# Survey Findings: Understanding Safety Beliefs & Risky Behaviors of Drivers of Large Trucks

*Eastern Service Center Region*

umass SAFE Traffic Safety Research Program

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# Driver Survey Background

## Project Overview

UMassSafe, with support from the Federal Motor Carrier Safety Administration (FMCSA), conducted an online, anonymous survey of large truck drivers to gather input on their safety beliefs and behaviors. A total of 1,054 drivers of large trucks operating in 13 states of the Eastern Service Center (ESC) completed this voluntary self-reported survey. Simultaneously, national data was collected to establish a baseline for examining potential trends within the ESC. An additional 1,024 drivers from 37 states and territories were represented. This survey captured basic demographic information, as well as the drivers' beliefs and experiences related to commercial motor vehicle (CMV) large truck operation and its relation to the following risky behaviors:

- Sending a text message while driving
- Exceeding hours-of-service (HOS) regulations
- Driving within four hours of alcohol consumption
- Driving after cannabis consumption

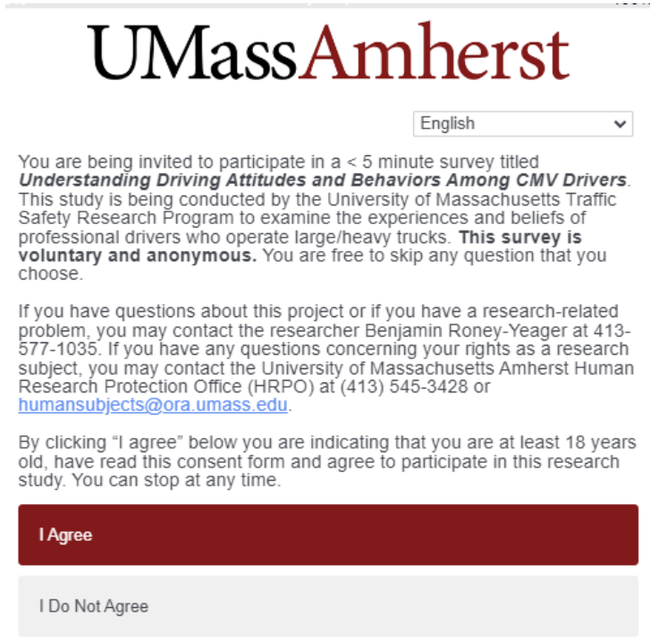
Prior to a full launch of the survey, a pilot was conducted with industry-relevant contacts to collect feedback on question/answer clarity and user interface factors. Changes were identified, including, aligning and improving clarity in categorical labels, such as fleet size and schedule type, to be universal across the nation and minimize occurrences where questions would not be relevant due to their specific types of trucking/industry.

Once a suitable sample size was reached, the survey data was compiled, reviewed,  and compared to observe relationships between driver beliefs and behaviors.

## Recruitment

Respondents were recruited using an online research panel service, as well as sharing directly with social media trucking groups and running advertisements with specific target user groups. On a rolling basis, outreach efforts were geographically targeted to mirror a relative proportion of state's vehicle miles travelled in relation to the respondent's reported top three states they drove in.

The survey panel vendor aligns pre-screened people who voluntarily participate in surveys, based on their verified employment, as well as knowledge-screening specifications established by UMassSafe. All respondents included in the analysis completed the survey which consisted of 17 multiple-choice questions, on a Qualtrics-style web-interface, averaging four minutes.

# Respondent Criteria & Demographics

## Screener Questions

Prior to the survey, respondents were required to answer several screening questions to determine eligibility. These screening questions determined that:

(1) at least one of the top three states they reported operating a CMV within was in the ESC;

(2) they possessed a Class A or Class B commercial driver's license (CDL); and

(3) at least 50% of their work-for-pay was as a driver of a large truck requiring a CDL.

Additionally, respondents were required to pass a content-knowledge question, "How many reflective triangles are required to be in your CMV?" (Answer: three).

## Demographics

As shown, the demographics of survey respondents generally mirrored the truck driving population, with the vast majority being male, possessing a Class A CDL, and operating a combination truck type. Respondents were well distributed across age, experience, and fleet size groups.

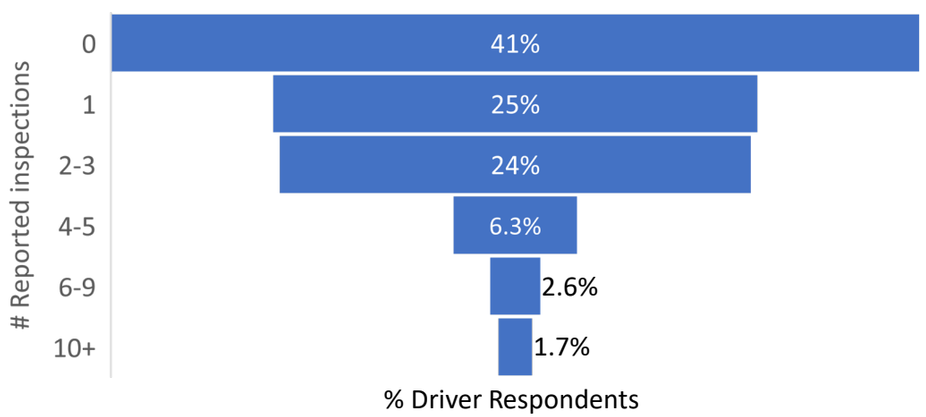
| | | % Driver Respondents |
|---|---|---|
| Gender | Male | 94% |
| | Female | 5.2% |
| | Non-Binary | 0.5% |
| | Prefer Not to Say | 0.5% |
| Age | 18-21 | 0.2% |
| | 22-25 | 6.1% |
| | 26-35 | 24% |
| | 36-45 | 16% |
| | 46-55 | 23% |
| | 56-65 | 23% |
| | 66-75 | 7.8% |
| | 76-85 | 0.6% |
| Driving Experience | Less Than a Year | 1.3% |
| | 1-4 Years | 14% |
| | 5-15 Years | 35% |
| | 16-30 Years | 28% |
| | >30 Years | 22% |

| | | % Driver Respondents |
|---|---|---|
| Driving Schedule | Long haul | 60% |
| | Short haul | 38% |
| | Other | 1.8% |
| Truck Type | Single-unit | 15% |
| | Combination | 85% |
| Fleet Size | Owner-Operator with own authority | 7.6% |
| | Owner-Operator leased to motor carrier | 8.7% |
| | Small (<20 Trucks) | 25% |
| | Medium (21-100 Trucks) | 24% |
| | Large (101-500 Trucks) | 16% |
| | Extra-Large (501 or More Trucks | 19% |
| CDL Type | CDL-A | 91% |
| | CDL-B | 9.1% |
| | CDL-C | 0.1% |

# Other Self-Reported Driving Outcomes

## **Roadside Safety Inspections** (conducted in the previous 12 months)

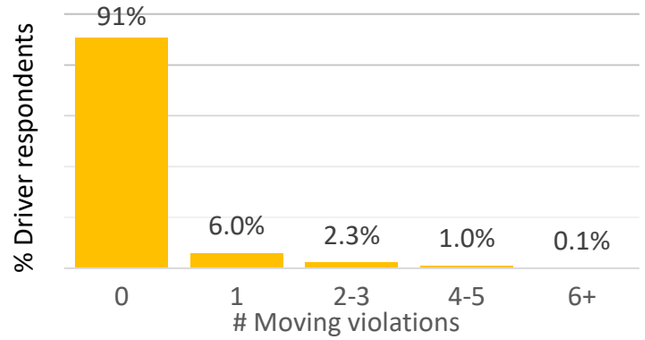
As shown, nearly 60% of those surveyed reported receiving at least one roadside safety inspection within the past 12 months. Of those that did report receiving such inspections, respondents were closely divided between one inspection or two to three inspections within the previous 12 months.




