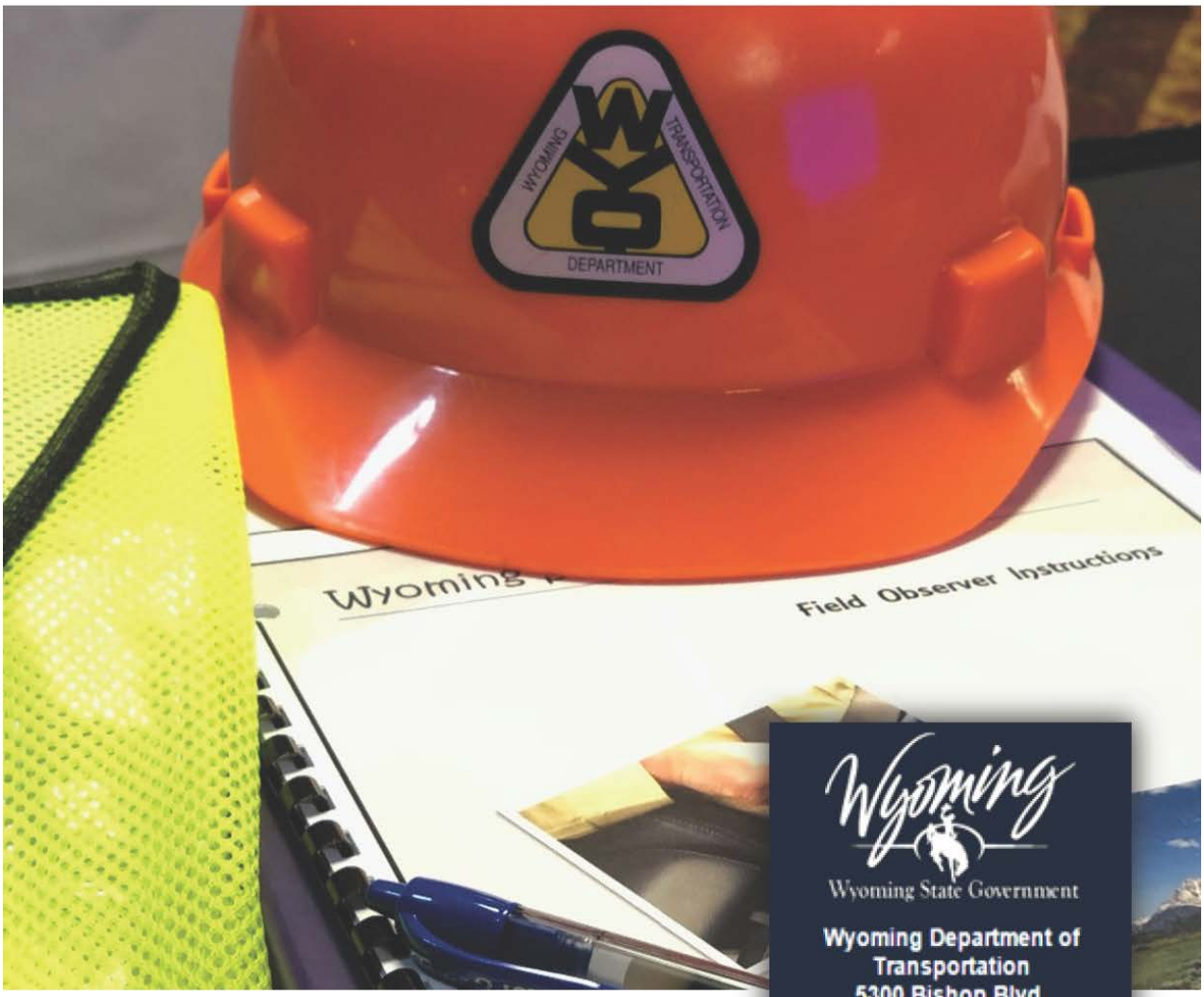
2020 WYOMING STATEWIDE SEATBELT SURVEY DATA ANALYSIS

WYOMING



Wyoming
Wyoming State Government
Wyoming Department of Transportation
5300 Bishop Blvd.
Cheyenne, WY 82009
307-777-4375

2020 WYOMING SEATBELT SURVEY

The protocols implemented for this study were per the 2012 federal guidelines. The standards and protocols align with the Uniform Criteria for State Observational Surveys of Seatbelt Use, 23 CFR Part 1340. The 2020 survey analysis is the eighth survey conducted under the 2012 guidelines for seatbelt use in the state of Wyoming.

Acknowledgments

DLN Consulting, Inc. expresses appreciation to several individuals who were essential to the completion of this project.

- Deb Nelson served as the project administrator.
- Lydia DeJesus assisted with project coordination and administration; observer training, coding, data entry, quality assurance procedures; and developed spreadsheets, charts, and graphs.
- Bridget White & Vicky Peterson coordinated and secured the acquisition of contractors to conduct the survey observations.
- Bridget White and Vicky Peterson conducted field monitoring.

Without the dedicated people who conducted the field observations, we could not complete this survey:

Monty Byers, Lori Cole, Sandee Conrad, Danny Conrad, Nikole Craig, Jaclyn Davison,

Peggy Dowers, Dixie Elder, Sklyer Elder, Deb Eutsler, Kurt Evezich, Wes Gasner,

Meredith Peak, Esther Perea, Doug Peterson, Vicky Peterson, Walter Tampellini,

Anna Thompson, Hannah Walls, Patrick White, and Bridget White.

Finally, special thanks to the staff of the Wyoming Highway Safety Program and Engineering Services for their support and help during the project period.

Deb Nelson, DLN President
Project Administrator

Keith Fernsler, PhD
Project Analyst

James G. Leibert, PhD
Project Statistician

Table of Contents

Table of Figures

Executive Summary

The Wyoming 2020 survey was moved from early June to August 24 through August 30, when observers collected the data for use in the compilation of the narrative and appendices in this report. The survey followed The Uniform Criteria for State Observational Surveys of Seatbelt Use, 23 CFR § 1340. The baseline survey done in 2017 identified the counties and sites sampled for survey observations.

The narrative begins with the estimates of seatbelt use for all vehicle occupants, then for the drivers and outboard front-seat passengers. Next is a review of occupant seatbelt use by county, population density, in-state and out-of-state registration, and a few other variables. Next, there is an analysis of seatbelt use within categories of gender and vehicle type, followed by a comparison of driver and passenger seatbelt use. At the end of the narrative, two trends are reviewed, one for sample sizes and one for estimates of belt use over the years of Wyoming surveys. Finally, there are concluding remarks on the results of the 2020 survey relative to previous surveys, especially the 2019 survey.

Throughout the narrative, the reported seatbelt use percentages are estimates derived from weighting the raw data. The estimates' calculation follows an approved statistical procedure that applies weights dependent on sampling probabilities assigned to each site where observations are collected. The weighting process ensures that the statistical results are reliably representative of real seatbelt use in Wyoming.

Here are some of the results for this year's survey.

- The observers covered 289 sites within 17 counties, collecting data on 22,137 vehicle occupants.
- The 2020 estimate is a seatbelt use rate for all vehicle occupants of 82.5 percent belted. The rate represents an increase of 4.2 percent when compared to the 2019 rate of 78.3 percent belted.
- The seatbelt use rate for drivers is 81.0 percent. The rate for outboard front-seat passengers is 88.7 percent. These rates are based on 16,637 drivers and 5,500 passengers.
- Thirteen of the 17 counties in the survey had seatbelt use rates above the state rate of 82.5 percent. Four counties have occupant belt use rates below the state rate. The county rates for drivers and passengers are also presented.
- Belt use results by population density show higher rates for vehicle occupants in rural sites than vehicle occupants in urban sites.
- The occupant rate in vehicles registered in Wyoming is 80.5 percent belted and 91.1 percent in out-of-state vehicles. Occupants in Wyoming vehicles are 57.5 percent of the total sample.
- The highest seatbelt use rate by roadway type is 91.7 percent on primary roadways. The lowest rate is on the combined category of local, rural, and city paved roads.
- Seatbelt use is higher on weekends than on weekdays, but weekdays account for most total observations.
- The belt use rate for females is 89.0 percent, and the male rate is 78.3 percent. Males account for three-fifths of the observations.

- Most vehicle occupants are in vans and pickup trucks, but the highest seatbelt use rate is for occupants in SUVs. Rates of seatbelt use increased for every vehicle type over the rates in the 2019 survey in Wyoming.
- Women have higher rates of seatbelt use in every vehicle type except SUVs. Male use rates increased over rates in 2019 for every type of vehicle.
- Passengers have higher seatbelt use rates than drivers within every category of every variable with very few or no exceptions.
- The sample size of 22,137 observations is 1,047 observations lower than the average of 23,184 of all the surveys from 2012-2020. However, the total is not exceptionally different from most of the previous surveys.
- The Wyoming 2020 rate of seatbelt use (82.5%) is 4.2 percentage points higher than the rate in 2019 and the third-highest rate of the past nine surveys. In 2019, rates of seatbelt use declined for vehicle occupants across most categories of every variable. The 2020 rate patterns are consistently higher than those in 2019.

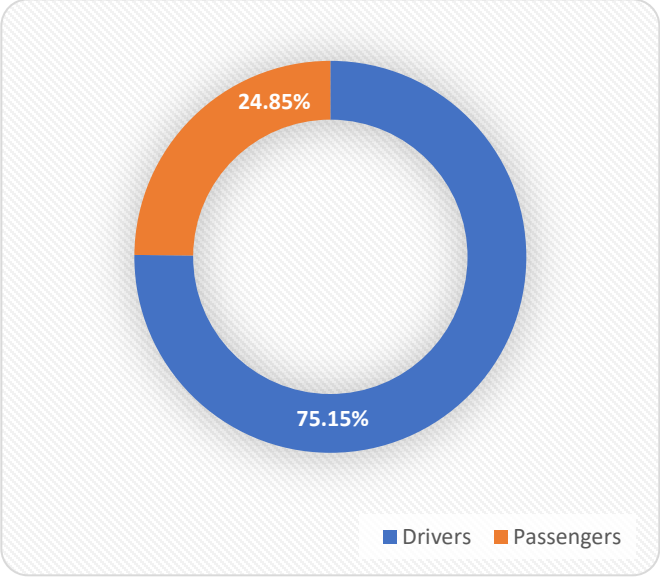
Introduction to the Survey

The year 2020 has been unusual. By March, the scope of the Covid19 disruption, now known as a pandemic, became apparent. As a result, DLN Consulting, Inc. submitted a plan to the Wyoming Department of Transportation, requesting a delay in the seatbelt survey from June to August 2020. DLN sought time to adjust observer recruitment and training so that everyone would be safe. DLN added observational procedures to minimize any possible spread of the Covid-19 virus. By completing the observations before Labor Day, DLN sought to secure observational data that was reasonably similar to what might have been collected if the survey had proceeded as initially scheduled. The Wyoming Department of Transportation approved the plan, and this report is the result.[1]

From Monday, August 24 to Sunday, August 30, 2020, seventeen trained observers collected seatbelt use observations within seventeen sites in each of seventeen counties, a total of 289 shifts over seven days, or about 42 sites covered each day.[2]

The observers collected data on 16,637 drivers and 5,500 outboard front-seat passengers, together identified in this report as "vehicle occupants." In other words, 75.2 percent of the vehicles had only drivers, while 24.8% also housed front-seat outboard passengers. The accompanying table shows this composition of the overall sample of vehicle occupants.

Figure 1: Percent of Frequencies by Vehicle Occupant



[1] A copy of the plan is included in the appendix to this narrative.
[2] In addition to the seventeen observers, there were alternate observers available if needed, and there were trained observers whose task was to insure quality control. Also, the observers had access to DLN office personnel for assistance as needed.

Each observer was assigned to a specific county. The following table lists the counties, the observers, and the frequencies of seatbelt use (belted, not belted, unsure) for each combination of county and observers.[3] Observers collected seatbelt use data on an average of 1,302 vehicle occupants. The largest number of observations occurred in Teton County (2,237), and the fewest were collected in Laramie County (500).

Table 1: Frequencies of Occupant Belt Use by County and Observer, Wyoming 2020

		Occupant Belt Use			
County	Observer	Belted	Not Belted	Unsure	Total
Albany	Monty Byers	1,649	184	0	1,833
Big Horn	Dixie Elder	674	80	0	754
Campbell	Wes Gasner	1,296	380	0	1,676
Carbon	Danny Conrad	1,191	103	3	1,297
Converse	Hannah Walls	1,005	214	6	1,225
Crook	Skylar Elder	1,185	92	1	1,278
Fremont	Jaclyn Davison	1,265	251	2	1,518
Johnson	Deb Eutsler	897	146	0	1,043
Laramie	Kurt Evezich	452	47	1	500
Lincoln	Esther Perea	979	143	3	1,125
Natrona	Meredith Peak	570	130	0	700
Niobrara	Lori Cole	694	36	2	732
Park	Patrick White	1,375	267	2	1,644
Platte	Doug Peterson	956	167	0	1,123
Sheridan	Sandee Conrad	1,261	260	4	1,525
Sweetwater	Nikole Craig	1,492	435	0	1,927
Teton	Peggy Dowers	2,097	138	2	2,237
	Total	19,038	3,073	26	22,137
				Average	1,302

[3] These numbers are the raw data. As such, they are not adjusted for the probability of selection for the site in which the observations were collected. To serve as estimates of seatbelt use, the data in each site is weighted by the appropriate probability. In this survey, that weighting process uses the complex samples plan in SPSS to mathematically apply probabilities and convert the raw data into an accurate estimate of seatbelt use.

Observer Training, Quality Control, and Data Preparation

DLN continues to rely on iPads to record the observations of seatbelt use. The iPads are loaded with software tools to facilitate recording and reporting the data for compiling outcomes. Every observer, alternate, and quality control staff members received training on the data collection process's components using audio, visual, and "hands-on" instruction. On the first day of training, each participant practiced using the program in the classroom. Next, the observers engaged in a mock data collection activity. On the second day, observers completed four data collection sessions. Three of those sessions were used to calculate individual inter-accuracy ratios used to determine readiness for collecting observations in the field for this survey.

Another part of the training required observers to take written tests of each observer's knowledge of observation rules and procedures. A minimum passing score of 80 percent was required for all observers, alternates, and quality control supervisors.

Once in the field, quality control monitors conducted random spot checks on the observations' reliability for different observers. In addition to the training for all observers, the monitors received training in separate half-day sessions, including a detailed review of the specific directions given to the monitors. During the session, sites were randomly selected for reliability spot checks where monitoring would take place.

During the survey, DLN staff were available to help observers with any questions or issues. Possible issues included situations where conditions required changes to alternate sites or other adjustments to ensure the observations' quality.

Once observers completed an electronic record of observations for each site, they transferred the data electronically to the DLN staff assigned to the task of compiling the data. DLN staff took steps to ensure the data was accurate and included correct codes, working with observers to resolve any issues before proceeding.

Once the data was cleaned of any errors, it was moved to Excel files and reviewed for any anomalies. The files were then loaded into SPSS (*The Statistical Package for the Social Sciences*), where variable and value labels were assigned along with other preparations for analysis. Separate Excel and SPSS files were created for drivers, passengers, and all occupants to simplify data analysis. At this point, variables needed in the analysis were created through computation or recoding. The first part of the analysis included further cleaning the data to correct any incorrect codes and creating the weighting mechanism for generating estimates that take account of sampling probabilities.

At every step described here, from observer training to data analysis, DLN followed standard protocols to guarantee the reliability and accuracy of the data used to compile this report.

Estimates of Seatbelt Use

The estimates of seatbelt use from the Wyoming seatbelt survey in 2020 were calculated using the "Complex Samples" weighting function in SPSS. This procedure uses the sampling methods and probabilities to weigh the raw data, thereby producing statistically reliable estimates of seatbelt use.

Three different estimates are presented here. The first is for all vehicle occupants. The next two estimates are for the two categories of vehicle occupants, the drivers and the passengers.

The following table presents the weighted estimates for the vehicle occupants, including the calculations for the standard error and the confidence intervals.

Table 2: Estimate of Occupant Seatbelt Use, Wyoming 2020

Belt Use	Estimate	Standard	95% Confidence Interval		Unweighted
		Error	Lower	Upper	Count
Belted	82.5%	0.4%	81.7%	83.2%	19,038
Not Belted	17.5%	0.4%	16.8%	18.2%	3,073
Unsure	0.0%	0.0%	0.0%	0.0%	26
Total	100.0%				22,137

The table shows that observers collected seatbelt use observations on 22,137 vehicle occupants. The weighted estimate is that 82.5 percent were wearing seatbelts, and 17.5 percent were not belted. Observers were “unsure” about seatbelt use for 26 vehicle occupants, a number that is too small to register as a percentage in the weighted data. The standard error for all occupants is 0.4 percent, significantly below the survey's allowable standard error. The 95 percent confidence intervals' calculations produced a low estimate of 81.7 percent and a high estimate of 83.2 percent.

The next table presents the estimates for the drivers.

Table 3: Estimate of Driver Seatbelt Use, Wyoming 2020

Belt Use	Estimate	Standard	95% Confidence Interval		Unweighted
		Error	Lower	Upper	Count
Belted	81.0%	0.4%	80.1%	81.8%	14,012
Not Belted	19.0%	0.4%	18.2%	19.9%	2,614
Unsure	0.0%	0.0%	0.0%	0.0%	11
Total	100.0%				16,637

Driver seatbelt use is 81.0 percent belted and 19.9 percent not belted with a standard error of 0.4 percent. The 95 percent confidence intervals for drivers are a lower estimate of 80.1 percent and an upper estimate of 81.8 percent. Although observers were unsure about belt use for 11 drivers, the number is too small to register in the estimates.

The next table summarizes the estimates of seatbelt use for passengers.

Table 4: Estimate of Passenger Seatbelt Use, Wyoming 2020

Belt Use	Estimate	Standard	95% Confidence Interval		Unweighted
		Error	Lower	Upper	Count
Belted	88.7%	0.7%	87.3%	89.9%	5,026
Not Belted	11.3%	0.7%	10.0%	12.7%	459
Unsure	0.1%	0.0%	0.0%	0.1%	15
Total	100.1%				5,500

The seatbelt use rate is 88.7 percent belted for passengers and 11.3 percent not belted. Because of the smaller number of passengers (5,500), the standard error is 0.7 percent, well within the survey's acceptable standard. The estimated 95 percent confidence intervals are a lower level of 87.3 percent and a higher limit of 89.9 percent.

The next table summarizes the vehicle occupants' percentage estimates and the separate estimates for drivers and passengers.

Table 5: Estimates of Seatbelt Use for Drivers, Passengers, and All Occupants, Wyoming 2020

	Drivers	Passengers	All Occupants
Percent Belted	81.0%	88.7%	82.5%
Unweighted Total	16,637	5,500	22,137
% of Sample	75.2%	24.8%	100.0%

The next table presents the frequencies, or unweighted counts of drivers, passengers, and the combined category of all vehicle occupants. The frequencies are presented for informational purposes, but they can produce spurious inferences inconsistent with the actual estimates because they are not weighted.

Table 6: Frequencies by Type of Vehicle Occupant, Wyoming 2020

	Unweighted Count	Percent
Drivers	16,637	75.2%
Passengers	5,500	24.8%
All Occupants	22,137	100.0%

Drivers represent 16,637 or 75.2 percent of the 22,137 vehicle occupants, while passengers are 5,500 or 24.8 percent of the vehicle occupants. While it is uncertain how these numbers affect the estimates, the seatbelt rate for drivers (81.0%) likely has the most significant impact on the overall rate. Similarly, passenger seatbelt use (88.7%) tends to raise the overall rate, but the smaller number of passengers likely reduces passengers' impact on the overall occupant rate.

The next table compares estimated seatbelt use for the past three annual surveys in Wyoming. In general, the 2020 year of the Covid 19 pandemic introduces many unique and perhaps unknown effects on traffic patterns. Hence, we will not report many unweighted counts unless the counts provide a relevant and broad context for interpreting the estimates.

Table 7: Comparison of Estimates of Seatbelt Use, 2018-2020 Wyoming

	2018	2019	2020
Drivers	86.9%	76.9%	81.0%
Passengers	84.5%	84.1%	88.7%
All Occupants	86.3%	78.3%	82.5%
Unweighted Count	25,046	24,821	22,137

The 2018 estimates are at 86.3 percent for all vehicle occupants, with similar estimates for drivers (86.9%) and passengers (84.5%). The overall occupant rate dropped to 78.9 percent in 2019, a decline of 8.0 points. For 2020, the vehicle occupants' rate is 82.5, a percentage point increase of 4.2 over the previous year.

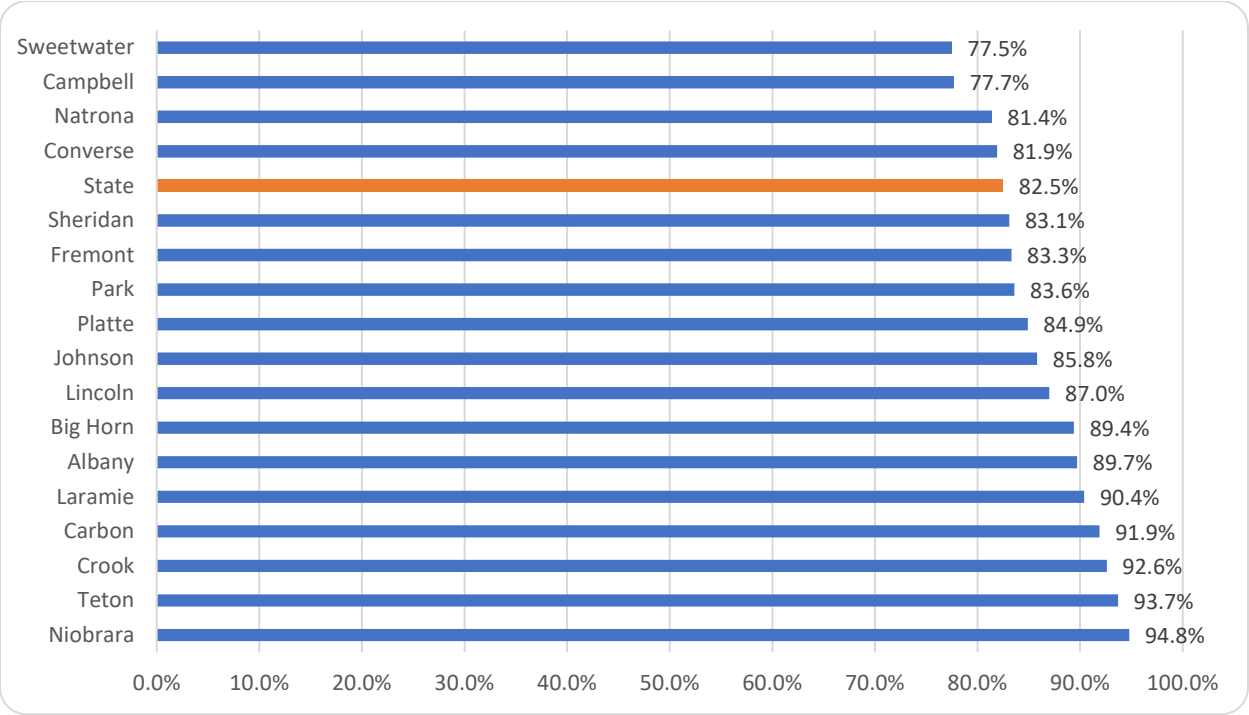
The 2019 survey appears to be the anomaly for these three surveys. The 2019 rate might be due to a combination of an unusually low rate for drivers and a low frequency of passengers, who usually have a higher belt use rate. The 2020 survey may be the most “normal” of the last three years in that predictable patterns emerge. However, the rate is an effect of many drivers, who usually have a lower rate of seatbelt use, and few passengers, who usually have a higher rate of seatbelt use. That rate was unusually high for drivers in 2018, which pushed the overall rate upward. The rates for 2020 are more consistent with the usual patterns of seatbelt use in Wyoming.

In the next section, the focus is on the estimates of seatbelt use within the categories of several variables. These estimates are designed to provide information useful to campaigns that target specific populations. First, there is a review of seatbelt use within the seventeen counties. Then the focus turns to urban and rural patterns, license registration (Wyoming, Out-of-State), roadway type, and days of the week. The remaining focus is on occupant gender, vehicle type, and the rates for combinations of different genders and vehicle types.

Estimates of Seatbelt Use by County

The survey includes sites within seventeen Wyoming counties. The following chart presents the estimates of seatbelt use for total vehicle occupants in each county, ranked from the lowest percent belted to the highest. Figure 2 shows the counties with seatbelt use above and below the statewide average of 82.5 percent belted.

Figure 2: Percent of Estimated Occupant Belt Use by County, Wyoming 2020

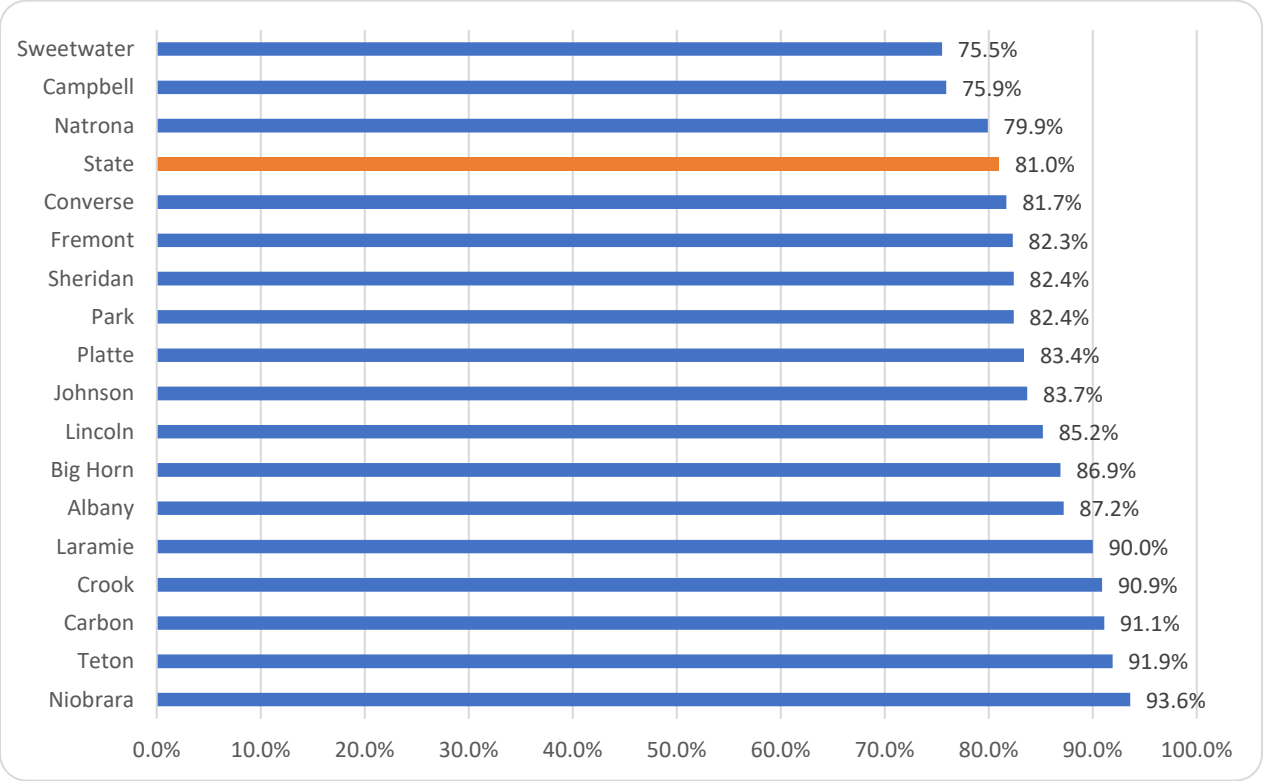


Occupant belt use is above the state average of 82.5 percent for 13 of the 17 counties. Niobrara County has the highest rate of 94.8 percent belted. Teton County is next at 93.7 percent belted, followed by Crook (92.6%), Carbon (91.9%), and Laramie County (90.4%). The remaining counties in the top tier of seatbelt use range from 89.7 percent belted (Albany) down to 83.1 percent in Sheridan County.

