SEAT BELT USE IN SOUTH DAKOTA

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Disclaimer

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EXECUTIVE SUMMARY

The purpose of South Dakota's seat belt use study is to provide statistically reliable data from which generalizations, comparative analyses and recommendations can be developed. The National Occupant Protection Use Survey (NOPUS) provides the South Dakota Department of Public Safety (SDDPS) with a system that monitors the seat belt use rates within the state. The National Highway Traffic Safety Administration (NHTSA) funds NOPUS through the SDDPS's Office of Highway Safety.

In April 2011, NHTSA issued new Uniform Criteria for state observational surveys of seat belt use in an effort to improve the survey's representativeness. The revised criteria, implemented for the 2012 survey and outlined in the Federal Register Vol. 76 No. 63, resulted in changes to the county selection, sites, road type classifications and weighting procedures. One of the main changes NHTSA implemented was to focus county selection by using crash-related fatalities data, as reported by Fatality Analysis Reporting System (FARS), compared to THE population-based exclusion criterion used in the past.

To choose the survey counties, all 66 counties in South Dakota were listed in descending order based on the average number of motor vehicle crash-related fatalities from 2006 to 2010. The top 38 counties accounted for at least 85% of the state's total crash-related fatalities. This comprised the first stage sampling frame. These 38 counties were then stratified by region based on statistical differences in seat belt use observed in prior surveys between the counties in the western and eastern parts of the state. Therefore, the 38 counties in the sampling frame were stratified according to geographical region with 18 counties in the west and 20 counties in the east. Eight counties were selected from each region using probability proportional to size (PPS) sampling with vehicle miles traveled (VMT) as the measure of size (MOS).

Road segments within each county were then stratified by MAF/TIGER Feature Class Code (MTFCC) road type and sorted by segment length. A random, systematic sample of 20 road segments was selected using PPS with road segment length by road segment type within each sampled county as the MOS. This represents the second stage of sample selection. This process resulted in the selection of 320 road segments (16 counties x 20 sites per county). Additional sites were also selected for use as alternate sites.

During the week of June 10-16, trained observers visited each site in their assigned counties to collect the seat belt use data as prescribed in the handbook they received. Drivers and right front seat passengers in vehicles with a gross vehicle weight up to 10,000 lbs. were observed for seat belt use.

For the 2013 statewide survey, observers tracked seat belt use for 20,204 drivers and 6,846 right front-seat passengers, for a total of 27,050 vehicle occupants. The estimates of seat belt use were 70.0% for drivers, 76.6% for passengers, and an overall unweighted estimate of 71.6% belted for drivers and passengers combined. Adjusting the raw state rate for the survey design and weights resulted in a weighted state rate of 68.7%.

Overall, males were less likely than females to wear seat belts (67.1% vs. 77.4%). Male rates were observed to be anywhere from 4% to 22% lower than female use rates across the counties surveyed, with the exception of Harding county where male use exceeded female use by 3%. The trend of higher female use rates holds for each vehicle type as well – female use ranged from 74.0% to 84.0% over the four vehicle types, while male use ranged from 58.7% to 76.0%. Not controlling for gender, van occupants had the highest seat belt use rate at 80.3% followed by SUVs (77.3%), automobiles (72.3%), and pickups/small trucks (62.3%).

Although drivers outnumbered passengers by a ratio of approximately 3 to 1, passengers buckled up at a rate of 76.6% compared to drivers at 70.0%. This may be mainly due to the fact that drivers are more likely to be men than women (63.8% vs. 36.2%), and their seat belt use rates are much lower than women – 67.0% compared to 75.2% respectively. For passengers, the reverse is true. Women represented 68.5% of the passengers with a use rate of 80.9%, while men represented 31.5% of the passengers with a use rate of 67.3%.

Rates by region indicate occupants in the east were more likely to buckle up (78.4%) than those in the west (66.7%). Regional differences in seat belt use were also reflected by road type. Occupants from the east half of the state had a greater propensity for seat belt use on both local and secondary road types. Occupants from the west, however, registered higher use on primary roads.

NHTSA reports the national average seat belt use rate was 86% in 2012. South Dakota falls below this average with a weighted rate of 68.7%. This compares to last year's weighted rate of 66.5%. Comparisons to years prior to 2012 should be made with caution because of changes in the sampling methodology implemented last year.

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INTRODUCTION

The Upper Great Plains Transportation Institute (UGPTI), a research and education center at North Dakota State University (NDSU) located in Fargo, ND, was contracted by the South Dakota Department of Public Safety (SDDPS) to conduct a field survey of seat belt use in 2013. The study replicates the sampling methodology previously revised and approved by the National Highway Transportation Safety Administration (NHTSA) and the SDDPS for the 2012 survey. Requirements for conducting statewide seat belt surveys are published in the Federal Register, Vol. 76 No. 63, April 1, 2011, Rules and Regulations, pp. 18042 – 18059. The methodology was designed to yield a more statistically valid estimate of the current seat belt use rate on all roadways in South Dakota.

OBJECTIVE

The objective of this study was to determine the rate of seat belt use of drivers and right front-seat passengers in the state of South Dakota.

Additional analyses determined seat belt use rates in the following categories:

- Occupant (driver, passenger)
- Gender (male, female)
- Type of vehicle (automobile, van, sport utility vehicle, pickup/small truck)
- Region of state (east, west)
- Roadway type (primary, secondary, local)

A description of the tasks involved in conducting the 2013 statewide seat belt survey is provided in this report which also includes general information about the methods and protocols. Table 1 summarizes the 2013 survey.

Table 1: Summary of the Seat Belt Use Survey

Methodology	Multistage Stratified Cluster Design with Probability Proportional to Size Sampling
Source of Samples	2011 revised methodology, approved by SDDPS and NHTSA; Westat* supplied list of road segments using 2010 TIGER data developed by the U.S. Census Bureau based on the MAF/TIGER Feature Class Code (MTFCC); three classifications: 1) Primary Roads, 2) Secondary Roads, and 3) Local Roads
Geographic Coverage	State of South Dakota
Identified Regions	East West
Selected Counties	East Region: Beadle, Brookings, Brown, Codington, Lincoln, Minnehaha, Roberts, Union West Region: Corson, Custer, Harding, Hughes, Lawrence, Meade, Pennington, Shannon
Number of Sites	320
Survey Period	June 10-16, 2013
Observation Duration Per Site	60 minutes
Sample Size	20,223 vehicles (includes all vehicles where either the driver or passenger or both had a known protection status)

*A research and statistical survey organization

METHODOLOGY OVERVIEW

On April 1, 2011, NHTSA published revised Uniform Criteria for the state observational seat belt surveys with the goal of providing more accurate data to guide occupant protection programs. The new rule changed many aspects of the survey design. One of these changes was to include counties in the sampling frame based on fatality-based exclusion criterion as opposed to the population-based criterion of the past.

It was determined that 38 counties accounted for at least 85% of South Dakota's total crash-related fatalities from 2006 to 2010. A subsample of 16 counties was selected for the survey of seat belt use in South Dakota. The counties represent the primary sampling unit. Half of the counties were selected from the western part of the state and the other eight were selected from the eastern half. Within each of those 16 counties a sample of 20 sites were selected, providing a total of 320 site locations across the state. A reserve sample of sites was also selected for observations if needed to replace the original site if unforeseen circumstances arose. The sites within the counties are the secondary sampling unit. The sites were stratified by road type, identified within three classifications: primary roads, secondary roads, and local roads.

The formulas contained in this report use the following definitions.

g – denotes the strata (east or west)
c – denotes the county
h – denotes the road segment strata (primary, secondary, or local)
i – denotes the road segment
j – denotes the time segment
k – denotes the vehicles direction of travel
l – denotes the lane of observation
m – denotes the vehicle
n – denotes the front-seat occupant (driver or passenger)

Within each stratum, east and west, counties were selected with probability proportional to size (PPS) with the measure of size (MOS) being vehicle miles traveled (VMT). If we let $g = 1,2$ be the first stage strata,v_{gc} be the VMT for county c in stratum g, and $v_g = \sum_{all\ c\ in\ g} v_{gc}$ be the total VMT for all counties in first stage stratum g, then the PSU inclusion probability is: $\pi_{gc} = n_g v_{gc}/v_g$, here $n_g$is the PSU sample size for first stage stratum g that was allocated. First each strata was analyzed to identify if any certainty counties existed. A county was selected with certainty if its MOS was equal to or exceeded v_g/n_g. Each certainty county identified was set aside and the stratum MOS was reduced by that county's

VMT and n_g was reduced by one. This process was repeated until no county's MOS was equal to or greater than v_g/n_g based on the reduced values for v_g and n_g. The probabilities of selection for the remaining counties in the stratum were calculated based on the new values for v_g and n_g. Pennington, Meade, and Lawrence counties were selected with certainty from the west region, while Minnehaha and Lincoln counties were selected with certainty from the east region. The remaining counties for each region were selected using the SAS 9.2 procedure PROC SURVEYSELECT based on the re-calculated probabilities of selection.

Next, road segments within each county were implicitly stratified by its MAF/TIGER Feature Class Code - primary, secondary and local. The list of eligible road segments within each county was then sorted by segment length within MTFCC group to obtain an ordered list. Road segments were selected with PPS using length as the MOS. The same procedure that was used to identify certainty counties was used to identify any certainty sites. With no certainty road segments being identified, a sampling interval (I) was calculated as the total length across all remaining road segments within the county divided by the number of road segments to select within each county (i.e. 20 less the number of certainties). A random start (RS) was selected between 0 and the calculated I, which determined the first road segment selected. Subsequent road segments selected were determined by adding multiples of I to RS until the desired number of road segments was selected and/or the end of the sorted list was reached.

Once the sites were chosen, a random order of the sites to observe within each county was constructed. One of the sites in each county was randomly chosen as the starting site. This site was then randomly assigned to one of the 77 one-hour time slots within the week as mandated by the Uniform Criteria. The time slots cover Monday through Sunday from 7 a.m. to 6 p.m. Once the initial site was selected and assigned to a time slot, the remaining sites were clustered and arranged within the county to achieve administrative and economic efficiencies. After each site was identified, the direction of travel was chosen randomly as either N/W or S/E. The lane of traffic was chosen as the closest lane to where the observer could find a suitable and safe place to make their observations.

Under this stratified multistage sample design, the inclusion probability for each observed vehicle is the product of selection probabilities at all stages:

π_{gc} for county,$\pi_{hi|gc}$ for road segment, $\pi_{j|gchi}$ for time segment, $\pi_{k|gchij}$ for direction, $\pi_{l|gchij}$ for lane, and $\pi_{m|gchijl}$for vehicle.

So the overall vehicle inclusion probability is:

$$\pi_{gchijklm} = \pi_{gc}\pi_{hi|gc}\pi_{j|gchi}\pi_{k|gchij}\pi_{l|gchij}\pi_{m|gchijl}.$$

The sampling weight (design weight) for vehicle *m* is:

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

Noting that all front-seat occupants were observed and letting the driver/passenger seat belt use status be:

$$y_{gchijklmn} = \begin{cases} 1, & if\ belt\ used \\ 0, & otherwise \end{cases}.$$

Then the seat belt use rate estimator is a ratio estimator calculated as follows:

$$\rho = \frac{\sum_{all\ gchijklmn} w_{gchijklm} y_{gchijklmn}}{\sum_{all\ gchijklmn} w_{gchijklm}}.$$

This estimator captures traffic volume and vehicle miles traveled through design weights (which will include nonresponse adjustment factors) at various stages and it does not require knowledge of VMT/DVMT.

The weighted average seat belt use rate for South Dakota calculated using this estimator was found to be 68.7% for 2013. This compares to the 2012 weighted rate of 66.5%.

Standard Error and Confidence Intervals

The standard error of the state seat belt use rate measures the amount of random sampling error in the survey results. The smaller the standard error the more accurate the seat belt use rate when compared to the true, but unknown, seat belt use rate for South Dakota. Assuming the design of the survey accurately measures the variable of interest, the larger the survey sample, the more accurate the results.

The estimated standard error for the state seat belt use rate is found by taking the square root of the variance, so

$$SE(\hat{p}_s) = \sqrt{V(\hat{p}_s)}$$

Where:

$SE(\hat{p}_s)$ = the estimated standard error for the state seat belt use rate

$V(\hat{p}_s)$ = the estimated variance for the state seat belt use rate

$\hat{p}_s$ = the estimated state seat belt use rate

Using SAS callable SUDAAN statistical software, the standard error for the state seat belt use was calculated to be 2.0%. From this, we can build a 95% confidence interval for the state seat belt use. The 95% confidence interval formula is $\hat{p}_s \pm 1.96 * SE(\hat{p}_s)$, where each of the terms has the meaning above and the value 1.96 is the tabled value from the standard normal distribution for a 95% confidence interval.

Table 2: Confidence Interval

95% Confidence Interval and Estimated Standard Error for the 2013 State Seat Belt Use				
Occupants	**State Rate**	**Standard Error**	**95% CI Lower Limit**	**95% CI Upper Limit**
27,050	68.7%	2.0%	66.7%	70.7%

The 95% confidence interval means that statistically there is only a 5% chance that the actual statewide seat belt percentage falls outside the range of 66.7% to 70.7%.

Nonresponse Rate

A factor that could potentially bias the results and invalidate the survey is if results have exceedingly high nonresponse rates. A nonresponse occurs when the observer tries but cannot determine an occupant's seat belt use. As stipulated in NHTSA's guidelines, the nonresponse rate (2.94%) did not exceed 10% over the entire survey. Had the rate exceeded the allowable maximum, individual counties that registered above the 10% threshold would have been revisited to acquire additional observations.

Observational Protocols

The observational protocols used in the 2013 study adhere to the recent changes to the Uniform Criteria as outlined in the Federal Register.

Observations were conducted Monday through Sunday. The day of the week and time of day were randomly chosen for one site within each county. The remaining sites within each county were arranged based on the first site to minimize travel and costs. This predetermined order of observation sites to be visited each day was provided to each observer. A complete list of county observation sites are found in Appendix A of this report. The traffic direction of vehicles to be observed was randomly chosen in advance and was limited to one direction.

An 11-hour block of daylight, from 7 a.m. to 6 p.m., was identified as the observational period. Each site observation occurred in a predetermined time slot, requiring a 60-minute observation period beginning at the first 5-minute interval after arrival at the site, and ending exactly 60 minutes later.

