SEAT BELT USE IN NORTH DAKOTA

JUNE 2025

Thank you to North Dakota Tourism and Gerald Blank for the use
of the North Dakota picture on the cover.

THIS REPORT WAS PREPARED IN COOPERATION WITH THE

North Dakota Department of Transportation

Highway Safety Division

and

U.S. Department of Transportation

National Highway Traffic Safety Administration

Upper Great Plains Transportation Institute

North Dakota State University, Dept. 2880

P.O. Box 6050

Fargo, North Dakota 58108-6050

Jaclyn Andersen[1], Kimberly Vachal[2]

[1]Research Specialist, [2]Senior Research Faculty

Disclaimer

This research was supported by the North Dakota Department of Transportation and the National Highway Traffic Safety Administration. The contents presented in this report are the sole responsibility of the Upper Great Plains Transportation Institute and the authors.

EXECUTIVE SUMMARY

North Dakota's seat belt use study provides statistically reliable data from a field survey of driver and right front-seat passenger seat belt use. This data can be used to develop generalizations, comparative analyses, and recommendations. This National Occupant Protection Use Survey (NOPUS) is based on national standards for survey design and field observation protocol. It provides the North Dakota Department of Transportation (NDDOT) with a systematic evaluation of seat belt use rates within the state. The National Highway Traffic Safety Administration (NHTSA) funds NOPUS through the NDDOT's Highway Safety Division.

During the week of June 1–7, 2025, trained observers visited 320 sites across 16 counties to collect seat belt use observations for drivers and right front-seat passengers in vehicles with gross vehicle weights up to 10,000 lbs. Data were collected for 14,319 drivers and 2,262 right front-seat passengers for a total of 16,581 vehicle occupants. Based on the sampling methodology weighting procedures, the final estimate for statewide seat belt use was 87.9%.

A summary of major findings from the 2025 survey regarding seat belt use in North Dakota follows:

- **County.** Weighted rates of seat belt use by county showed Cass County with the highest use at 94.0%, and Stutsman County with the lowest use at 71.6%. Barnes, Rolette, and Williams counties were observed to have low use of less than 80% in 2025. Applying three-year averages for trend comparison showed six counties with improved rates in the 2023–2025 time period over the previous 2020–2022 average. The time period comparisons were not available in three counties that were new to the survey with the 2022 county reselection. The change in the field survey county composition was due to the NHTSA-mandated reselection process, which is required in five-year intervals.

- **Vehicle Occupant.** Driver seat belt use was 86.4% while passenger use was 94.4% statewide in 2025. At the county level, Cass County reflected the highest rate of drivers belted at 95.0%. Driver restraint use was the lowest in Stutsman County at 78.8% belted. Cass and McLean County passengers were belted at 100%, and 99% in Grand Forks. In addition, all counties had passenger belt use rates greater than 90%, with the exception of Stutsman and Williams counties. The lowest rate for passengers was found in Williams County at 88.0%.

- **Region.** In the 2025 survey, 61.2% of vehicle occupants were observed in the west and 38.8% in the east. Historically, seat belt use has fluctuated in the east and west regions. This year's results show comparable use rates between the two regions: 87.5% in the east and 87.6% in the west. The east region saw a 7-percentage-point increase in rates from 2024, with the west decreasing by 1 percentage point. The average use rate in the east was 84.6% from 2020 to 2022 and 83.6% from 2023 to 2025. Seat belt use in the west increased between the two periods, from 83.6% in 2020–2022 to 85.7% in 2023–2025.

- **Vehicle Type.** Regionally, trucks represented 45.3% of vehicles in the west and 37.6% in the east. The larger share of vehicles in the western region (61.2%), along with the higher volume of trucks, may influence the statewide seat belt rate. Truck occupants' belt use was comparable between both regions at 82.3% in the west and 82.7% in the east. At the county level, this disproportionate share of trucks in the west region was most noticeable in McKenzie County, where trucks represented 78.8% of vehicles observed. This was followed by 56.4% in Williams County and 54.9% in Mountrail County. Seat belt use rates among truck occupants ranged between 73.6% and 85.9% in this region. In the east region, Rolette (42.9%), Stutsman (41.8%), and Benson (38.4%) counties registered the largest shares of trucks. Seat belt use rates among truck occupants ranged between 74.3% and 93.9% in this region. North Dakota's annual results for overall seat belt use by vehicle type shows SUV and van occupants continuing to demonstrate the highest usage rates, at 92.8% and 92.5%, respectively. Car and truck occupant rates were 86.4% and 82.4%, respectively. Notably, in 2025, occupants in cars, SUVs, and vans were belted at the highest rates in the past five years.

- **Gender.** Survey results for seat belt use by gender continued the trend of higher use rates by female occupants. Females demonstrated 92.9% usage in 2025 and have consistently registered at 89.1% or more throughout the last five years. Male restraint use had varied over time but, following the five-year low of 76.1% in 2023, has increased to 84.0% in 2025. Both genders demonstrated higher rates in 2025 compared with the previous four survey years.

- **Gender and Vehicle Type.** Although the disparity between gender seat belt use shifts from year to year, male use was lower than female use in every vehicle type in every year by as much as 15 percentage points in trucks in 2023. Throughout the five-year period, female rates are consistently high, with usage rates ranging between 85.0% and 95.3%. In contrast, annual rates for male seat belt use are much lower, with the rates ranging between 72.9% and 90.7% throughout the same time frame. Males show lower representation in SUVs, but higher shares of the overall sample in all other vehicle types. A large gender imbalance continues to be noticed in the truck category, where males accounted for 82.5% of the overall occupant share of this vehicle type.

- **Road Type.** Vehicle occupants traveling primary roadways in 2025 were belted at a higher rate (89.0%) than occupants on secondary (85.2%) and local roads (85.8%). Considering the past five survey years, primary roadway occupants used seat belts at rates from a low of 83.2% in 2023 to as high as 90.8% in 2021. Belt use by occupants on secondary roads has been unstable, from 77.5% in 2023 to 85.2% in 2025, but have demonstrated the most improvement from 2023's sharp decline. The most improvement was seen in local road occupant rates, increasing by nearly 14 percentage points from 2023, and reaching a five-year high. Restraint use in metropolitan statistical area (MSA) counties on primary roads (93.0%) was higher than on the same road type in non-MSA counties (88.0%). Restraint use on secondary roads in MSA counties (91.6%) was also higher than on the same road type in non-MSA counties (82.9%). Occupants on

local roads in MSA counties were restrained at 85.8%; local road sites were outside the sampling frame in non-MSA counties.

Table of Contents

List of Figures

List of Tables

INTRODUCTION

The Upper Great Plains Transportation Institute (UGPTI), a research, education, and outreach center at North Dakota State University (NDSU) in Fargo, ND, was contracted by the North Dakota Department of Transportation (NDDOT) to conduct a field survey of seat belt use in 2025. The study replicates the sampling methodology previously approved by the National Highway Traffic Safety Administration (NHTSA) and NDDOT 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 North Dakota roadways. 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.

The objective of this study was to estimate the statewide rate of seat belt use of drivers and right front-seat passengers in North 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, which includes general information about the methods and protocols, is provided in this report. Survey sample design methods were employed to ensure 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.

SEAT BELT SURVEY RESULTS

Statewide Results

Sample Size by Year

Table 1: Survey Sample by Occupant Position

Occupants Observed	Driver		Passenger		Total
	n	*%*	*n*	*%*	*N*
2021	19,798	81.4%	4,512	18.6%	24,310
2022	13,541	85.4%	2,318	14.6%	15,859
2023	14,087	84.7%	2,535	15.3%	16,622
2024	13,664	83.3%	2,738	16.7%	16,402
2025	14,319	86.4%	2,262	13.6%	16,581

Table 1 shows the sample size of annual seat belt surveys from 2021 to 2025 by occupant position. Within observations collected in 2025, there were 16,581 occupants: 14,319 drivers, which represented 86.4% of the sample, and 2,262 passengers, which represented 13.6% of the sample. The driver-to-passenger ratio can influence overall use rates because use rates among passengers are typically higher than drivers. In 2025, the ratio was 6.3 drivers for every occupant. Table 1 shows a noticeable decline in the driver count and share of passengers after the 2022 site reselection. Since the reselection, driver count and share of passengers has been relatively steady. These figures include only vehicle occupants where protection status could be determined per survey protocol. Total sample size can vary from year to year depending on site locations and traffic flow. It is common to have several individual sites capture only a limited number of vehicles. However, these sites are included each year because they are important to an inclusive and representative sample in the aggregate measurement of statewide seat belt use.

Table 2: Ratio of Drivers to Passengers, 2020–2025

Occupants Observed	*Drivers: Passengers*	*Drivers as % of Sample*
2021	4.4:1	81.4%
2022	5.8:1	85.4%
2023	5.6:1	84.7%
2024	5.0:1	83.3%
2025	6.3:1	86.4%

Overall unweighted results of the 2025 statewide survey indicate 87.5% of vehicle occupants were observed wearing seat belts on North 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 those formulas, the overall weighted rate of seat belt use in North Dakota was

87.9% for 2025. Figure 1 shows annual seat belt use rate since the implementation of the amended methodology in 2012. In addition, the graph includes national use as reported by NHTSA with the most recent data showing a rate of 91.2% in 2024.

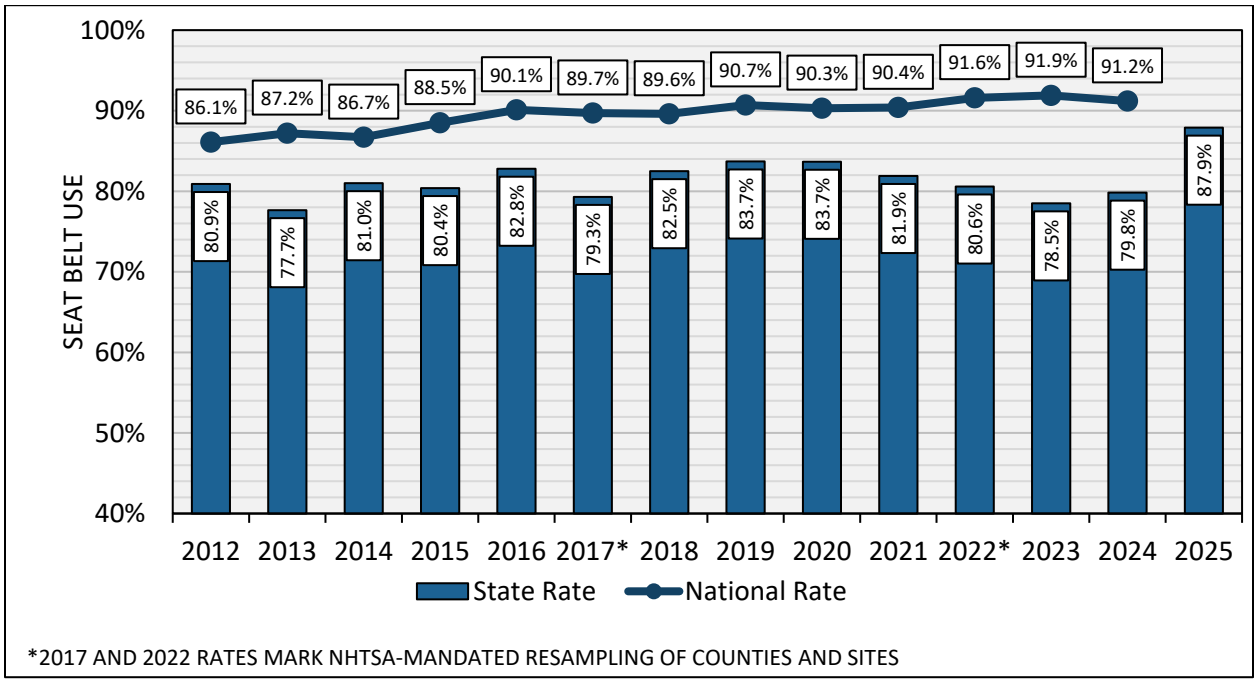


Figure 1: Statewide Seat Belt Use, Weighted

Considerable effort has been made to address seat belt use in North Dakota. A primary seat belt law went into effect in North Dakota on August 1, 2023. Nationally, NOPUS survey data confirm that vehicle occupants in states with primary seat belt laws demonstrated higher restraint use (91.7%) than states with secondary or no laws (89.2%) in 2024[1]. Historically, North Dakota's seat belt use rate has aligned more closely with states without primary seat belt laws, and has ranked in the bottom half among those states. While the 2025 result shows a marked improvement, increasing nearly 10 percentage points compared with 2024, it is lower than the national average for states with secondary (or no) primary seat belt laws. This report includes some factors that may be useful in administering education and enforcement efforts to increase seat belt use in North Dakota. Differences in seat belt use among regions of the state, gender, vehicle type, and roadway type are explored for additional insight.

County Results

The 2025 weighted seat belt rates by county are shown in Figure 2. Restraint use ranged from a high of 94.0% in Cass County to a low of 71.1% in Stutsman County. Previously, higher seat belt use was generally noticed in counties that follow interstate corridors. More recently, counties without interstate

[1] National Center for Statistics and Analysis. (2025, January). Seat belt use in 2024 – overall results (Traffic Safety Facts Research Note. Report No. DOT HS 813 682). National Highway Traffic Safety Administration. Research Note: Seat Belt Use in 2024 – Overall Results

corridors had a higher average rate of 86.9%, compared with the 79.9% belted seen in counties without interstate corridors.

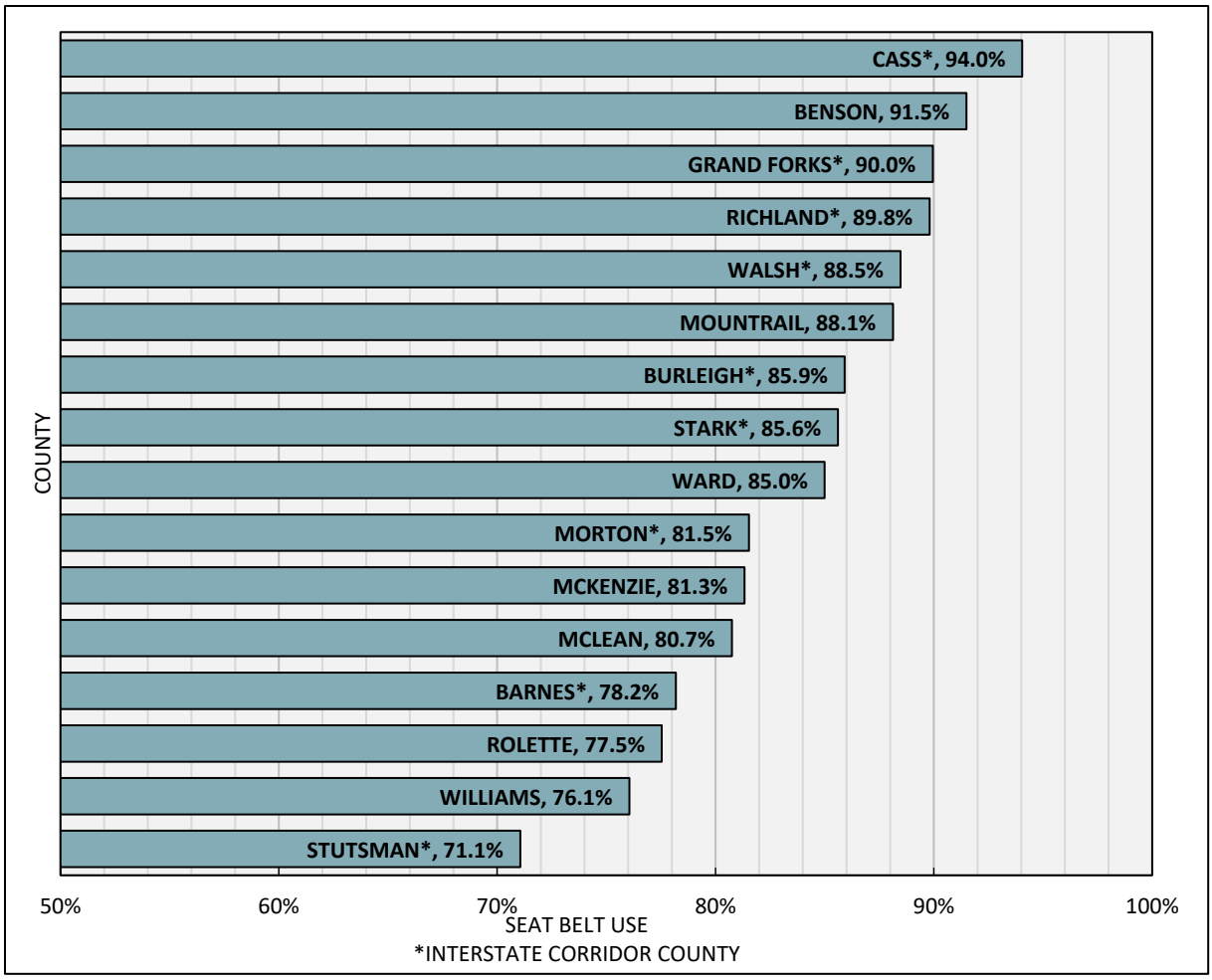


Figure 2: Seat Belt Use by County, 2025, Weighted

Rates vary from year to year at the county level. The changes can reflect sampling differences or special event effects, especially for counties where there are fewer total observations. However, even rates for counties with more observations may exhibit noticeable change from one year to the next.

