffic-safety educators. Your responses to this survey are confidential. Can you or someone else in your household who has a driver's license, drives a motor vehicle, and is at least 18 years old spare a few minutes? (IF NO, THANK AND TERMINATE.)

#2. (ONCE SUCH A RESPONDENT IS ON THE PHONE AND IS WILLING TO PARTICIPATE): Thank you for agreeing to participate in our survey. Let's begin.

Questions

1. Are you concerned about safety on the roads? Yes/No

For the next few questions, various driving scenarios will be considered. Think about how you would act in each.

(COMPUTERIZED VERSION NOTE: #s 7 AND 8 WERE GIVEN IN A RANDOMIZED ORDER TO PREVENT FATIGUE AND PRIMING EFFECTS DURING THESE MORE COMPLEX QUESTIONS).

7. You are approaching an intersection at 3:00 in the morning. The traffic light has just turned red. At this time you notice that there is no traffic near you. Which of the following would you likely do?
a) Stop at the red, and wait until the light turns green.
b) Stop at the red, but then proceed through the red light.
c) Slow down, but proceed directly through the red light.

---

[21] Missing question numbers reflect items that were deleted from the final survey.

8. You are approaching an intersection at 5:00 in the afternoon. The traffic light has just turned red. At this time you notice that there is no traffic near you. Which of the following would you likely do?
a) Stop at the red, and wait until the light turns green.
b) Stop at the red, but then proceed through the red light.
c) Slow down, but proceed directly through the red light.

9. You are late for work, school, or an appointment and have been stopped by several red lights in a row. You are approaching another intersection that has had a yellow light for several seconds, but you know it is about to turn red. Which of the following would you likely do?
a) Slow down and prepare to stop at the red light.
b) Speed up to beat the red light.

10a. (IF RESPONDENT SAYS HE/SHE SLOWS DOWN AND STOPS):
Why would you slow down and prepare to stop? (DO NOT READ LIST, BUT MARK ALL THAT APPLY)
a) Safe thing to do/too risky to run the red
b) It is my responsibility to stop
c) I was following the law
d) I was afraid of getting hurt in a crash
e) other:_____

10b. (IF RESPONDENT SAYS HE/SHE SPEEDS UP TO BEAT THE LIGHT):
Why would you speed up to beat the red light? (DO NOT READ LIST, BUT MARK ALL THAT APPLY)
a) To save time
b) I was in a rush
c) I was frustrated with having to stop again
d) I enjoy the thrill of beating the light
e) other:_____

11. Recalling the last 10 traffic lights you drove through, how many of them were red when you entered the intersections?

12. How many of these 10 were yellow?

13. Choose ONE of the following that best describes your feelings the last time you ran a red light whether by accident or choice. (READ LIST EXCEPT FOR "E")
a) I was lucky
b) I demonstrated that I was a good driver
c) Next time I'll speed through on the yellow light before it turns red
d) I'm angry that the light timings did not permit crossing prior to the red light
e) DO NOT READ: I have never run a red light

ASK ONLY IF #13 WAS NOT "E".

14. We are interested to learn about reasons people have for running red lights whether by accident or choice. Particularly, we are interested to learn both good and bad reasons. Therefore, using your best guess, of the last 10 red lights that you ran, how many would you consider to have been for good reasons?
a) Number:_____
b) Refuse to answer

IF RESPONDENT GAVE A NUMBER OUT OF 10, AND #13 WAS NOT "E", PROCEED WITH #s 15 & 16:

15. What are some of the "good" reasons for which you have run red lights? (DO NOT READ LIST, BUT MARK ALL THAT APPLY)
a) In a hurry
b) Not paying attention
c) No traffic around me
d) The red light is too long to wait for
e) Other:_____

16. What are some of the "bad" reasons for which you have run red lights? (DO NOT READ LIST, BUT MARK ALL THAT APPLY)
a) In a hurry
b) Not paying attention
c) No traffic around me
d) The red light is too long to wait for
e) Other:_____

ASK ONLY IF #13 WAS NOT "E".