- Drivers with less than five years of experience were 64% less likely to report receiving a roadside inspection compared to those with 5-15 years of experience.
- Short haul drivers were 79% less likely to report receiving a roadside inspection compared to long haul drivers.

## **Moving Violations** (received in the previous 12 months)

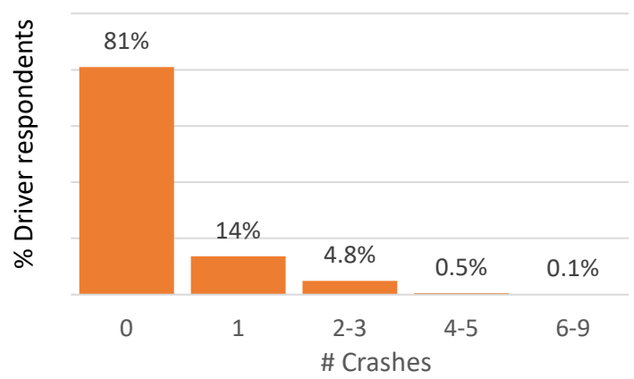
As shown, 91% of those surveyed reported receiving no moving violations in the past 12 months. Additionally, the majority of those that received a moving violation received only one in the previous 12 months.




- Drivers aged 26-35 were more likely to report receiving a moving violation, while drivers aged 46-65 were least likely to report receiving a moving violation.
- Drivers who reported at least one moving violation were also more likely to report exceeding hours-of-service regulations.

## **Crash Involvement** (within the previous three years)

As shown, 81% of those surveyed reported no crash involvement within the previous three years. Of those that did report crash involvement during that period, the majority reported being involved in only one crash.




- Crash involvement was reported by 27% of drivers aged 36-45, a relative 51% higher than drivers aged 26-35, which had 18% reported crash involvement.
- Drivers with 5-15 years of experience were significantly more likely to report being involved in a crash compared to those with 16-30 and 31+ years of experience.
- Drivers of extra-large carriers, as well as owner-operators with own authority, were least likely to report crash involvement.

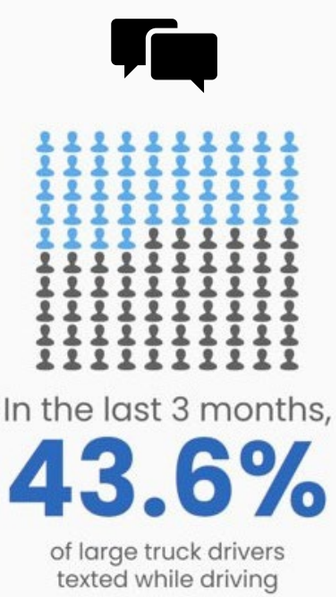
# Risky Driving Behaviors

## Overall Behavior Trends

In the previous three months (from the time they took the survey), only 3.1% of respondents reported driving a large truck within four hours of consuming alcohol. Similarly, only 3.2% reported driving after consuming cannabis. In contrast, slightly more than 35% of respondents reported exceeding hours-of-service regulations, and nearly 44% reported texting while driving in the previous three months.

It is worth noting that penalties for driving under the influence of alcohol or cannabis are significantly more severe (and can include loss of license) than those for texting or exceeding HOS, which may contribute to their prevalence.

### Text




### Hours-of-Service


### Alcohol


### Cannabis

# Methodology

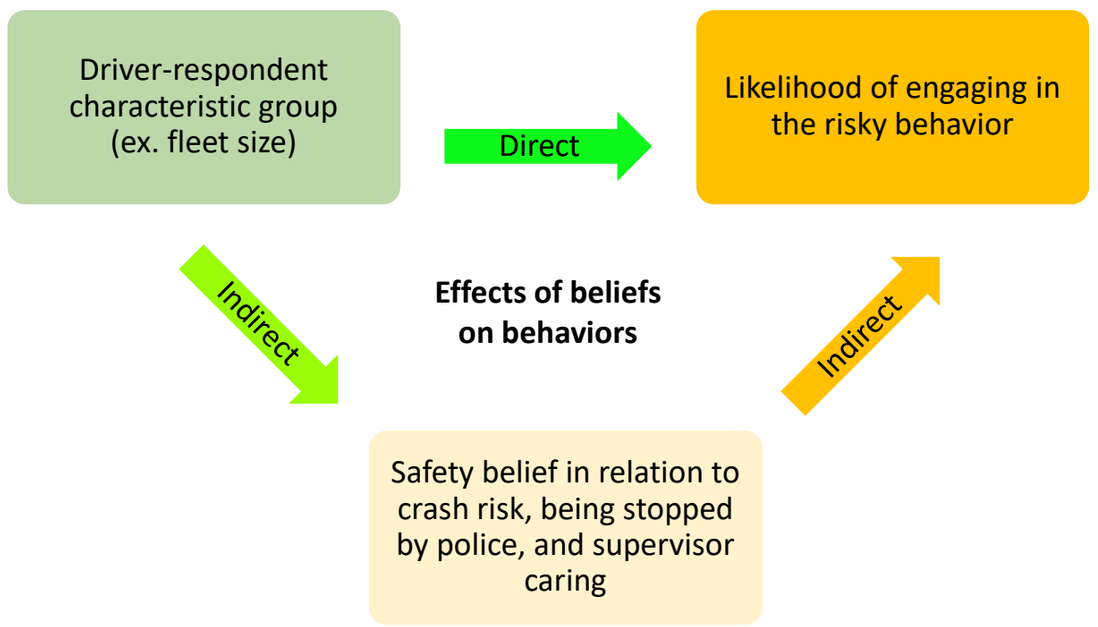
## Behavior & Belief Analyses

Predicted probability findings of the survey responses describe the likelihood a driver would engage in the risky behavior by reported frequency (‘never',  ‘rarely’, ‘sometimes’, ‘often’) and relative to various characteristic-types (ex. years of experience = 5-15 years). Statistical analysis tests were completed across the four surveyed behaviors (texting, exceeding HOS, cannabis, and alcohol) for each driver characteristic. Some behavior analyses were further examined by combining all affirmative frequencies (‘rarely’, ‘some’, ‘often’) into one cohort, for comparison against 'never'.

Predicted probabilities of statistical significance were also used in describing driver's agreement or disagreement with a safety statement such as, 'crash risk will increase if texting', in combination with the driver characteristics (ex. years of experience, schedule type, etc.). Driver response outcomes were scaled from 1 = strongly disagree to 5 = strongly agree. Safety-belief findings within the report depict characteristic type groups of over-represented coefficients with $p<0.1$ of statistical significance.

Furthermore, as illustrated to the right, the correlation between respondents’ agreement with a safety belief and their probability of engaging in that relative behavior was examined by characteristic-groups. Correlations between beliefs and behaviors which demonstrated significant findings were further analyzed utilizing the statistical coefficient to further explain the proportion of that characteristic-group's increased likelihood to engage in the behavior, relative to that specific safety belief. Results specific to the six characteristic-groups of fleet size, willingness to engage in the risky behavior, and reported beliefs are also included within the report.

