# WYOMING

## 2021 STATEWIDE SEATBELT SURVEY

SURVEY ANALYSIS

# 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 coordinated and secured the acquisition of contractors to conduct the survey observations.
- Bridget White and Vicky Peterson conducted field monitoring.

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## 2021 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 2021 survey analysis is the eighth survey conducted under the 2012 guidelines for seatbelt use in the state of Wyoming.

## Table of Contents

# Executive Summary

Observers collected seat belt use data in Wyoming from Monday, June 7, to Sunday, June 13, 2021. The results are presented throughout the narrative and in the appendices. The survey followed The Uniform Criteria for State Observational Surveys of Seat Belt Use, 23 CFR § 1340. The baseline survey done in 2017 identified the counties and sites sampled for survey observations. The result is data on 21,323 drivers and 7,932 front-seat outboard passengers for a total of 29,255 vehicle occupants. Drivers represent 72.9 percent of all vehicle occupants, and passengers are 27.1 percent of occupants.

The narrative begins with the estimates of seat belt use for all vehicle occupants, then for the drivers and front-seat outboard passengers. Next is a review of occupant seat belt use by county, population density, in-state and out-of-state license registration, and other relevant variables. An analysis of seat belt use within gender and vehicle type categories is followed by comparing driver and passenger seat belt use. At the end of the narrative, two trends are reviewed: sample sizes and estimates of belt use over the past ten years of Wyoming seat belt use surveys.

Throughout the narrative, the reported seat belt use percentages are estimates derived from weighting the raw data. The calculations of the estimates follow 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 valid seat belt use in Wyoming.

Here are some of the results of the Wyoming 2021 survey:

- Observers covered 289 sites within seventeen counties, collecting data on 29,255 vehicle occupants.
- The 2021 estimate is a seat belt use rate for all vehicle occupants of 80.2 percent observed as wearing seat belts, with a standard error of .04 percent.
- The estimate for drivers is 78.5 percent belted, with a standard error of 0.4 percent. The estimate for passengers is 87.5 percent belted, with a standard error of 0.6 percent.
- Six counties show seat belt use percentages of 90.0 percent or higher. Rates for the second tier of five counties are above the overall state rate of 80.2 percent belted, but less than 90.0 percent belted. The third group of counties has rates below the average of 80.2 percent, with three counties below 70.0 percent. This last group suppresses the overall rate of seat belt use. The counties in each group are identified in the narrative.
- An analysis of seat belt use by population density shows that vehicle occupants observed in rural areas are belted at a rate of 89.1 percent. Occupants in urban areas are belted at a rate of 75.3 percent. 76.7 percent of the vehicle occupants are in rural sites, and 23.3 are in urban sites.
- Vehicle registration analysis shows that occupants of Wyoming vehicles are belted at a rate of 78.4 percent. Out-of-state vehicle occupants are belted at a rate of 88.7 percent. 54.5 percent of vehicle occupants are observed in Wyoming licensed vehicles.
- Occupant seat belt use is 80.2 percent, 81.6 percent on secondary roads, 79.9 percent on other local, rural, and city roadways.
- Occupant seat belt use is 90.5 percent belted on weekends and 78.6 percent belted on weekdays, an 11.8 percentage point difference. 81.5 percent of all observations were collected on weekdays.

- Analysis of gender and occupant seat belt use finds 75.2 percent of males belted, and 86.7 percent of females belted, a difference of 11.5 percentage points. 57.6 percent of all vehicle occupants are male in the survey, while 42.4 percent are female.
- Nearly three-fourths of all occupants are observed in vans (36.2%) or pickup trucks (38.4 percent. Occupants' seat belt use is highest in vans (86.9%) and SUVs (88.5%). Seat belt use is lowest in automobiles (75.9%) and pickup trucks (74.3%).
- The lowest seat belt use rates are by males in automobiles (66.6 percent belted) and pickup trucks (74.2%). About half of all male occupants (49.8%) are observed in pickup trucks. Female occupants are belted at a rate more significant than the overall rate in three of the four types of vehicles. Females in pickup trucks were belted at a rate of 75.1 percent, unusually low for females in Wyoming seat belt surveys.
- 78.5 percent of drivers and 87.5 percent of passengers are belted. This difference is consistent across nearly every category of every variable associated with seat belt use.
- Passengers are belted at a higher rate than drivers for almost every county, in both Wyoming and out-of-state vehicles, in both rural and urban sites, for all roadway types, and nearly every combination of gender and vehicle type.
- More vehicle occupants were observed in 2021 (29,255) than in any other Wyoming survey in the past ten years. The overall rate of 80.2 percent belted is the sixth-highest rate of the past ten years.

# Introduction

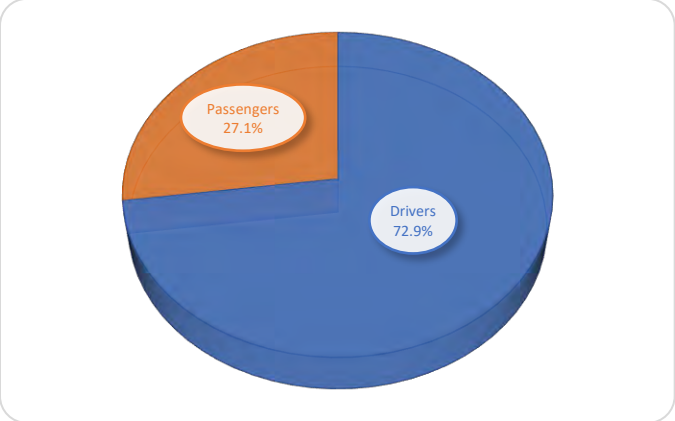
In 2020, the pandemic delayed the seat belt survey from June to August. This year, conditions were normal enough to collect the survey observations from Monday, June 7, to Sunday, June 13, 2021. Seventeen trained observers were dispatched to seventeen sites in each of the seventeen counties. The observers collected seat belt data during 289 shifts over the seven days, a collective total of 289 shifts, covering about 42 sites each day. There were alternate observers available as needed, along with quality control personnel in the field and DLN Consulting, Inc. staff available to support the observers.

The observers collected data on the seat belt use of 21,323 drivers and 7,932 outboard passengers for a total of 29,255 vehicle occupants. Drivers made up 72.9 percent and passengers 27.1 percent of the vehicle occupants. These results are illustrated below:

*Table 1: Frequencies by Occupant Type*

| Frequencies by Type of Vehicle Occupant, Wyoming 2021 | | |
|---|---|---|
| | Unweighted Count | Percent |
| **Drivers** | 21,323 | 72.9% |
| **Passengers** | 7,932 | 27.1% |
| **All Occupants** | 29,255 | 100.0% |

*Figure 1: Percent of Occupant Type*



Each observer was assigned to a specific county. The following table lists the counties, the observers assigned to those counties, and the frequencies of seat belt use (belted, not belted, unsure) for each combination of county and observer.[1]

*Table 2: Unweighted Frequencies by County/Observer*

| Unweighted Frequencies of Occupant Belt Use by County and Observer, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | | Occupant Belt Use | | | | |
| **County** | Observer | Belted | Not Belted | Unsure | Total | Per Cent |
| **Albany** | Monty Byers | 1,408 | 131 | 0 | 1,539 | 5.3% |
| **Big Horn** | Dixie Elder | 747 | 101 | 0 | 848 | 2.9% |
| **Campbell** | Bryan Shannon | 1,348 | 446 | 14 | 1,808 | 6.2% |
| **Carbon** | Brooke Darden | 1,165 | 530 | 3 | 1,698 | 5.8% |
| **Converse** | Walter Tampellini | 1,206 | 93 | 10 | 1,309 | 4.5% |
| **Crook** | Skylar Elder | 1,596 | 129 | 0 | 1,725 | 5.9% |
| **Fremont** | Sandra Gabel | 1,729 | 265 | 8 | 2,002 | 6.8% |
| **Johnson** | Deb Eutsler | 1,094 | 74 | 0 | 1,168 | 4.0% |
| **Laramie** | Ashley Ingerle | 412 | 179 | 0 | 591 | 2.0% |
| **Lincoln** | Mindy McKinley | 1,320 | 86 | 0 | 1,406 | 4.8% |
| **Natrona** | Meredith Peak | 588 | 138 | 0 | 726 | 2.5% |
| **Niobrara** | Lori Cole | 801 | 28 | 0 | 829 | 2.8% |
| **Park** | Donna Lucas | 1,111 | 347 | 13 | 1,471 | 5.0% |
| **Platte** | Doug Peterson | 1,196 | 156 | 0 | 1,352 | 4.6% |
| **Sheridan** | Kendra Hughes | 1,545 | 429 | 0 | 1,974 | 6.7% |
| **Sweetwater** | Kayla Schear | 2,920 | 1,650 | 0 | 4,570 | 15.6% |
| **Teton** | Susan Parkinson | 3,699 | 540 | 0 | 4,239 | 14.5% |
| | Total | 23,885 | 5,322 | 48 | 29,255 | 100.0% |
| | | | | Average | 1,721 | |

The largest frequencies of observations were collected in Sweetwater (15.6%) and Teton (14.5%) Counties; together, 30.1 percent of all observations were collected in these two counties. The fewest observations were collected in Laramie (2.0%), Natrona (2.5%), Niobrara (2.8%), and Big Horn (2.9%) Counties.

DLN Consulting, Inc. staff developed training and quality control techniques to ensure the reliability and validity of the data in this report. The following section describes the relevant processes.

[1] The numbers presented 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 seat belt 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 seat belt use.

## Observer Training, Quality Control, and Data Preparation

For the past several years, DLN Consulting, Inc. relied on iPads to record the observations of seat belt use. The iPads are loaded with software tools to facilitate recording and reporting the data for compiling. Every observer, alternate, and quality control staff member received training on the data collection procedural components using audio, visual, and "hands-on" instruction.

On the first day of training, each participant practiced using the program in a classroom setting. Next, the observers engaged in a mock data collection activity. During the second day of training, each observer completed four data-collection sessions. Three of those sessions were used to calculate individual inter-accuracy ratios, which were used to determine observer readiness for collecting actual observations in the field.

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 reliability of observations for a sample of observers. In addition to the training of all observers, the monitors received training in separate half-day sessions, including a detailed review of the specific directions given to each supervisor. During the session, sites were randomly selected for the reliability spot checks where monitoring would take place.

During the survey, DLN Consulting, Inc. staff were available to help observers with any questions or issues. Possible issues included conditions requiring changes to alternate sites or adjustments to observational processes to ensure quality data and observer safety.

Once observers completed an electronic record of observations for each site, they transferred the data electronically to the DLN Consulting, Inc. staff assigned to the task of compiling the data. DLN Consulting, Inc. 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 and other analysis preparations. Separate SPSS files were created for drivers, passengers, and all occupants to simplify data analysis. At this point, any unique variables essential to the analysis were created through computation or recoding. In addition, the analysis included further cleaning of the data to correct any incorrect codes and the creation of the Complex Samples Plan for weighting the data to produce accurate estimates based on sampling probabilities.

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

## Estimates of Seat Belt Use

The estimates of seat belt use from the Wyoming seat Belt survey in 2021 were calculated using the Complex Samples weighting function in SPSS. This procedure uses the sampling methods and probabilities associated with each site to weigh the raw data for analysis.

Three different estimates are presented. The first is for all vehicle occupants. The following 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 3: Estimated Occupant Belt Use*

| Estimate of Occupant Seat Belt Use, Wyoming 2021 | | | | | |
|---|---|---|---|---|---|
| **Belt Use** | Estimate | Standard | 95% Confidence Interval | | Unweighted |
| | | Error | Lower | Upper | Count |
| **Belted** | 80.2% | 0.4% | 79.5% | 80.9% | 23,885 |
| **Not Belted** | 19.8% | 0.4% | 19.1% | 20.5% | 5,322 |
| **Unsure** | 0.0% | 0.0% | 0.0% | 0.0% | 48 |
| **Total** | 100.0% | | | | 29,255 |

Observers collected data on seat belt use for 29,255 vehicle occupants. 80.2 percent of them were wearing seat belts, and 19.8 percent were not wearing seat belts. Observers were "unsure" about seat belt use for 48 vehicle occupants, or 0.16 percent of the occupants, a percentage too low to register in the table. The standard error is 0.4 percent, below the allowable standard error of 2.5 percent for the survey. The 95 percent confidence intervals calculation produced a low estimate of 79.5 percent and a high of 80.9 percent belted. The estimate of 80.2 percent belted is 2.3 percent lower than the rate for 2020.[2]

The following table presents the estimates of seat belt use for drivers.

*Table 4: Estimated Driver Belt Use*

| Estimate of Driver Seat Belt Use, Wyoming 2021 | | | | | |
|---|---|---|---|---|---|
| **Belt Use** | Estimate | Standard | 95% Confidence Interval | | Unweighted |
| | | Error | Lower | Upper | Count |
| **Belted** | 78.5% | 0.4% | 77.7% | 79.3% | 17,082 |
| **Not Belted** | 21.4% | 0.4% | 20.7% | 22.3% | 4,206 |
| **Unsure** | 0.0% | 0.0% | 0.0% | 0.0% | 35 |
| **Total** | 99.9% | | | | 21,323 |

[2] While the rate is lower, it may not be appropriate to compare it to the 2020 rate because of the exceptional circumstances governing the survey in 2020. The pandemic likely altered traffic patterns in many sites. The delay in the dates for the 2020 survey also may have introduced unpredictable and unknowable differences in the sample and consequent rates of seat belt use.

Observers recorded seat belt use for 21,323 drivers, 72.9 percent of all vehicle occupants. 78.5 percent of the drivers were wearing seat belts, and 21.4 percent were not. Observers could not determine seat belt use for 35 drivers or .16 percent of all drivers. The standard error for drivers is 0.4 percent, and the confidence intervals are a low of 77.7 percent and a high of 79.3 percent.

The following table presents the results for vehicle outboard passengers.

*Table 5: Estimated Passenger Belt Use*

| Estimate of Passenger Seat Belt Use, Wyoming 2021 | | | | | |
|---|---|---|---|---|---|
| **Belt Use** | Estimate | Standard | 95% Confidence Interval | | Unweighted |
| | | Error | Lower | Upper | Count |
| **Belted** | 87.5% | 0.6% | 86.3% | 88.6% | 6,803 |
| **Not Belted** | 12.5% | 0.6% | 11.4% | 13.6% | 1,116 |
| **Unsure** | 0.1% | 0.0% | 0.0% | 0.1% | 13 |
| **Total** | 100.1% | | | | 7,932 |

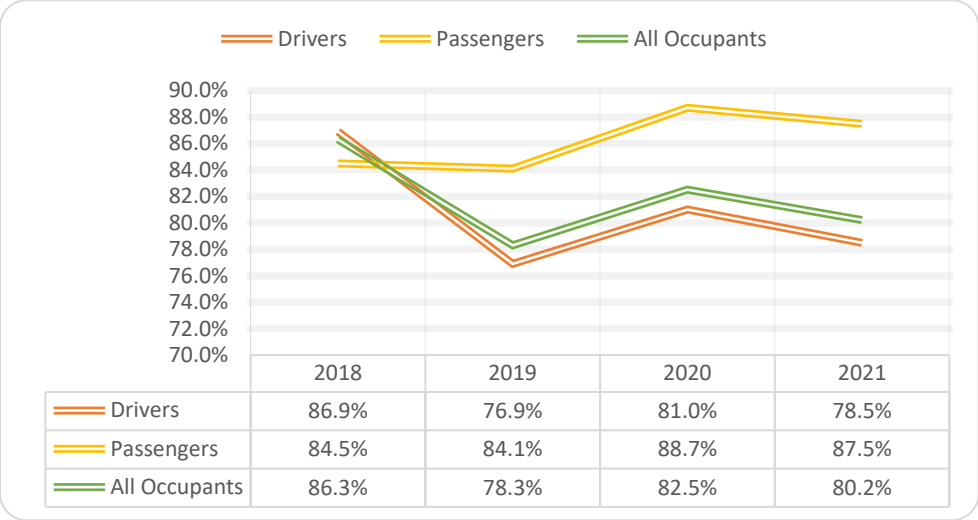
There are 7,932 passengers in the sample, 27.1 percent of vehicle occupants. The estimate is 87.5 percent belted, or 9.0 points higher than the 78.5 percent rate for drivers. 12.5 percent of the passengers were not belted. Observers were unsure about belt use for 13 passengers, or .16 percent of all passengers. The standard error for passengers is 0.6 percent, and the 95.0 percent confidence intervals show a low estimate of 86.3 percent and an upper estimate of 88.6 percent of the sample.

*Table 6: Estimated Belt & Frequencies*

| Estimates of Seat Belt Use for Drivers, Passengers, and All Occupants, Wyoming 2021 | | | |
|---|---|---|---|
| | Drivers | Passengers | All Occupants |
| **Percent Belted** | 78.5% | 87.5% | 80.2% |
| **Unweighted Total** | 21,323 | 7,932 | 29,255 |
| **% of Sample** | 72.9% | 27.1% | 100.0% |

The following figure shows the trends in seat belt use for Wyoming surveys from 2018 to 2021.