17. Choose one of the following that best describes where you are going most of the time when you run a red light whether by accident or choice. (READ LIST EXCEPT FOR "E", CHOOSE ONE)
a) Driving to work or school in the morning
b) Driving home in the afternoon
c) Driving to shops or running errands in the middle of the day
d) Driving for recreation on weekends
e) DO NOT READ: other (IF NONE OF THE ABOVE APPLIES):_____

ASK ONLY IF #13 WAS NOT "E".
17A. How close to home are you most of the time when you run a red light, whether by accident
or choice? (DO NOT READ LIST, CONVERT TO CLOSEST RESPONSE.)
a) One mile or less
b) More than one mile, up to two miles
c) More than two miles, up to five miles
d) More than five miles, up to 20 miles
e) More than 20 miles
f) Don't know
g) Refuse to answer

ASK ONLY IF #13 WAS NOT "E".
18. What time of day are you most likely to run a red light whether by accident or choice?
Please give a specific time that represents your answer, for example, "3:00 p.m." instead of mid-
afternoon. (DO NOT READ LIST; CONVERT THE RESPONSE TO ONE OF CATEGORIES)
a) 12:01 a.m. – 6:00 a.m.
b) 6:01 a.m. – 12:00 p.m.
c) 12:01 p.m. – 6:00 p.m.
d) 6:01 p.m. – 12:00 a.m.

ASK ONLY IF #13 WAS NOT "E".
19. Are you most likely to run a red light, whether by accident or choice, on a weekday or
weekend? (DO NOT READ LIST; CONVERT RESPONSE TO ONE OF CATEGORIES)
a) Weekday
b) Weekend

20. Out of every 10 red light runners, how many do you believe run red lights intentionally?

21. How frustrated do you get on average when driving on urban roads? Please give your
answer on a scale of 1 to 10, with 1 being "not at all frustrated" and 10 being "very frustrated."

ASK ONLY IF #21 WAS NOT "1".
22. What makes you frustrated when driving on urban roads? (DO NOT READ; MARK ALL
THAT APPLY.)
a) Congestion
b) Too many stop lights
c) Discourteous drivers
d) Long commute to work/school/shops
e) Drivers not following traffic laws
f) Other:

23. Which ONE of the following best describes when you are MOST likely to get frustrated when driving? READ LIST EXCEPT FOR "E", CHOOSE ONE
a) Driving to work or school in the morning
b) Driving home in the afternoon
c) Driving to shops or running errands in the middle of the day
d) Driving for recreation on weekends
e) DO NOT READ: other (IF NONE OF THE ABOVE APPLIES):_____

Think about times during which you were frustrated when driving. Now, please rate your likelihood of doing the following acts when frustrated on a scale of 1 being "not at all likely" to 10 being "very likely":

24. Weave in and out of traffic:_____
25. Speed more than 20 mph over the limit:_____
26. Run a red light:_____
27. Tailgate traffic in front of you:_____
28. Make an angry gesture at other drivers or pedestrians:_____

29. If you could run a red light without any negative consequences, how much time do you think you would save? Please estimate. (CONVERT TO MINUTES)

On a scale of 1 to 10, with 1 being "not at all likely" and 10 being "very likely," rate your tendency to consider running red lights under the following situations (READ IN ORDER):
30. When you are alone in the car:_____
31. When you have one adult passenger:_____
32. When you have child passengers:_____

33. Do you believe red light running is a problem? Yes/No

34a. (IF YES) Why do you think it is a problem? (DON'T READ, BUT CHECK ALL THAT APPLY)
a) Causes crashes, injuries, deaths
b) Everyone is doing it
c) Afraid of getting hit at intersections
d) Other:_____

34b. (IF NO) Why do you think it is not a problem? (DON'T READ, BUT CHECK ALL THAT APPLY)
a) Does not lead to many crashes, injuries, deaths
b) Do it all the time and nothing bad happens
c) Light cycles have time built in to allow red light running to occur safely
d) Police don't care because they have more important crimes to deal with
e) Other:_____

35. Do you consider red light running to be a dangerous act? Yes/No

(IF YES TO #35, COMPLETE #s 36-39):
Please compare red light running with these other driving behaviors.

36. Is red light running more dangerous than speeding over 20 mph above the limit? Yes/No
37. More dangerous than drinking and driving? Yes/No
38. More dangerous than tailgating? Yes/No
39. More dangerous than weaving in and out of traffic? Yes/No

40. Have you been given a ticket for running a red light? Yes/No

ASK IF YES TO #40:
41. How many tickets have you received for red light running?
Number: _____
Refuse to answer

ASK IF YES TO #40:
42. How long ago did you receive the last ticket for red light running? (DO NOT READ, CONVERT TO CLOSEST RESPONSE)
a) In the past week
b) More than a week, up to a month
c) More than a month, up to six months
d) More than six months, up to one year
e) More than a year, up to three years
f) More than three years ago
g) Don't know
h) Refuse to answer

ASK IF YES TO #40:
43. Did you receive the ticket on a weekday or weekend?
a) Weekday
b) Weekend
c) Don't remember
d) Refuse to answer

