

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 based on a field survey of driver and right front-seat passenger seat belt use. This National Occupant Protection Use Survey (NOPUS) is based on national standards for survey design and field observation protocol. It provides the South Dakota Department of Public Safety (SDDPS) with a systematic evaluation of seat belt use rates within the state. The National Highway Traffic Safety Administration (NHTSA) funds NOPUS through the SDDPS's Office of Highway Safety.

During the week of June 11-17, 2023, trained observers visited each site in their assigned counties to survey seat belt use for drivers and right front-seat passengers in vehicles with a gross vehicle weight up to 10,000 lbs. Observers recorded seat belt use for 19,265 drivers and 3,864 right front-seat passengers, for a total of 23,129 vehicle occupants. The observations were conducted at 320 sites across 16 counties. Based on the sampling methodology weighting procedures, the final estimate for statewide seat belt use was 91%.

A summary of major findings from the 2023 survey regarding seat belt use in South Dakota follows:

- **County.** Weighted rates of seat belt use by county showed Lincoln County with the highest use at 98.0%, and Butte County with the lowest use at 58.3%. Fall River, Harding, Hughes, Lawrence, Minnehaha, and Turner counties were observed to have use rates of less than 90.0% in 2023. Applying three-year averages for trend comparison showed seven counties with improved rates in the 2021-2023 time period over the previous 2018-2020 average. Trends were not available in eight counties that were new to the survey with the 2022 county reselection. The change in the county composition was due to the NHTSA-mandated reselection process that is required in five-year intervals.
- **Vehicle Occupant.** Driver seat belt use was 88.8% while passenger use was 90.7% statewide. At the county level, Lyman County reflected the highest rate of drivers belted at 97.5%, as well as the highest passenger rate at 100.0%. Restraint use in Butte County had the lowest rate of both drivers (52.9%) and passengers (67.9%) belted.
- **Region.** Historically, the east region has demonstrated higher use rates than the west, which continued with the current survey. Overall rates of seat belt use were higher in the east region at 91.9%, compared with 85.1% in the west region. Three year-average comparisons show an increase in use rates in the east (from 88.8% to 90.7%) and in the west (76.8% to 83.7%). Regional disparity can also be seen among drivers and passengers. Passengers in the east have continued to demonstrate the highest use rates (95.0%), followed by drivers in east (91.4%), and passengers in the west 85.3%. The lowest rate came from drivers in the west (85.0%). However, the rate increased nearly 8 percentage points, aligning more closely with the five-year high seen in 2021.

- Vehicle Type.** Of the four vehicle types, SUVs (35.4%) and trucks (34.4%) represented the largest share of the sample, and vans were least represented (9.7%). Occupants of SUVs, vans, and cars demonstrated restraint use of 93.8%, 92.5%, and 89.3%, respectively. While truck occupants continued to demonstrate the lowest use rates (83.3%) among vehicle types, this group has shown the most improvement since the 2022 survey.
- Occupant Gender and Position.** In 2023, female occupants represented 41.3% of the overall sample and continued to show higher rates of seat belt use (94.2%) than male occupants (85.5% belted, 58.3% of the sample). When considering rates at the county level, females registered use greater than 80% in 14 of 16 counties. Male rates reached that same level in 10 counties. The gender rate differences by county varied from 1 to 20.9 percentage points. At the occupant level, male drivers made up 53.6% of the sample and were belted at a rate of 85.9%. Female drivers represented 29.4% of the sample and were belted at 94.0%. Comparably, the female passenger rate was 94.7%, which represented nearly 12.0% of the sample. Male passengers demonstrated the lowest use rate (80.7%) yet made up less than 5% of the sample. Higher rates hold for females in every county whether they are drivers or passengers, with the exception of passengers in Lincoln County where the male rate exceeded the female rate by less than 1 percentage point.
- Gender and Vehicle Type.** Females had higher rates of seat belt use than males in every vehicle type in 2023. The highest rates for both females and males were found in SUVs, at 95.6% and 91.5%, respectively. The lowest rates for both genders were found in trucks, where the female rate exceeded the male rate by nearly 11 percentage points, at 91.8% and 81.2%, respectively. When comparing the 2018-2020 and 2021-2023 averages, car occupants of both genders increased rates the most, where the male rate increased by 7 percentage points and the female rate by 6 percentage points.
- Road Type.** Seat belt use was highest on primary roads (95.3%), followed by local roads (86.3%) and secondary roads (85.6%). Results showed comparable restraint use on primary roads in the east (95.0%) and west (95.9%) regions. Rates on local roads were also comparable between regions, at 85.6% and 87.0% in the east and west, respectively. However, occupants traveling on secondary roads in the east (90.6%) demonstrated higher use rates than those in the west (79.4%) by a difference of 11.2 percentage points. Higher use on primary roads was found in non-MSA counties than in MSAs, 96.1% and 92.1%, respectively. On secondary roads, comparable use was demonstrated in MSA counties (86.7%) and non-MSAs (85.5%). Local roads were only selected in MSA counties according to survey methodology, and restraint use was 86.3%.

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INTRODUCTION

The Upper Great Plains Transportation Institute (UGPTI), a research, education, and outreach center at North Dakota State University (NDSU), was contracted by the South Dakota Department of Public Safety (SDDPS) to conduct a field survey of seat belt use in 2023. The study replicates the sampling methodology previously revised and approved by the NHTSA and the SDDPS for the 2012 survey. That methodology was a redesign of an earlier method to yield a more statistically robust estimate of seat belt use on all roadways in South Dakota. In 2022, survey researchers implemented an NHTSA-mandated review of state crash-related fatalities that resulted in modifications to county inclusion and selection, and a complete reselection of observation sites. This reselection is certified for five years. Requirements for conducting statewide seat belt surveys are published in the Federal Register, Vol. 76 No. 63, April 1, 2011, Rules and Regulations, pp. 18,042 – 18,059.

OBJECTIVE

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

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

- Occupant position (driver, passenger)
- Gender (male, female)
- Type of vehicle (car, van, sport utility vehicle, truck)
- Region of state (east, west)
- Roadway type (primary, secondary, local)
- Population density/economic activity (MSA, non-MSA)

A description of the tasks involved in conducting the statewide seat belt survey is provided in this report. It includes general information about the methods and protocols. Table 1 summarizes the 2023 survey. Survey sample design methods were employed to ensure that the results were representative of the behavior statewide. One exception to this was that local roads were only sampled in MSA counties per NHTSA protocol.

Table 1: Summary of the Seat Belt Use Survey

Methodology	Multistage stratified cluster design with probability proportional to size sampling
Source of Samples	NHTSA supplied FARS, VMT, and road segment data
Geographic Coverage	State of South Dakota
Identified Regions	East West
Selected Counties	<u>East Region:</u> Beadle, Clay, Hanson, Kingsbury, Lincoln, Minnehaha, Moody, Turner <u>West Region:</u> Butte, Fall River, Harding, Hughes, Lawrence, Lyman, Meade, Pennington
Number of Sites	320
Survey Period	June 11-17, 2023
Observation Duration Per Site	60 minutes
Sample Size	Two vehicle occupants (includes all vehicles where either the driver or passenger or both had a known protection status)

METHODOLOGY

Uniform criteria published in 2011 guided the development of methodology used for seat belt surveys in South Dakota from 2012. This methodology changed the focus for county sampling from a population-based criterion to a traffic-crash-related fatality criterion. The federal criteria mandated a reselection of observation sites at five-year intervals. This reselection requirement was carried out in 2022 without further modifications to the survey design. A comprehensive explanation of survey methodology is found in Appendix A.

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 with 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 standard error for state seat belt use was calculated to be 0.003% using SAS statistical software. From this, a 95% confidence interval for state seat belt use can be determined. 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 90.3% to 91.7%.

Table 2: Confidence Interval

95% Confidence Interval and Estimated Standard Error for State Seat Belt Use				
Occupants	State Rate	Standard Error	95% CI Lower Limit	95% CI Upper Limit
23,129	91.0%	0.0034%	90.3%	91.7%

Nonresponse Rate

A factor that could potentially bias the results and invalidate the survey is a high nonresponse rate. A nonresponse occurs when the observer tries but cannot determine an occupant’s seat belt use. In the 2023 survey, 19,265 drivers and 3,864 passengers were observed for a total of 23,129 vehicle occupants. Seat belt use could not be determined for 1,473 vehicle occupants, resulting in a nonresponse rate of 5.99%. As stipulated in NHTSA’s guidelines, the nonresponse rate was within the allowable maximum of 10%, so no additional sampling was necessary.

Protocols

Observers

Observers contracted to conduct the 2023 statewide seat belt survey were required to complete online training. The training module covered survey methods, observer responsibilities, and instructions for operation of tablets for electronic data collection. Knowledge points required the trainee’s correct responses in order to move forward in the module. The survey administrator verified completion of training. All observers were required to have a current driver’s license with proof of adequate vehicle insurance. They were required to use seat belts and wear safety vests while conducting field observations.

Observational Protocols

The observational protocols used in the study adhere to the uniform criteria as outlined in the Federal Register.

Observations were conducted Sunday through Saturday. The initial observation site day of the week and time of day were randomly chosen within each county. The remaining sites within each county were arranged sequentially through the survey week based on the first site. Observation route sequencing was aimed to minimize travel time and costs among the sample site locations. This predetermined order of daily observation sites was provided to each observer before the survey. A complete list of county observation sites is available in the survey certification documentation submitted to NHTSA. 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 the predetermined time slot, requiring a 60-minute observation period, which began at the start of the pre-determined time slot—or the first five-minute interval after arrival at the site if the observer was delayed—and ended 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 observe, recording was done as long as possible and then stopped until the observer could catch up with observations. Some vehicles were, therefore, 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 record 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 approximate to the detour.

Observed Vehicles

All vehicles with a gross vehicle weight of up to 10,000 lbs. were observed and classified on the observation form as cars, vans, sport utility vehicles, and trucks. Large trucks (semi or large box), large emergency vehicles (ambulance/fire), and RVs/motor homes were not included in the survey.

Observations

The type of vehicle, gender, 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 safety. If observations could not be conducted from within the vehicle, the observer was allowed to stand off the roadway.

Problems Encountered by Observers

If traffic, observer safety, or construction issues were problematic, alternate sites were available through the project coordinator. Observer placement was managed according to site protocols. Intermittent problems relating to road construction and inclement weather did not seriously impede schedules, and hour-long observations were fulfilled as described in the protocol with on-time arrival at subsequent sites not impacted. In accordance with the Federal Register, if scheduled observations were not carried out for any of the above reasons, a return visit would have been arranged the following week adhering to the original prescribed schedule for data collection. Detailed site information is found in Appendix D.

Quality Assurance

Observers

Online training was offered at the observers' convenience. All contracted observers were required to complete the online training. Completion was verified prior to survey week.

During observation week, quality control personnel carried out unannounced site visits (one per county) to verify observers were located within valid road segments, adhering to the prearranged day of week/time of day schedules, and properly recording seat belt data. It is required that quality control personnel visit any new observers during their initial observation day to assure protocol compliance and verify safe observation practices.

SEAT BELT SURVEY RESULTS

Statewide Results

Sample Size by Year

Table 3 shows the sample size of annual seat belt surveys from 2019-2023 by occupant position. In the current year, 23,129 vehicle occupants were counted, consisting of 19,265 drivers representing 83.3% of the sample and 3,864 passengers making up the remaining 16.7% of the sample. These figures include only vehicle occupants where protection status could be determined.

Table 3: Survey Sample by Occupant Position

Occupants Observed	2019	% of Sample	2020	% of Sample	2021	% of Sample	2022	% of Sample	2023	% of Sample
Drivers	22,579	74.4%	18,614	77.8%	23,034	75.1%	17,081	81.8%	19,265	83.3%
Passengers	7,784	25.6%	5,297	22.2%	7,657	24.9%	3,802	18.2%	3,864	16.7%
Total	30,363	100.0%	23,911	100.0%	30,691	100.0%	20,883	100.0%	23,129	100.0%

Total sample size can vary from year to year depending on site locations and traffic flow. While there was an increase in sample size compared with last year, sample sizes were considerably larger in the three years that occurred prior to the required site reselection in 2022. The driver-to-passenger ratio can also influence overall use rates. Table 4 shows the most recent five-year period’s occupant shares; this year’s ratio was five drivers for every occupant, with the driver share of the sample tending to increase over time.

Table 4: Ratio of Drivers to Passengers, 2019-2023

Ratio	2019	2020	2021	2022	2023
Drivers:Passengers	2.9:1	3.5:1	3.0:1	4.5:1	5.0:1
Drivers as % of Sample	74.4%	77.8%	75.1%	81.8%	83.2%

Overall unweighted statewide survey results indicated 89.1% 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 seat belt use is found by weighting the unadjusted rate using the formulas and design weights from the methodology section. After employing those formulas, the overall weighted rate of seat belt use in South Dakota was 91% in 2023. Figure 1 shows annual seat belt use since the implementation of amended methodology in 2012. In addition, the graph includes national use as reported by NHTSA¹, with the most recent data showing a rate of 91.6% in 2022. Nationally, NOPUS survey data confirm that vehicle occupants in states with primary enforcement of seat belt laws demonstrate higher restraint use (92.2%) than states with secondary laws (89.5%). Interestingly, South Dakota aligns slightly closer to states with primary seat belt laws, and is within 1 percentage point of the national average for the first time on record.

¹National Highway Traffic Safety Administration. Traffic Safety Facts Research Note. January, 2023. [Seat Belt Use in 2022 – Overall Results \(dot.gov\)](#)

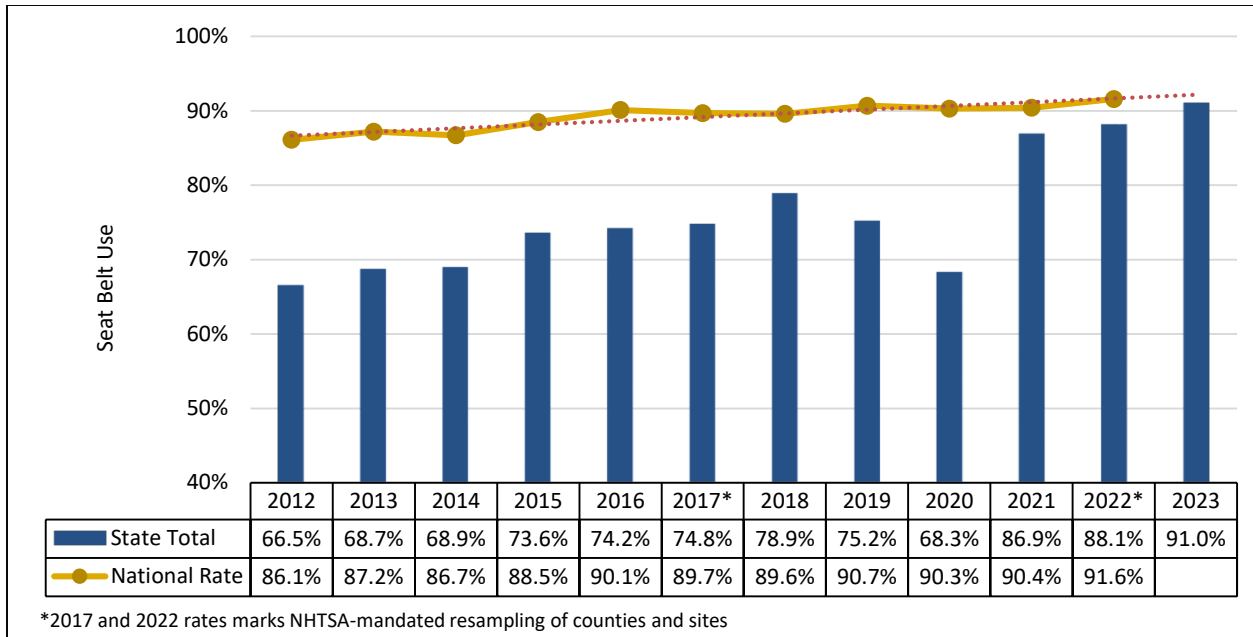


Figure 1: Statewide Seat Belt Use, Weighted

County Results

The 2023 weighted seat belt rates by county are shown in Figure 2. Restraint use ranged from a high of 98.0% in Lincoln County to a low of 58.3% in Butte County. Higher seat belt use is often observed in counties that follow interstate corridors. Seven of the nine counties that follow interstate corridors demonstrated use rates of 90% or more. A rate of this level occurred in only two of seven counties without interstate corridors.

