



# 2021 Traffic Safety Culture Index

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December 2022

## **Title**

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2021 Traffic Safety Culture Index

## **Authors**

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AAA Foundation for Traffic Safety

## Foreword

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The AAA Foundation for Traffic Safety has consistently demonstrated its commitment to improve traffic safety through work such as the one presented in this report, the 14<sup>th</sup> annual *Traffic Safety Culture Index*. Results presented in this report are based on a nationally representative survey conducted in 2021 of more than 2,600 licensed U.S. motorists.

Similar to 2020, the COVID-19 pandemic has continued to alter Americans' life and mobility in 2021. During this time, there has also been an increase in traffic fatalities. As multiple studies indicated unsafe driving behaviors such as speeding and impaired driving played a critical factor for the increase, continued efforts for research and public education regarding traffic safety have become increasingly important. Like the past *Traffic Safety Culture Index* reports, the 2021 version should be a useful reference for researchers, practitioners, and traffic safety advocates to gain better understanding of people's perceptions and attitudes towards risky driving behaviors, to identify relevant issues, and to develop corresponding strategies.

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AAA Foundation for Traffic Safety

## About the Sponsor

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## Introduction

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Since March 2020 when the World Health Organization declared COVID-19 a pandemic, Americans changed their travel patterns and lifestyles considerably. Although the changes and corresponding impact have remained through 2021 to some degree, the U.S. has started charting a course of recovery from the pandemic. People's daily travel increased and the traffic volumes on major corridors increased accordingly. Unfortunately, traffic fatalities increased to more than prior to the pandemic. The National Highway Traffic Safety Administration (NHTSA) projected a 10% increase in the estimated total traffic fatalities in 2021 over 2020, which would be the highest number since 2005 (National Center for Statistics and Analysis, 2022). As NHTSA's analyses pointed out, unsafe driving behaviors such as speeding, alcohol involvement, and non-use of a seatbelt, account for a considerable proportion of the increased fatalities.

For more than a decade, the AAA Foundation for Traffic Safety has been committed to deepening our understanding of America's traffic safety culture through the annual *Traffic Safety Culture Index* survey. As the impacts of traffic safety on public health have worsened, responses from the 2021 *Traffic Safety Culture Index* can provide insights into understanding public perceptions, attitudes toward, and engagement in unsafe driving behaviors and aspects that should be considered when developing countermeasures.

As in previous years, this report details the data collection methodology and summarizes major national-level results of the 14<sup>th</sup> annual *Traffic Safety Culture Index* (TSCD). In addition, this report includes an in-depth analysis of the magnitude of discordance between drivers' attitudes/perceptions and their behaviors.

## Organization of Report

This report is organized by the following sections:

- **Introduction**
- **Summary of Major Findings**
- **Data Collection Methodology and Limitations:** Methods for data collection as well as limitations.
- **Results:**
  - **Overall Results:** Perceived danger, perceived risk of apprehension, perceived social disapproval, self-reported behavior, and support for countermeasures related to various risky driving behaviors.
  - **Comparisons between Drivers' Attitudes and Perceptions and Their Behaviors:** Comparison of drivers' attitudes and perceptions with their self-reported engagement in risky driving behaviors as well as assessment of discordance magnitude between those measures.
- **Discussion**
- **Appendix A:** Overall results in a table format, considering demographic factors such as age and sex.

## **Summary of Major Findings**

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### **Results from 2021 TSCI**

#### ***Distracted Driving***

- Drivers predominantly believe texting/emailing (92%) and reading (93%) on a hand-held cell phone to be very or extremely dangerous. Fewer drivers perceived holding and talking on a hand-held cell phone (77%) or using a technology that allows hands-free use of their phones (17%) as being very or extremely dangerous.
- Less than half of the respondents believed drivers would be apprehended for texting/emailing on a cell phone (43%), reading a text/email (35%), or holding and talking on a cell phone while driving (37%).
- Very few drivers felt that people important to them would approve of them engaging in distracted driving behaviors (4%–12% depending on the behavior).
- Despite these perceptions, approximately a quarter of drivers (26%) reported having sent a text/email while driving. More drivers reported having read a text/email (36%) while driving or held and talked on a cell phone (37%) while driving. More than half of the drivers (57%) indicated having used a hands-free technology to talk or send texts/emails while driving.
- While 79% of respondents supported a law against holding and talking on a phone while driving, only 45% supported a law against using hands-free technologies to read/text/email while driving.

#### ***Aggressive Driving Behaviors***

- Half of drivers perceived driving 15mph over the speed limit on a freeway to be very or extremely dangerous. More respondents felt that driving through a red light was dangerous (76%).
- Though 63% of drivers believed police would apprehend them for traveling 15mph over the speed limit on a freeway, approximately half reported having engaged in the behavior in the past 30 days before the survey.
- Less than half (45%) of the respondents supported a policy using cameras to automatically ticket drivers who drive more than 10mph over the speed limit on residential streets.

#### ***Drowsy Driving Behaviors***

- The majority of drivers perceived drowsy driving to be very or extremely dangerous (95%) and that those important to them would disapprove of the behavior (99%); however, 19% of drivers reported having engaged in the behavior in the past 30 days.
- Few (29%) believed the police would apprehend them for drowsy driving.

### ***Impaired Driving Behaviors***

- Approximately 94% of drivers believed driving after drinking enough alcohol (to the point one considers they might be over the legal limit) was very or extremely dangerous. Only 7% of respondents reported having engaged in this behavior in the past 30 days.
- In contrast to alcohol, only 65% of drivers felt driving (within an hour) of using marijuana to be very or extremely dangerous. However, 93% of drivers believed people important to them would disapprove of the behavior.
- Most respondents (86%) considered driving when using potentially impairing prescription drugs to be very or extremely dangerous. Less than half (43%) of the drivers believed police would apprehend a driver engaging in such behavior (43%).

