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Missouri Seat Belt Usage Survey

Prepared for:
Missouri Department of Transportation
Highway Safety & Traffic Division

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EXECUTIVE SUMMARY

The underlying rationale of this survey is based upon the *Uniform Criteria for State Observational Surveys of Seat Belt Use* published in the **Federal Register** (vol. 76, no. 63, Friday, April 1, 2011, pp 18056-18059) by the National Highway Traffic Safety Administration (NHTSA) of the U. S. Department of Transportation and is in compliance with the subsequent *Final Rule* (effective May 2, 2011). The Uniform Criteria were revised in an effort to standardize the requirements for the statewide observing and reporting of seat belt use for drivers and right front-seat passengers. These new requirements contain numerous changes to include: county selection based upon fatality-based criterion, the use of a weighted calculation, a change in the standard error from 5.0 percent to 2.5 percent, the involvement of a qualified statistician, and every five years a reselection of observation sites using the most recent traffic fatality counts.

The following report documents the 2018 results of Missouri's annual statewide seat belt use survey. The principal objective is to establish a seat belt usage rate of drivers and right front-seat passengers from which strategies targeting educational and enforcement occupant protection programs can be developed. Missouri's sampling plan also addresses the need for a statewide seat belt usage rate required by NHTSA.

Missouri's observational survey of seat belt usage took place June 4th through June 17th, 2018. The Highway Safety and Traffic Division of Missouri Department of Transportation (MoDOT) contracted with the Missouri Safety Center located at the University of Central Missouri to help develop, implement, and analyze the 2018 observational survey with the statistical expertise being provided by Judi D. Reine, MA, Director of Institutional Research at State Fair Community College.

Based upon a total of 135,646 vehicle occupants observed, the 2018 seat belt use rate on Missouri roadways was found to be 87.06% (rounding to 87.1%), with a standard error of 0.1145. Of these 135,646 occupants, seat belt use could not be determined for 934 drivers and right front-seat passengers, therefore, the non-response or unknown use rate for the 934 occupants was 0.69%, and does not exceed the 10.0% requirement established by NHTSA.

The 1998 seat belt use survey was done as the base line; then each survey after and up through the 2012 seat belt use survey was conducted as a replication of the former. All were probability based surveys with the data collection locations representative of 85 percent of the State's population and were, at that time, in compliance with the guidelines recommended by NHTSA. Starting in 2013, NHTSA required changes in the survey methodology requiring survey locations account for 85 percent of the crash-related fatalities in the State. In addition, Missouri elected to depict the usage rate for each of Missouri's seven transportation districts, requiring at least 4 counties be included from each district. This approach was used through 2017. Missouri was required to reselect road segments and observation sites for the next five-year period starting with the 2018 survey (2018-2022). In addition to the new site selection, Missouri removed the requirement that each district be represented by at least 4 counties. The 2018 survey design was approved by NHTSA, January 24, 2018.

Results from Missouri’s initial statewide seat belt use survey remain included within this report to display the belt use since 1998. However, comparisons between the years of 1998-2012, 2013-2017, and 2018 should be made with caution, as these three groups of years represent three distinct survey methodologies and site samples. Table 1 indicates the weighted results of observations from 1998 through 2018.

Table 1: Observations and Usage Rate by Year, 1998-2018*

Year	Usage Rate	Vehicles Observed	Total Observation (Driver& Passenger)
2018	87.1%	104,510	135,646
2017	84.0%	91,850	115,902
2016	81.4%	96,705	123,678
2015	79.9%	91,463	118,081
2014	78.82%	90,015	117,297
2013	80.07%	82,128	108,096
2012	79.39%	92,860	119,474
2011	78.95%	97,646	127,720
2010	76.03%	96,160	126,419
2009	77.18%	94,799	122,962
2008	75.78%	88,980	116,274
2007	77.16%	87,543	114,432
2006	75.18%	90,345	117,901
2005	77.41%	82,051	105,233
2004	75.88%	85,066	111,966
2003	72.93%	83,781	109,619
2002	69.37%	75,412	99,099
2001	67.91%	73,603	97,544
2000	67.72%	70,230	92,000
1999	60.8%	74,058	95,538
1998	60.4%	74,930	97,233

* Weighted Data

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METHODOLOGY

According to NHTSA's Uniform Criteria, at least once every five years, all States are required to reselect their observation sites using the most recent traffic fatality counts. Missouri was required to reselect observation sites for the 2018 survey year. The fatality data from the five year period 2012-2016 were used for this purpose and were obtained from MoDOT. This reselection process resulted in changes to the survey methodology and observation sites.

Rationale for Changing the Sampling Design of the 2013 Study

The *2013 Missouri Seat Belt Study* attempted to depict the usage rate for each of Missouri's seven transportation districts as well as producing a usage rate for the entire state. A sampling procedure was used whereby two rural counties (population less than 50,000) and two urban counties (population greater than 50,000) were selected from the qualifying counties (having 85% of the state's fatalities) for each of Missouri's seven transportation districts. Unfortunately, the distribution of the qualifying counties using 2012-2016 fatality data netted only two counties for the Northwest District and insufficient balances of rural and urban counties in several others. As a result, Missouri elected to remove the requirement each district be represented by at least 4 counties for the 2018 survey.

In addition, the 2013 study based its observations upon roadway segments selected from eight functional road types – Urban Interstate, Rural Interstate, Urban Freeway/Expressway, Rural Freeway/Expressway, Urban Arterial, Rural Arterial, Urban Collector and Rural Collector. The implementation of this strategy revealed that distinctions between rural and urban components along the same roadway were difficult to discern. Hence, the 2018 study will remove the Urban and Rural distinction and will, thereby, select observation points from the resultant four functional road types.

County Selection

The State of Missouri is comprised of 114 counties and the City of St. Louis. For the purpose of this study the City of St. Louis and the County of St. Louis have been combined and have been counted as a single county. A total of 63 counties account for 85 percent of the total fatalities from 2012-2016 and these represent the primary sampling unit (PSU). The fatality data are reported by county, in descending order of magnitude, in *Appendix A, Vehicle Occupant Fatalities by County, 2012-2016*. They are also highlighted on the Missouri map, *Appendix B, Top Counties with 85% of Vehicle Occupant Fatalities, 2012-2016*.

The Vehicle Miles Traveled (VMT) – both Daily (DVMT) and Annual – were obtained from MoDOT for each of the 63 counties comprising the top 85% of the vehicle occupant fatalities for 2012-2016. In addition, the percent of the Total Yearly VMT was computed for each of the 63 counties based upon the Annual VMT for each county as compared with the grand total VMT (181,532,377 miles) for the group of 63 counties.

The final selection of 28 counties was made utilizing Microsoft Excel and Visual Basic for Applications to create a macro that would perform the random selection. This weighted the counties such that a county with high annual VMT would have more opportunities for selection than a county with low annual VMT. The resultant 28 counties may be found on the Missouri map, *Appendix C, Random Selection of Counties for Sampling, 2012-2016*.

Roadway Classification and Segment Selection

Roadway Segment Pool: The individual roadway segments to be used as observation sites were selected from MODOT's Transportation Management System (TMS). The TMS is updated annually and includes all federal, state, and local roads throughout the state. Pursuant to the guidelines in NHTSA's *Final Rule* (effective May 2, 2011), the following road types were excluded from this study: non-public roads, unnamed roads, unpaved roads, vehicular trails, access ramps, cul-d-sacs, traffic circles, and service drives. Each of the four remaining roadway types (Interstate, Freeway/Expressway, Arterial, and Collector) within each of the 28 survey counties were divided into roadway segments, each of which begins and ends at an "at grade" intersection where traffic could potentially change.

