

NORTH DAKOTA STATEWIDE TRAFFIC SAFETY SURVEY, 2014: TRAFFIC SAFETY PERFORMANCE MEASURES FOR STATE AND FEDERAL AGENCIES



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UGPTI Department Publication No. 273

Prepared for:

Traffic Safety Office, Safety Division
North Dakota Department of Transportation

July 2014

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ABSTRACT

The initial statewide driver traffic safety survey provides baseline metrics for the Traffic Safety Office and others to use in understanding perceptions and behaviors related to focus issues. A core set of questions addresses 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 it is apparent that 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 categories. For example, the road traffic death rate is much higher than in other countries (World Health Organization 2013) (Figure 1.1). Progress has been made in reducing the number of traffic deaths, but crashes that result in fatalities, injuries, and property damage continue to take place because of preventable factors such as driving under the influence of alcohol or operating a vehicle without a safety belt. These facts reveal that more work is needed to improve driver behavior and overall safety on the roadway. 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 initiative to improve transparency and quantify metrics for behavior-based investments designed to reduce motor vehicle crashes, the Governor's Highway Safety Association (GHSA) and National Highway Traffic Safety Administration (NHTSA) established a set of performance measures that support traffic safety priorities and reveal progress related to behavioral safety plans and programs (Hedlund 2008).

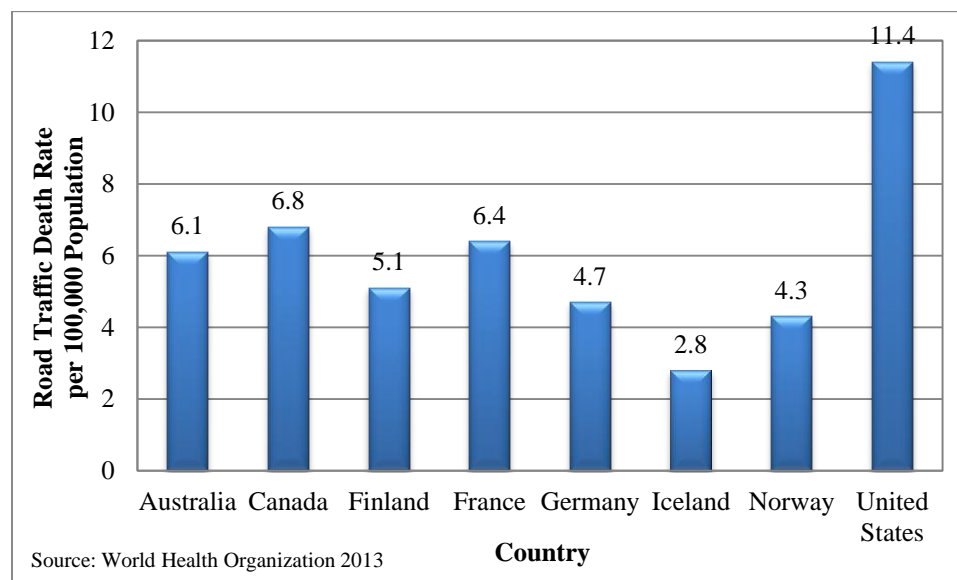


Figure 1.1 Road Traffic Death Rate for Selected Countries, 2010

Within the GHSA-NHTSA safety effort, 14 measures were agreed upon as *Minimum Performance Measures (MPM)*. These include one behavior, three activity, and ten outcome 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 offered for the *MPM* include goal setting, goal-action linkages, resource allocation, program evaluation, and communication. Other benefits arise via improvements to organizational focus, feedback processes, and accountability (Herbel et al. 2009). The measures were defined to monitor overall traffic safety performance in addition to progress related to prioritized behavioral issues. These prioritized behavioral issues include occupant protection, alcohol use, and speeding. In addition, the measures target high-risk population target 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 the existing national Fatality Analysis Reporting System (FARS) 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 generally calculated as follows:

- Core outcome measures
 - C-1) Number of traffic fatalities (FARS). States are encouraged to report 3-year or 5-year moving averages as appropriate. (One example is when annual counts are small enough that random fluctuations may inaccurately reflect true trends. This comment applies to all fatality measures.)
 - C-2) Number of serious injuries in traffic crashes (state crash data files).
 - C-3) Fatalities/VMT (FARS, FHWA). States should set a goal for total fatalities/VMT; states should report both rural and urban fatalities/VMT in addition to total fatalities/VMT.
 - C-4) Number of unrestrained passenger vehicle occupant fatalities, all seat positions (FARS).
 - C-5) Number of fatalities in crashes involving a driver or motorcycle operator with at least a blood alcohol content (BAC) of 0.08 g/dL (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 age 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 (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 *MPM* publication also referenced four other areas for measuring improvement and implementation. These areas focused on 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 attitudes, awareness, and behavior. A core question set was developed by a GHSA-NHTSA working group and presented to state departments of transportation following the preliminary *MPM* recommendations (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. The core questions remain consistent across all entities. Beyond the core questions, an option to supplement the survey with other additional questions provides latitude to address local interests and to obtain other useful information related to topics such as demographics and driving activity.

Currently, federal initiatives relating to driver behavior focus most on impaired driving, seat belt use, and speeding. As such, the core questions emphasize these issues (Hedlund et al. 2009). The core questions of the focus areas are as follows:

- 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?
- Safety belts
 - SB-1: How often do you use safety 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 safety 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 driver 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?

These questions have been incorporated into the “North Dakota Driver Survey” developed in conjunction with the North Dakota Department of Transportation Traffic Safety Office (TSO) (see Appendix A for complete survey). The TSO expanded the survey to gain additional information relevant to its goals and responsibilities.

The annual Highway Safety Plan (HSP) provides insight for current priorities and activities (Levi et al. 2013a). The most recent HSP outlines goals related to the overall traffic safety mission of the NDDOT, along with specific issues to address in the coming fiscal year. In 2014, these issues will be studied via projects designed to improve the following areas: planning and administration, police traffic services, traffic records, occupant protection, motorcycle safety, speed management, youth/young adult drivers, community traffic safety projects, and impaired driving prevention. 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 observed seat belt use at 80.9%, which is above the five-year moving average of 79.1%. (Levi et al. 2013b). Nonetheless, this is below the targeted goal of 82.9% of drivers always wearing a seat belt. Results here will enhance understanding of behavior by providing additional coverage, expanded insight to issues, and an increased number of measures.

2. METHOD

A mail survey was selected as the method for the driver traffic safety survey. A survey was designed by blending the 10 core questions with additional NDDOT-designated questions related to education, policy, and enforcement. The questions were developed based on a review of literature, including previous surveys of this type, and guidance offered by the GHSA-NHTSA working group. The mailing to drivers included a TSO cover letter which invited driver participation and explained the survey goals. The survey was mailed to drivers on March 1, 2014, and was open to response until April 1, 2014.

State DOT driver records provided the population for the sampling. Initially, the North Dakota Department of Transportation mail list consisted of 7,140 driver addresses. From this initial list of addresses, it was discovered that some out-of-state drivers had accidentally been included in the survey sample. After cleaning the sample, a total of 6,988 drivers were verified as having North Dakota residency. Moreover, the sample had regional, geographic, age, and gender distributions that were a reasonable representation of the general North Dakota driver population. Unlike mailing lists from prior years of this study, extensive screening of the address list led to zero addresses being identified as duplicates and zero addresses being flagged as “problem addresses.” From the 6,988 original addresses, 301 were returned by the postal service as being undeliverable. Most of these undeliverable addresses were postmarked for towns or cities in western North Dakota oil counties, a part of the state in which many individuals live temporarily due to the sporadic nature of the oil industry. The fact that most of the returned undeliverable envelopes were identified as addressed to “vacant properties” gives some credence to the hypothesis that these individuals were temporary or seasonal workers in North Dakota. Ultimately 1,752 surveys were completed. However, 11 were from zip codes that were either out-of-state or unidentifiable and 70 were from individuals who refused to indicate a zip code and thus cannot be verified as legitimate North Dakota responses. Therefore, of the useable survey responses provided, 1,671 were verified as valid responses and form the driver response sample in the analysis.

The sample size was based on a 95% confidence interval, with a 5% confidence level. The expected response was estimated at 20%. Although mail survey response is typically low, with 10% not uncommon, a slightly better response rate was anticipated due to the parameters used in the survey design and administration. These parameters include keeping the survey to a single page, including the state agency cover letter, and using state agency mail envelopes.

A disproportionate stratified random survey 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 conducted for a target driver group of 18-to-34-year-old male drivers. The disproportionate stratified sampling structure was used to elicit sufficient driver participation to allow robust analysis of responses by region, geography, and a target driver group. Using these simple average responses, however, would provide skewed results in representing the statewide driver population. For example, drivers age 25 to 34 were 37.1% of the survey sample and account for 23.3% of the survey responses. However, this age cohort only accounts for 18.5% of the licensed driver population in the state. Therefore, the post-stratification weighting process is used to give an appropriate weight to responses for statewide estimates. Results from post-stratification consider North Dakota registered driver age, gender, and location when weighting to reflect the views, perceptions, and behaviors of the statewide driving population. Note that answers with 30 or fewer responses are not considered large enough to extrapolate to the entire North Dakota driver population. These instances are indicated with asterisks throughout the analysis.

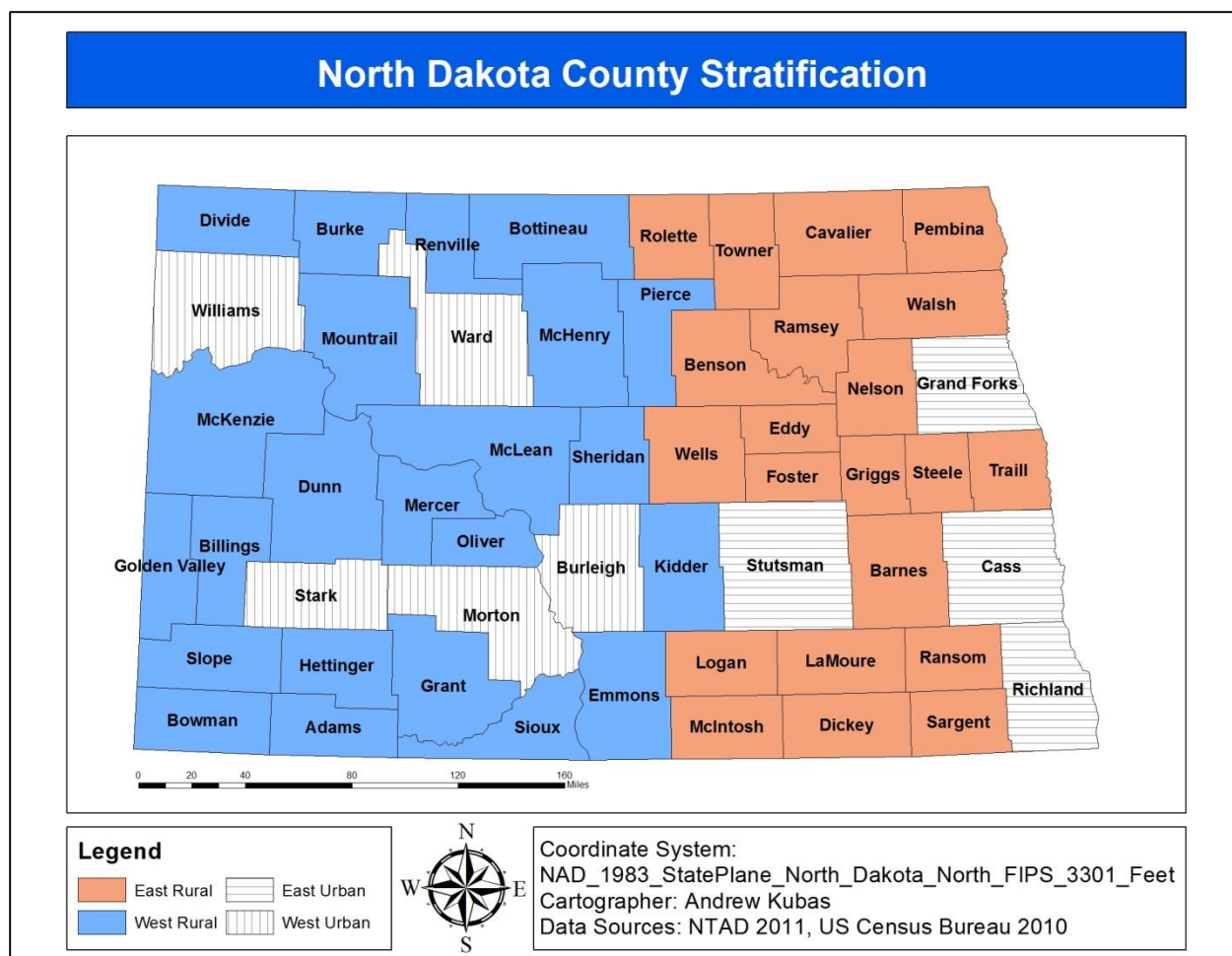


Figure 2.1 County Stratification

The regional geography was defined by aggregating the North Dakota health regions into two regions that most closely represent an east/west division of the state. The urban geography includes the largest urban population counties according to the rural and urban population figures in the most recently published US Census data. Four urban counties are located in the east and five in the west, as indicated by the population density geography definitions used in the study. The nine counties represent nearly 95% of the urban population in the state (US Census Bureau 2010). The sampling probabilities for the survey are shown in Table 2.1.

