

KANSAS
Occupant Protection Observational Survey
Supplementary Analyses

2019 Summer Study

Submitted To:
Kansas Department of Transportation
Bureau of Transportation Safety and Technology

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Introduction

This report presents the results of the Kansas 2019 Occupant Protection Observational Survey conducted by DCCCA Inc. on behalf of the Kansas Department of Transportation Bureau of Transportation Safety and Technology.

This study was managed in accordance with the National Highway Traffic Safety Administration's (NHTSA) 2011 issuance of Uniform Criteria for State Observational Surveys of Seat Belt Use (23 CFR Part 1340).

Kansas produced an observed belt use rate for drivers and outboard passengers of 84.97% in 2019. This represents less than a one-point increase over 2018 study results.

The state-wide estimate of safety belt use is based on the observation of 56,908 vehicles and 70,376 drivers and front-outboard passengers. The 2019 standard error rate was .78 percent, meeting the NHTSA-required standard error rate of 2.5 percent or less.

Kansas ranks 44th in belt use among the 50 states and the District of Columbia based on the most recent NHTSA National Occupant Protection Use Survey results released in 2018.

Year	Kansas Rate	National Rate
2014	86%	87%
2015	82%	88%
2016	87%	90%
2017	82%	90%
2018	84%	90%
2019	85%	

Source: 2018 Kansas Occupant Protection Observational Survey
National Occupant Protection Use Survey, National Highway Traffic
Safety Administration, National Center Statistics and Analysis.

Study Overview

The 2019 Kansas Occupant Protection Observational Survey is comprised of observations at 552 sites across 26 counties. The 26 counties were chosen from a sampling frame made up of the 66 counties accounting for 85 percent of Kansas motor vehicle crash-related fatalities from 2010-2014.

Using a road segment file provided by NHTSA containing 2015 TIGER data developed by the U.S. Census Bureau, road segments were stratified into three distinct road types: 1) Primary Roads, 2) Secondary Roads, and 3) Local Roads. Based on this stratification, a systematic probability proportional to size (PPS) sample was utilized to select road segments used as observation sites.

Code	Name	Definition
S1100	Primary Road	Primary roads are generally divided, limited-access highways within the interstate highway system or under state management, and are distinguished by the presence of interchanges. These highways are accessible by ramps and may include some toll highways.
S1200	Secondary Road	Secondary roads are main arteries, usually in the U.S. Highway, State Highway or County Highway system. These roads have one or more lanes of traffic in each direction, may or may not be divided, and usually have at-grade intersections with many other roads and driveways. They often have both a local name and a route number.
S1400	Local Neighborhood Road, Rural Road, City Street	These are generally paved non-arterial streets, roads, or byways that usually have a single lane of traffic in each direction. Roads in this feature class may be privately or publicly maintained. Scenic park roads would be included in this feature class, as would (depending on the region of the country) some unpaved roads.

The Kansas Occupant Protection Observational Survey has complied with the Uniform Criteria for State Observational Surveys of Seat Belt Use since 2002, with a survey redesign in 2012 and required resample occurring in 2016. The site sample used in 2019 was approved by NHTSA in 2016.

Observations were conducted by thirteen qualified individuals who were provided training in observational methods, quality, safety standards, and the requirements of this study and sample. The observational data collection period of the study was between June 3, 2019, and July 24, 2019. Observer training exceeded the standards required by NHTSA under federal guidelines.

Changes in Survey Method

The trend data presented in this report includes three distinct research designs and site samples. Because of these changes, year to year data comparisons should be made cautiously.

Survey Information Prior to 2012:

- Complied with all NHTSA requirements
- Study counties and sites were selected based on state population
- Conducted in 20 counties
- Comprised of 548 sites
- Used a sample of 10 road types collapsed into six road groups from the Kansas roads database
- Used a different method for data analysis

Survey Information 2012 to 2016:

- Complied with NHTSA Uniform Criteria for State Observational Surveys of Seat Belt Use survey design requirements
- Study counties and sites were selected based on number of motor vehicle fatalities
- Conducted in 35 counties
- Comprised of 544 sites

- Used TIGER 2010 data and standardized MTFCC road types

Code	Name	Site Count
S1100	Primary Road	154
S1200	Secondary Road	279
S1400	Local Neighborhood Road, Rural Road, City Street	109

Survey Information 2017 - Present:

- Complied with Uniform Criteria for State Observational Surveys of Seat Belt Use 5-year site resample requirement
- Study counties and sites were selected based on the number of motor vehicle fatalities
- Conducted in 26 counties
- Comprised of 552 sites
- Used TIGER 2015 data and standardized MTFCC road types

Code	Name	Site Count
S1100	Primary Road	136
S1200	Secondary Road	208
S1400	Local Neighborhood Road, Rural Road, City Street	208

Results before 2012 continue to be included in this report to illustrate the increase in belt use since 1999. Even with the non-comparability of the new survey method introduced in 2012 and the inclusion of new sample sites in 2017, it is clear that there has been a substantial increase in belt use since the late 1990's.

Results

Primary and Supplementary Results

The primary analysis required by the NHTSA-approved safety belt method, as defined in the new Uniform Criteria for State Observational Surveys of Seat Belt Use, involves establishing a state-wide estimate of safety belt use for drivers and front-outboard passengers while meeting a standard error rate of 2.5 percent or less.

The 2019 Kansas state-wide estimate is 84.97%.

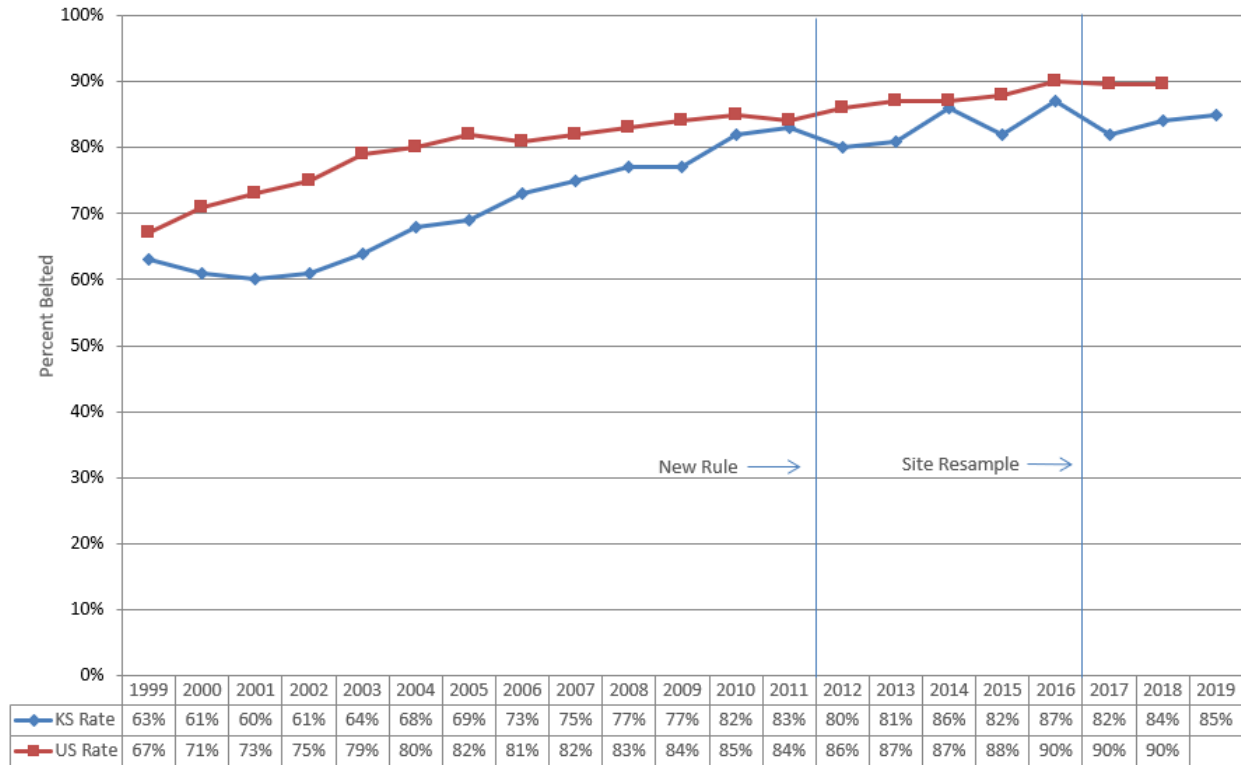
The 2019 Kansas survey produced a standard error rate of .78%.