Selection of Observation Sites: A total of 20 observation sites (roadway segments) per county were selected. Each functional road classification was sampled in proportion to the percentage of road classification VMT within each county. For example, if 40 percent of the VMT in the county were Interstates, then 40 percent of the sampled sites were randomly selected from the Interstate pool.

Each road segment had an opportunity to be selected based on its corresponding Functional Class and VMT – if the VMT was very small, the opportunity for selection was minimal. *Appendix D, County VMT by Functional Road Type* reports the Annual VMT, Percent of Annual VMT, Number of Road Segments to be Sampled, Available Segments, The Probability of Selection by Segment, and the Number of Alternate Segments Selected.

DATA COLLECTION

Observers and Quality Control Monitors

Forty-five observers were hired and trained by the Missouri Safety Center. All but eleven of the observers were experienced data collectors who had conducted seat belt observations in past surveys. The eleven newly hired observers received additional and individual training from the Missouri Safety Center.

All observers and quality control monitors were trained in the appropriate procedures of Missouri's survey. Data collection protocols, scheduling, site locations, field protocols and reporting requirements were all topics covered during the training. Additionally, observers were instructed on how to proceed in conditions of bad weather or temporary traffic impediments, as well as, if an observation site needed to be abandoned due to construction activities, safety concerns, or some other legitimate reason.

The Quality Control Monitors were given additional training that focused on their specific duties. These duties included verifying that the observers were at the appropriate observation site during the assigned time and ensuring that the observers were following field protocol and offering assistance if needed. Eleven Quality Control monitors were utilized to conduct random unannounced visits to 89 of the total 560 observation sites. This represents a 15.9 percent monitoring rate which is well above the 5 percent rate required by NHTSA.

Observation and Survey Protocols

Observation sites were geographically organized into clusters of 3, 4, or 5 sites to facilitate a reasonable driving time between locations. Each cluster was randomly assigned a single day of the week for the observation to take place. The sites within the cluster were then randomly assigned an observation period of time.

Two observers were required to work together at each observational road segment; one to articulate the observations for each vehicle while the other would record the observations. Each observer was given a survey schedule and a detailed map of road segment locations for their respective observational counties. The survey schedule specified the site (segment) number (both primary and alternate), weekday, start time, survey route, start crossroad, end crossroad, and functional class-road type. Using the identified, start crossroad and end crossroad listed on the survey schedule, the observer was to use their best judgment to select the safest location to conduct the survey within the specified road segment. Observers recorded data from one lane (outermost or far-right lane) and one direction of travel per survey location. The observations were conducted on all days of the week during daylight hours between 7:00 a.m. and 6:00 p.m. Observations started at the predetermined assigned time and continued for exactly 45-minutes.

Observations for use, non-use or unknown use of seat belts were recorded for all drivers and front-seat outboard passengers including children riding in booster seats (excluding children in child safety seats). If there was no passenger in the right front-seat of an observed vehicle then the passenger field was left blank on the data collection form. Passenger cars, van/minivans, sport utility/crossover vehicles, pickup trucks and commercial vehicles weighing less than 10,000 pounds were all qualifying vehicles for the survey and were eligible for observation, regardless of the license state. The additional data element of driver gender was also collected and recorded. All these data were recorded on the Site Summary Form (Appendix E) and Observation Form (Appendix F).

Alternate Site Selection

Observers were instructed on how to proceed in conditions of bad weather or temporary traffic impediments, as well as, if an observation site needed to be abandoned due to construction activities, safety concerns, or some other legitimate reason.

Alternate sites were selected in the counties of Christian, Greene, Jackson, McDonald, Webster, and Wright. Alternate site selections are noted in *Appendix G* included with this report.

RESULTS

Weighted vs. Un-weighted Estimations

Information recorded using the Site Summary and Observation Forms represent each vehicle observed. This information is considered to be raw or *un-weighted* data. While it might appear that using such information is the most direct and easiest to understand, it is often misleading when one considers that the observations on some road segments included every vehicle during the specified time period while significantly fewer vehicles were counted on other road segments. That is, all vehicles were counted on most two lane roads but it will not be true of multi-lane roadways where the observers included only those vehicles in the outer most right hand lane and/or, if the traffic was heavy, recorded perhaps every third vehicle. NHTSA requires the estimations of seat belt use to be calculated using weighted data; this was done in Missouri using the specifications described in the approved observational plan. Each of the following sections will be identified as containing either weighted or un-weighted data.

STATEWIDE RESULTS

Observers recorded data from 560 sites within the 28 Missouri counties on 135,646 vehicle occupants of whom 104,510 were drivers and 31,136 were outboard front-seat passengers; of these, belt use was unknown for 934 vehicle occupants.

Weighted Data

Tables 2-3 and Figure 1, show only weighted data and include the relative weights of the DVMT; however they do exclude the unknowns (934 vehicle occupants).

The overall belt use rate for drivers and passengers combined is 87.1 percent (95 Percent Confidence Interval 86.9% - 87.2%). Table 2 shows the 2018 Seat Belt Use in Missouri.

