

Seat Belt Use on North Dakota Rural Roads

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North Dakota's rural roads provide vital social and commercial links for a widely dispersed population. The safety of these roadways is paramount in managing traffic assets to enhance the state's livability. Approximately 54% of the state's travel, in vehicle-miles, takes place on rural roads that interconnect small communities and join the rural geography to interstate corridors and urban centers. From a safety perspective, this poses an inherent challenge because the risk for serious injury and death on these roads is relatively high compared to their urban counterparts (U.S. DOT 2005, U.S. DOT 2009a). With the understanding that seat belts are a relatively low-cost safety device and are an easy primary protection for occupants in passenger vehicles, North Dakota has chosen to continue to measure rural roads seat belt use. This study is a continuation of previous measurement of rural seat belt usage in North Dakota.

A direct observation survey method was used for this study. In 2009, stratified random sampling of the rural counties was conducted based on rural county populations and geographic representation of counties across four quadrants of the state. Within the sample counties (indicated in blue - Figure 1), sites selected for observation were based on local traffic knowledge, due to the fact that annual vehicle miles traveled, or traffic density, is not available for local roads.

RESULTS

A total of 4,727 observations of driver seat belt use were collected during surveys conducted at 141 sites across the state. Highway seat belt use increased from 57.2% in 2010 to 60.5% in 2011. Local programs focusing on high visibility seat belt enforcement such as the Click it Or Ticket effort most likely played a role in this increase. The observed seat belt use rate for drivers on rural highways, 60.5%, is significantly different than the use rate in rural towns at 41.4% (Figure 2).

Comparing usage rates by gender for road type, the adjusted female use on rural highways was at 71.8% compared to 55.2% for males. These weighted seat belt figures produce rates in rural towns of 49.6% for female drivers and only 35.7% for males (Figure 3). The lower propensity for males to use seat belts, as found in this study, is consistent with other research (U.S. DOT 2008, Gross et al. 2007, Vivida et al 2007, McCartt and Northrup 2004).

The range of highway seat belt use by county was large, considering a high of 83.5% in Renville County and a low of 41.9% in Dickey County. Seat belt use in rural towns ranges from a high of 69.6% in McKenzie County to a low of 7.7% in Hettinger County. The range in seat belt use suggests some potential to investigate the environment and practices in the more successful counties to determine if best practices can be trans-

Figure 1: Rural Seat Belt Counties



Figure 2: Driver Seat Belt Use by Road Type: 2009-2011 (Weighted)

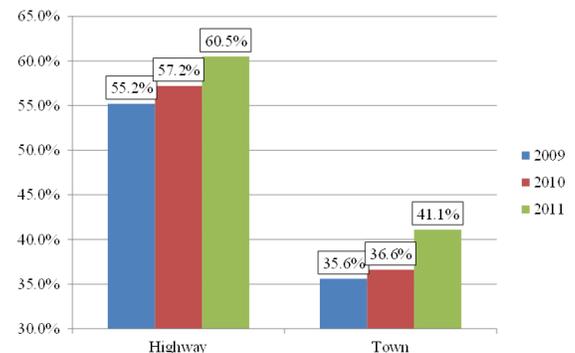
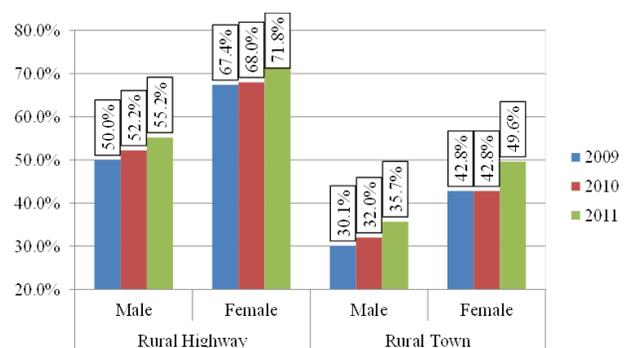


Figure 3: Driver Seat Belt Use by Gender and Road Type: 2009-2011 (Weighted)



ferred to other areas or if there are unique cultural or travel situations surrounding the higher rates.

Drivers in the Northwest region have the highest highway seat belt use at 75.7%, followed by the Southwest at 63.8%, the Northeast at 59.0%, and the Southeast at 53.9% (Figure 4). The Northeast and Northwest regions both saw increases in highway seatbelt use from 2010 to 2011, while the southern regions of the state saw declines.

