

North Dakota Statewide Traffic Safety Survey, 2023: Traffic Safety Performance Measures for State and Federal Agencies



Prepared for:

North Dakota Department of Transportation Highway Safety Division

Prepared by:

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Disclaimer

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ABSTRACT

The statewide driver traffic safety survey provides baseline metrics for the Highway Safety Division and others to use in understanding perceptions and self-reported behaviors related to focus issues. A core set of questions addressed nationally agreed upon priorities, including seat belts, impaired driving, and speeding. In addition to the core issues, questions were included to better understand views on specific programs and attitudes pertinent to North Dakota drivers. Results show that more North Dakota drivers have adopted safe-driving practices, but additional efforts are needed to improve safety on the state's roads.

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1. INTRODUCTION

The United States lags behind other developed countries in several transportation safety metrics. One metric, road traffic death rate, is higher than in other developed countries (World Health Organization 2021) (Figure 1.1). Progress has been made to reduce the number of traffic-related fatalities, but crashes resulting in death, injury, and property damage continue to occur due to preventable factors. These factors include driving under the influence of drugs or alcohol, distracted driving, speeding, and operating a vehicle without a seat belt, among others. The metric highlighted in Figure 1.1, which presents the most recent data from the World Health Organization, suggests more work is needed to improve driver behavior and overall safety on roadways in the United States. One critical asset in monitoring and communicating traffic safety priorities is a reliable and comprehensive means to set and measure goals (Government Accounting Office 2010). In a nationwide effort to improve transparency and quantify metrics for behavior-based investments designed to reduce motor vehicle crashes, the Governor’s Highway Safety Association (GHSA) and the National Highway Traffic Safety Administration (NHTSA) established a set of performance measures to support traffic safety priorities and demonstrate progress related to behavioral safety plans and programs (Hedlund 2008).

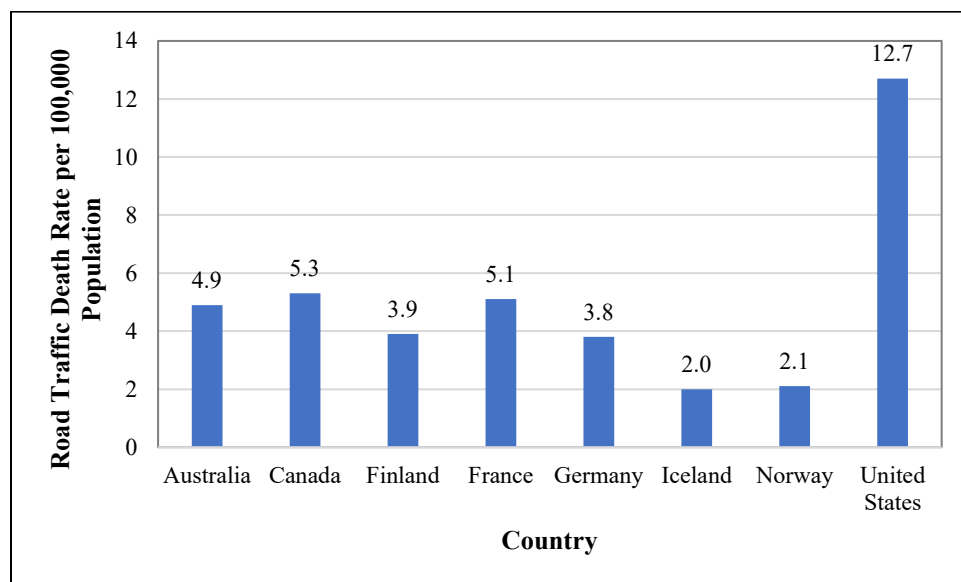


Figure 1.1 Road Traffic Death Rate of Selected Countries, 2019

Within the GHSA-NHTSA safety effort, 14 measures were agreed upon as Minimum Performance Measures. These include 10 outcome measure types, one behavior measure type, and three activity measure types. The Minimum Performance Measures are designed to create a quantitative core for the development and implementation of highway safety plans and programs. Several uses include goal setting, goal-action linkages, resource allocation, program evaluation, and communication. Other benefits stem from improvements to organizational focus, feedback processes, and accountability (Herbel et al. 2009). The measures were defined to monitor overall traffic safety performance and progress related to the prioritized behavioral issues. These issues include occupant protection, alcohol use, and speeding. Additionally, the measures target high-risk population groups. The 10 outcome measures focus on the following:

- Overall traffic safety performance
- Seat belt use
- Child occupants

- Alcohol-impaired driving
- Speeding and aggressive driving
- Motorcyclists
- Young drivers
- Older drivers
- Pedestrians
- Bicyclists

These 10 core outcome measures combine current exposure data, such as population and vehicle miles traveled (VMT), with existing national Fatality Analysis Reporting System (FARS) data to generate performance measures in areas common to state safety strategies and data systems. Activity measures emphasize actions, such as citations or arrests under grant-funded enforcement initiatives. Seat belt observation was chosen as the single initial core behavior measure (Hedlund 2008). The measures utilized in the outcome highlights are typically calculated as follows:

- Core outcome measures:
 - C-1) Number of traffic fatalities (FARS). States are encouraged to report three-year or five-year moving averages when appropriate. (One example is when annual counts are small enough that random fluctuations may inaccurately reflect true trends. This applies to all fatality measures.)
 - C-2) Number of serious injuries in traffic crashes (state crash data files).
 - C-3) Fatalities per VMT (FARS, FHWA). States should set a goal for total fatalities per VMT. States should report both urban and rural fatalities per VMT in addition to total fatalities per VMT.
 - C-4) Number of unrestrained passenger vehicle occupant fatalities. States should report these fatalities for all seat positions (FARS).
 - C-5) Number of fatalities in crashes involving a driver or motorcycle operator with a blood alcohol content (BAC) of at least 0.08 grams/deciliter (FARS).
 - C-6) Number of speeding-related fatalities (FARS).
 - C-7) Number of motorcyclist fatalities (FARS).
 - C-8) Number of motorcyclist fatalities not wearing a helmet (FARS).
 - C-9) Number of drivers aged 20 or younger involved in fatal crashes (FARS).
 - C-10) Number of pedestrian fatalities (FARS).
- Core behavior measure:
 - B-1) Observed seat belt use for passenger vehicles, front seat outboard occupants (observational survey).
- Activity measures:
 - A-1) Number of seat belt citations issued during grant-funded enforcement activities (grant activity reporting).
 - A-2) Number of impaired driving arrests made during grant-funded enforcement activities (grant activity reporting).
 - A-3) Number of speeding citations issued during grant-funded enforcement activities (grant activity reporting).

The Minimum Performance Measures publication also referenced four additional areas for measuring improvement and implementation: Traffic injury outcome; driver attitudes, awareness, and behavior; traffic speed; and law enforcement activity. The following report fulfills the need for improved measurement of driver knowledge, attitudes, behaviors, and beliefs. A core question set was developed by a GHSA-NHTSA working group and presented to state departments of transportation following the preliminary recommendations in the Minimum Performance Measures (Hedlund, Casanova, and Chaudhary 2009).

A set of 10 core questions was created to quantify attitudes, awareness, and self-reported behavioral patterns through periodic statewide traffic safety surveys/questionnaires. This recommended list of core questions was intended to provide a standard for states to track performance as they pursue program goals and objectives to reduce crashes, injuries, and fatalities related to high-risk driver behaviors. Core questions remain consistent across all entities. Beyond the core questions, an option to supplement the survey with additional questions provides latitude to address local interests and obtain other useful information related to topics, such as demographics and driving activity.

Commonly, federal initiatives relating to driving behavior focus on impaired driving, seat belt use, and speeding. Thus, the core questions emphasize these issues (Hedlund, Casanova, and Chaudhary 2009). The core questions of the focus areas are:

- Impaired driving:
 - ID-1: In the past 60 days, how many times have you driven a motor vehicle within two hours after drinking alcoholic beverages?
 - ID-2: In the past 30 days, have you read, seen or heard anything about alcohol impaired driving (or drunk driving) enforcement by police?
 - ID-3: What do you think the chances are of someone getting arrested if they drive after drinking?
- Seat belts:
 - SB-1: How often do you use seat belts when you drive or ride in a car, van, sport utility vehicle or pickup?
 - SB-2: In the past 60 days, have you read, seen, or heard anything about seat belt law enforcement by police?
 - SB-3: What do you think the chances are of getting a ticket if you don't wear your seat belt?
- Speeding:
 - SP-1a: On a local road with a speed limit of 30 miles per hour, how often do you drive faster than 35 miles per hour?
 - SP-1b: On a road with a speed limit of 65 miles per hour, how often do you drive faster than 70 miles per hour?
 - SP-2: In the past 30 days, have you read, seen or heard anything about speed enforcement by police?
 - SP-3: What do you think the chances are of getting a ticket if you drive over the speed limit?

Seven variations of these questions have been incorporated into the 2023 North Dakota Driver Survey, developed in conjunction with the North Dakota Department of Transportation's Highway Safety Division (see Appendix A for the complete survey). The Highway Safety Division expanded the survey to gain additional information relevant to its goals and responsibilities. Ultimately, the core questions were slightly modified to better fit driving conditions in North Dakota. The core questions, which were included, read as follows:

- Impaired driving:
 - ID-1a) In the past 60 days, how many times have you driven a motor vehicle within two hours after drinking 1–2 alcoholic drinks?
 - ID-1b) In the past 60 days, how many times have you driven a motor vehicle within two hours after drinking three or more alcoholic drinks?
 - ID-2) What are the chances of someone getting arrested if they drive under the influence of alcohol or drugs?

- Seat belts:
 - SB-1) How often do you use a seat belt when you drive or ride in a motor vehicle?
 - SB-2) What do you think the chance is of getting a ticket if you do not wear your seat belt?
- Speeding:
 - SP-1) On a road with a speed limit of 75 mph, how often do you driver faster than 80 mph?
 - SP-2) What do you think the chance is of getting a ticket if you drive over the speed limit?

The 2018 North Dakota *Vision Zero Plan* provides insight for current priorities and activities (NDDOT 2018). The current Strategic Highway Safety Plan outlines goals related to the overall traffic safety mission of the NDDOT, in addition to specific issues to address in the next five years. The following traffic safety issues are prioritized as emphasis areas:

- Lane departure
- Intersections
- Impaired driving
- Unbelted vehicle occupants
- Speeding/aggressive drivers
- Young drivers
- Heavy vehicles
- Older drivers
- Pedestrians/bicyclists
- Local system roadways
- Oil impact counties

Metrics are included to indicate progress of the overall safety mission in light of traffic fatalities and serious injuries. The single core behavior measure shows 2022 observed seat belt use at 80.6% (Vachal and Andersen 2022). Results presented here will enhance the understanding of behavior by providing additional coverage, expanded insights into issues, and an increased number of measures.

2. METHOD

A mail survey was selected as the method for the driver traffic safety survey. A questionnaire was created by blending the core questions with other NDDOT-designated questions pertaining to education, policy, and enforcement. The questions were developed based on a literature review — which included previous surveys of this type — and guidance offered by the GHSA-NHTSA working group. The mailings to drivers included a Highway Safety Division cover letter, which invited participation and explained the purpose of the survey. The questionnaire was mailed to North Dakota drivers on March 1, 2023, with responses to be returned by April 1, 2023.

NDDOT adult driver records formed the population used for sampling. The original NDDOT mail list consisted of 11,520 addresses. Unlike prior iterations of this survey, zero drivers lived outside of North Dakota. Thus, none were removed from mailing. In addition, none of the preliminary list of North Dakota addresses were deemed invalid prior to mailing. Zero surveys were returned to the NDDOT as undeliverable. This low number is likely due to the decision to use “or current resident” on each address label. The sample had regional, geographic, age, and gender distributions that were a reasonable representation of the general North Dakota driver population. Ultimately, 1,441 surveys were completed and returned to the research team. However, not every survey was from a self-reported North Dakota county. A total of 34 respondents did not provide an answer to the “In which North Dakota County do you live?” question and were removed from the sample. None of the other responses were from individuals living in counties outside of North Dakota. Thus, of the usable survey responses provided, 1,407 were confirmed as valid and form the driver response sample used in the analysis.

The sample size was based on a 95% confidence interval with a 5% confidence level. Although mail survey response is usually low, with 10% typical, a slightly better response rate was expected due to the parameters used in the survey design and administration. These parameters included keeping the survey to a single page, including the state agency cover letter and mail envelopes, and providing postage-paid return envelopes.

A disproportionate stratified random sample was used to select drivers. North Dakota drivers were stratified by region (east/west) and geography (urban/rural). County jurisdictional boundaries were used to define both region and geography (Figure 2.1). Additionally, oversampling was necessary for two target driver groups: 18-to-34-year-old male and female drivers. The disproportionate stratified sampling structure was used to elicit sufficient driver participation to allow robust analysis of responses by region, geography, and the target driver groups. However, using these simple average responses would provide skewed results in representing the statewide driver population. For example, drivers aged 35 to 44 were 8.6% of the survey sample and account for 7.3% of the survey responses. However, this age cohort actually accounts for 17.9% of the licensed driver population in the state (FHWA 2022). Therefore, a post-stratification weighting process is used to give an appropriate weight to responses for statewide estimates. Results from post-stratification consider the age, gender, and location of North Dakota registered drivers when weighting to reflect the knowledge, attitudes, behaviors, and beliefs of the statewide driving population. Note that answers with fewer than 30 responses are not considered large enough to extrapolate to fit the entire North Dakota driver population. These instances are indicated with asterisks throughout the analysis.

North Dakota County Stratification

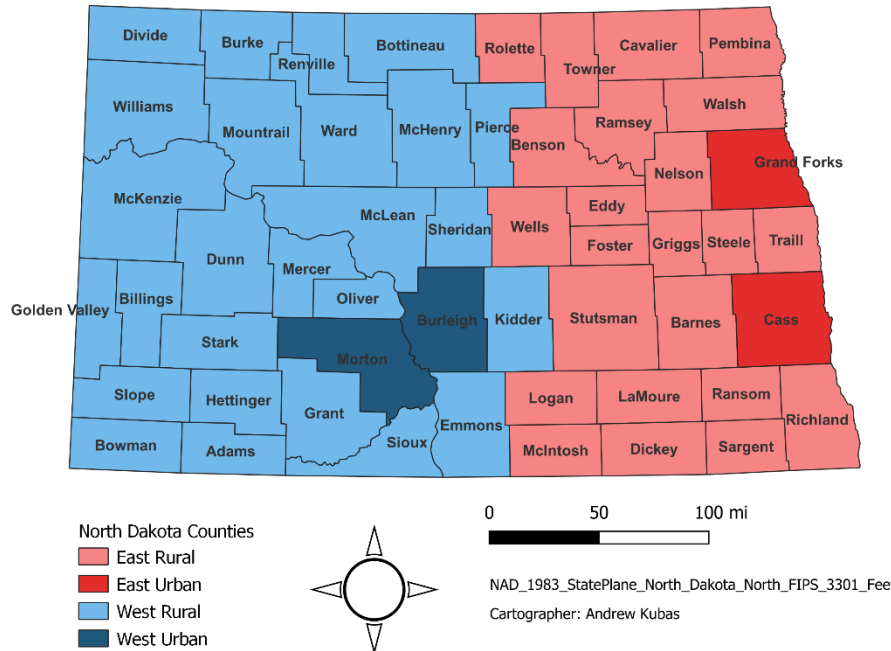


Figure 2.1 County Stratification

The regional definition was created by aggregating North Dakota health regions into two areas closely representing an east/west division of the state. The geography definition includes an urban/rural dichotomy. Urban drivers are those from counties with the largest urban population, according to the most recently published data estimates from the U.S. Census Bureau. Two urban counties are located in the east and another two are located in the west based on the population density geographic definitions used in the study (U.S. Census Bureau 2020). These counties represent the clear majority of the urban population in the state. The sampling probabilities for the survey are displayed in Table 2.1.

Table 2.1 Sampling Probabilities

Region	Geography ₁	Driver Age	Sampling Probability ₂
East	Urban	18–34	0.023
East	Urban	35+	0.008
East	Rural	18–34	0.065
East	Rural	35+	0.011
West	Urban	18–34	0.064
West	Urban	35+	0.014
West	Rural	18–34	0.033
West	Rural	35+	0.008

₁Source: U.S. Census Bureau 2020

₂Source: U.S. Census Bureau 2021

3. RESPONSE

The survey response rate was 12.2% with 1,407 valid responses obtained from a mailing to 11,520 drivers. The response rate was comparable to prior surveys (Vachal, Benson, and Kubas 2010–2021), but was slightly lower than the 14.1% rate during the 2022 mailing (Vachal and Kubas 2022). As expected, oversampling of the 18-to-34-year-old male and female driver target groups was needed to achieve a sample sufficient for statistical analysis. The target group response rate was 5.2% compared to 26.1% for other drivers. Sampling to elicit response by region and geography was successful (Table 3.1). Responses include an acceptable level of participation with comparable response rates from east, west, urban, and rural demographics.