### ***Comparisons between Drivers' Attitudes and Perceptions and Their Behaviors***

- The level of discordance between a driver's self-reported driving behavior and their perceptions of danger, likelihood of apprehension, and social disapproval varied depending on the specific risky behavior.
  - For example, 96% of drivers indicated that people important to them would disapprove of them driving while manually typing/sending a text message/email, but about a quarter reported having done so at least once in the past 30 days before the survey.
  - Nearly 90% of drivers felt driving aggressively by switching lanes quickly and/or very close behind another car to be very or extremely dangerous, and about a quarter of drivers admitted to having done so at least once in the past 30 days.
- Correlation analysis suggested that driver's risk-taking behaviors were associated with their perceived danger and social disapproval of the behavior.
- However, there were no or weak associations between one's risk-taking behavior and perceived likelihood of apprehension across all examined unsafe driving behaviors.
- Impaired driving showed higher discordances than other behaviors (regardless of the source of impairment). That is, the gaps between perceived risk/likelihood of apprehension/social disapproval and reported behaviors were larger for these than for other risky behaviors.
- In contrast, speeding behaviors on both freeways and residential streets showed lower discordances.
  - That is, both people's perceived danger and social disapproval have better alignment with their reported engagement in speeding than other unsafe driving behaviors.
  - This may imply that perceived danger and social disapproval would be important factors that drivers weigh in their decision to speed or not.

# Data Collection Methodology and Limitations

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## Survey Instrument

The 2021 TSCI instrument was identical to that used in 2019 (pre-COVID-19). This year's TSCI continued to survey the five core questions pertaining to people's perceived danger, perceived risk of apprehension, social disapproval, self-reported behaviors, and support for safety countermeasures.

## Sampling

The study used a sample from KnowledgePanel®, a probability-based web panel maintained by Ipsos, to collect data. The panel was designed to be representative of households in the United States by using standard probability-based random digit dial (RDD) and address-based sampling (ABS) methods. The sampling frame includes all U.S. households reachable by telephone or regular mail regardless of telephone or internet access or use. If a sampled household did not have an internet connection or an internet-capable computer, a web-enabled device and/or free internet service were provided. To achieve the representation of the U.S. adult population, a broad set of geodemographic indicators as well as hard-to-reach adult subgroups were used for the panel recruitment process. Individuals not sampled could not volunteer to join the panel.

For respondents ages 19 and older, eligible adults across the nine Census geographical divisions were sampled to ensure a minimum of 200 completed interviews per division. The questionnaire was sent to 4,178 panelists ages 19 and older, with 2,460 qualified respondents completing the questionnaire. For the 16- to 18-year-old sample, random households were sampled with at least one 15- to 18-year-old present from KnowledgePanel®. The survey was also sent to parents who had at least one age-eligible teen in their household. If there was more than one teen in this age range, one of the eligible teens was randomly selected. Parents were asked to provide consent for the selected teen and ask their teen to complete the remainder of the survey. Invitations were sent to 3,392 parents of teens ages 15–18, and 922 qualified teens completed the questionnaire. A total of 3,382 respondents ages 16 and older completed the survey. Among them, 2,657 were active licensed drivers (who drove in the past 30 days before the survey with valid driver's license). The survey was administered in English and Spanish between July 26 and August 30, 2021.

## Weighting

The data were weighted to account for probability of selection for recruitment into KnowledgePanel®, probability of selection for the survey, and non-response at both stages. Further, they were weighted to align the characteristics of respondents to those of the population of residents aged 16 years or older, from which the sample was drawn with respect to gender, age, race/Hispanic ethnicity, education, census region, metropolitan/non-metro status, number of people aged 16 and older in the household, and household income using data from the U.S. Census Bureau's Current Population Survey (2021). All analyses included in this report have been conducted using weighted data.

## Limitations

This survey aims to estimate the prevalence of specific attitudes and behaviors among all *drivers* in the United States. However, the results of this survey may differ from true population values due to sampling error and possible sources of bias.

Sampling error measures the extent to which estimates from a sample may reflect the population from which the sample is drawn. In this survey, the sampling error reflects the range in which estimates from the sample of 2,657 drivers might be expected to differ from the results that would be obtained if the same data were collected from all drivers in the United States. In this particular survey, a 95% confidence level is set for the margin of error. This means that the range of estimates is expected to include the actual population values 95 times out of 100 when estimated from a sample of the same size and with the same survey design. Additionally, the margin of error varies depending on the number of responses for a survey question and the distribution of responses. The table below shows the approximate margin of error derived from the entire sample. The margin of error is larger for items asked of fewer respondents.

**Table 1. Approximate margin of error (in percentage points) for selected percentages, at the 95% confidence level**

Percentages near	Approx. margin of error
90 or 10	± 1.4
80 or 20	± 1.8
70 or 30	± 2.1
60 or 40	± 2.2
50	± 2.3

There is a larger margin of error in this survey than for a simple random sample of the same size because of the design of the panel and the stratification by census division and oversampling of respondents aged 16–18. 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 due to bias. For instance, potential sources of bias in surveys include systematic non-coverage of certain segments of the population (e.g., people who cannot read in English or 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

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Results of the 2021 TSCI are presented in two sections. The first section included the overall results regarding perceived danger, perceived risk of apprehension, social disapproval, self-reporting of behaviors, and support of safety laws related to various risky driving behaviors. The second section highlighted comparisons of drivers' attitudes/perceptions with their behaviors by examining the magnitude of discordance (or concordance). Results were described in the context of three focus areas:

1. Distracted driving, primarily with cell phone use, including talking, reading, texting, and emailing
2. Aggressive driving, such as speeding and running red lights
3. Drowsy and impaired driving (by alcohol or other drugs)

### Overall Results

#### *Perceived Danger of Driving Behaviors*

Table 2 summarized the results about drivers' perceived level of danger for various driving behaviors. Aside from two behaviors—driving using a technology allowing hands-free use of their phone and driving 15 miles per hour [mph] over the speed limit on freeways—the majority of respondents perceived the examined unsafe driving behaviors as very or extremely dangerous.