Rates vary from year to year at the county level. The changes can represent sampling differences and are not likely to be statistically significant, especially for counties where there are fewer total observations. However, even the rates for counties with more observations may exhibit noticeable change from one year to the next. Further, it is common to have several individual sites capture only a limited number of vehicles. Yet these sites are important to an inclusive and representative sample in the aggregate measurement of statewide seat belt use.

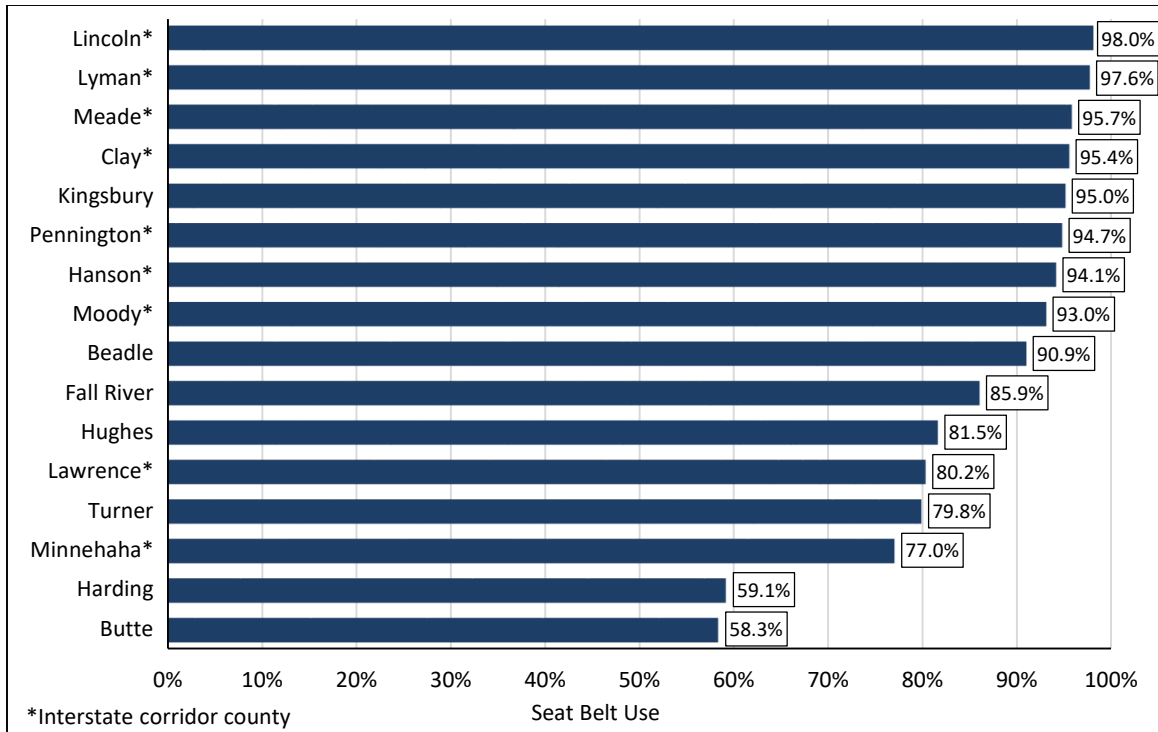


Figure 2: Seat Belt Use by County, 2023, Weighted

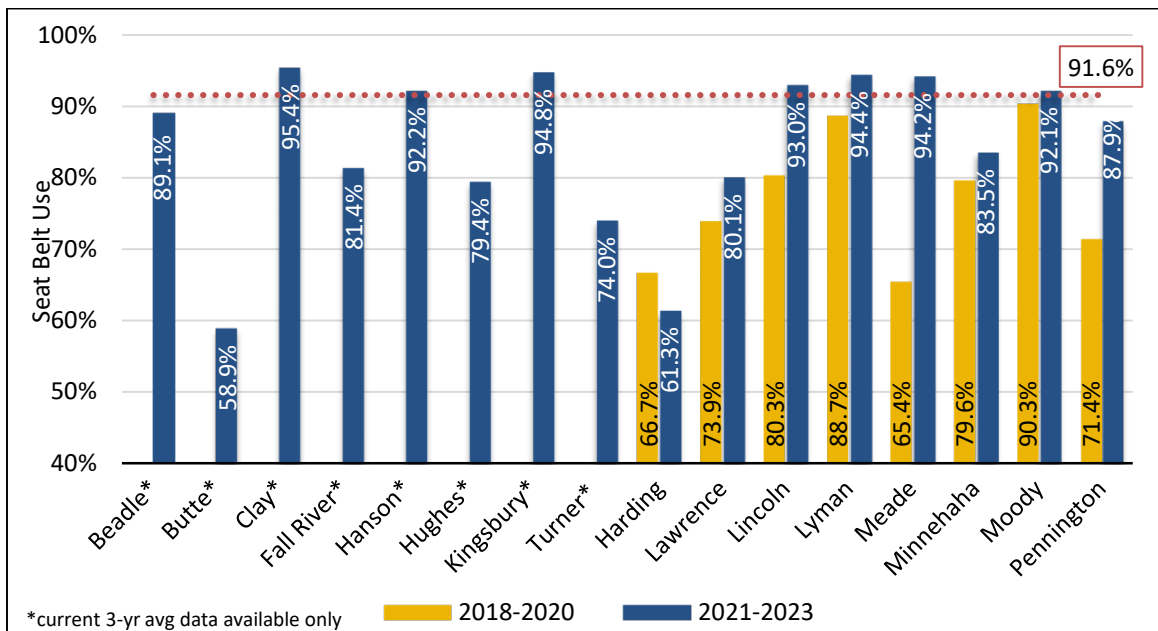


Figure 3: Seat Belt Use by County, Three-Year Weighted Average

Figure 3 provides three-year averages of county rates to smooth the annual variability. Due to the reselection process, this analysis does not offer three-year averages for Beadle, Butte, Clay, Fall River, Hanson, Hughes, Kingsbury, and Turner counties, as they were first-year additions to the survey in 2022. When only comparing counties with three-year trends available, overall improvements in seat belt use can be seen. In the most recent three-year period, Lyman County leads in belt use at 94.4%, while Lincoln, Meade, and Moody counties register rates above 90%. Meade County has demonstrated the

most improvement, increasing by 28 percentage points between the two time frames. Conversely, Harding County’s rates decreased by 5 percentage points.

The preceding statewide data are weighted based on the sampling methodology. However, the following sections of this report describe frequencies that are unadjusted due to survey design. It is important to note the county rates are based on the sites visited as part of the statewide rate sample; thus, they may not statistically represent seat belt use in a county.

Results for Vehicle Occupants by Position

Figure 4 illustrates seat belt use by occupant position in 2023. At the county level, driver use ranged from a low in Butte County of 52.9% to a high of 97.5% in Lyman County. Passenger use ranged from 67.9% to 100% in Butte and Lyman counties, respectively. Annual surveys confirm that, as a rule, passengers buckle up at higher rates than drivers. This trend was seen in all but two counties, Fall River and Minnehaha, where passenger rates were lower than those of drivers.

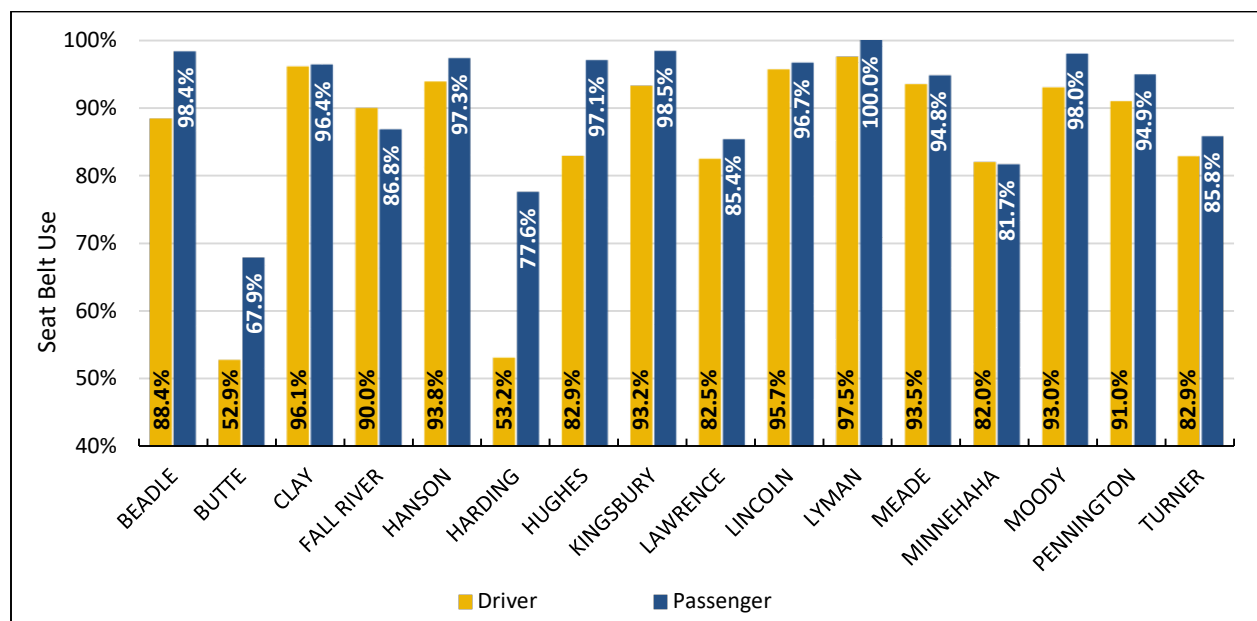


Figure 4: Percent Belted by Occupant Position & County, 2023, Unweighted

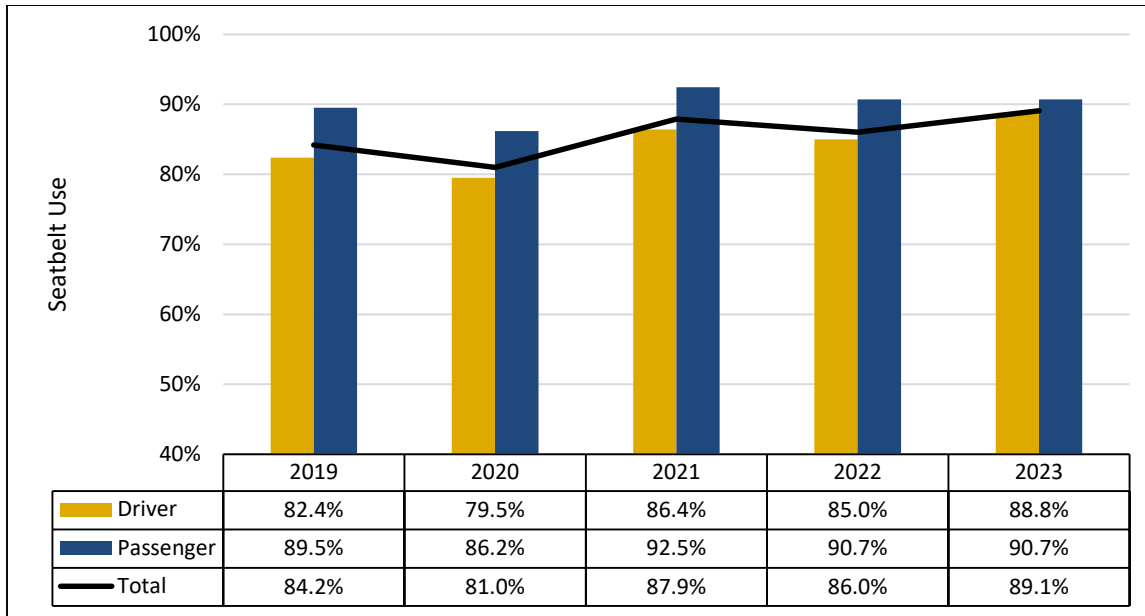


Figure 5: Percent Belted by Position, Annual, Unweighted

Efforts to address seat belt use in South Dakota are ongoing. Experiences from other states 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%. Other possible interventions include heightened education and enforcement across the state. Some factors that may be useful in administering programs to increase seat belt use in South Dakota are found in the remainder of this report. Differences in seat belt use among regions of the state, gender, vehicle type, and roadway type are explored for additional insight.

Results by South Dakota Regions

The survey sampling methodology groups the state into an east/west regional division (Figure 6). The west region contains three “certainty” counties and five additional counties selected from the remaining counties in the region. The east region is composed of two “certainty” counties and six additional counties from the region².

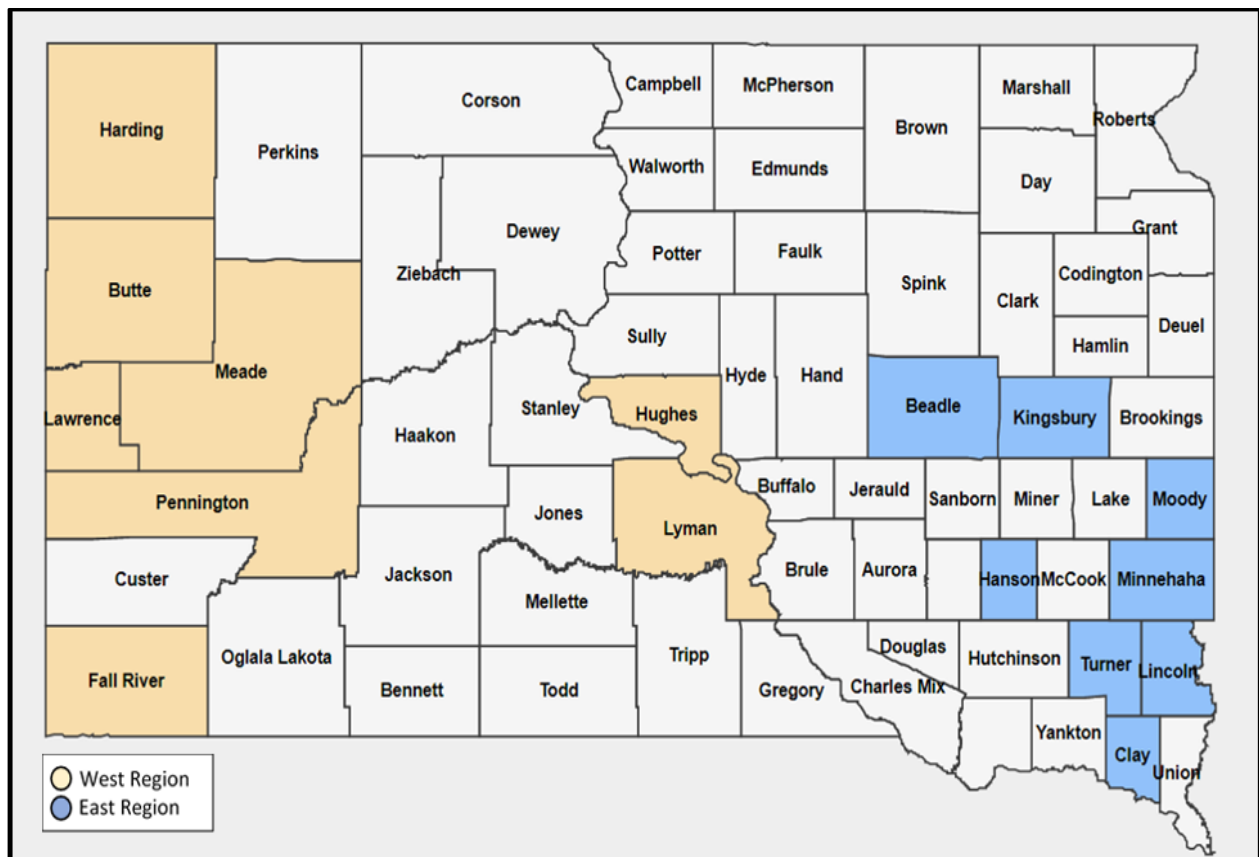


Figure 6: South Dakota County Stratification

Table 5: Sample Size by Region

Occupants Observed	2019	% of Sample	2020	% of Sample	2021	% of Sample	2022	% of Sample	2023	% of Sample
East	14,181	46.7%	11,788	49.3%	11,884	38.7%	12,407	59.4%	13,722	59.3%
West	16,185	53.3%	12,123	50.7%	18,807	61.3%	8,476	40.6%	9,407	40.7%
Total	30,366	100.0%	23,911	100.0%	30,691	100.0%	20,883	100.0%	23,129	100.0%

Year-to-year variations in sample size may be associated with revised sites and/or changes in travel levels and patterns. Table 5 shows sample distributions between regions throughout the five-year period. More recently, two-thirds of the sample is from the east region, whereas in the past the west region commonly provided the larger proportion.

