

KANSAS
Occupant Protection Observational Survey
Supplementary Analyses

2021 Summer Study

Submitted To:
Kansas Department of Transportation
Bureau of Transportation Safety

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Introduction

This report presents the results of the Kansas 2021 Occupant Protection Observational Survey conducted by DCCCA Inc. on behalf of the Kansas Department of Transportation Bureau of Transportation Safety.

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 85.92 percent in 2021. This represents about a one-point increase over 2020 study results.

The state-wide estimate of safety belt use is based on the observation of 47,094 vehicles and 59,632 drivers and front-outboard passengers. The 2021 standard error rate was 1.25 percent, meeting the NHTSA-required standard error rate of 2.5 percent or less.

This compares to a national belt rate of 90 percent based on the most recent NHTSA National Occupant Protection Use Survey results released in 2020.

| Year | Kansas Rate | National Rate |
|------|-------------|---------------|
| 2017 | 82% | 90% |
| 2018 | 84% | 90% |
| 2019 | 85% | 91% |
| 2020 | 85% | 90% |
| 2021 | 86% | |

Source: 2021 Kansas Occupant Protection Observational Survey
National Occupant Protection Use Survey, National Highway Traffic
Safety Administration, National Center Statistics and Analysis.

Study Overview

The 2021 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 arterials, 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 2021 was approved by NHTSA in 2016.

Observations were conducted by 11 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 1, 2021, and August 2, 2021. 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 the 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 1990s.

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 2021 Kansas state-wide estimate is 85.92 percent.

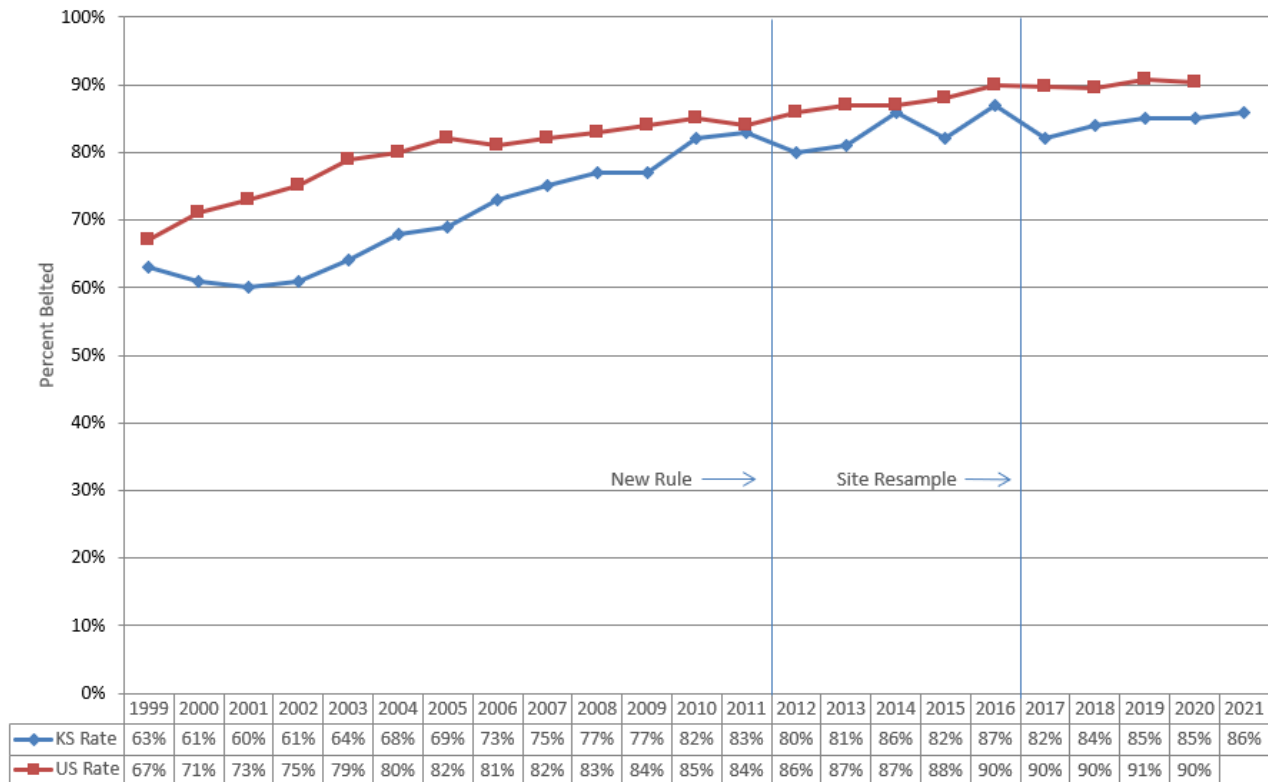
The 2021 Kansas survey produced a standard error rate of 1.25 percent.

Overall Weighted Statewide Safety Belt Trends

In 2021, Kansas produced an observed belt use rate for drivers and outboard passengers of about 86 percent.

The 2021 results are the fourth using the 2017 site resample, which increased the number of rural counties and local roads observed.

Kansas and National Safety Belt Use Rate
1999-2021



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 86 percent, the raw, unweighted belt use rate is about 88 percent. The weights used in the state-wide estimate use road segment length as the basis for calculating the probabilities of selection and subsequent weights.

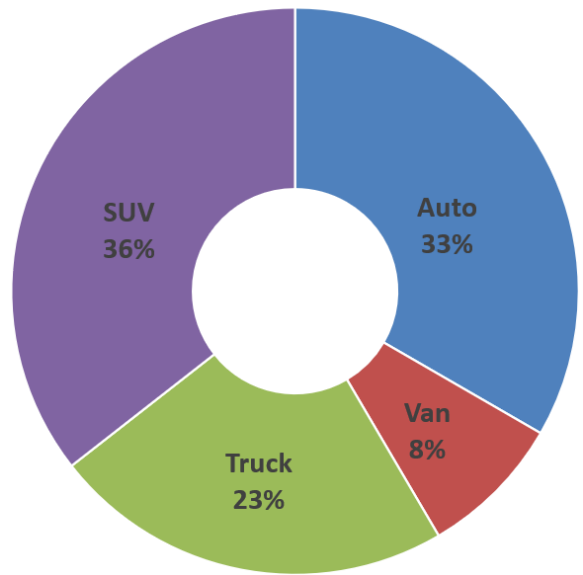
The following comparisons are calculated using raw, unweighted data, treating all counties and sites as one pool. This is a valid means of comparing relative differences between groups but may not reflect population estimates. The following results use unweighted data unless otherwise indicated.