*Figure 2: Seat Belt Use Trends 2018-2021*




| | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|
| Drivers | 86.9% | 76.9% | 81.0% | 78.5% |
| Passengers | 84.5% | 84.1% | 88.7% | 87.5% |
| All Occupants | 86.3% | 78.3% | 82.5% | 80.2% |

The highest driver seat belt use rate was 86.9 percent in 2018, and the lowest rate was in 2019, with the 2021 rate nearer the low end. Drivers typically have lower seat belt use rates, while passengers have higher rates than drivers (except for 2018). In general, the results for 2021 are more similar than different from the rates for the three prior years. The pattern of many drivers and few passengers is also typical for Wyoming surveys. The 2018 survey is the outlier for these four years, with the highest seat belt use rate overall and a higher rate for drivers than passengers.

The following section focuses on the estimates of seat belt use within the categories of several selected variables. These estimates are included to provide information that may be useful for seat belt use campaigns that target specific populations. First, there is a review of seat belt use within the seventeen counties. Then the focus turns to urban and rural patterns, license registration status (Wyoming, Out-of-State), roadway types, and weekday-weekend rates. The rest examines seat belt use by occupant gender, vehicle type, and gender and vehicle type combinations.

## Estimates of Seat Belt Use by County

The following table presents the estimates of seat belt use for drivers, passengers, and total vehicle occupants in each county.

*Figure 3: Estimated Belt Use for Drivers, Passengers, and Occupants by County*

| Estimates of Percent Belted by County for Drivers, Passengers and Occupants, Wyoming 2021 | | | | | |
|---|---|---|---|---|---|
| | | | | Total | % of Total |
| **County** | Drivers | Passengers | Occupants | Occupants | Occupants |
| **Albany** | 88.8% | 98.2% | 91.3% | 1,539 | 5.3% |
| **Big Horn** | 85.9% | 93.2% | 88.1% | 848 | 2.9% |
| **Campbell** | 73.2% | 79.7% | 74.7% | 1,808 | 6.2% |
| **Carbon** | 65.4% | 75.9% | 68.7% | 1,698 | 5.8% |
| **Converse** | 92.9% | 88.6% | 92.1% | 1,309 | 4.5% |
| **Crook** | 91.3% | 94.6% | 92.4% | 1,725 | 5.9% |
| **Fremont** | 83.8% | 92.5% | 86.4% | 2,002 | 6.8% |
| **Johnson** | 92.4% | 96.3% | 93.5% | 1,168 | 4.0% |
| **Laramie** | 68.6% | 73.5% | 69.7% | 591 | 2.0% |
| **Lincoln** | 93.9% | 93.8% | 93.9% | 1,406 | 4.8% |
| **Natrona** | 79.2% | 90.5% | 81.0% | 726 | 2.5% |
| **Niobrara** | 95.9% | 97.9% | 96.6% | 829 | 2.8% |
| **Park** | 72.3% | 84.6% | 75.5% | 1,471 | 5.0% |
| **Platte** | 86.6% | 92.3% | 88.2% | 1,352 | 4.6% |
| **Sheridan** | 76.4% | 86.0% | 78.5% | 1,974 | 6.7% |
| **Sweetwater** | 63.8% | 65.1% | 64.2% | 4,570 | 15.6% |
| **Teton** | 86.0% | 90.1% | 87.3% | 4,239 | 14.5% |
| **Total** | 78.5% | 87.5% | 80.2% | 29,255 | 100.0% |

The rates of seat belt use are higher for passengers than drivers for all but two counties: Converse, with a driver rate of 92.9 percent and a passenger rate of 88.6 percent, and Lincoln, where the rates differ by only a tenth of a percent, 93.9 percent for drivers and 93.8 percent for passengers.

In addition, the following characteristics emerge about seat belt rates by county.

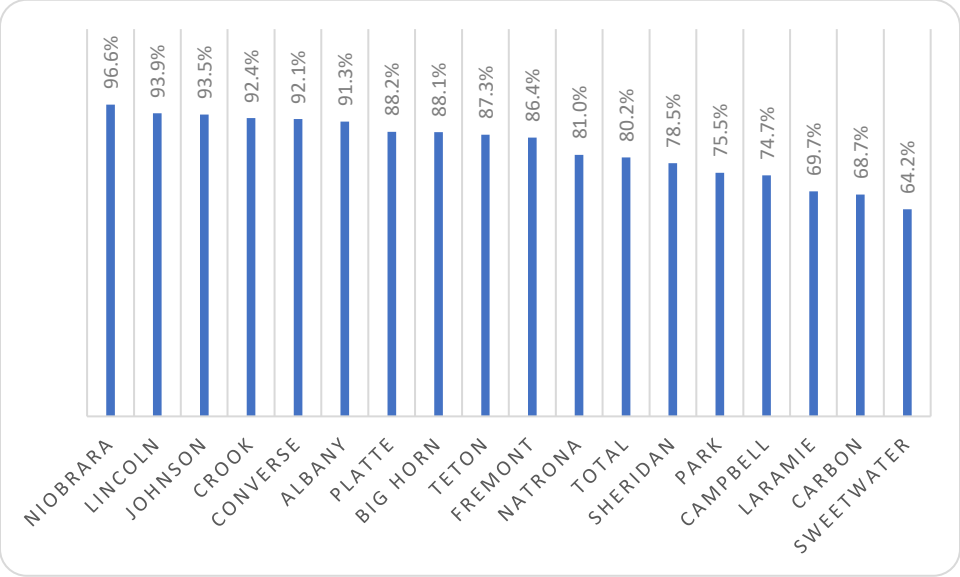
- In six of the counties, nine or more of every ten vehicle occupants are belted: Niobrara (96.6%), Lincoln (93.9%), Johnson (93.5%), Crook (92.4%), Converse (92.1%), and Albany (91.3%).
- A second group of five counties also has rates above the average of 80.2 percent, with at least eight of ten occupants belted. These counties are Platte (88.2%), Big Horn (88.1%), Teton (87.3%), Fremont (86.4%), and Natrona (81.0%).

In other words, there are eleven of the seventeen counties (64.7%) whose seat belt rates are above the overall rate of 80.2 percent of vehicle occupants observed as belted.

- There is a third grouping of six counties that, in varying degrees, reduce the overall occupant seat belt rate. They are Sheridan (78.5%), Park (75.5%), Campbell (74.7%), Laramie (69.7%), Carbon (68.7%), and Sweetwater (64.2%). The occupants in these counties are belted at a rate below the average for Wyoming in 2021.
- The difference in seat belt use rate for occupants in the county with the highest rate, Niobrara (96.6%), and the county with the lowest rate, Sweetwater (64.2%), is 32.4 percent.

The following graph illustrates the occupant rates of seat belt use for the counties, ranked from the highest to the lowest.

*Figure 4: Occupant Belt Use by County*



# Seat Belt Use by Selected Variables

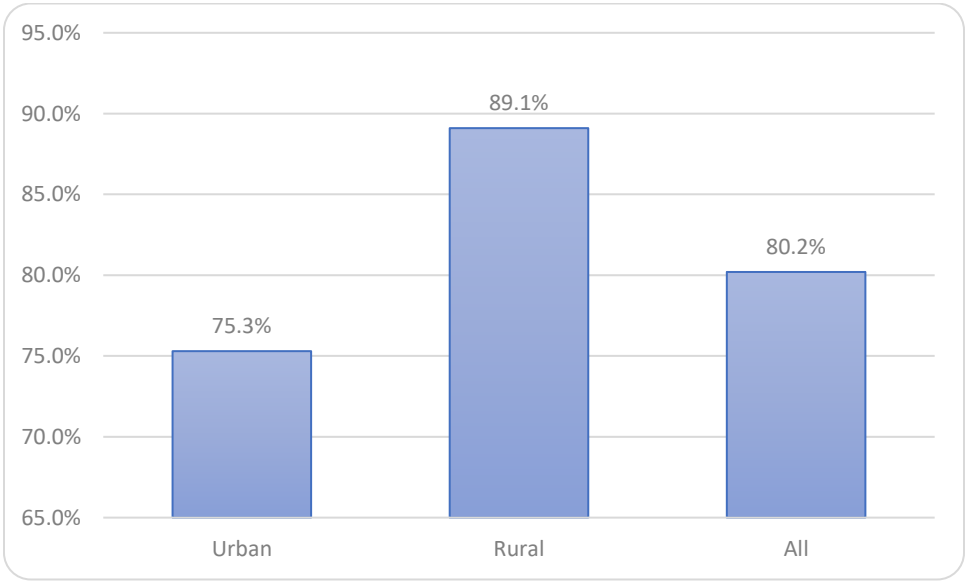
Survey observations are organized into variables and categories within variables. For example, some sites are pre-coded for population density (urban and rural) and the type of roadway (primary, secondary, and an "other" category). Occupant gender, type of vehicle, license registration (Wyoming, out-of-state), and weekday-weekend observations are reviewed. These variables and additional variables of interest when considering seat belt use are examined in this report section.

## Population Density

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. For example, sites within a city of 5,000 or more are pre-coded as urban sites, while sites located in smaller cities or outside cities with fewer than 5,000 residents are rural. In Wyoming, areas with more than 5,000 residents are defined as "urban." In comparison, sites with fewer than 5,000 residents are designated as "rural." Wyoming is far more rural than urban by this standard. For the current 2021 survey, 76.7 percent of the vehicle occupants are in rural sites, and 23.3 percent are in urban sites.

The seat belt use rate is higher in rural than urban sites, as illustrated by the following.

*Figure 5: Estimated Belt Use by Population Density*



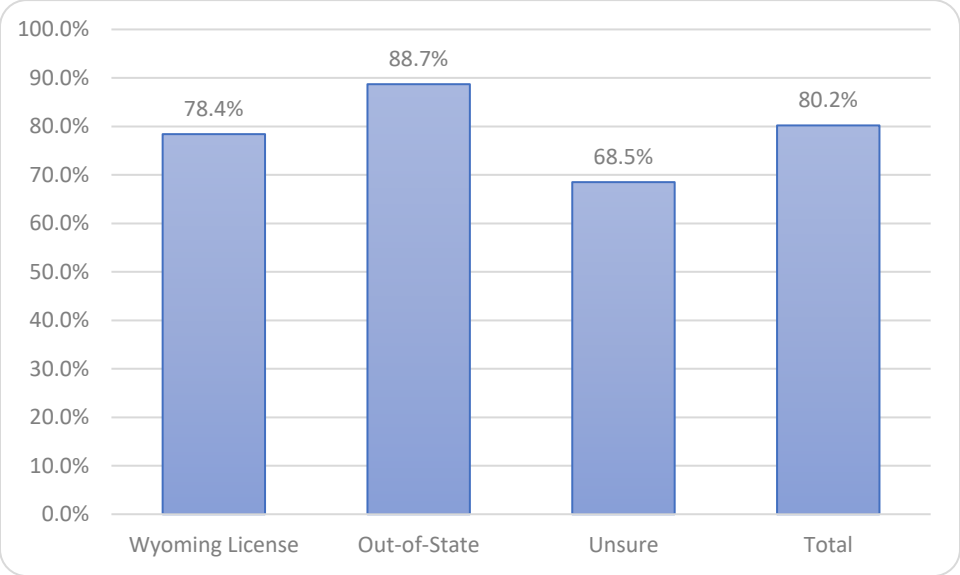

The rural rate is 89.1 percent belted, and the urban rate is 75.3 percent belted, a difference of 13.8 percentage points. Prior surveys have consistently shown higher seat belt use rates in rural areas, but this result shows a more significant than usual difference.

## Vehicle Registration

Observers record whether occupants are in vehicles with Wyoming or out-of-state license plates. A third category, "unsure," is recorded when observers are unable to identify the registration. For 2021, 54.5 percent of the 29,255 occupants were in vehicles identified with Wyoming registration, and 44.3 percent were in out-of-state vehicles. Observers were unsure about vehicle registration for 339 vehicle occupants, or 1.2 percent of the sample.

Out-of-state vehicle occupants are more likely to be wearing seat belts than occupants of Wyoming vehicles, as illustrated by the following.

*Figure 6: Estimated Belt Use by Registration Type*




78.4 percent of Wyoming vehicle occupants are belted, and 88.7 percent of out-of-state vehicle occupants are belted, a difference of 10.3 points. This result is consistent with findings from previous Wyoming surveys.

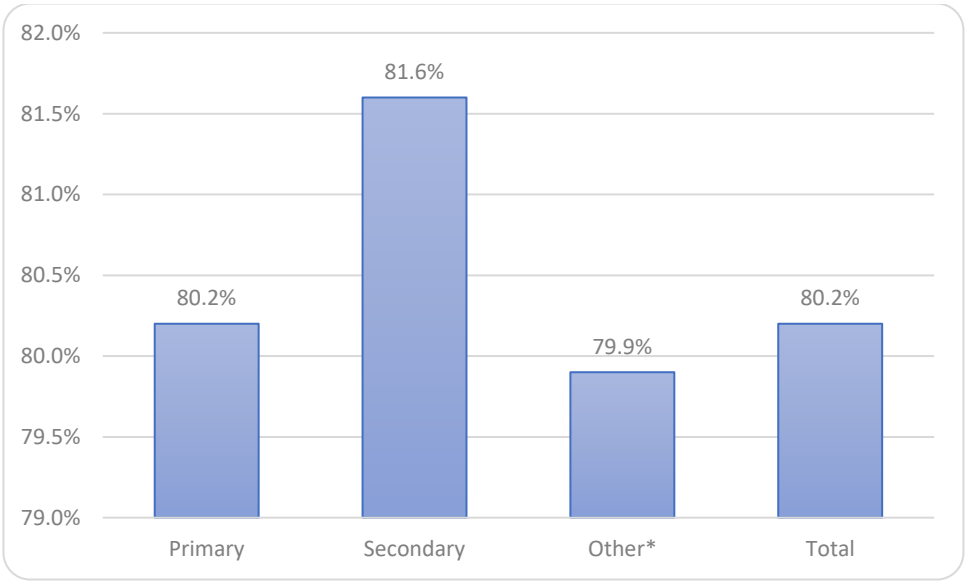
## Roadway Type

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

- S1100 primary roadways are federally or state-maintained primary roads and include interstate and other four-lane highways. For 2021, 8,996 (30.8%) of the vehicle occupants were observed in vehicles on primary roadways.
- S1200 roads are secondary, which means they are state or federally maintained and are typically two-lane highways. For 2021, 19,216 of the 29,255 occupants were in vehicles on secondary roads.
- S1400 "other" roadways 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 2021 are in this category, 1,043 vehicle occupants, or 3.6 percent of all occupants.

Occupant seat belt use by roadway type is illustrated by the following.

*Figure 7: Estimated Belt Use by Roadway Type*




*"Other" roadways are a catchall category for local, rural roads, and city streets

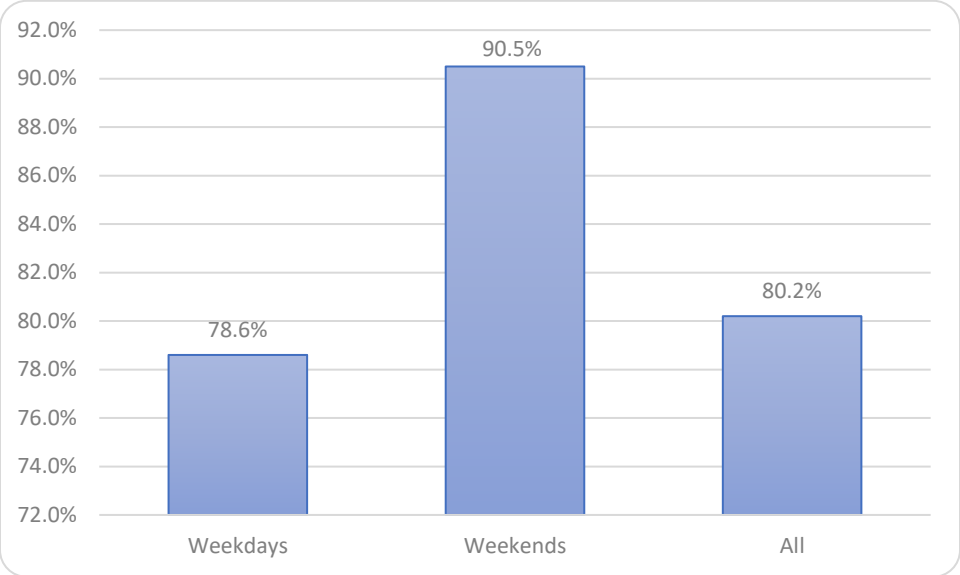
The different rates of seat belt use by roadway type are not great. Occupants in vehicles on primary roads were belted at a rate of 80.2 percent, the same as the overall average. Occupants in vehicles on secondary roads were belted at a slightly higher rate of 81.6 percent. Vehicle occupants on "other" roads were belted at a rate of 79.9 percent. The association of belt use and roadway type has been variable in prior surveys. For this year, belt use is more alike than different across the road types.

## Weekdays and Weekends

During data collection, 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 2021, 23,837 of 29,255 observations were on weekdays (81.5%) and 5,418 (18.5%) on weekends. Seat belt use by weekdays-weekends is illustrated by the following.

*Figure 8: Estimated Belt Use by Weekday vs. Weekends*




The seat belt use rate on weekends was 90.5 percent belted; on weekdays, 78.6 percent belted, a difference of 11.9 points. Prior surveys in Wyoming have shown similar results, although the difference is greater in 2021.