There are four counties with occupant belt use rates below the state rate of 82.5 percent for all vehicle occupants: Converse at 81.9 percent belted, Natrona at 81.4 percent, Campbell at 77.7 percent, and Sweetwater at 77.5 percent belted.

The state rate for drivers is 81.0 percent belted. The following chart presents the seatbelt use for each county, ranked from lowest to highest seatbelt use rate.

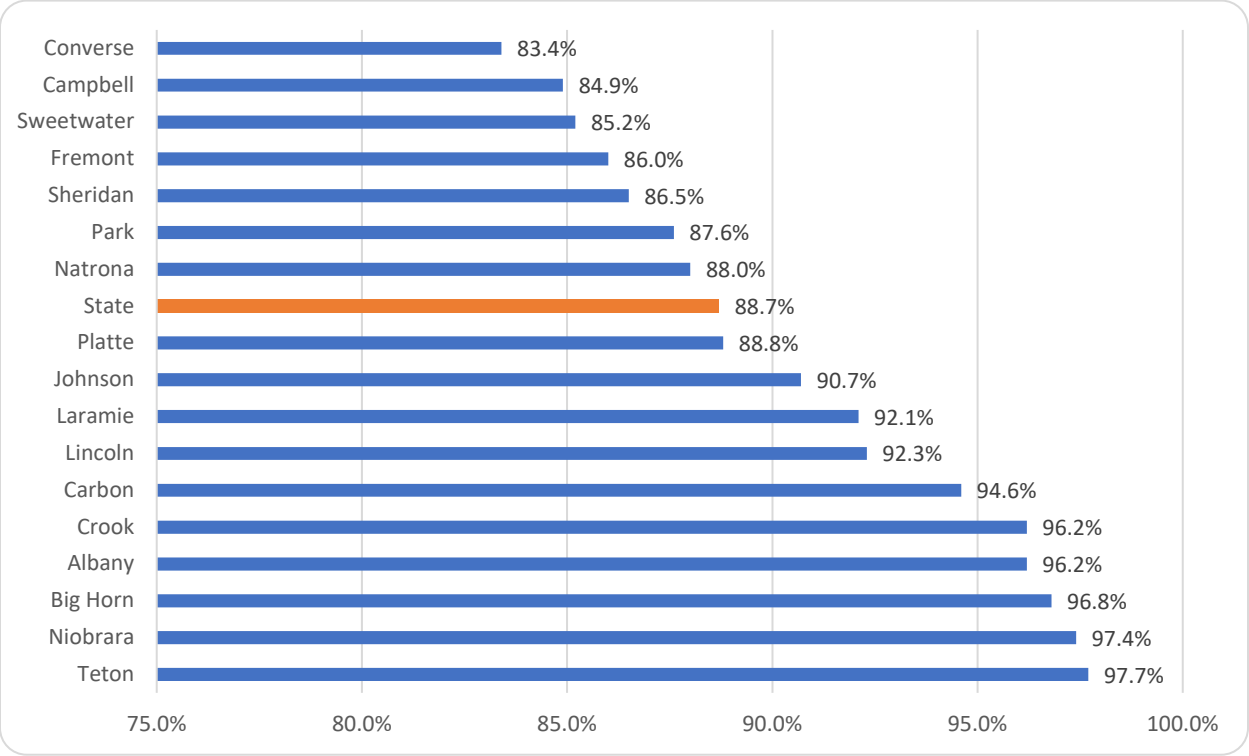
Figure 3: Percent of Estimated Driver Belt Use by County, Wyoming 2020



The seatbelt use rate for drivers is above the state rate (81.7%) for fourteen of the seventeen counties. The highest rate is in Niobrara, 93.6 percent belted. Nine or more of every ten drivers are belted in five counties: Niobrara (93.6%), Teton (91.9%), Carbon (91.1%), Crook (90.9%), and Laramie (90.0%). The three counties with a seatbelt use rate below the state rate for drivers (81.0%) are Natrona (79.9%), Campbell (75.9%), and Sweetwater (75.5%). These are the same counties with the lowest rate for all vehicle occupants.

Figure 4 presents the seatbelt rates by county for the 5,500 passengers in the survey. The counties are ranked from the highest to lowest seatbelt use rates.

Figure 4: Percent of Estimated Passenger Belt Use by County, Wyoming 2020



In general, there is less variance in seatbelt rates for passengers. As a result, the counties tend to bunch together with ten counties above the state rate for passengers (88.7%) and seven counties below the state rate. More than 95 percent of the passengers are belted in Teton (97.7%), Niobrara (97.4%), Big Horn (96.8%), Albany (96.2%), and Crook (96.2%). The three counties with the lowest passenger seatbelt use are Sweetwater, Campbell, and Converse Counties.

The following table presents the occupant belt use rates for 2019 and 2020 in Wyoming.

Table 8: Occupant Estimated Belt Use by County, Wyoming 2019-2020

County	2019	2020	Change
Niobrara	97.8%	94.8%	-3.0%
Teton	91.6%	93.7%	2.1%
Crook	92.9%	92.6%	-0.3%
Carbon	67.6%	91.9%	24.3%
Laramie	74.9%	90.4%	15.5%
Albany	87.9%	89.7%	1.8%
Big Horn	86.4%	89.4%	3.0%
Lincoln	88.7%	87.0%	-1.7%
Johnson	87.8%	85.8%	-2.0%
Platte	85.3%	84.9%	-0.4%
Park	72.3%	83.6%	11.3%
Fremont	83.5%	83.3%	-0.2%
Sheridan	79.8%	83.1%	3.3%
Converse	73.1%	81.9%	8.8%
Natrona	78.4%	81.4%	3.0%
Campbell	67.5%	77.7%	10.2%
Sweetwater	63.5%	77.5%	14.0%
Total	78.3%	82.5%	4.2%

Campbell and Sweetwater counties have the lowest seatbelt use rates for the last two Wyoming surveys. Both have higher rates in 2020, but Campbell and Sweetwater still had rates lower than eight of ten vehicle occupants in 2020.

The same counties tend to have the highest seatbelt use rates in both 2019 and 2020. Niobrara, Teton, and Crook Counties have consistently high rates comparable to rates found in states with primary seatbelt use laws.

The next section of this report focuses on the relationship between seatbelt use and variables that were highlighted in prior reports. Some of the variables are demographic – population density and gender – while others are structural: vehicle registration (Wyoming versus out-of-state), type of roadway, weekdays and weekends, and vehicle type. The relationship between gender and vehicle type is also explored.

Occupant Belt Use for Selected Variables

Survey observations are organized into variables and categories within variables. For example, some sites are pre-coded for population density (urban and rural) and the type of roadway (primary, secondary, and a catch-all category "other"). Each of these, and other characteristics, connect to each observation, so that belt use is associated with each variable's different categories. Also, observers note each vehicle occupant's gender, the type of vehicle, whether the vehicle is registered in Wyoming or out-of-state, and the day of the week when the observation occurs. This section focuses on the associations between the categories of these variables and seatbelt use.

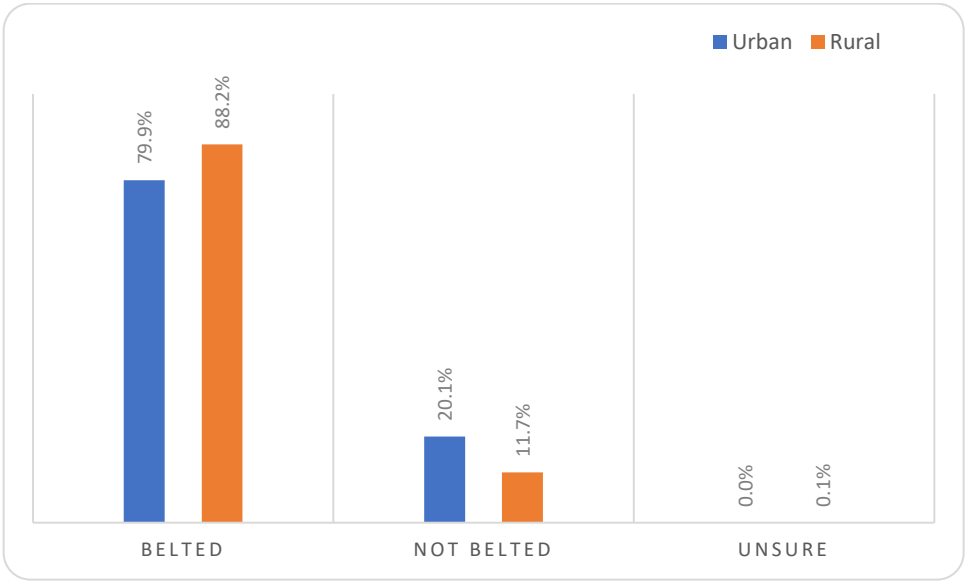
Population Density

In Wyoming, sites in areas with more than 5,000 residents are defined as "urban," while sites with fewer than 5,000 residents are designated as "rural." For the baseline survey developed in 2017, DLN staff consulted maps and U. S. Census data to determine the appropriate code for each site in the sample of sites within counties. Sites found within a city of 5,000 or more are urban sites, while sites located in smaller cities or outside cities with fewer than 5,000 residents are rural.

For the 2020 Wyoming Survey of vehicle occupants, 5,589 observations (25.2%) were collected in urban sites, and 16,548 (74.8%) were collected in rural areas, reflecting the rural character of much of Wyoming.[4]

The following chart presents the rates for vehicle occupants in urban and rural areas.

Figure 5: Estimates of Seatbelt Use by Population Density, Wyoming 2020



[4] "Urban" and "rural" have a different meaning in Wyoming compared to more populous states. Wyoming has fewer than six hundred thousand residents (549,914 in 2020) spread over almost ninety-seven thousand square miles, or less than six people per square mile. Niobrary County has a population of less than one person per square mile. Two of the larger cities, Cheyenne and Casper, have about sixty thousand residents each. Laramie has a little more than thirty-two thousand residents. Given this context, the notion of population density is very different than in more populated and smaller, geographically, states.

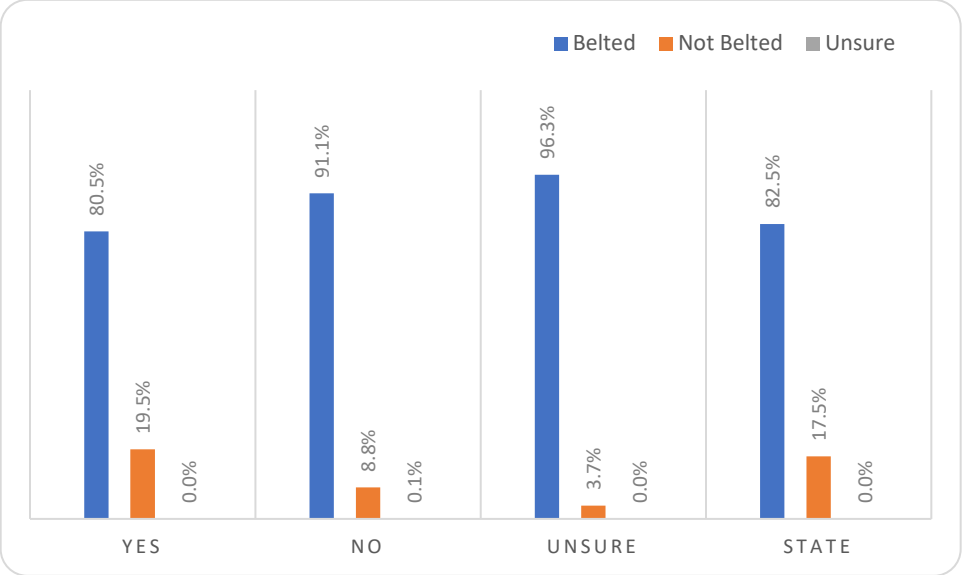
For Wyoming 2020, 88.2 percent of vehicle occupants in rural areas were belted, which is 8.3 points higher than the rate of 79.9 percent in urban areas. Higher rates of seatbelt use are consistently found in rural areas in Wyoming surveys. The 2020 result is consistent with prior survey results.

Vehicle Registration

Observers record whether occupants are in vehicles with Wyoming or out-of-state license plates. A third category, "unsure," is used when observers are unable to identify the registration. For this survey, 12,747 (57.5%) of the occupants were in Wyoming vehicles, and 9,099 (41.1%) were in out-of-state vehicles. Observers were unsure about vehicle registration for 291 vehicle occupants (1.3%).

As in past surveys of Wyoming seatbelt use, occupants in out-of-state vehicles are more likely to be wearing seatbelts than their Wyoming counterparts. The rates for 2020 are presented in Figure 6.

Figure 6: Estimates of Seatbelt Use by Wyoming License, Wyoming 2020



Occupants in out-of-state vehicles are belted at a rate of 91.1 percent, 10.6 percent higher than the rate of 80.5 percent for occupants of Wyoming vehicles. Both rates are higher than they were in 2019: 82.4 percent for out-of-state vehicle occupants and 77.3 percent for Wyoming occupants.

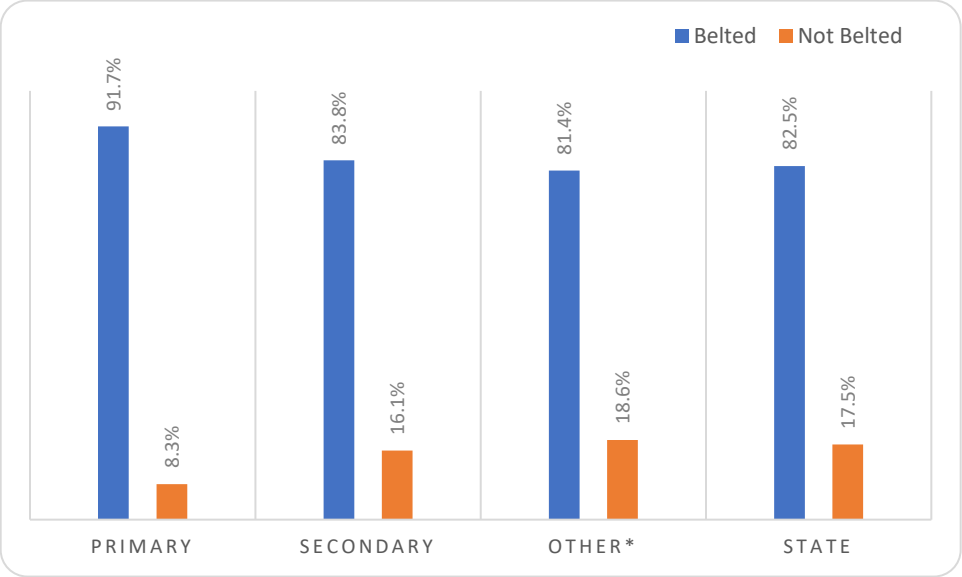
Roadway Type

When the baseline survey was developed in 2017, NHTSA described the type of roadway associated with each observational site. The codes are as follows:

- S1100 roads are federally or state-maintained primary roads and include the interstate highways and some other four-lane highways. In the 2020 survey, 6,765 observations (30.6%) were collected on primary roadways.
- S1200 roads are secondary, which means they are state or federally maintained and are typically two-lane highways. For 2020, 14,421 observations (65.1%) were collected on primary roadways.
- S1400 roads are a mixture of local, rural, and city roadways. All are paved roads, but some are two-lane, and some are four-lane. The fewest observations in 2020 come from this category: 951 observations, or 4.3 percent.

The following table illustrates seatbelt use by roadway type for 2020.

Figure 7: Estimates of Seatbelt Use by Roadway Type, Wyoming 2020



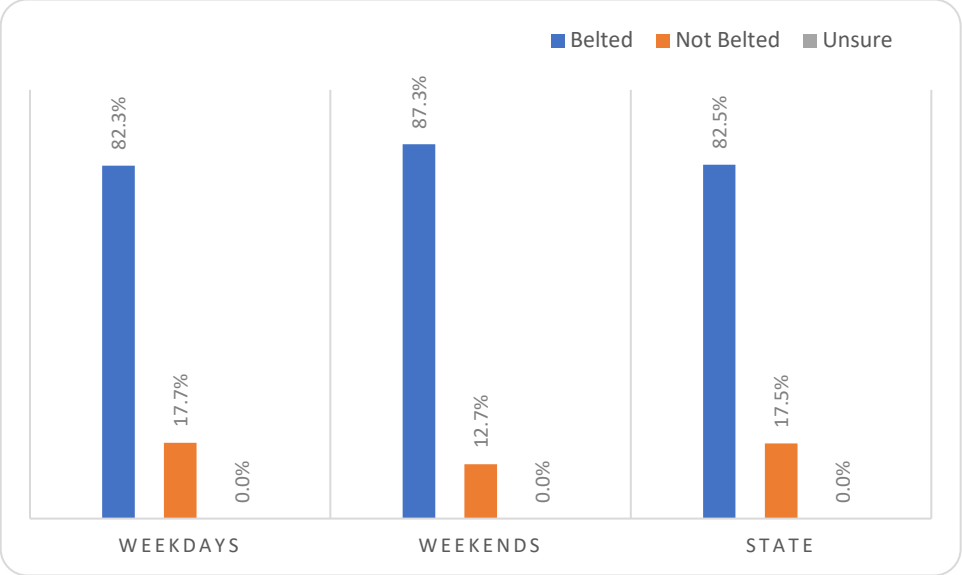
The highest rate is for occupants observed on primary roads, 91.7 percent. The rate is 9.2 percentage points higher than the statewide rate of 82.5 percent. The occupants' rate on secondary roads is 83.8 percent, and 81.4 percent of occupants were belted on “other” roadway types. The rates on all roadway types are higher than in 2019, but the pattern is slightly different: highest on primary (80.5 percent in 2019) and nearly the same on secondary (77.3%) and “other” roadways (78.3%) in 2019.

Weekdays and Weekends

During the data collection process, observers code observations by the day of the week. For this report, the observations are collapsed into a dichotomy, weekdays, and weekends. Weekends are Saturday and Sunday, and weekdays are Monday through Friday. For 2020, 18,222 observations (82.3%) were collected on weekdays, and 3,915 (17.7%) were collected on weekends.

Figure 8 illustrates the occupant seatbelt use for weekdays and weekends.

Figure 8: Estimates of Occupant Seatbelt Use by Weekdays and Weekends, Wyoming 2020



The rate during weekdays was 82.3 percent belted, slightly below the state rate (82.5%). The rate increased on weekends to 87.3 percent, 4.8 percent higher than the state rate, and 5.0 percent higher than the rate on weekdays. Both rates are higher than in 2019 but follow the same pattern: 83.6 percent on weekends and 76.7 percent on weekdays in 2019.

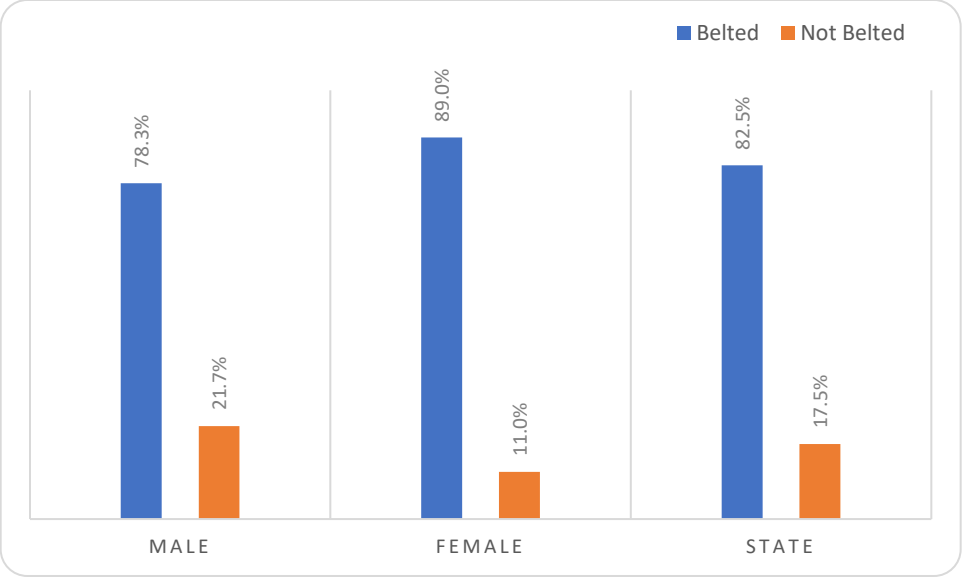
Occupant Gender and Vehicle Type

Occupant gender, vehicle type, and the combination of these two variables produced consistent results in Wyoming Surveys. Women typically had higher seatbelt use rates, occupants of pickup trucks had lower seatbelt use rates, and women had higher seatbelt use rates in pickup trucks. This section of the report examines the patterns for 2020.

Occupant Gender

The following chart illustrates the occupant belt use by gender in this year's survey.

Figure 9: Estimates of Seatbelt Use by Occupant Gender, Wyoming 2020

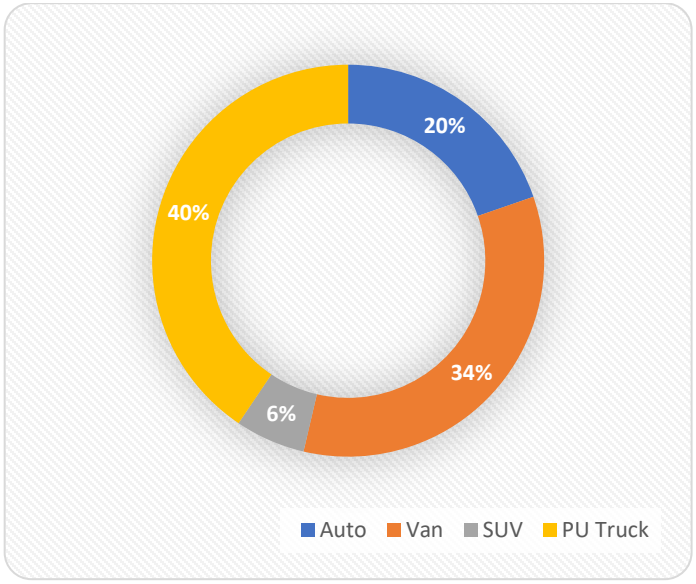


The seatbelt use rate for females is 89.0 percent belted compared to 78.3 percent for males, a difference of 10.7 points. The males have more influence over the statewide rate because males make up 59.8 percent of the vehicle occupants in 2020. In 2019, males were 13.7 percent less likely than females to wear seatbelts -- 85.7 percent belted for females, 72.0 percent belted for males -- and men made up 58.7 percent of the sample. In 2020, there were too few cases categorized by observers as "unsure" about seatbelt use to register in the estimates. In 2019, the comparable percentage was 0.1 percent "unsure."

Vehicle Type

Figure 10 illustrates the frequencies of occupants in each of the four vehicle types.

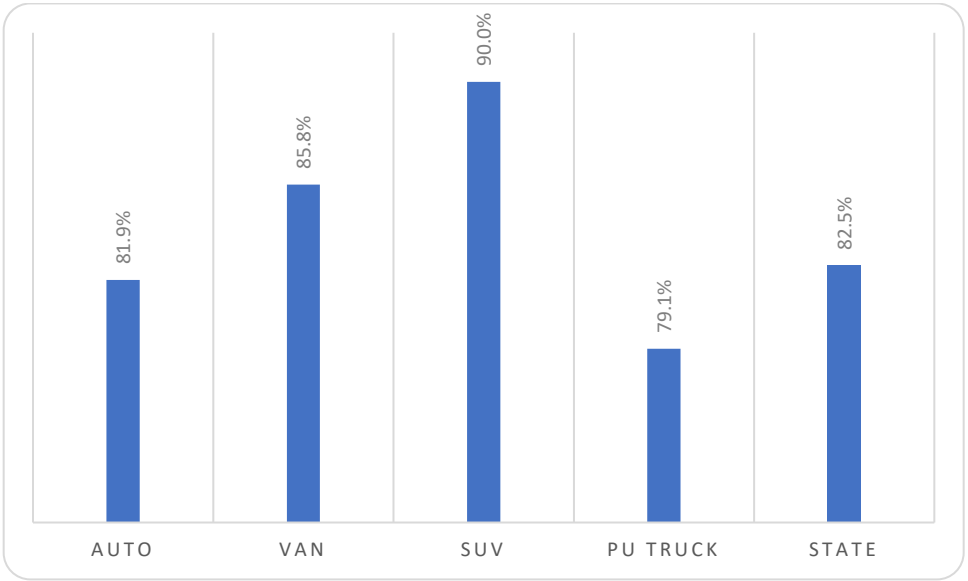
Figure 10: Occupant Frequencies | Percent of Sample by Vehicle Type, Wtoming 2020



Most vehicle occupants were found in vans (33.9%) and pickup trucks (40.6%). Together, almost three-fourths (74.5%) of occupants were found in vans and pickup trucks in the 2020 survey. Automobiles were next with 19.7 percent of the occupants, and 5.8 percent of vehicle occupants were in sport utility vehicles (SUVs).

The next chart presents the seatbelt use rates for vehicle occupants for each vehicle type.