Table 2.1 Sampling Probabilities

REGION	GEOGRAPHY	DRIVER AGE/SEX	SAMPLING PROBABILITY
East	Urban	18-34M	0.034
East	Urban	Other	0.006
East	Rural	18-34M	0.072
East	Rural	Other	0.012
West	Urban	18-34M	0.039
West	Urban	Other	0.007
West	Rural	18-34M	0.104
West	Rural	Other	0.018

3. RESPONSE

Survey response rate was 23.9% with 1,671 valid responses received from the sample mailing to 6,988 drivers. The response rate was comparable to prior surveys (Vachal, Benson, and Kubas 2010-2013). As expected, oversampling of the 18-34 year-old male driver target group was needed to achieve a sample sufficient for statistical analysis. The target group response rate was 11.7% compared to 36.1% for other drivers. Sampling to elicit response by region and geography was successful as shown in Table 3.1. The 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	431 (25.8%)	397 (23.8%)	828 (49.6%)
	West	472 (28.2%)	371 (22.2%)	843 (50.4%)
	Total	903 (54.0%)	768 (46.0%)	1,671

The sample design did not account for age or gender beyond the target male group. Responses have an acceptable distribution among age cohorts, though the 35-44 year-old age group is slightly underrepresented compared to its actual proportion of the driver population in the state (Table 3.2). The highest share of responses is among drivers age 25-34; this age cohort makes up 23.3% of the survey responses. The 35-44 age cohort makes up the lowest proportion of the survey responses. Nonetheless, there were well over 30 responses from each age cohort, making statistical extrapolation possible and allowing for inferences to be made with regard to the entire North Dakota driver population. Response rates were slightly skewed by gender: 55.6% of respondents were men and 44.4% were women. This deviates from the North Dakota driver population in which there is an equal distribution of males and females. The number of responses based on gender also provides sufficient data to expand these responses to represent the entire North Dakota driver population.

Table 3.2 Response by Age Group

Age Group	Survey		Population	
	Responses	Share	Drivers	Share
18-24	152	9.1%	63,227	12.4%
25-34	389	23.3%	96,627	19.0%
35-44	114	6.8%	74,213	14.6%
45-54	267	16.0%	87,472	17.2%
55-64	374	22.4%	85,422	16.8%
65-74	229	13.7%	48,262	9.5%
75 and Older	140	8.4%	38,915	7.6%

Frequency Missing: 6

Source: 2012 North Dakota Crash Summary

Information regarding drivers' annual travel provides background for understanding statewide driving activity. The expected trend in driving behavior is that as driver's age, the number of annual miles traveled decreases. This expected trend is evident in the average annual miles traveled summarized in Figure 3.1. A majority of drivers in the 25-34, 35-44, and 45-54 age cohorts report driving more than 10,000 miles annually. Responses show 76.2% of those over the age of 75 drive less than 10,000 miles yearly. Over one-third of 35-44 year-olds (36.2%) reported driving more than 15,000 miles annually; this was the largest proportion among age cohorts for driving at least 15,000 miles each year. In contrast, about two-fifths (39.0%) of drivers in the 65-74 year-old age cohort reported that they drive less than 5,000 miles per year.

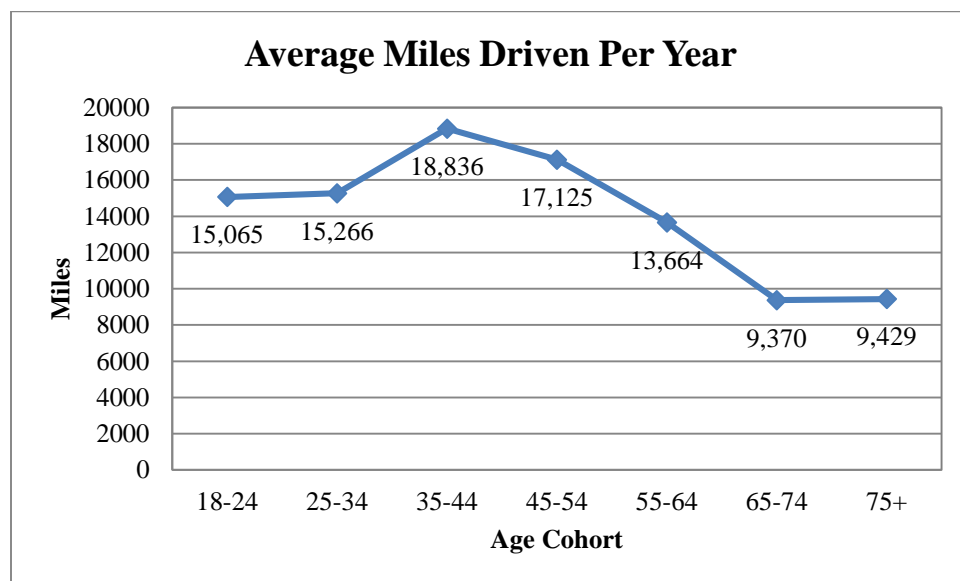
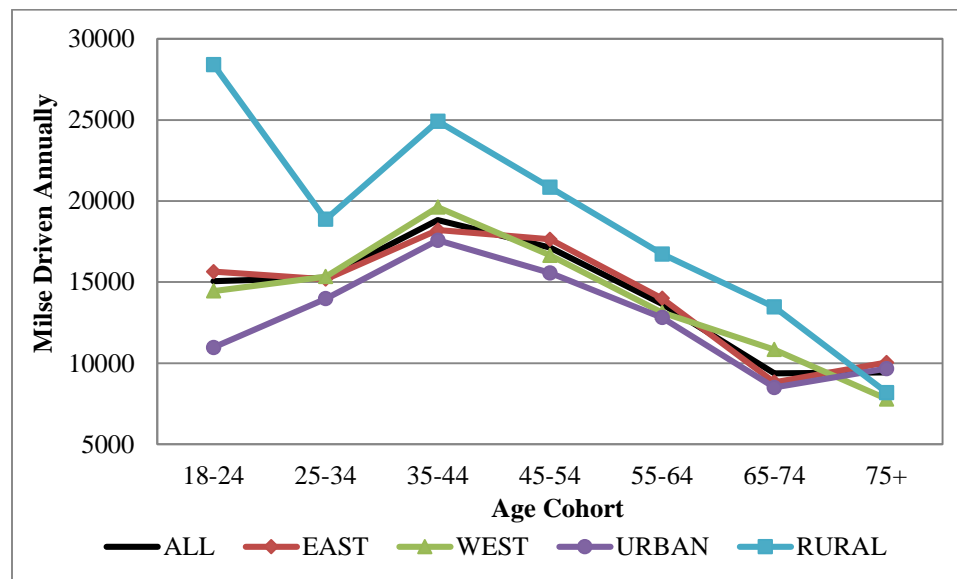


Figure 3.1 Average Miles Driven per Year, by Age

In North Dakota, the western portion of the state is generally associated with more miles driven annually. Similarly, it is assumed that rural residents travel more frequently than their urban counterparts. Thus, one would expect residents from the western region of the state and residents from rural backgrounds to travel further, on average, than their eastern and urban neighbors. When age is broken down by both region and geography, it becomes apparent that drivers from the western part of the state and drivers from rural areas do indeed drive more, on average, than other drivers (Table 3.3) (Figure 3.2). Drivers from the western half of the state reported traveling 14,655 miles per year, a slightly larger number than their eastern counterparts who traveled 13,716 miles annually. Responses reveal that rural residents, on average, drive farther than urban residents in every age cohort except those drivers over the age of 75. Rural residents reported annual travel of 18,931 miles compared to just 12,713 miles yearly for urban North Dakotans. Annual travel is important in understanding travel patterns and exposure for traffic safety assessments.

Table 3.3 Annual Miles Driven by Age, Factoring for Region and Geography

Age	East	West	Urban	Rural
18-24	15,645	14,450	10,963	28,413
25-34	15,182	15,335	13,981	18,868
35-44	18,209	19,622	17,578	24,919
45-54	17,637	16,647	15,562	20,847
55-64	13,993	13,120	12,811	16,764
65-74	8,831	10,835	8,497	13,467
75 and older	10,039	7,789	9,661	8,183

Bold: Highest in region or geography*Italic:* Highest in age cohort**Figure 3.2** Average Annual Driving Activity, by Respondent Group

Among drivers from the eastern half of the state, 35-44 year-olds drive the most at an average of 18,209 miles yearly. For drivers from the west, the 35-44 year-old cohort also travels the most per year, an average of 19,622 miles. In the nine urban counties, 35-44 year-olds once again have the highest rate of annual travel. In rural North Dakota, 18-24 year-olds drive the most at 28,413 miles annually. This was the largest annual average of any group studied in this project. The largest discrepancy in annual travel is between urban and rural drivers in the 18-24 year-old cohort. Among these drivers, rural residents drive an average of over 17,000 more miles yearly. Differences in driving activity may influence views and perceptions of traffic safety. This information is also valuable in understanding and interpreting information regarding crashes, injuries, fatalities, and assessing driver risk. Specific information regarding driver responses is provided in Table 3.4.

Table 3.4 Annual Driving Activity by Age Group

Driver Age	Less than 5,000	5,000 to 9,999	10,000 to 14,999	More than 15,000
18-24	24.6%	36.5%	14.3%	24.5%
25-34	15.5%	29.7%	25.4%	29.4%
35-44	12.7%	28.4%	22.8%	36.2%
45-54	13.0%	29.5%	25.6%	31.8%
55-64	26.4%	26.7%	20.6%	26.3%
65-74	39.0%	32.0%	15.0%	14.0%
75+	34.8%	41.4%	8.0%	15.9%
Frequency Missing: 98				

Table 3.5 indicates that driving activity does vary substantially by geography. Rural residents drive further, on average, than urban residents as revealed in Table 3.5. The difference between urban and rural annual driving distances is statistically significant at the 1% level ($F=8.534$, $df=1$, $p=0.004$).

Table 3.5 Annual Driving Activity by Geography

Geography	Less than 5,000	5,000 to 9,999	10,000 to 14,999	More than 15,000
Urban	25.4%	32.3%	20.4%	21.9%
Rural	13.8%	26.7%	20.4%	39.1%
Frequency Missing: 93				

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. Additionally, the scale responses can be transformed into ordinal values to help quantify responses between scale extremes to allow for some statistical testing of relationships and means. The higher-than-expected 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 are aimed at three specific issues: impaired driving, seat belt use, and speeding. Response frequencies for the 10 core questions are included in Table 4.1. The table includes 2010-2013 responses to establish metrics that may be used to identify North Dakota driving trends. Additionally, a five-year average sheds further light into trends during this timeframe. Responses show drivers believe law enforcement is more likely to ticket for impaired driving violations than for speeding or seat belt violations. Frequencies show that 61.3% of drivers believe chances are higher than average that impaired drivers will be arrested. This is higher than the 58.2% and 41.4% of respondents who believe there is a greater-than-average likelihood that drivers will be ticketed for speeding or seat belt violations, respectively.

Responses show 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 to drivers who never drove within two hours of consuming alcohol, those that operated 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 ($F=25.900$, $df=1$, $p<0.001$) and were also less likely to think that they would be ticketed for speeding ($F=18.707$, $df=1$, $p<0.001$). The same pattern occurred among those that chose to operate 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 appears to lower to one's perceived chances of getting a ticket for not wearing a seat belt ($F=14.406$, $df=1$, $p<0.001$), perceived chances of getting a ticket for speeding ($F=11.613$, $df=1$, $p=0.001$), and one's perceived chances of getting arrested for driving under the influence of alcohol ($F=6.000$, $df=1$, $p=0.014$).

In this survey, 28.7% 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. In contrast, just 5.5% of survey participants noted that they had operated a vehicle within two hours of drinking three or more drinks at least once during the past two months. This is a noticeable improvement from the 7.6% of survey participants who reported they operated a vehicle under these exact conditions in 2013.

With regard to speeding, 6.0% and 7.7% of drivers report high levels of speeding activity – considering those who answered “always” or “nearly always” to the questions on 30 mile per hour and 65 mile per hour speed zones, respectively. Drivers are more likely to speed on the 30 mile per hour road, with only 12.3% of the drivers reporting that they “never” speed on these roads compared to 20.0% of drivers who “never” speed on the 65 mile per hour roads.