## Other Variables

The data for 2021 also includes estimates of seat belt use by weather conditions, the number of roadway lanes observed, the time observations were collected, and the traffic direction when observations were collected. The 2021 results for these variables appear in the appendices to this report.

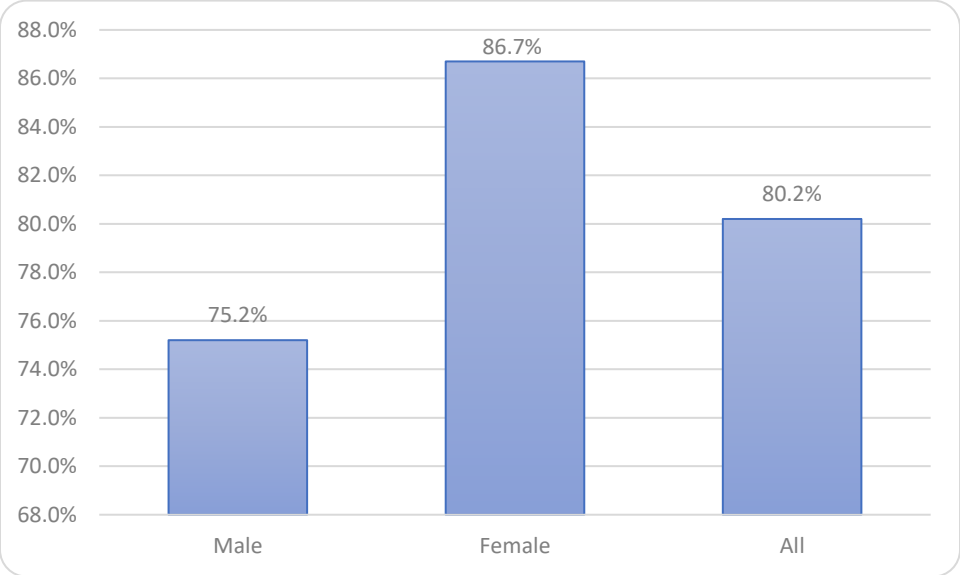
## Occupant Gender and Vehicle Type

Occupant gender, vehicle type, and the combination of these two variables have produced consistent results in Wyoming seat belt surveys. Females typically have higher rates of seat belt use than males. Female seat belt use tends to be higher in every type of vehicle. Males typically have the lowest seat belt use rate for any combination of variables when observed as occupants in pickup trucks. Females usually have higher rates of seat belt use in every vehicle type. The results for 2021 are examined next, first for gender, second for vehicle type, and then for the combination of gender and vehicle type.

### Occupant Gender

Observers code the gender of occupants. For the 29,255 vehicle occupants in 2021, 16,846 (57.6%) are male, and 12,409 (42.4%) are female, or 15.2 percentage points more males than females in the survey. Gender differences in seat belt use for vehicle occupants are illustrated by the following.

*Figure 9: Estimated Belt Use by Gender*



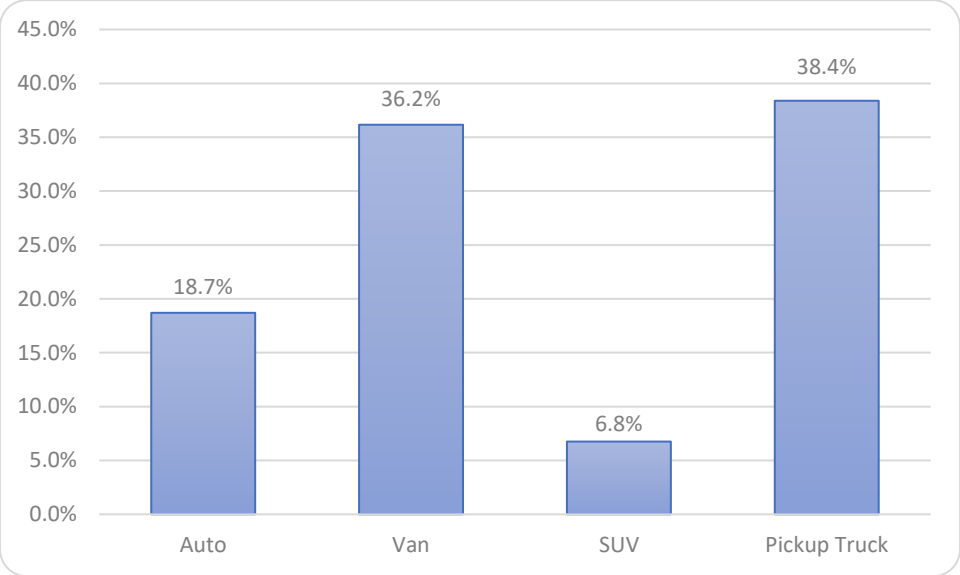

The seat belt use for male occupants is 75.2 percent belted, and for female occupants, it is 86.7 percent belted, a difference of 11.5 percentage points. Because males are 57.6 percent of the occupants, their lower seat belt use rate tends to pull down the overall average to 80.2 percent. Conversely, females tend to increase the overall average because of their greater use of seat belts.

Observers were unsure about gender for 48 vehicle occupants, or .16 percent of the total sample.

## Vehicle Type

Occupants were observed in four types of vehicles for the survey: Automobiles, Vans, Sport Utility Vehicles[3] (SUVs), and Pickup Trucks. The following graph illustrates the percentages of occupants in each vehicle type for the Wyoming 2021 survey.

*Figure 10: Percent of Sample by Vehicle Type*

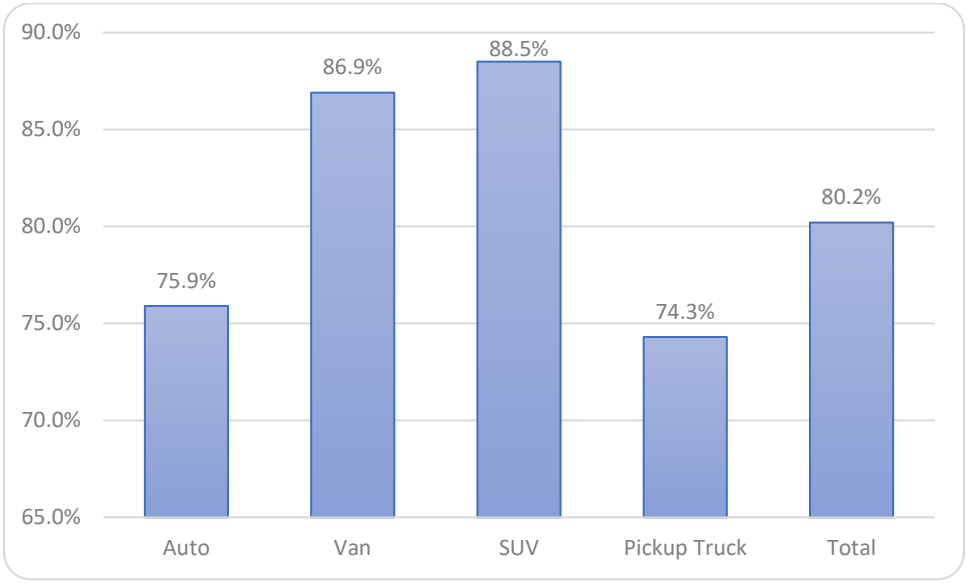



For the 2021 survey, most occupants are in either vans (36.2%) or pickup trucks (38.4%). Together, almost three-fourths of occupants (74.6%) are found in these two vehicle types. Automobiles are the next most common vehicle for occupants (18.7%), and SUVs are the least common vehicle with occupants (6.8%).

[3] First, it is likely the case that many vehicles labeled SUVs or Vans are possibly "Crossovers." Internet sources offer this difference: "Put simply, a crossover is lighter and built on a car platform, while a traditional SUV is heavier and uses a truck chassis." Without an official designation from NHTSA, crossovers are likely to be labeled as SUVs. Second, it's less likely but possible that observers may confuse SUVs and Vans. Again, from the internet: "Automakers design SUVs for towing, hauling, and off-road performance, whereas they build vans for transporting people or cargo."

Estimates of occupant seat belt use for each type of vehicle are illustrated by the following.

*Figure 11: Estimated Belt Use by Vehicle Type*

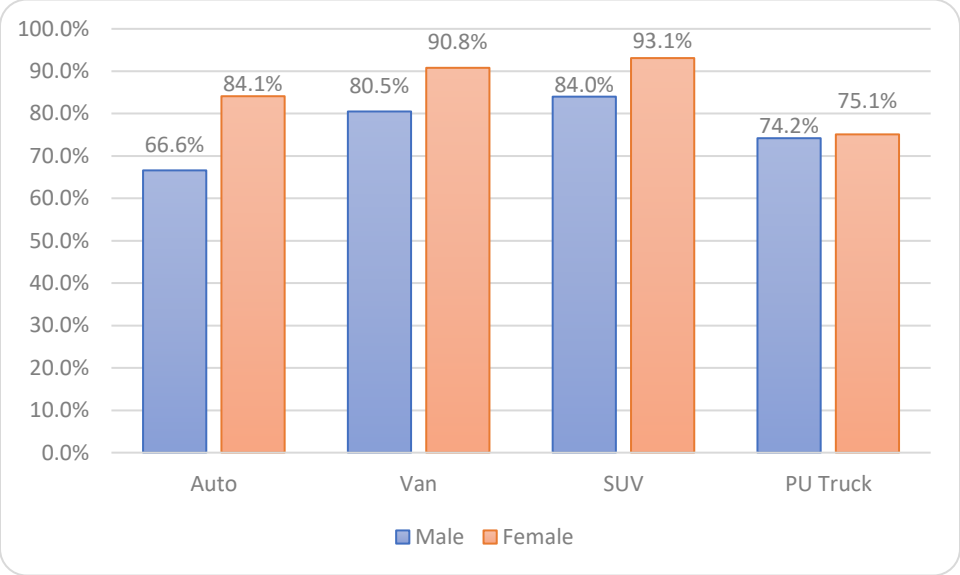



Seat belt use is highest for vehicle occupants in vans (86.9%) and SUVs (88.5%). Seat belt use is lower for occupants of automobiles (75.9%) and pickup trucks (74.3%).

## Gender and Vehicle Type

Estimates of occupant seat belt use for the combinations of gender and vehicle type are illustrated by the following.

*Figure 12: Estimated Belt Use by Gender & Vehicle Type*




The lowest seat belt use rates are for males in automobiles (66.6%) and pickup trucks (74.2%). Male seat belt use in pickup trucks is particularly significant because almost half (49.8%) of all male vehicle occupants were observed in pickup trucks. Male seat belt use is 80.5 percent in vans and 84.0 percent in SUVs.

Female occupants of vehicles have above average (80.2) seat belt use in three of the four vehicle types: 84.1 percent in automobiles, 90.8 percent in vans, and 93.1 percent in SUVs. Seat belt use for female occupants of pickup trucks for 2021 is 75.1 percent belted, almost the same as the male rate of 74.2 percent belted, a difference of less than one percentage point.

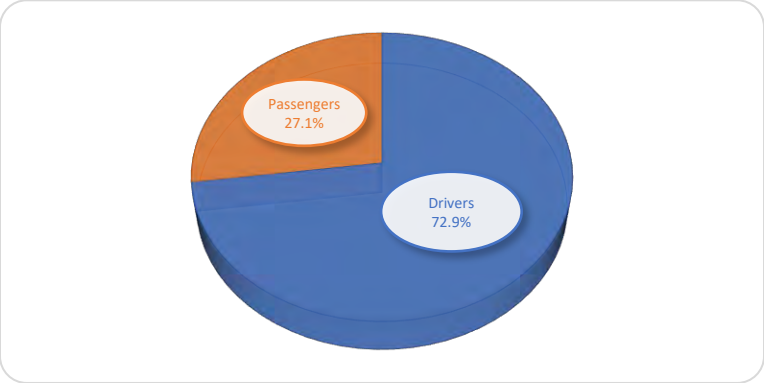
To sum up: (1) Seat belt use rates are higher for females than for males in three of the four vehicle types – automobiles, vans, and SUVs. (2) The most common vehicles for males are pickup trucks, in which seat belt use is lowest. As a result, the overall seat belt use rate is greater for females (86.7%) than for males (75.2%).

## Drivers and Passengers

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

For Wyoming 2021, observers collected data on 21,323 drivers and 7,932 passengers, for a total of 29,255 vehicle occupants. Drivers made up 72.9 percent of the vehicle occupants and passengers 27.1 percent. There were 2.7 drivers for every passenger.

*Figure 13: Percent of Sample by Occupant Type*



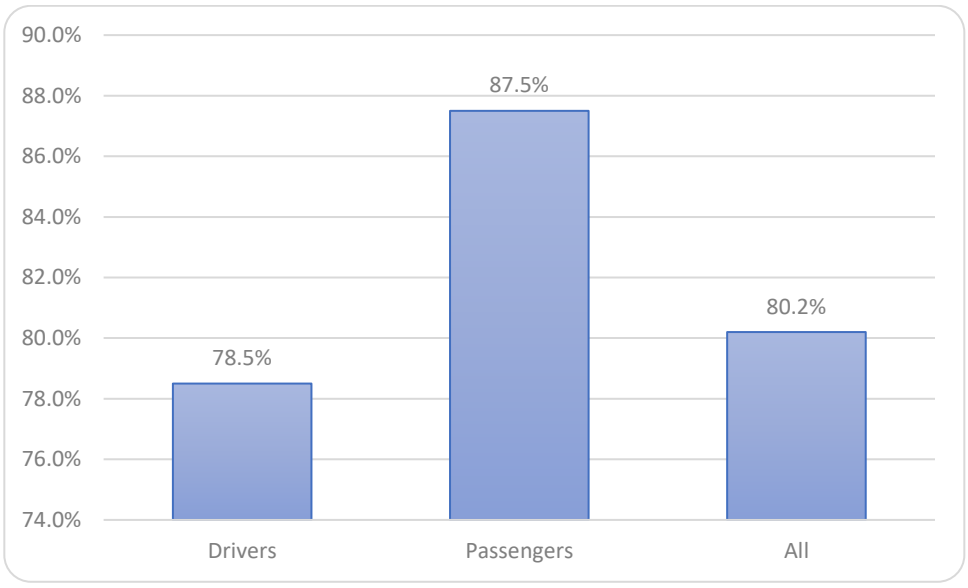

The following section of the report presents seat belt use rates for drivers and passengers. The overall rates are presented. Next, driver and passenger belt use are presented by county, population density, Wyoming license registration, roadway type, and the combination of vehicle type and gender.

## Overall Rates

78.5 percent of drivers were observed wearing seat belts. Passengers were belted at a rate of 87.5 percent, or 9.0 percentage points higher than the driver rate. There are many more drivers than passengers, so they contribute far more to the overall rate of 80.2 percent belted. The rates for drivers and passengers are illustrated by the following.

Seat Belt Use Rates for Drivers, Passengers, and All Vehicle Occupants, Wyoming 2021

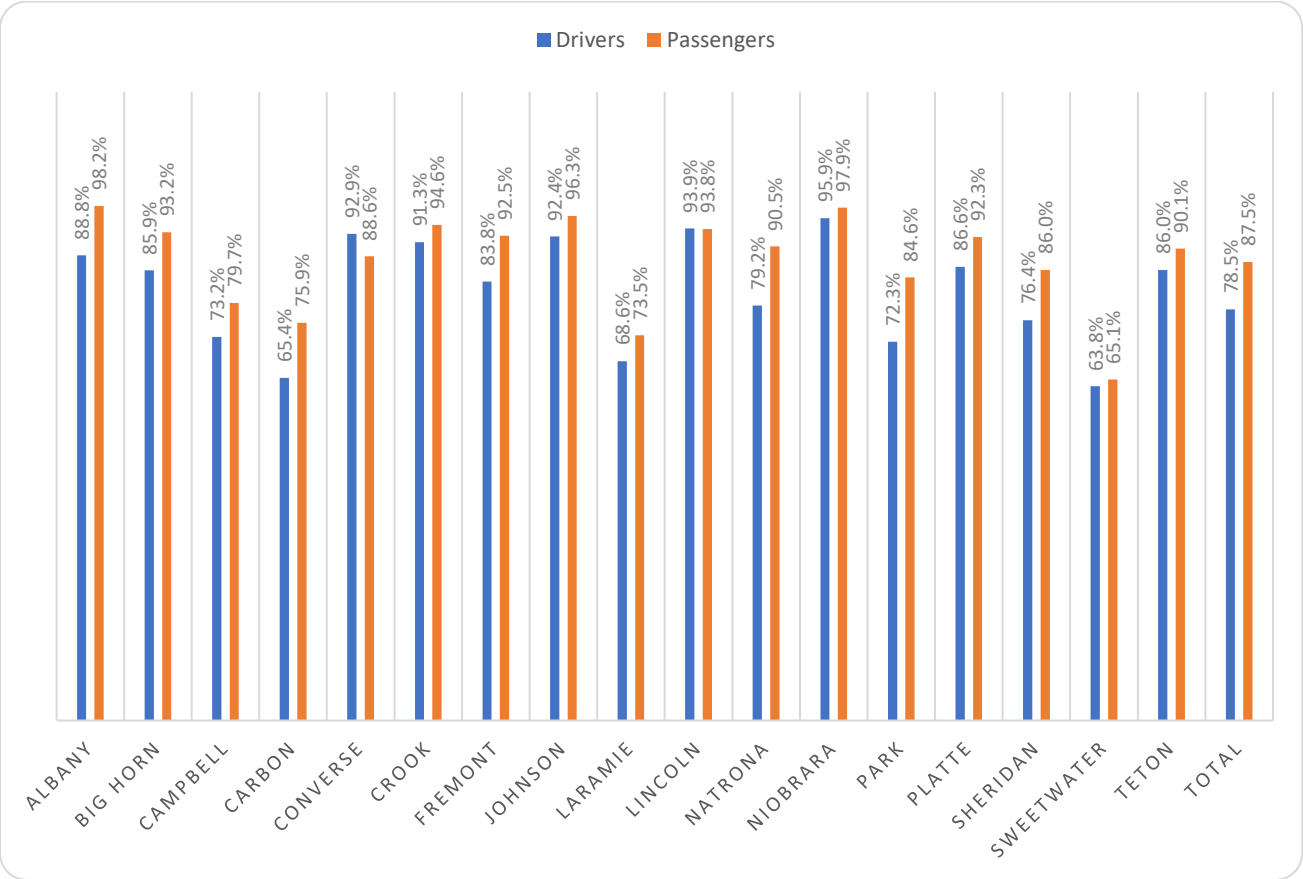
*Figure 14: Estimated Belt Use by Drivers, Passengers, and Occupants*



## Driver and Passenger Rates by County

The estimates of percent belted for drivers and passengers for each county are illustrated by the following.

