

KANSAS
Occupant Protection Observational Survey
Supplementary Analyses

2020 Summer Study

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

Prepared by:
DCCCA
3312 Clinton Parkway
Lawrence, KS 66047

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Introduction

This report presents the results of the Kansas 2020 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 85% in 2020. This represents no substantial change over 2019 study results.

The state-wide estimate of safety belt use is based on the observation of 45,928 vehicles and 57,749 drivers and front-outboard passengers. The 2020 standard error rate was 1.3 percent, meeting the NHTSA-required standard error rate of 2.5 percent or less.

Kansas ranks 42nd 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 2019.

Year	Kansas Rate	National Rate
2016	87%	90%
2017	82%	90%
2018	84%	90%
2019	85%	91%
2020	85%	

Source: 2019 Kansas Occupant Protection Observational Survey
National Occupant Protection Use Survey, National Highway Traffic
Safety Administration, National Center Statistics and Analysis.

Study Overview

The 2020 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 2020 was approved by NHTSA in 2016.

Observations were conducted by eleven 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 May 19, 2020, and August 24, 2020. 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.

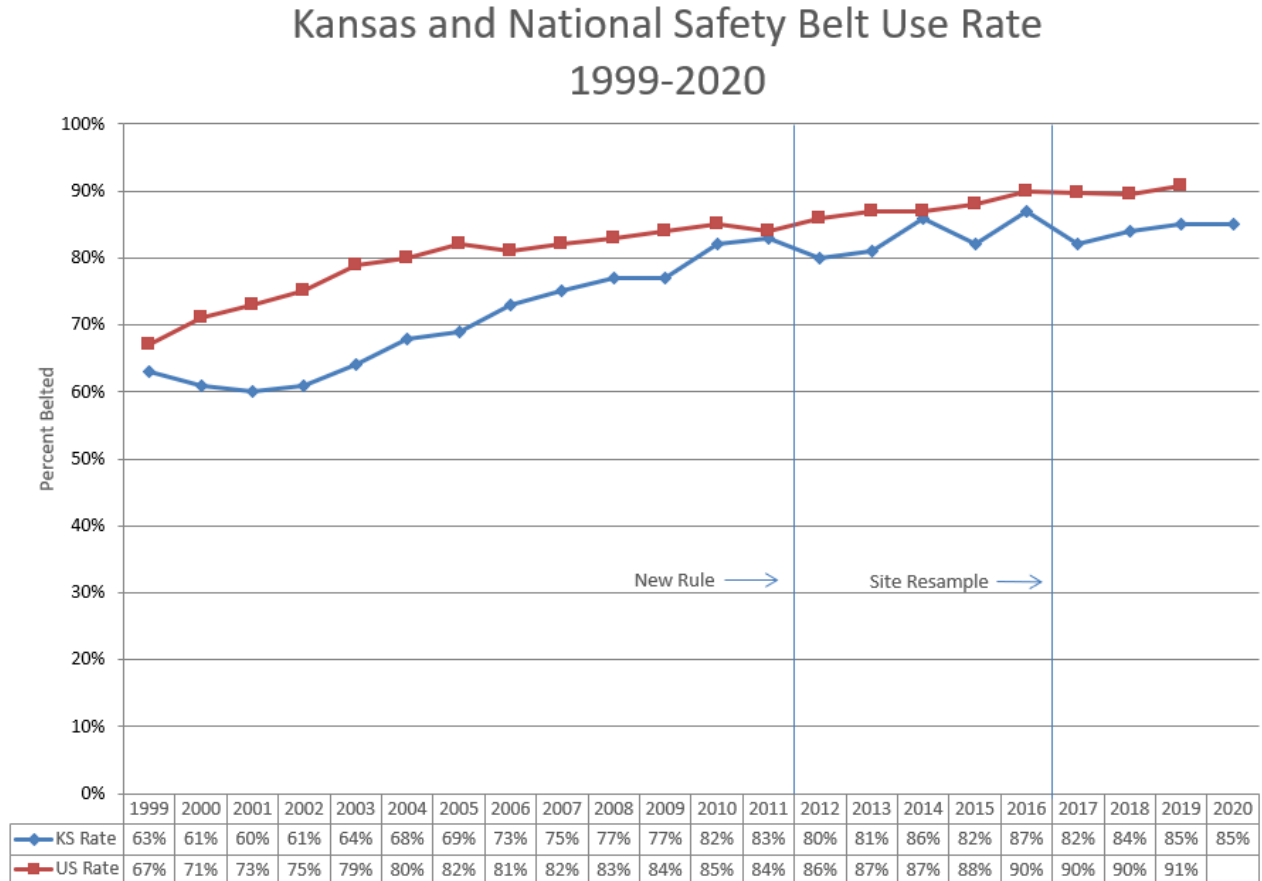
The 2020 Kansas state-wide estimate is 85%.

The 2020 Kansas survey produced a standard error rate of 1.3%.

Overall Weighted Statewide Safety Belt Trends

In 2020, Kansas produced an observed belt use rate for drivers and outboard passengers of 85%.

2020 results are the third using the 2017 site resample which increased the number of rural counties and local roads observed.



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 89%. The weights used in the state-wide estimate use road segment length as the basis for calculating the probabilities of selection and subsequent weights.

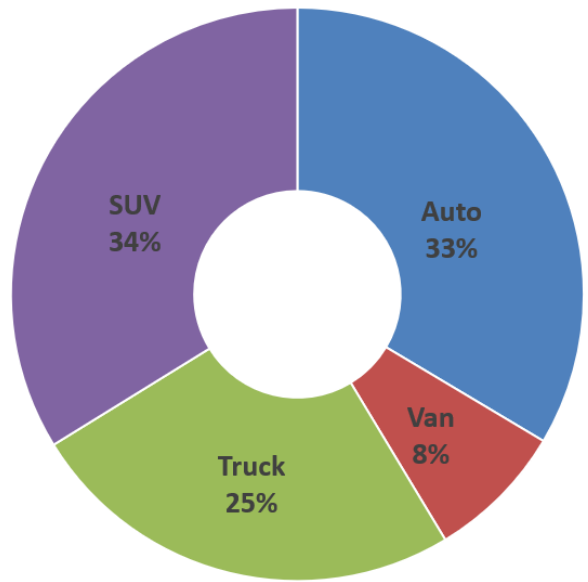
The following comparisons are calculated using raw, unweighted data, treating all counties and sites as one pool. This is a valid means of comparing relative differences between groups but may not reflect population estimates. The following results use unweighted data unless otherwise indicated.