Figure 11: Percent Belted by Vehicle Type, Wyoming 2020

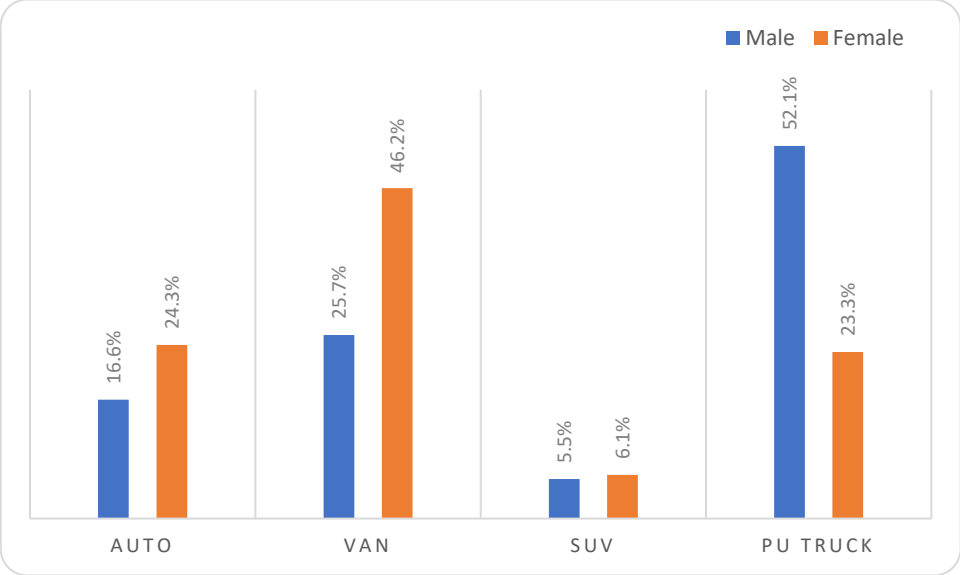


Occupants observed in SUVs have the highest rate of seatbelt use at 90.0 percent belted. Occupants of vans are belted at a rate of 85.8 percent. The occupants in automobiles and pickup trucks have use rates below the state average of 82.5 percent: for occupants in automobiles, the rate is 81.9 percent, and in pickup trucks, the rate is 79.1 percent. In the 2019 survey, the use rate in SUVs was 91.7 percent, and in vans, it was 85.0 percent, very similar results. For the other vehicle types, the rates increased. The occupant seatbelt rate in automobiles increased from 76.4 percent in 2019 to 81.9 percent, an increase of 5.5 percent. The rate in pickup trucks increased from 71.5 percent in 2019 to 79.1 percent in 2020, an increase of 7.6 percent. About three-fifths (60.3%) of vehicle occupants are in automobiles and pickup trucks in the 2020 sample, suggesting that these increases likely helped raise the overall estimate of seatbelt use from 78.3 percent in 2019 to 82.5 percent in 2020.

Occupant Gender and Vehicle Type

Figure 12 presents the percentage of male and female occupants for each vehicle type.

Figure 12: Gender Frequencies | Percent of Sample by Vehicle Type, Wyoming 2020



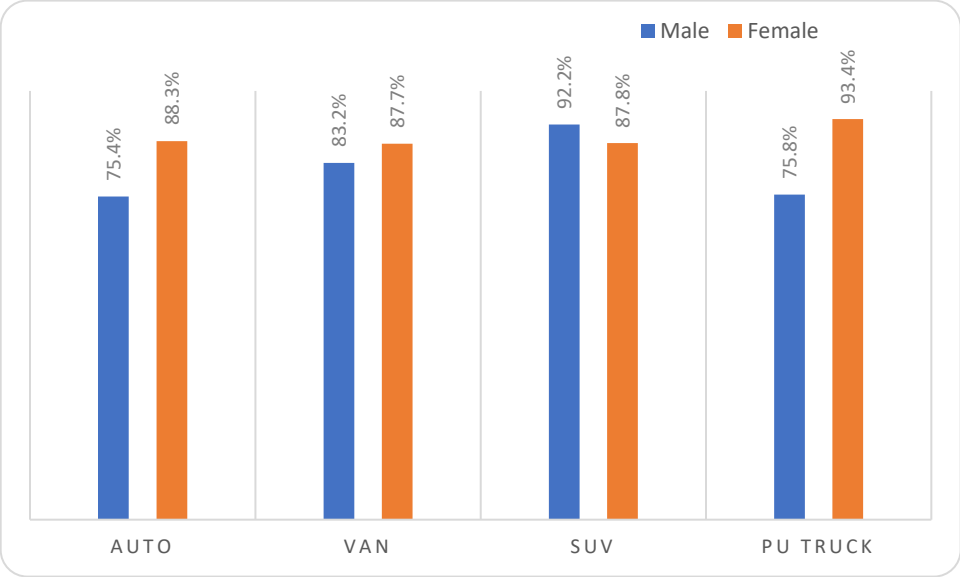
More than half of the men were observed in pickup trucks (52.1%). About a third of men were observed in conceptually similar vans (25.7%) and SUVs (5.5%), a total of 31.2 percent.[5] The fewest number of men are observed in automobiles (16.6%).

Women were most frequently observed in the combined categories of vans (46.2%) and SUVs (6.1%), for a total of 52.3 percent. The other half of the women (47.6%) were observed in automobiles (24.3%) and pickup trucks (24.3%).

[5]There are numerous internet references to the differences between SUVs and vans, with many offering suggestions about which to buy. The main differences involve their intended uses. SUVs are designed for towing, hauling, and (maybe) off-road performance. Vans are built for transporting people and cargo. In my opinion, these lines are blurring as SUVs and crossover types consume increasing market share. While pickup trucks are more distinctly for towing and work uses, increasing cab sizes (four-door pickups) often serve as people movers and commuting vehicles in addition to work uses, perhaps especially so in the Great Plains states.

Whatever the vehicle type, women were more likely to wear seatbelts, with few exceptions. The following chart illustrates this concept.

Figure 13: Percent Belted by Vehicle Type and Gender, Wyoming 2020



Both males and females had similar seatbelt use rates in vans and SUVs. For men, the rate is 83.2 percent in vans and 92.2 percent in SUVs. The rate is 87.7 percent in vans and 87.8 percent in SUVs for women.

The rates for occupants in automobiles and pickup trucks are different for males and females. The rate was 88.3 percent for females and 75.4 percent for males in automobiles, a difference of 12.9 percentage points. For occupants of pickup trucks, the rate was 93.4 percent belted for women and 78.3 percent for men, a difference of 17.6 points.

As in every survey done for Wyoming by DLN Consulting, Inc., the gender differences are significant. However, the seatbelt use rate for males in pickups increased from 68.2 percent belted in 2019 to 78.3 percent in 2020, increasing 10.1 percentage points in belt use. Belt use also increased for male occupants of automobiles from 71.1 percent in 2019 to 75.4 percent in 2020, a change of plus 4.3 points.

Drivers and Passengers

Observers collect data on drivers and front-seat outboard passengers, who, together, make up the vehicle occupants. The data do not include middle front-seat or back-seat occupants observations, so the data necessarily underestimate total vehicle occupants.

The following table illustrates the distribution of drivers and passengers for Wyoming in 2020.

Table 9: Frequencies by Type of Vehicle Occupant

Occupant	Unweighted Count	Percent of Occupants
Drivers	16,637	75.2%
Passengers	5,500	24.8%
All	22,137	100.0%

It is typical of Wyoming surveys that drivers are about three-fourths of the vehicle occupants. In the 2019 survey, drivers were 73.7 percent of the occupants. For 2020, drivers were 75.2 percent of the occupants. Passengers were 26.3 percent of the observations in 2019, and they were 24.8 percent in 2020. The total observations were 24,821 vehicle occupants in 2029, and the total is 22,137 in 2020, a decline of 2,684 vehicle occupants.[6]

The main focus in this section is on how drivers and passengers differ in belt use. First, the belt use of drivers and passengers is presented. Then selected variables are revisited – county differences, population density, Wyoming registration, roadway type, weekdays and weekends, gender, vehicle type, the combination of gender and vehicle type – but vehicle occupants are broken down into the separate categories of drivers and passengers.

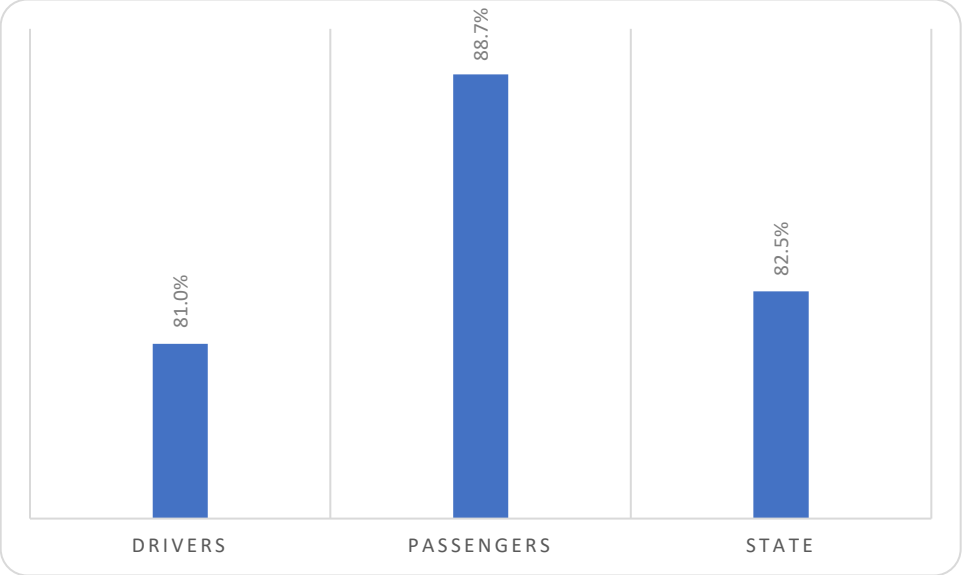
[6] There may be many reasons for this change: the switch from June to August, economic changes in employment and market sectors, the shrinkage in service sectors that usually generate traffic, etc., many of which followed from the pandemic.

Overall Seatbelt Use for Drivers and Passengers

Drivers always outnumber passengers in Wyoming surveys of seatbelt use. For this 2020 survey, 16,637 of the 22,137 vehicle occupants were drivers (75.2%). There were 5,500 passengers or 24.8 percent of the total sample.

Drivers always seem to have lower seatbelt use rates than passengers in Wyoming surveys, which is the case in 2020. Figure 14 illustrates the estimates for drivers and passengers in 2020.

Figure 14: Estimates of Seatbelt Use for Drivers and Passengers, Wyoming 2020



The rate was 81.0 percent for drivers and 88.7 percent for passengers, a difference of 7.7 percent. In 2019, the rate was 76.9 percent for drivers and 84.1 percent for passengers, a difference of 7.2 points. While the differences are similar, both rates were higher in 2020 than in 2019. Drivers increased by 4.1 percent, and passengers increased by 4.6 percentage points. These changes are reflected in the overall rate increase from 78.3 percent in 2019 to 82.5 percent in 2020.

Drivers and Passengers in Counties

The following table presents the estimates of driver and passenger seatbelt use for each of the counties in the sample.

*Table 10: Estimates of Driver and Passenger Belt Use by County**

	Percent Belted		
County	Drivers	Passengers	Difference
Niobrara	93.6%	97.4%	3.8%
Teton	91.9%	97.7%	5.8%
Carbon	91.1%	94.6%	3.5%
Crook	90.9%	96.2%	5.3%
Laramie	90.0%	92.1%	2.1%
Albany	87.2%	96.2%	9.0%
Big Horn	86.9%	96.8%	9.9%
Lincoln	85.2%	92.3%	7.1%
Johnson	83.7%	90.7%	7.0%
Platte	83.4%	88.8%	5.4%
Park	82.4%	87.6%	5.2%
Sheridan	82.4%	86.5%	4.1%
Fremont	82.3%	86.0%	3.7%
Converse	81.7%	83.4%	1.7%
Natrona	79.9%	88.0%	8.1%
Campbell	75.9%	84.9%	9.0%
Sweetwater	75.5%	83.4%	7.9%
Total	81.0%	88.7%	7.7%

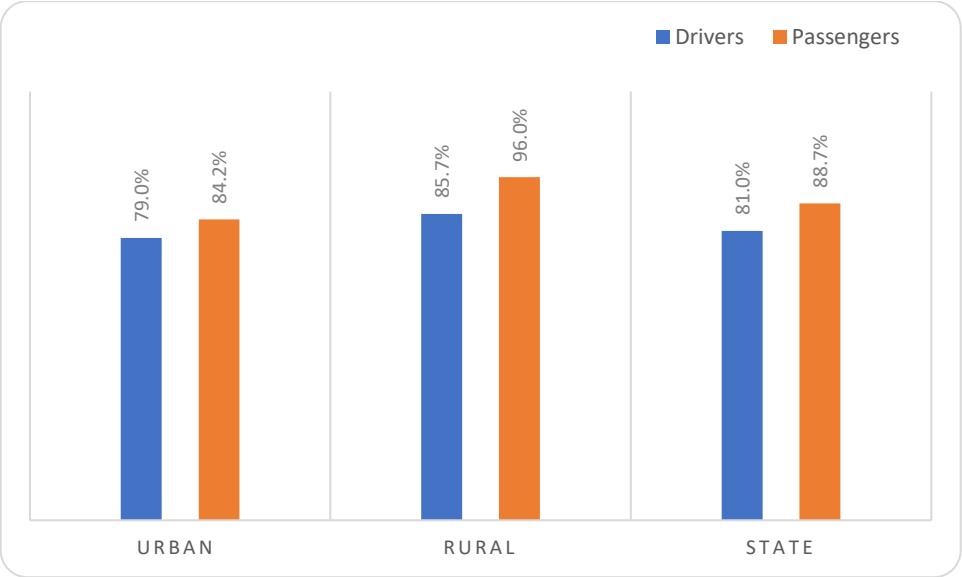
*Ranked in order of percent belted for drivers.

The estimates of passenger seatbelt use for passengers are higher than those for drivers in every county. The counties with the smallest differences were Converse (1.7%) and Laramie (2.1%). The largest differences are found in Big Horn (9.9%), Albany (9.0%), and Campbell (9.0%). The average difference for the total sample is 7.7 points.

Population Density

The following chart provides the estimates of seatbelt use for drivers and passengers by population density.

Figure 15: Estimates of Drivers and Passengers Belted by Population Density, Wyoming 2020

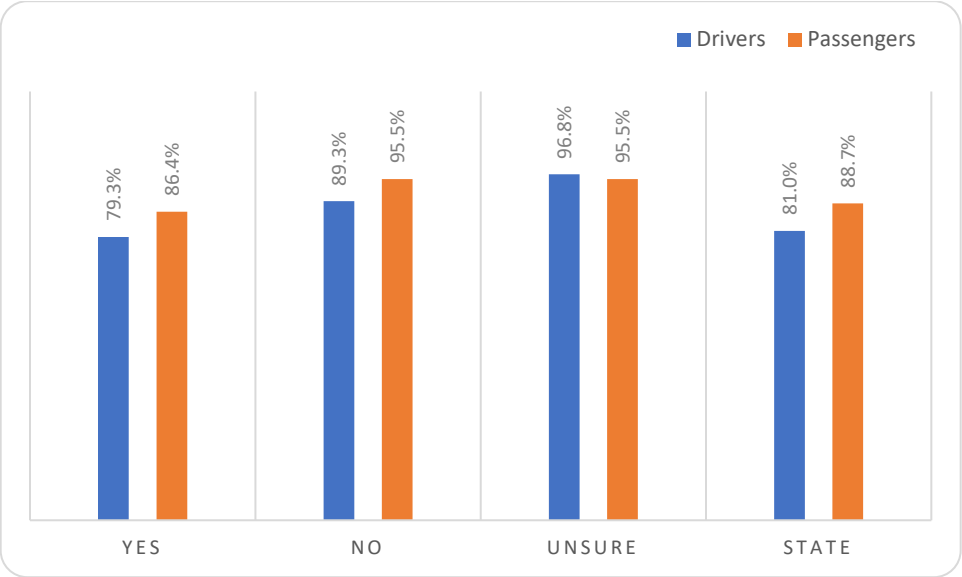


The more significant difference between driver and passenger seatbelt use is found in rural areas where the passenger estimate (96.0%) is 10.3 percentage points higher than the driver estimate (85.7%). The passenger rate in urban areas (84.2%) was 5.2 points higher than the estimate for drivers (79.0%) in urban areas.

Wyoming License Registration

The estimates for drivers and passengers in Wyoming vehicles and out-of-state vehicles are reported in Figure 16.

Figure 16: Estimates of Drivers and Passengers Belted by Wyoming License, Wyoming 2020

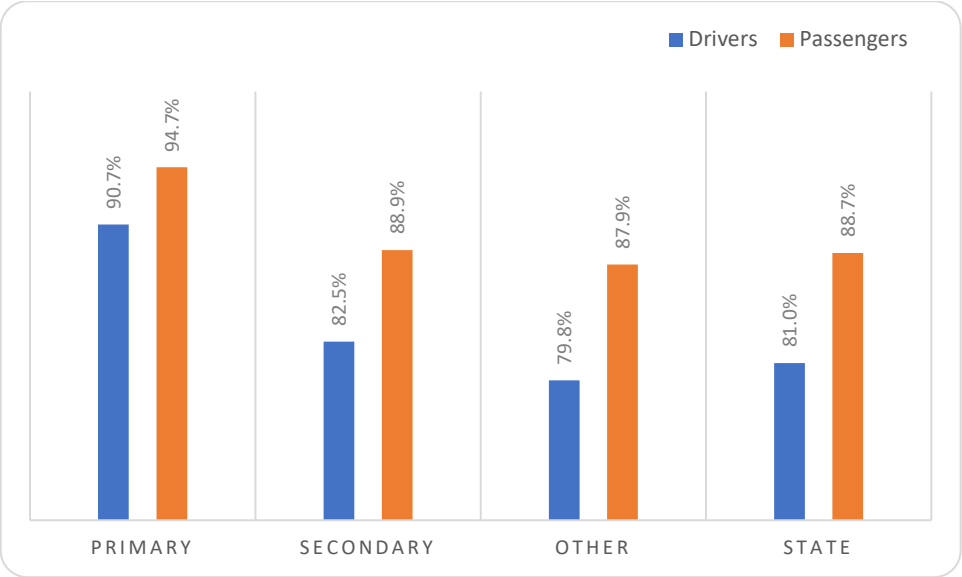


It was previously reported that occupants in Wyoming vehicles had lower seatbelt use rates than occupants in Wyoming vehicles. The differences are similar for drivers and passengers. Wyoming passengers (86.4%) were 7.1 percent more likely to be belted than Wyoming drivers (79.3%). For out-of-state vehicles, passengers (95.5 percent belted) had a seatbelt use rate that is 6.2 points higher than for out-of-state drivers (89.3%). The rates were nearly the same for those vehicles where observers could not determine the state registration ("Unsure").

Roadway Type

Passengers were more likely to be wearing seatbelts in every roadway type.

Figure 17: Estimates of Drivers and Passengers Belted by Roadway Type, Wyoming 2020

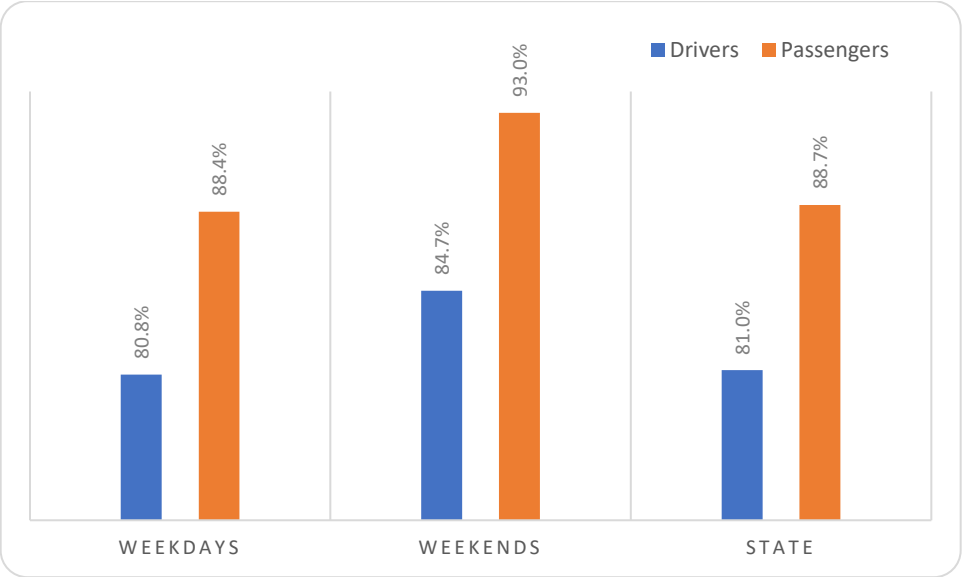


The lowest seatbelt use rates were in those "other" roadways that consisted of local, rural, and city streets that are not primary or secondary roadways. The differences between drivers and passengers are also more significant in those other roadways where passengers were 8.1 points more likely than drivers to be belted. The highest seatbelt use rates were found among occupants in vehicles on primary roads. The difference between drivers and passengers on primary roads (4.0%) was also smaller than on the other roadways.

Weekdays and Weekends

Figure 18 illustrates how drivers and passengers differ in seatbelt use on weekdays and weekends.

Figure 18: Estimates of Drivers and Passengers Belted by Weekday and Weekend, Wyoming 2020



The differences between drivers and passengers are not significant. The difference between drivers (80.8%) and passengers (88.4%) was 7.6 percent during weekdays. During weekends the difference was 8.3 percentage points (84.7% for drivers and 93.0% for passengers).

Gender and Vehicle Type

The following table presents estimates of seatbelt use for males and females within each vehicle type.

Table 11: Percent belted by Gender and Vehicle Type, Wyoming 2020

Gender	Vehicle Type	Drivers	Passengers	Difference
Male	Auto	75.0%	80.0%	5.0%
	Van	84.0%	77.9%	-6.1%
	SUV	91.8%	96.0%	4.2%
	Pickup	75.2%	79.3%	4.1%
	Total	78.1%	79.8%	1.7%
Female	Auto	87.1%	92.6%	5.5%
	Van	84.8%	94.9%	10.1%
	SUV	85.2%	90.9%	5.7%
	Pickup	92.1%	95.0%	2.9%
	State	86.6%	94.2%	7.6%

Male passengers (79.8%) were slightly more likely to wear seatbelts than male drivers (78.1%). Most male drivers and passengers behaved alike when it came to seatbelt use. The anomaly occurs in vans where male passengers (77.9%) were 6.1 percentage points less likely than male van drivers (84.0%). There is a similar anomaly for females but in the opposite direction. Female passengers in vans (94.9%) were 10.1 points more likely to be belted than female van drivers (84.8%).

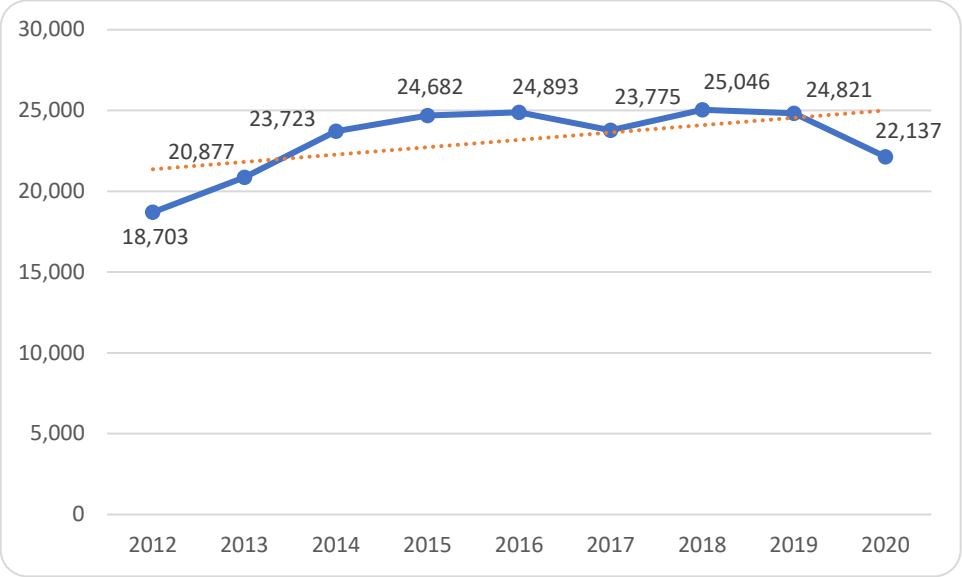
Otherwise, both male and female passengers were more likely to be belted but by margins that range between 2.9 percentage points (females in pickup trucks) and 5.5 percent (females in automobiles).

Trends

There are enough differences among the survey years that any simple comparisons are likely to be misleading. It is especially true for 2020 when the pandemic delayed the implementation of the survey. However, the samples and methods are generally similar enough to offer two trend lines.

The first trend line is for sample size.

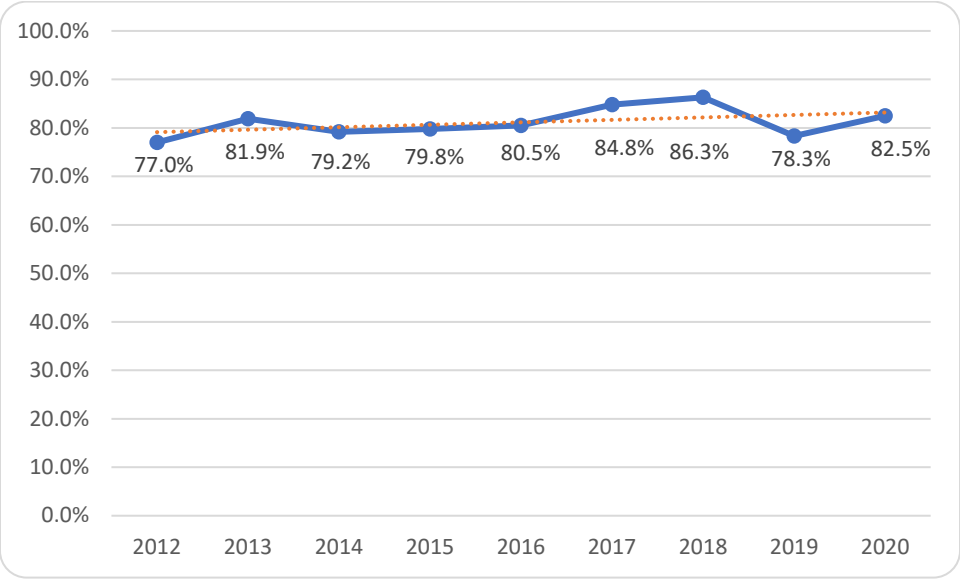
Figure 19: Trend in Sample Size, Wyoming 2012-2020



Between 2012 and 2020, observers collected 208,657 observations of seatbelt use in Wyoming. For individual years, the sample sizes vary between a high of 24,893 in 2016 and a low of 18,703 in 2012. The average number of observations for the last nine years was 23,184, and the totals are more alike than different, especially from 2014 to 2020.

The trend for the estimates of seatbelt use is presented in the next chart.

Figure 20: Trend in Seatbelt Use, Wyoming 2012-2020



Estimates of seatbelt use in Wyoming range from a low of 77.0 percent in 2012 to a high of 86.3 percent in 2018. The 2020 rate is the third-highest rate (82.5%) of the last nine years. There were higher rates only in 2018 (86.3%) and 2017 (84.8%).

The rate in 2019 (78.3%) was the lowest rate since 2012 (77.0%). The current 2020 survey rate is 82.5 percent, 4.2 percentage points higher than the rate in 2019.

Concluding Remarks

Last year, the data was scoured in a search to explain a significant decline in seatbelt use. No matter how much minutiae was examined, one major conclusion stood out: *"For nearly every type of vehicle occupant in all categories of the different variables, it seemed that there were decreases in belt use."* This year, the estimates of belt use have returned to "normal" or predictable, mostly consistent rates across all variables.

Another conclusion from 2019: *"The change in seatbelt usage in Wyoming 2019 does not establish a trend, and if prior patterns hold, it could increase again next year."* and so it has.

What is not known is the effect of the pandemic on the results of the 2020 survey. The survey was moved from the regular June dates to August 24 through August 30 of 2020. Without more evidence or experience, it is unknown if the rate would have been higher or lower in June. There were changes in observers because some who were available in June were not available in August. However, the training and quality control protocols did not change. The methods used to minimize observer effects remained in place. If the survey has to be delayed again, the methods that guarantee valid seatbelt use estimates will still be in place. Everyone can be confident about the results, whatever the rate.