Table 4.1 Core Question Responses

Core	Survey Question		Responses			
ID-1	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	
	2014 [#]	71.3%	27.0%	1.3%	0.4% *	
	2013 [#]	69.5%	26.8%	3.0%	0.7% *	
	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	
	2014 [#]	94.5%	5.1%	0.2% *	0.2% *	
	2013 [#]	92.4%	6.6%	0.8% *	0.2% *	
ID-2	Have you recently read, seen, or heard anything about drunk driving enforcement?					
		Yes	No			
	2014	85.2%	14.8%			
	2013	88.9%	11.1%			
	2012	89.5%	10.5%			
	2011	87.0%	13.0%			
	2010	85.0%	15.0%			
	5-Year Avg.	87.1%	12.9%			
ID-3	Chances of someone getting arrested if they drive after drinking alcohol?					
		Very Likely	Sw. Likely	Likely	Unlikely	V. Unlikely
	2014	29.7%	31.6%	25.9%	11.1%	1.7%
	2013	25.9%	29.1%	26.5%	16.7%	1.8%
	2012	32.5%	29.7%	25.9%	10.3%	1.6%
	2011	31.3%	26.7%	26.7%	12.6%	2.7%
	2010	25.0%	26.0%	31.0%	15.0%	4.0%
	5-Year Avg.	28.9%	22.7%	27.2%	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
	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%
	5-Year Avg.	66.3%	23.7%	6.7%	2.5%	0.7%
SB-2	Have you recently read, seen, or heard anything about seat belt law enforcement?					
		Yes	No			
	2014	74.5%	25.5%			
	2013	80.6%	19.4%			
	2012	84.7%	15.3%			
	2011	82.8%	17.2%			
	2010	77.0%	23.0%			
	5-Year Avg.	79.9%	20.1%			
SB-3	What do you think the chances are of getting a ticket if you don't wear your seat belt?					
		Very Likely	Sw. Likely	Likely	Unlikely	V. Unlikely
	2014	16.5%	24.9%	26.8%	26.3%	5.6%
	2013	15.5%	28.8%	21.8%	31.3%	2.7%
	2012	17.1%	28.1%	26.6%	23.7%	4.5%
	2011	16.0%	22.6%	25.3%	25.0%	11.2%
	2010	14.0%	26.0%	23.0%	26.0%	10.0%
	5-Year Avg.	15.8%	26.1%	24.7%	26.5%	6.8%

Table 4.1 Core Question Responses (continued)

Core	Survey Question	Responses				
SP-1a	On a road with 30 mph speed limit, how often do you drive faster than 35 mph?					
		Always	N. Always	Sometimes	Rarely	Never
	2014	0.7% *	5.3%	33.6%	48.1%	12.3%
	2013	1.3% *	7.6%	35.5%	42.2%	13.4%
	2012	0.6% *	6.4%	31.6%	46.3%	15.2%
	2011	1.1% *	3.5%	32.9%	47.3%	15.2%
	2010	1.0%	4.0%	31.0%	47.0%	17.0%
	5-Year Avg.	0.9%	5.4%	32.9%	46.2%	14.6%
SP-1b	On a road with 65 mph speed limit, how often do you drive faster than 70 mph?					
		Always	N. Always	Sometimes	Rarely	Never
	2014	1.1%	6.6%	26.3%	45.9%	20.0%
	2013	1.3% *	8.8%	26.0%	45.9%	18.0%
	2012	1.1% *	6.3%	23.5%	45.6%	23.5%
	2011	1.2% *	6.2%	27.3%	44.9%	20.5%
	2010	1.0%	5.0%	22.0%	45.0%	28.0%
	5-Year Avg.	1.1%	6.6%	25.0%	45.5%	22.0%
SP-2	What do you think the chances are of getting a ticket if you drive over the speed limit?					
		Very Likely	Sw. Likely	Likely	Unlikely	V. Unlikely
	2014	23.9%	34.3%	32.7%	8.1%	1.0% *
	2013	24.0%	37.5%	29.3%	8.4%	0.9% *
	2012	28.7%	33.6%	28.8%	7.4%	1.5% *
	2011	28.0%	31.3%	29.1%	9.5%	2.1%
	2010	26.0%	30.0%	28.0%	12.0%	4.0%
	5-Year Avg.	26.1%	33.3%	29.6%	9.1%	1.9%
SP-3	Have you recently read, seen, or heard anything about speed enforcement?					
		Yes	No			
	2014	38.1%	61.9%			
	2013	36.3%	63.7%			
	2012	34.2%	65.8%			
	2011	35.8%	64.2%			
	2010	57.0%	43.0%			
	5-Year Avg.	40.3%	59.7%			
Note: Please see Appendix A for exact question and response wording						
*Estimate uncertain due to limited sample size						
#Due to wording changes in ID-1, trends from previous years could not be studied						

The share of drivers reporting that they always use their seat belts when driving or riding in a vehicle is lower than the information presented by the core behavior metric of 80.9%. Driver self-reported use collected here shows that 72.2% “always” wear a seat belt with another 19.7% indicating usage as “nearly always.” The 72.2% of drivers who “always” wear a seat belt represents an improvement from 70.5% in 2013. Only 2.6% report that they “rarely” or “never” use a seat belt, a small increase from 2.2% in 2013.

Responses to awareness of public media or other education messages about traffic safety related to drinking, speeding, and seat belt issues shows speed enforcement is least often read, seen, or heard as a traffic safety topic; just 38.1% of survey participants responded that they had such exposure to this safety message. This did, however, continue a recent trend of increased exposure to this message since 2012 when just 34.2% of drivers were exposed to this safety theme. These low rates of exposure represent a stark contrast to messages about impaired driving and seat belt enforcement. Exposure rates to these two safety topics were 85.2% and 74.5%, respectively. Even so, these exposure rates have decreased slightly

since 2012. Considering these trends and drivers' perceptions that there is a relatively high risk for ticketing, it appears enforcement determines driving attitudes and actions more so than education.

An examination of the relationship between behavior and the enforcement expectations and education awareness yields some unexpected results. One would presume an inverse relationship between a negative behavior – such as speeding – and a related education or enforcement influence, as measured by read, seen, or heard exposure levels and perceived likelihood for ticketing, respectively. As illustrated in Figure 4.1, driver responses are not consistent with this expectation as the ticket drivers least expect to receive is associated with the second-lowest reported levels of negative behavior, failure to use a seat belt. With seat belts, 41.4% of drivers have more than an average expectation of receiving a ticket for not wearing a seat belt, but 2.6% report “rarely” or “never” using a safety belt in the questions posed in this survey. If an inverse relationship were to exist, then the highest level of negative behavior should be associated with seat belt use. With drinking, 61.3% see a greater-than-average chance for arrest. The smallest share, 2.1%, reports a more-than-average likelihood that they will operate a vehicle after consuming alcohol. This follows the expected inverse relationship. More than half of those surveyed, 58.2%, indicated that they think there is an above average chance of receiving a ticket for speeding. Nonetheless, 6.9% report that they have a higher-than-average likelihood of speeding while driving. This does not follow an inverse relationship as the highest levels of negative behavior should be associated with the lowest expectation of a ticket.

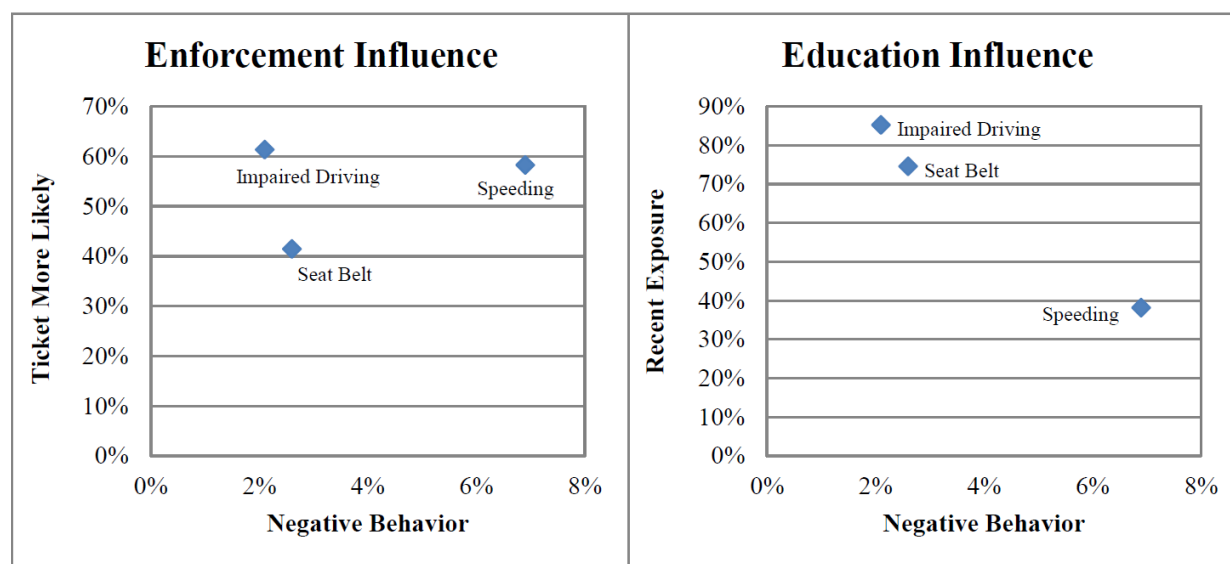


Figure 4.1 Driver Action Related to Enforcement and Education

The education influence follows an expected pattern, considering responses to the read, seen, or heard questions. One would expect – with the most exposure to educational messages – that impaired driving would have the lowest level of negative behavior. This is precisely what was reported by drivers. Similarly, drivers reported little educational exposure to messages about speeding and speeding was the highest negative behavior among drivers. This is a logical relationship: one would expect drivers to be more likely to behave negatively if they have not had as much educational exposure to the safety topic.

To further investigate relationships among the core questions and issues that may be related, measures of association are calculated for driver responses. The Pearson coefficient measures the strength of association between two variables – in this case the driver responses. Correlation coefficients range from -1 to +1, with values closer to these extremes considered strong relationships. Relationships between -0.5 and +0.5 are generally considered weak and inconsequential. For example, although the “drive after

drinking 1-2 drinks” and the “drive after drinking 3+ drinks” variables do have the expected positive relationship at Pearson Corr.=0.475, the correlation measure shows that less than 23% of their variability is shared. Statistically significant relationships are found among many responses, but the Pearson correlation calculations suggest that there are no strong relationships among all of the questions or within issues (Table 4.2).

Table 4.2 Correlations in Core Question Responses

	ID1a	ID1b	ID2	ID3	SB1	SB2	SB3	SP1a	SP1b	SP2	SP3
		.475**	.045	-.042	-.101**	-.005	-.131**	.116**	.165**	-.055*	-.122**
ID1a: Drive After Drinking 1-2 Drinks	1	.000	.068	.092	.000	.834	.000	.000	.000	.029	.000
ID1b: Drive After Drinking 3+ Drinks		1	.029	-.097**	-.132**	.001	-.104**	.106**	.146**	.036	-.118**
			.251	.000	.000	.962	.000	.000	.000	.169	.000
ID2: Read, Seen, or Heard Drunk Driving			1	.017	.012	.588**	.009	-.001	-.002	.296**	.013
				.498	.628	.000	.708	.963	.926	.000	.587
ID3: Arrest for Drinking				1	-.016	.043	.332**	-.061*	.005	.111**	.412**
					.509	.084	.000	.013	.833	.000	.000
SB1: Seat Belt Use					1	.011	.064**	-.086**	-.120**	-.032	.060*
						.651	.009	.000	.000	.197	.014
SB2: Read, Seen, or Heard Seat Belt						1	.071**	-.032	-.056*	.407**	.082**
							.004	.192	.024	.000	.001
SB3: Ticket for Seat Belt							1	-.090**	-.115**	.170**	.471**
								.000	.000	.000	.000
SP1a: Speed on 30 MPH Road								1	.522**	-.024	-.106**
									.000	.330	.000
SP1b: Speed on 65 MPH Road									1	-.104**	-.120**
										.000	.000
SP2: Read, Seen, or Heard Speed										1	.145**
											.000
SP3: Ticket for Speeding											1
**Correlation is significant at the 1% level											
*Correlation is significant at the 5% level											
Bold: Correlation and p-value indicate a substantive relationship											
Note: Correlations between -0.5 and +0.5 indicate a weak relationship and are not addressed in this study											

There were two substantive relationships within the core question correlations studied, though these relationships were relatively weak. One substantive relationship was between exposure to messages about impaired driving and exposure to messages about using safety belts while in a vehicle (Pearson Corr.=0.588, $p<0.001$, $n=1,642$). These two variables share approximately 35% of their variability. Exposure to these safety messages are related, but the relationship is weak, indicating that the questions address different perceptions of exposure to these educational messages. The other substantive relationship is between speeding on a road with a 30 mile per hour limit and speeding on a road with a 65 mile per hour limit (Pearson Corr.=0.522, $p<0.001$, $n=1,658$). These two variables share roughly 27% of their variability. This relationship reveals that – as one chooses to speed on a road with a posted speed limit of 30 miles per hour – one is more likely to also speed on a road with a posted speed limit of 65 miles per hour. 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 levels and thus are not considered substantive.

Driver responses to other questions are presented in Table 4.3. These responses offer additional insight for decision makers 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 traffic safety knowledge, driver preferences, distracted driving, and other drivers.

Table 4.3 Other Question Responses

Survey Question	Responses				
Traffic Safety Knowledge/Tools					
	YES		NO		DNK
Greater police presence increases seat belt use.	41.0% [#]		59.0% [#]		24.4%
Recently read, seen, or heard ads for <i>Code for the Road</i>	26.6%		73.4%		
Recently read, seen, or heard ads for Distracted Driving	60.3%		39.7%		
Driver Preferences					
Do you favor or oppose...	St. Favor	Sw. Favor	Neutral	Sw. Oppose	St. Oppose
Higher fines for speeding?	15.0%	23.1%	32.8%	17.4%	11.7%
Harsher DUI penalties?	50.8%	20.5%	19.4%	5.3%	4.0%
Primary seat belt law?	33.8%	21.6%	16.0%	13.0%	15.6%
Driver Distraction					
	Daily	Few/Week	Few/Month	<1/Month	Never
Cell Phone Text While Driving	4.6%	10.6%	16.5%	19.9%	48.3%
Cell Phone Talk While Driving	19.8%	23.4%	26.3%	11.7%	18.8%
Other Drivers					
	Very Comfortable	Somewhat Comfortable	Comfortable	Somewhat Uncomfortable	Very Uncomfortable
As passenger, how you feel if the driver uses a cell phone to text?	5.3%	4.7%	3.7%	26.7%	59.6%
As passenger, how you feel if the driver uses a cell phone to talk?	12.2%	19.8%	24.2%	27.6%	16.2%
[#] Percentages calculated based on those who answered “Yes” or “No”					

[#]Percentages calculated based on those who answered "Yes" or "No"

In terms of traffic safety knowledge, roughly two-fifths (41.0%) of North Dakota drivers believe that a greater police presence on the roadway increases the use of safety belts while driving. This is a noticeable decline from prior surveys. A larger proportion, 60.3%, indicated that they had recently read, seen, or heard information about distracted driving. Only about one-quarter of respondents (26.6%) had recent exposure to *Code for the Road*, the new statewide safety campaign rolled out by the North Dakota Department of Transportation. The campaign is designed to target high-risk (18-34 year-old) males via television and radio ads. It also utilizes online advertisements optimized to play more frequently on certain websites when visited by the target demographic (Heidle, Horton, and Lerman 2014). However, high-risk males in this sample had a lower rate of exposure to the *Code for the Road* safety campaign (23.8%) than all other drivers in the state (27.0%). It is unknown at this time why the safety messages have not reached the target demographic at higher rates than other North Dakota drivers.