Note: Data-points labeled in the charts/figures throughout this report have been rounded to the nearest whole number (except those under 10%).

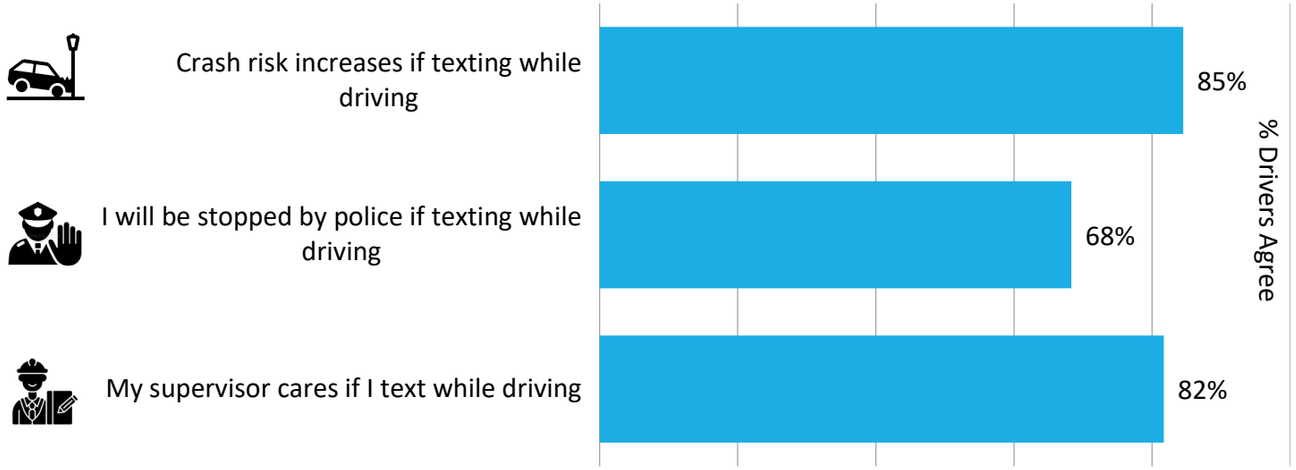


# Texting: Beliefs

## Safety Belief Responses

The majority of survey respondents agreed that crash risk increases if texting while driving (85%). Those who agreed that crash risk increases if texting while driving were less likely to report previously being involved in a crash or having been issued a moving violation. Drivers also largely agreed that their supervisor cares about texting while driving (82%). Additionally, more than half of the respondents agreed that they would be stopped by police if texting while driving (68%). Those who agreed they would be stopped by police if texting while driving were less likely to report having been issued a moving violation.

*While driving a large commercial truck, do you agree with the following statements?*




## Driver Characteristic Findings of Significance

- Drivers from these characteristic-groups were more likely to <u>agree</u> that texting increases crash risk:
  - **Short haul schedule**
  - **Extra-large size fleets**
  - **31+ years' experience**

- Drivers with a **long haul schedule** were more likely to <u>disagree</u> that they would be stopped by police for texting.

- Drivers from these characteristic-groups were more likely to <u>disagree</u> that their supervisor cares about texting:
  - **Single-unit truck type**
  - **Owner-operators with own authority** and **small size fleets**

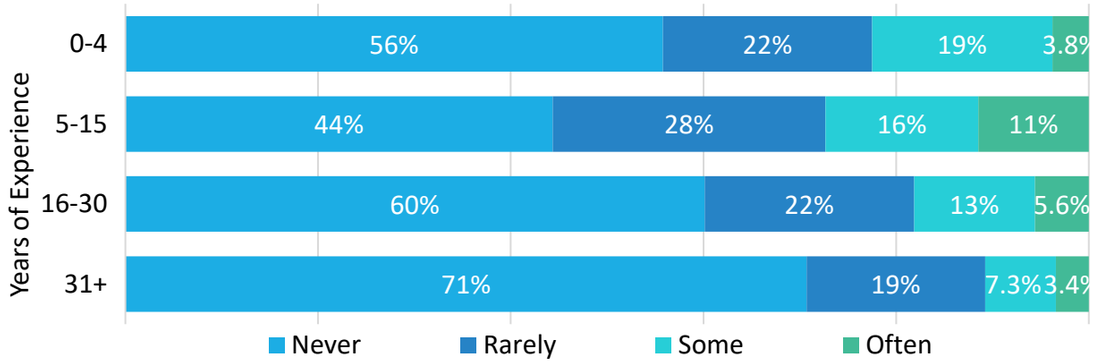
# Texting: Behaviors


## Risky Behavior Responses

Overall, 44% of drivers responded that they had sent a text message while driving in the previous three months. The relationships between respondents' characteristics such as years of experience, age, fleet size, etc., and their reported texting frequency ('never', 'rarely', 'some', 'often') were examined for findings of statistical significance and summarized herein.

Drivers with 5-15 years of experience reported engaging in this behavior the most, with the highest probability of 'often' texting while driving (11%), as well as the lowest probability of 'never' (44%). Comparatively, drivers with 31+ years of experience reported the safest behaviors, with only 10% reporting 'some' or 'often' texting while driving, and 71% reporting 'never'.

**Predicted probability of texting by frequency and years of driving experience**




Comparison findings of driver age group and reported frequency of texting were less significant. Those aged 26-35 reported safer behaviors, with a 62% probability to report 'never' texting. Specifically, driver age groups 36-45, 46-55, and 56-65 were more likely to report 'some' texting while driving compared to those aged 26-35. While it is a common perception that younger drivers are most likely to engage in texting while driving, these findings suggest the reality is more complex. Targeted programming may be more effective if incorporating other driver characteristics aside from age.

**Predicted probability of texting by frequency and driver age**

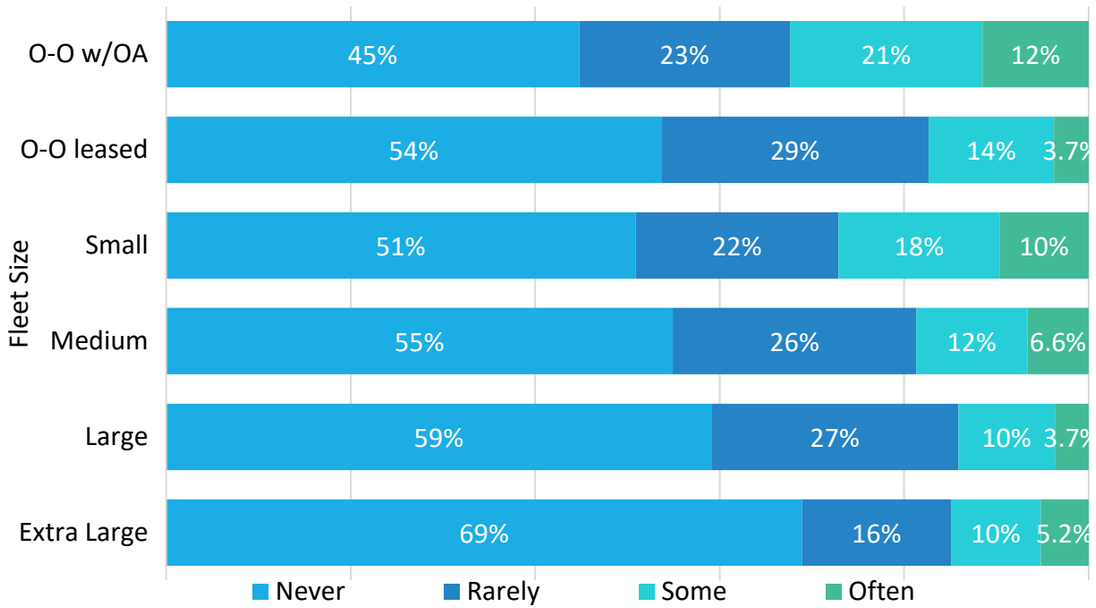
# Texting: Behaviors (continued)

## Risky Behavior Responses (continued)

While the overall probability to report any texting while driving was similar for both drivers of short haul and long haul schedules, further analysis revealed that drivers with short haul schedules were more likely to report 'often' texting compared to long haul schedules, at 8.4% and 5.6%, respectively.