Vehicle Type Represented in 2021 Survey

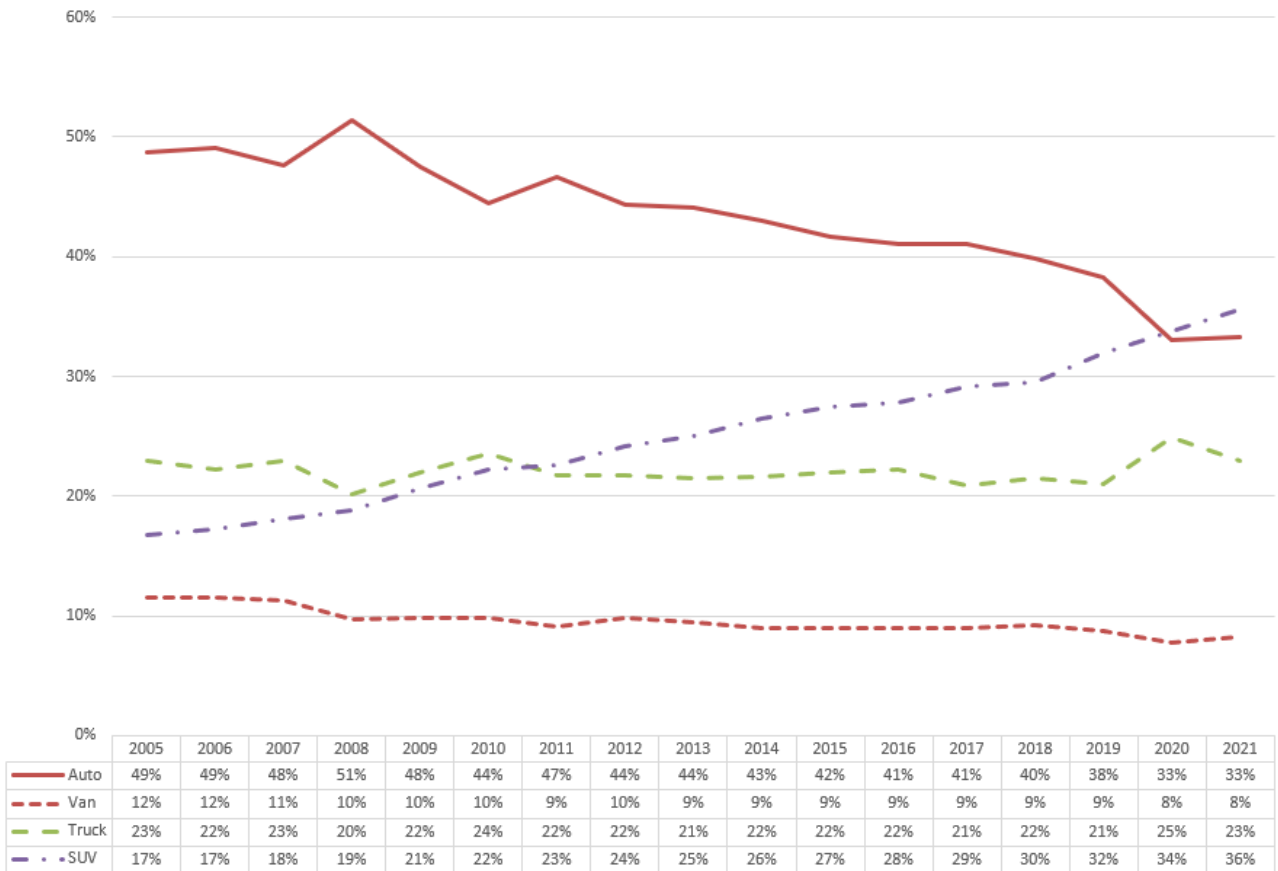
Of the four vehicle types represented in the survey, SUVs are the most commonly observed. SUVs comprise about 36 percent of all observed vehicles, followed by cars (33 percent), trucks (23 percent), and vans (8 percent).

Occupants have been shifting away from automobiles and vans and into SUVs since 2002. This year continues the trend of SUVs overtaking cars as the vehicle time most observed.

Vehicle Types Represented



Vehicle Types Represented 2002-2021

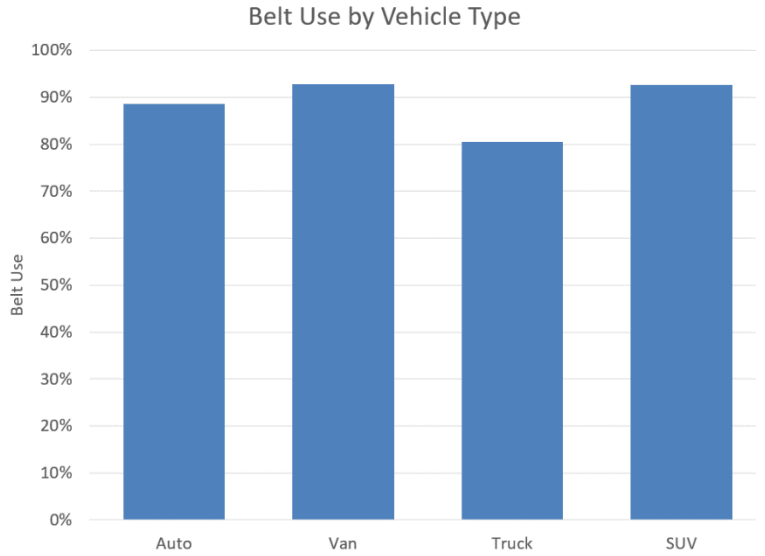


Belt Use by Vehicle Type

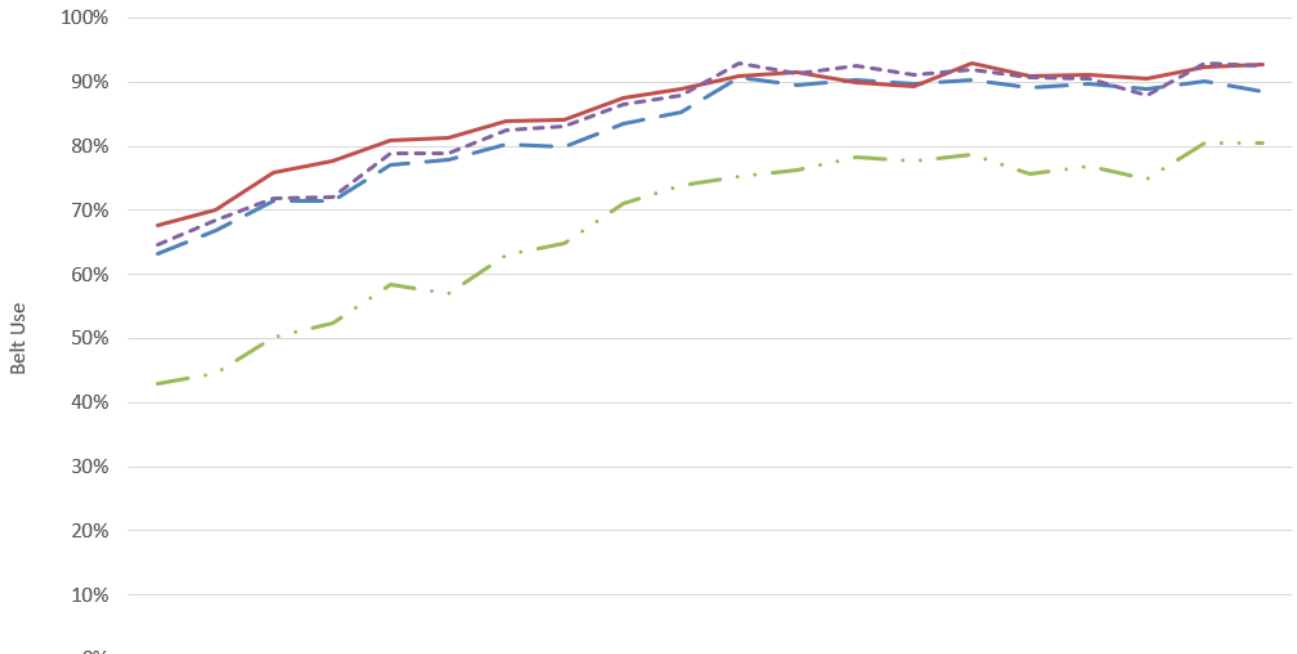
Those in SUVs and vans use their belts at the highest rate (93 percent), followed by automobiles (88 percent), and distantly followed by trucks (80 percent).