*Figure 15: Estimated Belt Use by County and Occupant Type*



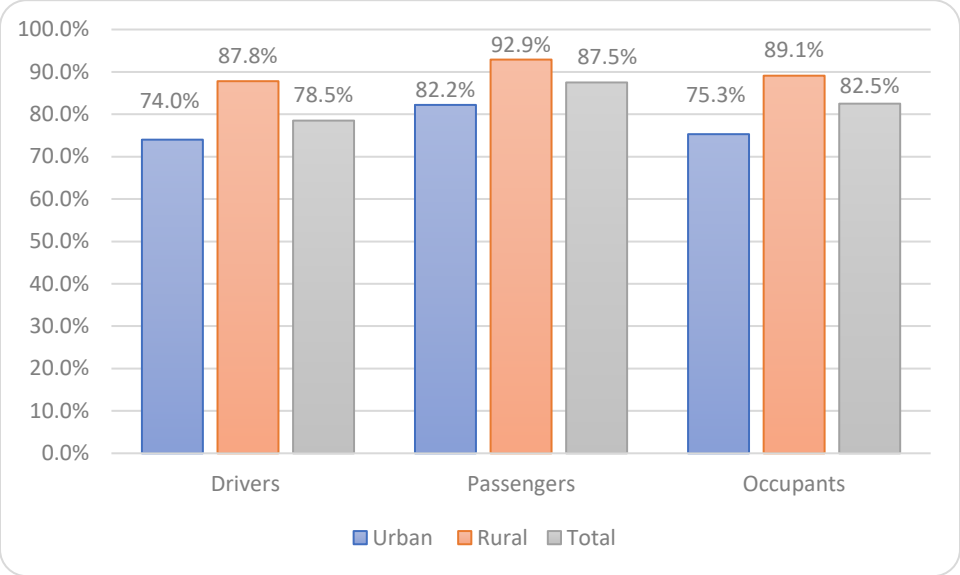

The chart shows that estimates of seat belt use are higher for passengers than drivers in almost all cases. One exception is Converse County, where drivers were belted at a higher rate (92.9%) than passengers (88.6%). The other exception is Lincoln County – the estimate for drivers is 93.9 percent, and for passengers 93.8 percent – but the difference is only a tenth of a percent.

Overall, the seat belt use rate for passengers is 9.0 points higher than the driver rate. For twelve of the counties, the difference is less significant. However, there are five counties where the difference is close to or above the overall rate difference. The counties that had driver rates at least 9.0 points lower than their passenger rates, along with the differences are: Albany (9.4%), Carbon (10.5%), Natrona (11.3%), Park (12.3%), and Sheridan (9.6%).

## Driver and Passenger Rates by Population Density

Overall, the seat belt use rate for vehicle occupants is 75.3 percent in urban sites and 89.1 percent in rural sites, a difference of 13.8 points. The rates for drivers, passengers, and all vehicle occupants are illustrated by the following.

*Figure 16: Estimated Belt Use by Occupant Type and Population Density*

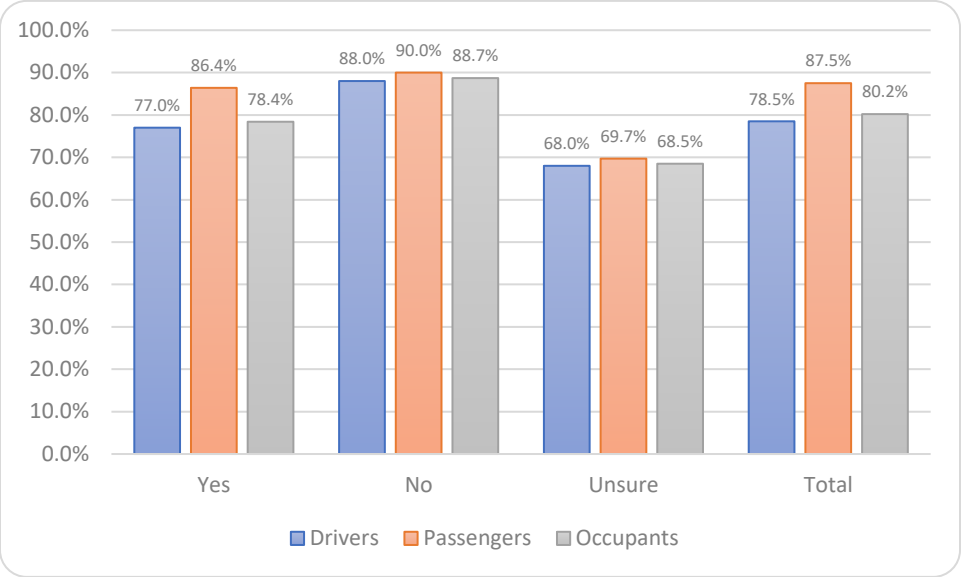



Drivers in rural areas are belted at a higher rate: 87.8 percent in rural sites and 74.0 percent in urban sites, a difference of 13.8 percentage points. The same pattern holds for passengers, but the difference is not quite as significant: 92.9 percent belted for passengers in rural areas, and 82.2 percent belted in rural areas, a difference of 10.7 percentage points.

## Driver and Passenger Rates by License Registration

The seat belt use rates for drivers, passengers, and all vehicle occupants are illustrated by the following.

*Figure 17: Estimated Belt Use by Occupant Type and Registration*

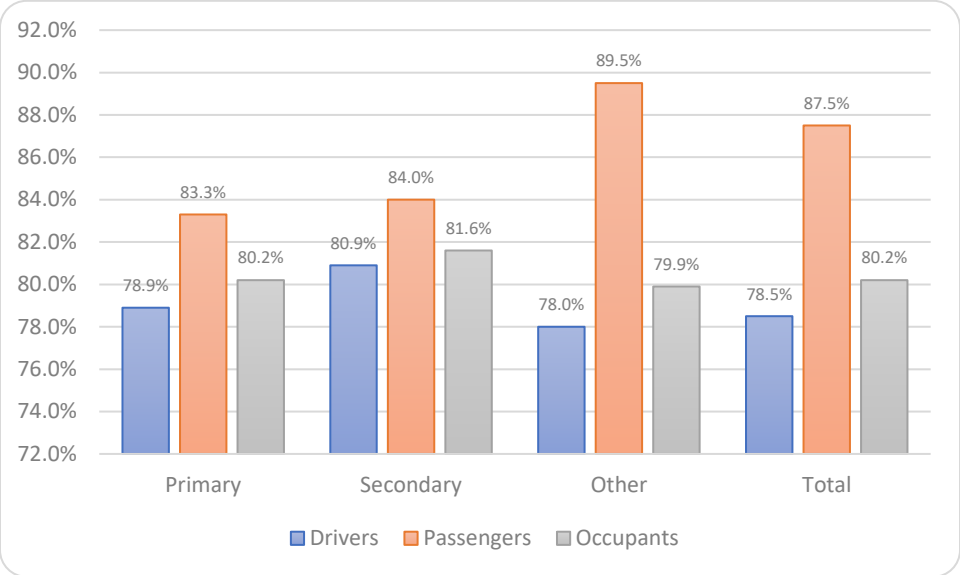



The main difference occurs for vehicle occupants in vehicles registered in Wyoming. The Wyoming seat belt use rate for drivers in Wyoming-registered vehicles is 77.0 percent and 86.4 percent for passengers, a difference of 9.4 percentage points. For occupants of out-of-state vehicles, the driver seat belt use is 88.0 percent and 92.9 percent for passengers, a difference of 2.0 points. The drivers and passengers in out-of-state vehicles are more likely to wear seat belts, while Wyoming passengers are more likely to wear seat belts than Wyoming drivers.

## Driver and Passenger Rates by Roadway Type

There are relatively small differences in seat belt use for vehicle occupants on primary (80.2% belted), secondary (81.6% belted), and "other" (79.9% belted) roads.[4] Passengers are more likely than drivers to be observed wearing seat belts on all three types of roadways. Seat belt use for drivers, passengers, and all vehicle occupants is illustrated by the following.

*Figure 18: Estimated Belt Use by Occupant Type and Roadway*




For the "other" roadways, 78.0 percent of the drivers were observed as belted, and 89.5 percent of passengers were belted, a difference of 11.5 percentage points. The passenger rate was 4.4 percentage points higher than the driver rate for vehicle occupants observed on primary roads. On secondary roads, the passenger rate was 3.1 points higher than the driver rate.

[4] The "other" roads are a mix of local, rural, and city roadways. All are paved roads, some with two and a few with four lanes.

## Driver and Passenger Rates by Gender and Vehicle Type.

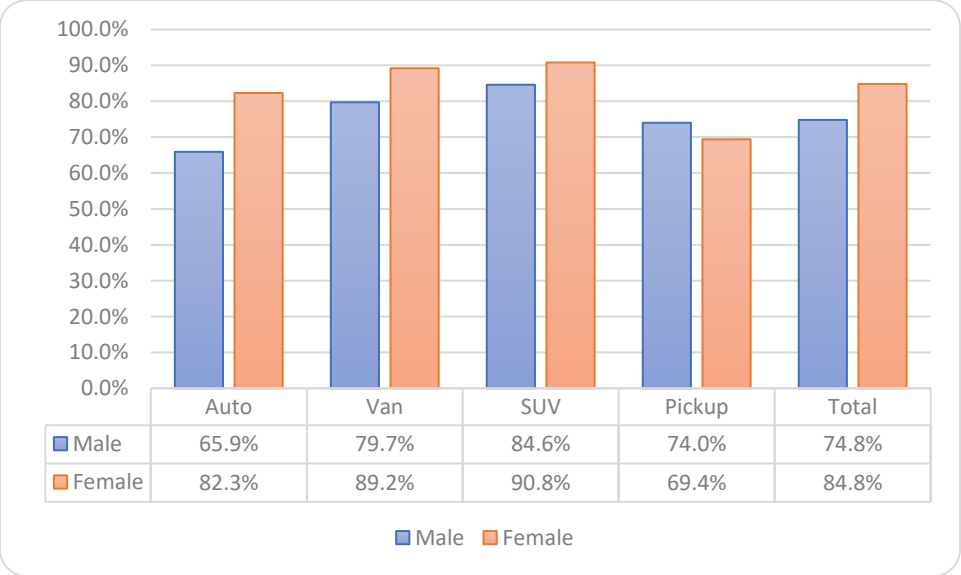
Females have higher rates of seat belt use overall and in every vehicle type except pickup trucks. The differences are illustrated by the following.

*Table 7: Estimated Belt Use by Occupant Type, Gender & Vehicle Type*

| Estimate of Driver, Passenger and All Occupants Seat Belt Use by Gender and Vehicle Type, Wyoming 2021 | | | | |
|---|---|---|---|---|
| **Gender** | Vehicle Type | Drivers | Passengers | Occupants |
| **Male** | Auto | 65.9% | 72.6% | 66.6% |
| | Van | 79.7% | 85.3% | 80.5% |
| | SUV | 84.6% | 75.7% | 84.0% |
| | Pickup | 74.0% | 76.7% | 74.2% |
| | Total | 74.8% | 79.2% | 75.2% |
| **Female** | Auto | 82.3% | 91.5% | 84.1% |
| | Van | 89.2% | 94.6% | 90.8% |
| | SUV | 90.8% | 96.7% | 93.1% |
| | Pickup | 69.4% | 81.6% | 75.1% |
| | Total | 84.8% | 90.8% | 86.7% |

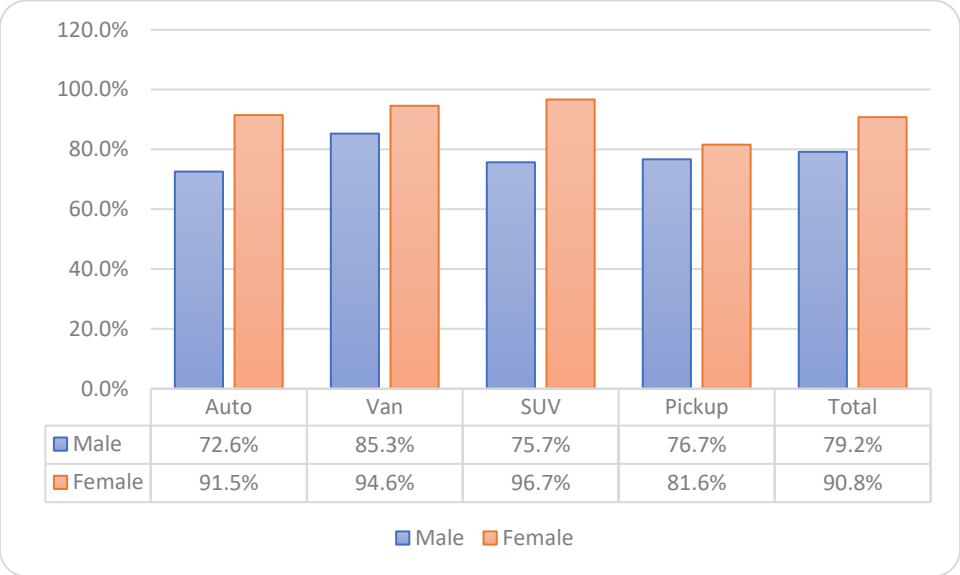
For drivers, seat belt use estimates are higher for females than males except in pickup trucks, where the male rate is 4.6 percentage points higher than the female rate. The rate of belt use is higher for females in automobiles (+16.4%), vans (+9.5%), and SUVs (+6.2%).

*Figure 19: Estimated Belt Use for Drivers by Vehicle Type and Gender*



Female passengers are more likely to wear seat belts than male passengers in all types of vehicles. The female passenger rates are more significant than male rates for all types of vehicles: automobiles (+18.9%), vans (+9.3%), SUVs (+21.0%), and pickup trucks (+4.9%).

*Figure 20: Estimated Belt Use for Passengers by Vehicle Type and Gender*

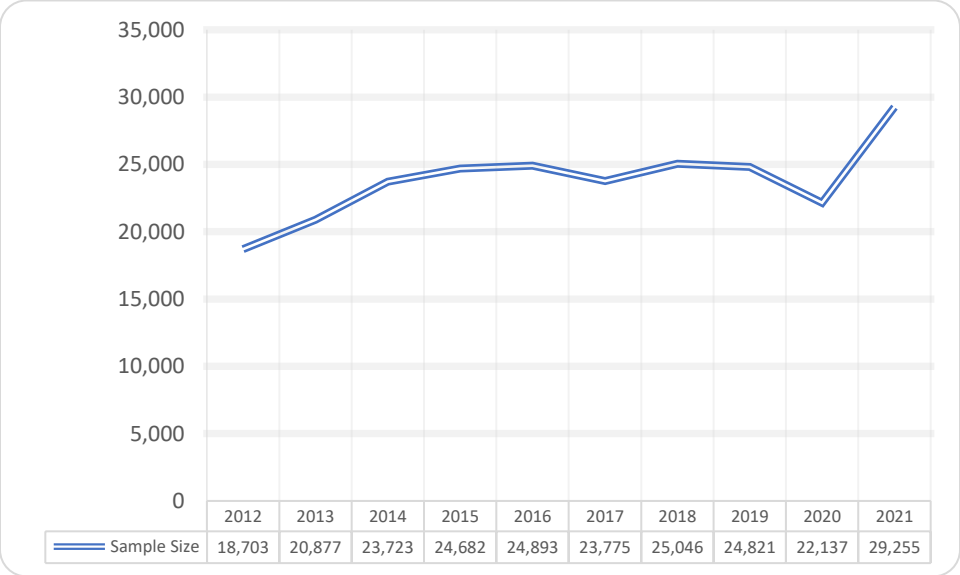



| | Auto | Van | SUV | Pickup | Total |
|---|---|---|---|---|---|
| Male | 72.6% | 85.3% | 75.7% | 76.7% | 79.2% |
| Female | 91.5% | 94.6% | 96.7% | 81.6% | 90.8% |

## Trends

The first trend line is for sample size, illustrated by the following.