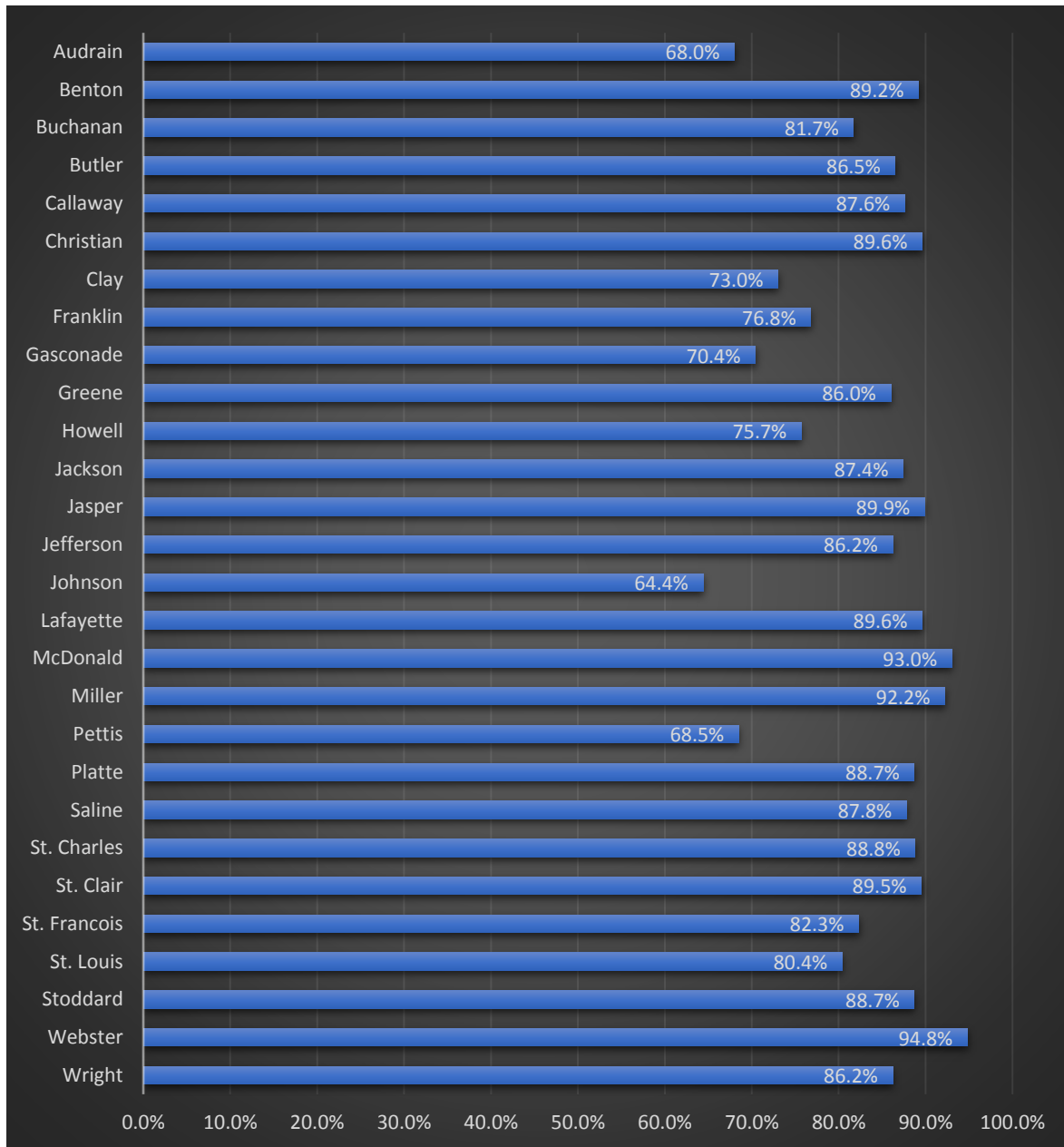
Table 2: Seat Belt Use in Missouri*

Belt Use	Frequency	Percent	Standard Error of Percent
Belted	112,287	87.1	0.1145
Non-Belted	22,425	12.9	0.1145
Total	134,712	100.0	

* Weighted Data

Figure 1 shows the weighted seat belt use rates by county. The range of percent is from a low of 64.4 percent in Johnson County to a high of 94.8 percent in Webster County.

Figure 1: Belt Use by County*



* Weighted Data

Table 3 shows the overall vehicle occupant seat belt use by roadway type. Roadways are stratified using the four functional roadway classifications of MoDOT. The roadway type Interstate had the highest seat belt use whereas the roadway type Collector had the lowest, at 87.7 and 74.2 percent respectively.

Table 3: Belt Use by Roadway Type*

Roadway Type	Percent Belted
Arterial	74.3
Collector	74.2
Freeway/Expressway	86.9
Interstate	87.7

* Weighted Data

The four functional roadway classifications identified by the Missouri Department of Transportation:

Arterial – Arterials provide high level mobility while at the same time allowing many at-grade intersections. Entrances to local land are typically permitted wherever safe to do so. Arterials provide connections between other classifications and are typically spaced at intervals consistent with population density, to be within reasonable distances of all developed areas.

Collector – Collector routes gather traffic from local roads and trip generating locations, in order to funnel them to arterial routes. Collectors generally connect neighborhoods, or other regions of local roads, to arterial networks. As such, they do not normally serve through traffic.

Freeway/Expressway – Freeways and expressways are physically similar to interstates, but are not in the official interstate system. Opposing traffic flows are physically separated by medians or barriers. Access to freeways is generally the same as interstates, fully controlled to allow access only via interchanges, while expressways allow limited, at-grade intersections. The emphasis is to provide high levels of mobility with limited access to local lands.

Interstate – The interstate system is a network of highways limited to those officially designated by the Secretary of Transportation. Interstates have full control of access, allowing access only via interchanges and prohibiting at-grade intersections. Their opposing traffic flows are physically separated by medians or barriers. Interstates offer high levels of mobility while linking major urban areas.

Un-weighted Data

Tables 4-11 and Figures 2-3, show only raw or un-weighted data and do not include the relative weights of the DVMT; they do include the unknowns (934 vehicle occupants). These numbers are not directly comparable to the weighted estimates.

Table 4 exhibits the un-weighted estimates of seat belt use by drivers (81.9%), passengers (85.8%), and overall (82.8%).

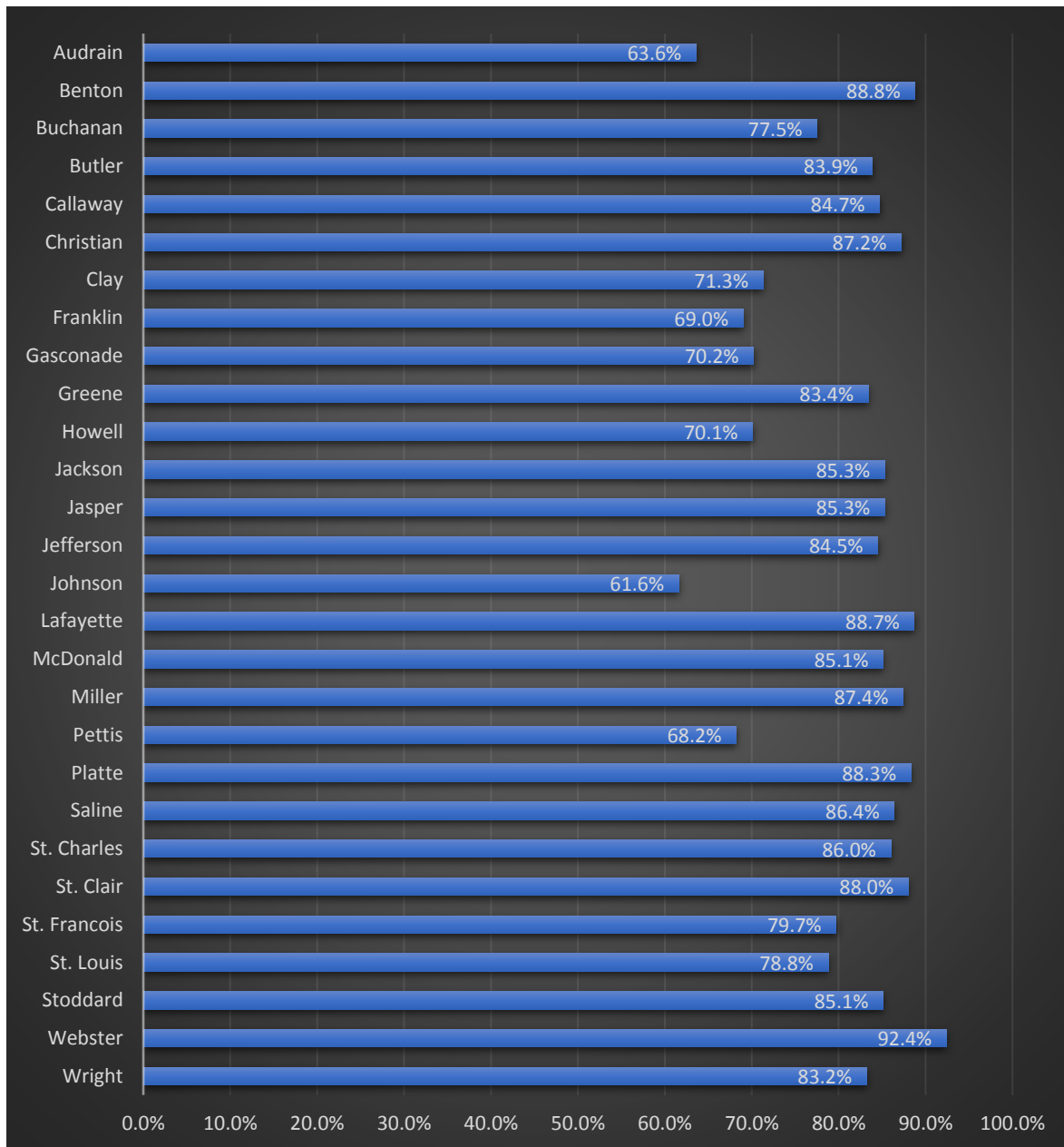
Table 4: Belt Use by Vehicle Occupant**

Vehicle Occupant	Belted		Non-Belted		Unknown	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Drivers	85,589	81.9	18,332	17.5	589	0.6
Passengers	26,698	85.8	4,093	13.1	345	1.1
Overall	112,287	82.8	22,425	16.5	934	0.7

** Un-weighted Data

Figure 2 distributes the un-weighted seat belt usage rates by county. Usage varied from a low of 61.6 percent in Johnson County to a high of 92.4 percent in Webster County.