Drivers of extra-large fleets reported the safest behaviors with a relative 54% more likely to report ‘never’ compared to owner-operators with own authority, at 69% and 45%, respectively. Overall, owner-operators with own authority and drivers of small size fleets were more likely to report any texting while driving at 56% and 50%, respectively.

**Predicted probability of texting by frequency and fleet size**




## Effects of Driver Beliefs on Behavior

The relationship findings between drivers' likelihood to report texting while driving and agreement with the safety belief statements were most influential regarding crash risk. Those who believed that crash risk increases when texting while driving were less likely to report engaging in the behavior. To a lesser extent, those who agreed they would be stopped by police were also less likely to report texting while driving. Comparatively, those who believed their supervisor doesn't care, were more likely to report texting while driving.

**Fleet Size**

*My supervisor <u>does not care</u> about texting while driving*

- **Owner-operators with own authority** and drivers of **small fleets** who reported this belief had a higher relative probability of texting while driving compared to drivers of other fleet sizes who reported the same belief.

*Crash risk <u>does not increase</u> if texting while driving*

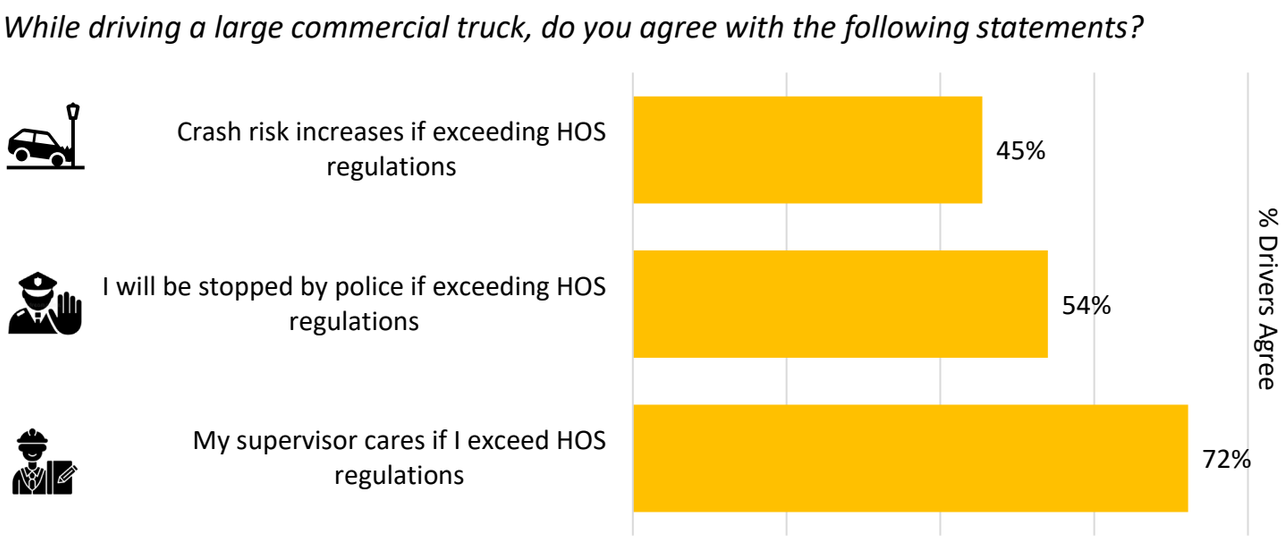
- **Owner-operators with own authority** who reported this belief had a higher relative probability of texting while driving compared to drivers of other fleet sizes who reported the same belief.

# Hours-of-Service: Beliefs

## Safety Belief Responses

Drivers did not conclusively agree that crash risk increases when exceeding HOS regulations, with only 45% agreeing. At a similar level of neutrality, slightly over half (54%) of drivers agreed that they would be stopped by police if exceeding HOS regulations. While 72% of drivers did agree their supervisor cares about HOS regulations, this proportion regarding supervisors' attitudes was lower than those relating to texting, cannabis use, alcohol use, suggesting the surveyed drivers believe their supervisor cares more about those behaviors than they do exceeding HOS.

*While driving a large commercial truck, do you agree with the following statements?*




## Driver Characteristic Findings of Significance

- Drivers from these characteristic-groups were more likely to <u>disagree</u> that crash risk increases when exceeding HOS regulations:
  - **Long haul** schedule
  - **Combination** truck type
  - **Owner-operators with own authority**, **owner-operators leased**, and **small size fleets**
  - **Aged 46-55** and **56-65**
- Drivers from these characteristic-groups were more likely to <u>disagree</u> that their supervisor cares about exceeding HOS regulations:
  - **Single-unit truck type**
  - **Owner-operators with own authority** and **small size fleets**
  - **Aged 46-55**

# Hours-of-Service: Behaviors


## Risky Behavior Responses

Overall, slightly more than one third of drivers reported that they had exceeded HOS in the previous three months. The relationships between respondents' characteristics such as years of experience, age, fleet size, etc., and their reported frequency ('never', 'rarely', 'some', 'often') of engaging in the behavior was examined for findings of statistical significance and summarized herein.

Similar to risky texting behavior patterns, drivers with 5-15 years' experience also reported the highest overall probability to exceed HOS at 43%. Specifically, those with 5-15 years' experience were more than twice as likely to report 'often' exceeding HOS compared to those with 16-30 years' at 7.1% and 3.2%, respectively. Additionally, those with 5-15 years' experience reflected a relative 58% increased likelihood to report 'rarely' exceeding HOS than those with 31+ years' experience, at 21% and 13%, respectively.

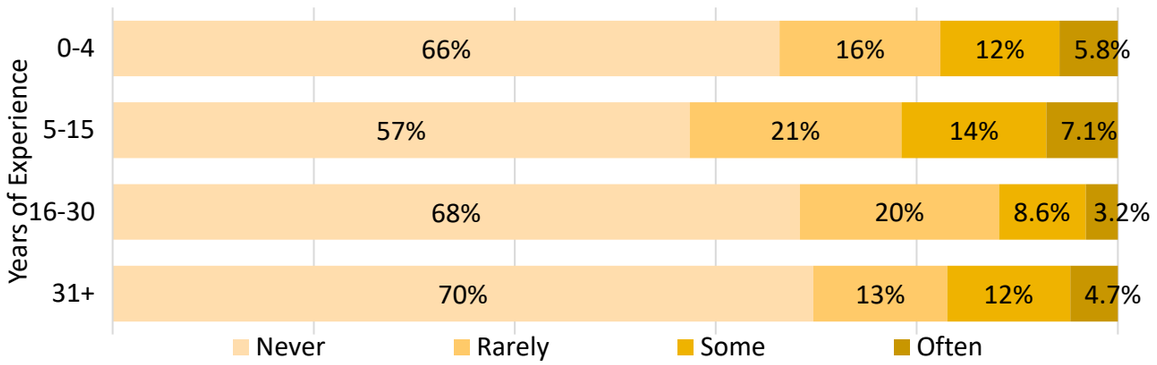
Examination of the probability to exceed HOS regulations by age group provided less significant results by frequency. However, overall, drivers aged 46-55 were a relative 20% more likely to report exceeding HOS compared to those aged 26-35, at 40% and 33%, respectively.