Traffic Conditions and Data Collection Problems

Observers were trained to cope with traffic problems in the following manner:

- When traffic was heavy and there were too many vehicles to count visually, recording was done as long as possible and then stopped until the observer could catch up with observations. Some vehicles were, of necessity, outside the sample. When this occurred, counting resumed after no more than a one-minute pause. Once an observer's eyes were locked on a vehicle, a count of that vehicle was required on the observation form.

- At sites with more than one lane of traffic in the predetermined direction, observations were made from the lane closest to the observer, unless traffic volume/flow allowed for observation of both lanes of traffic.

Site Accessibility Problems

Field observers could terminate observations at a preselected site if any of the following circumstances arose: (1) weather conditions that would hinder the accuracy of the observations; (2) heavy traffic flow that might endanger the safety of the observer; or (3) road conditions that rendered observations unfeasible, such as road construction, detoured traffic, or a crash site. In these circumstances, observers were directed to contact the project coordinator immediately for assignment of an alternate site if a suitable vantage point could not be established.

Observed Vehicles

All vehicles with a gross vehicle weight up to 10,000 lbs. were observed and classified on the observation form as automobiles, vans, sport utility vehicles, and pickups (includes other small trucks, i.e. flatbed, utility service, and small box trucks, etc.) Large trucks (semi or large box), large emergency vehicles (ambulance/fire), and RVs/motor homes were not included in the survey.

Observations

Type of vehicle, gender characteristics and seat belt use were recorded for both drivers and right front-seat passengers. Observations occurred from within the observer's vehicle whenever possible. The observer was parked as close as possible to the road for accurate observation without compromising observer safety. If observations could not be conducted from within the vehicle, the observer was allowed to stand off the roadway and required to wear an ANSI-approved Type-2 safety vest to enhance visibility of the observer.

Problems Encountered by Observers

Some observers encountered site issues related to road construction and road segments that were ineligible for inclusion. In these cases, the observer was directed to move to an alternate site fitting the protocols. Complete information on site locations is found in Appendix A.

QUALITY ASSURANCE

Observers

The SDDPS contracted directly with a nonprofit organization for observers to complete the field work, as they have with previous surveys. As part of the quality control process, training materials were provided for distribution to the observers to ensure accuracy in conducting the field observations. All observers were required to have good driving records with proof of adequate vehicle insurance if not using state fleet vehicles, and were required to wear seat belts while conducting observations.

Data Entry

Steps were taken to ensure quality control with respect to data entry. Each site packet was checked to ensure the number of observation sheets submitted was the same as that noted by the observers. Database records were verified to match the number of observations. An accuracy check was done on a systematic sample of records and was measured at greater than 99.9% for every field. Errors discovered during quality assurance checks were corrected prior to completion of all analyses.

RESULTS

Sample Size by Year

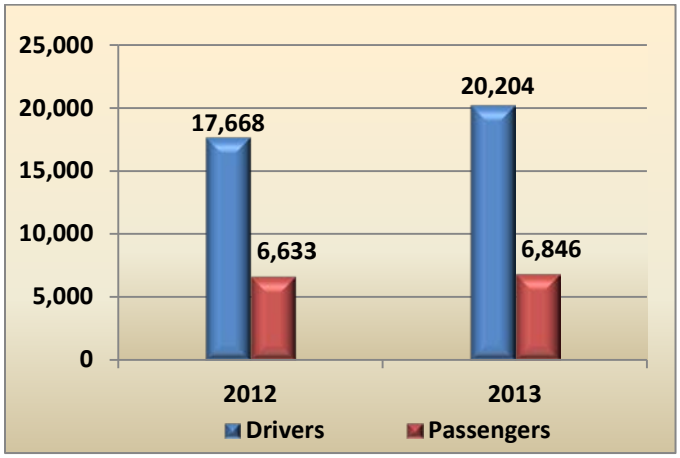


Figure 1: Driver and Passenger Observations, 2012 - 2013

The 2013 survey yielded seat belt use on 20,204 drivers and 6,846 passengers for a total of 27,050 occupants (Figure 1). Observation times had previously been extended to one hour to provide an adequate sample size to comply with standard error stipulations. Even with extended observations times, several individual sites did not capture the number of observed vehicles expected to represent a stand-alone, statistically valid sample at the site level. However, these sites contribute to the aggregate measurement of statewide and county seat belt use. Complete details on the number of observations and use by site are found in Appendix E.

Statewide Results

The overall unweighted results of the 2013 statewide survey indicate 71.6% of vehicle occupants were observed to be wearing seat belts on South Dakota roads. Because the survey employs a two-stage stratified random sampling scheme, a more appropriate estimate of the seat belt use rate is found by weighting the unadjusted rate using the formulas from the methodology section. Using those formulas, the overall weighted seat belt use rate in South Dakota is 68.7% for 2013.

One influence on the overall rate is the driver to passenger ratio. In 2013, there were 2.95 drivers for every passenger (Table 3).

Table 3: Driver Passenger Ratio, 2012 - 2013

Ratio	2013	2012	Difference
Drivers:Passengers	2.95	2.70	+0.25
Drivers as % of Sample	74.7%	72.7%	+2.0

County Results

Weighted seat belt use rates for all vehicle occupants in the 16 counties included in the sample are mapped in Figure 2, as well as, by descending order of use in Figure 3. Belt use ranges from a low of 33.4% in Shannon County to a high of 87.6% in Roberts. Approximately 20% of surveyed counties have use rates at or above the national rate reported by NHTSA. Use rates can vary considerably from year-to-

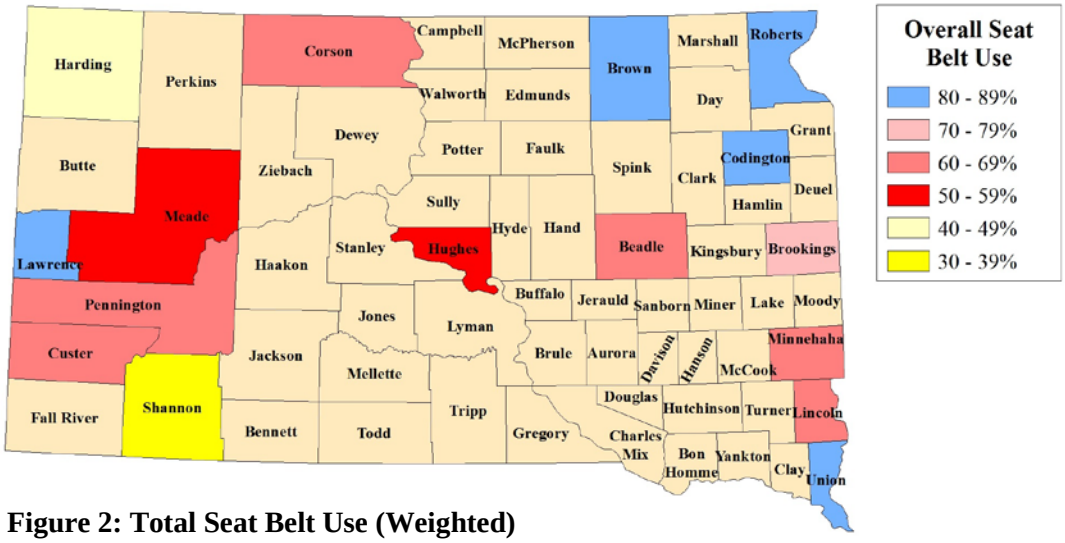


Figure 2: Total Seat Belt Use (Weighted)

year and it is best to be cautious in interpreting changes from one year to the next at the county level. The changes can often represent sampling difference and may not be statistically significant, especially for counties where there are few total observations.[1] However, even the rates for counties with more observations may be volatile over time.

[1] The frequencies of observations by county are presented in Appendix E of the report.

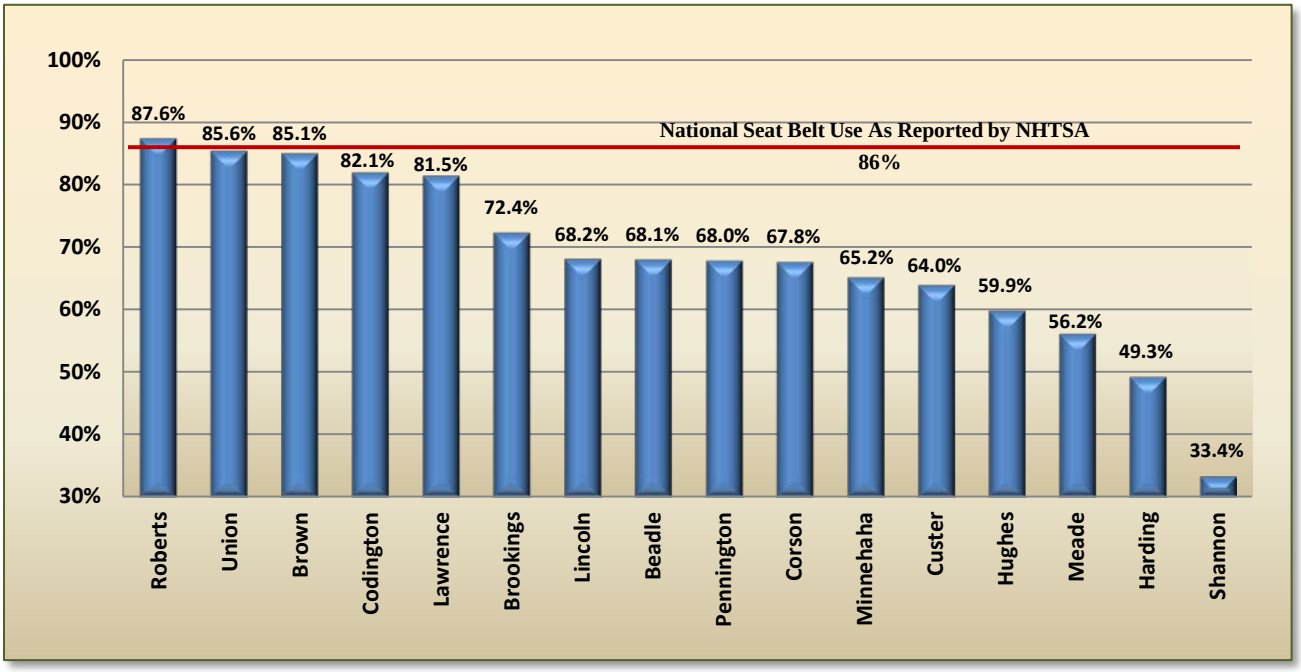


Figure 3: Seat Belt Use by County (Weighted)

Results for Vehicle Occupants

The unweighted estimates of seat belt use are 70.0% belted for drivers, 76.6% belted for passengers, with an overall estimate of the seat belt use rate of 71.6% for drivers and passengers combined (Figure 4).

In 2013, one quarter of the counties surveyed reflected driver seat belt use greater than 80% (Figure 5). Driver seat belt use was highest in Union County at 87.1%. Union was followed by: Roberts – 85.7%, Codington – 83.3%, and Lawrence – 82.3%. The majority of the remaining counties had driver use between 60% and 80%. However, Meade, Harding, and Shannon had lower driver rates of 57.0%, 47.7%, and 38.3% respectively.

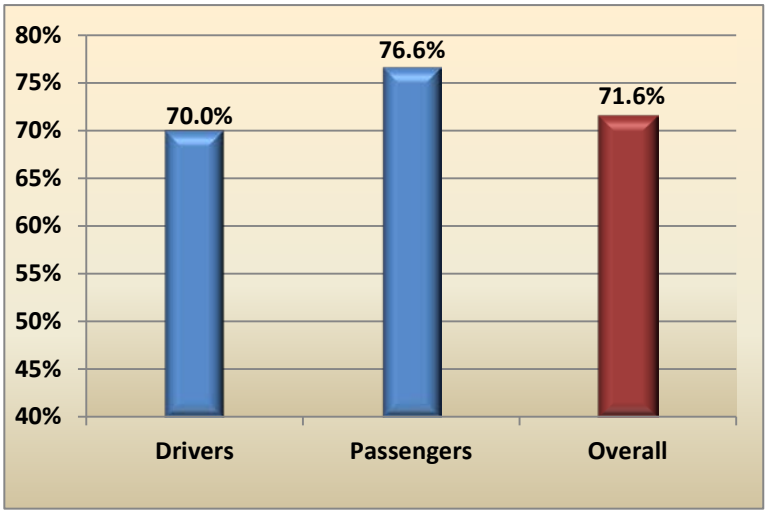


Figure 4: Percent Belted by Vehicle Occupant, Unweighted

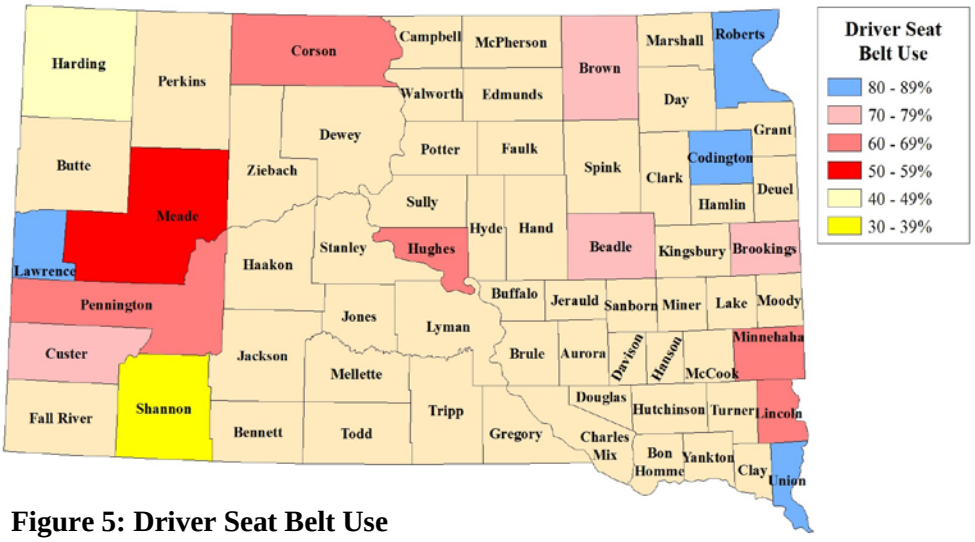


Figure 5: Driver Seat Belt Use

Passenger use outpaces driver use in all but two counties - Harding and Shannon have lower passenger than driver use rates. Passenger rates range from a low of 33.1% in Shannon to a high of 92.9% in Lawrence (Figure 6).