Table 3.1 Survey Response by Region and Geography

		GEOGRAPHY		
		Urban	Rural	Total
R E G I O N	East	340 (24.2%)	413 (29.4%)	753 (53.5%)
	West	343 (24.4%)	311 (22.1%)	654 (46.5%)
Total		683 (48.5%)	724 (51.5%)	1,407

The sample design did not account for age or gender beyond the target male and female groups. Responses have an acceptable distribution among age cohorts, though the 35-to-44-year-old age group is underrepresented, and the 65-to-74-year-old age group is overrepresented compared with the actual proportion of the driver population in the state (Table 3.2). The highest share of responses is among drivers aged 65 to 74. This age cohort makes up 21.1% of the survey responses and is a change from the trend of prior iterations of this survey in which the 25-to-34-year-old group has historically had the largest share of responses. The 35-to-44-year-old age cohort makes up the lowest proportion of survey responses. Nonetheless, there were well over 30 responses from each age group, making statistical extrapolation possible and allowing for inferences to be drawn with regard to the entire North Dakota driver population.

Response rates were skewed by gender: 60.2% of the sample were female. This deviates from the North Dakota driver population in which there is an approximately equal distribution of males and females. The number of respondents identifying as male or female provides sufficient data to expand the responses to represent the entire statewide driver population for these two groups. However, the four respondents identifying as non-binary (0.3%) cannot be extrapolated to fit the entire population of non-binary North Dakota drivers. These respondents will be excluded from analyses which examine trends by gender. The comparison to the state population supports the post-weighting for improved driver population representation with the sample.

Table 3.2 Response by Age Group

Age Group ₁	Survey		Driver Population	
	Responses	Share	Drivers ₂	Share ₃
18–24	122	8.7%	58,405	10.9%
25–34	281	20.0%	104,119	19.5%
35–44	103	7.3%	95,700	17.9%
45–54	179	12.7%	75,473	14.1%
55–64	255	18.1%	88,552	16.6%
65–74	296	21.1%	70,551	13.2%
75 and Older	169	12.0%	41,879	7.8%

₁Frequency missing: Two

₂Source: FHWA 2022

₃Represents share of drivers above age 18; percentages do not account for novice (under 18) drivers

4. RESULTS

Responses to the survey questions provide valuable insight into driver perceptions, attitudes, and behaviors regarding traffic safety. Simple frequency analysis of ordinal and dichotomous survey responses provides a general characterization of driver views and behaviors. The strong response rate resulted in increased confidence. The 95% confidence interval is coupled with smaller margins of error at +/-1% when discussing statewide results, and a +/-2% error margin when addressing the population in regional, geographic, or target driver strata.

4.1 All Drivers

The core questions emphasize three specific issues: impaired driving, seat belt use, and speeding. Response frequencies for these questions are included in Table 4.1. The table includes 2010–2023 responses to establish metrics that may be used to identify driving trends in North Dakota. In addition, five-year averages shed further light into patterns during this time frame. Responses show drivers believe law enforcement is more likely to ticket for impaired driving violations than for speeding or seat belt violations. Frequencies indicate that 70.7% of drivers think the chances are higher than average that impaired drivers will be arrested (Figure 4.1). This is higher than the 49.8% and 33.4% of respondents who believe there is a greater-than-average likelihood that drivers will be ticketed either for speeding or seat belt violations, respectively.

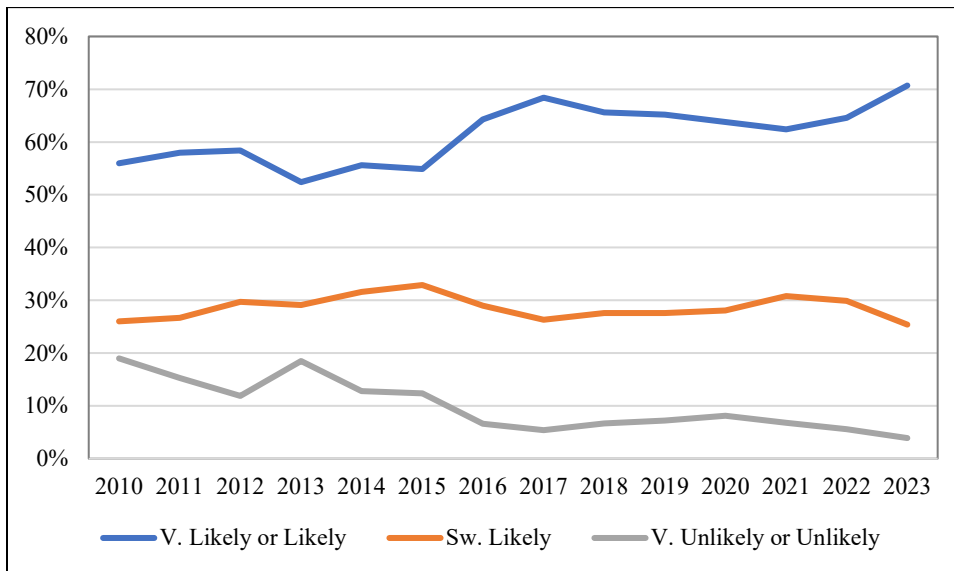


Figure 4.1 Perceived DUI Arrest Likelihood

Responses reveal that perceptions of getting a ticket for illegal driving behavior is related to whether one has driven within two hours of consuming alcohol in the last 60 days. For example, compared with drivers who never drove within two hours of consuming alcohol, those operating a vehicle at least once within two hours of consuming one or two alcoholic beverages were less likely to think that they would be ticketed for not wearing a seat belt ($F=23.669$, $df=1$, $p<0.001$) and were also less likely to believe that they would be ticketed for speeding ($F=21.893$, $df=1$, $p<0.001$). A similar pattern occurred among those who operated a vehicle within two hours of consuming three or more alcoholic drinks. In this survey, operating a vehicle after consuming three or more alcoholic beverages is associated with a lower perceived chance of getting a ticket for not wearing a seat belt ($F=9.178$, $df=1$, $p=0.003$) and for speeding ($F=10.006$, $df=1$, $p=0.002$). This suggests that a driver engaging in one dangerous activity (driving after consuming alcohol) may also take part in another — driving unbelted and/or speeding — and therefore may exponentially increase danger on the roadway.

Responses from this questionnaire show 42.9% of respondents reported that they had driven a vehicle within two hours of drinking one or two drinks at least once during the past two months (Figure 4.2). This is a worsening trend compared to the 2022 iteration of the survey in which 30.5% of respondents reported this behavior. This is the highest proportion recorded in the 11 years this question has been asked as part of the survey. Only 6.5% of respondents noted that they had operated a vehicle within two hours of drinking three or more drinks at least once during the past two months. However, this, once again, represented worsening behavior compared with 2022: Last year, 4.9% admitted to driving after consuming this many alcoholic beverages. Patterns from 2013–2022 were generally consistent, and 2023 marks a noticeable uptick in self-reported instances of driving after consuming alcoholic beverages. It would be prudent to continue monitoring these self-reported behaviors in the future and further investigate what caused a substantial increase in 2023.

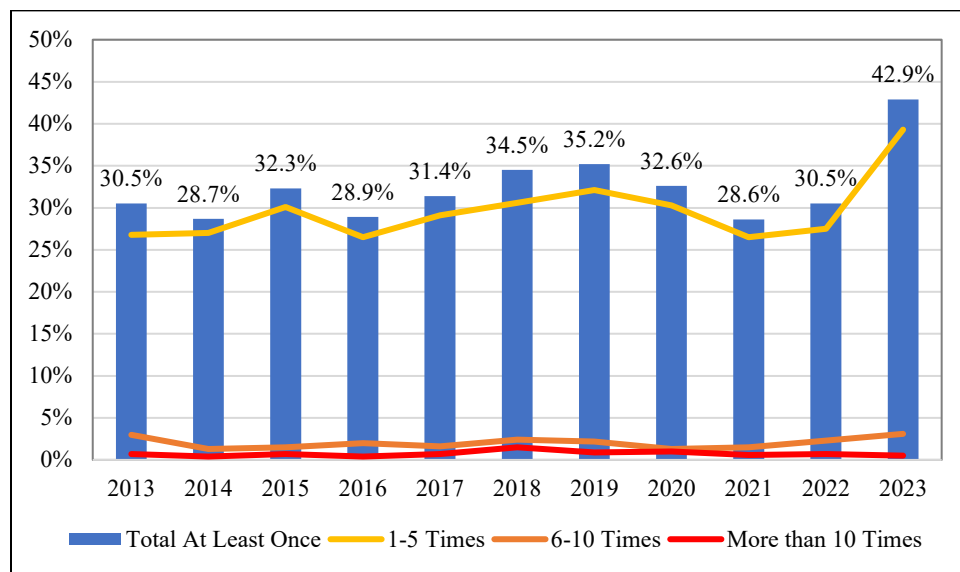


Figure 4.2 Self-reported Driving-after-drinking Activity within Two Hours of Consuming 1–2 Drinks

Table 4.1 Core Question Responses

Core	Survey Question	Responses			
ID-1a	In the past 60 days, how many times have you driven a vehicle within two hours after drinking 1–2 drinks?	None	1-5 Times	6-10 Times	More than 10 Times
	2023 [#]	57.1%	39.3%	3.1%	0.5%*
	2022 [#]	69.5%	27.5%	2.3%	0.7%*
	2021 [#]	71.3%	26.5%	1.5%*	0.6%*
	2020 [#]	67.4%	30.3%	1.3%	1.0%*
	2019 [#]	64.8%	32.1%	2.2%	0.9%
	2018 [#]	65.5%	30.6%	2.4%	1.6%
	2017 [#]	68.5%	29.1%	1.6%	0.7%*
	2016 [#]	71.0%	26.5%	2.0%	0.4%*
	2015 [#]	66.7%	30.1%	1.5%	0.7%*
	2014 [#]	71.3%	27.0%	1.3%	0.4%*
	2013 [#]	69.5%	26.8%	3.0%	0.7%*
	2019–2023 Five-year Avg.	66.0%	31.1%	2.1%	0.7%
	2018–2022 Five-year Avg.	67.7%	29.4%	1.9%	1.0%
	2017–2021 Five-year Avg.	67.5%	29.7%	1.8%	1.0%
	2016–2020 Five-year Avg.	67.4%	29.7%	1.9%	0.9%
	2015–2019 Five-year Avg.	67.3%	29.7%	1.9%	0.9%
	2014–2018 Five-year Avg.	68.6%	28.7%	1.8%	0.8%
	2013–2017 Five-year Avg.	69.4%	27.9%	1.9%	0.6%
ID-1b	In the past 60 days, how many times have you driven a vehicle within two hours after drinking 3+ drinks?	None	1-5 Times	6-10 Times	More than 10 Times
	2023 [#]	93.5%	5.8%	0.2%*	0.5%*
	2022 [#]	95.1%	4.1%	0.7%*	0.1%*
	2021 [#]	95.5%	4.1%	0.2%*	0.1%*
	2020 [#]	93.5%	6.1%	0.3%*	0.1%*
	2019 [#]	93.0%	6.4%	0.4%*	0.1%*
	2018 [#]	92.6%	6.5%	0.7%*	0.2%*
	2017 [#]	93.0%	6.7%	0.3%*	0.1%*
	2016 [#]	95.3%	4.4%	0.1%*	0.2%*
	2015 [#]	93.4%	6.1%	0.5%*	0.1%*
	2014 [#]	94.5%	5.1%	0.2%*	0.2%*
	2013 [#]	92.4%	6.6%	0.8%*	0.2%*
	2019–2023 Five-year Avg.	94.1%	5.3%	0.4%	0.2%
	2018–2022 Five-year Avg.	93.9%	5.4%	0.5%	0.1%
	2017–2021 Five-year Avg.	93.5%	6.0%	0.4%	0.1%
	2016–2020 Five-year Avg.	93.5%	6.0%	0.4%	0.1%
	2015–2019 Five-year Avg.	93.5%	6.0%	0.4%	0.1%
	2014–2018 Five-year Avg.	93.8%	5.8%	0.4%	0.2%
	2013–2017 Five-year Avg.	93.7%	5.8%	0.4%	0.2%

Table 4.1 Core Question Responses (continued)

Core	Survey Question	Responses				
ID-2	What are the chances of someone getting arrested if they drive under the influence of alcohol or drugs?	Very Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	2023	37.9%	32.8%	25.4%	2.2%	1.7%
	2022	34.8%	29.8%	29.9%	4.8%	0.8%*
	2021	27.3%	35.1%	30.8%	6.0%	0.8%*
	2020	32.6%	31.2%	28.1%	6.7%	1.4%
	2019	32.0%	33.2%	27.6%	5.6%	1.6%
	2018	31.9%	33.7%	27.6%	5.2%	1.5%*
	2017	32.5%	35.9%	26.3%	4.4%	1.0%
	2016	32.9%	31.4%	29.0%	5.4%	1.2%
	2015	33.6%	21.3%	32.9%	10.3%	2.1%
	2014	29.7%	25.9%	31.6%	11.1%	1.7%
	2013	25.9%	26.5%	29.1%	16.7%	1.8%
	2012	32.5%	25.9%	29.7%	10.3%	1.6%
	2011	31.3%	26.7%	26.7%	12.6%	2.7%
	2010	25.0%	31.0%	26.0%	15.0%	4.0%
	2019–2023 Five-year Avg.	32.9%	32.4%	28.4%	5.1%	1.3%
	2018–2022 Five-year Avg.	31.7%	32.6%	28.8%	5.7%	1.2%
	2017–2021 Five-year Avg.	31.3%	33.8%	28.1%	5.6%	1.3%
	2016–2020 Five-year Avg.	32.4%	33.1%	27.7%	5.5%	1.3%
	2015–2019 Five-year Avg.	32.6%	31.1%	28.7%	6.2%	1.5%
	2014–2018 Five-year Avg.	32.1%	29.6%	29.5%	7.3%	1.5%
	2013–2017 Five-year Avg.	30.9%	26.3%	31.7%	9.6%	1.6%
	2012–2016 Five-year Avg.	30.9%	26.2%	30.5%	10.8%	1.7%
	2011–2015 Five-year Avg.	30.6%	25.3%	30.0%	12.2%	2.0%
	2010–2014 Five-year Avg.	28.9%	27.2%	22.7%	13.1%	2.4%
SB-1	How often do you use seat belts when you drive or ride in a vehicle?	Always	N. Always	Sometimes	Rarely	Never
	2023	82.6%	12.2%	4.1%	0.7%*	0.5%*
	2022	81.8%	13.1%	3.5%	1.1%*	0.5%*
	2021	77.9%	16.1%	4.1%	1.5%*	0.4%*
	2020	77.1%	17.1%	4.1%	1.4%	0.3%*
	2019	76.6%	17.4%	4.5%	0.8%*	0.6%*
	2018	77.8%	17.3%	3.9%	0.5%*	0.4%*
	2017	74.4%	19.5%	4.6%	1.2%*	0.3%*
	2016	74.2%	19.7%	4.1%	1.6%	0.4%*
	2015	71.9%	20.4%	5.6%	1.6%	0.6%*
	2014	72.2%	19.7%	5.6%	2.1%	0.5%*
	2013	70.5%	21.3%	6.0%	1.8%	0.4%*
	2012	62.8%	26.9%	6.5%	2.9%	0.9%
	2011	67.9%	23.5%	5.3%	2.7%	0.6%*
	2010	58.0%	27.0%	10.0%	3.0%	1.0%
	2019–2023 Five-year Avg.	79.2%	15.2%	4.1%	1.1%	0.5%
	2018–2022 Five-year Avg.	78.2%	16.2%	4.0%	1.1%	0.4%
	2017–2021 Five-year Avg.	76.8%	17.5%	4.2%	1.1%	0.4%
	2016–2020 Five-year Avg.	76.0%	18.2%	4.2%	1.1%	0.4%
	2015–2019 Five-year Avg.	75.0%	18.9%	4.5%	1.1%	0.5%
	2014–2018 Five-year Avg.	74.1%	19.3%	4.8%	1.4%	0.4%
	2013–2017 Five-year Avg.	72.6%	20.1%	5.2%	1.7%	0.4%
	2012–2016 Five-year Avg.	70.3%	21.6%	5.6%	2.0%	0.6%
	2011–2015 Five-year Avg.	69.1%	22.4%	5.8%	2.2%	0.6%
	2010–2014 Five-year Avg.	66.3%	23.7%	6.7%	2.5%	0.7%

Table 4.1 Core Question Responses (Continued)