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

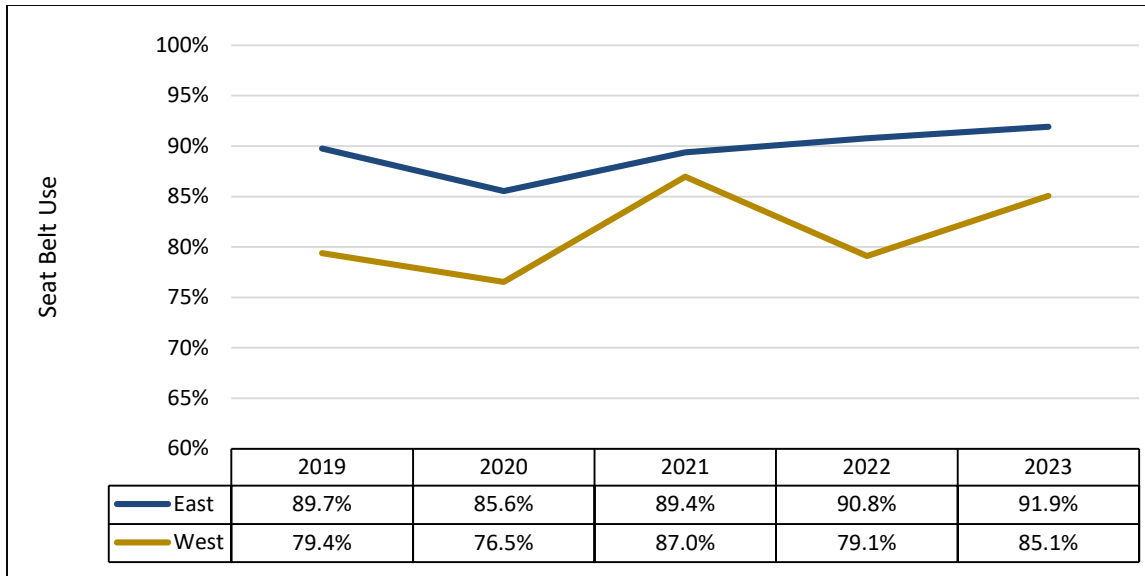


Figure 7: Percent Belted by Region, Annually, Unweighted

Historically, the east region has demonstrated higher use rates than the west, as shown in Figure 7. This trend continued with the current survey with the east region at a rate of 91.9% compared with 85.1% in the west region. Rates over the past five years in the east have remained steady, ranging from 2020’s low of 85.6% to the current high of 91.9%. Rates in the west region have ranged from 2020’s low of 76.5% to a high of 87% in 2021.

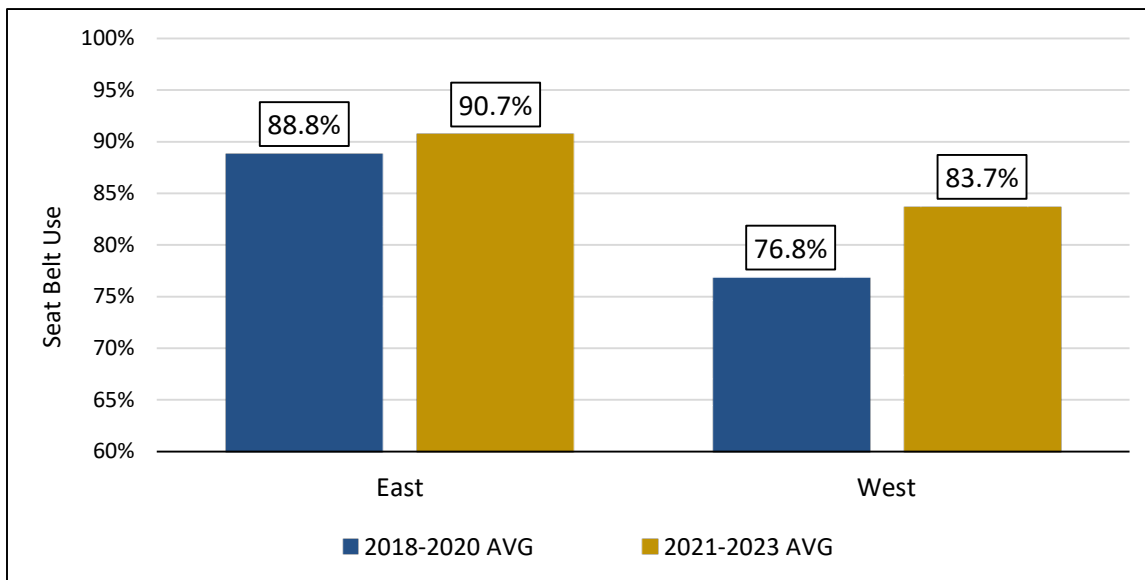


Figure 8: Seat Belt Use by Region, Three Year Averages, Unweighted

The three-year average use rates by region are shown in Figure 8. The east region’s rates show a slight increase, from 88.8% in 2018-2020 to 90.7% in 2021-2023. The west region’s rate increased from 76.8% in 2018-2020 to 83.7% in 2021-2023. This regional disparity can also be seen among drivers and passengers. Both drivers and passengers in the east tend to demonstrate higher rates of use than those in the west. Passengers tend to show higher use rates than drivers in both regions. A further breakdown of driver and passenger use by region is seen in Figure 9.

In the west, rates for occupant positions have fluctuated year to year. Following last year’s 6 percentage point decrease, passenger use rates remained at 85% (85.7% in 2022, 85.3% in 2023) and driver rates regained 7 percentage points (from 77.6% to 85%). Rates in the east have remained steady for both drivers and passengers, with use rates of 91.4% and 95%, respectively, in 2023.

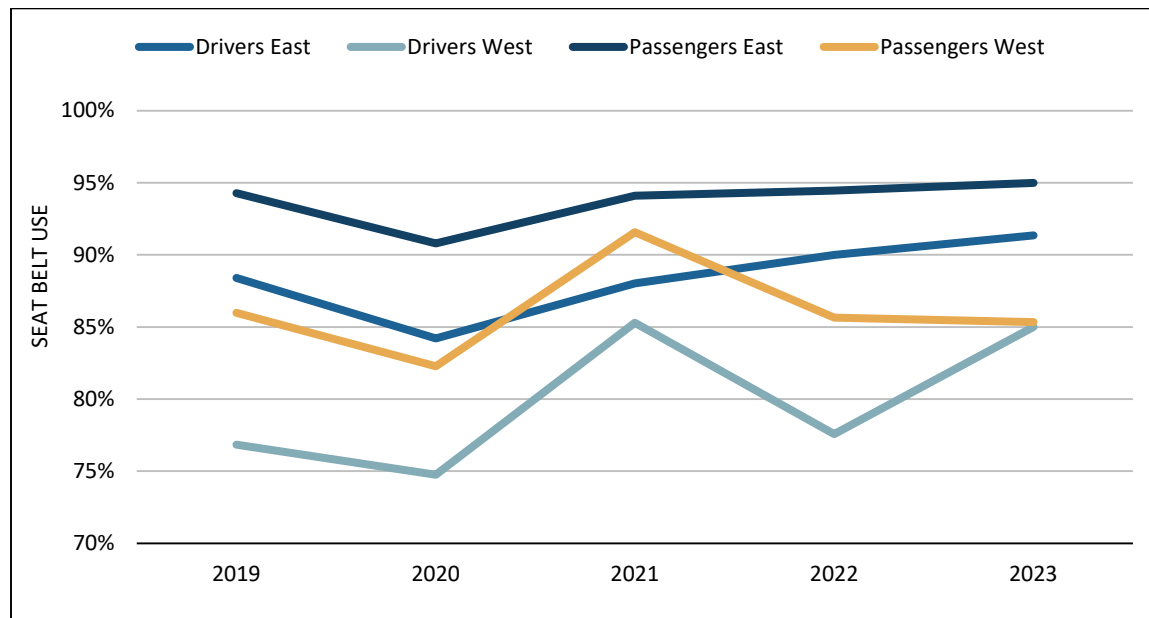


Figure 9: Percent Belted by Region & Occupant Position, Unweighted

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 of up to 10,000 pounds. This change necessitated the inclusion of various small trucks. Commercial-use trucks, indicated by logos on doors or truck bodies, are within the survey scope.³

Table 6 shows the annual fleet distribution for the past five years. Throughout this period, trucks and SUVs have sustained a vehicle share of approximately 34% each. The proportion of cars observed has steadily decreased, from 23.9% in 2019 to 20.5% in 2023. Vans continue to represent 10% or less of the sample.

³ Truck definition is trucks with a gross vehicle weight of less than 10,000 lbs., including pickups, wrecker tow vehicles, flatbed three- or four-ton trucks, and utility service trucks; excludes semi or large box trucks, and large emergency vehicles.

Table 6: Sample by Vehicle Type

Vehicles Observed	2019	% of Sample	2020	% of Sample	2021	% of Sample	2022	% of Sample	2023	% of Sample
Car	7,245	23.9%	5,706	23.9%	6,795	22.1%	4,351	20.8%	4,741	20.5%
SUV	10,003	33.1%	7,438	31.1%	11,285	36.8%	7,529	36.1%	8,197	35.4%
Truck	9,873	32.6%	8,745	36.6%	9,843	32.1%	7,065	33.8%	7,958	34.4%
Van	3,145	10.4%	2,022	8.5%	2,768	9.0%	1,938	9.3%	2,233	9.7%
Total	30,266	100.0%	23,911	100.0%	30,691	100.0%	20,883	100.0%	23,129	100.0%

Annual results for overall seat belt use by vehicle type are shown in Figure 10. Of the four vehicles types, occupants of SUVs and vans lead in rates of use across the five-year span, with current rates of 93.8% and 92.5%, respectively. This was followed by cars (89.3%), which consistently rank below SUVs and vans, yet above trucks. Truck occupants continued to demonstrate the lowest use rates among vehicle types; however, this year’s rate of 83.3% belted represents a five-year high. In fact, use rates in all vehicle types have reached five-year highs in the current survey.

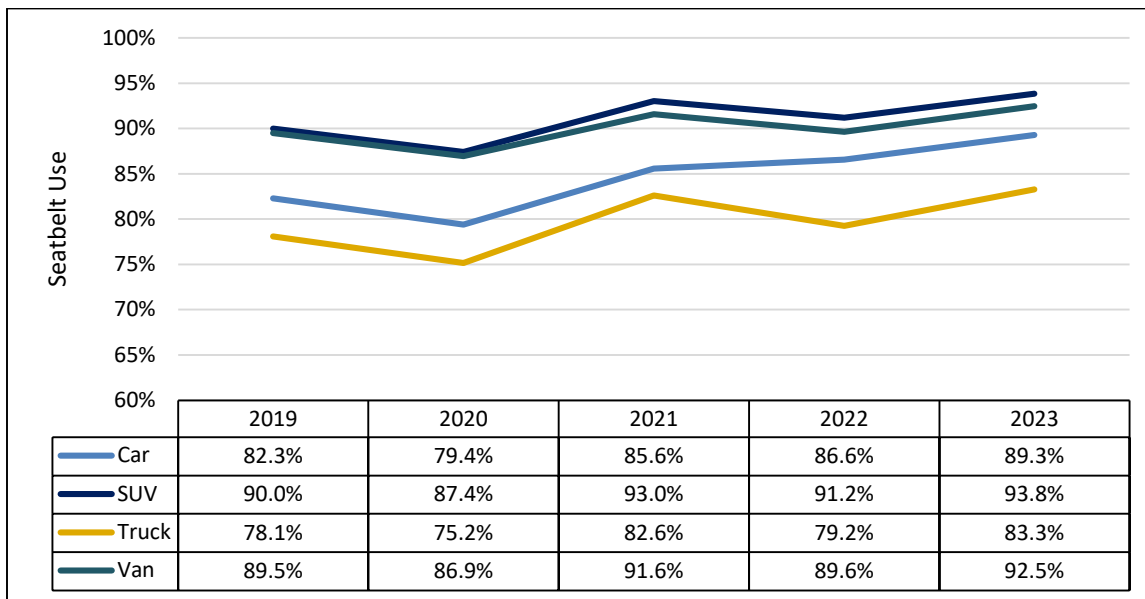


Figure 10: Percent Belted by Vehicle Type, Annually, Unweighted

Truck occupant use rates were not uniformly low in each county in 2023. However, some counties not only had low seat belt use in trucks, but a large proportion of trucks as a share of the total county sample. For example, the lowest use rate in the state was observed in Butte County (58.3%). Trucks made up 43.8% of Butte County’s sample, with 51.4% of occupants being belted. The highest use rate came from Lincoln County (98.0%). Here, trucks made up 31.6% of the sample, with 94.3% of occupants being belted. Table 7 shows this demographic with rates of less than 80% in six of the 16 observed counties. This lower use, coupled with the proportion of trucks in the sample, can reduce both county rates and the overall state rate.