Drivers with a long haul schedule were a relative 31% more likely to report exceeding HOS regulations than those with a short haul schedule, at 39% and 30%, respectively. While the probability of reporting 'some' and 'often' frequencies were similar for drivers of both schedule types, long haul drivers were more likely to indicate 'rarely', at 21%, compared to short haul at 14%.

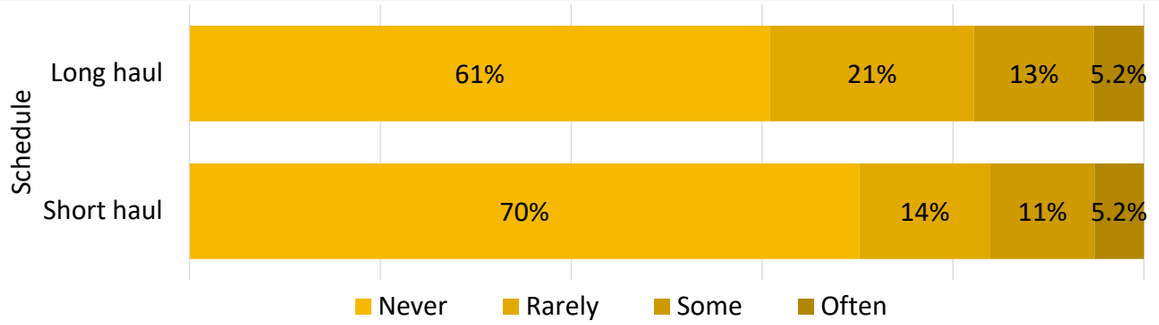
### Other Driving Outcomes

Drivers who reported 'sometimes' or 'rarely' exceeding HOS were more likely to report having received moving violations, and to a lesser extent, roadside inspections, compared to those who reported 'never' exceeding HOS.

**Predicted probability of exceeding HOS by frequency and years of driving experience**




**Predicted probability of exceeding HOS by frequency and schedule type**



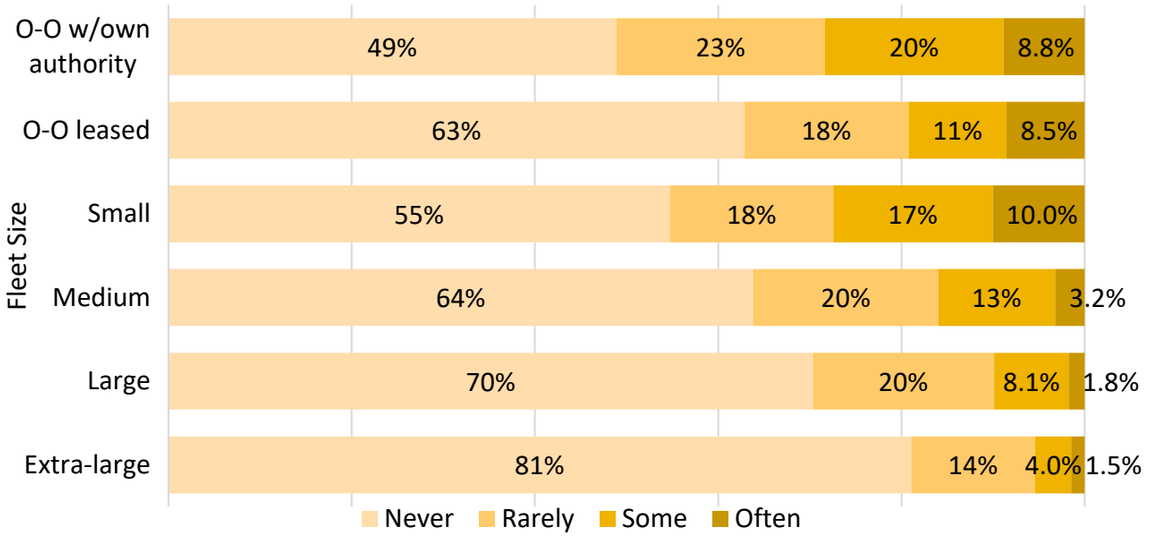
# Hours-of-Service: Behaviors (continued)

## Risky Behavior Responses (continued)

Drivers of extra-large fleets had the safest likelihood (81%) of reporting ‘never’ having exceeded hours-of-service regulations in the previous three months. In contrast, owner-operators with own authority and drivers of small fleets were less likely to report ‘never’ exceeding HOS at 49% and 55%, respectively, indicating a greater likelihood of engaging in this risky behavior.

Specifically, owner-operators with own authority and drivers of small fleets and were five times more likely to report ‘often’ exceeding hours of service, at 8.5% and 10% respectively, compared to extra-large fleet sizes, at 1.5%. Similarly, those groups were also over-represented in which 20% of owner-operators with own authority, and 17% of drivers of small size fleets, reported a frequency of ‘some’ exceeding HOS, compared to extra-large fleet sizes at 4.0%.

**Predicted probability of exceeding HOS by frequency and fleet size**




## Effects of Driver Beliefs on Behavior

The relationship findings between drivers' likelihood to report exceeding HOS and agreement with the safety belief statements were most influential regarding their supervisor's attitude. Those who believed their supervisor does not care were more likely to report exceeding HOS across all frequencies, but most significantly affecting those who reported 'often' exceeding HOS. In contrast, those who believed that crash risk increases were less likely to report exceeding HOS. Additionally, more marginally, those who believed they would be stopped by police were less likely to report exceeding HOS.

**Fleet Size**

*My supervisor <u>does not</u> <u>care</u> about HOS regulations* ➢ **Owner-operators with own authority** and drivers of **small fleets** who reported this belief had a higher relative probability of exceeding HOS compared to drivers of other fleet sizes who reported the same belief.

*My supervisor <u>cares</u> about HOS regulations* ➢ **Leased owner-operators** and drivers of **extra-large fleets** who reported this belief, had a lower relative probability of exceeding HOS compared to drivers of other fleet sizes who reported the same belief.

*Exceeding HOS regulations <u>does not increase</u> crash risk* ➢ **Owner-operators with own authority** who reported this belief had a higher relative probability of exceeding HOS compared to drivers of other fleet sizes who reported the same belief.

*Exceeding HOS regulations <u>increases</u> crash risk* ➢ Drivers of **extra-large fleets** who reported this belief had a lower relative probability of exceeding HOS compared to drivers of other fleet sizes who reported the same belief.

# Alcohol: Beliefs

## Safety Belief Responses

Among all risky behaviors discussed in this survey, drivers most conclusively agreed (87%) that crash risk increases if driving after consuming alcohol. Similarly, 90% of drivers reported that their supervisor cares about them driving after consuming alcohol, illustrating a much lower tolerance for this risky behavior than texting or exceeding HOS. Additionally, nearly 70% of drivers agreed that they would be stopped by police if driving after consuming alcohol.