Belt use in trucks has consistently been observed to be between 10 to 15 percentage points lower than the other vehicle types.

Belt use rates among all vehicle types have increased since 2002. Between 2002 and 2021, belt use in trucks has increased the most (37.6 percent), followed by SUVs (28 percent), automobiles (25 percent), and vans (25 percent).



Belt Use by Vehicle Type Driver and Front Outboard Passengers

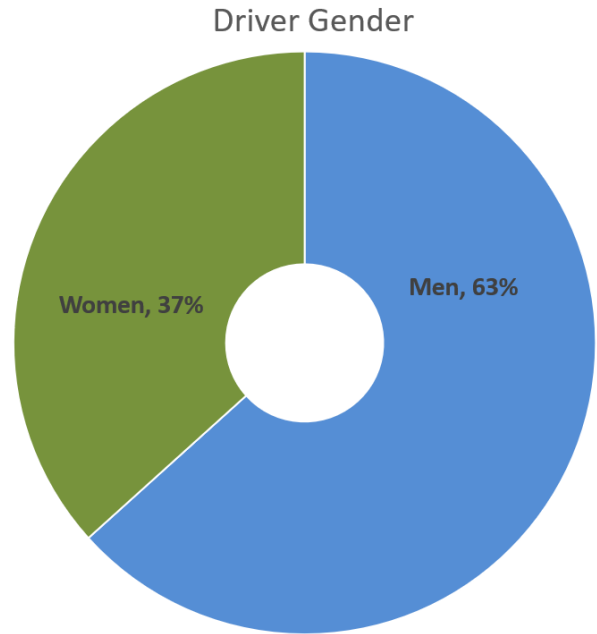


| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Auto | 63% | 67% | 72% | 72% | 77% | 78% | 80% | 80% | 84% | 85% | 91% | 90% | 90% | 90% | 90% | 89% | 90% | 89% | 90% | 89% |
| Van | 68% | 70% | 76% | 78% | 81% | 81% | 84% | 84% | 88% | 89% | 91% | 92% | 90% | 89% | 93% | 91% | 91% | 90% | 92% | 93% |
| Truck | 43% | 45% | 50% | 52% | 58% | 57% | 63% | 65% | 71% | 74% | 75% | 76% | 78% | 78% | 79% | 76% | 77% | 75% | 81% | 81% |
| SUV | 65% | 69% | 72% | 72% | 79% | 79% | 83% | 83% | 86% | 88% | 93% | 91% | 93% | 91% | 92% | 91% | 91% | 88% | 93% | 93% |

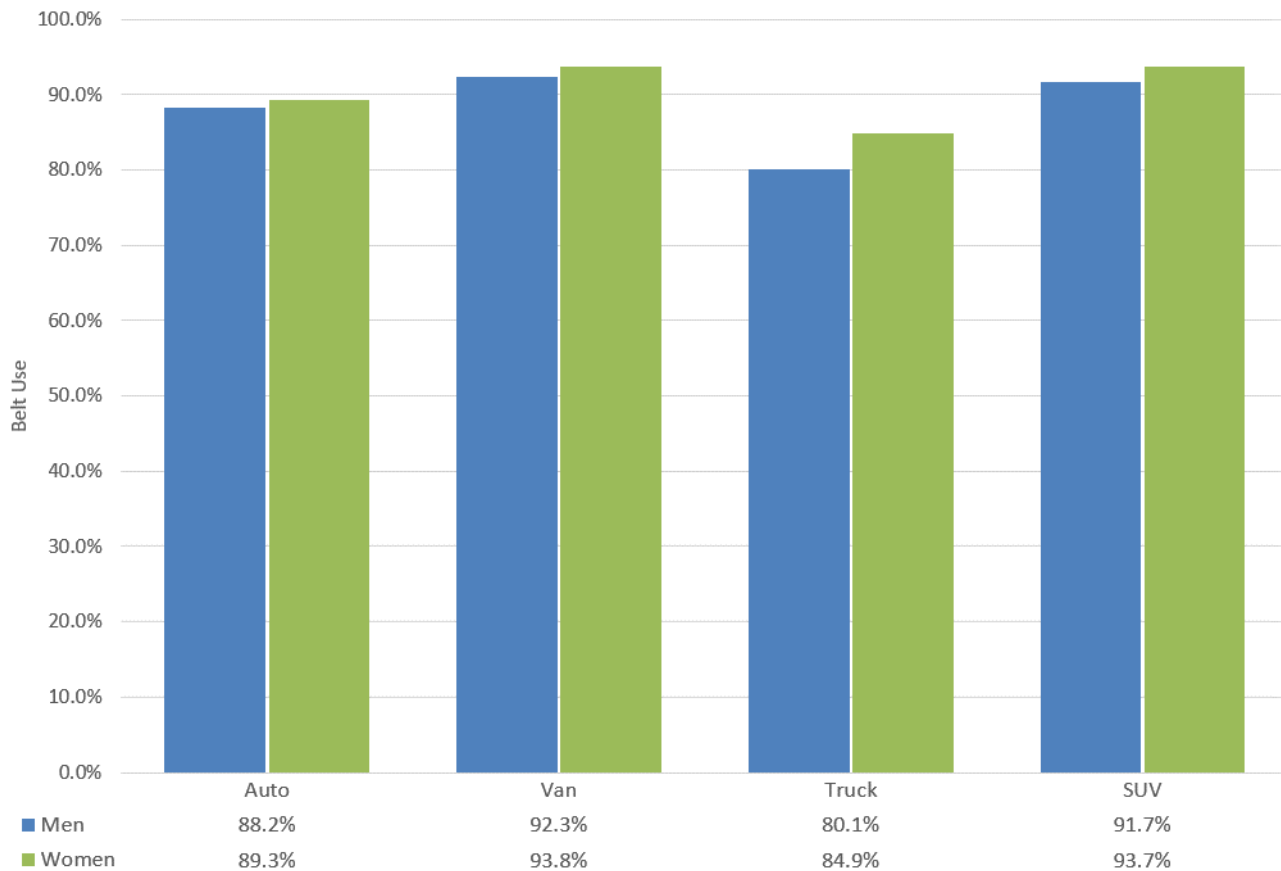
Driver Gender

Men were observed driving in about 63 percent of observed vehicles, while women were drivers in about 37 percent 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 and women differs by 4.6 percentage points.



Belt Use by Vehicle and by Gender of Driver

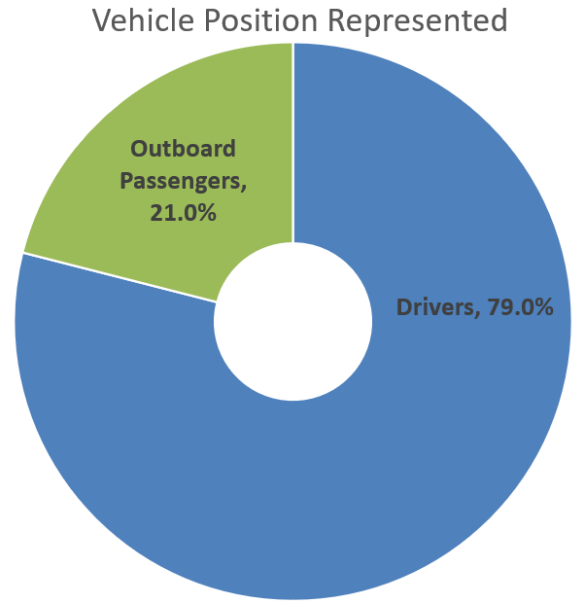


Belt Rates by Vehicle Position

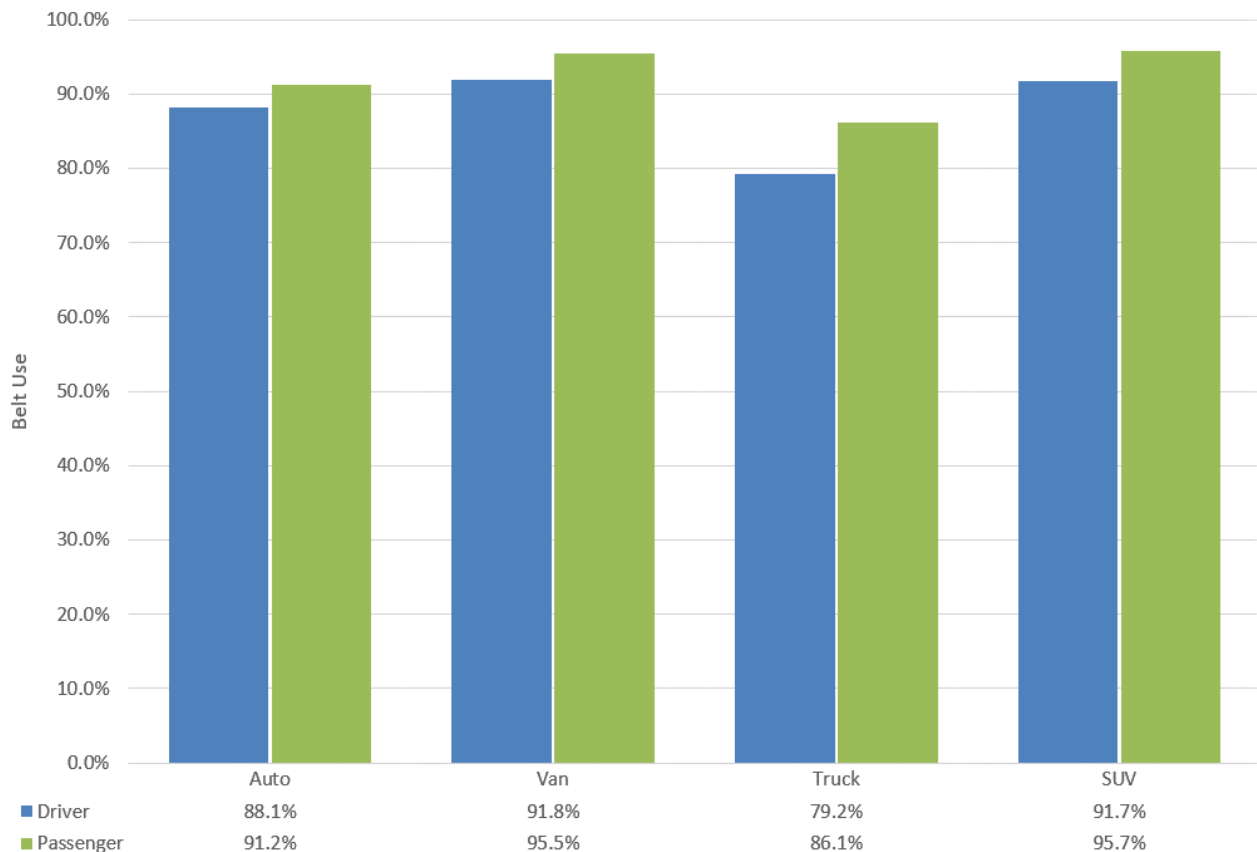
Most individuals observed in the survey were vehicle drivers (79 percent), while outbound passengers represented slightly more than one-fifth of all observations (21 percent).

Front-outboard passengers displayed a higher belt use rate across all vehicle types. The average unweighted belt use of drivers ($n=45,094$) was 87.6 percent, while the average unweighted belt use of outboard passengers ($n=12,538$) was 92.5 percent.

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

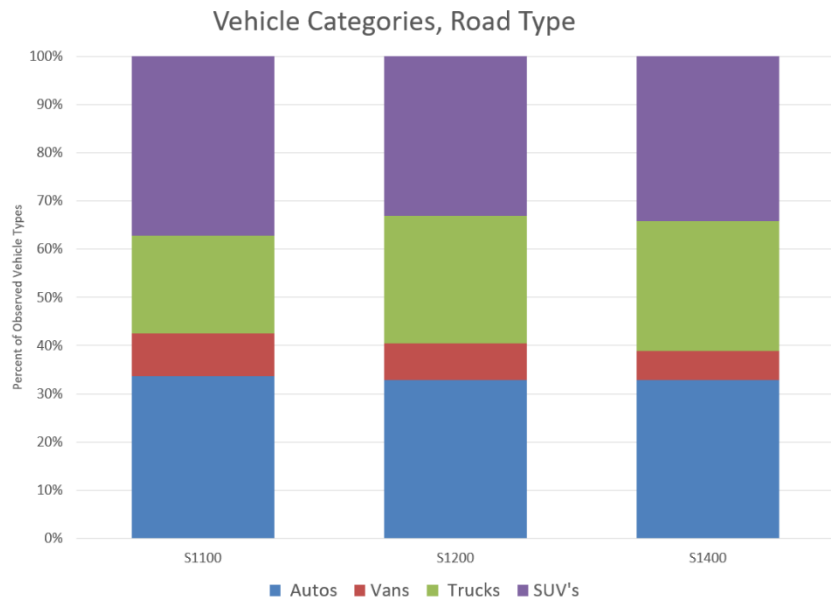


Belt Use by Vehicle Type, Position



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, 91 percent), followed by secondary roads such as US, State, and County Highways (Road Type 1200, 86 percent), and local roads (Road Type 1400, 82 percent).



Belt Use By Road Type



Truck Belt Use Rate

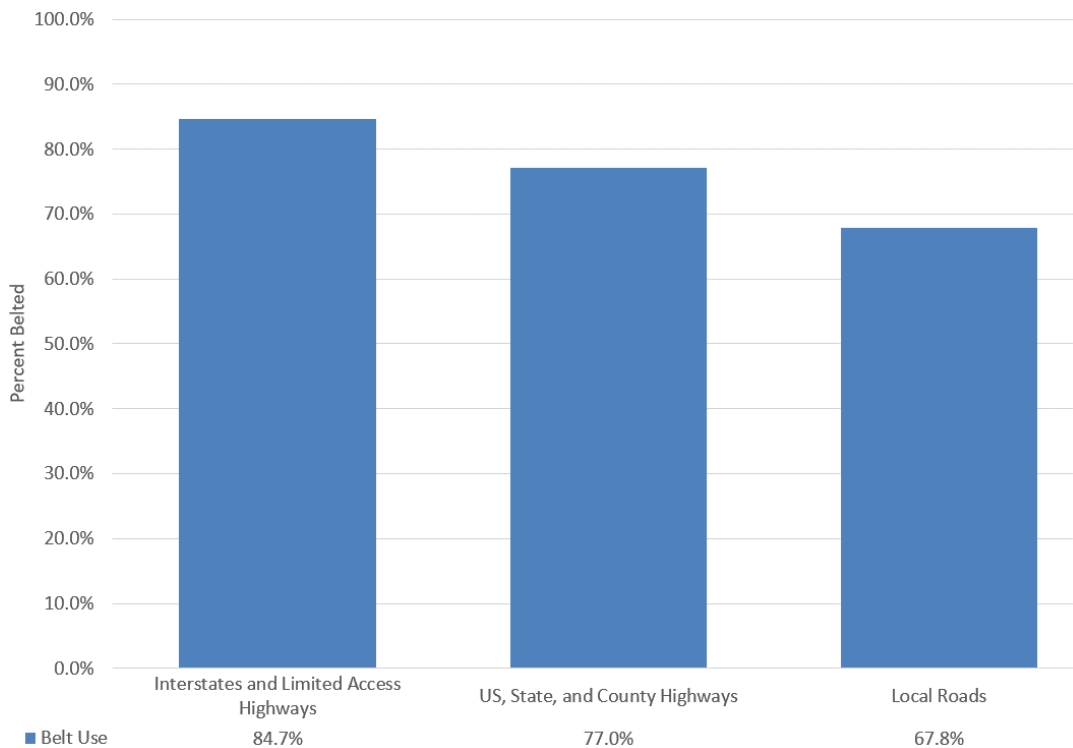
Belt use among truck drivers has historically been lower than drivers of other vehicle types.

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

In 2021, the belt use rate for trucks on interstates and limited access highways fell one percentage point to about 85 percent. Observed truck belt use on US, State, and County Highways and local roads remained relatively stable at about 77 percent and 68 percent, respectively.

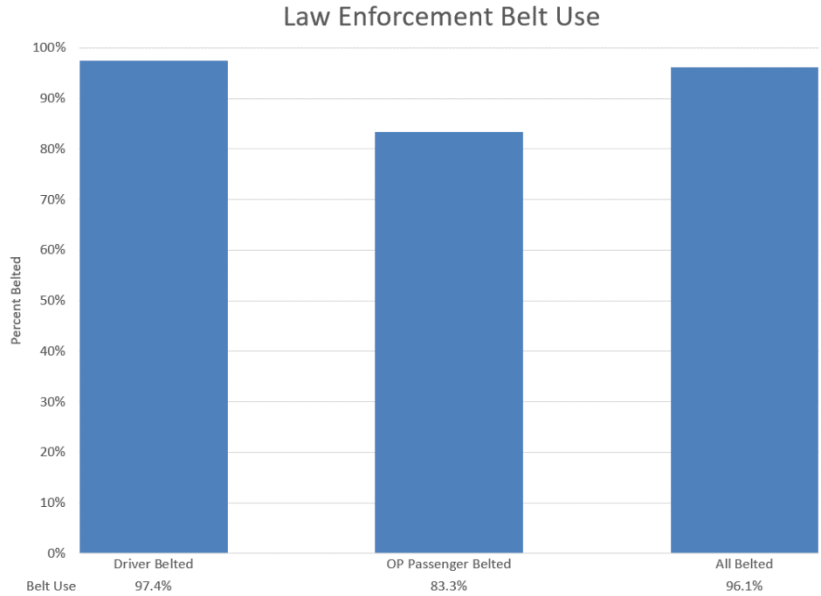
| Trucks Only, Belt Use by County, (Unweighted) | | | | |
|---|----------|-----------------|-------------|----------|
| Alphabetical | | <i>n=13,403</i> | Ranked | |
| County | % Belted | | County | % Belted |
| Atchison | 64.66% | | Johnson | 90.84% |
| Butler | 78.17% | | Wabaunsee | 89.27% |
| Coffey | 88.20% | | Gove | 88.86% |
| Cowley | 85.39% | | Ellsworth | 88.79% |
| Crawford | 67.94% | | Coffey | 88.20% |
| Chase | 77.30% | | Reno | 86.89% |
| Douglas | 74.82% | | Cowley | 85.39% |
| Ellsworth | 88.79% | | Wyandotte | 84.45% |
| Franklin | 83.64% | | Franklin | 83.64% |
| Gove | 88.86% | | Riley | 83.40% |
| Haskell | 60.76% | | Leavenworth | 83.09% |
| Harvey | 76.40% | | Shawnee | 83.03% |
| Jefferson | 78.24% | | Lyon | 80.69% |
| Johnson | 90.84% | | Jefferson | 78.24% |
| Labette | 61.61% | | Sedgwick | 78.21% |
| Leavenworth | 83.09% | | Butler | 78.17% |
| Lyon | 80.69% | | Chase | 77.30% |
| Montgomery | 59.70% | | Saline | 76.41% |
| Riley | 83.40% | | Harvey | 76.40% |
| Reno | 86.89% | | Douglas | 74.82% |
| Saline | 76.41% | | Seward | 70.15% |
| Sedgwick | 78.21% | | Crawford | 67.94% |
| Shawnee | 83.03% | | Atchison | 64.66% |
| Seward | 70.15% | | Labette | 61.61% |
| Wabaunsee | 89.27% | | Haskell | 60.76% |
| Wyandotte | 84.45% | | Montgomery | 59.70% |

Trucks Only Belt Use, Road Type



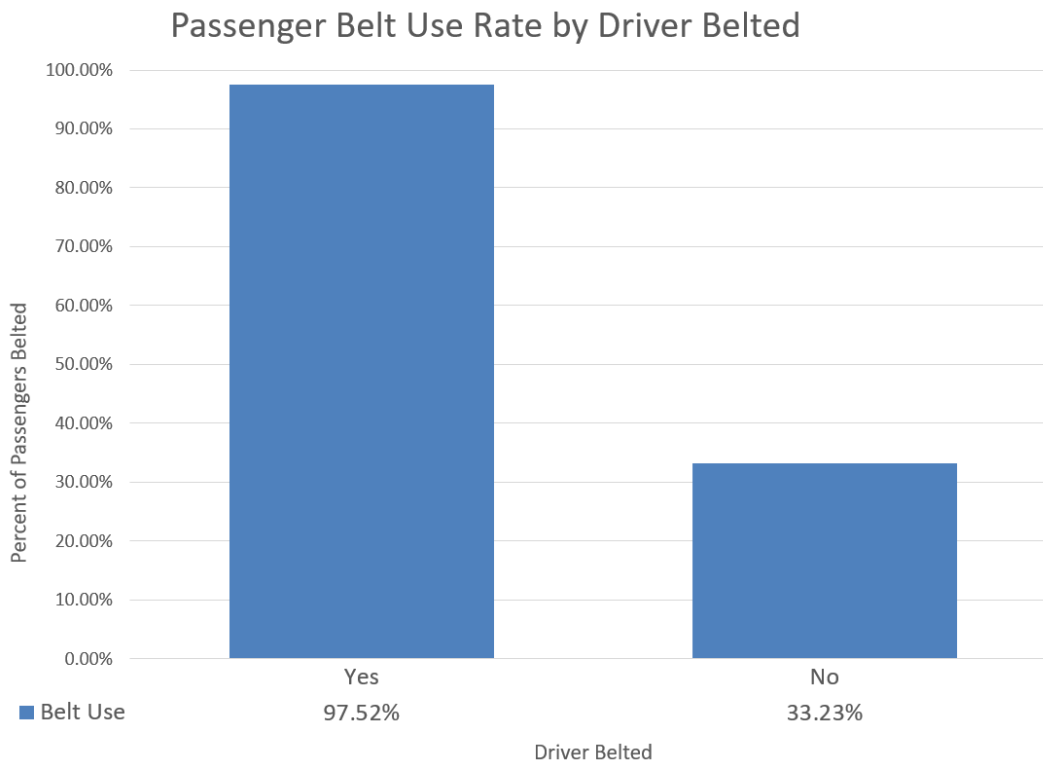
Law Enforcement Belt Use Rate

Overall, drivers and front, outboard passengers in law enforcement vehicles yielded a belt use rate of about 96 percent. Belt use for drivers was 97.4 percent, while the belt use rate for front, outboard passengers was 83 percent. There were 129 individuals observed in identifiable law enforcement vehicles – 117 drivers and 12 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 percent 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 percent of the front-outboard passengers were belted.

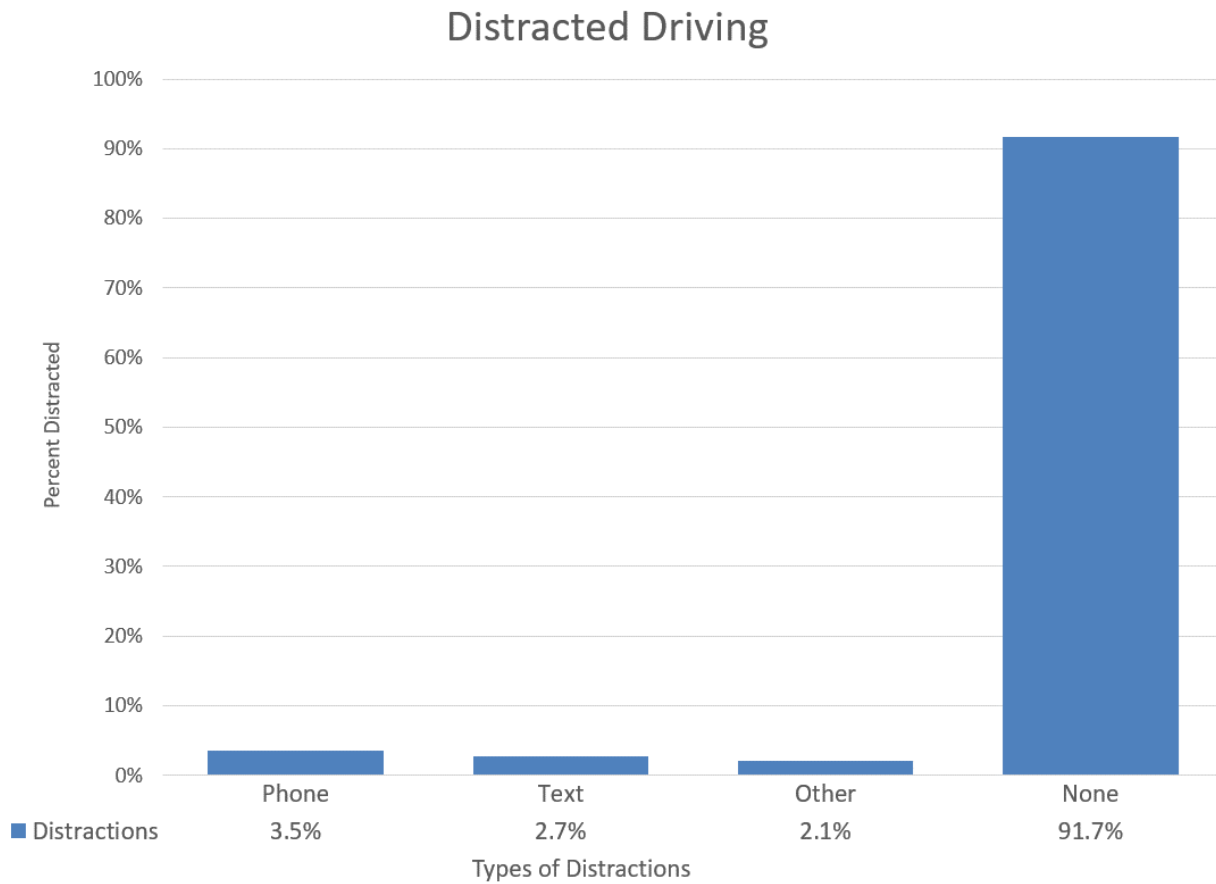
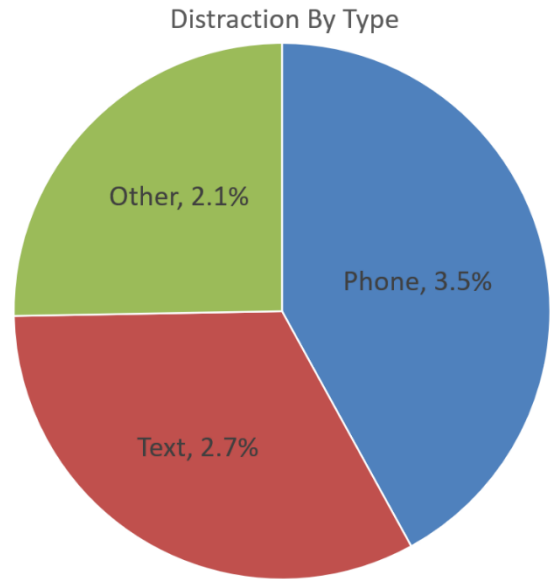


Distracted Driving

Percent of Distracted Drivers

Overall, about 8.3 percent of drivers were observed to be driving with a visible distraction. 3.5 percent of drivers were observed using a phone, while about 2.7 percent were observed texting/looking down. Another 2 percent were observed with “Other Distractions” (eating, operating the radio/audio device, looking for something on or under the seat, etc.).

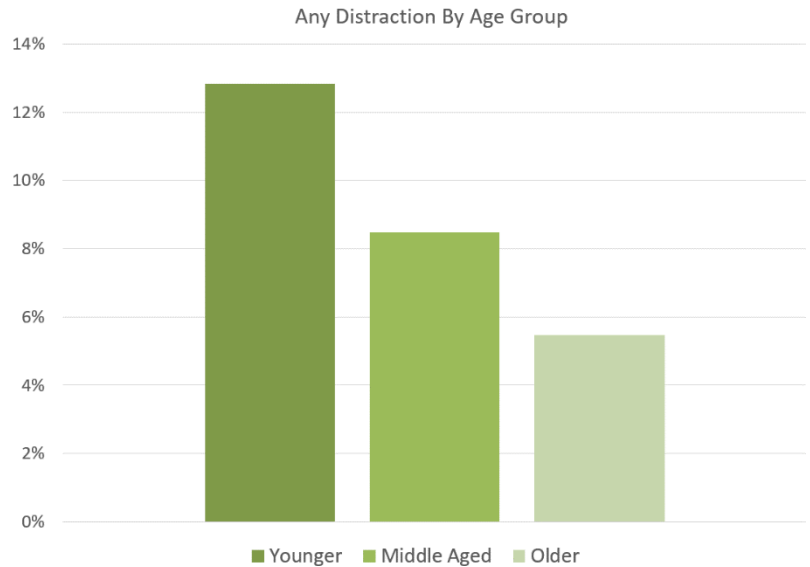
Observed distractions increased about 1 percentage point over 2020.



Distracted Drivers by Age Group

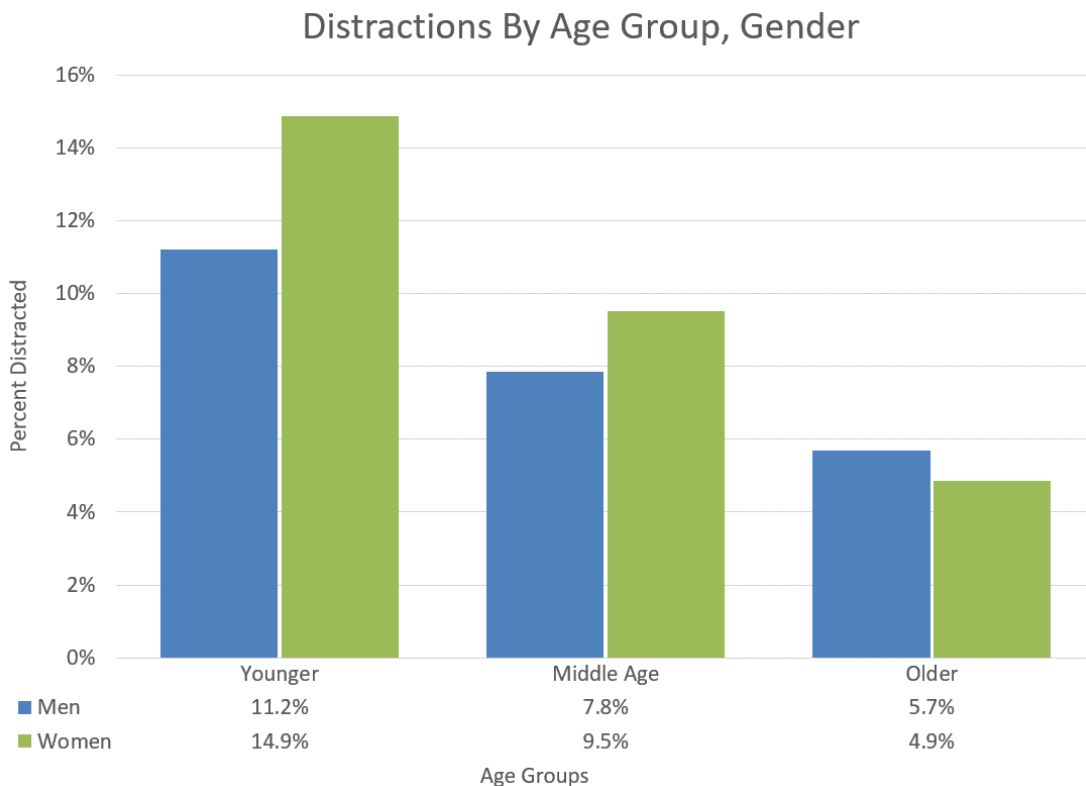
When examining any distraction by age group, younger aged drivers are the most distracted (about 13 percent), followed closely by middle-aged drivers (about 8.5 percent). Older drivers are much less distracted than other age groups (about 5.5 percent).

Observed distractions among all age groups increased over 2020, with observed distraction among younger drivers increasing 3 percentage points.



Distracted Drivers by Age Group and Gender

Women drivers continue to be observed to be driving while distracted at a higher percentage than men across all age groups. Younger-aged, female drivers were more often observed to be distracted (14.9 percent), followed by middle-aged, female drivers (9.5 percent).



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 - 2021 | | | | |
|--|--------------|--------------|--------------|------------------------|
| County | S1100 | S1200 | S1400 | *Percent Belted |
| Johnson | 96.1% | 95.3% | 91.4% | 94.9% |
| Wabaunsee | 96.5% | 88.8% | 81.8% | 94.4% |
| Gove | 97.5% | 79.0% | 61.1% | 93.3% |
| Reno | 0.0% | 95.7% | 83.3% | 93.3% |
| Ellsworth | 95.0% | 90.5% | 87.1% | 92.7% |
| Cowley | 0.0% | 90.8% | 85.3% | 89.7% |
| Coffey | 94.5% | 87.7% | 73.2% | 88.9% |
| Wyandotte | 90.5% | 88.8% | 78.3% | 88.7% |
| Leavenworth | 91.7% | 87.1% | 85.4% | 88.2% |
| Butler | 87.6% | 86.3% | 81.8% | 86.2% |
| Chase | 92.4% | 78.3% | 30.8% | 86.2% |
| Jefferson | 0.0% | 86.3% | 83.5% | 85.9% |
| Harvey | 88.8% | 86.9% | 72.1% | 85.8% |
| Shawnee | 84.7% | 87.0% | 80.9% | 85.6% |
| Franklin | 92.0% | 86.5% | 41.2% | 85.4% |
| Sedgwick | 88.3% | 85.8% | 81.0% | 85.4% |
| Saline | 90.2% | 84.3% | 68.7% | 85.0% |
| Riley | 97.5% | 87.8% | 79.7% | 84.9% |
| Crawford | 0.0% | 83.2% | 89.2% | 84.4% |
| Lyon | 92.9% | 79.1% | 50.0% | 84.0% |
| Douglas | 84.9% | 80.6% | 73.9% | 80.8% |
| Montgomery | 0.0% | 79.3% | 69.4% | 77.7% |
| Seward | 0.0% | 80.7% | 64.3% | 77.5% |
| Atchison | 0.0% | 77.5% | 74.2% | 76.8% |
| Labette | 0.0% | 84.8% | 16.7% | 74.3% |
| Haskell | 0.0% | 66.1% | 43.3% | 61.8% |
| *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 | | | |
|---|-------------|-------------|-------------|
| 2021 Belt Use Rate, Alphabetical by County | | | |
| County | 2019 | 2020 | 2021 |
| Atchison | 82.4% | 82.0% | 77.5% |
| Butler | 68.9% | 88.5% | 86.3% |
| Chase | 64.9% | 59.2% | 78.3% |
| Coffey | 91.1% | 60.9% | 87.7% |
| Cowley | 92.2% | 87.9% | 90.8% |
| Crawford | 88.3% | 84.9% | 83.2% |
| Douglas | 94.3% | 95.5% | 80.6% |
| Ellsworth | 87.4% | 91.9% | 90.5% |
| Franklin | 86.2% | 87.6% | 86.5% |
| Gove | 68.2% | 69.0% | 79.0% |
| Harvey | 87.1% | 88.6% | 86.9% |
| Haskell | 97.3% | 68.8% | 66.1% |
| Jefferson | 88.2% | 81.8% | 86.3% |
| Johnson | 94.1% | 97.3% | 95.3% |
| Labette | 94.6% | 84.7% | 84.8% |
| Leavenworth | 89.5% | 89.4% | 87.1% |
| Lyon | 51.7% | 58.9% | 79.1% |
| Montgomery | 82.5% | 81.6% | 79.3% |
| Reno | 95.2% | 88.5% | 95.7% |
| Riley | 88.7% | 80.4% | 87.8% |
| Saline | 85.4% | 85.6% | 84.3% |
| Sedgwick | 90.9% | 85.7% | 85.8% |
| Seward | 91.0% | 65.8% | 80.7% |
| Shawnee | 95.9% | 79.0% | 87.0% |
| Wabaunsee | 72.7% | 63.9% | 88.8% |
| Wyandotte | 90.3% | 83.6% | 88.8% |

**Yearly Belt Use Rates, S1200 Road Type
2021 Belt Use Rate, Descending**

| County | 2019 | 2020 | 2021 |
|---------------|-------------|-------------|-------------|
| Reno | 95.2% | 88.5% | 95.7% |
| Johnson | 94.1% | 97.3% | 95.3% |
| Cowley | 92.2% | 87.9% | 90.8% |
| Ellsworth | 87.4% | 91.9% | 90.5% |
| Wabaunsee | 72.7% | 63.9% | 88.8% |
| Wyandotte | 90.3% | 83.6% | 88.8% |
| Riley | 88.7% | 80.4% | 87.8% |
| Coffey | 91.1% | 60.9% | 87.7% |
| Leavenworth | 89.5% | 89.4% | 87.1% |
| Shawnee | 95.9% | 79.0% | 87.0% |
| Harvey | 87.1% | 88.6% | 86.9% |
| Franklin | 86.2% | 87.6% | 86.5% |
| Jefferson | 88.2% | 81.8% | 86.3% |
| Butler | 68.9% | 88.5% | 86.3% |
| Sedgwick | 90.9% | 85.7% | 85.8% |
| Labette | 94.6% | 84.7% | 84.8% |
| Saline | 85.4% | 85.6% | 84.3% |
| Crawford | 88.3% | 84.9% | 83.2% |
| Seward | 91.0% | 65.8% | 80.7% |
| Douglas | 94.3% | 95.5% | 80.6% |
| Montgomery | 82.5% | 81.6% | 79.3% |
| Lyon | 51.7% | 58.9% | 79.1% |
| Gove | 68.2% | 69.0% | 79.0% |
| Chase | 64.9% | 59.2% | 78.3% |
| Atchison | 82.4% | 82.0% | 77.5% |
| Haskell | 97.3% | 68.8% | 66.1% |

County Belt Use – S1200 Rolling Average

Findings from the last three surveys are averaged together to yield more stable county-level results.

| Belt Use Rates, S1200 Road Type Rolling Average | | | |
|--|---|---|---|
| County | Three-Year Average (2017 - 2019) | Three-Year Average (2018 - 2020) | Three-Year Average (2019 - 2021) |
| Johnson | 95.0% | 96.0% | 95.6% |
| Reno | 94.5% | 92.4% | 93.1% |
| Cowley | 89.5% | 89.0% | 90.3% |
| Douglas | 92.5% | 95.2% | 90.1% |
| Ellsworth | 86.6% | 89.9% | 89.9% |
| Leavenworth | 89.6% | 89.5% | 88.7% |
| Labette | 86.0% | 87.9% | 88.1% |
| Wyandotte | 87.2% | 88.2% | 87.6% |
| Harvey | 87.9% | 88.3% | 87.5% |
| Sedgwick | 89.0% | 89.0% | 87.5% |
| Shawnee | 92.1% | 88.8% | 87.3% |
| Franklin | 85.9% | 87.0% | 86.8% |
| Riley | 87.9% | 86.6% | 85.6% |
| Jefferson | 86.5% | 85.1% | 85.5% |
| Crawford | 78.0% | 81.6% | 85.4% |
| Saline | 85.7% | 85.3% | 85.1% |
| Butler | 78.3% | 79.6% | 81.2% |
| Montgomery | 73.8% | 78.4% | 81.1% |
| Atchison | 79.5% | 80.8% | 80.6% |
| Coffey | 90.7% | 80.6% | 79.9% |
| Seward | 90.4% | 83.7% | 79.2% |
| Haskell | 90.7% | 86.3% | 77.4% |
| Wabaunsee | 75.1% | 70.6% | 75.1% |
| Gove | 62.2% | 66.3% | 72.1% |
| Chase | 68.3% | 64.2% | 67.5% |
| Lyon | 71.4% | 64.5% | 63.2% |

Safety Belt Use by County
S1200 Road Type Rolling Multi Year Average
2019 - 2021