Core	Survey Question	Responses				
SB-2	What do you think the chance is of getting a ticket if you do not wear your seat belt?	Very Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	2023	10.3%	23.1%	35.7%	23.4%	7.4%
	2022	10.3%	21.7%	36.5%	23.8%	7.6%
	2021	9.7%	19.4%	39.3%	25.4%	6.2%
	2020	10.2%	23.0%	39.0%	21.0%	6.7%
	2019	11.9%	22.7%	38.0%	23.0%	4.5%
	2018	13.9%	22.0%	36.7%	22.4%	5.1%
	2017	11.4%	23.6%	39.5%	19.2%	6.3%
	2016	15.1%	24.5%	39.2%	16.7%	4.5%
	2015	16.9%	21.6%	30.6%	26.5%	4.4%
	2014	16.5%	26.8%	24.9%	26.3%	5.6%
	2013	15.5%	21.8%	28.8%	31.3%	2.7%
	2012	17.1%	26.6%	28.1%	23.7%	4.5%
	2011	16.0%	25.3%	22.6%	25.0%	11.2%
	2010	14.0%	23.0%	26.0%	26.0%	10.0%
	2019–2023 Five-year Avg.	10.5%	22.0%	37.7%	23.3%	6.5%
	2018–2022 Five-year Avg.	11.2%	21.8%	37.9%	23.1%	6.0%
	2017–2021 Five-year Avg.	11.4%	22.1%	38.5%	22.2%	5.8%
	2016–2020 Five-year Avg.	12.5%	23.2%	38.5%	20.5%	5.4%
	2015–2019 Five-year Avg.	13.8%	22.9%	36.8%	21.6%	5.0%
	2014–2018 Five-year Avg.	14.8%	34.2%	23.7%	22.2%	5.2%
	2013–2017 Five-year Avg.	15.1%	29.4%	26.8%	24.0%	4.7%
	2012–2016 Five-year Avg.	16.2%	30.3%	24.3%	24.9%	4.3%
	2011–2015 Five-year Avg.	16.4%	27.0%	24.4%	26.6%	5.7%
	2010–2014 Five-year Avg.	15.8%	26.1%	24.7%	26.5%	6.8%
SP-2	What do you think the chance is of getting a ticket if you drive over the speed limit?	Very Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	2023	12.8%	37.0%	40.1%	8.3%	1.8%
	2022	14.3%	37.5%	39.3%	7.4%	1.5%
	2021	14.7%	45.6%	33.9%	4.1%	1.7%*
	2020	14.0%	39.9%	40.1%	4.7%	1.2%*
	2019	19.1%	42.8%	32.6%	4.7%	0.8%*
	2018	17.8%	40.7%	35.8%	4.5%	1.2%*
	2017	15.4%	45.3%	33.5%	4.4%	1.3%
	2016	20.5%	42.4%	32.8%	3.8%	0.5%*
	2015	24.0%	25.7%	43.3%	6.5%	0.5%*
	2014	23.9%	32.7%	34.3%	8.1%	1.0%*
	2013	24.0%	29.3%	37.5%	8.4%	0.9%*
	2012	28.7%	28.8%	33.6%	7.4%	1.5%*
	2011	28.0%	29.1%	31.3%	9.5%	2.1%
	2010	26.0%	28.0%	30.0%	12.0%	4.0%
	2019–2023 Five-year Avg.	15.0%	40.6%	37.2%	5.8%	1.4%
	2018–2022 Five-year Avg.	16.0%	41.3%	36.3%	5.1%	1.3%
	2017–2021 Five-year Avg.	16.2%	42.9%	35.2%	4.5%	1.2%
	2016–2020 Five-year Avg.	17.4%	42.2%	35.0%	4.4%	1.0%
	2015–2019 Five-year Avg.	19.3%	39.4%	35.6%	4.8%	0.9%
	2014–2018 Five-year Avg.	20.3%	35.9%	37.4%	5.5%	0.9%
	2013–2017 Five-year Avg.	21.6%	38.6%	32.7%	6.2%	0.8%
	2012–2016 Five-year Avg.	24.2%	36.3%	31.8%	6.8%	0.9%
	2011–2015 Five-year Avg.	25.7%	36.0%	29.1%	8.0%	1.2%
	2010–2014 Five-year Avg.	26.1%	33.3%	29.6%	9.1%	1.9%

*Estimate uncertain due to limited sample size

#Due to wording changes in ID-1a and ID-1b, trends from 2010–2012 could not be studied

The share of drivers reporting that they always use their seat belts when driving or riding in a vehicle is slightly higher than the information presented by the core behavior metric of 80.6%. Driver self-reported use collected here shows 82.6% always wear a seat belt with another 12.2% reporting usage as nearly always (Figure 4.3). The 82.6% of drivers always wearing a seat belt represents an increase from 81.8% in 2022 and is the highest usage rate ever reported in the 14-year history of this survey. Only 1.2% of drivers report that they rarely or never use a seat belt which is a slight decrease from the 1.6% who reported such use last year. Overall, these metrics indicate that drivers in North Dakota are increasingly safe with regard to seat belt use.

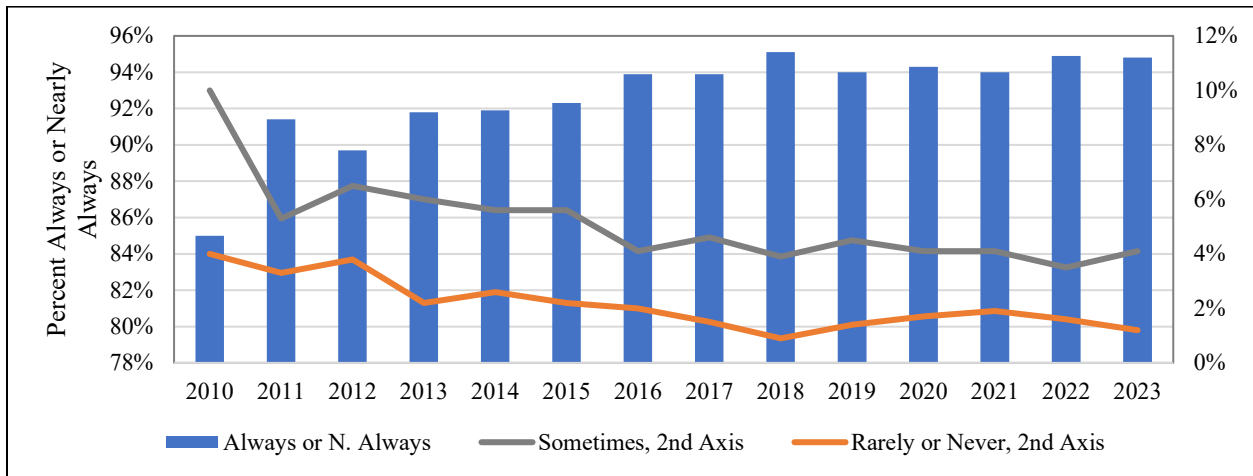


Figure 4.3 Self-reported Seat Belt Use

To further examine relationships among the core questions and issues that may be related, measures of association are calculated for responses. The Pearson coefficient measures the strength of association between two variables — in this case driver responses. Correlation coefficients range from -1 to +1, and values closer to these extremes are considered stronger relationships. Relationships between -0.5 and +0.5 are generally considered weak and inconsequential. For example, the “ticket for not wearing a seat belt” and “ticket for speeding” variables have an expected positive relationship at Pearson Corr.=0.491, but the correlation measure shows that less than 25% of their variability is shared. Although several other relationships between variables are found to be statistically significant at the 1% and 5% levels, the relationship measures are between the -0.5 and +0.5 thresholds and are not considered substantive. The Pearson Correlation values suggest there are zero strong relationships between survey items (Table 4.2). This represents the first time in the administration of this survey that no items have a substantive relationship.

Table 4.2 Correlations in Core Question Responses

	ID1a	ID1b	ID2	SB1	SB2	SP1	SP2
ID1a: Drive After Drinking 1–2 Drinks	1	.476**	-.036	-.108**	-.158**	.181**	-.130**
		.000	.263	.001	.000	.000	.000
ID1b: Drive After Drinking 3+ Drinks		1	-.030	-.124**	-.094**	.170**	-.099**
			.389	.000	.007	.000	.005
ID2: Arrest for Drunk Driving			1	.056*	.406**	.064*	.454**
				.035	.000	.017	.000
SB1: How Often Use Seat Belts				1	.057*	-.091**	.016
					.034	.001	.550
SB2: Ticket for No Seat Belt					1	-.137**	.491**
						.000	.000
SP1: Speed in 75 MPH Zone						1	-.152**
							.000
SP2: Ticket for Speeding							1
**Correlation is significant at the 1% level							
*Correlation is significant at the 5% level							
Note: Correlations between -0.5 and +0.5 indicate a weak relationship and are not addressed in this study							

Driver responses to other questions are presented in Table 4.3. These responses offer additional insight for practitioners and policymakers with queries related to traffic safety enforcement and education programs, policy, and investments. One aspect of traffic safety is deterrence through enforcement. The enforcement aspect combines patrol efforts and penalties to discourage drivers from taking part in dangerous or risky behaviors. The critical driver risk behaviors here are driver preferences, distracted driving, driver beliefs, sober/designated drivers, and exposure to enforcement messages.

Table 4.3 Other Question Responses

Survey Question	Responses				
Driver Preferences					
Do you favor or oppose... Banning hand-held phone use while driving?	St. Favor 30.8%	Sw. Favor 24.4%	Neutral 20.0%	Sw. Oppose 14.6%	St. Oppose 10.2%
Driver Distraction					
Chances of distracted driving ticket	V. Likely 9.5%	Likely 21.0%	Sw. Likely 39.1%	Unlikely 24.6%	V. Unlikely 5.9%
How likely to use phone when driving? ¹	7.3%	25.1%	32.5%	17.1%	18.1%
Phone use purpose ^{1,2}	Texts 40.6%	Emails 3.2%	Maps 61.0%	Social Media 3.8%	Other 13.0%
My use is Bluetooth/hands-free ¹				Yes 70.0%	No 30.0%
Driver Beliefs					
Do highway safety corridors positively change your driving or driver behavior? ³				Yes 75.1%	No 24.9%
Are crashes preventable?	Always 6.0%	N. Always 55.1%	Sometimes 38.3%	Rarely 0.3%	Never 0.3%
Designated Driver					
Likelihood designating alternate driver ⁴	V. Likely 59.4%	Likely 24.9%	Sw. Likely 9.7%	Unlikely 1.8%	V. Unlikely 4.3%
Alternate service used ^{2,4}		Friend 42.8%	Taxi 8.5%	Sober Driver 67.0%	Ride Share 30.8%
Exposure to Messaging					
Within last six months, have you read, seen, or heard traffic safety messages related to... ⁵				Yes	No
Seat belt enforcement?				76.6%	23.4%
Speed enforcement?				51.7%	48.3%
Drunk driving enforcement?				87.1%	12.9%
Distracted driving enforcement?				64.4%	35.6%
<i>Vision Zero?</i>				55.2%	44.8%

¹Frequency does not include those who answered “I Do Not Use.”

²Frequency based on each individual box checked; it is possible for respondents to check more than one box.

³Frequency does not include those who answered “Do Not Know.”

⁴Frequency calculated based on those who do drink alcohol.

⁵Frequency calculated based on any read, seen, or heard exposure.

4.1.1 Driver Preferences

For the fifth consecutive year, North Dakota drivers were asked to rate their support for banning hand-held cell phone use while driving. The majority (55.2%) indicated that they favored such a ban based on those who chose the “strongly favor” or “somewhat favor” options. This level of support represents a 3.4-percentage-point increase from the 2022 iteration of the survey (Figure 4.4). It should be noted that the percentage of respondents who answered “strongly oppose” to this question (10.2%) declined for the first time in five years.

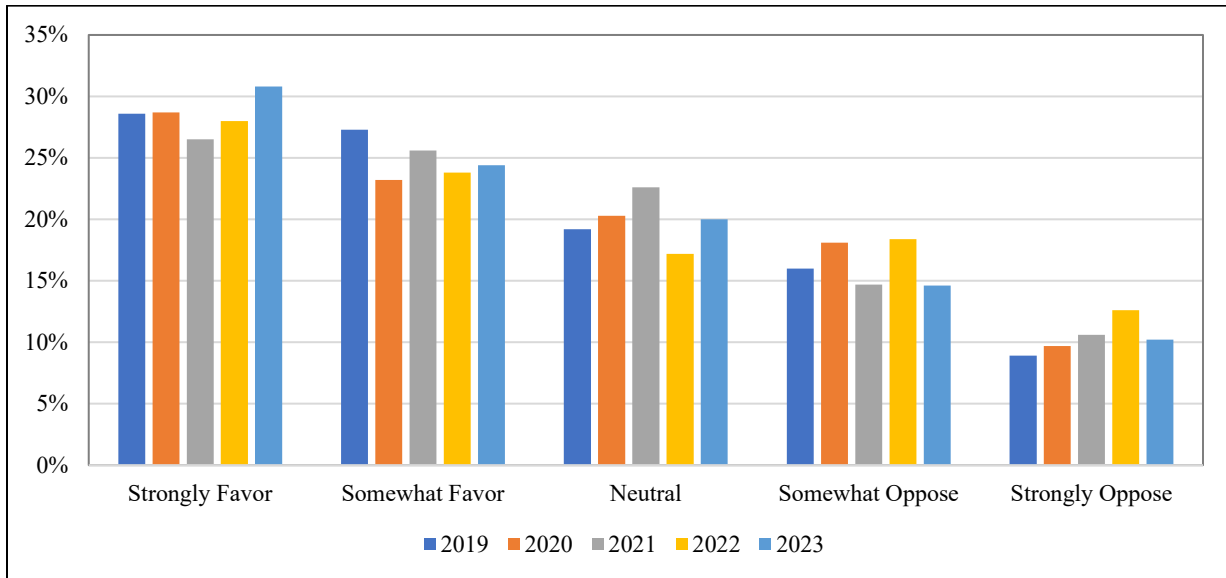


Figure 4.4 Driver Preferences for Banning Hand-held Cell Phone Use while Driving

4.1.2 Driver Distraction

Four questions specific to distracted driving were included in the survey. Although the term “distracted driving” can refer to a broad range of issues, the focus here was on cell phone use while driving. Just 10.1% of drivers self-reported that they do not use a phone while driving. Of those who do use their phone, there was an even distribution of responses when asked to rate the likelihood of using it while driving: Roughly one-third of respondents (32.4%) self-reported they were “likely” or “very likely” to use a phone, roughly one-third (32.5%) indicated usage as “somewhat likely,” and roughly one-third (35.2%) answered the chances were “very unlikely” or “unlikely” that they would engage in this dangerous behavior.

Among those who do use cell phones while driving, when asked specifically for which purposes the respondents use cell phones, maps were cited as the most common use with 61.0% self-reporting this behavior. A lower proportion, 40.6%, indicated that they use phones to text while driving.

For the second year in a row, drivers were asked whether their cell phone use while driving occurs via hands-free/Bluetooth technology. Of those using a phone while driving, seven in 10 (70.0%) do so by leveraging hands-free technology. This represents a 0.7-percentage-point decline from 2022.

The expectations North Dakota drivers have for receiving a ticket for distracted driving closely resemble a bell curve (Figure 4.5). Drivers tend to believe that a ticket for this dangerous behavior is just as unlikely as it is likely. None of the responses in 2023 varied by more than three percentage points when compared to the 2022 responses from drivers.

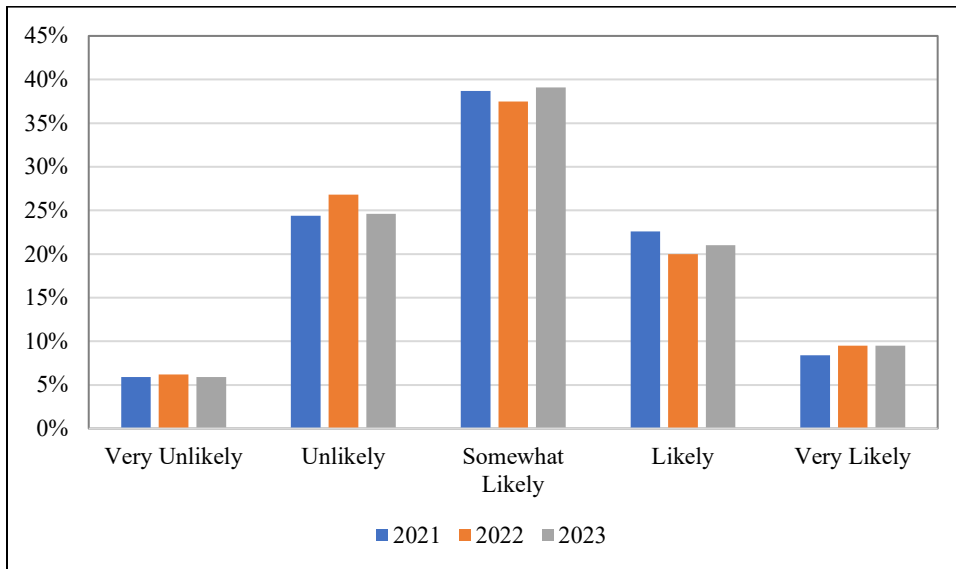


Figure 4.5 Perceived Likelihood of Receiving a Ticket for Distracted Driving

4.1.3 Driver Beliefs

Two questions pertaining to driver beliefs were included in the 2023 driver survey. These relate highway safety corridors and whether crashes are preventable. Of those respondents who traveled on a highway safety corridor, 75.1% believed that it did positively change their attention to driving and one's driving behavior. This was a 0.2-percentage-point decline from last year. The majority (61.1%) of North Dakotans believe crashes are preventable based on those who responded "Always" or "Nearly Always" when asked to rate the preventability of crashes on roadways.