Figure 2: Belt Use by County**



* Un-weighted data

Driver and Passenger seat belt use by roadway classification is displayed in Table 5 and shows that belt use was highest on Interstate (86.7%). The lowest usage was recorded for the Collector (71.4%) classification.

Table 5: Driver & Passenger Belt Use by Roadway Classification**

Roadway Type	Belted		Non-Belted		Unknown		Overall Percent based upon a total of 135,646 observed	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Arterial	21,896	72.7	8,002	26.5	235	0.8	30,133	22.2
Collector	3,289	71.4	1,220	26.5	98	2.1	4,607	3.4
Freeway / Expressway	36,542	85.7	5,813	13.6	265	0.7	42,620	31.4
Interstate	50,560	86.7	7,390	12.7	336	0.6	58,286	43.0

** Un-weighted data

Drivers of Sport Utility/Crossover vehicles exhibited the highest seat belt use rate among vehicle types at 87.8 percent, while drivers of pickup trucks exhibited the lowest use rate at 71.1 percent. Table 6 shows seat belt use by drivers for vehicle type.

Table 6: Driver Belt Use by Vehicle Type**

Vehicle Type	Belted		Non-Belted		Unknown		Overall Percent based upon a total of 104,510 observed	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Passenger Cars	31,784	83.0	6,268	16.4	236	0.6	38,288	36.6
Sport Utility/Crossover	28,688	87.8	3,862	11.8	110	0.4	32,660	31.3
Pickup Trucks	17,619	71.1	6,934	28.0	218	0.9	24,771	23.7
Van/Minivan	7,498	85.3	1,268	14.4	25	0.3	8,791	8.4

** Un-weighted data

An additional data element collected during the survey was that of Driver Gender. Table 7 provides the seat belt use estimation by driver gender. In 2018, female drivers show a much higher seat belt use rate than males, 86.7% and 79.0%, respectively.

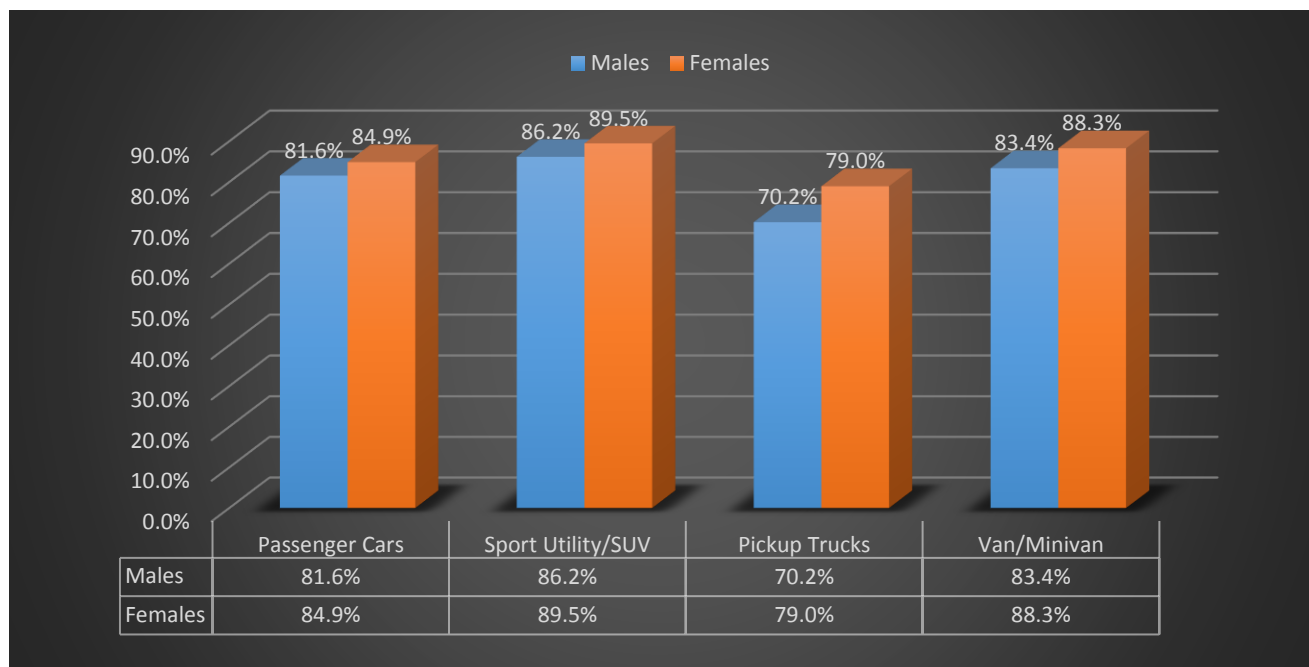
Table 7: Driver Belt Use by Gender**

Gender	Belted		Non-Belted		Unknown		Overall Percent based upon a total of 104,510 observed	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Female	33,897	86.7	5,071	13.0	139	0.3	39,107	37.4
Male	51,692	79.0	13,261	20.3	450	0.7	65,403	62.6

**Un-weighted Data

Figure 3 shows the breakdown of male and female driver's seat belt use by vehicle type. Female drivers had higher rates of seat belt use among all vehicle types in 2018, ranging from 79.0 % for pickup trucks to 89.5 % for SUV's. Males used seat belts only 70.2% in pickup trucks and 86.2% in SUV's.

Figure 3: Driver Belt Use by Gender by Vehicle**



**Un-weighted Data

The 2018 survey was scheduled and conducted over a fourteen day period (June 4th through 17th), between the hours of 7:00 am and 6:00 pm. Table 8 shows that of the 135,646 of both drivers and passengers Saturday had the highest number of observations at 22,532.

Table 8: Driver & Passenger Belt Use by Day of the Week**

Day of the Week	Belted		Non-Belted		Unknown		Overall Percent based upon a total of 135,646 observed	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Monday	15,561	79.4	3,855	19.7	179	0.9	19,595	14.5
Tuesday	15,816	80.9	3,627	18.6	105	0.5	19,548	14.4
Wednesday	15,560	84.2	2,849	15.4	80	0.4	18,489	13.6
Thursday	17,130	84.3	3,099	15.2	100	0.5	20,329	15.0
Friday	16,228	86.0	2,533	13.4	111	0.6	18,872	13.9
Saturday	18,654	82.8	3,700	16.4	178	0.8	22,532	16.6
Sunday	13,338	81.9	2,762	17.0	181	1.1	16,281	12.0

** Un-weighted Data

Tables 9, 10 and 11 display the frequency of vehicles observed by time of the day, direction of traffic flow and conditions of the road.