With respect to distracted driving, 92% of respondents felt that driving while manually texting or emailing on a cell phone is extremely or very dangerous, and 93% believed that driving while reading on cellphones is extremely or very dangerous. Also, 76% perceived that driving while holding and talking on cell phones was extremely or very dangerous. In contrast, only 17% of respondents perceived using a technology that allows for hands-free use of their phones as being very or extremely dangerous.

Fewer drivers reported aggressive driving behaviors as being very or extremely dangerous compared to the distracted driving behaviors. Approximately 88% of drivers believed aggressive driving, including switching lanes quickly and driving closely behind other vehicles was very or extremely dangerous. Driving through a red light was reported as being very or extremely dangerous by 76% of drivers. Fewer drivers perceived speeding as a dangerous activity. For instance, 59% of respondents perceived driving 10mph over the speed limit on residential streets as very or extremely dangerous. Fewer (50%) reported speeding 15mph over the speed limit on freeways as very or extremely dangerous.

Respondents predominantly agreed (95%) that driving tired/drowsy is a very or extremely dangerous activity. Regarding substance-related impaired driving, 94% of respondents felt driving after drinking enough alcohol that one may be over the legal limit was extremely or very dangerous, and 65% perceived driving within an hour after using marijuana as extremely or very dangerous. Additionally, 86% of respondents reported driving after using potentially impairing prescription drugs as very or extremely dangerous.

**Table 2. How dangerous do you feel the following driving behaviors are?**

Driving Behaviors		Extremely dangerous (%)	Very dangerous (%)	Moderately dangerous (%)	Slightly dangerous (%)	Not dangerous at all (%)
Distracted	Drivers holding and talking on cell phones	44.4	32.1	18.2	4.5	0.7
	Drivers reading on cell phones	64.9	28.3	5.9	0.8	0.0
	Drivers manually texting or emailing on cell phones	71.3	20.8	7.2	0.7	0.0
	Drivers using technology that allows hands-free use of their phone (Bluetooth, CarPlay, Android Auto, etc.)*	8.1	9.3	28.3	41.8	12.5
Aggressive	Drivers speeding 15 mph over the speed limit on freeways	22.3	27.3	30.3	17.4	2.7
	Drivers speeding 10 mph over the speed limit on residential streets (neighborhood)	29.1	30.3	29.3	10.6	0.8
	Driving through a light that had just turned red when they could have stopped safely	47.0	29.3	18.6	5.1	0.0
	Driving aggressively (switching lanes quickly, driving very closely behind another car)	53.4	34.9	10.0	1.3	0.4
Drowsy & Impaired	Driving when they were so tired that they had a hard time keeping your eyes open	67.3	27.5	3.9	0.9	0.4
	Driving after drinking enough alcohol that they may be over the legal limit	75.3	18.4	5.9	0.3	0.2
	Driving shortly (within an hour) after using marijuana	39.2	25.6	21.8	11.5	2.0
	Driving after using potentially impairing prescription drugs	56.0	30.3	10.8	2.5	0.4
Other	Driving without wearing a seatbelt	47.4	27.9	18.2	5.0	1.5

\* The survey did not specify talking or typing using hands-free technology to ask how dangerous people feel distracted driving is.

### ***Perceived Risk of Apprehension***

Drivers reported how likely a driver is to be caught by the police for certain behaviors (see Table 3). Across each of the distracted driving behaviors, fewer than half of all respondents reported that a driver engaging in the behavior would be somewhat or very likely to be caught by the police. Specifically, 43% of drivers believed a driver manually typing or sending a text message/email on a phone would be somewhat or very likely to be apprehended, while 35% believed a driver reading a text/email on a phone would be apprehended by the police.

Far more respondents believed drivers engaging in aggressive driving behaviors would be caught by police, compared to the engagement in distracted driving behaviors. For example, 63% of respondents thought that driving 15 mph over the posted speed limit on a freeway would likely result in apprehension. Likewise, 53% believed that driving through a red light would likely result in the same.

Responses were less consistent regarding the impaired driving behaviors. Nearly seven in ten respondents indicated that a driver who has consumed enough alcohol to be over the legal limit would somewhat or very likely be caught by the police. In contrast, only 31% of respondents believed a person driving within an hour after using marijuana would somewhat or very likely be apprehended by the police.

**Table 3. How likely is a driver to be caught by the police for the following behaviors?**

Driving Behaviors		Very likely (%)	Somewhat likely (%)	Somewhat unlikely (%)	Very unlikely (%)
Distracted	Driving while holding and talking on a cell phone	9.8	27.2	37.8	25.2
	Driving while reading a text or an email on a cell phone	8.2	26.9	42.3	22.6
	Driving while manually typing or sending a text message or email on a cell phone	11.9	31.1	36.4	20.7
Aggressive	Driving 15 mph over the speed limit on a freeway	21.6	41.2	26.0	11.2
	Driving 10 mph over the speed limit on a residential street	11.6	34.5	35.4	18.4
	Driving through a light that had just turned red when they could have stopped safely	16.8	36.6	30.5	16.1
	Driving aggressively (switching lanes quickly, driving very closely behind another car)	16.5	36.6	31.0	15.9
Drowsy & Impaired	Driving while being so tired that they had a hard time keeping their eyes open	8.0	20.8	42.4	28.8
	Driving after drinking enough alcohol that they may be over the legal limit	20.4	47.3	23.3	9.1
	Driving shortly (within an hour) after using marijuana	6.9	23.8	39.5	29.8
	Driving after using potentially impairing prescription drugs	8.7	33.9	38.8	18.5
Other	Driving without wearing a seatbelt	14.6	31.8	32.3	21.3

### ***Social Disapproval***

Respondents were asked, “How much do you believe people who are important to you would approve of each of the following behaviors?” As shown in Table 4, across each driving behavior, respondents predominantly believed that the people important to them would somewhat or completely disapprove of the unsafe driving behavior.