To smooth the annual variability, the three-year averages in Figure 3 provide a representation of county rates. This analysis does not offer the earlier three-year averages for comparison of the three counties (McLean, Rolette, and Walsh) that were first-year additions to the 2022 survey with the reselection process. The three-year averages used for trend comparison show variations in seat belt use in several counties. In the most recent three-year time frame, Benson County leads in belt use at 90.7%, followed by McKenzie County at 87.0% belted. Benson County also showed the most improvement between the two time frames, compared with the earlier 78.8% rate. Eleven of the 16 counties registered rates above 80% in the most recent time frame. Barnes, Cass, McKenzie, Morton, Richland, Stark, and Richmond counties' rates were lower in the most recent period, while all other county rates increased over time.

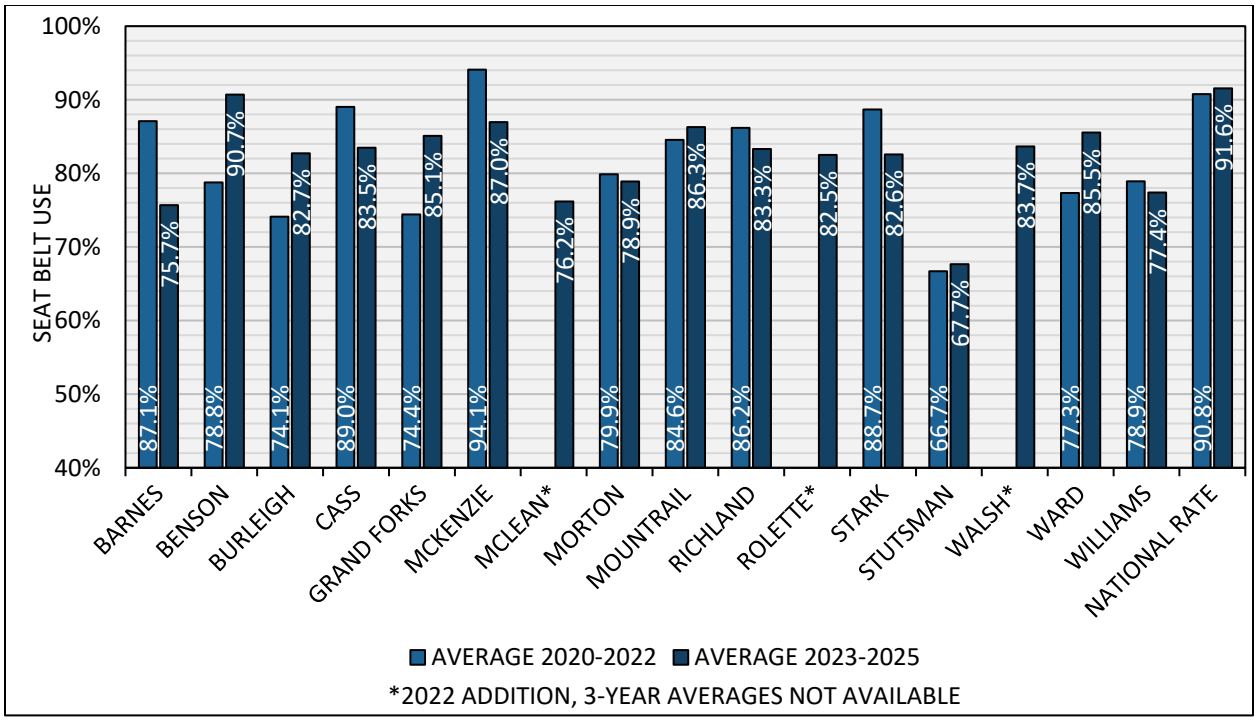


Figure 3: Seat Belt Use by County, Three-Year Averages, Weighted

The preceding statewide data are based on the weighted county sampling frame. However, the following sections of this report describe strata frequencies that are unadjusted because of survey design. Note that the county rates are based on the sites visited as part of the statewide rate sample, and thus 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 2024. At the county level, driver use ranged from a low of 71.6% in Stutsman County to a high of 92.3% in Stark County. Passenger use ranged from 83.6% in Cass County to 100% in Grand Forks County. Annual surveys confirm that, as a rule, passengers buckle up at higher rates than drivers. This was seen in the 2024 survey, with all counties holding higher passenger rates than driver rates.

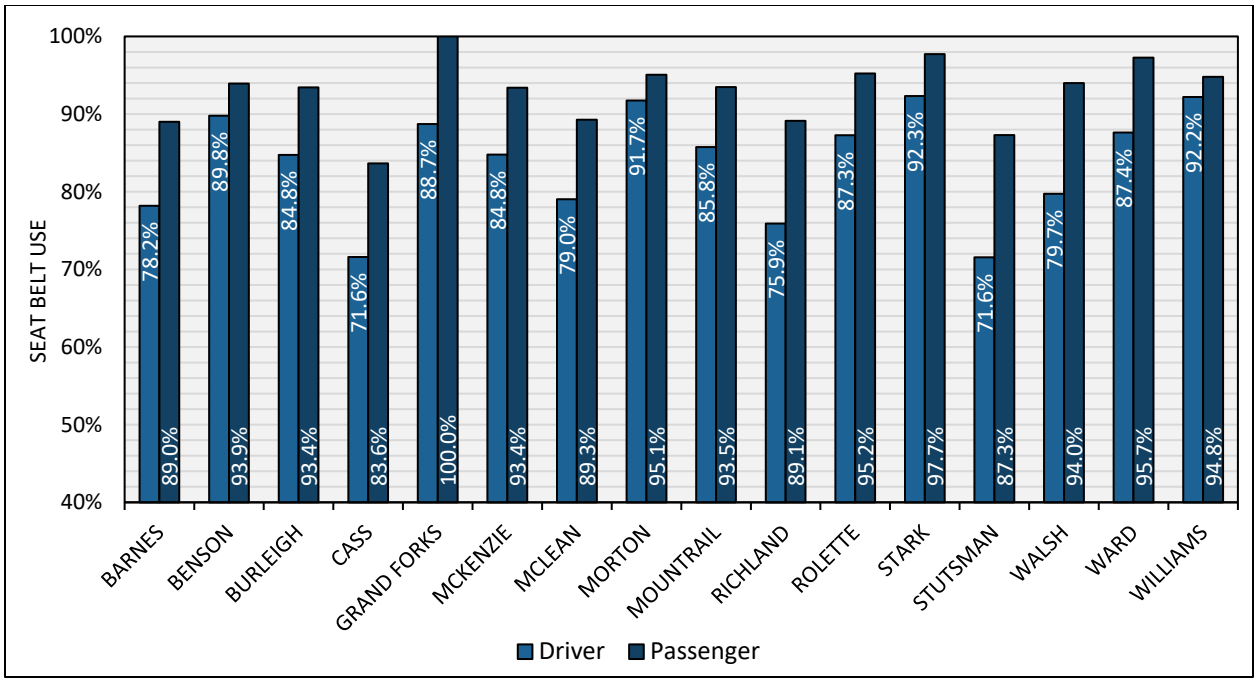


Figure 4: Percent Belted by Occupant Position & County, Unweighted, 2024

Considering the state as a whole, the unweighted estimates of seat belt use in 2025 were 86.4% for drivers and 94.4% for passengers, with an overall seat belt use rate estimate of 87.5% for drivers and passengers combined (Figure 5). An increase of approximately 2 percentage points was seen when compared with 2024 results, with 83.9% for drivers, 92.8% for passengers, and a combined rate of 85.4% belted.

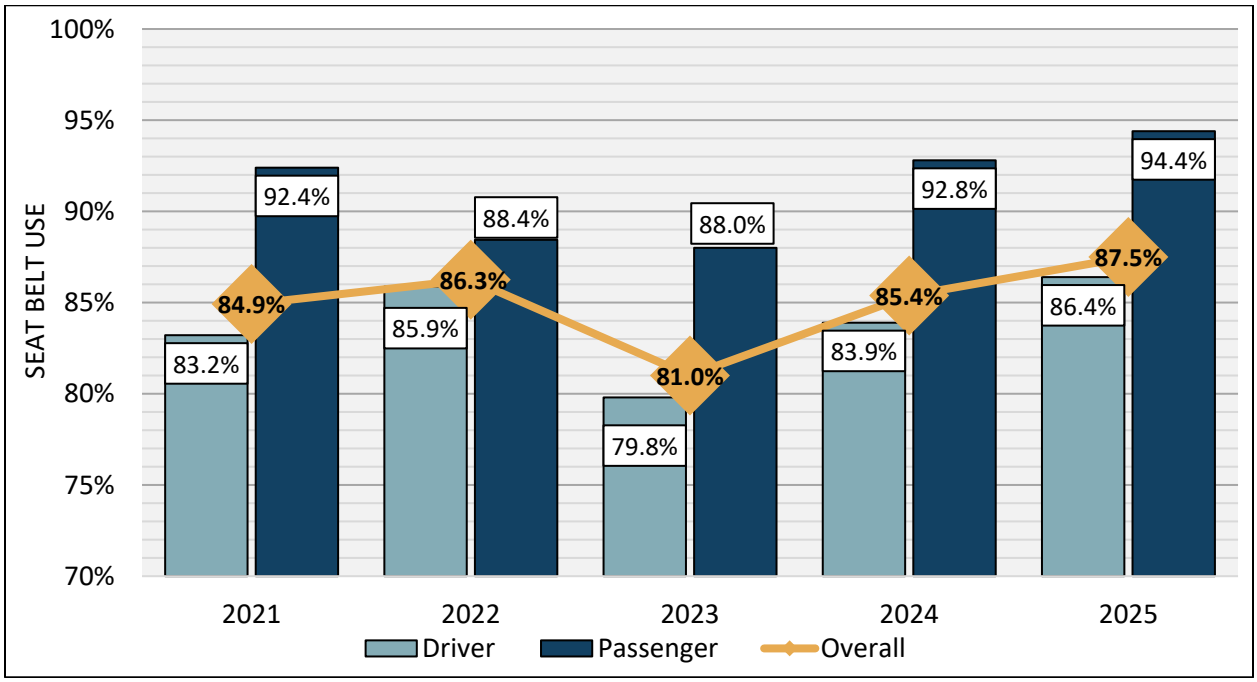


Figure 5: Percent Belted by Position, Annual, Unweighted

Results by North Dakota Regions

The survey sampling methodology groups the state into east and west regions (Figure 6). Each region is represented by eight counties. Both east and west regions contain "certainty" counties, five in the east and seven in the west, with the rest selected from the remaining counties in each region[2].

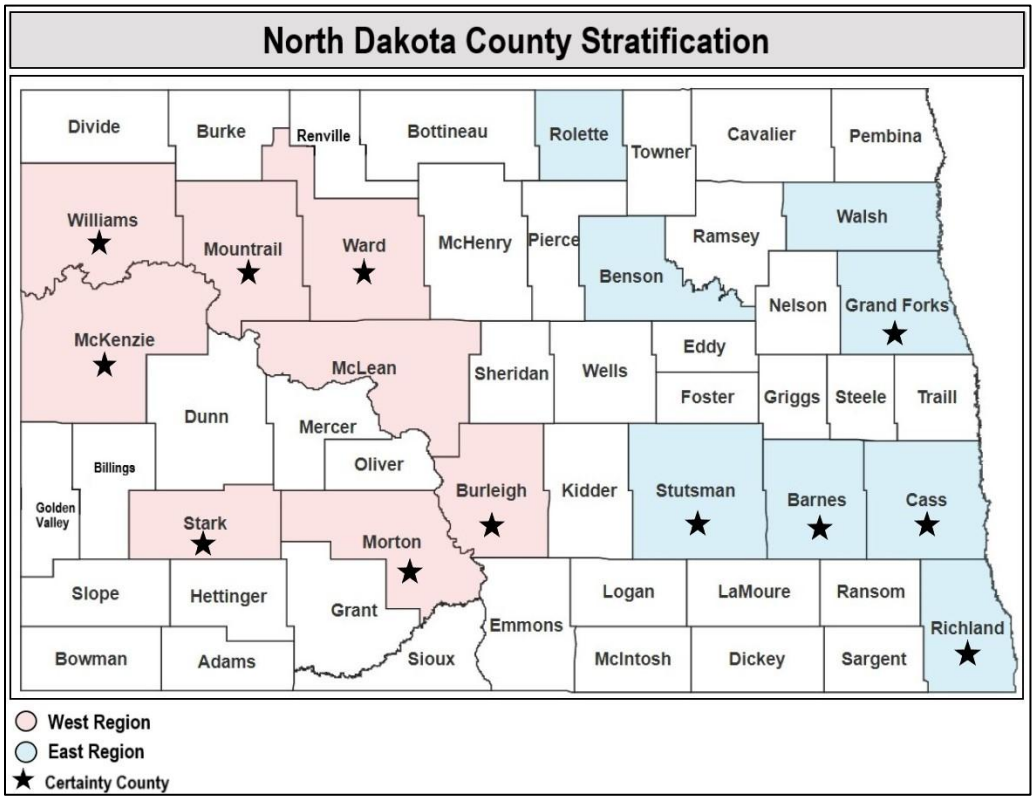


Figure 6: North Dakota County Stratification

Year-to-year variations in sample size may be associated with revised sites and/or changes in travel levels and patterns. Table 3 shows a proportionate sample distribution between regions throughout the five-year period. More than half (61.2%) of the sample data was collected in western North Dakota from 10,124 occupants. The remaining proportion (38.8%) was observed in eastern North Dakota among 6,439 occupants.

Table 3: Sample Size by Region

Occupants Observed	East		West		Total
	n	*%*	*n*	*%*	*N*
2021	11,455	47.1%	12,855	52.9%	24,310
2022	6,349	40.0%	9,510	60.0%	15,859
2023	6,552	39.4%	10,070	60.6%	16,622
2024	6,878	41.9%	9,524	58.1%	16,402
2025	6,439	38.8%	10,142	61.2%	15,581

[2]For details on methodology, certainty counties, and the selection processes, contact NDDOT Safety Division.

Historically, seat belt use has fluctuated in the east and west regions, as shown in Figure 7. This year's results show comparable use rates between the two regions: 87.5% in the east and 87.6% in the west. The east region saw a 7-percentage-point increase in rates from 2024, with the west decreasing by 1 percentage point. The comparison of seat belt use in Figure 8 shows an average rate in the east of 84.6% from 2020 to 2022 and 83.6% from 2023 to 2025. Seat belt use in the west increased between the two periods, from 83.6% in 2020–2022 to 85.7% in 2023–2025.