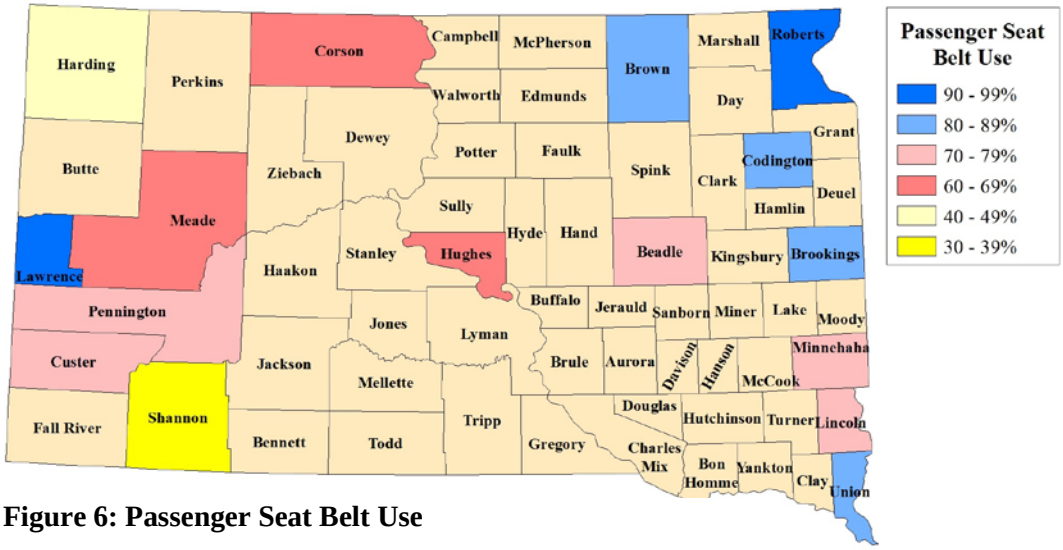


Figure 6: Passenger Seat Belt Use

Efforts to address seat belt use in South Dakota are ongoing. The weighted rate of 68.7% realized this year is lower than the national average of 86% (2012) reported by NHTSA. Experiences from other states would suggest that some impetus to cause a major shift will be necessary to achieve significant increases in seat belt use. One possibility would be enactment of a primary seat belt law which NHTSA suggests would increase seat belt use rates by 10% to 15%. Another related possibility is increased enforcement across the state.

Some factors that may be useful in discussions about increasing seat belt use in South Dakota are found in the remainder of this report, which focuses on differences in seat belt use among regions of the state, gender, vehicle type, and roadway type.

Results by South Dakota Regions

The 2013 survey sampling methodology groups the state into an east/west regional division. Both east and west regions contain "certainty" counties and additional selected counties from the remaining counties in each region for a total of eight counties.[2] The results for the 2013 survey indicate the greatest numbers of observations were collected in the west – 15,676 - with observations from the east numbering 11,374. The sampling distribution by region is illustrated in Figure 7.

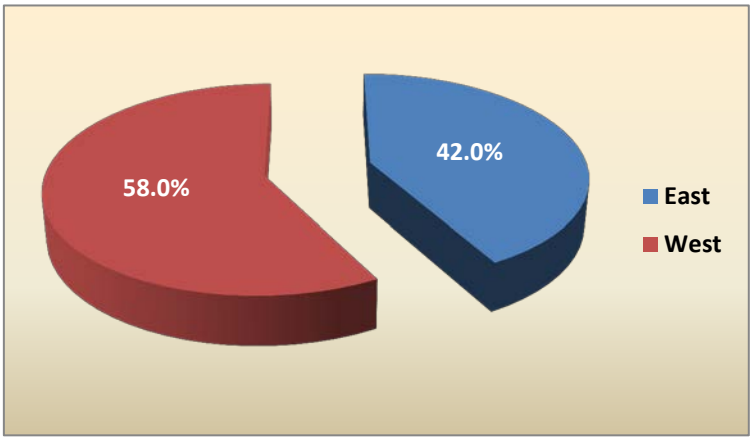


Figure 7: Sample by Region

Rates of seat belt use were higher in the east (78.4%) than the west region (66.7%). Figure 8 illustrates regional results for all vehicle occupants for 2013.

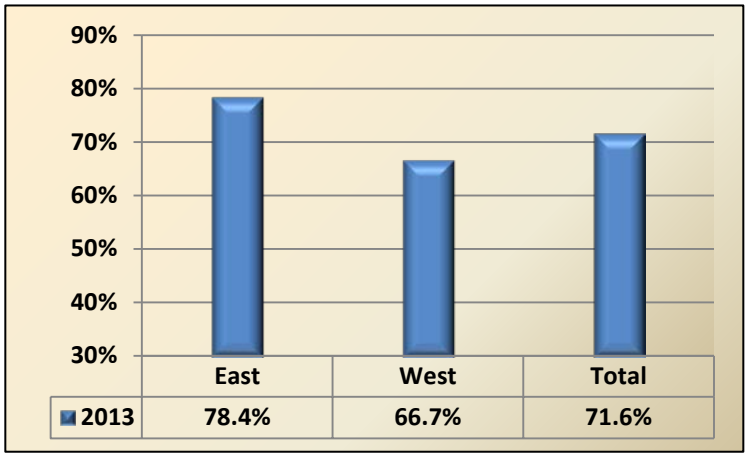


Figure 8: Percent Belted by Region, Unweighted

[2] See the discussion of the sampling methodology for details on certainty counties and the selection processes.

Results by Vehicle Type

Beginning with the 2012 statewide seat belt survey, South Dakota incorporated the expanded Uniform Criteria vehicle eligibility to include all passenger vehicles with a gross vehicle weight up to 10,000 pounds. This change necessitated the inclusion of various small trucks (i.e. flatbed, utility service, and small box trucks, etc.) These additional truck observations are hereafter included in the "pickup" category to prevent confusion with larger truck activity.

The 2013 survey shows a sample distribution of vehicles where automobiles hold the largest share followed by pickups, SUVs, and vans (Figure 9).

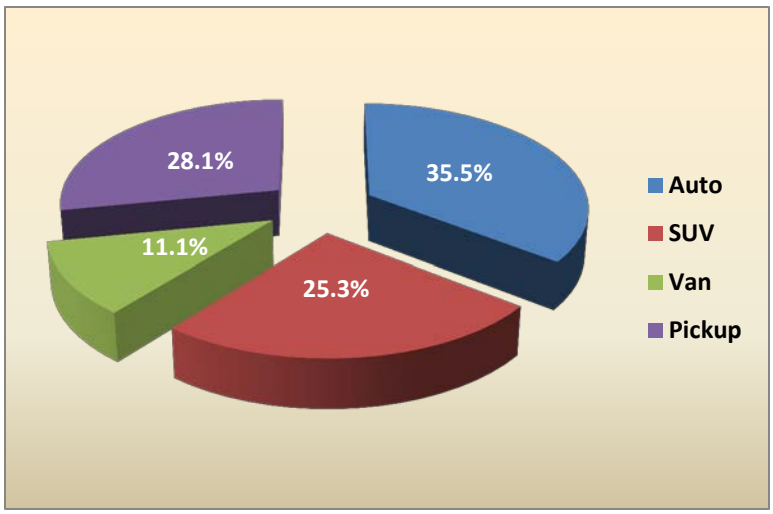


Figure 9: Composition of Sample by Vehicle Type

Seat belt use rates are higher than the unweighted 2013 statewide rate of 71.6% for all vehicle types except pickups. This demographic (pickups) typically demonstrates lower seat belt use and this use rate, coupled with its share of the sample, can reduce the overall state rate. Pickup occupants have observed seat belt use rates considerably lower than the rates in other vehicle types, and 13% lower than the overall unweighted state rate. These 2013 results are consistent with the long-term trends for seat belt use in South Dakota and other states that are largely rural and have a high frequency of pickup trucks.

The results for overall seat belt use by vehicle type are presented in Figure 10. Maps detailing seat belt use by county and vehicle type is found in Figures 11 through 14.

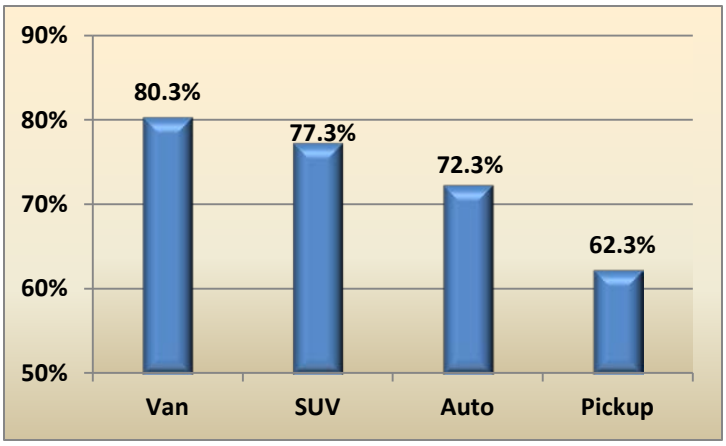


Figure 10: Percent Belted by Vehicle Type for All Occupants (Unweighted)