Of the distracted driving behaviors, 96% of respondents felt people important to them would disapprove of them driving while manually sending a text/email on a phone. Fewer respondents thought that driving while reading a text/email on a phone (94%) and driving while holding and talking on a phone (88%) would be socially disapproved.

Compared to other examined unsafe driving behaviors, speeding had less social disapproval. That is, 85% of respondents believed people important to them would disapprove of driving 15mph over the speed limit on a freeway and 89% thought driving 10mph over the speed limit on a residential street would be socially disapproved. Far more believed driving through a red light (94%) or driving aggressively (96%) would be disapproved by people important to them.

Among the impaired driving behaviors, 98% of respondents believed that people important to them would somewhat or completely disapprove of driving after drinking enough alcohol to be over the legal limit. Nearly all respondents (99%) believed riding in a car driven by someone who has had too much alcohol would be socially disapproved. Approximately nine in ten respondents felt that the people important to them would disapprove of driving within an hour after using marijuana.

**Table 4. How much do you believe people who are important to you would approve of each of the following behaviors?**

Driving Behaviors		Completely approve (%)	Somewhat approve (%)	Somewhat disapprove (%)	Completely disapprove (%)
Distracted	Driving while holding and talking on a cell phone	1.7	10.0	44.2	44.1
	Driving while reading a text or an email on a cell phone	1.1	4.7	32.8	61.5
	Driving while manually typing or sending a text message or email on a cell phone	0.5	3.6	28.5	67.4
Aggressive	Drivers speeding 15 mph over the speed limit on freeways	1.7	13.8	48.7	35.8
	Drivers speeding 10 mph over the speed limit on residential streets (neighborhood)	1.0	9.9	39.9	49.2
	Driving through a light that had just turned red when they could have stopped safely	0.7	5.0	36.7	57.6
	Driving aggressively (switching lanes quickly, driving very closely behind another car)	0.6	3.3	35.2	61.0
Drowsy & Impaired	Driving while being so tired that they had a hard time keeping their eyes open	0.5	0.6	22.4	76.5
	Driving after drinking enough alcohol to be over the legal limit	1.0	1.2	9.4	88.4
	Riding in a car driven by someone who has had too much alcohol	0.4	0.9	8.8	89.9
	Driving shortly (within an hour) after using marijuana	1.6	5.3	17.7	75.4
	Driving after using potentially impairing prescription drugs	0.6	2.9	15.9	80.6
Other	Driving without wearing a seatbelt	0.8	2.6	22.4	74.2

### ***Driving Behaviors in Past 30 Days***

Respondents were asked, “In the past 30 days, how often have you done any of the following behaviors?” Table 5 shows that many respondents reported having engaged in each of the behaviors to varying degrees.

For the distracted driving behaviors, 26% of drivers indicated they manually typed/sent a text on a phone while driving, 36% drove while reading a text/email on a phone, and 37% drove while holding and talking on a phone. In contrast, 57% of drivers indicated they had used a hands-free technology to talk/text/email while driving in the past 30 days.

Half of respondents reported having driven 15mph over the speed limit on a freeway at least once in the past 30 days before the survey. Additionally, four in ten drivers reported having driven 10mph over the speed limit on a residential street. On the other hand, fewer reported having driven through a red light (28%) or driven aggressively by switching lanes quickly and/or following very closely behind another vehicle (23%) in the past 30 days.

Relative to distracted or aggressive driving, the prevalence of reported impaired driving was less frequent and varied by the source of impairment. For example, 19% of drivers reported having driven when they were so tired that they had a hard time keeping their eyes open, whereas only 4% reported having driven while using potentially impairing prescription drugs. Approximately 7% of respondents reported having driven when they had enough alcohol that they may have been over the legal limit. Likewise, 7% reported having ridden in a car driven by someone who had too much alcohol, at least once in the past 30 days before the survey.

**Table 5. In the past 30 days, how often have you...?**

Driving Behaviors		Regularly (%)	Fairly often (%)	A few times (%)	Just once (%)	Never (%)
Distracted	Driven while holding and talking on a cell phone	1.1	3.3	22.4	10.6	62.6
	Driven while reading a text or an email on a cell phone	0.8	2.9	22.4	10.3	63.7
	Driven while manually typing or sending a text message or an email	0.5	1.9	15.6	8.4	73.7
	Talked/texted/emailed on a cell phone using hands-free technology (Bluetooth, CarPlay etc.)	9.1	12.9	29.5	5.6	42.9
Aggressive	Driven 15 mph over the speed limit on a freeway	4.6	8.1	29.9	7.9	49.6
	Driven 10 mph over the speed limit on a residential street	1.9	5.6	25.5	7.2	59.8
	Driven through a light that had just turned red when you could have stopped safely	0.3	0.5	12.0	15.3	71.9
	Driven aggressively by switching lanes quickly and/or very close behind another car	0.3	1.4	13.7	7.6	77.1
Drowsy & Impaired	Driven when you were so tired that you had a hard time keeping your eyes open	0.3	0.6	7.5	10.3	81.3
	Driven when you had enough alcohol that you thought you might be over the legal limit	0.1	0.4	3.1	3.8	92.6
	Ridden in a car driven by someone who has had too much alcohol	0.0	0.1	3.6	3.4	92.9
	Driven shortly (within an hour) after using marijuana	1.0	0.7	2.4	1.2	94.8
	Driven when using potentially impairing prescription drugs	0.3	0.6	1.8	0.9	96.4
Other	Driven without wearing a seatbelt	1.8	2.0	6.7	2.3	87.3

### ***Support for Safety Countermeasures***

Respondents were asked how strongly they support or oppose various traffic safety countermeasures. As shown in Table 6, many drivers were in favor of most examined countermeasures. Nearly 90% of the respondents were in support of requiring self-driving car developers to share safety information and testing results with the public before these vehicles are allowed on public roads. About eight in ten drivers were supportive of a law against holding and talking on a phone while driving, regardless of the driver's age. Meanwhile, 45% of respondents were in support of a law against using hands-free technologies for reading, typing, and sending a text message/email. Likewise, less than half of the respondents (45%) were in favor of using cameras to automatically ticket drivers who drive more than 10mph over the speed limit on residential streets.

Regarding impaired driving, 72% of drivers supported requiring all new vehicles to have a built-in technology that would not let the car start if the driver's alcohol level is over the legal limit. While only 56% of drivers supported lowering the legal limit for a driver's blood alcohol concentration from 0.08 to 0.05, approximately 71% of drivers supported lowering the legal limit for a driver's blood alcohol concentration to 0.05 for people transporting young children. A large majority (79%) of the respondents supported making it illegal to drive with more than a certain amount of marijuana in your system. Nearly three in four drivers supported making it illegal to drive with any drug (not legally prescribed) in one's system.

**Table 6. How strongly do you support or oppose...?**

Driving Behaviors		Support strongly (%)	Support somewhat (%)	Oppose somewhat (%)	Oppose strongly (%)
Distracted	Having a law against holding and talking on a cell phone while driving, for all drivers regardless of their age	52.9	26.0	16.5	4.6
	Having a law against using hands-free technology to read, type, or send a text message/email while driving	21.9	23.5	29.6	25.1
Aggressive	Using cameras to automatically ticket drivers who drive more than 10 mph over speed limit on residential streets	17.5	27.4	25.6	29.6
Impaired	Requiring all new cars to have a built-in technology that won't let the car start if the driver's alcohol level is over the legal limit	40.1	32.3	16.3	11.3
	Having a law lowering the legal limit for a driver's blood alcohol concentration from 0.08 to 0.05	24.3	31.8	23.0	20.9
	Lowering the legal limit for a driver's blood alcohol concentration to 0.05 for people transporting young children	41.1	29.5	11.9	17.5
	Making it illegal to drive with more than a certain amount of marijuana in your system	47.8	30.7	13.3	8.3
	Making it illegal to drive with any drug (not legally prescribed) in your system	43.8	29.3	16.3	10.6
Other	Requiring all new drivers under the age of 21 years to go through training, practice time, and a restriction period	36.5	40.3	15.8	7.4
	Require developers of self-driving car technologies to share safety information and testing results with the public before the vehicles are allowed on public roads	65.2	25.2	5.2	4.4

## Comparisons between Drivers' Attitudes and Perceptions and Their Behaviors

### *Overall Results*

Table 7 shows that although 93% of drivers felt reading a text or an email while driving was very or extremely dangerous, about four in ten reported having engaged in the behaviors at least once in the past 30 days. Also, 96% of drivers thought that people important to them would disapprove of them driving while manually typing/sending a text message/email, yet about a quarter reported having done so at least once in the past 30 days before the survey.

In examining the risky driving behaviors, the levels of discordance between the driver's attitudes/perceptions and their engagement in the behavior varied depending on the unsafe driving behavior. For example, a half of drivers felt driving 15mph over the speed limit on a freeway to be very or extremely dangerous, and about the same number of drivers reported having engaged in the behavior at least once in the past 30 days. In contrast, nearly nine in ten drivers felt driving aggressively by switching lanes quickly and/or very close behind another car to be very or extremely dangerous, and about a quarter of drivers admitted to having done so at least once in the past 30 days.

Drivers reported relatively high perceived danger, high social disapproval, and low engagement across all examined impaired-driving behaviors. For instance, driving when one had enough alcohol that they may be over the legal limit was perceived as being very or extremely dangerous by 94% of respondents and as being socially disapproved by 98% of respondents. Only 7% of drivers reported having engaged in the behavior. A similar trend of high social disapproval and low engagement was observed regarding driving after using marijuana and driving when using potentially impairing prescription drugs.

**Table 7. Drivers' perceptions and self-reported behaviors**

Driving Behaviors		Very or extremely dangerous (%)	Police will apprehend the driver (%)	Socially disapproved (%)	Engaged in at least once (%)
Distracted	Driven while holding and talking on a cell phone	76.5	37.0	88.3	37.4
	Driven while reading a text or an email on a cell phone	93.2	35.1	94.3	36.4
	Driven while manually typing or sending a text message or an email	92.1	43.0	95.9	26.4
	Driven while talking/texting/emailing on a cell phone using hands-free technology (Bluetooth, CarPlay, etc.)*	17.4	NA	NA	57.1
Aggressive	Driven 15 miles per hour over the speed limit on a freeway	49.6	62.8	84.5	50.5
	Driven 10 miles per hour over the speed limit on a residential street	59.4	46.1	89.1	40.2
	Driven through a light that had just turned red when you could have stopped safely	76.3	53.4	94.3	28.1
	Driven aggressively by switching lanes quickly and/or very close behind another car	88.3	53.1	96.2	23.0
Drowsy & Impaired	Driven when you were so tired that you had a hard time keeping your eyes open	94.8	28.8	98.9	18.7
	Driven when you had enough alcohol that you thought you might be over the legal limit	93.7	67.7	97.8	7.4
	Ridden in a car driven by someone who has had too much alcohol	NA	NA	98.7	7.1
	Driven shortly (within an hour) after using marijuana	64.8	30.7	93.1	5.3
	Driven when using potentially impairing prescription drugs	86.3	42.6	96.5	3.6
Other	Driven without wearing a seatbelt	75.3	46.4	96.6	12.8

\* The survey did not specify talking or typing using hands-free technology to ask how dangerous people feel distracted driving is.

## ***Magnitude of Discordance between Drivers' Attitudes and Perceptions and Their Behaviors***

This section provided further statistical assessment on the prevalence of discordance of people's behaviors compared with their attitudes and perceptions toward unsafe driving behaviors. The analysis used Kendall's tau-a ( $\tau_a$ ) to examine how well people's perceived danger, risk of apprehension, and social disapproval regarding unsafe driving behaviors aligned with their engagement in those behaviors. In contrast to *Overall Results*, which made the comparisons at a group level, this analysis looked into the discordances at an individual level.