Opinions were mixed regarding driver preferences (Figure 4.2). A majority of respondents (50.8%) strongly favored harsher penalties for those who receive a DUI. This proportion remained consistent with previous surveys despite the fact that the 2014 North Dakota Driver Survey was administered after the North Dakota legislature implemented stricter DUI penalties. Because this survey does not investigate the cause of driver attitudes, it is difficult to pinpoint why a majority of drivers still hold this viewpoint. One can speculate that North Dakota drivers will embrace even harsher DUI penalties, or, conversely, perhaps the North Dakota drivers in this sample do not follow legislative decision making closely.

When opposing these three issues, drivers were most likely to strongly oppose a primary seat belt law, though just 15.6% of respondents held this viewpoint. Like the previous three surveys in which drivers were asked if they favor or oppose higher fines for speeding, responses to this question continued to follow somewhat of a bell curve, peaking at those who feel neutral towards the issue. What was uniform among these three questions is that a larger share of respondents either “strongly favor” or “somewhat favor” the three safety strategies than the share that “somewhat oppose” or “strongly oppose” them. This indicates that these are preferred safety strategies among the greater North Dakota driver population. Transportation safety officials and practitioners can use this information as they work to improve traffic safety within the state.

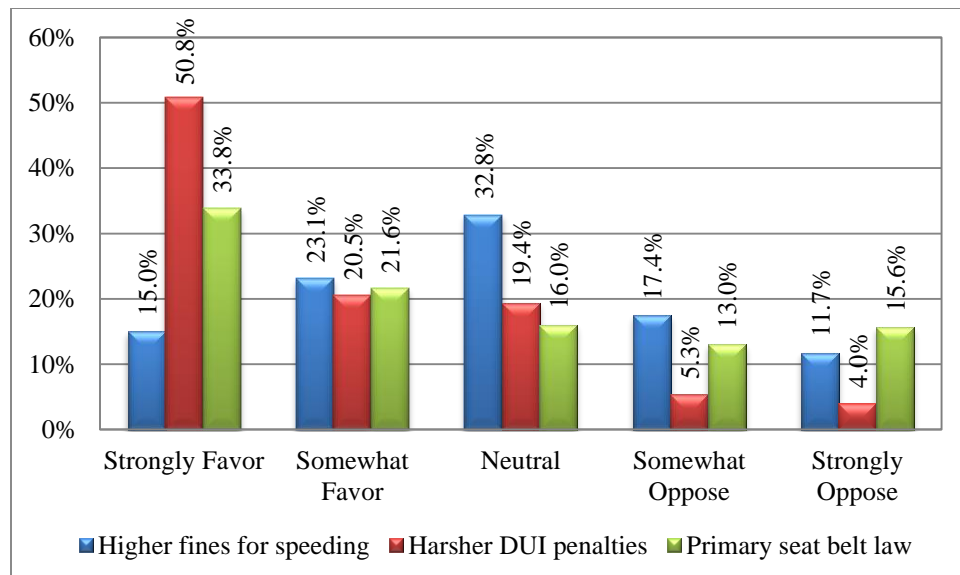


Figure 4.2 Driver Preferences

Some initial trends can be observed in driver preferences between 2010 and 2014. Note that the three questions highlighted in Figure 4.2 were not addressed in the 2011 survey. In terms of those drivers who prefer having higher fines for speeding offenders, results were consistent between the 2010 and 2014 surveys (Figure 4.3). Although a slightly larger proportion of respondents either “strongly favor” or “somewhat favor” harsher fines for speeding offenders than do those respondents who either “somewhat oppose” or “strongly oppose” such penalties, the overall distribution of responses somewhat resembles a bell curve.

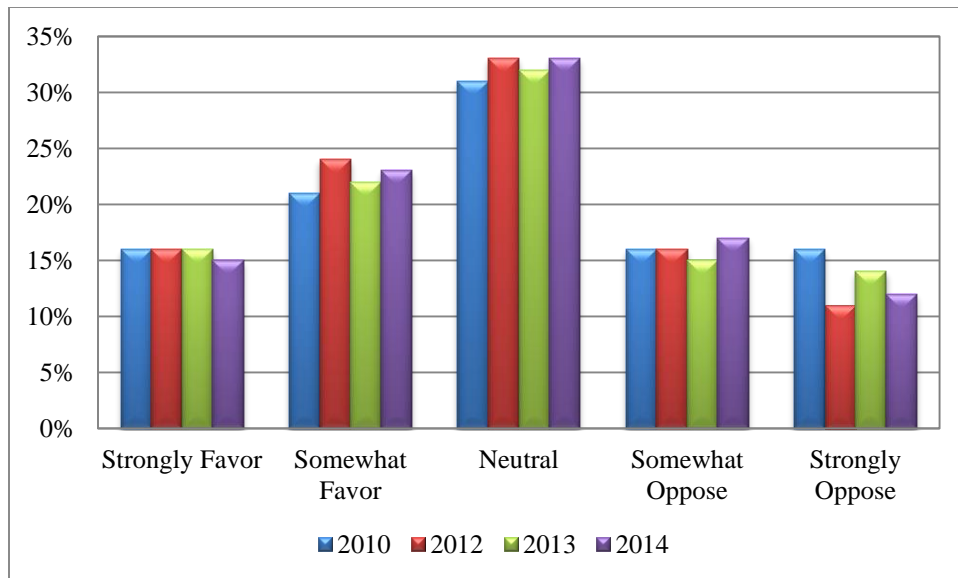


Figure 4.3 Driver Preferences for Higher Speeding Fines

Drivers' perceptions for having harsher penalties for those arrested for driving under the influence remained stable in the 2014 survey (Figure 4.4). Although slightly fewer respondents "strongly favor" harsher penalties in 2014 compared to 2013, a majority of respondents still hold this viewpoint. Responses to this question are clearly skewed, as more drivers favor harsher penalties than those who oppose stricter punishments for impaired driving.

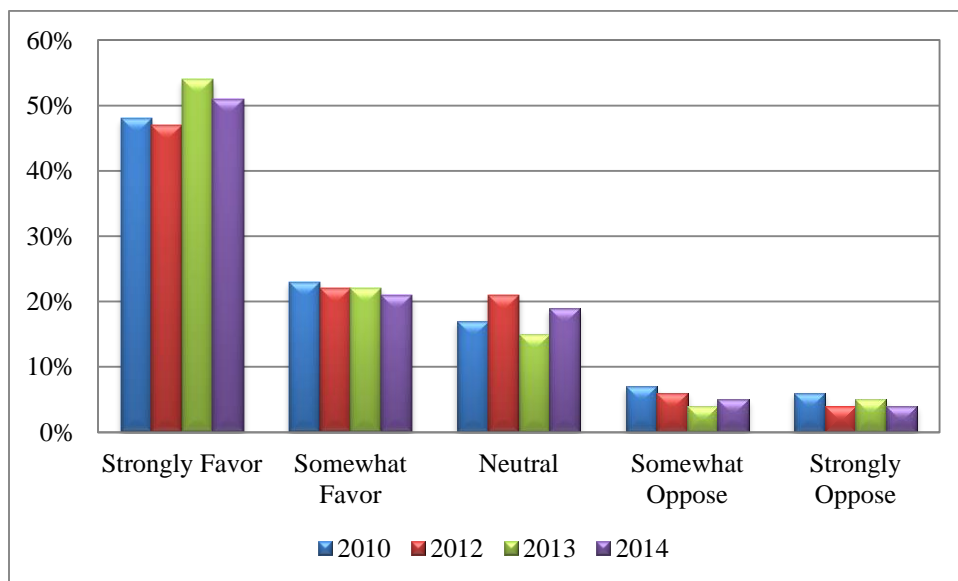


Figure 4.4 Driver Preferences for Harsher DUI Penalties

The question with the most variability in the dispersion of responses between 2010 and 2014 is driver preferences towards having a primary seat belt law in North Dakota (Figure 4.5). Whereas in 2010 nearly half (46%) of the North Dakota driver population "strongly favored" a primary seat belt law, only about one-third hold the same viewpoint in 2014. It should be noted, however, that this represents a five percentage point increase from 2013 responses, and continues the improvement from 2012 when the lowest proportion (23%) strongly favored such a law. All other categories remained fairly consistent

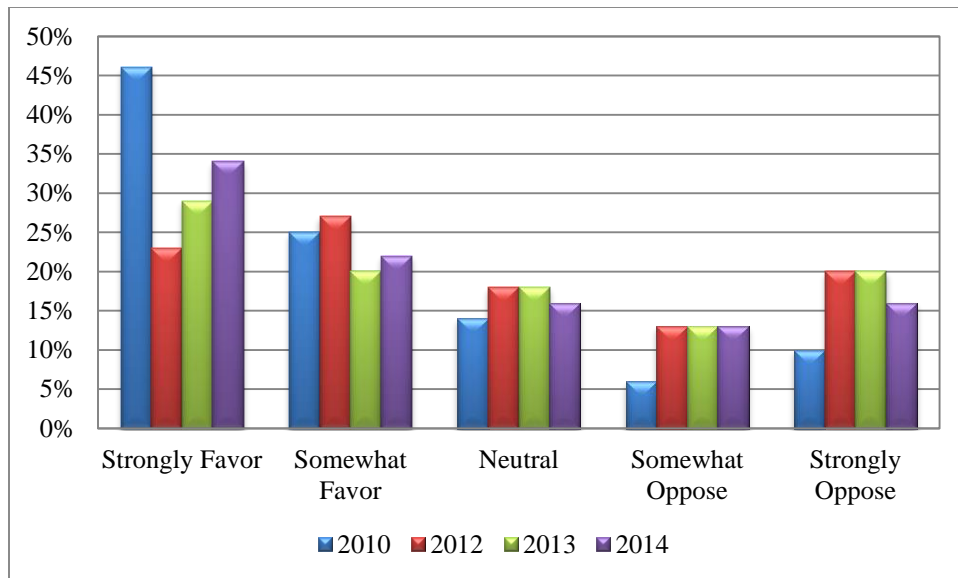


Figure 4.5 Driver Preferences for a Primary Seat Belt Law

between 2013 and 2014. It is unknown why such a dramatic shift in viewpoints occurred between 2010 and 2012. Identical parameters were used in the survey design and administration during the previous studies. Moreover, the same weighting procedures were applied to the samples. It is unknown if external factors may have influenced attitudes towards having a primary seat belt law in the state.

Two 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 is on cell phone use via texting or talking on the phone while driving. In terms of texting while driving, the distributions are comparable, but some noticeable trends have emerged over the last four years (Figure 4.6). For example, the proportion of respondents who “never” text on the phone while driving has decreased each year. Whereas about 62% of respondents in 2011 claimed to “never” text on the phone when driving, only about 48% of drivers report “never” doing so currently. That makes 2014 the first year in which there is no longer a majority of

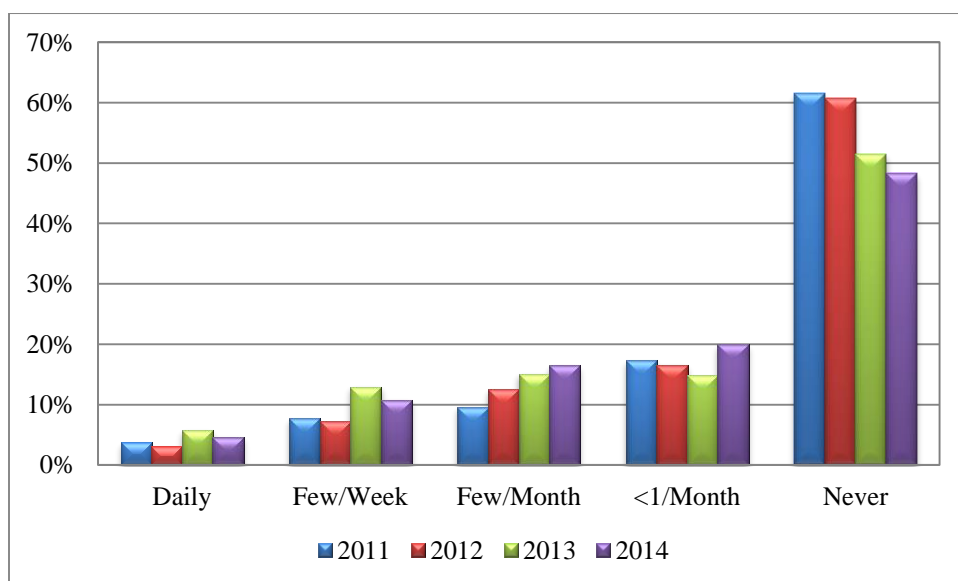


Figure 4.6 Cell Phone Texting Distractions, by Year

drivers who “never” text on the phone when operating a vehicle. Interestingly, there was a slight decline in the number of drivers who reported texting on the phone “daily” (-1.2%) and “a few times per week” (-2.1%) which indicates that some drivers are choosing to be safer when using a cell phone behind the wheel. Nonetheless, it is clear that cell phone use for texting while driving is still occurring at dangerous levels within the state.

