

Seat Belt Use on Rural Roads: Effective Interventions

Seat belt use on rural roads is especially important due to the relatively high risk for injury compared to urban areas. In the Northern Plains states, where nearly 90% of travel occurs on rural roads, addressing this issue becomes particularly critical because a vast majority of crash fatalities there occur on rural roads (Figure 1).

Fatality Analysis Reporting System (FARS) reports show that about 39,000 drivers were involved in fatal crashes on lower travel density rural roads, including the minor arterial, major collectors, minor collectors, and local roads. Nationwide, these road classifications accounted for 77% of the fatal crash driver cases between 2007 and 2009. Seat belt use rate among these drivers was only 54%. Considering the more than 9,500 fatal crash driver cases recorded on local rural roads between 2007 and 2009, only 45.1% were wearing seat belts (Figure 2).

Figure 3 illustrates the distribution of seat belt use among the contiguous states, distinguishing their primary and secondary enforcement status. While there is some mix of enforcement strategies in the states in the mid-range, the upper and lower echelons are heavily comprised of primary and secondary enforcement states, respectively. Research has shown that the primary law is neither necessary nor sufficient in establishing the upper-tier use levels, but that it is an important intervention strategy in establishing significant gains and sustained highs in seat belt use rates.

While efforts including legislation, education, and enforcement have produced a large increase in seat belt use nationwide, gaps in use rates among user groups still remain. Understanding and addressing these gaps offer the prospect for effectively targeting user-based factors such as the driving environment or user characteristics.