*Figure 21: Trends for Sample Size*

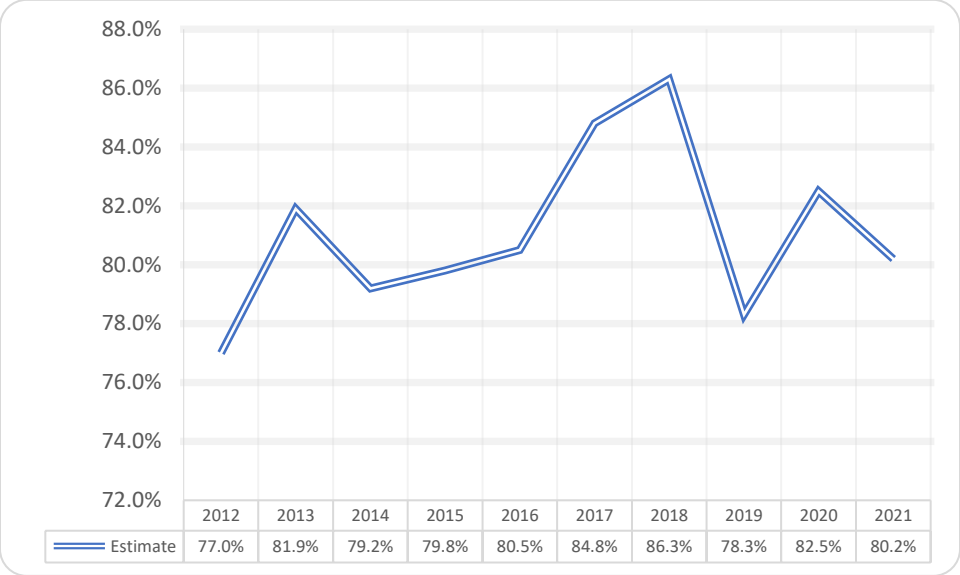



| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample Size | 18,703 | 20,877 | 23,723 | 24,682 | 24,893 | 23,775 | 25,046 | 24,821 | 22,137 | 29,255 |

The 2021 survey in Wyoming produced more observations than any other previous year dating back to 2012. The total of 29,255 vehicle occupants is 4,209 more than in the previous high of 25,046 collected in 2018.

The second trend line is for the overall seat belt use rate for all vehicle occupants. The rates from 2012 to 2021 are illustrated by the following.

*Figure 22: Trends for Estimated Belt Use by Year*




The 2021 rate of 80.2 percent belted is the sixth-highest rate over the past ten years. The rates were higher in 2018 (86.3%), 2017 (84.8%), 2020 (82.5%), 2013 (81.9%), and 2016 (80.5%). The difference between the highest rate of the past ten years, 86.3 percent in 2018, and 80.2 percent in 2021, or -6.1 percentage points.

## Concluding Remarks

A review of the results of the 2021 Wyoming seat belt use survey is found in the executive summary at the beginning of the report. The appendices that follow provide detailed resources that augment the narrative. All of the statistical tables generated by the data analysis are included.

# 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: 2021

Statewide Seatbelt Use Rate: 80.2 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[5], 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

9-30-21

Date

Matthew D. Carlson, P.E.

Printed name of authorized signing official

5 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.

5820 York Ave. S. Phone 952.922.0018

Edina, MN. 55410 E-mail 1jleibert@gmail.com

# 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]

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[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.
- $\pi$ denote the inclusion probability, and
  - $\pi_c$ 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.

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## 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

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## 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 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

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

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

For the 2020 observation period 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.

For the 2021 observation period data was collected the first full week of June as is customary.

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<br>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.

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

| Unweighted Frequencies of Occupant Belt Use by County and Observer, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | | Occupant Belt Use | | | | |
| **County** | Observer | Belted | Not Belted | Unsure | Total | Per Cent |
| **Albany** | Monty Byers | 1,408 | 131 | 0 | 1,539 | 5.3% |
| **Big Horn** | Dixie Elder | 747 | 101 | 0 | 848 | 2.9% |
| **Campbell** | Bryan Shannon | 1,348 | 446 | 14 | 1,808 | 6.2% |
| **Carbon** | Brooke Darden | 1,165 | 530 | 3 | 1,698 | 5.8% |
| **Converse** | Walter Tampellini | 1,206 | 93 | 10 | 1,309 | 4.5% |
| **Crook** | Skylar Elder | 1,596 | 129 | 0 | 1,725 | 5.9% |
| **Fremont** | Sandra Gabel | 1,729 | 265 | 8 | 2,002 | 6.8% |
| **Johnson** | Deb Eutsler | 1,094 | 74 | 0 | 1,168 | 4.0% |
| **Laramie** | Ashley Ingerle | 412 | 179 | 0 | 591 | 2.0% |
| **Lincoln** | Mindy McKinley | 1,320 | 86 | 0 | 1,406 | 4.8% |
| **Natrona** | Meredith Peak | 588 | 138 | 0 | 726 | 2.5% |
| **Niobrara** | Lori Cole | 801 | 28 | 0 | 829 | 2.8% |
| **Park** | Donna Lucas | 1,111 | 347 | 13 | 1,471 | 5.0% |
| **Platte** | Doug Peterson | 1,196 | 156 | 0 | 1,352 | 4.6% |
| **Sheridan** | Kendra Hughes | 1,545 | 429 | 0 | 1,974 | 6.7% |
| **Sweetwater** | Kayla Schear | 2,920 | 1,650 | 0 | 4,570 | 15.6% |
| **Teton** | Susan Parkinson | 3,699 | 540 | 0 | 4,239 | 14.5% |
| | Total | 23,885 | 5,322 | 48 | 29,255 | 100.0% |
| | | | | Average | 1,721 | |

| Frequencies by Type of Vehicle Occupant, Wyoming 2021 | | |
|---|---|---|
| | Unweighted Count | Percent |
| **Drivers** | 21,323 | 72.9% |
| **Passengers** | 7,932 | 27.1% |
| **All Occupants** | 29,255 | 100.0% |

## Occupant Variables

| Estimate of Occupant Seat Belt Use, Wyoming 2021 | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Belt Use** | Estimate | Standard | 95% Confidence Interval | | Unweighted |
| | | Error | Lower | Upper | Count |
| **Belted** | 80.2% | 0.4% | 79.5% | 80.9% | 23,885 |
| **Not Belted** | 19.8% | 0.4% | 19.1% | 20.5% | 5,322 |
| **Unsure** | 0.0% | 0.0% | 0.0% | 0.0% | 48 |
| **Total** | 100.0% | | | | 29,255 |

| Occupant Estimated Belt Use by County, Wyoming 2019-2021 | | | |
|---|---|---|---|
| | | | |
| **Year** | 2019 | 2020 | 2021 |
| **County** | % Belted | % Belted | % Belted |
| **Albany** | 87.9% | 89.7% | 91.3% |
| **Big Horn** | 86.4% | 89.4% | 88.1% |
| **Campbell** | 67.5% | 77.7% | 74.7% |
| **Carbon** | 67.6% | 91.9% | 68.7% |
| **Converse** | 73.1% | 81.9% | 92.1% |
| **Crook** | 92.9% | 92.6% | 92.4% |
| **Fremont** | 83.5% | 83.3% | 86.4% |
| **Johnson** | 87.8% | 85.8% | 93.5% |
| **Laramie** | 74.9% | 90.4% | 69.7% |
| **Lincoln** | 88.7% | 87.0% | 93.9% |
| **Natrona** | 78.4% | 78.4% | 81.0% |
| **Niobrara** | 97.8% | 94.8% | 96.6% |
| **Park** | 72.3% | 83.6% | 75.5% |
| **Platte** | 85.3% | 84.9% | 88.2% |
| **Sheridan** | 79.8% | 83.1% | 78.5% |
| **Sweetwater** | 63.5% | 77.5% | 64.2% |
| **Teton** | 91.6% | 91.6% | 87.3% |
| **Total** | 78.3% | 82.5% | 80.2% |

| Percent of Occupants by Gender and Vehicle Type, Wyoming 2021 | | | |
|---|---|---|---|
| | | | |
| **Vehicle** | Gender | | Percent |
| **Type** | Male | Female | Difference |
| **Auto** | 16.5% | 21.6% | 5.1% |
| **Van** | 27.2% | 48.3% | 21.1% |
| **SUV** | 6.4% | 7.2% | 0.7% |
| **PU Truck** | 49.8% | 22.9% | -26.9% |
| **Total** | 100.0% | 100.0% | 0.0% |

| Estimate of Occupant Belt Use by Vehicle Type, Wyoming 2021 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Vehicle** | Occupant Belt Use | | | | Unweighted | % | | |
| **Type** | Belted | Not Belted | Unsure | Total | Count | Total | Males | Females |
| **Auto** | 75.9% | 24.0% | 0.1% | 100.0% | 5,471 | 18.7% | 16.5% | 21.6% |
| **Van** | 86.9% | 13.1% | 0.0% | 100.0% | 10,579 | 36.2% | 27.2% | 48.3% |
| **SUV** | 88.5% | 11.5% | 0.0% | 100.0% | 1,975 | 6.8% | 6.4% | 7.2% |
| **PU Truck** | 74.3% | 25.6% | 0.0% | 99.9% | 11,230 | 38.4% | 49.8% | 22.9% |
| **Total** | 82.5% | 17.5% | 0.0% | 100.0% | 29,255 | 100.0% | 100.0% | 100.0% |

| Estimate of Occupant Belt Use by Vehicle Type and Occupant Gender, Wyoming 2021 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Vehicle | Occupant Belt Use | | | | Unweighted | % of |
| **Gender** | Type | Belted | Not Belted | Unsure | Total | Count | Sample |
| **Male** | Auto | 66.6% | 33.3% | 0.1% | 100.0% | 2,786 | 16.5% |
| | Van | 80.5% | 19.4% | 0.0% | 99.9% | 4,584 | 27.2% |
| | SUV | 84.0% | 16.0% | 0.0% | 100.0% | 1,084 | 6.4% |
| | PU Truck | 74.2% | 25.8% | 0.0% | 100.0% | 8,392 | 49.8% |
| | Total | 75.2% | 24.8% | 0.0% | 100.0% | 16,846 | 100.0% |
| **Female** | Auto | 84.1% | 15.9% | 0.1% | 100.1% | 2,685 | 21.6% |
| | Van | 90.8% | 9.2% | 0.0% | 100.0% | 5,995 | 48.3% |
| | SUV | 93.1% | 6.9% | 0.0% | 100.0% | 891 | 7.2% |
| | PU Truck | 75.1% | 24.9% | 0.1% | 100.1% | 2,838 | 22.9% |
| | Total | 86.7% | 13.3% | 0.0% | 100.0% | 12,409 | 100.0% |

| Estimates of Occupant Seat Belt Use by Population Density, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| **Population** | Occupant Belt Use | | | | Unweighted | |
| **Density** | Belted | Not Belted | Unsure | Total | Count | % |
| **Urban** | 75.3% | 24.7% | 0.0% | 100.0% | 6,830 | 23.3% |
| **Rural** | 89.1% | 10.8% | 0.1% | 100.0% | 22,425 | 76.7% |
| **All** | 80.2% | 17.5% | 0.0% | 97.7% | 29,255 | 100.0% |

| Estimate of Occupant Seat Belt Use by Wyoming License, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | Occupant Belt Use | | | | Unweighted | |
| **Wyoming License** | Belted | Not Belted | Unsure | Total | Count | % |
| **Yes** | 78.4% | 21.6% | 0.0% | 100.0% | 15,950 | 54.5% |
| **No** | 88.7% | 11.2% | 0.1% | 100.0% | 12,966 | 44.3% |
| **Unsure** | 68.5% | 30.7% | 0.8% | 100.0% | 339 | 1.2% |
| **Total** | 80.2% | 19.8% | 0.0% | 100.0% | 29,255 | 100.0% |

| Estimate of Occupant Seat Belt Use by Roadway Type, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | Occupant Belt Use | | | | Unweighted | |
| **Roadway Type** | Belted | Not Belted | Unsure | Total | Count | % |
| **Primary** | 80.2% | 19.7% | 0.1% | 100.0% | 8,996 | 30.8% |
| **Secondary** | 81.6% | 18.2% | 0.2% | 100.0% | 19,216 | 65.7% |
| **Other*** | 79.9% | 20.1% | 0.0% | 100.0% | 1,043 | 3.6% |
| **Total** | 80.2% | 19.8% | 0.0% | 100.0% | 29,255 | 100.0% |
| ***"Other" roadways are a catchall category for local, rural roads, and city streets** | | | | | | |
| **that are not primary or secondary roadways.** | | | | | | |

| Estimate of Occupant Seat Belt Use by Day of Week, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | Occupant Belt Use | | | | Unweighted | |
| **Weekday-Weekend** | Belted | Not Belted | Unsure | Total | Count | % |
| **Weekdays** | 78.6% | 21.4% | 0.0% | 100.0% | 23,837 | 81.5% |
| **Weekends** | 90.5% | 9.4% | 0.0% | 99.9% | 5,418 | 18.5% |
| **All** | 80.2% | 17.5% | 0.0% | 97.7% | 29,255 | 100.0% |

| Estimate of Occupant Seat Belt Use by Occupant Gender, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| **Occupant** | Occupant Belt Use | | | | Unweighted | |
| **Gender** | Belted | Not Belted | Unsure | Total | Count | % |
| **Male** | 75.2% | 24.8% | 0.0% | 100.0% | 16,846 | 57.6% |
| **Female** | 86.7% | 13.3% | 0.0% | 100.0% | 12,409 | 42.4% |
| **All** | 80.2% | 17.5% | 0.0% | 97.7% | 29,255 | 100.0% |

| Estimate of Occupant Seat Belt Use by Vehicle Type, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | Occupant Belt Use | | | | Unweighted | Percent |
| **Vehicle Type** | Belted | Not Belted | Unsure | Total | Count | Percent of Sample |
| **Auto** | 75.9% | 24.0% | 0.1% | 100.0% | 5,471 | 18.7% |
| **Van** | 86.9% | 13.1% | 0.0% | 100.0% | 10,579 | 36.2% |
| **SUV** | 88.5% | 11.5% | 0.0% | 100.0% | 1,975 | 6.8% |
| **Pickup Truck** | 74.3% | 25.6% | 0.0% | 99.9% | 11,230 | 38.4% |
| **Total** | 80.2% | 19.8% | 0.0% | 100.0% | 29,255 | 100.0% |

| Estimate of Occupant Belt Use by Type of Weather, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | Occupant Belt Use | | | | Unweighted | |
| **Weather** | Belted | Not Belted | Unsure | Total | Count | % |
| **Clear/Sunny** | 80.2% | 19.7% | 0.0% | 99.9% | 27,245 | 93.1% |
| **Cloudy** | 78.8% | 21.1% | 0.1% | 100.0% | 1,908 | 6.5% |
| **Light Fog** | 50.0% | 50.0% | 0.0% | 100.0% | 2 | 0.0% |
| **Light Rain** | 80.4% | 19.6% | 0.0% | 100.0% | 100 | 0.3% |
| **Total** | 80.2% | 19.8% | 0.0% | 100.0% | 29,255 | 100.0% |

| Estimate of Occupant Belt Use by Number of Lanes Observed, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | Occupant Belt Use | | | | Unweighted | |
| **Lanes** | Belted | Not Belted | Unsure | Total | Count | % |
| **One Lane** | 84.2% | 15.8% | 0.1% | 100.1% | 16,831 | 57.5% |
| **Two Lanes** | 77.6% | 22.4% | 0.0% | 100.0% | 12,424 | 42.5% |
| **Total** | 80.2% | 19.8% | 0.0% | 100.0% | 29,255 | 100.0% |

| Estimate of Occupant Belt Use by Time of Observation, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | Occupant Belt Use | | | | Unweighted | |
| **Time** | Belted | Not Belted | Unsure | Total | Count | % |
| **7:30-9:30 AM** | 82.3% | 17.6% | 0.1% | 100.0% | 4,378 | 15.0% |
| **9:30-11:30 AM** | 77.8% | 22.2% | 0.0% | 100.0% | 5,491 | 18.8% |
| **11:30 AM-1:30 PM** | 67.7% | 32.2% | 0.1% | 100.0% | 6,678 | 22.8% |
| **1:30-3:30 PM** | 83.2% | 16.8% | 0.0% | 100.0% | 5,797 | 19.8% |
| **3:30-5:30 PM** | 90.4% | 9.5% | 0.1% | 100.0% | 6,911 | 23.6% |
| **Total** | 80.2% | 19.8% | 0.0% | 100.0% | 29,255 | 100.0% |

| Estimate of Occupant Belt Use by Direction of Observation, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | Occupant Belt Use | | | | Unweighted | |
| **Direction** | Belted | Not Belted | Unsure | Total | Count | % |
| **North** | 92.9% | 7.1% | 0.0% | 100.0% | 4,526 | 15.5% |
| **South** | 90.9% | 9.1% | 0.0% | 100.0% | 6,079 | 20.8% |
| **East** | 71.7% | 28.3% | 0.0% | 100.0% | 9,522 | 32.5% |
| **West** | 83.7% | 16.3% | 0.1% | 100.1% | 9,128 | 31.2% |
| **Total** | 80.2% | 19.8% | 0.0% | 100.0% | 29,255 | 100.0% |