Drivers are more likely to use their cell phone for talking while driving (Figure 4.7). About one-fifth (19.8%) of drivers in North Dakota use their cell phone for talking while driving on a daily basis. This is an improvement from 2013, but is still higher than the best-recorded year of 2012 (18.5% daily usage). The proportion of respondents that “never” use their cell phone for talking while driving improved noticeably between 2013 and 2014; an additional 7.2% of North Dakota drivers are now choosing to “never” talk on the phone when driving. In the history of this annual survey, 2014 is the year in which the highest percentage are choosing the safest option.

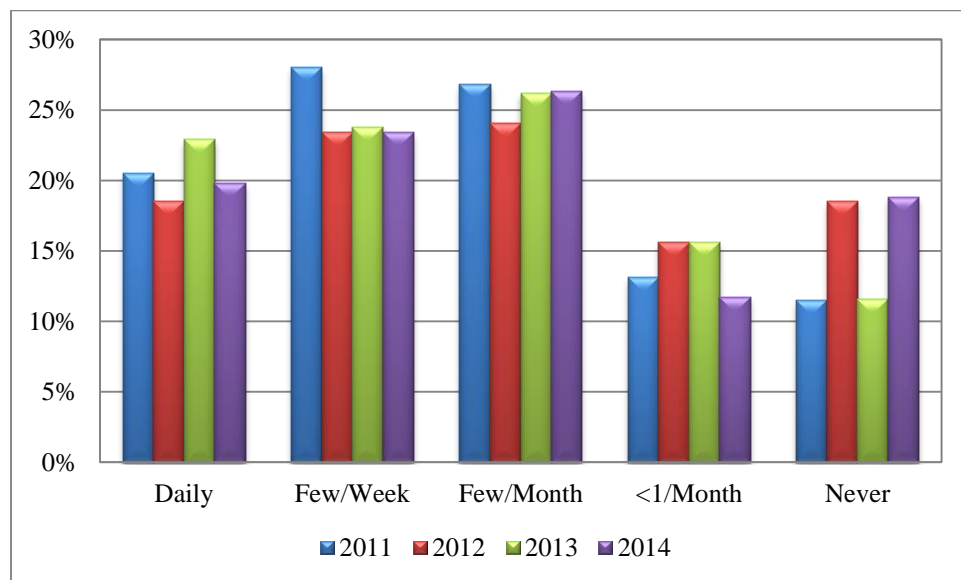


Figure 4.7 Cell Phone Talking Distractions, by Year

Two new questions were introduced into the 2014 survey to identify how North Dakotans feel when they are a passenger in a vehicle in which the driver is either texting or talking on the phone (Figure 4.8). Responses to these questions show that there are some parallels between one’s own behavior behind the wheel and one’s level of comfort with being a passenger in a vehicle in which a driver is distracted. The more often one texts while driving, the more likely one is to feel comfortable in a car in which the driver is sending or reading text messages ($F=78.146$, $df=4$, $p<0.001$). The same relationship occurs for talking on the phone while driving. Survey participants admitted to talking on the phone while driving regularly, therefore it is not surprising that they feel fairly comfortable being a passenger in a car in which the driver is talking on the phone whilst driving. Again, those survey participants who talk on the phone while driving more often have higher levels of comfort as a passenger in a vehicle in which the driver is talking on the phone while driving ($F=235.706$, $df=4$, $p<0.001$).

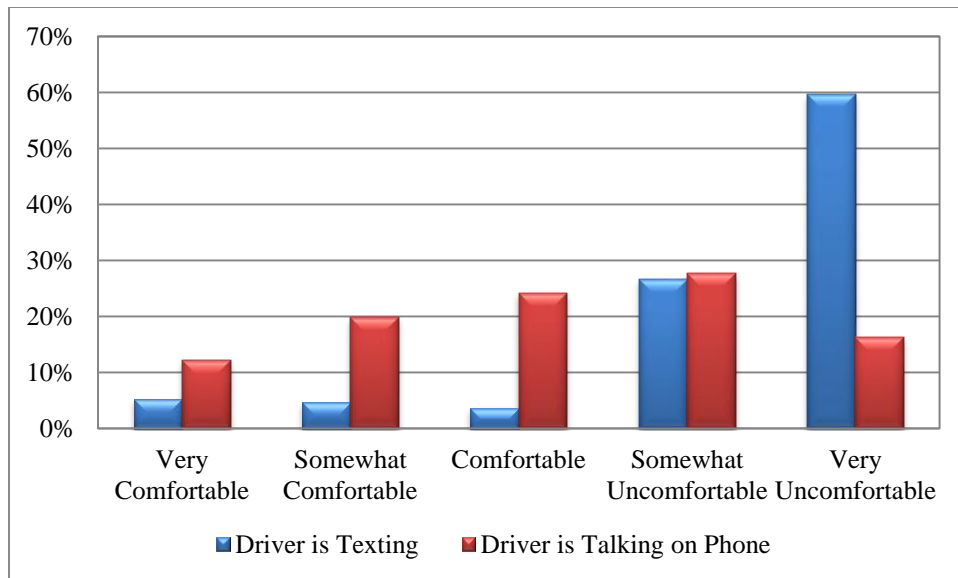


Figure 4.8 Comfort Level as Passenger with a Distracted Driver

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 may be beneficial to investigate differences within the driver population to determine if they are perceived or 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 are assigned to the descriptive answers to create ordinal scales. These transformations also allow for expanded statistical analysis of responses. The quantitative scale definitions are provided in Table 4.4.

Stratification in sampling the driver population provides an opportunity to look at the drivers based on region and geography – as defined in the methods section. In addition, the young male driver group can be distinguished as a high-risk driver population. 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.

Table 4.4 Quantitative Scale Definitions for Responses

Q#	Question	Scale	Conversion Values
1	Seat Belt Use	1-5	1=Never to 5=Always
2	Police Presence SB	0-1	0=No, 1=Yes
3	Ticket Likely Seat Belt	1-5	1=Very Unlikely to 5=Very Likely
4	Primary Seat Belt Law	1-5	1=Strongly Oppose to 5=Strongly Favor
5	Ticket Likely Speeding	1-5	1=Very Unlikely to 5=Very Likely
6	30 MPH Speed Zone	1-5	1=Never to 5=Always
7	65 MPH Speed Zone	1-5	1=Never to 5=Always
8	Higher Speeding Fines	1-5	1=Strongly Oppose to 5=Strongly Favor
9	Chances of DUI Arrest	1-5	1=Very Unlikely to 5=Very Likely
11	Tougher DUI Penalties	1-5	1=Strongly Oppose to 5=Strongly Favor
12	Cell Phone Text	1-5	1=Never to 5=Daily
13	As Passenger, Driver Text	1-5	1=Very Uncomfortable to 5=Very Comfortable
14	Cell Phone Talk	1-5	1=Never to 5=Daily
15	As Passenger, Driver Talk	1-5	1=Very Uncomfortable to 5=Very Comfortable
16a	RSH Seat Belt	0-1	0=No, 1=Yes
16b	RSH Speeding	0-1	0=No, 1=Yes
16c	RSH Impaired Driving	0-1	0=No, 1=Yes
16d	RSH <i>Code for the Road</i>	0-1	0=No, 1=Yes
16e	RSH Distracted Driving	0-1	0=No, 1=Yes

4.2.1 Regional and Geographic Observations

Table 4.5 shows the mean values for drivers surveyed statewide, along with regional and geographic comparisons. Statewide survey averages show 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 4.61. This number is below the goal of 5.0 – which is equivalent to “always” in the driver survey response. Table 4.6 shows the changes in mean values from 2010 to 2014. 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. Driver views and self-reported behaviors showed some regional variation in comparing drivers from the east and west. Similar responses for exposure to policy opinions were found when comparing drivers from opposite sides of the state. In all, two issues were statistically significant by region and ten issues were statistically significant in rural/urban comparisons.

With regard to regional designations, the statistically significant differences were both related to exposure to safety messages. Residents living in the eastern half of the state were more likely to have recently read, seen, or heard safety messages about impaired driving (Chi-Sq.=4.652, df=1, p=0.031) and distracted driving (Chi-Sq.=5.530, df=1, p=0.019). In 2014 there were statistically significant differences in terms of exposure to impaired driving for the first time in the history of this study. The survey administered this year was the first to include a question about exposure to distracted driving. It is unknown why exposure rates are higher in the east; it could plausibly be related to targeted messaging strategies as some safety campaigns can be focused on specific demographics.

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

Question	Scale ₁	Statewide	Region		Sig.	Geography		Sig.
		All	East	West		Urban	Rural	
Seat Belt Use	1-5	4.61	4.63	4.58		4.67	4.40	##
Police Presence SB	0-1	0.41	0.45	0.36		0.40	0.45	*
Ticket Likely Seat Belt	1-5	3.20	3.26	3.14		3.19	3.25	#
Primary Seat Belt Law	1-5	3.45	3.55	3.32		3.50	3.26	
Ticket Likely Speeding	1-5	3.72	3.71	3.73		3.71	3.77	##
30 MPH Speed Zone	1-5	2.34	2.27	2.43		2.34	2.34	
65 MPH Speed Zone	1-5	2.23	2.14	2.34		2.22	2.24	##
Higher Speeding Fines	1-5	3.12	3.21	3.01		3.16	2.99	
Chances of DUI Arrest	1-5	3.76	3.71	3.83		3.79	3.69	
Tougher DUI Penalties	1-5	4.09	4.13	4.04		4.14	3.93	
Cell Phone Text	1-5	2.04	1.92	2.18		1.99	2.20	##
As Passenger, Driver Text	1-5	1.69	1.68	1.71		1.67	1.78	
Cell Phone Talk	1-5	3.14	2.94	3.39		3.10	3.26	##
As Passenger, Driver Talk	1-5	2.84	2.68	3.05		2.81	2.95	
RSH Seat Belt	0-1	0.74	0.78	0.70		0.74	0.77	**
RSH Speeding	0-1	0.38	0.41	0.34		0.37	0.43	**
RSH Impaired Driving	0-1	0.85	0.86	0.84	*	0.85	0.85	
RSH <i>Code for the Road</i>	0-1	0.27	0.30	0.23		0.27	0.27	*
RSH Distracted Driving	0-1	0.60	0.65	0.55	*	0.62	0.54	
/Note: 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								

In general, urban residents exhibit safer behaviors behind the wheel than rural residents. North Dakota drivers living in the nine urban counties are less likely to speed on a road with a 65 mile per hour limit ($F=15.514$, $df=1$, $p<0.001$), less likely to send or receive a text message when driving ($F=13.447$, $df=1$, $p<0.001$), and less likely to use a cell phone to talk when driving ($F=11.565$, $df=1$, $p=0.001$). In terms of seat belt use, residents from urban areas were more likely to wear safety belts while operating a motor vehicle than were respondents from rural communities ($F=35.614$, $df=1$, $p<0.001$). This continues a trend that has been observed each year since 2010.

Interestingly, despite exhibiting more dangerous driving behaviors, rural residents were more likely to think that drivers would be ticketed for engaging in dangerous or illegal driving behavior. These rural residents thought tickets were more likely for not using a seat belt ($F=7.800$, $df=1$, $p=0.017$) and speeding ($F=10.754$, $df=1$, $p=0.001$). Rural residents were also more likely to think that a greater police presence on the roadway increases seat belt use ($\text{Chi-Sq.}=4.564$, $df=1$, $p=0.033$).

Moreover, despite partaking in dangerous driving behaviors, rural residents were more likely to have had recent exposure to safety messages. These drivers more frequently recognized messages about wearing a seat belt ($\text{Chi-Sq.}=9.556$, $df=1$, $p=0.002$) and speeding ($\text{Chi-Sq.}=23.799$, $df=1$, $p<0.001$) yet these individuals still chose to wear seat belts less regularly and speed more often than their urban counterparts. This implies that safety messages are in fact reaching specific audiences, but the current messages may not be effective.