A significant variation in seat belt use is found across passenger vehicle types. Driver seat belt use in cars was 58.0% compared to 43.8% for pickup truck drivers. Sport utility vehicle and van drivers both had higher observed use rates than drivers in cars and pickups at 59.9% and 62.7%, respectively (Figure 5).

Passenger seat belt use was 65.8% on rural highways and 50.2% in rural towns. Both rural highway and rural town passenger seat belt use increased from 2010 to 2011. As with driver observations, gender was a significant factor in seat belt use in passengers. Female passengers used seat belts in 71.5% of the observations, compared to 45.1% for males. While female passenger belt use increased significantly from 2010, climbing from 57.5% to 71.5% usage, male passenger belt use did not increase as dramatically- increasing from 39.9% in 2010 to 45.1% in 2011. The driver and passenger seat belt use rates were strongly correlated in cases where passenger use could be recorded (Figure 6). Stratifying the passenger seat belt cases by road type does show that the belted passenger and belted driver observations scenario accounted for the greatest share of the observed cases for the rural highways at 61.5%. The unbelted passenger and unbelted driver observations scenario was the most common in rural towns at 45.6%.

CONCLUSION

Rural roads account for 55% of annual travel and nearly 89% of fatal and disabling injury crashes. While there are many important aspects of road safety, interest here is in measuring seat belt use for managing it as a safety priority. Seat belt use on the state's rural roads was found to be significantly less than the commonly reported statewide seat belt use rate. The relative risk and significant difference in use rates between rural highways and towns should continue to be considered in research related to rural seat belt use. In addition, continued assessment of programs to increase local seat belt enforcement or awareness on rural roads is suggested.

Figure 4: Highway Driver Seat Belt Use by Region: 2009-2011 (Weighted)

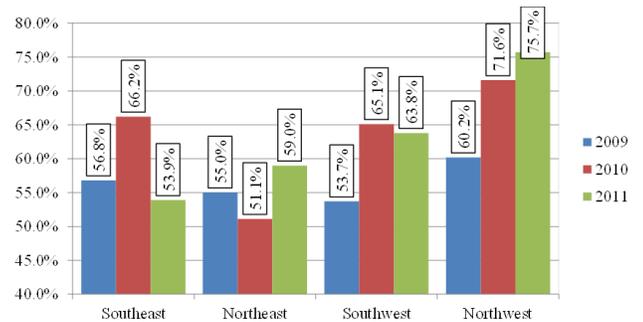


Figure 5: Driver Seat Belt Use by Vehicle Type: 2009-2011 (Weighted)

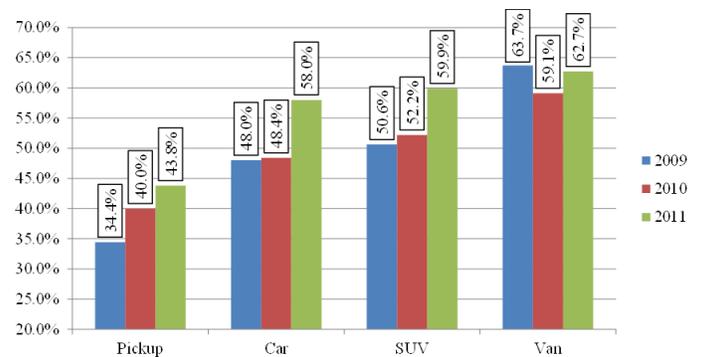
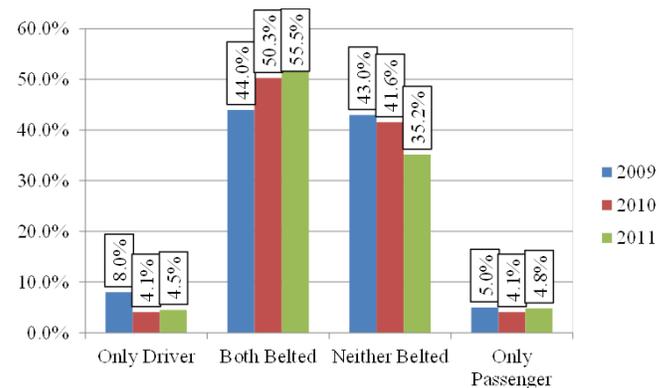


Figure 6: Seat Belt Use in Passenger Observation Cases: 2009-2011



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