## Driver & Passenger Variables

| Estimates of Percent Belted by County for Drivers, Passengers and Occupants, Wyoming 2021 | | | | | |
|---|---|---|---|---|---|
| | | | | Total | % of Total |
| **County** | Drivers | Passengers | Occupants | Occupants | Occupants |
| **Albany** | 88.8% | 98.2% | 91.3% | 1,539 | 5.3% |
| **Big Horn** | 85.9% | 93.2% | 88.1% | 848 | 2.9% |
| **Campbell** | 73.2% | 79.7% | 74.7% | 1,808 | 6.2% |
| **Carbon** | 65.4% | 75.9% | 68.7% | 1,698 | 5.8% |
| **Converse** | 92.9% | 88.6% | 92.1% | 1,309 | 4.5% |
| **Crook** | 91.3% | 94.6% | 92.4% | 1,725 | 5.9% |
| **Fremont** | 83.8% | 92.5% | 86.4% | 2,002 | 6.8% |
| **Johnson** | 92.4% | 96.3% | 93.5% | 1,168 | 4.0% |
| **Laramie** | 68.6% | 73.5% | 69.7% | 591 | 2.0% |
| **Lincoln** | 93.9% | 93.8% | 93.9% | 1,406 | 4.8% |
| **Natrona** | 79.2% | 90.5% | 81.0% | 726 | 2.5% |
| **Niobrara** | 95.9% | 97.9% | 96.6% | 829 | 2.8% |
| **Park** | 72.3% | 84.6% | 75.5% | 1,471 | 5.0% |
| **Platte** | 86.6% | 92.3% | 88.2% | 1,352 | 4.6% |
| **Sheridan** | 76.4% | 86.0% | 78.5% | 1,974 | 6.7% |
| **Sweetwater** | 63.8% | 65.1% | 64.2% | 4,570 | 15.6% |
| **Teton** | 86.0% | 90.1% | 87.3% | 4,239 | 14.5% |
| **Total** | 78.5% | 87.5% | 80.2% | 29,255 | 100.0% |

| Estimates of Seat Belt Use for Drivers, Passengers, and All Occupants, Wyoming 2021 | | | |
|---|---|---|---|
| | Drivers | Passengers | All Occupants |
| **Percent Belted** | 78.5% | 87.5% | 80.2% |
| **Unweighted Total** | 21,323 | 7,932 | 29,255 |
| **% of Sample** | 72.9% | 27.1% | 100.0% |

| Estimate of Driver Seat Belt Use, Wyoming 2021 | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Belt Use** | Estimate | Standard | 95% Confidence Interval | | Unweighted |
| | | Error | Lower | Upper | Count |
| **Belted** | 78.5% | 0.4% | 77.7% | 79.3% | 17,082 |
| **Not Belted** | 21.4% | 0.4% | 20.7% | 22.3% | 4,206 |
| **Unsure** | 0.0% | 0.0% | 0.0% | 0.0% | 35 |
| **Total** | 99.9% | | | | 21,323 |

| Estimate of Passenger Seat Belt Use, Wyoming 2021 | | | | | |
|---|---|---|---|---|---|
| **Belt Use** | Estimate | Standard | 95% Confidence Interval | | Unweighted |
| | | Error | Lower | Upper | Count |
| **Belted** | 87.5% | 0.6% | 86.3% | 88.6% | 6,803 |
| **Not Belted** | 12.5% | 0.6% | 11.4% | 13.6% | 1,116 |
| **Unsure** | 0.1% | 0.0% | 0.0% | 0.1% | 13 |
| **Total** | 100.1% | | | | 7,932 |

| Comparison of Estimates of Seat Belt Use by Type of Vehicle Occupant in Wyoming, 2018-2021 | | | | |
|---|---|---|---|---|
| | 2018 | 2019 | 2020 | 2021 |
| **Drivers** | 86.9% | 76.9% | 81.0% | 78.5% |
| **Passengers** | 84.5% | 84.1% | 88.7% | 87.5% |
| **All Occupants** | 86.3% | 78.3% | 82.5% | 80.2% |
| **Unweighted Count** | 25,046 | 24,821 | 22,137 | 29,255 |

| Estimates of Driver, Passenger and All Occupants Belted by Population Density, Wyoming 2021 | | | |
|---|---|---|---|
| **Population** | Drivers | Passengers | Occupants |
| **Urban** | 74.0% | 82.2% | 75.3% |
| **Rural** | 87.8% | 92.9% | 89.1% |
| **Total** | 78.5% | 87.5% | 82.5% |

| Estimates of Drivers, Passengers and All Occupants Belted by Wyoming License, Wyoming 2021 | | | |
|---|---|---|---|
| **Wy License** | Drivers | Passengers | Occupants |
| **Yes** | 77.0% | 86.4% | 78.4% |
| **No** | 88.0% | 90.0% | 88.7% |
| **Unsure** | 68.0% | 69.7% | 68.5% |
| **Total** | 78.5% | 87.5% | 80.2% |

| Estimates of Drivers, Passengers and All Occupants Belted by Roadway Type, Wyoming 2021 | | | |
|---|---|---|---|
| **Roadway** | Drivers | Passengers | Occupants |
| **Primary** | 78.9% | 83.3% | 80.2% |
| **Secondary** | 80.9% | 84.0% | 81.6% |
| **Other** | 78.0% | 89.5% | 79.9% |
| **Total** | 78.5% | 87.5% | 80.2% |

| Estimate of Driver, Passenger and All Occupants Seat Belt Use by Gender and Vehicle Type, Wyoming 2021 | | | | |
|---|---|---|---|---|
| | Vehicle | | | |
| **Gender** | Type | Drivers | Passengers | Occupants |
| **Male** | Auto | 65.9% | 72.6% | 66.6% |
| | Van | 79.7% | 85.3% | 80.5% |
| | SUV | 84.6% | 75.7% | 84.0% |
| | Pickup | 74.0% | 76.7% | 74.2% |
| | Total | 74.8% | 79.2% | 75.2% |
| **Female** | Auto | 82.3% | 91.5% | 84.1% |
| | Van | 89.2% | 94.6% | 90.8% |
| | SUV | 90.8% | 96.7% | 93.1% |
| | Pickup | 69.4% | 81.6% | 75.1% |
| | Total | 84.8% | 90.8% | 86.7% |

## Vehicle Type & Gender

| Estimate of Occupant Belt Use by Vehicle Type, Wyoming 2021 | | | | | | |
|---|---|---|---|---|---|---|
| **Vehicle** | Occupant Belt Use | | | | Unweighted | Percent |
| **Type** | Belted | Not Belted | Unsure | Total | Count | Sample |
| **Auto** | 75.9% | 24.0% | 0.1% | 100.0% | 5,471 | 18.7% |
| **Van** | 86.9% | 13.1% | 0.0% | 100.0% | 10,579 | 36.2% |
| **SUV** | 88.5% | 11.5% | 0.0% | 100.0% | 1,975 | 6.8% |
| **PU Truck** | 74.3% | 25.6% | 0.0% | 99.9% | 11,230 | 38.4% |
| **Total** | 80.2% | 17.5% | 0.0% | 97.7% | 29,255 | 100.0% |

| Estimate of Occupant Belt Use by Vehicle Type and Occupant Gender, Wyoming 2021 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Vehicle | Occupant Belt Use | | | | Unweighted | % of |
| **Gender** | Type | Belted | Not Belted | Unsure | Total | Count | Sample |
| **Male** | Auto | 66.6% | 33.3% | 0.1% | 100.0% | 2,786 | 16.5% |
| | Van | 80.5% | 19.4% | 0.0% | 99.9% | 4,584 | 27.2% |
| | SUV | 84.0% | 16.0% | 0.0% | 100.0% | 1,084 | 6.4% |
| | PU Truck | 74.2% | 25.8% | 0.0% | 100.0% | 8,392 | 49.8% |
| | Total | 75.2% | 24.8% | 0.0% | 100.0% | 16,846 | 100.0% |
| **Female** | Auto | 84.1% | 15.9% | 0.1% | 100.1% | 2,685 | 21.6% |
| | Van | 90.8% | 9.2% | 0.0% | 100.0% | 5,995 | 48.3% |
| | SUV | 93.1% | 6.9% | 0.0% | 100.0% | 891 | 7.2% |
| | PU Truck | 75.1% | 24.9% | 0.1% | 100.1% | 2,838 | 22.9% |
| | Total | 86.7% | 13.3% | 0.0% | 100.0% | 12,409 | 100.0% |

| Percent of Occupants by Gender and Vehicle Type, Wyoming 2021 | | | |
|---|---|---|---|
| **Vehicle** | Gender | | Percent |
| **Type** | Male | Female | Difference |
| **Auto** | 16.5% | 21.6% | 5.1% |
| **Van** | 27.2% | 48.3% | 21.1% |
| **SUV** | 6.4% | 7.2% | 0.7% |
| **PU Truck** | 49.8% | 22.9% | -26.9% |
| **Total** | 100.0% | 100.0% | 0.0% |

## Trends

| Trend in Sample Sizes for Wyoming Seat Belt 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 |
| **2021** | 29,255 |
| **Total** | 237,912 |
| **Average** | 26,435 |

| Trend in Seat Belt 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% |
| **2021** | 80.2% |

# Appendix E: Observer Field Test Ratings

Field Test Scores by Observer

# Observer Written Exam & Field Observations

| County | Observer | Written | Practice | Test 1 | Test 2 | Test 3 | AVG 1-3 |
|---|---|---|---|---|---|---|---|
| **Albany** | Monty Byers | 90.00 | 95.51 | 87.40 | 80.52 | 94.03 | 89.49 |
| **Big horn** | Dixie Elder | 85.00 | 98.36 | 92.68 | 100.00 | 100.00 | 95.21 |
| **Campbell** | Bryan Shannon | 95.00 | 92.06 | 82.55 | 75.00 | 89.07 | 86.74 |
| **Carbon** | Brooke Darden | 95.00 | 93.51 | 84.31 | 84.72 | 97.60 | 91.03 |
| **Converse** | Walter Tampellini | 95.00 | 90.00 | 76.26 | 90.48 | 98.28 | 90.00 |
| **Crook** | Skyler Elder | 100.00 | 100.00 | 87.63 | 83.33 | 84.72 | 91.14 |
| **Fremont** | Sandra Gabel | 100.00 | 100.00 | 88.19 | 100.00 | 97.67 | 97.17 |
| **Johnson** | Deb Eutsler | 100.00 | 75.90 | 82.67 | 99.10 | 100.00 | 91.53 |
| **Laramie** | Ashley Ingerle | 95.00 | 88.78 | 77.92 | 82.67 | 97.47 | 88.37 |
| **Lincoln** | Mindy McKinley | 95.00 | 98.36 | 86.36 | 98.41 | 89.24 | 93.47 |
| **Natrona** | Meredith Peak | 95.00 | 88.04 | 97.89 | 84.29 | 93.85 | 91.81 |
| **Niobrara** | Lori Cole | 95.00 | 95.45 | 92.94 | 73.68 | 98.39 | 91.09 |
| **Park** | Donna Lucas | 100.00 | 100.00 | 78.21 | 98.59 | 97.97 | 94.95 |
| **Platte** | Doug Peterson | 100.00 | 92.86 | 99.10 | 80.26 | 97.94 | 94.03 |
| **Sheridan** | Kendra Huges | 100.00 | 97.98 | 84.16 | 87.21 | 92.67 | 92.40 |
| **Sweetwater** | Kayla Schearer | 100.00 | 100.00 | 86.99 | 86.59 | 89.85 | 92.69 |
| **Teton** | Susan Parkinson | 100.00 | 100.00 | 97.37 | 99.10 | 97.74 | 98.84 |
| **Alternate 1** | Vikie Ingerle | 100.00 | 93.18 | 90.91 | 84.29 | 89.24 | 91.52 |
| **WY Cor** | Bridget White | 100.00 | 93.59 | 97.60 | 91.30 | 92.95 | 95.09 |
| **QC2** | Vicky Peterson | 100.00 | 77.27 | 90.91 | 87.91 | 85.23 | 88.26 |
| | State Averages | 97.00 | 93.54 | 88.10 | 88.37 | 94.20 | 92.24 |

# Appendix F: SBU Unknown Rate

Seatbelt Survey Unknown Rates

| County | County Code | Unknown Driv+Pass | Total Obsv. Driv+Pass | County Rate |
|---|---|---|---|---|
| **Albany** | 1 | 0 | 1539 | 0.000000 |
| **Big Horn** | 3 | 0 | 848 | 0.000000 |
| **Campbell** | 5 | 14 | 1799 | 0.007782 |
| **Carbon** | 7 | 3 | 1697 | 0.001768 |
| **Converse** | 9 | 10 | 1309 | 0.007639 |
| **Crook** | 11 | 0 | 1725 | 0.000000 |
| **Fremont** | 13 | 8 | 1701 | 0.004703 |
| **Johnson** | 19 | 0 | 1168 | 0.000000 |
| **Laramie** | 21 | 0 | 591 | 0.000000 |
| **Lincoln** | 23 | 0 | 1406 | 0.000000 |
| **Natrona** | 25 | 0 | 726 | 0.000000 |
| **Niobrara** | 27 | 0 | 829 | 0.000000 |
| **Park** | 29 | 13 | 1469 | 0.008850 |
| **Platte** | 31 | 0 | 1352 | 0.000000 |
| **Sheridan** | 33 | 0 | 1974 | 0.000000 |
| **Sweetwater** | 37 | 0 | 2285 | 0.000000 |
| **Teton** | 39 | 0 | 4239 | 0.000000 |
| | | | | |
| **State** | | 48 | 26657 | 0.001801 |