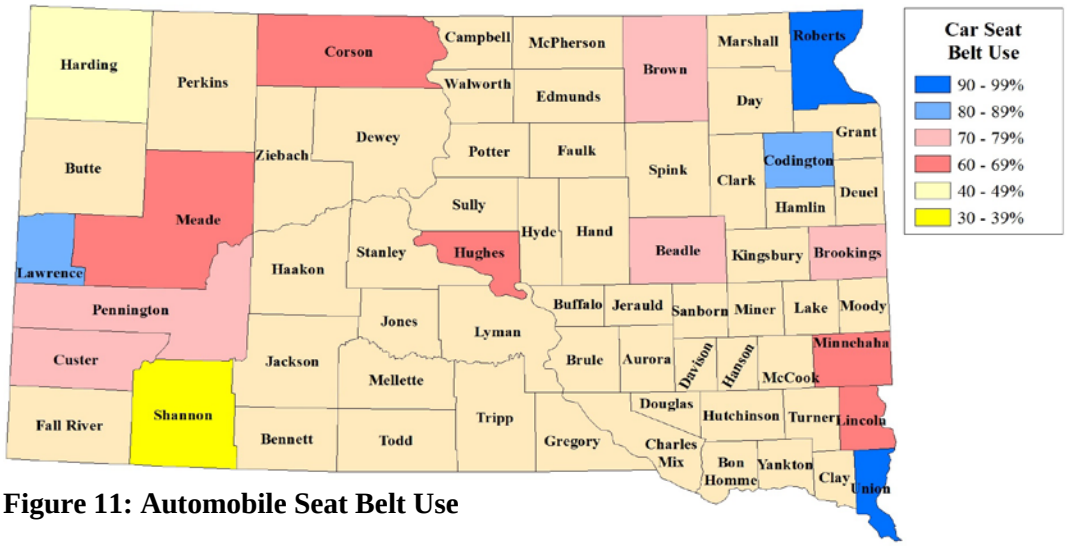


Figure 11: Automobile Seat Belt Use

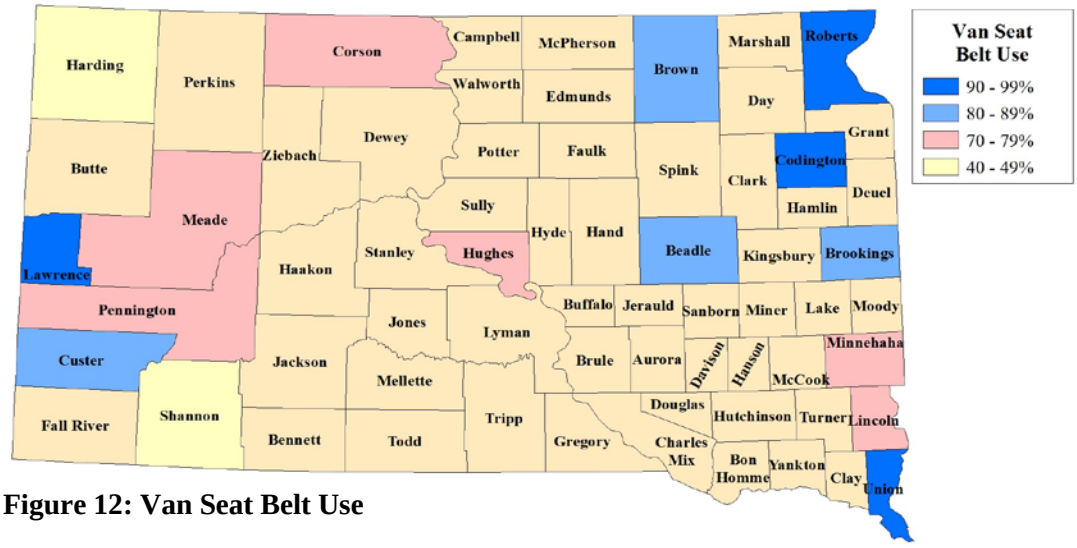


Figure 12: Van Seat Belt Use

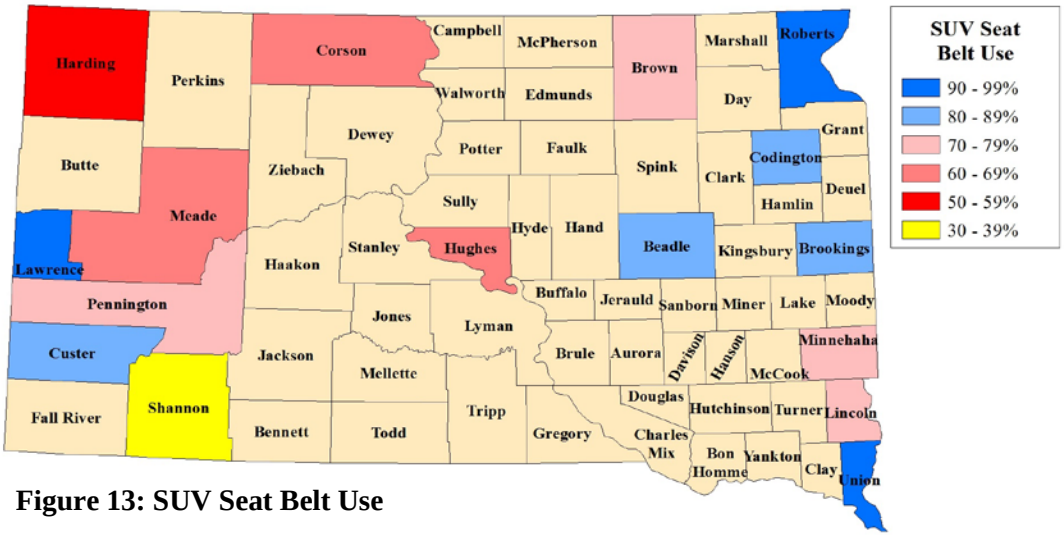


Figure 13: SUV Seat Belt Use

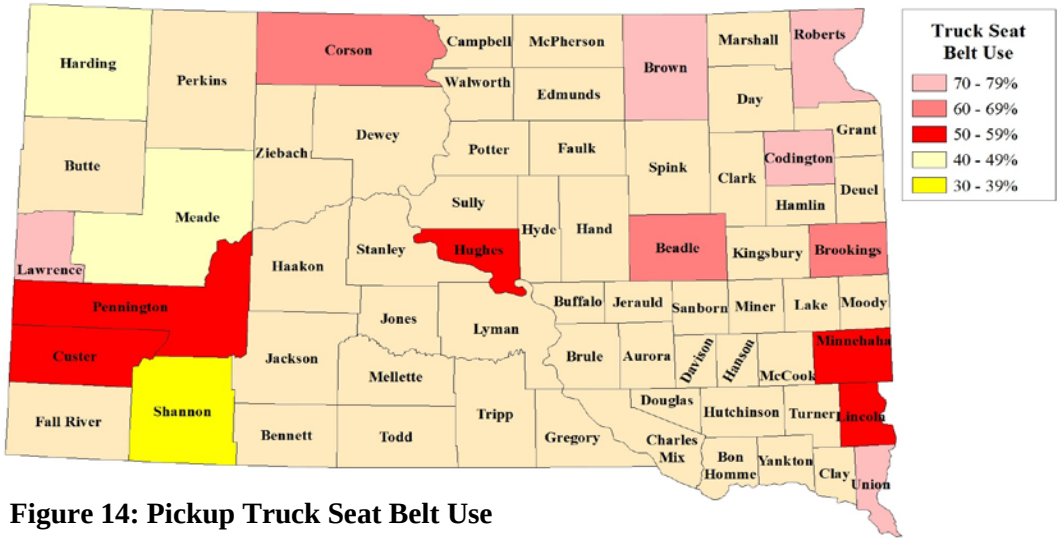


Figure 14: Pickup Truck Seat Belt Use

Gender and Seat Belt Use

Males make up more of the driver sample, approximately 2 to 1, whereas females are reported more frequently as passengers by a similar proportion. Overall, males represent 55.6% and females 44.4% of the 2013 sample (Figure 15). In a small percentage of observations (0.03%), occupant gender was unable to be determined, but occupant protection was still recorded. These cases are included in all of the analyses except where gender is one of the variables of interest. Removing these observations for these

parts of the analyses has no effect on the overall numbers, but is mentioned here for comprehensive reporting.

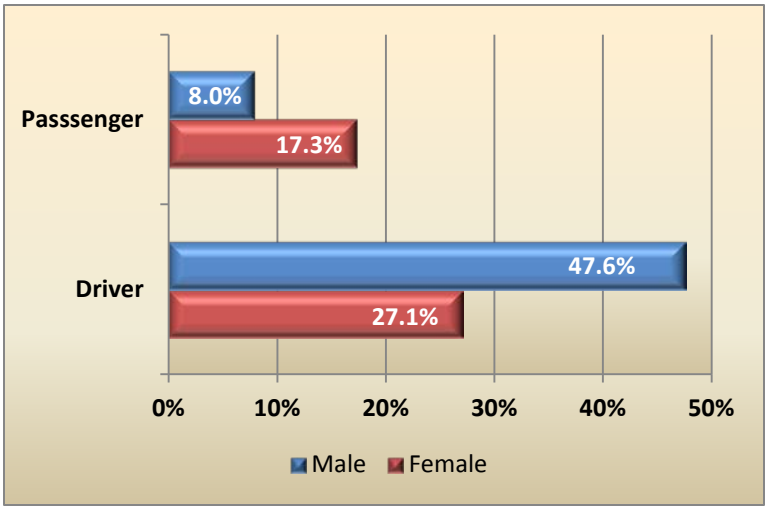
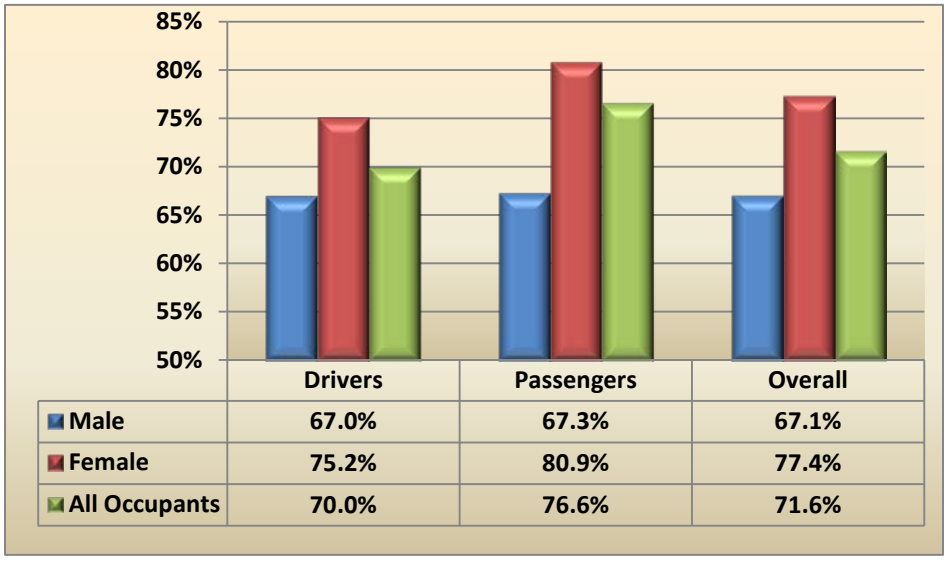


Figure 15: Percent of Sample by Gender and Vehicle Occupant

Females, regardless of occupant position, consistently demonstrate more frequent seat belt use than males (Figure 16). Female passengers lead seat belt use rates at 80.9% followed by female driver use rates of 75.2%. Rates for male occupants are essentially equal, irrespective of position.



	Drivers	Passengers	Overall
Male	67.0%	67.3%	67.1%
Female	75.2%	80.9%	77.4%
All Occupants	70.0%	76.6%	71.6%

Figure 16: Belted by Gender and Vehicle Occupant

As can be seen in the following maps (Figures 17 and 18), both genders exhibit higher seat belt use in the eastern half of the state. Corson, Hughes, Meade, Harding and Shannon demonstrate the lowest rates for both female and male occupants.

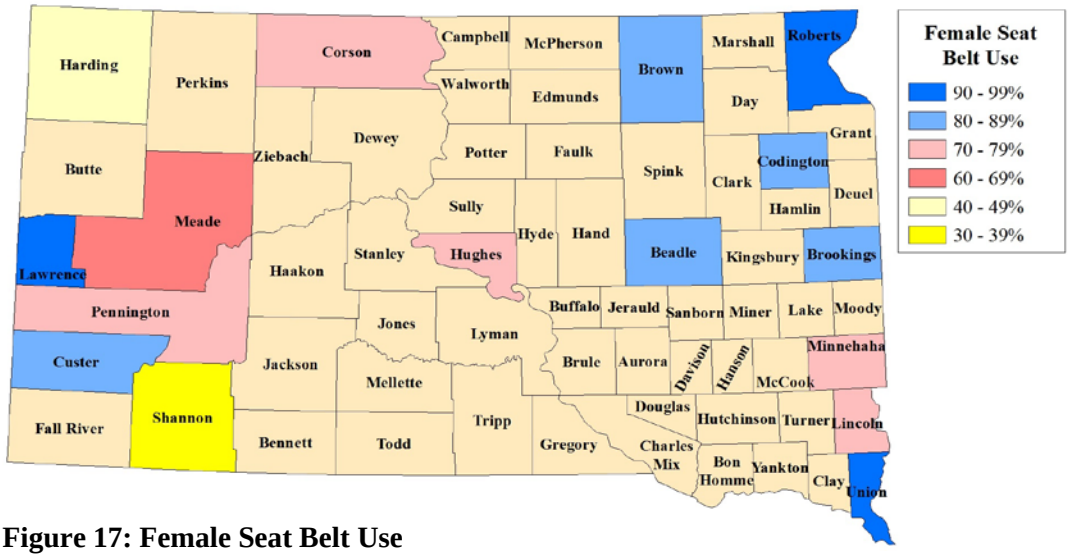


Figure 17: Female Seat Belt Use

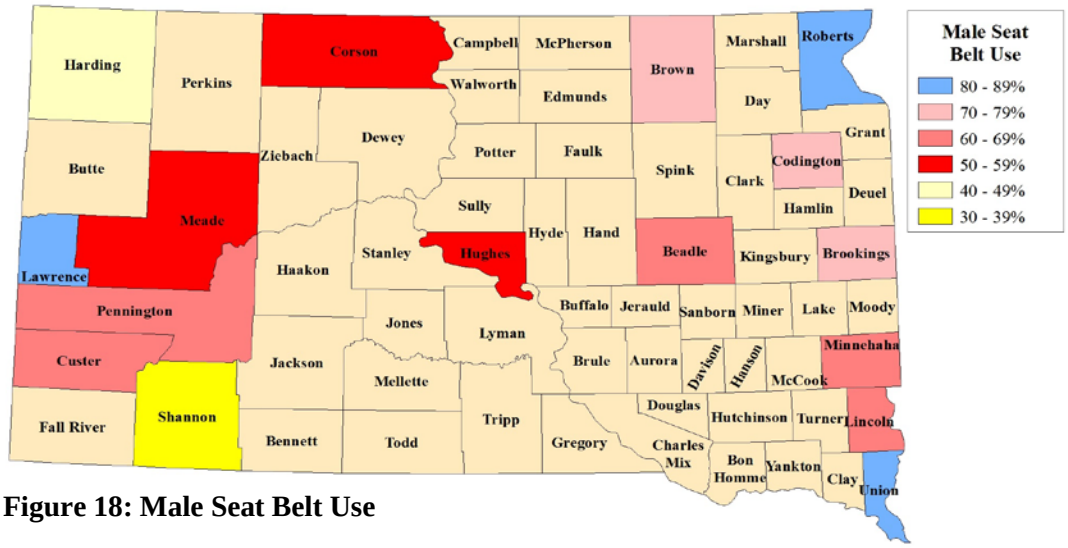
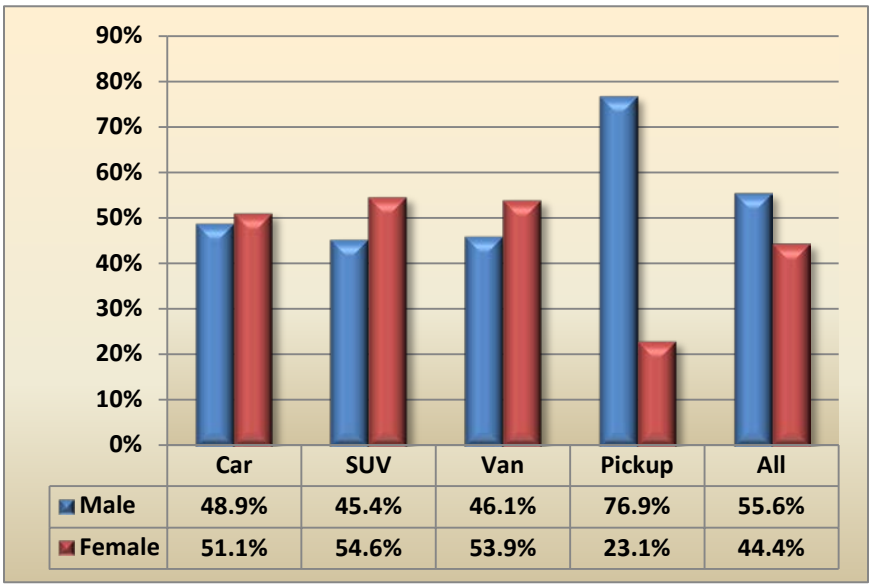


Figure 18: Male Seat Belt Use

Gender and Vehicle Type

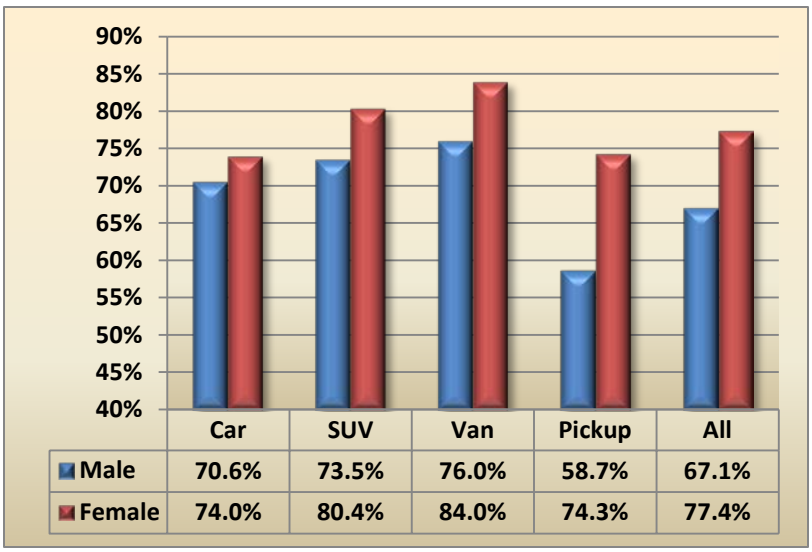
When considering the data without respect to the driver/passenger demographic, females have higher representation in all vehicle types except pickups. For pickups, males make up more than 75% of the sample, outnumbering female occupants by a ratio greater than 3 to 1. The gender breakdown of the other vehicle types is fairly uniform. The distribution of vehicle occupants by gender, expressed as percentages of the vehicle type, are illustrated in Figure 19.