Table 9: Frequency, Vehicles Observed by Time of Day**

Time	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7:00 am	8,478	8.1	8,478	8.1
8:00 am	6,626	6.3	15,104	14.4
9:00 am	11,131	10.7	26,235	25.1
10:00 am	8,637	8.3	34,872	33.4
11:00 pm	8,850	8.5	43,722	41.9
12:00 pm	10,497	10.1	54,219	52.0
1:00 pm	9,233	8.8	63,452	60.8
2:00 pm	9,655	9.2	73,107	70.0
3:00 pm	9,076	8.7	82,183	78.7
4:00 pm	7,666	7.3	89,849	86.0
5:00 pm	14,661	14.0	104,510	100.0

**Un-weighted Data

Table 10: Frequency, Vehicles Observed by Direction of Traffic Flow**

Flow	Frequency	Percent	Cumulative Frequency	Cumulative Percent
East	31,122	29.8	31,122	29.8
North	24,847	23.8	55,969	53.6
South	21,340	20.4	77,309	74.0
West	27,201	26.0	104,510	100.0

**Un-weighted Data

Table 11: Frequency, Vehicles Observed by Road Conditions**

Condition	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Dry	100,249	97.9	100,249	97.9
Wet	1,701	1.6	101,950	99.5
Fog	0	0.0	0	0
Other	487	0.5	102,437	100

**Un-weighted Data

Frequency Missing = 2,073

APPENDICES

- A. Vehicle Occupant Fatalities by County, 2012-2016
- B. Top Counties with 85% of Vehicle Occupant Fatalities, 2012-2016 (Map)
- C. Random Selection of Counties for Sampling, 2012-2016 (Map)
- D. County VMT by Functional Road Type, 2012-2016
- E. Site Summary Form
- F. Observational Form
- G. Alternate Site Selection - 2018

APPENDIX A

Vehicle Occupant Fatalities by County 2012 - 2016

County	2012-2016 Fatalities	5-year avg. Fatalities	% of Contribution	Cumulative % of Contribution
ST. LOUIS (CITY & COUNTY)	329	65.80	10.60%	10.60%
JACKSON	251	50.20	8.08%	18.68%
JEFFERSON	124	24.80	3.99%	22.67%
GREENE	98	19.60	3.16%	25.83%
FRANKLIN	95	19.00	3.06%	28.89%
ST. CHARLES	71	14.20	2.29%	31.18%
CLAY	69	13.80	2.22%	33.40%
BOONE	67	13.40	2.16%	35.56%
JASPER	63	12.60	2.03%	37.58%
NEWTON	47	9.40	1.51%	39.10%
PHELPS	46	9.20	1.48%	40.58%
LINCOLN	45	9.00	1.45%	42.03%
CASS	43	8.60	1.38%	43.41%
MILLER	43	8.60	1.38%	44.80%
CAMDEN	42	8.40	1.35%	46.15%
PLATTE	41	8.20	1.32%	47.47%
JOHNSON	38	7.60	1.22%	48.70%
TANEY	38	7.60	1.22%	49.92%
CHRISTIAN	37	7.40	1.19%	51.11%
HOWELL	37	7.40	1.19%	52.30%
LAWRENCE	37	7.40	1.19%	53.49%
DUNKLIN	36	7.20	1.16%	54.65%
WASHINGTON	35	7.00	1.13%	55.78%
BARRY	34	6.80	1.10%	56.88%
CAPE GIRARDEAU	34	6.80	1.10%	57.97%
ST. FRANCOIS	34	6.80	1.10%	59.07%
CALLAWAY	33	6.60	1.06%	60.13%
TEXAS	33	6.60	1.06%	61.19%
COLE	32	6.40	1.03%	62.22%
STONE	32	6.40	1.03%	63.25%
PEMISCOT	31	6.20	1.00%	64.25%
BUCHANAN	30	6.00	0.97%	65.22%
MCDONALD	30	6.00	0.97%	66.18%
PETTIS	30	6.00	0.97%	67.15%
LACLEDE	28	5.60	0.90%	68.05%
STODDARD	28	5.60	0.90%	68.95%
BUTLER	27	5.40	0.87%	69.82%
POLK	27	5.40	0.87%	70.69%
WEBSTER	27	5.40	0.87%	71.56%
WARREN	25	5.00	0.81%	72.37%

APPENDIX A, Continued

**Vehicle Occupant Fatalities by County
2012 - 2016**

County	2012-2016 Fatalities	5-year avg. Fatalities	% of Contribution	Cumulative % of Contribution
PULASKI	24	4.80	0.77%	73.14%
SALINE	24	4.80	0.77%	73.91%
GASCONADE	23	4.60	0.74%	74.65%
LAFAYETTE	21	4.20	0.68%	75.33%
NEW MADRID	21	4.20	0.68%	76.01%
SCOTT	20	4.00	0.64%	76.65%
STE. GENEVIEVE	20	4.00	0.64%	77.29%
AUDRAIN	19	3.80	0.61%	77.91%
BENTON	19	3.80	0.61%	78.52%
MONTGOMERY	19	3.80	0.61%	79.13%
MORGAN	19	3.80	0.61%	79.74%
PIKE	18	3.60	0.58%	80.32%
RANDOLPH	18	3.60	0.58%	80.90%
HENRY	17	3.40	0.55%	81.45%
MARIES	17	3.40	0.55%	82.00%
RALLS	17	3.40	0.55%	82.54%
PERRY	16	3.20	0.52%	83.06%
WRIGHT	16	3.20	0.52%	83.57%
ST. CLAIR	15	3.00	0.48%	84.06%
ANDREW	14	2.80	0.45%	84.51%
DENT	14	2.80	0.45%	84.96%
MADISON	14	2.80	0.45%	85.41%
VERNON	14	2.80	0.45%	85.86%
Sorted by decreasing fatalities. Counties with at least 85% of fatalities are listed above.				
Counties with the remaining 15% of fatalities are listed below.				
CRAWFORD	13	2.60	0.42%	86.28%
MARION	13	2.60	0.42%	86.70%
MISSISSIPPI	13	2.60	0.42%	87.12%
MONITEAU	13	2.60	0.42%	87.54%
RIPLEY	13	2.60	0.42%	87.95%
WAYNE	13	2.60	0.42%	88.37%
BOLLINGER	12	2.40	0.39%	88.76%
CARTER	12	2.40	0.39%	89.15%
DALLAS	12	2.40	0.39%	89.53%
IRON	12	2.40	0.39%	89.92%
OREGON	12	2.40	0.39%	90.31%
REYNOLDS	12	2.40	0.39%	90.69%
BARTON	11	2.20	0.35%	91.05%
HARRISON	11	2.20	0.35%	91.40%
NODAWAY	11	2.20	0.35%	91.76%
RAY	11	2.20	0.35%	92.11%
CLARK	10	2.00	0.32%	92.43%
COOPER	10	2.00	0.32%	92.75%
DEKALB	10	2.00	0.32%	93.08%