Overall Weighted Statewide Safety Belt Trends

In 2019, Kansas produced an observed belt use rate for drivers and outboard passengers of 84.97%.

2019 results are the third using the 2016 site resample which increased the number of rural counties and local roads observed.

Kansas and National Safety Belt Use Rate
1999-2019



Unweighted Belt Use Rates and Other Results

While the official belt use rate when corrected for over and underreporting by county and road type/segment length is about 85%, the raw, unweighted belt use rate is about 86%. The weights used in the state-wide estimate use road segment length as the basis for calculating the probabilities of selection and subsequent weights.

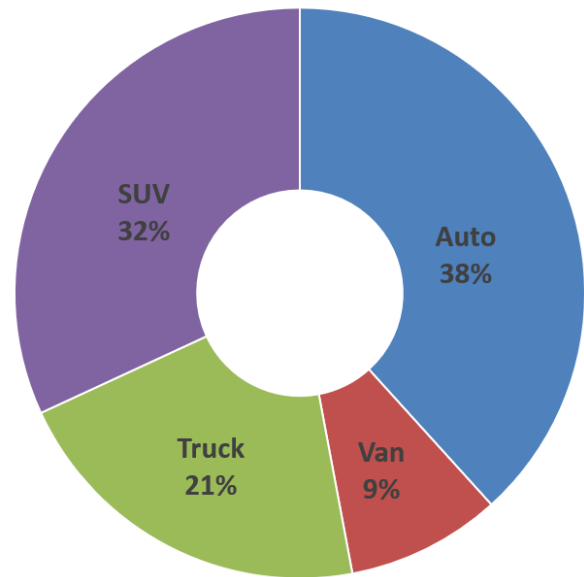
The following comparisons are calculated using raw, unweighted data, treating all counties and sites as one pool. This is a valid means of comparing relative differences between groups but may not reflect population estimates. The following results use unweighted data unless otherwise indicated.

Vehicle Type Represented in 2019 Survey

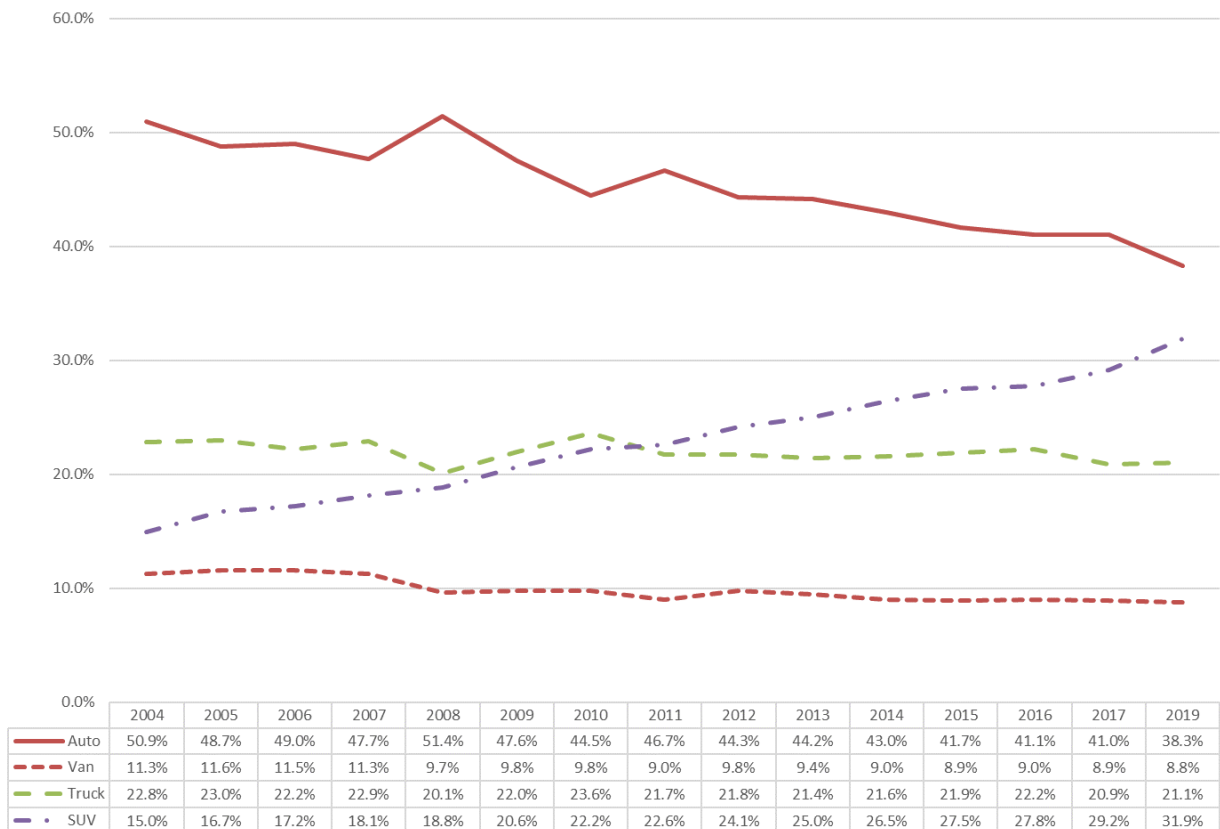
Of the four vehicle types represented in the survey, automobiles are the most observed. Cars comprise about 38% of all observed vehicles, followed by SUV's (32%), trucks (21%), and vans (9%).

Automobiles have consistently been the largest single observed vehicle type. However, since 2002, occupants have been shifting away from automobiles and vans, into SUV's. That trend continues in 2019.