*While driving a large commercial truck, do you agree with the following statements?*


## Driver Characteristic Findings of Significance

- Drivers of **large** and **extra-large fleets** were more likely to <u>agree</u> that that there is an increased crash risk if driving within four hours of consuming alcohol.
- Drivers from these characteristic-groups were more likely to <u>disagree</u> that they would be stopped by police if driving within four hours of consuming alcohol:
  - **Aged 46-55**
  - **31+ years' experience**
  - **Small size fleets**
  - **Combination vehicle type**
- Those with **31+ years' experience** were more likely to <u>disagree</u> that their supervisor would care about alcohol use.

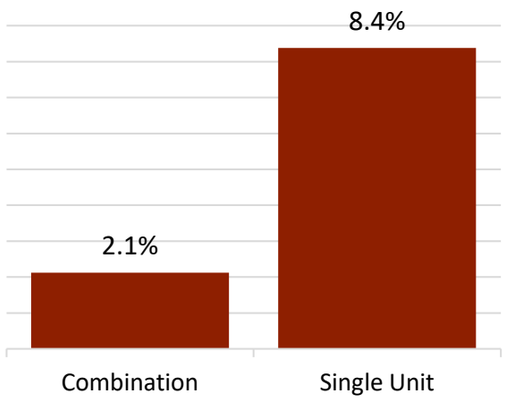
# Alcohol: Behaviors


## Risky Behavior Responses

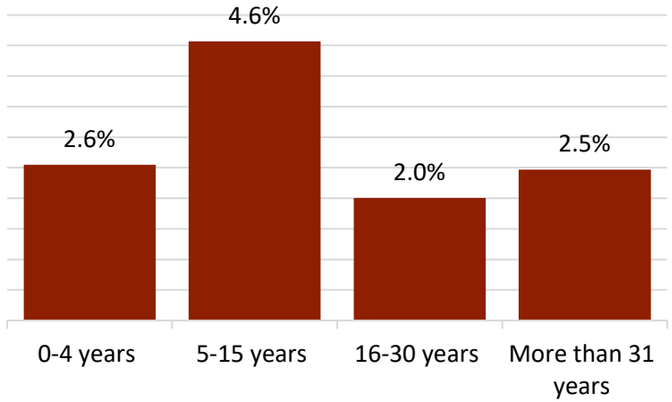
Overall, 3.1% of drivers reported having driven within four hours of consuming alcohol in the previous three months. Those who reported consuming alcohol before driving were nearly twice as likely to report having received a moving violation, and 88% more likely to have been involved in a crash. Importantly, the survey behavior findings for alcohol use should be used with caution due to the low number (n=33) of respondents who reported having consumed alcohol prior to driving.

Examining characteristics of those who indicated driving after consuming alcohol, it was determined that drivers of single-unit truck types were nearly three times more likely to drive after consuming alcohol compared to those with a combination truck type, at 7.9% and 2.2%, respectively. Additionally, drivers with 5-15 years of experience were more likely to report engaging in the behavior than those with 16-30 years, at 4.6% and 2.0%, respectively. While the findings relevant to age were less noteworthy, those aged 46-55 had a significantly lower probability compared to those aged 36-45, at 1.4% and 4.5% respectively.

**Predicted probability of alcohol use by vehicle type**




**Predicted probability of alcohol use by years of driving experience**




### Other Driving Outcomes

Compared to those who reported 'never', drivers who reported driving after consuming alcohol were more likely to report having received moving violations and/or involvement in crashes.

## Effects of Driver Beliefs on Behavior

The relationship findings between drivers' likelihood to report driving within four hours of consuming alcohol and agreement with the safety belief statements were most influential regarding their supervisor's attitude. Those who believed their supervisor does not care were more likely to report driving within four hours of consuming alcohol. In contrast, those who believed alcohol use increases crash risk were less likely to report engaging in the behavior. To a lesser extent, those who believed they would be stopped by police were also less likely to report driving within four hours of consuming alcohol.

### Fleet Size

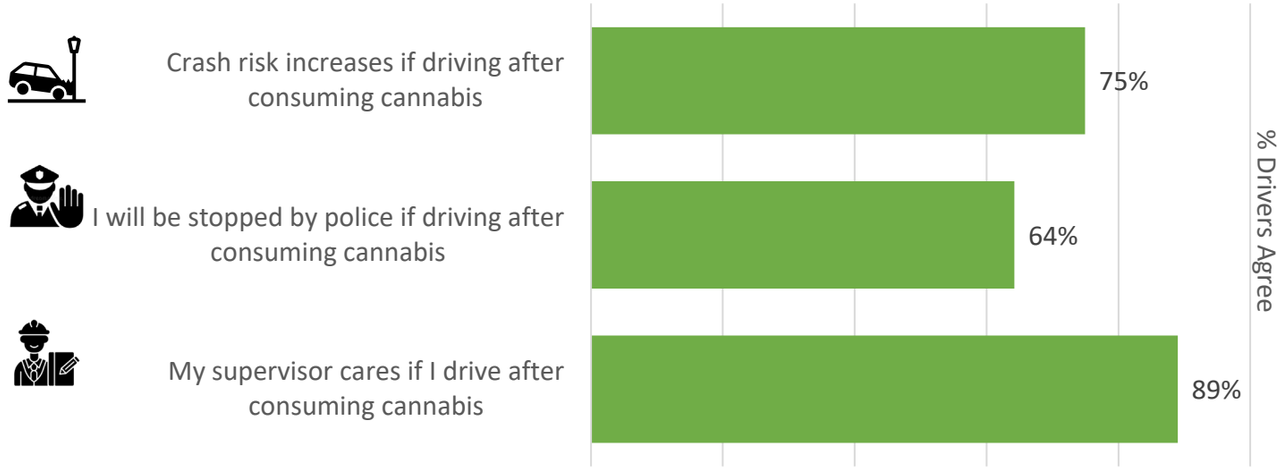
Although behavior findings related to alcohol consumption were not statistically different among drivers of different fleet size groups, when examining the effects of their reported beliefs, drivers of small fleets who reported the belief that their supervisor did not care had a relatively higher likelihood of driving within four hours of consuming alcohol compared to drivers of other fleet sizes who reported the same belief.

# Cannabis: Beliefs

## Safety Belief Responses

Similar to findings regarding alcohol consumption, 89% of drivers reported that their supervisor cares about their driving after consuming cannabis. Those who disagreed with this belief were more likely to report prior moving violations and roadside safety inspections. Furthermore, 75% of drivers agreed that crash risk increases if driving after consuming cannabis, while only 64% reported believing they would be stopped by police if engaging in this behavior.

*While driving a large commercial truck, do you agree with the following statements?*




## Driver Characteristics Findings of Significance

- Drivers with **31+ years' experience** were more likely to <u>agree</u> that there is an increased crash risk from driving after consuming cannabis.
- Drivers from these characteristic-groups were more likely to <u>disagree</u> that they would be stopped by police if driving after consuming cannabis:
  - **Long haul schedule**
  - **31+ years' experience**
  - **Aged 46-55**
- Drivers of **extra-large fleets** were more likely to <u>agree</u> that they would be stopped by police if driving after using cannabis.
- **Owner-operators with own authority** were more likely to <u>disagree</u> that their supervisor cared about cannabis use.