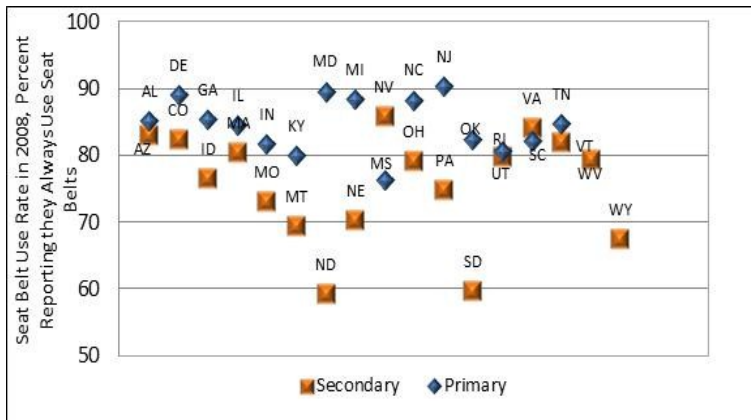


Figure 3. Enforcement Type and Seat Belt Use Rates, 2008

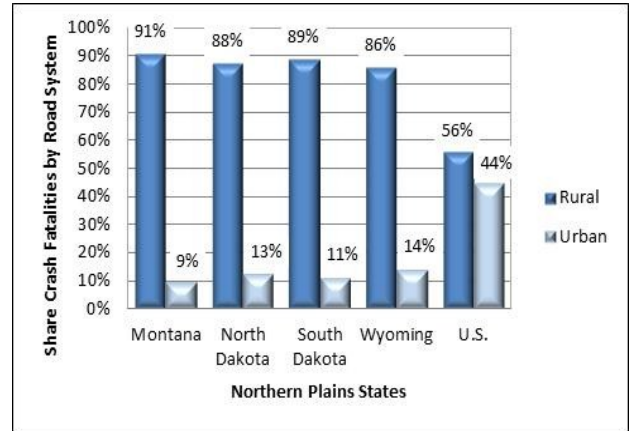


Figure 1. Location of Crash Fatalities in 2008, Rural and Urban Roads

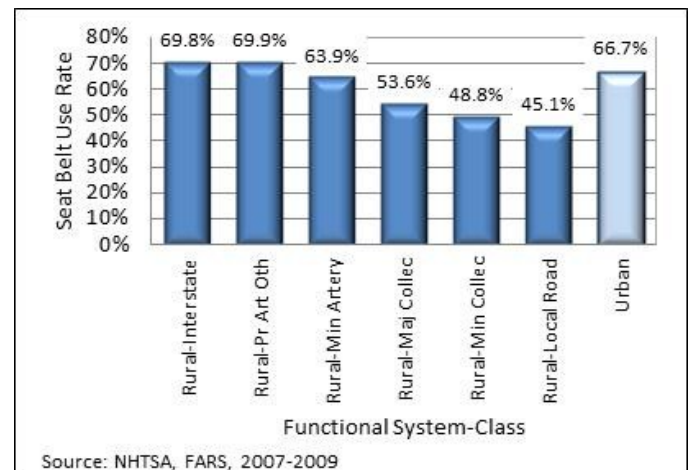


Figure 2. Driver Seat Belt Use in Fatal Crashes by Road System and Among Rural Classes

One recognized gap is among user groups in rural and urban road environments. One might expect greater propensity to use seat belts on rural roads due to the relatively high injury risk associated with higher speeds, undivided traffic lanes, fewer traffic controls, and longer emergency response times. However, seat belt use rates on rural roads generally falls below that on urban roads, 65% and 72% respectively, considering the most recent three years of driver use in fatal crashes.

In this study of fatal crash drivers in 32 states, several crash-level items of information were collected with regard to driver and environment, as well as state-level intervention effects. Table 1 provides an overview of the results.

Table 1: All Drivers and High Risk Driver Groups Seat Belt Use and Interventions

Fatal Crash Drivers Seat Belt Use in Rural Road Crashes, 2007 - 2009			
MODEL: ALL DRIVERS			
	<i>Less Likely To Use Seat Belts</i>	<i>More Likely To Use Seat Belts</i>	Comments
<i>Drinking Driver</i>	75%		Drinking had the largest predictive weight for seat belt use.
<i>Rural Roads vs Rural Interstates</i>	24%		
<i>Rural Roads w/Fewer Driving Lanes</i>	21%		
<i>Darkness</i>	17%		
<i>Late-Night Hours</i>	23%		
<i>Males</i>	25%		
<i>Pickup Drivers vs Other Vehicle Types</i>	30%		
<i>Drivers w/Previous Suspension</i>	36%		
<i>Young Adult Drivers</i>	23%		
Efficacy of Interventions: All Drivers			
Low Fines	21%		Higher fines do provide a large positive effect in primary enforcement states.
Primary Enforcement		14%	
High Enforcement Activity (CIOT)	Not significant—see comment		Enforcement intensity was not significant in the model for all cohort states. Increased compliance is reinforced in secondary enforcement states where drivers are 18% more likely to be using seat belts.
MODEL: HIGH RISK GROUPS			
Efficacy of Interventions: Drinking Drivers			
Low Fines	18%		Fine levels are a more influential intervention among non-drinking drivers.
Primary Enforcement		34%	Primary enforcement produces a substantial effect in likelihood of seat belt use among high-risk drinking drivers.
High Enforcement Activity (CIOT)	Not significant		
Efficacy of Interventions: Young Adult Drivers			
Low Fines	18%		Fine levels are more influential among older drivers.
Primary Enforcement		27%	Primary enforcement is a significant positive influence with young adults.
High Enforcement Activity (CIOT)	Not significant		

Conclusion

Seat belts are an effective and low-cost injury prevention asset. Increased seat belt use has been proven to substantially reduce serious injury and death. This is especially important on rural roads where crash injury risk is high and seat belt use remains low. Understanding influences of laws, enforcement, and education in influencing drivers on rural roads is a high priority in the Northern Plains. Results from models of statewide and driver seat belt use over recent years offer insight for improving rural road safety. Successfully selecting and implementing interventions based on available resources and prevalence of high-risk groups in crashes requires ongoing investment and analysis. While encouraging the general population to use seat belts through traditional interventions is certainly a recommended strategy, noticeable gains may be achieved by targeting interventions that are effective with high-risk drivers.

To read the entire research report and find references, please visit the RTSSC website: <http://www.ugpti.org/rtssc>

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