Appendices

Appendix A: State Seatbelt Use Reporting Form

state seatbelt use reporting form

State Seatbelt Use Survey Reporting Form

PART A

State: Wyoming

Calendar Year of Survey: 2020

Statewide Seatbelt Use Rate: 82.5 Percent

I hereby certify that: The Governor designated Matthew D. Carlson, P.E. as the State's Highway Safety Representative (GR) and has the authority to sign the certification in writing.

The reported Statewide seatbelt use rate is based on a survey design that received approval by NHTSA, in writing, as conforming to the Uniform Criteria for State Observational Surveys of Seatbelt Use, 23 CFR Part 1340.

The survey design remained unchanged since NHTSA approved the survey.

Dr. James G. Leibert[7], a qualified survey statistician, reviewed the seatbelt use rate reported above and information reported in Part B and determined that they meet the Uniform Criteria for State Observational Surveys of Seatbelt Use, 23 CFR Part 1340.

Signature

1-20-21

Date

Matthew D. Carlson, P.E.

Printed name of authorized signing official

5820 York Ave. S.
Edina, MN. 55410

Phone 952.922.0018
E-mail 1jleibert@gmail.com

7 In accordance with the final rule published in Federal Register Vol. 76 No. 63, April 1, 2011, Rules and Regulations, pp. 18042-18059, DLN contracted with statistician, Dr. James G. Leibert to determine that the methods used to process the collected data met the Uniform Criteria for State Observational Surveys of Seatbelt Use, 23 CFR Part 1340. Dr. Leibert reviewed the SPSS output files and related data tables to confirm the data are accurate and true. A copy of Dr. Leibert's abbreviated resume follows.

James G. Leibert, PhD.

Summary – Creative problem solver with knowledge of and experience in a broad array of statistical and computational tools and techniques. I understand that there is no one tool or technique that can be used for every situation. I can quickly see connections and use tools and techniques from other fields as appropriate.

Employment

Research Scientist III, Minnesota Department of Human Services, Disability Services Division, St. Paul, MN. Current

Chair, Dept. of Political Science and Public Administration / Director of the Master of Public Administration Program / Dean of Graduate and Undergraduate Studies, Kazakhstan Institute of Management, Economics, and Strategic Research (KIMEP), Almaty, Republic of Kazakhstan, 2001-2002.

Associate Professor (1999-2001) / International Programs Coordinator (2000 – 2001)

Chairman of the Department of Social Sciences (1999 – 2000) \ Assistant Professor (1993-1998), Dickinson State University Dickinson, ND, 1993-2001.

Leadership

Team Player

Problem

Solving

Appendix B: Survey Design

Wyoming survey design

The Wyoming Department of Transportation Highway Safety Program in collaboration with DLN Consulting, Inc. designed the following sampling, data collection, and estimation plan. The National Highway Traffic Safety Administration accepted and approved the plan on April 24, 2012. A copy of the approval notification can be found in Appendix C.

Seat Belt Use Survey Design for Wyoming

Sampling, Data Collection and Estimation Plan

Revised 04-03-2012

Seat Belt Use Survey Design for Wyoming

Sampling, Data Collection and Estimation Plan

January 3, 2012
Revised March 7, 2012

Submitted to:

National Highway Traffic Safety Administration
Traffic Safety Programs
1200 New Jersey Ave, SE
Washington, DC 20590

Submitted by:

Wyoming Department of Transportation
Highway Safety Program
5300 Bishop Boulevard
Cheyenne, WY, 82009-3340

DLN Consulting, Inc.
2493 4th Ave W
Suite G
Dickinson, ND 58601

Table of Contents

Introduction

This document provides the details of the methods proposed for a survey of seat belt use in the State of Wyoming in 2012. These methods have been developed by Wyoming to comply with the new Uniform Criteria for State Observational Surveys of Seat Belt Use issued in 2011 by the National Highway Traffic Safety Administration (NHTSA).[1]

This proposal includes the following:

- The general parameters of the study design, which produced the proposed sampling frame for the survey of Wyoming seat belt use.
- The sample design, including the proposed sample size and the methods to be used for the selection of road segments.
- The proposed data collection methods, including the training of observers, and the protocols that will guide observers in data collection, and the proposed quality control procedures.
- The proposed analytical methods to be used in producing an estimate of seat belt use in Wyoming, including the statistical use of sampling weights, the methods to adjust for nonresponsive data, and the methods of variance estimation.

This plan is compliant with the Uniform Criteria and will be used for the implementation of Wyoming's 2012 seat belt survey, upon approval.

Study Design

There are 23 counties in the State of Wyoming. Fatality Analysis Reporting System (FARS) data for the years 2005 – 2009 by county was examined to identify the counties that accounted for at least 85 per cent of the cumulative crash–related fatalities during that period of time. Five years of data was selected to produce the largest number of counties available for the sample. Sixteen of the 23 counties accounted for 87.7 percent of the fatalities during this five-year period. Table 1 lists the fatality counts, and cumulative percentage of fatalities by county in Wyoming.

Road segment data was acquired from NHTSA, as developed by the U.S. Census Bureau in the form of 2010 TIGER data, for each of the 16 counties in the sample frame. All roads, with the exception of rural local roads, non-public roads, unnamed roads, unpaved roads, vehicular trails, access ramps, cul-de-sacs, traffic circles, and service drivers. These exclusions are compliant under § 1340.5.a.2.ii. The data include the length of the road segments and the classification of the road segments by road type (MTFCC).[2] This classification scheme locates each road segment within three different types of roads, as follows:

- Primary roads (MTFCC Code S1100), which are generally divided, limited-access highways within the interstate highway system or under state management, and are distinguished by the presence of interchanges. These highways are accessible by ramps and may include toll highways, although there are no toll highways in Wyoming.

[1] The final rule was published in Federal Register Vol. 76 No. 63, April 1, 2011, Rules and Regulations, pp. 18042 – 18059.
[2] The classification scheme uses the MAF/TIGER feature Class Code, or MTFCC in the database.

- Secondary roads (MTFCC Code S1200), which are main arteries, usually in the U.S. Highway, State Highway, or County Highway system. These roads have one or more lanes of traffic in each direction, may or may not be divided, and usually have at-grade intersections with many other roads and driveways. They often have both a local name and a route number.
- Local neighborhood roads, rural roads, and city streets (MTFCC Code S1400), including paved non-arterial streets, roads or byways that usually have a single lane of traffic in each direction. The roads in this class may be privately or publicly maintained. Scenic park roads would be included, as would some unpaved roads, in this classification.

This classification scheme will be used to stratify the road segments in each county. The road segments to be included in the statewide sample will be drawn from the strata within each of the selected counties.

Sample Design

The proposed design is intended to conform to the requirements of the Uniform Criteria. The objective of the design is to generate annual estimates of occupant restraint use for adults and children using booster seats in the front seats of passenger vehicles. Wyoming intends to update the sample of data collection sites every five years in order to have survey results that reflect those counties with more than 85 percent of crash–related fatalities. The sample design described here was provided to Wyoming under a consultant agreement with DLN Consulting, Inc. and Dr. Jamil Ibriq of Dickinson State University in Dickinson, North Dakota.[3] The sample design is for a stratified, systematic, randomly selected sample of data collection segments, with the following detailed steps:

- All 23 counties in Wyoming were listed in descending order of the average number of motor vehicle crash-related fatalities for the period of 2005 to 2009. Fatality Analysis Reporting System (FARS) data were used to determine the number of crash-related fatalities per county. It was determined that 16 of the counties accounted for more than 85.0 percent of traffic-related fatalities.[4] A decision was made by the Wyoming Department of Transportation to include all 16 counties for observation in order to maximize the numbers of counties to be observed. This method used in the first sampling stage resulted in all counties in the sample being selected with certainty and a probability factor of 1. Table 1 lists Wyoming's counties, fatality counts, and cumulative fatality percentages.
- The road segments were selected randomly from all eligible segments in each of the strata in the sampled counties. The road segments were stratified on the basis of the MTFCC road type classification[5]. A total sample of 18 road segments was identified for each county based on the historical number of observations collected over the past five years in Wyoming. This stage of the sampling process resulted in the selection of 288 road segments (16 counties X 18 sites per county).

[3] Dr. Jamil Ibriq's résumé is included in Appendix A.
[4] The 16 counties account for 87.7 percent of traffic-related fatalities in the FARS cumulative data from 2005-2009.
[5] The road types, previously described, are (S1100) primary roads, (S1200) secondary roads, and (S1400) local neighborhood roads, rural roads, and city streets.

- The sampling process included the random selection of additional road segments within each road-type strata and county. These segments are part of a pool of reserve sites that can be substituted for existing segments in the sample that become unavailable due to extensive construction, weather-related problems, or other unanticipated events.
- It is expected that this process will produce approximately 28,800 observations, based on prior surveys of seat belt use in Wyoming. Given this sample size, the standard error should be less than the 2.5 percent maximum specified by the Uniform Criteria. In the event that the standard error exceeds 2.5 percent, additional observations will be collected from existing sites.
- Randomization procedures will be used to determine protocols regarding the initial road segment for observation within each county, the direction of traffic flow for observation, etc., to be described later in this proposal.

Table 1: Wyoming's Average Motor Vehicle Crash-Related Fatalities By County 2005 - 2009

STATE CODE	COUNTY NAME	Average fatality counts for 5 years	Fatality percentage within the state	Cumulative fatality percentage
Wyoming	FREMONT	20.6	12.4	12.4
Wyoming	SWEETWATER	19	11.4	23.8
Wyoming	NATRONA	13.2	7.9	31.8
Wyoming	CAMPBELL	11.8	7.1	38.9
Wyoming	LARAMIE	11.2	6.7	45.6
Wyoming	CARBON	10	6	51.7
Wyoming	ALBANY	7.6	4.6	56.2
Wyoming	JOHNSON	6.8	4.1	60.3
Wyoming	PARK	6.8	4.1	64.4
Wyoming	TETON	6.4	3.9	68.3
Wyoming	UINTA	6.4	3.9	72.1
Wyoming	SHERIDAN	5.4	3.3	75.4
Wyoming	SUBLETTE	5.4	3.3	78.6
Wyoming	LINCOLN	5.2	3.1	81.8
Wyoming	BIG HORN	5	3	84.8
Wyoming	PLATTE	4.8	2.9	87.7
Wyoming	CONVERSE	4.2	2.5	90.2
Wyoming	GOSHEN	3.3	2	92.2
Wyoming	CROOK	3.2	1.9	94.1
Wyoming	WESTON	3	1.8	95.9
Wyoming	NIOBRARA	2.8	1.7	97.6
Wyoming	HOT SPRINGS	2	1.2	98.8
Wyoming	WASHAKIE	2	1.2	100

Sample Size and Precision

A standard error of less than 2.5% for the seat belt use estimates is required by the Final Rule. Since 2006, Wyoming has conducted annual seat belt use studies that have historically obtained standard error rates below this threshold (e.g. 1.1%, 1.2%, 0.9%, 1.0%, and 0.8% in the past five years) via

observed sample sizes between 23,404 and 27,274. These observed sample sizes have been obtained from previous sample designs using nine counties and 23 road segments per county. Therefore, since the proposed design is expected to yield a sample of about 28,800 observations (16 counties X 18 sites per county X 100 vehicles per observation site), the precision objective should be achieved without problem. In the event that the precision objective of a 2.5% or less standard error is not met, additional observations will be taken starting with sites having the fewest observations. New data will be added to existing data until the desired precision is achieved.

County Selection

All 16 counties within the sample were selected with certainty. This was a decision made by the Wyoming Department of Transportation to measure seat belt use in all the top fatality counties within the state. As certainty counties, each was assigned a probability factor of 1 (16 counties selected from the 16 counties in the sample) and represented the first stage of sampling.

Road Segment Selection

After determining the number of road segments in each stratum, the probabilities of selection were determined. Based on the probability calculations, no certainty road segments were identified. The road segments in each stratum in each county were then selected randomly using a simple java program. The program randomly selected a particular site from the list of eligible sites in the stratum. Once a site was selected, it was removed from the list of eligible sites in the stratum. The next site was then selected randomly from the remaining sites. This random process continued until all the sites in the stratum were selected.

Table 2: Roadway Functional Strata by County, Road Segments Population (N), Length, and Number of Segments Selected (n)

County		MTFCC Strata			Total
		Primary	Secondary	Local	
Albany	N	149	992	0	1141
	Length	60.639697	247.87805	0	308.517747
	n	2	16	0	18
Big Horn	N	0	1182	0	1182
	Length	0	271.087301	0	271.087301
	n	0	18	0	18
Campbell	N	267	1041	0	1308
	Length	97.912343	275.346207	0	373.25855
	n	4	14	0	18
Carbon	N	222	1311	0	1533
	Length	80.064222	419.42926	0	499.493482
	n	3	15	0	18
Fremont	N	1	1891	0	1892
	Length	0.115489	486.099588	0	486.215077
	n	0	18	0	18
Johnson	N	698	862	0	1560
	Length	234.830117	196.282768	0	431.112885
	n	8	10	0	18
Laramie	N	447	966	10768	12181
	Length	170.462425	242.350688	2127.917681	2540.730794
	n	1	1	16	18
Lincoln	N	94	1312	0	1406
	Length	34.119548	284.555377	0	318.674925
	n	1	17	0	18
Natrona	N	402	1516	11520	13438
	Length	124.83999	273.855866	1699.565696	2098.261552
	n	1	2	15	18
Park	N	0	1593	0	1593
	Length	0	365.12326	0	365.12326
	n	0	18	0	18
Platte	N	401	754	0	1155
	Length	145.526417	168.650462	0	314.176879
	n	6	12	0	18
Sheridan	N	228	1470	0	1698
	Length	85.030844	222.495535	0	307.526379
	n	2	16	0	18
Sublette	N	0	1064	0	1064
	Length	0	258.890084	0	258.890084
	n	0	18	0	18
Sweetwater	N	329	1162	0	1491
	Length	154.80921	374.258433	0	529.067643
	n	4	14	0	18
Teton	N	0	785	0	785
	Length	0	226.731063	0	226.731063
	n	0	18	0	18
Uinta	N	223	624	0	847
	Length	74.802936	132.715057	0	207.517993
	n	5	13	0	18

Reserve Sample

In the event that an original road segment is permanently unavailable, a reserve road segment will be used for data collection. The reserve road segment sample consists of two additional road segments per original road segment selected, resulting in a reserve sample of 576 road segments. The reserve sample is generated by selecting the road segments immediately preceding and immediately following each randomly selected road segment, and constitutes the original sample. Since the road segments in the database for any road type and county are organized geographically by their longitude and latitude values, this implies that the road segments in the reserve sample for a particular road type and county are located in close proximity to each other. For example, if V_i-1 and V_i+1 are the same type as V_i, i.e., primary road type, and located in the same geographical region, they therefore have similar characteristics in terms of traffic flow and population mix. The reserve sample is developed using simple random sampling in which v road segments are selected from V road segments in a particular road classification and county in such a way that every possible combination of v road segments is equally likely to be the sample selected.

For the purposes of data weighting, the reserve road segments inherit all probabilities of selection and weighting components up to and including the road segment stage of selection from the original road segments actually selected.

Data Collection

Site Selection

Each of the road segments in the sample, including those in the reserve sample, was mapped according to the latitude and longitude of their midpoints. Observation sites were identified by the intersections that occurred within the road segment, except when there was no identifiable intersection or interchange. In the latter case, the midpoint within the road segment was selected for observation.

The data collection sites on the road segments were selected in a location approximately fifty yards from any controlled intersection. For interstate highways, data collection will occur on a ramp carrying traffic that is exiting the highway. In every case, the choice of the observation site will be based on maximizing observer safety and line of sight for reliable data collection.

The observed direction of travel was randomly assigned for each road segment. The locations of the data collection sites were described on Site Assignment Sheets for each county, and maps were developed to assist the observers and quality control monitors in travelling to the assigned locations.

Training

Wyoming will hire a minimum of 16 observers, one for each county in the sample, to collect the data. Additional observers will be hired as reserve observers and to assist assigned observers in high traffic sites, defined by known traffic patterns associated with the general area of the sample sites.[6]

Two quality control monitors will be hired. Each will be responsible for half the state. Observers and quality control monitors will be recruited by a contracted firm with preference given to individuals who have experience in past seat belt use surveys or other field data collection. Law enforcement personnel will be excluded from the hiring base to reduce data collection bias.

There will be two quality control monitors assigned to cover the data collectors. Quality control monitors will make unannounced visits at ten percent of the total sites for purposes of determining data reliability through the separate collection of data. The quality control monitors will not serve as both observer and quality control monitor.

Training for observers and quality control monitors will be conducted at a central location in the state prior to the state's pre-survey held the last week in April each year. The training session will include lecture, classroom, and field exercises. Each observer and quality control monitor will be tested through participation at a minimum of three observation test sites to acquire an inter-observer agreement ratio.

Test sites will be selected to represent the types of sites and situations observers will encounter in the field. No actual sites in the sample of roadway segments will be used as test sites. During field training, observers and quality control monitors will record data independently on separate observation forms. Each person will document vehicle type, gender, and seat belt use of drivers and outboard front seat passengers. Individual observations will be compared to the group to calculate the agreement rate. All agreement rates must be sufficiently high (85% or higher) or additional training will be conducted.

At the conclusion of the training, observers and quality control monitors will be given a post-training quiz to ensure they understand the survey terminology, the data collection protocols, and the reporting requirements.

Quality control monitors will be given an additional half-day training session that focuses on their specific duties. These include conducting unannounced site visits to a minimum of two sites (10%) for each observer and reviewing the field protocols with the observers during the visits. The quality control monitors will be available to respond to questions and offer assistance to observers as needed.

The training syllabus can be found in Appendix D.

Data Collection Protocols

Observers will collect data on the seat belt use of drivers and outboard passengers, including children in booster seats,[7] on the weekdays and weekends during the collection period during the first full week of

[6] The definition of high traffic sites includes the number of observations in similar areas from a combination of data from prior Wyoming SBU surveys, and/or demographic information from densely populated areas.

June 2012. Data collection will occur in 45-minute observation periods between the hours of 7:00 a.m. and 6:00 p.m. Start times will be staggered to ensure that a representative number of weekday/weekend sites and rush hour/non-rush hour sites will be included. Observers will cover between four and five sites per day, depending on the accessibility of sites and the travel time needed to arrive at the sites.

All observers will have packets of maps showing the location of assigned sites and data collection forms specific to each assigned site. Additional information will include the road segment names; the location of the intersection within the road segment; the assigned date, time, and direction of travel; and any additional instructions which may apply at any given site. Sites in close geographic proximity to each other will be clustered to increase efficiency of data collection. The first site to be observed within a cluster will be chosen randomly and observations at subsequent sites will be scheduled by geographic proximity to minimize travel within the cluster. The clustering process will be designed so that an observer can cover all the sites within the cluster in a single day.

Some sites will have much heavier traffic than others. An additional observer will be assigned to sites identified as having heavy traffic patterns. One person will be responsible for the visual observation and the second observer will record the observations as verbally provided by the first observer. The objective here is to maximize coverage and minimize those observations where seat belt use cannot be determined due to the volume of traffic. The number of second observers will be determined once all sites have been physically located.

Data Collection

All passenger vehicles, including commercial vehicles weighing less than 10,000 pounds, will be eligible for observation. Observers will be provided data collection forms, a sample of which is included in Appendix C.[8] Cover sheets for each site will provide for documentation of important site information, including the location of the road segment, assigned date, time, direction of traffic flow, lanes observed, start and end times, and additional information as appropriate, including weather conditions, road construction, or any other factors which might affect data collection. Observers will fill in the cover form at each site. If observers need to move to an alternate site, the reasons, along with all other information, will be detailed on the cover sheet.

For each vehicle, observers will record the type of vehicle, the gender of each driver and passenger, the belt status for each driver and passenger, and the vehicle license registration (Wyoming or out-of-state). These variables, along with belt use by county and roadway type, will be analyzed for the state of Wyoming. [9]

---

[7] Front seat occupants who are child passengers traveling in child seats with harness straps will not be included in the observations.

[8] The sample form included in the appendix may need some modifications before data collection occurs, but any changes are likely to be minor.

[9] Once all statistical calculations have been completed by Dr. Ibriq, Dr. Keith Fernsler will serve as the analyst of the data. Dr. Fernsler's resume can be found in Appendix A.

Belt status for each driver and passenger will be recorded as follows:

- Belted, which is defined as an observable shoulder belt in front of the occupant's shoulder;
- Not belted, when the shoulder belt is not in front of the occupant's shoulder;
- Unknown, which is the code used for the occupant or occupants when the observer cannot determine whether the driver or outboard passenger is belted.
- A code which indicates that no passenger is present.[10] This code would also apply to children restrained in safety seats with harnesses.

For sites with two-way traffic, the direction of the traffic to be observed will be predetermined through a random selection process. For road segments with two or more lanes of traffic traveling in the same direction, observations will be made in the lane closest to the observer.

Generally, observations will occur from observer vehicles. The vehicles will be parked in safe locations that do not hinder normal traffic and are not a traffic hazard. The objective is for the observer to find a safe site from which drivers and front seat outboard passenger seat belt use can be determined. Other considerations include light conditions and the direction of the sun, so as to minimize glare in making observations.

In some instances, observers will not be able to collect data from their vehicles. In those cases, observers may exit the vehicle and stand as close to the intersection as is safely feasible. Whenever they make observations outside the vehicle, observers will wear safety vests and hard hats as required by Wyoming Department of Transportation policy. This safety equipment will be issued to all observers and quality control monitors by the Wyoming Department of Transportation.

Alternate Sites and Rescheduling

Assigned sites on assigned days and times may not be available for a variety of reasons. When a site is temporarily unavailable due to inclement weather or a crash, data collection will be rescheduled for a similar time of day and day of week. If a site is permanently unavailable, such as on a detoured road segment or within a gated community, then an alternate site, selected as part of the reserve sample, will be used as the permanent replacement. The two alternate locations for each site will be clearly identified and listed on the Site Assignment Sheet. Observers will select one of the reserve sites at random. If the selected reserve site is also permanently unavailable, then the observer will use the second reserve site listed.

Quality Control

Quality control monitors will be randomly assigned to two data collection sites within each of the sixteen counties in the Wyoming sample. At each site, the monitor will evaluate the observer's general performance and will work alongside the observer to ensure that the observer is following all survey

[10] It is possible that separate lines of data for drivers and passengers during the data analysis stage may be created. This process will make it easier to combine drivers and passengers when reporting on seat belt use for all vehicle occupants.

protocols. The quality control monitor will include in the performance evaluation all or more of the following:

- Was the observer on time at the assigned sites?
- Did the observer complete the cover sheets and observation forms correctly?
- Were the observer's observations of seat belt use accurate?

The quality control monitors will prepare full reports on each of their site visits within a reasonable time after a site visit occurs. If there are problems with an observer's performance, the monitor should report these problems to the survey supervisor immediately so problems can be corrected.

Quality control monitors will be especially sensitive to any indications that an observer may have falsified data. Any such falsification will be reported by the monitor immediately so that the observer can be replaced by a reserve observer. This back-up observer will be assigned to revisit all sites where it is proven or suspected that falsification of data may have occurred.

Under normal circumstances, observers will be required to mail completed observation forms to the data entry supervisor at DLN Consulting, Inc. when observations are completed for all sites within the observer's assigned county, provided that no problems are identified by the quality control monitors for any given observer. When problems are identified, observers may be required to return forms from a given site immediately after observations are completed for that site so that the forms can be reviewed. Also, forms may need to be returned as soon as possible if either the quality control monitor or the observer encounters a large number of observations where seat belt use is coded as "unknown ."

The data entry supervisor will review all returned forms from the observers to ascertain if the rate of observations coded as "unknown" for seat belt use approximates or exceeds 10 percent of the observations for any given site. If this occurs, the observer will be sent back to any such site for an additional observation period.

Imputation, Estimation, and Variance

This section includes a discussion of the sampling weights and formulas; the procedures for adjustments for "nonresponse;" the estimators, with formulas; and the variance estimation.

Imputation

No imputation will be done on missing data.

Variance Estimation

A stratified multistage sample design has been proposed, and as such, direct variance estimation for the seat belt use estimator can be a complicated mathematical process, in addition to being time-consuming and costly. For the variance estimator, the ratio estimation procedure in *The Statistical Package for the Social Sciences (SPSS)* software package, its corresponding *Complex Sample Module for* SPSS, and the joint PSU selection probabilities to calculate the seat belt use rate and its variance will be employed.

Estimation

The following computation is based on the NHTSA guidelines provided in [1]. NHTSA provides two seat belt rate estimators: a ratio estimator, and an estimator using road segment level VMT. DLN implements the ratio estimator to compute the seat belt rate use.

Notation

The following notations are used in developing the seat use rate estimator

- The following are the subscripts used:
  - c used for county (PSU)
  - h used for road segment strata.
  - i used for road segment.
  - j used for time segment.
  - k used for road direction.
  - l used for the lane.
  - m used for vehicle.
  - n used for front seat occupants.
- π denote the inclusion probability, and
  - π_c represents the inclusion probability for a county.
  - $\pi_{hi|c}$ represents the inclusion probability for road segment.
  - $\pi_{j|chi}$ represents the inclusion probability for time segment.
  - $\pi_{k|chij}$ represents the inclusion probability for direction
  - $\pi_{l|chij}$ represents the inclusion probability for lane
  - $\pi_{m|chijl}$ represents the inclusion probability for vehicle.
- $w_{chijklm}$ denote the sampling weight for vehicle m and is computed as follows:

$$w_{chijklm} = \frac{1}{\pi_{chijklm}} \tag{1}$$

$\pi_{chijklm}$ in Equation (1) represents the overall vehicle inclusion probability which is the product of the selection probabilities at all stages in the sample design. $\pi_{chijklm}$ is computed as follows:

$$\pi_{chijklm} = \pi_c \cdot \pi_{hi|c} \cdot \pi_{j|chi} \cdot \pi_{k|chij} \cdot \pi_{l|chij} \cdot \pi_{m|chijl}$$

- *Length* denote the length of the road segment.
- p denote the rate estimator.

Nonresponse Adjustment

Given the data collection protocol described in this plan, including the provision for the use of alternate observation sites, road segments with non-zero eligible volume and yet zero observations conducted should be a rare event. Nevertheless, if eligible vehicles passed an eligible site or an alternate eligible site during the observation time but no usable data were collected for some reason, then this site will be considered as a "non-responding site." The weight for a non-responding site will be distributed over other sites in the same road type in the same PSU. Let

$$\pi_{chi} = \pi_c \cdot \pi_{h|c}$$

be the road segment selection probability, and

$$w_{chi} = \frac{1}{\pi_{chi}}$$

be the road segment weight. The nonresponding site nonresponse adjustment factor:

$$f_{ch} = \frac{\sum_{\forall\ i}\ w_{chi}}{\sum_{responding\ i}\ w_{chi}}$$

will be multiplied to all weights of non-missing road segments in the same road type of the same county and the missing road segments will be dropped from the analysis file. However, if there were no vehicles passing the site during the selected observation time (60 minutes), then this is simply an empty block at this site and this site will not be considered as a nonresponding site, and will not require nonresponse adjustment.