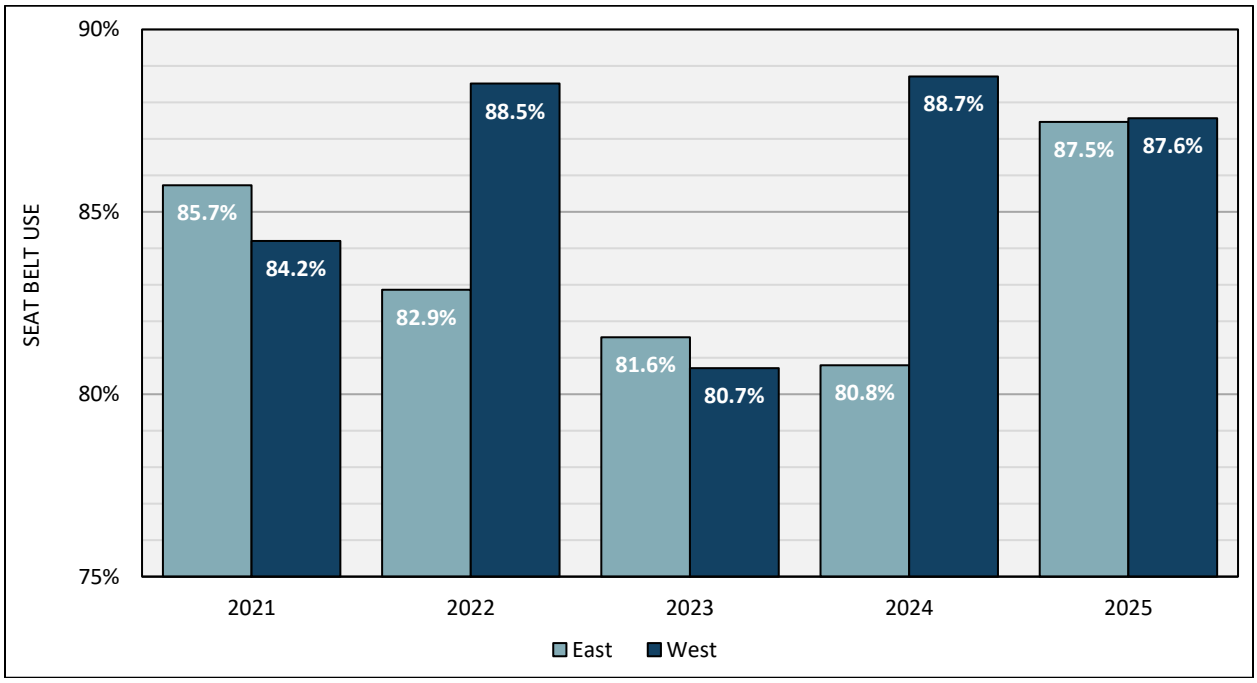


Figure 7: Percent Belted by Region, Unweighted

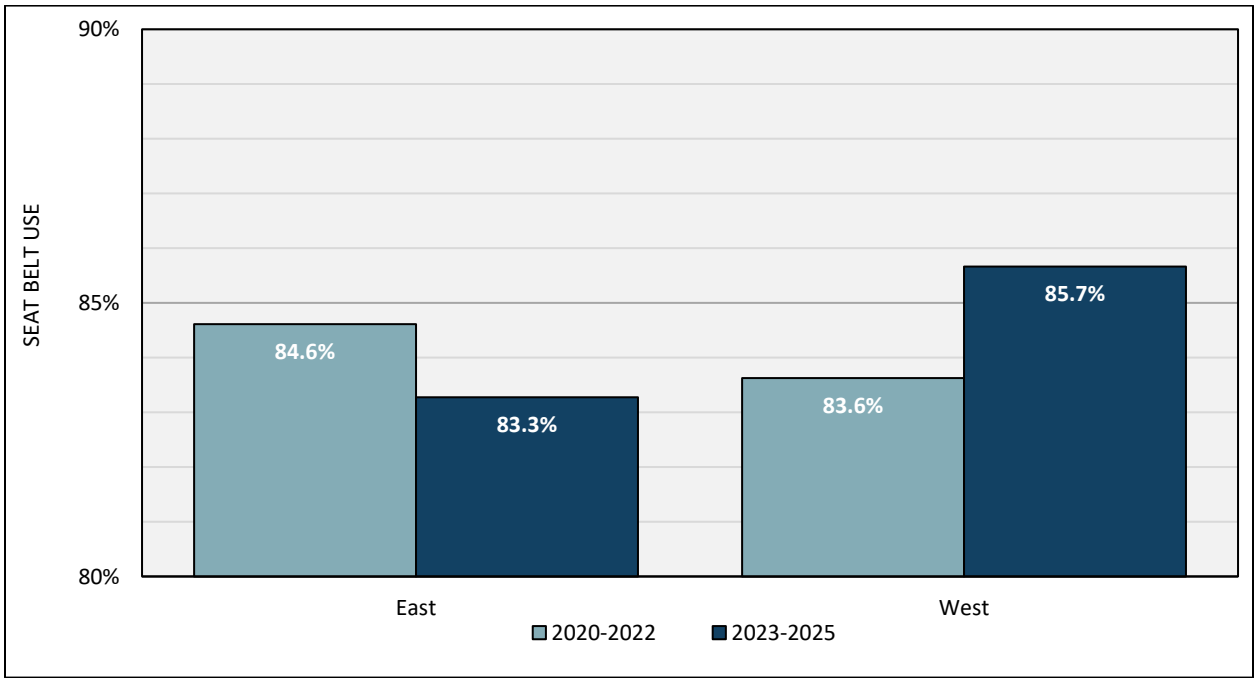
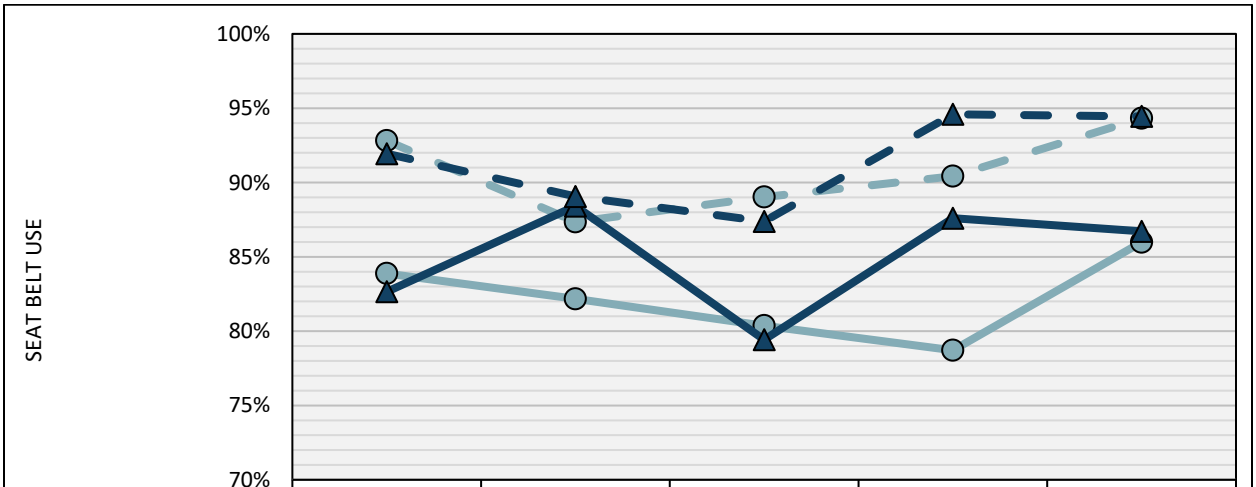


Figure 8: Seat Belt Use by Region, Three Year Averages, Unweighted

Figure 9 shows the further breakdown of driver and passenger use by region over the past five years. Driver belt use in the east region increased during the five-year span, from 83.9% in 2021 to 86.0% in 2025, currently holding the lowest usage rate of the four occupant groups. Passenger rates in the east rose from 92.8% in 2021 to 94.3% in 2025. Driver use rates in the west increased from 82.7% in 2021 to 86.7% in 2025. Passenger use rates also increased from 91.9% in 2021 to 94.4% in 2025 and have reached the highest rate in the past five years of all occupant groups.



	2021	2022	2023	2024	2025
Drivers East	83.9%	82.2%	80.4%	78.7%	86.0%
Passengers East	92.8%	87.4%	89.0%	90.4%	94.3%
Drivers West	82.7%	88.4%	79.4%	87.6%	86.7%
Passengers West	91.9%	89.1%	87.4%	94.6%	94.4%

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

Historically, lower seat belt usage in the west region was explained by the high prevalence of truck occupants, who have typically exhibited the lowest rate of use among vehicle types. For example, large truck volume of greater than 50% was observed in McKenzie, Mountrail, and Williams counties. Overall, the west region accounts for 65.5% of the statewide share of occupants in this vehicle type. While use rates in the west have risen, the disproportionate influence of truck occupants is still apparent, as noted in the following section.

Results by Vehicle Type

Table 4 shows the fleet distribution annually since 2021. During that time, the number of cars observed has decreased from a 17.1% share in 2021 to 13.9% in 2025. Van representation has also declined over this same period and currently represents the smallest share (5.4%) of the sample. The share of SUVs (38.4%) has been relatively consistent since 2021, while increasing by 3 percentage points since 2023. Trucks made up 42.3% of the occupant share in 2025 and historically hold the largest share of vehicle type and the lowest seat belt use rate.

Table 4: Sample by Vehicle Type

Occupants Observed	Car		Truck		SUV		Van		Total
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*N*
2021	4,168	17.1%	9,988	41.1%	8,723	35.9%	1,431	5.9%	24,310
2022	3,015	19.0%	6,404	40.4%	5,623	35.5%	817	5.2%	15,859
2023	2,657	16.0%	7,306	44.0%	5,810	35.0%	849	5.1%	16,622
2024	2,346	14.3%	6,983	42.6%	6,275	38.3%	798	4.9%	16,402
2025	2,301	13.9%	7,017	42.3%	6,372	38.4%	891	5.4%	16,581

Beginning with the 2012 statewide seat belt survey, North 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 lbs. This change necessitated the inclusion of various small trucks, e.g., flatbed, utility service, small box trucks, etc. Trucks with commercial use indicated by logos on doors or truck bodies are within the survey scope.

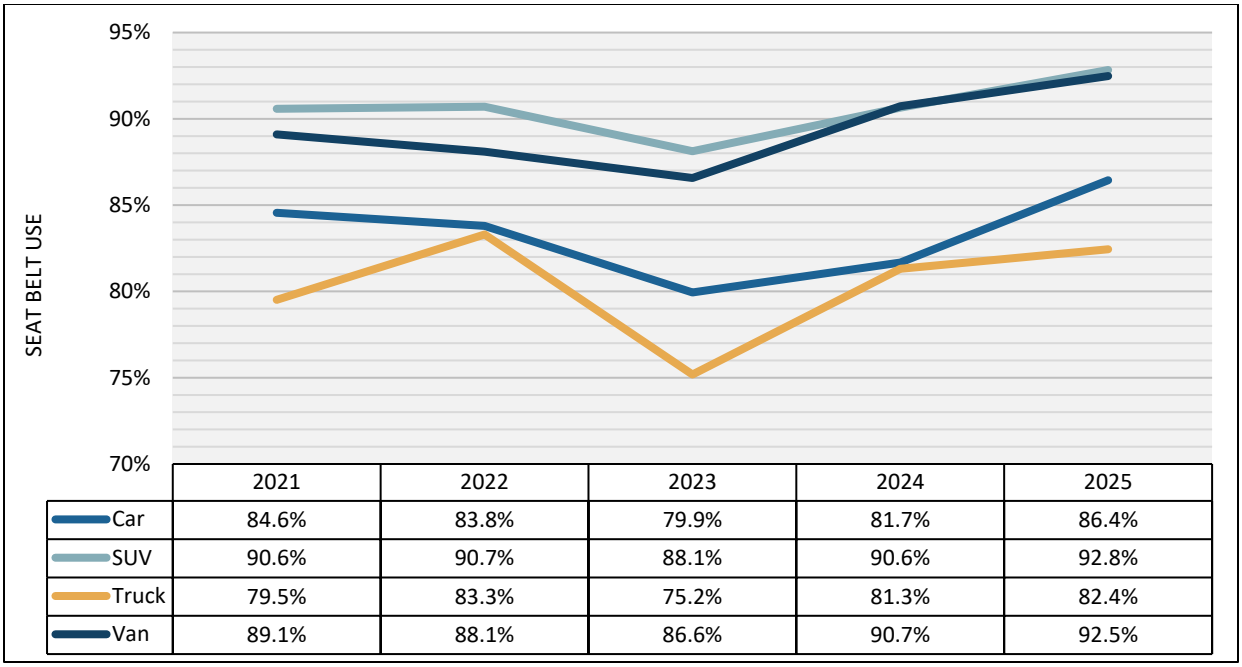
In 2024, NHTSA found the national rate of observed seat belt use for truck occupants was 85.0%, compared with 91.0% in cars and 93.6% in SUVs and vans combined (reference on page 3). In 2023, North Dakota, Wyoming, and Montana held the highest rates of truck fatalities at 34%, 35%, and 37%, respectively[3].

Regionally, trucks represented 45.3% of vehicles in the west and 37.6% in the east. The larger share of vehicles in the west region (61.2%), along with the higher volume of trucks, may influence the statewide seat belt rate. The larger truck share may have historically been correlated with the proximity to the Bakken oil region, particularly in McKenzie, Mountrail, and Williams counties, where the truck share represented more than half of total vehicle counts. The nature of the travel environments, with fewer urban lane miles in the west, also likely impacted fleet composition. However, note that truck occupants' belt use was comparable between both regions: 82.3% in the west and 82.7% in the east. From this, we might infer that low belt use rates by truck occupants are more widespread than in previous survey years.

At the county level, this disproportionate share of trucks in the west region was most noticeable in McKenzie County, where trucks made 78.8% of vehicles observed. This was followed by 56.4% in Williams County and 54.9% in Mountrail County. Seat belt use rates among truck occupants ranged between 73.6% and 85.9% in this region. In the east region, Rolette (42.9%), Stutsman (41.8%), and Benson (38.4%) counties registered the largest shares of trucks. Seat belt use rates among truck occupants ranged between 74.3% and 93.9% in this region.

North Dakota's annual results for overall seat belt use by vehicle type are shown in Figure 10. SUV and van occupants continue to demonstrate the highest use rates at 92.8% and 92.5%, respectively. Car and truck occupant rates were 86.4% and 82.4%, respectively. Notably, in 2025, occupants in cars, SUVs, and vans were belted at the highest rates in the past five years.

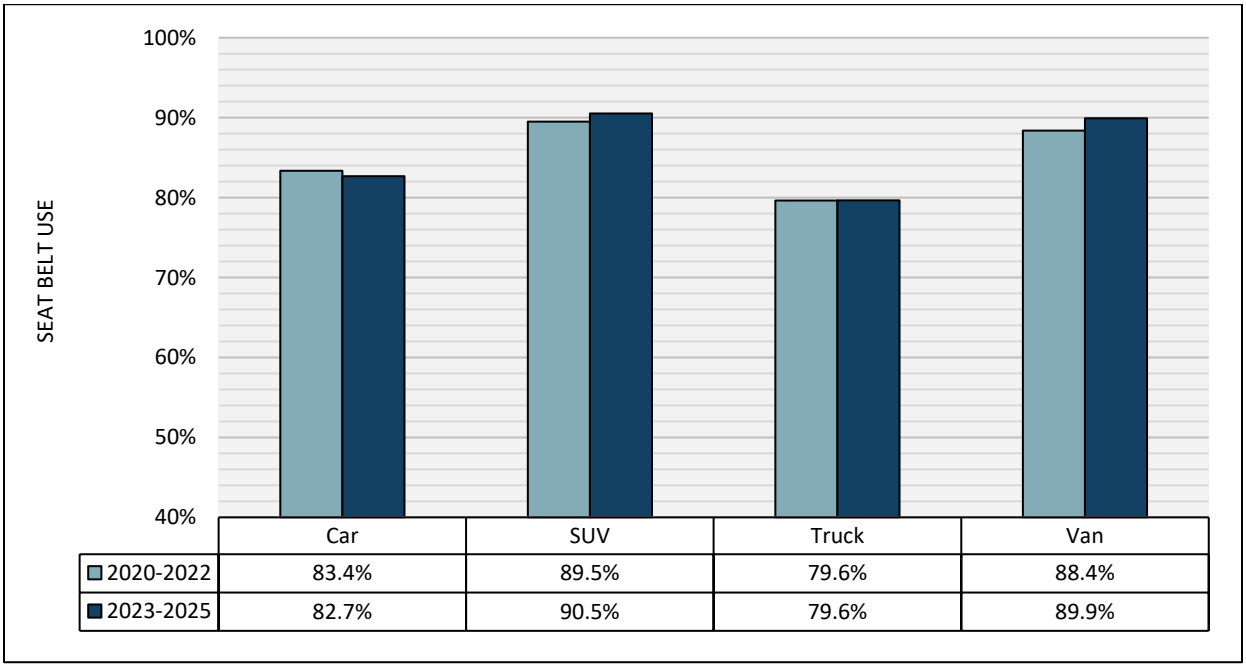
[3] Traffic Safety Fact Report: 2023 Data - Passenger Vehicles



	2021	2022	2023	2024	2025
Car	84.6%	83.8%	79.9%	81.7%	86.4%
SUV	90.6%	90.7%	88.1%	90.6%	92.8%
Truck	79.5%	83.3%	75.2%	81.3%	82.4%
Van	89.1%	88.1%	86.6%	90.7%	92.5%

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

The three-year averages of belt use by vehicle type are relatively stable between time periods (Figure 11). Each vehicle type rate is within 1 percentage point between the two periods. As with annual trends outlined above, car and truck rates are lower than SUV and van rates. Individual county rates by each vehicle type are found in Table 5.