The five-year trends presented in Table 4.6 provide insight about patterns that may be emerging from North Dakota driver responses. Although only five years of data are provided, some initial conclusions

Table 4.6 Differences in Driver Views and Behaviors from 2010-2014, by Region and Geography

Question	Year	Scale	Statewide All	Region East West Sig.			Geography Urban Rural Sig.			Core Y/N
Seat Belt Use 1=Never to 5=Always	2014	1-5	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
	Five Year Average		4.43	4.45	4.41		4.52	4.26		
Ticket Likely SB 1=Very Unlikely to 5=Very Likely	2014	1-5	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
	Five Year Average		3.11	3.14	1.10		3.07	3.17		
Ticket Likely Speed 1=Very Unlikely to 5=Very Likely	2014	1-5	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
	Five Year Average		3.66	3.66	3.66		3.66	3.68		
Speed 30 MPH Zone 1=Never to 5=Always	2014	1-5	2.34	2.27	2.43		2.34	2.34		Y
	2013		2.39	2.38	2.40		2.37	2.39		Y
	2012		2.33	2.30	2.35		2.34	2.32		Y
	2011		2.31	2.35	2.22	**	2.31	2.31		Y
	2010		2.29	2.25	2.32		2.29	2.27		Y
	Five Year Average		2.33	2.31	2.34		2.33	2.33		
Speed 65 MPH Zone 1=Never to 5=Always	2014	1-5	2.23	2.14	2.34		2.22	2.24	**	Y
	2013		2.23	2.22	2.24		2.29	2.23	**	Y
	2012		2.19	2.11	2.29	**	2.23	2.15	*	Y
	2011		2.22	2.29	2.04	**	2.16	2.13		Y
	2010		2.19	2.17	2.20		2.20	2.15		Y
	Five Year Average		2.21	2.19	2.22		2.22	2.18		
Arrest for DUI 1=Very Unlikely to 5=Very Likely	2014	1-5	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
	Five Year Average		3.62	3.62	3.62		3.63	3.59		
RSH Seat Belt 0=No, 1=Yes	2014	0-1	0.74	0.78	0.70		0.74	0.77	**	Y
	2013		0.83	0.83	0.82		0.80	0.83	**	Y
	2012		0.88	0.89	0.86		0.85	0.90	*	Y
	2011		0.84	0.84	0.84		0.83	0.87		Y
	2010		0.77	0.76	0.77		0.75	0.80		Y
	Five Year Average		0.81	0.82	0.80		0.79	0.83		
RSH Speeding 0=No, 1=Yes	2014	0-1	0.38	0.41	0.34		0.37	0.43	**	Y
	2013		0.39	0.40	0.38		0.36	0.39	**	Y
	2012		0.38	0.39	0.36		0.36	0.39		Y
	2011		0.38	0.39	0.36		0.39	0.36		Y
	2010		0.57	0.57	0.56		0.57	0.56		Y
	Five Year Average		0.42	0.43	0.40		0.41	0.43		
RSH DUI 0=No, 1=Yes	2014	0-1	0.85	0.86	0.84	*	0.85	0.85		Y
	2013		0.90	0.91	0.89		0.88	0.90	**	Y
	2012		0.90	0.90	0.90		0.90	0.90		Y
	2011		0.88	0.88	0.88		0.87	0.90		Y
	2010		0.85	0.86	0.84		0.86	0.83		Y
	Five Year Average		0.88	0.88	0.87		0.87	0.88		
Police Presence 0=No, 1=Yes	2014	0-1	0.41	0.45	0.36		0.40	0.45	*	N
	2013		0.60	0.59	0.61		0.58	0.60		N
	2012		0.66	0.71	0.61	**	0.64	0.69	*	N
	2011		0.66	0.66	0.67		0.65	0.69		N
	2010		0.74	0.74	0.75		0.74	0.74		N
	Five Year Average		0.61	0.63	0.60		0.60	0.63		

*Statistically significant difference at the 5% level

**Statistically significant difference at the 1% level

can be made. For example, self-reported seat belt use is currently at a five-year high with an average rating of 4.61. This means that the average North Dakotan is currently wearing a seat belt “always” or “nearly always” when operating a motor vehicle. Another positive trend is that the perceived likelihood of receiving a ticket for not wearing a seat belt is also at a five-year high. This perception may be leading some residents to wear a safety belt more often when operating a motor vehicle.

A few negative trends also become evident when examining results from the previous five years. For example, the percentage of residents who think that greater police presence increases seat belt use has consistently declined and is currently at a five-year low. Similarly, exposure to safety messages about speeding has remained virtually unchanged in the last four years, and exposure to messages about using a seat belt while driving has declined considerably over the last three years. These negative perceptions reveal that there is still room for improvement in North Dakota.

One ongoing trend is a substantial discrepancy in seat belt use between urban and rural drivers. Urban residents are significantly more likely to wear seat belts when driving compared to their rural counterparts. Note, however, that in 2014 rural residents’ self-reported seat belt use was the highest it has been since this annual survey has been conducted. Although both subcategories are well under the goal of a mean value of 5.00, rural residents are much farther away from this target number. Perhaps more efforts are needed to increase seat belt use among these individuals.

4.2.2 Young Male Driver Target Group

As with the previous four surveys, the selected target group of male drivers between 18 and 34 years of age does show significantly different behaviors, exposure levels, and views when compared to other drivers (Table 4.7). In terms of behavior, high-risk male drivers in this survey are more likely to exhibit behavior at odds with traffic safety goals, such as speeding in a 30 mile per hour zone ($F=6.420$, $df=1$, $p=0.011$), speeding in a 65 mile per hour zone ($F=95.938$, $df=1$, $p<0.001$), texting while driving ($F=354.874$, $df=1$, $p<0.001$), and talking on the phone while driving ($F=180.968$, $df=1$, $p<0.001$).

In addition to exhibiting higher levels of risky behavior than the rest of the driver population, young males are also less likely to engage in safe driving behaviors. The high-risk young male drivers surveyed are substantially less likely to wear safety belts than other drivers ($F=66.989$, $df=1$, $p<0.001$). Only 45.8% of young male drivers “always” wear a seat belt while driving or riding in a vehicle, a number much smaller than the 67.6% of other drivers who “always” do so. The share of young males who report that they “rarely” or “never” use seat belts (5.3%) is more than two times the rate of other drivers (2.2%). Lower reported levels of seat belt usage likely go hand-in-hand with the fact that young male drivers have a lower expectancy for law enforcement to ticket drivers for seat belt violations when compared to the balance of the population ($F=19.508$, $df=1$, $p<0.001$). This implies that these two behaviors from young males are linked: young male drivers do not use seat belts in part because they perceive that there is a low risk of facing consequences from law enforcement for not doing so.

The TSO continues to explore opportunities to increase safe driving behavior overall in this driver group. Young male driver responses to read, seen, or heard education and exposure questions offer some insight. Exposure to traffic safety messages that can be read, seen, or heard vary between the young male drivers and other drivers based on the message at hand. There was no statistically significant difference between young male drivers and others who were exposed to messages about impaired driving (Chi-Sq.=0.038, $df=1$, $p=0.845$). Differences between high-risk young male drivers and all other North Dakota drivers were statistically significant for exposure to four other safety materials that can be read, seen, or heard. These drivers were less likely to have had recent exposure to messages about seat belt enforcement (Chi-Sq.=10.239, $df=1$, $p=0.001$), speeding (Chi-Sq.=18.432, $df=1$, $p<0.001$), the *Code for the Road* safety campaign (Chi-Sq.=10.291, $df=1$, $p=0.001$), and distracted driving (Chi-Sq.=25.973, $df=1$, $p<0.001$).

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

Question	Target Male Drivers		Sig.
	18-34 Year-olds n=407	Other Drivers n=1,264	
Seat Belt Use	4.26	4.65	##
Police Presence Increases SB Use	0.35	0.42	**
Ticket Likely Seat Belt	2.98	3.23	##
Primary Seat Belt Law	2.77	3.53	##
Ticket Likely Speeding	3.47	3.75	##
Speed in 30 MPH Zone	2.43	2.33	#
Speed in 65 MPH Zone	2.59	2.18	##
Higher Fines for Speeding	2.57	3.19	##
Drive After Drinking 1-2 Drinks	1.58	1.28	##
Drive After Drinking 3+ Drinks	1.12	1.05	##
How often Use Sober Driver?	3.33	2.62	##
Chance Arrest for DUI	3.89	3.75	##
Favor/Oppose More DUI Penalties	3.61	4.15	##
RSH Seat Belt	0.69	0.75	**
RSH Speeding	0.29	0.39	**
RSH Drunk Driving	0.86	0.85	
RSH <i>Code for the Road</i>	0.24	0.27	**
RSH Distracted Driving	0.49	0.62	**
Cell Phone Text	2.94	1.93	##
As Passenger, Driver Text	2.15	1.64	##
Cell Phone Talk	3.86	3.05	##
As Passenger, Driver Talk	3.51	2.76	##

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

It is particularly interesting to note the attitudes of young male drivers towards driving under the influence of alcohol. Differences in opinions about the chances of getting arrested for DUI are statistically significant at the 1% level with young male drivers thinking there is a greater likelihood of facing arrest ($F=16.800$, $df=1$, $p<0.001$). Similarly, the mean values of exposure to material that can be read, seen, or heard about impaired driving were higher among young male drivers than all other driver groups, although it was not a statistically significant difference. This suggests that messages regarding driving under the influence of alcohol are successfully reaching this target group and may partially explain why young male drivers believe there is a greater-than-average chance of getting arrested for impaired driving. However, despite the fact that this target group holds these opinions about impaired driving, it is important to understand that – when compared to the rest of the driver population – young male drivers still have a higher propensity to drive within two hours of consuming one or two drinks ($F=71.652$, $df=1$, $p<0.001$), and a higher likelihood of driving within two hours of consuming three or more alcoholic beverages ($F=11.336$, $df=1$, $p=0.001$). This tendency to operate a vehicle after consuming alcohol is even more alarming when one considers that young male drivers reported designating a sober driver more often than all other North Dakotans ($F=52.216$, $df=1$, $p<0.001$). This implies that messages which are reaching young male drivers have mixed effects. Some high-risk male drivers are being positively influenced and are making safe decisions by designating a sober driver. Despite this positive behavior change, this target group still is more likely to drive after drinking, suggesting that further improvements can be made. This in part may explain why young male drivers do not favor more stringent DUI penalties as much as all other drivers ($F=31.298$, $df=1$, $p<0.001$).

Young male drivers have views about driving that are explicitly different than other drivers. For example, the target age group indicated that they do not think that greater police presence increases the use of seat belts among drivers as much as the rest of the population does (Chi-Sq.=20.273, df=2, $p<0.001$). Only 35.1% of high-risk young males agreed that a greater police presence on the roadway directly translates to greater compliance via seat belt use. This is a considerably lower percentage than all other driver groups included in this study. Moreover, this target group is less likely to support having a primary seat belt law in North Dakota than other groups ($F=55.240$, df=1, $p<0.001$) (Figure 4.9). Whereas only 34.8% of high-risk young male drivers support a primary seat belt law in the state based on those who responded they either “somewhat favor” or “strongly favor” such a law, anywhere from 46.5% to 60.0% of all other groups support having such a law in place.

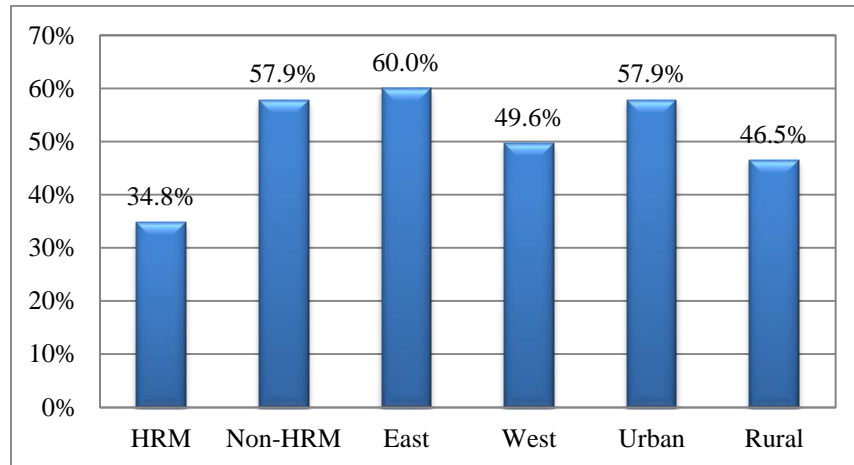


Figure 4.9 Percent that “Strongly” or “Somewhat” Favor A Primary Seat Belt Law

One short-term trend worth noting is the overall support for a primary seat belt law from various driver groups (Figure 4.10). Support for a primary seat belt law increased between 2013 and 2014 for all six driver groups studied. Moreover, the 2014 survey registered the highest percentage of respondents supporting a primary seat belt law ever in the three years in which this question has been included in the questionnaire. Overall support for such a law was at 55.4% of North Dakota drivers. This is the first time that a majority of respondents have supported this law in the three years that it has been included in the annual driver survey.