ASK IF YES TO #40:
44. What time of day was it when you received the most recent red light running ticket? Please estimate a time of day that best represents your answer, for example, "3:00 p.m." instead of mid-afternoon. (DO NOT READ LIST; CONVERT THE RESPONSE TO ONE OF CATEGORIES)
a) 12:01 a.m. – 6:00 a.m.
b) 6:01 a.m. – 12:00 p.m.
c) 12:01 p.m. – 6:00 p.m.
d) 6:01 p.m. – 12:00 a.m.
e) Don't know
f) Refuse to answer

ASK IF YES TO #40:
45. How close to home were you when you received the most recent red light running ticket?
(DO NOT READ LIST, CONVERT TO CLOSEST RESPONSE.)
a) One mile or less
b) More than one mile, up to two miles
c) More than two miles, up to five miles
d) More than five miles, up to 20 miles
e) More than 20 miles
f) Don't know
g) Refuse to answer

46. Out of 10 drivers who run a red light, how many do you think will actually be stopped and ticketed by police?

46A. Have you ever been in a crash involving a red light runner? Yes/No

48. We are particularly interested in reaching risky drivers who may not change their red light running behaviors easily. Therefore, what would you do to encourage such drivers to begin slowing down when they see a yellow light so that they can stop at the red? (MARK ALL THAT APPLY, BUT DO NOT READ LIST)
a) I have no ideas (MARK THIS ONLY IF RESPONDENT HAS OFFERED NOTHING ELSE)
b) Give more education to the public
c) Change signal timings
d) Implement photo enforcement cameras
e) Increase fines for red light running
f) Require attendance at driver improvement clinics
g) Have police regularly enforce intersections
h) Other:

49.. (DO NOT ASK UNLESS NECESSARY) Check the respondent's gender:
a) Male
b) Female

Now I'd like to ask just a few questions about you. (READ LISTS WHEN PROVIDED UNLESS STATED OTHERWISE):

50. What age group are you in?
a) 18-25
b) 26-35
c) 36-45
d) 46-55
e) Over 55

51. What is your occupation?
(USE ESTABLISHED LIST FOR CODING.)

52. I am going to read a list of levels of education. Please indicate which level of education you have completed.
a) Some high school
b) Graduated high school
c) Technical school degree or vocational tech
d) Some college
e) Associates degree
f) Bachelors degree
g) Post-graduate

54. About how many miles per year do you drive? Please estimate. (DO NOT READ LIST.)
a) Less than 10,000
b) 10,000 - 15, 000
c) 15,001 – 20,000
d) More than 20,000

55. Are you a parent? Yes/No

IF YES TO #55:
56. Do you have at least one child under four years old? Yes/No
57. Do you have at least one child between 4 and 7 years old? Yes/No
58. Do you have at least one child between 8 and 11 years old? Yes/No
59. Do you have at least one child between 12 and 15 years old? Yes/No
60. Do you have at least one child between 16 and 19 years old? Yes/No

Thank you for your time and for contributing to our survey. Have a nice day/evening.

Appendix B:

Occupation Descriptions

Occupation Descriptions

1. Professional, Managerial

Doctors, lawyers, bankers, accountants
- Managers, consultants
- Farm owners, managers (high income)
- Artists, teachers, nurses, ministers
- Computer programmers, real estate, insurance agents
- Owners, proprietors
- Coaches, producer, chef, counselor
- Stockbroker, pilot
- School administration, social worker

2. Lower Level Technical, Managerial

- Lab technician, lower level civil service, dental assistant
- LPN, police, computer operator, teacher aid, fireman, government employee, military

3. Clerical, Sales

- Clerical (bookkeeper, mailman, etc.)
- Sales (grocery clerk, retail clerk, etc.)
- Secretary, bank teller, telemarketer
- Customer service representative, receptionist

4. Homemaker

5. Blue Collar

- Craftsman (building contractor, electrician, plumber—high income)
- Foreman
- Operative machinist (anyone who operates or runs a machine)
- Mechanic, skilled maintenance (repairs machinery, cars, appliances, etc.)
- Truck driver, other delivery
- Other skilled (miner, printer, photographer, housepainter, etc.)
- Unskilled, except farm
- Farm laborers

6. Household, Service

- Private household (although homemaker considered separately)
- Other service, unskilled (waitress, gardener, janitor, nurse's aid, beautician)
- Cosmetologist, maintenance worker, bar tender

7. Retired

8. Unemployed

9. Other

Appendix C:

Target States vs. Comparison 40

Target States vs. Comparison 40

The following provides direct comparisons between each target state and the remaining 40 as the comparison group. Each table lists the percent of red light runners and percent running at least 1 red light in the last 10 intersections for each category that we found to produce significant differences between the target and comparison group. For example, given the Alabama table, more females in Alabama (58.9%) reported running red lights than females in the Comparison 40 (51.7%). Similarly, Alabama females were more likely to have run one red light in the last 10 intersections (26.8%) than females in the Comparison 40 (19.6%).