4.1.4 Sober/Designated Drivers

Among those respondents who do drink alcohol, 59.4% reported that they are very likely to designate an alternate driver when drinking or planning to drink. This was a 6.0-percentage-point decline from the 65.4% who reported this last year. The share of respondents self-reporting that they were very unlikely to designate an alternate driver was 4.3%, a nearly three-fold increase from the 1.5% who reported this in 2022. For the second year, a question was asked to understand which type of alternate driver is used by those who do not drive when drinking alcohol. Among those individuals who designate an alternate driver, they most commonly designate a sober driver in the group (67.0%). A smaller share, 42.8%, call a friend or family member for a ride. Ride sharing services (30.8%) and taxis (8.5%) were least commonly used among respondents. It should be noted that respondents could choose more than one option to this question, and each individual category reported here is inclusive of any combination of options on the survey.

4.1.5 Exposure to Messaging

Responses to educational messaging reveal that drivers most often read, see, or hear messages pertaining to impaired driving. Nearly nine out of 10 drivers (87.1%) reported some capacity of exposure to messages about drunk driving in the last six months. Messages pertaining to seat belt use were recently read, seen, or heard by roughly three out of four (76.6%) North Dakota drivers and educational content regarding distracted driving was self-reported by approximate two out of three (64.4%) drivers. These percentages are in line with prior iterations of this survey in which these three topics — impaired driving, seat belt use, and distracted driving — were most commonly read, seen, or heard, respectively.

4.2 Driver Group Evaluations

It is reasonable to assume that driver perceptions and behaviors are influenced by local norms and the driving environment. Therefore, it is prudent to investigate differences within the driver population to determine if perceptions can be substantiated. This information may be valuable in more effectively allocating traffic safety resources, conducting program assessments, and focusing programs and strategies beyond typical statewide treatment. To more easily quantify and manage the discussion of driver responses in the strata, numeric values were assigned to the descriptive answers to create ordinal scales. These transformations also allowed for expanded statistical analysis of responses. The quantitative scale definitions are provided in Table 4.4.

Table 4.4 Quantitative Scale Definitions for Responses

Q#	Question	Scale	Conversion Values
SB1	Seat Belt Use	1–5	1=Never to 5=Always
SB2	Ticket Likely Seat Belt	1–5	1=Very Unlikely to 5=Very Likely
SP1	Speed on 75 MPH Zone	1–5	1=Never to 5=Always
SP2	Chance of Speeding Ticket	1–5	1=Very Unlikely to 5=Very Likely
ID1	Chance Arrest Drunk Driving	1–5	1=Very Unlikely to 5=Very Likely
ID3a	Drive After Drinking 1-2 Drinks	0–1	0=None, 1=At Least Once
ID3b	Drive After Drinking 3+ Drinks	0–1	0=None, 1=At Least Once
DD1	Hand-held Cell Phone Ban	1–5	1=Strongly Oppose to 5=Strongly Favor
DD2	Distracted Driving Ticket	1–5	1=Very Unlikely to 5=Very Likely
VZ1a	RSH Seat Belt	0–1	0=No Exposure, 1=Exposed by Source(s)
VZ1b	RSH Speed	0–1	0=No Exposure, 1=Exposed by Source(s)
VZ1c	RSH Drunk Driving	0–1	0=No Exposure, 1=Exposed by Source(s)
VZ1d	RSH Distracted Driving	0–1	0=No Exposure, 1=Exposed by Source(s)
VZ1e	RSH <i>Vision Zero</i>	0–1	0=No Exposure, 1=Exposed by Source(s)
TS1	Highway Safety Corridor	0–1	0=No, 1=Yes
TS2	Crashes Are Preventable	1–5	1=Never to 5=Always

Stratification in sampling the driver population provided an opportunity to look at the drivers based on region and geography as defined in the methods section. In addition, the young male and female driver groups can be distinguished as high-risk populations. Insights regarding impaired driving, seat belts, and speed across these strata may benefit traffic safety advocates by enhancing their ability to focus efforts. The information may also be useful in assessing the value of including these types of stratification in future surveys.

4.2.1 Regional and Geographic Observations

Table 4.5 shows the mean values for drivers surveyed statewide with regional and geographic comparisons. Statewide survey averages indicate that drivers' views and behaviors associated with traffic safety goals have potential for improvement as discussed in the descriptive statistics. For example, seat belt use is at a mean of 4.76. This number is below the goal of 5.00, which is equivalent to "always" in the driver survey response. Table 4.6 shows the change in mean values from 2010–2023. The primary reason to include the values here is to establish a statewide baseline for the discussion of respondent groups. The figures may also be useful measures in monitoring statewide progress over time. The regional and geographic strata were tested for significant differences. In all, two issues were statistically significant by region, and nine issues were statistically significant by geographic comparisons.

With regard to regional designations, one statistically significant difference was related to exposure to safety messaging and the other was related to self-reported beliefs about highway safety corridors. With regard to safety messaging, residents from the western half of the state were more likely to have read, seen, or heard messages related to *Vision Zero* efforts (Chi-Sq.=26.974, df=1, p<0.001). In terms of whether driving through a traffic safety corridor improves one's behaviors while driving, drivers from the eastern half of North Dakota were more likely to report positively changing attention to driving or driving behavior (Chi-Sq.=9.458, df=1, p=0.002). No other survey items had statistically significant differences when factoring for one's regional location in the state.

With regard to geographic classifications, one ongoing trend is the substantial discrepancy in seat belt use between urban and rural drivers. North Dakota drivers living in the four urban counties are more likely to use a seat belt (F=48.515, df=1, p<0.001). Compared with rural drivers, the higher seat belt use among urban residents continues a trend that has been in place each year since 2010. Although both subcategories are under the goal of a mean value of 5.00, rural residents are farther away from this target number.

Rural drivers had noticeable differences when compared with urban drivers for two areas: speeding and distracted driving. With regard to speeding, rural respondents self-reported speeding on a 75-mile-per-hour roadway more often than did urban drivers (F=14.755, df=1, p<0.001). This occurred despite these drivers thinking there was a higher chance of being ticketed for speeding (F=5.372, df=1, p=0.021) and having greater exposure to safety messages about speeding (Chi-Sq.=5.541, df=1, p=0.019). The same pattern occurred for distracted driving: Rural respondents were less supportive of a ban on hand-held devices while driving (F=4.749, df=1, p=0.029) even though they were more likely to think one would be cited for distracted driving (F=4.484, df=1, p=0.034) and had more exposure to messages about distracted driving (Chi-Sq.=6.610, df=1, p=0.010). For these rural drivers, enforcement efforts and educational messaging do not appear to have strong deterrent effects for negative behavior related to speeding and distracted driving.

The dangerous knowledge, attitudes, behaviors, and beliefs exhibited by rural drivers are likely related to their overall sentiment about crashes. Compared to urban drivers, rural respondents were less likely to think that crashes are preventable (F=7.676, df=1, p=0.006). This likely relates to their views about seat belts, speed, and distracted driving noted above.

The one metric by which urban residents performed worse than rural drivers pertained to driving within two hours of drinking one or two alcoholic beverages. Urban residents were more likely to operate a vehicle within this time frame (Chi-Sq.=11.452, df=1, p=0.001). The two groups were on par with one another, however, when operating a vehicle within two hours of consuming three or more alcoholic beverages (Chi-Sq.=0.292, df=1, p=0.589).

Table 4.5 Differences in Mean Driver Views and Behaviors, by Region and Geography

Question	Scale ₁	Statewide	Region		Geography			
		All	East	West	Sig.	Urban	Rural	Sig.
Seat Belt Use	1–5	4.76	4.76	4.76		4.83	4.56	##
Ticket Likely Seat Belt	1–5	3.05	3.08	3.02		3.03	3.11	
Speed on 75 MPH Zone	1–5	2.29	2.25	2.36		2.26	2.37	##
Chance of Speeding Ticket	1–5	3.51	3.47	3.57		3.47	3.60	#
Chance Arrest Drunk Driving	1–5	4.03	3.99	4.09		4.00	4.09	
Drive After Drinking 1-2 Drinks	0–1	0.43	0.41	0.46		0.430	0.426	**
Drive After Drinking 3+ Drinks	0–1	0.07	0.06	0.07		0.05	0.10	
Hand-held Cell Phone Ban	1–5	3.51	3.57	3.42		3.57	3.36	#
Distracted Driving Ticket	1–5	3.04	3.09	2.94		3.01	3.10	#
RSH Seat Belt	0–1	0.77	0.78	0.75		0.76	0.77	
RSH Speed	0–1	0.52	0.53	0.50		0.51	0.54	*
RSH Drunk Driving	0–1	0.87	0.88	0.86		0.87	0.88	
RSH Distracted Driving	0–1	0.64	0.65	0.63		0.63	0.69	*
RSH <i>Vision Zero</i>	0–1	0.55	0.48	0.66	**	0.52	0.64	
Highway Safety Corridor	0–1	0.75	0.79	0.67	**	0.76	0.73	
Crashes Are Preventable	1–5	3.66	3.67	3.65		3.69	3.59	##

₁Note: Nominal/Ordinal scales require different tests of significance.
 *Significant difference at the 5% level for Pearson Chi-Square test
 **Significant difference at the 1% level for Pearson Chi-Square test
 #Significant difference at 5% level for 1-way ANOVA
 ##Significant difference at 1% level for 1-way ANOVA

The five-year trends presented in Table 4.6 provide insight about patterns emerging from North Dakota drivers. With 14 years of data available, some conclusions can be made. For instance, the five-year average of seat belt use (4.72) is at an all-time high. Similarly, with the exception of drivers from the western half of the state, the five-year averages for perceptions of being arrested for drunk driving are at all-time highs for the remaining driver groups. Conversely, a negative trend becomes apparent when analyzing results from the previous 14 years. The five-year average measuring the perceived likelihood of receiving a ticket for not wearing seat belts is at an all-time low for all driver groups. Similarly, the five-year average measuring the perceived likelihood of receiving a ticket for speeding is at an all-time low for all driver groups except those from rural counties.

Table 4.6 Differences in Driver Views and Behaviors from 2010-2023, by Region and Geography

Question	Year	Scale	Statewide	Region		Sig.	Geography		Sig.	Core Y/N
			All	East	West		Urban	Rural		
Seat Belt Use	2023	1-5	4.76	4.76	4.76		4.83	4.56	**	Y
1=Never to 5=Always	2022		4.75	4.74	4.76		4.82	4.51	**	Y
	2021		4.69	4.73	4.64		4.75	4.50	**	Y
	2020		4.69	4.74	4.62		4.77	4.48	**	Y
	2019		4.69	4.69	4.68		4.77	4.43	**	Y
	2018		4.72	4.72	4.71		4.78	4.52	**	Y
	2017		4.66	4.69	4.63		4.73	4.46	**	Y
	2016		4.66	4.70	4.61		4.73	4.44	**	Y
	2015		4.61	4.64	4.59		4.68	4.44	**	Y
	2014		4.61	4.63	4.58		4.67	4.40	**	Y
	2013		4.47	4.44	4.50	*	4.54	4.36	**	Y
	2012		4.31	4.37	4.24	*	4.40	4.23	**	Y
	2011		4.42	4.44	4.36	**	4.52	4.21	**	Y
	2010		4.36	4.38	4.36		4.49	4.08	**	Y
2019-2023 Five-year Average			4.72	4.73	4.69		4.79	4.50		
2018-2022 Five-year Average			4.71	4.72	4.68		4.78	4.49		
2017-2021 Five-year Average			4.69	4.71	4.66		4.76	4.48		
2016-2020 Five-year Average			4.68	4.71	4.65		4.76	4.47		
2015-2019 Five-year Average			4.67	4.69	4.64		4.74	4.46		
2014-2018 Five-year Average			4.65	4.68	4.62		4.72	4.45		
2013-2017 Five-year Average			4.60	4.62	4.58		4.67	4.42		
2012-2016 Five-year Average			4.53	4.56	4.50		4.60	4.37		
2011-2015 Five-year Average			4.48	4.50	4.45		4.56	4.33		
2010-2014 Five-year Average			4.43	4.45	4.41		4.52	4.26		
Ticket Likely Seat Belt	2023	1-5	3.05	3.08	3.02		3.03	3.11		Y
1=Very Unlikely to 5=Very Likely	2022		3.03	3.04	3.02		3.04	3.02		Y
	2021		3.01	3.10	2.88	*	3.00	3.04		Y
	2020		3.09	3.12	3.04		3.09	3.08	**	Y
	2019		3.15	3.18	3.09	*	3.13	3.19		Y
	2018		3.17	3.14	3.21		3.16	3.21	*	Y
	2017		3.15	3.17	3.12		3.14	3.15	*	Y
	2016		3.29	3.27	3.31		3.26	3.37	**	Y
	2015		3.29	3.38	3.19		3.27	3.35	**	Y
	2014		3.20	3.26	3.14		3.19	3.25	*	Y
	2013		3.17	3.18	3.15		3.10	3.17	**	Y
	2012		3.16	3.24	3.06	*	3.10	3.22		Y
	2011		2.98	2.93	3.10		2.94	3.06		Y
	2010		3.06	3.07	3.04		3.03	3.13		Y
2019-2023 Five-year Average			3.07	3.10	3.01		3.06	3.09		
2018-2022 Five-year Average			3.09	3.12	3.05		3.08	3.11		
2017-2021 Five-year Average			3.11	3.14	3.07		3.10	3.13		
2016-2020 Five-year Average			3.17	3.18	3.15		3.16	3.20		
2015-2019 Five-year Average			3.21	3.23	3.18		3.19	3.25		
2014-2018 Five-year Average			3.22	3.24	3.19		3.20	3.27		
2013-2017 Five-year Average			3.22	3.25	3.18		3.19	3.26		
2012-2016 Five-year Average			3.22	3.27	3.17		3.18	3.27		
2011-2015 Five-year Average			3.16	3.20	3.13		3.12	3.21		
2010-2014 Five-year Average			3.11	3.14	3.10		3.07	3.17		
Speed 75 MPH Zone	2023	1-5	2.29	2.25	2.36		2.26	2.37	**	Y
1=Never to 5=Always	2022		2.28	2.19	2.41		2.27	2.31	**	Y
	2020		2.19	2.13	2.27		2.20	2.16	**	Y
	2019		2.11	2.05	2.19		2.12	2.07	**	Y
	2018		2.14	2.04	2.26		2.15	2.09	**	Y
	2017		2.17	2.08	2.28		2.22	2.02	**	Y
2018-2023 Five-year Average			2.20	2.13	2.30		2.20	2.20		
2017-2022 Five-year Average			2.18	2.10	2.28		2.19	2.13		

Question	Year	Scale	Statewide	Region		Sig.	Geography		Sig.	Core Y/N
			All	East	West		Urban	Rural		
Ticket Likely Speed	2023	1-5	3.51	3.47	3.57		3.47	3.60	*	Y
1=Very Unlikely to 5=Very Likely	2022		3.56	3.56	3.56		3.54	3.61		Y
	2021		3.67	3.65	3.71		3.64	3.79	*	Y
	2020		3.61	3.56	3.68	**	3.59	3.65	**	Y
	2019		3.75	3.75	3.74		3.72	3.83	**	Y
	2018		3.69	3.64	3.76		3.76	3.67	**	Y
	2017		3.69	3.67	3.72	*	3.67	3.75	**	Y
	2016		3.79	3.76	3.81		3.76	3.87	**	Y
	2015		3.84	3.82	3.87	*	3.84	3.84		Y
	2014		3.72	3.71	3.73		3.71	3.77	**	Y
	2013		3.67	3.66	3.68	*	3.63	3.67		Y
	2012		3.69	3.71	3.66		3.62	3.76	*	Y
	2011		3.62	3.61	3.66		3.76	3.62	*	Y
	2010		3.59	3.61	3.58		3.60	3.58		Y
2019-2023 Five-year Average			3.62	3.60	3.65		3.59	3.70		
2018-2022 Five-year Average			3.66	3.63	3.69		3.65	3.71		
2017-2021 Five-year Average			3.68	3.65	3.72		3.68	3.74		
2016-2020 Five-year Average			3.71	3.68	3.74		3.70	3.75		
2015-2019 Five-year Average			3.75	3.73	3.78		3.75	3.79		
2014-2018 Five-year Average			3.75	3.72	3.78		3.75	3.78		
2013-2017 Five-year Average			3.74	3.72	3.76		3.72	3.78		
2012-2016 Five-year Average			3.74	3.73	3.75		3.71	3.78		
2011-2015 Five-year Average			3.71	3.70	3.72		3.71	3.73		
2010-2014 Five-year Average			3.66	3.66	3.66		3.66	3.68		
Arrest for DUI	2023	1-5	4.03	3.99	4.09		4.00	4.09		Y
1=Very Unlikely to 5=Very Likely	2022		3.93	3.89	3.98		3.90	4.03		Y
	2021		3.82	3.85	3.77		3.81	3.86		Y
	2020		3.87	3.84	3.91		3.87	3.87		Y
	2019		3.88	3.90	3.86		3.90	3.85		Y
	2018		3.89	3.83	3.97		3.90	3.87		Y
	2017		3.94	3.90	4.00		3.92	4.02		Y
	2016		3.89	3.86	3.93		3.89	3.90		Y
	2015		3.86	3.90	3.80		3.84	3.89		Y
	2014		3.76	3.71	3.83		3.79	3.69		Y
	2013		3.53	3.54	3.52		3.51	3.53		Y
	2012		3.64	3.67	3.60		3.68	3.61		Y
	2011		3.62	3.61	3.69		3.63	3.65		Y
	2010		3.53	3.59	3.47		3.55	3.49		Y
2019-2023 Five-year Average			3.91	3.89	3.92		3.90	3.94		
2018-2022 Five-year Average			3.88	3.86	3.90		3.88	3.90		
2017-2021 Five-year Average			3.88	3.86	3.90		3.88	3.89		
2016-2020 Five-year Average			3.89	3.87	3.93		3.90	3.90		
2015-2019 Five-year Average			3.89	3.88	3.91		3.89	3.91		
2014-2018 Five-year Average			3.87	3.84	3.91		3.87	3.87		
2013-2017 Five-year Average			3.80	3.78	3.82		3.79	3.81		
2012-2016 Five-year Average			3.74	3.74	3.74		3.74	3.72		
2011-2015 Five-year Average			3.68	3.69	3.69		3.69	3.67		
2010-2014 Five-year Average			3.62	3.62	3.62		3.63	3.59		
*Statistically significant difference at the 5% level										
**Statistically significant difference at the 1% level										