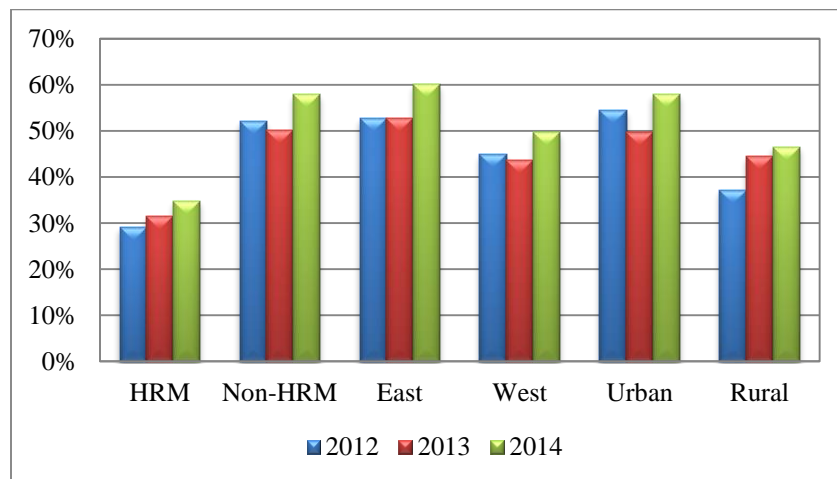


Figure 4.10 Percent of Drivers “Somewhat” or “Strongly” Favoring Primary Seat Belt Law, 2012-2014

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 towards 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=1,661	Always	N. Always	Sometimes	Rarely	Never
	Other	74.9%	18.2%	4.7%	1.8% **	0.4% **
	HRM	50.1%	32.0%	12.5%	4.2% **	1.2% **
Police Presence	n=1,294	Yes	No			
	Other	41.8%	58.2%			
	HRM	35.1%	64.9%			
Seat Belt Ticket	n=1,657	V. Likely	Sw. Likely	Likely	Unlikely	V. Unlikely
	Other	17.1%	25.3%	26.6%	25.6%	5.4%
	HRM	11.9%	21.1%	27.7%	31.7%	7.6%
Primary Seat Belt Law	n=1,665	S. Favor	Sw. Favor	Neutral	Sw. Oppose	S. Oppose
	Other	35.6%	22.3%	15.4%	13.1%	13.5%
	HRM	19.2%	15.6%	20.7%	12.4%	32.1%
Chance Speed Ticket	n=1,662	V. Likely	Sw. Likely	Likely	Unlikely	V. Unlikely
	Other	25.1%	34.5%	31.8%	7.5%	1.0% **
	HRM	14.2%	32.1%	40.4%	12.6%	0.7% **
Speed in 30 mph	n=1,660	Always	N. Always	Sometimes	Rarely	Never
	Other	0.4% **	5.3%	33.4%	48.6%	12.3%
	HRM	2.8% **	6.0% **	35.3%	43.6%	12.3%
Speed in 65 mph	n=1,668	Always	N. Always	Sometimes	Rarely	Never
	Other	0.6% **	5.9%	25.8%	46.5%	21.2%
	HRM	4.8% **	12.4%	31.1%	40.9%	10.8%
Speed Fines	n=1,662	S. Favor	Sw. Favor	Neutral	Sw. Oppose	S. Oppose
	Other	15.7%	24.2%	33.2%	17.3%	9.7%
	HRM	9.3%	14.0%	29.7%	18.7%	28.2%
Chance DUI Arrest	n=1,661	V. Likely	Sw. Likely	Likely	Unlikely	V. Unlikely
	Other	28.8%	31.9%	26.4%	11.1%	1.8% **
	HRM	36.9%	28.7%	22.0%	11.5%	0.9% **
Drive 1-2 Drinks	n=1,638	None	1-5 Times	6-10 Times	10+ Times	
	Other	73.9%	25.0%	0.8% **	0.4% **	
	HRM	50.2%	43.2%	5.4% **	1.2% **	
Drive 3+ Drinks	n=1,547	None	1-5 Times	6-10 Times	10+ Times	
	Other	95.3%	4.3%	0.2% **	0.2% **	
	HRM	88.5%	11.0%	0.3% **	0.2% **	
DUI Penalties	n=1,663	S. Favor	Sw. Favor	Neutral	Sw. Oppose	S. Oppose
	Other	53.0%	20.3%	18.6%	4.9%	3.3%
	HRM	33.0%	22.8%	25.5%	8.9%	9.7%
Cell Phone Text	n=1,670	Daily	Few/Week	Few/Month	<1/Month	Never
	Other	3.5% **	9.6%	14.9%	19.9%	52.1%
	HRM	12.9%	21.4%	29.2%	19.7%	16.9%
Cell Phone Talk	n=1,661	Daily	Few/Week	Few/Month	<1/Month	Never
	Other	18.0%	22.4%	26.4%	12.6%	20.6%
	HRM	34.1%	31.4%	25.2%	4.9% **	4.3% **
Note: Please see Appendix A for exact question and response wording						
**Estimate uncertain due to limited sample size						

4.2.3 Young Female Driver Group

Another driver group with noticeable differences in behavior and attitudes is that of 18-34-year-old female 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 towards safe driving habits and exposure to messages promoting safe driving lag behind other driver groups (Table 4.9). When this female driver group was compared to all other drivers, there were statistically significant differences for almost all variables studied in this project. The results from the “other driver” group were likely skewed from the extreme viewpoints held by high-risk male drivers. As such, the young female driver group was compared only to non-high-risk male other drivers.

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

Question	Target Female Drivers 18-34 Year-olds n=134	Non-HRM Other Drivers n=1,130	Sig.
Seat Belt Use	4.67	4.65	
Police Presence Increases SB Use	0.31	0.47	*
Ticket Likely Seat Belt	3.19	3.25	
Primary Seat Belt Law	3.68	3.47	##
Ticket Likely Speeding	3.82	3.72	
Speed in 30 MPH Zone	2.49	2.25	#
Speed in 65 MPH Zone	2.51	2.03	##
Higher Fines for Speeding	2.89	3.33	#
Drive After Drinking 1-2 Drinks	1.36	1.23	
Drive After Drinking 3+ Drinks	1.04	1.06	
How often Use Sober Driver?	3.39	2.23	##
Chance Arrest for DUI	3.95	3.65	##
Favor/Oppose More DUI Penalties	4.33	4.07	##
RSH Seat Belt	0.65	0.80	**
RSH Speeding	0.27	0.45	**
RSH Drunk Driving	0.83	0.86	
RSH <i>Code for the Road</i>	0.14	0.33	**
RSH Distracted Driving	0.52	0.66	**
Cell Phone Text	2.70	1.57	##
As Passenger, Driver Text	1.90	1.52	##
Cell Phone Talk	3.78	2.71	##
As Passenger, Driver Talk	3.38	2.47	##
*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 the 5% level for 1-way ANOVA			
##Significant difference at the 1% level for 1-way ANOVA			

The 18-34 year-old female cohort is more likely to engage in dangerous driving behaviors. This target group has a higher likelihood of speeding on a 30 mile per hour road ($F=5.018$, $df=1$, $p=0.025$), speeding on a 65 mile per hour road ($F=34.938$, $df=1$, $p<0.001$), texting while driving ($F=152.905$, $df=1$, $p<0.001$), and talking on the phone while driving ($F=62.757$, $df=1$, $p<0.001$).

Like their high-risk male counterparts, 18-34 year-old females also have a lower likelihood of being exposed to safety messages. This target female group was less likely to have had recent exposure to messages about seat belt enforcement (Chi-Sq.=15.449, $df=1$, $p<0.001$), speeding (Chi-Sq.=15.151, $df=1$, $p<0.001$), the *Code for the Road* safety campaign (Chi-Sq.=19.889, $df=1$, $p<0.001$), and distracted driving (Chi-Sq.=7.891, $df=1$, $p=0.005$).

Interestingly, high-risk females were more likely to support a primary seat belt law ($F=8.321$, $df=1$, $p=0.004$) and were more likely to favor stricter DUI penalties ($F=15.290$, $df=1$, $p<0.001$). This is a deviation from their male counterparts. However, like high-risk young males, the 18-34 year-old female target group was also less likely to support higher fines for speeding ($F=4.541$, $df=1$, $p=0.033$). This may stem from their higher propensity to speed.

With regard to impaired driving, there was one unique difference among young female drivers and all others. Just like high-risk male drivers, 18-34-year-old females thought that the chances of being arrested for driving under the influence of alcohol were more likely than did other North Dakotans ($F=11.212$, $df=1$, $p=0.001$). High-risk females held this viewpoint despite the fact that they were not statistically more likely to drive after consuming alcohol. They also held this viewpoint in spite of designating a sober driver more often than other drivers ($F=29.330$, $df=1$, $p<0.001$). This reaffirms that messages about the dangers of operating a vehicle while impaired are reaching this key demographic.

5. CONCLUSIONS

The initial statewide driver traffic safety survey provides baseline metrics for the TSO and others in understanding perceptions and behaviors related to focus issues. A core set of questions was selected to address nationally agreed upon priorities, including seat belts, drinking and 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 based upon examination of trends that have taken place over the last five years of administering this survey. First, there is a clear 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 substantially less likely to use safety belts than their urban counterparts. Improvement in this area must be made to reduce rates of fatalities and serious injuries during crash events among rural North Dakotans. Second, there is a bifurcation among exposure rates to safety messages contingent upon whether one is a high-risk 18-34 year-old driver. Younger drivers have less exposure to key safety campaigns and traffic messages than all other driver groups. It may be beneficial to make the 18-34 year-old target group more aware of traffic safety tools via focused safety campaigns and optimized advertisement placement. More resources must be allocated to this group to change their perceptions and, ultimately, their behaviors on the roadway.

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 more robust by having a higher percentage of 35-44 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 able to be extrapolated to represent the entire North Dakota driver population.

6. REFERENCES

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APPENDIX A. SURVEY INSTRUMENT



2014 North Dakota Driver Survey

**All Responses
Are Confidential**

1. How often do you use seat belts when you drive or ride in a vehicle?
☐ Always ☐ Nearly Always ☐ Sometimes ☐ Rarely ☐ Never
2. Does greater police presence increase seat belt use?
☐ Yes ☐ No ☐ Do Not Know
3. What do you think the chance is of getting a ticket if you do not wear your seat belt?
☐ Very Likely ☐ Somewhat Likely ☐ Likely ☐ Unlikely ☐ Very Unlikely
4. Do you favor or oppose a primary seat belt law where law enforcement can stop a vehicle and issue a citation simply for failure to wear a seat belt?
☐ Strongly Favor ☐ Somewhat Favor ☐ Do Not Favor or Oppose ☐ Somewhat Oppose ☐ Strongly Oppose
5. What do you think the chance is of getting a ticket if you drive over the speed limit?
☐ Very Likely ☐ Somewhat Likely ☐ Likely ☐ Unlikely ☐ Very Unlikely
6. On a local road with a speed limit of 30 mph, how often do you drive faster than 35 mph?
☐ Always ☐ Nearly Always ☐ Sometimes ☐ Rarely ☐ Never
7. On a road with a speed limit of 65 mph, how often do you drive faster than 70 mph?
☐ Always ☐ Nearly Always ☐ Sometimes ☐ Rarely ☐ Never
8. Do you favor or oppose higher fees/fines for speeding violations?
☐ Strongly Favor ☐ Somewhat Favor ☐ Do Not Favor or Oppose ☐ Somewhat Oppose ☐ Strongly Oppose
9. What do you think the chances are of someone getting arrested if they drive after drinking alcohol?
☐ Very Likely ☐ Somewhat Likely ☐ Likely ☐ Unlikely ☐ Very Unlikely
10. In the past 60 days, how many times have you driven a motor vehicle within 2 hours after drinking
 1 – 2 Alcoholic Drinks? ☐ 0000 ☐ 1 – 5 times ☐ 6 – 10 times ☐ more than 10 times
 3 or More Alcoholic Drinks? ☐ 0000 ☐ 1 – 5 times ☐ 6 – 10 times ☐ more than 10 times
 > If drinking or planning to drink, how often do you designate a sober driver?
☐ Do not drink ☐ Never ☐ Rarely ☐ Sometimes ☐ Nearly Always ☐ Always
11. Do you favor or oppose more stringent DUI penalties?
☐ Strongly Favor ☐ Somewhat Favor ☐ Do Not Favor or Oppose ☐ Somewhat Oppose ☐ Strongly Oppose
12. How often do you read/send text messages on a cell phone while driving a vehicle?
☐ Daily ☐ Few Times per Week ☐ Few Times per Month ☐ Less than Once per Month ☐ Never
13. When riding as a passenger, how comfortable are you if the driver is reading/sending text messages while driving?
☐ Very Comfortable ☐ Somewhat Comfortable ☐ Comfortable ☐ Somewhat Uncomfortable ☐ Very Uncomfortable
14. How often do you talk on your cell phone while driving a vehicle? (all phone types including hands-free)
☐ Daily ☐ Few Times per Week ☐ Few Times per Month ☐ Less than Once per Month ☐ Never
15. When riding as a passenger, how comfortable are you if the driver is talking on a cell phone while driving?
☐ Very Comfortable ☐ Somewhat Comfortable ☐ Comfortable ☐ Somewhat Uncomfortable ☐ Very Uncomfortable
16. Have you recently read, seen, or heard traffic safety messages relating to:

Seat Belt Law Enforcement	Yes	No	If yes, where?	TV	Radio	Print	Social Media	Other _____
Speed Enforcement	Yes	No	If yes, where?	TV	Radio	Print	Social Media	Other _____
Drunk Driving Enforcement	Yes	No	If yes, where?	TV	Radio	Print	Social Media	Other _____
Code for the Road. Follow the Rules. Follow the Law.	Yes	No	If yes, where?	TV	Radio	Print	Social Media	Other _____
Distracted Driving Enforcement	Yes	No	If yes, where?	TV	Radio	Print	Social Media	Other _____
17. Your age: ☐ 18 – 24 ☐ 25 – 34 ☐ 35 – 44 ☐ 45 – 54 ☐ 55 – 64 ☐ 65 – 74 ☐ 75 or Older
18. Type of Vehicle You Most Often Drive: (select one)
☐ Car ☐ Pickup ☐ SUV ☐ Van ☐ Motorcycle ☐ Semi/Large Truck ☐ Other
19. Approximate Miles Driven Last Year: _____
20. Your Gender: ☐ Male ☐ Female
21. Your Zip Code: _____
22. How long have you been a resident of the state of North Dakota?
☐ Less than 1 year ☐ 1 – 3 years ☐ More than 3 years

Thank you for your time and participation.