Kendall's tau-a (Kendall, 1938) measures the correlation between two ordinal variables by computing the degree of concordances and discordances of orders in two variables' categories. The value of  $\tau_a$  can range from  $-1$  (perfect negative association) to  $1$  (perfect positive association), with  $0$  indicating no association. Also, the following guidelines for  $\tau_a$  can be used, in general, to understand the magnitude of an association between two variables (Botsch, 2011):

- $|\tau_a| < 0.20$ : a weak association
- $0.20 \leq |\tau_a| < 0.30$ : a moderate association
- $|\tau_a| \geq 0.30$ : a strong association

For example, the Kendall correlation between perceived danger and self-reported behavior would be close to  $1$  when drivers' responses within those measures have similar ranks in the same direction (e.g., *extremely dangerous* pairing with *engaged regularly*, or *not dangerous at all* pairing with *never engaged*). In contrast, the correlation would be close to  $-1$  when responses' ranks are similar but in the opposite direction (e.g., *extremely dangerous* pairing with *never engaged*, or *not dangerous at all* pairing with *engaged regularly*).

Table 8 shows that, across all examined unsafe driving behaviors, the associations between drivers' perceived danger and their engagement were statistically significant. The negative values implied that as drivers' perceived danger toward an unsafe driving behavior increased, they reported having engaged in the behavior less. The magnitude of associations, however, was relatively weak for most examined behaviors. For example, for all types of impaired driving,  $|\tau_a|$  was smaller than  $0.1$ , indicating a low concordance (or high discordance) between the perceived danger and behavior.

Interestingly, speeding behaviors on freeways and residential streets showed moderate associations with the perceived danger. Considering that only about half of the drivers perceived speeding as dangerous (see Table 7), the relatively high  $\tau_a$  implied a higher concordance resulting from lower perceived danger and (therefore) higher engagement. That is, perceived danger could be an important factor that drivers weigh in their decision to speed or not.

For risks of apprehension, associations with people's behavior were statistically significant only for a sub-set of unsafe driving behaviors: speeding on residential streets, alcohol-impaired driving, and drug-impaired driving. The negative values implied that the

more likely respondents were to believe that drivers engaging in an unsafe driving behavior would be caught by the police, the less likely they were to report engaging in the behavior. However, these correlations were all close to a value of zero, indicating very weak associations between these two measurements.

For social disapprovals, like the perceived danger, associations with people's behaviors were statistically significant across all examined unsafe driving behaviors. The negative values implied that the more likely that people important to respondents disapproved of an unsafe driving behavior, the less likely respondents were to engage in the behavior. Despite the small magnitudes of associations identified across most examined unsafe driving behaviors, speeding on both freeways and residential streets had moderate associations between social disapproval and behavior. This may imply if a driver believes people important to them would approve of speeding, they may be more inclined to speed themselves.

Table 8. Statistical associations ( $\tau_a$ ) between drivers' perceptions and behaviors

Driving Behaviors		Perceived danger	Risk of apprehension	Social disapproval
Distracted	Driven while holding and talking on cell phones	-0.139***	-0.002	-0.190***
	Driven while reading on cell phones	-0.140***	0.028	-0.108***
	Driven while manually texting or emailing on cell phones	-0.145***	0.014	-0.103***
	Driven while using technology allowing hands-free use of their phone	-0.137***	NA	NA
Aggressive	Driven 15 miles per hour over the speed limit on freeways	-0.239***	-0.029	-0.225***
	Driven 10 miles per hour over the speed limit on residential streets (neighborhood)	-0.233***	-0.064**	-0.198***
	Driven through a light that had just turned red when they could have stopped safely	-0.132***	-0.005	-0.151***
	Driven aggressively (switching lanes quickly, driving very closely behind another car)	-0.106***	-0.009	-0.078***
Impaired	Driven when they were so tired that they had a hard time keeping your eyes open	-0.035*	0.019	-0.052***
	Driven after drinking enough alcohol that you might be over the legal limit	-0.037***	-0.031*	-0.021*
	Driven shortly (within an hour) after using marijuana	-0.056***	0.008	-0.053***
	Driven after using potentially impairing prescription drugs	-0.034***	-0.021**	-0.037***
Other	Driven without wearing a seatbelt	-0.137***	-0.001	-0.101***

\* for  $p \leq 0.05$ ; \*\* for  $p \leq 0.01$ ; \*\*\* for  $p \leq 0.001$

## Discussion

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The 2021 TSCI survey continues to underscore important discordances between self-reported driving behavior and perceived danger, likelihood of apprehension, and social disapproval. Although most unsafe driving behaviors examined in the TSCI showed high discordances, impaired-related driving (regardless of the source of impairment) showed higher discordances than other behaviors, in terms of perceived danger and social disapproval. Notably, speeding behaviors on freeways and residential streets showed lower discordances; people's perceived danger and social disapproval toward speeding were lower than other unsafe driving behaviors, and nearly half of the drivers reported having sped on these road types. This finding suggests that perceived danger and social disapproval toward speeding may be critical aspects to people's decisions to speed. It follows that enhancing the perceived danger and/or social disapproval of speeding in certain drivers could be the area for targeted remediation. More research is necessary to explore this possibility.

Among three measures examined in this survey—perceived danger, risk of apprehension, and social disapproval—people's engagement in unsafe driving behaviors was associated with the perceived danger and social disapproval. Enforcement is often referred to as an effective countermeasure to combat unsafe driving behaviors (Soole et al., 2013; Truelove et al., 2017). However, several studies also reported that the effectiveness declines after enforcement is ceased (Factor et al., 2022; Governors Highway Safety Association, 2022). Those findings in conjunction with the current results suggest that people's perceptions toward risks of apprehension may have less influence on their behavior change unless the enforcement is highly visible and consistent in the long term.