4.2.2 Young Male Driver Group

As with the previous surveys, the selected target group of 18-to-34-year-old high-risk males (HRM) shows significantly different behaviors, exposure levels, and views when compared with other drivers (Table 4.7). (Note that high-risk females were not included in the “other” group. See Section 4.2.3 for results for high-risk females.) In terms of behavior, high-risk male drivers in this survey are more likely to exhibit behaviors at odds with traffic safety goals such as speeding on a 75-mile-per-hour roadway ($F=87.956$, $df=1$, $p<0.001$), driving within two hours of consuming one or two alcoholic beverages (Chi-

Sq.=7.985, df=1, p=0.005), driving within two hours of consuming three or more alcoholic beverages (Chi-Sq.=6.757, df=1, p=0.009), and using a phone when driving (F=10.022, df=1, p=0.002).

In addition to having higher levels of risky behavior compared to the rest of the North Dakota driver population, young males are also less likely to engage in safe driving practices. This group self-reported changing driving behaviors while driving on highway safety corridors less often than other drivers (Chi-Sq.=25.416, df=1, p<0.001). Additionally, the high-risk young male drivers surveyed are less likely to wear seat belts than other drivers (F=8.101, df=1, p=0.005). Only 71.4% of young male drivers always wear a seat belt while driving or riding in a vehicle, a number much smaller than the 86.2% of other drivers who always do so. Lower levels of seat belt use likely go hand-in-hand with young male drivers having a lower expectancy of law enforcement ticketing drivers for seat belt violations when compared to the balance of the population (F=18.743, df=1, p<0.001).

Table 4.7 Differences in Driver Views and Behaviors, Young Male Target Group

Question	HRM (n=155)	Other Drivers (n=994)	Sig. ¹
Seat Belt Use	4.60	4.80	##
Ticket Seat Belt	2.67	3.14	##
Speed in 75 MPH Zone	2.85	1.96	##
Ticket Likely Speeding	3.27	3.46	
Safety Corridor	0.47	0.78	**
Chance Arrest for DUI	4.00	3.87	
Use Alternate Sober Driver	4.40	4.24	
Drive After 1–2 Drinks	0.59	0.36	**
Drive After 3+ Drinks	0.17	0.06	**
Ban Hand-held Cell Use	3.49	3.65	
Ticket Distracted Driving	2.70	2.97	
Use Phone While Driving	0.95	0.85	**
RSH Seat Belt	0.80	0.77	
RSH Speeding	0.49	0.54	
RSH Drunk Driving	0.87	0.84	
RSH Distracted Driving	0.59	0.65	
RSH <i>Vision Zero</i>	0.70	0.47	**
Crashes Are Preventable	3.80	3.68	

¹Note: Nominal/Ordinal scales require different tests of significance.

**Significant difference at the 1% level for Pearson Chi-Square test

##Significant difference at the 1% level for 1-way ANOVA

Table 4.8 compares the responses of high-risk young males to all other driver groups. It is clear that there are differences in views, behaviors, and attitudes toward various transportation safety topics. The complete list of survey questions is provided in Appendix A.

Table 4.8 Responses for High-risk Male Drivers

Question		Responses, by Driver Group				
Seat Belt Use	n=1,146	Always	N. Always	Sometimes	Rarely	Never
	Other	86.2%	9.1%	3.7%	0.7%**	0.2%**
	HRM	71.4%	20.4%	6.1%**	0.7%**	1.5%**
Ticket Seat Belt Use	n=1,147	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	Other	14.0%	23.2%	33.5%	21.1%	8.3%
	HRM	6.4%**	17.5%**	25.4%	37.8%	12.9%**
Speed in 75 MPH Zone	n=1,148	Always	N. Always	Sometimes	Rarely	Never
	Other	1.1%**	5.2%	16.2%	43.7%	33.8%
	HRM	10.5%**	19.6%**	27.4%	29.4%	13.1%**
Ticket Speeding	n=1,142	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	Other	12.7%	34.5%	40.6%	10.0%	2.2%**
	HRM	7.6%**	33.2%	40.8%	15.5%**	2.9%**
Chance Arrest DUI	n=1,142	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	Other	31.1%	32.7%	31.1%	2.4%	2.7%**
	HRM	37.2%	35.9%	18.2%**	7.0%**	1.7%**
Use Alternate Driver ₁	n=765	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	Other	54.6%	27.2%	10.6%	3.0%**	4.6%
	HRM	62.2%	21.6%**	12.7%**	0.9%**	2.6%**
Drive After 1–2 Drinks	n=768	None	1-5 Times	6-10 Times	10+ Times	
	Other	64.3%	31.9%	2.9%**	0.9%**	
	HRM	41.5%	43.3%	12.5%**	2.7%**	
Drive After 3+ Drinks	n=641	None	1-5 Times	6-10 Times	10+ Times	
	Other	94.1%	5.1%	0.5%**	0.4%**	
	HRM	82.7%	16.8%**	0.5%**	0.0%**	
Hand-held Ban Driving	n=1,132	St. Favor	Sw. Favor	Neutral	Sw. Oppose	St. Oppose
	Other	40.4%	21.4%	12.6%	14.0%	11.7%
	HRM	28.9%	26.1%	21.9%	11.0%**	12.1%**
Ticket Distracted Driving	n=1,140	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	Other	10.4%	15.8%	40.5%	26.9%	6.4%
	HRM	5.1%**	18.1%	30.4%	34.3%	12.0%**
Use Phone While Driving ₂	n=1,134	Yes	No			
	Other	84.5%	15.5%			
	HRM	94.7%	5.3%**			
RSH Seat Belt	n=1,110	Yes	No			
	Other	76.8%	23.2%			
	HRM	80.2%	19.8%**			
RSH Speeding	n=1,066	Yes	No			
	Other	53.7%	46.3%			
	HRM	48.6%	51.4%			
RSH Drunk Driving	n=1,107	Yes	No			
	Other	84.2%	15.8%			
	HRM	87.4%	12.6%**			
RSH Distracted Driving	n=1,084	Yes	No			
	Other	64.8%	35.2%			
	HRM	58.9%	41.1%			
RSH Vision Zero	n=1,060	Yes	No			
	Other	47.0%	53.0%			
	HRM	70.2%	29.8%			
Highway Safety Corridor	n=650	Yes	No			
	Other	77.5%	22.5%			
	HRM	47.0%	53.0%			
Crashes Preventable	n=1,146	Always	N. Always	Sometimes	Rarely	Never
	Other	4.5%	58.9%	36.4%	0.0%**	0.1%**
	HRM	11.6%**	57.5%	29.9%	0.9%**	0.0%**

Note: Please see Appendix A for exact question and response wording.

₁Note: Percentages based only on those North Dakota drivers who report that they consume alcohol.

₂Note: Any phone use frequency was combined to form “Yes” category.

**Estimate uncertain due to limited sample size

4.2.3 Young Female Driver Group

Another driver group with noticeable differences in behaviors and attitudes is that of 18-to-34-year-old high-risk female (HRF) drivers. Like their high-risk male counterparts, young female drivers tend to exhibit behaviors that are more dangerous than all other drivers. Similarly, their attitudes toward safe driving habits lag behind the balance of the driver population (Table 4.9). When this female driver group was compared to all other drivers, there were statistically significant differences for the majority of variables studied in this report.

Table 4.9 Differences in Driver Views and Behaviors, Young Female Target Group

Question	HRF (n=246)	Other Drivers (n=994)	Sig. ¹
Seat Belt Use	4.71	4.80	
Ticket Seat Belt	2.99	3.14	
Speed in 75 mph Zone	2.63	1.96	##
Ticket Likely Speeding	3.58	3.46	#
Safety Corridor	0.74	0.78	
Chance Arrest for DUI	4.21	3.87	##
Use Alternate Sober Driver	4.41	4.24	##
Drive After 1-2 Drinks	0.49	0.36	
Drive After 3+ Drinks	0.06	0.06	
Ban Hand-held Cell Use	3.36	3.65	#
Ticket Distracted Driving	3.14	2.97	##
Use Phone While Driving	0.96	0.85	**
RSH Seat Belt	0.76	0.77	
RSH Speeding	0.50	0.54	
RSH Drunk Driving	0.90	0.84	*
RSH Distracted Driving	0.64	0.65	
RSH <i>Vision Zero</i>	0.63	0.47	**
Crashes Are Preventable	3.63	3.68	

¹Note: Nominal/Ordinal scales require different tests of significance

**Significant difference at the 1% level for Pearson Chi-Square test

*Significant difference at the 5% level for Pearson Chi-Square test

##Significant difference at the 1% level for 1-way ANOVA

#Significant difference at the 5% level for 1-way ANOVA

The 18-to-34-year-old female cohort is more likely to engage in dangerous driving behaviors. This target group has a higher likelihood of speeding in a 75-mile-per-hour zone ($F=92.233$, $df=1$, $p<0.001$) even though the group thought the chances of a ticket for speeding were greater than other drivers ($F=6.076$, $df=1$, $p=0.014$). In addition, high-risk females were more likely to use a phone when driving ($Chi-Sq.=18.390$, $df=1$, $p<0.001$) even though the group thought the chances of being ticketed for distracted driving were higher than other drivers ($F=11.099$, $df=1$, $p=0.001$). This may explain why the group had lower levels of support for banning hand-held phone use while driving ($F=4.956$, $df=1$, $p=0.026$).

With regard to impaired driving, this target group of 18-to-34-year-old females thought that the chance of being arrested for driving under the influence of alcohol was more likely than did other North Dakota drivers ($F=30.348$, $df=1$, $p<0.001$). Perhaps that is why this group was more likely to use an alternate driver than other North Dakotans ($F=8.831$, $df=1$, $p=0.003$). These both may be related to the fact that the target group of drivers had greater exposure to traffic safety messages about impaired driving ($Chi-Sq.=6.169$, $df=1$, $p=0.013$). Table 4.10 provides a complete explanation of how this group compared to the balance of the North Dakota driving population.

Table 4.10 Responses for High-risk Female Drivers

Question	Responses, by Driver Group					
Seat Belt Use	n=1,238	Always	N. Always	Sometimes	Rarely	Never
	Other	86.2%	9.1%	3.7%	0.7%**	0.2%**
	HRF	79.2%	15.0%	4.3%**	0.8%**	0.6%**
Ticket Seat Belt Use	n=1,237	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	Other	14.0%	23.2%	33.5%	21.1%	8.3%
	HRF	6.4%**	23.4%	39.1%	25.0%	6.1%**
Speed in 75 MPH Zone	n=1,239	Always	N. Always	Sometimes	Rarely	Never
	Other	1.1%**	5.2%	16.2%	43.7%	33.8%
	HRF	6.3%**	14.1%	31.5%	32.3%	15.8%
Ticket Speeding	n=1,233	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	Other	12.7%	34.5%	40.6%	10.0%	2.2%**
	HRF	13.3%	40.1%	39.5%	5.9%**	1.2%**
Chance Arrest DUI	n=1,234	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	Other	31.1%	32.7%	31.1%	2.4%	2.7%**
	HRF	45.6%	32.8%	19.3%	1.6%**	0.6%**
Use Alternate Driver ₁	n=841	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	Other	54.6%	27.2%	10.6%	3.0%**	4.6%
	HRF	63.5%	23.0%	8.6%**	0.7%**	4.2%**
Drive After 1–2 Drinks	n=844	None	1-5 Times	6-10 Times	10+ Times	
	Other	64.3%	31.9%	2.9%**	0.9%**	
	HRF	51.4%	46.0%	2.6%**	0.0%**	
Drive After 3+ Drinks	n=709	None	1-5 Times	6-10 Times	10+ Times	
	Other	94.1%	5.1%	0.5%**	0.4%**	
	HRF	93.8%	5.6%**	0.0%**	0.6%**	
Hand-held Ban Driving	n=1,223	St. Favor	Sw. Favor	Neutral	Sw. Oppose	St. Oppose
	Other	40.4%	21.4%	12.6%	14.0%	11.7%
	HRF	20.1%	27.7%	28.2%	15.7%	8.3%**
Ticket Distracted Driving	n=1,231	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	Other	10.4%	15.8%	40.5%	26.9%	6.4%
	HRF	8.7%**	27.2%	38.1%	21.2%	4.8%**
Use Phone While Driving ₂	n=1,227	Yes	No			
	Other	84.5%	15.5%			
	HRF	95.6%	4.4%**			
RSH Seat Belt	n=1,198	Yes	No			
	Other	76.8%	23.2%			
	HRF	76.2%	23.8%			
RSH Speeding	n=1,158	Yes	No			
	Other	53.7%	46.3%			
	HRF	49.8%	50.2%			
RSH Drunk Driving	n=1,201	Yes	No			
	Other	84.2%	15.8%			
	HRF	90.3%	9.7%**			
RSH Distracted Driving	n=1,174	Yes	No			
	Other	64.8%	35.2%			
	HRF	64.2%	35.8%			
RSH <i>Vision Zero</i>	n=1,149	Yes	No			
	Other	47.0%	53.0%			
	HRF	63.1%	36.9%			
Highway Safety Corridor	n=679	Yes	No			
	Other	77.5%	22.5%			
	HRF	74.0%	26.0%**			
Crashes Preventable	n=1,236	Always	N. Always	Sometimes	Rarely	Never
	Other	4.5%	58.9%	36.4%	0.0%**	0.1%**
	HRF	7.2%**	50.5%	41.1%	0.6%**	0.6%**

Note: Please see Appendix A for exact question and response wording.

₁Note: Percentages based only on those North Dakota drivers who report that they consume alcohol.

₂Note: Any phone use frequency was combined to form “Yes” category.

**Estimate uncertain due to limited sample size

4.2.4 High-Risk Driver Comparisons

The extreme views held by high-risk drivers differ when high-risk males are compared directly with high-risk females (Table 4.11). These differences are related to perceptions of traffic enforcement and dangerous behind-the-wheel behavior.

Table 4.11 Differences in Driver Views and Behaviors, High-risk Drivers

Question	HRM (n=155)	HRF (n=246)	Sig./
Seat Belt Use	4.60	4.71	#
Ticket Seat Belt	2.67	2.99	##
Speed in 75 MPH Zone	2.85	2.63	
Ticket Likely Speeding	3.27	3.58	##
Safety Corridor	0.47	0.74	**
Chance Arrest for DUI	4.00	4.21	##
Use Alternate Sober Driver	4.40	4.41	
Drive After 1–2 Drinks	0.59	0.49	
Drive After 3+ Drinks	0.17	0.06	**
Ban Hand-held Cell Use	3.49	3.36	
Ticket Distracted Driving	2.70	3.14	##
Use Phone While Driving	0.95	0.96	
RSH Seat Belt	0.80	0.76	
RSH Speeding	0.49	0.50	
RSH Drunk Driving	0.87	0.90	
RSH Distracted Driving	0.59	0.64	
RSH <i>Vision Zero</i>	0.70	0.63	
Crashes Are Preventable	3.80	3.63	#

/Note: Nominal/Ordinal scales require different tests of significance.