# Cannabis: Behaviors

In the last 3 months,

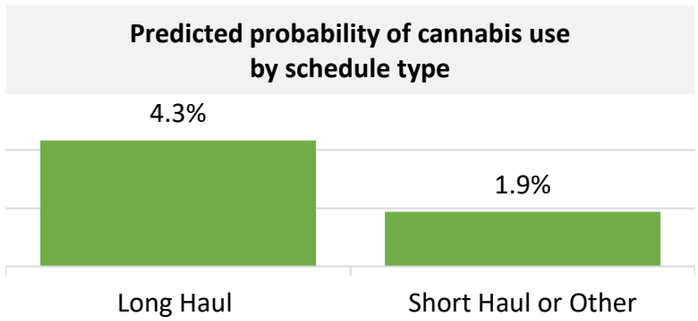
**3.2%**

of large truck drivers drove after consuming cannabis

## Risky Behavior Responses

Overall, 3.2% of drivers reported to have driven after consuming cannabis in the previous three months. Note, the survey behavior findings for cannabis consumption should be used with caution due to the low number (n=34) of respondents who reported having consumed cannabis prior to driving.

Examining driver characteristics, it was determined that drivers with a long haul schedule were more than twice as likely to report having driven after consuming cannabis compared to those with short haul schedules (4.3% versus 1.9%).




## Effects of Driver Beliefs on Behavior

Relationship findings between drivers' likelihood to report driving after consuming cannabis and agreement with the safety belief statements were significant. Those who believed their supervisor doesn't care were more likely to report driving after consuming cannabis, while those who believed that cannabis use increases crash risk were less likely to engage in the behavior. To a lesser extent, those who believed they would be stopped by police were also less likely to report driving after consuming cannabis.

**Fleet Size**

Although behavior findings related to cannabis consumption were not statistically different among drivers of different fleet size groups, when examining the effects of their reported beliefs, drivers of extra-large fleets who reported the belief that crash risk increases had a relatively lower likelihood of driving after consuming cannabis compared to drivers from other fleet sizes who reported the same belief.

# Cross-Theme Correlations

## Trends of Engaging in Multiple Risky Behaviors

Trends of concurrent behavioral factors were examined through a series of bivariate cross-tabulations. Cannabis consumption prior to driving was reported by 3.1% of drivers, while 3.2% of drivers indicated alcohol consumption within four hours of driving; of these, a relative 19% (1.0% of total respondents) reported both. Overall, 5.3% of total respondents reported engaging in either or both of these impairment-causing behaviors.

Those who reported driving after consuming alcohol and/or cannabis were more than twice as likely to also report exceeding HOS, compared to those who reported ‘never’ driving after consuming alcohol/cannabis (77% versus 32%).

Similarly, those who reported driving after consuming alcohol and/or cannabis were a relative 66% more likely to also report sending a text message while driving, compared to those who responded ‘never’ driving after consuming alcohol/cannabis (78% versus 47%).

Similarly, findings also support safe correlations between drivers who reported 'never' texting and 'never' exceeding HOS, accounting for 46% of total respondents. Conversely, 25% of total respondents reported both texting while driving and exceeding HOS.

| | **Reported driving after consuming alcohol and/or cannabis** | |
|---|---|---|
| | *'Never'* (95% of total respondents) | *'Yes'* (*rarely, some, often*) (5.3% of total respondents) |
| **Probability to report exceeding HOS** | 32% | 77% |
| **Probability to report texting while driving** | 47% | 78% |

| | | **Reported driving while exceeding HOS** (% of total respondents) | |
|---|---|---|---|
| | | *'Yes'* (*rarely, some, often*) | *'Never'* |
| **Reported texting while driving** (% of total respondents) | *'Yes'* (*rarely, some, often*) | 25% | 19% |
| | *'Never'* | 11% | 46% |

# Identifying Safe Trends

## Safe Driver Characteristics

Driver characteristic-groups which were less likely to engage in the risky behavior, as well as those who were more likely to agree with the safe beliefs, are itemized below as positive driver safety attributes.

Generally, drivers of extra-large fleets were identified as reporting the safest behaviors and beliefs related to all four categories of risky behaviors. Additionally, drivers with short haul schedules were identified as reporting less risky beliefs and behaviors regarding HOS and cannabis use.

| | Safe Behavior | | Safe Beliefs | |
|---|---|---|---|---|
| **Texting** | ✓ Extra-large fleet size | ✓ 31+ years' experience<br>✓ Drivers aged 26-35 | Crash risk increases:<br>✓ Short haul schedule<br>✓ Extra-large fleet size<br>✓ 31+ years' experience | Supervisor cares:<br>✓ Combination truck type<br>Police will stop:<br>✓ Short haul schedule |
| **HOS** | ✓ Extra-large fleet size | ✓ Short haul schedule<br>✓ 16-30 & 31+ years' experience | Crash risk increases:<br>✓ Single unit truck type<br>✓ Short haul schedule<br>✓ Extra-large fleet size<br>✓ Drivers aged 18-25 & 26-35 | Supervisor cares:<br>✓ Combination truck type<br>✓ Large & extra-large fleet size |
| **Alcohol** | ✓ Combination truck type | ✓ 16-30 & 31+ years' experience | Crash risk increases:<br>✓ Large & extra-large fleet sizes | Police will stop:<br>✓ Single unit truck type<br>✓ Extra-large fleet size<br>✓ 5-15 years' experience<br>✓ Drivers aged 26-35 |
| **Cannabis** | | ✓ Short haul schedule | Crash risk increases:<br>✓ 31+ years' experience | Police will stop:<br>✓ Short haul schedule<br>✓ Extra-large fleet size<br>✓ 5-15 years' experience<br>✓ Drivers aged 26-35 |

# Targeting Risky Trends

## Risky Driver Characteristics

Driver characteristic-groups which were determined to have higher likelihoods of engaging in the risky behavior, or characteristic groups with higher levels of disagreement with the safety beliefs, are itemized below. It is interesting to note that while some beliefs align with the behaviors, others do not, such as, alcohol use is more common for drivers of single unit trucks, but it is combination truck types that do not believe they would be stopped by police. Additionally, combination truck types do not agree that HOS increases crash risk, however, single unit truck types do not believe their supervisor cares about HOS regulations.

| | Risky Behavior | | Risky Beliefs | |
|---|---|---|---|---|
| **Texting** | • Owner-operators with own authority & small fleet size | • 5-15 years' experience<br>• Aged 36-45, 46-55, & 56-65 | Police NOT stop:<br>• Long haul schedule<br>Supervisor NOT care:<br>• Single unit truck type<br>• O-O w/OA & small fleet size | Crash risk NOT increase:<br>• Age 46-55<br>• Long haul schedule<br>• O-O w/OA |
| **HOS** | • Owner-operators with own authority & small size fleets | • Long haul schedule<br>• 5-15 years' experience<br>• Aged 46-55 | Crash risk NOT increase:<br>• O-O w/OA, O-O leased & small size fleets<br>• Long haul schedule<br>• Combination truck type<br>• Age 46-55 & 56-65 | Supervisor NOT care:<br>• Single unit truck type<br>• Drivers aged 46-55<br>• O-O w/OA & small fleet sizes |
| **Alcohol** | • Single unit truck type | • 5-15 years' experience | Police NOT stop:<br>• Small fleet size<br>• Age 46-55<br>• 31+ years' experience<br>• Combination truck type | Supervisor NOT care:<br>• 31+ years' experience |
| **Cannabis** | | • Long haul schedule | Police NOT stop:<br>• Age 46-55<br>• 31+ years' experience<br>• Long haul schedule | Supervisor NOT care:<br>• O-O w/OA |

# Peer Normative Factors

## Overall Driver Characteristic Trends

Combining the previous behavior and belief characteristic findings, the following collated characteristics can be utilized to target safety and enforcement programming initiatives.