Alabama versus the Comparison 40.

Category	Alabama	Comparison 40
Percent Running Red Lights		
Females	58.9	51.7
High School Degree	58.5	44.7
Percent Running At Least 1 Red Light in Last 10 Intersections		
Females	26.8	19.6
High School Degree	36.8	18.2
Home-makers	26.9	14.1
Blue Collar workers	49.0	29.4
Parents (all)	25.1	18.8

Arizona versus the Comparison 40.

Category	Arizona	Comparison 40
Percent Running Red Lights		
Some College	40.7	59.4
Percent Running At Least 1 Red Light in Last 10 Intersections		
Males	11.2	22.3
Ages 26-35	11.5	28.1
Some College	10.6	23.8
Bachelor's Degree	9.8	19.6
Blue Collar workers	11.4	29.4
Parents (all)	10.0	18.8

California versus the Comparison 40.

Category	California	Comparison 40
Percent Running Red Lights		
Associates Degree	51.7	76.3
Post-Graduates	49.2	64.9
Percent Running At Least 1 Red Light in Last 10 Intersections		
Females	12.1	19.6
Ages 56+	7.6	15.7
Post-Graduates	3.4	17.6
Professionals/Managers	10.3	21.7
Retirees	6.3	16.3
Parents (all)	10.5	18.8

Colorado versus the Comparison 40.

Category	Colorado	Comparison 40
Percent Running Red Lights		
Bachelor's Degree	70.6	58.2
Percent Running At Least 1 Red Light in Last 10 Intersections		
Some College	14.0	23.8

Florida versus the Comparison 40.

Category	Florida	Comparison 40
Percent Running Red Lights		
Clerical/Sales	35.7	58.1
High School Graduate	61.3	44.7
Associates Degree	50.0	76.3
Post-Graduates	32.7	64.9
Percent Running At Least 1 Red Light in Last 10 Intersections		
Retired	6.9	16.3

Michigan versus the Comparison 40.

Category	Michigan	Comparison 40
Percent Running Red Lights		
Ages 36-45	54.0	66.1
Homemakers	36.4	51.9
Some college	47.7	59.4
Associates Degree	40.0	76.3
Parents	44.4	52.8
Percent Running At Least 1 Red Light in Last 10 Intersections		
Lower Level Managers	4.7	19.0
Some College	12.6	23.8
Associates Degree	4.4	22.0

New Jersey versus the Comparison 40.

Category	New Jersey	Comparison 40
Percent Running Red Lights		
Blue Collar Workers	79.3	56.3
Percent Running At Least 1 Red Light in Last 10 Intersections		
No Differences		

New York versus the Comparison 40.

Category	New York	Comparison 40
Percent Running Red Lights		
No Differences		
Percent Running At Least 1 Red Light in Last 10 Intersections		
Homemakers	32.3	14.1

South Carolina versus the Comparison 40.

Category	South Carolina	Comparison 40
Percent Running Red Lights		
No Differences		
Percent Running At Least 1 Red Light in Last 10 Intersections		
High School Degree	32.5	18.2
Homemakers	27.9	14.1

Texas versus the Comparison 40.

Category	Texas	Comparison 40
Percent Running Red Lights		
Associates Degree	53.6	76.3
Percent Running At Least 1 Red Light in Last 10 Intersections		
Females	29.7	19.6
Ages 18-25	46.9	29.7
Clerical/Sales	42.1	20.3
Vo-Tech/Vocational	50.0	22.9
Parents (all)	25.1	18.8
Non-parents	40.0	26.9

Appendix D:

Target States and Comparison 40 Miscellaneous Data

Gender and Age Information:

State/Group	N	Gender (%)		Age Group[22] (%)				
		Males	Females	18-25	26-35	36-45	46-55	55+
Alabama	474	39.5	60.5	7.6	16.5	22.4	20.9	32.7
Arizona	410	39.3	60.7	8.0	14.9	17.8	17.8	41.5
California	353	41.6	58.4	11.3	11.0	18.7	21.5	37.4
Colorado	442	39.6	60.4	9.7	17.0	25.8	20.4	26.9
Florida	359	42.1	57.9	5.3	15.9	25.1	19.2	34.5
Michigan	460	35.2	64.8	10.7	14.6	21.7	21.7	31.3
New Jersey	348	38.2	61.8	6.0	15.5	25.6	19.8	33.0
New York	336	40.8	59.2	10.1	19.0	25.6	16.4	28.9
South Carolina	432	36.8	63.2	9.7	16.9	25.2	18.1	30.1
Texas	393	33.1	66.9	12.5	15.5	19.8	22.1	29.8
Comparison 40	1,017	35.2	64.8	8.9	15.0	23.5	21.8	30.7

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[22] Two respondents refused to provide age information (from Colorado and Texas).

Occupation Information:

State/Group	N	Occupation[23] (%): See Codes Below								
		1	2	3	4	5	6	7	8	9
Alabama	474	27.2	9.5	8.2	11.0	10.8	2.7	20.7	2.1	7.8
Arizona	410	25.1	9.8	7.6	8.5	8.5	2.0	31.7	0.5	6.1
California	353	27.5	8.5	7.9	10.8	10.5	1.7	22.7	1.7	8.5
Colorado	442	33.0	9.3	8.4	11.1	10.4	2.7	17.2	1.4	6.3
Florida	359	30.1	10.6	7.8	9.5	9.2	2.2	24.2	1.4	4.7
Michigan	460	27.6	9.3	7.4	14.3	10.7	2.2	19.6	1.1	7.8
New Jersey	348	30.2	7.8	11.2	13.2	8.3	2.9	20.4	0.6	5.5
New York	336	34.2	11.0	6.0	9.2	11.0	1.8	19.6	0.6	6.3
South Carolina	432	28.9	8.8	7.4	14.1	10.6	2.5	19.4	1.6	6.3
Texas	393	28.8	8.9	9.7	15.0	6.1	3.1	16.8	1.3	9.9
Comparison 40	1,017	27.1	9.8	7.3	13.3	11.7	3.0	19.3	2.1	6.2

1—Professional/Managerial   4—Homemaker   7—Retired
2—Lower level technical/managerial   5—Blue Collar   8—Unemployed
3—Clerical/Sales   6—Household/Service   9—Other

[23] Ten respondents either refused to provide occupation information or the question did not apply to them (one each from Arizona, California, Colorado, Florida, New York, South Carolina; two each from Texas and the Comparison 40).

Education Information:

State/Group	N	Education (%): See Codes Below						
		1	2	3	4	5	6	7
Alabama	474	9.5	22.4	7.6	24.1	7.6	16.9	12.0
Arizona	410	4.9	19.5	5.9	27.6	8.8	20.0	13.4
California	353	3.4	19.0	5.7	24.6	8.2	22.4	16.7
Colorado	442	3.2	17.4	6.6	25.8	7.9	23.1	16.1
Florida	359	1.7	22.3	8.6	24.0	9.5	18.7	15.3
Michigan	460	4.1	24.8	5.4	24.1	9.8	16.7	15.0
New Jersey	348	3.7	20.7	7.5	19.5	5.7	27.0	15.8
New York	336	2.4	20.2	8.3	20.5	7.1	23.2	18.2
South Carolina	432	7.9	19.2	8.6	22.2	8.6	22.0	11.6
Texas	393	4.8	22.1	5.1	27.0	7.1	20.6	13.2
Comparison 40	1,017	3.5	27.0	8.2	23.5	5.8	19.1	12.9

1—Some High School
2—Graduated High School
3—Technical/Vocational Tech
4—Some College

5—Associates Degree
6—Bachelors Degree
7—Post-Graduate

Parent Status and Age of Children Information:

State/Group	N	Parent? (%)		If Parent, Have Children < Age 20? (%)	
		Yes	No	Yes	No
Alabama	474	79.7	20.3	48.9	51.1
Arizona	410	75.9	24.1	38.3	61.7
California	353	73.1	26.9	40.3	59.7
Colorado	442	72.6	27.4	55.5	44.5
Florida	359	79.1	20.9	45.1	54.9
Michigan	460	73.9	26.1	46.5	53.5
New Jersey	348	73.6	26.4	47.7	52.3
New York	336	74.7	25.3	55.0	45.0
South Carolina	432	75.5	24.5	48.8	51.2
Texas	393	77.1	22.9	50.2	49.8
Comparison 40	1,017	78.1	21.9	50.1	49.9