**Significant difference at the 1% level for Pearson Chi-Square test

*Significant difference at the 5% level for Pearson Chi-Square test

##Significant difference at the 1% level for 1-way ANOVA

#Significant difference at the 5% level for 1-way ANOVA

With regard to perceptions of traffic enforcement, high-risk females believe tickets are more likely for not wearing a seat belt ($F=8.905$, $df=1$, $p=0.003$), speeding ($F=9.633$, $df=1$, $p=0.002$), being arrested for driving while impaired by drugs or alcohol ($F=7.140$, $df=1$, $p=0.008$), and receiving a ticket for driving while distracted ($F=11.733$, $df=1$, $p=0.001$). This may explain why these same drivers are more likely to use a seat belt ($F=4.658$, $df=1$, $p=0.032$), less often self-report driving within two hours of consuming three or more alcoholic beverages ($Chi-Sq.=9.524$, $df=1$, $p=0.002$), and improve driving when in a traffic safety corridor ($Chi-Sq.=12.886$, $df=1$, $p<0.001$).

On average, high-risk males are more dangerous on the roadway than high-risk females (Table 4.12). A detailed explanation of how high-risk 18-to-34-year-old drivers compare to all other North Dakota drivers — including longitudinal trends — is presented in Appendix B. In general, when high-risk drivers are studied collectively, this group exhibits more dangerous behaviors than drivers over the age of 35.

Table 4.12 Responses for High-risk Drivers

Question	Responses, by Driver Group					
Seat Belt Use	n=402	Always	N. Always	Sometimes	Rarely	Never
	HRM	71.4%	20.4%	6.1%**	0.7%**	1.5%**
	HRF	79.2%	15.0%	4.3%**	0.8%**	0.6%**
Ticket Seat Belt Use	n=402	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	HRM	6.4%**	17.5%**	25.4%	37.8%	12.9%**
	HRF	6.4%**	23.4%	39.1%	25.0%	6.1%**
Speed in 75 mph Zone	n=403	Always	N. Always	Sometimes	Rarely	Never
	HRM	10.5%**	19.6%**	27.4%	29.4%	13.1%**
	HRF	6.3%**	14.1%	31.5%	32.3%	15.8%
Ticket Speeding	n=403	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	HRM	7.6%**	33.2%	40.8%	15.5%**	2.9%**
	HRF	13.3%	40.1%	39.5%	5.9%**	1.2%**
Chance Arrest DUI	n=402	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	HRM	37.2%	35.9%	18.2%**	7.0%**	1.7%**
	HRF	45.6%	32.8%	19.3%	1.6%**	0.6%**
Use Alternate Driver ¹	n=318	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	HRM	62.2%	21.6%**	12.7%**	0.9%**	2.6%**
	HRF	63.5%	23.0%	8.6%**	0.7%**	4.2%**
Drive After 1–2 Drinks	n=316	None	1-5 Times	6-10 Times	10+ Times	
	HRM	41.5%	43.3%	12.5%**	2.7%**	
	HRF	51.4%	46.0%	2.6%**	0.0%**	
Drive After 3+ Drinks	n=280	None	1-5 Times	6-10 Times	10+ Times	
	HRM	82.7%	16.8%**	0.5%**	0.0%**	
	HRF	93.8%	5.6%**	0.0%**	0.6%**	
Hand-held Ban Driving	n=401	St. Favor	Sw. Favor	Neutral	Sw. Oppose	St. Oppose
	HRM	28.9%	26.1%	21.9%	11.0%**	12.1%**
	HRF	20.1%	27.7%	28.2%	15.7%	8.3%**
Ticket Distracted Driving	n=403	V. Likely	Likely	Sw. Likely	Unlikely	V. Unlikely
	HRM	5.1%**	18.1%	30.4%	34.3%	12.0%**
	HRF	8.7%**	27.2%	38.1%	21.2%	4.8%**
Use Phone While Driving ²	n=399	Yes	No			
	HRM	94.7%	5.3%**			
	HRF	95.6%	4.4%**			
RSH Seat Belt	n=398	Yes	No			
	HRM	80.2%	19.8%**			
	HRF	76.2%	23.8%			
RSH Speeding	n=388	Yes	No			
	HRM	48.6%	51.4%			
	HRF	49.8%	50.2%			
RSH Drunk Driving	n=400	Yes	No			
	HRM	87.4%	12.6%**			
	HRF	90.3%	9.7%**			
RSH Distracted Driving	n=386	Yes	No			
	HRM	58.9%	41.1%			
	HRF	64.2%	35.8%			
RSH Vision Zero	n=391	Yes	No			
	HRM	70.2%	29.8%			
	HRF	63.1%	36.9%			
Highway Safety Corridor	n=181	Yes	No			
	HRM	47.0%	53.0%			
	HRF	74.0%	26.0%**			
Crashes Preventable	n=402	Always	N. Always	Sometimes	Rarely	Never
	HRM	11.6%**	57.5%	29.9%	0.9%**	0.0%**
	HRF	7.2%**	50.5%	41.1%	0.6%**	0.6%**

Note: Please see Appendix A for exact question and response wording.

¹Note: Percentages based only on those North Dakota drivers who report that they consume alcohol.

²Note: Any phone use frequency was combined to form “Yes” category.

**Estimate uncertain due to limited sample size

5. CONCLUSIONS

The annual statewide driver traffic safety survey provides baseline metrics for the Highway Safety Division and others in understanding perceptions and behaviors related to focus issues. A core set of questions was selected to address nationally agreed upon priorities. These include emphases on seat belt use, impaired driving, and speeding. In addition to the core issues, questions were included to better understand views on specific programs and activities. Results show that many North Dakota drivers have adopted safe driving practices, but it is apparent that additional efforts are needed to improve safety on the state's roads.

Two specific recommendations can be made when examining trends that have taken place over the last 14 years of administering this survey. First, there is a continued dichotomy between how urban and rural residents approach the use of a seat belt while operating a vehicle. Results clearly show that rural residents are less likely to use seat belts than their urban counterparts. Improvement in this area must be made to reduce rates of fatalities and serious injuries during crash events by rural North Dakotans. Second, there is a bifurcation in safe driving attitudes, behaviors, and beliefs factoring for whether one is a high-risk 18-to-34-year-old driver. Younger drivers generally engage in dangerous behavior behind the wheel more often and engage in safe practices less often than those over the age of 35.

Further research involving North Dakota driving tendencies can be improved. For instance, future studies involving North Dakota driving habits will be more robust when the response sample more accurately reflects the North Dakota driver population. This particular study would have been improved by having a higher percentage of 35-to-54-year-old drivers included in the response sample. Nonetheless, the response rate for this survey was satisfactory and most of the desired performance metrics were extrapolated to represent the entire North Dakota driver population.

6. REFERENCES

- Federal Highway Administration. 2022. "Highway Statistics 2020." Washington, DC: Policy and Governmental Affairs, Office of Highway Policy Information, Table DL-22. Retrieved June 10, 2023, (<https://www.fhwa.dot.gov/policyinformation/statistics/2021/dl22.cfm>).
- Government Accounting Office. 2010. "Traffic Safety Data: State Data System Quality Varies and Limited Resources and Coordination Can Inhibit Further Progress." Washington, DC: Government Printing Office, Technical Report to Congressional Committee No. GAO-10-454.
- Hedlund, J. 2008. "Traffic Safety Performance Measures for States and Federal Agencies." Washington, DC: U.S. Department of Transportation, National Highway Traffic Safety Administration, Technical Report No. DOT-HS-811-025.
- Hedlund, J., T. Casanova, and N. Chaudhary. 2009. "Survey Recommendations for the NHTSA-GHSA Working Group." Trumbull, CT: Preusser Research Group, Inc., on behalf of the Governor's Highway Safety Association. Retrieved August 18, 2011, (http://www.ghsa.org/html/resources/files/pdf/planning/survey_recs.pdf).
- Herbel, S., M.D. Meyer, B. Kleiner, and D. Gaines. 2009. "A Primer on Safety Performance Measures for the Transportation Planning Process." Washington, DC: U.S. Department of Transportation, Federal Highway Administration, Technical Report No. FHWA-HEP-09-043.
- North Dakota Department of Transportation. 2018. "2018 North Dakota *Vision Zero Plan*: Strategic Highway Safety Plan Update 2018-2023." Bismarck, ND: NDDOT Highway Safety Division. Retrieved August 6, 2019, (https://www.dot.nd.gov/divisions/safety/docs/FINAL_NDDOT_SHSP.pdf).
- United States Census Bureau. 2020. American Community Survey Table DP05. ACS Demographic and Housing Estimates 2020: ACS 5-Year Estimates Data Profiles. Retrieved June 24, 2022, (<https://data.census.gov/cedsci/table?t=Age%20and%20Sex&g=0400000US38%24050000&tid=ACSDP5Y2020.DP05>).
- United States Census Bureau. 2021. American Community Survey Table S0101. ACS Age and Sex 2021: ACS 5-Year Estimates Subject Tables. Retrieved June 29, 2023, ([https://data.census.gov/table?t=Age+and+Sex&g=040XX00US38\\$0500000&tid=ACSST5Y2021.S0101](https://data.census.gov/table?t=Age+and+Sex&g=040XX00US38$0500000&tid=ACSST5Y2021.S0101)).
- United States Department of Transportation. 2011. National Transportation Atlas Databases 2011: A Collection of Spatial Data for use in GIS-based Applications [computer software]. Washington, DC: Bureau of Transportation Statistics: Research and Innovative Technology Administration.
- Vachal, K., L. Benson, and A. Kubas. 2010-2021. "North Dakota Statewide Traffic Safety Survey – Traffic Safety Performance Measures for State and Federal Agencies." Fargo, ND: Upper Great Plains Transportation Institute, North Dakota State University, document compendium.
- Vachal, K. and A. Kubas. 2022. "North Dakota Statewide Traffic Safety Survey, 2022: Traffic Safety Performance Measures for State and Federal Agencies." Fargo, ND: Upper Great Plains Transportation Institute, North Dakota State University, DP-316: 1-48.

Vachal, K. and J. Andersen. 2022. "Seat Belt Use in North Dakota." Fargo, ND: Upper Great Plains Transportation Institute, North Dakota State University: 1-26. Retrieved June 30, 2023, (<https://www.dot.nd.gov/divisions/safety/docs/seat-belt-use.pdf>).

World Health Organization. 2021. "Global Health Observatory Data Repository: Road Traffic Deaths Data by Country" [dataset]. Retrieved June 10, 2021, (<https://apps.who.int/gho/data/view.main.51310?lang=en>).

APPENDIX A. SURVEY INSTRUMENT

2023 North Dakota Driver Survey

All Responses
Are Confidential

SB1- How often do you use a seat belt when you drive or ride in a motor vehicle?

Never Rarely Sometimes Nearly Always Always

SB2- What do you think the chance is of getting a ticket if you do not wear your seat belt?

Very Unlikely Unlikely Somewhat Likely Likely Very Likely

SP1- On a road with a speed limit of 75 mph, how often do you drive faster than 80 mph?

Never Rarely Sometimes Nearly Always Always

SP2- What do you think the chance is of getting a ticket if you drive over the speed limit?

Very Unlikely Unlikely Somewhat Likely Likely Very Likely

ID1- What are the chances of someone getting arrested if they drive under the influence of alcohol or drugs?

Very Unlikely Unlikely Somewhat Likely Likely Very Likely

ID2a- If drinking or planning to drink alcohol, how likely are you to designate an alternate driver?

Do Not Drink (*skip to DD1*) Very Unlikely Unlikely Somewhat Likely Likely Very Likely

ID2b- If you designate an alternative, which do you typically use? (select all that apply):

Designated sober driver in group Calling friend or family Ride share (Uber/Lyft) Taxi

ID3- In the past 60 days, how many times have you driven a motor vehicle within 2 hours after drinking?

1-2 Alcoholic Drinks? none 1-5 times 6-10 times more than 10 times

3 or More Alcoholic Drinks? none 1-5 times 6-10 times more than 10 times

DD1- Do you favor or oppose a ban on hand-held phone use while driving?

Strongly Oppose Somewhat Oppose Do Not Favor or Oppose Somewhat Favor Strongly Favor

DD2- What do you think the chance is of getting a ticket for distracted driving?

Very Unlikely Unlikely Somewhat Likely Likely Very Likely

DD3- How likely are you to use a phone while driving?

I do not use Very Unlikely Unlikely Somewhat Likely Likely Very Likely

→ Purpose (select all that apply)? View/Send Text Emails Social Media Maps Other Apps

→ Is it hands-free/Bluetooth technology? Yes No

VZ1- Within the last 6 months have you read, seen, or heard traffic safety messages relating to:

Seat Belt Enforcement TV Radio Online Ad Social Media Hwy Message Boards None

Speed Enforcement TV Radio Online Ad Social Media Hwy Message Boards None

Drunk Driving Enforcement TV Radio Online Ad Social Media Hwy Message Boards None

Distracted Driving Enforcement TV Radio Online Ad Social Media Hwy Message Boards None

Vision Zero. Zero Fatalities. Zero Excuses. TV Radio Online Ad Social Media Hwy Message Boards None

TS1- When in a highway safety corridor, does it positively change your attention to driving or driver behavior?

Yes No Do Not Know

TS2- Do you believe that crashes are preventable?

Never Rarely Sometimes Nearly Always Always

DM1- Type of Vehicle You Most Often Drive: (select only one)

Car Pickup SUV Van Motorcycle Semi/Large Truck Other_____

DM2- Your age: 18-24 25-34 35-44 45-54 55-64 65-74 75 or Older

DM3- Your gender: Male Female Non-Binary

DM4- In which North Dakota county do you live? _____

Please include any traffic safety comments and suggestions for future surveys.

Thank you for your time and participation

APPENDIX B. HIGH-RISK 18-TO-34-YEAR-OLD DRIVER BEHAVIORS/PERCEPTIONS

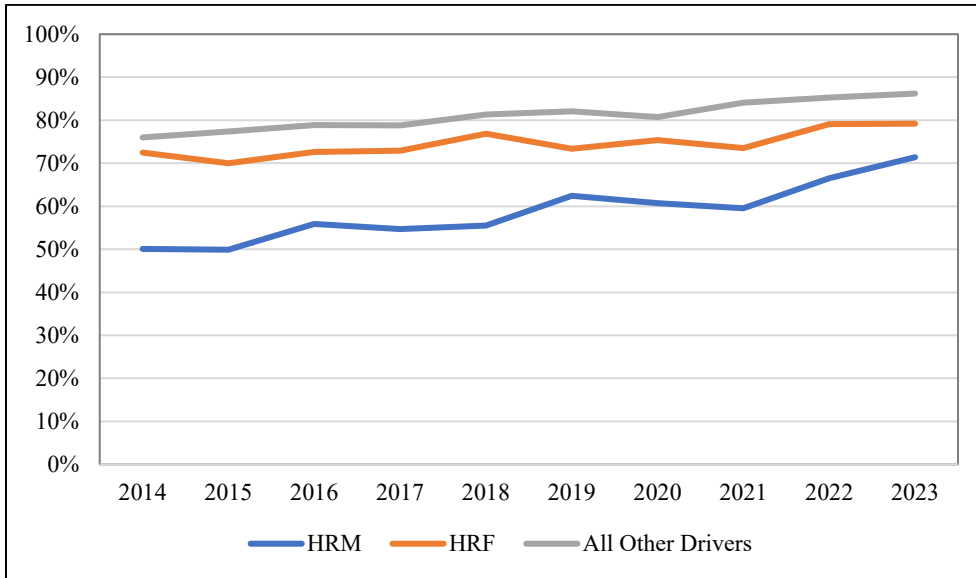


Figure B.1 Drivers Self-reporting Seat Belt Use as Always

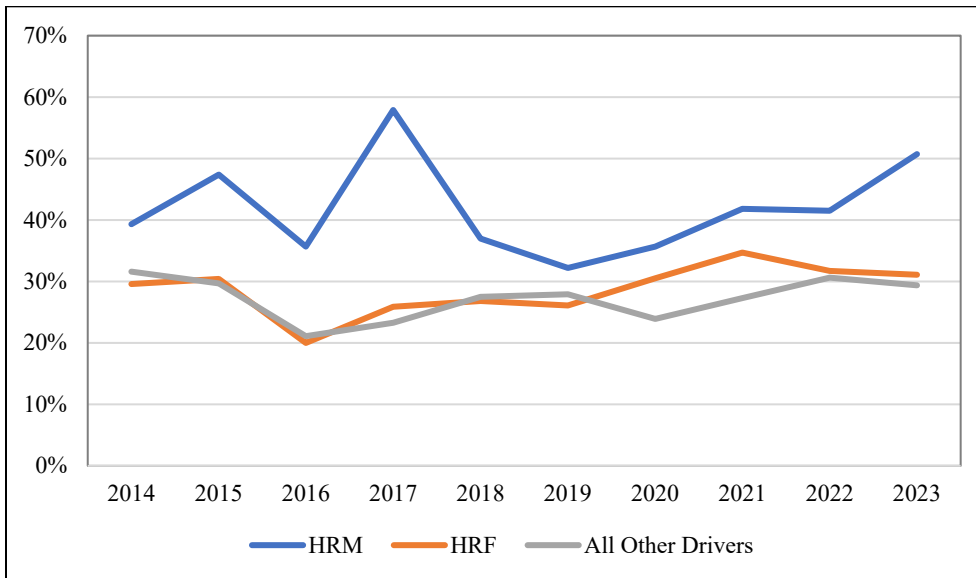


Figure B.2 Drivers Reporting the Perceived Likelihood of Receiving a Ticket for Not Wearing a Seat Belt as Very Unlikely or Unlikely