These findings also point to the importance of public education and awareness regarding the danger and consequences of engagement in unsafe driving behaviors in order to change people's mindsets, behaviors, and traffic safety culture in communities. Additionally, education stemming from home and family conversation may play a critical role to keep many drivers from engaging in unsafe driving behaviors.

Since the onset of the COVID-19 pandemic, Americans changed their travel patterns and lifestyles considerably to comply with national/local restrictions such as stay-at-home orders. Although COVID-19 in the U.S. is becoming endemic, studies still report concerns about increased traffic fatalities in which unsafe driving behaviors were involved (National Center for Statistics and Analysis, 2022). Findings in this report can help better understand public perceptions and attitudes towards unsafe driving behaviors and provide some insights into what should be considered when developing effective countermeasures. AAA Foundation for Traffic Safety continues to devote research efforts to promote safe driving behaviors and to establish a healthy traffic safety culture.

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## Appendix: Drivers' attitudes, perceptions, and behaviors in relation to age and sex

*Table A1. Proportion of drivers who perceived distracted driving as very or extremely dangerous.*

		Holding and talking on cell phone (%)	Reading on cell phone (%)	Texting or emailing on cell phone (%)	Using technology that allows hands-free use of their phone (Bluetooth, CarPlay) (%)
<b>All drivers</b>		76.6	93.4	92.1	17.6
<b>Age group</b>	16–18	70.1	90.7	91.2	23.9
	19–24	68.4	90.4	85.5	11.7
	25–39	62.6	88.3	86.7	11.4
	40–59	77.3	96.0	92.6	17.5
	60–74	86.2	94.4	98.9	21.5
	75+	89.0	100.0	94.9	33.4
<b>Sex</b>	Male	75.9	91.9	91.4	14.8
	Female	77.4	94.9	92.7	20.0

*Table A2. Proportion of drivers who perceived distracted driving somewhat or very likely to be caught by the police.*

		Holding and talking on cell phone (%)	Reading a text or an email on cell phone (%)	Typing or sending a text message or email on cell phone (%)
<b>All drivers</b>		37.0	35.5	43.1
<b>Age group</b>	16–18	34.0	43.3	46.2
	19–24	35.9	49.1	56.8
	25–39	44.7	38.1	41.8
	40–59	41.4	32.3	42.4
	60–74	27.5	34.7	41.2
	75+	30.1	27.8	41.7
<b>Sex</b>	Male	34.7	33.1	37.2
	Female	39.7	37.8	48.1

**Table A3. Proportion of drivers who believed people who were important to them would approve of distracted driving somewhat or completely.**

		Holding and talking on cell phone (%)	Reading a text or an email on cell phone (%)	Typing or sending a text message or email on cell phone (%)
<b>All drivers</b>		11.8	5.9	3.9
<b>Age group</b>	16–18	9.5	3.6	0.6
	19–24	21.2	3.2	3.5
	25–39	13.9	7.0	3.0
	40–59	10.5	7.2	3.9
	60–74	10.4	4.3	4.9
	75+	10.5	2.3	6.4
<b>Sex</b>	Male	11.7	3.7	3.2
	Female	11.9	8.1	4.6

**Table A4. Proportion of drivers who reported distracted driving behaviors at least once in the past 30 days.**

		Holding and talking on cell phone (%)	Reading a text or an email on cell phone (%)	Manually texting or sending a text message or email (%)	Using technology that allows hands-free use of their phone (Bluetooth, Carplay) (%)
<b>All drivers</b>		37.4	36.2	26.3	57.1
<b>Age group</b>	16–18	45.6	37.4	27.5	50.7
	19–24	42.5	42.7	42.0	58.4
	25–39	43.5	53.9	44.5	69.2
	40–59	39.2	38.6	26.2	58.8
	60–74	30.1	20.4	9.9	48.5
	75+	22.7	7.1	2.8	34.4
<b>Sex</b>	Male	39.4	36.1	25.4	57.7
	Female	35.4	36.2	27.3	56.5

*Table A5: Proportion of drivers who perceived aggressive driving as very or extremely dangerous.*

		Driving 15 mph over the speed limit on freeway (%)	Driving 10 mph over the speed limit on a residential street (neighborhood) (%)	Speeding through a red light (%)	Aggressive driving (%)	Driving without wearing a seatbelt (%)
<b>All drivers</b>		49.9	59.4	76.5	88.2	75.2
<b>Age group</b>	16–18	53.5	66.1	75.8	87.2	83.7
	19–24	46.3	41.1	63.9	72.7	62.3
	25–39	38.2	47.2	64.0	85.2	75.1
	40–59	50.0	64.7	77.1	87.2	73.3
	60–74	58.2	68.5	90.7	93.1	82.1
	75+	56.0	59.9	88.8	96.3	72.4
<b>Sex</b>	Male	46.7	52.4	74.3	84.7	70.9
	Female	53.6	66.4	78.3	92.2	78.9

*Table A6: Proportion of drivers who perceived aggressive driving as somewhat or very likely to be caught by the police.*

		Driving 15 mph over the speed limit on freeway (%)	Driving 10 mph over the speed limit on a residential street (neighborhood) (%)	Speeding through a red light (%)	Aggressive driving (%)	Driving without wearing a seatbelt (%)
<b>All drivers</b>		62.9	46.2	53.5	53.3	46.4
<b>Age group</b>	16–18	66.2	54.1	61.3	59.3	53.6
	19–24	66.8	60.6	62.8	52.8	52.9
	25–39	71.5	49.6	54.1	56.9	43.0
	40–59	66.6	47.4	52.2	54.8	47.8
	60–74	55.3	41.9	56.1	46.9	50.3
	75+	42.9	19.9	34.6	57.3	29.6
<b>Sex</b>	Male	59.3	40.5	50.2	51.9	40.5
	Female	67.0	51.8	56.2	54.9	51.5