	Car	SUV	Truck	Van
2020-2022	83.4%	89.5%	79.6%	88.4%
2023-2025	82.7%	90.5%	79.6%	89.9%

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

While seat belt use by truck occupants has increased in recent years, Table 5 shows this demographic with rates of less than 90% in all but three observed counties. The lowest rate among all vehicle types, 65.7%, was observed in Stutsman County. This lower use, coupled with the proportion of trucks in the sample, can reduce county rates along with the overall state rate. The highest rate among all vehicle types was observed in van occupants in both Mountrail and Walsh counties.

Table 5: Percent Belted by County & Vehicle Type, 2025, Unweighted

2025							
Car		**SUV**		**Truck**		**Van**	
Barnes	78.8%	Barnes	89.7%	Barnes	74.3%	Barnes	97.6%
Benson	77.3%	Benson	97.1%	Benson	93.9%	Benson	95.0%
Burleigh	85.2%	Burleigh	91.9%	Burleigh	82.7%	Burleigh	92.9%
Cass	95.5%	Cass	97.6%	Cass	92.9%	Cass	96.1%
Grand Forks	94.6%	Grand Forks	97.6%	Grand Forks	84.3%	Grand Forks	75.0%
McKenzie	83.0%	McKenzie	91.7%	McKenzie	81.4%	McKenzie	92.0%
McLean	87.5%	McLean	88.3%	McLean	73.6%	McLean	89.7%
Morton	92.3%	Morton	97.5%	Morton	84.6%	Morton	92.9%
Mountrail	87.7%	Mountrail	96.2%	Mountrail	85.9%	Mountrail	100.0%
Richland	87.7%	Richland	96.0%	Richland	90.7%	Richland	96.7%
Rolette	71.9%	Rolette	86.0%	Rolette	86.7%	Rolette	82.9%
Stark	95.0%	Stark	96.2%	Stark	84.4%	Stark	96.6%
Stutsman	80.2%	Stutsman	81.9%	Stutsman	65.7%	Stutsman	74.2%
Walsh	96.6%	Walsh	95.1%	Walsh	77.0%	Walsh	100.0%
Ward	82.2%	Ward	93.0%	Ward	84.6%	Ward	94.1%
Williams	76.6%	Williams	88.0%	Williams	80.6%	Williams	85.7%

Results by Occupant Gender and Position

Minimal year-to-year variation in sample composition was observed for occupant gender, as summarized in Table 6. Overall, males represented 59.4% and females 38.9% of the sample in 2025. In a small percentage of observations, 1.4%, occupant gender could not be determined, but occupant protection was still recorded. These cases are included in all 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.

Table 6: Sample by Gender

Occupants Observed	Female		Male		Unknown		Total
	n	*%*	*n*	*%*	*n*	*%*	*N*
2021	8,909	36.6%	15,287	62.9%	114	0.5%	24,310
2022	6,091	38.4%	9,693	61.1%	75	0.5%	15,859
2023	6,201	37.3%	10,299	62.0%	122	0.7%	16,622
2024	6,245	38.1%	9,902	60.4%	255	1.6%	16,402
2025	6,452	38.9%	9,889	59.4%	240	1.4%	16,581

Survey results for seat belt use by gender continued the trend of higher use rates by female occupants. Females demonstrated 92.9% usage in 2025 and have consistently registered at 89.1% or more throughout the last five years (Figure 12). Male restraint use had varied over time, but following the five-year low of 76.1% in 2023 it increased to 84.0% in 2025. Both genders demonstrated higher rates in 2025 compared with the previous four survey years.

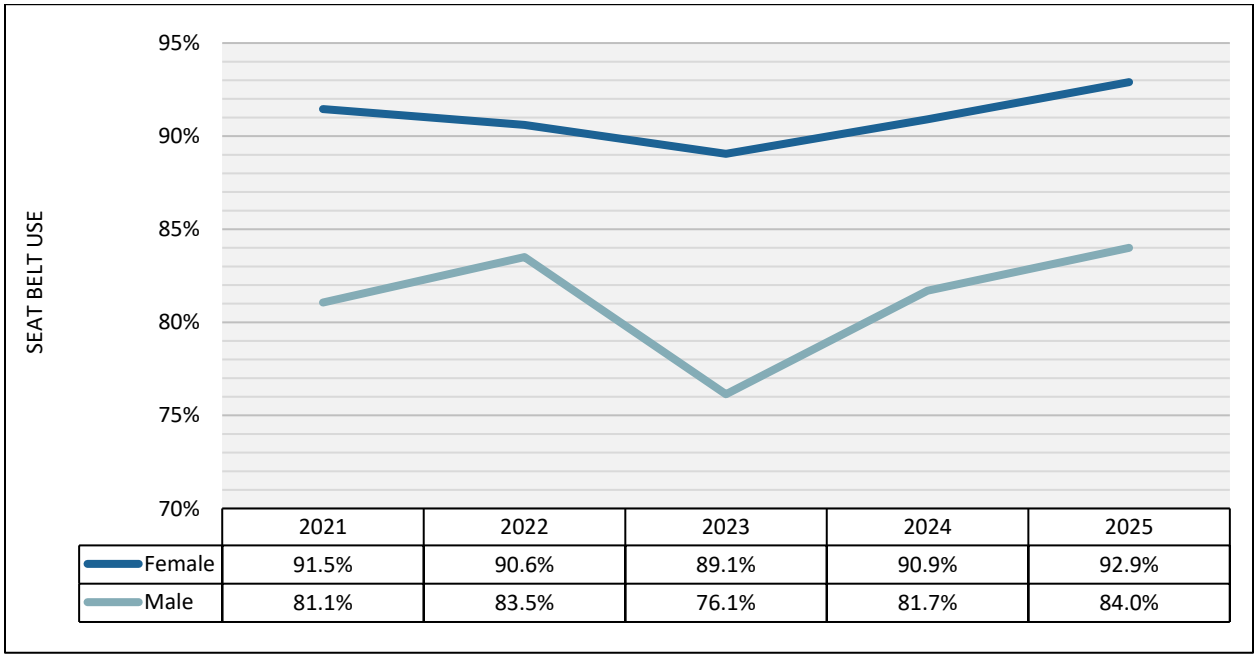


Figure 12: Percent Belted by Gender, Annual, Unweighted

Table 7 shows restraint use by county and gender. Female occupants were observed to have rates above 80% in all counties. In comparison, 12 counties showed male rates at above 80%. In fact, the male seat belt use rate was lower than the female rate in every county. In McLean County, there was a 15 percentage-point rate difference between genders. Cass County held the highest rates for both genders (97.9% female, 94.4% male); Stutsman held the lowest rates for females and males, at 82.9% and 68.8%, respectively.

The sample by gender and occupant position has remained stable from year to year. As described in Table 8, drivers were nearly twice as likely to be male than female (9,193 compared with 5,003). In contrast, passengers were twice as likely to be female than male (1,449 compared with 696).

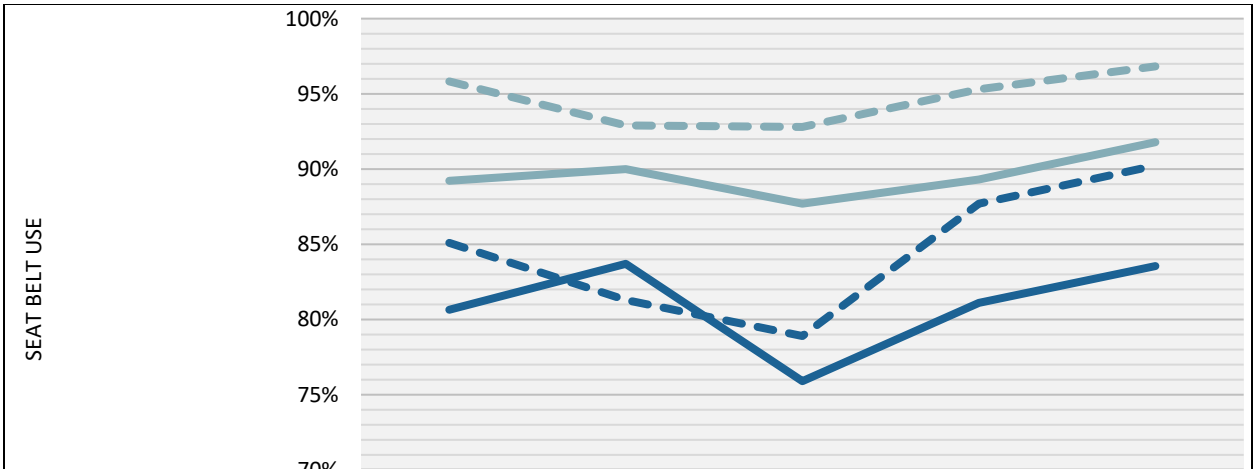
Table 7: Percent Belted by Gender & County, 2025

2025		
COUNTY	**FEMALE**	**MALE**
Barnes	90.9%	76.6%
Benson	95.3%	92.1%
Burleigh	93.4%	84.4%
Cass	97.9%	94.4%
Grand Forks	97.6%	88.6%
McKenzie	84.8%	82.8%
McLean	92.0%	76.7%
Morton	96.3%	88.6%
Mountrail	95.7%	86.9%
Richland	95.9%	90.3%
Rolette	87.0%	82.2%
Stark	95.3%	87.2%
Stutsman	82.9%	68.8%
Walsh	96.1%	83.1%
Ward	93.5%	84.3%
Williams	88.9%	78.7%

Table 8: Sample by Gender & Position

	Male				**Female**				**Unknown**		
Occupants	Driver		Passenger		Driver		Passenger		All Positions		**Total**
Observed	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*N*
2021	13,858	57.0%	1,429	5.9%	5,888	24.2%	3,021	12.4%	114	0.5%	24,310
2022	8,833	55.7%	860	5.4%	4,683	29.5%	1,408	8.9%	75	0.5%	15,859
2023	9,431	56.7%	868	5.2%	4,588	27.6%	1,613	9.7%	122	0.7%	16,622
2024	8,980	54.7%	922	5.6%	4,553	27.8%	1,692	10.3%	255	1.6%	16,402
2025	9,193	55.4%	696	4.2%	5,003	30.2%	1,449	8.7%	240	1.4%	16,581

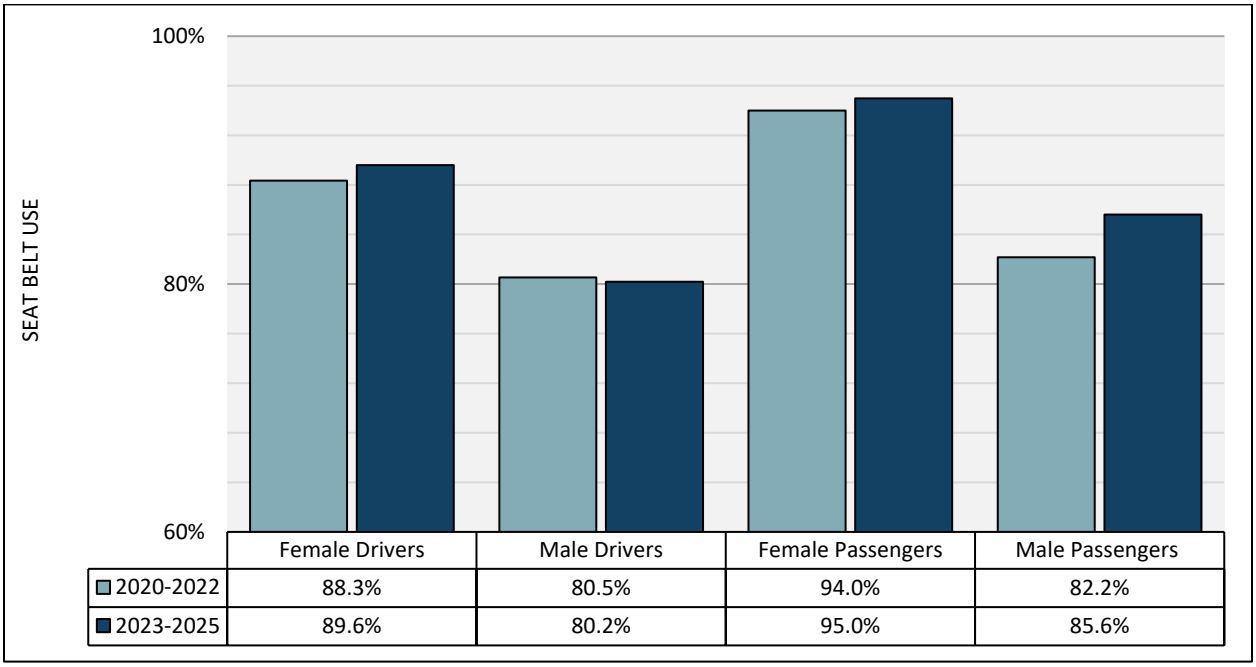
Survey results corroborate higher rates of seat belt use by females regardless of occupant position (Figure 13). Female passengers used restraints at a rate of 96.8%, the highest usage of gender and occupant positions. This was followed by female drivers at 91.8%. Male rates were lower for both positions: 83.6% for drivers and 90.2% for passengers. Compared with 2024, an increase in rates was seen for all genders and positions in 2025.



	2021	2022	2023	2024	2025
Female Drivers	89.2%	90.0%	87.7%	89.3%	91.8%
Female Passengers	95.8%	92.9%	92.8%	95.3%	96.8%
Male Drivers	80.6%	83.7%	75.9%	81.1%	83.6%
Male Passengers	85.1%	81.3%	78.9%	87.7%	90.2%

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

Figure 14 shows a comparison of three-year averages. Females demonstrated increased use regardless of occupant position in the most recent three-year period. Male driver rates showed little change, while male passengers showed the most improvement. The gender disparity in rates between time periods remained relatively constant, with the difference in rates being approximately 9 percentage points for drivers and 10 for passengers.



	Female Drivers	Male Drivers	Female Passengers	Male Passengers
2020-2022	88.3%	80.5%	94.0%	82.2%
2023-2025	89.6%	80.2%	95.0%	85.6%

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

There are wide-ranging seat belt use rates in individual counties in all occupant positions (Table 9). At the county level, female drivers' rates were generally high with only one county below 80.0% (Stutsman, 78.3%). Female drivers demonstrated the highest rates (97.6%) in Cass County. Male drivers were found to have use rates below 80.0% in four counties, and ranged from 66.9% in Stutsman to 94.0% in Cass. Female passenger use rates were also generally high, with seven counties at 100% use and the remaining at 90.0% or more. Male passenger rates varied from 81.6% in Stutsman County to 100.0% in both Cass and McLean counties.

Table 9: Percent Belted by Gender & Position by County, 2025, Unweighted

2025							
FEMALE DRIVERS		**FEMALE PASSENGERS**		**MALE DRIVERS**		**MALE PASSENGERS**	
Barnes	88.4%	Barnes	94.9%	Barnes	75.2%	Barnes	90.9%
Benson	95.1%	Benson	95.6%	Benson	92.4%	Benson	89.9%
Burleigh	92.8%	Burleigh	100.0%	Burleigh	84.3%	Burleigh	91.7%
Cass	97.6%	Cass	100.0%	Cass	94.0%	Cass	100.0%
Grand Forks	96.8%	Grand Forks	100.0%	Grand Forks	87.9%	Grand Forks	96.7%
McKenzie	81.9%	McKenzie	95.0%	McKenzie	82.3%	McKenzie	90.7%
McLean	90.8%	McLean	100.0%	McLean	76.5%	McLean	100.0%
Morton	96.0%	Morton	98.1%	Morton	88.6%	Morton	89.7%
Mountrail	94.2%	Mountrail	98.2%	Mountrail	86.3%	Mountrail	95.0%
Richland	94.7%	Richland	100.0%	Richland	90.2%	Richland	91.7%
Rolette	82.4%	Rolette	100.0%	Rolette	81.2%	Rolette	89.4%
Stark	94.7%	Stark	98.7%	Stark	86.9%	Stark	93.1%
Stutsman	78.3%	Stutsman	93.9%	Stutsman	66.9%	Stutsman	81.6%
Walsh	94.5%	Walsh	100.0%	Walsh	81.1%	Walsh	96.4%
Ward	92.9%	Ward	96.1%	Ward	83.9%	Ward	88.9%
Williams	87.9%	Williams	91.2%	Williams	78.4%	Williams	83.0%

Results by Gender and Vehicle Type

When considering vehicle type, males show lower representation in SUVs, but higher shares of the overall sample in all other vehicle types. A large gender imbalance continues to be noticed in the truck category, where males accounted for 82.5% of the overall occupant share of this vehicle type.