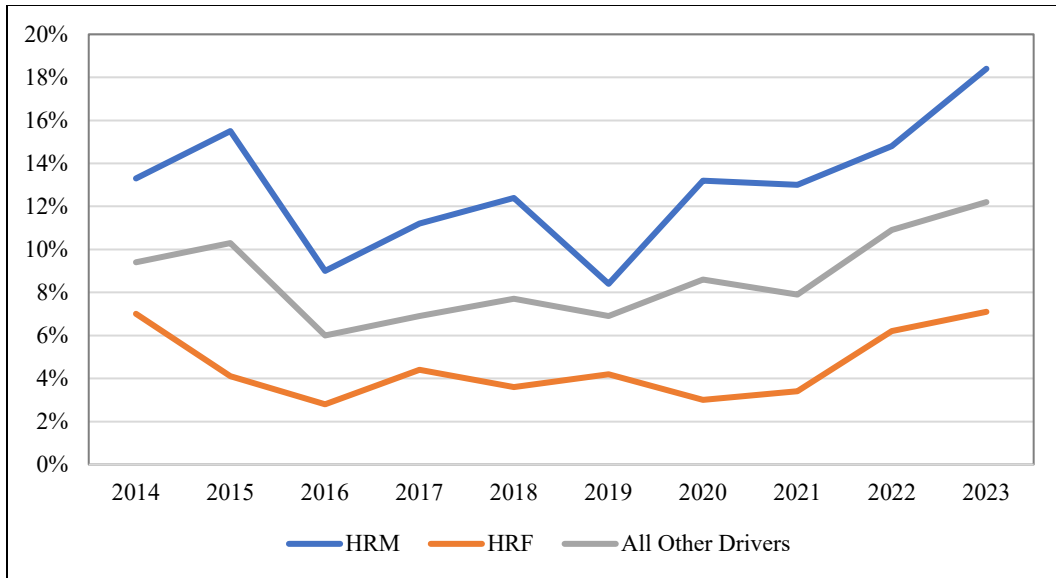


Figure B.3 Drivers Reporting the Perceived Likelihood of Receiving a Ticket for Speeding as Very Unlikely or Unlikely

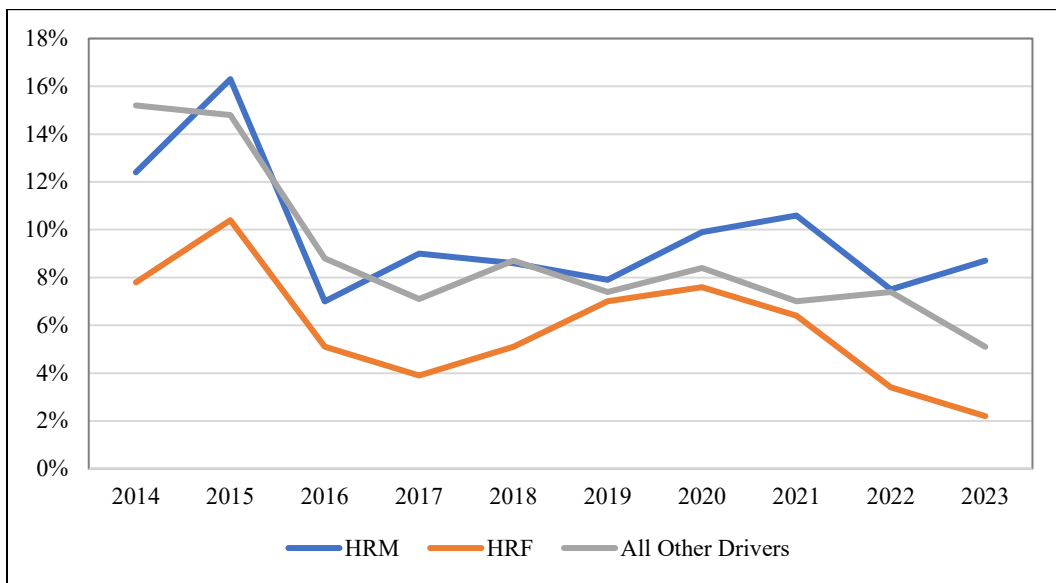


Figure B.4 Drivers Reporting the Perceived Likelihood of Being Arrested for Impaired Driving as Very Unlikely or Unlikely

Table B.1 Longitudinal Response Averages from High-Risk Male Drivers						
Question	Year	Scale	HRM	Other	Sig.	
Seat Belt Use 1=Never to 5=Always	2023	1-5	4.60	4.80	**	
	2022		4.56	4.79	**	
	2021		4.40	4.79	**	
	2020		4.41	4.73	**	
	2019		4.45	4.75	**	
	2018		4.31	4.75	**	
	2017		4.36	4.73	**	
	2016		4.33	4.71	**	
	2015		4.24	4.68	**	
	2014		4.26	4.65	**	
	2013		4.18	4.52	**	
	2012		3.98	4.41	**	
	2011		4.18	4.47	**	
	2010		4.04	4.43	**	
	2019–2023 Five-year Average			4.48	4.77	
	2018–2022 Five-year Average			4.43	4.76	
	2017–2021 Five-year Average			4.39	4.75	
	2016–2020 Five-year Average			4.37	4.73	
	2015–2019 Five-year Average			4.34	4.72	
	2014–2018 Five-year Average			4.30	4.70	
2013–2017 Five-year Average		4.27	4.66			
2012–2016 Five-year Average		4.20	4.59			
2011–2015 Five-year Average		4.17	4.55			
2010–2014 Five-year Average		4.13	4.50			
Question	Year	Scale	HRM	Other	Sig.	
Ticket Likely Seat Belt 1=Very Unlikely to 5=Very Likely	2023	1-5	2.67	3.14	**	
	2022		2.88	3.05	*	
	2021		2.78	3.14	*	
	2020		2.85	3.18	**	
	2019		2.82	3.13	**	
	2018		2.94	3.17	**	
	2017		2.85	3.19	**	
	2016		2.99	3.26	*	
	2015		2.83	3.33	**	
	2014		2.98	3.23	**	
	2013		2.97	3.23	**	
	2012		3.06	3.20	**	
	2011		2.77	3.03	**	
	2010		2.74	3.12	**	
	2019–2023 Five-year Average			2.80	3.13	
	2018–2022 Five-year Average			2.85	3.13	
	2017–2021 Five-year Average			2.85	3.16	
	2016–2020 Five-year Average			2.89	3.19	
	2015–2019 Five-year Average			2.89	3.22	
	2014–2018 Five-year Average			2.92	3.24	
2013–2017 Five-year Average		2.92	3.25			
2012–2016 Five-year Average		2.97	3.25			
2011–2015 Five-year Average		2.92	3.20			
2010–2014 Five-year Average		2.90	3.16			

Question	Year	Scale	HRM	Other	Sig.	
Ticket Likely Speed 1=Very Unlikely to 5=Very Likely	2023	1-5	3.27	3.46		
	2022		3.43	3.50		
	2021		3.50	3.58		
	2020		3.41	3.58		
	2019		3.57	3.68		
	2018		3.48	3.61		
	2017		3.53	3.66		
	2016		3.59	3.68		
	2015		3.54	3.79	*	
	2014		3.47	3.75	**	
	2013		3.52	3.71	**	
	2012		3.64	3.71		
	2011		3.50	3.65		
	2010		3.47	3.62	**	
	2019–2023 Five-year Average			3.44	3.56	
	2018–2022 Five-year Average			3.48	3.59	
	2017–2021 Five-year Average			3.50	3.62	
	2016–2020 Five-year Average			3.52	3.64	
	2015–2019 Five-year Average			3.54	3.68	
	2014–2018 Five-year Average			3.52	3.70	
2013–2017 Five-year Average		3.53	3.72			
2012–2016 Five-year Average		3.55	3.73			
2011–2015 Five-year Average		3.53	3.72			
2010–2014 Five-year Average		3.52	3.69			
Question	Year	Scale	HRM	Other	Sig.	
Arrest for DUI 1=Very Unlikely to 5=Very Likely	2023	1-5	4.00	3.87		
	2022		3.90	3.74	*	
	2021		3.84	3.80		
	2020		3.80	3.74	*	
	2019		3.79	3.76	*	
	2018		3.91	3.69	**	
	2017		3.89	3.75	**	
	2016		3.80	3.66	**	
	2015		3.76	3.67	*	
	2014		3.89	3.75	**	
	2013		3.67	3.49	*	
	2012		3.72	3.61	**	
	2011		3.65	3.62		
	2010		3.61	3.52		
	2019–2023 Five-year Average			3.87	3.78	
	2018–2022 Five-year Average			3.85	3.75	
	2017–2021 Five-year Average			3.85	3.75	
	2016–2020 Five-year Average			3.84	3.72	
	2015–2019 Five-year Average			3.83	3.71	
	2014–2018 Five-year Average			3.85	3.70	
2013–2017 Five-year Average		3.80	3.66			
2012–2016 Five-year Average		3.77	3.64			
2011–2015 Five-year Average		3.74	3.63			
2010–2014 Five-year Average		3.71	3.60			
*Statistically significant difference at the 5% level						
**Statistically significant difference at the 1% level						

Table B.2 Longitudinal Response Averages from High-Risk Female Drivers						
Question	Year	Scale	HRF	Other	Sig.	
Seat Belt Use 1=Never to 5=Always	2023	1-5	4.71	4.80		
	2022		4.71	4.79		
	2021		4.62	4.79		
	2020		4.69	4.73	*	
	2019		4.66	4.75		
	2018		4.72	4.75	**	
	2017		4.65	4.73		
	2016		4.65	4.71		
	2015		4.60	4.68		
	2014		4.67	4.65		
	2013		4.58	4.51		
	2019–2023 Five-year Average			4.68	4.77	
	2018–2022 Five-year Average			4.68	4.76	
	2017–2021 Five-year Average			4.67	4.75	
	2016–2020 Five-year Average			4.67	4.73	
2015–2019 Five-year Average		4.66	4.72			
2014–2018 Five-year Average		4.66	4.70			
2013–2017 Five-year Average		4.63	4.66			
Question	Year	Scale	HRF	Other	Sig.	
Ticket Likely Seat Belt 1=Very Unlikely to 5=Very Likely	2023	1-5	2.99	3.14		
	2022		3.02	3.05		
	2021		2.91	3.14		
	2020		3.03	3.18		
	2019		3.18	3.13	*	
	2018		3.19	3.17		
	2017		3.14	3.19		
	2016		3.33	3.26	*	
	2015		3.30	3.33		
	2014		3.19	3.25		
	2013		3.15	3.25	*	
	2019–2023 Five-year Average			3.03	3.13	
	2018–2022 Five-year Average			3.07	3.13	
	2017–2021 Five-year Average			3.09	3.16	
	2016–2020 Five-year Average			3.17	3.19	
2015–2019 Five-year Average		3.23	3.22			
2014–2018 Five-year Average		3.23	3.24			
2013–2017 Five-year Average		3.22	3.26			

Question	Year	Scale	HRF	Other	Sig.	
Ticket Likely Speed 1=Very Unlikely to 5=Very Likely	2023	1-5	3.58	3.46	*	
	2022		3.63	3.50	**	
	2021		3.77	3.58	**	
	2020		3.65	3.58	*	
	2019		3.81	3.68	**	
	2018		3.78	3.61	**	
	2017		3.73	3.66	*	
	2016		3.87	3.68	**	
	2015		3.89	3.79	**	
	2014		3.82	3.72		
	2013		3.76	3.70		
	2019–2023 Five-year Average			3.69	3.56	
	2018–2022 Five-year Average			3.73	3.59	
	2017–2021 Five-year Average			3.75	3.62	
2016–2020 Five-year Average		3.77	3.64			
2015–2019 Five-year Average		3.82	3.68			
2014–2018 Five-year Average		3.82	3.69			
2013–2017 Five-year Average		3.81	3.71			
Question	Year	Scale	HRF	Other	Sig.	
Arrest for DUI 1=Very Unlikely to 5=Very Likely	2023	1-5	4.21	3.87	**	
	2022		4.15	3.74	**	
	2021		3.84	3.80	**	
	2020		3.99	3.74	**	
	2019		3.99	3.76	**	
	2018		4.04	3.69	**	
	2017		4.09	3.75	**	
	2016		4.06	3.66	**	
	2015		3.98	3.67	**	
	2014		3.95	3.65	**	
	2013		3.67	3.44	*	
	2019–2023 Five-year Average			4.04	3.78	
	2018–2022 Five-year Average			4.00	3.75	
	2017–2021 Five-year Average			3.99	3.75	
2016–2020 Five-year Average		4.03	3.72			
2015–2019 Five-year Average		4.03	3.71			
2014–2018 Five-year Average		4.02	3.68			
2013–2017 Five-year Average		3.95	3.63			
*Statistically significant difference at the 5% level						
**Statistically significant difference at the 1% level						

APPENDIX C. MISSING/REFUSE TO ANSWER RESPONSES

Q#	Question	Total Responses	Missing Responses
Seat Belt			
SB1	Seat Belt Use	1,404	3
SB2	Chance Ticket Seat Belt	1,404	3
Speeding			
SP1	Speed 75 MPH Zone	1,406	1
SP2	Chance Ticket Speeding	1,400	7
Alcohol/Impairment			
ID1	Chance Arrest Drinking	1,400	7
ID2a	Alternate Driver	1,392	15
ID2b	Alternate Driver Type	956	451
ID3a	Drive 1–2 Drinks	973	434
ID3b	Drive 3+ Drinks	822	585
Distracted Driving			
DD1	Hand-held Ban	1,388	19
DD2	Chance Ticket Distracted	1,398	9
DD3	Use Phone While Driving	1,390	17
DD3a	Use Phone Purpose	898	509
DD3b	Use Phone Hands-Free	1,136	271
Awareness/Exposure			
VZ1a	RSH Seat Belt	1,364	43
VZ1b	RSH Speeding	1,317	90
VZ1c	RSH Drunk Driving	1,365	42
VZ1d	RSH Distracted Driving	1,333	74
VZ1e	RSH <i>Vision Zero</i>	1,311	96
Traffic Safety			
TS1	Highway Safety Corridor	1,360	47
TS2	Crashes Preventable	1,403	4
Total n=1,407			

APPENDIX D. DRIVER RESPONSES BY REGION AND GEOGRAPHY

Question	Region or Geography, Response					
What are the chances of getting a ticket if you...	Don't wear your seat belt		Drive over the speed limit		Drive after drinking alcohol	
	EAST	WEST	EAST	WEST	EAST	WEST
V. Likely	10.4%	10.2%	11.8%	14.3%	34.6%	42.9%
Likely	25.0%	20.1%	36.0%	38.6%	35.7%	28.3%
Sw. Likely	34.8%	37.1%	41.6%	37.8%	25.5%	25.1%
Unlikely	21.4%	26.5%	8.5%	8.1%	2.6%	1.7%**
V. Unlikely	8.3%	6.1%	2.2%**	1.2%**	1.6%**	1.9%**
What are the chances of getting a ticket if you...	Don't wear your seat belt		Drive over the speed limit		Drive after drinking alcohol	
	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL
V. Likely	11.0%	8.6%	11.9%	15.0%	37.2%	39.6%
Sw. Likely	22.0%	25.7%	36.1%	39.1%	31.7%	35.7%
Likely	34.8%	38.0%	41.0%	37.9%	27.4%	20.2%
Unlikely	23.5%	23.2%	9.0%	6.5%	1.8%**	3.2%
V. Unlikely	8.6%	4.4%	1.9%**	1.5%**	1.9%**	1.2%**
Times driving after drinking 1-2 drinks in the past 60 days...			None	1-5 Times	6-10 Times	10+ Times
East			59.0%	38.0%	2.6%**	0.4%**
West			54.1%	41.3%	3.9%**	0.7%**
Urban			57.0%	39.8%	2.9%**	0.4%**
Rural			57.4%	38.0%	3.8%**	0.8%**
Times driving after drinking 3+ drinks in the past 60 days...			None	1-5 Times	6-10 Times	10+ Times
East			93.8%	5.5%	0.0%**	0.7%**
West			93.0%	6.2%	0.5%**	0.3%**
Urban			94.8%	4.5%	0.2%**	0.5%**
Rural			90.4%	9.0%	0.2%**	0.4%**
Seat Belt Use	Always		N. Always	Sometimes	Rarely	Never
East	81.7%		12.9%	4.9%	0.3%**	0.2%**
West	84.0%		11.0%	2.7%**	1.4%**	0.9%**
Urban	88.9%		7.1%	2.7%**	0.7%**	0.5%**
Rural	66.3%		25.0%	7.4%	0.9%**	0.4%**
**Fewer than 30 responses in this group						