**Table A7: Proportion of drivers who believed people who were important to them would approve of aggressive driving somewhat or completely.**

		Driving 15 mph over the speed limit on freeway (%)	Driving 10 mph over the speed limit on a residential street (neighborhood) (%)	Speeding through a red light (%)	Aggressive driving (%)	Driving without wearing a seatbelt (%)
<b>All drivers</b>		15.6	10.8	5.5	3.9	3.2
<b>Age group</b>	16–18	8.7	4.0	1.2	1.7	1.6
	19–24	30.4	9.7	3.5	7.3	2.5
	25–39	14.6	10.1	10.3	3.6	5.7
	40–59	13.2	12.9	4.7	4.4	2.2
	60–74	17.3	8.6	2.4	3.0	3.2
	75+	16.0	14.7	5.9	3.5	0.6
<b>Sex</b>	Male	12.9	10.0	3.5	2.7	1.5
	Female	18.6	11.6	7.3	5.3	4.7

**Table A8: Proportion of drivers who reported aggressive driving behaviors at least once in the past 30 days.**

		Driving 15 mph over the speed limit on freeway (%)	Driving 10 mph over the speed limit on a residential street (neighborhood) (%)	Speeding through a red light (%)	Aggressive driving (%)	Driving without wearing a seatbelt (%)
<b>All drivers</b>		50.7	40.3	28.2	22.9	12.7
<b>Age group</b>	16–18	34.3	39.2	26.9	24.5	12.4
	19–24	50.3	52.7	33.5	33.9	16.0
	25–39	60.9	50.2	31.9	33.0	15.0
	40–59	48.9	34.9	30.6	22.5	12.1
	60–74	47.1	34.1	22.1	12.7	11.0
	75+	42.5	42.8	19.0	12.6	10.2
<b>Sex</b>	Male	54.2	42.5	29.5	26.3	13.7
	Female	47.2	38.0	27.0	19.5	11.7

*Table A9. Proportion of drivers who reported drowsy, alcohol-impaired, or drug-impaired driving as very or extremely dangerous.*

		Driving while being so tired that they had had a hard time keeping their eyes open (%)	Drinking enough alcohol that they may be over the legal limit (%)	Driving shortly (within an hour) after using marijuana (%)	Driving after using potentially impairing prescription drugs (%)
<b>All drivers</b>		94.8	93.8	65.2	86.5
<b>Age Group</b>	16–18	92.9	99.0	79.9	95.2
	19–24	85.0	100.0	63.1	93.7
	25–39	95.9	93.3	58.4	85.4
	40–59	95.6	93.6	68.9	87.1
	60–74	95.2	92.6	61.9	82.5
	75+	93.5	91.9	79.3	90.3
<b>Sex</b>	Male	93.8	92.0	63.2	85.8
	Female	95.9	95.6	66.8	87.1

*Table A10. Proportion of drivers who perceived drowsy, alcohol-impaired, or drug-impaired driving somewhat or very likely to be caught by the police.*

		Driving while being so tired that they had had a hard time keeping their eyes open (%)	Drinking enough alcohol that they may be over the legal limit (%)	Driving shortly (within an hour) after using marijuana (%)	Driving after using potentially impairing prescription drugs (%)
<b>All drivers</b>		28.8	67.9	30.7	42.8
<b>Age Group</b>	16–18	35.7	73.3	43.5	54.3
	19–24	35.0	77.5	37.2	70.5
	25–39	32.3	72.1	31.9	44.7
	40–59	31.0	65.7	29.8	41.2
	60–74	22.1	64.8	29.9	38.0
	75+	24.9	61.6	21.2	28.3
<b>Sex</b>	Male	25.7	62.4	27.6	37.7
	Female	32.3	73.3	33.4	48.0

*Table A11. Proportion of drivers who believed people who were important to them would approve of engaging in drowsy, alcohol-impaired, or drug-impaired driving somewhat or completely.*

		Driving while being so tired that they had had a hard time keeping their eyes open (%)	Drinking enough alcohol that they may be over the legal limit (%)	Ridden in a car driven by someone who has had too much alcohol (%)	Driving shortly (within an hour) after using marijuana (%)	Driving after using potentially impairing prescription drugs (%)
<b>All drivers</b>		1.1	2.3	1.3	6.7	3.5
<b>Age Group</b>	16–18	1.7	3.2	1.5	1.8	0.7
	19–24	0.0	0.0	0.0	3.7	3.2
	25–39	0.5	1.3	0.9	9.4	2.9
	40–59	1.8	4.4	2.2	6.2	5.3
	60–74	0.6	1.1	0.8	7.4	2.4
	75+	2.5	0.0	1.1	2.0	1.8
<b>Sex</b>	Male	0.9	1.4	1.4	5.9	3.1
	Female	1.5	3.2	1.2	7.4	3.9

*Table A12. Proportion of drivers who reported engaging in drowsy, alcohol-impaired, or drug-impaired driving in the past 30 days.*

		Driving while being so tired that they had had a hard time keeping their eyes open (%)	Drinking enough alcohol that they may be over the legal limit (%)	Ridden in a car driven by someone who has had too much alcohol (%)	Driving shortly (within an hour) after using marijuana (%)	Driving after using potentially impairing prescription drugs (%)
<b>All drivers</b>		18.8	7.3	7.1	5.0	3.6
<b>Age Group</b>	16–18	16.3	4.2	7.7	6.3	3.3
	19–24	28.4	10.6	10.0	9.7	4.1
	25–39	22.3	8.4	8.4	9.0	3.9
	40–59	19.5	6.9	6.7	3.4	3.3
	60–74	13.7	6.1	5.5	3.1	3.7
	75+	12.4	8.2	6.7	0.9	3.8
<b>Sex</b>	Male	18.4	9.2	6.8	6.4	4.3
	Female	19.2	5.5	7.3	3.7	3.0