APPENDIX B. DO NOT KNOW/REFUSE TO ANSWER RESPONSES

Q#	Question	Total Responses	Missing Responses	DNK Responses
Seat Belt				
Q1	Seat Belt Use	1,661	10	370
Q2	Police Presence Increases SB	1,294	7	
Q3	Chance Ticket Seat Belt	1,657	14	
Q4	Primary Seat Belt Law	1,665	6	
Speeding				
Q5	Chance Ticket Speeding	1,662	9	
Q6	Speed, 30 MPH Zone	1,660	11	
Q7	Speed, 65 MPH Zone	1,668	3	
Q8	Higher Speeding Fines	1,662	9	
Alcohol				
Q9	Chance Arrest Drinking	1,661	10	
Q10a	Drive After 1-2 Drinks	1,638	33	
Q10b	Drive After 3+ Drinks	1,547	124	
Q10c	Designate Sober Driver	1,598	73	
Q11	More Stringent DUI Penalties	1,663	8	
Knowledge				
Q14	Percent Fatal Crash DUI	1,962	26	
Q15	Annual DUI Arrests	1,909	79	
Distracted Driving				
Q12	Cell Phone Text	1670	1	
Q13	As Passenger, Driver Text	1,663	8	
Q14	Cell Phone Talk	1,663	8	
Q15	As Passenger, Driver Talk	1,661	10	
Awareness/Exposure				
Q16a	RSH Seat Belt	1,647	24	
Q16b	RSH Speeding	1,612	59	
Q16c	RSH Drunk Driving	1,647	24	
Q16d	RSH <i>Code for the Road</i>	1,580	91	
Q16e	RSH Distracted Driving	1,594	77	
Total n=1,671				

APPENDIX C. 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	18.5%	14.0%	24.1%	23.7%	27.8%	32.2%
Sw. Likely	23.5%	26.6%	33.0%	35.8%	31.6%	31.6%
Likely	27.8%	25.5%	33.7%	31.6%	26.6%	25.0%
Unlikely	25.7%	27.0%	8.3%	7.8%	12.3%	9.5%
V. Unlikely	4.5%	7.0%	0.9%**	1.1%**	1.7%**	1.7%**
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	16.5%	16.4%	23.0%	27.3%	30.0%	28.8%
Sw. Likely	24.0%	28.0%	34.8%	32.4%	32.3%	29.0%
Likely	27.2%	25.3%	33.1%	31.4%	25.7%	26.8%
Unlikely	26.7%	24.7%	8.1%	8.2%	10.5%	13.4%
V. Unlikely	5.6%	5.6%	1.1%**	0.8%**	1.6%**	2.1%**
Times driving after drinking 1-2 drinks in the past 60 days...			None	1-5 Times	6-10 Times	10+ Times
East			75.8%	22.6%	1.3%**	0.3%**
West			65.6%	32.5%	1.2%**	0.7%**
Urban			69.4%	29.0%	1.1%**	0.5%**
Rural			78.1%	20.0%	1.7%**	0.2%**
Times driving after drinking 3+ drinks in the past 60 days...			None	1-5 Times	6-10 Times	10+ Times
East			96.4%	3.2%	0.1%**	0.3%**
West			92.1%	7.4%	0.3%**	0.2%**
Urban			94.9%	4.6%	0.2%**	0.2%**
Rural			92.9%	6.7%	0.2%**	0.2%**
Seat Belt Use	Always		N. Always	Sometimes	Rarely	Never
East	74.2%		17.6%	5.7%	2.3%**	0.2%**
West	69.7%		22.3%	5.3%	1.8%**	0.8%**
Urban	77.2%		15.4%	5.0%	2.0%**	0.4%**
Rural	54.1%		35.3%	7.5%	2.4%**	0.7%**
Text messaging while driving	Daily		Few/Week	Few/Month	<1/Month	Never
East	4.0%		10.3%	14.4%	16.7%	54.6%
West	5.3%		11.5%	19.1%	24.0%	40.1%
Urban	4.2%		10.1%	15.3%	21.2%	49.2%
Rural	5.7%		13.6%	20.8%	14.9%	44.9%
Talking on cell phone while driving	Daily		Few/Week	Few/Month	<1/Month	Never
East	15.1%		23.3%	25.4%	12.3%	23.8%
West	25.8%		23.5%	27.4%	11.0%	12.3%
Urban	19.3%		23.3%	26.1%	10.6%	20.6%
Rural	21.4%		23.7%	27.0%	15.9%	12.1%

**Less than 30 responses in this group

APPENDIX D. EXPOSURE TO MEDIA MESSAGES

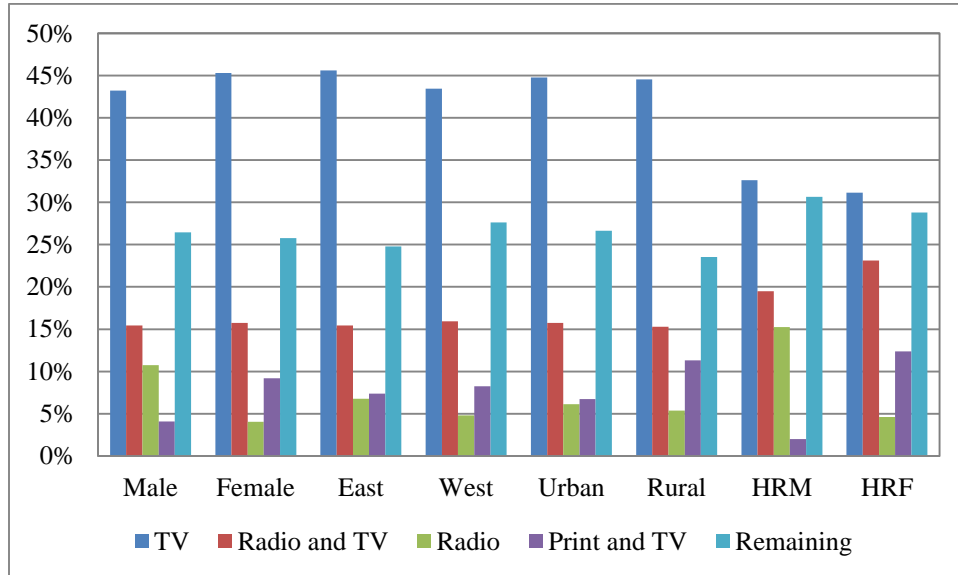


Figure D.1 Exposure to Messages about Seat Belt Use

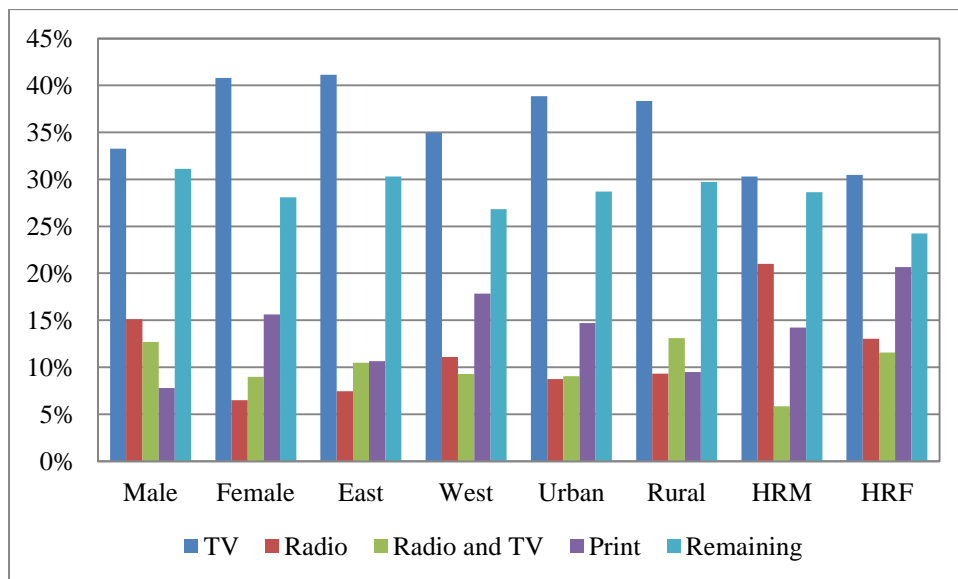


Figure D.2 Exposure to Messages about Speeding

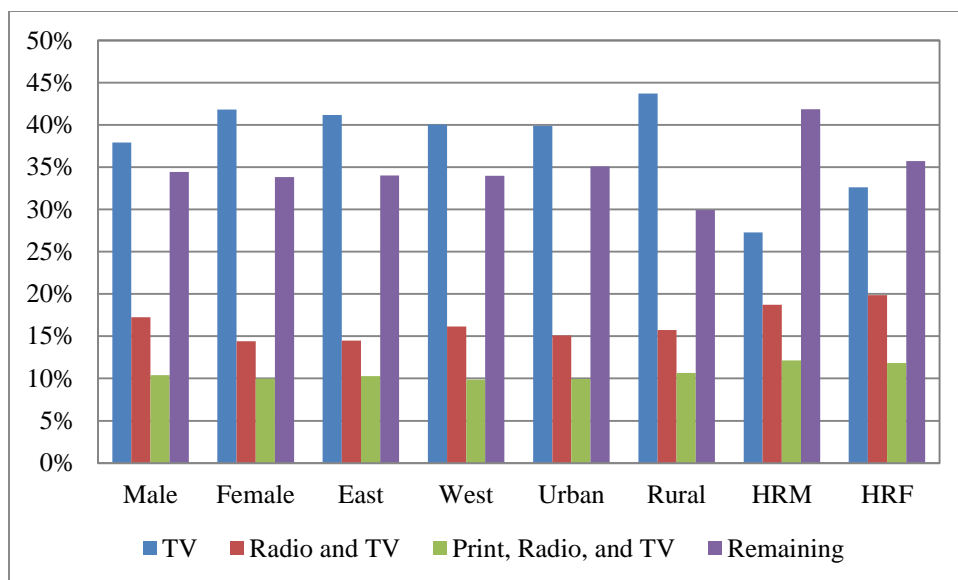


Figure D.3 Exposure to Messages about Impaired Driving

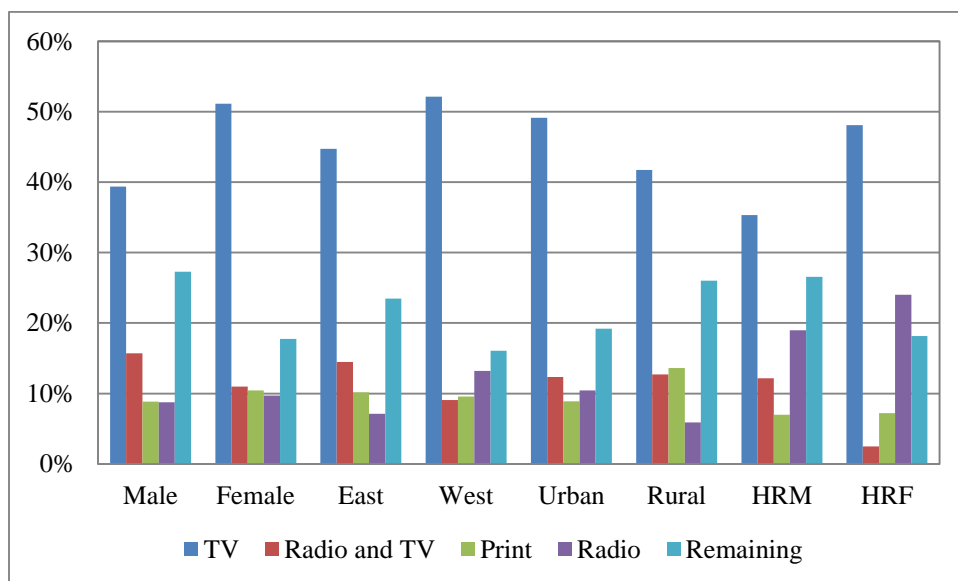


Figure D.4 Exposure to Messages about *Code for the Road*

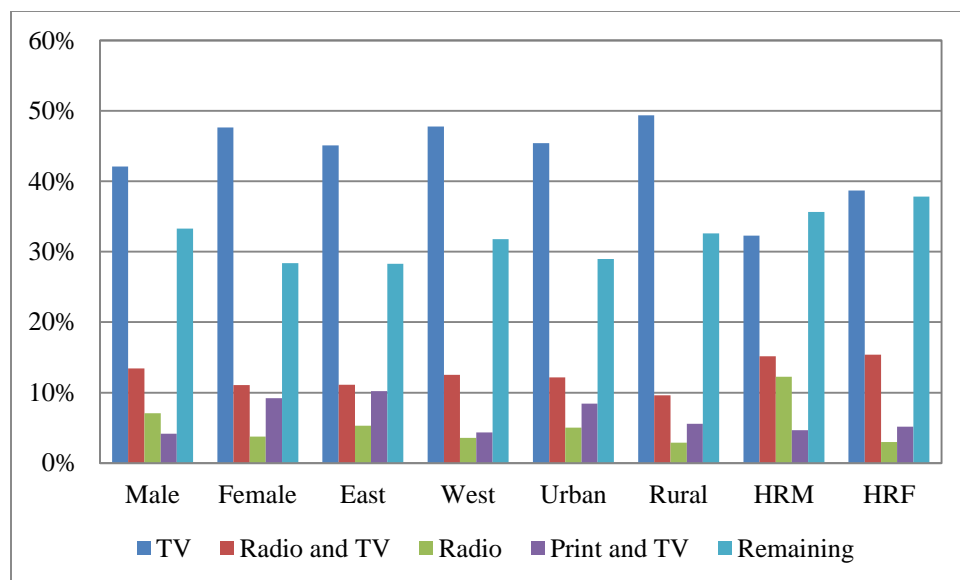


Figure D.5 Exposure to Messages about Distracted Driving