APPENDIX A, Continued

**Vehicle Occupant Fatalities by County
2012 - 2016**

County	2012-2016 Fatalities	5-year avg. Fatalities	% of Contribution	Cumulative % of Contribution
LIVINGSTON	10	2.00	0.32%	93.40%
SHANNON	10	2.00	0.32%	93.72%
BATES	9	1.80	0.29%	94.01%
CEDAR	9	1.80	0.29%	94.30%
CHARITON	9	1.80	0.29%	94.59%
HICKORY	9	1.80	0.29%	94.88%
HOWARD	9	1.80	0.29%	95.17%
OZARK	9	1.80	0.29%	95.46%
SCHUYLER	9	1.80	0.29%	95.75%
CALDWELL	8	1.60	0.26%	96.01%
CLINTON	8	1.60	0.26%	96.26%
HOLT	8	1.60	0.26%	96.52%
OSAGE	8	1.60	0.26%	96.78%
ADAIR	7	1.40	0.23%	97.00%
DOUGLAS	7	1.40	0.23%	97.23%
GRUNDY	7	1.40	0.23%	97.46%
KNOX	7	1.40	0.23%	97.68%
LINN	7	1.40	0.23%	97.91%
MACON	7	1.40	0.23%	98.13%
DADE	6	1.20	0.19%	98.33%
LEWIS	6	1.20	0.19%	98.52%
MONROE	6	1.20	0.19%	98.71%
CARROLL	5	1.00	0.16%	98.87%
DAVIESS	5	1.00	0.16%	99.03%
SULLIVAN	5	1.00	0.16%	99.19%
MERCER	4	0.80	0.13%	99.32%
PUTNAM	4	0.80	0.13%	99.45%
SCOTLAND	4	0.80	0.13%	99.58%
SHELBY	4	0.80	0.13%	99.71%
WORTH	4	0.80	0.13%	99.84%
ATCHISON	3	0.60	0.10%	99.94%
GENTRY	2	0.40	0.06%	100.00%
TOTAL	3105	621.00	100.00%	

Includes drivers and passengers of passenger cars, station wagons, SUVs, vans (eight or less with driver), pick-ups and single-unit trucks with three or more axles.

Top Counties with 85% of Vehicle Occupant Fatalities 2012 - 2016

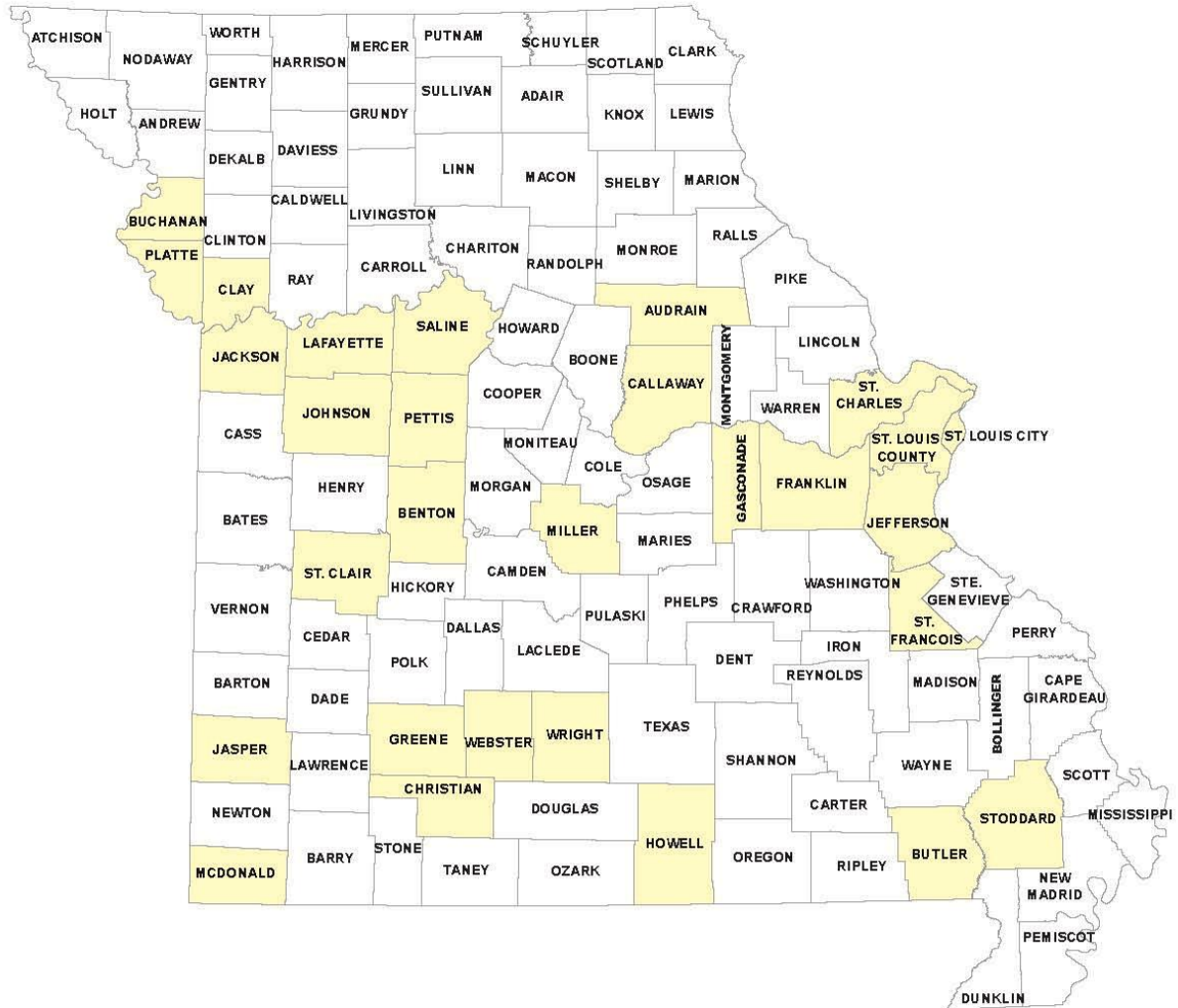


Counties with 85% of Fatalities



APPENDIX C

Random Selection of Counties for Sampling 2012 - 2016



Notes:

- Counties were selected from the Counties previously identified as containing 85% of Vehicle Occupant Fatalities.
- The probability that a county would be selected was weighted towards the Annual VMT for that county.
- Additional details regarding the random selection process can be found in the report.



Missouri Department of Transportation
Transportation Planning
1-888-ASK-MODOT
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November 21, 2017



Document Path: Z:\MapProjects\TSVay_shanksurvey_counties_safety_bell.mxd

APPENDIX D

County VMT by Functional Road Type 2012 - 2016

Notes:

- County VMT obtained from MoDOT Datazone tool (2016 Data) for State and Federal routes only (no local roads).
- Arterial Annual VMT includes Major and Minor Arterials.
- Collector Annual VMT includes Major and Minor Collectors.
- Segments were manually adjusted by +/- 1 to account for rounding errors in order to achieve a total of 20 road segments to sample per county.

County	Functional Classification	Annual VMT	% of Annual VMT	# of Segments to Sample	Available Segments	Prob. Of Selection	Alternate Segments
AUDRAIN	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	49,032	8.77%	2	6	33.33%	3
	Arterial	370,685	66.31%	13	136	9.56%	3
	Collector	139,288	24.92%	5	220	2.27%	3
	Totals	559,005	100.00%	20	362	5.52%	-
BENTON	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	165,370	34.79%	7	22	31.82%	3
	Arterial	200,810	42.25%	8	70	11.43%	3
	Collector	109,103	22.96%	5	126	3.97%	3
	Totals	475,283	100.00%	20	218	9.17%	-
BUCHANAN	Interstate	784,860	38.26%	8	42	19.05%	3
	Freeway/Expressway	220,054	10.73%	2	26	7.69%	3
	Arterial	745,462	36.34%	7	251	2.79%	3
	Collector	300,812	14.67%	3	306	0.98%	3
	Totals	2,051,188	100.00%	20	625	3.20%	-
BUTLER	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	480,955	39.64%	8	38	21.05%	3
	Arterial	441,722	36.41%	7	128	5.47%	3
	Collector	290,611	23.95%	5	192	2.60%	3
	Totals	1,213,288	100.00%	20	358	5.59%	-
CALLAWAY	Interstate	960,663	44.20%	9	12	75.00%	3
	Freeway/Expressway	756,635	34.81%	7	43	16.28%	3
	Arterial	176,783	8.13%	2	85	2.35%	3
	Collector	279,476	12.86%	2	202	0.99%	3
	Totals	2,173,557	100.00%	20	342	5.85%	-
CHRISTIAN	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	747,657	46.34%	9	20	45.00%	3
	Arterial	663,646	41.14%	8	100	8.00%	3
	Collector	201,946	12.52%	3	105	2.86%	3
	Totals	1,613,249	100.00%	20	225	8.89%	-