In rare cases, the Nonresponse Adjustment procedure described above fails. For example, if in a county, only one road segment was drawn from a road type and that this segment was nonresponding and both alternate segments were unavailable, then the nonresponse adjustment will not work. In such a rare case, this cell would be collapsed with a cell of a different road type within the same county.

Seat Use Rate Estimator

The first stratum rate estimator can be obtained using the following equation:

$$p_{chi} = \frac{\sum_{\forall\ chijklmn}\ w_{chijklm}\ Length_{chi}\ y_{chijklmn}}{\sum_{\forall\ chijklmn}\ w_{chijklm}\ Length_{chi}} \tag{2}$$

where

$$y_{gchijklmn} = \begin{cases} 1 & if\ belt\ is\ used \\ 0 & otherwise \end{cases} \tag{3}$$

In the proposed sample design, it is assumed that after the selecting the road segment i, the selection probabilities for all vehicles at segment i are equal. Hence, $w_{jklm|chi}$ values for the same road segment i are equal and can be cancelled in the calculation of the first seat belt rate use estimator. Furthermore, since the $Length_{chi}$ values for all vehicles at road segment i are the same, the length $Length_{chi}$ can also be cancelled from the first seat belt rate use estimator. Thus, the first stratum rate estimator for road segment i that is provided in equation (2) reduces to the following:

$$p_{chi} = \frac{1}{n_{chi}} \sum_{\forall jklmn \in chi} y_{chijklmn} \tag{4}$$

where n_{chi} is the sample size at road segment i.

Based on the above analysis, our design does not record amount of observation time, the number of directions, the number of lanes, and the number of vehicles passing the site i.

For the second stratum, namely the road type, the following formula is used:

$$p_{ch} = \frac{\sum_{\forall\ i\ in\ h} \ w_{chi}\ \ Length_{chi}\ p_{chi}}{\sum_{\forall\ i\ in\ h} \ w_{chi}\ \ Length_{chi}} \tag{5}$$

where

$$w_{chi} = \frac{1}{\pi_{chi}} \tag{6}$$

Another method can be used for the calculation of P_{chi}. Since stratified random sampling is proposed in this methodology where the sample is selected by simple random sampling, that is random sampling without replacement in each stratum, the following equation can be used to calculate the rate estimator at stratum h.

$$p_{ch} = \frac{1}{n_h} \sum_{i=1}^{n_h} p_{chi} \tag{7}$$

where n_h is number of road segments each road stratum.

For the county, the following rate estimator will be used:

$$p_c = \frac{\sum_{\forall\ h\ in\ c} \ w_{ch} \cdot Length_{ch} \cdot p_{ch}}{\sum_{\forall\ h\ in\ c} \ w_{chi} \cdot Length_{ch}} \tag{8}$$

where

$$w_{ch} = \frac{1}{\pi_{ch}} \tag{9}$$

The following equation can also be used to compute p_c.

$$p_c = \frac{1}{n_c} \sum_{i=1}^{n_c} p_{ch} \tag{10}$$

where n_c is number of road strata in the county.

For the state, the following rate estimator will be used:

$$p = \frac{\sum_{\forall\ c} \quad w_c \cdot Length_c \cdot p_c}{\sum_{\forall\ c} \quad w_c \cdot Length_c} \tag{11}$$

where

$$w_c = \frac{1}{\pi_c} \tag{12}$$

The following equation can also be used to compute p.

$$p = \frac{1}{n} \sum_{i=1}^{n} p_c \tag{13}$$

where n is number of counties in the frame.

Appendix A

Resumés

Jamil Ibriq

Summary

Dr. Jamil Ibriq is an assistant professor at Dickinson State University with extensive experience in simulation modeling that involves sampling and optimization techniques. Dr. Ibriq has expertise in area of data processing and survey research methodology. Dr. Ibriq is a proficient user of many programming languages and software packages, including SPSS.

Education

Ph.D., Computer Engineering, Florida Atlantic University, 2007
M.S., Computer Science, 2000
B.A. Biochemistry, University of Texas at Austin, 1979

Professional Associations

IEEE
ACM

Computer Skills

- Operation Systems: Windows, UNIX/LINUX, and UNIX shell scripts.
- Programming Languages: C, C++, Java, Visual Basic, SQL, Oracle PL/SQL, Motorola 68000 Assembly Language, PHP, Python, HTML, and Perl
- Software: Windows database, spreadsheet, and presentation software, TeX and LaTeX, SPSS, MatLab.

Publications

- J. Ibriq, I. Mahgoub, and M. Ilyas. Handbook of Information & Communication Security chapter Secure Routing in Wireless Sensor Networks, pages 549-574. Springer, Germany, December 2010.
- J. Ibriq and I. Mahgoub, "Hierarchical Key Management Scheme for Wireless Sensor Networks," in Proceedings of the 21st IEEE International Conference on Advanced Information Networking and Applications (AINA '07) Niagara Falls, Canada, May 2007, pages 210-219.
- J. Ibriq, I. Mahgoub, M. Ilyas and M. Cardei, Encyclopedia of Wireless and Mobile Communications chapter: Key Management Schemes in Wireless Sensor Networks, CRC Press, Boca Raton, FL, December 2007, pages 1509-1522.
- J. Ibriq and I. Mahgoub,"A hierarchical key management scheme for wireless sensor networks," Technical report, Florida Atlantic University, Boca Raton, FL, April 2006.
- J. Ibriq and I. Mahgoub, "A secure hierarchical routing protocol for wireless sensor networks," in Proceedings of the 10th IEEE International Conference on Communication Systems (ICCS '06),Singapore, October 2006, pages 1-6.
- J. Ibriq and I. Mahgoub,"Cluster-based Routing in Wireless Sensor Networks: Issues and Challenges," in Proceedings of the 2004 International Symposium on Performance Evaluation of Computer and Telecommunication Systems San Jose, CA, July 2004, pages 759 –766.

Keith Fernsler, Ph.D.

12/27/2011

942 9th Ave W, Dickinson, ND 58601
Home: 701-225-3436 Cell: 701-260-5807 Fax: 701-483-8475
keith@dlnconsulting.com

DLN Consulting Inc., 2493 4th Ave W Suite G, Dickinson, ND 58601

CURRENT EMPLOYMENT ACTIVITIES

Research Analyst, Evaluation Research, both quantitative and qualitative. Survey and Observational Research. Focus Group Design and Analysis. Data Analysis and Report Writing. Resident Analyst at DLN Consulting, Inc., 1999 – Present.

EDUCATION AND PROFESSIONAL ACTIVITIES

AB ('67) and MA ('72) Indiana University, Bloomington, IN; Ph.D. University of Montana, 1979.

College Teaching from 1968 – 1973 and 1978 - 2008 at St. Ambrose College (Iowa), Marycrest College (Iowa), Christopher Newport College (Virginia), and Dickinson State University. Several Bush Foundation Faculty Development Awards at Dickinson State; Social Science Department Chair (five years); DSU Professor Emeritus, 2008 – Present.

Membership in American Sociological Association (1976 – Present); Charter Member of ASA Teaching Resource Center; Author of two editions of the manual for Deviant Behavior courses. American Association of Public Opinion Research membership, 2003 – Present.

Knowledge of Microsoft Word and Excel, the Statistical Package for the Social Sciences; analysis of Census Data; and knowledge of the General Social Survey.

Specializations in sociology include methodology, theory, deviant behavior, criminology, sociological practice and public sociology.

RECENT CONSULTING ACTIVITIES

Wyoming seat belt pre-surveys and main surveys, research design and methodology development, data analysis, report writing (Wyoming Department of Transportation, 2006-2011; currently assisting in development of 2011 methodology under new Federal rules.

North Dakota Workforce Safety and Insurance, Employer and Injured Worker Surveys; research design, data analysis, and report writing; 2009 – present.

Focus group design, observation, analysis and report writing on topic of underage drinking (youth, law enforcement, educators, university students),

Community Action Partnership.

Alcohol, Tobacco and Other Drugs, data analysis and report writing, Dickinson Community Action Program.

North Dakota Seat Belt Use Surveys: Research design and data analysis consultation, 1999-2009, including major redesign in 2006; report writing; data analysis using SPSS.

CURRENT COMMUNITY SERVICE

Roughrider Country Kiwanis Club; First Congregational Church, UCC; North Dakota Public Employees Association.

REFERENCES

Deb Nelson, CEO and Owner, DLN Consulting, Inc. 2493 4th Ave W, Dickinson, ND 58601 (701/483-2801). deb@dlnconsulting.com

Becky Byzewski, SWCSC Coordinator, Community Action Partnership, 202 Villard St W, Dickinson, ND 58601 (701/227-0131).

Jamil Ibriq, Ph.D., Assistant Professor, Department of Mathematics and Computer Science, Dickinson State University, 291 Campus Drive, Dickinson, ND 58601 (701/483-2333) jamil.ibriq@dickinsonstate.edu

Steven Doherty, Ph.D., Assistant Professor of Political Science, Department of Social Science, Dickinson State University, 291 Campus Drive, Dickinson, ND 58601 (701/483-2065) steven.doherty@dickinsonstate.edu

Debora Dragseth, Ph.D., Professor of Business Administration, Department of Business and Management, Dickinson State University, 291 Campus Drive, Dickinson, ND 58601 (701/483-2696) deb.dragseth@dickinsonstate.edu

Appendix B

Selected Road Segments within Each County and Their Probabilities of Selection

STATEFP	COUNTYFP	MTFCC	FULLNAME	TLID	Alt_Name	DIVROAD	DECKEDROAD	Longitude	Latitude	SegLen_Mi	SRSWOR
56	1	S1100	I- 80	168749730	US Hwy 30	Y	N	-105.378496	41.145686	0.831622	0.01342282
56	1	S1100	I- 80	604512124		N	N	-105.976683	41.455622	0.185331	0.01342282
56	1	S1200	US Hwy 30	604512235	US Hwy 30	N	N	-105.613789	41.436288	0.487287	0.01612903
56	1	S1200	S 3rd St	168748704	US Hwy 287	N	N	-105.591913	41.28322	0.082576	0.01612903
56	1	S1200	State Hwy 130	168722835		N	N	-106.287656	41.350363	0.427204	0.01612903
56	1	S1200	S 3rd St	604506806	US Hwy 287	N	N	-105.594072	41.294338	0.176844	0.01612903
56	1	S1200	Snowy Range Rd	168750353	State Hwy 130	N	N	-106.138426	41.297205	0.029432	0.01612903
56	1	S1200	N 3rd St	168757040	N 3rd St	N	N	-105.591733	41.328609	0.047988	0.01612903
56	1	S1200	State Hwy 13	168722017		N	N	-106.005865	41.719918	0.045972	0.01612903
56	1	S1200	N 3rd St	604510122	N 3rd St	N	N	-105.589465	41.349592	0.023102	0.01612903
56	1	S1200	Snowy Range Rd	168738815	State Hwy 130	N	N	-105.695098	41.328608	0.311022	0.01612903
56	1	S1200	Happy Jack Rd	168744760	State Hwy 210	N	N	-105.309387	41.191091	0.653912	0.01612903
56	1	S1200	Bus I- 80	168756901	US Hwy 30	N	N	-105.568899	41.309599	0.005935	0.01612903
56	1	S1200	State Hwy 10	168745008		N	N	-105.994902	41.032165	0.213298	0.01612903
56	1	S1200	US Hwy 30	168737539	US Hwy 30	N	N	-105.618617	41.445781	0.55288	0.01612903
56	1	S1200	State Hwy 11	168755506		N	N	-106.090934	41.193713	0.3791	0.01612903
56	1	S1200	State Hwy 210	604505747		N	N	-105.438008	41.239964	0.011093	0.01612903
56	1	S1200	N 4th St	168755958	Co Rd 67	N	N	-105.975505	41.75157	0.062117	0.01612903
56	3	S1200	US Hwy 14 E	605633431		N	N	-107.749401	44.549772	0.01933	0.01522843
56	3	S1200	US Hwy 14A E	180494288		NA	NA	-108.222314	44.854737	0.237779	0.01522843
56	3	S1200	US Hwy 14A E	180493968		NA	NA	-108.320407	44.840598	0.062603	0.01522843
56	3	S1200	US Hwy 14A E	605624056		NA	NA	-108.354114	44.840581	0.053415	0.01522843
56	3	S1200	State Hwy 32	180493545		N	N	-108.415772	44.800116	0.006963	0.01522843
56	3	S1200	State Hwy 32	605621594		N	N	-108.587279	44.732075	0.173849	0.01522843
56	3	S1200	US Hwy 14	180484672		N	N	-108.015517	44.49378	0.057181	0.01522843
56	3	S1200	State Hwy 30	605616914		N	N	-108.339589	44.417795	0.321328	0.01522843
56	3	S1200	3rd St E	180505210	US Hwy 310	N	N	-108.46286	44.87988	0.015607	0.01522843
56	3	S1200	US Hwy 14 Alt	626936823		Y	N	-108.016292	44.79296	0.353805	0.01522843
56	3	S1200	US Hwy 16	180500795		N	N	-107.224785	44.177728	0.893127	0.01522843
56	3	S1200	US Hwy 14 Alternate Rte	180501932		N	N	-108.376118	44.839933	0.099877	0.01522843
56	3	S1200	US Hwy 310	180490602		N	N	-108.584372	44.89102	0.036785	0.01522843
56	3	S1200	State Hwy 32	180506937		N	N	-108.49826	44.776846	0.166397	0.01522843
56	3	S1200	State Hwy 433	180507017		N	N	-107.938854	44.197309	0.474787	0.01522843
56	3	S1200	Marshall St	180508412	State Hwy 31	N	N	-107.962173	44.274582	0.04248	0.01522843
56	3	S1200	State Hwy 433	180499656		N	N	-107.979944	44.249642	0.248082	0.01522843
56	3	S1200	C St	180485070	State Hwy 36	N	N	-108.041229	44.381112	0.071452	0.01522843

56	5	S1100	I- 90	607415957	I- 90	NA	NA	-105.248589	44.294692	0.2338	0.01498127
56	5	S1100	I- 90	607413318	I- 90	NA	NA	-105.383825	44.295056	0.565923	0.01498127
56	5	S1100	I- 90	146326960	US Hwy 14	N	N	-105.352327	44.289556	0.032443	0.01498127
56	5	S1100	I- 90	146347844	US Hwy 14	N	N	-105.378563	44.294171	0.039906	0.01498127
56	5	S1200	State Hwy 59	146348156		N	N	-105.526384	44.352279	0.035885	0.01344861
56	5	S1200	E 2nd St	146325159	E 2nd St	N	N	-105.489034	44.292555	0.006099	0.01344861
56	5	S1200	US Hwy 14	146349851	State Hwy 59	N	N	-105.529311	44.296796	0.051126	0.01344861
56	5	S1200	State Hwy 50	146329404		N	N	-105.62461	44.181178	0.128849	0.01344861
56	5	S1200	State Hwy 50	146334309		N	N	-105.724815	43.993419	0.268938	0.01344861
56	5	S1200	State Hwy 50	146353809		N	N	-105.719015	44.07693	0.152303	0.01344861
56	5	S1200	State Hwy 59	607396191		N	N	-105.464887	44.022166	0.220383	0.01344861
56	5	S1200	State Hwy 50	146333806		N	N	-105.750504	43.925684	0.026796	0.01344861
56	5	S1200	US Hwy 14	146321054	US Hwy 16	N	N	-105.538015	44.391359	0.066024	0.01344861
56	5	S1200	State Hwy 50	146353348		N	N	-105.711349	44.114846	0.837201	0.01344861
56	5	S1200	State Hwy 51	607406131		N	N	-105.283045	44.288769	0.020793	0.01344861
56	5	S1200	US Hwy 14	146346688	State Hwy 59	N	N	-105.530279	44.30921	0.060938	0.01344861
56	5	S1200	State Hwy 59	635532528		N	N	-105.44592	43.969271	0.227319	0.01344861
56	5	S1200	State Hwy 387	146342308		N	N	-105.979091	43.5588	0.24863	0.01344861
56	7	S1100	I- 80	611197576		N	N	-106.521149	41.752786	0.67332	0.01351351
56	7	S1100	I- 80	148702972	I- 80	N	N	-106.948342	41.751102	0.026198	0.01351351
56	7	S1100	I- 80	148729076	I- 80	Y	N	-107.373738	41.786936	0.145819	0.01351351
56	7	S1200	3rd St	622138133	US Hwy 287	N	N	-107.22921	41.807878	0.184918	0.01144165
56	7	S1200	State Hwy 70	148737136		N	N	-107.034068	41.156663	0.828525	0.01144165
56	7	S1200	State Hwy 789	148752555		N	N	-107.730909	41.291091	1.697048	0.01144165
56	7	S1200	State Hwy 130	148712671		N	N	-106.760293	41.392624	0.460732	0.01144165
56	7	S1200	State Hwy 130	148715207		N	N	-106.651357	41.343293	0.077775	0.01144165
56	7	S1200	State Hwy 230	148718040		N	N	-106.610856	41.172584	0.416111	0.01144165
56	7	S1200	State Hwy 220	148695417		N	N	-107.243952	42.428181	0.229884	0.01144165
56	7	S1200	N Higley Blvd	148729803	US Hwy 287 Byp	N	N	-107.215405	41.795669	0.069431	0.01144165
56	7	S1200	State Hwy 72	148707454		N	N	-106.453685	41.718692	0.74372	0.01144165
56	7	S1200	Lincoln Hwy	148702076	US Hwy 30	N	N	-106.277868	41.901903	1.701502	0.01144165
56	7	S1200	State Hwy 230	148743798		N	N	-106.701352	41.218277	0.116587	0.01144165
56	7	S1200	State Hwy 789	148736405		N	N	-107.693147	41.220518	0.326679	0.01144165
56	7	S1200	State Hwy 230	148714894		N	N	-106.776349	41.255209	0.053899	0.01144165
56	7	S1200	State Hwy 487	148727630		N	N	-106.186809	42.097454	1.894335	0.01144165
56	7	S1200	State Hwy 130	148716025		N	N	-106.496624	41.32687	0.364838	0.01144165

56	13	S1200	Fremont St	628694209	Fremont St	N	N	-108.739361	42.824433	0.041387	0.00951877
56	13	S1200	US Hwy 287	148440001	State Hwy 789	N	N	-108.355944	42.651302	0.917551	0.00951877
56	13	S1200	S Fifth St	148435866	S Fifth St	N	N	-108.735391	42.83345	0.075688	0.00951877
56	13	S1200	US Hwy 287	634121244	US Hwy 287	N	N	-107.749138	42.488102	0.108102	0.00951877
56	13	S1200	US Hwy 26	148495718		N	N	-108.56709	43.112365	0.083409	0.00951877
56	13	S1200	US Hwy 26	148494149	US Hwy 26	N	N	-109.43973	43.416155	0.271117	0.00951877
56	13	S1200	US Hwy 20	148486152	State Hwy 789	N	N	-108.160355	43.394654	0.521853	0.00951877
56	13	S1200	Blue Sky Hwy	148473776	Blue Sky Hwy	N	N	-108.766271	43.086613	0.493145	0.00951877
56	13	S1200	US Hwy 26	148485578	US Hwy 26	N	N	-109.940564	43.65715	0.666155	0.00951877
56	13	S1200	Gas Hills Rd	148433925	State Hwy 136	N	N	-108.336608	42.993204	0.029512	0.00951877
56	13	S1200	US Hwy 26	148495394		N	N	-108.879131	43.224349	0.382653	0.00951877
56	13	S1200	US Hwy 20	148468455	State Hwy 789	N	N	-108.115049	43.35974	0.359517	0.00951877
56	13	S1200	US Hwy 26	148486961		N	N	-108.920264	43.213638	0.606161	0.00951877
56	13	S1200	US Hwy 287	148429899	State Hwy 789	N	N	-107.580341	42.462137	0.201633	0.00951877
56	13	S1200	US Hwy 20	148448781	US Hwy 20	N	N	-107.689438	43.151979	0.292919	0.00951877
56	13	S1200	Missouri Valley Rd	148470962	Missouri Valley Rd	N	N	-108.610016	43.214772	0.456474	0.00951877
56	13	S1200	State Hwy 789	148433053		N	N	-108.553074	42.911615	0.035458	0.00951877
56	13	S1200	State Hwy 789	148432511		N	N	-108.569408	42.910442	0.085218	0.00951877
56	19	S1100	I- 25	624471389	I- 25	Y	N	-106.646302	43.995016	0.300971	0.01146132
56	19	S1100	I- 25	147364609	US Hwy 87	Y	N	-106.533561	43.598253	0.116223	0.01146132
56	19	S1100	I- 25	147364620	US Hwy 87	Y	N	-106.608497	43.644685	0.809497	0.01146132
56	19	S1100	I- 90	635198026		Y	N	-106.160823	44.212252	0.230765	0.01146132
56	19	S1100	I- 90	635203662		Y	N	-106.306087	44.217749	0.201378	0.01146132
56	19	S1100	I- 90	147303287		Y	N	-106.156158	44.212943	0.018582	0.01146132
56	19	S1100	I- 90	147364484		Y	N	-106.390326	44.235006	0.124988	0.01146132
56	19	S1100	I- 90	147365807		Y	N	-106.104178	44.219162	0.078479	0.01146132
56	19	S1200	Sussex Rd	147321002	Sussex Rd	N	N	-106.297982	43.698467	0.019054	0.01160093
56	19	S1200	N Main St	624035496	State Hwy 196	N	N	-106.697436	44.360852	0.066349	0.01160093
56	19	S1200	N Main St	147299782	State Hwy 196	N	N	-106.698941	44.34753	0.093436	0.01160093
56	19	S1200	Old Hwy 87	147375368	Old Hwy 87	N	N	-106.70217	44.152286	0.414683	0.01160093
56	19	S1200	Sussex Rd	147320405	State Hwy 1002	N	N	-106.52221	43.69458	0.231502	0.01160093
56	19	S1200	US Hwy 16	147301629		N	N	-106.917457	44.161293	0.182867	0.01160093
56	19	S1200	US Hwy 16	147301697		N	N	-106.92537	44.233648	0.042325	0.01160093
56	19	S1200	US Hwy 16	147330545		N	N	-106.686296	44.354195	0.03269	0.01160093
56	19	S1200	US Hwy 16	617881865		N	N	-106.7265	44.341227	0.069923	0.01160093
56	19	S1200	Sussex Rd	147320871	State Hwy 1002	N	N	-106.373653	43.706753	0.085488	0.01160093

56	21	S1100	I- 25	622388802	I- 25	N	N	-104.838174	41.198768	0.794488	0.00223714
56	21	S1200	E Four Mile Rd	624043730	E Four Mile Rd	N	N	-104.81166	41.189258	0.093536	0.0010352
56	21	S1400	Draper Rd	160176358		N	N	-104.822959	41.096529	0.061319	0.00148588
56	21	S1400	Harriman Rd	160145448	Co Rd 102	N	N	-105.255088	41.000815	0.014499	0.00148588
56	21	S1400	Hirsig Rd	160162024	Hirsig Rd	N	N	-105.164265	41.552454	0.505235	0.00148588
56	21	S1400	E 5th St	160151376		N	N	-104.793841	41.128595	0.05956	0.00148588
56	21	S1400	Foothills Rd	160148179		N	N	-104.773765	41.169918	0.052044	0.00148588
56	21	S1400	Clear View Cir	160171828		N	N	-104.797632	41.199493	0.174119	0.00148588
56	21	S1400	Jack Rabbit Rd	160148102		N	N	-104.772682	41.195892	0.201315	0.00148588
56	21	S1400	Douglas St	160148214		N	N	-104.769206	41.167367	0.028956	0.00148588
56	21	S1400	E 20th St	160149935		N	N	-104.810315	41.138992	0.061455	0.00148588
56	21	S1400	Bus Park	160172654	Bus Park	N	N	-104.057737	41.182368	0.016854	0.00148588
56	21	S1400	Carroll Ave	160147641		N	N	-104.827405	41.165087	0.123116	0.00148588
56	21	S1400	Monroe Ave	160152283		N	N	-104.758935	41.135548	0.125386	0.00148588
56	21	S1400	Co Rd 138	160160311		N	N	-104.566438	41.120511	0.223542	0.00148588
56	21	S1400	McDonald Rd	160176882		N	N	-105.067974	41.152391	0.087434	0.00148588
56	21	S1400	McAllister Ln	160179037		N	N	-104.808831	41.174821	0.015039	0.00148588
56	21	S1400	Military Rd	608318324		N	N	-104.885953	41.13547	0.003858	0.00148588
56	23	S1100	US Hwy 30	611001502		NA	NA	-110.063887	41.684366	0.185933	0.0106383
56	23	S1200	Hwy 238	130299361	State Hwy 238	N	N	-110.997509	42.736914	0.321042	0.01295732
56	23	S1200	US Hwy 30	130309240		N	N	-110.975366	41.842883	2.388625	0.01295732
56	23	S1200	US Hwy 26	130324547	US Hwy 89A	N	N	-111.02474	43.180649	0.251294	0.01295732
56	23	S1200	US Hwy 89	130316044	US Hwy 89A	N	N	-111.017462	43.167187	0.031132	0.01295732
56	23	S1200	US Hwy 26	130316740	US Hwy 89	N	N	-110.933792	43.191983	0.115793	0.01295732
56	23	S1200	Hwy 236	611004110	State Hwy 236	N	N	-110.961819	42.692569	0.058369	0.01295732
56	23	S1200	US Hwy 189	611001556		N	N	-110.571305	41.633032	0.036267	0.01295732
56	23	S1200	State Hwy 89	635503417		N	N	-111.04699	42.347346	0.288851	0.01295732
56	23	S1200	Hwy 237	130297921	State Hwy 237	N	N	-110.950765	42.793945	0.227784	0.01295732
56	23	S1200	State Hwy 239	619637613		N	N	-111.030837	42.982527	0.060775	0.01295732
56	23	S1200	US Hwy 30	130324450		N	N	-110.954794	41.923748	0.658579	0.01295732
56	23	S1200	US Hwy 89	611008956	US Hwy 89A	N	N	-111.025859	43.13296	0.053011	0.01295732
56	23	S1200	State Hwy 235	130301475		N	N	-110.242527	42.261535	0.421719	0.01295732
56	23	S1200	US Hwy 30	130301732		N	N	-110.981435	42.153542	0.502008	0.01295732
56	23	S1200	US Hwy 26	130316677	US Hwy 89	N	N	-110.943822	43.192256	0.401259	0.01295732
56	23	S1200	US Hwy 89	611008950	US Hwy 89A	N	N	-111.026041	43.133785	0.062243	0.01295732
56	23	S1200	US Hwy 189	130303332		N	N	-110.185824	42.179875	0.328363	0.01295732