Vehicle Types Represented



Vehicle Types Represented 2002-2019

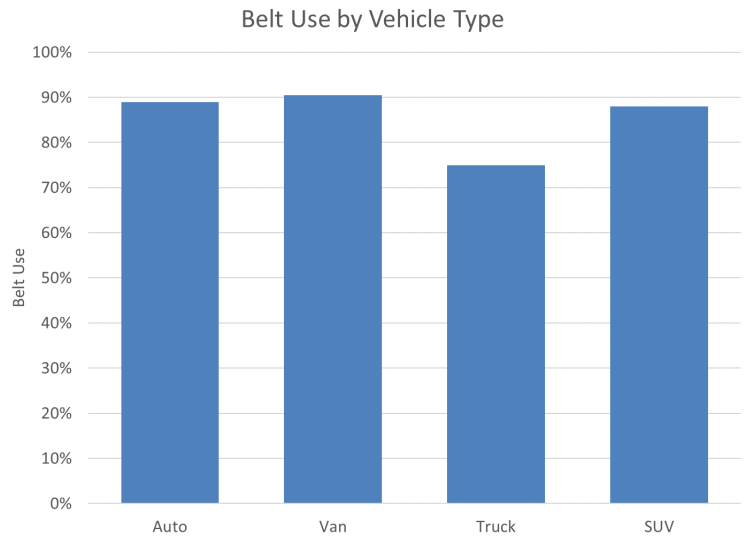


Belt Use by Vehicle Type

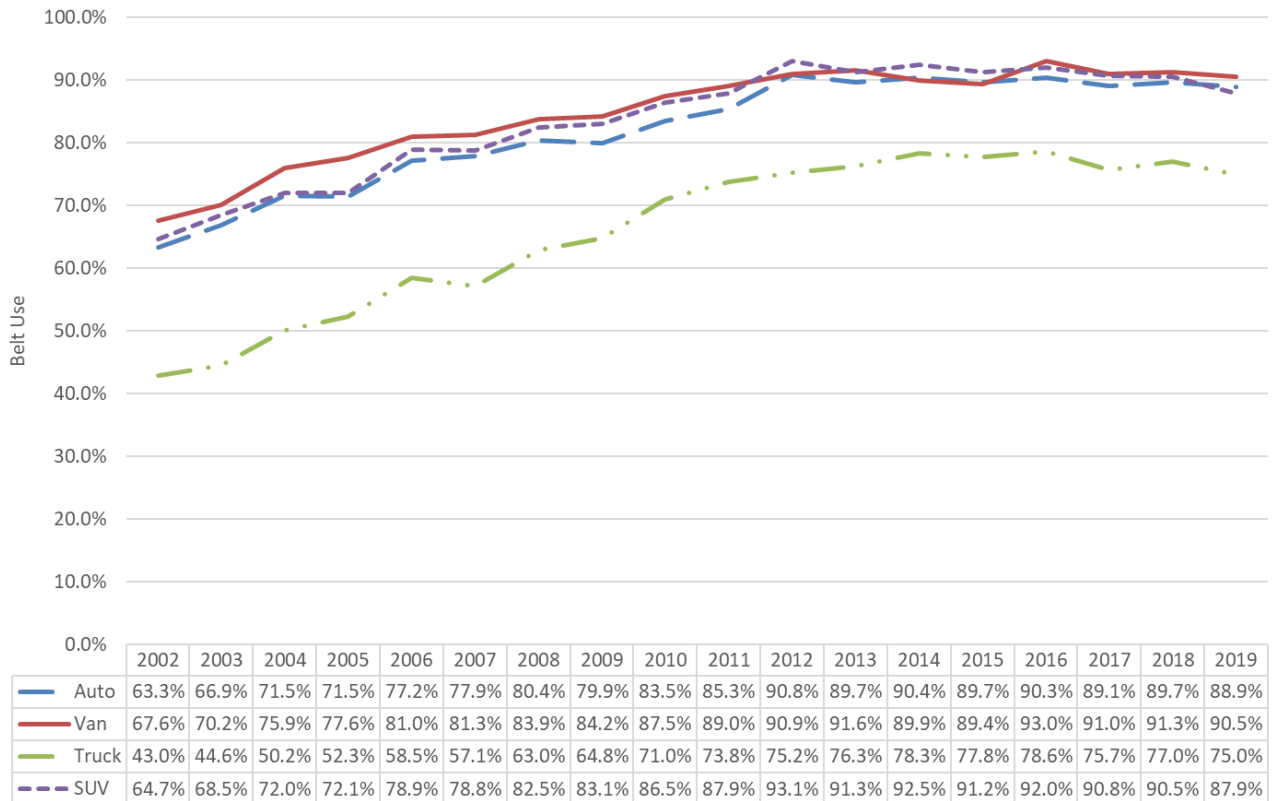
Those in vans use their belts at the highest rate (90%), followed by automobiles (89%), SUV's (88%) and distantly followed by trucks (75%).

Belt use in trucks has consistently been observed to be between twelve to fifteen percentage points lower than the other vehicle types.

Belt use rates among all vehicle types have increased since 2002. Between 2002 and 2019, belt use in trucks has increased the most (32%), followed by automobiles (26%), SUV's (23%), and vans (23%).



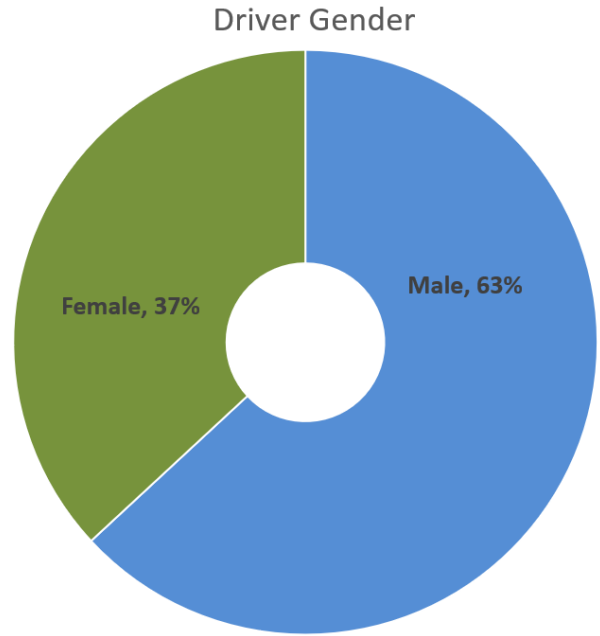
Belt Use by Vehicle Type Driver and Front Outboard Passengers