APPENDIX D, Continued

**County VMT by Functional Road Type
2012 - 2016**

County	Functional Classification	Annual VMT	% of Annual VMT	# of Segments to Sample	Available Segments	Prob. Of Selection	Alternate Segments
CLAY	Interstate	2,299,398	40.06%	8	62	12.90%	3
	Freeway/Expressway	1,447,450	25.22%	5	72	6.94%	3
	Arterial	1,509,812	26.31%	5	372	1.34%	3
	Collector	482,941	8.41%	2	280	0.71%	3
	Totals	5,739,601	100.00%	20	786	2.54%	-
FRANKLIN	Interstate	1,307,175	41.09%	8	30	26.67%	3
	Freeway/Expressway	-	0.00%	0	0	0.00%	-
	Arterial	1,241,754	39.04%	8	249	3.21%	3
	Collector	632,068	19.87%	4	396	1.01%	3
	Totals	3,180,997	100.00%	20	675	2.96%	-
GASCONADE	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	-	0.00%	0	0	0.00%	-
	Arterial	238,071	75.96%	15	62	24.19%	3
	Collector	75,346	24.04%	5	104	4.81%	3
	Totals	313,417	100.00%	20	166	12.05%	-
GREENE	Interstate	1,237,694	17.42%	4	26	15.38%	3
	Freeway/Expressway	2,974,292	41.85%	8	153	5.23%	3
	Arterial	2,108,457	29.67%	6	408	1.47%	3
	Collector	785,751	11.06%	2	417	0.48%	3
	Totals	7,106,194	100.00%	20	1004	1.99%	-
HOWELL	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	380,450	35.53%	7	36	19.44%	3
	Arterial	417,435	38.98%	8	131	6.11%	3
	Collector	272,904	25.49%	5	247	2.02%	3
	Totals	1,070,789	100.00%	20	414	4.83%	-
JACKSON	Interstate	6,981,412	41.95%	8	144	5.56%	3
	Freeway/Expressway	2,438,669	14.65%	3	95	3.16%	3
	Arterial	6,251,431	37.57%	8	1062	0.75%	3
	Collector	969,530	5.83%	1	441	0.23%	3
	Totals	16,641,042	100.00%	20	1742	1.15%	-
JASPER	Interstate	998,996	35.20%	7	39	17.95%	3
	Freeway/Expressway	208,614	7.35%	2	19	10.53%	3
	Arterial	1,182,463	41.66%	8	399	2.01%	3
	Collector	448,346	15.80%	3	315	0.95%	3
	Totals	2,838,419	100.00%	20	772	2.59%	-
JEFFERSON	Interstate	1,702,402	33.26%	7	22	31.82%	3
	Freeway/Expressway	1,067,661	20.86%	4	33	12.12%	3
	Arterial	1,512,097	29.54%	6	228	2.63%	3
	Collector	835,864	16.33%	3	450	0.67%	3
	Totals	5,118,024	100.00%	20	733	2.73%	-

APPENDIX D, Continued

**County VMT by Functional Road Type
2012 - 2016**

County	Functional Classification	Annual VMT	% of Annual VMT	# of Segments to Sample	Available Segments	Prob. Of Selection	Alternate Segments
JOHNSON	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	55,186	4.57%	1	6	16.67%	3
	Arterial	864,562	71.67%	14	184	7.61%	3
	Collector	286,530	23.75%	5	204	2.45%	3
	Totals	1,206,278	100.00%	20	394	5.08%	-
LAFAYETTE	Interstate	1,012,039	68.43%	14	16	87.50%	2
	Freeway/Expressway	-	0.00%	0	0	0.00%	-
	Arterial	238,818	16.15%	3	76	3.95%	3
	Collector	227,978	15.42%	3	174	1.72%	3
	Totals	1,478,835	100.00%	20	266	7.52%	-
MCDONALD	Interstate	151,309	22.74%	4	12	33.33%	3
	Freeway/Expressway	71,605	10.76%	2	2	100.00%	0
	Arterial	186,993	28.10%	6	44	13.64%	3
	Collector	255,540	38.40%	8	134	5.97%	3
	Totals	665,447	100.00%	20	192	10.42%	-
MILLER	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	361,912	44.73%	9	22	40.91%	3
	Arterial	256,481	31.70%	6	78	7.69%	3
	Collector	190,659	23.57%	5	121	4.13%	3
	Totals	809,052	100.00%	20	221	9.05%	-
PETTIS	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	-	0.00%	0	0	0.00%	-
	Arterial	734,028	73.76%	15	161	9.32%	3
	Collector	261,097	26.24%	5	224	2.23%	3
	Totals	995,125	100.00%	20	385	5.19%	-
PLATTE	Interstate	2,107,769	64.42%	13	61	21.31%	3
	Freeway/Expressway	302,957	9.26%	2	26	7.69%	3
	Arterial	643,475	19.67%	4	137	2.92%	3
	Collector	217,506	6.65%	1	150	0.67%	3
	Totals	3,271,707	100.00%	20	374	5.35%	-
SALINE	Interstate	650,540	61.89%	12	12	100.00%	0
	Freeway/Expressway	82,254	7.83%	2	12	16.67%	3
	Arterial	236,946	22.54%	4	125	3.20%	3
	Collector	81,326	7.74%	2	188	1.06%	3
	Totals	1,051,066	100.00%	20	337	5.93%	-
ST. CHARLES	Interstate	3,601,295	39.87%	8	48	16.67%	3
	Freeway/Expressway	1,533,367	16.98%	3	47	6.38%	3
	Arterial	2,454,519	27.17%	6	270	2.22%	3
	Collector	1,443,643	15.98%	3	463	0.65%	3
	Totals	9,032,824	100.00%	20	828	2.42%	-

APPENDIX D, Continued

**County VMT by Functional Road Type
2012 - 2016**

County	Functional Classification	Annual VMT	% of Annual VMT	# of Segments to Sample	Available Segments	Prob. Of Selection	Alternate Segments
ST. CLAIR	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	269,495	66.04%	13	20	65.00%	3
	Arterial	76,594	18.77%	4	62	6.45%	3
	Collector	61,993	15.19%	3	118	2.54%	3
	Totals	408,082	100.00%	20	200	10.00%	-
ST. FRANCOIS	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	656,647	51.59%	10	34	29.41%	3
	Arterial	355,608	27.94%	6	183	3.28%	3
	Collector	260,525	20.47%	4	176	2.27%	3
	Totals	1,272,780	100.00%	20	393	5.09%	-
ST. LOUIS CITY & COUNTY	Interstate	18,161,414	54.20%	11	287	3.83%	3
	Freeway/Expressway	2,083,222	6.22%	1	78	1.28%	3
	Arterial	10,327,348	30.82%	6	1491	0.40%	3
	Collector	2,934,390	8.76%	2	1386	0.14%	3
	Totals	33,506,374	100.00%	20	3242	0.62%	-
STODDARD	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	322,236	38.00%	8	24	33.33%	3
	Arterial	265,206	31.27%	6	100	6.00%	3
	Collector	260,545	30.73%	6	268	2.24%	3
	Totals	847,987	100.00%	20	392	5.10%	-
WEBSTER	Interstate	635,342	43.78%	8	8	100.00%	0
	Freeway/Expressway	450,240	31.02%	6	22	27.27%	3
	Arterial	58,480	4.03%	1	32	3.13%	3
	Collector	307,295	21.17%	5	184	2.72%	3
	Totals	1,451,357	100.00%	20	246	8.13%	-
WRIGHT	Interstate	-	0.00%	0	0	0.00%	-
	Freeway/Expressway	294,043	52.66%	11	16	68.75%	3
	Arterial	126,223	22.61%	4	42	9.52%	3
	Collector	138,072	24.73%	5	166	3.01%	3
	Totals	558,338	100.00%	20	224	8.93%	-