Small Cities (<100,000 Population) vs. Big Cities (100,000+ Population):

State/Group	N	Respondents from Cities with Populations: (%)	
		< 100,000	100,000 +
Alabama	474	69.0	31.0
Arizona	410	35.6	64.4
California	353	64.3	35.7
Colorado	442	58.4	41.6
Florida	359	75.2	24.8
Michigan	460	84.1	15.9
New Jersey	348	96.8	3.2
New York	336	85.7	14.3
South Carolina	432	90.0	10.0
Texas	393	54.7	45.3
Comparison 40	1,017	79.7	20.3

Miles Driven Per Year:

State/Group	N	< 10,000	10,000 - 15,000	15,001 - 20,000	> 20,000
		Miles Driven Per Year (%)			
Alabama	474	34.6	25.9	12.4	27.0
Arizona	410	39.8	27.3	12.0	21.0
California	353	38.0	30.6	10.5	21.0
Colorado	442	31.4	29.2	17.0	22.4
Florida	359	26.2	32.3	17.0	24.5
Michigan	460	36.1	26.7	13.3	23.9
New Jersey	348	31.6	40.2	9.8	18.4
New York	336	39.0	32.4	12.8	15.8
South Carolina	432	33.8	28.9	12.7	24.5
Texas	393	33.3	32.6	12.7	21.4
Comparison 40	1,017	34.3	29.9	13.6	22.2

Slowing Down and Preparing to Stop When Approaching an Intersection, Even When Running Late and Several Previous Intersections Had Red Lights:

State/Group	N	If Late, Approaching Intersection: Slow down, prepare to stop (%)	Reasons for Slowing Down (%)[24]				
			Safety	Afraid of Injury	Following Law	I'm Responsible	Other
Alabama	474	73.0	54.3	17.3	13.3	10.7	4.3
Arizona	410	78.8	50.8	17.0	15.8	9.0	7.4
California	353	76.5	58.5	12.2	17.4	7.0	4.8
Colorado	442	71.3	57.8	11.4	13.0	9.2	8.6
Florida	359	81.3	51.4	15.1	13.7	13.7	6.2
Michigan	460	69.6	55.9	13.8	14.7	8.4	7.2
New Jersey	348	73.9	54.9	13.6	14.8	9.7	7.0
New York	336	70.8	60.9	13.9	12.6	8.8	3.8
South Carolina	432	78.2	56.8	12.7	14.8	9.8	5.9
Texas	393	72.0	56.7	15.5	12.0	4.9	10.9
Comparison 40	1,017	73.5	54.8	14.3	15.1	8.4	7.4

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[24] Data taken from respondents who said they would slow down when approaching an intersection with a light about to turn red. Note, too, that respondents were allowed to choose more than one reason, but only their first choices are reflected above.

Speeding Up to Beat the Red Light When Approaching an Intersection, Particularly When Running Late and Several Previous Intersections Had Red Lights:

State/Group	N	If Late, Approaching Intersection Speed up to beat red light (%)	Reasons for Speeding Up (%)[25]				
			In a Rush	To Save Time	Frustrated	Enjoy the Thrill	Other
Alabama	474	27.0	43.8	28.1	10.2	2.3	15.6
Arizona	410	21.2	35.2	31.8	13.6	1.1	18.2
California	353	23.5	35.7	33.3	9.5	1.2	20.2
Colorado	442	28.7	39.4	34.6	13.4	0.8	11.8
Florida	359	18.7	47.8	22.4	10.4	1.5	17.9
Michigan	460	30.4	41.4	28.6	19.3	0.0	10.7
New Jersey	348	26.1	51.1	22.8	6.5	1.1	18.5
New York	336	29.2	43.9	30.6	11.2	1.0	13.3
South Carolina	432	21.8	30.9	27.7	19.1	3.2	19.1
Texas	393	28.0	40.2	39.3	7.1	0.0	13.4
Comparison 40	1,017	26.5	34.1	31.5	12.6	3.3	18.5

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[25] Data taken from respondents who said they would speed up when approaching an intersection with a light about to turn red. Note, too, that respondents were allowed to choose more than one reason, but only their first choices are reflected above.

Perceptions of a Red Light Running Problem and Dangerousness of Red Light Running:

State/Group	N	Red light Running A Problem? (%)		Red light Running Dangerous? (%)	
		Yes	No	Yes	No
Alabama	474	79.5	20.5	99.2	0.8
Arizona	410	86.8	13.2	98.5	1.5
California	353	83.6	16.4	97.5	2.5
Colorado	442	85.3	14.7	98.9	1.1
Florida	359	84.1	15.9	98.1	1.9
Michigan	460	75.7	24.3	98.7	1.3
New Jersey	348	78.2	21.8	98.9	1.1
New York	336	79.8	20.2	98.8	1.2
South Carolina	432	82.4	17.6	99.5	0.5
Texas	393	83.7	16.3	98.0	2.0
Comparison 40	1,017	77.0	23.0	99.0	1.0

Perceptions of Intentional Red Light Runners and the Likelihood of Police Citations for Red Light Running:

State/Group	N	Intentional Red light Runners Out of 10		Red light Runners Out of 10 Who Will Be Ticketed	
		M	SD	M	SD
Alabama	474	5.29	2.74	2.22	2.00
Arizona	410	5.54	2.88	1.99	2.09
California	353	5.47	2.99	1.70	1.74
Colorado	442	5.80	2.75	1.85	1.77
Florida	359	5.76	2.87	1.69	1.68
Michigan	460	5.19	2.81	1.81	1.73
New Jersey	348	5.10	2.77	2.24	2.13
New York	336	5.17	2.91	1.99	1.84
South Carolina	432	5.44	2.72	2.07	1.90
Texas	393	5.75	2.65	2.05	1.99
Comparison 40	1,017	5.61	2.75	2.05	1.94

First Ideas Offered for Preventing Red Light Running:

State/Group	N	First Idea Offered for Preventing Red light Running (%)							
		1	2	3	4	5	6	7	8
Alabama	474	25.3	19.4	2.5	9.1	10.5	1.9	13.9	17.3
Arizona	410	22.0	16.1	3.4	19.5	11.2	2.0	9.8	16.1
California	353	17.3	15.6	2.8	19.3	16.4	2.0	8.5	18.1
Colorado	442	20.8	16.3	4.1	15.2	10.9	0.9	11.1	20.8
Florida	359	16.4	21.2	2.2	8.6	13.1	1.9	16.4	20.1
Michigan	460	25.2	14.3	3.7	6.3	13.5	2.2	17.0	17.8
New Jersey	348	20.7	19.3	3.4	5.2	12.9	3.7	13.8	21.0
New York	336	18.5	21.1	3.3	10.1	12.8	3.0	13.4	17.9
South Carolina	432	22.0	17.8	3.5	11.6	13.2	1.2	13.7	17.1
Texas	393	26.7	14.8	2.5	11.5	8.1	2.0	14.2	20.1
Comparison 40	1,017	24.9	14.7	3.3	8.3	11.4	1.7	14.7	21.0

1—No Ideas
2—Education
3—Change Signal Timings
4—Photo Enforcement

5—Increase Fines
6—Driver Improvement Clinics
7—Police Enforce Regularly
8—Other

Time of Day for Red Light Running:

State/Group	$\underline{N}$[26]	Time of Day When Most Red Light Running Occurs (%)			
		12:01 a.m. - 6:00 a.m.	6:01 a.m. - 12:00 p.m.	12:01 p.m. - 6:00 p.m.	6:01 p.m. - 12:00 a.m.
Alabama	277	11.2	38.6	40.1	10.1
Arizona	214	14.0	32.7	42.1	11.2
California	189	7.9	34.9	47.1	10.1
Colorado	267	8.6	37.1	43.4	10.9
Florida	189	12.7	41.3	36.0	10.1
Michigan	233	8.2	28.3	48.1	15.5
New Jersey	178	9.6	40.4	39.9	10.1
New York	189	6.9	38.1	44.4	10.6
South Carolina	248	10.5	40.3	39.9	9.3
Texas	227	7.5	36.6	45.4	10.6
Comparison 40	564	9.8	33.9	46.5	9.9

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[26] Only respondents admitting to have run red lights completed this question.

Destinations Traveled When Red Light Running:

State/Group	N[27]	Where Going Most of the Time When Running A Red Light (%)				
		To work/school in morning	Home in the afternoon	Running errands in mid-day	Weekend Recreation	Other
Alabama	277	42.6	11.6	22.4	11.2	12.3
Arizona	215	40.9	13.0	26.5	7.9	11.6
California	189	41.8	12.7	24.9	11.1	9.5
Colorado	268	40.7	13.8	24.3	9.7	11.6
Florida	190	47.9	11.1	20.5	10.0	10.5
Michigan	233	33.0	14.2	24.9	14.6	13.3
New Jersey	179	46.4	14.0	19.0	6.1	14.5
New York	189	39.2	16.4	29.1	5.3	10.1
South Carolina	249	47.4	12.0	20.5	8.0	12.0
Texas	227	43.6	15.9	21.6	10.1	8.8
Comparison 40	565	40.2	10.1	24.4	12.6	12.7

[27] Only respondents admitting to have run red lights completed this question.

