SEAT BELT USE IN SOUTH DAKOTA

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EXECUTIVE SUMMARY

South Dakota's seat belt use study provides 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 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), instead of 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 13-19, trained observers visited each site in their assigned counties to collect 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 2016 statewide survey, observers determined seat belt use for 22,034 drivers and 7,812 right front-seat passengers, for a total of 29,846 vehicle occupants. The estimates of seat belt use were 74.3% for drivers, 81.0% for passengers, and an overall unweighted estimate of 76.1% belted for drivers and passengers combined. Adjusting the raw state rate for the survey design and weights resulted in a weighted state rate of 74.2%.

Overall, males were less likely than females to wear seat belts (72.0% vs. 81.1%). Male rates were observed to be as much as 23% lower than female use rates across the counties surveyed, with the exception of Brown County where male use exceeded female use by a slight margin. The trend of higher rates of use by females holds for each vehicle type as well with female use ranging from 78.1% to 84.3% over the four vehicle types compared to male use which ranged from 67.1% to 80.7%. Van occupants had the highest seat belt use rate at 81.7% followed by SUVs (81.0%), cars (75.5%), and pickups (70.5%).

Although drivers outnumbered passengers by a ratio of 2.8 to 1, passengers buckled up at a rate of 81.0% compared to drivers at 74.3%. This may be mainly due to the fact that drivers are more likely to be men than women (64.2% vs. 35.8%), and their seat belt use rates are lower than women, 72.1% compared to 78.2%. For passengers, the reverse is true. Women represented 68.4% of the passengers with a use rate of 85.2%, while men represented 31.6% of the passengers with a use rate of 71.8%.

Rates by region indicate occupants in the east were more likely to buckle up (79.8%) than those in the west (72.4%). Regional differences in seat belt use were also reflected by road type. Occupants from the west region exhibited higher rates of use on primary roads – 91.4% compared to 83.1% in the east. However, on both local and secondary road types, there was a greater tendency for seat belt use in occupants from the east half of the state.

NHTSA reports the national average seat belt use rate was 88.5% in 2015. South Dakota falls below this average with a weighted rate of 74.2%. This compares to last year's weighted rate of 73.6%. In general, the findings in the 2016 South Dakota statewide survey are consistent with the findings of previous surveys. Comparisons to prior years should be made with caution because of changes in the sampling methodology implemented in 2012.

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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 2016. 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 redesigned to yield a more statistically robust 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 position (driver, passenger)

- Gender (male, female)

- Type of vehicle (car, 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 statewide seat belt survey is provided in this report which also includes general information about the methods and protocols. Table 1 summarizes the 2016 survey. Categories are generally representative of statewide behavior based on survey sample design. The local road type, however, was limited to segments randomly selected in the Metropolitan Statistical Area (MSA) counties per NHTSA protocol guidance.

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, Oglala Lakota**, Pennington
Number of Sites	320
Survey Period	June 13-19, 2016
Observation Duration Per Site	60 minutes
Sample Size	22,096 vehicles (includes all vehicles where either the driver or passenger or both had a known protection status)

*A research and statistical survey organization
** Formerly known as Shannon County

METHODOLOGY OVERVIEW

On April 1, 2011, NHTSA published revised Uniform Criteria for the state observational seat belt surveys 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 inclusion 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 sample of 16 counties was selected for the survey of seat belt use in South Dakota. Counties represent the primary sampling unit (PSU). Half of the counties were selected from the western part of the state and the other eight selected from the eastern half. Within each of those 16 counties a sample of 20 sites was selected, providing a total of 320 site locations across the state. A reserve sample of sites was also selected to replace the original sites 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 county 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 vehicle's 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 procedure PROC SURVEYSELECT based on the re-calculated probabilities of selection.

Next, road segments within each county were stratified by its MAF/TIGER Feature Class Code primary, secondary and local. The list of eligible road segments within each county was 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 certainty sites). A random starting point (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:

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

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

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

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:

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

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 74.2% in 2016. Information on previous years' rates is found in the Statewide Results section of this report.

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 0.97%. 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 2016 State Seat Belt Use				
Occupants	State Rate	Standard Error	95% CI Lower Limit	95% CI Upper Limit
29,846	74.2%	0.97%	72.3%	76.1%

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 72.3% to 76.1%.

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. In the 2016 survey, 23,425 drivers and 8,432 passengers were observed for a total of 31,857 vehicle occupants. Seat belt use could not be determined for 2,011 vehicle occupants resulting in a nonresponse rate of 6.31%. As stipulated in NHTSA's guidelines, the nonresponse rate did not exceed the allowable maximum of 10%. 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 2016 study adhere 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 before the survey. 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. Observations at each site occurred in a predetermined time slot, requiring a 60-minute observation period which began at the start of the predetermined time slot - or the first 5-minute interval after arrival at the site if the observer was delayed - and ended 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.

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 cars, 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 for both drivers and right front-seat passengers were recorded. 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. Observers were required to wear an ANSI-approved Type-2 safety vest at all times to enhance visibility of the observer.

Problems Encountered by Observers

Unforeseen circumstances prevented site observations as originally scheduled in one county during the 2016 survey. However, in accordance with guidelines outlined in the Federal Register, observations were completed at this site by adhering to the prescribed schedule the following week. Two sites required temporary alternate site assignments because of road construction jeopardizing observer safety. Protocols were followed in identifying site reassignments. 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, online training was introduced in 2016. The training module covered survey methods and observer responsibilities, as well as true/false questions requiring correct responses in order to move forward in the module. Observers were asked to complete training to ensure accuracy in conducting the field observations. During observation week, quality control personnel also carried out unannounced site visits (one per county) to verify observers were located within valid road segments, conforming to the prearranged day of week/time of day schedules, and properly recording seat belt data. All observers were required to have a current license 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
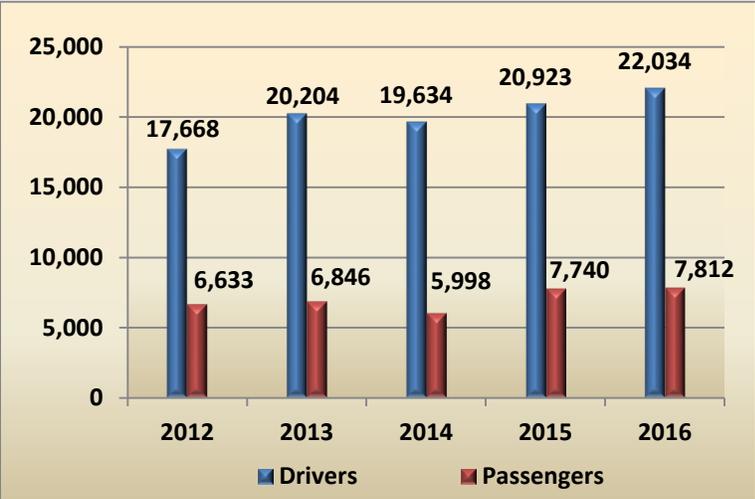
Figure 1: Driver and Passenger Observations, 2012-2016

Sample size in Figure 1 includes only vehicle occupants where protection status could be determined. The 2016 survey yielded seat belt use on 22,034 drivers and 7,812 passengers for a total of 29,846 occupants. Several county sites captured only a limited number of observed vehicles because of low traffic volume. However, these sites are important to the aggregate measurement of statewide and county seat belt use and therefore are captured each year. Complete details on the number of observations and use by site are found in Appendix E.

Statewide Results

The overall unweighted results of the 2016 statewide survey indicated 76.1**%** of vehicle occupants were observed 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 was 74.2% for 2016. Figure 2 shows annual seat belt use since implementation of the amended methodology in 2012.
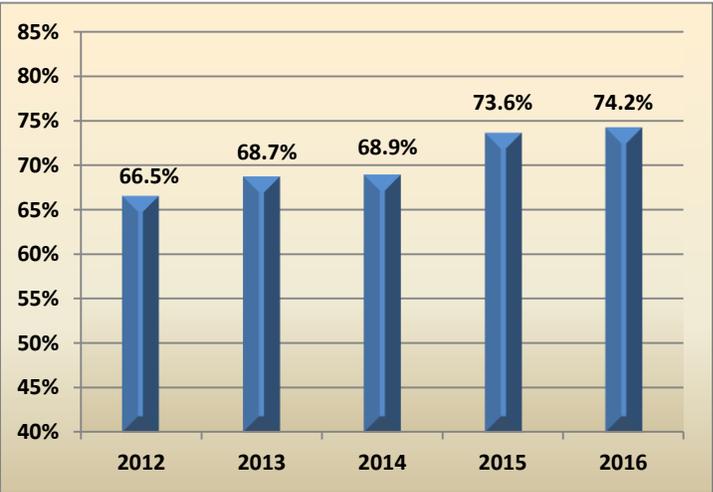
Figure 2: Statewide Results, 2012-2016, Weighted

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The driver-to-passenger ratio can influence overall use rates. Annual ratios for 2012 through 2016 are given in Table 3. The surveys have maintained similar ratios throughout the years, ranging from 2.7 to 3.3. The deviation in driver share of the sample was less than 4 percentage points over the same time period.

Table 3: Driver Passenger Ratio, 2012 - 2016

	2012	2013	2014	2015	2016	Difference Baseline (2012) to Current Year
Ratio Drivers:Passengers	2.7:1	3.0:1	3.3:1	2.7:1	2.8:1	+0.1
Drivers as % of Sample	72.7%	74.7%	76.6%	73.0%	73.8%	+1.1

County Results

Rates can vary considerably from year-to-year at the county level. The changes can often represent sampling differences and are not likely to be statistically significant, especially for counties where there are few total observations. However, even the rates for counties with more observations may be volatile from year-to-year. Other factors such as road type (e.g. number of interstate sites) can also bias rates at the county level. To balance this variability, the 5-year average is mapped in Figure 3 to provide a representation of county rates.

5 YR AVERAGE
2012 - 2016

Roberts	83.7%
Brookings	81.6%
Lawrence	81.6%
Union	80.1%
Brown	79.8%
Codington	74.7%
Minnehaha	71.4%
Beadle	70.9%
Lincoln	70.3%
Pennington	69.1%
Custer	69.1%
Harding	68.8%
Corson	57.9%
Meade	57.8%
Hughes	56.8%
Oglala Lakota	52.5%
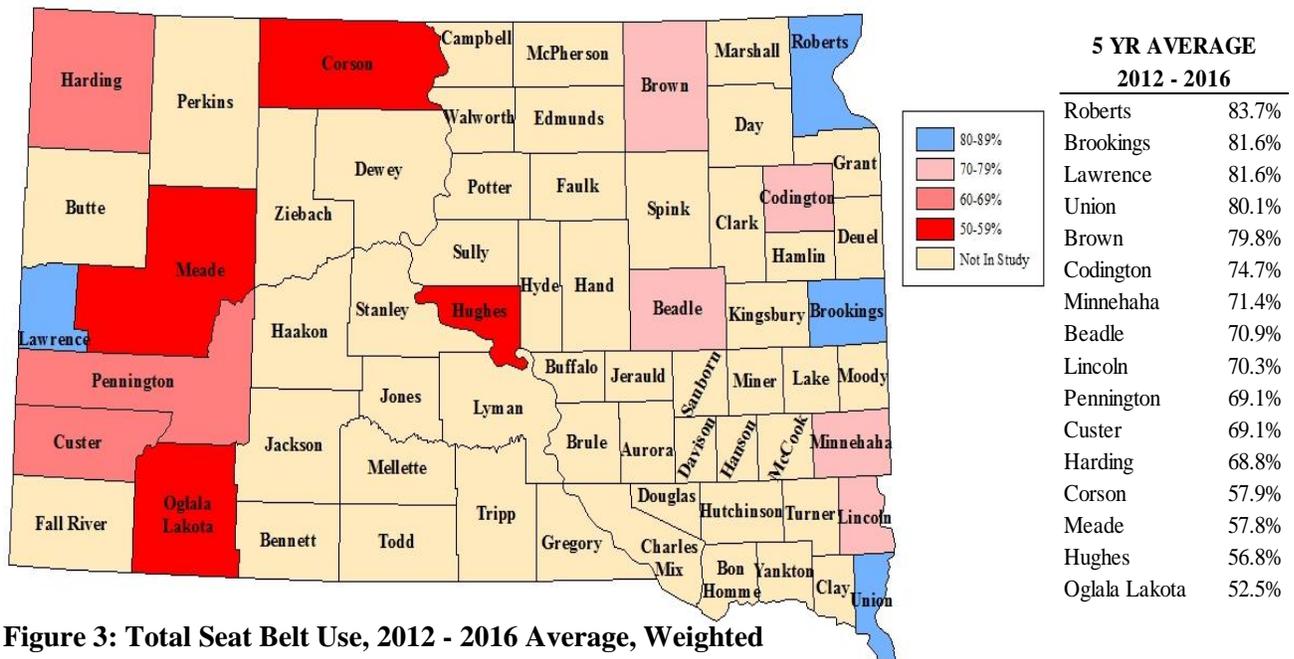
Figure 3: Total Seat Belt Use, 2012 - 2016 Average, Weighted

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Weighted seat belt use rates identify Roberts, Brookings, Lawrence, and Union counties with use above 80%. Occupant use of less than 70% was found in seven of the eight sample counties located in the western half of the state. Lawrence County was the only exception in the west with a rate of 81.6%. Corson, Hughes, Meade and Oglala Lakota[1] counties were all shown to lag well behind the national seat belt rate by more than 30 percentage points with use ranging between 52.5% and 57.9%.

Figure 4 identifies three-year rolling averages for trend comparison. Twelve of 16 surveyed counties increased belt use in the 2014 – 2016 time period with a sizeble increase noticed in Harding County from 57.7% to 72.0%. In this breakdown, Lawrence County showed the highest use at 86.1%, and Oglala Lakota County the lowest at 55.7%. The current three-year average shows a decline in occupant belt use in Brown, Codington, Corson and Roberts counties. Individual 2016 rates are provided in the frequencies in Appendix C.
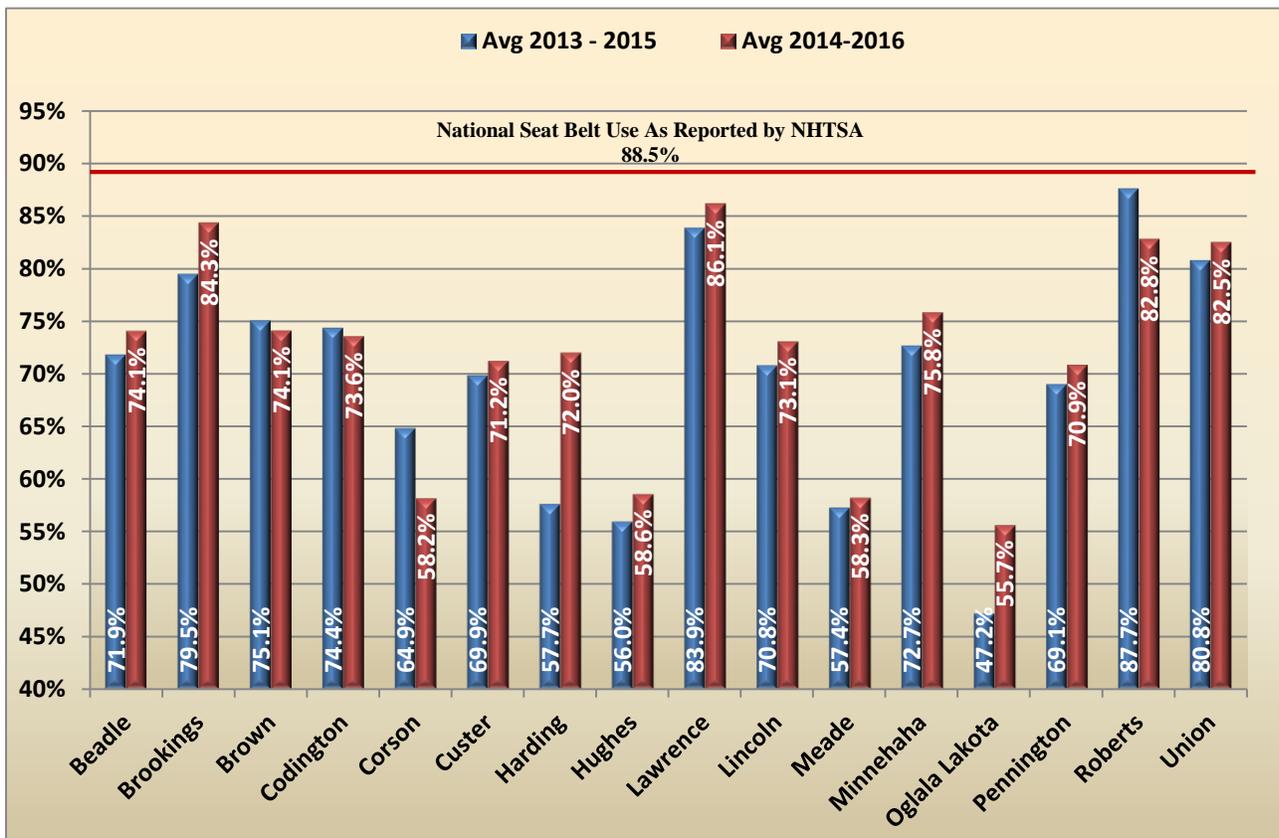
Figure 4: Seat Belt Use by County, 3-Year Averages, Weighted

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[1] Oglala Lakota formerly Shannon County

Results for Vehicle Occupants

The unweighted estimates of seat belt use were 74.3% for drivers, 81.0% for passengers, with an overall estimate of seat belt use of 76.1% for drivers and passengers combined (Figure 5). These rates effectively mirrored 2015 rates. Since 2012 driver rates rose from 66.7% to 74.3%, and passenger rates rose from 74.2% to 81.0%.

	2012	2013	2014	2015	2016
Drivers	66.7%	70.0%	69.1%	74.3%	74.3%
Passengers	74.2%	76.6%	78.1%	80.5%	81.0%
Overall	68.8%	71.6%	71.2%	76.0%	76.1%
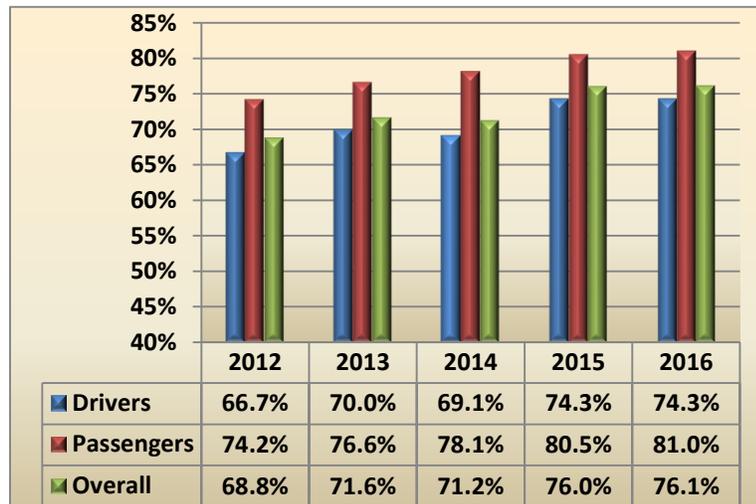
Figure 5: Percent Belted by Vehicle Occupant, Unweighted

Seat belt use by county and occupant position is mapped in Figures 6 and 7 using a five-year average. No counties were shown to have driver use above 80%. The highest average for drivers was seen in Brookings and Union counties, both at 78.9%. This was followed closely by Lawrence County, 78.2%. Half of the counties demonstrated driver use less than 70% with only two of those counties in the eastern part of the state, Minnehaha and Lincoln. The other six counties with that level of use were situated in the west. Corson and Oglala Lakota counties showed the lowest driver use of 60.6% and 59.0%, respectively.
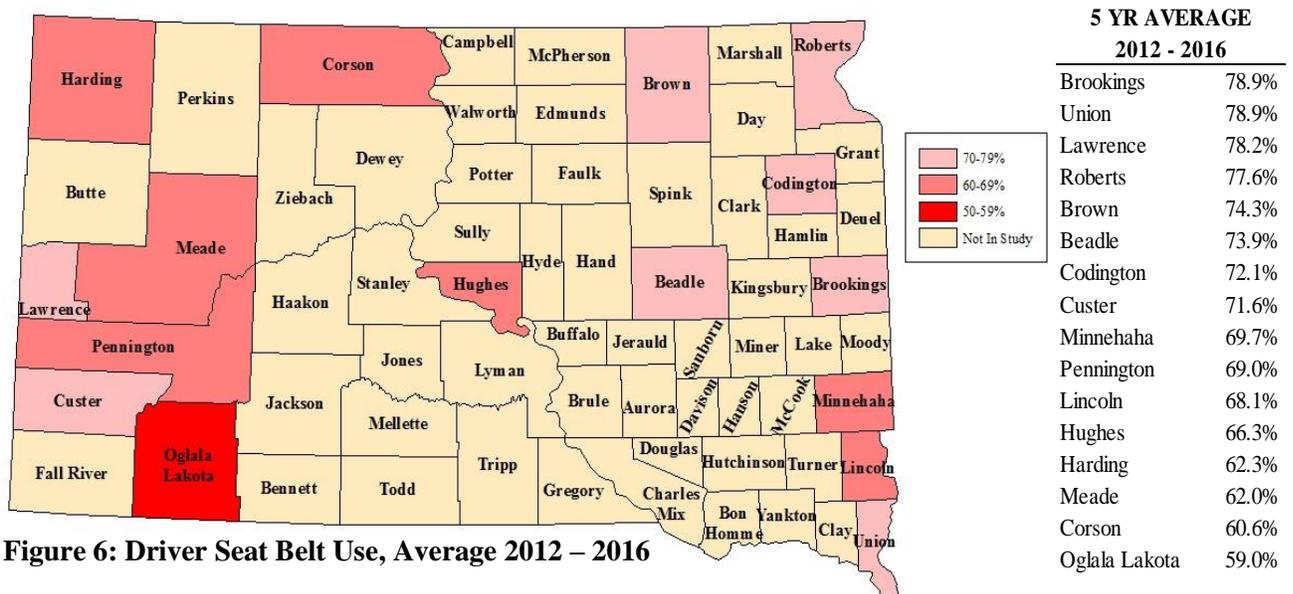
Figure 6: Driver Seat Belt Use, Average 2012 – 2016

5 YR AVERAGE 2012 - 2016	
Brookings	78.9%
Union	78.9%
Lawrence	78.2%
Roberts	77.6%
Brown	74.3%
Beadle	73.9%
Codington	72.1%
Custer	71.6%
Minnehaha	69.7%
Pennington	69.0%
Lincoln	68.1%
Hughes	66.3%
Harding	62.3%
Meade	62.0%
Corson	60.6%
Oglala Lakota	59.0%

Passenger seat belt use typically outpaces driver use and this was the case in all of the surveyed counties with the exception of Oglala Lakota which had average passenger use of 51.9% compared to driver use of 59.0% (Figure 7). Passenger rates ranged from a low of 51.9% in Oglala Lakota to a high of 90.1% in Lawrence.

5 YR AVERAGE 2012 - 2016	
Lawrence	90.1%
Roberts	88.6%
Brookings	87.3%
Brown	84.3%
Union	83.4%
Beadle	82.0%
Codington	81.4%
Custer	78.0%
Lincoln	73.8%
Minnehaha	73.5%
Harding	70.7%
Pennington	70.5%
Hughes	69.9%
Meade	69.7%
Corson	63.9%
Oglala Lakota	51.9%
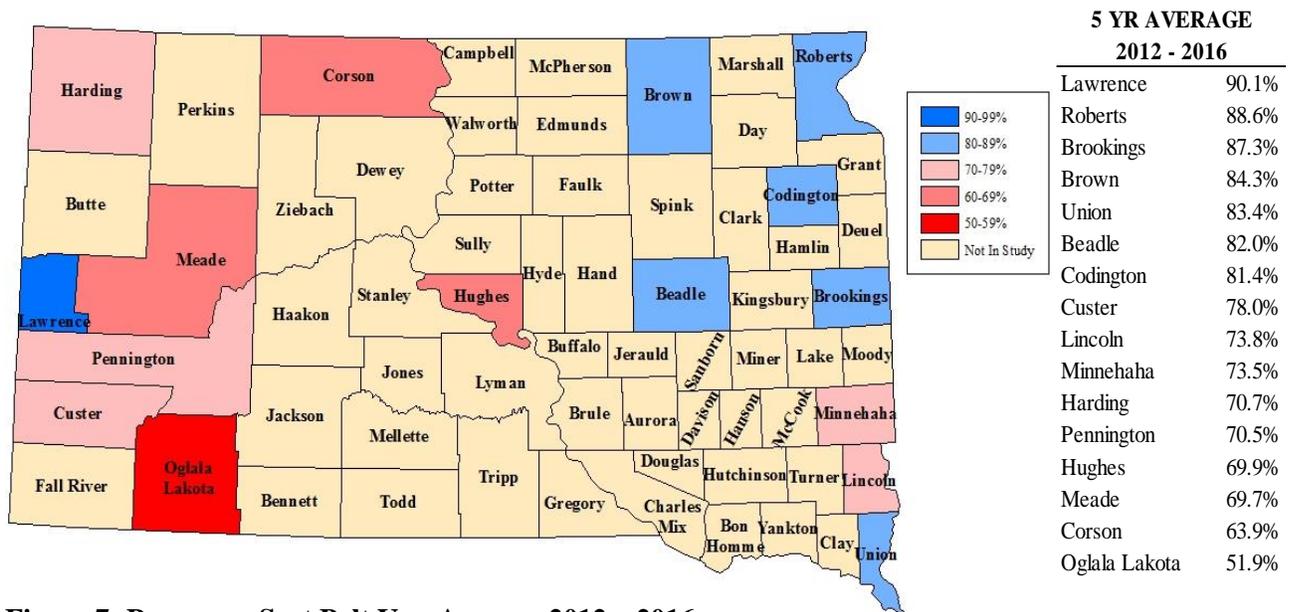
Figure 7: Passenger Seat Belt Use, Average 2012 – 2016

Efforts to address seat belt use in South Dakota are ongoing. The weighted rate of 74.2% realized this year is lower than the national average of 88.5% (2015) reported by NHTSA. Experiences from other states suggest 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 heightened education and/or enforcement.

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 survey sampling methodology groups the state into east and west regions. Both east and west regions contain "certainty" counties and additional counties selected from the remaining counties in each region

for a total of eight counties.[2] Counties in the west yielded more observations in 2016, following a historical pattern. However, the separation in share between regions has become less pronounced since 2012 (Figure 8). In the 2016 survey, there were 15,192 records collected in the west and 14,654 in the east for a 50.9% and 49.1% share, respectively.

Figure 9 shows that seat belt use continued to be higher in the east than the west, 79.8% compared to 72.4%. A steady increase in seat belt use by
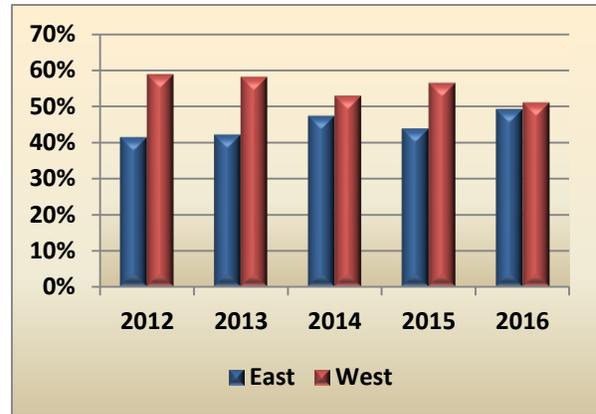
Figure 8: Percent of Sample by Region
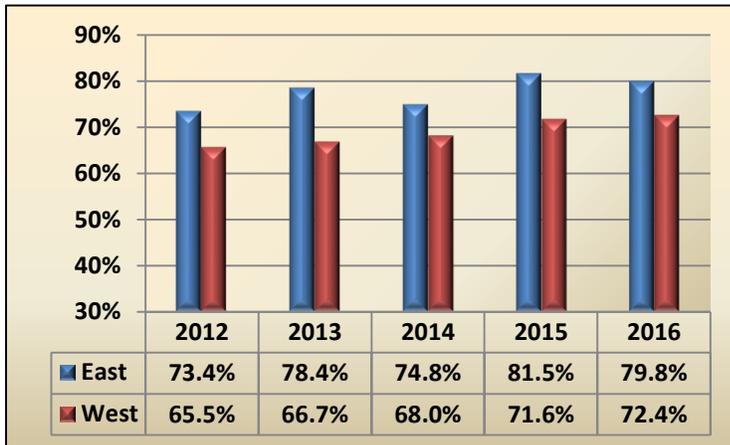
occupants in the west has been observed in the last five years, from 65.5% in 2012 to 72.4% currently. Rates in the east have shown less consistent movement annually. However, the 2016 rate of 79.8% was above the five-year average of 77.6%.

	2012	2013	2014	2015	2016
East	73.4%	78.4%	74.8%	81.5%	79.8%
West	65.5%	66.7%	68.0%	71.6%	72.4%

Figure 9: Percent Belted by Region, Unweighted

Results by Vehicle Type

Beginning with the 2012 statewide seat belt survey, South Dakota incorporated the expanded Uniform Criteria vehicle eligibility to define a fleet that included 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 truck observations are included in the "pickup" category to prevent confusion with larger truck activity.

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

Figure 10: Composition of Sample by Vehicle Type
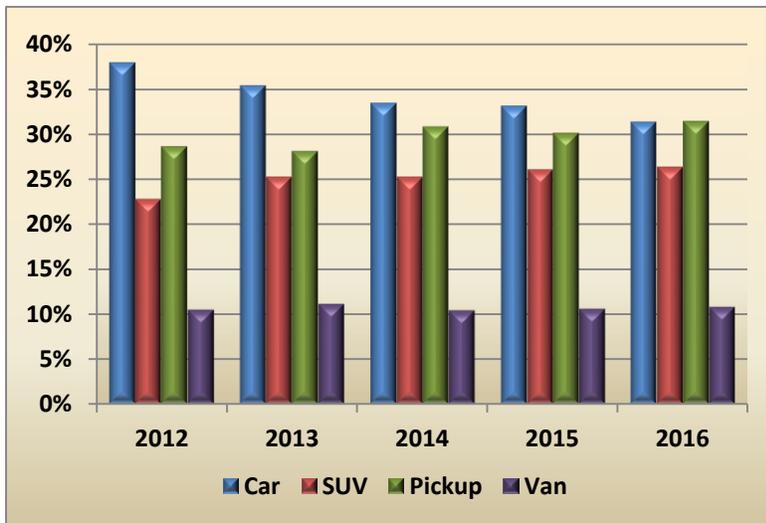
In general, fleet distribution in the 2016 sample was consistent with previous survey years with only marginal variations in share noticed. Cars and pickups held an equal share of 31.4% in this year's survey. There has traditionally been a larger share of cars than other vehicle types, but the share has decreased from 38.0% in 2012 to the current share of 31.4% (Figure 10).

The results for overall seat belt use by vehicle type are shown in Figure 11. Van occupants were observed to be belted at a rate of 81.7%, followed by occupants of SUVs (81.0%), cars (75.5%), and pickups (70.5%). Belt use by pickup occupants showed a 20% increase in 2016 over a low of 58.6% demonstrated in 2012, and rose above

	Van	SUV	Car	Pickup
2012	79.1%	75.8%	69.3%	58.6%
2013	80.3%	77.3%	72.3%	62.3%
2014	79.7%	76.4%	72.0%	63.2%
2015	83.4%	81.4%	75.5%	69.1%
2016	81.7%	81.0%	75.5%	70.5%
5 Yr Avg	80.8%	78.4%	72.9%	64.7%
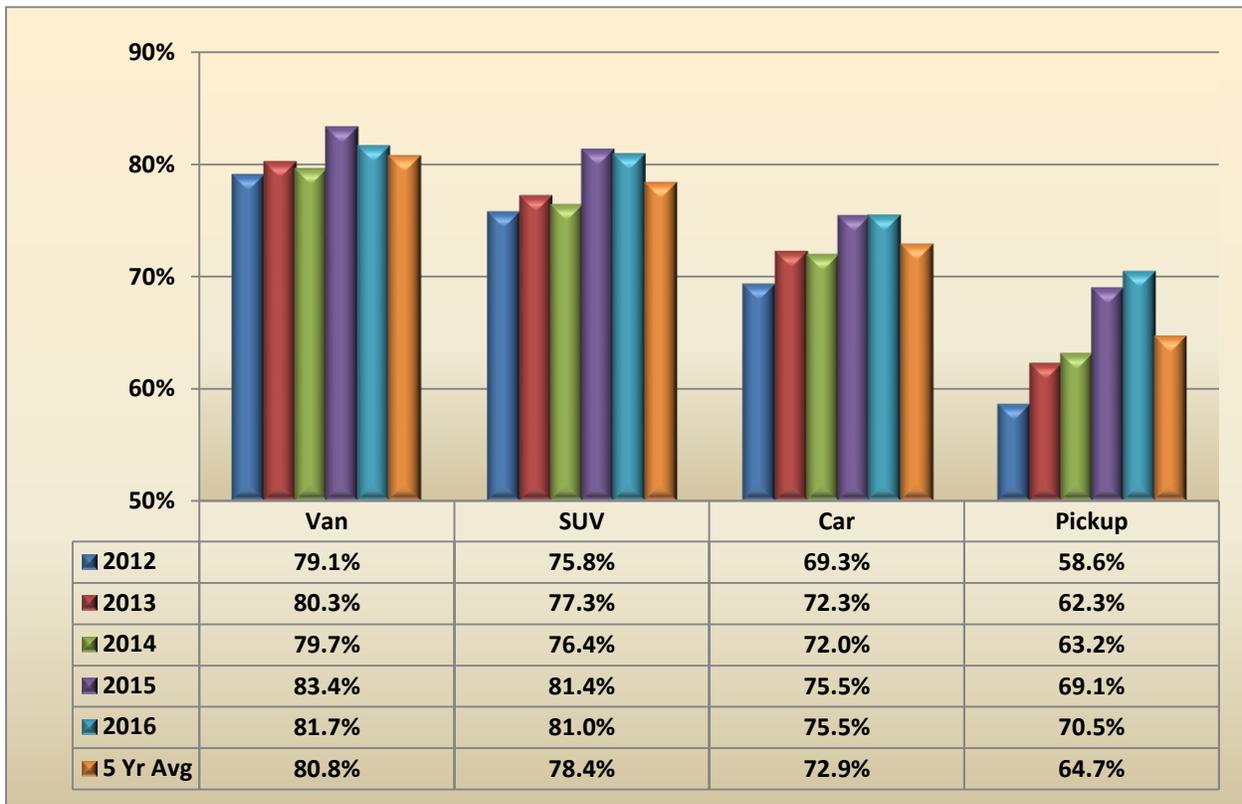
Figure 11: Percent Belted by Vehicle Type for All Occupants, Unweighted

70% for the first time in five years. Even though this group was identified as having the largest increase in use, the five-year average shows a rate of 64.7% which continues to be considerably lower than the rates in other vehicle types. Pickup occupants typically demonstrate lower seat belt use and this use rate, coupled with its share of the sample, can suppress the overall state rate. These 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 proportion of pickup trucks.

Maps detailing average seat belt use from 2012 – 2016 by vehicle type and county are found in Figures 12 through 15. Lawrence, Roberts, and Union counties were the highest users in cars and vans, ranging from 83.0% to 84.8% in cars, and 89.0% to 90.1% in vans, and were among the highest users in SUVs. Use by vehicle occupants in Oglala Lakota was low over this time period with a rate of 49.7% in cars, and with both van and SUV occupant use at 60.6%. Four counties in the western half of the state exhibited pickup occupants' use below 60% including both Corson and Pennington at 55.9%, followed by Oglala Lakota (54.7%), Hughes (54.4%), and Meade (51.5%). Generally vehicle occupants demonstrated belt use at higher rates in the east than the west region irrespective of vehicle type. However, Lawrence County was the exception from the west exhibiting some of the highest rates of use among the vehicle types.
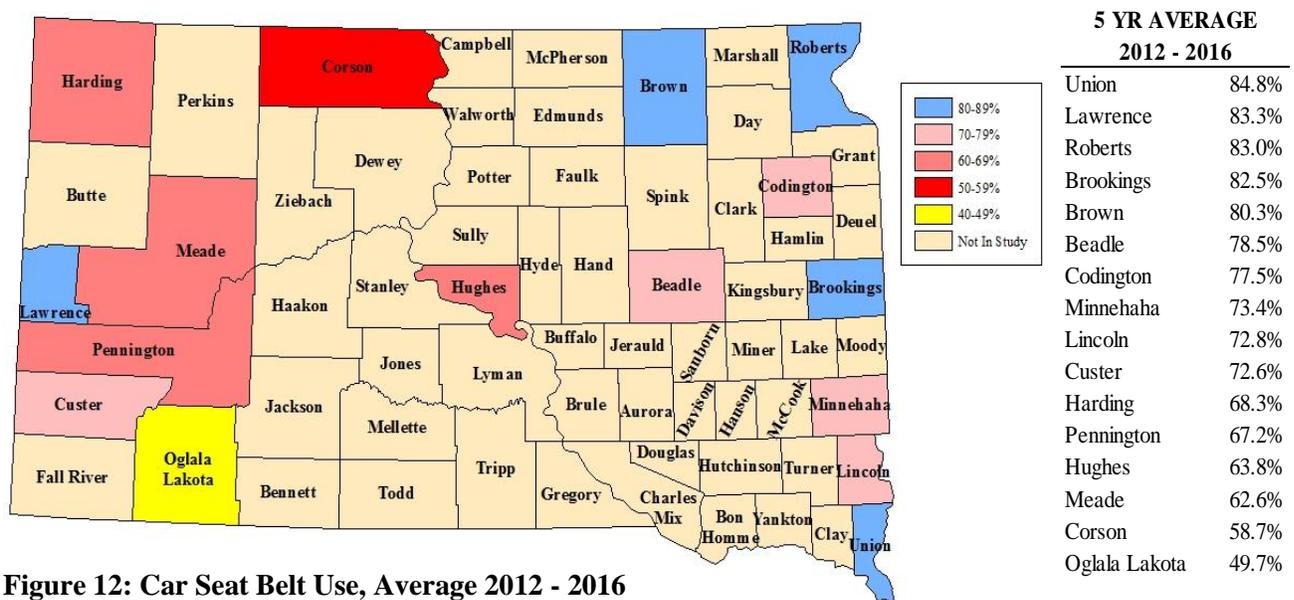
Figure 12: Car Seat Belt Use, Average 2012 - 2016

5 YR AVERAGE 2012 - 2016	
Union	84.8%
Lawrence	83.3%
Roberts	83.0%
Brookings	82.5%
Brown	80.3%
Beadle	78.5%
Codington	77.5%
Minnehaha	73.4%
Lincoln	72.8%
Custer	72.6%
Harding	68.3%
Pennington	67.2%
Hughes	63.8%
Meade	62.6%
Corson	58.7%
Oglala Lakota	49.7%
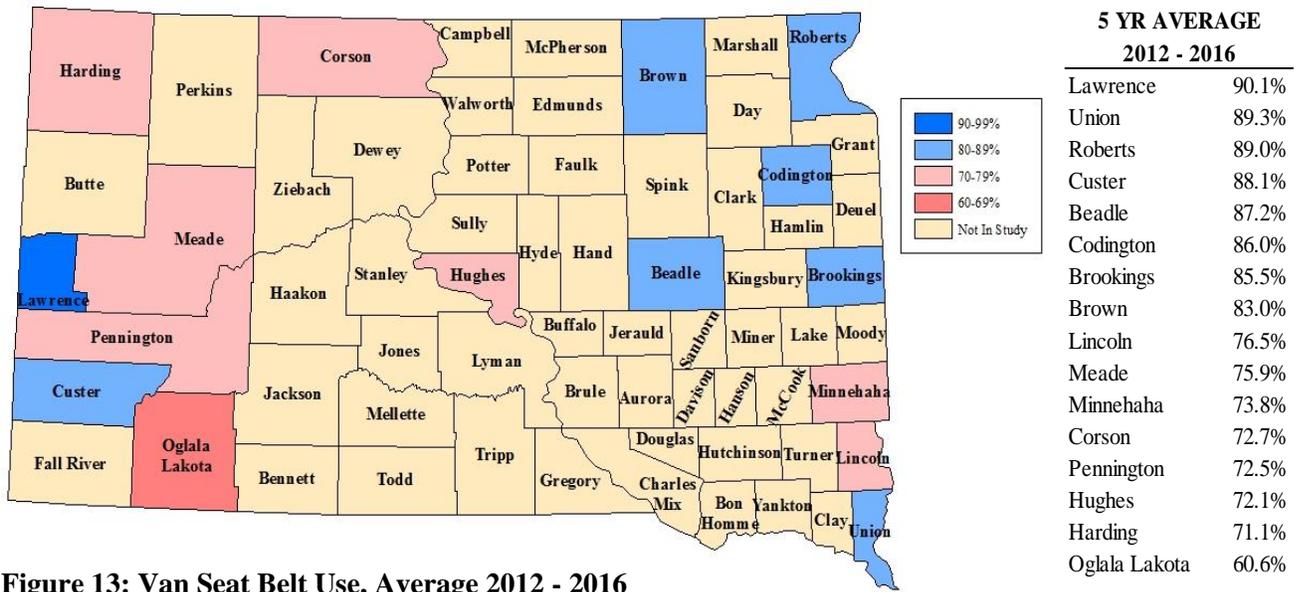
Figure 13: Van Seat Belt Use, Average 2012 - 2016

5 YR AVERAGE 2012 - 2016	
Lawrence	90.1%
Union	89.3%
Roberts	89.0%
Custer	88.1%
Beadle	87.2%
Codington	86.0%
Brookings	85.5%
Brown	83.0%
Lincoln	76.5%
Meade	75.9%
Minnehaha	73.8%
Corson	72.7%
Pennington	72.5%
Hughes	72.1%
Harding	71.1%
Oglala Lakota	60.6%
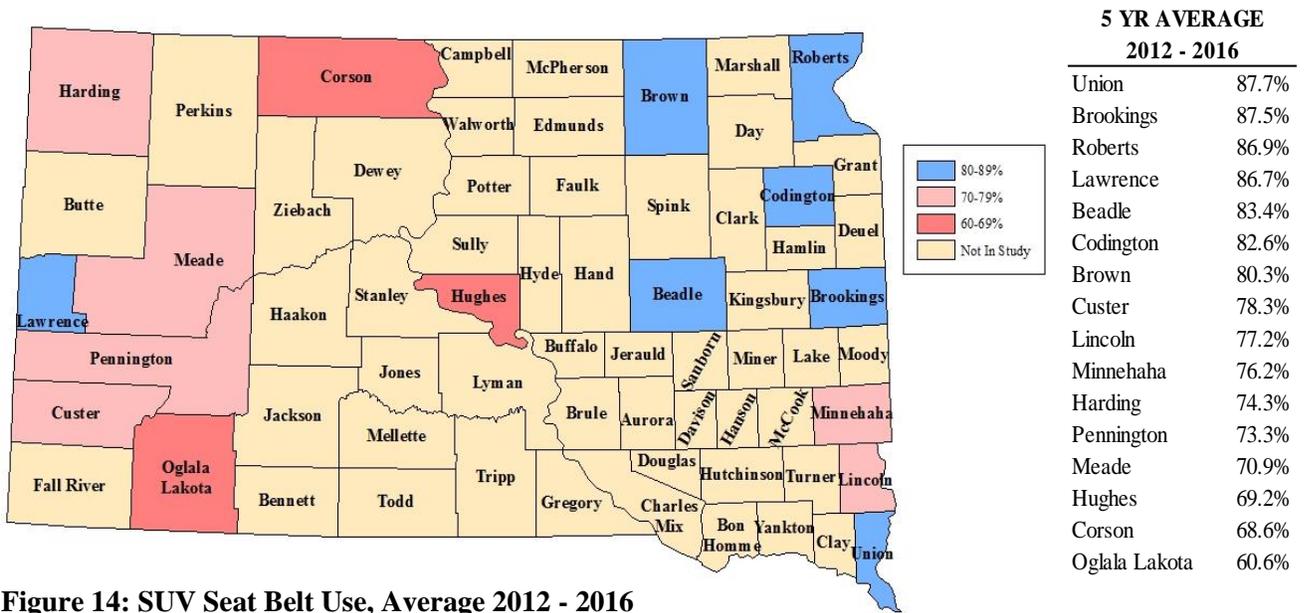
Figure 14: SUV Seat Belt Use, Average 2012 - 2016

5 YR AVERAGE 2012 - 2016	
Union	87.7%
Brookings	87.5%
Roberts	86.9%
Lawrence	86.7%
Beadle	83.4%
Codington	82.6%
Brown	80.3%
Custer	78.3%
Lincoln	77.2%
Minnehaha	76.2%
Harding	74.3%
Pennington	73.3%
Meade	70.9%
Hughes	69.2%
Corson	68.6%
Oglala Lakota	60.6%
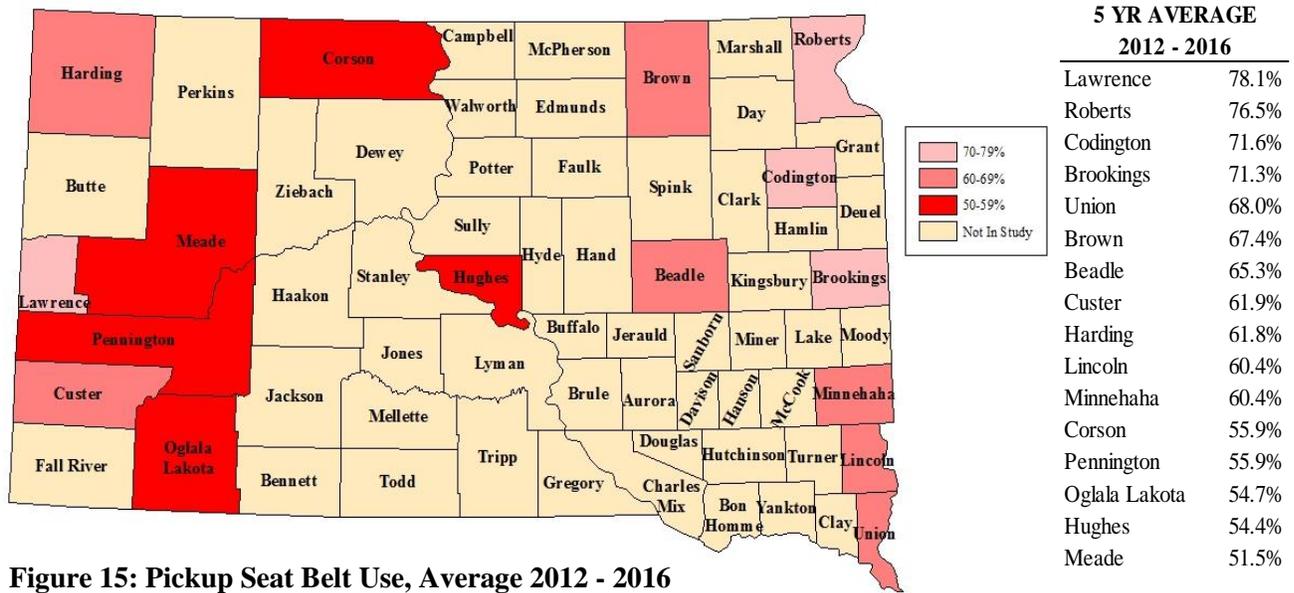
Figure 15: Pickup Seat Belt Use, Average 2012 - 2016

5 YR AVERAGE 2012 - 2016	
Lawrence	78.1%
Roberts	76.5%
Codington	71.6%
Brookings	71.3%
Union	68.0%
Brown	67.4%
Beadle	65.3%
Custer	61.9%
Harding	61.8%
Lincoln	60.4%
Minnehaha	60.4%
Corson	55.9%
Pennington	55.9%
Oglala Lakota	54.7%
Hughes	54.4%
Meade	51.5%

Results by Gender and Seat Belt Use

There is minimal year-to-year variation in sample composition when defined by occupant position and gender (Figure 16). Overall, males represented 55.6% and females 44.2% of the 2016 sample. When considering occupant position, drivers were roughly twice as likely to be male than female, but were only half the representation in the passenger demographic. In a small percentage of observations, 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 16: Percent of Sample by Gender and Vehicle Occupant

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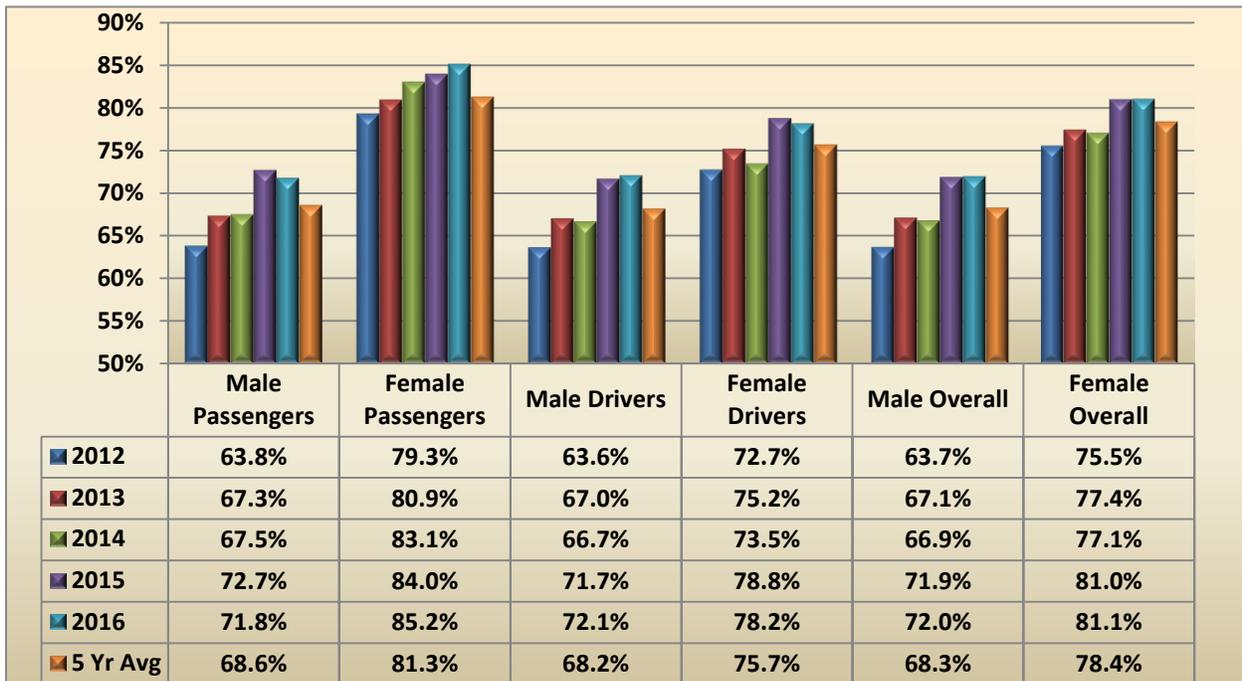
Figure 17: Percent Belted by Gender and Vehicle Occupant

	Male Passengers	Female Passengers	Male Drivers	Female Drivers	Male Overall	Female Overall
2012	63.8%	79.3%	63.6%	72.7%	63.7%	75.5%
2013	67.3%	80.9%	67.0%	75.2%	67.1%	77.4%
2014	67.5%	83.1%	66.7%	73.5%	66.9%	77.1%
2015	72.7%	84.0%	71.7%	78.8%	71.9%	81.0%
2016	71.8%	85.2%	72.1%	78.2%	72.0%	81.1%
5 Yr Avg	68.6%	81.3%	68.2%	75.7%	68.3%	78.4%

Females, regardless of occupant position, consistently demonstrated higher seat belt use than males (Figure 17). In 2016, female passengers led seat belt use with a rate of 85.2% followed by female driver use of 78.2%. A greater disparity is noted between female and male passengers (85.2% compared to 71.8%) than between female and male drivers (78.2% compared to 72.1%). Rates for male occupants in 2016 were comparable irrespective of position. Although the overall rates for both genders have shifted

5 YR AVERAGE
2012 - 2016

Roberts	89.9%
Lawrence	88.4%
Union	88.2%
Brookings	87.6%
Beadle	86.4%
Codington	82.8%
Brown	79.7%
Lincoln	78.3%
Custer	78.2%
Minnehaha	77.1%
Meade	72.1%
Pennington	72.1%
Harding	71.7%
Hughes	69.6%
Corson	67.8%
Oglala Lakota	56.5%

80-89%
70-79%
60-69%
50-59%
Not In Study
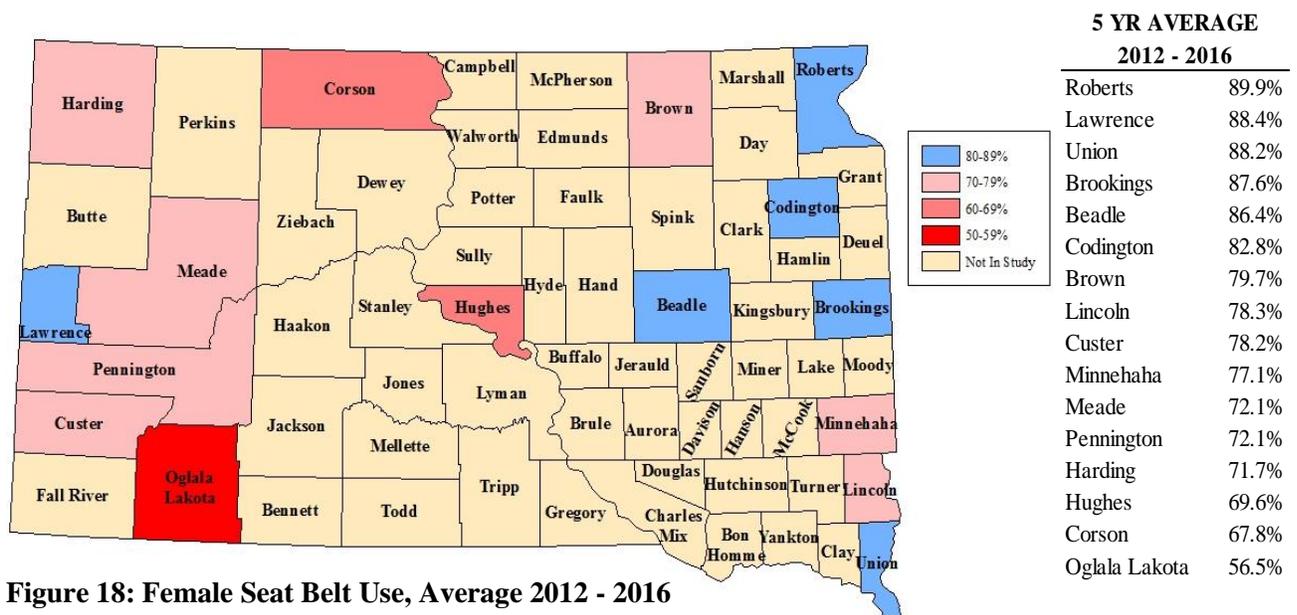
Figure 18: Female Seat Belt Use, Average 2012 - 2016

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upward over the time frame shown, the five-year average for male drivers is low at 68.2% and the passenger rate only slightly higher at 68.6%. The average for female drivers is 75.7%, while female passengers is 81.3% over the five-year period.

Seat belt use by gender and county is mapped in Figures 18 and 19. Brookings, Lawrence, Roberts, and Union counties, represented by five year averages, were belted at the highest rates for both genders although the male threshold is 79.3% while the female is 89.9%. Male belt use was less than 70% in about two-thirds of counties with four of those counties between 53.6% and 57.2%. Oglala Lakota County demonstrated the lowest rates for both female and male occupants, 56.5% and 53.6%, respectively. By and large, seat belt use was higher in the eastern half of the state for both males and females.

5 YR AVERAGE 2012 - 2016	
Lawrence	79.3%
Roberts	77.1%
Brookings	76.1%
Union	75.5%
Codington	74.6%
Brown	73.6%
Custer	69.4%
Beadle	69.2%
Minnehaha	66.5%
Lincoln	65.2%
Harding	64.6%
Pennington	62.4%
Hughes	57.2%
Corson	56.1%
Meade	54.7%
Oglala Lakota	53.6%
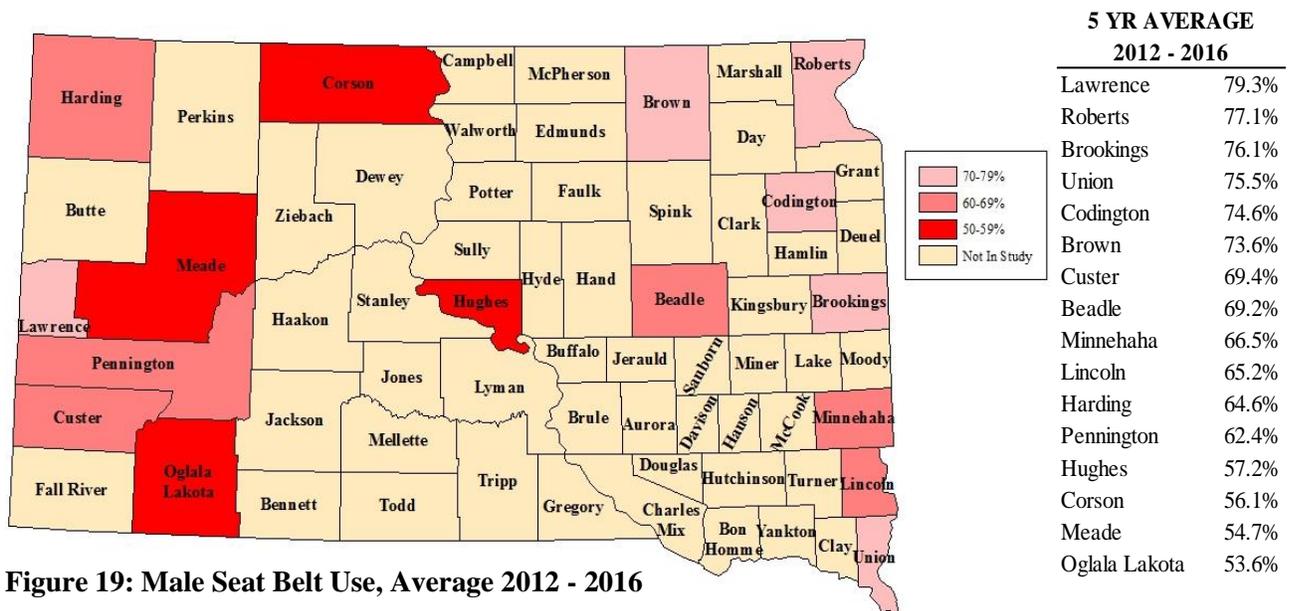
Figure 19: Male Seat Belt Use, Average 2012 - 2016

Results by Gender and Vehicle Type

When considering the data without respect to the driver/passenger demographic, females had higher representation in three of the four vehicle types (Figure 20). The gender share was comparable in cars, SUVs, and vans, but a large disparity existed in pickup occupants where males outnumbered females by a ratio of approximately 3 to 1.

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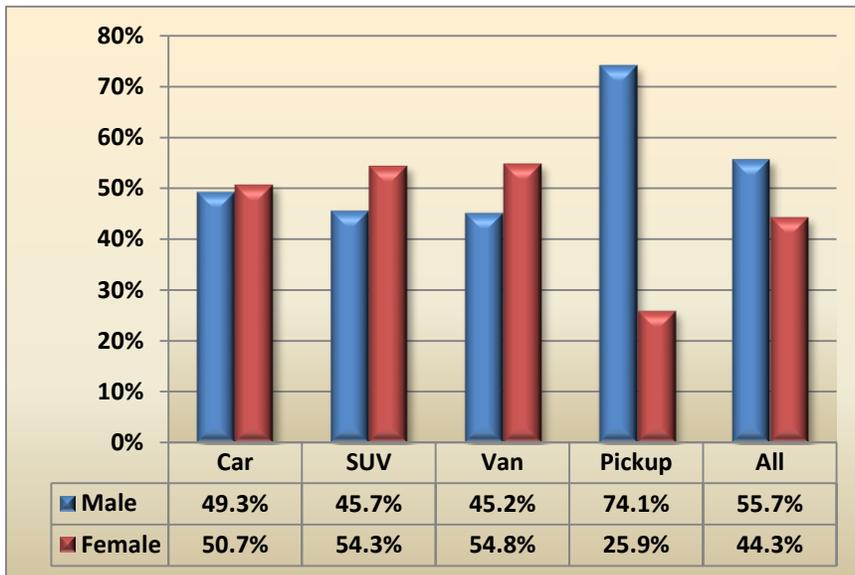
Figure 20: Percent of Sample by Gender & Vehicle Type, 2016

	Car	SUV	Van	Pickup	All
Male	49.3%	45.7%	45.2%	74.1%	55.7%
Female	50.7%	54.3%	54.8%	25.9%	44.3%

Although the size of the disparity in seat belt use by gender varied across the vehicle types, the five-year average shows females consistently buckled up with greater frequency than males (Figure 21) irrespective of vehicle type. Female use was observed to range from 75.5% (pickups) to 83.6% (vans) while male use ranged from 61.5% (pickups) to 77.7% (vans). The difference in gender use was most noticeable in pickups with 75.5% of females using seat belts compared to 61.5% of males. Although observed seat belt use was lowest in pickups, note that rates for both genders in this vehicle type have improved the most of any vehicle type since 2012 (Table 4). Male occupants in pickups have improved from a low of 55.5% in 2012 to a high of 67.1% in 2016. Female rates in pickups ranged from 69.5% in 2012 to 80.1% in 2016.

	Car	SUV	Van	Pickup
Male	70.1%	75.0%	77.7%	61.5%
Female	75.6%	81.3%	83.6%	75.5%
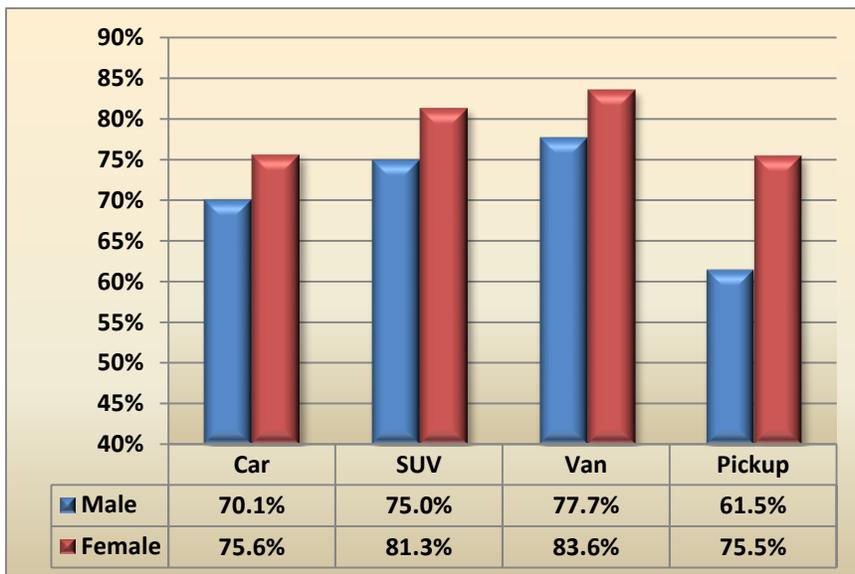
Figure 21: Percent Belted by Gender and Vehicle Type, Average 2012 - 2016

Table 4: Annual Rates by Gender & Vehicle Type

Male	2012	2013	2014	2015	2016
Car	65.0%	70.6%	69.3%	73.1%	72.7%
SUV	73.2%	73.5%	73.1%	77.9%	77.1%
Van	74.2%	76.0%	77.1%	80.5%	80.7%
Pickup	55.5%	58.7%	60.0%	66.1%	67.1%
Female	2012	2013	2014	2015	2016
Car	73.6%	74.0%	74.5%	77.6%	78.1%
SUV	78.2%	80.4%	79.4%	84.3%	84.3%
Van	83.7%	84.0%	82.1%	85.9%	82.4%
Pickup	69.5%	74.3%	74.9%	78.8%	80.1%

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 the U.S./State/County highway system
- Local neighborhood road/rural road/city street – paved, non-arterial streets

	Primary	Secondary	Local
East	16.0%	27.0%	6.1%
West	8.2%	35.6%	7.1%
Total	24.2%	62.6%	13.3%
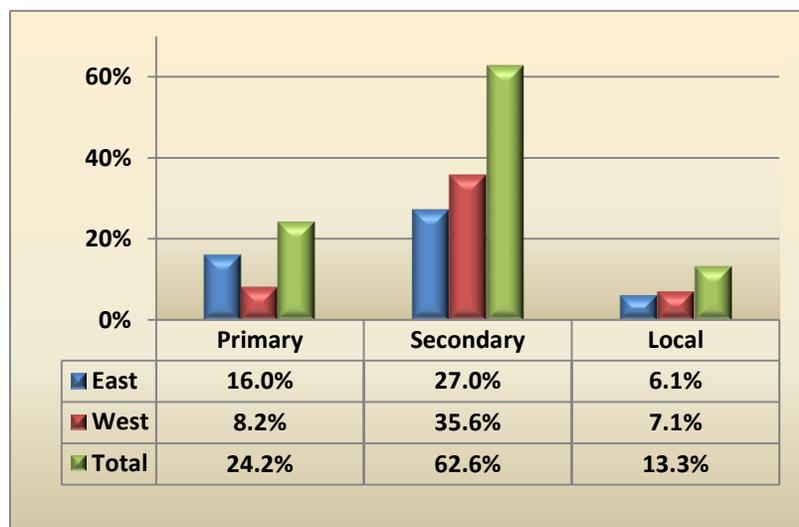
Figure 22: Percent of Sample by Roadway Type, 2016

Comprehensive definitions of road type are provided in Appendix F. In the 2016 survey, primary, secondary and local roadways accounted for 24.2%, 62.6%, and 13.3% of the vehicle occupants, respectively (Figure 22).

Differences in rates of seat belt use were found across the road types. Predictably, vehicle occupants on primary (interstate/divided) roads

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were belted at considerably higher rates in both regions than those on secondary and local roads (Figure 23). The statewide seat belt rate can be negatively influenced when considering the large sample share

represented by secondary roads in conjunction with the lower use on this road type, e.g. 69.8% average 2012 – 2016 belt use. Occupants on local roads show the lowest overall use of 65.3%, and also reflect the largest separation between eastern and western counties with rates of 72.1% and 58.5%, respectively.

	Primary	Secondary	Local
East	84.6%	75.6%	72.1%
West	86.3%	66.0%	58.5%
Total	85.2%	69.8%	65.3%

Figure 23: Seat Belt Use by Roadway Type, Average 2012 - 2016

Annual seat belt use stratified by region and roadway (Table 5) shows use on primary roads in the east region ranging between 81.7% and 87.3% throughout the five years, whereas a broader range is seen in the west region, 76.8% to 91.4%. Use on local roads in the west is consistently low, less than 60% in each of the five years.

Table 5: Annual Rates By Region & Road Type

EAST	2012	2013	2014	2015	2016
Primary	81.7%	87.3%	84.2%	86.9%	83.1%
Secondary	72.0%	77.4%	69.1%	80.7%	78.9%
Local	66.5%	72.4%	72.3%	74.2%	75.1%
WEST	2012	2013	2014	2015	2016
Primary	76.8%	89.4%	87.4%	86.7%	91.4%
Secondary	63.7%	60.2%	65.6%	69.7%	70.8%
Local	59.3%	59.3%	56.7%	58.4%	58.6%
TOTAL	2012	2013	2014	2015	2016
Primary	79.2%	88.6%	85.4%	86.9%	85.9%
Secondary	66.7%	67.2%	66.9%	73.9%	74.3%
Local	62.8%	65.7%	65.0%	66.4%	66.4%

SUMMARY

Observers collected data on seat belt use for 22,034 drivers and 7,812 right front-seat passengers, for a total of 29,846 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 74.2%. Experiences from other states 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 from the 2016 survey regarding seat belt use in South Dakota are:

- **County.** Applying a five-year average to measure county seat belt use shows rates above 80% in four of the sixteen counties surveyed. The highest use was observed in Roberts County at 83.7%. Brookings and Lawrence counties both registered use of 81.6% and Union at 80.1%. There were also four counties that registered seat belt use of less than 60% - Corson (57.9%), Meade (57.8%), Hughes (56.8%), and Oglala Lakota (52.5%). Seat belt use improved in three-fourths of the sample counties when assessed using the three-year rolling average.

- **Vehicle Occupant.** Driver seat belt use was 74.3% and passengers use was 81.0% statewide. At the county level, Brookings and Union had the highest use at 78.9%, followed closely by Lawrence at 78.2%. Fifty percent of the counties in the sample registered driver use less than 70%. Passenger use ranged from a high in Lawrence County of 90.1% to a low in Oglala Lakota of 51.9%. Passenger use was lower than driver use in Oglala Lakota which is contrary to the averages found in the other counties.

- **Region.** Overall rates of seat belt use in 2016 were higher in the east region, 79.8%, compared to 72.4% in the west. This regional disparity has been identified annually throughout the 2012 – 2016 time frame. Note that rates in the west have steadily trended upwards each year from a low of 65.5% in 2012. While rates in the east have exhibited almost the same raw percent increase from 2012 to 2016, the yearly rates are more variable.

- **Vehicle Type.** The results of the 2016 statewide survey indicate that rates of seat belt use were highest in vans and SUVs, 81.7% and 81.0%, respectively. Use among pickup occupants was lowest of the vehicle types. This group has shown continual improvement over the five years examined, however the five-year average is low at 64.7%. Seat belt use among pickup occupants continues to have a negative effect on the overall rate in South Dakota because of the share of the

sample, 31.4%, combined with low use, 70.5%. Male occupants in pickups were belted at 67.1% in 2016, with an average of 61.5% from 2012 - 2016.

- **Gender.** Females consistently have higher rates of use when compared to males not only in South Dakota, but across the nation. In the 2016 survey, female occupants were observed to have belt use of 81.1%, compared to male occupants with 72.0%. Higher rates were typical for females whether they were drivers or passengers. Mapping of five-year averages show a greater concentration of counties in the east region with higher seat belt use by both genders.

- **Gender and Vehicle Type.** Females had higher rates of seat belt use than males for every vehicle type. Van occupants showed the highest use for both males and females with five-year averages of 77.7% and 83.6, respectively. The lowest average use for both genders was found in pickups with male use at 61.5% and female use at 75.5%.

- **Road Type.** Secondary roads held the largest share of occupants in the sample, 62.6%, with primary and local roads representing smaller shares, 24.2% and 13.3%, respectively. Five-year average seat belt use was highest on primary roads, 85.2%, followed by secondary roads, 69.8%, and local roads, 65.3%. Use on primary roads was high in both the east and west regions, whereas use on secondary and local roads in the west was noticeably lower than the corresponding road types in the east.

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

*Site accessibility problems due to road construction. Temporary alternate sites approved following Federal guidelines.

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

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

OGLALA LAKOTA 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

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

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 2016

Estimated Seat Belt Use by County - 2012 to 2016 (*Weighted* Percent)

Annual Seat Belt Use by County								
Weighted Seat Belt Rate	2012	2013	2014	2015	2016	Avg 2013 - 2015	Avg 2014- 2016	Percentage Point Change: Current 3 Yrs vs Prev 3 Yrs
State Total	66.5%	68.7%	68.9%	73.6%	74.2%	70.4%	72.2%	1.8
Beadle	64.2%	68.1%	74.2%	73.2%	74.8%	71.9%	74.1%	2.2
Brookings	82.6%	72.4%	83.6%	82.6%	86.9%	79.5%	84.3%	4.8
Brown	91.7%	85.1%	63.8%	76.3%	82.2%	75.1%	74.1%	-1.0
Codington	70.8%	82.1%	57.7%	83.5%	79.5%	74.4%	73.6%	-0.9
Corson	47.1%	67.8%	64.4%	62.5%	47.8%	64.9%	58.2%	-6.7
Custer	67.9%	64.0%	72.9%	72.8%	68.0%	69.9%	71.2%	1.3
Harding	78.8%	49.3%	50.4%	73.3%	92.4%	57.7%	72.0%	14.3
Hughes	48.4%	59.9%	58.7%	49.4%	67.8%	56.0%	58.6%	2.6
Lawrence	67.8%	81.5%	83.6%	86.6%	88.2%	83.9%	86.1%	2.2
Lincoln	64.1%	68.2%	68.4%	75.9%	74.9%	70.8%	73.1%	2.2
Meade	58.1%	56.2%	58.2%	57.6%	59.0%	57.4%	58.3%	0.9
Minnehaha	64.3%	65.2%	78.1%	74.8%	74.6%	72.7%	75.8%	3.1
Oglala Lakota	62.3%	33.4%	43.6%	64.7%	58.8%	47.2%	55.7%	8.5
Pennington	65.1%	67.9%	66.4%	73.0%	73.2%	69.1%	70.9%	1.8
Roberts	82.7%	87.6%	89.3%	86.1%	73.0%	87.7%	82.8%	-4.9
Union	67.6%	85.6%	79.9%	77.0%	90.5%	80.8%	82.5%	1.7

South Dakota Statewide Survey, June 2016

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

Occupant	Status	Estimate Percent	Unweighted Frequency		
Drivers	Belted	74.3%			
	Not Belted	25.7%			
	Total	100.0%	22,034		
				Ratio	2.8
Passengers	Belted	81.0%			
	Not Belted	19.0%			
	Total	100.0%	7,812		
All Occupants	Belted	76.1%			
	Not Belted	23.9%			
	Total	100.0%	29,846		

South Dakota Statewide Survey, June 2016

Seat Belt Use by Region

Region of State				
Occupant	**Status**	**East**	**West**	**Total**
Drivers	Belted	77.7%	70.9%	74.3%
	Not Belted	22.3%	29.1%	25.7%
	Count	10,983	11,051	22,034
Passengers	Belted	86.2%	76.5%	81.0%
	Not Belted	13.8%	23.5%	19.0%
	Count	3,671	4,141	7,812
All Occupants	Belted	79.8%	72.4%	76.1%
	Not Belted	20.2%	27.6%	23.9%
	Count	14,654	15,192	29,846

South Dakota Statewide Survey, June 2016

Summary of Seat Belt Use by Occupant Position, 2016

Note: Based on unweighted percentages

Occupants	Status	Beadle	Brookings	Brown	Codington	Corson	Custer	Harding	Hughes	Lawrence	Lincoln	Meade	Minnehaha	Pennington	Roberts	Shannon/ Oglala Lakota	Union	Total
																County		
Drivers	**Belted**	**78.7%**	**83.8%**	**75.1%**	**80.2%**	**50.5%**	**68.3%**	**86.1%**	**71.1%**	**88.3%**	**75.4%**	**59.2%**	**72.2%**	**67.7%**	**69.4%**	**63.0%**	**88.3%**	**74.3%**
	Not Belted	21.3%	16.3%	24.9%	19.8%	49.5%	31.7%	13.9%	28.9%	11.7%	24.6%	40.8%	27.8%	32.3%	30.6%	37.0%	11.7%	25.7%
	Count	1165	1680	1236	3136	469	1402	411	1733	2283	1255	1035	575	1749	1586	1969	350	22034
	% of Sample	3.9%	5.6%	4.1%	10.5%	1.6%	4.7%	1.4%	5.8%	7.6%	4.2%	3.5%	1.9%	5.9%	5.3%	6.6%	1.2%	73.8%
Passengers	**Belted**	**89.2%**	**92.3%**	**86.0%**	**89.3%**	**53.6%**	**75.3%**	**100.0%**	**86.3%**	**95.3%**	**74.2%**	**70.5%**	**68.0%**	**77.1%**	**77.2%**	**58.6%**	**94.8%**	**81.0%**
	Not Belted	10.8%	7.7%	14.0%	10.7%	46.4%	24.7%	0.0%	13.7%	4.7%	25.8%	29.5%	32.0%	22.9%	22.8%	41.4%	5.2%	19.0%
	Count	500	439	314	1451	179	681	114	300	1027	240	312	75	484	575	1044	77	7812
	% of Sample	1.7%	1.5%	1.1%	4.9%	0.6%	2.3%	0.4%	1.0%	3.4%	0.8%	1.0%	0.3%	1.6%	1.9%	3.5%	0.3%	26.2%
All Occupants	**Belted**	**81.9%**	**85.5%**	**77.3%**	**83.1%**	**51.4%**	**70.6%**	**89.1%**	**73.4%**	**90.5%**	**75.2%**	**61.8%**	**71.7%**	**69.7%**	**71.4%**	**61.5%**	**89.5%**	**76.1%**
	Not Belted	18.1%	14.5%	22.7%	16.9%	48.6%	29.4%	10.9%	26.6%	9.5%	24.8%	38.2%	28.3%	30.3%	28.6%	38.5%	10.5%	23.9%
	Count	1665	2119	1550	4587	648	2083	525	2033	3310	1495	1347	650	2233	2161	3013	427	29846
	% of Sample	5.6%	7.1%	5.2%	15.4%	2.2%	7.0%	1.8%	6.8%	11.1%	5.0%	4.5%	2.2%	7.5%	7.2%	10.1%	1.4%	100.0%

South Dakota Statewide Survey, June 2016

Summary of Seat Belt Use by Gender & Vehicle Type, 2016

Note: Based on unweighted percentages

Occupants	Status	County															
		Beadle	Brookings	Brown	Codington	Corson	Custer	Harding	Hughes	Lawrence	Lincoln	Meade	Minnehaha	Pennington	Roberts	Shannon/ Oglala Lakota	Union
Gender																	
Female	Belted	92.2%	91.7%	77.2%	86.1%	59.0%	75.2%	96.4%	85.3%	93.8%	82.5%	71.3%	71.7%	76.1%	76.2%	66.1%	92.0%
	% of Sample	2.3%	3.0%	2.6%	7.2%	0.9%	2.9%	0.7%	2.6%	4.6%	2.4%	2.0%	0.9%	3.4%	3.2%	5.1%	0.6%
Male	Belted	74.7%	80.9%	77.5%	80.5%	46.1%	67.5%	84.5%	65.5%	88.0%	68.3%	54.6%	71.6%	64.6%	67.7%	56.8%	87.4%
	% of Sample	3.3%	4.1%	2.5%	8.2%	1.3%	4.1%	1.1%	4.2%	6.5%	2.6%	2.6%	1.3%	4.1%	4.1%	5.0%	0.8%
Vehicle Type																	
Car	Belted	80.8%	88.8%	80.4%	80.8%	48.4%	69.9%	94.3%	78.4%	90.8%	78.3%	59.0%	74.2%	66.7%	66.2%	52.8%	90.6%
	% of Sample	1.3%	2.2%	1.7%	4.8%	0.6%	1.7%	0.4%	1.9%	4.6%	1.6%	1.2%	1.1%	2.5%	2.0%	3.3%	0.5%
SUV	Belted	89.4%	90.9%	77.8%	87.1%	60.2%	75.4%	93.4%	81.6%	88.6%	77.8%	70.0%	71.9%	79.0%	72.9%	73.9%	93.7%
	% of Sample	1.6%	2.1%	0.5%	4.5%	0.4%	2.4%	0.5%	1.6%	2.0%	1.7%	1.5%	0.3%	2.2%	2.3%	2.3%	0.5%
Pickup	Belted	73.6%	74.1%	74.2%	80.5%	47.2%	60.7%	81.7%	64.7%	89.9%	65.5%	52.2%	68.4%	59.3%	72.4%	59.2%	81.4%
	% of Sample	2.1%	2.1%	1.6%	4.6%	0.9%	2.1%	0.7%	2.8%	3.5%	1.2%	1.5%	0.6%	2.0%	2.1%	3.1%	0.3%
Van	Belted	95.1%	93.8%	76.8%	86.4%	59.7%	83.3%	98.0%	77.2%	94.8%	79.1%	81.1%	66.7%	80.6%	78.3%	67.4%	90.9%
	% of Sample	0.5%	0.7%	1.4%	1.5%	0.2%	0.8%	0.2%	0.5%	1.0%	0.5%	0.3%	0.1%	0.7%	0.8%	1.4%	0.1%

South Dakota Statewide Survey, June 2016

Seat Belt Use by Gender

Occupant	Status	Gender			Total
		Male	**Female**	**Unknown**	
Drivers	Belted	72.1%	78.2%	87.9%	74.3%
	Not Belted	27.9%	21.8%	12.1%	25.7%
	Count	14,133	7,868	33	22,034
Passengers	Belted	71.8%	85.2%	94.1%	81.0%
	Not Belted	28.2%	14.8%	5.9%	19.0%
	Count	2,465	5,330	17	7,812
All Occupants	Belted	72.0%	81.1%	90.0%	76.1%
	Not Belted	28.0%	18.9%	10.0%	23.9%
	Count	16,598	13,198	50	29,846

South Dakota Statewide Survey, June 2016

Male Seat Belt Use

Vehicle Type						
Occupant	**Status**	**Car**	**SUV**	**Van**	**Pickup**	**Total**
Male Drivers	Belted	72.9%	77.2%	80.2%	67.3%	72.1%
	Not Belted	27.1%	22.8%	19.8%	32.7%	27.9%
	Count	3,937	3,045	1,187	5,964	14,133
Male Passengers	Belted	71.6%	76.9%	82.8%	66.1%	71.8%
	Not Belted	28.4%	23.1%	17.2%	33.9%	28.2%
	Count	682	550	262	971	2,465
All Male Occupants	Belted	72.7%	77.1%	80.7%	67.1%	72.0%
	Not Belted	27.3%	22.9%	19.3%	32.9%	28.0%
	Count	4,619	3,595	1,449	6,935	16,598

South Dakota Statewide Survey, June 2016

Female Seat Belt Use Rate

	Vehicle Type					
Occupant	**Status**	**Car**	**SUV**	**Van**	**Pickup**	**Total**
Female Drivers	Belted	76.1%	82.2%	78.9%	74.1%	78.2%
	Not Belted	23.9%	17.8%	21.1%	25.9%	21.8%
	Count	3,047	2,675	1,001	1,145	7,868
Female Passengers	Belted	81.8%	87.8%	87.1%	85.6%	85.2%
	Not Belted	18.2%	12.2%	12.9%	14.4%	14.8%
	Count	1,694	1,603	757	1,276	5,330
All Female Occupants	Belted	78.1%	84.3%	82.4%	80.1%	81.1%
	Not Belted	21.9%	15.7%	17.6%	19.9%	18.9%
	Count	4,741	4,278	1,758	2,421	13,198

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, 2016

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.16364	0.29495	61	65	93.9%
2	0.15464	0.29495	62	76	81.6%
3	0.14926	0.29495	56	60	93.3%
4	0.13587	0.29495	86	95	90.5%
5	0.12151	0.29495	40	41	97.6%
6	0.10707	0.29495	71	83	85.5%
7	0.09152	0.29495	99	115	86.1%
8	0.08133	0.29495	66	74	89.2%
9	0.07747	0.29495	35	45	77.8%
10	0.07118	0.29495	97	104	93.3%
11	0.06241	0.29495	67	93	72.0%
12	0.05482	0.29495	68	78	87.2%
13	0.04851	0.29495	72	86	83.7%
14	0.04008	0.29495	94	130	72.3%
15	0.03249	0.29495	58	68	85.3%
16	0.02551	0.29495	50	71	70.4%
17	0.01967	0.29495	88	104	84.6%
18	0.01399	0.29495	106	134	79.1%
19	0.01109	0.29495	49	95	51.6%
20	0.00274	0.29495	38	48	79.2%

Brookings County

June, 2016

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.15295	0.57693	228	267	85.4%
2	0.10065	0.57693	188	212	88.7%
3	0.05877	0.57693	225	259	86.9%
4	0.00345	0.57693	238	263	90.5%
5	0.16039	0.57693	54	63	85.7%
6	0.15982	0.57693	28	34	82.4%
7	0.15097	0.57693	12	16	75.0%
8	0.15040	0.57693	20	21	95.2%
9	0.14275	0.57693	20	24	83.3%
10	0.12707	0.57693	24	31	77.4%
11	0.12058	0.57693	86	94	91.5%
12	0.09670	0.57693	10	11	90.9%
13	0.07848	0.57693	63	68	92.7%
14	0.07417	0.57693	34	44	77.3%
15	0.06185	0.57693	65	73	89.0%
16	0.05420	0.57693	257	302	85.1%
17	0.04068	0.57693	46	48	95.8%
18	0.02797	0.57693	46	58	79.3%
19	0.01594	0.57693	98	140	70.0%
20	0.00741	0.57693	70	91	76.9%

Brown County

June, 2016

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.09504	0.68386	24	36	66.7%
2	0.09470	0.68386	145	175	82.9%
3	0.09461	0.68386	3	8	37.5%
4	0.09447	0.68386	101	132	76.5%
5	0.09439	0.68386	65	89	73.0%
6	0.09382	0.68386	27	35	77.1%
7	0.08926	0.68386	76	101	75.3%
8	0.08879	0.68386	98	125	78.4%
9	0.08329	0.68386	34	48	70.8%
10	0.07564	0.68386	66	73	90.4%
11	0.06617	0.68386	77	91	84.6%
12	0.05481	0.68386	9	14	64.3%
13	0.04821	0.68386	11	17	64.7%
14	0.04476	0.68386	60	83	72.3%
15	0.04124	0.68386	124	149	83.2%
16	0.03540	0.68386	40	58	69.0%
17	0.02527	0.68386	10	20	50.0%
18	0.01780	0.68386	40	63	63.5%
19	0.00896	0.68386	109	138	79.0%
20	0.00031	0.68386	79	95	83.2%

Codington County

June, 2016

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.16405	0.55268	261	277	94.2%
2	0.10168	0.55268	338	351	96.3%
3	0.07355	0.55268	378	422	89.6%
4	0.03211	0.55268	333	362	92.0%
5	0.17572	0.55268	135	198	68.2%
6	0.15681	0.55268	17	19	89.5%
7	0.14630	0.55268	38	52	73.1%
8	0.13315	0.55268	37	39	94.9%
9	0.11644	0.55268	211	221	95.5%
10	0.09969	0.55268	142	232	61.2%
11	0.08580	0.55268	47	56	83.9%
12	0.07707	0.55268	246	264	93.2%
13	0.06819	0.55268	133	146	91.1%
14	0.05662	0.55268	43	74	58.1%
15	0.05040	0.55268	224	231	97.0%
16	0.03953	0.55268	460	641	71.8%
17	0.03101	0.55268	77	92	83.7%
18	0.02214	0.55268	415	497	83.5%
19	0.01534	0.55268	69	112	61.6%
20	0.01015	0.55268	207	301	68.8%

Corson County

June, 2016

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.29813	0.19204	0	3	0.0%
2	0.16741	0.19204	5	7	71.4%
3	0.13639	0.19204	16	36	44.4%
4	0.10974	0.19204	30	59	50.9%
5	0.09770	0.19204	1	1	100.0%
6	0.09174	0.19204	6	12	50.0%
7	0.08693	0.19204	14	22	63.6%
8	0.08477	0.19204	19	38	50.0%
9	0.07972	0.19204	13	23	56.5%
10	0.07320	0.19204	57	120	47.5%
11	0.06555	0.19204	21	41	51.2%
12	0.06044	0.19204	12	22	54.6%
13	0.05594	0.19204	43	77	55.8%
14	0.05101	0.19204	7	21	33.3%
15	0.04538	0.19204	9	15	60.0%
16	0.04021	0.19204	27	50	54.0%
17	0.03346	0.19204	29	44	65.9%
18	0.02761	0.19204	7	16	43.8%
19	0.01673	0.19204	11	20	55.0%
20	0.00667	0.19204	6	21	28.6%

Custer County

June, 2016

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.20253	0.51261	17	25	68.0%
2	0.17126	0.51261	34	44	77.3%
3	0.15239	0.51261	37	63	58.7%
4	0.12763	0.51261	43	71	60.6%
5	0.10869	0.51261	107	165	64.9%
6	0.09372	0.51261	314	428	73.4%
7	0.08089	0.51261	26	43	60.5%
8	0.07325	0.51261	99	126	78.6%
9	0.06255	0.51261	66	99	66.7%
10	0.05671	0.51261	73	95	76.8%
11	0.05172	0.51261	89	108	82.4%
12	0.04542	0.51261	77	106	72.6%
13	0.03750	0.51261	41	60	68.3%
14	0.03028	0.51261	31	51	60.8%
15	0.02444	0.51261	71	81	87.7%
16	0.02018	0.51261	39	47	83.0%
17	0.01572	0.51261	73	111	65.8%
18	0.01167	0.51261	18	26	69.2%
19	0.00773	0.51261	80	133	60.2%
20	0.00238	0.51261	136	201	67.7%

Harding County

June, 2016

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.36363	0.15327	2	2	100.0%
2	0.31099	0.15327	1	1	100.0%
3	0.24738	0.15327	2	7	28.6%
4	0.23283	0.15327	10	12	83.3%
5	0.20366	0.15327	16	23	69.6%
6	0.16727	0.15327	47	50	94.0%
7	0.15072	0.15327	9	9	100.0%
8	0.12749	0.15327	6	8	75.0%
9	0.11990	0.15327	45	55	81.8%
10	0.11247	0.15327	6	8	75.0%
11	0.10536	0.15327		0	
12	0.09832	0.15327	34	36	94.4%
13	0.08851	0.15327	60	66	90.9%
14	0.07955	0.15327	18	19	94.7%
15	0.06933	0.15327	47	53	88.7%
16	0.06174	0.15327	13	15	86.7%
17	0.05311	0.15327	4	5	80.0%
18	0.04386	0.15327	48	51	94.1%
19	0.02877	0.15327	81	85	95.3%
20	0.00971	0.15327	19	20	95.0%

Hughes County

June, 2016

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.59821	0.44826	34	48	70.8%
2	0.37036	0.44826	35	43	81.4%
3	0.28811	0.44826	59	75	78.7%
4	0.23922	0.44826	78	91	85.7%
5	0.19629	0.44826	36	41	87.8%
6	0.19456	0.44826	58	59	98.3%
7	0.16694	0.44826	100	128	78.1%
8	0.14335	0.44826	33	41	80.5%
9	0.13320	0.44826	44	55	80.0%
10	0.12182	0.44826	80	100	80.0%
11	0.10792	0.44826	99	155	63.9%
12	0.09758	0.44826	28	31	90.3%
13	0.08445	0.44826	40	44	90.9%
14	0.07124	0.44826	92	135	68.2%
15	0.05490	0.44826	38	42	90.5%
16	0.04613	0.44826	46	60	76.7%
17	0.03460	0.44826	118	158	74.7%
18	0.02583	0.44826	18	29	62.1%
19	0.01622	0.44826	228	348	65.5%
20	0.00952	0.44826	228	350	65.1%

Lawrence County

June, 2016

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.19649	1.00000	199	211	94.3%
2	0.13349	1.00000	216	221	97.7%
3	0.10320	1.00000	231	237	97.5%
4	0.07079	1.00000	192	204	94.1%
5	0.04677	1.00000	218	226	96.5%
6	0.03663	1.00000	176	183	96.2%
7	0.01861	1.00000	202	213	94.8%
8	0.26930	1.00000	114	125	91.2%
9	0.16268	1.00000	121	131	92.4%
10	0.11457	1.00000	142	162	87.7%
11	0.10085	1.00000	131	155	84.5%
12	0.09074	1.00000	115	150	76.7%
13	0.07797	1.00000	105	108	97.2%
14	0.06007	1.00000	180	199	90.5%
15	0.05066	1.00000	30	31	96.8%
16	0.03955	1.00000	178	219	81.3%
17	0.02833	1.00000	121	135	89.6%
18	0.02132	1.00000	25	26	96.2%
19	0.01459	1.00000	126	141	89.4%
20	0.00795	1.00000	172	233	73.8%

Lincoln County

June, 2016

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.01098	1.00000	241	300	80.3%
2	0.00497	1.00000	43	68	63.2%
3	0.01434	1.00000	10	14	71.4%
4	0.01224	1.00000	0	4	0.0%
5	0.00975	1.00000	2	4	50.0%
6	0.00828	1.00000	2	2	100.0%
7	0.00724	1.00000	4	10	40.0%
8	0.00669	1.00000	14	19	73.7%
9	0.00604	1.00000	8	14	57.1%
10	0.00531	1.00000	2	2	100.0%
11	0.00466	1.00000	6	9	66.7%
12	0.00408	1.00000	0	2	0.0%
13	0.00353	1.00000	298	385	77.4%
14	0.00301	1.00000	5	7	71.4%
15	0.00251	1.00000	244	319	76.5%
16	0.00202	1.00000	5	9	55.6%
17	0.00158	1.00000	11	16	68.8%
18	0.00114	1.00000	9	16	56.3%
19	0.00088	1.00000	1	4	25.0%
20	0.00055	1.00000	219	291	75.3%

Meade County

June, 2016

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.01172	1.00000	329	466	70.6%
2	0.01233	1.00000	16	32	50.0%
3	0.00511	1.00000	27	37	73.0%
4	0.03117	1.00000	7	8	87.5%
5	0.01846	1.00000	7	15	46.7%
6	0.01508	1.00000	15	20	75.0%
7	0.01273	1.00000	59	98	60.2%
8	0.01156	1.00000	1	4	25.0%
9	0.01065	1.00000	10	20	50.0%
10	0.00946	1.00000	14	28	50.0%
11	0.00864	1.00000	7	23	30.4%
12	0.00757	1.00000	210	342	61.4%
13	0.00659	1.00000	2	2	100.0%
14	0.00578	1.00000	12	25	48.0%
15	0.00504	1.00000	18	34	52.9%
16	0.00420	1.00000	52	97	53.6%
17	0.00329	1.00000	21	29	72.4%
18	0.00255	1.00000	20	48	41.7%
19	0.00162	1.00000	4	7	57.1%
20	0.00085	1.00000	2	12	16.7%

Minnehaha County

June, 2016

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.00304	1.00000	154	218	70.6%
2	0.00348	1.00000	6	10	60.0%
3	0.00835	1.00000	4	6	66.7%
4	0.00782	1.00000	58	97	59.8%
5	0.00692	1.00000	2	2	100.0%
6	0.00588	1.00000	1	1	100.0%
7	0.00489	1.00000	4	6	66.7%
8	0.00419	1.00000	1	2	50.0%
9	0.00382	1.00000	0	1	0.0%
10	0.00321	1.00000	6	7	85.7%
11	0.00263	1.00000	104	130	80.0%
12	0.00208	1.00000	44	59	74.6%
13	0.00170	1.00000	4	6	66.7%
14	0.00138	1.00000	5	6	83.3%
15	0.00109	1.00000	18	31	58.1%
16	0.00089	1.00000	11	13	84.6%
17	0.00070	1.00000	4	7	57.1%
18	0.00055	1.00000	9	11	81.8%
19	0.00048	1.00000	9	9	100.0%
20	0.00028	1.00000	22	28	78.6%

Oglala Lakota County

June, 2016

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.44522	0.32952	58	84	69.1%
2	0.35323	0.32952	25	38	65.8%
3	0.32064	0.32952	47	59	79.7%
4	0.29245	0.32952	23	44	52.3%
5	0.28601	0.32952	82	107	76.6%
6	0.24531	0.32952	64	83	77.1%
7	0.19717	0.32952	26	34	76.5%
8	0.18041	0.32952	81	119	68.1%
9	0.16221	0.32952	153	219	69.9%
10	0.13565	0.32952	126	192	65.6%
11	0.12261	0.32952	29	50	58.0%
12	0.10488	0.32952	172	225	76.4%
13	0.08530	0.32952	64	91	70.3%
14	0.07604	0.32952	67	131	51.2%
15	0.06627	0.32952	173	290	59.7%
16	0.05248	0.32952	95	152	62.5%
17	0.04447	0.32952	155	316	49.1%
18	0.03690	0.32952	111	195	56.9%
19	0.02261	0.32952	205	454	45.2%
20	0.00828	0.32952	97	130	74.6%

Pennington County

June, 2016

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.00656	1.00000	477	491	97.2%
2	0.00869	1.00000	9	9	100.0%
3	0.00166	1.00000	287	419	68.5%
4	0.01790	1.00000	47	136	34.6%
5	0.01226	1.00000	11	14	78.6%
6	0.00919	1.00000	9	9	100.0%
7	0.00769	1.00000	237	441	53.7%
8	0.00680	1.00000	3	8	37.5%
9	0.00578	1.00000	3	7	42.9%
10	0.00492	1.00000	1	1	100.0%
11	0.00402	1.00000	44	64	68.8%
12	0.00343	1.00000	54	95	56.8%
13	0.00278	1.00000	10	22	45.5%
14	0.00220	1.00000	2	5	40.0%
15	0.00176	1.00000	3	7	42.9%
16	0.00136	1.00000	15	30	50.0%
17	0.00103	1.00000	0	1	0.0%
18	0.00077	1.00000	23	55	41.8%
19	0.00056	1.00000	295	384	76.8%
20	0.00036	1.00000	27	35	77.1%

Roberts County

June, 2016

Site Rates with Weights					
Site	**Site Weight**	**County Weight**	**Total Belted**	**Total Occupants**	**Seat Belt Rate**
1	0.14728	0.36470	170	266	63.9%
2	0.10405	0.36470	250	344	72.7%
3	0.07067	0.36470	172	219	78.5%
4	0.04919	0.36470	214	287	74.6%
5	0.03009	0.36470	184	247	74.5%
6	0.01006	0.36470	253	338	74.9%
7	0.11925	0.36470	18	19	94.7%
8	0.11228	0.36470	24	32	75.0%
9	0.10964	0.36470	12	12	100.0%
10	0.09217	0.36470	12	20	60.0%
11	0.08250	0.36470	37	55	67.3%
12	0.06821	0.36470	60	111	54.1%
13	0.06016	0.36470	8	16	50.0%
14	0.05639	0.36470	34	37	91.9%
15	0.05145	0.36470	6	9	66.7%
16	0.04311	0.36470	20	42	47.6%
17	0.03483	0.36470	31	42	73.8%
18	0.02694	0.36470	25	41	61.0%
19	0.01954	0.36470	0	5	0.0%
20	0.01021	0.36470	14	19	73.7%

Union County

June, 2016

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.01562	0.62805	132	132	100.0%
2	0.01308	0.62805	11	12	91.7%
3	0.02756	0.62805		0	
4	0.02123	0.62805	3	11	27.3%
5	0.02110	0.62805	5	6	83.3%
6	0.02035	0.62805	39	52	75.0%
7	0.01977	0.62805	103	104	99.0%
8	0.01827	0.62805	0	3	0.0%
9	0.01599	0.62805	14	17	82.4%
10	0.01432	0.62805	2	7	28.6%
11	0.01205	0.62805	1	2	50.0%
12	0.01068	0.62805	2	3	66.7%
13	0.01006	0.62805	12	14	85.7%
14	0.00946	0.62805		0	
15	0.00820	0.62805	12	12	100.0%
16	0.00644	0.62805	10	12	83.3%
17	0.00515	0.62805	25	28	89.3%
18	0.00396	0.62805	1	1	100.0%
19	0.00226	0.62805	2	3	66.7%
20	0.00130	0.62805	8	8	100.0%

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.