Table 10: Sample by Vehicle Type & Gender

Occupants Observed	2021		2022		2023		2024		2025	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Male										
Car	2,348	9.7%	1,722	10.9%	1,460	8.8%	1,285	7.8%	1,273	7.7%
SUV	3,750	15.4%	2,170	13.7%	2,167	13.0%	2,398	14.6%	2,396	14.5%
Truck	8,392	34.5%	5,363	33.8%	6,184	37.2%	5,769	35.2%	5,728	34.5%
Van	797	3.3%	438	2.8%	488	2.9%	450	2.7%	492	3.0%
Female										
Car	1,790	7.4%	1,270	8.0%	1,157	7.0%	1,012	6.2%	988	6.0%
SUV	4,926	20.3%	3,432	21.6%	3,599	21.7%	3,759	22.9%	3,866	23.3%
Truck	1,565	6.4%	1,017	6.4%	1,091	6.6%	1,144	7.0%	1,216	7.3%
Van	628	2.6%	372	2.3%	354	2.1%	330	2.0%	382	2.3%
Unknown	114	0.5%	75	0.5%	122	0.7%	255	1.6%	240	1.4%
Total	24,310	100.0%	15,859	100.0%	16,622	100.0%	16,402	100.0%	16,581	100.0%

Differences in seat belt use by gender varied across vehicle types (Figure 15). In the 2025 survey, male occupants were belted at rates ranging from a low of 80.8% in trucks to a high of 90.7% in vans. Females were belted at higher rates than men in all vehicle types, ranging from a low of 89.6% in cars to a high of 95.3% in vans.

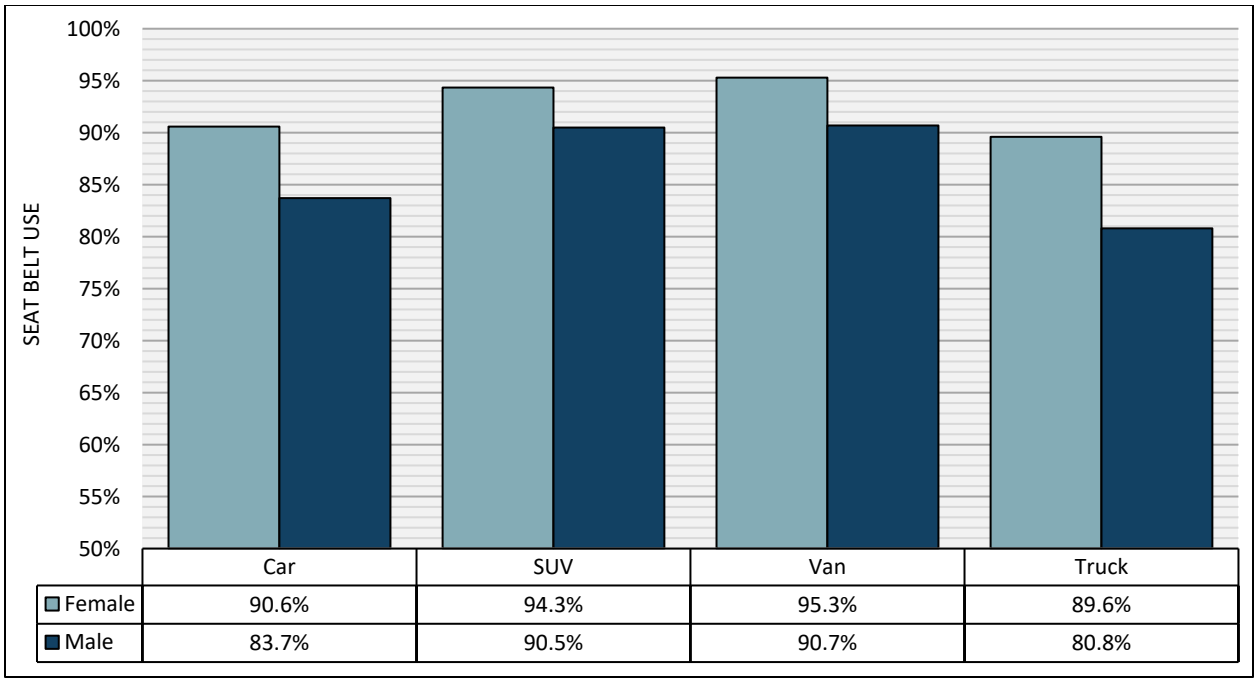


Figure 15: Percent Belted by Gender & Vehicle Type, 2025, Unweighted

Although the disparity size between gender seat belt use shifts from year to year, male use is lower than female use in every vehicle type in every year to as much as 15 percentage points in trucks in 2023 (Table 11). Throughout the five-year period, female rates are consistently high, with use rates ranging between 85.0% and 95.3%. In contrast, annual rates for male seat belt use are much lower, with the rates ranging between 72.9% and 90.7% throughout the same time frame.

Table 11: Annual Percent Belted by Gender & Vehicle Type, Unweighted

	2021	2022	2023	2024	2025
Male					
Car	81.2%	82.2%	75.8%	77.9%	83.7%
SUV	88.2%	87.9%	83.9%	88.1%	90.5%
Van	86.4%	85.4%	83.2%	87.1%	90.7%
Truck	77.3%	81.9%	72.9%	79.5%	80.8%
Female					
Car	88.9%	85.9%	85.0%	86.0%	90.6%
SUV	92.4%	92.4%	90.5%	92.1%	94.3%
Van	92.5%	91.1%	91.0%	95.2%	95.3%
Truck	91.1%	90.4%	87.9%	90.0%	89.6%

When comparing the 2020–2022 with the 2023–2025 averages, seat belt use by females across vehicle types has remained stable, increasing by approximately 1 percentage point on average (Figure 16). Male occupants show similar trends across vehicle types. The most notable gender disparity is seen in trucks, where females displayed rates 11 percentage points higher than males in both time periods.

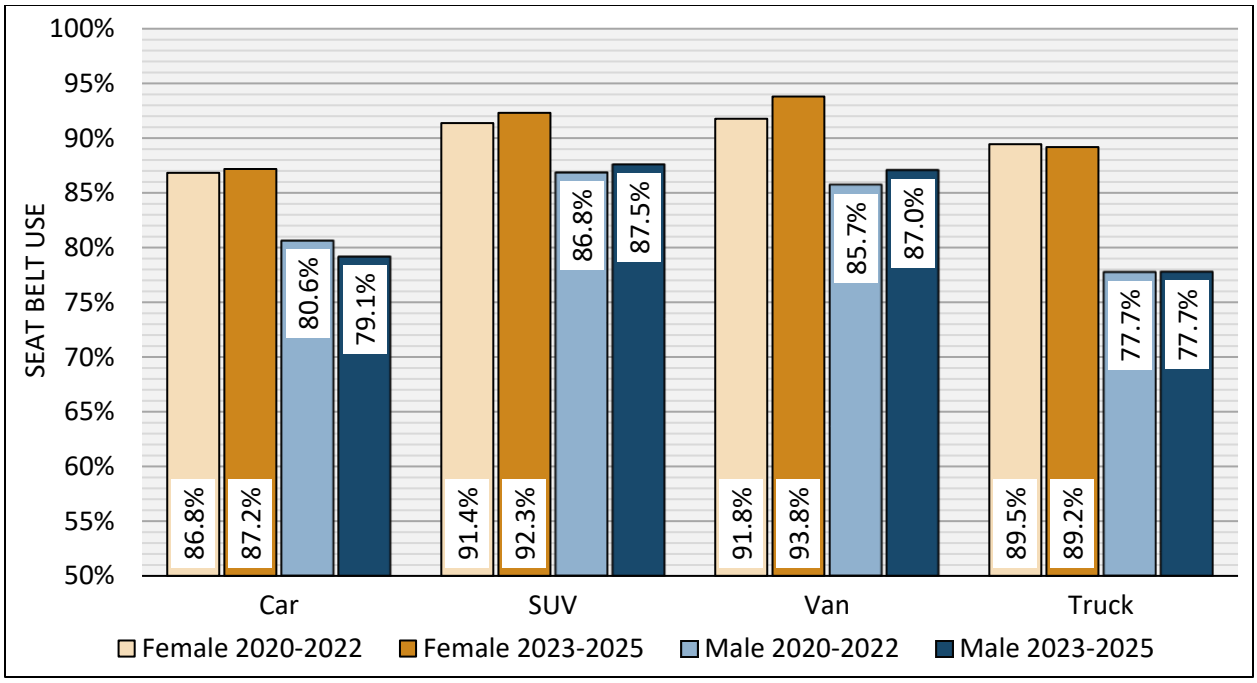


Figure 16: Seat Belt Use by Gender & Vehicle Type, Three-Year Averages, Unweighted

Results by Road Type

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

- Primary road: divided, limited-access, e.g., 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

There were 6,439 observations collected from the east region and 10,142 from the west during the 2025 survey. Primary, secondary, and local roadways accounted for 61.4%, 36.6%, and 2.0% of the vehicle occupants, respectively. Sample distribution by road type and region is diverse, as shown in Table 12. Sample variations are associated with revisions in the number of sites drawn in each road type when NHTSA-mandated reselection of sites occurs at five-year intervals. Contrasting traffic volume in newly selected counties and site locations are factors as well.

Table 12: Sample by Road Type

Occupants Observed	2021		2022		2023		2024		2025	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
East										
Primary	7,302	30.0%	3,995	25.2%	4,159	25.0%	4,389	26.8%	3,972	24.0%
Secondary	3,126	12.9%	2,096	13.2%	2,179	13.1%	2,323	14.2%	2,246	13.5%
Local	1,027	4.2%	258	1.6%	214	1.3%	166	1.0%	221	1.3%
All	11,455	47.1%	6,349	40.0%	6,552	39.4%	6,878	41.9%	6,439	38.8%
West										
Primary	3,455	14.2%	5,658	35.7%	6,018	36.2%	5,782	35.3%	6,202	37.4%
Secondary	8,369	34.4%	3,671	23.1%	3,943	23.7%	3,595	21.9%	3,824	23.1%
Local	1,031	4.2%	181	1.1%	109	0.7%	147	0.9%	116	0.7%
All	12,855	52.9%	9,510	60.0%	10,070	60.6%	9,524	58.1%	10,142	61.2%
Total	24,310	100.0%	15,859	100.0%	16,622	100.0%	16,402	100.0%	16,581	100.0%

Figure 17 provides contextual information, which identifies the proportion of sites by road type established with the amended methodology in 2012 followed by the reselections in 2017 and 2022. These sample disparities, along with diverse habits of restraint use, factor into the regional differences in rates. 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.

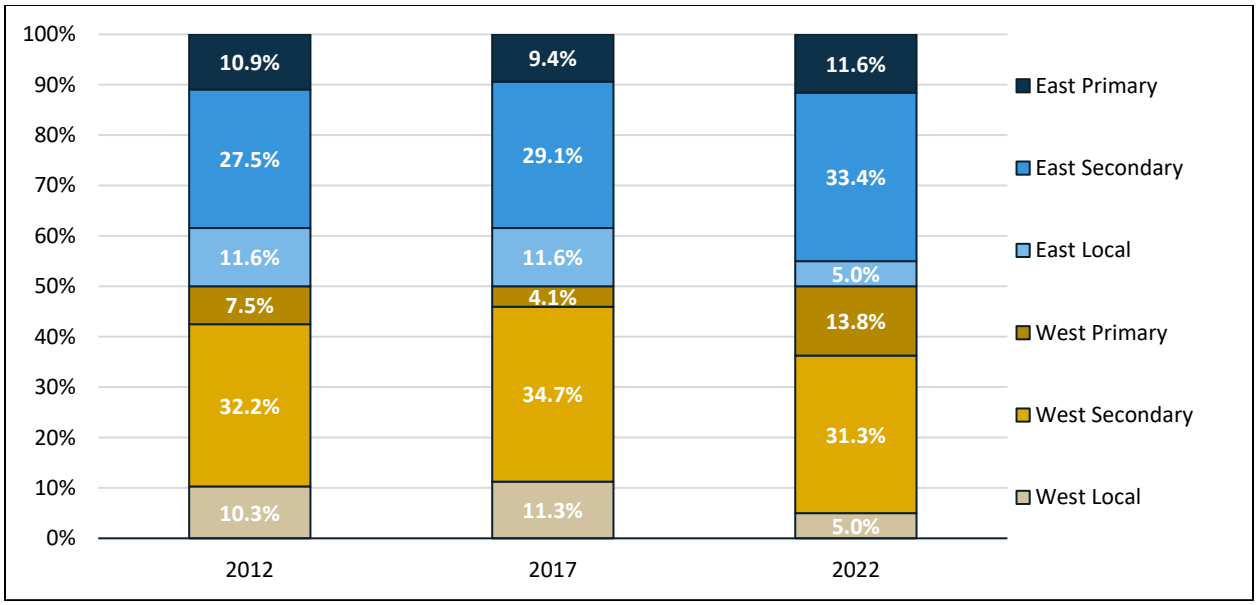


Figure 17: Percent of 320 Survey Sites by Road Type, 2012, 2017, 2022

Figure 18 shows that vehicle occupants traveling primary roadways in 2025 were belted at a higher rate (89.0%) than occupants on secondary (85.2%) and local roads (85.8%). Considering the past five survey years, primary roadway occupants used seat belts at rates from a low of 83.2% in 2023 to as high as 90.8% in 2021. Belt use by occupants on secondary roads has been unstable, from 77.5% in 2023 to 85.2% in 2025, but it has demonstrated the most improvement from 2023's sharp decline. The most improvement was seen in local road occupant rates, increasing by nearly 14 percentage points from 2023, and reaching a five-year high.

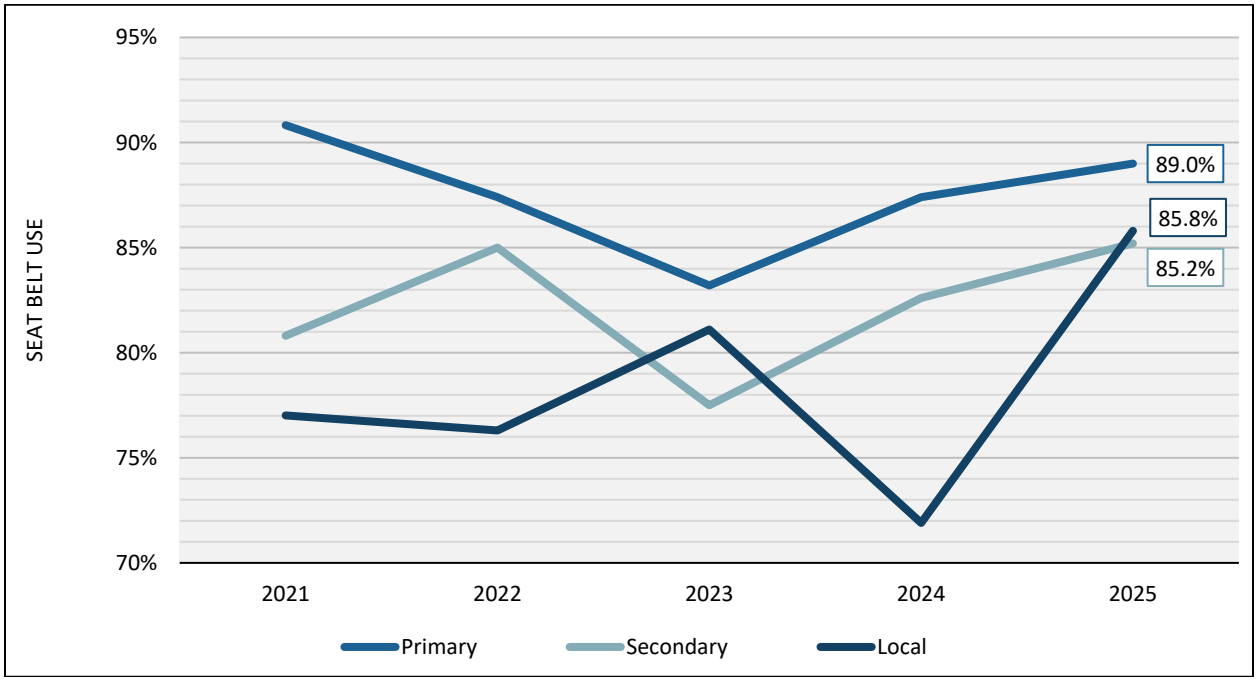


Figure 18: Percent Belted by Road Type, Annual, Unweighted

Annual rates stratified by region and road type over a five-year period are identified in Table 13. Restraint use on primary roads in the east region ranges from 83.1% to 89.9%, while corresponding roads in the west region range from 83.0% to 92.7%. Use on secondary roads ranges from 77.0% to 86.8% in the east and 77.4% to 87.6% in the west. Occupants traveling local roads were belted at rates from 73.5% to 89.1% and 66.3% to 79.3% the east and west regions, respectively. Generally, higher rates of use have been observed on primary and secondary road types in the west compared with the east. On local roads, higher rates of use have been observed in the east region.

Table 13: Percent Belted by Region & Road Type, Unweighted

	2021	2022	2023	2024	2025
East					
Primary	89.9%	84.1%	83.5%	83.1%	87.8%
Secondary	77.7%	80.5%	77.6%	77.0%	86.8%
Local	80.4%	83.3%	85.0%	73.5%	89.1%
West					
Primary	92.7%	89.8%	83.0%	90.7%	89.7%
Secondary	82.0%	87.6%	77.4%	86.2%	84.3%
Local	73.6%	66.3%	73.4%	70.1%	79.3%
Total					
Primary	90.8%	87.4%	83.2%	87.4%	89.0%
Secondary	80.8%	85.0%	77.5%	82.6%	85.2%
Local	77.0%	76.3%	81.1%	71.9%	85.8%

When balancing the year-to-year variability of rates in each road type (Figure 19), little difference is seen between the time periods on most road types in the two regions. All road types in the east saw a decrease of approximately 3 percentage points between the two time periods. All road types in the west saw an increase of approximately 2 percentage points. Disparity between regions is evident, with a difference of approximately 5 percentage points in the most recent three-year period.

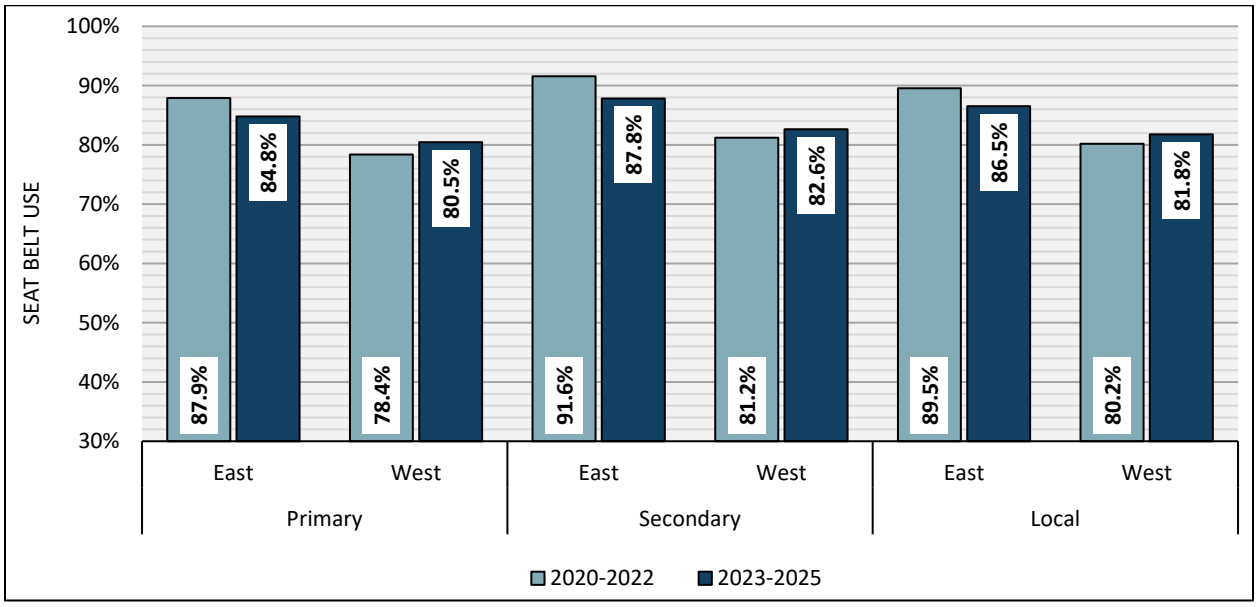


Figure 19: Seat Belt Use by Roadway Type, Three-Year Averages, Unweighted

Additional insight is found in delineating restraint use by road type and metropolitan statistical areas (MSAs). 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 North Dakota observational seat belt survey are Burleigh, Morton, Cass, and Grand Forks.

The data shown in Figure 20 are unweighted and do not account for the allocation of sites by road type in the two categories. Analysis shows restraint use in MSA counties on primary roads (93.0%) was higher than on the same road type in non-MSA counties (88.0%). Restraint use on secondary roads in MSA counties (91.6%) was also higher than on the same road type in non-MSA counties (82.9%). Occupants on local roads in MSA counties were restrained at 85.8%; local road sites were outside the sampling frame in non-MSA counties, so a comparison of that road type is not available.

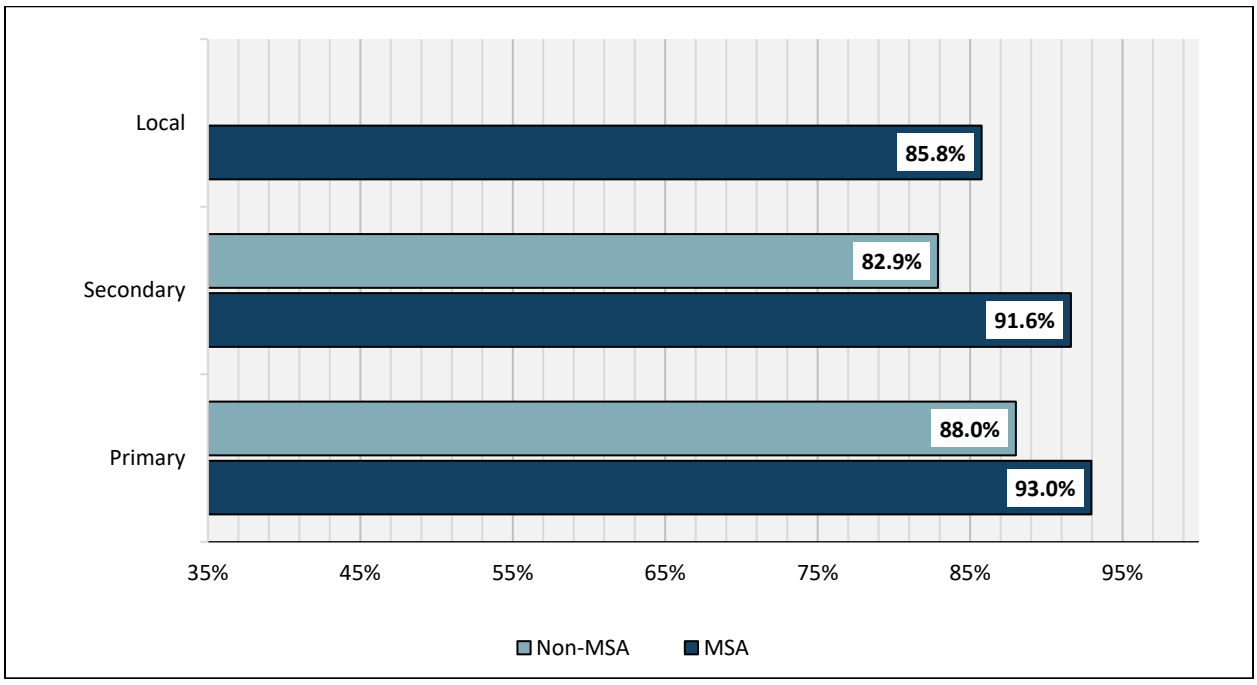


Figure 20: Percent Belted by Road Type & Metropolitan Statistical Areas, 2025, Unweighted

Sample size and restraint use by MSA designation, road type, and region are shown in Table 14. Vehicle observations from primary roads were predominantly collected in non-MSA counties in the west (29.3%) compared with non-MSA counties in the east (22.0%). Survey data indicated the rate of belted occupants on primary road segments in non-MSA counties was 86.2% in the east and 89.3% in the west. Primary roads in MSA counties were observed to have rates of 96.0% in the east and 91.5% in the west.

Secondary roads in non-MSA western counties represented 18.5% of the sample, compared with the east (8.4%). Noting the disparate size of the sample between regions, the rates were 82.3% in the east and 83.2% in the west. Vehicle occupants on secondary roads in MSA counties were observed to have rates of 94.1% in the east and 88.8% in the west.

As mentioned previously, observations were collected on local roads in MSA counties only per NHTSA protocol guidance. Regional sample sizes and use rates from local roads were, respectively, 1.3% and 0.7% with use rates in the east and west at 89.1% and 79.3% in the west.

Table 14: Sample and Seat Belt Use by Region & MSA Designations

Occupants Observed	East			West		
	n	*%*	*belted*	*n*	*%*	*belted*
Primary						
MSA	650	3.9%	96.0%	1,338	8.1%	91.5%
Non-MSA	3,322	20.0%	86.2%	4,864	29.3%	89.3%
Secondary						
MSA	853	5.1%	94.1%	757	4.6%	88.8%
Non-MSA	1,393	8.4%	82.3%	3,067	18.5%	83.2%
Local						
MSA	221	1.3%	89.1%	116	0.7%	79.3%
Non-MSA	-		-	-		-

FIELD SURVEY PROTOCOL

Table 15: 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 North Dakota
Identified Regions	East West
Selected Counties	East Region: Barnes, Benson, Cass, Grand Forks, Richland, Rolette, Stutsman, Walsh West Region: Burleigh, McKenzie, McLean, Morton, Mountrail, Stark, Ward, Williams
Number of Sites	320
Survey Period	June 1–7, 2025
Observation Duration Per Site	60 minutes
Sample Size	16,581 vehicle occupants (includes all vehicles where either the driver or passenger or both had a known protection status)

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 North 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 the state seat belt use was calculated to be 0.0003% 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 the actual statewide seat belt percentage falls outside the 87.8% to 87.9% range.

Table 16: Confidence Interval

95% Confidence Interval and Estimated Standard Error for 2025 State Seat Belt Use				
Occupants	**State Rate**	**Standard Error**	**95% CI Lower Limit**	**95% CI Upper Limit**
16,581	87.9%	0.0003	87.80%	87.97%

Nonresponse Rate

A factor that could potentially bias the results and invalidate the survey is exceedingly high nonresponse rates. A nonresponse occurs when the observer tries but cannot determine an occupant's seat belt use. In the 2025 survey, 14,319 drivers and 2,262 passengers were observed for a total of 16,581 vehicle occupants. Seat belt use could not be determined for 848 vehicle occupants, resulting in a nonresponse rate of 4.87%. As stipulated in NHTSA's guidelines, the nonresponse rate did not exceed the allowable maximum of 10%, so no resampling was necessary.

Protocols

Observers

Observers contracted to conduct the 2025 statewide seat belt survey were required to complete online training. The training module covered survey methods, observer responsibilities, and instructions for tablet operation for electronic data collection. Knowledge points required the trainee's correct responses in order to move forward in the module. Completion of training was verified by the survey administrator, and follow-up phone calls or emails were made to first-time observers to ensure full understanding of observer duties and survey protocols. 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 2025 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 at minimizing 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 and required a 60-minute observation period, which began at the start of the predetermined 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 took place for 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 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

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 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 the visibility of the observer.

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 seriously 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 while adhering to the original prescribed schedule for data collection.

Quality Assurance

During observation week, quality control personnel carried out unannounced site visits (minimum 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. It was required that quality control personnel visit any new observers during their initial observation day to assure protocol compliance and verify safe observation practices.

CONCLUSION

Uniform criteria published in 2011 guided the development of methodology used for seat belt surveys in North Dakota from 2012 through 2016. This methodology changed the focus from population-based criterion to traffic-crash-related fatality data for county sampling. The federal criteria mandated the reselection of observation sites at five-year intervals. This reselection requirement was carried out in 2017 and again in 2022 without further modifications to the survey design.

For the 2025 statewide survey, observers recorded seat belt use for 14,319 drivers and 2,262 passengers for a total of 16,581 vehicle occupants. The unweighted estimates of seat belt use were 86.4% for drivers, 94.4% for passengers, and 87.5% overall. Adjusting the raw state rate for the survey design and weights resulted in an overall weighted state rate of 87.9%, which is the generalizable seat belt use rate for the state. Rates by strata such as gender, vehicle type, region, roadway, population density, and distraction are unweighted due to the sample design.

North Dakota's weighted seat belt rate of 87.9% falls below the national estimate of 91.2% according to the most recent NHTSA report (January 2025). A noticeable gap remains evident, even when compared with states with secondary (or no) seat belt laws, where NHTSA reports a restraint use rate of 89.2% (2024). Note that North Dakota implemented a primary seat belt law in August 2023, following the national survey. In general, the findings in the 2025 North Dakota statewide survey are consistent with the findings of previous surveys. Experiences from other states indicate that improvement in seat belt use will likely only occur through some type of significant change, such as increased funding for additional enforcement, or possibly higher fines (NHTSA).

APPENDICES

Appendix A: Survey Methodology

Methodology Overview

From 1998 to 2000, the methodology for the observational seat belt survey in North Dakota was based on simple random sampling of 12 counties followed by random sampling of intersections within those selected counties. As a result, the sample produced a strong rural bias by excluding some of the most populous counties with higher traffic density and vehicle miles traveled (VMT). Following the 2000 survey, NDDOT concluded that a new sampling methodology was needed to obtain results that were more representative of traffic patterns and the distribution of drivers and passengers in North Dakota. NDDOT worked with research methodology experts at NHTSA to review the process.

The methodology from 2001 to 2011 included 16 counties, representing the quadrants of the state, and 319 sites, with approximately half above and half below the mean VMT within each county. This methodology could therefore be described as stratified random sampling modified by the inclusion of what are referred to in the federal guidelines as “certainty” counties. The certainty counties represented about three-fourths of North Dakota’s population and approximately two-thirds of the VMT in the state.

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 and using 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 23 counties accounted for at least 85% of North 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 North 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. If any of the 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 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: $\pi_{gc} = n_g v_{gc}/v_g$, where $n_g$is the PSU sample size for first stage stratum g that was allocated. First, each stratum 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 identified certainty county 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. Seven certainty counties were identified in the west region: Burleigh, McKenzie, Morton, Mountrail, Stark, Ward, and Williams. Barnes, Cass, Grand Forks, Stutsman, and Richland 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 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 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 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 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:

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

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

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

This estimator captures traffic volume and VMT 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

Barnes County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0315	1	124	166	74.7%
2	0.1544	1	115	121	95.0%
3	0.3103	1	298	331	90.0%
4	0.4374	1	21	28	75.0%
5	0.0096	1	62	81	76.5%
6	0.0305	1	12	12	100.0%
7	0.096	1	7	8	87.5%
8	0.1527	1	12	18	66.7%
9	0.2	1	2	4	50.0%
10	0.2373	1	2	2	100.0%
11	0.3607	1	8	9	88.9%
12	0.4046	1	41	50	82.0%
13	0.471	1	2	7	28.6%
14	0.5276	1	4	6	66.7%
15	0.5418	1	2	6	33.3%
16	0.5664	1	1	1	100.0%
17	0.6663	1	8	8	100.0%
18	0.6838	1	13	18	72.2%
19	0.7833	1	1	5	20.0%
20	0.8517	1	7	11	63.6%

Benson County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.1315	1.7632	112	120	93.3%
2	0.2243	1.7632	123	150	82.0%
3	0.3099	1.7632	155	160	96.9%
4	0.4874	1.7632	13	13	100.0%
5	0.5025	1.7632	147	150	98.0%
6	0.5652	1.7632	16	18	88.9%
7	0.9078	1.7632	14	15	93.3%
8	0.0134	1.7632	7	8	87.5%
9	0.1757	1.7632	30	32	93.8%
10	0.3378	1.7632	25	25	100.0%
11	0.3909	1.7632	20	20	100.0%
12	0.4455	1.7632	7	7	100.0%
13	0.4735	1.7632	5	5	100.0%
14	0.6077	1.7632	26	27	96.3%
15	0.7073	1.7632	38	39	97.4%
16	0.7377	1.7632	7	7	100.0%
17	0.7882	1.7632	37	40	92.5%
18	0.8982	1.7632	10	12	83.3%
19	1	1.7632	5	5	100.0%
20	1	1.7632	4	6	66.7%

Burleigh County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0014	1	288	339	85.0%
2	0.0538	1	239	268	89.2%
3	0.2144	1	126	131	96.2%
4	0.0016	1	89	102	87.3%
5	0.0067	1	36	45	80.0%
6	0.0289	1	79	91	86.8%
7	0.1145	1	124	141	87.9%
8	0.1669	1	24	26	92.3%
9	0.2182	1	4	4	100.0%
10	0.2877	1	20	22	90.9%
11	0.0012	1	27	30	90.0%
12	0.0016	1	14	16	87.5%
13	0.0024	1	5	5	100.0%
14	0.0033	1	7	8	87.5%
15	0.0044	1	4	6	66.7%
16	0.0056	1	14	15	93.3%
17	0.0076	1	1	1	100.0%
18	0.0106	1	2	2	100.0%
19	0.0143	1	7	7	100.0%
20	0.0224	1	2	2	100.0%

Cass County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0044	1	126	129	97.7%
2	0.0708	1	215	221	97.3%
3	0.0012	1	335	350	95.7%
4	0.0043	1	18	18	100.0%
5	0.0085	1	88	94	93.6%
6	0.0187	1	37	38	97.4%
7	0.0481	1	29	30	96.7%
8	0.0764	1	3	3	100.0%
9	0.1179	1	17	17	100.0%
10	0.1492	1	4	4	100.0%
11	0.3095	1	41	41	100.0%
12	0.0009	1	15	19	78.9%
13	0.0013	1	8	10	80.0%
14	0.0019	1	46	51	90.2%
15	0.0024	1	4	7	57.1%
16	0.003	1	5	5	100.0%
17	0.0037	1	5	5	100.0%
18	0.0048	1	1	1	100.0%
19	0.0064	1	8	10	80.0%
20	0.0097	1	8	8	100.0%

Grand Forks County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.034	1	95	102	93.1%
2	0.1204	1	57	59	96.6%
3	0.1912	1	131	139	94.2%
4	0.0033	1	18	24	75.0%
5	0.0119	1	55	60	91.7%
6	0.0492	1	4	4	100.0%
7	0.0928	1	54	61	88.5%
8	0.1245	1	10	11	90.9%
9	0.1613	1	7	8	87.5%
10	0.1943	1	61	66	92.4%
11	0.2495	1	3	4	75.0%
12	0.2923	1	4	4	100.0%
13	0.3503	1	15	16	93.8%
14	0.0015	1	5	5	100.0%
15	0.002	1	6	6	100.0%
16	0.0028	1	4	4	100.0%
17	0.0043	1	45	50	90.0%
18	0.0072	1	2	2	100.0%
19	0.0164	1	30	33	90.9%
20	0.2908	1	5	5	100.0%

McKenzie County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.089	1	135	171	78.9%
2	0.1815	1	78	84	92.9%
3	0.2116	1	80	102	78.4%
4	0.277	1	116	131	88.6%
5	0.3163	1	62	67	92.5%
6	0.4081	1	108	123	87.8%
7	0.0394	1	12	17	70.6%
8	0.0862	1	14	18	77.8%
9	0.1185	1	23	28	82.1%
10	0.144	1	13	18	72.2%
11	0.1925	1	4	4	100.0%
12	0.2702	1	3	4	75.0%
13	0.2944	1	29	33	87.9%
14	0.331	1	24	33	72.7%
15	0.3627	1	5	10	50.0%
16	0.3892	1	29	36	80.6%
17	0.4357	1	5	5	100.0%
18	0.5658	1	64	75	85.3%
19	0.5808	1	38	50	76.0%
20	0.7741	1	9	14	64.3%

McLean County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.097	2.9149	122	160	76.3%
2	0.2506	2.9149	197	222	88.7%
3	0.3278	2.9149	23	29	79.3%
4	0.3426	2.9149	181	200	90.5%
5	0.0127	2.9149	10	12	83.3%
6	0.0509	2.9149	6	7	85.7%
7	0.1432	2.9149	17	27	63.0%
8	0.1635	2.9149	2	3	66.7%
9	0.1938	2.9149	14	17	82.4%
10	0.2534	2.9149	6	8	75.0%
11	0.2953	2.9149	92	128	71.9%
12	0.3293	2.9149	4	4	100.0%
13	0.3457	2.9149	19	28	67.9%
14	0.4809	2.9149	9	13	69.2%
15	0.5341	2.9149	25	27	92.6%
16	0.5872	2.9149	23	26	88.5%
17	0.6033	2.9149	35	51	68.6%
18	0.6156	2.9149	7	8	87.5%
19	0.6657	2.9149	13	15	86.7%
20	0.8153	2.9149	11	12	91.7%

Morton County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0347	1	273	275	99.3%
2	0.1416	1	20	25	80.0%
3	0.2095	1	196	208	94.2%
4	0.2622	1	6	10	60.0%
5	0.3383	1	32	34	94.1%
6	0.6282	1	44	48	91.7%
7	0.0032	1	7	7	100.0%
8	0.018	1	193	205	94.1%
9	0.0724	1	5	6	83.3%
10	0.1587	1	8	11	72.7%
11	0.2447	1	0	0	0.0%
12	0.2969	1	4	9	44.4%
13	0.3646	1	60	65	92.3%
14	0.511	1	19	23	82.6%
15	0.0022	1	0	0	0.0%
16	0.0034	1	3	4	75.0%
17	0.0042	1	4	10	40.0%
18	0.0076	1	1	1	100.0%
19	0.0129	1	0	0	0.0%
20	0.0411	1	1	1	100.0%

Mountrail County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0996	1	135	148	91.2%
2	0.2029	1	54	57	94.7%
3	0.4097	1	109	123	88.6%
4	0.6613	1	169	181	93.4%
5	1	1	86	90	95.6%
6	0.0224	1	2	2	100.0%
7	0.0674	1	69	83	83.1%
8	0.1144	1	19	26	73.1%
9	0.1904	1	21	25	84.0%
10	0.3108	1	9	10	90.0%
11	0.3977	1	8	8	100.0%
12	0.4661	1	6	7	85.7%
13	0.4776	1	15	17	88.2%
14	0.5123	1	25	28	89.3%
15	0.519	1	13	16	81.3%
16	0.5942	1	7	7	100.0%
17	0.6669	1	11	11	100.0%
18	0.798	1	8	8	100.0%
19	1	1	19	24	79.2%
20	1	1	38	43	88.4%

Richland County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0392	1	48	50	96.0%
2	0.2359	1	133	140	95.0%
3	0.3304	1	134	135	99.3%
4	0.4269	1	56	57	98.2%
5	0.5612	1	74	79	93.7%
6	0.0261	1	29	32	90.6%
7	0.0554	1	50	67	74.6%
8	0.1092	1	8	8	100.0%
9	0.1973	1	8	10	80.0%
10	0.2459	1	22	24	91.7%
11	0.2914	1	10	11	90.9%
12	0.3098	1	35	40	87.5%
13	0.3408	1	6	6	100.0%
14	0.3645	1	21	22	95.5%
15	0.4484	1	26	30	86.7%
16	0.4896	1	8	8	100.0%
17	0.5399	1	47	52	90.4%
18	0.5872	1	6	7	85.7%
19	0.6114	1	8	9	88.9%
20	0.733	1	23	24	95.8%

Rolette County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.1185	1.6889	129	171	75.4%
2	0.3314	1.6889	90	104	86.5%
3	0.3889	1.6889	54	58	93.1%
4	0.5615	1.6889	20	32	62.5%
5	0.693	1.6889	41	42	97.6%
6	0.7821	1.6889	63	66	95.5%
7	0.8344	1.6889	10	10	100.0%
8	0.0888	1.6889	17	30	56.7%
9	0.1848	1.6889	8	9	88.9%
10	0.4871	1.6889	20	24	83.3%
11	0.539	1.6889	9	9	100.0%
12	0.5729	1.6889	14	16	87.5%
13	0.6209	1.6889	13	13	100.0%
14	0.6433	1.6889	15	16	93.8%
15	0.8507	1.6889	7	8	87.5%
16	1	1.6889	5	5	100.0%
17	1	1.6889	13	14	92.9%
18	1	1.6889	9	10	90.0%
19	1	1.6889	23	30	76.7%
20	1	1.6889	13	18	72.2%

Stark County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0175	1	194	220	88.2%
2	0.1184	1	254	268	94.8%
3	0.3913	1	194	206	94.2%
4	0.4142	1	188	200	94.0%
5	0.5613	1	183	199	92.0%
6	0.7094	1	45	46	97.8%
7	0.868	1	162	172	94.2%
8	1	1	17	19	89.5%
9	0.0048	1	186	219	84.9%
10	0.0115	1	88	109	80.7%
11	0.0267	1	3	3	100.0%
12	0.0441	1	25	28	89.3%
13	0.0678	1	30	36	83.3%
14	0.1355	1	16	18	88.9%
15	0.2867	1	233	243	95.9%
16	0.313	1	15	23	65.2%
17	0.4118	1	47	54	87.0%
18	0.5231	1	11	13	84.6%
19	0.5606	1	27	34	79.4%
20	1	1	17	17	100.0%

Stutsman County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0157	1	253	340	74.4%
2	0.1363	1	87	134	64.9%
3	0.1863	1	111	135	82.2%
4	0.2294	1	176	221	79.6%
5	0.408	1	65	81	80.2%
6	0.0057	1	51	78	65.4%
7	0.0328	1	2	6	33.3%
8	0.0854	1	10	14	71.4%
9	0.1603	1	3	6	50.0%
10	0.231	1	3	7	42.9%
11	0.2771	1	6	7	85.7%
12	0.3171	1	9	13	69.2%
13	0.3231	1	19	19	100.0%
14	0.3596	1	3	3	100.0%
15	0.3895	1	12	15	80.0%
16	0.4483	1	5	9	55.6%
17	0.4813	1	2	7	28.6%
18	0.5211	1	6	10	60.0%
19	0.7603	1	8	11	72.7%
20	1	1	5	7	71.4%

Walsh County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0719	1.0036	46	49	93.9%
2	0.331	1.0036	67	71	94.4%
3	0.4527	1.0036	41	47	87.2%
4	0.589	1.0036	26	28	92.9%
5	0.0362	1.0036	8	10	80.0%
6	0.1159	1.0036	4	5	80.0%
7	0.1679	1.0036	19	23	82.6%
8	0.1977	1.0036	3	4	75.0%
9	0.2533	1.0036	11	11	100.0%
10	0.2646	1.0036	8	11	72.7%
11	0.2936	1.0036	2	3	66.7%
12	0.3904	1.0036	5	6	83.3%
13	0.4168	1.0036	7	7	100.0%
14	0.4573	1.0036	6	6	100.0%
15	0.463	1.0036	2	6	33.3%
16	0.5193	1.0036	11	12	91.7%
17	0.5452	1.0036	10	14	71.4%
18	0.5854	1.0036	9	11	81.8%
19	0.6194	1.0036	11	12	91.7%
20	0.812	1.0036	8	9	88.9%

Ward County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0182	1	216	251	86.1%
2	0.0572	1	128	144	88.9%
3	0.1439	1	47	55	85.5%
4	0.1928	1	326	367	88.8%
5	0.2193	1	77	79	97.5%
6	0.2865	1	72	78	92.3%
7	0.664	1	72	75	96.0%
8	0.0031	1	98	118	83.1%
9	0.009	1	110	129	85.3%
10	0.0177	1	81	93	87.1%
11	0.0351	1	88	97	90.7%
12	0.1004	1	16	16	100.0%
13	0.1582	1	9	9	100.0%
14	0.183	1	2	2	100.0%
15	0.2072	1	34	41	82.9%
16	0.2476	1	8	9	88.9%
17	0.323	1	14	19	73.7%
18	0.3563	1	5	6	83.3%
19	0.426	1	30	31	96.8%
20	0.5285	1	17	17	100.0%

Williams County

June 2025

Site Rates with Weights					
Site	Site Weight	County Weight	Total Belted	Total Occupants	Seat Belt Rate
1	0.0336	1	150	197	76.1%
2	0.1367	1	99	123	80.5%
3	0.2713	1	106	111	95.5%
4	0.4071	1	108	115	93.9%
5	0.7217	1	49	51	96.1%
6	0.0101	1	99	134	73.9%
7	0.021	1	36	45	80.0%
8	0.0412	1	3	6	50.0%
9	0.0919	1	13	17	76.5%
10	0.1464	1	42	61	68.9%
11	0.178	1	3	3	100.0%
12	0.2649	1	105	129	81.4%
13	0.301	1	68	82	82.9%
14	0.3163	1	24	31	77.4%
15	0.3301	1	5	5	100.0%
16	0.3569	1	59	65	90.8%
17	0.3871	1	3	7	42.9%
18	0.6286	1	7	7	100.0%
19	1	1	33	39	84.6%
20	1	1	6	6	100.0%

Appendix C: Site Locations

BARNES COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	S94E000B290.803_01	-98.001573	46.923356	E	0.66
2	I94E000M	-97.976604	46.916792	W	3.22
3	I94E000M	-97.755319	46.919173	W	6.46
4	S1N000M	-98.192467	47.000940	E	9.11
5	L21_003M	-98.007044	46.907442	E	0.20
6	L22_003M	-98.009255	46.928781	W	0.65
7	L1_003M	-98.227656	46.921058	W	2.03
8	L52_003M	-98.027490	46.964941	N	3.24
9	L53_003M	-97.913157	46.949728	N	4.24
10	L4_003M	-98.139334	47.066830	S	5.03
11	L50_003M	-98.404169	47.040242	N	7.64
12	S32N000M	-97.749629	46.630080	N	8.57
13	S26E000M	-98.106735	47.183027	W	9.98
14	L53_003M	-97.896754	47.115817	E	11.18
15	L2_003M	-98.325851	47.182697	S	11.48
16	L1_003M	-98.228244	46.747054	E	12.00
17	L58_003M	-97.854463	47.153125	N	14.11
18	L10_003M	-97.986973	46.789883	E	14.49
19	S9E000M	-98.322587	47.095655	S	16.59
20	L8_003M	-98.333335	46.761865	N	18.04

BENSON COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	U2E000M	-99.452774	48.289837	E	1.62
2	S57E000M	-98.903063	48.008047	W	2.77
3	U2E000M	-99.391782	48.284500	E	3.82
4	U281N000M	-99.200310	48.326480	E	6.01
5	U2E000M	-99.285471	48.277595	W	6.20
6	U281N000M	-99.177981	47.978072	E	6.97
7	U281N000M	-99.286842	48.145034	N	11.20
8	L52_005M	-99.210179	47.919630	E	0.15
9	L357_005M	-98.716572	47.932993	S	1.95
10	S19E000M	-99.807994	48.035931	W	3.76
11	S30N000M	-99.533623	47.871251	N	4.35
12	L52_005M	-99.265166	47.919418	W	4.96
13	L351_005M	-99.438349	48.332787	W	5.27
14	S30N000M	-99.529456	48.017703	N	6.76
15	S19E000M	-99.203007	48.115138	S	7.87
16	S19E000M	-99.349411	48.064496	N	8.21
17	S20N000M	-98.824152	47.993308	N	8.77
18	S20N000M	-98.763589	47.919986	E	9.99
19	L346_005M	-99.769576	47.934285	W	12.07
20	S30N000M	-99.538481	48.183763	S	17.25

BURLEIGH COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	L1700_015M	-100.793810	46.844838	N	0.05
2	I94E000M	-100.751727	46.831262	E	2.02
3	U83N000M	-100.792082	47.099148	W	8.05
4	L362_015M	-100.768588	46.816477	E	0.07
5	L1674_015M	-100.776775	46.860165	S	0.30
6	L1734_015M	-100.776721	46.765698	S	1.28
7	S1804N000M	-100.818664	46.881484	S	5.06
8	S1804N000M	-100.896789	46.941848	S	7.37
9	S14N000M	-100.287488	46.906113	E	9.64
10	S1804N000M	-100.897190	47.076852	N	12.72
11	L839_015M	-100.789160	46.827743	N	0.05
12	L938_015M	-100.783695	46.814007	S	0.07
13	L713_015M	-100.778806	46.829623	S	0.11
14	L653_015M	-100.761197	46.825573	E	0.15
15	L758_015M	-100.775610	46.784210	W	0.20
16	L659_015M	-100.758705	46.811001	E	0.25
17	L525_015M	-100.749708	46.877545	N	0.34
18	L20253_015M	-100.753112	46.877497	W	0.48
19	L491_015M	-100.661679	46.805241	E	0.64
20	L539_015M	-100.698517	46.889034	W	1.01

CASS COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	I94E000M	-97.680534	46.917501	W	0.26
2	I29N000M	-96.993410	47.211031	E	4.16
3	L1899_017M	-96.800443	46.883187	N	0.07
4	L1874_017M	-97.010980	46.889475	E	0.27
5	L1887_017M	-96.866669	46.905927	S	0.53
6	L1876_017M	-96.882946	46.984291	S	1.16
7	L1877_017M	-96.830338	46.745729	E	3.00
8	L1878_017M	-96.904815	46.664760	W	4.76
9	L1864_017M	-97.556017	46.820480	N	7.35
10	L1875_017M	-97.458005	46.774549	W	9.31
11	L1865_017M	-97.182396	47.151682	N	19.30
12	L800_017M	-96.799654	46.886338	N	0.06
13	L717_017M	-96.790499	46.854971	S	0.09
14	L956_017M	-96.829100	46.793308	S	0.13
15	L461_017M	-96.816299	46.826439	S	0.16
16	L500_017M	-96.803944	46.835979	W	0.21
17	L1033_017M	-96.911943	46.872177	S	0.25
18	L1702_017M	-96.901649	46.820808	E	0.33
19	L402_017M	-96.800467	46.962697	W	0.43
20	L517_017M	-96.804848	46.919280	S	0.66

GRAND FORKS COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	I29N000M	-97.109230	48.006577	N	1.23
2	I29N000M	-97.184810	48.103489	S	4.34
3	U2E000M	-97.313402	47.933068	W	6.89
4	L881_035M	-97.034595	47.921284	S	0.13
5	L844_035M	-97.148199	47.889517	E	0.48
6	L840_035M	-97.602584	47.918276	W	1.97
7	L851_035M	-97.045285	47.820897	S	3.72
8	S18N000M	-97.452933	47.708229	N	4.99
9	L833_035M	-97.725478	48.151350	S	6.47
10	S15E000M	-97.303215	47.759322	S	7.79
11	L852_035M	-97.217480	47.672153	E	10.00
12	L846_035M	-97.365914	47.829634	N	11.72
13	S15E000M	-97.731730	47.744722	E	14.04
14	L302_035M	-97.032565	47.887297	N	0.05
15	L421_035M	-97.050237	47.936092	E	0.07
16	L411_035M	-97.030758	47.886758	W	0.10
17	L619_035M	-97.109559	47.919949	S	0.15
18	L83_035M	-97.581052	47.739014	E	0.25
19	L19_035M	-97.174831	47.938739	N	0.57
20	L97_035M	-97.752285	48.078563	E	10.06

MCKENZIE COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	U85N000M	-103.283069	47.751105	E	2.03
2	U85N000M	-103.251589	47.582675	N	4.14
3	U85N000M	-103.324145	47.767038	W	4.83
4	U85N000M	-103.558751	47.804964	S	6.33
5	S23E000M	-102.941498	47.855543	N	7.22
6	S23E000M	-102.685267	47.973028	S	9.32
7	L794_053M	-103.454924	47.697486	S	0.98
8	S68E000M	-103.819878	47.673926	S	2.14
9	L794_053M	-103.369039	47.723861	W	2.94
10	L794_053M	-103.412036	47.703537	N	3.57
11	L741_053M	-104.019134	47.613915	E	4.78
12	L752_053M	-103.926489	47.575595	W	6.71
13	S73E000M	-102.863840	47.804085	N	7.31
14	S1806N000M	-102.876511	48.019793	S	8.22
15	L744_053M	-103.036902	47.905402	S	9.00
16	S200E000M	-103.938560	47.859186	S	9.66
17	L755_053M	-103.352520	47.419879	W	10.82
18	S22N000M	-102.731799	47.882835	W	14.05
19	S1806N000M	-103.197863	47.905668	N	14.42
20	S16N000M	-103.859299	47.568882	N	19.22

MCLEAN COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	U83N000M	-101.262554	47.598130	W	2.29
2	U83N000M	-100.955403	47.241780	E	5.91
3	S200E000M	-100.798454	47.487221	S	7.73
4	U83N000M	-101.079144	47.352039	N	8.08
5	S53E000M	-101.279470	47.819165	E	0.25
6	L695_055M	-101.079060	47.841061	E	1.00
7	S48N000M	-101.227701	47.522373	N	2.83
8	L159_055M	-101.129274	47.371535	S	3.23
9	S53E000M	-100.617383	47.831157	S	3.83
10	L691_055M	-101.850489	47.710286	E	5.00
11	S37E000M	-101.354029	47.646925	N	5.83
12	L691_055M	-101.807771	47.793354	E	6.50
13	S1804N000M	-101.747802	47.646417	E	6.82
14	L899_055M	-100.912060	47.287532	S	9.49
15	S200E000A157.781_01	-101.035606	47.382003	W	10.54
16	S41N000M	-100.715832	47.407427	E	11.59
17	S37E000M	-101.551816	47.647176	N	11.91
18	S53E000M	-100.800482	47.830246	S	12.15
19	S41N000M	-100.907761	47.609922	N	13.14
20	S53E000M	-101.101885	47.819382	E	16.09

MORTON COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	I94E000M	-100.848113	46.822633	W	0.81
2	S21E000M	-101.269176	46.443875	E	3.32
3	I94E000M	-101.624468	46.860513	S	4.92
4	S6N000M	-100.921068	46.429833	W	6.16
5	S6N000M	-100.903007	46.523781	N	7.94
6	S6N000M	-100.901892	46.682245	S	14.75
7	L702_059M	-100.894311	46.826329	E	0.08
8	S94E000B147.183_02	-100.833472	46.809641	E	0.43
9	L678_059M	-101.394664	46.821702	S	1.71
10	L670_059M	-101.472150	46.847516	W	3.74
11	L679_059M	-101.236812	46.501978	N	5.77
12	S49N000M	-101.865227	46.765818	N	7.00
13	S25N000M	-101.007368	46.923656	N	8.60
14	S1806N000M	-100.616762	46.595921	E	12.05
15	L263_059M	-101.828767	46.816730	N	0.05
16	L386_059M	-100.892827	46.829226	S	0.07
17	L605_059M	-101.410035	46.845686	E	0.09
18	L373_059M	-100.940181	46.861931	S	0.16
19	L378_059M	-100.941241	46.870260	N	0.28
20	L189_059M	-100.914912	46.888964	N	0.88

MOUNTRAIL COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	U2E000M	-102.229307	48.327041	E	1.52
2	S23E000B248.391_01	-102.473174	47.992322	W	3.10
3	U2E000M	-102.469937	48.312507	N	6.26
4	U2E000M	-102.030222	48.326983	S	10.11
5	S23E000M	-102.069776	47.977901	S	18.47
6	L390_061M	-102.547966	48.318975	W	0.34
7	S37E000M	-102.128761	47.970587	W	1.01
8	L394_061M	-102.190846	48.032422	S	1.72
9	S1804N000M	-102.537237	48.030320	N	2.86
10	L388_061M	-102.636013	48.374357	E	4.67
11	L393_061M	-102.288966	48.153455	S	5.97
12	L389_061M	-102.320596	48.341667	S	7.00
13	L390_061M	-102.569157	48.262132	N	7.17
14	L390_061M	-102.557210	47.903237	E	7.69
15	S50E000M	-102.105367	48.546276	W	7.79
16	L388_061M	-102.646904	48.470616	W	8.92
17	S50E000M	-102.299236	48.546328	N	10.01
18	L393_061M	-102.482996	48.182397	N	11.98
19	S8N000M	-102.407915	48.436532	E	15.42
20	S1804N000M	-102.612457	48.119081	N	16.25

RICHLAND COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	S127N000M	-96.616221	46.244440	W	0.66
2	I29N000M	-96.833817	46.166296	E	4.00
3	I29N000M	-96.835820	45.981224	W	5.60
4	S13E000M	-96.925073	46.261585	W	7.24
5	S13E000M	-96.734958	46.260901	S	9.51
6	L50_077M	-96.817608	46.572603	N	0.53
7	S11E000M	-96.898653	46.066095	W	1.13
8	L496_077M	-96.889887	46.051639	E	2.23
9	L51_077M	-96.653160	46.340096	N	4.03
10	L485_077M	-96.948813	46.593956	W	5.02
11	L50_077M	-97.010206	46.543291	S	5.95
12	S11E000M	-96.675342	46.051223	W	6.33
13	L484_077M	-97.008694	46.333262	E	6.96
14	S11E000M	-96.814089	46.051544	E	7.45
15	L491_077M	-96.765808	46.514595	E	9.16
16	S127N000M	-96.617732	46.007543	S	10.00
17	S127N000M	-96.616181	46.159791	S	11.03
18	L482_077M	-97.008942	46.470744	N	12.00
19	L491_077M	-96.736795	46.349708	W	12.49
20	S18N000M	-97.135020	46.521233	S	14.97

ROLETTE COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	U281N000M	-99.778293	48.827066	S	1.06
2	U281N000M	-99.689669	48.849024	S	2.97
3	U281N000M	-99.563852	48.863138	N	3.49
4	U281N000M	-100.051483	48.856015	S	5.04
5	S3N000M	-100.051535	48.761620	S	6.22
6	S3N000M	-100.037140	48.595928	S	7.02
7	U281N000M	-100.051933	48.945474	N	7.49
8	L318_079M	-99.929027	48.834673	E	0.82
9	L320_079M	-99.723020	48.930148	W	1.71
10	L319_079M	-99.841797	48.699616	N	4.51
11	L322_079M	-100.091385	48.675238	N	4.99
12	S66E000M	-99.551322	48.631830	W	5.30
13	L323_079M	-99.623521	48.586556	S	5.75
14	S43E000M	-100.117371	48.950273	S	5.95
15	L316_079M	-99.743769	48.892072	E	7.87
16	S30N000M	-99.613934	48.724999	E	9.04
17	S66E000M	-99.944993	48.675590	S	9.06
18	L315_079M	-99.950706	48.950059	N	9.50
19	S30N000M	-99.657013	48.931278	W	9.98
20	S66E000M	-99.725388	48.660894	N	10.83

STARK COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	S94E000B59.485_01	-102.750092	46.882231	W	0.22
2	I94E000M	-102.773864	46.895109	W	1.52
3	I94E000M	-102.570887	46.878276	W	5.01
4	I94E000M	-102.298765	46.869898	W	5.30
5	I94E000M	-102.445055	46.876978	E	7.19
6	U85N000M	-103.189943	46.695011	E	9.08
7	I94E000M	-103.115217	46.891076	W	11.11
8	S8N000M	-102.307372	46.751245	W	16.79
9	L716_089M	-102.768585	46.886921	W	0.07
10	L665_089M	-102.810434	46.870640	W	0.17
11	L719_089M	-102.747572	46.888079	E	0.40
12	L680_089M	-102.831907	46.897730	E	0.65
13	L661_089M	-102.894226	46.882917	S	1.00
14	L661_089M	-102.894225	46.861740	N	2.01
15	S22N000M	-102.789645	46.950171	N	4.25
16	S8N000M	-102.328616	46.916929	N	4.64
17	S22N000M	-102.789865	46.673544	N	6.10
18	S22N000B56.668_01	-102.841420	46.933986	N	7.75
19	L675_089M	-102.979920	46.876419	N	8.31
20	L658_089M	-102.560079	46.744638	S	16.00

STUTSMAN COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	U52E000M	-98.708615	46.910298	W	0.35
2	U281N000M	-98.712845	46.855230	E	3.00
3	U52E000M	-98.811134	47.045120	W	4.10
4	I94E000M	-98.812266	46.892300	W	5.05
5	U281N000M	-98.712807	46.768424	W	8.99
6	L636_093M	-98.689020	46.884612	E	0.14
7	S9E000M	-98.832846	47.326912	E	0.81
8	L604_093M	-98.756140	46.921089	S	2.11
9	L598_093M	-99.143523	47.298130	E	3.97
10	L597_093M	-98.618746	47.167789	N	5.72
11	L607_093M	-98.640448	46.790613	E	6.86
12	S9E000M	-98.514958	47.167978	N	7.85
13	L611_093M	-98.481391	46.835320	W	8.00
14	S9E000M	-98.936271	47.326798	W	8.90
15	S46E000M	-99.243619	46.631085	N	9.64
16	L782_093M	-99.312601	47.063485	E	11.10
17	L599_093M	-99.133914	46.802154	E	11.91
18	S9E000M	-98.742314	47.276379	N	12.90
19	S36E000M	-99.111823	47.167537	S	18.82
20	S46E000M	-98.861547	46.630733	N	26.83

WALSH COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	I29N000M	-97.190201	48.507392	N	1.10
2	I29N000M	-97.189965	48.375433	N	5.06
3	U81N000M	-97.405037	48.350613	S	6.92
4	S17E000M	-97.288402	48.412278	S	9.01
5	L413_099M	-97.517285	48.470548	S	0.63
6	L418_099M	-97.795369	48.238347	S	2.00
7	L416_099M	-97.415873	48.296320	S	2.91
8	L413_099M	-98.041835	48.485269	N	3.42
9	L416_099M	-97.505855	48.296132	S	4.38
10	L416_099M	-97.309817	48.295670	S	4.58
11	S35N000M	-98.122705	48.376223	E	5.08
12	L416_099M	-97.630590	48.310763	E	6.76
13	L417_099M	-97.258596	48.208446	N	7.21
14	L416_099M	-98.032538	48.310487	N	7.91
15	L415_099M	-97.552960	48.151020	E	8.01
16	S32N000M	-97.860565	48.260025	N	8.99
17	S17E000M	-97.962435	48.398330	S	9.43
18	S18N000M	-97.622727	48.470481	E	10.13
19	S17E000M	-98.201741	48.413005	E	10.72
20	S18N000M	-97.622451	48.296485	W	14.05

WARD COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	U2E000B144.326_01	-101.265850	48.231566	W	0.50
2	U52E000M	-101.030859	48.085127	S	1.58
3	U52E000M	-102.046605	48.653083	N	3.97
4	U2E000M	-101.392699	48.243681	N	5.32
5	U52E000M	-101.535289	48.342212	N	6.05
6	U52E000M	-101.637357	48.405215	W	7.90
7	S23E000M	-101.486232	47.978481	W	18.31
8	L1260_101M	-101.322006	48.253905	W	0.09
9	L1260_101M	-101.317296	48.263702	W	0.25
10	L1260_101M	-101.318753	48.251426	N	0.50
11	L1241_101M	-101.263504	48.283416	N	0.99
12	S50E000M	-101.993358	48.547247	E	2.83
13	L7_101M	-101.508056	48.020689	N	4.46
14	L1238_101M	-101.868413	48.341758	S	5.16
15	L1244_101M	-101.708316	48.182463	W	5.84
16	L1232_101M	-101.807779	47.905341	S	6.98
17	L1248_101M	-101.057685	48.305700	N	9.11
18	L1249_101M	-101.403958	48.051927	S	10.05
19	L1244_101M	-101.515108	48.182142	E	12.01
20	S23E000M	-101.135067	47.978897	E	14.90

WILLIAMS COUNTY

Site	Route ID	Longitude	Latitude	Direction	Segment Length
1	U2E000B17.923_01	-103.635447	48.145196	N	0.74
2	U2E000M	-102.990661	48.341695	N	3.01
3	U2E000M	-103.088219	48.342348	N	5.98
4	U2E000M	-103.442363	48.342280	E	8.98
5	U85N000M	-103.624701	48.454740	E	15.91
6	L834_105M	-103.650776	48.168707	W	0.22
7	L824_105M	-103.626070	48.165380	W	0.55
8	L64_105M	-103.712216	48.219506	W	1.07
9	L822_105M	-102.929431	48.616024	S	2.39
10	L1016_105M	-103.582886	48.213693	E	3.80
11	S50E000M	-103.998989	48.619248	S	4.62
12	S1804N000M	-103.788185	48.091838	W	6.88
13	S1804N000M	-103.963762	48.002802	N	7.82
14	S50E000M	-103.567813	48.572113	W	8.22
15	L867_105M	-103.341987	48.404039	S	8.57
16	S40N000M	-102.929308	48.479353	W	9.27
17	L811_105M	-103.992342	48.069285	W	10.05
18	S50E000M	-103.092200	48.589927	W	16.32
19	S1804N000M	-103.251060	48.169331	W	23.41
20	L812_105M	-103.950223	48.430090	E	24.09

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 systems. 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.