Type of Day When Red Light Running:

State/Group	$\underline{N}$[28]	What Type of day is Red Light Running Occurring? Weekday	Weekend
Alabama	277	83.0	17.0
Arizona	214	80.4	19.6
California	189	85.2	14.8
Colorado	267	82.4	17.6
Florida	189	85.7	14.3
Michigan	233	77.7	22.3
New Jersey	178	80.9	19.1
New York	189	88.4	11.6
South Carolina	248	87.1	12.9
Texas	227	83.7	16.3
Comparison 40	564	81.2	18.8

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[28] Only respondents admitting to have run red lights completed this question.

Distance from Home When Running Red Lights:

| State/Group | N[30] | Distance from Home (miles) When Most Likely Running Red Lights (%)[29] | | | | |
		Up to 1	More than 1, up to 2	More than 2, up to 5	More than 5, up to 20	More than 20
Alabama	277	9.4	10.5	24.9	37.5	10.5
Arizona	214	13.1	11.2	25.7	31.8	7.9
California	189	10.1	12.2	27.0	30.2	13.8
Colorado	267	9.4	15.0	28.8	28.1	13.9
Florida	190	6.8	12.1	26.8	36.8	9.5
Michigan	233	6.9	5.2	24.5	37.3	18.0
New Jersey	178	13.5	10.7	25.8	28.7	12.9
New York	189	7.9	14.3	30.2	34.9	5.3
South Carolina	248	7.3	8.5	27.8	35.1	13.3
Texas	227	10.1	14.5	23.3	33.9	12.8
Comparison 40	565	12.4	11.9	22.1	31.0	14.0

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[29] Approximately 7.6% did not know where they were most of the time when running red lights, or simply refused to answer the question. The percentages for each row do not add up to 100% because of these individuals.
[30] Only respondents admitting to have run red lights completed this question.

Urban Frustration and the Likelihood of Performing Various Driving Behaviors When Frustrated:

State/Group	N	At Least Somewhat Frustrated with Urban Roads (%)	If Frustrated, Somewhat Likely to[31]: (%)				
			Weave	Speed	Tailgate	Gesture	Run Red Lights
Alabama	474	76.8	45.4	35.7	34.6	20.5	24.9
Arizona	410	79.5	44.1	32.7	34.9	22.2	18.8
California	353	76.8	47.9	37.7	39.1	29.7	18.1
Colorado	442	87.1	49.1	33.0	39.6	30.1	24.2
Florida	359	77.4	45.4	33.4	31.8	24.0	19.5
Michigan	460	82.6	44.8	28.7	37.2	30.9	16.7
New Jersey	348	80.7	37.4	36.2	35.3	29.6	16.7
New York	336	79.2	44.0	32.4	39.0	29.2	25.9
South Carolina	432	81.0	48.1	29.6	38.7	24.1	22.5
Texas	393	77.6	52.7	32.1	37.7	24.4	24.7
Comparison 40	1,017	79.0	41.2	31.3	33.6	25.4	20.5

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[31] Each behavior was considered in separate survey questions.

Urban Frustrations:

State/Group	N[33]	Driver Discourtesy	Illegal Driving	Congestion	Too Many Lights	Long Commute	Other
							Urban Road Frustrations[32] (%)
Alabama	364	41.5	13.5	22.0	3.8	0.3	19.0
Arizona	326	39.9	13.5	23.9	3.4	0.0	19.3
California	271	37.6	14.0	30.3	4.8	0.4	12.9
Colorado	385	44.4	13.5	26.0	1.3	0.0	14.8
Florida	278	42.1	16.2	21.2	2.9	0.4	17.3
Michigan	380	42.4	9.7	26.3	3.2	0.8	17.6
New Jersey	281	35.2	14.2	29.2	2.5	0.4	18.5
New York	266	35.0	14.3	23.3	4.9	0.8	21.8
South Carolina	350	40.0	13.1	22.0	3.4	0.0	21.4
Texas	305	41.0	11.8	23.3	4.9	1.0	18.0
Comparison 40	803	43.8	12.8	20.2	3.0	0.6	19.6

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[32] Frustrations were considered in one survey question, with multiple responses allowed. However, only respondents' first mentioned frustrations are reflected above.
[33] N sizes reflect only respondents who were at least somewhat frustrated with urban roads.