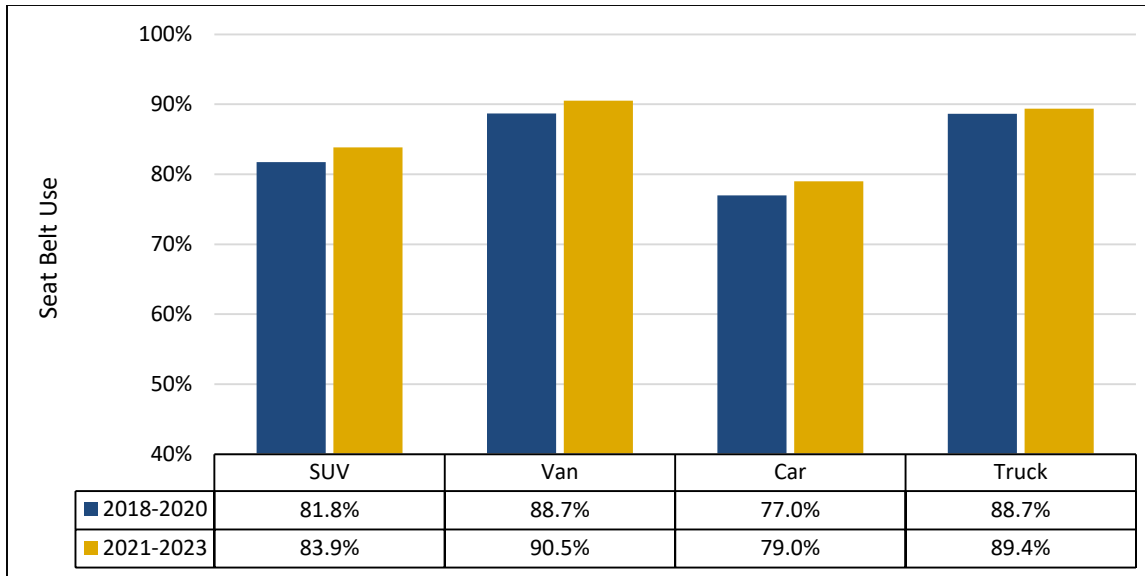


Figure 11: Seat Belt Use by Vehicle Type, Three-Year Averages, Unweighted

A comparison of averages shown in Figure 11 indicates slightly increased seat belt use for all vehicle types from the 2018-2020 period to the 2021-2023 period. Individual county rates by vehicle type are outlined in Table 7. Lyman County demonstrated the highest rate of seat belt use in cars (98.1%), trucks (94.4%), and vans (99.1%), while the highest rate in SUVs (99.6%) was found in Lincoln County. Butte County demonstrated the lowest rates in cars (44%), trucks (51.3%), and vans (66.7%), while the lowest rate in SUVs (67.8%) was found in Harding County.

Table 7: Percent Belted by County & Vehicle Type, 2023, Unweighted

County	Car	SUV	Truck	Van
Beadle	93.8%	93.9%	83.5%	97.4%
Butte	44.0%	68.3%	51.3%	66.7%
Clay	97.8%	98.7%	91.2%	98.7%
Fall River	91.3%	94.6%	82.2%	91.0%
Hanson	93.1%	98.7%	89.5%	94.0%
Harding	53.6%	67.8%	52.8%	71.0%
Hughes	89.0%	90.5%	76.2%	96.8%
Kingsbury	94.2%	98.2%	92.1%	89.3%
Lawrence	88.9%	86.8%	74.1%	84.0%
Lincoln	97.1%	99.6%	86.6%	95.1%
Lyman	98.1%	99.2%	94.4%	99.1%
Meade	93.7%	96.2%	91.2%	96.3%
Minnehaha	80.7%	87.0%	77.1%	82.4%
Moody	89.8%	95.8%	92.9%	94.5%
Pennington	94.9%	94.1%	88.5%	93.8%
Turner	81.1%	93.5%	75.3%	84.0%

Results by Occupant Gender and Position

Table 8: Sample Percent by Gender

Occupants Observed	2019	% of Sample	2020	% of Sample	2021	% of Sample	2022	% of Sample	2023	% of Sample
Male	16,921	55.7%	13,831	57.8%	17,502	57.0%	12,291	58.9%	13,488	58.3%
Female	13,197	43.5%	9,623	40.2%	13,068	42.6%	8,451	40.5%	9,553	41.3%
Unknown:	248	0.8%	457	1.9%	121	0.4%	141	0.6%	88	0.4%
Total	30,366	100.0%	23,911	100.0%	30,691	100.0%	20,883	100.0%	23,129	100.0%

Minimal year-to-year variation in gender composition of the sample is observed in the past five years, as summarized in Table 8. Male occupants were 58.3% of the overall sample in the current survey, while females were 41.3%. In less than 1% of observations, occupant gender could not 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 from these parts of the analyses had no effect on the overall numbers, but is mentioned here for comprehensive reporting.

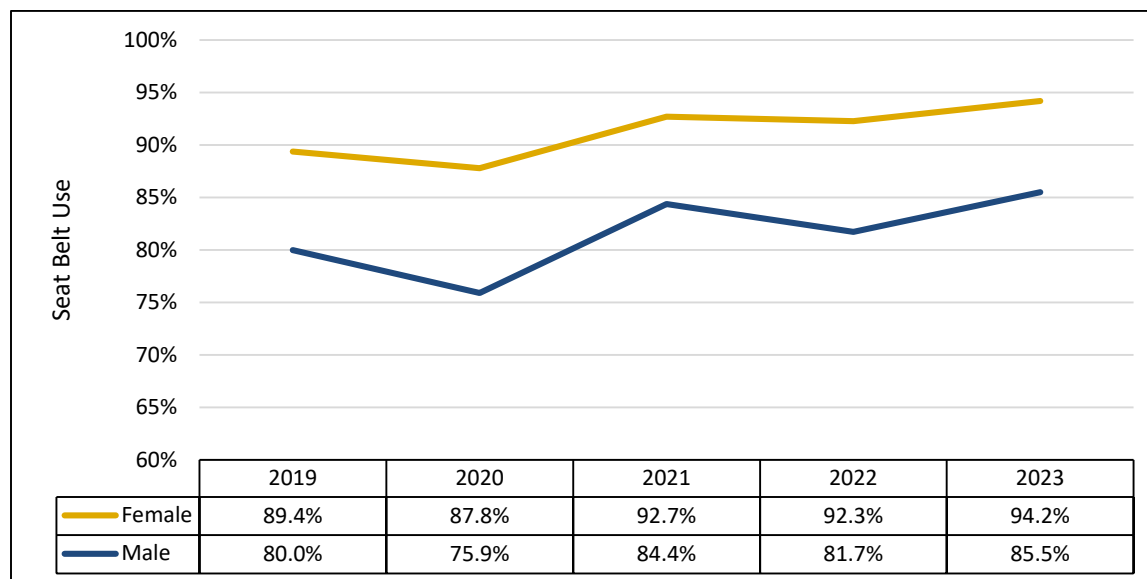


Figure 12: Percent Belted by Gender, Annually, Unweighted

Seat belt use by gender continued the trend of higher rates by female occupants. The five-year annual trends in Figure 12 illustrate this disparity, ranging from a difference of 8.3 percentage points in 2021 to nearly 12 percentage points in 2020. Both genders demonstrated the highest use rate on record in 2023, with females at 94.2% and males considerably lower at 85.5%.

Table 9: Percent Belted by Gender & County, 2023

OCCUPANT RATES		
COUNTY	FEMALE	MALE
Beadle	96.0%	91.2%
Butte	67.4%	50.3%
Clay	99.2%	93.3%
Fall River	93.9%	76.9%
Hanson	98.3%	93.4%
Harding	71.2%	54.0%
Hughes	96.7%	85.7%
Kingsbury	98.3%	94.1%
Lawrence	93.1%	72.2%
Lincoln	98.1%	94.8%
Lyman	99.5%	98.4%
Meade	96.4%	91.7%
Minnehaha	88.5%	75.9%
Moody	97.0%	91.1%
Pennington	96.0%	89.1%
Turner	93.4%	75.0%

Table 9 shows restraint use by county and gender. The lowest rates were found in Butte County for both females (67.4%) and males (50.3%). The highest rates were found in Lyman County for both females and males at 99.5% and 98.4%, respectively. Female occupants demonstrated rates above 80% in 14 counties, while male occupants demonstrated the same level in 10 counties.

The sample by gender and occupant position also remains quite stable from year to year, with the 2023 sample indicating a gender distribution proportionate to past surveys. As defined in Table 10, drivers were nearly twice as likely to be male than female (53.6% to 29.4%). In contrast, passengers were twice as likely to be female than male (11.9% to 4.7%).

Table 10: Sample by Gender & Occupant Position

Occupants Observed	2019	% of Sample	2020	% of Sample	2021	% of Sample	2022	% of Sample	2023	% of Sample
Drivers:										
Male	14,790	48.7%	12,290	51.4%	15,267	49.7%	11,157	53.4%	12,392	53.6%
Female	7,618	25.1%	6,074	25.4%	7,685	25.0%	5,824	27.9%	6,808	29.4%
Passengers:										
Male	2,131	7.0%	1,541	6.4%	2,235	7.3%	1,134	5.4%	1,096	4.7%
Female	5,579	18.4%	3,549	14.8%	5,383	17.5%	2,627	12.6%	2,745	11.9%
Unknown:	248	0.8%	457	1.9%	121	0.4%	108	0.7%	88	0.3%
Total	30,366	100.0%	23,911	100.0%	30,691	100.0%	20,883	100.0%	23,129	100.0%

Current survey results corroborate higher rates of use by females regardless of occupant position (Figure 13). Female drivers and passengers demonstrated the highest usage rate (94%, 94.7%) of all gender and occupant positions. This was followed by male drivers at 85.9% and male passengers at 80.7%. While these measures of restraint use resume the upward trend for females in both occupant groups and male drivers, male passenger rates have been steadily decreasing since 2021, along with their share of the sample size.

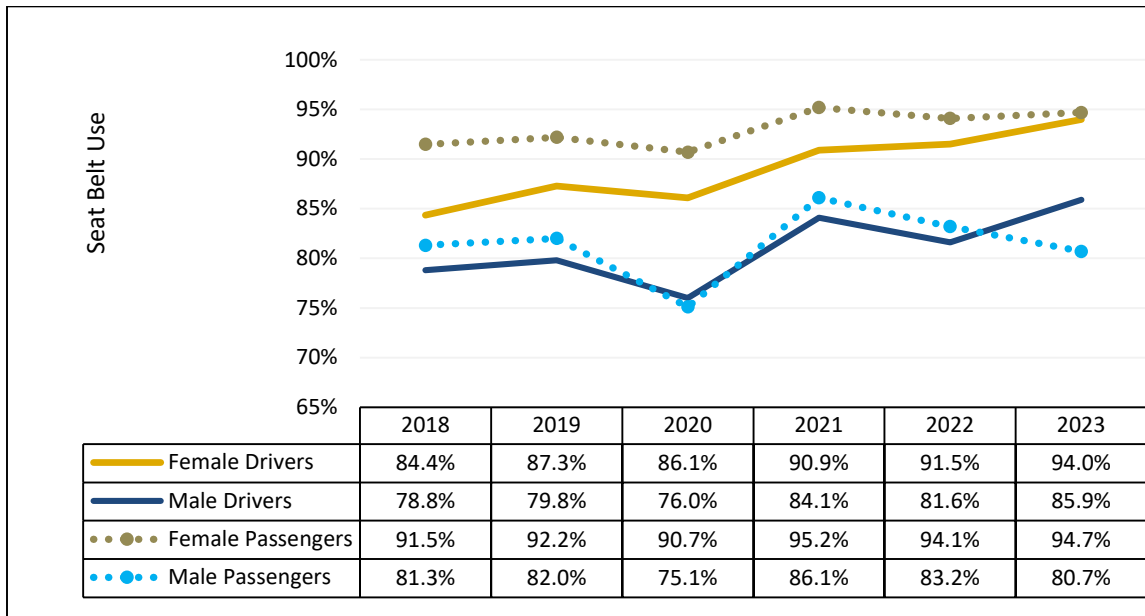


Figure 13: Percent Belted by Gender & Position, Annual, Unweighted

Figure 14 identifies the three-year average rates of seat belt use by all gender and occupant positions. Female drivers demonstrated an average rate of 85.9% in the 2018-2020 period and increased to 92.1% in the most recent three-year period. The male driver group also increased between the two periods, from 78.2% to 83.9%. Passenger rates increased for both females and males, from 91.5% to 94.7% and 79.5% to 83.3%, respectively.

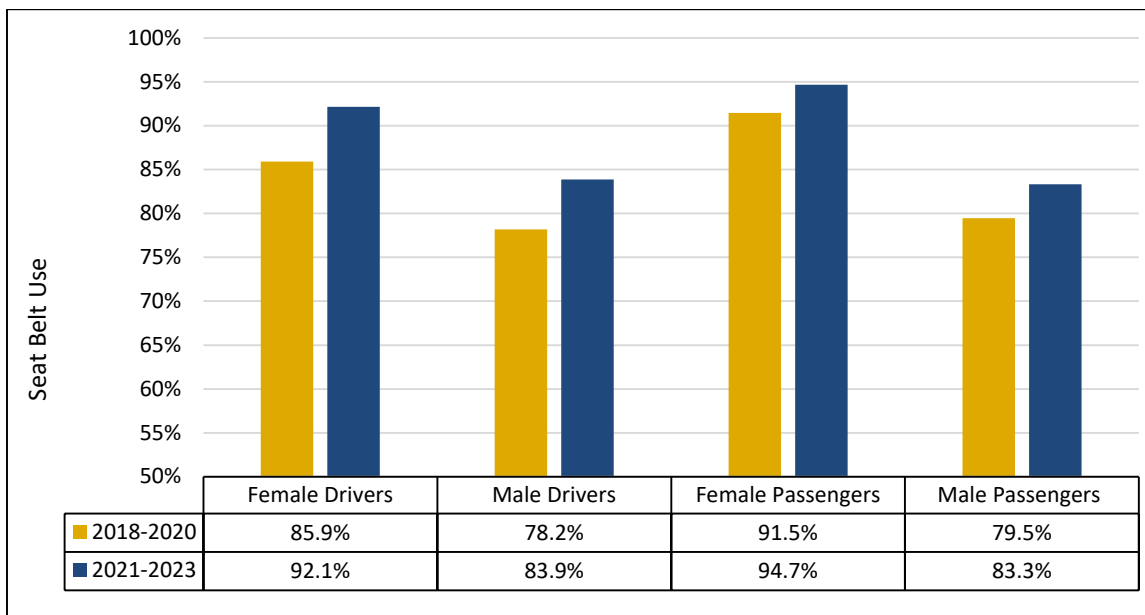


Figure 14: Seat Belt Use by Gender & Position, Three-Year Averages, Unweighted

Seat belt use rates in individual counties differ for all occupant positions, as seen in Table 11. At the county level, female driver rates were generally high, with only two counties belted below 80%, compared with male drivers in six counties belted below 80%. Female passenger rates were 80% or more in all counties other than Butte (77.3%), with male passengers above 80% in 10 counties.

Table 11: Percent Belted by Gender, Position, & County, 2023, Unweighted

COUNTY	FEMALE		MALE	
	DRIVERS	PASSENGERS	DRIVERS	PASSENGERS
Beadle	93.2%	98.9%	85.9%	96.6%
Butte	57.5%	77.3%	51.2%	49.5%
Clay	98.3%	100.0%	94.8%	91.8%
Fall River	95.2%	92.5%	87.1%	66.7%
Hanson	97.9%	98.6%	91.3%	95.4%
Harding	58.0%	84.4%	51.9%	56.1%
Hughes	93.5%	100.0%	77.6%	93.8%
Kingsbury	97.3%	99.3%	91.8%	96.4%
Lawrence	90.7%	95.5%	76.4%	68.0%
Lincoln	99.7%	96.5%	92.4%	97.1%
Lyman	98.9%	100.0%	96.9%	100.0%
Meade	96.3%	96.5%	92.1%	91.2%
Minnehaha	89.7%	87.2%	76.9%	75.0%
Moody	94.9%	99.1%	91.7%	90.6%
Pennington	94.1%	97.9%	89.8%	88.4%
Turner	94.6%	92.1%	73.8%	76.3%

Results by Gender and Vehicle Type

Examining the survey sample size without respect to the driver/passenger demographic shows the ratio of male to female occupants is about 1.4 to 1 (Table 12). The proportion of male occupants was larger than that of females in all vehicle types other than SUVs. A large gender imbalance continues to be noticed in the truck category, where males represented 80.6% of the occupant share in this vehicle type.