### Red Light Warning Signs

Drivers with **5-15 years of experience** were more likely to report texting, exceeding HOS regulations, and consuming alcohol before driving, even though they were more likely to report believing they would be stopped by law enforcement for alcohol and cannabis.

**Owner-operators with own authority** and drivers of **small fleet size** groups were more likely to report exceeding HOS. Additionally, they disagreed that crash risk increases and their supervisor would care if they engaged in this behavior. They were also more likely to report texting while driving, and disagreed their supervisor would care about this behavior.

Drivers with a **long haul schedule** were more likely to report exceeding HOS regulations and disagreed that crash risk increases or that they would be stopped by law enforcement when exceeding HOS. Similar beliefs were reported, with disagreement that crash risk increases or that they would be stopped by law enforcement when texting while driving. Additionally, they were also more likely to report cannabis use and disagreement that law enforcement would stop them when driving after consuming cannabis.

Drivers **aged 46-55** were more likely to report both texting while driving and exceeding HOS regulations, while also disagreeing that crash risk increases when engaging in either behavior. Those drivers also disagreed they would be stopped by law enforcement for cannabis or alcohol use.

### Green Light Role Modeling Factors

Drivers with **31+ years of experience** were less likely to report texting while driving, exceeding HOS regulations, and driving after consuming alcohol. They also agreed that crash risk increases when texting while driving or driving after consuming cannabis.

Drivers of **extra-large fleet sizes** were less likely to report texting while driving and exceeding HOS regulations, while also agreeing that crash risk increases when engaging in either behavior. They additionally reported that their supervisor cares about HOS regulations, and that they would be stopped by law enforcement when driving after consuming alcohol or cannabis.

# Crash Beliefs and Behaviors by Region

Responses were grouped into smaller multi-state geographic regions to identify any trends that may be more, or less, prominent in different parts of the Eastern Service Center region. It should be noted that the comparative differences observed, region versus region, for the various behavior and belief groups are not statistically tested to specify significance. However, viewing them in conjunction with one another may provide a preliminary sense of safety and risk trends relevant to specific corridors. Cell shading below represents higher likelihoods of the behavior or lower levels of agreement with the safety beliefs, with risky shaded in red. Conversely, those with safer trends are shaded in green.

**Safety Beliefs** – Likelihood that drivers reported agreement that these behaviors increase crash risk by geographic driving region

| Region | Crash risk increases if exceeding HOS | Crash risk increases if texting while driving | Crash risk increases if driving within four hours of consuming alcohol | Crash risk increases if driving after consuming cannabis |
|---|---|---|---|---|
| ME NH VT | 55% | 83% | 87% | 81% |
| MA CT RI | 57% | 83% | 87% | 79% |
| NY NJ PA | 55% | 84% | 88% | 77% |
| MD DE | 57% | 89% | 91% | 79% |
| VA WV | 54% | 88% | 89% | 83% |

**Behavior** – Probability of engaging in these behaviors by geographic driving region

| Region | Exceeded HOS in the past three months | Texted while driving in the past three months | Drove within four hours of consuming alcohol in the past three months | Drove after consuming cannabis in the past three months |
|---|---|---|---|---|
| ME NH VT | 25.5% | 29.7% | 2.9% | 3.9% |
| MA CT RI | 25.9% | 31.8% | 3.1% | 3.1% |
| NY NJ PA | 26.6% | 30.0% | 3.0% | 2.9% |
| MD DE | 50.0% | 29.0% | 2.5% | 3.8% |
| VA WV | 50.0% | 30.6% | 2.5% | 2.2% |

Interestingly, drivers reported similar levels of neutral agreement, that exceeding HOS regulations increases crash risk, across geographic regions. However, those primarily driving in Maryland/Delaware and Virginia/West Virginia reported the highest likelihood to drive while exceeding HOS.

# Recommendations Based on Findings

## Stakeholder Promotion of Traffic Safety Culture

Various commercial motor vehicle safety stakeholders may be able to utilize these survey findings to further foster a traffic safety culture. Alignment with the Safe Driver component of the USDOT Safe System Approach emphasizes effective programming which targets at risk populations and wholistically promotes proactive traffic safety. Motor Carrier Safety Assistance Program (MCSAP) offices in the Eastern Service Center area can also use the findings to further understand the safety effects of specific beliefs relative to commercial drivers age, driving experience, truck type, driving schedule, and fleet size. State Trucking Associations and individual trucking companies/carriers may also utilize findings candidly to foster discussion and increase awareness of safety challenges amongst their members.

## Social Norms Media Campaign

According to social norms theory, one's perception of normative behaviors can significantly influence their own behavior. Drawing from this premise, a social norm intervention is an attempt to alter one's perception of what the social norm is, with the ultimate intent of influencing their actual behavior. [Experimental Test of Social Norms Theory in a Real-World Drinking Environment] This approach consists of further communicating accurate positive norms that already exist. [Social Norms and Traffic Safety]

It is important that safe and risky behaviors be appropriately framed within the commercial drivers' prevalent culture. Therefore, social motivations to engage in risky behaviors need to be eliminated, while motivators to engage in safe behaviors should be celebrated. The "Most of Us Don't…" campaign targeted to young-adult impaired driving can be utilized as a model to create normative messages and media campaigns based on positive truck driver behaviors. [Montana's MOST of Us Don't Drink and Drive Campaign A Social Norms Strategy to Reduce Impaired Driving Among 21-34-Year-Olds]

## Utilizing Intervention Agents

Behavior-modeling by peers is essential for defining behavioral norms, i.e., which behaviors are or are not socially acceptable. The perception of others' preferences can be sufficient motivation for someone to alter their behavior to conform with the broader group. For example, commercial drivers may be less likely to drive after consuming alcohol if it is known that their peers believe that doing so is unacceptable. Because of this, sustainable behavioral changes can be made across populations by establishing a social environment that standardizes safe behaviors and discourages risky ones. [A Primer for Traffic Safety Culture]

One way to move toward this social environment is to establish and utilize safety-champions with trucking companies and organizations, by identifying employees who have demonstrated exemplary safety practices and having them advocate for safer behaviors among their peers as role models, effectively creating a peer-to-peer safety program. [Proactive Traffic Safety: Empowering Behaviors to Reach our Shared Vision of Zero Deaths and Serious Injuries]

These kinds of social motivators could be particularly useful for addressing risky behaviors that, while dangerous, have significantly less severe consequences for violating, such as texting while driving and exceeding Hours-of-Service.

## Best Practices Guide

In addition to these survey findings, UMassSafe has compiled a full Best Practice Guide: Utilizing Findings to Create Change

# Next Steps

With a FMCSA FY23HP grant, UMassSafe will further examine at-risk attitudes and behaviors among CMV drivers by implementing a second ESC-representative self-report survey.  Specifically, the survey will aim to understand how a company or organization's safety culture (or lack thereof), as well as peers, influence driver behavior.

Survey questions will incorporate large truck operators' behavioral, normative and control beliefs surrounding risky behaviors. Measuring the various types of beliefs will provide a deeper understanding of how they influence drivers' willingness and intention to drive dangerously. These findings will support specific guidance for safety and enforcement programming to address and alter those behaviors.

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