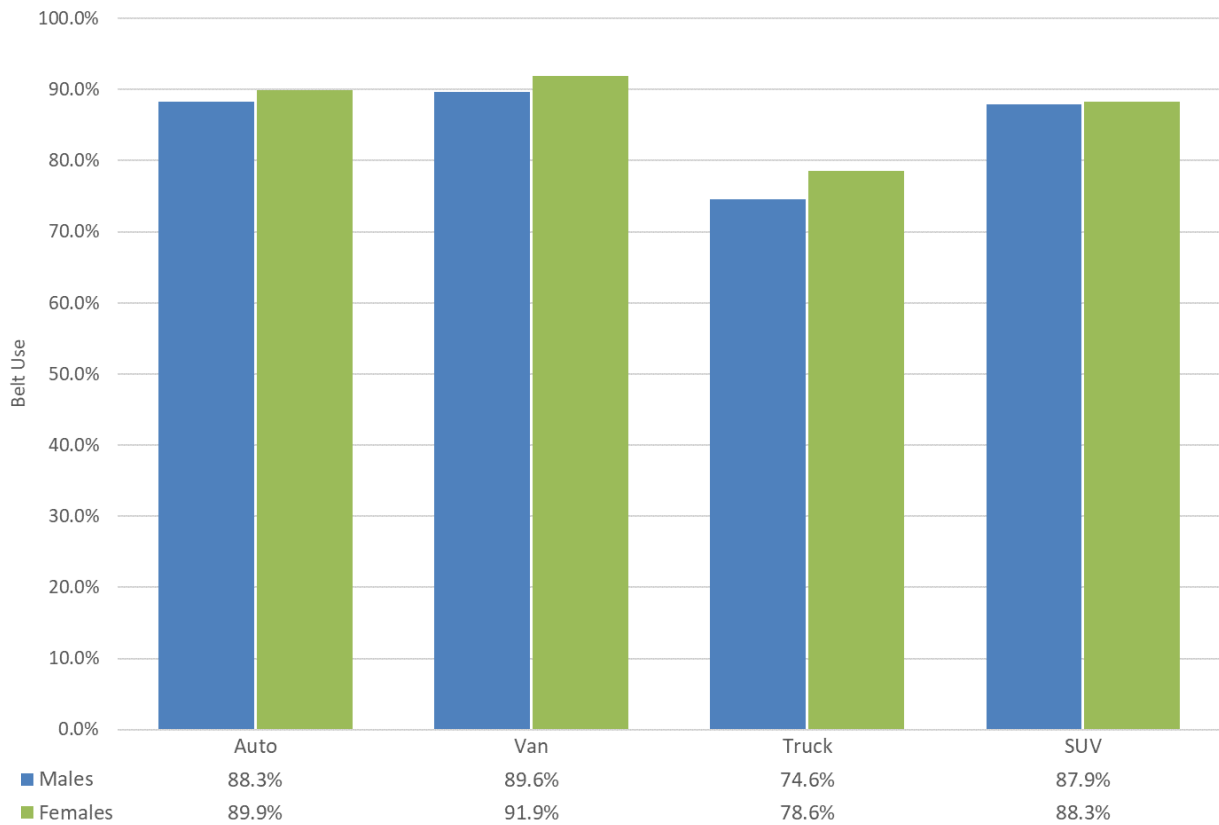
Driver Gender

Men were observed driving in about 63% of observed vehicles while women were drivers in about 37% of vehicles.

For all vehicle types, occupants in vehicles driven by women consistently use their belts at a higher rate. The differences are most significant in trucks, where the belt use rate between vehicles driven by men as compared to women differs by 4 percentage points.



Belt Use by Vehicle and by Gender of Driver

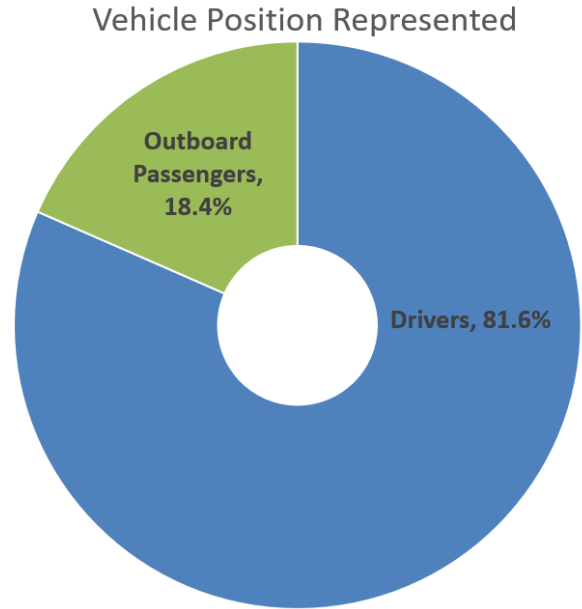


Belt Rates by Vehicle Position

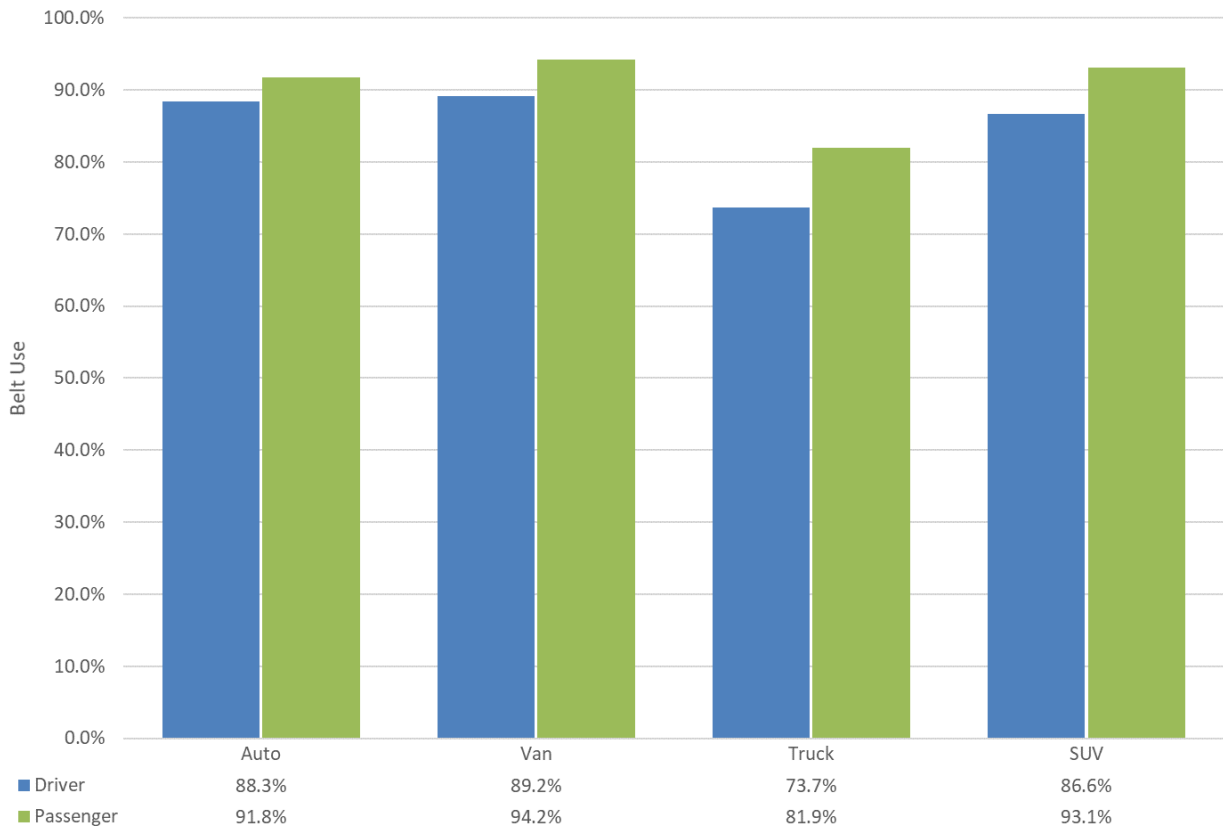
Most individuals observed in the survey were vehicle drivers (81.6%) while outbound passengers represented a slightly under one-fifth of all observations (18.4%).

Front-outboard passengers displayed a higher belt use rate across all vehicle types. The average, unweighted, belt use of drivers ($n=56,483$) was 85% while the average, unweighted, belt use of outboard passengers ($n=12,767$) was 91%.

Observations in which the data collector selected 'Belted? Can't Tell' were excluded from calculations.

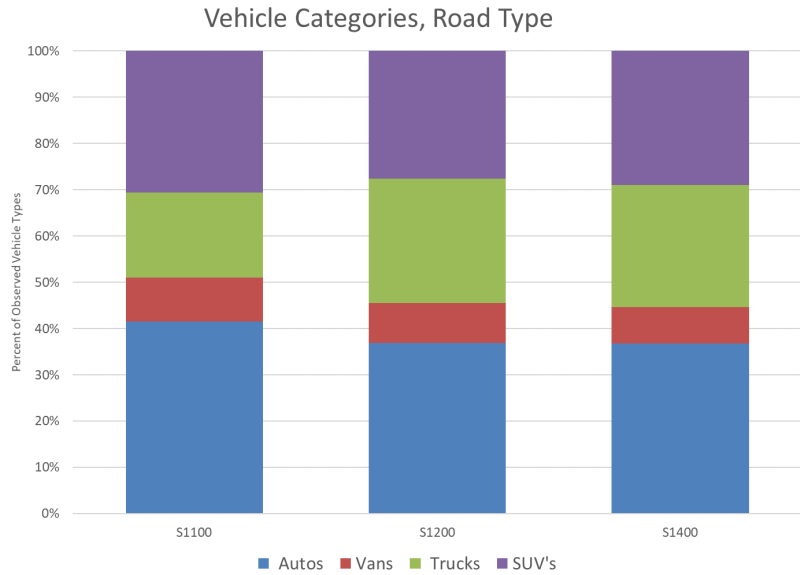


Belt Use by Vehicle Type, Position

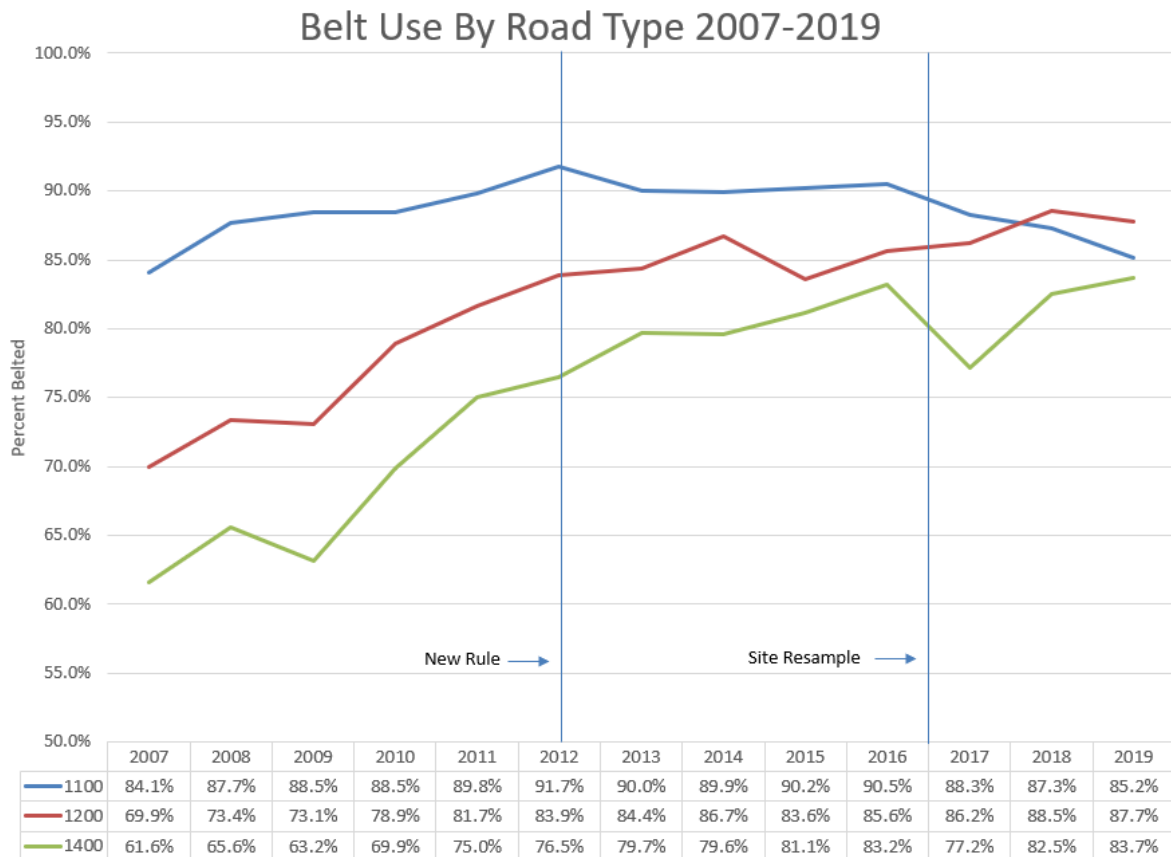


Belt Rates by Road Type

Of the three road types observed, drivers and outbound passengers were belted at the highest percentage while driving on secondary roads such as US, state or county highways (Road Type 1200, 87.7%), followed by primary roads such as interstates/limited-access highways (Road Type 1100, 85.2%), and local roads (Road Type 1400, 83.7%).



This is the second year since 2007 that belt use was shown to be higher on secondary roads than primary roads/interstates. This year's survey continues a 5 point decline in belt use on primary roads/interstates and a 6 point increase in belt use on local roads.



Truck Belt Use Rate

Belt use among truck drivers has historically been lower than drivers of other vehicle types.

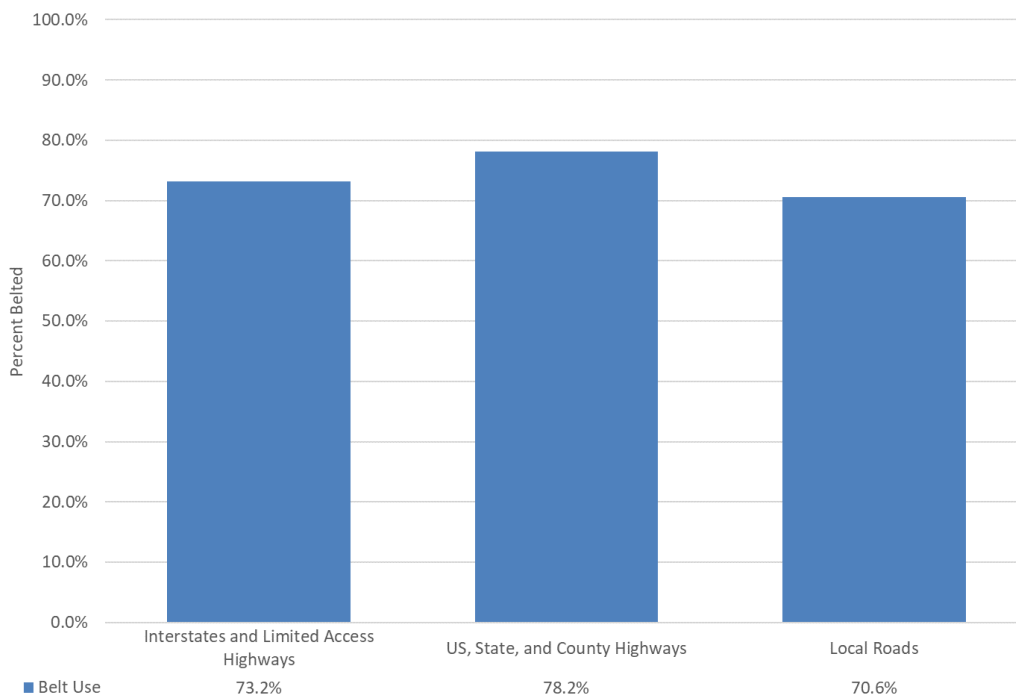
In 2019, belt use rate for trucks on interstates and limited access highways matched overall trends and declined to about 73%. On US, State, and County Highways truck belt use remained relatively stable at nearly 78%. Observed truck belt use on local roads dropped slightly to 71%.

County-specific results for unweighted belt use, trucks only, are presented both alphabetically and ranked most belted to least belted

Trucks Only, 2019, Belt Use by County, (Unweighted)

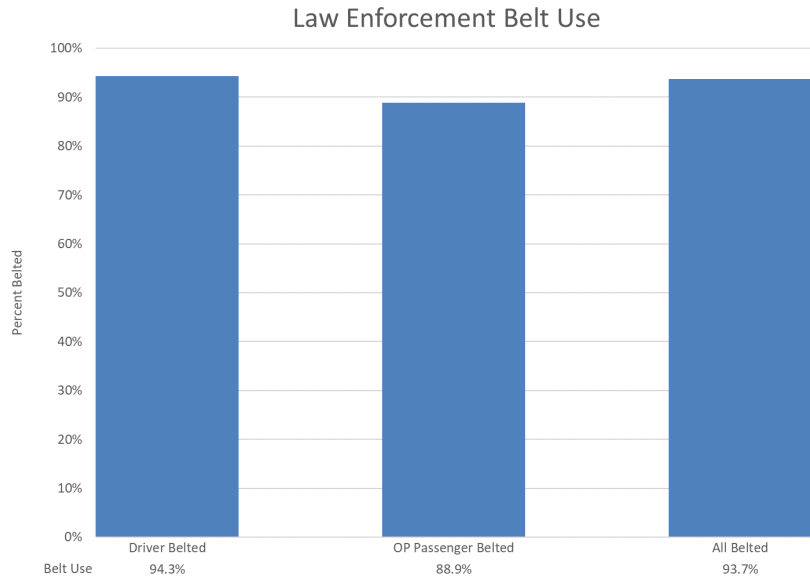
Alphabetical		<i>n=14,655</i>	Ranked	
County	% Belted		County	% Belted
Atchison	75.48%		Haskell	95.73%
Butler	53.58%		Shawnee	93.79%
Coffey	59.58%		Douglas	93.23%
Cowley	89.36%		Johnson	92.51%
Crawford	77.78%		Reno	90.66%
Chase	52.56%		Cowley	89.36%
Douglas	93.23%		Leavenworth	87.15%
Ellsworth	84.82%		Labette	86.21%
Franklin	77.76%		Seward	85.35%
Gove	80.46%		Ellsworth	84.82%
Haskell	95.73%		Wyandotte	83.67%
Harvey	75.65%		Sedgwick	81.18%
Jefferson	79.20%		Gove	80.46%
Johnson	92.51%		Jefferson	79.20%
Labette	86.21%		Crawford	77.78%
Leavenworth	87.15%		Franklin	77.76%
Lyon	48.68%		Saline	77.50%
Montgomery	61.05%		Harvey	75.65%
Riley	67.95%		Atchison	75.48%
Reno	90.66%		Riley	67.95%
Saline	77.50%		Montgomery	61.05%
Sedgwick	81.18%		Coffey	59.58%
Shawnee	93.79%		Wabaunsee	53.72%
Seward	85.35%		Butler	53.58%
Wabaunsee	53.72%		Chase	52.56%
Wyandotte	83.67%		Lyon	48.68%

Trucks Only Belt Use, Road Type



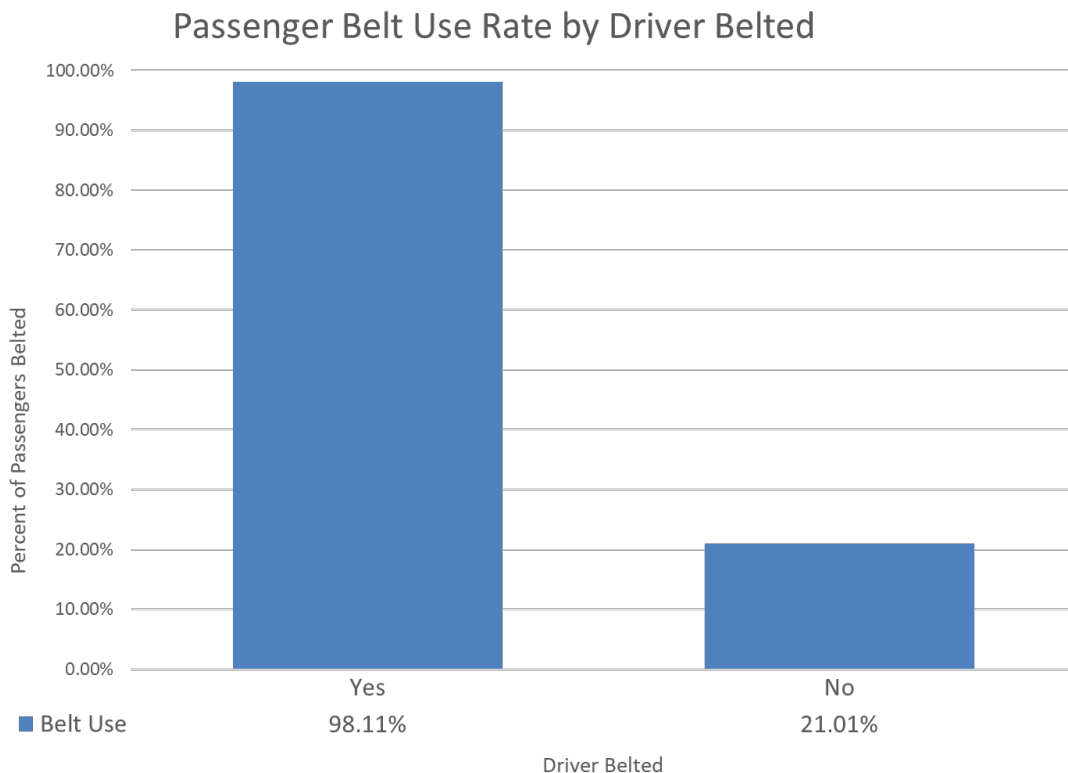
Law Enforcement Belt Use Rate

Overall, drivers and front, outboard passengers in law enforcement vehicles yielded a belt use rate of about 94%. Belt use for drivers was 94.3%, while the belt use rate for front, outboard passengers was 88.9%. There were 159 individuals observed in identifiable law enforcement vehicles – 141 drivers and 18 passengers.



Passenger Restraint Rate If Driver Is Belted

If the driver of a vehicle is belted, passengers in that vehicle are much more likely to also be belted. About 98% of the front-outboard passengers were observed to be belted in cases where the driver was belted. If the driver was not belted, only about 20% of the front-outboard passengers were belted.

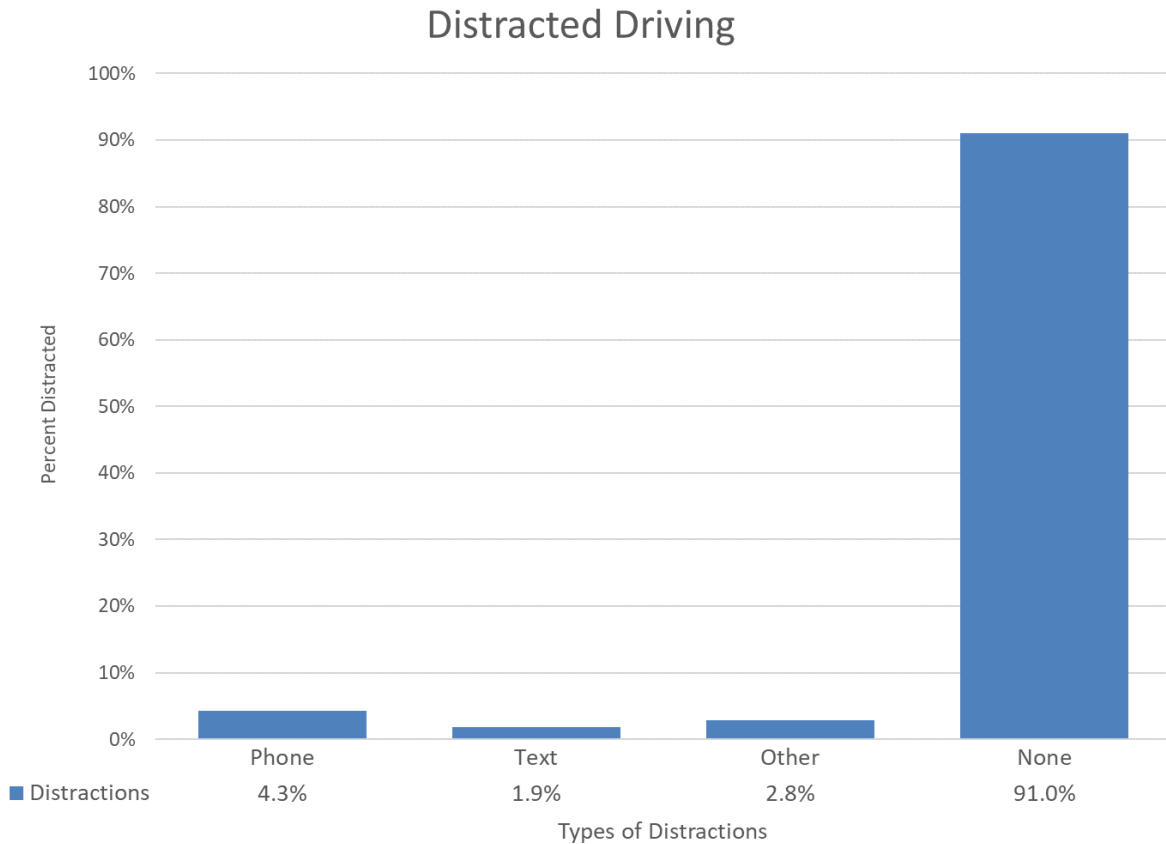
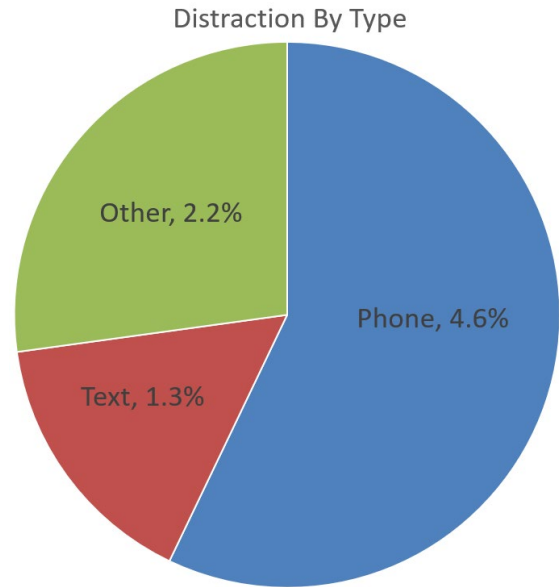


Distracted Driving

Percent of Distracted Drivers

Overall, about 8% of drivers were observed to be driving with an observed distraction. 4.6% of drivers were observed using a phone, while about 1.3% were observed texting. Another 2.2% were observed with “Other Distractions” (eating, operating the radio/audio device, looking for something on or under the seat, etc.).

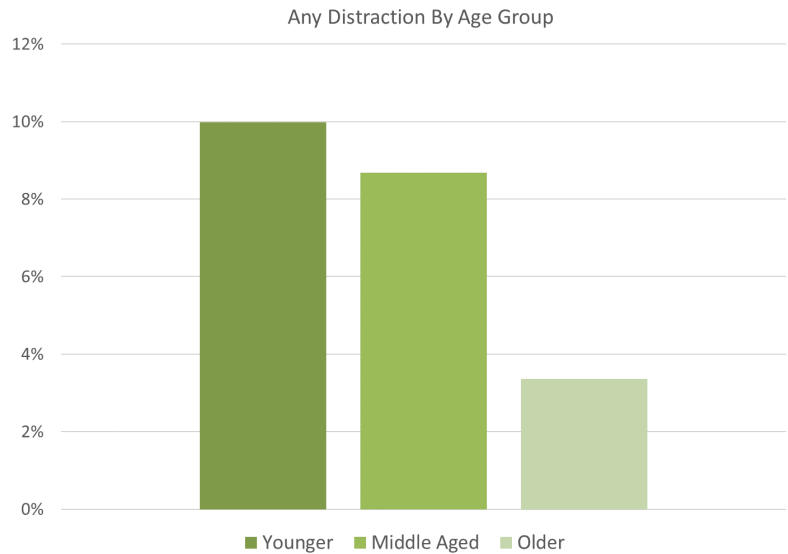
While observed distractions dropped 1 percentage-point over 2018, overall levels of observed distractions have remained relatively consistent the last three years.



Distracted Drivers by Age Group

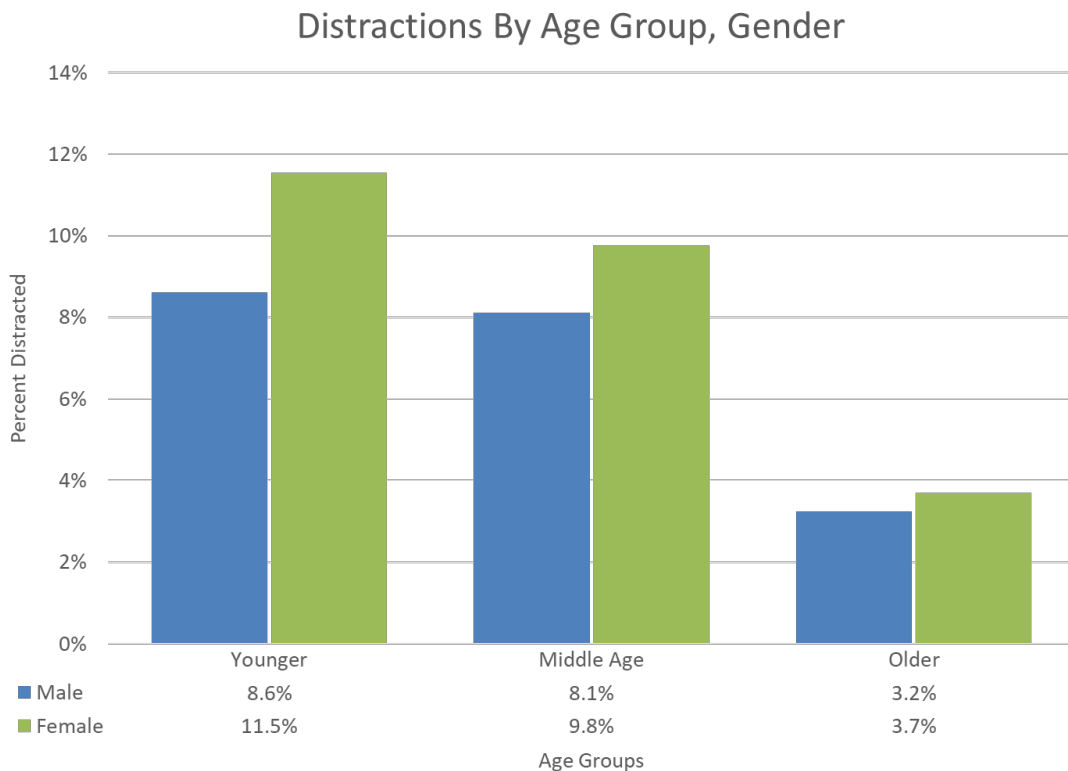
When examining any distraction by age group, younger aged drivers are the most distracted (about 10%), followed closely by middle-aged drivers (about 8.5%). Older drivers are much less distracted than other age groups (about 3.5%).

Distractions among younger and middle-aged drivers have dropped slightly while distraction among older drivers have slightly increased.



Distracted Drivers by Age Group and Gender

Female drivers continue to be observed to be driving while distracted at a higher percent than male drivers across all age groups. Younger aged, female drivers were more often observed to be distracted (11.5%) followed by middle-aged, female drivers (9.8%)



Belt Use by County

The table below includes belt use results, by county, for all vehicles, drivers and front-outboard passengers. The results are ranked from highest belt use rate to lowest belt use rate.

Results are weighted by road type proportions as measured by daily vehicle miles traveled calculated by the Kansas Department of Transportation.

Belt Use Rates, Ranked by Percent Belted - 2019				
County	S1100	S1200	S1400	*Percent Belted
Haskell		97.3%	95.2%	96.9%
Reno		95.2%	95.4%	95.2%
Shawnee	97.8%	95.9%	84.0%	95.2%
Douglas	98.5%	94.3%	87.5%	94.5%
Johnson	96.7%	94.1%	90.8%	94.3%
Cowley		92.2%	98.2%	93.4%
Labette		94.6%	81.8%	92.6%
Wyandotte	96.6%	90.3%	77.6%	92.5%
Gove	95.2%	68.2%	85.7%	91.7%
Seward		91.0%	93.5%	91.5%
Leavenworth	93.6%	89.5%	87.2%	90.3%
Sedgwick	91.2%	90.9%	82.3%	89.4%
Ellsworth	91.2%	87.4%	80.5%	88.9%
Jefferson		88.2%	82.5%	87.3%
Saline	91.1%	85.4%	79.3%	87.3%
Franklin	94.5%	86.2%	50.0%	87.2%
Crawford		88.3%	78.1%	86.3%
Riley	95.2%	88.7%	82.7%	85.4%
Harvey	87.5%	87.1%	71.6%	85.3%
Atchison		82.4%	84.0%	82.7%
Montgomery		82.5%	69.7%	80.4%
Coffey	65.8%	91.1%	75.4%	80.2%
Wabaunsee	73.5%	72.7%	66.7%	73.1%
Butler	75.5%	68.9%	54.8%	69.4%
Chase	71.2%	64.9%	57.9%	68.7%
Lyon	70.5%	51.7%	44.0%	61.2%
*Weighted by road type as measured by DVMT				

County Belt Use – S1200 Roads

S1200 roads (US, state, and county highways with at-grade intersections) are observed in all 26 counties included in the current sample, as well as in the previous study sample. Focusing on a road type present across all counties allows for a more specific trend comparison across survey years.

Yearly Belt Use Rates, S1200 Road Type			
2019 Belt Use Rate, Alphabetical by County			
County	2017	2018	2019
Atchison	78.2%	78.1%	82.4%
Butler	84.5%	81.5%	68.9%
Chase	71.4%	68.6%	64.9%
Coffey	91.2%	89.7%	91.1%
Cowley	89.3%	86.9%	92.2%
Crawford	74.0%	71.8%	88.3%
Douglas	87.6%	95.7%	94.3%
Ellsworth	82.1%	90.4%	87.4%
Franklin	84.3%	87.2%	86.2%
Gove	56.6%	61.7%	68.2%
Harvey	87.5%	89.1%	87.1%
Haskell	81.7%	92.9%	97.3%
Jefferson	86.1%	85.1%	88.2%
Johnson	94.4%	96.4%	94.1%
Labette	79.0%	84.3%	94.6%
Leavenworth	89.8%	89.6%	89.5%
Lyon	79.5%	83.0%	51.7%
Montgomery	67.8%	71.2%	82.5%
Reno	94.8%	93.4%	95.2%
Riley	84.4%	90.7%	88.7%
Saline	86.8%	84.9%	85.4%
Sedgwick	85.9%	90.3%	90.9%
Seward	85.9%	94.4%	91.0%
Shawnee	88.9%	91.5%	95.9%
Wabaunsee	77.7%	75.1%	72.7%
Wyandotte	80.4%	90.8%	90.3%

Yearly Belt Use Rates, S1200 Road Type			
2019 Belt Use Rate, Descending			
County	2017	2018	2019
Haskell	81.7%	92.9%	97.3%
Shawnee	88.9%	91.5%	95.9%
Reno	94.8%	93.4%	95.2%
Labette	79.0%	84.3%	94.6%
Douglas	87.6%	95.7%	94.3%
Johnson	94.4%	96.4%	94.1%
Cowley	89.3%	86.9%	92.2%
Coffey	91.2%	89.7%	91.1%
Seward	85.9%	94.4%	91.0%
Sedgwick	85.9%	90.3%	90.9%
Wyandotte	80.4%	90.8%	90.3%
Leavenworth	89.8%	89.6%	89.5%
Riley	84.4%	90.7%	88.7%
Crawford	74.0%	71.8%	88.3%
Jefferson	86.1%	85.1%	88.2%
Ellsworth	82.1%	90.4%	87.4%
Harvey	87.5%	89.1%	87.1%
Franklin	84.3%	87.2%	86.2%
Saline	86.8%	84.9%	85.4%
Montgomery	67.8%	71.2%	82.5%
Atchison	78.2%	78.1%	82.4%
Wabaunsee	77.7%	75.1%	72.7%
Butler	84.5%	81.5%	68.9%
Gove	56.6%	61.7%	68.2%
Chase	71.4%	68.6%	64.9%
Lyon	79.5%	83.0%	51.7%

County Belt Use – S1200 Rolling Average

Findings from the last three surveys are averaged together to yield more stable county-level results. Counties new to the 2017 sample are included, but the averages only include findings from 2017 and 2018.

Belt Use Rates, S1200 Road Type Rolling Average			
County	Three-Year Average (2015 - 2017)	Three-Year Average (2016 - 2018)	Three-Year Average (2017 - 2019)
Johnson	89.9%	95.7%	95.0%
Reno	88.3%	91.6%	94.5%
Douglas	90.9%	90.6%	92.5%
Shawnee	85.9%	90.5%	92.1%
Coffey	91.2%	90.5%	90.7%
Haskell	81.7%	87.3%	90.7%
Seward	91.9%	91.3%	90.4%
Leavenworth	87.3%	88.2%	89.6%
Cowley	88.2%	88.5%	89.5%
Sedgwick	87.7%	86.3%	89.0%
Riley	86.0%	88.7%	87.9%
Harvey	83.2%	85.3%	87.9%
Wyandotte	81.3%	85.3%	87.2%
Ellsworth	82.1%	86.2%	86.6%
Jefferson	82.9%	84.0%	86.5%
Labette	71.6%	74.8%	86.0%
Franklin	87.7%	87.2%	85.9%
Saline	84.6%	84.0%	85.7%
Atchison	75.4%	76.7%	79.5%
Butler	85.8%	83.4%	78.3%
Crawford	75.5%	76.7%	78.0%
Wabaunsee	77.7%	76.4%	75.1%
Montgomery	80.5%	75.4%	73.8%
Lyon	75.4%	79.3%	71.4%
Chase	75.9%	73.9%	68.3%
Gove	56.6%	59.1%	62.2%

Safety Belt Use by County
S1200 Road Type Rolling Multi Year Average
2017 - 2019