Table 12: Sample by Vehicle Type & Gender

Occupants Observed	2019	% of Sample	2020	% of Sample	2021	% of Sample	2022	% of Sample	2023	% of Sample
Male										
Car	3,536	11.6%	2,800	11.7%	3,400	11.1%	2,252	10.8%	2,382	10.3%
SUV	4,323	14.2%	3,145	13.2%	5,041	16.4%	3,313	15.9%	3,508	15.2%
Truck	7,516	24.8%	6,865	28.7%	7,610	24.8%	5,711	27.3%	6,398	27.7%
Van	1,546	5.1%	1,021	4.3%	1,451	4.7%	1,015	4.9%	1,200	5.2%
Female										
Car	3,740	12.3%	2,792	11.7%	3,363	11.0%	2,064	9.9%	2,334	10.1%
SUV	5,588	18.4%	4,082	17.1%	6,196	20.2%	4,156	19.9%	4,653	20.1%
Truck	2,304	7.6%	1,772	7.4%	2,204	7.2%	1,320	6.3%	1,540	6.7%
Van	1,565	5.2%	977	4.1%	1,305	4.3%	911	4.4%	1,026	4.4%
Unknown:	245	0.8%	457	1.9%	121	0.4%	141	0.7%	88	0.4%
Total	30,363	100.0%	23,911	100.0%	30,691	100.0%	20,742	100.0%	23,129	100.0%

Differences in seat belt use by gender varied across vehicle types (Figure 15). Male occupants were belted from a low of 81.2% in trucks to a high of 91.5% in SUVs. Females were belted at higher rates than males in all vehicle types, ranging from a low of 91.8% in trucks to a high of 95.6% in SUVs.

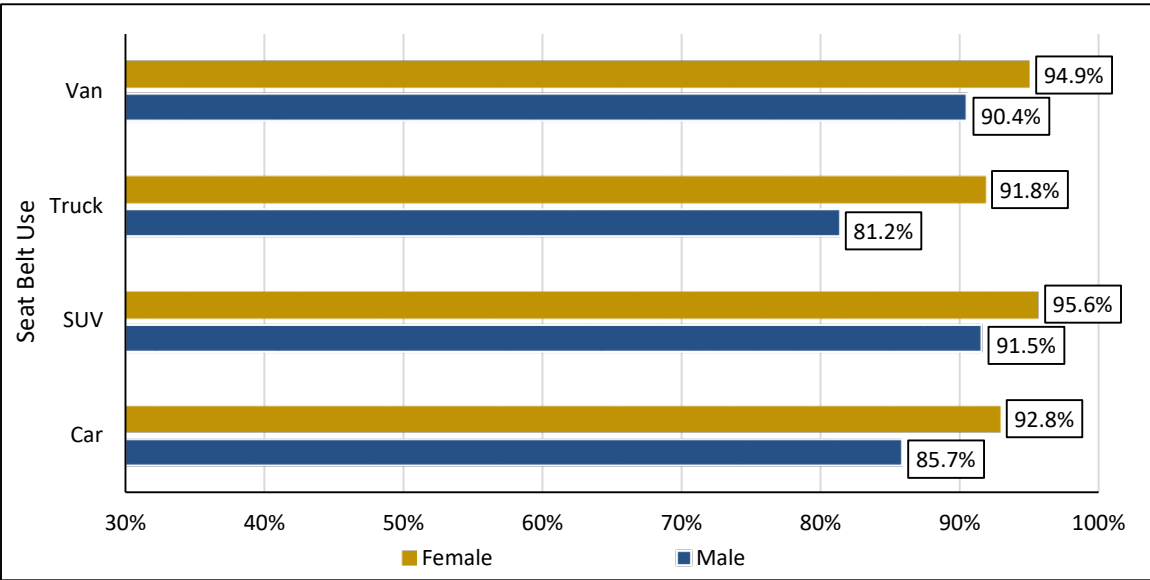


Figure 15: Percent Belted by Gender & Vehicle Type, 2023, Unweighted

The extent of the disparity between male and female seat belt use varies from year to year, as seen in Table 13. Male use has been lower than female use in every vehicle type in every year by as much as 13.4 percentage points (2020, trucks) to as little as 4.1 percentage points (2019, 2023, SUVs). Annual

belt use rates for both genders have been highest in SUVs and vans. Males have consistently demonstrated the lowest use rates in trucks, and females were observed to have the lowest use in cars from 2019-2021, and in trucks more recently.

Table 13: Annual Percent Belted by Gender & Vehicle Type, Unweighted

Male	2019	2020	2021	2022	2023
Car	78.9%	74.6%	83.0%	83.7%	85.7%
SUV	87.6%	83.0%	90.5%	87.4%	91.5%
Truck	75.0%	72.3%	80.1%	77.1%	81.2%
Van	86.2%	81.8%	88.5%	85.3%	90.4%
Female	2019	2020	2021	2022	2023
Car	85.5%	83.8%	88.2%	89.8%	92.8%
SUV	91.8%	90.4%	95.0%	94.3%	95.6%
Truck	87.8%	85.6%	91.4%	88.5%	91.8%
Van	92.8%	92.1%	95.2%	94.5%	94.9%

Figure 16 compares the three-year average rates of seat belt use by both genders and vehicle type. Both genders demonstrated increased use from the 2018-2020 period to the 2021-2023 period in all vehicle types. Both genders showed the most improvement in cars, with male rates increasing rates by 7.1 percentage points and females by 5.9 percentage points.

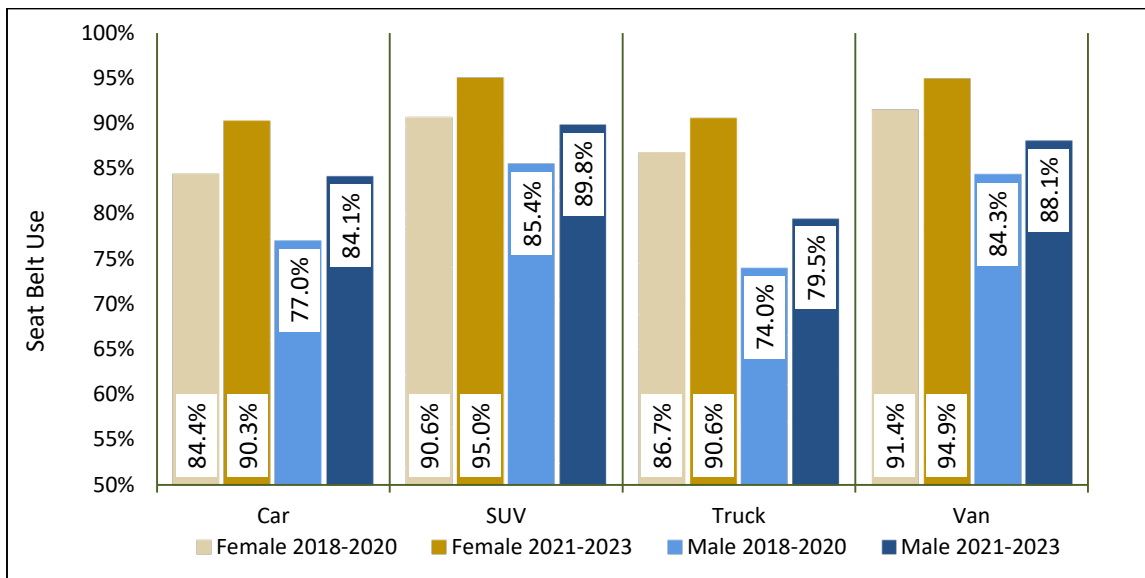


Figure 16: Seat Belt Use by Gender & Vehicle Type, Three-Year Averages, Unweighted

Results by Road Type

Roadways are classified into three road types and broadly described as follows, with more comprehensive definitions provided in Appendix D:

- Primary road: divided, limited-access, e.g., interstates
- Secondary road: main arteries usually in the U.S./state/county highway systems
- Local neighborhood road/rural road/city street: paved, non-arterial streets

While it is typical to see annual variations in the regional sample size by road class, the NHTSA-mandated reselection of sites in 2022 heightened the disparities. Historically, as seen in Table 14, the largest proportion of the sample came from primary roads, followed by secondary, then local. Since the reselection, however, the sample reflects a noticeable increase in the share of secondary roads, while primary and local road shares have decreased.

The east region contributed to two-thirds of the sample, with 13,722 observations, while the remaining 9,407 observations were collected in the west. Occupants traveling on primary, secondary, and local roads in the east accounted for 24.0%, 29.8%, and 5.5% of observations, respectively. In the west, primary, secondary, and local roads accounted for 11.5%, 23.8%, and 5.5% of observations, respectively. Overall, the largest proportion of observations was collected on secondary roadways (53.6%), followed by primary (35.5%), with the smallest proportion coming from local roadways (11.0%).

Table 14: Sample by Region & Road Type

Occupants Observed	2019	% of Sample	2020	% of Sample	2021	% of Sample	2022	% of Sample	2023	% of Sample
East										
Primary	6,775	22.3%	5,228	21.9%	4,363	14.2%	5,234	25.1%	5,558	24.0%
Secondary	5,739	18.9%	5,078	21.2%	5,713	18.6%	6,366	30.5%	6,884	29.8%
Local	1,667	5.5%	1,482	6.2%	1,808	5.9%	807	3.9%	1,280	5.5%
Total East	14,181	46.7%	11,788	49.3%	11,884	38.7%	12,407	59.4%	13,722	59.3%
West										
Primary	7,875	25.9%	5,357	22.4%	9,918	32.3%	2,473	11.8%	2,651	11.5%
Secondary	5,570	18.3%	4,230	17.7%	5,769	18.8%	5,270	25.2%	5,494	23.8%
Local	2,740	9.0%	2,536	10.6%	3,120	10.2%	733	3.5%	1,262	5.5%
Total West	16,185	53.3%	12,123	50.7%	18,807	61.3%	8,476	40.6%	9,407	40.7%
Total	30,366	100.0%	23,911	100.0%	30,691	100.0%	20,883	100.0%	23,129	100.0%

Sample variations were associated with revisions in the number of sites drawn for each road type as well as traffic volumes at new site locations. Contextual information is provided in Figure 17, identifying the proportion of sites by road type established with the amended methodology in 2012 followed by the reselections in 2017 and 2022. Although the weighted results do include adjustments for changes to road site characteristics, the unweighted results may be influenced by the site mix and underlying characteristics, such as higher use rates on interstate corridors.

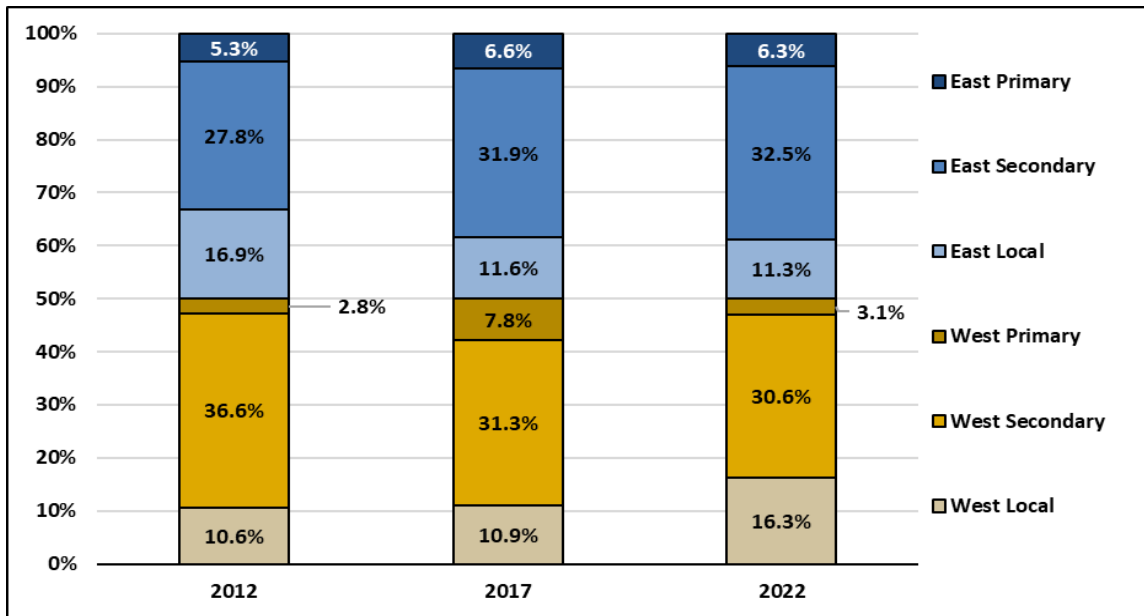


Figure 17: Percent of 320 Survey Sites by Road Type, 2012, 2017, 2022

Occupants on primary roads have historically belted at higher rates than those on local and secondary roads, as shown in Figure 18. Seat belt use was approximately 10 percentage points higher on primary roads (95.3%) than on local (86.3%) and secondary roads (85.6%) in 2023. Rates for all road types were the highest seen in the most recent five-year time period.

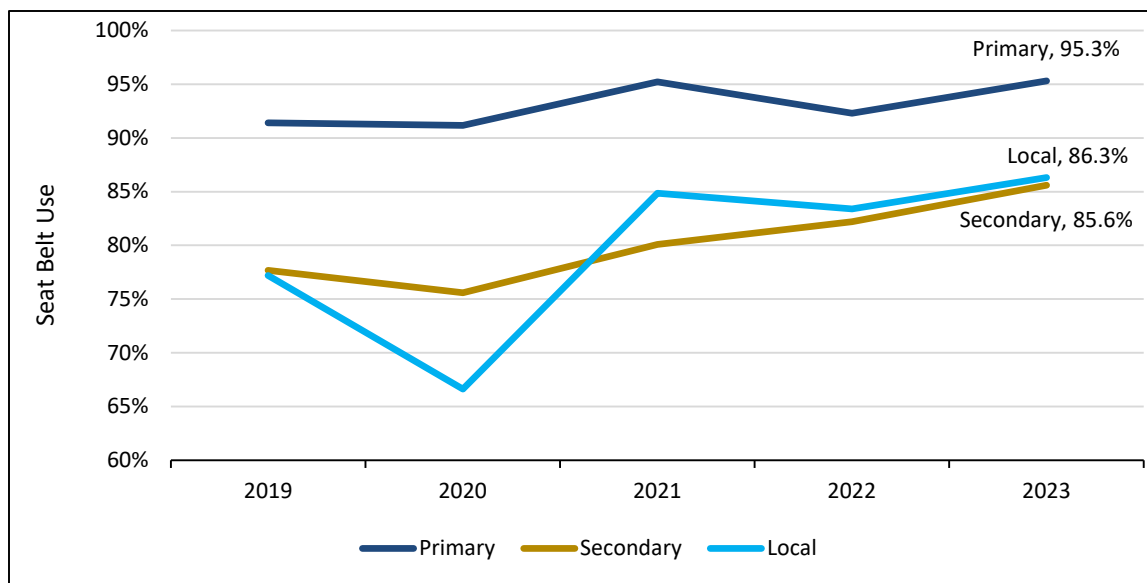


Figure 17: Percent Belted by Road Type, Annual, Unweighted

Annual rates stratified by region and road type for the most recent five years are shown in Table 15. Restraint use on primary roads in the east region ranged from 94.0% to 97.8%, and in the west ranged from 85.5% to 95.9%. Secondary road rates ranged from 79.4% to 90.6% in the east and 70.9% to 79.4% in the west. Local road rates ranged from 66.0% to 91.4% in the east and 67.0% to 87.0% in the west. Rates in the east have typically been higher than the west on primary and secondary roads; however, the disparity between regions is less predictable with local roads.