	Car	SUV	Van	Pickup	All
Male	48.9%	45.4%	46.1%	76.9%	55.6%
Female	51.1%	54.6%	53.9%	23.1%	44.4%

Figure 19: Percent of Sample by Gender and Vehicle Type

Female seat belt use rates range from a low of 74.0% (car) to a high of 84.0% (SUV) across the vehicle types. Further breakdown shows females exhibit higher rates than males for every type of vehicle, although the size of the difference varies (Figure 20). The male use rates range between 58.7% (pickup) and 76.0% (van). Although both male and female observed use is lowest in pickups, the male rate drops off precipitously to 58.7% versus 74.3% for females. Female seat belt use is higher than the unweighted state rate (71.6%) across all vehicle types, whereas, male seat belt use outpaces the state rate in vans and SUVs only.



	Car	SUV	Van	Pickup	All
Male	70.6%	73.5%	76.0%	58.7%	67.1%
Female	74.0%	80.4%	84.0%	74.3%	77.4%

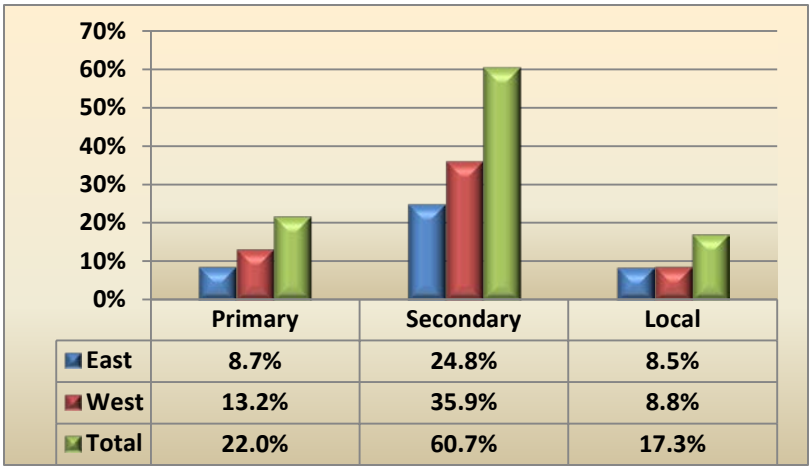
Figure 20: Belted by Gender and Vehicle Type

Results by Roadway Type

Roadways are classified into three road types and broadly described as follows:

- Primary Road – divided, limited-access, i.e. interstates
- Secondary Road – main arteries usually in U.S./State/County highway system
- Local Neighborhood Road/Rural Road/City Street – paved, non-arterial streets

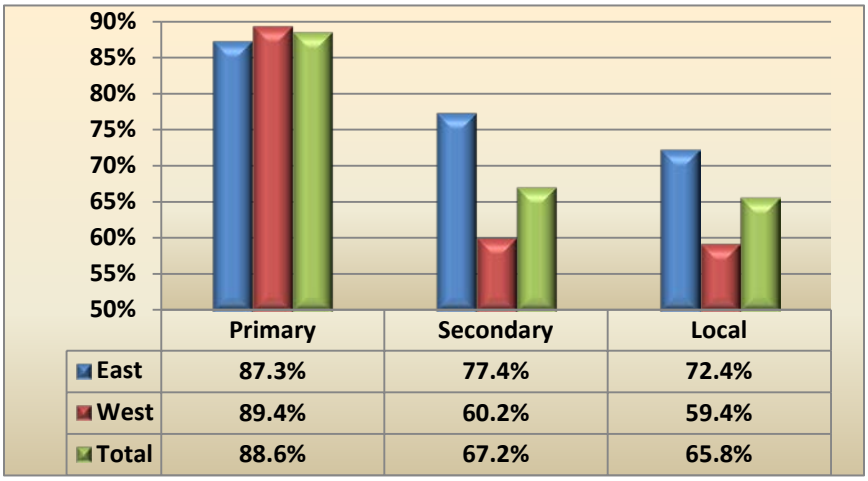
Comprehensive definitions of road type are provided in Appendix F. In the 2013 survey, primary, secondary and local roadways accounted for 22.0%, 60.7%, and 17.3% of the vehicle occupants respectively (Figure 21).



	Primary	Secondary	Local
East	8.7%	24.8%	8.5%
West	13.2%	35.9%	8.8%
Total	22.0%	60.7%	17.3%

Figure 21: Percent of Sample by Roadway Type

Differences in seat belt use rates are found across the road types. It is typical to find that vehicle occupants on interstate roadways have the highest rates of seat belt use, and this was evident in 2013. Vehicle occupants on primary roads were belted roughly a third more frequently than those on secondary and local roads (Figure 22). While secondary roads represented 60% of the sample, seat belt use on this road type was only 67.2%, negatively influencing the overall unweighted state rate. Local roads have the lowest overall rate of 65.8%.



	Primary	Secondary	Local
East	87.3%	77.4%	72.4%
West	89.4%	60.2%	59.4%
Total	88.6%	67.2%	65.8%

Figure 22: Seat Belt Use by Roadway Type

Seat belt use stratified by region and roadway reveals that the west half of the state has a slightly higher rate of use on primary roads, while belt use on secondary and local road types is considerably higher in the east. The largest variation in east/west use is found on secondary roads, 77.4% and 60.2% respectively.

SUMMARY

Observers collected data on seat belt use for 20,204 drivers and 6,846 right front-seat passengers, for a total of 27,050 vehicle occupants. The observations were collected at 320 sites across 16 counties. Based on the sampling methodology weighting procedures, the final estimate for the statewide seat belt use was 68.7% belted. Experiences from other states would indicate that improvement in seat belt use will likely only occur through some type of significant change such as implementation of a primary seat belt law, increased funding for additional enforcement, or possibly higher fines (NHTSA).

A summary of major findings regarding seat belt use in South Dakota for 2013 are:

- **Region.** In 2013, rates of seat belt use were higher in the east region overall – 78.4% versus 66.7% (west). The driver population from the east recorded a rate of 77.2% compared to 64.3% in the west. Passengers use rates showed a less pronounced contrast than the driver population – 82.8% (east) and 73.0% (west).

- **County.** Roberts, Union, and Brown counties registered weighted seat belt use at or above the 2012 national average of 86%. Roberts had the highest use rate of 87.6% in 2013. Union and Brown counties were just short of the national average – 85.6% and 85.1% respectively. Of the 16 counties observed, 10 registered seat belt use less than 70%, and two counties less than 50% (Harding – 49.3%, and Shannon – 33.4%).

- **Vehicle Type.** The results of the 2013 statewide survey indicate that rates of seat belt use were above the unweighted statewide average in every vehicle type except pickups. Seat belt use among pickup occupants depresses the overall rate in South Dakota because occupants of these vehicles made up 28.1% of the sample and the use is very low – 62.3% overall, with male occupants at 58.7%.

- **Gender.** Female occupants had higher rates of seat belt use (77.4%) than male occupants (67.1%). This is true whether females are drivers or passengers. The lowest rate of seat belt use for both female and male occupants was measured in Shannon County - 39.9% and 34.6% respectively. Females consistently have higher rates when compared to males not only in South Dakota, but across the nation.

- **Gender and Vehicle Type.** Females had higher rates of seat belt use than males for every vehicle type. The highest rate for males was found in vans, 76.0%, and the lowest in pickups, 58.7%. Females also registered the highest rate in vans (84.0%) while the lowest use was in cars (74.0%).

- **Road Type.** Secondary roads held the largest share of occupants in the sample (60.7%), followed by primary roads (22.0%), with local roads having the smallest share at 17.3%. Frequency of seat belt use was highest on primary roads (88.6%) followed by secondary roads (67.2%) and local roads (65.8%).

APPENDICES

Appendix A: Site Locations

BEADLE COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	387th St	-98.498895	44.522873	N	1.003615
2	208th St	-98.387149	44.370637	S	0.948403
3	387th St	-98.498886	44.507727	S	0.915376
4	US Hwy 14	-98.498879	44.449455	N	0.833306
5	387th St	-98.502482	44.595344	N	0.745207
6	400th Ave	-98.220528	44.608293	S	0.656662
7	400th Ave	-98.214157	44.482487	N	0.561295
8	US Hwy 281	-98.457806	44.243787	N	0.49878
9	US Hwy 14	-98.148824	44.370366	E	0.475124
10	400th Ave	-98.213894	44.228642	N	0.436569
11	US Hwy 14	-98.139611	44.37033	W	0.382748
12	400th Ave	-98.220394	44.572158	N	0.3362
13	400th Ave	-98.213895	44.237984	S	0.297515
14	US Hwy 14	-98.252737	44.372232	E	0.245804
15	US Hwy 14	-98.122248	44.370073	W	0.199272
16	4th St NW	-98.24397	44.3739	E	0.156425
17	400th Ave	-98.213651	44.297289	N	0.120626
18	Dakota Ave N	-98.214312	44.390622	N	0.085825
19	US Hwy 14	-98.214886	44.370353	E	0.06802
20	Commercial Ave NW	-98.474983	44.41188	S	0.016778

BROOKINGS COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 29	-96.757764	44.202619	N	0.952568
2	I- 29	-96.75863	44.302921	N	0.626889
3	I- 29	-96.756588	44.43353	S	0.366034
4	I- 29	-96.757208	44.242807	N	0.021472
5	454th Ave	-97.129114	44.246424	S	0.99894
6	454th Ave	-97.128871	44.289628	N	0.995382
7	217th St	-96.536516	44.239011	E	0.94024
8	203rd St	-96.495146	44.441352	W	0.936691
9	217th St	-96.676288	44.239197	E	0.889083
10	203rd St	-96.614595	44.441411	W	0.791415
11	454th Ave	-97.12785	44.535477	S	0.750972
12	203rd St	-96.458418	44.441446	E	0.602246
13	211th St	-97.053475	44.325961	W	0.488795
14	212th St	-96.602759	44.311142	W	0.461913
15	212th St	-96.542978	44.3114	W	0.385221
16	18th St	-96.784745	44.325845	E	0.337574
17	State Hwy 30	-96.624937	44.439892	W	0.253343
18	486th Ave	-96.486455	44.304882	N	0.174208
19	211th St	-96.922732	44.326003	W	0.099283
20	211th St	-97.089758	44.325752	E	0.046174

BROWN COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	406th Ave	-98.103942	45.595938	N	1.006492
2	406th Ave	-98.103675	45.75544	S	1.002944
3	410th Ave	-98.020694	45.697386	N	1.002026
4	386th Ave	-98.517549	45.785753	N	1.000464
5	US Hwy 281	-98.516562	45.26407	N	0.999634
6	404th Ave	-98.144879	45.842465	N	0.993632
7	US Hwy 12	-98.649964	45.444478	W	0.945343
8	US Hwy 12	-98.691079	45.442245	E	0.940394
9	110th St	-98.073129	45.791782	E	0.882096
10	386th Ave	-98.515631	45.337809	N	0.801075
11	US Hwy 12	-98.25485	45.458767	W	0.700769
12	406th Ave	-98.104027	45.346018	N	0.580441
13	406th Ave	-98.104286	45.323667	N	0.510549
14	406th Ave	-98.10358	45.403601	N	0.47402
15	US Hwy 12	-98.609729	45.445577	E	0.436772
16	US Hwy 12	-98.176592	45.458327	W	0.374865
17	State Hwy 10	-98.164118	45.790993	E	0.267636
18	US Hwy 281	-98.515457	45.421979	N	0.188533
19	US Hwy 281	-98.509427	45.476435	N	0.09484
20	US Hwy 281	-98.510658	45.479158	W	0.003334

CODINGTON COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 29	-96.973333	44.809857	S	1.041215
2	I- 29	-96.990917	44.822432	S	0.645341
3	I- 29	-97.054647	45.046186	S	0.46683
4	I- 29	-97.056258	44.903271	S	0.203797
5	State Hwy 20	-97.300819	45.012227	N	1.115274
6	455th Ave	-97.106101	44.999026	N	0.995289
7	158th St	-97.462863	45.093964	E	0.928586
8	157th St	-96.994626	45.107221	E	0.845082
9	173rd St	-97.317396	44.876562	E	0.739059
10	N Hwy 20	-97.16221	44.934711	S	0.632751
11	Csd Hwy 20	-96.97097	45.106918	E	0.544547
12	9th Ave SW	-97.21316	44.890669	W	0.489164
13	173rd St	-97.345274	44.876349	E	0.43279
14	State Hwy 20	-97.208377	44.958699	N	0.359389
15	172nd St	-97.253817	44.890413	E	0.319874
16	State Hwy 20	-97.291881	45.005432	S	0.250894
17	4th St NE	-97.106841	44.917754	S	0.196801
18	10th St NW	-97.131878	44.909088	S	0.140532
19	N Hwy 20	-97.178566	44.946605	N	0.097374
20	N Hwy 20	-97.17622	44.94493	E	0.064402

CORSON COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	State Hwy 1806	-100.500043	45.535099	N	3.239461
2	State Hwy 65	-101.325951	45.690413	N	1.819116
3	US Hwy 12	-101.115406	45.91585	E	1.482052
4	State Hwy 1806	-100.514881	45.618676	S	1.19243
5	State Hwy 65	-101.359739	45.653559	N	1.061596
6	State Hwy 1806	-100.479733	45.796725	N	0.9968
7	US Hwy 12	-101.896796	45.934691	E	0.944626
8	US Hwy 12	-101.191423	45.920239	E	0.921158
9	State Hwy 1806	-100.479323	45.825258	S	0.866219
10	US Hwy 12	-100.550761	45.560948	E	0.795394
11	State Hwy 20	-100.566303	45.52481	N	0.712288
12	US Hwy 12	-101.604299	45.927439	E	0.656735
13	US Hwy 12	-100.509408	45.561393	E	0.607807
14	US Hwy 12	-101.850979	45.932714	E	0.554255
15	State Hwy 65	-101.343661	45.685844	N	0.49313
16	US Hwy 12	-100.773446	45.787259	N	0.436926
17	State Hwy 20	-100.579506	45.497457	N	0.36362
18	US Hwy 12	-101.64177	45.932368	W	0.299971
19	State Hwy 1806	-100.527342	45.63764	N	0.181743
20	State Hwy 63	-100.813246	45.687537	S	0.072446

CUSTER COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	State Hwy 40 E	-103.041873	43.787961	E	2.072713
2	State Hwy 40 E	-103.076779	43.804095	E	1.752638
3	State Hwy 40	-102.894343	43.691094	N	1.55952
4	State Hwy 89	-103.588418	43.598068	S	1.306153
5	US Hwy 16	-103.359977	43.761617	E	1.11231
6	US Hwy 16	-103.639093	43.836384	S	0.9591
7	State Hwy 40 E	-102.904081	43.719273	N	0.82782
8	US Hwy 385	-103.524664	43.603855	N	0.749683
9	Mt Rushmore Rd	-103.846981	43.731147	S	0.640103
10	State Hwy 89	-103.684993	43.491293	S	0.580324
11	State Hwy 87	-103.446392	43.801362	W	0.529306
12	Mt Rushmore Rd	-103.711245	43.7361	E	0.464782
13	State Hwy 40 E	-102.94226	43.740146	W	0.383741
14	State Hwy 40 E	-103.002454	43.761303	E	0.30993
15	State Hwy 89	-103.65109	43.556884	S	0.250165
16	S Dakota Hwy 40	-103.29611	43.855789	W	0.206548
17	US Hwy 385	-103.60484	43.716041	S	0.160916
18	State Hwy 87	-103.47807	43.636626	W	0.119401
19	US Hwy 385	-103.569197	43.608818	E	0.079104
20	Mt Rushmore Rd	-103.671847	43.734483	E	0.024343

HARDING COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	State Hwy 20	-103.422523	45.559779	E	2.897667
2	State Hwy 20	-103.273992	45.545268	E	2.478218
3	State Hwy 20	-103.685869	45.588957	W	1.971313
4	State Hwy 79	-103.005879	45.557043	S	1.855378
5	State Hwy 79	-103.187574	45.279672	N	1.622916
6	US Hwy 85	-103.54555	45.438325	N	1.33293
7	State Hwy 79	-102.984213	45.825834	N	1.201049
8	State Hwy 79	-102.963334	45.885312	N	1.015955
9	US Hwy 85	-103.55665	45.388768	N	0.955438
10	State Hwy 20	-103.919233	45.555678	W	0.896214
11	State Hwy 20	-103.98823	45.548916	W	0.8396
12	US Hwy 85	-103.376991	45.9154	N	0.783481
13	US Hwy 85	-103.537659	45.624143	S	0.705345
14	State Hwy 79	-102.991903	45.714844	N	0.633921
15	US Hwy 85	-103.54865	45.249887	N	0.552468
16	State Hwy 79	-102.98421	45.813576	S	0.492015
17	State Hwy 20	-103.147264	45.53743	W	0.423217
18	US Hwy 85	-103.396982	45.785068	S	0.349544
19	US Hwy 85	-103.549059	45.370753	S	0.229225
20	State Hwy 79	-102.960058	45.944489	S	0.077354

HUGHES COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	State Hwy 34	-99.875874	44.273293	W	2.862937
2	214th St	-99.703158	44.279956	W	1.772471
3	198th St	-100.012399	44.512272	W	1.378853
4	US Hwy 14	-100.179509	44.444943	S	1.144872
5	197th St	-99.694099	44.526791	W	0.939388
6	197th St	-99.89643	44.527013	E	0.931139
7	State Hwy 1804	-100.3485	44.403178	S	0.798938
8	State Hwy 204	-100.393413	44.455182	E	0.686034
9	305th Ave	-100.067785	44.509284	S	0.637451
10	US Hwy 14	-100.083057	44.495091	N	0.583026
11	US Hwy 14	-100.338508	44.388122	S	0.516488
12	197th St	-99.810125	44.526945	E	0.466993
13	197th St	-99.841588	44.527046	W	0.404145
14	State Hwy 1804	-100.35012	44.413649	N	0.340953
15	State Hwy 1804	-100.416831	44.492329	S	0.262723
16	State Hwy 34	-100.22441	44.339056	W	0.220793
17	US Hwy 14	-100.299812	44.400238	E	0.165573
18	State Hwy 34	-100.126126	44.329717	W	0.12363
19	E Sioux Ave	-100.349219	44.364159	N	0.077619
20	E Sioux Ave	-100.352064	44.365793	N	0.045568

LAWRENCE COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 90	-103.702793	44.487191	E	1.57221
2	I- 90	-103.784779	44.475369	E	1.068125
3	I- 90	-103.975104	44.546623	E	0.825699
4	I- 90	-103.989834	44.54642	W	0.566426
5	I- 90	-103.803347	44.4766	E	0.374183
6	I- 90	-103.811435	44.477242	E	0.293128
7	I- 90	-103.879719	44.521289	E	0.148868
8	US Hwy 385	-103.721107	44.334879	S	2.154752
9	US Hwy 14 Alt	-103.634562	44.388799	E	1.301671
10	US Hwy 14 Alt	-103.576434	44.401999	N	0.916712
11	S Dakota Hwy 34	-103.694401	44.522116	S	0.806931
12	S Dakota Hwy 34	-103.670367	44.497759	N	0.726028
13	Spearfish Canyon Hwy	-103.912708	44.384074	N	0.623837
14	US Hwy 14 Alt	-103.666128	44.389462	W	0.480602
15	US Hwy 14 Alt	-103.871279	44.304892	N	0.405385
16	US Hwy 85	-103.859572	44.54925	S	0.31646
17	US Hwy 385	-103.570168	44.141893	N	0.226701
18	US Hwy 14 Alt	-103.799085	44.316408	S	0.170558
19	S Dakota Hwy 34	-103.76962	44.594554	S	0.11676
20	Sherman St	-103.729179	44.375422	S	0.063571

LINCOLN COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 29	-96.796196	43.36485	N	0.766211
2	479th Ave	-96.628656	43.2509	S	0.346855
3	484th Ave	-96.529632	43.163328	N	1.000616
4	483rd Ave	-96.549432	43.381622	S	0.854236
5	289th St	-96.601683	43.199453	S	0.680658
6	477th Ave	-96.668559	43.427218	S	0.5779
7	466th Ave	-96.885593	43.23254	N	0.505339
8	272nd St	-96.88105	43.446599	E	0.467144
9	281st St	-96.782576	43.315856	N	0.421479
10	482nd Ave	-96.569133	43.399759	E	0.370429
11	464th Ave	-96.92426	43.216765	N	0.324943
12	S Grand Arbor Ct	-96.745101	43.478149	E	0.284872
13	287th St	-96.841783	43.228886	E	0.246557
14	477th Ave	-96.668664	43.452433	E	0.209867
15	W Wicklow Ln	-96.744085	43.489084	N	0.175461
16	466th Ave	-96.885123	43.18756	S	0.141103
17	Spur Ave	-96.480027	43.096654	S	0.109966
18	S Pine St	-96.886383	43.352912	N	0.079598
19	Harris St	-96.459633	43.13229	E	0.061179
20	473rd Ave	-96.747489	43.49562	N	0.0386

MEADE COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 90	-103.558854	44.425562	E	0.979528
2	State Hwy 73	-102.044897	44.986761	S	1.030656
3	206th St	-103.41146	44.426134	N	0.426964
4	Smithville Rd	-102.452739	44.26979	E	2.605253
5	New Underwood Rd	-102.822114	44.485482	W	1.542754
6	Vista Pl	-102.257519	44.459054	S	1.25997
7	Brushy Creek Rd	-102.130172	44.849237	E	1.064164
8	Reef Pl	-102.50212	44.582938	S	0.966341
9	New Underwood Rd	-102.829507	44.234618	N	0.889851
10	Chalk Butte Rd	-102.763562	44.604617	S	0.790674
11	New Underwood Rd	-102.79217	44.421277	S	0.7223
12	Ball Field Rd	-102.608475	44.517377	N	0.632831
13	Dalzell Rd	-102.453854	44.313197	W	0.550549
14	New Underwood Rd	-102.828937	44.323243	S	0.482896
15	165th Ave	-102.758357	44.209118	S	0.421456
16	129th Pl	-103.467915	44.486353	W	0.350643
17	Ricard Rd	-103.272082	44.237983	S	0.275282
18	Hermit Rd	-102.652086	44.81949	W	0.213476
19	220th St	-103.270599	44.213131	W	0.135099
20	Main St S	-102.038423	45.020657	N	0.071195

MINNEHAHA COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 90	-96.748739	43.611136	W	0.366093
2	475th Ave	-96.709717	43.807389	S	0.419523
3	462nd Ave	-96.970215	43.63791	S	1.005405
4	250th St	-97.079586	43.761424	E	0.941819
5	487th Ave	-96.472499	43.536554	N	0.83262
6	472nd Ave	-96.771483	43.683594	N	0.708438
7	262nd St	-96.943997	43.587172	E	0.588846
8	458th Ave	-97.049438	43.797382	N	0.50388
9	463rd Ave	-96.950293	43.575619	N	0.459549
10	Jasper St	-96.673621	43.825745	E	0.386318
11	253rd St	-96.887211	43.717685	W	0.316262
12	S Main Ave	-96.727509	43.520311	S	0.250466
13	W 46th St	-96.804254	43.512456	W	0.205153
14	486th Ave	-96.491653	43.65853	S	0.165563
15	S Ogorman Dr	-96.759833	43.5158	S	0.131539
16	S Purdue Ave	-96.825803	43.515597	S	0.107217
17	S Clover Ave	-96.665175	43.526771	S	0.08381
18	E 3rd St	-96.719231	43.55514	W	0.066377
19	W 31st St	-96.73436	43.524106	E	0.057866
20	E 38th St	-96.717128	43.518033	E	0.033573

PENNINGTON COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 90	-102.494337	44.089795	W	0.849619
2	Sn 44	-102.424834	43.729922	S	1.125499
3	E North St	-103.187483	44.089903	S	0.215402
4	FS Rd 301 1-B	-103.881814	43.921456	S	2.31786
5	Big Foote Rd	-102.067662	44.049586	S	1.587918
6	S Castle Creek Rd	-103.837284	44.007136	S	1.190619
7	Higgins Rd	-102.517116	43.8577	E	0.99611
8	169th Ave	-102.668627	44.131519	S	0.880096
9	Cedar Butte Rd	-102.277802	44.110337	E	0.748175
10	235th St	-102.052488	43.994649	N	0.637528
11	195th Ave	-102.147772	44.236541	S	0.520937
12	Soholt Draw	-103.841508	44.03425	E	0.443729
13	Custer Limestone Rd	-103.952413	43.876947	E	0.359907
14	Haddock Dr	-103.409366	44.061034	S	0.285155
15	Clarkson Rd	-103.319171	43.998776	S	0.227436
16	St Charles St	-103.222167	44.069548	E	0.175911
17	173rd Ave	-102.586137	44.02035	S	0.132832
18	E Chicago St	-103.194393	44.083899	E	0.099582
19	West Blvd N	-103.236115	44.077536	N	0.072722
20	Swede Ln	-103.271931	44.125318	S	0.046536

ROBERTS COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 29	-97.032842	45.391085	S	1.241149
2	I- 29	-97.04892	45.375718	S	0.876855
3	I- 29	-97.052028	45.303332	N	0.595546
4	I- 29	-96.989361	45.467249	S	0.414495
5	I- 29	-96.936198	45.737791	S	0.253593
6	I- 29	-96.989411	45.544419	N	0.084748
7	478th Ave	-96.62597	45.885424	N	1.004897
8	106th St	-96.886112	45.848824	W	0.946227
9	478th Ave	-96.618645	45.928601	N	0.923936
10	106th St	-97.054273	45.848827	E	0.776692
11	State Hwy 109	-96.508924	45.355577	N	0.69524
12	119th St	-97.067476	45.660107	E	0.574803
13	459th Ave	-97.020974	45.811159	S	0.506956
14	105th St	-96.683468	45.863679	W	0.475169
15	467th Ave	-96.862072	45.372553	N	0.433555
16	136th St	-96.805272	45.413033	W	0.363334
17	US Hwy 12	-97.20943	45.335649	W	0.293502
18	105th St	-96.790071	45.863509	W	0.227036
19	459th Ave	-97.021053	45.806297	N	0.164657
20	State Hwy 127	-96.866252	45.849455	E	0.086001

SHANNON COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	US Hwy 18	-102.276556	43.047132	W	1.306231
2	US Hwy 18	-102.86665	43.188343	W	1.036355
3	US Hwy 18	-102.347508	43.046586	W	0.940724
4	US Hwy 18	-102.846697	43.188303	W	0.858012
5	US Hwy 18	-102.146987	43.109183	S	0.839121
6	US Hwy 18	-102.404454	43.046497	W	0.719701
7	US Hwy 18	-102.970654	43.188399	W	0.578463
8	US Hwy 18	-102.228396	43.046552	W	0.529314
9	US Hwy 18	-102.587257	43.083338	S	0.475903
10	US Hwy 18	-102.475286	43.03327	W	0.397979
11	US Hwy 18	-102.82165	43.189164	E	0.359724
12	US Hwy 18	-102.70466	43.170968	N	0.307706
13	US Hwy 18	-102.701413	43.167597	N	0.250257
14	US Hwy 18	-102.74725	43.18798	E	0.223083
15	US Hwy 18	-102.516773	43.027172	W	0.194428
16	US Hwy 18	-102.583872	43.079054	S	0.153982
17	US Hwy 18	-102.545673	43.02733	W	0.13047
18	US Hwy 18	-102.568452	43.064463	N	0.108266
19	White Clay Rd	-102.55447	43.010212	S	0.066337
20	US Hwy 18	-102.486372	43.031855	W	0.024286

UNION COUNTY

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 29	-96.781446	42.774955	S	0.740731
2	479th Ave	-96.626372	42.899179	S	0.620276
3	River Rd	-96.519453	42.984558	S	1.307015
4	480th Ave	-96.606999	42.916234	E	1.006861
5	471st Ave	-96.785484	42.946294	N	1.000784
6	328th St	-96.556936	42.633914	N	0.964963
7	306th St	-96.617393	42.952473	W	0.93755
8	320th St	-96.757319	42.749902	N	0.866302
9	322nd St	-96.794372	42.721103	E	0.758175
10	329th St	-96.574042	42.619696	S	0.679306
11	298th St	-96.701078	43.069269	N	0.571377
12	298th St	-96.72052	43.069335	E	0.506603
13	Military Rd	-96.492303	42.536395	N	0.476832
14	474th Ave	-96.726648	42.985706	E	0.448479
15	302nd St	-96.777634	43.011171	E	0.388669
16	302nd St	-96.690414	43.011305	E	0.305261
17	478th Ave	-96.645979	42.889454	W	0.244338
18	477th Ave	-96.663421	42.7348	W	0.187734
19	Leneve St	-96.482527	42.530513	S	0.107367
20	W Wood Ln	-96.522318	42.548066	E	0.061521

Appendix B: Code Book

Variable Information

Variable	Type	Label
CASENO	Number	Overall Case Number
CTYIDNBR	Number	County ID Number
CTYNAME	Text	County Name
CTY_SEL_PROB	Number	County Probability of Selection
DESCRIP	Text	Description
DIR	Text	Direction of Traffic
DIR_SEL_PROB	Number	Direction Probability of Selection
DIV_ROAD	Text	Number of Lanes
DRGENDER	Text	Driver Gender
DRPROT	Text	Driver Protection
ENDTIME	Date/Time	End of Observations at this Site
FIRSTNAME	Text	Observer First Name
HWYNBR	Text	Highway Number
ID	Number	Overall Site ID
LANE_SEL_PROB	Number	Lane Probability of Selection
LASTNAME	Text	Observer Last Name
LATITUDE	Number	Latitude
LONGITUDE	Number	Longitude
MAPID	Text	MAP ID
NOPUS_Year	Number	Year of NOPUS Data
OBSDATE	Date/Time	Date of Observations at this Site
OBSID	Number	Observer ID
OBSNBR	Number	Site Observation Number
PASSGENDER	Text	Passenger Gender
PASSPROT	Text	Passenger Protection
RDTYPE	Text	Road Type
REGION	Text	Region of the State
SEGLEN_MI	Number	Segment Length in Miles
SITEDESCNBR	Number	County Site Decsription Number
SITE_SEL_PROB	Number	Site Probability of Selection
STRATUM	Text	East or West
STTIME	Date/Time	Start of Obsverations at this Site
TOTLEN	Number	Total County Segment Length
Variable	Data Type	Description
VEHTYPE	Text	Vehicle Type

Variable Values

County		
Value	**Label**	**Region**
1	Beadle	1
2	Brookings	1
3	Brown	1
4	Codington	1
5	Corson	2
6	Custer	2
7	Harding	2
8	Hughes	2
9	Lawrence	2
10	Lincoln	1
11	Meade	2
12	Minnehaha	1
13	Pennington	2
14	Roberts	1
15	Shannon	2
16	Union	1

	Value	**Label**
Region	1	East
	2	West
Roadway	1	Primary
	2	Secondary
	3	Local
Weekday	1	Sunday
	2	Monday
	3	Tuesday
	4	Wednesday
	5	Thursday
	6	Friday
	7	Saturday

Appendix C: Frequencies

South Dakota Statewide Survey, June 2013

Estimated Seat Belt Use (Percent) and Unweighted Frequencies for Vehicle Occupants

Occupant	Status	Estimate Percent	Unweighted Frequency		
Driver	Belted	70.0%			
	Not Belted	30.0%			
	Total	100.0%	20,204		
				Ratio	3.0
Passenger	Belted	76.6%			
	Not Belted	23.4%			
	Total	100.0%	6,846		
All Occupants	Belted	71.6%			
	Not Belted	28.4%			
	Total	100.0%	27,050		

South Dakota Statewide Survey, June 2013

Seat Belt Use by Region

Region of State				
Occupant	**Status**	**East**	**West**	**Total**
Drivers	Belted	77.2%	64.3%	70.0%
	Not Belted	22.8%	35.7%	30.0%
	Total	100.0%	100.0%	100.0%
	Count	8,869	11,335	20,204
Passengers	Belted	82.8%	73.0%	76.6%
	Not Belted	17.2%	27.0%	23.4%
	Total	100.0%	100.0%	100.0%
	Count	2,505	4,341	6,846
All Occupants	Belted	78.4%	66.7%	71.6%
	Not Belted	21.6%	33.3%	28.4%
	Total	100.0%	100.0%	100.0%
	Count	11,374	15,676	27,050

South Dakota Statewide Survey, June 2013

Seat Belt Use by County

Note: Based on unweighted percentages		County																
Occupants	**Status**	**Beadle**	**Brookings**	**Brown**	**Codington**	**Corson**	**Custer**	**Harding**	**Hughes**	**Lawrence**	**Lincoln**	**Meade**	**Minnehaha**	**Pennington**	**Roberts**	**Shannon**	**Union**	**Total**
Drivers	Belted	**73.5%**	**74.9%**	**76.7%**	**83.3%**	**65.6%**	**71.9%**	**47.7%**	**60.2%**	**82.3%**	**69.2%**	**57.0%**	**67.7%**	**68.1%**	**85.7%**	**38.3%**	**87.1%**	**70.0%**
	Not Belted	26.5%	25.1%	23.3%	16.7%	34.4%	28.1%	52.3%	39.8%	17.7%	30.8%	43.0%	32.3%	31.9%	14.2%	61.7%	12.9%	30.0%
	Count	1066	1073	1233	1995	427	1202	413	1258	3198	1326	1184	777	1623	672	2030	727	20204
	% of Sample	3.9%	4.0%	4.6%	7.4%	1.6%	4.4%	1.5%	4.7%	11.8%	4.9%	4.4%	2.9%	6.0%	2.5%	7.5%	2.7%	74.7%
Passengers	Belted	**78.2%**	**80.3%**	**84.8%**	**87.7%**	**66.5%**	**78.9%**	**40.2%**	**67.1%**	**92.9%**	**73.5%**	**69.2%**	**74.7%**	**74.1%**	**91.6%**	**33.1%**	**87.5%**	**76.6%**
	Not Belted	21.8%	19.7%	15.1%	12.3%	33.5%	21.1%	59.8%	32.9%	7.1%	26.5%	30.8%	25.3%	25.9%	8.4%	66.9%	12.5%	23.4%
	Count	455	290	498	497	191	683	102	316	1479	234	370	154	545	249	655	128	6846
	% of Sample	1.7%	1.1%	1.8%	1.8%	0.7%	2.5%	0.4%	1.2%	5.5%	0.9%	1.3%	0.6%	2.0%	0.9%	2.4%	0.5%	25.3%
All Occupants	Belted	**74.9%**	**76.1%**	**79.1%**	**84.1%**	**65.9%**	**74.4%**	**46.2%**	**61.6%**	**85.7%**	**69.8%**	**59.9%**	**68.9%**	**69.6%**	**87.3%**	**37.1%**	**87.1%**	**71.6%**
	Not Belted	25.1%	23.9%	20.9%	15.9%	34.1%	25.6%	53.8%	38.4%	14.3%	30.2%	40.1%	31.1%	30.4%	12.7%	62.9%	12.9%	28.4%
	Count	1521	1363	1731	2492	618	1885	515	1574	4677	1560	1554	931	2168	921	2685	855	27050
	% of Sample	5.6%	5.0%	6.4%	9.2%	2.3%	7.0%	1.9%	5.8%	17.3%	5.8%	5.8%	3.4%	8.0%	3.4%	9.9%	3.2%	100.0%

South Dakota Statewide Survey, June 2013

Seat Belt Use by Gender

Occupant	Status	Gender			Total
		Male	Female	Unknown	
Drivers	Belted	67.0%	75.2%	40.0%	70.0%
	Not Belted	33.0%	24.8%	60.0%	30.0%
	Count	12,877	7,322	5	20,204
Passengers	Belted	67.3%	80.9%	66.7%	76.6%
	Not Belted	32.7%	19.1%	33.3%	23.4%
	Count	2,154	4,689	3	6,846
All Occupants	Belted	67.1%	77.4%	50.0%	71.6%
	Not Belted	32.9%	22.6%	50.0%	28.4%
	Count	15,031	12,011	8	27,050

South Dakota Statewide Survey, June 2013

Male Seat Belt Use

Vehicle Type						
Occupant	**Status**	**Auto**	**SUV**	**Van**	**Truck**	**Total**
Male Drivers	Belted	70.7%	73.1%	76.1%	59.0%	67.0%
	Not Belted	29.3%	26.9%	23.9%	41.0%	33.0%
	Count	4,001	2,635	1,122	5,119	12,877
Male Passengers	Belted	69.7%	75.8%	75.5%	56.6%	67.3%
	Not Belted	30.3%	24.2%	24.5%	43.4%	32.7%
	Count	693	471	265	725	2,154
All Male Occupants	Belted	70.6%	73.5%	76.0%	58.7%	67.1%
	Not Belted	29.4%	26.5%	24.0%	41.3%	32.9%
	Count	4,694	3,106	1,387	5,844	15,031

South Dakota Statewide Survey, June 2013

Female Seat Belt Use Rate

Vehicle Type						
Occupant	**Status**	**Auto**	**SUV**	**Van**	**Truck**	**Total**
Female Drivers	Belted	71.4%	78.2%	83.4%	71.6%	75.2%
	Not Belted	28.6%	21.8%	16.6%	28.4%	24.8%
	Count	3,234	2,319	958	811	7,322
Female Passengers	Belted	79.1%	84.0%	84.8%	76.6%	80.9%
	Not Belted	20.9%	16.0%	15.2%	23.4%	19.1%
	Count	1,664	1,415	665	945	4,689
All Female Occupants	Belted	74.0%	80.4%	84.0%	74.3%	77.4%
	Not Belted	26.0%	19.6%	16.0%	25.7%	22.6%
	Count	4,898	3,734	1,623	1,756	12,011

Appendix D: Survey Instrument

Seat Belt Survey Form Page # _____ of_____

Date _____ **Start Time:** _____ **AM/PM** **End Time** _____**AM/PM**

County_____ **Observer Name:**_____

Site Location Description (including city/town where applicable): _____

Site ID Number: _____ **(if applicable)**

Traffic Type Being Observed: ❑ Town/City ❑ Highway/County Road (outside of town/city) ❑ Interstate

Obs	Vehicle Type					Driver					Passenger				
						Gender		Protection			Gender		Protection		
1	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
2	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
3	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
4	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
5	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
6	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
7	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
8	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
9	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
10	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
11	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
12	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
13	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
14	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
15	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
16	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
17	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
18	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
19	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
20	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
21	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
22	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
23	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
24	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
25	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
26	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
27	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
28	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
29	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK
30	Car	Trck	SUV	Van	Mcycl	M	F	Y	N	DK	M	F	Y	N	DK

M=Male; F=Female; DK = Do Not Know

Appendix E: Seat Belt Use Rates with Site and County Weights

Beadle County

June, 2013

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.163642932	0.29495	19	20	95.0%
2	0.154640423	0.29495	58	77	75.3%
3	0.149255255	0.29495	29	34	85.3%
4	0.135873455	0.29495	89	102	87.3%
5	0.121508605	0.29495	19	23	82.6%
6	0.107071033	0.29495	43	52	82.7%
7	0.091521111	0.29495	73	89	82.0%
8	0.081327822	0.29495	42	55	76.4%
9	0.077470628	0.29495	36	46	78.3%
10	0.071184101	0.29495	59	79	74.7%
11	0.062408399	0.29495	52	68	76.5%
12	0.054818585	0.29495	58	76	76.3%
13	0.04851086	0.29495	71	88	80.7%
14	0.040079201	0.29495	55	70	78.6%
15	0.032491996	0.29495	52	69	75.4%
16	0.025505643	0.29495	62	88	70.5%
17	0.019668491	0.29495	113	137	82.5%
18	0.013994066	0.29495	93	149	62.4%
19	0.011090899	0.29495	65	122	53.3%
20	0.002735712	0.29495	51	77	66.2%

Brookings County

June, 2013

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.152945115	0.57693	0	0	0.0%
2	0.100653822	0.57693	0	0	0.0%
3	0.058770725	0.57693	200	221	90.5%
4	0.003447562	0.57693	0	0	0.0%
5	0.160390642	0.57693	26	44	59.1%
6	0.159819366	0.57693	35	59	59.3%
7	0.150965721	0.57693	8	11	72.7%
8	0.15039589	0.57693	25	34	73.5%
9	0.14275191	0.57693	20	23	87.0%
10	0.127070254	0.57693	22	30	73.3%
11	0.120576692	0.57693	81	99	81.8%
12	0.096697121	0.57693	12	17	70.6%
13	0.078481334	0.57693	74	90	82.2%
14	0.074165138	0.57693	74	100	74.0%
15	0.061851406	0.57693	50	59	84.7%
16	0.054201164	0.57693	184	234	78.6%
17	0.040676964	0.57693	15	29	51.7%
18	0.027970982	0.57693	42	52	80.8%
19	0.015940962	0.57693	79	136	58.1%
20	0.007413736	0.57693	90	125	72.0%

Brown County

June, 2013

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.095036157	0.68386	43	48	89.6%
2	0.094701144	0.68386	31	37	83.8%
3	0.094614464	0.68386	79	85	92.9%
4	0.094466975	0.68386	75	88	85.2%
5	0.094388603	0.68386	120	132	90.9%
6	0.093821876	0.68386	29	50	58.0%
7	0.089262275	0.68386	111	142	78.2%
8	0.088794975	0.68386	132	163	81.0%
9	0.083290294	0.68386	29	55	52.7%
10	0.075640035	0.68386	108	145	74.5%
11	0.066168825	0.68386	97	121	80.2%
12	0.054807075	0.68386	17	20	85.0%
13	0.048207651	0.68386	20	26	76.9%
14	0.044758467	0.68386	18	22	81.8%
15	0.041241393	0.68386	123	143	86.0%
16	0.035395939	0.68386	41	47	87.2%
17	0.025271037	0.68386	11	22	50.0%
18	0.017801882	0.68386	113	160	70.6%
19	0.008955093	0.68386	59	95	62.1%
20	0.000314807	0.68386	113	130	86.9%

Codington County

June, 2013

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.164047034	0.55268	188	209	90.0%
2	0.101675713	0.55268	167	196	85.2%
3	0.073550686	0.55268	189	203	93.1%
4	0.032108924	0.55268	161	185	87.0%
5	0.175715287	0.55268	63	75	84.0%
6	0.156811234	0.55268	48	75	64.0%
7	0.146301945	0.55268	51	64	79.7%
8	0.1331456	0.55268	19	35	54.3%
9	0.116441309	0.55268	107	124	86.3%
10	0.099692115	0.55268	133	152	87.5%
11	0.085795268	0.55268	22	30	73.3%
12	0.077069485	0.55268	128	146	87.7%
13	0.068187565	0.55268	97	118	82.2%
14	0.056622983	0.55268	81	88	92.0%
15	0.050397258	0.55268	94	103	91.3%
16	0.03952922	0.55268	93	104	89.4%
17	0.03100668	0.55268	96	127	75.6%
18	0.022141304	0.55268	191	235	81.3%
19	0.015341611	0.55268	64	79	81.0%
20	0.010146758	0.55268	105	144	72.9%

Corson County

June, 2013

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.29812937	0.19204	2	5	40.0%
2	0.167414242	0.19204	0	1	0.0%
3	0.136394057	0.19204	5	12	41.7%
4	0.109739986	0.19204	25	45	55.6%
5	0.097699261	0.19204	3	7	42.9%
6	0.09173605	0.19204	9	17	52.9%
7	0.086934448	0.19204	21	27	77.8%
8	0.084774675	0.19204	8	20	40.0%
9	0.079718609	0.19204	8	11	72.7%
10	0.073200545	0.19204	66	85	77.6%
11	0.065552255	0.19204	25	42	59.5%
12	0.060439682	0.19204	13	20	65.0%
13	0.055936811	0.19204	73	105	69.5%
14	0.051008391	0.19204	10	15	66.7%
15	0.045383024	0.19204	0	4	0.0%
16	0.040210539	0.19204	31	45	68.9%
17	0.033464148	0.19204	23	31	74.2%
18	0.027606495	0.19204	22	28	78.6%
19	0.016725908	0.19204	22	40	55.0%
20	0.006667245	0.19204	41	58	70.7%

Custer County

June, 2013

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.20253372	0.51261	5	14	35.7%
2	0.171257813	0.51261	25	44	56.8%
3	0.152387421	0.51261	37	52	71.2%
4	0.127629839	0.51261	44	61	72.1%
5	0.108688604	0.51261	103	126	81.7%
6	0.093717795	0.51261	285	353	80.7%
7	0.08088986	0.51261	37	62	59.7%
8	0.073254757	0.51261	97	117	82.9%
9	0.062547223	0.51261	89	99	89.9%
10	0.056705959	0.51261	66	80	82.5%
11	0.05172077	0.51261	80	90	88.9%
12	0.045415852	0.51261	100	143	69.9%
13	0.037496987	0.51261	43	55	78.2%
14	0.030284596	0.51261	28	39	71.8%
15	0.0244447	0.51261	43	54	79.6%
16	0.020182695	0.51261	49	62	79.0%
17	0.015723796	0.51261	58	100	58.0%
18	0.011667186	0.51261	29	31	93.5%
19	0.007729593	0.51261	73	113	64.6%
20	0.002378659	0.51261	112	190	58.9%

Harding County

June, 2013

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.363631771	0.15327	6	11	54.5%
2	0.310994603	0.15327	7	17	41.2%
3	0.247382476	0.15327	4	18	22.2%
4	0.232833651	0.15327	1	4	25.0%
5	0.203661711	0.15327	9	20	45.0%
6	0.167271014	0.15327	29	50	58.0%
7	0.150721106	0.15327	2	9	22.2%
8	0.127493434	0.15327	0	0	0.0%
9	0.119899081	0.15327	16	33	48.5%
10	0.112466989	0.15327	1	3	33.3%
11	0.105362429	0.15327	0	0	0.0%
12	0.098319988	0.15327	19	49	38.8%
13	0.088514605	0.15327	37	69	53.6%
14	0.07955152	0.15327	1	5	20.0%
15	0.069329884	0.15327	20	48	41.7%
16	0.061743563	0.15327	0	3	0.0%
17	0.053110018	0.15327	3	11	27.3%
18	0.043864703	0.15327	30	60	50.0%
19	0.028765725	0.15327	49	101	48.5%
20	0.009707248	0.15327	4	4	100.0%

Hughes County

June, 2013

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.598212096	0.44826	33	38	86.8%
2	0.370358688	0.44826	23	30	76.7%
3	0.288112014	0.44826	42	73	57.5%
4	0.239221568	0.44826	66	106	62.3%
5	0.196285585	0.44826	44	59	74.6%
6	0.194561953	0.44826	39	55	70.9%
7	0.166938489	0.44826	46	69	66.7%
8	0.143347142	0.44826	21	45	46.7%
9	0.1331957	0.44826	33	54	61.1%
10	0.12182357	0.44826	69	113	61.1%
11	0.107920422	0.44826	25	43	58.1%
12	0.097578417	0.44826	30	53	56.6%
13	0.084446297	0.44826	50	77	64.9%
14	0.071242297	0.44826	42	89	47.2%
15	0.0548961	0.44826	30	46	65.2%
16	0.046134806	0.44826	47	62	75.8%
17	0.03459656	0.44826	32	77	41.6%
18	0.025832549	0.44826	13	19	68.4%
19	0.016218528	0.44826	114	191	59.7%
20	0.009521456	0.44826	170	275	61.8%

Lawrence County

June, 2013

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.196493835	1.00000	444	472	94.1%
2	0.133493603	1.00000	461	514	89.7%
3	0.103195351	1.00000	252	286	88.1%
4	0.070791572	1.00000	236	261	90.4%
5	0.04676516	1.00000	477	508	93.9%
6	0.036634956	1.00000	313	335	93.4%
7	0.018605431	1.00000	269	295	91.2%
8	0.269299574	1.00000	107	139	77.0%
9	0.162682038	1.00000	112	157	71.3%
10	0.1145701	1.00000	162	215	75.3%
11	0.100849738	1.00000	110	116	94.8%
12	0.090738531	1.00000	84	96	87.5%
13	0.077966763	1.00000	42	49	85.7%
14	0.060065341	1.00000	164	202	81.2%
15	0.050664767	1.00000	27	36	75.0%
16	0.039550975	1.00000	264	308	85.7%
17	0.028332951	1.00000	158	186	84.9%
18	0.021316233	1.00000	38	48	79.2%
19	0.014592593	1.00000	88	105	83.8%
20	0.007945064	1.00000	199	349	57.0%

Lincoln County

June, 2013

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.010977694	1.00000	266	335	79.4%
2	0.004969477	1.00000	54	91	59.3%
3	0.014336072	1.00000	8	12	66.7%
4	0.01223885	1.00000	2	5	40.0%
5	0.009751955	1.00000	3	5	60.0%
6	0.008279716	1.00000	2	2	100.0%
7	0.007240116	1.00000	4	7	57.1%
8	0.006692887	1.00000	57	77	74.0%
9	0.006038634	1.00000	8	21	38.1%
10	0.005307228	1.00000	7	8	87.5%
11	0.004655538	1.00000	5	18	27.8%
12	0.004081431	1.00000	3	4	75.0%
13	0.003532483	1.00000	273	378	72.2%
14	0.003006816	1.00000	6	14	42.9%
15	0.002513873	1.00000	121	167	72.5%
16	0.002021617	1.00000	10	18	55.6%
17	0.00157551	1.00000	13	19	68.4%
18	0.00114042	1.00000	49	91	53.8%
19	0.000876527	1.00000	5	8	62.5%
20	0.000553032	1.00000	193	280	68.9%

Meade County

June, 2013

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.011721177	1.00000	304	462	65.8%
2	0.012332982	1.00000	13	34	38.2%
3	0.005109114	1.00000	19	37	51.4%
4	0.031174843	1.00000	8	13	61.5%
5	0.018460823	1.00000	12	20	60.0%
6	0.015076987	1.00000	9	17	52.9%
7	0.012733944	1.00000	123	229	53.7%
8	0.011563379	1.00000	5	6	83.3%
9	0.010648089	1.00000	7	14	50.0%
10	0.009461322	1.00000	19	26	73.1%
11	0.008643149	1.00000	9	17	52.9%
12	0.007572549	1.00000	246	375	65.6%
13	0.006587951	1.00000	2	6	33.3%
14	0.005778405	1.00000	19	24	79.2%
15	0.005043205	1.00000	5	13	38.5%
16	0.004195846	1.00000	37	68	54.4%
17	0.003294065	1.00000	22	37	59.5%
18	0.002554485	1.00000	69	138	50.0%
19	0.001616615	1.00000	0	0	0.0%
20	0.00085193	1.00000	3	18	16.7%

Minnehaha County

June, 2013

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.003041028	1.00000	141	199	70.9%
2	0.003484856	1.00000	93	155	60.0%
3	0.008351608	1.00000	4	5	80.0%
4	0.007823417	1.00000	152	198	76.8%
5	0.006916333	1.00000	4	6	66.7%
6	0.005884789	1.00000	23	28	82.1%
7	0.004891373	1.00000	25	35	71.4%
8	0.004185585	1.00000	8	13	61.5%
9	0.00381734	1.00000	43	60	71.7%
10	0.003209032	1.00000	13	24	54.2%
11	0.002627097	1.00000	6	7	85.7%
12	0.002080548	1.00000	8	14	57.1%
13	0.001704146	1.00000	10	11	90.9%
14	0.001375284	1.00000	14	20	70.0%
15	0.001092656	1.00000	6	6	100.0%
16	0.000890621	1.00000	15	25	60.0%
17	0.000696185	1.00000	6	7	85.7%
18	0.000551374	1.00000	48	83	57.8%
19	0.000480676	1.00000	2	3	66.7%
20	0.000278881	1.00000	20	32	62.5%

Pennington County

June, 2013

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.006560692	1.00000	447	449	99.6%
2	0.008691016	1.00000	12	19	63.2%
3	0.001663318	1.00000	236	346	68.2%
4	0.017898336	1.00000	89	157	56.7%
5	0.01226178	1.00000	11	15	73.3%
6	0.009193868	1.00000	12	25	48.0%
7	0.007691884	1.00000	284	458	62.0%
8	0.006796033	1.00000	22	30	73.3%
9	0.00577735	1.00000	0	1	0.0%
10	0.004922942	1.00000	2	2	100.0%
11	0.004022635	1.00000	44	66	66.7%
12	0.003426441	1.00000	50	133	37.6%
13	0.002779174	1.00000	6	14	42.9%
14	0.002201945	1.00000	14	20	70.0%
15	0.001756243	1.00000	2	3	66.7%
16	0.001358371	1.00000	23	32	71.9%
17	0.001025718	1.00000	0	0	0.0%
18	0.000768965	1.00000	30	49	61.2%
19	0.000561554	1.00000	191	296	64.5%
20	0.000359347	1.00000	34	53	64.2%

Roberts County

June, 2013

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.147279884	0.3647	112	122	91.8%
2	0.104051248	0.3647	98	119	82.4%
3	0.070669957	0.3647	58	67	86.6%
4	0.049185695	0.3647	116	125	92.8%
5	0.030092396	0.3647	40	42	95.2%
6	0.010056549	0.3647	90	97	92.8%
7	0.119245243	0.3647	14	18	77.8%
8	0.112283218	0.3647	31	35	88.6%
9	0.109638075	0.3647	10	17	58.8%
10	0.092165492	0.3647	25	30	83.3%
11	0.08250006	0.3647	20	21	95.2%
12	0.068208506	0.3647	32	39	82.1%
13	0.0601575	0.3647	9	12	75.0%
14	0.056385523	0.3647	31	33	93.9%
15	0.051447433	0.3647	17	20	85.0%
16	0.043114718	0.3647	27	29	93.1%
17	0.034828164	0.3647	14	16	87.5%
18	0.026941033	0.3647	32	41	78.0%
19	0.019538882	0.3647	15	17	88.2%
20	0.010205235	0.3647	13	21	61.9%

Shannon County

June, 2013

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.445220212	0.32952	30	77	39.0%
2	0.353234759	0.32952	46	64	71.9%
3	0.320639564	0.32952	38	80	47.5%
4	0.292447725	0.32952	35	66	53.0%
5	0.286008852	0.32952	20	54	37.0%
6	0.245305334	0.32952	37	126	29.4%
7	0.197165294	0.32952	32	53	60.4%
8	0.180413182	0.32952	33	77	42.9%
9	0.162208395	0.32952	61	144	42.4%
10	0.135648514	0.32952	45	104	43.3%
11	0.12260955	0.32952	20	50	40.0%
12	0.104879558	0.32952	30	56	53.6%
13	0.085298446	0.32952	8	14	57.1%
14	0.076036368	0.32952	25	66	37.9%
15	0.0662695	0.32952	147	401	36.7%
16	0.052483748	0.32952	57	133	42.9%
17	0.044469838	0.32952	55	237	23.2%
18	0.036901751	0.32952	45	159	28.3%
19	0.022610528	0.32952	162	525	30.9%
20	0.008277723	0.32952	69	199	34.7%

Union County

June, 2013

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.015619966	0.62805	238	244	97.5%
2	0.013079903	0.62805	13	14	92.9%
3	0.027561327	0.62805	3	6	50.0%
4	0.02123191	0.62805	6	9	66.7%
5	0.021103763	0.62805	10	11	90.9%
6	0.020348397	0.62805	110	126	87.3%
7	0.019770333	0.62805	144	161	89.4%
8	0.01826791	0.62805	11	18	61.1%
9	0.015987811	0.62805	73	82	89.0%
10	0.014324682	0.62805	4	10	40.0%
11	0.012048759	0.62805	2	6	33.3%
12	0.010682854	0.62805	0	6	0.0%
13	0.010055066	0.62805	53	73	72.6%
14	0.00945718	0.62805	1	1	100.0%
15	0.008195953	0.62805	16	18	88.9%
16	0.006437109	0.62805	15	17	88.2%
17	0.005152412	0.62805	42	46	91.3%
18	0.00395879	0.62805	2	4	50.0%
19	0.002264073	0.62805	1	1	100.0%
20	0.001297308	0.62805	1	2	50.0%

Appendix F: Roadway Classifications

Roadway Type Classifications

Code	Name	Definition
S1100	Primary Road	Primary roads 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 some toll highways.
S1200	Secondary Road	Secondary roads 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.
S1400	Local Neighborhood Road, Rural Road, City Street	Generally paved non-arterial streets, roads, or byways that usually have a single lane of traffic in each direction. Roads in this feature class may be privately or publicly maintained. Scenic park roads would be included in this feature class, as would (depending on the region of the country) some unpaved roads.