APPENDIX E

Statewide Seat Belt Survey

Site Summary Form

Observer: _____

County: _____

Date: _____

Time: Start _____ End _____

Road Condition: ☐ ☐ ☐ ☐

Dry Wet Fog Other: _____

Observation Point (be specific): _____

Major Distractions: _____

PLEASE COMPLETE ALL INFORMATION ABOVE THIS LINE

County		Day of the Week			
<input type="radio"/> 01-Audrain		<input type="radio"/> Sunday			
<input type="radio"/> 02-Benton		<input type="radio"/> Monday			
<input type="radio"/> 03-Buchanan	Traffic Flow	<input type="radio"/> Tuesday	<input type="radio"/> 1	<input type="radio"/> 17	
<input type="radio"/> 04-Butler	<input type="radio"/> North	<input type="radio"/> Wednesday	<input type="radio"/> 2	<input type="radio"/> 18	
<input type="radio"/> 05-Callaway	<input type="radio"/> East	<input type="radio"/> Thursday	<input type="radio"/> 3	<input type="radio"/> 19	
<input type="radio"/> 06-Christian	<input type="radio"/> South	<input type="radio"/> Friday	<input type="radio"/> 4	<input type="radio"/> 20	
<input type="radio"/> 07-Clay	<input type="radio"/> West	<input type="radio"/> Saturday	<input type="radio"/> 5	<input type="radio"/> 21	
<input type="radio"/> 08-Franklin			<input type="radio"/> 6	<input type="radio"/> 22	
<input type="radio"/> 09-Gasconade			<input type="radio"/> 7	<input type="radio"/> 23	
<input type="radio"/> 10-Greene	Road Type		<input type="radio"/> 8	<input type="radio"/> 24	
<input type="radio"/> 11-Howell	<input type="radio"/> Interstate (I)		<input type="radio"/> 9	<input type="radio"/> 25	
<input type="radio"/> 12-Jackson	<input type="radio"/> Freeway/Expressway (F/E)		<input type="radio"/> 10	<input type="radio"/> 26	
<input type="radio"/> 13-Jasper	<input type="radio"/> Arterial (A)		<input type="radio"/> 11	<input type="radio"/> 27	
<input type="radio"/> 14-Jefferson	<input type="radio"/> Collector (C)		<input type="radio"/> 12	<input type="radio"/> 28	
<input type="radio"/> 15-Johnson			<input type="radio"/> 13	<input type="radio"/> 29	
<input type="radio"/> 16-Lafayette	Start Time		<input type="radio"/> 14	<input type="radio"/> 30	
<input type="radio"/> 17-McDonald	<input type="radio"/> 7:00 AM		<input type="radio"/> 15	<input type="radio"/> 31	
<input type="radio"/> 18-Miller	<input type="radio"/> 8:00 AM	District	<input type="radio"/> 16	<input type="radio"/> 32	
<input type="radio"/> 19-Pettis	<input type="radio"/> 9:00 AM	<input type="radio"/> 01-Northwest			
<input type="radio"/> 20-Platte	<input type="radio"/> 10:00 AM	<input type="radio"/> 02-Northeast			
<input type="radio"/> 21-Saline	<input type="radio"/> 11:00 AM	<input type="radio"/> 03-Kansas City			
<input type="radio"/> 22-St. Charles	<input type="radio"/> 12:00 PM	<input type="radio"/> 04-Central	Site Type		
<input type="radio"/> 23-St. Clair	<input type="radio"/> 1:00 PM	<input type="radio"/> 05-St. Louis	<input type="radio"/> Primary		
<input type="radio"/> 24-St. Francois	<input type="radio"/> 2:00 PM	<input type="radio"/> 06-Southwest	<input type="radio"/> Alternate		
<input type="radio"/> 25-St. Louis	<input type="radio"/> 3:00 PM	<input type="radio"/> 07-Southeast			
<input type="radio"/> 26-Stoddard	<input type="radio"/> 4:00 PM				
<input type="radio"/> 27-Webster	<input type="radio"/> 5:00 PM				
<input type="radio"/> 28-Wright					

APPENDIX F

District:	County:	<input type="radio"/>	<input type="radio"/>	0	Road Segment:	<input type="radio"/>	<input type="radio"/>	0	Observer: _____
		<input type="radio"/>	<input type="radio"/>	1		<input type="radio"/>	<input type="radio"/>	1	
<input type="radio"/> 1-NW		<input type="radio"/>	<input type="radio"/>	2		<input type="radio"/>	<input type="radio"/>	2	
<input type="radio"/> 2-NE		<input type="radio"/>	<input type="radio"/>	3		<input type="radio"/>	<input type="radio"/>	3	
<input type="radio"/> 3-KC		<input type="radio"/>	<input type="radio"/>	4		<input type="radio"/>	<input type="radio"/>	4	
<input type="radio"/> 4-Central		<input type="radio"/>	<input type="radio"/>	5		<input type="radio"/>	<input type="radio"/>	5	Page: _____ of _____
<input type="radio"/> 5-St. Louis		<input type="radio"/>	<input type="radio"/>	6		<input type="radio"/>	<input type="radio"/>	6	
<input type="radio"/> 6-SW		<input type="radio"/>	<input type="radio"/>	7		<input type="radio"/>	<input type="radio"/>	7	
<input type="radio"/> 7-SE		<input type="radio"/>	<input type="radio"/>	8		<input type="radio"/>	<input type="radio"/>	8	
		<input type="radio"/>	<input type="radio"/>	9		<input type="radio"/>	<input type="radio"/>	9	

	Vehicle Type				Driver Belted			Driver Gender		Passenger Belted		
	Car	Truck	Minivan/ Van	SUV/ Crossover	Yes	No	Un- known	M	F	Yes	No	Un- known
1.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX G**Alternate Site Selection - 2018**

County	Primary Site	Alternate Site Used	Reason for Using Alternate
Christian	20	27	There was not a safe place to observe from at the primary site.
Greene	4	8	There was not a safe place to observe from at the primary site.
	16	23	There was not a safe place to observe from at the primary site.
	21	25	There was not a safe place to observe from at the primary site.
	26	32	There was not a safe place to observe from at the primary site.
Jackson	22	31	There was not a safe place to observe from at the primary site.
	23	32	There was a vehicle accident and construction.
	27	30	There was not a safe place to observe from at the primary site and construction
McDonald	16	18	The road and bridge were closed.
	29	8	*No usable data was collected* The road type of the alternate and primary site are different.
Webster	13	21	There was not a safe place to observe from at the primary site.
Wright	18	27	There was not a safe place to observe from at the primary site.