# 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: 0.1801 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 | 6/11/2021 | 0.001650855 | 181 | 76 | 238 | 19 | 0 |
| 604506604 | Original | 6/11/2021 | 0.001650855 | 201 | 70 | 254 | 17 | 0 |
| 604518733 | Original | 6/8/2021 | 0.001650855 | 187 | 65 | 228 | 24 | 0 |
| 618090887 | Original | 6/10/2021 | 0.001650855 | 180 | 68 | 240 | 8 | 0 |
| 168721954 | Original | 6/7/2021 | 0.00536996 | 8 | 3 | 8 | 3 | 0 |
| 168724202 | Original | 6/13/2021 | 0.00536996 | 22 | 16 | 35 | 3 | 0 |
| 168736409 | Original | 6/8/2021 | 0.00536996 | 3 | 1 | 4 | 0 | 0 |
| 168736812 | Original | 6/9/2021 | 0.00536996 | 2 | 0 | 1 | 1 | 0 |
| 168736818 | Original | 6/9/2021 | 0.00536996 | 2 | 1 | 2 | 1 | 0 |
| 168739458 | Original | 6/10/2021 | 0.00536996 | 57 | 13 | 61 | 9 | 0 |
| 168744758 | Original | 6/11/2021 | 0.00536996 | 29 | 15 | 41 | 3 | 0 |
| 168755794 | Original | 6/8/2021 | 0.00536996 | 1 | 0 | 1 | 0 | 0 |
| 168756946 | Original | 6/10/2021 | 0.00536996 | 39 | 12 | 41 | 10 | 0 |
| 168759492 | Original | 6/10/2021 | 0.00536996 | 28 | 8 | 32 | 4 | 0 |
| 604505737 | Original | 6/12/2021 | 0.00536996 | 78 | 33 | 100 | 11 | 0 |
| 604508028 | Original | 6/12/2021 | 0.00536996 | 79 | 27 | 91 | 15 | 0 |
| 639960821 | Original | 6/7/2021 | 0.00536996 | 25 | 9 | 31 | 3 | 0 |
| 180485518 | Original | 6/9/2021 | 0.00675 | 32 | 12 | 37 | 7 | 0 |
| 180488087 | Original | 6/8/2021 | 0.00675 | 12 | 10 | 21 | 1 | 0 |
| 180490194 | Original | 6/7/2021 | 0.00675 | 21 | 9 | 24 | 6 | 0 |
| 180496628 | Original | 6/9/2021 | 0.00675 | 71 | 29 | 85 | 15 | 0 |
| 180498297 | Original | 6/10/2021 | 0.00675 | 16 | 8 | 23 | 1 | 0 |
| 180499677 | Original | 6/12/2021 | 0.00675 | 29 | 18 | 43 | 4 | 0 |
| 180499711 | Original | 6/11/2021 | 0.00675 | 28 | 13 | 37 | 4 | 0 |
| 180499713 | Original | 6/11/2021 | 0.00675 | 28 | 18 | 43 | 3 | 0 |
| 180500800 | Original | 6/13/2021 | 0.00675 | 49 | 34 | 82 | 1 | 0 |
| 180502805 | Original | 6/8/2021 | 0.00675 | 51 | 10 | 44 | 17 | 0 |
| 605615639 | Original | 6/7/2021 | 0.00675 | 34 | 13 | 38 | 9 | 0 |
| 605622874 | Original | 6/8/2021 | 0.00675 | 13 | 5 | 18 | 0 | 0 |
| 605628846 | Original | 6/7/2021 | 0.00675 | 53 | 10 | 57 | 6 | 0 |
| 605634311 | Original | 6/12/2021 | 0.00675 | 4 | 3 | 5 | 2 | 0 |
| 605635819 | Original | 6/7/2021 | 0.00675 | 52 | 15 | 55 | 12 | 0 |
| 629140276 | Original | 6/10/2021 | 0.00675 | 64 | 34 | 94 | 4 | 0 |
| 640075189 | Original | 6/9/2021 | 0.00675 | 40 | 10 | 41 | 9 | 0 |
| 146322365 | Original | 6/7/2021 | 0.00122368 | 142 | 76 | 179 | 38 | 1 |
| 607412531 | Original | 6/7/2021 | 0.00122368 | 78 | 21 | 82 | 13 | 4 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 635167239 | Original | 6/9/2021 | 0.00122368 | 176 | 90 | 207 | 56 | 3 |
| 146318474 | Original | 6/12/2021 | 0.00570204 | 7 | 3 | 8 | 2 | 0 |
| 146328862 | Original | 6/7/2021 | 0.00570204 | 41 | 10 | 40 | 11 | 0 |
| 146332262 | Original | 6/8/2021 | 0.00570204 | 85 | 24 | 88 | 21 | 0 |
| 146339526 | Original | 6/11/2021 | 0.00570204 | 47 | 18 | 49 | 14 | 2 |
| 146342003 | Original | 6/10/2021 | 0.00570204 | 14 | 7 | 15 | 5 | 1 |
| 146343481 | Original | 6/11/2021 | 0.00570204 | 56 | 21 | 62 | 14 | 1 |
| 146347374 | Original | 6/13/2021 | 0.00570204 | 5 | 4 | 4 | 5 | 0 |
| 146350863 | Original | 6/9/2021 | 0.00570204 | 202 | 24 | 127 | 99 | 0 |
| 146351033 | Original | 6/8/2021 | 0.00570204 | 270 | 62 | 234 | 98 | 0 |
| 146353423 | Original | 6/9/2021 | 0.00570204 | 82 | 22 | 71 | 32 | 1 |
| 607412366 | Original | 6/10/2021 | 0.00570204 | 17 | 9 | 22 | 4 | 0 |
| 624031392 | Original | 6/12/2021 | 0.00570204 | 15 | 4 | 16 | 3 | 0 |
| 633856780 | Original | 6/8/2021 | 0.00570204 | 77 | 18 | 75 | 20 | 0 |
| 637303141 | Original | 6/8/2021 | 0.00570204 | 61 | 20 | 69 | 11 | 1 |
| 611196911 | Original | 6/13/2021 | 0.0012506 | 176 | 102 | 250 | 28 | 0 |
| 611197521 | Original | 6/10/2021 | 0.0012506 | 191 | 95 | 214 | 72 | 0 |
| 611197813 | Original | 6/10/2021 | 0.0012506 | 114 | 49 | 96 | 67 | 0 |
| 611197839 | Original | 6/9/2021 | 0.0012506 | 155 | 37 | 103 | 86 | 3 |
| 148697142 | Original | 6/11/2021 | 0.004063325 | 97 | 58 | 108 | 47 | 0 |
| 148703998 | Original | 6/10/2021 | 0.004063325 | 17 | 2 | 12 | 7 | 0 |
| 148709091 | Original | 6/9/2021 | 0.004063325 | 37 | 15 | 34 | 18 | 0 |
| 148715351 | Original | 6/8/2021 | 0.004063325 | 21 | 9 | 12 | 18 | 0 |
| 148715791 | Original | 6/7/2021 | 0.004063325 | 11 | 3 | 11 | 3 | 0 |
| 148729069 | Original | 6/13/2021 | 0.004063325 | 59 | 20 | 42 | 37 | 0 |
| 148729548 | Original | 6/11/2021 | 0.004063325 | 122 | 70 | 140 | 52 | 0 |
| 610950022 | Original | 6/8/2021 | 0.004063325 | 10 | 1 | 5 | 6 | 0 |
| 622138132 | Original | 6/12/2021 | 0.004063325 | 83 | 34 | 71 | 46 | 0 |
| 622152589 | Original | 6/12/2021 | 0.004063325 | 11 | 6 | 14 | 3 | 0 |
| 634320706 | Original | 6/9/2021 | 0.004063325 | 55 | 15 | 42 | 28 | 0 |
| 635735302 | Original | 6/7/2021 | 0.004063325 | 14 | 6 | 10 | 10 | 0 |
| 638995814 | Original | 6/7/2021 | 0.004063325 | 3 | 0 | 1 | 2 | 0 |
| 146991744 | Original | 6/8/2021 | 0.00232162 | 92 | 7 | 94 | 4 | 1 |
| 147011297 | Original | 6/9/2021 | 0.00232162 | 114 | 17 | 123 | 7 | 1 |
| 606576236 | Original | 6/7/2021 | 0.00232162 | 117 | 31 | 138 | 8 | 2 |
| 638018831 | Original | 6/9/2021 | 0.00232162 | 104 | 29 | 119 | 14 | 0 |
| 639999220 | Original | 6/12/2021 | 0.00232162 | 108 | 67 | 173 | 2 | 0 |
| 146973757 | Original | 6/8/2021 | 0.00558606 | 50 | 2 | 48 | 2 | 2 |
| 146990064 | Original | 6/9/2021 | 0.00558606 | 55 | 8 | 59 | 2 | 2 |
| 146992776 | Original | 6/7/2021 | 0.00558606 | 26 | 0 | 21 | 5 | 0 |
| 146999066 | Original | 6/13/2021 | 0.00558606 | 2 | 1 | 3 | 0 | 0 |
| 147014316 | Original | 6/13/2021 | 0.00558606 | 11 | 4 | 15 | 0 | 0 |
| 147015716 | Original | 6/11/2021 | 0.00558606 | 75 | 11 | 86 | 0 | 0 |
| 606568024 | Original | 6/11/2021 | 0.00558606 | 59 | 17 | 70 | 6 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 606572349 | Original | 6/10/2021 | 0.00558606 | 38 | 2 | 32 | 8 | 0 |
| 606573014 | Original | 6/10/2021 | 0.00558606 | 107 | 20 | 102 | 25 | 0 |
| 635660664 | Original | 6/12/2021 | 0.00558606 | 2 | 0 | 2 | 0 | 0 |
| 635660676 | Original | 6/11/2021 | 0.00558606 | 62 | 25 | 82 | 5 | 0 |
| 638996176 | Original | 6/8/2021 | 0.00558606 | 40 | 6 | 39 | 5 | 2 |
| 147162757 | Original | 6/11/2021 | 0.002206125 | 117 | 63 | 170 | 10 | 0 |
| 610821880 | Original | 6/9/2021 | 0.002206125 | 123 | 60 | 178 | 5 | 0 |
| 610821966 | Original | 6/9/2021 | 0.00220613 | 153 | 66 | 210 | 9 | 0 |
| 610822060 | Original | 6/9/2021 | 0.00220613 | 137 | 73 | 197 | 13 | 0 |
| 634779349 | Original | 6/11/2021 | 0.00220613 | 91 | 37 | 120 | 8 | 0 |
| 147156838 | Original | 6/13/2021 | 0.00527425 | 73 | 53 | 121 | 5 | 0 |
| 147158424 | Original | 6/10/2021 | 0.00527425 | 36 | 25 | 57 | 4 | 0 |
| 147159706 | Original | 6/13/2021 | 0.00527425 | 35 | 17 | 42 | 10 | 0 |
| 147159927 | Original | 6/12/2021 | 0.00527425 | 24 | 9 | 27 | 6 | 0 |
| 147160775 | Original | 6/12/2021 | 0.00527425 | 31 | 10 | 27 | 14 | 0 |
| 147172557 | Original | 6/7/2021 | 0.00527425 | 102 | 22 | 104 | 20 | 0 |
| 147177000 | Original | 6/8/2021 | 0.00527425 | 62 | 49 | 108 | 3 | 0 |
| 610822469 | Original | 6/10/2021 | 0.00527425 | 40 | 12 | 40 | 12 | 0 |
| 610824002 | Original | 6/7/2021 | 0.00527425 | 25 | 8 | 31 | 2 | 0 |
| 610824055 | Original | 6/7/2021 | 0.00527425 | 48 | 22 | 63 | 7 | 0 |
| 610824506 | Original | 6/8/2021 | 0.00527425 | 25 | 14 | 39 | 0 | 0 |
| 636266007 | Original | 6/8/2021 | 0.00527425 | 38 | 25 | 62 | 1 | 0 |
| 148431519 | Original | 6/12/2021 | 0.00525 | 115 | 49 | 156 | 8 | 0 |
| 148433356 | Original | 6/9/2021 | 0.00525 | 254 | 84 | 291 | 46 | 1 |
| 148434220 | Original | 6/9/2021 | 0.00525 | 0 | 0 | 0 | 0 | 0 |
| 148436040 | Original | 6/11/2021 | 0.00525 | 0 | 0 | 0 | 0 | 3 |
| 148444989 | Original | 6/12/2021 | 0.00525 | 96 | 61 | 154 | 3 | 2 |
| 148448765 | Original | 6/8/2021 | 0.00525 | 68 | 32 | 75 | 22 | 0 |
| 148470147 | Original | 6/8/2021 | 0.00525 | 39 | 11 | 32 | 16 | 1 |
| 148470268 | Original | 6/7/2021 | 0.00525 | 21 | 7 | 19 | 9 | 1 |
| 148472074 | Original | 6/8/2021 | 0.00525 | 20 | 8 | 20 | 7 | 0 |
| 148472781 | Original | 6/7/2021 | 0.00525 | 43 | 17 | 49 | 10 | 0 |
| 148483099 | Original | 6/7/2021 | 0.00525 | 25 | 7 | 23 | 9 | 0 |
| 628693352 | Original | 6/10/2021 | 0.00525 | 113 | 26 | 111 | 28 | 0 |
| 633721362 | Original | 6/11/2021 | 0.00525 | 197 | 60 | 218 | 39 | 0 |
| 635524645 | Original | 6/13/2021 | 0.00525 | 111 | 71 | 169 | 13 | 0 |
| 638997913 | Original | 6/10/2021 | 0.00525 | 101 | 54 | 135 | 20 | 0 |
| 639777342 | Original | 6/12/2021 | 0.00525 | 124 | 45 | 138 | 31 | 0 |
| 641181426 | Original | 6/13/2021 | 0.00525 | 87 | 56 | 139 | 4 | 0 |
| 147299629 | Original | 6/11/2021 | 0.002652 | 63 | 10 | 66 | 7 | 0 |
| 147364555 | Original | 6/7/2021 | 0.002652 | 73 | 43 | 114 | 2 | 0 |
| 147364574 | Original | 6/8/2021 | 0.002652 | 79 | 27 | 102 | 4 | 0 |
| 147364598 | Original | 6/7/2021 | 0.002652 | 85 | 18 | 95 | 8 | 0 |
| 147364618 | Alternate | 6/9/2021 | 0.002652 | 76 | 26 | 96 | 6 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 635199539 | Original | 6/10/2021 | 0.002652 | 123 | 34 | 156 | 1 | 0 |
| 635832919 | Original | 6/13/2021 | 0.002652 | 117 | 50 | 160 | 7 | 0 |
| 641441511 | Original | 6/9/2021 | 0.002652 | 28 | 8 | 32 | 4 | 0 |
| 147304101 | Original | 6/11/2021 | 0.0029853 | 5 | 0 | 3 | 2 | 0 |
| 147307397 | Original | 6/8/2021 | 0.0029853 | 12 | 1 | 3 | 10 | 0 |
| 147307449 | Original | 6/8/2021 | 0.0029853 | 9 | 1 | 3 | 7 | 0 |
| 147318882 | Original | 6/8/2021 | 0.0029853 | 6 | 3 | 7 | 2 | 0 |
| 147326253 | Original | 6/12/2021 | 0.0029853 | 73 | 61 | 126 | 8 | 0 |
| 147326365 | Original | 6/12/2021 | 0.0029853 | 48 | 30 | 78 | 0 | 0 |
| 147328662 | Original | 6/10/2021 | 0.0029853 | 2 | 1 | 3 | 0 | 0 |
| 147375707 | Alternate | 6/9/2021 | 0.0029853 | 14 | 4 | 18 | 0 | 0 |
| 635127767 | Original | 6/13/2021 | 0.0029853 | 27 | 11 | 32 | 6 | 0 |
| 606515802 | Original | 6/10/2021 | 0.00003458 | 138 | 52 | 146 | 44 | 0 |
| 160144721 | Original | 6/9/2021 | 0.00003325 | 47 | 15 | 39 | 23 | 0 |
| 160143525 | Original | 6/8/2021 | 0.00053826 | 0 | 0 | 0 | 0 | 0 |
| 160145523 | Alternate | 6/9/2021 | 0.00053826 | 0 | 0 | 0 | 0 | 0 |
| 160147391 | Alternate | 6/7/2021 | 0.00053826 | 0 | 0 | 0 | 0 | 0 |
| 160149538 | Original | 6/10/2021 | 0.00053826 | 4 | 1 | 0 | 5 | 0 |
| 160154128 | Original | 6/7/2021 | 0.00053826 | 3 | 0 | 1 | 2 | 0 |
| 160158288 | Original | 6/13/2021 | 0.00053826 | 2 | 0 | 1 | 1 | 0 |
| 160158469 | Original | 6/12/2021 | 0.00053826 | 0 | 0 | 0 | 0 | 0 |
| 160163562 | Original | 6/11/2021 | 0.00053826 | 222 | 56 | 186 | 92 | 0 |
| 160167119 | Original | 6/8/2021 | 0.00053826 | 0 | 0 | 0 | 0 | 0 |
| 160169067 | Original | 6/12/2021 | 0.00053826 | 5 | 2 | 6 | 1 | 0 |
| 604943907 | Original | 6/7/2021 | 0.00053826 | 35 | 4 | 31 | 8 | 0 |
| 604970409 | Original | 6/13/2021 | 0.00053826 | 0 | 0 | 0 | 0 | 0 |
| 606518225 | Original | 6/11/2021 | 0.00053826 | 0 | 0 | 0 | 0 | 0 |
| 624678718 | Original | 6/10/2021 | 0.00053826 | 3 | 2 | 2 | 3 | 0 |
| 641616454 | Original | 6/7/2021 | 0.00053826 | 0 | 0 | 0 | 0 | 0 |
| 130301448 | Original | 6/11/2021 | 0.00595 | 28 | 4 | 28 | 4 | 0 |
| 130306325 | Original | 6/11/2021 | 0.00595 | 21 | 10 | 30 | 1 | 0 |
| 130309542 | Original | 6/13/2021 | 0.00595 | 54 | 30 | 84 | 0 | 0 |
| 130310021 | Original | 6/12/2021 | 0.00595 | 22 | 13 | 33 | 2 | 0 |
| 130314658 | Original | 6/13/2021 | 0.00595 | 24 | 15 | 38 | 1 | 0 |
| 130315195 | Original | 6/8/2021 | 0.00595 | 24 | 14 | 31 | 7 | 0 |
| 130320929 | Original | 6/12/2021 | 0.00595 | 30 | 13 | 35 | 8 | 0 |
| 130326826 | Original | 6/8/2021 | 0.00595 | 135 | 40 | 168 | 7 | 0 |
| 611004677 | Original | 6/10/2021 | 0.00595 | 8 | 1 | 9 | 0 | 0 |
| 611005970 | Original | 6/8/2021 | 0.00595 | 84 | 24 | 92 | 16 | 0 |
| 611009251 | Original | 6/7/2021 | 0.00595 | 115 | 38 | 148 | 5 | 0 |
| 611012866 | Original | 6/10/2021 | 0.00595 | 59 | 30 | 89 | 0 | 0 |
| 619637622 | Original | 6/9/2021 | 0.00595 | 14 | 3 | 12 | 5 | 0 |
| 621121926 | Original | 6/9/2021 | 0.00595 | 144 | 58 | 199 | 3 | 0 |
| 625338589 | Original | 6/12/2021 | 0.00595 | 14 | 9 | 21 | 2 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 626692093 | Original | 6/7/2021 | 0.00595 | 165 | 40 | 193 | 12 | 0 |
| 635537076 | Original | 6/7/2021 | 0.00595 | 93 | 30 | 110 | 13 | 0 |
| 607714377 | Original | 6/11/2021 | 0.000002245 | 21 | 1 | 22 | 0 | 0 |
| 160336980 | Original | 6/9/2021 | 0.00004725 | 0 | 0 | 0 | 0 | 0 |
| 149002674 | Original | 6/13/2021 | 0.00004725 | 61 | 24 | 83 | 2 | 0 |
| 149003362 | Original | 6/13/2021 | 0.00004725 | 1 | 0 | 0 | 1 | 0 |
| 149005355 | Original | 6/13/2021 | 0.00004725 | 0 | 0 | 0 | 0 | 0 |
| 149011903 | Original | 6/7/2021 | 0.00004725 | 42 | 18 | 60 | 0 | 0 |
| 149022922 | Original | 6/11/2021 | 0.00004725 | 7 | 0 | 4 | 3 | 0 |
| 149023334 | Original | 6/10/2021 | 0.00004725 | 8 | 0 | 7 | 1 | 0 |
| 149027199 | Original | 6/12/2021 | 0.00004725 | 5 | 1 | 4 | 2 | 0 |
| 607713464 | Original | 6/8/2021 | 0.00004725 | 7 | 0 | 4 | 3 | 0 |
| 607730056 | Original | 6/11/2021 | 0.00004725 | 267 | 40 | 224 | 83 | 0 |
| 607752291 | Original | 6/7/2021 | 0.00004725 | 150 | 29 | 153 | 26 | 0 |
| 607765363 | Original | 6/12/2021 | 0.00004725 | 0 | 0 | 0 | 0 | 0 |
| 617964312 | Original | 6/10/2021 | 0.00004725 | 18 | 1 | 15 | 4 | 0 |
| 633093763 | Original | 6/9/2021 | 0.00004725 | 2 | 0 | 2 | 0 | 0 |
| 639002442 | Original | 6/8/2021 | 0.00004725 | 1 | 0 | 1 | 0 | 0 |
| 640696510 | Original | 6/10/2021 | 0.00004725 | 20 | 2 | 9 | 13 | 0 |
| 160334094 | Original | 6/11/2021 | 0.01715 | 6 | 2 | 6 | 2 | 0 |
| 160336972 | Original | 6/12/2021 | 0.01715 | 60 | 27 | 85 | 2 | 0 |
| 160337605 | Original | 6/13/2021 | 0.01715 | 101 | 53 | 154 | 0 | 0 |
| 160344999 | Original | 6/7/2021 | 0.01715 | 55 | 33 | 86 | 2 | 0 |
| 160345686 | Original | 6/8/2021 | 0.01715 | 54 | 37 | 91 | 0 | 0 |
| 160347161 | Original | 6/7/2021 | 0.01715 | 23 | 4 | 25 | 2 | 0 |
| 160348581 | Original | 6/10/2021 | 0.01715 | 2 | 0 | 2 | 0 | 0 |
| 160348895 | Original | 6/10/2021 | 0.01715 | 3 | 0 | 3 | 0 | 0 |
| 160349055 | Original | 6/10/2021 | 0.01715 | 2 | 0 | 2 | 0 | 0 |
| 160351946 | Original | 6/11/2021 | 0.01715 | 82 | 55 | 135 | 2 | 0 |
| 160353063 | Original | 6/13/2021 | 0.01715 | 5 | 2 | 4 | 3 | 0 |
| 160353822 | Original | 6/9/2021 | 0.01715 | 58 | 26 | 80 | 4 | 0 |
| 607001764 | Original | 6/12/2021 | 0.01715 | 4 | 2 | 6 | 0 | 0 |
| 607027600 | Original | 6/12/2021 | 0.01715 | 3 | 1 | 4 | 0 | 0 |
| 607028034 | Original | 6/12/2021 | 0.01715 | 10 | 3 | 6 | 7 | 0 |
| 607029627 | Original | 6/8/2021 | 0.01715 | 44 | 26 | 68 | 2 | 0 |
| 629141429 | Original | 6/9/2021 | 0.01715 | 31 | 15 | 44 | 2 | 0 |
| 149193090 | Original | 6/10/2021 | 0.00545 | 109 | 28 | 98 | 37 | 2 |
| 149201740 | Original | 6/11/2021 | 0.00545 | 41 | 21 | 54 | 8 | 0 |
| 149201930 | Original | 6/11/2021 | 0.00545 | 30 | 13 | 38 | 5 | 0 |
| 149202730 | Original | 6/11/2021 | 0.00545 | 33 | 29 | 55 | 7 | 0 |
| 149211215 | Original | 6/13/2021 | 0.00545 | 46 | 30 | 62 | 13 | 1 |
| 149216185 | Original | 6/8/2021 | 0.00545 | 132 | 20 | 106 | 46 | 0 |
| 611835705 | Original | 6/8/2021 | 0.00545 | 105 | 32 | 113 | 24 | 0 |
| 611870412 | Original | 6/7/2021 | 0.00545 | 18 | 3 | 9 | 12 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 611874198 | Original | 6/9/2021 | 0.00545 | 125 | 42 | 120 | 45 | 2 |
| 611879443 | Original | 6/9/2021 | 0.00545 | 124 | 32 | 118 | 34 | 4 |
| 612517261 | Original | 6/7/2021 | 0.00545 | 60 | 19 | 64 | 13 | 2 |
| 612522792 | Original | 6/12/2021 | 0.00545 | 17 | 12 | 29 | 0 | 0 |
| 612523438 | Original | 6/12/2021 | 0.00545 | 37 | 32 | 55 | 14 | 0 |
| 612523506 | Original | 6/13/2021 | 0.00545 | 23 | 8 | 21 | 10 | 0 |
| 612525148 | Original | 6/7/2021 | 0.00545 | 88 | 47 | 106 | 27 | 2 |
| 612525641 | Original | 6/10/2021 | 0.00545 | 75 | 11 | 44 | 42 | 0 |
| 614771184 | Original | 6/8/2021 | 0.00545 | 24 | 5 | 19 | 10 | 0 |
| 160436335 | Original | 6/8/2021 | 0.002666965 | 73 | 20 | 86 | 7 | 0 |
| 604830837 | Original | 6/7/2021 | 0.002666965 | 127 | 42 | 156 | 13 | 0 |
| 604831395 | Original | 6/11/2021 | 0.002666965 | 169 | 77 | 222 | 24 | 0 |
| 606895018 | Original | 6/10/2021 | 0.002666965 | 101 | 31 | 125 | 7 | 0 |
| 635826409 | Original | 6/12/2021 | 0.002666965 | 149 | 86 | 216 | 19 | 0 |
| 638080329 | Original | 6/13/2021 | 0.002666965 | 79 | 33 | 107 | 5 | 0 |
| 160424975 | Original | 6/13/2021 | 0.00488151 | 2 | 1 | 1 | 2 | 0 |
| 160427396 | Original | 6/12/2021 | 0.00488151 | 20 | 5 | 18 | 7 | 0 |
| 160433447 | Original | 6/10/2021 | 0.00488151 | 75 | 29 | 86 | 18 | 0 |
| 160434518 | Original | 6/11/2021 | 0.00488151 | 17 | 2 | 12 | 7 | 0 |
| 604821382 | Original | 6/11/2021 | 0.00488151 | 59 | 10 | 57 | 12 | 0 |
| 604823624 | Original | 6/12/2021 | 0.00488151 | 30 | 8 | 27 | 11 | 0 |
| 634659728 | Original | 6/9/2021 | 0.00488151 | 11 | 9 | 16 | 4 | 0 |
| 635549418 | Original | 6/7/2021 | 0.00488151 | 8 | 2 | 4 | 6 | 0 |
| 638072853 | Original | 6/9/2021 | 0.00488151 | 2 | 1 | 3 | 0 | 0 |
| 635549382 | Original | 6/8/2021 | 0.00488151 | 3 | 0 | 1 | 2 | 0 |
| 638522178 | Original | 6/10/2021 | 0.00488151 | 52 | 19 | 59 | 12 | 0 |
| 608774680 | Original | 6/10/2021 | 0.0006118 | 102 | 44 | 126 | 20 | 0 |
| 639689837 | Original | 6/9/2021 | 0.0006118 | 164 | 71 | 202 | 33 | 0 |
| 147401116 | Original | 6/7/2021 | 0.00455175 | 24 | 5 | 28 | 1 | 0 |
| 147403821 | Original | 6/11/2021 | 0.00455175 | 206 | 42 | 170 | 78 | 0 |
| 147404413 | Original | 6/10/2021 | 0.00455175 | 127 | 28 | 115 | 40 | 0 |
| 147410535 | Original | 6/8/2021 | 0.00455175 | 6 | 0 | 2 | 4 | 0 |
| 147411652 | Original | 6/8/2021 | 0.00455175 | 19 | 2 | 17 | 4 | 0 |
| 147413279 | Original | 6/10/2021 | 0.00455175 | 226 | 34 | 180 | 80 | 0 |
| 147419915 | Original | 6/7/2021 | 0.00455175 | 189 | 50 | 193 | 46 | 0 |
| 605374149 | Original | 6/9/2021 | 0.00455175 | 259 | 57 | 268 | 48 | 0 |
| 605388659 | Original | 6/13/2021 | 0.00455175 | 19 | 12 | 21 | 10 | 0 |
| 605396189 | Original | 6/12/2021 | 0.00455175 | 7 | 3 | 9 | 1 | 0 |
| 608774654 | Original | 6/7/2021 | 0.00455175 | 6 | 1 | 7 | 0 | 0 |
| 618572901 | Original | 6/12/2021 | 0.00455175 | 46 | 14 | 53 | 7 | 0 |
| 629142524 | Original | 6/9/2021 | 0.00455175 | 21 | 3 | 21 | 3 | 0 |
| 637972373 | Original | 6/11/2021 | 0.00455175 | 131 | 47 | 127 | 51 | 0 |
| 638535884 | Original | 6/8/2021 | 0.00455175 | 7 | 2 | 6 | 3 | 0 |
| 618327492 | Original | 6/7/2021 | 0.001504 | 442 | 102 | 370 | 174 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 618328108 | Original | 6/8/2021 | 0.001504 | 302 | 158 | 288 | 172 | 0 |
| 634704011 | Original | 6/12/2021 | 0.001504 | 430 | 228 | 448 | 210 | 0 |
| 637926770 | Original | 6/8/2021 | 0.001504 | 202 | 84 | 184 | 102 | 0 |
| 641433232 | Original | 6/8/2021 | 0.001504 | 334 | 160 | 370 | 124 | 0 |
| 149462214 | Original | 6/13/2021 | 0.003604 | 78 | 34 | 56 | 56 | 0 |
| 149462365 | Original | 6/13/2021 | 0.003604 | 98 | 48 | 86 | 60 | 0 |
| 149462690 | Original | 6/12/2021 | 0.003604 | 28 | 18 | 26 | 20 | 0 |
| 149475167 | Original | 6/9/2021 | 0.003604 | 48 | 24 | 46 | 26 | 0 |
| 149475533 | Original | 6/9/2021 | 0.003604 | 24 | 8 | 20 | 12 | 0 |
| 149498901 | Original | 6/10/2021 | 0.003604 | 8 | 0 | 8 | 0 | 0 |
| 149503682 | Original | 6/7/2021 | 0.003604 | 268 | 70 | 210 | 128 | 0 |
| 612218179 | Original | 6/7/2021 | 0.003604 | 166 | 22 | 106 | 82 | 0 |
| 618324746 | Original | 6/11/2021 | 0.003604 | 22 | 6 | 12 | 16 | 0 |
| 618324787 | Original | 6/11/2021 | 0.003604 | 144 | 24 | 108 | 60 | 0 |
| 618325371 | Original | 6/11/2021 | 0.003604 | 712 | 214 | 536 | 390 | 0 |
| 636258579 | Alternate | 6/10/2021 | 0.003604 | 50 | 14 | 46 | 18 | 0 |
| 130412723 | Original | 6/9/2021 | 0.0138 | 163 | 56 | 182 | 37 | 0 |
| 130415393 | Original | 6/12/2021 | 0.0138 | 134 | 110 | 218 | 26 | 0 |
| 130422037 | Original | 6/10/2021 | 0.0138 | 234 | 38 | 222 | 50 | 0 |
| 130422578 | Original | 6/8/2021 | 0.0138 | 148 | 52 | 178 | 22 | 0 |
| 130427569 | Original | 6/8/2021 | 0.0138 | 370 | 101 | 398 | 73 | 0 |
| 130435783 | Original | 6/9/2021 | 0.0138 | 400 | 121 | 457 | 64 | 0 |
| 130437592 | Original | 6/7/2021 | 0.0138 | 0 | 0 | 0 | 0 | 0 |
| 130437880 | Original | 6/7/2021 | 0.0138 | 79 | 39 | 103 | 15 | 0 |
| 130438888 | Original | 6/11/2021 | 0.0138 | 177 | 149 | 291 | 35 | 0 |
| 130441420 | Original | 6/11/2021 | 0.0138 | 57 | 24 | 74 | 7 | 0 |
| 130450400 | Original | 6/10/2021 | 0.0138 | 49 | 22 | 68 | 3 | 0 |
| 130450450 | Original | 6/11/2021 | 0.0138 | 86 | 59 | 136 | 9 | 0 |
| 235938924 | Original | 6/13/2021 | 0.0138 | 103 | 79 | 172 | 10 | 0 |
| 235940231 | Original | 6/12/2021 | 0.0138 | 80 | 63 | 127 | 16 | 0 |
| 618913726 | Original | 6/8/2021 | 0.0138 | 262 | 127 | 331 | 58 | 0 |
| 635879991 | Original | 6/13/2021 | 0.0138 | 164 | 138 | 257 | 45 | 0 |
| 637241907 | Original | 6/9/2021 | 0.0138 | 446 | 109 | 485 | 70 | 0 |
| | | | | 21323 | 7932 | 23885 | 5322 | 48 |
| | | | | | | | | |