Vehicle Type Represented in 2020 Survey

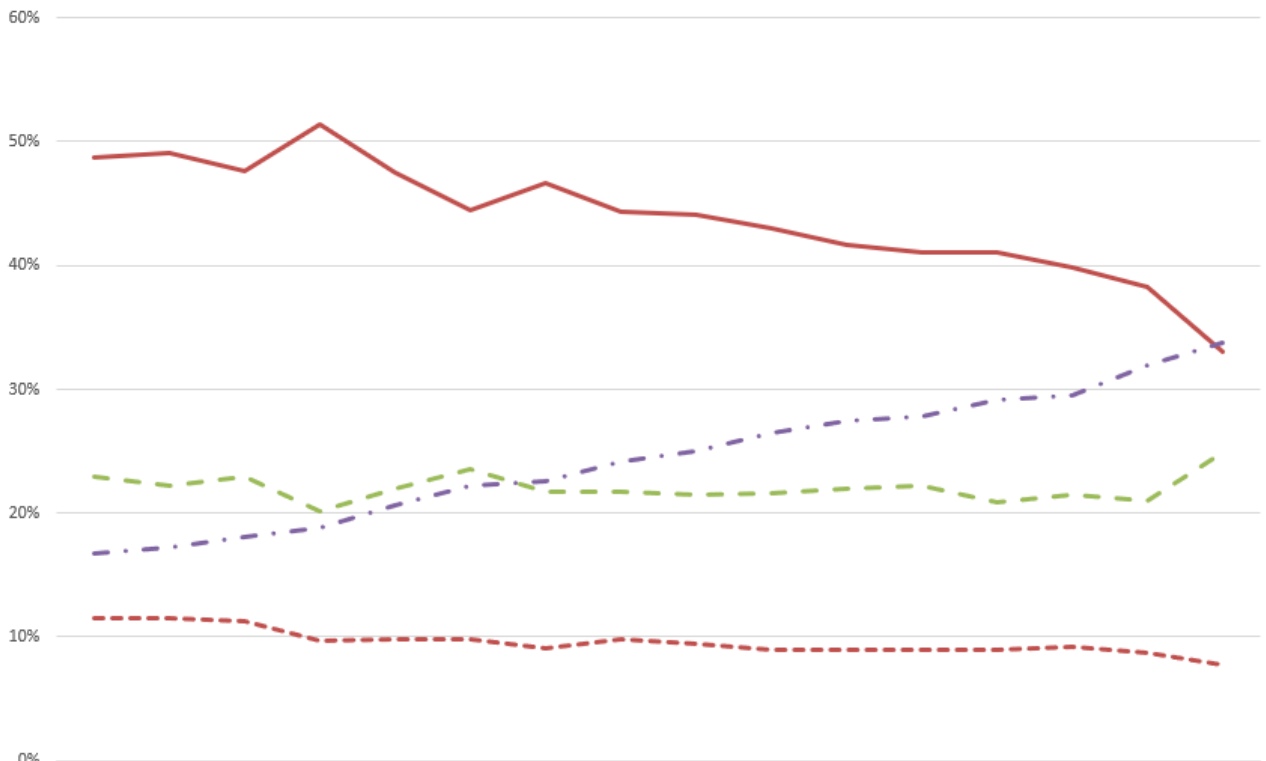
Of the four vehicle types represented in the survey, SUV's are the most commonly observed. SUV's comprise about 34% of all observed vehicles, followed by cars (33%), trucks (25%), and vans (8%).

Occupants have been shifting away from automobiles and vans, and into SUV's since 2002. This is the first year since 2002 where more SUV's are the most observed vehicle type.

Vehicle Types Represented



Vehicle Types Represented 2002-2020



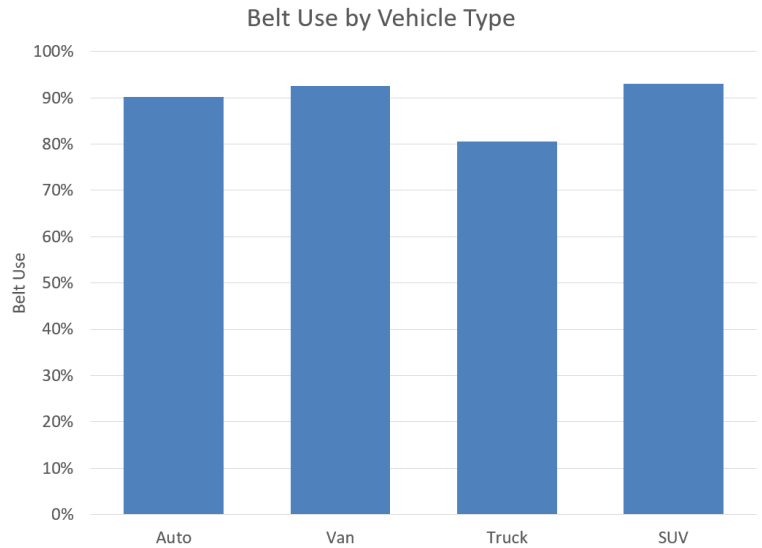
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Auto	49%	49%	48%	51%	48%	44%	47%	44%	44%	43%	42%	41%	41%	40%	38%	33%
Van	12%	12%	11%	10%	10%	10%	9%	10%	9%	9%	9%	9%	9%	9%	9%	8%
Truck	23%	22%	23%	20%	22%	24%	22%	22%	21%	22%	22%	22%	21%	22%	21%	25%
SUV	17%	17%	18%	19%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%	32%	34%

Belt Use by Vehicle Type

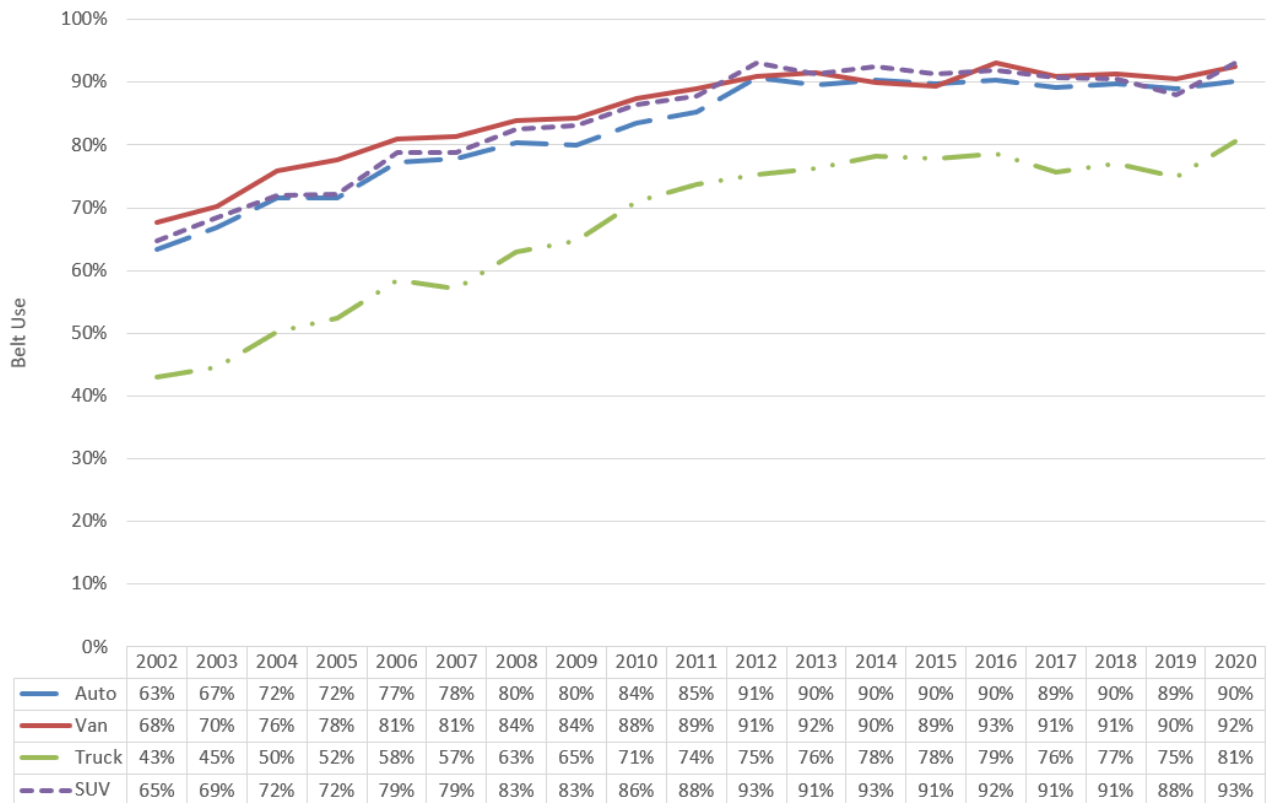
Those in SUV's use their belts at the highest rate (93%), followed by vans (92%), automobiles (90%), and distantly followed by trucks (80%).