APPENDIX E. EXPOSURE TO TRAFFIC SAFETY MESSAGES

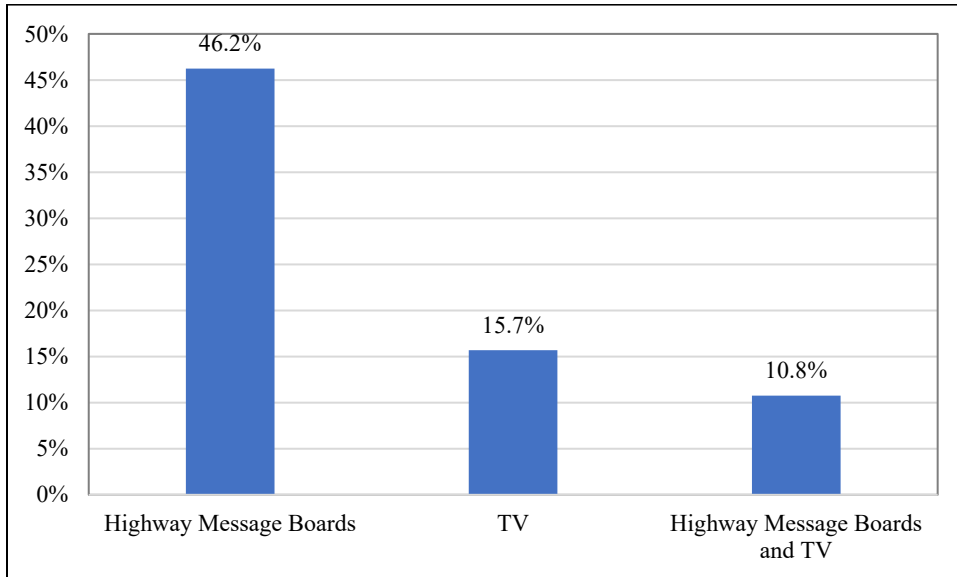


Figure E.1 Exposure to Messages about Seat Belts, by Source

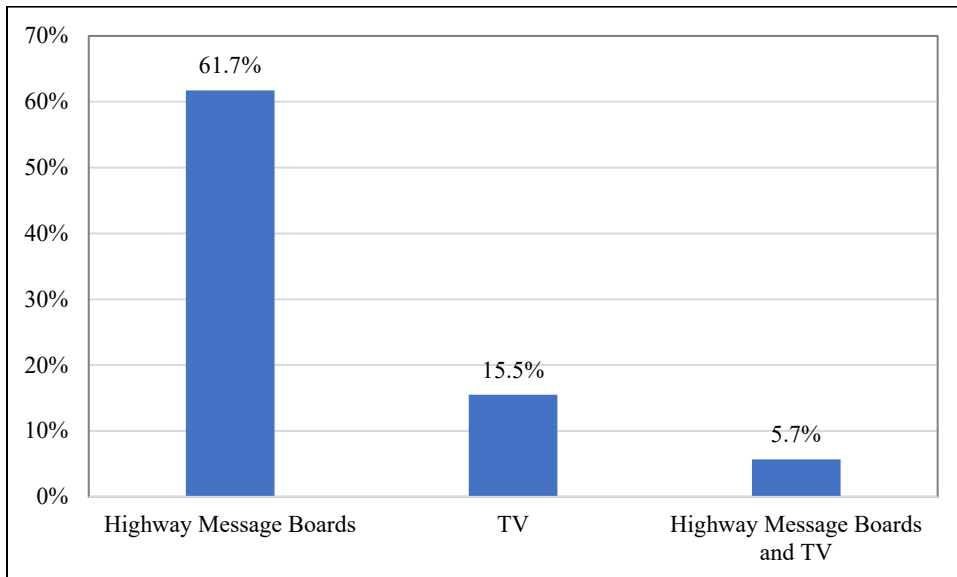


Figure E.2 Exposure to Messages about Speeding, by Source

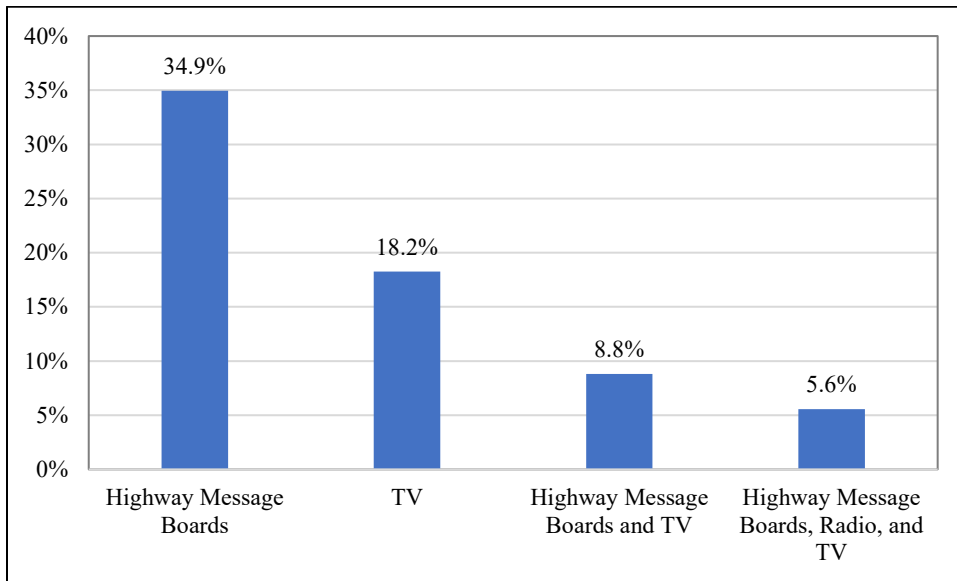


Figure E.3 Exposure to Messages about Drunk Driving, by Source

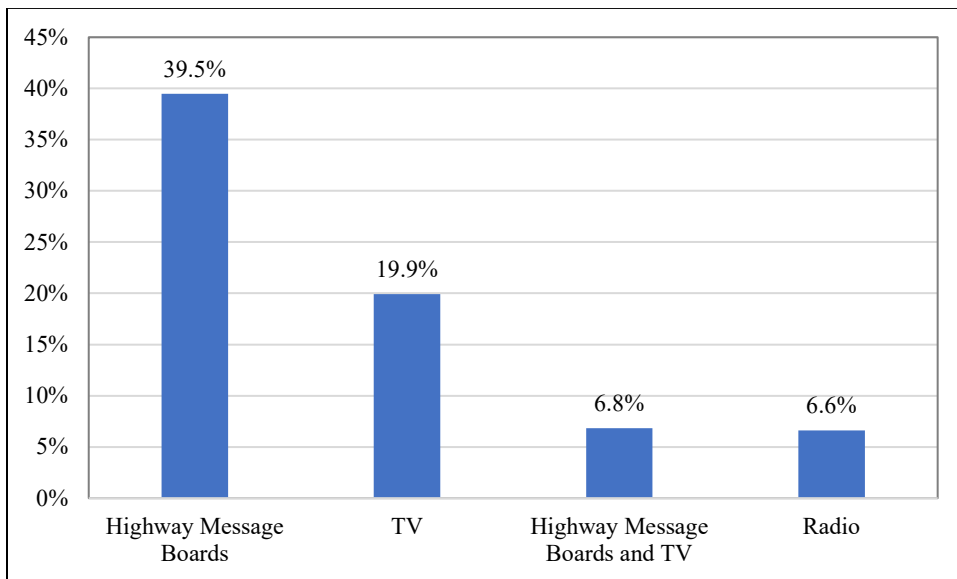


Figure E.4 Exposure to Messages about Distracted Driving, by Source

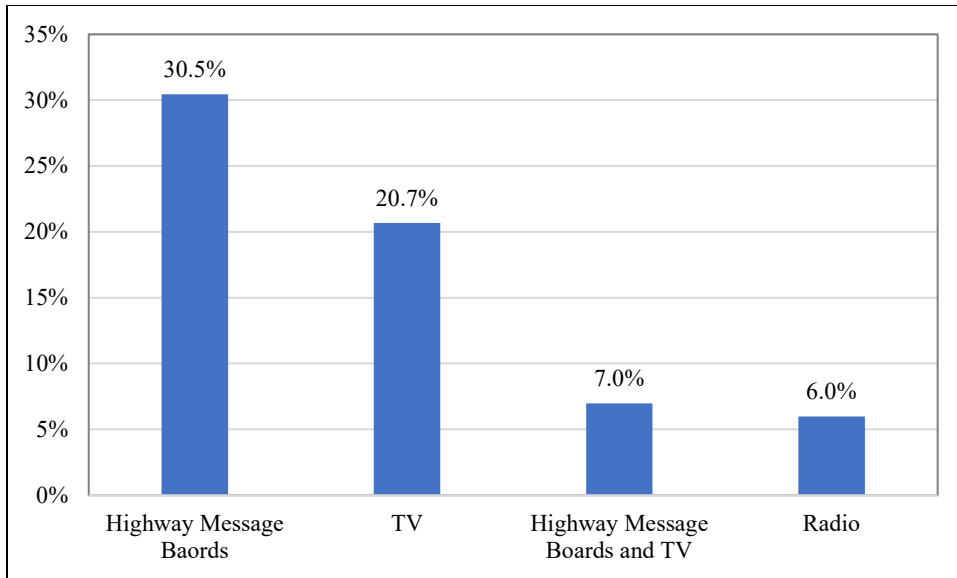


Figure E.5 Exposure to Messages about *Vision Zero*, by Source

APPENDIX F. DRIVER RESPONSES BY VEHICLE TYPE

Table F.1 Seat Belt Use, by Vehicle Type

Vehicle Type	Never or Rarely	Sometimes	Nearly Always or Always
Car	1.2%**	4.3%**	94.5%
Pickup	2.0%**	12.9%	85.1%
SUV	1.0%**	2.3%**	96.6%
Van	0.0%**	2.0%**	98.0%

**Fewer than 30 responses in this group

Table F.2 Times Driving After Consuming 1–2 Alcoholic Beverages, by Vehicle Type

Vehicle Type	None	1-5 Times	6-10 Times	10+ Times
Car	67.9%	29.9%	1.3%**	0.9%**
Pickup	46.8%	43.9%	7.4%**	2.0%**
SUV	54.0%	43.0%	3.0%**	0.1%**
Van	61.9%**	38.1%**	0.0%**	0.0%**

**Fewer than 30 responses in this group

Table F.3 Times Driving After Consuming 3+ Alcoholic Beverages, by Vehicle Type

Vehicle Type	None	1-5 Times	6-10 Times	10+ Times
Car	97.5%	2.3%**	0.0%**	0.2%**
Pickup	87.2%	11.8%**	0.4%**	0.7%**
SUV	92.3%	6.7%**	0.3%**	0.7%**
Van	99.5%	0.5%**	0.0%**	0.0%**

**Fewer than 30 responses in this group

APPENDIX G. COUNTY-LEVEL RESPONSES

Table G.1 Seat Belt Use

County*	Never	Rarely	Sometimes	Nearly Always	Always
Barnes	0.0%	0.0%	3.7%	17.8%	78.5%
Burleigh	0.2%	0.3%	2.5%	6.1%	91.0%
Cass	0.1%	0.2%	2.9%	4.8%	91.9%
Grand Forks	0.0%	0.6%	4.6%	10.3%	84.6%
Morton	3.9%	4.3%	0.5%	16.7%	74.6%
Ramsey	4.6%	2.9%	7.4%	25.5%	59.6%
Richland	0.0%	0.0%	4.1%	18.7%	77.2%
Stark	0.0%	0.0%	3.7%	11.7%	84.6%
Stutsman	0.0%	0.0%	8.7%	14.4%	77.0%
Ward	0.0%	0.0%	0.6%	10.3%	89.1%
Williams	0.0%	0.0%	1.2%	22.8%	76.1%

*Only counties with 30 or more responses are included.

Table G.2 Chances Ticket No Seat Belt

County*	Very Unlikely	Unlikely	Somewhat Likely	Likely	Very Likely
Barnes	0.0%	19.1%	33.4%	35.6%	12.0%
Burleigh	5.1%	25.8%	40.2%	20.1%	8.8%
Cass	8.5%	21.2%	34.4%	23.5%	12.4%
Grand Forks	15.9%	24.2%	28.8%	22.3%	8.8%
Morton	10.9%	25.8%	27.6%	21.4%	14.2%
Ramsey	0.0%	22.6%	61.9%	7.8%	7.6%
Richland	6.1%	6.0%	44.2%	42.3%	1.4%
Stark	2.9%	32.8%	34.5%	10.5%	19.3%
Stutsman	5.1%	21.0%	37.4%	25.4%	11.1%
Ward	1.7%	27.8%	41.0%	26.8%	2.7%
Williams	5.5%	43.0%	26.3%	20.5%	4.6%

*Only counties with 30 or more responses are included.

Table G.3 Ticket Likelihood for Speeding

County*	Very Unlikely	Unlikely	Somewhat Likely	Likely	Very Likely
Barnes	0.0%	1.1%	46.9%	38.8%	13.2%
Burleigh	1.2%	10.1%	40.9%	33.8%	14.1%
Cass	1.7%	9.2%	44.4%	33.7%	10.9%
Grand Forks	4.6%	9.8%	39.3%	36.0%	10.3%
Morton	1.3%	4.1%	28.0%	54.6%	11.9%
Ramsey	0.0%	15.9%	37.5%	20.2%	26.4%
Richland	6.4%	4.5%	44.4%	36.2%	8.5%
Stark	0.0%	4.9%	31.8%	46.4%	16.9%
Stutsman	1.0%	9.2%	43.4%	35.5%	10.9%
Ward	0.7%	8.1%	41.4%	35.0%	14.9%
Williams	0.0%	8.6%	30.4%	52.8%	8.2%

*Only counties with 30 or more responses are included.

Table G.4 Chances of Arrest for Driving Under Influence of Alcohol/Drugs

County*	Very Unlikely	Unlikely	Somewhat Likely	Likely	Very Likely
Barnes	1.4%	0.0%	19.8%	22.6%	56.2%
Burleigh	2.5%	1.3%	27.7%	26.3%	42.2%
Cass	2.0%	2.8%	31.2%	28.2%	35.8%
Grand Forks	0.5%	1.3%	16.7%	58.5%	23.0%
Morton	1.6%	0.0%	22.4%	31.7%	44.4%
Ramsey	4.1%	1.6%	12.1%	30.7%	51.4%
Richland	1.2%	2.7%	5.5%	48.8%	41.7%
Stark	1.4%	0.0%	27.3%	24.9%	46.4%
Stutsman	0.5%	1.7%	32.5%	34.2%	31.1%
Ward	0.7%	6.2%	20.0%	28.9%	44.2%
Williams	0.0%	2.3%	23.8%	20.4%	53.5%

*Only counties with 30 or more responses are included.

Table G.5 Likelihood of Getting Ticketed for Distracted Driving

County*	Very Unlikely	Unlikely	Somewhat Likely	Likely	Very Likely
Barnes	3.7%	20.0%	32.3%	31.5%	12.5%
Burleigh	7.9%	25.9%	39.9%	18.5%	7.8%
Cass	6.0%	23.9%	39.9%	17.4%	12.8%
Grand Forks	2.6%	28.4%	42.2%	16.7%	10.2%
Morton	7.5%	22.6%	39.0%	23.6%	7.3%
Ramsey	19.6%	46.6%	13.1%	15.1%	5.6%
Richland	2.3%	8.5%	31.7%	46.0%	11.5%
Stark	0.9%	24.8%	36.7%	29.3%	8.4%
Stutsman	2.6%	28.7%	42.3%	24.1%	2.2%
Ward	8.9%	29.7%	36.8%	21.1%	3.6%
Williams	4.6%	45.1%	32.5%	14.8%	3.0%

*Only counties with 30 or more responses are included.

APPENDIX H. CELL PHONE USE WHILE DRIVING

Table H.1 Cell Phone Use Responses

Type of Use	Percent
Maps	35.8%
Maps and Texting	26.9%
Texting	15.9%
Maps and Other	6.9%
Other	4.7%
Maps, Other, and Texting	2.6%
Emails, Maps, and Texting	1.4%
Maps, Social Media, and Texting	1.1%
Maps, Other, Social Media, and Texting	1.0%
Emails, Maps, Other, Social Media, and Texting	0.9%
Emails, Social Media, and Texting	0.7%
Maps and Social Media	0.4%
Other and Texting	0.3%
Emails, Maps, and Social Media	0.3%
Emails	0.2%
Emails, Maps, Social Media, and Texting	0.2%
Social Media	0.2%
Emails, Maps, Other, and Texting	0.2%
Emails and Texting	0.1%
Social Media and Texting	0.1%
Emails, Other, and Texting	<0.1%
Emails, Other, Social Media, and Texting	<0.1%

Note: Percentages based on those who do use a phone while driving.