56	25	S1100	I- 25	149010081	I- 25	N	N	-106.335419	43.056092	0.413891	0.00248756
56	25	S1200	Cy Ave	149022110	Cy Ave	N	N	-106.366423	42.82324	0.017426	0.00131926
56	25	S1200	Cole Creek Rd	149038958	Cole Creek Rd	N	N	-106.188882	42.891713	0.027375	0.00131926
56	25	S1400	Co Rd 607	149017131		N	N	-106.154287	42.66765	0.463712	0.00130208
56	25	S1400	E A St	607727858		N	N	-106.300759	42.85147	0.033396	0.00130208
56	25	S1400	Star Ln	617962807		NA	NA	-106.340114	42.849249	0.007403	0.00130208
56	25	S1400	S 5th Ave	149021251		N	N	-106.392876	42.84351	0.0661	0.00130208
56	25	S1400	Gooder Ave	149019813		N	N	-106.45744	42.894276	0.202048	0.00130208
56	25	S1400	Lakeshore Dr	607699609	Lakeshore Dr	N	N	-106.778388	42.529729	0.036057	0.00130208
56	25	S1400	E 13th St	149024110		N	N	-106.313672	42.837542	0.017916	0.00130208
56	25	S1400	Co Rd 602	149026356		N	N	-106.225292	42.853349	0.012091	0.00130208
56	25	S1400	N 6 Mile Rd	149020050	Co Rd 119	N	N	-106.434416	42.899062	0.408276	0.00130208
56	25	S1400	Second St	607727056		N	N	-106.365773	42.841959	0.030995	0.00130208
56	25	S1400	Oregon Trl	148992543	Turkey Track Rd	N	N	-107.479794	42.473862	0.38719	0.00130208
56	25	S1400	Missouri Ave	607718345	Missouri Ave	N	N	-106.29305	42.83014	0.109077	0.00130208
56	25	S1400	N East St	149039592		N	N	-106.24357	43.414304	0.02002	0.00130208
56	25	S1400	Goose Egg Cir	607701450		N	N	-106.515294	42.760538	0.070234	0.00130208
56	25	S1400	Granada Ave	617963960		N	N	-106.342498	42.814829	0.029059	0.00130208
56	29	S1200	Beartooth Hwy	612523424	US Hwy 212	N	N	-109.633519	44.922577	1.645067	0.01129944
56	29	S1200	Chief Joseph Hwy	612522810	Chief Joseph Hwy	N	N	-109.644082	44.866408	0.069016	0.01129944
56	29	S1200	N Fork Hwy	627160085	US Hwy 14	N	N	-109.619865	44.463599	0.38333	0.01129944
56	29	S1200	Rd 18	149194387	Badger Basin Rd	N	N	-108.916337	44.703963	0.240759	0.01129944
56	29	S1200	N Fork Hwy	149206406	US Hwy 14	N	N	-109.911367	44.482239	0.238308	0.01129944
56	29	S1200	E Entrance Rd	626966347	US Hwy 14	N	N	-110.363413	44.560993	0.680702	0.01129944
56	29	S1200	17th St	612520875	17th St	N	N	-109.054089	44.51858	0.033156	0.01129944
56	29	S1200	Hwy 114	612522765	Hwy 114	N	N	-108.665672	44.875669	0.469234	0.01129944
56	29	S1200	US Hwy 14 Alt	624469118		N	N	-108.683333	44.77285	0.003999	0.01129944
56	29	S1200	Ln 13	612517654	State Hwy 295	N	N	-108.750575	44.695729	0.017968	0.01129944
56	29	S1200	W Coulter Ave	149194643	W US Hwy 14A	N	N	-108.781521	44.744254	0.145786	0.01129944
56	29	S1200	Powell Hwy	612521823	Powell Hwy	N	N	-108.926863	44.679533	0.055645	0.01129944
56	29	S1200	State Hwy 120	149212941		N	N	-108.823272	44.12936	0.036804	0.01129944
56	29	S1200	State Hwy 294	149202036	State Hwy 294	N	N	-109.016527	44.855058	0.095278	0.01129944
56	29	S1200	Rd 9	612468763	Hwy 295	N	N	-108.75993	44.7847	0.219583	0.01129944
56	29	S1200	US Hwy 191	149216474		N	N	-111.055155	44.933339	0.096348	0.01129944
56	29	S1200	W Coulter Ave	625076103	W US Hwy 14A	N	N	-108.776052	44.745846	0.085806	0.01129944
56	29	S1200	R 9	612522218	Rd 9	N	N	-108.759912	44.741851	0.051305	0.01129944

56	31	S1100	I- 25	160436166	I- 25	N	N	-105.033471	42.488013	0.150221	0.01496259
56	31	S1100	I- 25	606897806	I- 25	NA	NA	-105.002408	42.181889	0.336848	0.01496259
56	31	S1100	I- 25	604828586	I- 25	N	N	-104.828994	41.694975	1.05719	0.01496259
56	31	S1100	I- 25	606897551	I- 25	NA	NA	-104.791379	41.788735	0.107012	0.01496259
56	31	S1100	I- 25	604829666	I- 25	NA	NA	-105.048003	42.280869	0.749704	0.01496259
56	31	S1100	I- 25	618035322	I- 25	NA	NA	-104.96093	42.014929	0.189146	0.01496259
56	31	S1200	N Pioneer Rd	604823280	N Pioneer Rd	N	N	-104.750109	41.89528	0.703969	0.01591512
56	31	S1200	Hartville Hwy	160432353	State Hwy 270	N	N	-104.724922	42.320239	0.333096	0.01591512
56	31	S1200	Lake Side Dr	604817760	Lake Side Dr	N	N	-104.747501	42.33979	1.191051	0.01591512
56	31	S1200	US Hwy 26	624031047		N	N	-104.847177	42.248395	0.091746	0.01591512
56	31	S1200	W Whalen St	604820352	US Hwy 26	N	N	-104.748604	42.269744	0.140121	0.01591512
56	31	S1200	State Hwy 34	160445492		N	N	-105.082689	41.953594	0.428089	0.01591512
56	31	S1200	N Wheatland Hwy	160445589	State Hwy 320	N	N	-104.936079	42.12393	0.519234	0.01591512
56	31	S1200	S Glendo Hwy	160431220	S Glendo Hwy	N	N	-104.992648	42.360525	0.223112	0.01591512
56	31	S1200	Hartville Hwy	160441567	State Hwy 270	N	N	-104.694803	42.501143	0.777523	0.01591512
56	31	S1200	el Rancho Rd	604820453	el Rancho Rd	N	N	-105.049222	42.271762	0.09635	0.01591512
56	31	S1200	Slater Rd	160442550	State Hwy 314	N	N	-104.830403	41.871476	0.442447	0.01591512
56	31	S1200	Iron Mountain Rd	160425201	State Hwy 211	N	N	-104.836275	41.756586	0.136607	0.01591512
56	33	S1100	I-90	629143491		NA	NA	-106.936971	44.802617	0.025825	0.00877193
56	33	S1100	I- 90	634774573		NA	NA	-106.828618	44.582922	3.868549	0.00877193
56	33	S1200	US Hwy 14	147411270	US Hwy 16	N	N	-106.534251	44.567071	0.032397	0.01088435
56	33	S1200	Big Goose Rd	147421444	State Hwy 331	N	N	-107.062538	44.76667	0.019143	0.01088435
56	33	S1200	E 5th St	605384408	State Hwy 336	N	N	-106.955285	44.806844	0.031902	0.01088435
56	33	S1200	US Hwy 14	147398734		N	N	-107.364785	44.799827	0.737105	0.01088435
56	33	S1200	Coffeen Ave	147408472	Coffeen Ave	N	N	-106.94748	44.736972	0.051388	0.01088435
56	33	S1200	Front St	147409609	US Hwy 14	N	N	-106.382235	44.637732	0.032159	0.01088435
56	33	S1200	US Hwy 14	147400215		N	N	-107.500689	44.714898	0.029523	0.01088435
56	33	S1200	State Hwy 345	147396185		N	N	-107.321543	44.948465	0.756063	0.01088435
56	33	S1200	N Piney Rd	147420545	N Piney Rd	N	N	-106.900559	44.578041	0.177454	0.01088435
56	33	S1200	US Hwy 87	605368387		N	N	-106.885561	44.63175	0.031174	0.01088435
56	33	S1200	Fish Hatchery Rd	147419891	State Hwy 194	N	N	-106.918967	44.568667	0.147106	0.01088435
56	33	S1200	Big Goose Rd	147399687	State Hwy 331	N	N	-107.070202	44.7648	0.393307	0.01088435
56	33	S1200	State Hwy 335	147408335		N	N	-106.980318	44.700411	0.029008	0.01088435
56	33	S1200	US Hwy 14	147398523		N	N	-107.476861	44.77952	0.069219	0.01088435
56	33	S1200	W Loucks St	614721355	W Loucks St	N	N	-106.973517	44.796617	0.05157	0.01088435
56	33	S1200	Main St	147417308	Main St	N	N	-107.262715	44.871275	0.020451	0.01088435

56	35	S1200	Big Piney Calpet Rd	149346148	Big Piney Calpet Rd	N	N	-110.283783	42.393018	0.195383	0.01691729
56	35	S1200	Big Piney Calpet Rd	149347154	Big Piney Calpet Rd	N	N	-110.284863	42.37851	0.385055	0.01691729
56	35	S1200	State Hwy 352	149330874		N	N	-109.989113	42.956827	0.497131	0.01691729
56	35	S1200	State Hwy 352	149342158		N	N	-110.023781	43.098791	0.126517	0.01691729
56	35	S1200	Bloomfield Ave	617103316		NA	NA	-109.879699	42.882772	0.190991	0.01691729
56	35	S1200	US Hwy 189	614284845	US Hwy 189	N	N	-110.409656	43.20366	0.12783	0.01691729
56	35	S1200	State Hwy 352	631784199		N	N	-109.989064	42.97478	0.225948	0.01691729
56	35	S1200	Big Piney Calpet Rd	149328921	Big Piney Calpet Rd	N	N	-110.290572	42.358646	0.278765	0.01691729
56	35	S1200	Middle Piney Rd	149319272	Middle Piney Rd	N	N	-110.285006	42.538177	0.847708	0.01691729
56	35	S1200	Big Piney Calpet Rd	149327486	Big Piney Calpet Rd	N	N	-110.282524	42.387895	0.261669	0.01691729
56	35	S1200	State Hwy 354	611631792		N	N	-110.124057	42.890585	0.348304	0.01691729
56	35	S1200	State Hwy 353	149335729		N	N	-109.714446	42.749503	0.046943	0.01691729
56	35	S1200	Big Piney Calpet Rd	149349722	Big Piney Calpet Rd	N	N	-110.28701	42.453728	0.154211	0.01691729
56	35	S1200	State Hwy 352	149348298		N	N	-110.024543	43.100778	0.158921	0.01691729
56	35	S1200	Fox Willow Dr	624696401		NA	NA	-109.863534	42.858926	0.039994	0.01691729
56	35	S1200	US Hwy 189	149341811	US Hwy 191	N	N	-110.167302	43.096316	0.195055	0.01691729
56	35	S1200	State Hwy 353	149343493		N	N	-109.509085	42.67973	0.040054	0.01691729
56	35	S1200	US Hwy 191	611631778		N	N	-110.070024	42.890439	0.046435	0.01691729
56	37	S1100	I- 80	624231944	I- 80	NA	NA	-108.780959	41.678094	0.163315	0.01215805
56	37	S1100	I- 80	633104230	US Hwy 30	N	N	-109.316632	41.554826	0.039476	0.01215805
56	37	S1100	I- 80 Interstate Rmp	149499689		N	N	-109.587987	41.555451	0.259911	0.01215805
56	37	S1100	I- 80	149487238	I- 80	N	N	-108.066013	41.661045	0.136447	0.01215805
56	37	S1200	US Hwy 191	618328344		N	N	-109.437956	42.043985	0.338956	0.01204819
56	37	S1200	State Hwy 374	149511333		N	N	-109.482509	41.541523	0.131587	0.01204819
56	37	S1200	Uinta Dr	149500497	Uinta Dr	N	N	-109.472709	41.511854	0.0531	0.01204819
56	37	S1200	State Hwy 414	149464554		N	N	-109.985213	41.027126	0.131917	0.01204819
56	37	S1200	State Hwy 28	149493695		N	N	-109.808056	41.858995	0.147627	0.01204819
56	37	S1200	Lower Farson Cutoff Rd	149492132	California-Mormon Emigr	N	N	-109.666317	41.965696	0.038819	0.01204819
56	37	S1200	Dewar Dr	149503912	Dewar Dr	N	N	-109.226073	41.584776	0.04782	0.01204819
56	37	S1200	US Hwy 191	149496622		N	N	-109.325226	41.744334	0.329502	0.01204819
56	37	S1200	Pilot Butte Ave	611877695	Pilot Butte Ave	NA	NA	-109.216939	41.59261	0.030201	0.01204819
56	37	S1200	State Hwy 430	149458823		N	N	-108.78958	41.049775	0.243255	0.01204819
56	37	S1200	US Hwy 191	149461346	State Hwy 373	N	N	-109.310187	41.437909	1.183344	0.01204819
56	37	S1200	State Hwy 372	149499742	State Hwy 374	N	N	-109.591055	41.555985	0.056765	0.01204819
56	37	S1200	D St	149502711	State Hwy 430	N	N	-109.2125	41.581594	0.037972	0.01204819
56	37	S1200	State Hwy 430	149457693		N	N	-108.836841	41.204642	0.057298	0.01204819

56	39	S1200	Grand Loop Rd	130447128	US Hwy 89	N	N	-110.647369	44.4336	0.335289	0.02292994
56	39	S1200	State Hwy 22	130412425		N	N	-111.023765	43.531226	0.014713	0.02292994
56	39	S1200	W Broadway Ave	626815081	US Hwy 26	N	N	-110.767775	43.479528	0.008592	0.02292994
56	39	S1200	US Hwy 26	130414136	US Hwy 26	N	N	-110.747679	43.393058	0.052961	0.02292994
56	39	S1200	US Hwy 26	130440602	US Hwy 26	N	N	-110.519893	43.822999	0.705899	0.02292994
56	39	S1200	State Hwy 22	235945248		N	N	-111.044466	43.542907	0.121907	0.02292994
56	39	S1200	N Cache St	130449024	US Hwy 26	N	N	-110.762232	43.489123	0.002913	0.02292994
56	39	S1200	Grand Loop Rd	130410308	US Hwy 89	N	N	-110.849699	44.487252	0.476339	0.02292994
56	39	S1200	US Hwy 26	130442142	US Hwy 26	N	N	-110.140642	43.785674	0.058013	0.02292994
56	39	S1200	US Hwy 26	130414163	US Hwy 26	N	N	-110.745142	43.384441	0.015347	0.02292994
56	39	S1200	US Hwy 26	130416881	US Hwy 26	N	N	-110.179349	43.812532	0.085526	0.02292994
56	39	S1200	John D Rockefeller Jr Pkwy	625696810	US Hwy 89	N	N	-110.632246	43.929951	0.644068	0.02292994
56	39	S1200	US Hwy 26	633121288	US Hwy 26	N	N	-110.748242	43.394564	0.107092	0.02292994
56	39	S1200	Grand Loop Rd	130435259	US Hwy 20	N	N	-110.418215	44.54549	0.012986	0.02292994
56	39	S1200	N Moose Wilson Rd	130421972	N Moose Wilson Rd	N	N	-110.846204	43.500474	0.111366	0.02292994
56	39	S1200	W Broadway Ave	626815080	US Hwy 26	N	N	-110.767992	43.479487	0.01271	0.02292994
56	39	S1200	US Hwy 189	130430099	US Hwy 189	Y	N	-110.730176	43.322355	0.075306	0.02292994
56	39	S1200	John D Rockefeller Jr Pkwy	130438888	US Hwy 89	N	N	-110.617709	43.904563	0.02257	0.02292994
56	41	S1100	I- 80	160262564		N	N	-110.424833	41.332567	0.082322	0.02242152
56	41	S1100	I- 80	160262989		N	N	-110.382457	41.349435	0.884846	0.02242152
56	41	S1100	I- 80	160263878		N	N	-110.369274	41.354538	0.581572	0.02242152
56	41	S1100	I- 80	160276521		N	N	-110.449606	41.328957	0.025325	0.02242152
56	41	S1100	I- 80 Bus	625848180		N	N	-110.374475	41.316471	0.467979	0.02242152
56	41	S1200	State Hwy 150	160278118	State Hwy 150	N	N	-110.948574	41.26097	0.069808	0.02083333
56	41	S1200	State Hwy 89	160256726	State Hwy 89 N	N	N	-111.041282	41.406968	0.045853	0.02083333
56	41	S1200	State Hwy 414	160278610		N	N	-110.33637	41.272014	0.050479	0.02083333
56	41	S1200	State Hwy 414	160276641		N	N	-110.32857	41.269014	0.002005	0.02083333
56	41	S1200	State Hwy 89	160259758	State Hwy 89 N	N	N	-110.982831	41.297753	0.059565	0.02083333
56	41	S1200	State Hwy 414	160269401		N	N	-110.121784	41.048317	0.287048	0.02083333
56	41	S1200	State Hwy 412	160258496		N	N	-110.423572	41.4321	0.102188	0.02083333
56	41	S1200	State Hwy 410	160266210		N	N	-110.493857	41.1882	0.094194	0.02083333
56	41	S1200	US Hwy 189	160257875		N	N	-110.625197	41.430625	0.935336	0.02083333
56	41	S1200	Carter Cutoff Rd	160258469	Carter Cutoff Rd	N	N	-110.441935	41.452999	0.052881	0.02083333
56	41	S1200	State Hwy 414	160269069		N	N	-110.178426	41.097522	0.74704	0.02083333
56	41	S1200	State Hwy 150	606738273	State Hwy 150 S	N	N	-110.953165	41.262237	0.015361	0.02083333
56	41	S1200	State Hwy 89	160275943		N	N	-110.957224	41.281488	0.07992	0.02083333

Appendix C

Sample Data Collection Form and Cover Sheet

WYDOT SEAT BELT SURVEY DATA COLLECTION FORM

Observer _____ Total # of observation pages: _____

County _____ Date: _____

Site # _____

Site Location _____

Alternate Site Information

Available alternate sites:

1. _____

2. _____

Is this an alternate site? Yes No (Please circle response)

If yes, which site was selected? 1 2 (Please circle response)

Please provide reason for using alternate site:

_____

_____

_____

Site Description

Please circle your responses:

Assigned traffic flow North South East West

Number of lanes in this direction: _____

Weather conditions clear/sunny cloudy light fog light rain light snow

Observation Site start and end times:

Start Time: _____ AM PM End Time: _____ AM PM

(Total observation period MUST last EXACTLY 45 minutes)

Vehicle Type				WY License		
(1) Auto	(2) Van	(3) SUV	(4) PU	(1) Y	(2) N	(9) Unsure
Driver	(1) M	(2) F	(1) Y	(2) N	(3) UK	
Pass.	(1) M	(2) F	(1) Y	(2) N	(3) UK	(4) NP

Vehicle Type				WY License		
(1) Auto	(2) Van	(3) SUV	(4) PU	(1) Y	(2) N	(9) Unsure
Driver	(1) M	(2) F	(1) Y	(2) N	(3) UK	
Pass.	(1) M	(2) F	(1) Y	(2) N	(3) UK	(4) NP

Vehicle Type				WY License		
(1) Auto	(2) Van	(3) SUV	(4) PU	(1) Y	(2) N	(9) Unsure
Driver	(1) M	(2) F	(1) Y	(2) N	(3) UK	
Pass.	(1) M	(2) F	(1) Y	(2) N	(3) UK	(4) NP

Vehicle Type				WY License		
(1) Auto	(2) Van	(3) SUV	(4) PU	(1) Y	(2) N	(9) Unsure
Driver	(1) M	(2) F	(1) Y	(2) N	(3) UK	
Pass.	(1) M	(2) F	(1) Y	(2) N	(3) UK	(4) NP

Vehicle Type				WY License		
(1) Auto	(2) Van	(3) SUV	(4) PU	(1) Y	(2) N	(9) Unsure
Driver	(1) M	(2) F	(1) Y	(2) N	(3) UK	
Pass.	(1) M	(2) F	(1) Y	(2) N	(3) UK	(4) NP

Vehicle Type				WY License		
(1) Auto	(2) Van	(3) SUV	(4) PU	(1) Y	(2) N	(9) Unsure
Driver	(1) M	(2) F	(1) Y	(2) N	(3) UK	
Pass.	(1) M	(2) F	(1) Y	(2) N	(3) UK	(4) NP

Vehicle Type				WY License		
(1) Auto	(2) Van	(3) SUV	(4) PU	(1) Y	(2) N	(9) Unsure
Driver	(1) M	(2) F	(1) Y	(2) N	(3) UK	
Pass.	(1) M	(2) F	(1) Y	(2) N	(3) UK	(4) NP

Vehicle Type				WY License		
(1) Auto	(2) Van	(3) SUV	(4) PU	(1) Y	(2) N	(9) Unsure
Driver	(1) M	(2) F	(1) Y	(2) N	(3) UK	
Pass.	(1) M	(2) F	(1) Y	(2) N	(3) UK	(4) NP

Vehicle Type				WY License		
(1) Auto	(2) Van	(3) SUV	(4) PU	(1) Y	(2) N	(9) Unsure
Driver	(1) M	(2) F	(1) Y	(2) N	(3) UK	
Pass.	(1) M	(2) F	(1) Y	(2) N	(3) UK	(4) NP

Vehicle Type				WY License		
(1) Auto	(2) Van	(3) SUV	(4) PU	(1) Y	(2) N	(9) Unsure
Driver	(1) M	(2) F	(1) Y	(2) N	(3) UK	
Pass.	(1) M	(2) F	(1) Y	(2) N	(3) UK	(4) NP

Appendix D

Training Syllabus

Day One

Welcome and introduction of all participants

- **Trainers**
- **Employer**
- **Highway Safety Office Personnel**
- **Observers**
- **Alternate (reserve) observers**
- **Quality Control Monitors**

Distribution of equipment

- **Checklist of materials, including WYDOT authorization letter, safety materials, all forms & observation materials**

Survey overview

- **Steps**
- **Importance of Data Collection process**

Data Collection Techniques

- **Definition of vehicles**
- **Definition of passengers & belt/booster seat use**
- **Weekday/weekend**
- **Heavy traffic v. light traffic**
    - **Use of second observers**
- **Weather conditions**
- **Observation duration**

Scheduling and Rescheduling

- **Site assignment sheet**
- **Daylight observation**
- **Problems encountered because of temporary impediments (i.e., weather)**
- **Permanent problems at data collection sites**

Site locations

- **Site location & description sheet**
- **Parking**
- **Interstate ramps and surface streets**
- **Direction of travel/number of observed lanes**
- **Non-intersection requirement**
- **Alternate site selection**

Data Collection Forms

- **Cover sheet**
- **Recording observations**
- **Recording temporary problems/weather conditions**
- **Recording alternate site information**

Safety and Security

Field Testing

- **Practice field site**

Day Two (AM)

Review of maps

- **Locating all sites on county maps**

Shipment of Forms and materials

- **Review materials**
- **Essential timeline**

Timesheet and expense reporting

Field Testing

- **3 Test Sites**

Post Training Quiz

Day Two (PM)

Quality Control Training

- **Review of randomly selected QC sites**
- **Checklist of field protocols to address during site**
- **Inter-observer agreement ratio testing**
- **Procedures in cases of suspected or confirmed data falsification**
- **Reporting**

Uniform Criteria for State Observational Surveys of Seatbelt Use

Per the required procedures, the sample first created in 2012 reached its expiration date and necessitated a new sampling. What follows is the certification form submitted for NHTSA approval.

Uniform Criteria for State Observational Surveys of Seat Belt Use

Certification Form

1. CONTACT INFORMATION

Submit Form

State: Wyoming

Name: Contact Name

Address: Street Address

City | State | Zip Code

Email: Email Address

Phone number:

2. VERIFICATION

I verify that this sample design is consistent with the previously NHTSA approved design plan (i.e., the sample design characteristics (stratification, stages of selection, etc.) and sample sizes have not changed). I verify that all of the information provided is complete and accurate.

(●) Yes ( ) No

3. ROAD SEGMENT SAMPLING FRAME

a. What road segment sample frame was used? TIGER

If Other, please specify:

b. If you are not using NHTSA provided road segment data please verify the following:

I verify that every road in the state is represented in the database, with the exception of rural local roads in counties that are not within Metropolitan Statistical Areas (MSAs), other non-public roads, unnamed roads, unpaved roads, vehicular trails, access ramps, cul-de-sacs, traffic circles, and service drives. If the database is a sample of roads, I verify that all in-scope roads had a chance to be selected and the overall probability of selection is trackable.

(●) Yes ( ) No

4. EXCLUSIONS

a. Was the optional FARS 85% fatality exclusion implemented? (●) Yes ( ) No
[1340.5.a.1 allows for exclusions of counties proivded that the sample frame accounts for at least 85% of the state's fatalities in the last 3, 4, 5 years based on FARS.]

i. If yes, please specify years of FARS data used:

Year 2014 and range 5 years

b. Was the optional rural local roads exclusion implemented? (●) Yes ( ) No
[1340.5.a.2.iii allows for exclusions of rural local roads that are not within a Metropolitan Statistical Area (MSA).]

c. Were the optional road types exclusions implemented? (●) Yes ( ) No
[1340.5.a.2.iii allows for exclusions of non-public roads, unnamed roads, unpaved roads, vehicular trails, access ramps, cul-de-sacs, traffic circles, and service drives.]

5. STAGES OF SELECTION

a. How many stages of selection? 2 Stages

b. Please specify the definition of units:

Stage	Unit	
1	County	If Other, please specify:
2	Road segments	If Other, please specify:
3	Select Unit	If Other, please specify:
4	Select Unit	If Other, please specify:

c. Was stratification of sampling units used for each for each stage (i.e., PSUs/counties, road segments, etc.)? (●) Yes ( ) No

i. If yes, please specify:
County Stratification: By Region
Road Segment Stratification: By Road Type

6. **PROBABILITIES OF SELECTION**

a. Probabilities of selection: Other | SRS by County and Road Type

i. If PPS, please specify measure of size: Specify PPS Measure of Size:

7. **ALLOCATION**

a. Please provide the following information on the allocation of the road segment sample:

Stratum/County	Description	Population	Sample Count
Albany	S1100	254	4
Albany	S1200	954	13
Big Horn	S1200	1258	17
Campbell	S1100	234	3
Campbell	S1200	990	14
Carbon	S1100	385	4
Carbon	S1200	1216	13
Converse	S1100	310	5
Converse	S1200	765	12
Crook	S1100	315	5
Crook	S1200	820	12
Fremont	S1200	1613	17
Johnson	S1100	667	8
Johnson	S1200	842	9
Laramie	S1100	527	1
Laramie	S1200	964	1
Laramie	S1400	13007	15
Lincoln	S1200	1430	17
Natrona	S1200	1335	1
Natrona	S1400	28117	16
Niobrara	S1200	495	17
Park	S1200	1561	17
Platte	S1100	372	6
Platte	S1200	751	11
Sheridan	S1100	218	2
Sheridan	S1200	1422	15
Sweetwater	S1100	534	5
Sweetwater	S1200	1135	12
Teton	S1200	617	17

Submit Form

Signed Change Order Approved on 05-01-2020

Timeline adjustments were implemented due to the impacts of COVID-19. Requests for changes in the process (observer training, data collection, and data analysis) were submitted to and approved by the State Highway Safety Engineer Matthew Carlson, P.E.