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

Belt use rates among all vehicle types have increased since 2002. Between 2002 and 2020, belt use in trucks has increased the most (37%), followed by SUV's (28%), automobiles (27%) and vans (27%).



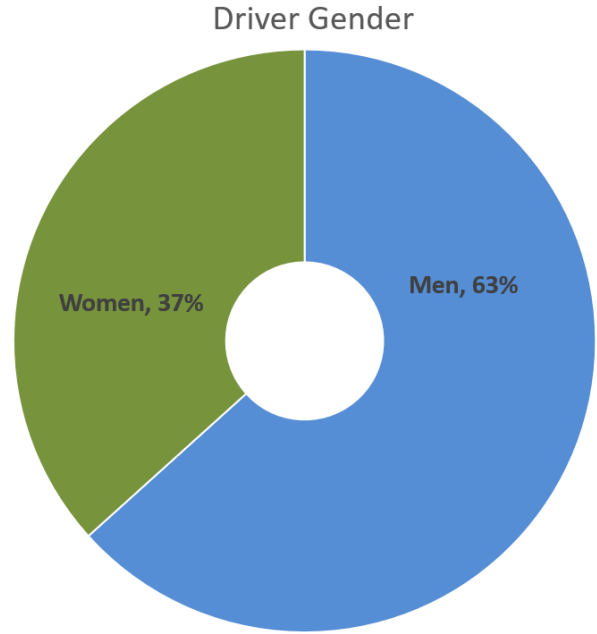
Belt Use by Vehicle Type Driver and Front Outboard Passengers



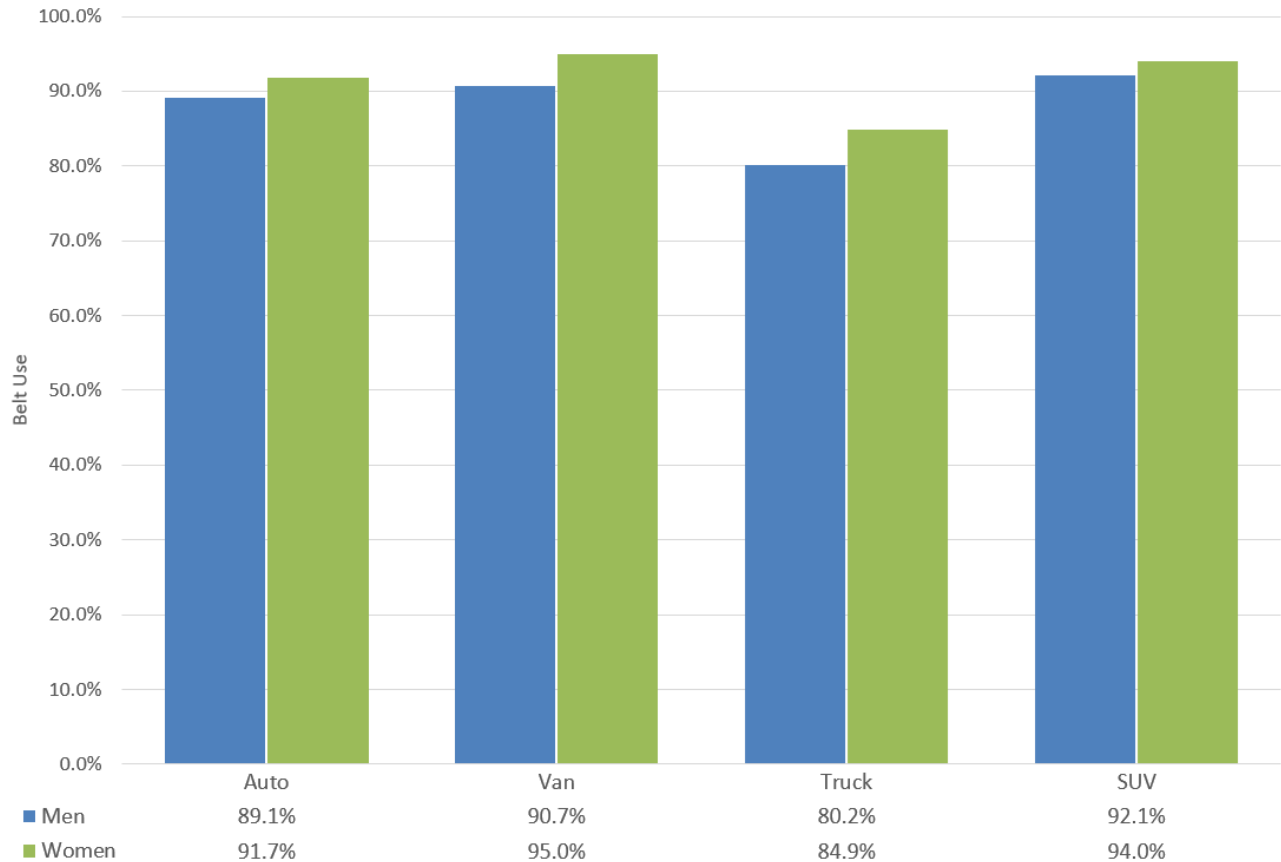
Driver Gender

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 5.6 percentage points.



Belt Use by Vehicle and by Gender of Driver

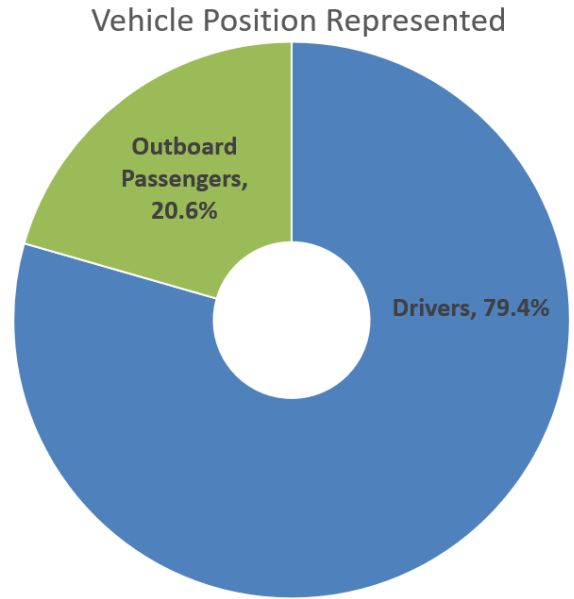


Belt Rates by Vehicle Position

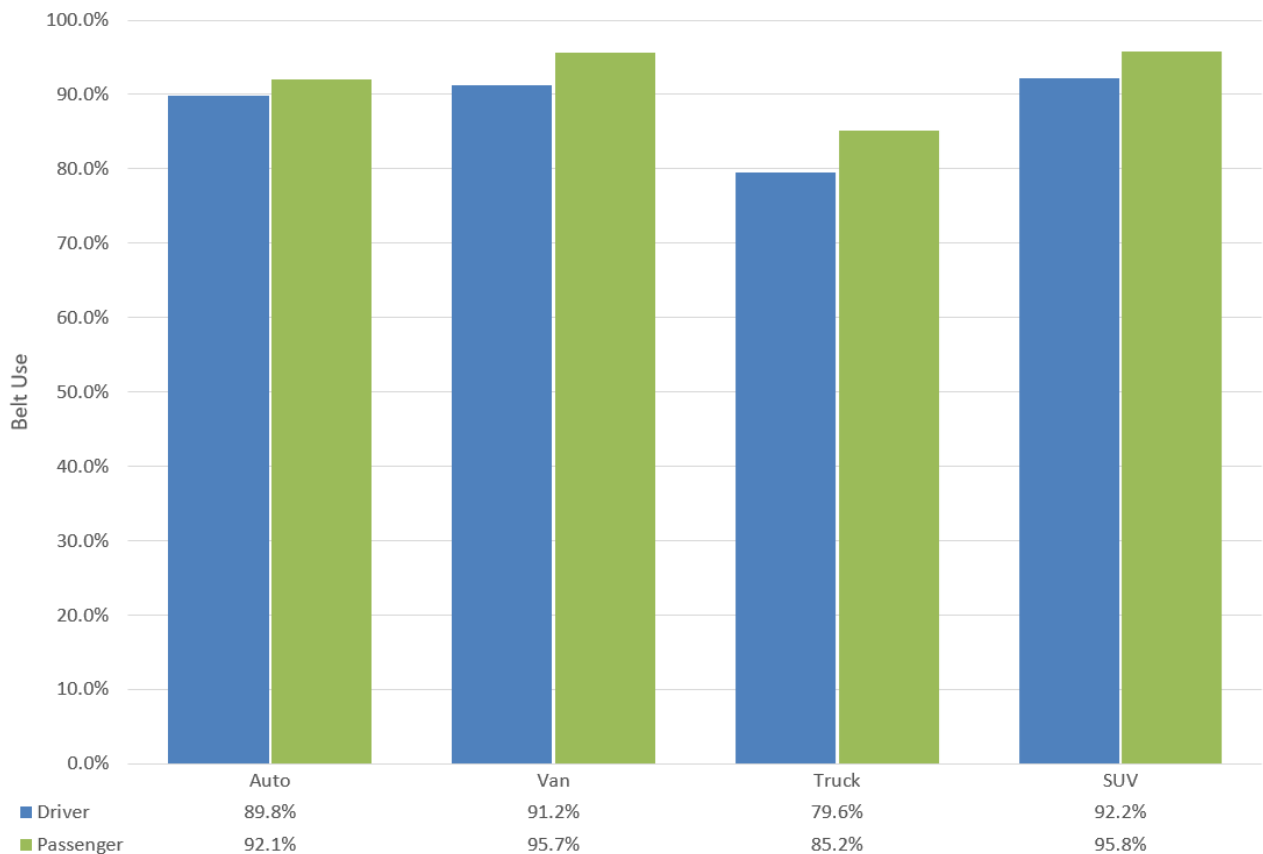
Most individuals observed in the survey were vehicle drivers (79.4%) while outbound passengers represented a slightly more than one-fifth of all observations (20.6%).

Front-outboard passengers displayed a higher belt use rate across all vehicle types. The average, unweighted, belt use of drivers ($n=45,787$) was 88% while the average, unweighted, belt use of outboard passengers ($n=11,841$) was 92.5%.

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

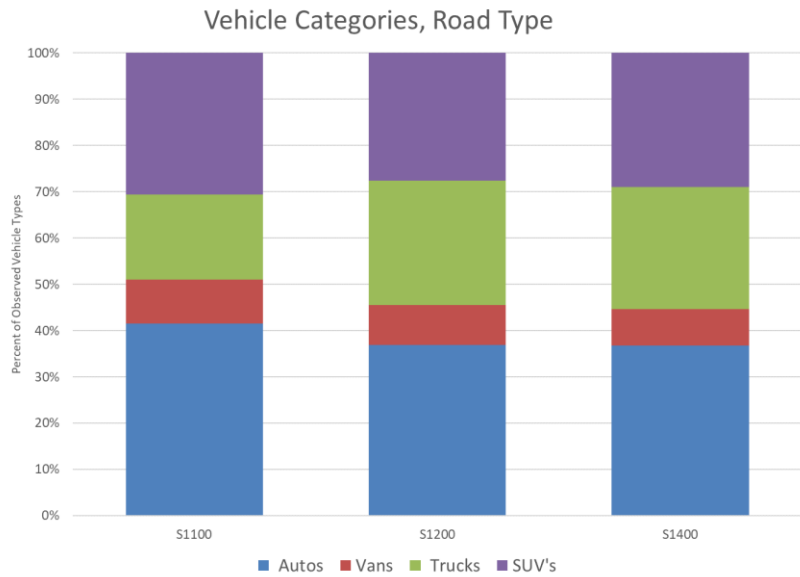


Belt Use by Vehicle Type, Position

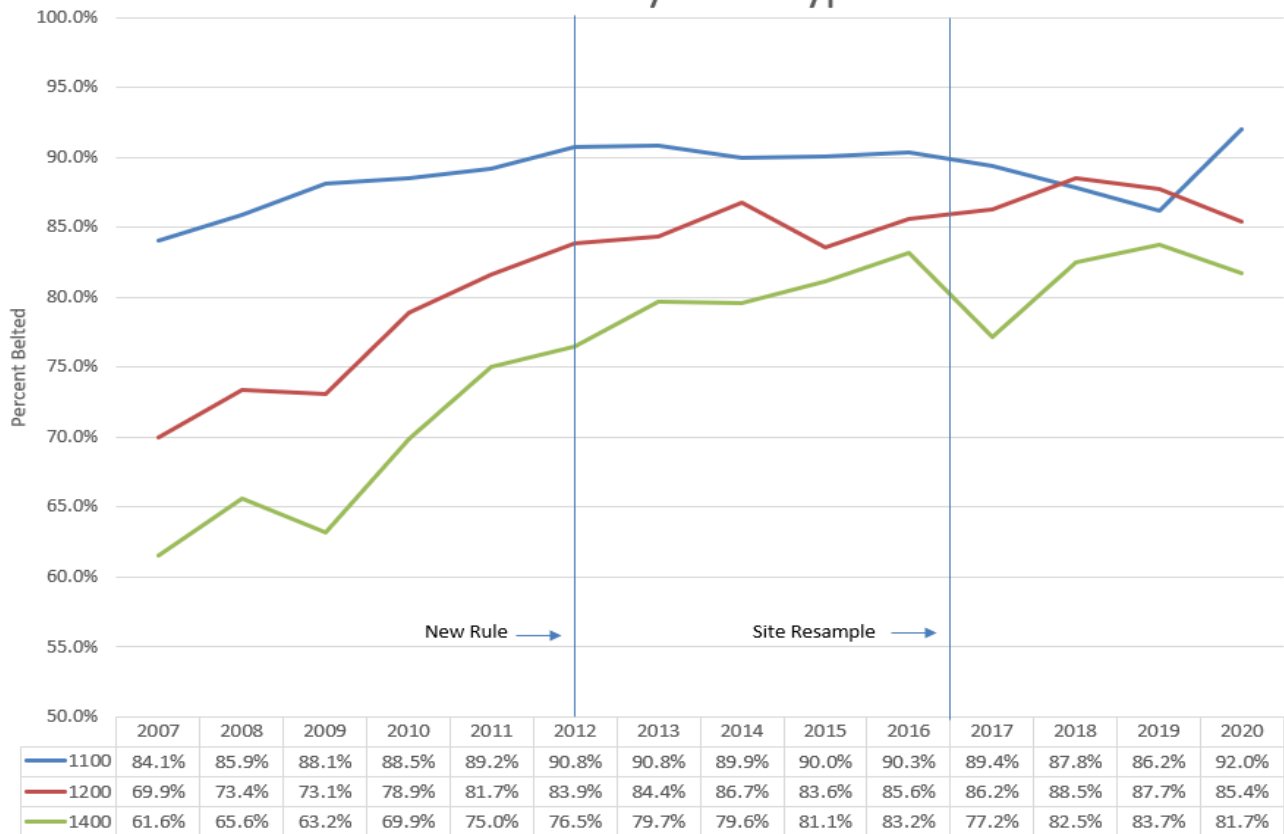


Belt Rates by Road Type

Of the three road types observed, drivers and outbound passengers were belted at the highest percentage while driving on primary roads such as interstates and limited access highways (Road Type 1100, 92%), followed by secondary roads such as US, State, and County Highways (Road Type 1200, 85.4%), and local roads (Road Type 1400, 81.7%).



Belt Use By Road Type



Truck Belt Use Rate

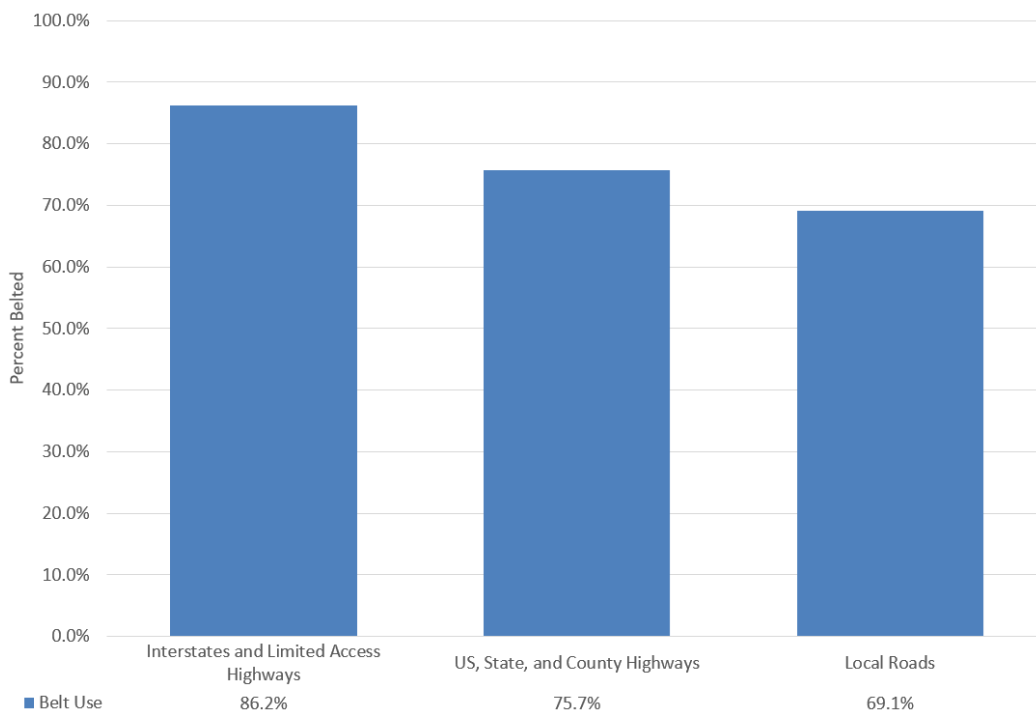
Belt use among truck drivers has historically been lower than drivers of other vehicle types.

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

In 2020, belt use rate for trucks on interstates and limited access highways increased to about 86%. Observed truck belt use on US, State, and County Highways and local roads remained relatively stable at about 76% and 69%, respectively.

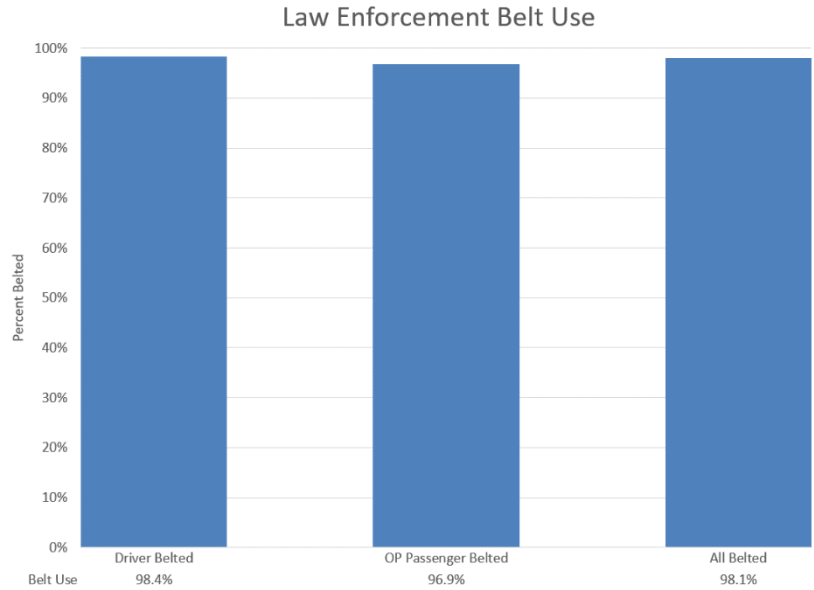
Trucks Only, Belt Use by County, (Unweighted)				
Alphabetical		<i>n=13,924</i>	Ranked	
County	% Belted		County	% Belted
Atchison	69.16%		Johnson	93.69%
Butler	82.66%		Douglas	92.65%
Coffey	74.86%		Ellsworth	90.06%
Cowley	78.71%		Leavenworth	86.64%
Crawford	60.39%		Butler	82.66%
Chase	77.58%		Franklin	81.88%
Douglas	92.65%		Wabaunsee	81.08%
Ellsworth	90.06%		Riley	80.00%
Franklin	81.88%		Gove	79.71%
Gove	79.71%		Sedgwick	79.46%
Haskell	57.02%		Cowley	78.71%
Harvey	78.62%		Harvey	78.62%
Jefferson	77.89%		Saline	78.50%
Johnson	93.69%		Jefferson	77.89%
Labette	61.73%		Chase	77.58%
Leavenworth	86.64%		Shawnee	76.63%
Lyon	68.07%		Wyandotte	76.42%
Montgomery	61.05%		Coffey	74.86%
Riley	80.00%		Reno	73.40%
Reno	73.40%		Atchison	69.16%
Saline	78.50%		Lyon	68.07%
Sedgwick	79.46%		Seward	64.33%
Shawnee	76.63%		Labette	61.73%
Seward	64.33%		Montgomery	61.05%
Wabaunsee	81.08%		Crawford	60.39%
Wyandotte	76.42%		Haskell	57.02%

Trucks Only Belt Use, Road Type



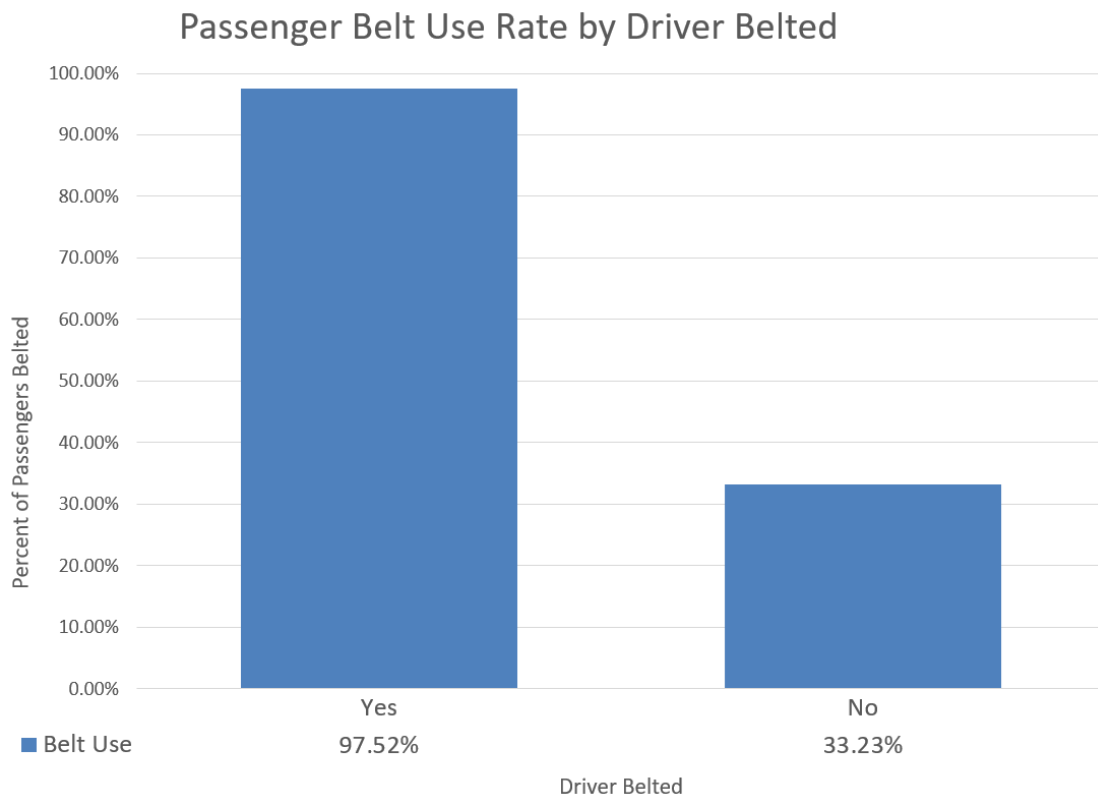
Law Enforcement Belt Use Rate

Overall, drivers and front, outboard passengers in law enforcement vehicles yielded a belt use rate of about 98%. Belt use for drivers was 98.4%, while the belt use rate for front, outboard passengers was 96.9%. There were 154 individuals observed in identifiable law enforcement vehicles – 125 drivers and 32 outboard 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 97.5% 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 30% of the front-outboard passengers were belted.

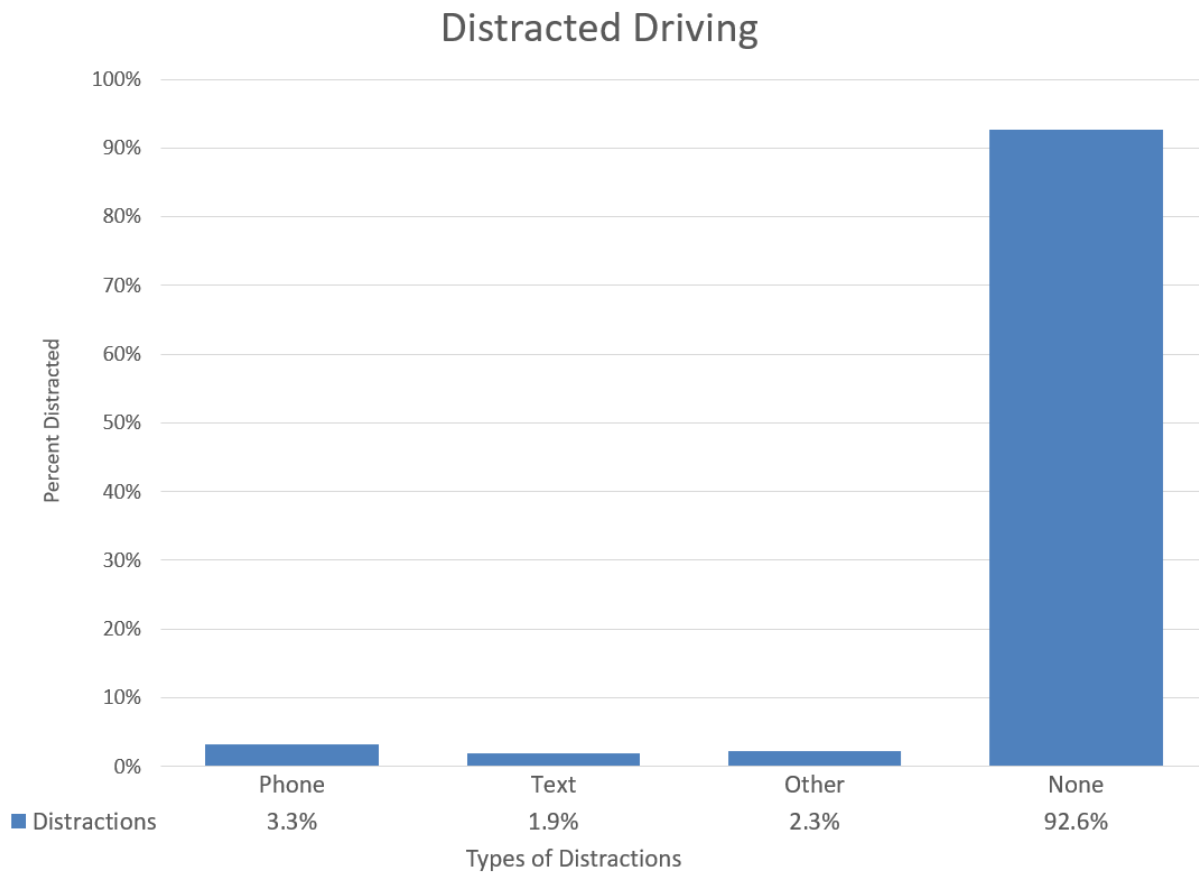
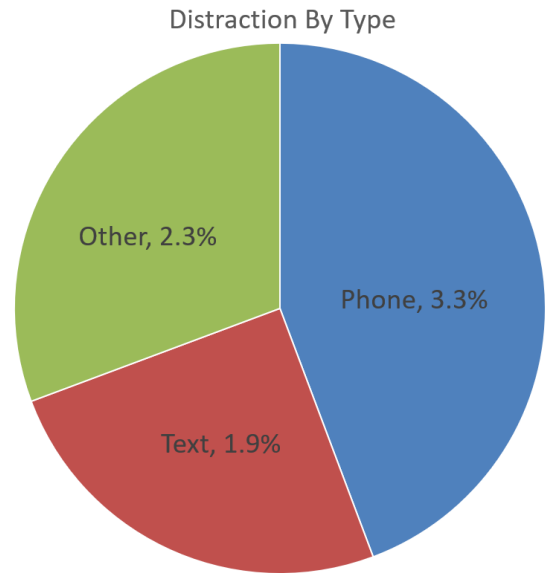


Distracted Driving

Percent of Distracted Drivers

Overall, about 7.4% of drivers were observed to be driving with a visible distraction. 3.3% of drivers were observed using a phone, while about 1.9% were observed texting/looking down. Another 2.3% were observed with “Other Distractions” (eating, operating the radio/audio device, looking for something on or under the seat, etc.).

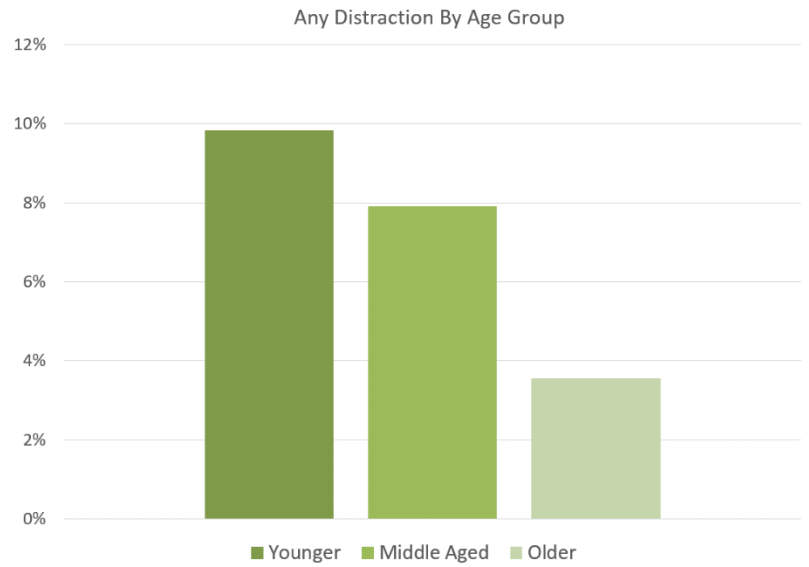
Observed distractions dropped 1 percentage-point over 2019.



Distracted Drivers by Age Group

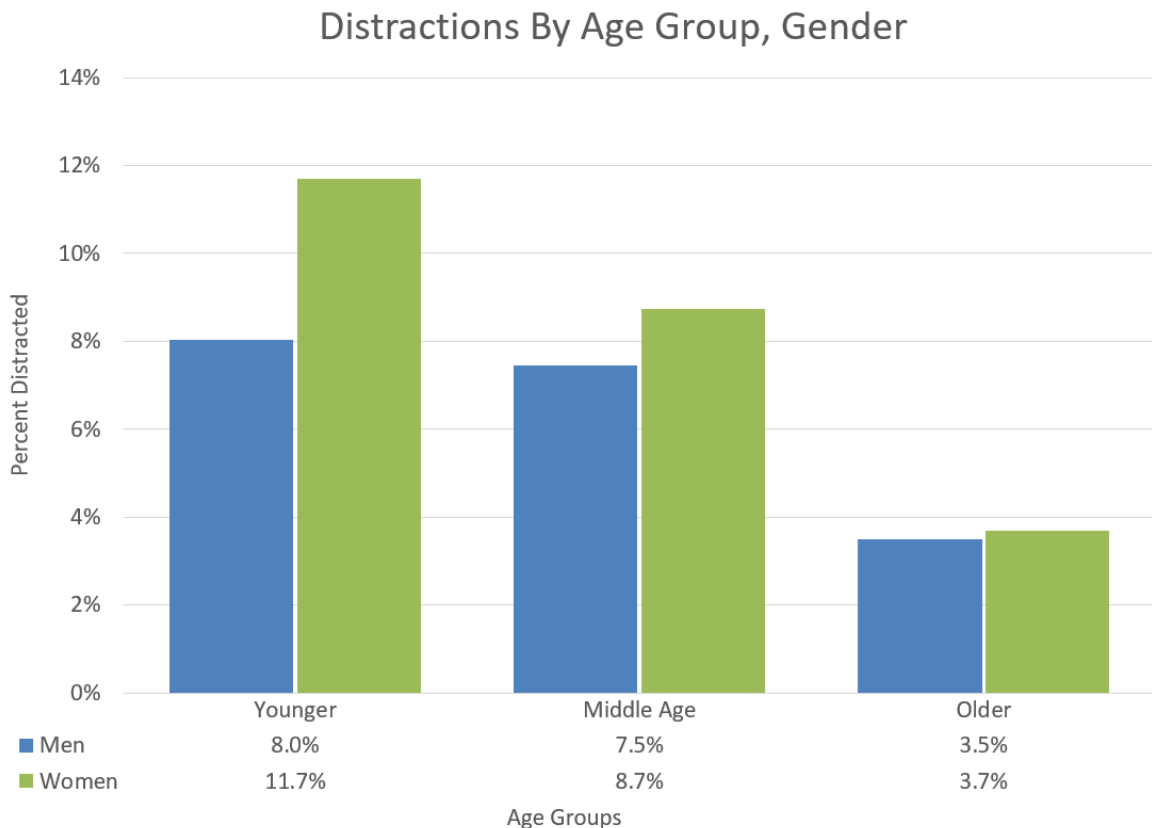
When examining any distraction by age group, younger aged drivers are the most distracted (about 10%), followed closely by middle-aged drivers (about 8%). Older drivers are much less distracted than other age groups (about 3.6%).

Observed distractions among younger and older drivers remain at levels similar to 2019. Distractions observed with middle-aged drivers have dropped slightly.



Distracted Drivers by Age Group and Gender

Women drivers continue to be observed to be driving while distracted at a higher percent than men across all age groups. Younger aged, female drivers were more often observed to be distracted (11.7%) followed by middle-aged, female drivers (8.7%).



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 - 2020				
County	S1100	S1200	S1400	*Percent Belted
Johnson	97.5%	97.3%	93.7%	96.8%
Douglas	98.4%	95.5%	84.2%	94.7%
Ellsworth	93.7%	91.9%	72.7%	91.3%
Franklin	94.5%	87.6%	70.0%	89.5%
Butler	90.8%	88.5%	85.8%	88.9%
Gove	94.5%	69.0%	40.0%	88.4%
Wabaunsee	96.7%	63.9%	47.8%	88.3%
Leavenworth	91.5%	89.4%	78.0%	88.0%
Harvey	88.8%	88.6%	79.1%	87.5%
Reno		88.5%	81.1%	87.1%
Saline	89.4%	85.6%	77.2%	86.3%
Sedgwick	87.8%	85.7%	84.2%	85.8%
Cowley		87.9%	69.7%	84.3%
Wyandotte	85.7%	83.6%	73.8%	83.8%
Crawford		84.9%	77.1%	83.4%
Jefferson		81.8%	86.7%	82.6%
Shawnee	85.8%	79.0%	84.9%	81.7%
Labette		84.7%	57.1%	80.5%
Chase	92.5%	59.2%	76.0%	80.5%
Atchison		82.0%	66.7%	78.7%
Montgomery		81.6%	52.9%	77.0%
Riley	94.5%	80.4%	68.1%	76.5%
Lyon	87.5%	58.9%	83.3%	76.6%
Coffey	89.3%	60.9%	86.7%	73.9%
Haskell		68.8%	42.9%	63.8%
Seward		65.8%	41.7%	61.1%
*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			
2020 Belt Use Rate, Alphabetical by County			
County	2018	2019	2020
Atchison	78.1%	82.4%	82.0%
Butler	81.5%	68.9%	88.5%
Chase	68.6%	64.9%	59.2%
Coffey	89.7%	91.1%	60.9%
Cowley	86.9%	92.2%	87.9%
Crawford	71.8%	88.3%	84.9%
Douglas	95.7%	94.3%	95.5%
Ellsworth	90.4%	87.4%	91.9%
Franklin	87.2%	86.2%	87.6%
Gove	61.7%	68.2%	69.0%
Harvey	89.1%	87.1%	88.6%
Haskell	92.9%	97.3%	68.8%
Jefferson	85.1%	88.2%	81.8%
Johnson	96.4%	94.1%	97.3%
Labette	84.3%	94.6%	84.7%
Leavenworth	89.6%	89.5%	89.4%
Lyon	83.0%	51.7%	58.9%
Montgomery	71.2%	82.5%	81.6%
Reno	93.4%	95.2%	88.5%
Riley	90.7%	88.7%	80.4%
Saline	84.9%	85.4%	85.6%
Sedgwick	90.3%	90.9%	85.7%
Seward	94.4%	91.0%	65.8%
Shawnee	91.5%	95.9%	79.0%
Wabaunsee	75.1%	72.7%	63.9%
Wyandotte	90.8%	90.3%	83.6%

Yearly Belt Use Rates, S1200 Road Type			
2020 Belt Use Rate, Descending			
County	2018	2019	2020
Johnson	96.4%	94.1%	97.3%
Douglas	95.7%	94.3%	95.5%
Ellsworth	90.4%	87.4%	91.9%
Leavenworth	89.6%	89.5%	89.4%
Harvey	89.1%	87.1%	88.6%
Reno	93.4%	95.2%	88.5%
Butler	81.5%	68.9%	88.5%
Cowley	86.9%	92.2%	87.9%
Franklin	87.2%	86.2%	87.6%
Sedgwick	90.3%	90.9%	85.7%
Saline	84.9%	85.4%	85.6%
Crawford	71.8%	88.3%	84.9%
Labette	84.3%	94.6%	84.7%
Wyandotte	90.8%	90.3%	83.6%
Atchison	78.1%	82.4%	82.0%
Jefferson	85.1%	88.2%	81.8%
Montgomery	71.2%	82.5%	81.6%
Riley	90.7%	88.7%	80.4%
Shawnee	91.5%	95.9%	79.0%
Gove	61.7%	68.2%	69.0%
Haskell	92.9%	97.3%	68.8%
Seward	94.4%	91.0%	65.8%
Wabaunsee	75.1%	72.7%	63.9%
Coffey	89.7%	91.1%	60.9%
Chase	68.6%	64.9%	59.2%
Lyon	83.0%	51.7%	58.9%

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 forward.

Belt Use Rates, S1200 Road Type Rolling Average			
County	Three-Year Average (2016 - 2018)	Three-Year Average (2017 - 2019)	Three-Year Average (2018 - 2020)
Johnson	95.7%	95.0%	96.0%
Douglas	90.6%	92.5%	95.2%
Reno	91.6%	94.5%	92.4%
Ellsworth	86.2%	86.6%	89.9%
Leavenworth	88.2%	89.6%	89.5%
Cowley	88.5%	89.5%	89.0%
Sedgwick	86.3%	89.0%	89.0%
Shawnee	90.5%	92.1%	88.8%
Harvey	85.3%	87.9%	88.3%
Wyandotte	85.3%	87.2%	88.2%
Labette	74.8%	86.0%	87.9%
Franklin	87.2%	85.9%	87.0%
Riley	88.7%	87.9%	86.6%
Haskell	87.3%	90.7%	86.3%
Saline	84.0%	85.7%	85.3%
Jefferson	84.0%	86.5%	85.1%
Seward	91.3%	90.4%	83.7%
Crawford	76.7%	78.0%	81.6%
Atchison	76.7%	79.5%	80.8%
Coffey	90.5%	90.7%	80.6%
Butler	83.4%	78.3%	79.6%
Montgomery	75.4%	73.8%	78.4%
Wabaunsee	76.4%	75.1%	70.6%
Gove	59.1%	62.2%	66.3%
Lyon	79.3%	71.4%	64.5%
Chase	73.9%	68.3%	64.2%

**New since 2017 Site Sample. Averages only include survey information from 2017 to present.*

Safety Belt Use by County

S1200 Road Type Rolling Multi Year Average 2018 - 2020