Table 15: Annual Percent Belted by Region & Road Type, Unweighted

EAST	2019	2020	2021	2022	2023
Primary	94.5%	97.0%	97.8%	94.0%	95.0%
Secondary	83.7%	79.4%	84.4%	88.5%	90.6%
Local	91.4%	66.0%	84.8%	88.1%	85.6%
WEST	2019	2020	2021	2022	2023
Primary	88.7%	85.5%	94.1%	88.8%	95.9%
Secondary	71.5%	70.9%	75.9%	74.6%	79.4%
Local	68.6%	67.0%	84.9%	78.3%	87.0%
TOTAL	2019	2020	2021	2022	2023
Primary	91.4%	91.2%	95.2%	92.3%	95.3%
Secondary	77.7%	75.6%	80.1%	82.2%	85.6%
Local	77.2%	66.6%	84.9%	83.4%	86.3%

The 2023 survey results showed comparable restraint use on primary roads in the east (95.0%) and west (95.9%) regions. Rates on local roads were also comparable between regions, at 85.6% and 87.0% in the east and west, respectively. Occupants on secondary roads in the east (90.6%) demonstrated higher use rates than those in the west (79.4%) by a difference of 11.2 percentage points.

Increases in rates are evident in most road classifications and regions when comparing three-year averages (Figure 19). Although the extent of these increases varies, the largest improvement over time was demonstrated on local roads in the west region, increasing by just over 13 percentage points.

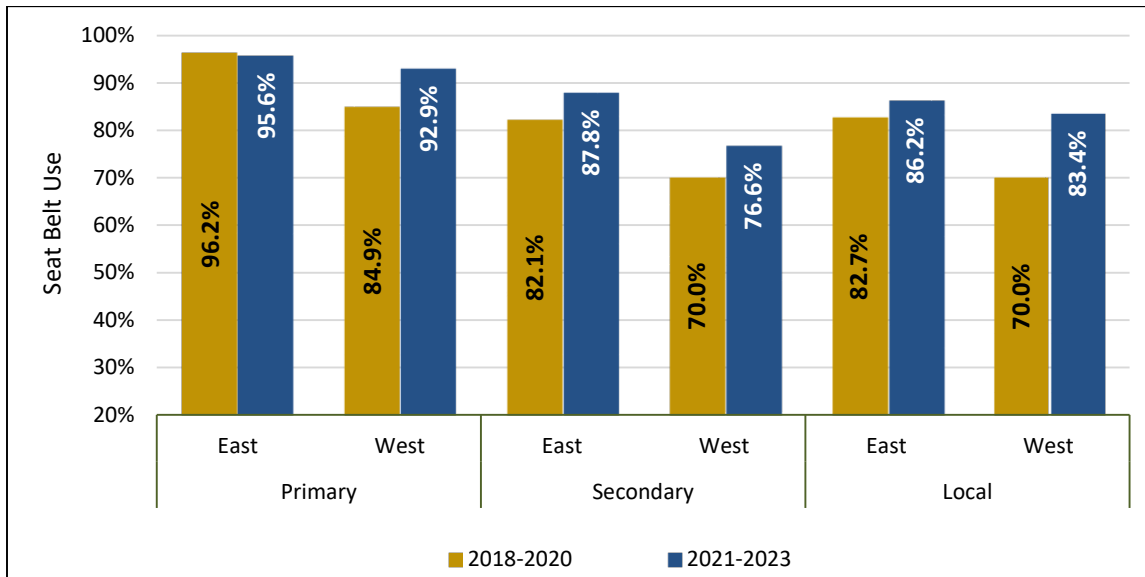


Figure 19: Seat Belt Use by Road Type Region, Three Year Averages, Unweighted

Additional insight is found in delineating restraint use by road type and metropolitan statistical areas (MSA). MSA counties are defined as a core area consisting of a larger population nucleus and adjacent communities with high economic and social involvement (U.S. Census Bureau). The designated MSA counties in the South Dakota observational seat belt survey are Lawrence, Lincoln, Meade, Minnehaha, and Pennington. Higher use on primary roads was found in non-MSA counties than in MSAs, 96.1% and

92.1%, respectively. On secondary roads, comparable use was demonstrated in MSA counties (86.7%) and non-MSAs (85.5%). Local roads were only selected in MSA counties according to survey methodology, and restraint use was 86.3%. The data shown in Figure 20 are unweighted and do not account for the allocation of sites by road type in the two categories.

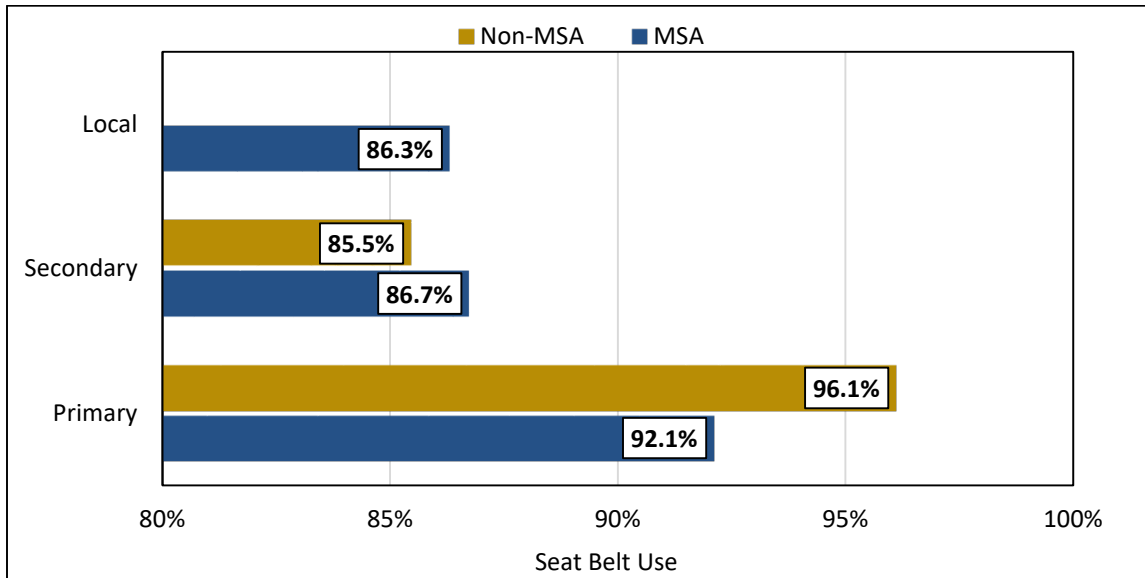


Figure 20: Percent Belted by Road Type & Metropolitan Statistical Areas, 2023, Unweighted

Table 16 shows a regional breakdown of sample size and restraint use by county designation and road type. The majority of primary road observations were collected in non-MSA counties, where counties in the east were belted at 95.3% and in the west at 98.4%. Occupants on primary roads in MSA counties were belted at a rate of 93.4% in the east, compared with 91.0% in the west. Secondary road occupants were also sampled more heavily in non-MSA counties than in MSA counties. Occupants in non-MSA counties on this road type demonstrated rates of 91.2% in the east and 77.2% in the west, while MSA county rates were 82.5% and 88.5% in the east and west regions, respectively. As mentioned previously, observations were collected on local roads in MSA counties only per NHTSA protocol guidance. The rates on local roads were 85.6% in the east and 87.0% in the west.

Table 16: Sample and Percent Belted Use by Region & MSA Designation

Occupants Observed		East		West	
Road Type	MSA	Sample	Belted	Sample	Belted
Primary	MSA	772	93.4%	902	91.0%
	non-MSA	4786	95.3%	1749	98.4%
Secondary	MSA	451	82.5%	1080	88.5%
	non-MSA	6433	91.2%	4414	77.2%
Local	MSA	1280	85.6%	1262	87.0%
	non-MSA	n.a.	n.a.	n.a.	n.a.

APPENDICES

Appendix A: Survey Methodology

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 a fatality-based inclusion criterion as opposed to the population-based criterion of the past. This methodology was used for surveys from 2012 to 2016. The federal rule directs states to update sampling frame data every five years to ensure accurate fatality distribution as well as a representative inventory of road segments. Accordingly, in 2022, a review of fatalities over the five-year period 2015 to 2019 was performed, resulting in changes in county involvement and a complete reselection of sites.

It was determined that 35 counties accounted for at least 85% of South Dakota's total crash-related fatalities from 2015 to 2019. A subsample of 16 counties was selected for the survey of seat belt use in South Dakota. 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 was selected, providing a total of 320 site locations across the state. In the event that any original sites could not be observed due to unforeseen circumstances, a reserve sample of sites was also selected. The sites within the counties are the secondary sampling unit. The sites were stratified by road types, identified within three MAF/TIGER Feature Class Code (MTFCC) 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 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 primary sampling unit (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 . Four certainty counties were identified in the west region: Lawrence, Lincoln, Meade, and Pennington. Minnehaha was the only county 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 their MTFCC class: primary, secondary, and local. The list of eligible road segments within each county was then sorted by segment length within each 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. Only one certainty road segment was 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 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 Sunday through Saturday 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 observations.

Under the 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:

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

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

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

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.

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

Beadle County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.00880	4.95350	67	70	95.7%
2	0.01330	4.95350	110	119	92.4%
3	0.01910	4.95350	69	80	86.3%
4	0.02530	4.95350	62	71	87.3%
5	0.03120	4.95350	76	88	86.4%
6	0.03730	4.95350	101	123	82.1%
7	0.04660	4.95350	55	58	94.8%
8	0.05320	4.95350	81	84	96.4%
9	0.06150	4.95350	107	122	87.7%
10	0.06930	4.95350	89	92	96.7%
11	0.07750	4.95350	78	80	97.5%
12	0.08050	4.95350	83	84	98.8%
13	0.08910	4.95350	68	71	95.8%
14	0.10630	4.95350	32	44	72.7%
15	0.11830	4.95350	19	24	79.2%
16	0.13800	4.95350	15	18	83.3%
17	0.15020	4.95350	36	45	80.0%
18	0.15830	4.95350	38	40	95.0%
19	0.15940	4.95350	23	28	82.1%
20	0.17840	4.95350	20	22	90.9%

Butte County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.01050	2.82430	67	110	60.9%
2	0.01690	2.82430	13	20	65.0%
3	0.02570	2.82430	28	43	65.1%
4	0.03230	2.82430	16	31	51.6%
5	0.03830	2.82430	9	14	64.3%
6	0.04600	2.82430	8	16	50.0%
7	0.05410	2.82430	4	12	33.3%
8	0.06100	2.82430	46	111	41.4%
9	0.06920	2.82430	50	108	46.3%
10	0.07650	2.82430	19	31	61.3%
11	0.08110	2.82430	39	56	69.6%
12	0.09120	2.82430	39	67	58.2%
13	0.09770	2.82430	52	87	59.8%
14	0.10570	2.82430	26	36	72.2%
15	0.11470	2.82430	32	59	54.2%
16	0.12460	2.82430	15	26	57.7%
17	0.14190	2.82430	15	16	93.8%
18	0.16150	2.82430	32	60	53.3%
19	0.24180	2.82430	9	16	56.3%
20	0.54290	2.82430	64	107	59.8%

Clay County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.00300	5.92300	83	88	94.3%
2	0.02040	5.92300	126	129	97.7%
3	0.03350	5.92300	113	113	100.0%
4	0.04060	5.92300	134	135	99.3%
5	0.05650	5.92300	17	18	94.4%
6	0.06530	5.92300	132	148	89.2%
7	0.07200	5.92300	103	106	97.2%
8	0.07830	5.92300	52	55	94.5%
9	0.08640	5.92300	157	166	94.6%
10	0.10200	5.92300	109	114	95.6%
11	0.12020	5.92300	115	120	95.8%
12	0.12930	5.92300	115	116	99.1%
13	0.13850	5.92300	139	143	97.2%
14	0.15660	5.92300	21	22	95.5%
15	0.16520	5.92300	39	45	86.7%
16	0.17860	5.92300	100	103	97.1%
17	0.18480	5.92300	23	23	100.0%
18	0.19460	5.92300	104	106	98.1%
19	0.21100	5.92300	38	46	82.6%
20	0.31420	5.92300	201	203	99.0%

Fall River County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.00530	3.65850	71	87	81.6%
2	0.01120	3.65850	57	72	79.2%
3	0.01720	3.65850	88	100	88.0%
4	0.02160	3.65850	119	132	90.2%
5	0.02780	3.65850	25	30	83.3%
6	0.03300	3.65850	49	53	92.5%
7	0.03890	3.65850	44	51	86.3%
8	0.04590	3.65850	163	181	90.1%
9	0.05250	3.65850	53	62	85.5%
10	0.05650	3.65850	163	180	90.6%
11	0.06280	3.65850	12	16	75.0%
12	0.06970	3.65850	129	149	86.6%
13	0.08260	3.65850	4	6	66.7%
14	0.09240	3.65850	31	34	91.2%
15	0.10140	3.65850	149	154	96.8%
16	0.10840	3.65850	154	168	91.7%
17	0.11330	3.65850	165	174	94.8%
18	0.13190	3.65850	3	5	60.0%
19	0.15520	3.65850	20	23	87.0%
20	0.21250	3.65850	118	136	86.8%

Hanson County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.05290	6.20720	378	395	95.7%
2	0.08650	6.20720	255	270	94.4%
3	0.12300	6.20720	315	344	91.6%
4	0.16310	6.20720	327	342	95.6%
5	0.20810	6.20720	329	347	94.8%
6	0.22730	6.20720	437	453	96.5%
7	0.25830	6.20720	278	284	97.9%
8	0.40560	6.20720	303	319	95.0%
9	0.01760	6.20720	10	11	90.9%
10	0.03540	6.20720	18	19	94.7%
11	0.05370	6.20720	7	7	100.0%
12	0.06480	6.20720	21	27	77.8%
13	0.08160	6.20720	14	15	93.3%
14	0.08770	6.20720	24	31	77.4%
15	0.10160	6.20720	18	25	72.0%
16	0.11340	6.20720	26	29	89.7%
17	0.12730	6.20720	34	34	100.0%
18	0.14410	6.20720	25	29	86.2%
19	0.18230	6.20720	11	12	91.7%
20	0.18980	6.20720	20	22	90.9%

Harding County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.01750	7.66220	8	16	50.0%
2	0.03760	7.66220	2	3	66.7%
3	0.05130	7.66220	1	6	16.7%
4	0.05850	7.66220	6	9	66.7%
5	0.06620	7.66220	28	34	82.4%
6	0.07580	7.66220	19	55	34.5%
7	0.08620	7.66220	65	112	58.0%
8	0.09310	7.66220	49	67	73.1%
9	0.10270	7.66220	14	19	73.7%
10	0.10690	7.66220	20	30	66.7%
11	0.11700	7.66220	34	45	75.6%
12	0.12390	7.66220	3	8	37.5%
13	0.14400	7.66220	36	57	63.2%
14	0.15030	7.66220	39	65	60.0%
15	0.18110	7.66220	0	0	0.0%
16	0.21190	7.66220	6	9	66.7%
17	0.24230	7.66220	4	5	80.0%
18	0.27390	7.66220	20	50	40.0%
19	0.32930	7.66220	2	6	33.3%
20	0.48990	7.66220	26	35	74.3%

Hughes County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.01500	2.72760	83	109	76.1%
2	0.02220	2.72760	44	48	91.7%
3	0.03240	2.72760	15	19	78.9%
4	0.04510	2.72760	6	7	85.7%
5	0.05330	2.72760	28	28	100.0%
6	0.06720	2.72760	83	101	82.2%
7	0.08120	2.72760	25	25	100.0%
8	0.09750	2.72760	4	6	66.7%
9	0.10790	2.72760	15	19	78.9%
10	0.12140	2.72760	58	69	84.1%
11	0.13170	2.72760	23	30	76.7%
12	0.14410	2.72760	10	10	100.0%
13	0.16220	2.72760	4	6	66.7%
14	0.18590	2.72760	9	13	69.2%
15	0.19990	2.72760	31	32	96.9%
16	0.20240	2.72760	10	13	76.9%
17	0.25810	2.72760	18	18	100.0%
18	0.36710	2.72760	5	7	71.4%
19	0.60670	2.72760	2	5	40.0%
20	0.64160	2.72760	2	2	100.0%

Kingsbury County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.01660	9.12060	79	82	96.3%
2	0.03270	9.12060	97	99	98.0%
3	0.06450	9.12060	90	104	86.5%
4	0.10290	9.12060	20	20	100.0%
5	0.12930	9.12060	48	52	92.3%
6	0.16830	9.12060	19	22	86.4%
7	0.18030	9.12060	48	52	92.3%
8	0.20660	9.12060	58	59	98.3%
9	0.22470	9.12060	48	51	94.1%
10	0.22700	9.12060	39	40	97.5%
11	0.22770	9.12060	51	51	100.0%
12	0.22780	9.12060	53	55	96.4%
13	0.22800	9.12060	61	67	91.0%
14	0.22830	9.12060	23	29	79.3%
15	0.22850	9.12060	20	20	100.0%
16	0.22880	9.12060	56	59	94.9%
17	0.22910	9.12060	33	36	91.7%
18	0.22950	9.12060	42	44	95.5%
19	0.23390	9.12060	44	44	100.0%
20	0.45530	9.12060	63	67	94.0%

Lawrence County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.00390	1.00000	371	429	86.5%
2	0.00130	1.00000	268	327	82.0%
3	0.01080	1.00000	238	268	88.8%
4	0.00050	1.00000	39	48	81.3%
5	0.00120	1.00000	215	290	74.1%
6	0.00170	1.00000	1	1	100.0%
7	0.00240	1.00000	2	2	100.0%
8	0.00310	1.00000	5	5	100.0%
9	0.00390	1.00000	0	0	0.0%
10	0.00470	1.00000	2	4	50.0%
11	0.00590	1.00000	3	3	100.0%
12	0.00690	1.00000	13	15	86.7%
13	0.00820	1.00000	6	10	60.0%
14	0.00980	1.00000	5	6	83.3%
15	0.01160	1.00000	18	18	100.0%
16	0.01380	1.00000	4	7	57.1%
17	0.01660	1.00000	1	1	100.0%
18	0.02050	1.00000	4	4	100.0%
19	0.02490	1.00000	0	0	0.0%
20	0.03370	1.00000	1	1	100.0%

Lincoln County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.00840	1.00000	252	252	100.0%
2	0.00490	1.00000	84	92	91.3%
3	0.00050	1.00000	181	184	98.4%
4	0.00080	1.00000	264	266	99.2%
5	0.00100	1.00000	8	10	80.0%
6	0.00130	1.00000	0	0	0.0%
7	0.00170	1.00000	0	0	0.0%
8	0.00210	1.00000	0	0	0.0%
9	0.00260	1.00000	11	13	84.6%
10	0.00300	1.00000	0	0	0.0%
11	0.00350	1.00000	7	7	100.0%
12	0.00410	1.00000	0	0	0.0%
13	0.00480	1.00000	2	2	100.0%
14	0.00550	1.00000	4	4	100.0%
15	0.00610	1.00000	1	3	33.3%
16	0.00650	1.00000	16	21	76.2%
17	0.00750	1.00000	71	80	88.8%
18	0.00910	1.00000	44	51	86.3%
19	0.01120	1.00000	9	11	81.8%
20	0.01270	1.00000	0	0	0.0%

Lyman County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.01660	1.82650	231	233	99.1%
2	0.02880	1.82650	267	273	97.8%
3	0.05910	1.82650	330	331	99.7%
4	0.06760	1.82650	187	190	98.4%
5	0.09310	1.82650	211	212	99.5%
6	0.11640	1.82650	270	278	97.1%
7	0.17420	1.82650	225	232	97.0%
8	0.00770	1.82650	15	17	88.2%
9	0.02120	1.82650	26	26	100.0%
10	0.02990	1.82650	4	5	80.0%
11	0.03570	1.82650	17	20	85.0%
12	0.04410	1.82650	9	9	100.0%
13	0.05710	1.82650	16	17	94.1%
14	0.06920	1.82650	14	16	87.5%
15	0.07810	1.82650	7	10	70.0%
16	0.09750	1.82650	12	15	80.0%
17	0.12650	1.82650	0	0	0.0%
18	0.13870	1.82650	9	10	90.0%
19	0.20510	1.82650	90	94	95.7%
20	0.27670	1.82650	130	135	96.3%

Meade County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.01810	1.00000	208	220	94.5%
2	0.00430	1.00000	66	73	90.4%
3	0.00030	1.00000	39	40	97.5%
4	0.00090	1.00000	114	118	96.6%
5	0.00160	1.00000	5	6	83.3%
6	0.00240	1.00000	80	88	90.9%
7	0.00320	1.00000	2	2	100.0%
8	0.00400	1.00000	74	75	98.7%
9	0.00490	1.00000	0	0	0.0%
10	0.00580	1.00000	4	6	66.7%
11	0.00680	1.00000	7	7	100.0%
12	0.00770	1.00000	4	4	100.0%
13	0.00870	1.00000	3	3	100.0%
14	0.00980	1.00000	148	158	93.7%
15	0.01050	1.00000	8	10	80.0%
16	0.01180	1.00000	46	51	90.2%
17	0.01400	1.00000	18	20	90.0%
18	0.01650	1.00000	15	17	88.2%
19	0.02070	1.00000	5	5	100.0%
20	0.03070	1.00000	47	49	95.9%

Minnehaha County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.00490	1.00000	469	520	90.2%
2	0.00320	1.00000	288	359	80.2%
3	0.00030	1.00000	6	10	60.0%
4	0.00050	1.00000	9	24	37.5%
5	0.00060	1.00000	17	17	100.0%
6	0.00070	1.00000	53	69	76.8%
7	0.00090	1.00000	37	53	69.8%
8	0.00110	1.00000	23	26	88.5%
9	0.00140	1.00000	31	44	70.5%
10	0.00170	1.00000	0	0	0.0%
11	0.00210	1.00000	201	249	80.7%
12	0.00260	1.00000	2	2	100.0%
13	0.00320	1.00000	14	22	63.6%
14	0.00380	1.00000	21	27	77.8%
15	0.00420	1.00000	60	80	75.0%
16	0.00510	1.00000	0	0	0.0%
17	0.00610	1.00000	0	0	0.0%
18	0.00720	1.00000	0	0	0.0%
19	0.00790	1.00000	2	2	100.0%
20	0.00800	1.00000	2	2	100.0%

Moody County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.04500	3.55490	259	270	95.9%
2	0.06130	3.55490	234	249	94.0%
3	0.10320	3.55490	158	164	96.3%
4	0.14570	3.55490	160	170	94.1%
5	0.20610	3.55490	146	153	95.4%
6	0.20740	3.55490	254	262	96.9%
7	0.35160	3.55490	175	183	95.6%
8	0.36630	3.55490	155	166	93.4%
9	0.40880	3.55490	168	176	95.5%
10	0.56610	3.55490	229	239	95.8%
11	0.01430	3.55490	23	26	88.5%
12	0.04120	3.55490	59	68	86.8%
13	0.06440	3.55490	37	43	86.0%
14	0.08800	3.55490	19	27	70.4%
15	0.10170	3.55490	62	68	91.2%
16	0.13290	3.55490	65	78	83.3%
17	0.15720	3.55490	80	84	95.2%
18	0.19680	3.55490	101	112	90.2%
19	0.20180	3.55490	59	62	95.2%
20	0.20350	3.55490	18	24	75.0%

Pennington County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.00010	1.00000	242	253	95.7%
2	0.00060	1.00000	148	164	90.2%
3	0.00550	1.00000	236	248	95.2%
4	0.00020	1.00000	3	3	100.0%
5	0.00040	1.00000	6	8	75.0%
6	0.00060	1.00000	26	33	78.8%
7	0.00080	1.00000	9	14	64.3%
8	0.00110	1.00000	1	1	100.0%
9	0.00140	1.00000	0	0	0.0%
10	0.00180	1.00000	20	20	100.0%
11	0.00220	1.00000	3	4	75.0%
12	0.00270	1.00000	59	65	90.8%
13	0.00320	1.00000	2	2	100.0%
14	0.00380	1.00000	15	15	100.0%
15	0.00440	1.00000	1	2	50.0%
16	0.00520	1.00000	1	1	100.0%
17	0.00590	1.00000	2	3	66.7%
18	0.00700	1.00000	11	13	84.6%
19	0.00910	1.00000	0	0	0.0%
20	0.01240	1.00000	1	1	100.0%

Turner County

June 2023

Site Rates With Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.01750	7.85230	34	51	66.7%
2	0.03590	7.85230	17	23	73.9%
3	0.04950	7.85230	58	72	80.6%
4	0.06100	7.85230	56	68	82.4%
5	0.07900	7.85230	7	9	77.8%
6	0.09270	7.85230	103	116	88.8%
7	0.10740	7.85230	50	59	84.7%
8	0.11430	7.85230	66	72	91.7%
9	0.12070	7.85230	67	74	90.5%
10	0.14700	7.85230	57	66	86.4%
11	0.15280	7.85230	32	41	78.0%
12	0.17280	7.85230	77	79	97.5%
13	0.18980	7.85230	28	39	71.8%
14	0.20320	7.85230	46	57	80.7%
15	0.20910	7.85230	36	45	80.0%
16	0.22410	7.85230	74	88	84.1%
17	0.23320	7.85230	70	81	86.4%
18	0.23480	7.85230	34	44	77.3%
19	0.23530	7.85230	28	49	57.1%
20	0.24710	7.85230	31	32	96.9%

Appendix C: Site Locations

Beadle County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	400th Ave	-98.21356	44.266245	N	0.00177
2	Dakota Ave S	-98.213788	44.319312	N	0.00268
3	US Hwy 14	-98.204625	44.370475	W	0.00386
4	US Hwy 14	-98.172594	44.370732	W	0.00511
5	US Hwy 14	-98.212174	44.370525	W	0.00629
6	Dakota Ave S	-98.214261	44.331784	E	0.00753
7	400th Ave	-98.213891	44.213099	E	0.00941
8	400th Ave	-98.213908	44.263413	S	0.01074
9	Dakota Ave S	-98.213669	44.300968	N	0.01242
10	400th Ave	-98.213896	44.228643	S	0.014
11	400th Ave	-98.213489	44.200169	N	0.01565
12	400th Ave	-98.213891	44.218893	S	0.01624
13	400th Ave	-98.214153	44.482488	N	0.018
14	US Hwy 281	-98.495432	44.432776	N	0.02146
15	387th St	-98.50248	44.595345	N	0.02389
16	State Hwy 28	-97.867791	44.631205	E	0.02786
17	US Hwy 14	-97.963333	44.368781	E	0.03033
18	400th Ave	-98.220424	44.581812	N	0.03196
19	400th Ave	-98.220535	44.610806	N	0.03218
20	387th St	-98.498901	44.538274	N	0.03601

Butte County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	US Hwy 212	-103.784053	44.691046	W	0.00373
2	Hwy 85 N	-103.851871	44.685069	S	0.006
3	State Hwy 79	-103.425515	44.732497	S	0.00911
4	US Hwy 212	-103.400066	44.721671	W	0.01144
5	State Hwy 79	-103.270359	45.11414	S	0.01357
6	US Hwy 212	-103.056645	44.90891	W	0.0163
7	US Hwy 212	-103.031031	44.918881	W	0.01917
8	US Hwy 212	-103.775393	44.691044	W	0.02159
9	US Hwy 212	-103.798859	44.687819	W	0.0245
10	US Hwy 212	-103.065947	44.903856	S	0.02709
11	US Hwy 85	-103.852576	44.801327	S	0.02872
12	US Hwy 212	-103.519118	44.676687	W	0.03229
13	US Hwy 212	-104.007891	44.782424	S	0.0346
14	State Hwy 79	-103.425348	44.811766	S	0.03744
15	US Hwy 212	-103.652074	44.689461	W	0.0406
16	State Hwy 79	-103.424813	44.892656	S	0.04413
17	State Hwy 79	-103.274142	45.101999	S	0.05023
18	US Hwy 85	-103.54865	45.115083	S	0.05717
19	State Hwy 168	-103.528274	45.013669	W	0.08563
20	US Hwy 212	-103.93071	44.731969	W	0.19223

Clay County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	E Cherry St	-96.90507	42.786531	W	0.0005
2	W Cherry St	-96.943251	42.786713	W	0.00345
3	State Hwy 50	-97.071231	42.843077	E	0.00566
4	State Hwy 50	-96.942208	42.793726	W	0.00686
5	State Hwy 19	-96.964014	42.981284	N	0.00954
6	E Cherry St	-96.91791	42.786626	W	0.01102
7	State Hwy 50	-97.064156	42.839834	E	0.01215
8	State Hwy 19	-96.963572	43.081019	N	0.01321
9	State Hwy 50	-97.150824	42.879396	E	0.01458
10	State Hwy 50	-96.951988	42.793706	W	0.01721
11	State Hwy 50	-97.00017	42.809944	W	0.02029
12	State Hwy 50	-97.029602	42.82429	W	0.02183
13	State Hwy 50	-97.078582	42.846758	W	0.02339
14	State Hwy 19	-96.964014	42.949966	N	0.02643
15	State Hwy 19	-96.953749	42.818913	N	0.02788
16	State Hwy 50	-97.126801	42.868458	E	0.03015
17	State Hwy 19	-96.963624	43.048698	N	0.0312
18	State Hwy 50	-97.136804	42.873025	W	0.03285
19	State Hwy 19	-96.952963	42.807172	N	0.03561
20	State Hwy 50	-96.836094	42.786127	E	0.05304

Fall River County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	US Hwy 18	-103.500699	43.428695	E	0.00146
2	US Hwy 18	-103.506818	43.427524	E	0.00306
3	State Hwy 89	-103.693928	43.467909	S	0.00469
4	US Hwy 18	-103.826461	43.30937	E	0.00591
5	Cascade Rd	-103.642508	43.182347	N	0.0076
6	US Hwy 385	-103.307003	43.257955	S	0.00903
7	US Hwy 18	-103.123346	43.187545	E	0.01063
8	State Hwy 79	-103.359771	43.445912	S	0.01254
9	US Hwy 18	-103.14626	43.188205	E	0.01435
10	State Hwy 79	-103.384725	43.422564	S	0.01545
11	Cascade Rd	-103.56177	43.318242	S	0.01717
12	US Hwy 385	-103.228813	43.033128	S	0.01905
13	State Hwy 471	-103.768139	43.188128	E	0.02259
14	US Hwy 18	-103.217864	43.187666	E	0.02526
15	US Hwy 385 N	-103.236814	43.16616	S	0.0277
16	State Hwy 79	-103.3476	43.467973	S	0.02962
17	US Hwy 385	-103.257618	43.208257	S	0.03096
18	State Hwy 471	-103.670817	43.109032	W	0.03603
19	Cascade Rd	-103.57807	43.270949	N	0.04243
20	US Hwy 385	-103.29804	43.242688	S	0.05809