Mark Gordon
Governor

WYOMING Department of Transportation
"Providing a safe, high quality, and efficient transportation system"
5300 Bishop Boulevard, Cheyenne, Wyoming 82009-3340

K. Luke Reiner
Director

Distribution to:		Services for:		Reviewed by:	Date:
Owner:	☒	Design	☐		
FHWA (When Applicable):	☐	Construction	☐		4-30-2020
Consultant:	☒	Other	☒	Engineering Services Engineer	

Project No.:	HS40220 & HS40221	Consultant:	DLN Consulting, Inc.
Project Name:	Statewide Seat Belt Observation Survey	Address:	2493 4th Avenue West, Suite G Dickinson, ND 58607
County:	Statewide	Agreement No.:	69717
		Change Order No.:	1

Upon execution of this Change Order, the following supplemental instructions and/or fees shall become a part of the project agreement and, where in conflict with, supersede the original agreement and previously executed change orders.

Description of Services:

Change Order No. 1 is issued to amend the scope of work, to extend the completion date, and to add project HS40221 for Fiscal Year 2021 as described in Exhibit A-1, attached hereto and made a part of this Change Order.

Execution of this Change Order authorizes performance to commence from the date entered into and, except as may be changed by the State, in writing, the Consultant shall complete the services described herein on or by December 21, 2020.

April 30, 2020

Fees:

Original Agreement	$126,004.80	Cost-not-to-exceed
Net Previous Changes	$ 0.00	Cost-not-to-exceed
Subtotal	$126,004.80	Cost-not-to-exceed
Fee (increase this change order)	$ 0.00	Cost-not-to-exceed
Total Adjusted Fee	$126,004.80	Cost-not-to-exceed

With the exception of the items explicitly delineated in this Change Order, all terms and conditions of the original Agreement between WYDOT and the Consultant, including but not limited to sovereign immunity, shall remain unchanged and in full force and effect.

EXECUTION: This Change Order shall be binding on successors and assigns of either party and the parties hereby agree to the terms and conditions set forth in this instrument, and have found that this Change Order can be authorized under the terms of the above referenced Agreement and shall be executed by their proper officials thereunto duly authorized as of the date indicated below.

DLN Consulting, Inc.

By: Debra L. Nelson Date: 5-1-2020
Debra L. Nelson
President

Transportation Commission of Wyoming

By: Date: 5-1-2020
Matthew Carlson, P.E.
State Highway Safety Engineer
Wyoming Department of Transportation

Proposal for Wyoming Seat Belt Survey, 2020

DLN Consulting, Inc. staff met on April 17, 2020, to map out a plan for the conduct of the Wyoming Seat Belt Survey in the current year. There are so many unknown factors that the strategic plan has to be flexible enough to accommodate various developments in the Covid-19 pandemic. Here is an outline of DLN's current proposal.

The Basic Plan

- Prior yearly studies have been done in early June, with training the week before field observations occur. It is unlikely that conditions will change enough to permit that time frame.
- DLN staff recommends that the time for training and observations needs to be postponed until traffic conditions are as comparable to prior studies as possible.
    - Specifically, the ratio of in-state and out-of-state licensed vehicles should be as similar as possible. For this to happen, the tourist season will need some opportunity to develop for comparable traffic patterns.
    - DLN staff suggest a plan that specifies as a tentative goal the latest possible time for observations, which we calculate to be one to two weeks before Labor Day (September 7, 2020), the day that usually marks the end of the tourist season. This plan sets the dates as follows:
        - Training to be the week of August 17-21, 2020.
        - Field observations collected August 24-30, 2020.
- If conditions allow, both training and observations could occur earlier, depending on when normal travel conditions return.

A Contingency Plan

If current pandemic conditions prevail up to and including the training and observation period in August, some changes will be necessary. DLN proposes the following potential contingency plans:

- Training can be done virtually using a meeting platform (Zoom, Go To Meeting, WebEx, etc.) that brings the observers together. DLN staff have experience with different platforms. However, it will be necessary to determine in advance if observers are available and all have the technical capabilities, hardware and software (including WiFi access), to participate in the virtual training.
- A more complex problem involves the process of determining interaccuracy reliability (or interrater reliability) ratios. Under normal conditions, observers are paired, and they watch and record observations for the same traffic. Their observations are then compared and a reliability ratio is calculated. If pandemic conditions are still prevalent, DLN staff suggest a simulated test of observer interaccuracy.
    - DLN staff will create virtual pairings of observers who view the same traffic, but in a video format. This simulation requires that each pair view the same video and record observations in as similar a manner as possible. The platform for viewing the videos needs to exclude observer actions that alter the viewing patterns. For example, observers would not be allowed to rewind and rewatch traffic, use slow motion or zooming techniques, or otherwise change the viewing patterns and skew the results.

- Once this plan is approved, DLN staff can begin the process of preparing for the simulation.
  - Staff will begin the search for an appropriate video platform as soon as possible.
  - Video services or video equipment will need to be procured and videos will need to be recorded.
  - Videos will need to approximate Wyoming traffic patterns and Wyoming landscape conditions.
  - A pre-test can allow assessment of the viability of the simulation.

Changes to the Budget

Virtual training may, and simulated tests of interaccuracy reliability ratios certainly will, involve costs that are not currently itemized in the budget for the Wyoming 2020 Seat Belt Survey. However, the current budget provides for travel and in-person meeting expenses that could be reallocated to cover the unexpected costs of virtual training and simulation tests. Of course, this depends on whether this plan is acceptable, approved and implemented.

One additional point about the simulation: DLN staff believe that a pre-test of the simulated interaccuracy reliability ratio experiment is in order. This can be done on a smaller scale, using only a few paired observers and locally produced videos for a trial run of the process. Whether a simulation is necessary, or is unnecessary because conditions return to normal in a timely manner, it may still be valuable to determine if the simulations are reliable enough to be included in the training.

At this point, DLN staff does not assume that conditions will be fully returned to normal under the current pandemic restrictions. Depending on real circumstances, a hybrid plan that uses an appropriate mix of virtual training and on-site data collection can be developed.

Changes to the Timeline

Event	Task	Original Completion Date	Proposed Completion Date
Observer Training	All contacts for training date	05/15/2020	7/1/2020
	Training Event	NLT 6/5/2020	Week of 8/17/2020
Preparation	Purchases completed, all setup and preparation completed (including virtual training & reliability testing, if necessary)	5/29/2020	NLT 8/3/2020
Observational Survey	Statewide Survey Observations	6/8 – 6/14/2020	8/24 – 8/30/2020
	Data Work & QA Completed	7/31/2020/	10/15/2020
	Statewide Survey Results to HSO	8/14/2020	10/31/2020
	Statewide Analysis Report to HSO	9/25/2020	12/21/2020

Appendix C: NHTSA Approval

NHTSA approval and final review

State Seatbelt Survey Plan

NHTSA Final Review

Wyoming

Version 4

Requirement Type		Design Requirement	Status	Comments
Statistical	1	Are the sampling units, with measures of size, defined and compliant with 1340.5.a?	Compliant	16 counties account for approximately 85% of the passenger vehicle crash-related fatalities according to FARS data averages for the period 2005 to 2009 (p.4).
GIS	2	Is the source for the sample frame road segments specified and compliant with 1340.5.a.2.i?	Compliant	Westat supplied 2010 TIGER data (p.4).
Statistical	3	If there are any exclusions to the sampling frame, are they specified and compliant with 1340.5.a.2.ii?	Compliant	Wyoming exercised the available exclusion option and removed rural local roads in counties that are not within Metropolitan Statistical Areas (MSAs), and other non-public roads, unnamed roads, unpaved roads, vehicular trails, access ramps, cul-de-sacs, traffic circles, and service drivers from the dataset (p.4).
Statistical	4	Are the stratification methods for each stage of sampling defined along with a description of methods that were used for allocating the sample units into the strata?	Compliant	1) County: 16 of 23 counties accounted for 85% of the traffic-related fatalities; all 16 counties were selected for the sample (p.5). 2) Road segment: Stratified by MTFCC road classification into three groups (Primary, Secondary, and Local) (pp.4-5).
Statistical	5	Is the method used for selecting road segments for observation sites specified and compliant with 1340.5.b?	Compliant	Segments were sampled by random sampling (p.5). The reserve sample segments were also selected SRS within a particular road classification and county (p.9).
Statistical	6	Is there a list of all observation sites and their probabilities of selection?	Compliant	A list of sites is found in Appendix B (p.23). The probabilities represent an SRS.
Statistical	7	Is there an explanation of how the sample sizes were determined? Is that explanation compliant with section 1340.5.d?	Compliant	Based on historical data, the state estimates a total of 28,800 vehicle observations (16 counties * 18 sites in each county * 100 observations per site) (pp.6-7).

Requirement Type		Design Requirement	Status	Comments
Operational	8	Is the process of assigning observation sites to observation time periods explained? Is it compliant with 1340.6?	Compliant	All observations will be conducted during weekdays and weekends between 7 a.m. and 6 p.m. (p.11). Sites within relatively close geographic proximity will be assigned as data collection clusters. The first site within each cluster will be assigned a random day and time for completion. All other sites within a cluster will be assigned to the same day and scheduled in order of operational efficiency (p.11).
Statistical	9	Is the state statistician named and his/her qualifications described? Does the statistician meet the requirements in 1340.8.c?	Compliant	The statistician's resume is Appendix A (p.19).
Operational	10	Is an observation period defined?	Compliant	45 minutes (p.11)
Operational	11	Are the procedures used to reschedule and substitute observation sites specified and compliant with 1340.5.c?	Compliant	When a site is temporarily unavailable, data collection will be rescheduled for a similar day of the week and time of day. In the event that the site is permanently unworkable, an alternate site, selected as part of the reserve sample, will be used as a permanent replacement (p.12).
Statistical	12	Are the procedures for collecting additional data to reduce the nonresponse rate specified and compliant with 1340.9.f.2?	Compliant	If a site exceeds 10% nonresponse, data collectors will be sent back to that site for an additional observation period (p.13).
Operational	13	Are the data collection procedures described?	Compliant	Data collection will primarily be performed by single observers, except at high volume sites where two data collectors will be assigned (p.11). The observed direction of traffic will be predetermined and randomly assigned (p.12). The appropriate vehicles, occupants, belt use definitions, and data elements are included in the survey (pp.10-12).
Operational	14	Are the number of observers and quality control monitors specified?	Compliant	16 data collectors and 2 QC Monitors will be hired (p.10). QC Monitors will visit 2 sites per county (or 11%) (p.10). Training will take place prior to data collection, during the last week of April (p.10). The training agenda is Appendix D (p.35).
Statistical	15	Is there a description of how the seat belt use rate estimate will be calculated?	Compliant	A ratio estimator will be used (pp.15-16).
Statistical	16	Is there a description of how the variance will be calculated? Is it compliant with 1340.9.g?	Compliant	Complex Sample Module for SPSS will be used to calculate the variance (p.13).

Requirement Type		Design Requirement	Status	Comments
Statistical	17	If any imputation is planned, are the methods specified and compliant with 1340.9.c?	Compliant	No imputation is planned (p.13).
Statistical	18	Are the weighting procedures appropriate for the design, including base weights, and adjustments for observation sites with no usable data, and specified and compliant with 1340.9.d and 1340.9.e?	Compliant	Weights and estimators are appropriate for the SRS design (pp.14-17). The nonresponse adjustment is also appropriate for the proposed plan (p.15).
Statistical	19	If the standard error exceeds 2.5 percentage points, are the procedures to reduce it specified and compliant with 1340.9.g?	Compliant	If the standard error exceeds 2.5%, more data will be collected from existing sites (p.6).

U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

Region 8
Colorado, Nevada, North Dakota,
South Dakota, Utah, Wyoming

12300 West Dakota Avenue
Suite 140
Lakewood, CO 80228
Phone: 720-963-3100
Fax: 720-963-3124

February 9, 2017

Kenneth Ledet, Grants Manager
Highway Safety Behavioral Program
Wyoming Department of Transportation
5300 Bishop Boulevard
Cheyenne, WY 52009

Dear Ken:

NHTSA has completed its review of your Uniform Criteria for State Observational Surveys of Seat Belt Use Certification form and supporting documentation, evaluating the four requirements related to the re-selection of observation sites listed in 1340.10 of the Final Rule. We are pleased to inform you that your re-selection is fully compliant with the Uniform Criteria for State Observational Surveys of Seat Belt Use.

Sincerely,

Gina Mia Espinosa-Salcedo
Regional Administrator

cc: Karson James

NHTSA
www.nhtsa.gov

Appendix D: Data Tables

Detailed table of collected data

Occupant Frequencies

Frequencies of Occupant Belt Use by County and Observer, Wyoming 2020					
		Occupant Belt Use			
County	Observer	Belted	Not Belted	Unsure	Total
Albany	Monty Byers	1,649	184	0	1,833
Big Horn	Dixie Elder	674	80	0	754
Campbell	Wes Gasner	1,296	380	0	1,676
Carbon	Danny Conrad	1,191	103	3	1,297
Converse	Hannah Walls	1,005	214	6	1,225
Crook	Skylar Elder	1,185	92	1	1,278
Fremont	Jaclyn Davison	1,265	251	2	1,518
Johnson	Deb Eutsler	897	146	0	1,043
Laramie	Kurt Evezich	452	47	1	500
Lincoln	Esther Perea	979	143	3	1,125
Natrona	Meredith Peak	570	130	0	700
Niobrara	Lori Cole	694	36	2	732
Park	Patrick White	1,375	267	2	1,644
Platte	Doug Peterson	956	167	0	1,123
Sheridan	Sandee Conrad	1,261	260	4	1,525
Sweetwater	Nikole Craig	1,492	435	0	1,927
Teton	Peggy Dowers	2,097	138	2	2,237
	Total	19,038	3,073	26	22,137
				Average	1,302

Frequencies by Type of Vehicle Occupant, Wyoming 2020			
	Unweighted Count	Percent	
Drivers	16,637	75.2%	
Passengers	5,500	24.8%	
All Occupants	22,137	100.0%	

	Vehicle	Unweighted	% of
Gender	Type	Count	Sample
Male	Auto	2,202	16.6%
	Van	3,404	25.7%
	SUV	735	5.5%
	PU Truck	6,905	52.1%
	State	13,246	100.0%
Female	Auto	2,162	24.3%
	Van	4,110	46.2%
	SUV	545	6.1%
	PU Truck	2,074	23.3%
	State	8,891	100.0%

Frequencies by Type of Vehicle Occupant		
Occupant	Unweighted	Percent of
	Count	Occupants
Drivers	16,637	75.2%
Passengers	5,500	24.8%
All	22,137	100.0%

Trend in Sample Sizes for Wyoming Seatbelt Surveys, 2012-2020	
Year	Sample Size
2012	18,703
2013	20,877
2014	23,723
2015	24,682
2016	24,893
2017	23,775
2018	25,046
2019	24,821
2020	22,137
Total	208,657
Average	23,184

Frequencies by Type County and Percent of Sample, Wyoming 2020		
County	Count	% of Sample
Niobrara	732	3.3%
Teton	2,237	10.1%
Crook	1,278	5.8%
Carbon	1,297	5.9%
Laramie	500	2.3%
Albany	1,833	8.3%
Big Horn	754	3.4%
Lincoln	1,125	5.1%
Johnson	1,043	4.7%
Platte	1,123	5.1%
Park	1,644	7.4%
Fremont	1,518	6.9%
Sheridan	1,525	6.9%
Converse	1,225	5.5%
Natrona	700	3.2%
Campbell	1,676	7.6%
Sweetwater	1,927	8.7%
State	22,137	100.0%

Occupant Variables

Estimates of Seatbelt Use by Population Density, Wyoming 2020					
Population	Occupant Belt Use				Unweighted
Density	Belted	Not Belted	Unsure	Total	Count
Urban	79.9%	20.1%	0.0%	100.0%	5,589
Rural	88.2%	11.7%	0.1%	100.0%	16,548
State	82.5%	17.5%	0.0%	100.0%	22,137

Estimates of Seatbelt Use by Wyoming License, Wyoming 2020					
Wyoming	Occupant Belt Use				Unweighted
License	Belted	Not Belted	Unsure	Total	Count
Yes	80.5%	19.5%	0.0%	100.0%	12,747
No	91.1%	8.8%	0.1%	100.0%	9,099
Unsure	96.3%	3.7%	0.0%	100.0%	291
State	82.5%	17.5%	0.0%	100.0%	22,137

Estimates of Seatbelt Use by Roadway Type, Wyoming 2020					
Roadway	Occupant Belt Use				Unweighted
Type	Belted	Not Belted	Unsure	Total	Count
Primary	91.7%	8.3%	0.1%	100.1%	6,765
Secondary	83.8%	16.1%	0.1%	100.0%	14,421
Other*	81.4%	18.6%	0.0%	100.0%	951
State	82.5%	17.5%	0.0%	100.0%	22,137
*"Other" roadways are a catchall category for local, rural roads, and city streets					
that are not primary or secondary roadways.					

Estimates of Occupant Seatbelt Use by Weekdays and Weekends, Wyoming 2020					
Weekday-	Occupant Belt Use				Unweighted
Weekend	Belted	Not Belted	Unsure	Total	Count
Weekdays	82.3%	17.7%	0.0%	100.0%	18,222
Weekends	87.3%	12.7%	0.0%	100.0%	3,915
State	82.5%	17.5%	0.0%	100.0%	22,137

Estimates of Seatbelt Use by Occupant Gender, Wyoming 2020					
Occupant	Occupant Belt Use				Unweighted
Gender	Belted	Not Belted	Unsure	Total	Count
Male	78.3%	21.7%	0.0%	100.0%	13,246
Female	89.0%	11.0%	0.0%	100.0%	8,891
State	82.5%	17.5%	0.0%	100.0%	22,137

Estimate of Occupant Belt Use by Vehicle Type						
Vehicle	Occupant Belt Use				Unweighted	%
Type	Belted	Not Belted	Unsure	Total	Count	Sample
Auto	81.9%	18.1%	0.0%	100.0%	4,364	19.7%
Van	85.8%	14.2%	0.0%	100.0%	7,514	33.9%
SUV	90.0%	10.0%	0.0%	100.0%	1,280	5.8%
PU Truck	79.1%	20.9%	0.0%	100.0%	8,979	40.6%
State	82.5%	17.5%	0.0%	100.0%	22,137	100.0%

	Estimate of Occupant Belt Use by Vehicle Type and Occupant Gender						
	Vehicle	Occupant Belt Use				Unweighted	% of
Gender	Type	Belted	Not Belted	Unsure	Total	Count	Sample
Male	Auto	75.4%	24.6%	0.0%	100.0%	2,202	16.6%
	Van	83.2%	16.7%	0.1%	100.0%	3,404	25.7%
	SUV	92.2%	7.7%	0.0%	99.9%	735	5.5%
	PU Truck	75.8%	24.2%	0.0%	100.0%	6,905	52.1%
	State	78.3%	21.7%	0.0%	100.0%	13,246	100.0%
Female	Auto	88.3%	11.7%	0.0%	100.0%	2,162	24.3%
	Van	87.7%	12.2%	0.1%	100.0%	4,110	46.2%
	SUV	87.8%	12.2%	0.0%	100.0%	545	6.1%
	PU Truck	93.4%	6.5%	0.0%	99.9%	2,074	23.3%
	State	89.0%	11.0%	0.0%	100.0%	8,891	100.0%

Estimates (Percent) of Occupants Belted by County, Wyoming 2020*						
					Unweighted	
County	% Belted	% Not Belted	% Unsure	Total	Count	% of Sample
Niobrara	94.8%	4.9%	0.3%	100.0%	732	3.3%
Teton	93.7%	6.2%	0.1%	100.0%	2,237	10.1%
Crook	92.6%	7.3%	0.1%	100.0%	1,278	5.8%
Carbon	91.9%	7.8%	0.2%	99.9%	1,297	5.9%
Laramie	90.4%	9.4%	0.2%	100.0%	500	2.3%
Albany	89.7%	10.3%	0.0%	100.0%	1,833	8.3%
Big Horn	89.4%	10.6%	0.0%	100.0%	754	3.4%
Lincoln	87.0%	12.7%	0.3%	100.0%	1,125	5.1%
Johnson	85.8%	14.2%	0.0%	100.0%	1,043	4.7%
Platte	84.9%	15.1%	0.0%	100.0%	1,123	5.1%
Park	83.6%	16.2%	0.1%	99.9%	1,644	7.4%
Fremont	83.3%	16.5%	0.1%	99.9%	1,518	6.9%
Sheridan	83.1%	16.6%	0.3%	100.0%	1,525	6.9%
Converse	81.9%	17.6%	0.5%	100.0%	1,225	5.5%
Natrona	81.4%	18.6%	0.0%	100.0%	700	3.2%
Campbell	77.7%	22.3%	0.0%	100.0%	1,676	7.6%
Sweetwater	77.5%	22.5%	0.0%	100.0%	1,927	8.7%
State	82.5%	17.5%	0.0%	100.0%	22,137	100.0%
*Ranked from Highest to Lowest Percent Belted.						

Driver & Passenger Variables

Estimates of Driver and Passenger Belt Use by County*			
	Percent Belted		
County	Drivers	Passengers	Difference
Niobrara	93.6%	97.4%	3.8%
Teton	91.9%	97.7%	5.8%
Carbon	91.1%	94.6%	3.5%
Crook	90.9%	96.2%	5.3%
Laramie	90.0%	92.1%	2.1%
Albany	87.2%	96.2%	9.0%
Big Horn	86.9%	96.8%	9.9%
Lincoln	85.2%	92.3%	7.1%
Johnson	83.7%	90.7%	7.0%
Platte	83.4%	88.8%	5.4%
Park	82.4%	87.6%	5.2%
Sheridan	82.4%	86.5%	4.1%
Fremont	82.3%	86.0%	3.7%
Converse	81.7%	83.4%	1.7%
Natrona	79.9%	88.0%	8.1%
Campbell	75.9%	84.9%	9.0%
Sweetwater	75.5%	83.4%	7.9%
Total	81.0%	88.7%	7.7%
*Ranked in order of percent belted for drivers.			

Estimates of Drivers and Passengers Belted by Population Density			
Population	Drivers	Passengers	Difference
Urban	79.0%	84.2%	5.2%
Rural	85.7%	96.0%	10.3%
Total	81.0%	88.7%	7.7%

Estimates of Drivers and Passengers Belted by Wyoming License			
Wy License	Drivers	Passengers	Difference
Yes	79.3%	86.4%	7.1%
No	89.3%	95.5%	6.2%
Unsure	96.8%	95.5%	-1.3%
Total	81.0%	88.7%	7.7%

Estimates of Drivers and Passengers Belted by Roadway Type			
Roadway	Drivers	Passengers	Difference
Primary	90.7%	94.7%	4.0%
Secondary	82.5%	88.9%	6.4%
Other	79.8%	87.9%	8.1%
Total	81.0%	88.7%	7.7%

Estimates of Drivers and Passengers Belted by Weekday and Weekend			
Days	Drivers	Passengers	Difference
Weekdays	80.8%	88.4%	7.6%
Weekends	84.7%	93.0%	8.3%
Total	81.0%	88.7%	7.7%

Gender	Vehicle	Drivers	Passengers	Difference
	Type			
Male	Auto	75.0%	80.0%	5.0%
	Van	84.0%	77.9%	-6.1%
	SUV	91.8%	96.0%	4.2%
	Pickup	75.2%	79.3%	4.1%
	Total	78.1%	79.8%	1.7%
Female	Auto	87.1%	92.6%	5.5%
	Van	84.8%	94.9%	10.1%
	SUV	85.2%	90.9%	5.7%
	Pickup	92.1%	95.0%	2.9%
	Total	86.6%	94.2%	7.6%

General Estimates

Estimate of Occupant Seatbelt Use, Wyoming 2020			
Belt Use	Estimate	Standard	95% Confidence Interval
		Error	Lower
Belted	82.5%	0.4%	81.7%
Not Belted	17.5%	0.4%	16.8%
Unsure	0.0%	0.0%	0.0%
Total	100.0%		

Estimate of Driver Seatbelt Use, Wyoming 2020			
Belt Use	Estimate	Standard	95% Confidence Interval
		Error	Lower
Belted	81.0%	0.4%	80.1%
Not Belted	19.0%	0.4%	18.2%
Unsure	0.0%	0.0%	0.0%
Total	100.0%		

Estimate of Passenger Seatbelt Use, Wyoming 2020			
Belt Use	Estimate	Standard	95% Confidence Interval
		Error	Lower
Belted	88.7%	0.7%	87.3%
Not Belted	11.3%	0.7%	10.0%
Unsure	0.1%	0.0%	0.0%
Total	100.1%		

Estimates of Seatbelt Use for Drivers, Passengers, and All Occupants, Wyoming 2020			
	Drivers	Passengers	All Occupants
Percent Belted	81.0%	88.7%	82.5%
Unweighted Total	16,637	5,500	22,137
% of Sample	75.2%	24.8%	100.0%

Comparison of Estimates of Seatbelt Use, 2018-2020 Wyoming			
	2018	2019	2020
Drivers	86.9%	76.9%	81.0%
Passengers	84.5%	84.1%	88.7%
All Occupants	86.3%	78.3%	82.5%
Unweighted Count	25,046	24,821	22,137

Frequencies by Type of Vehicle Occupant, Wyoming 2020		
	Unweighted Count	Percent
Drivers	16,637	75.2%
Passengers	5,500	24.8%
All Occupants	22,137	100.0%

Trends

Trend in Sample Sizes for Wyoming Seatbelt Surveys, 2012-2020	
Year	Sample Size
2012	18,703
2013	20,877
2014	23,723
2015	24,682
2016	24,893
2017	23,775
2018	25,046
2019	24,821
2020	22,137
Total	208,657
Average	23,184

Trend in Seatbelt Use, 2012-2020	
Year	Estimate
2012	77.0%
2013	81.9%
2014	79.2%
2015	79.8%
2016	80.5%
2017	84.8%
2018	86.3%
2019	78.3%
2020	82.5%

Appendix E: Observer Field Test Ratings

Field Test Scores by Observer

Observer Written Exam & Field Observations

	Written	Practice	1	2	3	Field Average
Monty Byers	100.00	94.00	92.16	95.93	87.50	91.86
Dixie Elder	100.00	95.92	89.41	89.23	97.06	91.90
Wes Gasner	100.00	96.00	94.12	93.65	96.88	94.88
Daniel Conrad	100.00	96.00	60.00	91.18	96.30	82.49
Hannah Walls	100.00	90.00	72.97	90.41	77.23	80.20
Skylar Elder	100.00	90.00	77.30	93.16	84.81	85.09
Jaclyn Davison	100.00	94.00	89.67	90.00	88.49	89.39
Deb Eutsler	95.00	98.00	80.00	95.31	93.67	89.66
Kurt Evezich	100.00	92.00	89.34	91.23	81.60	87.39
Esther Perea	95.00	97.37	75.50	95.06	89.09	86.55
Meredith Peak	100.00	93.48	86.26	93.94	96.10	92.10
Lori Cole	100.00	97.96	91.30	95.45	90.51	92.42
Patrick White	95.00	96.00	95.58	93.33	86.96	91.96
Doug Peterson	95.00	97.37	95.61	94.78	88.32	92.91
Sandee Conrad	100.00	96.00	87.32	91.03	85.21	87.85
Nikole Craig	95.00	92.00	75.41	100.00	82.20	85.87
Peggy Dowers	95.00	94.00	80.62	100.00	88.24	89.62
Walter Tampellini	95.00	97.96	71.83	86.79	88.68	82.43
Anna Thompson	100.00	98.00	92.75	98.41	78.62	89.93
Bridget White	100.00	97.96	92.96	94.96	94.19	94.03
Vicky Peterson	100.00	97.92	94.62	98.36	88.57	93.85
State Averages	98.33	95.33	84.99	93.92	88.58	89.16

Appendix F: SBU Unknown Rate

Seatbelt Survey Unknown Rates

County	County Code	Unknown Driv+Pass	Total Obsv. Driv+Pass	County Rate
Albany	1	0	1833	0.000000
Big Horn	3	0	754	0.000000
Campbell	5	0	1676	0.000000
Carbon	7	3	1297	0.002313
Converse	9	6	1225	0.004898
Crook	11	1	1278	0.000782
Fremont	13	2	1518	0.001318
Johnson	19	0	1043	0.000000
Laramie	21	1	500	0.002000
Lincoln	23	3	1125	0.002667
Natrona	25	0	700	0.000000
Niobrara	27	2	732	0.002732
Park	29	2	1644	0.001217
Platte	31	0	1123	0.000000
Sheridan	33	4	1525	0.002623
Sweetwater	37	0	1927	0.000000
Teton	39	2	2237	0.000894
State		26	22137	0.001175

Appendix G: Reporting requirements

Data Collected at Observation Sites

1. Standard Error of Statewide Belt Use Rate: 0.4 percent
2. Nonresponse Rate as provided in §1340.9 (f)
    a. Nonresponse rate for the survey variable seatbelt use: 0.1175 percent

PART B-DATA COLLECTED AT OBSERVATION SITES

Site ID	Site type[1]	Date observed	Sample weight	Number of drivers	Number of front passengers	Number of occupants[2] belted	Number of occupants unbelted	Number of occupants with unknown belt use
168744812	Original	8/28/2020	0.001650855	183	85	252	16	0
604506604	Original	8/28/2020	0.001650855	201	84	255	30	0
604518733	Original	8/25/2020	0.001650855	173	78	237	14	0
618090887	Original	8/27/2020	0.001650855	242	103	328	17	0
168721954	Original	8/24/2020	0.00536996	5	0	5	0	0
168724202	Original	8/30/2020	0.00536996	23	12	33	2	0
168736409	Original	8/25/2020	0.00536996	4	1	3	2	0
168736812	Original	8/26/2020	0.00536996	6	1	3	4	0
168736818	Original	8/26/2020	0.00536996	5	0	3	2	0
168739458	Original	8/27/2020	0.00536996	97	21	92	26	0
168744758	Original	8/28/2020	0.00536996	43	13	53	3	0
168755794	Original	8/25/2020	0.00536996	1	0	1	0	0
168756946	Original	8/27/2020	0.00536996	83	13	68	28	0
168759492	Original	8/27/2020	0.00536996	35	4	35	4	0
604505737	Original	8/29/2020	0.00536996	113	52	149	16	0
604508028	Original	8/29/2020	0.00536996	90	36	111	15	0
639960821	Original	8/24/2020	0.00536996	20	6	21	5	0
180485518	Original	8/26/2020	0.00675	38	12	45	5	0
180488087	Original	8/25/2020	0.00675	16	10	26	0	0
180490194	Original	8/24/2020	0.00675	15	2	14	3	0
180496628	Original	8/26/2020	0.00675	64	7	57	14	0
180498297	Original	8/27/2020	0.00675	12	5	16	1	0
180499677	Original	8/29/2020	0.00675	36	19	50	5	0
180499711	Original	8/28/2020	0.00675	7	1	8	0	0
180499713	Original	8/28/2020	0.00675	31	13	42	2	0
180500800	Original	8/30/2020	0.00675	60	42	98	4	0
180502805	Original	8/25/2020	0.00675	97	21	102	16	0
605615639	Original	8/24/2020	0.00675	32	9	34	7	0
605622874	Original	8/25/2020	0.00675	11	2	12	1	0
605628846	Original	8/24/2020	0.00675	32	4	32	4	0

605634311	Original	8/29/2020	0.00675	3	1	4	0	0
605635819	Original	8/24/2020	0.00675	48	16	51	13	0
629140276	Original	8/27/2020	0.00675	50	19	66	3	0
640075189	Original	8/26/2020	0.00675	12	7	17	2	0
146322365	Original	8/24/2020	0.0012237	111	50	154	7	0
607412531	Original	8/24/2020	0.0012237	86	16	87	15	0
635167239	Original	8/26/2020	0.0012237	149	55	179	25	0
146318474	Original	8/29/2020	0.005702	16	8	9	15	0
146328862	Original	8/24/2020	0.005702	36	10	41	5	0
146332262	Original	8/25/2020	0.005702	79	14	81	12	0
146339526	Original	8/28/2020	0.005702	32	11	42	1	0
146342003	Original	8/27/2020	0.005702	21	5	25	1	0
146343481	Original	8/28/2020	0.005702	21	5	25	1	0
146347374	Original	8/30/2020	0.005702	31	6	36	1	0
146350863	Original	8/26/2020	0.005702	203	21	149	75	0
146351033	Original	8/25/2020	0.005702	310	74	238	146	0
146353423	Original	8/26/2020	0.005702	71	15	60	26	0
607412366	Original	8/27/2020	0.005702	30	6	26	10	0
624031392	Original	8/29/2020	0.005702	18	6	20	4	0
633856780	Original	8/25/2020	0.005702	59	13	53	19	0
637303141	Original	8/25/2020	0.005702	74	14	71	17	0
611196911	Original	8/30/2020	0.0012506	145	70	212	3	0
611197521	Original	8/27/2020	0.0012506	145	53	196	2	0
611197813	Original	8/27/2020	0.0012506	64	15	79	0	0
611197839	Original	8/26/2020	0.0012506	115	35	147	2	1
148697142	Original	8/28/2020	0.0040633	83	25	107	1	0
148703998	Original	8/27/2020	0.0040633	30	5	34	1	0
148709091	Original	8/26/2020	0.0040633	58	10	61	7	0
148715351	Original	8/25/2020	0.0040633	27	10	30	7	0
148715791	Original	8/24/2020	0.0040633	23	4	25	2	0
148729069	Original	8/30/2020	0.0040633	56	18	50	24	0
148729548	Original	8/28/2020	0.0040633	96	32	122	6	0
610950022	Original	8/25/2020	0.0040633	19	5	21	3	0
622138132	Original	8/29/2020	0.0040633	40	12	45	7	0
622152589	Original	8/29/2020	0.0040633	14	3	13	4	0
634320706	Original	8/26/2020	0.0040633	64	11	44	30	1
635735302	Alternate	8/24/2020	0.0040633	0	0	0	0	0
638995814	Original	8/24/2020	0.0040633	7	3	5	4	1

146991744	Original	8/25/2020	0.002322	102	19	99	20	2
147011297	Original	8/26/2020	0.002322	113	30	136	7	0
606576236	Original	8/24/2020	0.002322	120	16	111	24	1
638018831	Original	8/26/2020	0.002322	130	22	137	14	1
639999220	Original	8/29/2020	0.002322	122	27	139	10	0
146973757	Original	8/25/2020	0.005586	32	7	34	5	0
146990064	Original	8/26/2020	0.005586	40	5	40	5	0
146992776	Original	8/24/2020	0.005586	18	5	15	7	1
146999066	Original	8/30/2020	0.005586	9	6	12	3	0
147014316	Original	8/30/2020	0.005586	9	4	13	0	0
147015716	Original	8/28/2020	0.005586	78	14	65	27	0
606568024	Original	8/28/2020	0.005586	25	10	33	2	0
606572349	Original	8/27/2020	0.005586	65	6	58	13	0
606573014	Original	8/27/2020	0.005586	99	13	66	46	0
635660664	Original	8/29/2020	0.005586	5	3	1	7	0
635660676	Alternate	8/28/2020	0.005586	19	1	13	7	0
638996176	Original	8/25/2020	0.005586	39	12	33	17	1
147162757	Original	8/28/2020	0.0022061	91	43	133	1	0
610821880	Original	8/26/2020	0.0022061	89	34	115	8	0
610821966	Original	8/26/2020	0.002206	112	52	159	5	0
610822060	Original	8/26/2020	0.002206	115	61	166	10	0
634779349	Original	8/28/2020	0.002206	84	35	112	7	0
147156838	Original	8/30/2020	0.005274	39	25	58	6	0
147158424	Original	8/27/2020	0.005274	30	21	48	3	0
147159706	Original	8/30/2020	0.005274	12	7	18	1	0
147159927	Original	8/29/2020	0.005274	20	11	27	4	0
147160775	Original	8/29/2020	0.005274	30	11	35	5	1
147172557	Original	8/24/2020	0.005274	90	19	86	23	0
147177000	Original	8/25/2020	0.005274	46	30	74	2	0
610822469	Original	8/27/2020	0.005274	33	10	36	7	0
610824002	Original	8/24/2020	0.005274	13	6	18	1	0
610824055	Original	8/24/2020	0.005274	28	13	35	6	0
610824506	Original	8/25/2020	0.005274	13	8	20	1	0
636266007	Original	8/25/2020	0.005274	31	16	45	2	0
148431519	Original	8/29/2020	0.00525	80	35	93	21	1
148433356	Original	8/26/2020	0.00525	107	29	119	17	0
148434220	Original	8/26/2020	0.00525	0	0	0	0	0

148436040	Original	8/28/2020	0.00525	47	7	51	3	0
148444989	Original	8/29/2020	0.00525	57	23	66	14	0
148448765	Original	8/25/2020	0.00525	50	18	63	5	0
148470147	Original	8/25/2020	0.00525	38	14	41	11	0
148470268	Original	8/24/2020	0.00525	16	4	15	5	0
148472074	Original	8/25/2020	0.00525	20	11	29	2	0
148472781	Original	8/24/2020	0.00525	50	14	56	8	0
148483099	Original	8/24/2020	0.00525	44	10	38	16	0
628693352	Original	8/27/2020	0.00525	91	19	95	15	0
633721362	Original	8/28/2020	0.00525	160	47	151	55	1
635524645	Original	8/30/2020	0.00525	73	47	109	11	0
638997913	Original	8/27/2020	0.00525	71	32	86	17	0
639777342	Original	8/29/2020	0.00525	114	46	121	39	0
641181426	Original	8/30/2020	0.00525	92	52	132	12	0
147299629	Original	8/28/2020	0.002652	68	21	46	43	0
147364555	Original	8/24/2020	0.002652	55	24	72	7	0
147364574	Original	8/25/2020	0.002652	76	36	101	11	0
147364598	Original	8/24/2020	0.002652	79	32	105	6	0
147364618	Original	8/26/2020	0.002652	64	18	77	5	0
635199539	Original	8/27/2020	0.002652	99	47	146	0	0
635832919	Original	8/30/2020	0.002652	68	36	95	9	0
641441511	Original	8/26/2020	0.002652	28	10	30	8	0
147304101	Original	8/28/2020	0.0029853	8	2	3	7	0
147307397	Original	8/25/2020	0.0029853	6	1	2	5	0
147307449	Original	8/25/2020	0.0029853	24	4	14	14	0
147318882	Original	8/25/2020	0.0029853	0	0	0	0	0
147326253	Original	8/29/2020	0.0029853	63	44	100	7	0
147326365	Original	8/29/2020	0.0029853	47	22	59	10	0
147328662	Original	8/27/2020	0.0029853	3	2	3	2	0
147375707	Original	8/26/2020	0.0029853	5	0	2	3	0
635127767	Original	8/30/2020	0.0029853	34	17	42	9	0
606515802	Original	8/27/2020	0.00003458	148	31	176	3	0
160144721	Original	8/26/2020	0.00003325	45	8	47	6	0
160143525	Original	8/25/2020	0.00053826	0	0	0	0	0
160145523	Original	8/26/2020	0.00053826	0	0	0	0	0
160147391	Original	8/24/2020	0.00053826	0	0	0	0	0
160149538	Original	8/27/2020	0.00053826	5	0	2	3	0

160154128	Original	8/24/2020	0.00053826	0	0	0	0	0
160158288	Original	8/30/2020	0.00053826	0	0	0	0	0
160158469	Original	8/29/2020	0.00053826	0	0	0	0	0
160163562	Original	8/28/2020	0.00053826	159	36	172	22	1
160167119	Original	8/25/2020	0.00053826	17	7	20	4	0
160169067	Original	8/29/2020	0.00053826	0	0	0	0	0
604943907	Original	8/24/2020	0.00053826	32	6	30	8	0
604970409	Original	8/30/2020	0.00053826	2	1	3	0	0
606518225	Original	8/28/2020	0.00053826	1	0	0	1	0
624678718	Original	8/27/2020	0.00053826	1	0	1	0	0
641616454	Original	8/24/2020	0.00053826	1	0	1	0	0
130301448	Original	8/28/2020	0.00595	36	10	19	27	0
130306325	Original	8/28/2020	0.00595	27	12	35	4	0
130309542	Original	8/30/2020	0.00595	44	17	53	8	0
130310021	Original	8/29/2020	0.00595	30	14	28	16	0
130314658	Original	8/30/2020	0.00595	24	8	29	3	0
130315195	Original	8/25/2020	0.00595	21	7	27	1	0
130320929	Original	8/29/2020	0.00595	10	6	14	2	0
130326826	Original	8/25/2020	0.00595	115	40	146	8	1
611004677	Original	8/27/2020	0.00595	4	0	1	2	1
611005970	Original	8/25/2020	0.00595	94	16	98	12	0
611009251	Original	8/24/2020	0.00595	139	39	169	9	0
611012866	Original	8/27/2020	0.00595	41	26	60	7	0
619637622	Original	8/26/2020	0.00595	18	2	15	5	0
621121926	Original	8/26/2020	0.00595	86	24	96	14	0
625338589	Original	8/29/2020	0.00595	18	10	24	4	0
626692093	Original	8/24/2020	0.00595	59	30	81	8	0
635537076	Original	8/24/2020	0.00595	73	25	84	13	1
607714377	Original	8/28/2020	0.000002245	17	0	15	2	0
160336980	Original	8/26/2020	0.00004725	3	0	1	2	0
149002674	Original	8/30/2020	0.00004725	1	0	1	0	0
149003362	Original	8/30/2020	0.00004725	0	0	0	0	0
149005355	Original	8/30/2020	0.00004725	0	0	0	0	0
149011903	Alternate	8/24/2020	0.00004725	77	29	96	10	0
149022922	Alternate	8/28/2020	0.00004725	62	6	58	10	0
149023334	Original	8/27/2020	0.00004725	2	1	3	0	0
149027199	Original	8/29/2020	0.00004725	5	3	7	1	0
607713464	Original	8/25/2020	0.00004725	3	0	3	0	0
607730056	Original	8/28/2020	0.00004725	268	51	243	76	0

607752291	Original	8/24/2020	0.00004725	95	36	113	18	0
607765363	Original	8/29/2020	0.00004725	0	0	0	0	0
617964312	Original	8/27/2020	0.00004725	4	0	3	1	0
633093763	Original	8/26/2020	0.00004725	5	3	7	1	0
639002442	Original	8/25/2020	0.00004725	5	0	5	0	0
640696510	Original	8/27/2020	0.00004725	20	4	15	9	0
160334094	Original	8/28/2020	0.01715	9	2	9	2	0
160336972	Original	8/29/2020	0.01715	28	20	46	2	0
160337605	Original	8/30/2020	0.01715	118	56	169	5	0
160344999	Original	8/24/2020	0.01715	68	20	81	5	2
160345686	Original	8/25/2020	0.01715	45	23	64	4	0
160347161	Original	8/24/2020	0.01715	22	9	30	1	0
160348581	Original	8/27/2020	0.01715	3	2	4	1	0
160348895	Original	8/27/2020	0.01715	2	0	2	0	0
160349055	Original	8/27/2020	0.01715	11	3	10	4	0
160351946	Original	8/24/2020	0.01715	60	37	95	2	0
160353063	Original	8/28/2020	0.01715	6	1	6	1	0
160353822	Original	8/30/2020	0.01715	34	18	50	2	0
607001764	Original	8/26/2020	0.01715	2	1	3	0	0
607027600	Original	8/29/2020	0.01715	2	0	1	1	0
607028034	Original	8/29/2020	0.01715	14	6	17	3	0
607029627	Original	8/25/2020	0.01715	24	10	34	0	0
629141429	Original	8/26/2020	0.01715	49	27	73	3	0
149193090	Original	8/27/2020	0.00545	111	33	112	32	0
149201740	Original	8/28/2020	0.00545	21	5	24	2	0
149201930	Original	8/28/2020	0.00545	43	20	60	3	0
149202730	Original	8/28/2020	0.00545	32	16	42	6	0
149211215	Original	8/30/2020	0.00545	46	26	67	5	0
149216185	Original	8/25/2020	0.00545	136	21	131	25	1
611835705	Original	8/25/2020	0.00545	73	19	84	8	0
611870412	Original	8/24/2020	0.00545	7	3	8	2	0
611874198	Original	8/26/2020	0.00545	132	39	149	22	0
611879443	Original	8/26/2020	0.00545	149	44	169	24	0
612517261	Original	8/24/2020	0.00545	44	20	55	8	1
612522792	Original	8/29/2020	0.00545	34	21	50	5	0
612523438	Original	8/29/2020	0.00545	33	28	58	3	0
612523506	Original	8/30/2020	0.00545	12	6	16	2	0
612525148	Original	8/24/2020	0.00545	64	30	77	17	0
612525641	Original	8/27/2020	0.00545	63	9	47	25	0

614771184	Original	8/25/2020	0.00545	242	62	226	78	0
160436335	Original	8/25/2020	0.002666965	52	14	54	12	0
604830837	Original	8/24/2020	0.002666965	120	52	158	14	0
604831395	Original	8/28/2020	0.002666965	122	49	146	25	0
606895018	Original	8/27/2020	0.002666965	77	33	93	17	0
635826409	Original	8/29/2020	0.002666965	122	54	160	16	0
638080329	Original	8/30/2020	0.002666965	67	25	84	8	0
160424975	Original	8/30/2020	0.00488151	1	1	2	0	0
160427396	Original	8/29/2020	0.00488151	22	11	27	6	0
160433447	Original	8/27/2020	0.00488151	62	23	59	26	0
160434518	Original	8/28/2020	0.00488151	17	2	13	6	0
604821382	Original	8/28/2020	0.00488151	52	9	48	13	0
604823624	Original	8/29/2020	0.00488151	17	8	16	9	0
634659728	Original	8/26/2020	0.00488151	16	12	27	1	0
635549418	Original	8/24/2020	0.00488151	8	0	4	4	0
638072853	Original	8/26/2020	0.00488151	6	1	6	1	0
635549382	Original	8/25/2020	0.00488151	3	0	2	1	0
638522178	Original	8/27/2020	0.00488151	51	14	57	8	0
608774680	Original	8/27/2020	0.0006118	140	41	178	3	0
639689837	Original	8/26/2020	0.0006118	104	35	135	3	1
147401116	Original	8/24/2020	0.0045518	18	5	19	2	2
147403821	Original	8/28/2020	0.0045518	186	39	171	54	0
147404413	Original	8/27/2020	0.0045518	130	23	113	40	0
147410535	Original	8/25/2020	0.0045518	9	1	6	4	0
147411652	Original	8/25/2020	0.0045518	10	2	8	4	0
147413279	Original	8/27/2020	0.0045518	246	30	236	40	0
147419915	Alternate	8/24/2020	0.0045518	126	20	98	47	1
605374149	Original	8/26/2020	0.0045518	197	47	203	41	0
605388659	Original	8/30/2020	0.0045518	12	4	13	3	0
605396189	Original	8/29/2020	0.0045518	7	2	9	0	0
608774654	Original	8/24/2020	0.0045518	9	4	8	5	0
618572901	Original	8/29/2020	0.0045518	16	8	20	4	0
629142524	Original	8/26/2020	0.0045518	4	0	3	1	0
637972373	Original	8/28/2020	0.0045518	28	9	30	7	0
638535884	Original	8/25/2020	0.0045518	11	2	11	2	0
618327492	Original	8/24/2020	0.001504	210	61	208	63	0
618328108	Original	8/25/2020	0.001504	140	36	133	43	0
634704011	Original	8/29/2020	0.001504	226	89	265	50	0
637926770	Original	8/25/2020	0.001504	93	33	89	37	0

641433232	Alternate	8/25/2020	0.001504	133	22	131	24	0
149462214	Original	8/30/2020	0.003604	21	10	27	4	0
149462365	Original	8/30/2020	0.003604	41	17	50	8	0
149462690	Original	8/29/2020	0.003604	13	5	16	2	0
149475167	Original	8/26/2020	0.003604	23	11	29	5	0
149475533	Original	8/26/2020	0.003604	15	4	14	5	0
149498901	Original	8/27/2020	0.003604	13	1	11	3	0
149503682	Original	8/24/2020	0.003604	119	18	90	47	0
612218179	Original	8/24/2020	0.003604	81	8	57	32	0
618324746	Original	8/28/2020	0.003604	37	2	20	19	0
618324787	Original	8/28/2020	0.003604	68	12	57	23	0
618325371	Original	8/28/2020	0.003604	281	68	284	65	0
636258579	Alternate	8/27/2020	0.003604	13	3	11	5	0
130412723	Original	8/26/2020	0.0138	105	46	143	8	0
130415393	Original	8/29/2020	0.0138	151	126	271	6	0
130422037	Original	8/27/2020	0.0138	179	64	226	16	1
130422578	Original	8/25/2020	0.0138	121	46	150	17	0
130427569	Original	8/25/2020	0.0138	295	86	339	42	0
130435783	Original	8/26/2020	0.0138	265	76	308	33	0
130437592	Original	8/24/2020	0.0138	74	34	108	0	0
130437880	Original	8/24/2020	0.0138	64	40	100	4	0
130438888	Original	8/28/2020	0.0138	93	77	165	4	1
130441420	Original	8/28/2020	0.0138	47	26	71	2	0
130450400	Original	8/27/2020	0.0138	48	35	80	3	0
130450450	Original	8/28/2020	0.0138	69	40	106	3	0
235938924	Original	8/30/2020	0.0138	16	14	30	0	0
235940231	Original	8/29/2020	0.0138	0	0	0	0	0
618913726	Original	8/25/2020	0.0138	0	0	0	0	0
635879991	Original	8/30/2020	0.0138	0	0	0	0	0
637241907	Original	8/26/2020	0.0138	0	0	0	0	0
			Total	16,637	5,500	19,038	3073	26

Standard Error of Statewide Belt Use Rate[3]: 0.4 percent

Nonresponse Rate as provided in §1340.9 (f)

Nonresponse rate for the survey variable seatbelt use: 0.1175 percent

---

[1]Identify if the observation site is an original observation site or an alternate observation site.

[2]Occupants refer to both drivers and passengers

[3]The standard error may not exceed 2.5 percent

Appendix H: SPSS Data Codes

SPSS Data Dictionary

```
GET
  FILE="N:\Keith's Files\Wyoming2020\Occupants WY 2020.sav".
DATASET NAME DataSet1 WINDOW=FRONT.
DISPLAY DICTIONARY.
```

File Information: Vehicle Occupants, Wyoming 2020

[DataSet1] N:\Keith's Files\Wyoming2020\Occupants WY 2020.sav

Variable Information

Variable	Position	Label	Measurement Level	Role	Column Width	Alignment
InclProbOfRoadType	1	InclProbOfRoadType	Scale	Input	12	Right
TLID	2	TLID	Scale	Input	12	Right
SRSWOR	3	SRSWOR	Scale	Input	12	Right
County	4	County	Nominal	Input	12	Right
Site#	5	Site #	Nominal	Input	12	Right
Population	6	Population Density	Nominal	Input	12	Right
Roadway	7	Roadway Type	Nominal	Input	12	Right
weight	8	Weight	Scale	Input	12	Right
day	9	Weekday	Nominal	Input	12	Right
observer	10	Observer	Nominal	Input	12	Right
weather	11	Weather	Nominal	Input	12	Right
lanes	12	Lanes Observed	Nominal	Input	12	Right
direction	13	Direction Observed	Nominal	Input	12	Right
OccupGender	14	Occupant Gender	Nominal	Input	12	Right
OccupBelt	15	Occupant Belt Use	Nominal	Input	12	Right
carType	16	Vehicle Type	Nominal	Input	12	Right
wyPlate	17	Wyoming License	Nominal	Input	12	Right
timeStamp	18	Time Stamp	Nominal	Input	12	Right
SRSWORinvert	19	SRSWORinvert	Scale	Input	14	Right
WkdayWkend	20	Weekday-Weekend	Nominal	Input	12	Right

Variable Information

Variable	Print Format	Write Format
InclProbOfRoadType	F12.5	F12.5
TLID	F12	F12
SRSWOR	F12.5	F12.5
County	F12	F12
Site#	F12	F12
Population	F12	F12
Roadway	F12	F12
weight	F12.6	F12.6
day	F12	F12
observer	F12	F12
weather	F12	F12
lanes	F12	F12
direction	F12	F12
OccupGender	F12	F12
OccupBelt	F12	F12
carType	F12	F12
wyPlate	F12	F12
timeStamp	F12	F12
SRSWORinvert	F8.2	F8.2
WkdayWkend	F8.2	F8.2

Variables in the working file

Variable Values

Value		Label
County	1	Albany
	3	Big Horn
	5	Campbell
	7	Carbon
	9	Converse
	11	Crook
	13	Fremont
	19	Johnson
	21	Laramie
	23	Lincoln
	25	Natrona
	27	Niobrara
	29	Park
	31	Platte
	33	Sheridan
	37	Sweetwater
	39	Teton
Population	1	Urban
	2	Rural
Roadway	11	S1100-Primary Road
	12	S1200-Secondary Road
	14	S1400-Local/Rural/City St
day	1	Sunday
	2	Monday
	3	Tuesday
	4	Wednesday
	5	Thursday
	6	Friday
	7	Saturday
observer	7	Bridget White
	14	Vicky Peterson
	23	Monty Byers
	41	Patrick White
	44	Doug Peterson
	47	Dixie Elder

Variable Values

Value		Label
	48	Deb Eutsler
	55	Jaclyn Davison
	62	Peggy Dowers
	67	Skylar Elder
	69	Lori Cole
	70	Wes Gasner
	71	Danny Conrad
	72	Hannah Walls
	73	Kurt Evezich
	74	Esther Perea
	75	Meredith Peak
	76	Walter Tampellini
	77	Anna Thompson
	78	Sandee Conrad
	79	Nikole Craig
weather	1	Clear/Sunny
	2	Cloudy
	3	Light Fog
	4	Light Rain
	5	Snow
lanes	1	One Lane
	2	Two Lanes
direction	1	North
	2	South
	3	East
	4	West
OccupGender	1	Male
	2	Female
OccupBelt	1	Belted
	2	Not Belted
	3	Unsure
carType	1	Automobile
	2	Van
	3	SUV
	4	Pickup Truck

Variable Values

Value		Label
wyPlate	1	Yes
	2	No
	9	Unsure
timeStamp	1	7:30-9:30 AM
	2	9:30-11:30 AM
	3	11:30-1:30 PM
	4	1:30-3:30 PM
	5	3:30-5:30 PM

Report prepared by: