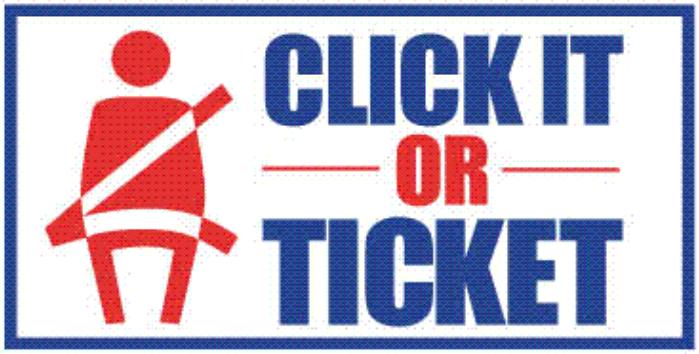
Safety Belt Use in West Virginia, 2010

Division of Motor Vehicles
West Virginia Department of Transportation



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About MSCJRS…

Mountain State Criminal Justice Research Services (MSCJRS) is a private research company that conducts criminal justice and social science research and offers consultation, training, and grant-writing services to government agencies, nonprofit institutions, and private businesses. MSCJRS seeks to improve policy and practice through research and analysis and provides consultation to governmental and nongovernmental entities in the areas of grant-writing and program development.

Acknowledgments

The *2010 Observational Survey of Safety Belt Use in West Virginia* was conducted under the direction of the West Virginia Division of Motor Vehicles, Governor's Highway Safety Program (GHSP). The GHSP is responsible for the administration of highway safety programs in the state. Occupant protection is among several significant program areas for which the GHSP is responsible. A portion of GHSP's occupant protection program funding comes from the Federal Government, which requires administration of a statewide survey of safety belt use that must adhere to the uniform survey criteria developed under the Transportation Equity Act for the 21st Century, 23 CFR Part 1340. West Virginia's first statewide survey was completed in 1992. The 2010 survey, conducted in June 2010, provides an estimate of safety belt use in WV that is comparable to the 1992 estimate accredited by NHTSA in 1998 and all statewide surveys conducted thereafter.

The collection of the observational survey data and production of this report involved many staff persons within the GHSP and independent contractors. Bob Tipton, director of the GHSP, directed the study. Special thanks is extended to Barbara Lobert, program manager for the GHSP, compiling the survey data and managing the project. The author would also like to acknowledge J. D. Meadows for overseeing the data collection efforts and all of the individuals that participated in making field observations. This study would not have been possible without the hard work and dedication of these individuals.

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Introduction

Traffic crashes are a leading cause of death for both adults and children in the United States (National Highway Traffic Safety Association, 2007a). Yet, while research shows that some of these traffic crash fatalities could be prevented, many passenger vehicle occupants still do not "buckle up" prior to traveling on our nation's roadways. In 2006, the NHTSA found that of the 28,141 passenger vehicle occupant fatalities for which restraint use was known, an estimated 15,523 (55%) were *not* wearing a seat belt at the time of the incident (Glassbrenner and Ye, 2007).

Research clearly indicates that increasing the use of safety belts has tremendous potential for saving lives, preventing injuries and reducing the economic costs associated with crashes (NHTSA, 2005). Research has found that lap/shoulder seat belts, when used, can reduce the risk of fatal injury to front-seat passenger car occupants by 45 percent and the risk of moderate-to-critical injury by 50 percent (NHTSA, 2005). Given that research has shown that increasing the use of seat belts can save lives, many states have eagerly participated in a targeted campaign, "Click It or Ticket", to educate the public and ticket vehicle occupants for not using safety belts.

The "Click It or Ticket" campaign is identified as one of the most successful seat belt enforcement campaigns ever, according to NHTSA, and is credited with helping to produce some of the highest seat belt usage rates in the country. Based on NHTSA's National Occupant Protection Use Survey (NOPUS), the seat belt use rate nationwide was 81.0% in 2006, up from 58.0% in 1994 and 71.0% in 2000 (NHTSA, 2007b). As part of West Virginia's efforts to improve highway safety, the Governor's Highway Safety Program (GHSP) has participated in the national "Click It or Ticket" campaign and maintained efforts to monitor safety belt use in the state.

As a result of the GHSP's efforts, the rate of safety belt use in the state increased each year between 2000 and 2008. In 2009, however, the WV seatbelt rate declined slightly for the first time in nearly a decade by 2.5%. This was followed by an much sharper decline in 2010. The safety belt use rate declined by 4.9% from the year prior and 7.5%from the 2007 peak. Nonetheless, WV's safety belt use rate has exceeded the national average for 2006 of 81.0% over the past six consecutive years. In 2005, WV's safety belt use rate was 84.9%. By 2007, the safety belt use rate in WV reached its highest level ever at 89.6%, up from 49.5% in 2000 and a low of 32.0% in 1992. The 2010 safety belt use rate in WV is estimated at 82.1%.

Scope of the Report

This report represents an integral part of WV's efforts to monitor and increase safety belt use in the state. The

Report Highlights...

- The safety belt use rate in West Virginia steadily increased each year between 2000 and 2007, but declined the past three years.
- The 2010 safety belt use rate in WV is estimated at 82.1%, down 7.5 percentage points from the 2007 peak usage rate of 89.6%.
- From 2000 to 2010, the percentage of motorist wearing safety belts increased by 32.6 percentage points from 49.5% in 2000 to 82.1% in 2010.
- Three counties had usage rates drop below eighty percent in 2010. These counties included Kanawha (62.3%), Mercer (78.8%), and Mineral (78.8%).
- The safety belt use rate for Greenbrier County increased by 61.5 percentage points from a low of 20.8% in 2000 to 82.3% in 2010.
- The statewide decline in seat belt use due in part to a subtantial decline in a single county between 2009 and 2010. The seat belt use rate for Kanawha County declined 18.5 percentage points to 62.3%. By far, the sharpest decline of any county.
- In 2010, Kanawha County had the lowest safety belt use rate in WV at 62.3%.
- Twelve of fourteen counties experienced a decline in safety belt use between 2009 and 2010.

primary purpose of this report is to systematically document the safety belt use rate and identify the primary sources of variation in seat belt use for the state of West Virginia. The *2010 Observational Survey of Safety Belt Use in West Virginia* was conducted under the direction of the West Virginia Division of Motor Vehicles, Governor's Highway Safety Program (GHSP).

The current survey used a multi-stage, stratified cluster sampling procedure to identify 95 sites for vehicle and occupant observations. The data collection procedures for the 2010 survey were guided by the 1998 Uniform Criteria for Observational Surveys of Seat Belt Use established by NHTSA (23 CFR, Part 1340). Extensive efforts were made to adhere to historical site and observation procedures in an effort to provide data directly comparable to the previous safety belt use surveys in the state. As a result, the 2010 survey calculated a statewide safety belt use rate for drivers and outboard front seat passengers in passenger vehicles that is comparable to previous surveys.

Observers recorded safety belt information on 15,698 drivers and 2,618 outboard front seat passengers for a total of 18,316 observations. These observations were compiled across 95 observation sites and 14 counties. In accordance with the sampling strategy, the largest percentage of observations occurred in the counties with the largest residential populations. Nearly one-half of all vehicles observed were passenger cars (42.6%), followed by sport utility vehicles (25.3%) and trucks (23.3%). Vans comprised less than ten percent of all vehicles observed (8.8%).

Over forty percent of driver observations occurred in southern counties (44.5%). Likewise, 37.8% of driver observations took place in the north central area of the state. Just over ten percent of observations occurred in the eastern (10.6%). Less than ten percent of observations took place in the northern (7.2%) panhandle regions of the state. More than half of driver observations took place in rural areas (56.8%) compared to 43.2% of observations in urban areas. Additionally, most observations also occurred on expressways (33.3%) and feeder routes (27.9%) with only 16.9% of observations occurring on trunk lines.

Organization of the Report

This report begins with a detailed discussion of the sampling procedures and methods used to obtain an estimate of the safety belt use rate in WV. Weighting procedures for obtaining an estimate of belt use by all occupants for each roadway class is also described. This is followed by a presentation of the results. A summary of the characteristics of occupants, vehicles, and observation sites is provided. This report concludes with an analysis of selected characteristics of vehicle occupants and observation sites using the unweighted sample of observations. It is anticipated that this information will help to identify the conditions in which safety belts are more or less likely to be used in the state.

Report Highlights...

- In 2010, the highest percentage of belt use was found for vehicles traveling on expressways (83.5%), followed by feeder routes (83.2%), trunk lines (80.6%), and local routes (79.3%).
- Males were significantly *less* likely to be using a safety belt compared to females in 2010. This is especially true for male passengers.
- Both drivers and passengers in trucks were significantly *less* likely to be wearing a seat belt compared to occupants in other types of vehicles in 2010.
- Drivers traveling in vans and utility vehicles were the most likely group to be wearing a safety belt in 2010, followed by drivers in passenger cars.
- Drivers of vehicles traveling on local service roads were significantly *less* likely to be wearing a safety belt compared to drivers on other classes of roadways in 2010.
- Drivers in the eastern panhandle region and passengers in south region of the state were significantly *less* likely to be wearing a seat belt in 2010 compared to occupants in other regions of the state.
- Drivers in the north central region of the state and passengers in the northern panhandle region of the state were *more* likely than any other vehicle occupants to be wearing a seat beat in 2010.

Methods

Data Collection

The 2010 sampling strategy followed the procedures used in previous surveys. The sample was selected using a multistage, stratified cluster sampling procedure. A sample of counties was selected first and followed by roadways within each county. Once specific roadways were identified, intersections of roads were sampled. Finally, vehicles passing through the intersections were randomly observed. Through this process, a sample of 95 observation sites were identified which provided a representative sample of observation sites for studying safety belt use in West Virginia.

To obtain a representative sample of sites, the state was stratified into four regions to ensure that all regions of the state were represented in the final sample. These regions were identified as the Eastern Panhandle, Northern Panhandle, North Central, and South (see Appendix A). Of the 55 WV counties, roughly one-quarter were randomly selected for inclusion in the survey. Two counties were randomly selected from each of the two panhandles, and five counties each were selected from the North Central and South regions of the state. In total, observations were conducted in 14 counties.

The number of counties sampled per region was based on population levels within regions (Althouse, Heffner, and Elliot, 2001). Based on 2000 Census estimates, the North Central (51%) and Southern (30%) regions of the state combined included roughly 81 percent of population in the state. The Eastern Panhandle (10%) and Northern Panhandle (8%) contained roughly 18 percent. For further information on population estimates and the probability of selection, see Appendix B.

To arrive at the sample of 14 counties utilized in this study, information on population size and region of the state was taken into account. The five largest counties in the state were automatically included in the sample to reflect the relative proportion of the state's population residing in these counties. These counties were Cabell, Kanawha, and Raleigh in the South Region and Wood and Monongalia in the North Central Region. Based on 2000 Census data, these five counties contain 30.5 percent (546,689 residents) of West Virginia's population. Other counties included in the survey were sampled through a random process. The 14 counties altogether contained 52.2 percent of the population (936,170 residents) in 2000.

Within each county, four to eight observation sites were selected. The most densely populated counties contained more sample sites and less densely populated counties contained fewer. Selection of individual observation sites within counties was based on information provided by the West Virginia Department of Highways (DOH). DOH provided information concerning various roadway classifications within each county and the amount of travel per roadway classification. Roadway classifications included local service, feeder routes, trunk lines, and expressway/interstates.

Sampling within each county accounted for differences in travel patterns among the different roadway classifications. Individual observation sites were distributed equal to the measured proportions of travel per roadway classification in each county. Once proportion of travel per roadway classification was identified, equal proportions of intersections per roadway type were designated as observation sites.

Individual observation sites in the sample have remained nearly unchanged since previous safety belt surveys. That is, the same 95 sites in the same 14 counties have been used each time a statewide survey has been conducted. For a detailed list of observation sites, see Appendix C. However, in 2002 widespread flooding in southern West Virginia precluded the use of four observation sites in McDowell County. McDowell County is in the south region of the state. Most of the roads in this county were deemed unusable for travel at the time of the survey, making observational surveys of seat belt use impossible.[1] In order not to impact representation of these sites in the sample, four replacement sites were randomly identified in nearby Greenbrier County which is located in the same region of the state. The four

[1] Beginning in 2002, minor changes were made to the Observational Survey Data Collection Form and observation sites. In 2002, the data collection form no longer gathered information on whether an observed vehicle had a West Virginia license plate. In addition, the 2002 survey required repositioning of a small number of observation sites due to a widespread flooding disaster in McDowell County. A total of four sites were impacted by this incident. The process of repositioning the observation sites involved oversight by the NHTSA's National Center for Statistics and Analysis.

replacement sites in Greenbrier County were randomly sampled in such a way as to match the proportional distribution of roadway classifications in McDowell County. The 2006-2010 survey continued using sites in Greenbrier County.

Procedures

Specific data collection procedures were established prior to the initiation of data collection. The procedures were guided by the 1998 Uniform Criteria for Observational Surveys of Seat Belt Use established by NHTSA (23 CFR, Part 1340).

Safety Belt Observer Instruction Form. A one-page instruction form was developed for review by observers to ensure knowledge of the guidelines for conducting site observations (Appendix D). The Safety Belt Observer Instruction Form provided to each site observer. Moreover, each observer was encouraged to review the guidelines on a periodic basis. A sample of the guidelines set forth on the Safety Belt Observer Instruction Form included:

- Length of observation period would be 45 minutes;
- Vehicle types to include were passenger vehicles, including cars, pickup trucks, sport utility vehicles and vans;
- Observable occupants included drivers and outboard, front seat passengers. Children in a front seat child restraint would be excluded, however, children that are unrestrained and in the front seat would be counted;
- Each lane of traffic in one direction would be observed for an equal amount of time;
- On heavy traffic roadways, if traffic was moving too fast to observe every vehicle, a focal point up the road in the appropriate lane was to be picked. The focal point would indicate a next vehicle for observation after the last vehicle had been recorded;
- If rain, fog or inclement weather occurred, the observer was to wait 15 minutes to see if it would stop. If bad weather persisted, the site was to be rescheduled for another day; and
- If construction compromised a site, the observer was told to move one block so that the same stream of traffic could be observed. If this would not work, an alternate site would be selected.

Report Highlights...

- The *2009 Observational Survey of Safety Belt Use in West Virginia* used a multi-stage, stratified cluster sampling procedure to identify 95 sites for vehicle and occupant observations.
- The data collection procedures for the 2009 survey were guided by the 1998 Uniform Criteria for Observational Surveys of Seat Belt Use established by NHTSA (23 CFR, Part 1340).
- Extensive efforts were made to adhere to historical site and observation procedures in an effort to provide data directly comparable to the previous safety belt use surveys in the state.

Historical site and observational details were adhered to in order to provide data directly comparable to the previous safety belt use surveys. Features included exact observation location, direction of traffic to be observed, and time of day. These data elements were requisite to 2010 data collection.

Observers. A total of sixteen site observers were selected and trained to conduct the site observations. Nearly all of the observers had previous experience collecting observational safety belt use data. All observers attended a classroom training session where sites and schedules were assigned, observation procedures were explained, and all materials necessary for conducting the observational study were distributed (directions, schedules, site maps, data collection forms, clipboards, pens, return envelopes, etc.).

For training purposes, a minority of observers without previous experience paired with trained and experienced observers to conduct mock-observations prior to actual data

collection. During mock-observations, the experienced observer monitored and ensured that procedures were understood, observations were accurate and data were recorded accurately. These pairings were successful in providing the trainer and trainee the opportunity to correct any problems.

In most instances, two observers were positioned at each observation site. One observer called out data as sampled vehicles passed. It was the primary responsibility of the second observer to record data. Whenever possible, the second observer was also charged with the task of helping to verify the observation details.

Observation Schedule. Observations were made during the daylight hours and all seven days of the week were included in the survey. Careful attention was given to historical information on procedures used in previous surveys. Data collection procedures placed emphasis on replicating date and time information associated with previous surveys. For example, time of day was taken into account to ensure that sites visited during rush hour in past surveys remained rush hour sites, morning sites remained morning sites, afternoon sites remained afternoon sites, and late afternoon sites remained late afternoon sites.

Observation sites were mapped in advance. Mapping helped to identify geographic location of sites as well as the target date and time of day for observation. Mapping enabled observers to plan trips in advance; thereby, increasing efficiency in travel and labor. Since observation work was divided among 16 people, scheduling observations over a short time period was relatively easy. Observers were assigned to four to six observation sites per day.

Data Collection Form. Survey information was recorded on the Observational Survey Data Collection Form (see Appendix E). The data collection form was designed for use in the 2002 statewide survey of safety belt use and has been used in each survey since 2002. The form was designed so that pertinent site information could be recorded. Information was gathered on the observation site as well as the vehicles and occupants observed. Each one-page form included space to record information on 50 vehicles. Observation site and other information captured on the Observational Survey Data Collection Form are summarized below.

Observation site:

- county
- site number and notes
- roadway location
- date of observation
- day of week
- time of day i.e., start time and end time)
- weather conditions (i.e., clear/sunny, light rain, cloudy, fog, clear but wet)

Vehicle/Occupant:

- vehicle type (i.e., car, pick-up, SUV, van)
- driver gender
- passenger gender
- driver belt use/non-use (i.e., yes, no)
- passenger belt use/non- use (i.e., yes, no)

Once the observation data was gathered, the information was entered into a referential database by the West Virginia Governor's Highway Safety Program. After the data were entered, ten percent of cases were randomly drawn and checked for errors. The data were then entered into a statistical analysis package for further cleaning and examination. Weighting procedures used to estimate the overall statewide safety belt use rate were formulated using Microsoft Excel. To check the reliability of the data gathered, comparisons were made between data collected by individual observers and patterns in historical data.

Seat Belt Usage Rate and Variability Calculations

As noted previously, some regions of the state were oversampled relative to the proportion of the state population. In addition, traffic on controlled access roadways was somewhat underrepresented since observations were made only at exit ramps. Therefore, small adjustments in weighting were made using standard statistical procedures to correct for this type of condition.

To ensure appropriate representation in the sample, the five largest population counties (Cabell, Kanawha, Monongalia, Raleigh, and Wood) were sampled with probability 1.00. The

Figure 1. Calculation of Statewide Safety Belt Use Rate

Subscripts:
i = county
j = road type
k = site

Subgroups:
B = # belted
O = # observed
V = annual vehicle miles traveled
W = designated sampling weight

Equation for Road Type in County

Bijk = number belted at site k, road type j, county i
Oijk = number observed at site k, road type j, county i

Pij = O Bijk / O Oijk
Pi = O (Vij * Pij) / O Vij

Equation for State

P= O (Vi * Wi * Pi) / O (Vi * Wi)

where,

Wi = the inverse of the probability of selection in the county i

results were adjusted prior to analysis through the use of differential weighting. The data from each of the 14 counties were given a weight equal to the inverse of their probability of selection, ensuring proper representation of data from each county.

A final adjustment was made in order to ameliorate the effects of a logistical problem in data collection. Because observations of interstate highway occupants could only be conducted at exits, relatively fewer vehicles traveling on interstate highways were observed compared to vehicles on all other roadway types. While twenty-four percent of travel in WV occurs on interstate highways, only approximately seventeen percent of weighted observations came from this type of road. Since drivers and passengers traveling on such roads are more likely than those on other roadway types to wear their safety belts, data were re-weighted to reflect the distribution of traffic across the function classes. Thus, interstate observations were weighted such that they constituted twenty-four percent of the data used to produce the final estimate of statewide belt use, paralleling the proportion of travel that occurs on such roads.

Weighted belt use by all occupants (both drivers and front seat passengers) on roadways in each of the function classes (r) was estimated using the formula shown in Figure 1. The standard deviation of the statewide seat belt use rate was estimated using the formula displayed in Figure 2. The relative error for safety belt use was calculated by dividing the standard error by the estimate.

Figure 2. Calculation of the Standard Deviation of the Statewide Safety Belt Use Rate

To estimate the variance of the ratio r=y/x (the proportion of individuals wearing a safety belt), the following approximate formula for the variance of r in the ultimate clusters was used (Sudman, 1976, p.187):

$$S^2(r) = [(1-f)/ x^2] * [m/(m-1)] * [(\Sigma^m y_i^2 - y^2/m) + r^2 (\Sigma^m x_i^2 - x^2/m) - 2r (\Sigma^m y_i x_i - yx/m)]$$

where

$$r = y/x = \Sigma^m y_i / \Sigma^m x_i$$

and

m = number of clusters
y = number wearing safety belt
x = number in sample

Results

The results of the analysis on the 18,316 vehicle and occupant observations made in 2010 are presented below. Extensive effort is made to summarize the characteristics of occupants, vehicles, and observation sites. The 2010 safety belt use rate based on the weighted sample of observations is also provided. In addition to the overall safety belt use rate, a description of the weighted belt use rate by roadway type and county is presented. This section concludes with an analysis of selected characteristics of occupants and observation sites using the unweighted sample of observations. The presentation of the results begins with a description of the total number and percentage of front seat occupants observed.

Total Observations and Selected Occupant, Vehicle, and Site Characteristics

Table 1 displays the total number and percentage of observed front seat occupants. As shown in this table, observers recorded safety belt information on 15,698 drivers and 2,618 outboard front seat passengers for a total of 18,316 observations. These observations were compiled across 95 observation sites and 14 counties. As expected, the largest percentage of observations occurred in the counties with the

Table 1. Number and Percentage of Total Observed Front Seat Occupants, 2010 (N = 18,316)

	Drivers		Passengers		Total	
County	**N**	**%**	**N**	**%**	**N**	**%**
Berkeley	939	5.98%	238	9.09%	1,177	6.43%
Cabell	1,466	9.34%	390	14.90%	1,856	10.13%
Greenbrier	859	5.47%	0	0.00%	859	4.69%
Harrison	1,441	9.18%	115	4.39%	1,556	8.50%
Kanawha	2,044	13.02%	694	26.51%	2,738	14.95%
Lewis	859	5.47%	203	7.75%	1,062	5.80%
Marshall	500	3.19%	144	5.50%	644	3.52%
Mercer	917	5.84%	7	0.27%	924	5.04%
Mineral	725	4.62%	159	6.07%	884	4.83%
Monongalia	1,747	11.13%	189	7.22%	1,936	10.57%
Ohio	624	3.98%	137	5.23%	761	4.15%
Preston	584	3.72%	75	2.86%	659	3.60%
Raleigh	1,698	10.82%	0	0.00%	1,698	9.27%
Wood	1,295	8.25%	267	10.20%	1,562	8.53%
Total	**15,698**	**100.0%**	**2,618**	**100.0%**	**18,316**	**100.0%**

Note: Totals may not add to 100.0% due to rounding.

largest residential populations. Fifteen percent of all observations occurred in Kanawha County (15.0%), followed by Monongalia (10.6%), and Cabell (10.1%) counties. Roughtly nine percent of observations were recorded for Raleigh (9.3%), Wood (8.5), and Harrison (8.5%) and counties.

Five of the fourteen counties contained less than five percent of the total number of observations. These counties included Mineral (4.8%), Greenbrier (4.7%), Ohio (4.2%), Preston (3.6%), and Marshall (3.5%). These five counties accounted for roughly twenty percent of the total number of observations (20.8%).

The distribution of selected occupant, vehicle, and site characteristics based on the total number of observations are presented in Table 2. In terms of occupant characteristics, most drivers were male while a greater percentage of passengers were female. Of the 15,698 drivers observed, a total of 8,735 or 55.6% were male compared to 6,963 or 44.4% were female. In contrast, two-thirds of passengers were female. Of the 2,618 passengers observed, 66.7% were female and 33.3% were male.

Passenger cars were the most common vehicle type observed in 2010. Nearly one-half of all vehicles observed were passenger cars (42.6%), followed by sport utility vehicles (25.3%), trucks (23.3%). Vans comprised less than ten percent of all vehicles observed (8.8%).

In terms of site characteristics, the largest percentages of observations were made in rural areas on expressway or feeder routes and in the southern and north central regions of the state. More than half of driver observations occurred in rural areas (56.8%) compared to 43.2% of observations in urban areas. Additionally, most observations also occurred on expressways (33.3%) and feeder routes (27.9%) with only 16.9% of observations occurring on trunk lines.

Finally, a vast majority of observations took place in the south and north central regions of the state. Over forty percent of driver observations occurred in southern counties (44.5%). Likewise, 37.8% of driver observations occurred in the north central area of the state. Less than ten percent of observations took place in the eastern (10.6%) and northern (7.2%) panhandle regions of the state. These distributions are similar to the results of previous observational surveys conducted in WV.

Table 2. Distribution of selected occupant, vehicle, and site characteristics, 2010

Variable	N	%
Occupant/Vehicle Characteristics		
Gender		
Driver		
Male	8735	55.6
Female	6963	44.4
Total	**15698**	**100.0**
Passenger		
Male	873	33.3
Female	1745	66.7
Total	**2618**	**100.0**
Vehicle Type		
Car	6681	42.6
Pickup	3654	23.3
Van	1385	8.8
Utility	3978	25.3
Total	**15698**	**100.0**
Site Characteristics		
Land Use		
Urban	6776	43.2
Rural	8922	56.8
Total	**15698**	**100.0**
Roadway		
Expressway	5235	33.3
Feeder Route	4374	27.9
Local Service	3431	21.9
Trunk Line	2658	16.9
Total	**15698**	**100.0**
Region		
Eastern Panhandle	1664	10.6
Northern Panhandle	1124	7.2
North Central	5926	37.8
South	6984	44.5
Total	**15698**	**100.0**

Note: Percents may not add to 100% due to rounding.

Weighted Safety Belt Use Rate, 2010

The safety belt use rate in West Virginia increased steadily between 2000 and 2008, followed by a 2.5% decline in 2009. In 2008, the weighted safety belt use rate reached a near high of 89.5%. This nearly equal to the high of 89.6% achieved in 2007. The 2008 rate was up from 49.5% in 2000 and a low of 32.0% in 1992. A slight decline in the safety belt use rate occurred between 2008 and 2009, resulting in a statewide rate of 87.0%. The 2010 safety belt use rate declined further to 82.1%—the lowest observed rate since 2004.

Graph 1 shows the rate of safety belt use in WV over the ten year period from 2000 to 2010. As shown in this graph, the safety belt use rate was at 49.5% in 2000. Over the next year, the safety belt use rate increased to 52.7% and continued to increase through 2007 and 2008. From 2000 to 2007, the percentage of motorist wearing safety belts increased by 40.1 percentage points from 49.5% in 2000 to 89.6% in 2007. From

Graph 1. Weighted Safety Belt Use Rate in West Virginia, 2000-2010

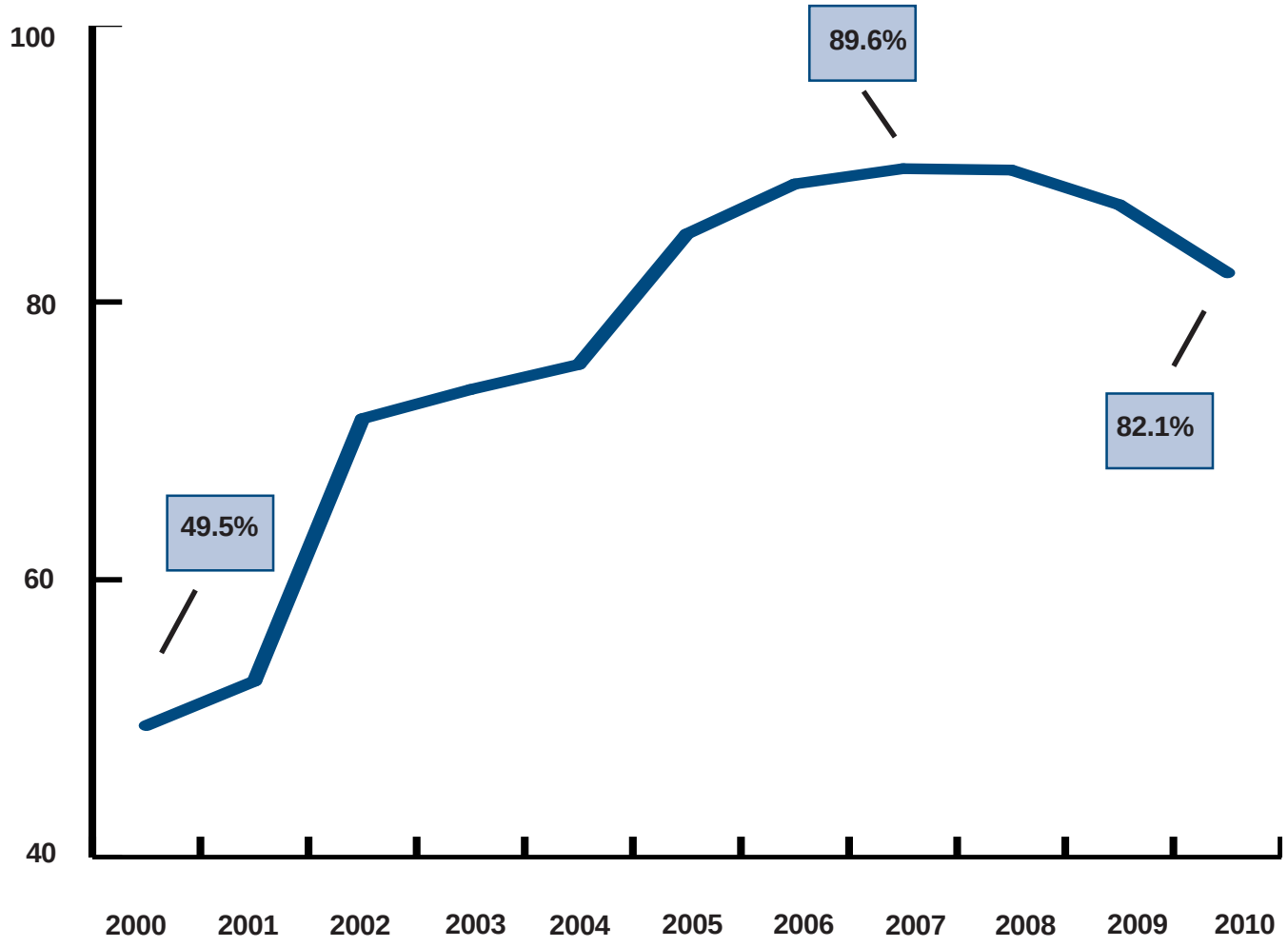


Table 3. Percent Weighted Safety Belt Use Rate by County, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Percent Difference 2000-2010
Berkeley	59.1	64.8	78.3	74.8	68.1	82.9	83.0	83.7	88.1	85.7	81.4	22.3%
Cabell	57.8	65.8	79.7	77.1	86.5	85.9	90.5	89.9	90.0	90.4	87.8	30.0%
Greenbrier	20.8	33.8	64.9	76.5	83.2	87.1	88.0	90.3	90.7	85.1	82.3	61.5%
Harrison	50.8	50.4	77.2	78.3	66.8	81.6	89.1	89.9	92.2	89.5	91.0	40.2%
Kanawha	57.2	62.5	72.9	67.0	79.9	86.5	87.6	90.7	86.2	80.8	62.3	5.1%
Lewis	53.4	59.9	78.8	75.8	77.5	84.7	86.8	87.1	88.5	86.3	85.7	32.3%
Marshall	51.0	48.6	76.9	70.9	78.4	85.8	93.9	94.1	92.0	91.8	90.3	39.3%
Mercer	36.2	46.9	60.1	69.4	66.8	85.2	89.8	89.8	88.7	86.5	78.8	42.6%
Mineral	54.2	57.1	68.5	70.9	76.5	85.7	88.5	88.3	88.2	82.0	78.8	24.6%
Monongalia	71.8	47.3	75.9	82.4	84.1	87.1	91.1	93.3	95.2	93.9	93.5	21.7%
Ohio	49.1	49.0	77.8	74.7	81.6	80.7	91.8	92.0	89.6	90.9	87.8	38.7%
Preston	51.1	37.7	61.8	78.1	85.0	85.7	89.7	90.9	92.5	90.9	92.5	41.4%
Raleigh	47.2	55.3	80.6	77.5	79.9	87.9	91.2	90.4	91.0	88.7	87.0	39.8%
Wood	61.3	64.1	75.6	71.5	72.4	82.4	83.6	88.7	88.3	90.4	89.1	27.8%
Statewide	**49.5**	**52.7**	**71.6**	**73.7**	**75.5**	**84.9**	**88.5**	**89.6**	**89.5**	**87.0**	**82.1**	**32.6%**

the low of 32.0% in 1992, the safety belt use rate increased 57.6 percentage points to 89.6% in 2007 before dropping three consecutive years to 82.1% in 2010.

Weighted Safety Belt Use Rate by County

Table 3 displays the weighted safety belt use rate by county since 2000. All fourteen counties experienced substantial increases in the rate of belt use over this 10-year period. In 2000, safety belt use rates ranged from a low of 20.8% in Greenbrier County to a high of 71.8% in Monongalia County.[2] Other counties with safety belt use rates less than 50.0% in 2000 included Mercer (36.2%), Raleigh (47.2%), and Ohio (49.1%).

By 2005, all fourteen counties had a safety belt use rate above eighty percent with many county usage rates exceeding ninety percent. This trend continued through 2009. In 2010, however, three counties had usage rates drop below eighty percent. These counties include Kanawha (62.3%), Mercer (78.8%), and Mineral (78.8%). Some of the largest gains in belt usage occurred in counties with particularly low safety belt use rates in 2000. For instance, between 2000 and 2010 the safety belt use rate for Greenbrier County increased by 61.5 percentage points from a low of 20.8% in 2000 to 82.3% in 2010. Similarly, the counties of Harrison (40.2%), Mercer (42.6%), and Preston (92.5%) all experienced percentage point increases of forty percent or greater during this 11-year period.

The county analysis further suggests that much of the statewide decline in seat belt use may be due to a subtantial

[2] Observations sites in McDowell County were replaced with sites randomly selected in Greenbrier County in 2002. For more information, see footnote 1.

declines in a single county—that is, Kanawha County. Between 2009 and 2010, the seat belt use rate declined 18.5 percentage points to 62.3%. By far, the sharpest decline of any county. Given that Kanawha County accounted for nearly thirteen percent of all observations, this is likely to have had a significant impact on the overall saftety belt use rate.

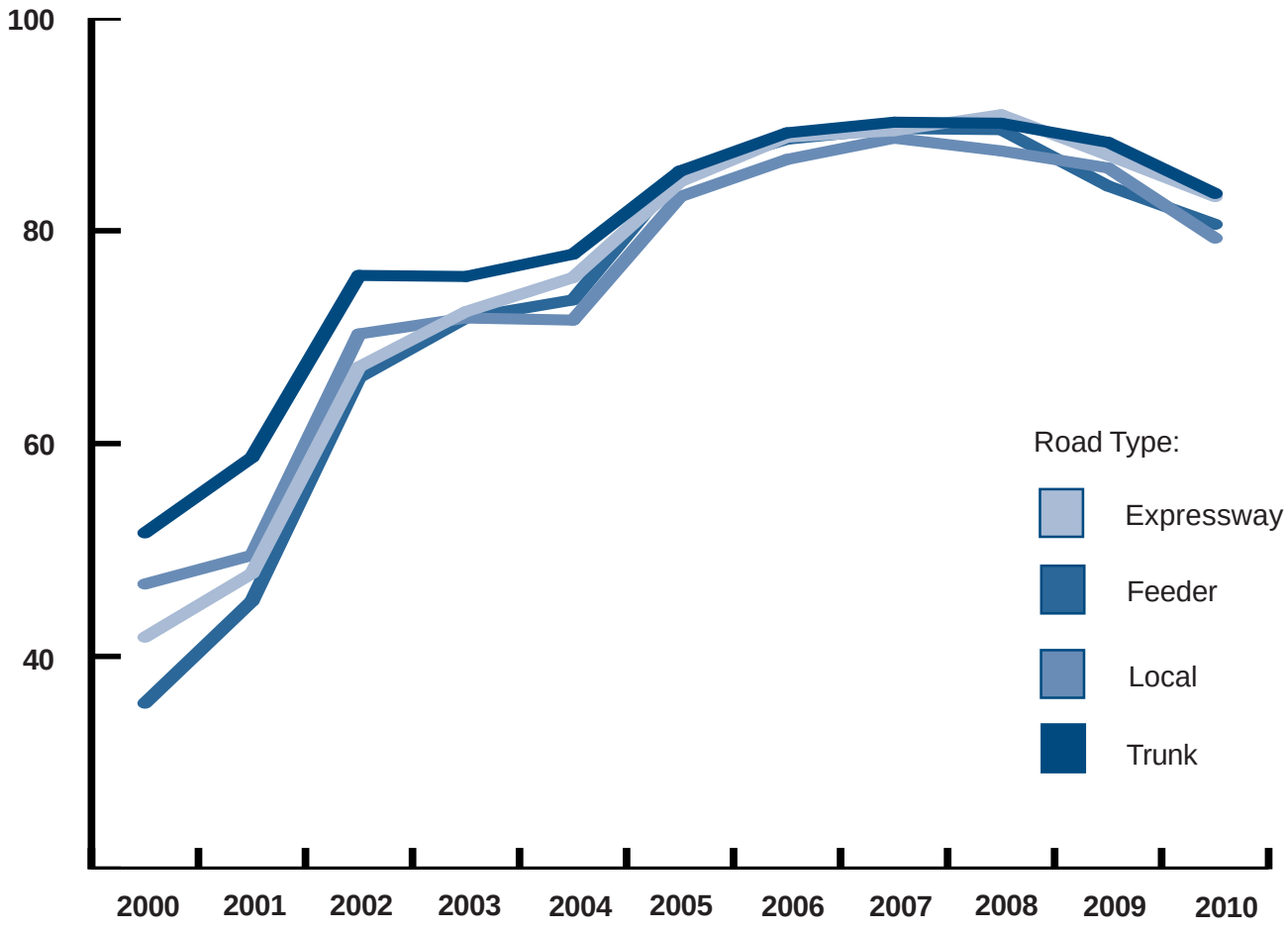
Only four of the fourteen counties had safety belt use rates above 90.0% in 2010. These counties included Marshall (90.3%), Monongalia (93.5%), Harrison (91.0%), Preston (92.5%). Kanawha County clearly had the lowest safety belt use rate at 62.3% in 2010.

Weighted Safety Belt Use Rate by Road Type

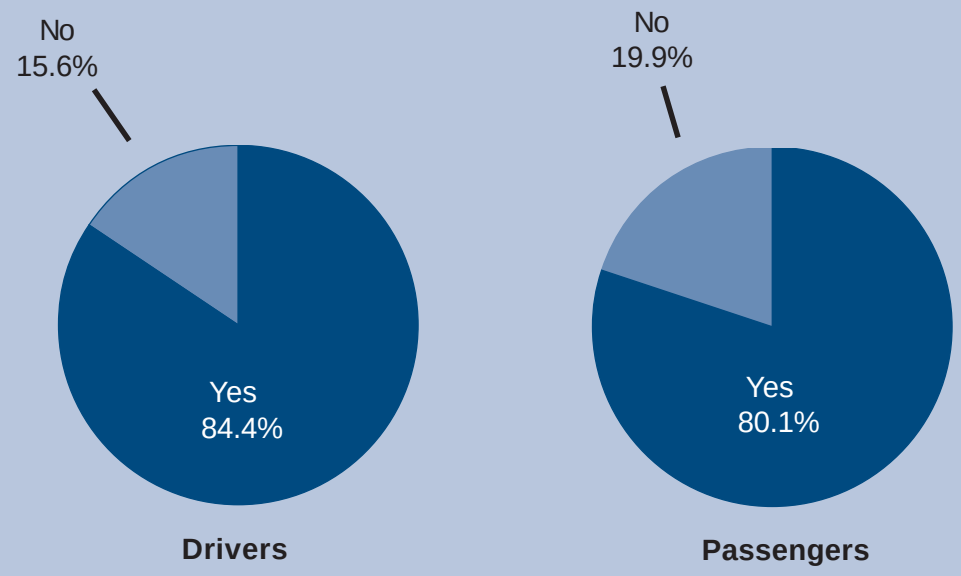
Despite the recent declines, the safety belt use rate has increased substantially for every major road type since 2000. Observations were conducted at four different roadways classifications: expressways, feeder routes, local service roads, and trunk lines.

In 2000, vehicle occupants were less likely to be observed wearing a safety belt when traveling on trunk line and feeder routes. Only 35.6% and 41.8% of vehicle occupants on trunk line and feeder routes were observed wearing a safety belt in 2000, respectively. This is compared to 46.8% of vehicle occupants on local service roads and 51.6% on expressways. As a result, vehicle occupants were considerably more likely to be wearing a safety belt when traveling on the state's expressways compared to other types of roadways.

Graph 2. Weighted Safety Belt Use Rate by Road Type, 2000-2010



Graph 3. Distribution of Drivers and Passengers Belted, 2010



Note: Drivers, N = 15,698; Passengers, N = 2,618.

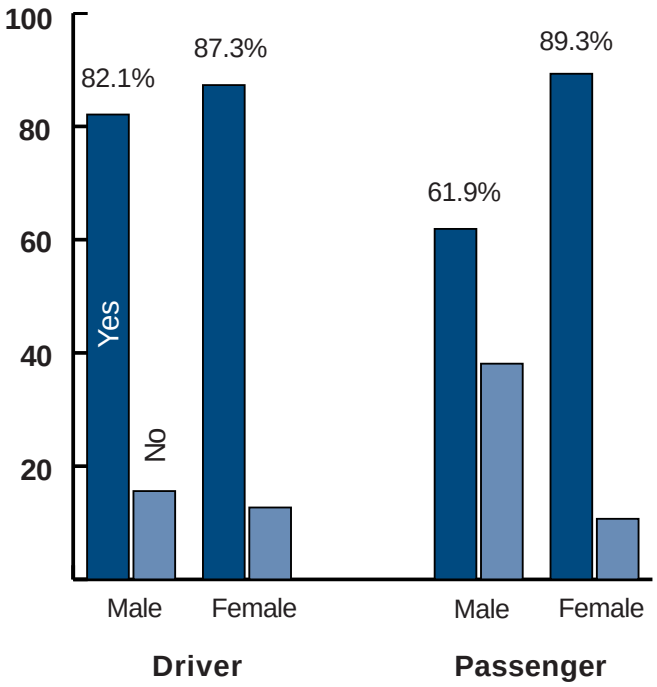
By 2010, however, there was much less difference in the weighted safety belt use rate for vehicle occupants by roadway type. Roughly eighty percent of all vehicles observed in 2010 had a belted occupant, regardless of road type. The highest percentage of belt use was found for vehicles traveling on the state's expressways (83.5%), followed by feeder routes (83.2%), trunk lines (80.6%), and local routes (79.3%).

As a result, there has been a notable increase in the rate of safety belt use on all types of roadways in the state since 2000. The largest percentage point increases occurred for trunk lines, increasing from 35.6% in 2000 to 80.6% in 2010. This translates into a 45.0 percentage point increase in the use of safety belts on trunk lines since the beginning of this decade. Large percentage point increases were also found for all other types of roadways in WV. These include a 44.4 percentage point increase in seat belt use for travelers on feeder routes, followed by local routes (32.5%) and expressways (31.9%).

Characteristics of Belted Drivers and Passengers

The previous section presented the weighted results of safety belt use for the state as well as by county and road type. The remaining sections of this report present the results

Graph 4. Distribution of drivers and passengers belted by gender, 2010



Note: Driver, N = 15,698; Passenger, N = 2,618.

of additional analysis using the *unweighted* sample of observations. The purpose is to identify variation in safety belt usage by occupant and site characteristics as well as vehicle type. It is anticipated that this information will help to identify the conditions in which safety belts are more or less likely to be used in the state.

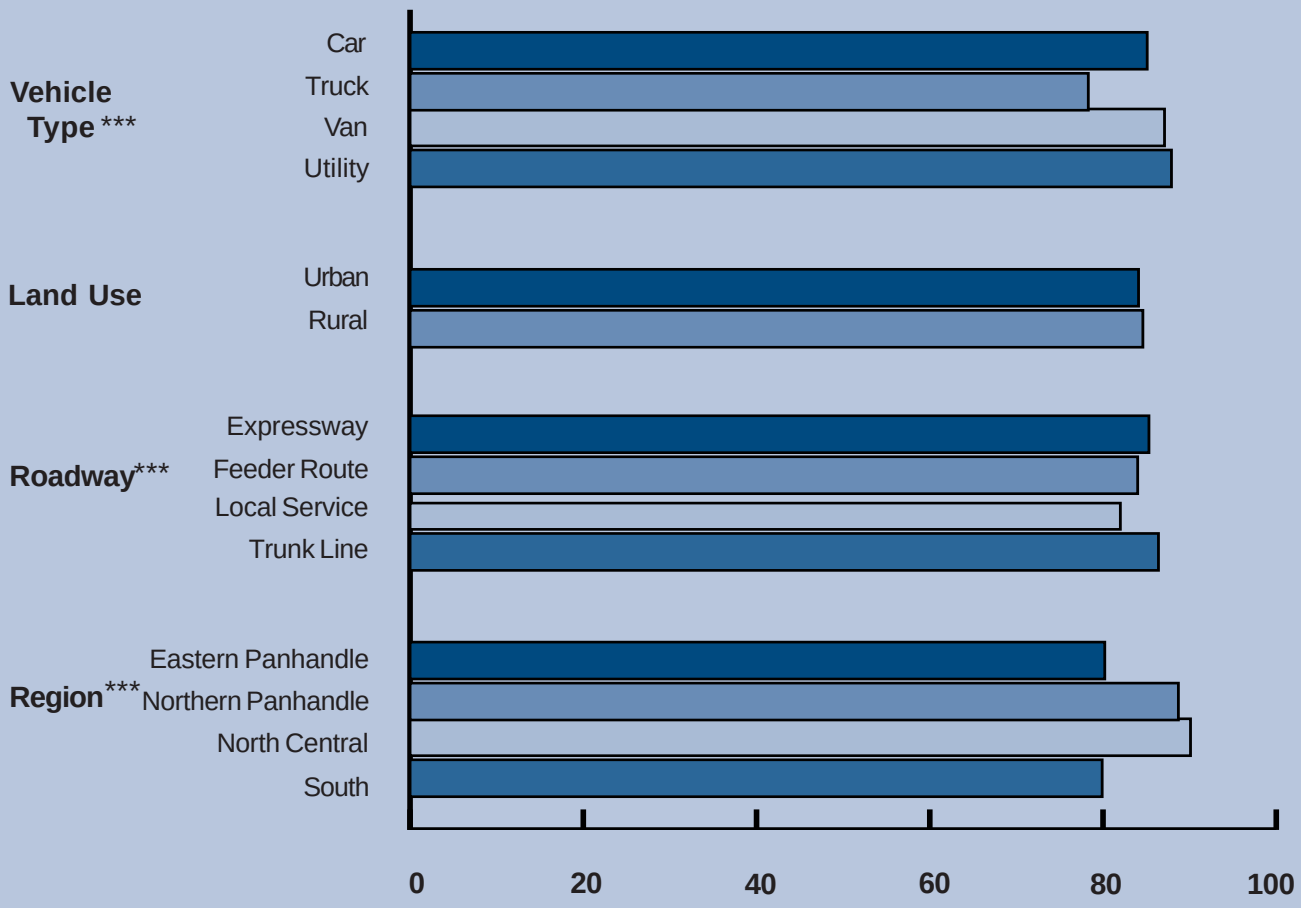
Graph 3 displays the unweighted distribution of drivers and passengers belted in 2010. As shown in this graph, a determination of whether a safety belt was being used was made on a total of 15,698 drivers and 2,618 passengers. Based on these observations, roughly the same percentage of drivers and passengers were observed wearing a safety belt. Eighty-four percent of drivers (84.4%) compared to 80.1% of passengers were observed wearing a seat belt in 2010. As a result, approximately fifteen percent of drivers (15.6%) and twenty percent of passengers (19.9%) were *not* belted based on the results of this survey.

Drivers and Passengers Belted by Gender

Graph 4 displays the results of safety belt use by gender. The findings illustrate that there are significant gender differences in the use of safety belts across gender. Simply put, males were significantly *less* likely to use safety belts compared to females, particularly male passengers. Nonetheless, this held true regardless of whether the vehicle occupant was a driver or passenger.

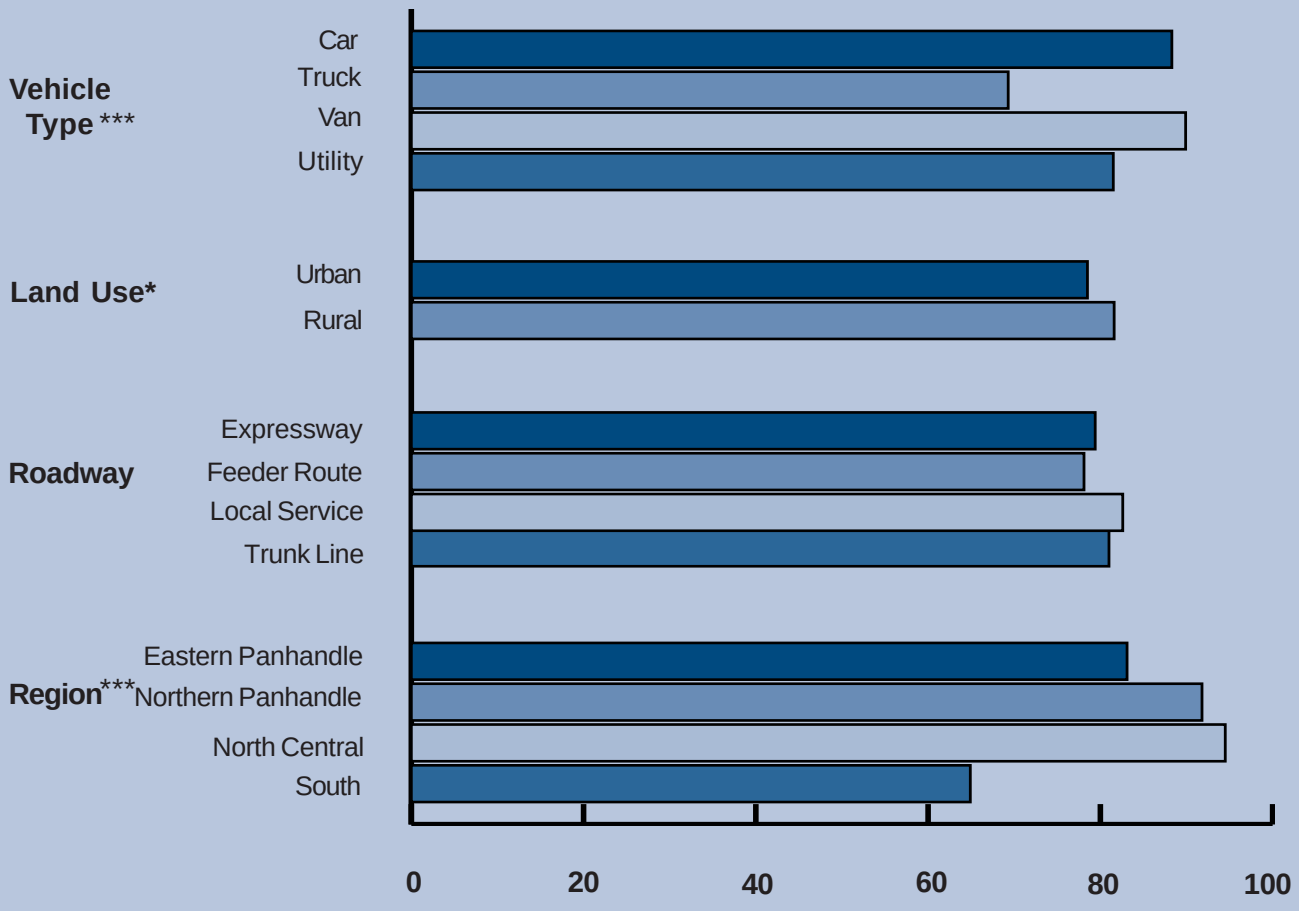
As shown in Graph 4, male drivers were significantly less likely than female drivers to be belted (Chi-square = 80.204; $p < .001$). Nearly ninety percent of female drivers were observed wearing a safety belt (87.3%) compared to 82.1% of male

Graph 5. Proportion of Drivers Belted by Vehicle Type and Site Characteristics, 2010



Note: N = 15,698; *** p < .001; ** p < .01; * p < .05

Graph 6. Proportion of Passengers Belted by Vehicle Type and Site Characteristics, 2010



Note: N = 2,618 *** p < .001; ** p < .01; * p < .05

drivers. Hence, nearly twenty percent of male drivers were observed *not* wearing a seat belt in 2010 (17.9%).

A similar pattern was present for vehicle passengers. Males were significantly less likely than females to be wearing a safety belt when traveling as a vehicle passenger (Chi-square = 275.016; p < .001). The percentage of male passengers wearing a seat belt dropped markedly between 2009 and 2010. Nearly twenty percent fewer males were observed wearing a safety belt in 2010 compared to 2009. Thus, almost thirty percent fewer males (61.9%) were observed wearing a safety belt compared to females (89.3%), when traveling as a passenger. As a result, nearly forty percent of male passengers were observed *not* wearing a seat belt (38.1%) compared to only 10.7% of female passengers.

Drivers Belted by Vehicle Type and Site Characteristics

Graph 5 displays the proportion of drivers belted by vehicle type and various site characteristics. The results indicate that there was substantial variation in drivers belted by vehicle and roadway type as well as region of the state. With the exception of land use, there were significant differences in the likelihood of drivers wearing safety belts across these factors. For instance, the analysis of drivers belted by vehicle type showed that individuals driving trucks were significantly *less* likely to be wearing a seat belt compared to drivers of other types of vehicles (Chi-square = 149.461; p < .001). Less than eighty percent of truck drivers were wearing a seat belt (78.3%), compared to nearly ninety percent of drivers traveling in other types of vehicles. Drivers traveling in vans (87.1%)

and utility vehicles (87.9%) were the most likely group to be wearing a safety belt in 2010, followed by drivers in passenger cars (85.1%).

Significant difference in safety belt use among drivers was also found for type of roadway and region of the state. Drivers of vehicles traveling on local service roads were significantly *less* likely to be wearing a safety belt compared to drivers on other classes of roadways (Chi-square = 26.989; $p < .001$). While the differences were less pronounced than vehicle type, only 82.0% of drivers traveling on local service roads were wearing a seat belt in 2010. This is compared to 84.0% of drivers traveling on feeder routes and 85.3% of expressways. It is important to note, however, that these significant differences are based on unweighted estimates of seat belt use by roadway type. The weighted results were similar, but less pronounced for drivers belted by road type.

Finally, the findings presented in Graph 5 further show differences in seat belt usage between the different regions in the state. Drivers traveling in the south and eastern panhandle were significantly *less* likely to be wearing a seat belt in 2010 compared to other regions in the state. Eighty-five percent of drivers in both the eastern panhandle (80.2%) and south (79.9%) were wearing a safety belt in 2010. At the same time, however, drivers in the north central and northern panhandle regions of the state were significantly *more* likely to be wearing a seat beat based on the 2010 observations. Nearly ninety percent of drivers in the northern panhandle region of the state were wearing safety belts in 2010 (88.7%). Likewise, just over ninety percent of drivers in the north central region of the state were observed wearing a seatbelt (90.1%). No significant difference was found between drivers observed in urban and rural areas of the state and safety belt use.

Passengers Belted by Vehicle Type and Site Characteristics

Similar to the previous analysis, Graph 6 displays the results for passengers. Consistent the analysis of drivers, significant differences were found in the use of safety belts for vehicle and roadway type and region of the state. When it comes to passengers, however, there was also a significant difference found for land use but no difference for roadway type.

As shown in Graph 6, passengers traveling in trucks were significantly *less* likely to be wearing a seat belt compared to other vehicle types (Chi-square = 68.208; $p < .001$). These results are similar to what was observed for drivers. Only 69.3% of truck passengers were observed wearing a seat belt in 2010. Passengers traveling in passenger cars and vans were most likely to be observed wearing a seat belt in 2010 at 83.3% and 89.9%, respectively.

Contrary to previous findings, there was also a significant differences in safety belt use across urban and rural areas. Passengers in rural areas were significantly more likely to be observed wearing a seatbelt, compared to their urban counterparts (Chi-square = 3.967: $p < .05$). Safety belt use among vehicle passengers also significantly varied depending on the region of the state. Passengers traveling in the north central regions of the state were significantly *more* likely to be wearing a safety belt in 2010. Nearly ninety-five percent of passengers in the north central region were observed wearing a seat belt (94.5%). Similarly, 91.8% passengers in the northern panhandle were observed wearing a seat bel t. On the contrary, less than ninety percent of passengers were observed wearing a seat belt in the eastern panhandle (83.1%), and only 64.9% of passengers in the southern region were observed wearing a belt in 2010.

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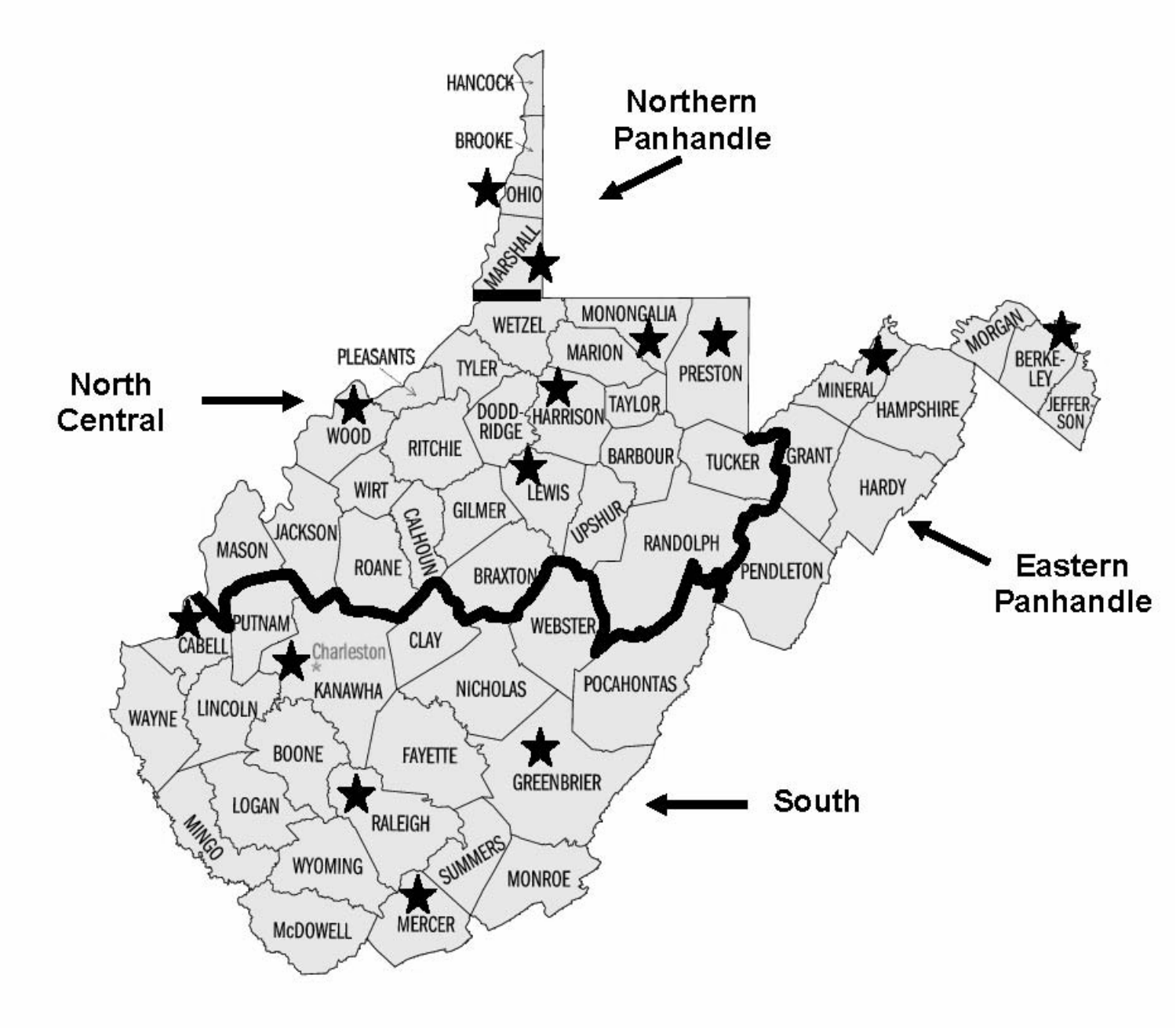
Appendices

Appendix A: Safety Belt Observational Survey Counties and Regions



Appendix B: County Populations and Probability of Selection

County Selection Procedures

The following summary of procedures for county selection was acquired from the West Virginia University's Survey Research Center (Althouse et al., 2001).

Some regions of the state were over-sampled relative to the proportion of the state population that resides there. West Virginia's population at the time when the original sample was drawn = 1,793,477. To ensure their representation in the sample, the five larges counties (Cabell, Kanawha, Monongalia, Raleigh and Wood) were sampled with probability 1.00. The results were adjusted prior to analysis by the use of differential weighting to take this into account: data from each of the 14 counties were given a weight equal to the inverse of their probability of selection, ensuring proper representation of data from each county.

South — **22 Counties**

County	Population	Cumulative	Probability of Selection in Stratum
*Kanawha	207,619		1.00
*Cabell	96,827		1.00
*Raleigh	76,819		1.00
*Mercer	64,980	64,980	0.24
Fayette	47,952	112,932	0.18
Logan	43,032	155,964	0.16
Putnam	42,835	198,799	0.16
Wayne	41,636	240,435	0.16
McDowell	35,233	275,668	0.14
*Greenbrier	34,693	310,361	0.12
Mingo	33,739	344,100	0.12
Wyoming	28,990	373090	0.10
Nicolas	26,775	399,865	0.10
Boone	25,870	425,735	0.10
Mason	25,178	450,913	0.10
Lincoln	21,382	472,295	0.08
Summers	14,204	486,499	0.06
Braxton	12,998	499,497	0.04
Monroe	12,406	511,903	0.04
Webster	10,729	522,632	0.04
Clay	9,983	532,615	0.04
Pocahontas	9,008	541,623	0.04
Total	922,888	541,623	

Proportion of Population (922,888/1,793,477) = 51%
Proportion of Sample (5/14 Counties) = 36%

North Central — **21 Counties**

County	Population	Cumulative	Probability of Selection in Stratum
*Wood	89,915		1.00
*Monongalia	75,509		1.00
*Harrison	69,371	69,371	0.54
Marion	57,249	126,620	0.45
*Preston	29,037	155,657	0.24
Randolph	27,803	183,460	0.21
Jackson	25,938	209,398	0.21
Upsur	22,867	232,265	0.18
Wetzel	19,258	251,523	0.15
*Lewis	17,223	268,746	0.15
Barbour	15,699	284,445	0.12
Taylor	15,144	299,589	0.12
Roane	15,120	314,709	0.12
Ritchie	10,233	324,942	0.09
Tyler	9,796	334,738	0.09
Calhoun	7,885	342,623	0.06
Tucker	7,728	350,351	0.06
Gilmer	7,669	358,020	0.06
Pleasants	7,546	365,566	0.06
Doddridge	6,994	372,560	0.06
Wirt	5,192	377,752	0.03
Total	540,176	377,752	

Proportion of Population (540,176/1,793,477) = 30%
Proportion of Sample (5/14 Counties) = 36%

Northern Panhandle — **8 Counties**

County	Population	Cumulative	Probability of Selection in Stratum
*Berkeley	59,253	59,253	0.66
Jefferson	35,926	95,179	0.40
*Mineral	26,697	121,876	0.30
Hampshire	16,498	138,374	0.18
Morgan	12,128	150,502	0.14
Hardy	10,977	161,479	0.12
Grant	10,428	171,907	0.12
Pendleton	8,054	179,961	0.08
Total	179,961	179,961	

Proportion of Population (179,961/1,793,477) = 10%
Proportion of Sample (2/14 Counties) = 14%

Eastern Panhandle — **4 Counties**

County	Population	Cumulative	Probability of Selection in Stratum
*Ohio	50,871	50,871	0.68
*Marshall	37,356	88,227	0.50
Hancock	35,233	123,460	0.46
Brooke	26,992	150,452	0.36
Total	150,452	150,452	

Proportion of Population (150,452/1,793,477) = 8%
Proportion of Sample (2/14 Counties) = 14%

Site#	Day	County	Map#	BeginTime	EndTime	Urban	Class	Location
18	Sun	Berkeley	1	2:30 PM	4:30 PM	Rural	Expwy	181 Northbound Exit 12-WV 45 (Martinsville)
28	Mon	Berkeley	2	8:00 AM	10:00 AM	Rural	Expwy	181 southbound Exit 23-US 11 (Failing Water)
38	Mon	Berkeley	3	2:30 PM	4:30 PM	Rural	Feeder	WV 45 at Intersection with County 45/2 and County 45/3
48	Tues	Berkeley	4	8:00 AM	10:00 AM	Rural	Local	County Route ¼ (eastbound) at Intersection with County Route 1 (Route 4 ends at Intersection)
58	Mon	Berkeley	4	10:00 AM	12:00 AM	Rural	Local	County Route 12 at Intersection with US 11
68	Tues	Berkeley	5	10:00 AM	12:00 AM	Rural	Trunk	WV 9 at Intersection with County 4/13 (9/13) appears to have 2 intersections at 9)
78	Sat	Berkeley	6	12:30 PM	2:30 PM	Urban	Feeder	WV 45 at Intersection with US 11 in Martinsville (Westbound only)
88	Mon	Berkeley	7	12:30 PM	2:30 PM	Urban	Local	County Route 10/1 (Eastbound only) at Intersection with US 11
98	Sat	Cabell	8	12:30 PM	2:30 AM	Rural	Expwy	WV 2 at intersection with county 7, North of Barboursville
108	Tues	Cabell	87	10:00 AM	12:00 AM	Rural	Feeder	WV 10a at intersection with US 60
118	Sun	Cabell	9	2:30 PM	4:30 PM	Rural	Local	County Route 21 (Westbound) at intersection with County Route 1
128	Tues	Cabell	88	12:30 PM	2:30 PM	Rural	Local	I64 Eastbound, Exit 11 - WV 10 (Hal Greer Boulevard)
138	Wed	Cabell	10	8:00 AM	10:00 AM	Urban	Expwy	WV 2 3rd Avenue and 20th Street in Huntington (WV 2 turns into US 60)
148	Wed	Cabell	11	10:00 AM	12:00 AM	Urban	Feeder	WV 106 at intersection with WV 2 in Huntington
158	Tues	Cabell	89	2:30 PM	4:30 AM	Rural	Local	City Route 32/69 (8th Avenue) at 20th Street in Huntington
168	Tues	Cabell	90	8:00 AM	10:00 AM	Urban	Trunk	WV 10 (Hal Greer Blvd.) at intersection with 5th Avenue in Huntington
178	Wed	Harrison	12	8:00 AM	10:00 AM	Rural	Expwy	US 50 at Intersection with county 33, West of Clarksburg
188	Thur	Harrison	13	10:00 AM	12:00 AM	Rural	Feeder	WV 76 at intersection with US 50 (East of Bridgeport)
198	Wed	Harrison	14	10:00 AM	12:00 AM	Rural	Local	County 11 at County 9 (Wilsonburg)
208	Sun	Harrison	15	2:30 PM	4:30 PM	Rural	Local	County route 24 (Northbound) at intersection with US 19 (Route 24 ends at intersection)
218	Sat	Harrison	16	12:30 PM	2:30 PM	Rural	Trunk	WV 20 at intersection with County 9
228	Thur	Harrison	17	8:00 AM	10:00 AM	Urban	Expwy	179 Exit 119 (Clarksburg) northbound or Southbound (Exit 119 marks intersection with US 50)
238	Wed	Harrison	18	2:30 PM	4:30 PM	Urban	Expwy	US 50 at intersection with US 20 in Clarksburg
248	Wed	Harrison	19	12:30 PM	2:30 PM	Urban	Feeder	US 19 at intersection with WV in Clarksburg
258	Sun	Kanawha	20	2:30 PM	4:30 PM	Rural	Expwy	US 119 intersection with WV 114 in Big Chimney
268	Wed	Kanawha	21	2:30 PM	4:30 PM	Rural	Feeder	WV 61 at intersection with WV 94 in Marmet
278	Sat	Kanawha	91	12:30 PM	2:30 PM	Rural	Local	County Route 21 (Northbound) at intersection WV 622
288	Thur	Kanawha	22	8:00 AM	10:00 AM	Urban	Expwy	I77Exit 99 Greenbrier Street (WV 114) in Charleston
298	Thur	Kanawha	23	10:00 AM	12:00 AM	Urban	Expwy	I79 Exit 102 (Westmoreland Street) in Charleston
308	Mon	Kanawha	92	10:00 AM	12:00 AM	Urban	Feeder	US 60 at intersection with WV 35 West of St. Albans
318	Wed	Kanawha	93	12:30 PM	2:30 PM	Urban	Local	City Route 10/25
328	Mon	Kanawha	94	8:00 AM	10:00 AM	Urban	Trunk	County Route 9 at intersection with county Route 3, south of St. Albans
338	Thur	Lewis	24	9:00 AM	10:30 AM	Rural	Expwy	I79, exit 99 at US 33
348	Thur	Lewis	25	7:30 AM	9:00 AM	Rural	Expwy	US 33 at intersection with County 15 (from South) and County 36 (from North) in Hirner
368	Thur	Lewis	26	10:30 AM	12:00 AM	Rural	Local	County Route 14 at intersection with US 119
378	Fri	Lewis	27	2:00 PM	3:30 PM	Rural	Local	County Route 1 (northbound) at intersection with County Route 1/6 (Butchersville, by Jackson Mill)
388	Thur	Lewis	28	12:30 PM	2:00 PM	Urban	Local	US 19 at intersection with US 33/119 in Weston
398	Thur	Marshall	29	12:30 PM	2:00 PM	Rural	Expwy	US 250 at intersection with US 88
408	Fri	Marshall	30	7:30 PM	9:00 AM	Rural	Expwy	WV 2 at County Route 29, Burch Ridge road (Franklin, south of Moundsville)
418	Thur	Marshall	31	2:00 PM	3:30 PM	Rural	Feeder	US 250 at intersection with WV 891
428	Sat	Marshall	32	3:30 PM	5:00 PM	Rural	Local	County Route 25 at intersection with US 250 (Cameron)
438	Thur	Marshall	33	10:30 PM	12:00 AM	Rural	Local	County Route 88/12 at intersection with WV 88 (east of Benwood) (Back-up 88/13)
448	Fri	Marshall	34	9:00 AM	10:30 AM	Urban	Expwy	WV 2 at intersection with 250/88 in Moundsville
458	Tues	Greenbrier	75	8:00 AM	10:00 AM	Rural	Feeder	WV Route 3 at intersection with County Route 3/2 (Alderson Cemetery Road)
468	Tues	Greenbrier	76	10:00 AM	12:00 AM	Rural	Local	County Route 43 at intersection with County Route 58 (located off Route 63 where the Greenbrier River leaves Route 63)

478	Tues	Greenbrier	77	12:30 PM	2:30 PM	Rural	Trunk	US Route 219 at intersection with Gypsy Mountain Road (County Route 24) located between Fairlea and Ronceverte
488	Tues	Greenbrier	78	2:30 PM	4:30 PM	Rural	Trunk	Route 20 at intersection with Simms Mountain Road, located south of Rainelle and Lilly Park.
498	Wed	Mercer	79	10:00 AM	12:00 AM	Rural	Expwy	US 19 at intersection with 19/29 south of Princeton
508	Wed	Mercer	80	12:30 PM	2:30 PM	Rural	Expwy	US 460 at intersection with County Route 34/1 south of Princeton
518	Wed	Mercer	81	8:00 AM	10:00 AM	Rural	Feeder	WV 10 at intersection with County Route 6 (Lashmeet)
528	Wed	Mercer	82	2:30 PM	4:30 PM	Rural	Feeder	WV 112 at intersection with County Route 219/6 (east of Oakvale)
538	Thur	Mercer	83	8:00 AM	10:00 AM	Rural	Local	County Route 25 at intersection with US 19
548	Thur	Mercer	84	10:00 AM	12:00 AM	Rural	Trunk	WV 20 at intersection with US 52
558	Sun	Mercer	85	12:30 PM	2:30 PM	Urban	Expwy	US 460 at intersection with County Route 21/1 in Bluefield
568	Sun	Mercer	86	2:30 PM	4:30 PM	Urban	Trunk	US 52 at intersection with WV 598 (east of Cumberland Road in Bluefield)
578	Wed	Mineral	35	2:00 PM	3:30 PM	Rural	Local	County Route 28/5 (Northbound) at intersection with County Route 28
588	Wed	Mineral	36	9:00 AM	10:30 AM	Rural	Trunk	US 220 at intersection with US 50
598	Wed	Mineral	37	7:30 AM	9:00 AM	Rural	Trunk	WV 93 at intersection with US 50
608	Wed	Mineral	38	10:30 AM	12:00 AM	Rural	Trunk	WV 972 at intersection with US 220
618	Wed	Mineral	39	12:30 PM	2:00 PM	Urban	Feeder	WV 46 at intersection with US 220
628	Wed	Mineral	40	3:30 PM	5:00 PM	Urban	Trunk	WV 28 at entrance to Cumberland County Airport (County 28/11) 21
638	Wed	Monongalia	41	2:30 PM	4:30 PM	Urban	Expwy	I68 at Exit 4 (WV 7, Sabraton)
648	Thur	Monongalia	42	10:00 AM	12:00 AM	Urban	Expwy	I79 at Exit 152 (US 19, Westover)
658	Wed	Monongalia	43	12:30 PM	2:30 PM	Urban	Feeder	WV 7 at intersection with County 75 Dellslow
668	Sat	Monongalia	44	10:00 AM	12:00 AM	Urban	Local	County Route 75/2 at intersection with County Route 75
678	Fri	Monongalia	45	2:30 PM	4:30 PM	Urban	Trunk	US 119 at intersection with WV 705
688	Fri	Monongalia	46	12:30 PM	2:30 PM	Rural	Feeder	WV 705 at intersection with Van Voorhis
698	Sat	Monongalia	47	8:00 AM	10:00 AM	Rural	Local	City route 47/89 at University Avenue (in Morgantown, Evansdale Drive near McDonalds)
708	Thur	Monongalia	48	8:00 AM	10:00 AM	Rural	Trunk	US 119 at intersection with US 19
718	Mon	Ohio	49	7:30 AM	9:00 AM	Rural	Expwy	I70, Exit 1 (County 41)
728	Tues	Ohio	50	3:30 PM	5:00 PM	Rural	Local	County Route 25 at intersection with WV 88
738	Mon	Ohio	51	10:30 AM	12:00 AM	Urban	Expwy	I470, Exit 1 (US 250)
748	Tues	Ohio	52	2:00 PM	3:30 PM	Urban	Expwy	WV 2 at intersection with 12th Street in Wheeling
758	Mon	Ohio	53	9:00 PM	10:30 PM	Urban	Feeder	WV 88 at intersection with US 40
768	Tues	Ohio	54	12:30 PM	2:00 PM	Urban	Local	(Use back-up, 252 is closed) North Huron at US 40
778	Mon	Preston	55	8:00 AM	10:00 AM	Rural	Expwy	I68, Exit 23 (Bruceton Mills)
788	Mon	Preston	56	10:00 AM	12:00 AM	Rural	Feeder	County 70 at intersection with WV 26 in Tunnelton
798	Tues	Preston	57	2:30 PM	4:30 PM	Rural	Feeder	WV 7 at intersection with WV 26 in Kingwood
808	Tues	Preston	58	12:30 PM	2:30 PM	Rural	Local	County Route 59 at WV 26 in Tunnelton
818	Sat	Raleigh	59	2:30 PM	4:30 PM	Rural	Expwy	I64 Exit 124 (US 19, East Beckley)
828	Fri	Raleigh	60	8:00 AM	10:00 AM	Rural	Expwy	US 19 at intersection with WV 3 (Shady Spring, South of Beckley)
838	Sat	Raleigh	61	8:00 AM	10:00 AM	Rural	Feeder	WV 41 at intersection with WV 61
848	Sat	Raleigh	62	10:00 AM	12:00 AM	Rural	Feeder	WV 41 at intersection with WV 41/24, (isn't marked; 8/10 mile south of 41 & 6 intersection)
858	Fri	Raleigh	63	2:30 PM	4:30 PM	Rural	Local	County Route 1 at intersection with County Route 7 (In Cirtsville I77)
868	Fri	Raleigh	64	12:30 PM	2:30 PM	Urban	Expwy	I77 Exit 44 (WV 3, Beckley)
878	Sat	Raleigh	65	12:30 PM	2:30 PM	Urban	Feeder	WV 41 at intersection US 19
888	Fri	Raleigh	66	10:00 AM	12:00 AM	Urban	Trunk	WV 3 at intersection with WV 16 in Beckley
898	Wed	Wood	67	12:30 PM	2:30 PM	Rural	Expwy	I77, Exit 179 (WV 2, Emerson Avenue)
908	Wed	Wood	68	2:30 PM	4:30 PM	Rural	Expwy	US 50 at intersection with County 50/36 and County 50/37 near Murphytown
918	Wed	Wood	69	10:00 AM	12:00 AM	Rural	Feeder	WV 14 at intersection with WV 31
928	Wed	Wood	70	8:00 AM	10:00 AM	Rural	Feeder	WV 31 at intersection with WV 14
938	Mon	Wood	71	12:30 PM	2:30 PM	Rural	Local	County Route 21 (Northbound) at intersection with WV 14
948	Sun	Wood	72	10:00 AM	12:00 AM	Urban	Expwy	US 50 at intersection with 13th Street in Parkersburg
958	Sun	Wood	73	8:00 AM	10:00 AM	Urban	Feeder	WV 47 at intersection with US 50
968	Mon	Wood	74	2:30 PM	4:30 PM	Urban	Local	County route 32 at intersection with WV 14 in Parkersburg

Appendix D: Safety Belt Observer Instructions

Safety Belt Observer Instruction Form

- Eligible vehicles need to have at least four tires and be one of the following: Passenger automobile, pickup truck, recreational vehicle, jeep or van (private, public and commercial). Pickup trucks should be coded “truck.” Jeeps, Broncos, Blazers and other vehicles of similar type should be coded "SUV." Do not include straight trucks (like a UPS truck) or tractor-trailers. Eligible vehicles should be observed regardless of the state in which they are registered.

- Belt use will be observed for front seat occupants only. Observe and record data for the driver and passenger in the right front seat. If there is more than one front seat passenger, observe only the “outside” passenger. Do not record data for passengers in the back seat or for a third passenger riding in the middle of the front seat.

- If a child is present in the front seat in a child restraint seat, do not record anything. However, children riding in the front seat, regardless of age, who are not in child restraint seats should be observed as any other front seat passenger.

- Each observation period will last for 45 minutes.

The following procedures will be used in conducting observations of belt use:

1. As you observe an eligible vehicle, record the type of vehicle (car, truck, sport utility, van), sex (male or female) and restrained by shoulder belt (yes or no) of the front seat occupants (driver and front seat “outside” passenger only).

2. If you notice a lap belt in use without a shoulder belt, it should be recorded as not restrained. Only shoulder belts are to be counted.

3. If the vehicle is equipped with shoulder belts but the person has the shoulder strap under his/her arm or behind the back, this should be recorded as not restrained.

4. Observe belt use ONLY for the lane(s) indicated on the site maps provided to you. The lane(s) are indicated by arrows on the site maps.

5. In many situations, it will be possible to observe every vehicle in the designated lane. However, if traffic is moving too fast to observe every vehicle, you should determine a focal point up the road in the appropriate lane. Observe the next vehicle to pass the focal point after the last vehicle has been coded.

6. Do not observe if it is raining, or if there is fog or inclement weather. If you arrive at a site and it begins to rain, do not collect data in the rain. Find a dry place and wait 15 minutes to see if the rain stops. If the rain stops, start observing again and extend the observation period to make up for the time missed. Otherwise, you will have to reschedule the site. (Note: rain means real rain, not light fog, or drizzle, or mist).

7. If more than one data sheet is used, staple sheets together at the end of the observation period and note the number of sheets used at the top of the data form.

8. It may happen that the site you are assigned is seriously compromised due to construction. If this occurs you may move one block in any direction on the same street such that you are observing the same stream of traffic that would have normally been observed had there been no construction. If moving one block will not solve the problem, then do not observe. An alternate site will be selected and observed on some future date.

Appendix E: Observational Survey Data Collection Form

Safety Belt Observational Survey Data Collection Form

COUNTY NAME:_____ **SITE NUMBER:**_____

SITE NOTES:_____

DATE: _____ - _____ - _____

WEATHER CONDITIONS (Circle one):
1) Clear/Sunny 2) Light Rain 3) Cloudy 4) Fog 5) Clear But Wet

START TIME:_____ **END TIME:**_____

	DRIVER			PASSENGER			DRIVER			PASSENGER	
Veh. #	**Vehicle** C = car T = pick up S = suv V = van	**Sex** M = male F = female N/S = unsure	**Use** Y = yes N = no	**Sex** M = male F = female N/S = unsure	**Use** Y = yes N = no	**Veh. #**	**Vehicle** C = car T = pick up S = suv V = van	**Sex** M = male F = female N/S = unsure	**Use** Y = yes N = no	**Sex** M = male F = female N/S = unsure	**Use** Y = yes N = no
1						26					
2						27					
3						28					
4						29					
5						30					
6						31					
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FORM 2002