Hanson County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 90	-97.789267	43.66471	E	0.00852
2	I- 90	-97.931294	43.694838	E	0.01393
3	I- 90	-97.712039	43.665649	E	0.01981
4	I- 90	-97.799278	43.665168	E	0.02627
5	I- 90	-97.74779	43.665037	E	0.03352
6	I- 90	-97.817033	43.667297	W	0.03661
7	I- 90	-97.868779	43.689911	E	0.04161
8	I- 90	-97.908428	43.694832	E	0.06534
9	427th Ave	-97.66643	43.664826	N	0.00284
10	State Hwy 42	-97.704683	43.543331	E	0.0057
11	State Hwy 42	-97.928819	43.542764	E	0.00866
12	State Hwy 38	-97.780264	43.702305	N	0.01043
13	427th Ave	-97.666436	43.670228	N	0.01314
14	State Hwy 38	-97.85288	43.702588	E	0.01413
15	427th Ave	-97.668697	43.829102	N	0.01637
16	State Hwy 262	-97.680831	43.619859	E	0.01826
17	State Hwy 262	-97.720356	43.632341	E	0.02051
18	State Hwy 38	-97.713947	43.702429	E	0.02322
19	State Hwy 42	-97.806256	43.540264	E	0.02936
20	State Hwy 38	-97.737698	43.702405	E	0.03058

Harding County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	State Hwy 79	-103.222536	45.224177	S	0.00228
2	State Hwy 20	-103.24486	45.539517	W	0.00491
3	State Hwy 20	-103.128508	45.542915	W	0.00669
4	State Hwy 20	-103.367289	45.558281	W	0.00764
5	State Hwy 79	-102.98392	45.756435	S	0.00864
6	US Hwy 85	-103.397996	45.783253	S	0.00989
7	US Hwy 85	-103.379974	45.815111	S	0.01125
8	State Hwy 79	-103.094714	45.496952	S	0.01214
9	State Hwy 79	-102.991853	45.725528	S	0.01341
10	State Hwy 79	-103.222541	45.231553	S	0.01395
11	State Hwy 79	-102.973752	45.8672	W	0.01527
12	State Hwy 20	-103.62735	45.583466	W	0.01616
13	State Hwy 79	-103.204309	45.262944	S	0.01879
14	State Hwy 79	-103.105904	45.45081	S	0.01962
15	State Hwy 20	-103.578985	45.581602	W	0.02363
16	State Hwy 20	-103.78535	45.5823	W	0.02766
17	State Hwy 20	-102.984393	45.536867	W	0.03162
18	US Hwy 85	-103.48365	45.667658	S	0.03574
19	State Hwy 20	-103.497333	45.559792	W	0.04298
20	US Hwy 85	-103.545674	45.487638	S	0.06393

Hughes County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	N Euclid Ave	-100.348493	44.373324	W	0.0055
2	State Hwy 1804	-100.351369	44.42813	N	0.00813
3	State Hwy 1804	-100.448015	44.505521	N	0.01188
4	US Hwy 14	-100.246312	44.419564	W	0.01652
5	State Hwy 1804	-100.402335	44.477341	N	0.01955
6	US Hwy 14	-100.30656	44.398951	W	0.02464
7	197th St	-99.728546	44.526925	W	0.02978
8	State Hwy 34	-100.217359	44.337758	W	0.03576
9	State Hwy 1804	-100.395108	44.47152	N	0.03954
10	US Hwy 14	-100.083057	44.495092	W	0.0445
11	284th Ave	-100.451544	44.539144	N	0.04829
12	US Hwy 14	-99.953651	44.524346	W	0.05282
13	State Hwy 34	-99.939208	44.290787	W	0.05945
14	US Hwy 14	-100.220277	44.429263	W	0.06815
15	197th St	-99.6941	44.526792	W	0.07328
16	US Hwy 14	-100.200864	44.436494	W	0.07419
17	State Hwy 1804	-100.362778	44.433866	N	0.09462
18	State Hwy 34	-100.056952	44.308204	W	0.13458
19	State Hwy 34	-99.875969	44.274757	W	0.2224
20	State Hwy 34	-99.754732	44.275897	W	0.2352

Kingsbury County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	W Elm St	-97.137295	44.367374	E	0.00182
2	US Hwy 14	-97.490054	44.370065	E	0.00358
3	US Hwy 14	-97.543267	44.377827	E	0.00707
4	433rd Ave	-97.551935	44.538526	S	0.01128
5	US Hwy 14	-97.425618	44.36765	E	0.01417
6	433rd Ave	-97.551579	44.374017	S	0.01844
7	US Hwy 14	-97.182838	44.365756	E	0.01976
8	US Hwy 14	-97.399817	44.361367	E	0.02264
9	US Hwy 14	-97.602043	44.383161	E	0.02463
10	454th Ave	-97.128895	44.289629	S	0.02488
11	454th Ave	-97.129128	44.231962	S	0.02495
12	US Hwy 14	-97.581986	44.383146	E	0.02497
13	US Hwy 14	-97.30056	44.36145	E	0.02499
14	433rd Ave	-97.552005	44.260405	S	0.02502
15	433rd Ave	-97.55214	44.477285	S	0.02505
16	454th Ave	-97.128591	44.434533	S	0.02508
17	454th Ave	-97.128887	44.30411	S	0.02511
18	454th Ave	-97.129123	44.260945	S	0.02515
19	US Hwy 14	-97.642084	44.379562	E	0.02563
20	US Hwy 14	-97.270291	44.361786	E	0.0499

Lawrence County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 90	-103.635349	44.469862	E	0.0039
2	US Hwy 85/CanAm Hwy	-103.860308	44.539998	N	0.00125
3	US Hwy 85/CanAm Hwy	-103.719685	44.404004	N	0.01079
4	Sunnyhill Rd	-103.775345	44.351075	N	0.00046
5	N 27th St	-103.814477	44.477994	N	0.00118
6	Boles Canyon Rd	-103.972941	44.217208	N	0.00167
7	Gift Edge Rd	-103.679149	44.336976	E	0.00238
8	Turtle Ln	-103.773887	44.492396	N	0.0031
9	196 St	-103.706623	44.561102	E	0.0039
10	Mayer Rd	-103.605531	44.5193	E	0.00473
11	Crago Loop	-103.896336	44.568882	E	0.00587
12	Baneberry Loop	-103.65471	44.396553	E	0.00693
13	Upper Redwater Rd	-103.98191	44.57573	N	0.00822
14	McNenny Rd	-104.005185	44.559909	E	0.00982
15	Merritt Estes Rd	-103.54436	44.14725	E	0.01156
16	Labrador Creek Rd	-103.836848	44.368887	N	0.01384
17	Co Rd 631	-103.927484	44.145455	N	0.01664
18	Co Rd 223	-103.956015	44.303483	N	0.0205
19	Co Rd 631	-103.891222	44.143219	E	0.02485
20	Forest Rd 144	-103.483751	44.203555	E	0.03368

Lincoln County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 29	-96.796332	43.094479	S	0.00841
2	478th Ave	-96.648507	43.376442	S	0.00489
3	473rd Ave	-96.747336	43.482028	S	0.00047
4	W 57th St	-96.794154	43.500283	W	0.00078
5	469th Ave	-96.825587	43.170184	W	0.00097
6	487th Ave	-96.470182	43.132713	S	0.00134
7	470th Ave	-96.805773	43.169766	W	0.00172
8	483rd Ave	-96.549441	43.171782	S	0.00214
9	W 69th St	-96.824269	43.490063	W	0.00259
10	296th St	-96.674722	43.098258	W	0.00304
11	486th Ave	-96.490098	43.175849	S	0.00354
12	477 Ave	-96.668285	43.221354	S	0.00408
13	280th St	-96.620716	43.329966	W	0.00476
14	486th Ave	-96.490038	43.159066	S	0.00545
15	486th Ave	-96.490024	43.146228	S	0.00611
16	472nd Ave	-96.767062	43.283124	S	0.00645
17	276th St	-96.563293	43.38782	W	0.0075
18	276th St	-96.675576	43.388043	W	0.00906
19	278th St	-96.834993	43.359463	W	0.01124
20	281st St	-96.697554	43.315582	W	0.01266

Lyman County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 90	-99.823199	43.88271	W	0.00909
2	I- 90	-99.641374	43.868481	W	0.01576
3	I- 90	-100.230338	43.91253	W	0.03237
4	I- 90	-99.755403	43.876989	W	0.03701
5	I- 90	-99.807797	43.878669	W	0.05094
6	I- 90	-100.088474	43.898632	W	0.06372
7	I- 90	-99.711528	43.87004	W	0.09539
8	State Hwy 47	-99.606023	43.881725	N	0.00424
9	State Hwy 47	-99.521352	43.667138	N	0.0116
10	State Hwy 53	-100.322944	43.721377	N	0.01634
11	State Hwy 47	-99.606002	43.916022	N	0.01955
12	Hwy 16	-100.278103	43.919755	W	0.02415
13	Hwy 16	-100.179592	43.915243	W	0.03126
14	US Hwy 183	-100.041045	43.75324	N	0.03788
15	State Hwy 47	-99.446464	44.027104	W	0.04276
16	US Hwy 183	-100.045859	43.866117	N	0.05339
17	US Hwy 183	-100.046168	43.717793	N	0.06928
18	State Hwy 53	-100.30001	43.789391	N	0.07592
19	US Hwy 83	-100.325921	43.975637	N	0.11231
20	US Hwy 83	-100.33943	44.093395	N	0.15148

Meade County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 90	-103.483497	44.381754	E	0.01809
2	State Hwy 34	-102.248889	44.60412	E	0.00434
3	194th St	-103.452414	44.590284	E	0.00028
4	Lemay Blvd	-103.093577	44.147192	S	0.00087
5	Middle Alkali Rd/County Hwy MC-7	-103.24689	44.369824	S	0.00161
6	Cheyenne Crossing Rd/County Hwy MC-39	-102.161343	44.457649	S	0.00242
7	Blanche St	-103.501369	44.41655	E	0.00315
8	135th Ave	-103.34472	44.447904	S	0.00401
9	198th Ave	-102.086026	45.026687	S	0.00492
10	Tifft Rd	-102.658799	44.575393	E	0.00579
11	224th Pl	-103.023831	44.154612	E	0.00677
12	Elk Creek Rd	-103.001602	44.241959	E	0.00769
13	Marcus Rd	-102.281601	44.610328	S	0.00869
14	SD-79	-103.437936	44.445559	E	0.00982
15	207th St/County Hwy MC-10	-103.347963	44.402016	E	0.01051
16	199th St/County Hwy MC-18	-103.315236	44.517922	E	0.01177
17	Plainview Rd/County Hwy MC-39	-102.172306	44.446863	S	0.01402
18	Fox Ridge Rd/County Hwy MC-35	-102.4494	44.989775	S	0.01654
19	Hope Rd/County Hwy MC-27	-102.682705	44.430534	E	0.02072
20	180th St	-102.148306	44.76548	E	0.03072

Minnehaha County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 29	-96.77088	43.629182	S	0.00493
2	E 10th St	-96.678089	43.545591	E	0.00319
3	457th Ave	-97.069572	43.639145	N	0.00033
4	E Bennett St	-96.705773	43.563017	E	0.00049
5	S Wildwood Cir	-96.725686	43.50083	E	0.00056
6	N Main Ave	-96.728348	43.554486	N	0.00071
7	463rd Ave	-96.950099	43.534106	N	0.00091
8	E Highline Pl	-96.655635	43.544936	E	0.0011
9	261st St	-96.6997	43.601882	E	0.00138
10	487th Ave	-96.470919	43.715918	N	0.00171
11	N Hall Ave	-96.681257	43.58334	N	0.00206
12	479th Ave	-96.631488	43.67657	N	0.00263
13	Jasper St	-96.673622	43.825742	E	0.00324
14	258th St	-96.516664	43.644893	E	0.00384
15	465th Ave	-96.910331	43.525105	N	0.00418
16	Logan St	-96.585435	43.782834	E	0.0051
17	251st St	-96.903049	43.746676	E	0.00609
18	267th St	-96.522761	43.514672	E	0.00723
19	471st Ave	-96.791301	43.724903	N	0.00788
20	468th Ave	-96.852698	43.81183	N	0.00801

Moody County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 29	-96.759217	44.04602	S	0.01267
2	I- 29	-96.758411	43.908507	N	0.01723
3	I- 29	-96.757867	43.866405	S	0.02903
4	I- 29	-96.758734	43.89697	S	0.04097
5	I- 29	-96.759238	44.01509	S	0.05796
6	I- 29	-96.759047	44.073074	S	0.05834
7	I- 29	-96.7586	43.995577	N	0.09892
8	I- 29	-96.759336	44.136268	N	0.10305
9	I- 29	-96.758607	44.094644	N	0.115
10	I- 29	-96.758618	43.955132	S	0.15925
11	481st Ave	-96.587581	44.041389	W	0.00402
12	SW 3rd St	-96.87112	43.978831	W	0.0116
13	230th St	-96.745332	44.051471	W	0.01812
14	481st Ave	-96.587761	44.192505	S	0.02475
15	233rd St	-96.530877	44.007711	W	0.02861
16	230th St	-96.735527	44.051413	W	0.03738
17	SW 3rd St	-96.880972	43.978783	W	0.04422
18	235th St	-96.778444	43.978794	W	0.05537
19	235th St	-96.718785	43.978745	W	0.05676
20	481st Ave	-96.588582	44.160067	S	0.05725

Pennington County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	I- 90	-102.448096	44.065163	W	0.00008
2	State Hwy 240	-102.189519	43.842288	N	0.00063
3	US Hwy 385	-103.501594	43.954708	N	0.00547
4	233rd St	-102.943174	44.023678	W	0.00024
5	Adams St	-103.213864	44.091696	N	0.00043
6	Nemo Rd	-103.36261	44.112702	N	0.0006
7	E Saint Francis St	-103.213116	44.066632	W	0.00081
8	Meadowland Dr	-103.141228	44.066251	W	0.00109
9	Co Rd 109	-104.024503	44.13956	N	0.00141
10	Sunlight Dr	-103.093682	44.068648	W	0.00175
11	Country Rd	-103.094521	44.125507	W	0.00221
12	Sheridan Lake Rd	-103.420716	43.986126	W	0.00268
13	222 nd St	-102.1731	44.182376	W	0.00315
14	Dewey Ln	-103.140517	43.906427	N	0.00375
15	234th St	-102.060049	44.009112	W	0.00442
16	Victoria Lake Rd	-103.484653	44.051431	W	0.00521
17	Nelson Rd	-102.859555	44.03817	W	0.00591
18	Jensen Rd	-102.370314	43.96563	N	0.00704
19	Gillette Canyon Rd	-103.917351	43.887187	N	0.00913
20	Williams Draw Rd	-103.805419	43.983666	N	0.01243

Turner County

Site	Location	Longitude	Latitude	Direction	Segment Length
1	Railway Ave	-96.986301	43.373437	E	0.00223
2	Main St	-97.153851	43.083131	E	0.00458
3	275th St	-97.204158	43.401277	E	0.00631
4	275th St	-97.362171	43.400774	E	0.00777
5	295th St	-97.03893	43.111998	E	0.01006
6	3rd St	-96.960239	43.257658	E	0.01181
7	286th St	-97.39492	43.241736	E	0.01368
8	286th St	-97.304024	43.241979	E	0.01457
9	286th St	-97.216499	43.242925	E	0.01537
10	456th Ave	-97.081826	43.223294	S	0.01873
11	State Hwy 44	-96.958043	43.367688	E	0.01947
12	275th St	-97.372099	43.400752	E	0.02201
13	277th St	-97.012185	43.373367	E	0.02418
14	456th Ave	-97.081735	43.20562	S	0.02588
15	State Hwy 44	-96.972838	43.370706	E	0.02664
16	275th St	-97.270378	43.400971	E	0.02854
17	275th St	-97.329831	43.400976	E	0.02971
18	456th Ave	-97.082205	43.336759	E	0.02991
19	454th Ave	-97.122217	43.466911	S	0.02997
20	456th Ave	-97.081333	43.090968	E	0.03148

Appendix D: 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.