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: 0.1801 percent

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[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='E:\Wy SBU 21\SPSS Data Files\Occupants Wy 2021.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
DISPLAY DICTIONARY.
```

## File Information

[DataSet1] E:\Wy SBU 21\SPSS Data Files\Occupants Wy 2021.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 | Scale | 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 | Number of Lanes | Nominal | Input | 12 | Right |
| direction | 13 | Road Direction | Nominal | Input | 12 | Right |
| driverGender | 14 | Occupant Gender | Nominal | Input | 12 | Right |
| driverBelt | 15 | Occupant Seat 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 of Observation | Nominal | Input | 8 | Left |
| Roadway2 | 19 | Roadway Type | Nominal | Input | 10 | Right |
| SRSWORinvert | 20 | SRSWORinvert | Scale | Input | 14 | Right |
| Weekend | 21 | Weekdays & Weekend | Nominal | Input | 10 | Right |

**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 |
| day | 1 | Sunday |
| | 2 | Monday |
| | 3 | Tuesday |
| | 4 | Wednesday |
| | 5 | Thursday |
| | 6 | Friday |
| | 7 | Saturday |
| observer | 1 | Donna Lucas |
| | 7 | Bridget White: Wy Cor |
| | 14 | Vicky Peterson: QC2 |
| | 23 | Monty Byers |
| | 35 | Kayla Schear |
| | 44 | Doug Peterson |
| | 47 | Dixie Elder |
| | 48 | Deb Eutsler |
| | 50 | Brooke Darden |

**Variable Information**

| Variable | Print Format | Write Format |
|---|---|---|
| InclProbOfRoadType | F12.5 | F12.5 |
| TLID | F12 | F12 |
| SRSWOR | F12.4 | F12.4 |
| County | F12 | F12 |
| Site# | F12 | F12 |
| Population | F12 | F12 |
| Roadway | F12 | F12 |
| weight | F12.9 | F12.9 |
| day | F12 | F12 |
| observer | F12 | F12 |
| weather | F12 | F12 |
| lanes | F12 | F12 |
| direction | F12 | F12 |
| driverGender | F12 | F12 |
| driverBelt | F12 | F12 |
| carType | F12 | F12 |
| wyPlate | F12 | F12 |
| timeStamp | A1 | A1 |
| Roadway2 | F8 | F8 |
| SRSWORinvert | F8.4 | F8.4 |
| Weekend | F8 | F8 |

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 |
| day | 1 | Sunday |
| | 2 | Monday |
| | 3 | Tuesday |
| | 4 | Wednesday |
| | 5 | Thursday |
| | 6 | Friday |
| | 7 | Saturday |
| observer | 1 | Donna Lucas |
| | 7 | Bridget White: Wy Cor |
| | 14 | Vicky Peterson: QC2 |
| | 23 | Monty Byers |
| | 35 | Kayla Schear |
| | 44 | Doug Peterson |
| | 47 | Dixie Elder |
| | 48 | Deb Eutsler |
| | 50 | Brooke Darden |

**Variable Values**

| Value | | Label |
|---|---|---|
| | 51 | Susan Parkinson |
| | 67 | Skylar Elder |
| | 69 | Lori Cole |
| | 75 | Meredith Peak |
| | 76 | Walter Tampellini |
| | 80 | Bryan Shannon |
| | 81 | Sandra Gabel |
| | 82 | Ashley Ingerle |
| | 83 | Mindy McKinley |
| | 84 | Kendra Hughes |
| | 85 | Vickie Ingerle |
| weather | 1 | Clear & Sunny |
| | 2 | Cloudy |
| | 3 | Light Fog |
| | 4 | Light Rain |
| | 5 | Light Snow |
| lanes | 1 | One Lane Observed |
| | 2 | Two Lanes Observed |
| direction | 1 | North |
| | 2 | South |
| | 3 | East |
| | 4 | West |
| driverGender | 1 | Male |
| | 2 | Female |
| driverBelt | 1 | Belted |
| | 2 | Not Belted |
| | 3 | Unsure |
| carType | 1 | Auto |
| | 2 | Van |
| | 3 | SUV |
| | 4 | Pickup Truck |
| wyPlate | 1 | Yes |
| | 2 | No |
| | 9 | Unsure |

**Variable Values**

| Value | | Label |
|---|---|---|
| timeStamp | 1 | 7:30-9:30 AM |
| | 2 | 9:30-11:30 AM |
| | 3 | 11:30 AM-1:30 PM |
| | 4 | 1:30 PM-3:30 PM |
| | 5 | 3:30 PM-5:30 PM |
| Roadway2 | 11 | S1100 Primary Road |
| | 12 | S1200 Secondary Road |
| | 14 | S1400 Local/Rural/City Street |
| Weekend | 1 | Weekdays |
| | 2 | Weekend |

Report prepared by: