

# 2019 NEW MEXICO

## OCCUPANT SEAT BELT OBSERVATION STUDY

DAYTIME AND NIGHTTIME SURVEYS

OLD SANTA FE TRAIL

### STATE OF NEW MEXICO

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New Mexico DEPARTMENT OF  
**TRANSPORTATION**  
MOBILITY FOR EVERYONE





# 2019 NEW MEXICO

## OCCUPANT SEAT BELT OBSERVATION STUDY

DAYTIME AND NIGHTTIME SURVEYS

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## Table of Contents

Executive Summary .....	iii
2019 New Mexico Occupant Seat Belt Observation Study (Daytime) .....	1
2019 New Mexico Occupant Seat Belt Observation Study (Nighttime) .....	15
Recommendations .....	21
Appendices	
<b>Appendix I.</b> Weighting and Calculations Daytime Survey Instrument .....	APX I
<b>Appendix II.</b> Daytime Seat Belt Survey Instrument .....	APX II
<b>Appendix III.</b> Nighttime Seat Belt Survey Instrument .....	APX III



# EXECUTIVE SUMMARY

NEW MEXICO  
OCCUPANT SEAT BELT  
OBSERVATION STUDY

## 2019 New Mexico Occupant Seat Belt Observation Study (Daytime)

The purpose of the study is to provide a statewide estimate of daytime seat belt use using a National Highway Traffic Safety Administration (NHTSA)-approved sampling design. New Mexico's safety belt observation methodology has evolved considerably since the first surveys conducted in 1982. The current report will show seat belt results from 2005 to present.

In 2018, the road segments used for New Mexico's statewide seat belt survey were resampled to be consistent with federal regulations, which require a resampling of sites every five years. The sites were selected in a manner identical to that described in the approved survey design (created in 2013) but using updated data. Thus, observations for the 2018 (and now 2019) survey occurred at brand new sites which are different from the sites used for the 2013 through 2017 surveys.

Road segments from 19 of New Mexico's 33 counties (accounting for 85.5 percent of passenger vehicle crash-related fatalities) were sampled for inclusion in the survey (identical to those observed in 2013 to 2017). A total of 94 segments were observed with 28 on Primary highways and 33 each on Secondary and Local roads. All passenger vehicles (cars, pickups, vans and SUVs) with a gross vehicle weight up to 10,000 pounds were observed in the survey including small commercial vehicles. The target population was all drivers and right front seat passengers (excluding middle passengers and children harnessed in child safety seats) of vehicles traveling on public roads between the hours of 7 a.m. and 6 p.m. The observation period for each selected road segment was 20 minutes.

Quality control measures enacted during the study included: ensuring qualified individuals conducted the observations; assigning sites within relatively close geographic proximity as data collection clusters to increase efficiency and minimize travel costs; utilizing "Survey in progress" signs when necessary to alert motorists of the survey event in progress; and ensuring quality control monitors made random, unannounced visits to at least five percent of the observation sites to evaluate the observer's performance from a distance (if possible), and then work alongside the observer.



**91.8%**  
New Mexico's  
2019 seat belt  
use rate  
IS HIGHER THAN THE  
NATIONAL AVERAGE

## Report Organization

This report summarizes the results of New Mexico's 2019 Occupant Seat Belt Observation Study providing daytime and nighttime seat belt observation results. Recommendations based on the findings are presented. Appendices are given at the end of the report.



Pre and post Click It or Ticket (CIOT) data collection dates and the number of vehicles, total occupants, drivers and passengers observed are noted below.

2019	Vehicles	Occupants	Drivers	Passengers
PRE-Campaign	4,143	5,256	4,143	1,123
POST-Campaign	5,378	6,990	5,378	1,612

Daytime data collection efforts for the 2019 New Mexico Occupant Seat Belt Observation Study included a pre-measure conducted from April 29 through May 15, 2019 and a post measure conducted between June 3 through 18, 2019. Five observers gathered observation data for both waves.

The weighted (see Appendix I) seat belt use rate for the 2019 (June) study is 91.8 percent. The use rate for the 2018 (June) study is 90.2 percent. The difference between 2018's and 2019's use rate is 1.6 percentage points. This difference is not significant.

Analyses were also conducted using weighted data to explore pre to post program changes in daytime belt use for 2019. New Mexico drivers and front outboard passengers had a seat belt use rate of 90.0 percent during the pre-measure and 91.8 percent for the post-campaign measure. Confidence intervals indicate the change from pre to post was not significant. Unweighted data were used for all remaining analyses.

Driver belt use showed non-significant change from pre (90.3%) to post (92.6%). Passenger use rates remain similar (90.5% pre to 90.2% post). Pickup Truck seat belt use increased significantly, from pre to post (89.0% and 90.7%, respectively). Car/Van/SUV seat belt use increased significantly, from pre to post (90.9% to 92.6%, respectively). Road stratification analyses showed small increases from pre to post CIOT. Primary road belt use increased slightly from 92.3 to 93.5 percent (not significant); Secondary road belt use increased (89.4% and 91.3%, pre to post, not significant); and Local road belt use increased from

87.8 percent (pre) to 89.3 percent (post) (not significant). The difference between Car/Van/SUV Driver and Pickup Truck Driver seat belt use post measures (93.2% and 90.8%, respectively) is statistically significant. The difference between Car/Van/SUV Passenger belt use (90.5%) and Pickup Truck Passenger belt use (89.2%) was not significant.

During the study, 3,509 occupants were observed on Primary roads, 1,992 occupants were observed on Secondary roads, and 1,445 occupants were observed on Local roads. Primary roads had the highest seat belt usage rates at 93.5 percent. Secondary roads (91.3%) and Local roads (89.3%) showed lower use rates.

Daytime seat belt use in New Mexico increased slightly from the previous year. The pre-measure was exactly 90 percent. The good news is that the post (official) use rate increased for the first time in several years. It is too early to designate this increase as a trend and there is always the possibility that the increase is an anomaly masking flat use or a continuation of the downward trend. There should be some concern with the relatively low pre survey results. However, it appears that the enforcement efforts were successful in increasing use rates. According to prior research, seat belt enforcement tends to have a "ratcheting" effect on seat belt use. That is the use rate increases immediately after enforcement but then drops soon after. The drop, however, does not give back all the gains and the sustained rate is typically higher than the baseline. If this is the case, we should see a higher use rate for the 2020 pre-campaign measure (followed hopefully by an even higher 2020 final rate).



## 2019 New Mexico Occupant Seat Belt Observation Study (Nighttime)

The fifth New Mexico Nighttime Occupant Seat Belt Observation Study occurred in 2019. This study provides a statewide estimate of seat belt use for night drivers using the same 94 sites examined as part of the NHTSA-approved sampling design for daytime belt use in 2013. Since these observations occur a month or so after the daytime, we chose to keep the original sites. This allows us to better gauge change over time at night and since the method of site selection was the same for the 2013 daytime sites and the 2018 daytime sites, we can still reasonably compare day to night use.

Safer New Mexico Now and Preusser Research Group observers partnered to conduct the nighttime survey for adults in front seat outboard positions using night vision equipment when needed. The same vehicle and driver characteristics used to select vehicles for daytime observation were used in night observations, but a few changes were made to the protocol to facilitate nighttime data collection. Observations were made for vehicles traveling on public roads between the hours of 8:45 p.m. and 2 a.m. The observation period for each selected road segment was 45 minutes. The road segments remained the same, though the observer was permitted to adjust the location for vantage point in case of unsafe conditions and/or lighting conditions.

Observations at night were always conducted by a two-person team with one person acting as the observer and the other documenting the observation data as verbalized by the observer. Attempts were made to conduct night observations in locations with adequate overhead lighting when possible. Observers only used night vision equipment when roadway lighting was insufficient to make natural observations.



Data collection for the 2019 New Mexico Nighttime Occupant Seat Belt Observation Study was conducted from July 19 to July 24, 2019. Six observers gathered observation data over the 2019 study period with 1,340 vehicles observed and belt use noted for 1,840 occupants.

Shoulder belt use status was observed and recorded on 1,840 front seat occupants, including 1,340 drivers and 500 passengers. New Mexico nighttime drivers and front outboard passengers had a combined unweighted seat belt use of 87.5 percent. Driver usage was recorded at 87.2 percent and front seat outboard passenger usage at 88.4 percent. Shoulder belt use status in Cars/Van/SUV categories were observed and recorded on 1,520 front seat occupants, including 1,090 drivers and 430 passengers. Drivers in these vehicle categories accounted for 71.7 percent of persons observed. Nighttime drivers and front outboard passengers in these vehicle categories had a combined seat belt use of 88.7 percent. Driver usage was recorded at 88.6 percent and front seat outboard passenger usage at 88.8 percent.

Pickup driver nighttime seat belt use for drivers and front outboard passengers combined was 81.9 percent. Pickup truck Driver use was recorded

at 80.8 percent and front passenger seat belt use was recorded at 85.7 percent.

During the 2019 nighttime surveying period, 1,192 occupants were observed on Primary roads, 299 occupants were observed on Secondary roads, and 349 occupants were observed on Local roads. Approximately 1,500 of the vehicles observed fell into the car/van/SUV categories (1,520) and 320 trucks were observed. Secondary roads had the highest nighttime seat belt usage at 93.0 percent, followed by Primary roads at 89.0 percent. The lowest percentage of seat belt usage was observed on Local roads at 77.7 percent.

Nighttime seat belt observations from 2015 to 2019 took place one to two months following implementation of the CIOT high visibility enforcement campaign. A 2.2 percentage point reduction in use was observed from 2016 to 2017, which was further decreased by two percentage points from 2017 to 2018. However, the 2019 use rate is increased by 1.5 percentage point. This rate was similar to the increase in daytime use adding to the confidence that the daytime use rate is a sign of increased use from 2018. As with daytime belt use, pickup truck drivers demonstrate lower nighttime belt use. These should be considered important populations to target. The nighttime rate was more than four percentage points lower than the daytime rate.



## Recommendations

New Mexico's seat belt use rate has been declining over the last three years. However, the 2019 use rate is 91.8; an increase over last year and higher than the national average.

The increase in both the day and the night 2019 rate are positive indications of increased seat belt use. Given the prior existing downward trend the state should maintain focus on enforcement during CIOT in 2020 to maintain or increase seat belt use. The fact that the pre survey showed weighted use at exactly 90 percent could be a cause for alarm. However, to the extent that enforcement was effective at increasing the use rate this year, prior research suggests that the pre rate in 2020 should be slightly increased. If other waves of enforcement are undertaken in the year (prior to the 2020 CIOT enforcement effort) the chances of higher use in both the pre and post measures for 2020 are even greater.

That is, timely and strong programming should be undertaken to maintain or hopefully, increase the seat belt use rate in the state. There are many factors that can impact use rates like, type or intensity of media or seat belt enforcement. High visibility enforcement in particular is generally considered to be the best means for achieving increases in belt use. Enforcement rates are declining in much of the country.

As with previous years, there are areas deserving of extra efforts to continue to make New Mexico roads safer. Particularly, drivers of pickup trucks and drivers on local roads have the lowest daytime seat belt use rates. In addition, findings from the nighttime study showed lower seat belt use for the same subgroups of vehicles and road types compared to their corresponding daytime seat belt use rates.





## Report Organization

This report summarizes the results of the 2019 New Mexico Occupant Seat Belt Observation Study conducted since 1982. It continues the presentation of nighttime observation data which began in 2015. Both the daytime and nighttime surveys have a section in the report with seven subsections:

1) STUDY PURPOSE; 2) STUDY DESIGN OVERVIEW; 3) SAMPLING; 4) OBSERVER SELECTION, TRAINING, AND ON-SITE PROCEDURES; 5) DATA COLLECTION AND ANALYSIS; 6) RESULTS; AND 7) DISCUSSION.

A section for Recommendations presents findings based on both surveys. Appendices included at the end of the report include weighting methodology and the day and night observation forms.



## 2019 NEW MEXICO OCCUPANT SEAT BELT OBSERVATION STUDY DAYTIME

### Study Purpose

The purpose of this study is to use a NHTSA-approved sampling design to provide the State of New Mexico with a statewide estimate of seat belt use. In 2018, the road segments used for New Mexico's statewide seat belt survey were resampled to be consistent with federal regulations, which require a resampling of sites every five years. The sites were selected in a manner identical to that described in the approved survey design (created in 2013) but using updated data. Thus, observations for the 2018 survey occurred at brand new sites which are different from the sites used for the 2013 through 2017 surveys.

Sites were selected based on weighted random probability assessment of road segments from 19 New Mexico counties. These counties contained 85 percent of all motor vehicle occupant fatalities over the past several years (at the time of survey design). Preusser Research Group was contracted by the New Mexico Department of Transportation (NMDOT), Traffic Safety Division (TSD) to conduct the 2019 New Mexico Occupant Seat Belt Observation Study. Observers from the local organization Safer New Mexico Now provided Preusser Research Group with local personnel who surveyed seat belt use for adults in front seat outboard positions at 94 sites for both a pre and post CIOT campaign measure.





# Study Design Overview

Several research designs for belt use rates have been implemented since law implementation in 1982. The NHTSA's 2011 issuance of new Uniform Criteria for State Observational Surveys of Seat Belt Use resulted in new approved design being implemented for the seat belt survey since 2013.

A resample of sites used in the 2013 through 2017 was used for 2018 as mandated by NHTSA following the same site selection criteria as the previous design. Road segments from 19 of New Mexico's 33 counties (accounting for 85.4 percent of passenger vehicle crash-related fatalities) were sampled for inclusion in the survey. The road segments were divided into Primary, Secondary or Local road classifications for stratification and sampling selection. Last year was the first year of resample and this year there were no change in the sites; several sites that were selected as primary sites were replaced with spares. Replacement occurred for sites on unpaved roadways, dead ends, and tribal lands among others. Four of the sites had zero cars observed at them. The target population included all drivers and right front seat passengers (excluding middle passengers and children harnessed in child safety seats) of vehicles traveling on public roads between the hours of 7 a.m. and 6 p.m. All passenger vehicles (cars, pickup trucks, vans and SUVs) with a gross vehicle weight up to 10,000 pounds were observed in the survey. Observations included small commercial vehicles. The observation period for each selected road segment was 20 minutes. The road segments vary in length, permitting the observer to adjust for vantage point in case of unsafe conditions at the usual observation location. Data collection was conducted by trained observers, many who participated in previous seat belt surveys. Data were entered and analyzed by Preusser Research Group.



## Sampling

As new redesigns were implemented over the years, the sampling segments that were used varied for the annual rates calculated and reported in this document. There was a new design in 2012 which was revised in 2013 and the current survey sites were resampled (as required by federal regulation) using the design developed in 2013.

For the 2012 survey, a file of road segments was obtained from NHTSA containing 2010 TIGER data developed by the U.S. Census Bureau. These segments are classified by the U.S. Census Bureau using the MAF/TIGER Feature Class Code (MTFCC) with the three main classifications of primary roads, secondary roads and local roads. Road segment listings in the file included those designations along with specified segment lengths as determined by TIGER. This descriptive information allowed for stratification of road segments by MTFCC. A systematic probability proportional to size (PPS) sampling (with no certainty sites) was employed to then select the road segments to be used as observation sites. These were used for the data collection years of 2012 to current.

A year after the resample changes described above were made, the number of road segments selected, and the number of vehicles observed were also revised. The same 108 road segments had been used for seat belt observations from 1998 through 2012. This was reduced to 94 segments in 2013 with 28 on Primary highways and 33 each on Secondary and Local roads. These reductions were structured to most effectively manage resources while also meeting the NHTSA-required standard error rate of 2.5 percent or less. Additional data collection may be scheduled in instances where the standard error rates exceed required levels. Exclusion options were exercised to remove aberrant locations such as rural roads in non-MSA counties, non-public roads, unnamed roads, unpaved roads, vehicular trails, access ramps, cul-de-sacs, traffic circles, and service drives.

When any of these selected road segments become permanently unavailable, a reserve road segment is used. The reserve road segment sample consists of an additional 20 percent of road segments per MTFCC. More detailed information about the sampling methodology can be found in the Appendix of the 2014 report (Davis, Pearce & Logstead, 2014).

The same method described for the 2013 redesign was used to sample new sites for the 2018 survey and same sites were used for 2019. The distribution of sites across roadway type remained consistent. The end result was new sites observed that differed from those that were in use from 2013 through 2017.

## Observer Selection, Training, and On-site Procedures

Qualified individuals meeting New Mexico-established criteria conducted the observations. A three-hour refresher training was held. Practice surveys were completed and checks for inter-observer consistency were performed.

Maps showing the location of all observation sites and Site Assignment Sheets were provided to the observers. These indicated the observed road name, the crossroad included within the road segment (or nearest crossroad), assigned date, assigned time, and assigned direction of travel. Sites within relatively close geographic proximity are assigned as data collection clusters to minimize travel costs. During the 2019 official survey, as in previous years, "Survey in progress" signs were used when necessary, alerting motorists of the survey event in progress.





During the site survey, the observer:

- Observed as many lanes of traffic as could be comfortably monitored while obtaining data on 99 percent of the vehicles;
- Observed only one predetermined direction of traffic (the opposite direction could be used and noted if sunshine in the eyes or other factors hampered observation);
- Observed all passenger vehicles, including commercial vehicles weighing less than 10,000 pounds;
- Recorded seat belt use by both drivers and right front seat occupants, including children riding in booster seats (the only right front seat occupants excluded from the study were child passengers traveling in child “car seats” with harness straps).

All observers used audio recorders to record observations when observing in high traffic volume segments and then transcribed them to the 2019 NMDOT Seat Belt Observation Form. Observers marked the forms directly during observation periods in low volume areas. Observers recorded belt use by marking the form appropriately for each person in each vehicle, with no marks made for absent passengers. A seat belt observation form was provided for entry (Appendix II). Occupants were recorded as:

- Belted if the shoulder belt was in front of the person’s shoulder;
- Unbelted if the shoulder belt was not in front of the person’s shoulder;
- Unknown if it could not reasonably be determined whether the driver or right front passenger was belted.

Quality control monitors made random, unannounced visits to at least five percent of the observation sites. During these visits, the quality control monitor evaluated the observer’s performance from a distance (if possible), and then worked alongside the observer. The quality control monitor ensured that the observer was following all survey protocols including arriving on time at assigned sites, completing the cover sheet and observation forms, and making accurate observations of seat belt use. The quality control monitor prepares site visit reports highlighting any problems with data collection site locations and observer performance. The quality control monitor also serves as a point of contact during the data collection should the observers have a question arising during this time.

## Data Collection and Analysis

Daytime data collection efforts for the 2019 New Mexico Occupant Seat Belt Observation Study included a pre-measure conducted from April 29 through May 15, 2019 and a post measure conducted between June 6 and June 18, 2019. Five observers gathered observation data. Completed observation data forms were sent to Preusser Research Group for data entry using Excel and/or SPSS. Data cleaning procedures were performed including 10 percent entry checks to assess entry accuracy across all data entry forms completed and variable frequency counts to identify ineligible entry values or outliers.

## Results

During the pre-measure, shoulder belt use was observed and recorded on 5,256 front seat occupants including 4,133 drivers and 1,123 passengers. Drivers accounted for 78.6 percent of persons observed with passengers accounting for 21.4 percent. For the post measure, shoulder belt use status was observed and recorded on 6,990 front seat occupants, including 5,378 drivers and 1,612 passengers. Drivers accounted for 77.0 percent of persons observed and passengers accounted for 23.0 percent of persons observed.

A total of 91 (47 in pre-and 44 in post) observations (less than 1%) of the entire observation sample for both waves combined were marked as seat belt use “unknown.” These cases were removed for weighting and analysis, but the overall numbers were well within allowable targeted observation limits therefore no sites needed to be re-observed.

The total number of vehicles and occupants observed for 2005 to 2019 post measures are presented in Table 1. (Reduced numbers of vehicles and occupants observed beginning in 2013 came as a result of a study design change). Probabilities to judge significance were set to 0.05. That is, the probability of a difference being due to chance must be less than 5 percent for us to deem the difference significant.

**TABLE 1**  
Vehicles and Occupants Observed in Official Seat Belt Surveys, New Mexico, 2005-2019

	2005	2006	2007	2008	2009
Number of Observers	5	5	5	5	4
Total Vehicles Observed	15,540	15,362	15,085	15,153	14,756
Total Occupants Observed	18,378	17,836	17,593	17,525	17,314

	2010	2011	2012	2013	2014
Number of Observers	4	4	4	3	3
Total Vehicles Observed	14,977	14,531	14,059	5,215	3,870
Total Occupants Observed	17,411	16,588	16,151	6,874	5,013

	2015	2016	2017	2018	2019
Number of Observers	4	4	4	4	5
Total Vehicles Observed	6,540	6,660	6,780	4,060	5,378
Total Occupants Observed	8,449	8,530	8,642	5,158	6,690



## Overall and Pre to Post Weighted Daytime Seat Belt Use

Analyses were conducted to explore pre to post program changes in daytime belt use for 2019. The official daytime use rate for New Mexico was 91.8 percent, compared to 90.2 percent in 2018. Although the percentage point difference is +1.6, the difference is not significant. The total number of observations in 2019 was more than the last year. The 2018 and 2019 confidence intervals show a large amount of overlap, thus indicating no significant change. Although not statistically significant, the increase in use may be meaningful and hopefully represents the start of an upward trend (reversing the pre-existing downward trend seen over the last three years). New Mexico Drivers and front outboard Passengers had a seat belt use rate of 90.0 percent during the pre-measure, 1.8 percentage points lower than the final measurement. All remaining analyses on belt use data are with unweighted data.

## Categories of Daytime Seat Belt Use (Raw Data)

Pre to post analyses were conducted to identify changes in belt use during the campaign while examination of trends was used to explore belt use data going back to 2005. Tables 2a and 2b show the Driver, Passenger and combined occupant seat belt use rates gathered during the pre and post measures in 2019.

For the pre-measure, New Mexico drivers had *unweighted* seat belt use rate of 90.3 percent (90.0% weighted). *Unweighted* belt use rate increased to 92.0 percent (91.8% weighted) post-measure (significant). Driver belt use showed a slight (non-significant) increase in belt use from 90.3 percent (pre) to 92.6 percent (post).

**TABLE 2A**  
Pre-Enforcement Seat Belt Use 2019

Type of Vehicle	Number of Occupants Observed (PRE)	Seat Belt Use Percent (PRE)
Car/Van/SUVs (all)	3,786	90.9%
Driver	2,956	91.0%
Passenger	829	90.5%
Pickup Trucks (all)	1,421	89.0%
Driver	1,150	88.7%
Passenger	271	90.4%
All Vehicles (all)	5,207	90.4%
Driver	4,107	90.3%
Passenger	1,100	90.5%

**TABLE 2B**  
Post-Enforcement Seat Belt Use 2019

Type of Vehicle	Number of Occupants Observed (POST)	Seat Belt Use Percent (POST)
Car/Van/SUVs (all)	5,082	92.6%
Driver	3,861	93.2%
Passenger	1,221	90.5%
Pickup Trucks (all)	1,864	90.7%
Driver	1,495	90.8%
Passenger	369	89.2%
All Vehicles (all)	6,946	92.0%
Driver	5,356	92.6%
Passenger	1,590	90.2%

Driver belt use increased significantly from pre (90.3%) to post (92.6%). The percent of pre vs. post belted Passengers remains the same (not significant) from 90.5 to 90.2 percent.

Changes pre to post campaign use by vehicle type (Car, Truck, Van and SUV) and road type (Primary, Secondary, and Local Roads) were also examined. Two vehicle categories were created, one which included pickup trucks only and one with cars, SUVs and vans combined. The isolation of pickup trucks as its own category was due to the existence of previous analyses demonstrating that pickup trucks lag behind the other three vehicle types in seat belt use.

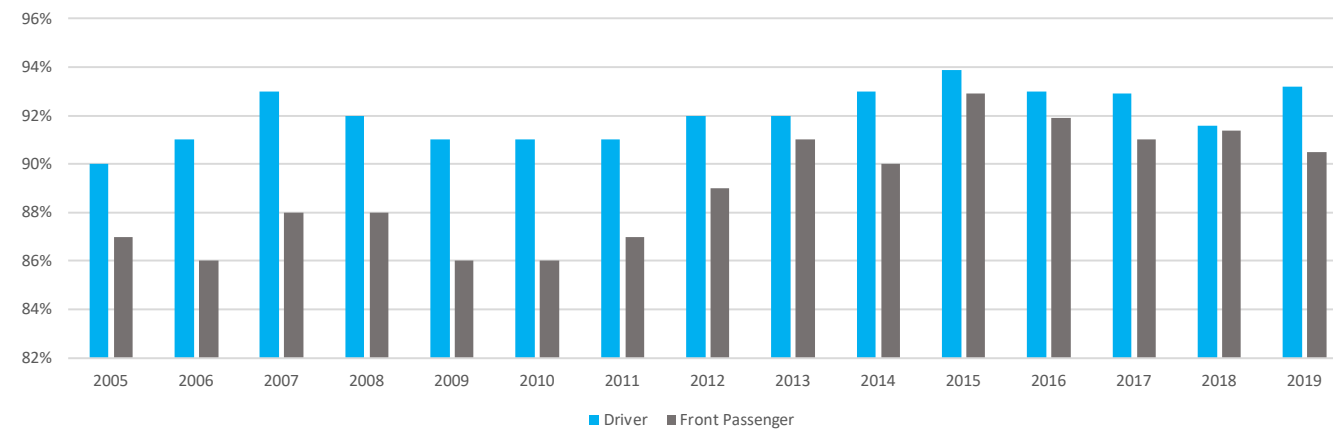
Pickup Truck seat belt use slightly increased from pre to post (89.0% and 90.7% respectively), which is a significant change. Car/Van/SUV seat belt use also showed increase in use (significant increase from pre to post 90.9% and 92.6%, respectively). The three road types were analyzed separately for pre to post changes in belt use. Primary road belt use increased slightly (non-significant) from 92.3 to 93.5 percent. Secondary road belt use increased from pre to post (89.4% to 91.3%, respectively-significant). Local road belt use increased slightly from 87.8 to 89.3 percent (significant).



Trend assessments of daytime seat belt use post campaign showed that Driver and Passenger belt use rates by vehicle type has fluctuated slightly in recent years. As shown by Figure 1, observed Car/Van/SUV driver seat belt use rates reached a peak of 94 percent in 2015 and decreased slightly to 93 percent in 2016 and 2017 and decreased

further to 92% in 2018. The 2019 rate slightly increased to 93.1 percent. Passenger use showed a positive trend from 2010 to 2015 (peaking at 93%) and decreased slightly to 92 percent in 2016 and 91 percent in 2017 and 2018. The passenger seat belt use remained at 91% in 2019.

**FIGURE 1**  
Official Observed Car/Van/SUV Seat Belt Use, New Mexico, 2005-2019

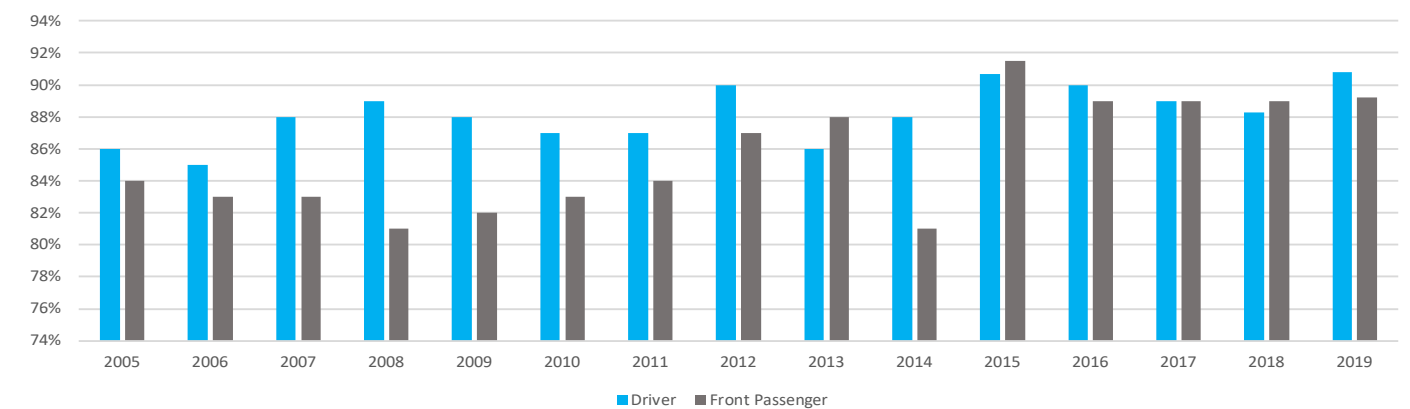


Source: 2019 Annual New Mexico Official Seat Belt Observation Survey; percentages rounded to the nearest whole number.

Pickup driver seat belt use measured in 2019 was recorded at 90.8 percent compared to Car/SUV/Van driver use of 93.2 percent (significant). Pickup truck passenger use (89.2%) was not significantly different than non-pickup truck passenger use (90.5%). Figure 2 shows fluctuations in pickup truck driver belt use. It reached a peak of 91 percent in 2015 followed by a decreasing trend since (90% in 2016, 89% in 2017 and 88% in 2018),

but went back up to the highest point (91%) in 2019. Pickup truck passenger seat belt use shows a more continuous rising trend from 2008 through 2013, with a steep drop off in 2014 but a recovery and increase to 92 percent belt use for 2015. Since then, pickup truck passenger belt use has remained stable at 89 percent and increased in 2019 (89.2%).

**FIGURE 2**  
Official Observed Pickup Truck Seat Belt Use, New Mexico, 2005-2019



Source: 2019 Annual New Mexico Official Seat Belt Observation Survey; percentages rounded to the nearest whole number.

Road class differences in observed seat belt use were also explored. During the 2019 New Mexico Occupant Seat Belt Observation Study, 3,509 occupants were observed on Primary roads, 1,992 occupants were

observed on Secondary roads, and 1,445 occupants were observed on Local roads. Most vehicles observed fell into the Car/Van/SUV categories (5,056) and 1,864 trucks were observed.



Table 3 provides counts of the numbers of people observed by road classification and vehicle type. Figure 3 illustrates observed seat belt use for Car/Van/SUV and pickup truck belt use on the three road classifications.

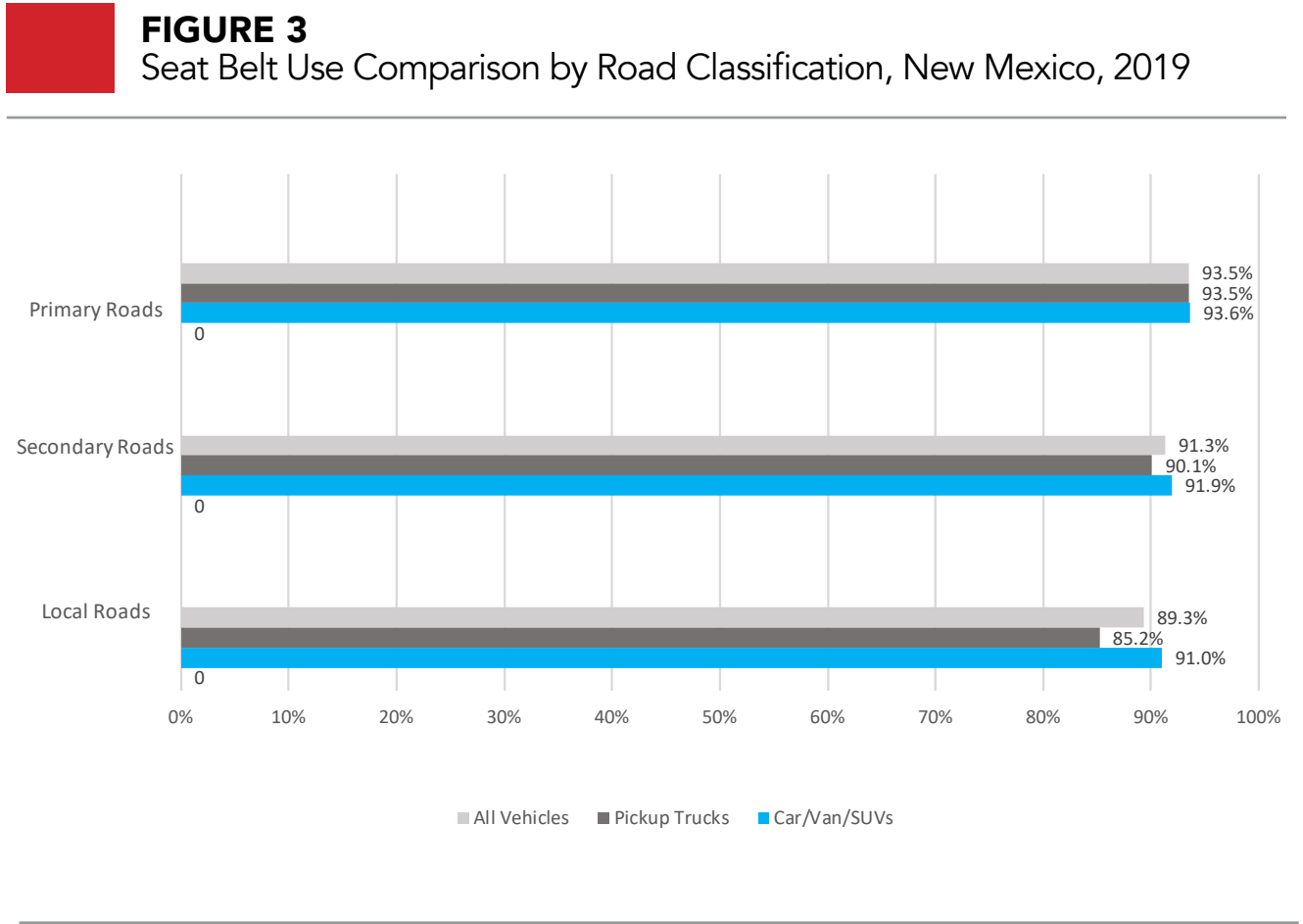


TABLE 3

Surveys by Road Classification and Vehicle Type, New Mexico, 2019

Road Classification	Car/Van/SUVs	
	# People Observed	Belt Use
Primary Roads	2,685	93.6%
Secondary Roads	1,378	91.9%
Local Roads	1,019	91.0%
Statewide Total	5,082	92.6%

Road Classification	Pickup Trucks	
	# People Observed	Belt Use
Primary Roads	824	93.5%
Secondary Roads	614	90.1%
Local Roads	426	85.2%
Statewide Total	1,864	90.7%

Road Classification	All Vehicles	
	# People Observed	Belt Use
Primary Roads	3,509	93.5%
Secondary Roads	1,992	91.3%
Local Roads	1,445	89.3%
Statewide Total	6,946	92.0%

Combining across vehicle types, the lowest percentage of seat belt usage (post) was observed on Local roads at 89.3 percent compared to 91.3 percent for Secondary roads and 93.5 percent for Primary roads. The difference in seat belt use between Primary and Local roads was significant. The lowest belt use rate overall was in pickup truck occupants on local roads, at 85.2 percent. Pickup truck belt use peaked at 93.5 percent on Primary roads, followed by Secondary roads at 90.1 percent. The only significant difference in pickup truck belt use was between Primary and Local roads. Car/Van/SUV use followed a similar pattern with highest use found on Primary roads (93.6%), followed by Secondary roads (91.9%), and was lowest on Local roads (90.0%). The difference in Car/Van/SUV belt use was significant between Primary and Secondary roads.





## Discussion

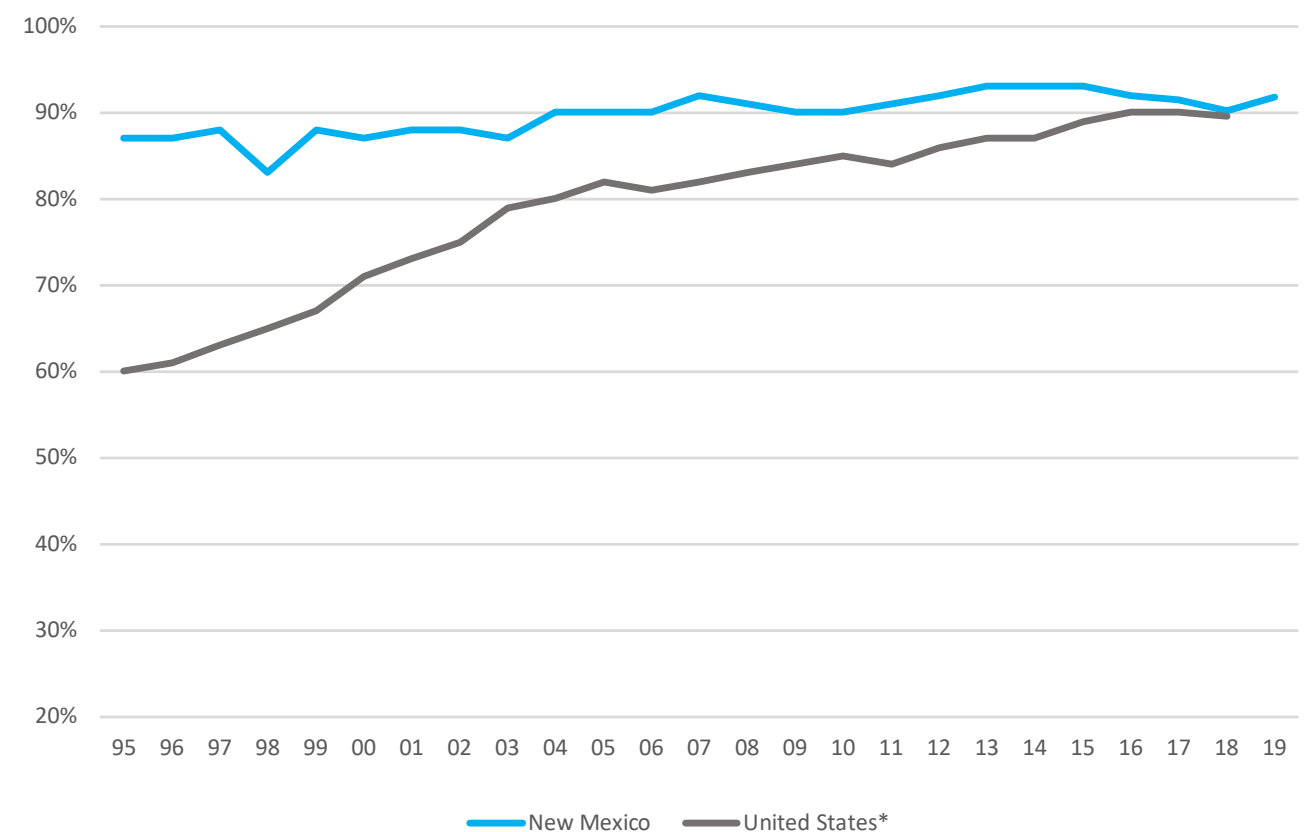
Daytime seat belt use in New Mexico increased slightly from the previous year. The weighted pre-measure was exactly 90 percent. The good news is that the post (official) use rate increased for the first time in several years. It is too early to designate this increase as a trend and there is always the possibility that the increase is an anomaly masking flat use or a continuation of the downward trend. There should be some concern with the relatively low pre survey results. However, it appears that the enforcement efforts were successful in increasing use rates. According to prior research seat belt enforcement tends to have a “ratcheting” effect on seat belt use. That is, the use rate increases immediately after enforcement but then drops soon after. The drop, however, does not give back all the gains and the sustained rate is typically higher than the baseline. If this is the case, we should see a

higher use rate for the 2020 premeasure (followed hopefully by an even higher 2020 final rate).

Most categories showed small increases in belt use from pre to post (many of those increases are indeed significant). Primary road users show consistently high belt use rates (over 90 percent belted) and showed a slight increase from pre (92.3%) to post (93.5%) (not significant). Similarly, secondary road users showed a slight increase from pre (89.5%) to post (91.3%), and belt use rates on local roads also showed a slight increase in use (from 87.8 pre to 89.3% post) (not significant). Although these differences were not significant, they are encouraging. Some subgroups (i.e. local roads, pickup trucks occupant) with substantially lower use rates could be targets for future programmatic and campaign efforts.

**FIGURE 4**

Official Observed Seat Belt Use -- New Mexico vs. U.S. 1995-2019



\*Seat Belt Use in 2018 - Overall Results. Traffic Safety Facts. NHTSA. June 2019.





# 2019

## NEW MEXICO OCCUPANT SEAT BELT OBSERVATION STUDY **NIGHTTIME**

### Study Purpose

This portion of the study provides a statewide estimate of seat belt use for night drivers. This is the fifth year for nighttime seat belt data collection. Safer New Mexico Now and Preusser Research Group observers partnered to conduct the nighttime survey for adults in front seat outboard positions using night vision equipment when needed.

### Study Design Overview

This study replicates the method used in the 2015-2017 studies. Data collection was conducted by trained Preusser Research Group nighttime observers partnering with trained daytime observers, who all had participated in previous seat belt surveys. Data were entered and analyzed by Preusser Research Group.

Just as with the daytime seat belt survey, all passenger vehicles (cars, pickups, vans and SUVs) with a gross vehicle weight up to 10,000 pounds were observed in the survey. This included small commercial vehicles. The target population was all drivers and right front seat passengers (excluding middle passengers and children harnessed in child safety seats) of vehicles traveling on public roads at night, with observers assessing belt use between the hours of 9 p.m. and 2 a.m. The observation period for each selected road segment was 45 minutes. The road segments vary in length permitting the observer to adjust for vantage point in case of unsafe conditions and/or lighting conditions at the usual observation location.

### Sampling

The fifth New Mexico Nighttime Occupant Seat Belt Observation Study occurred in 2019. This study provides a statewide estimate of seat belt use for night drivers using the same 94 sites examined as part of the NHTSA-approved sampling design for daytime belt use in 2013. Since these observations occur a month or so after the daytime, we chose to keep the original sites. This allows us to better gauge change over time at night and since the method of site selection was the same for the 2013 daytime sites and the 2018 daytime sites, we can still reasonably compare day to night use.



To recap the sampling methodology used when the night sites were initially selected in 2013, seven counties were involved in the nighttime survey (Bernalillo, Doña Ana, McKinley, Otero, San Juan, Sandoval, and Santa Fe). From these counties, 35 sites were selected (on a prior basis) using the number of daytime observations to weight selection toward higher volume sites (a process fundamentally similar to that used to select daytime sites from the universe of roadways).

## Observer Selection, Training, and On-Site Procedures

The on-site procedures used for nighttime observations were very similar to the daytime procedures with a few modifications. Observations at night were always conducted by a two-person team. Preusser Research Group personnel with previous night observation experience were paired with an accompanying team member from Safer New Mexico Now with primary experience in daytime observations and some nighttime experience. Attempts were made to conduct night observations in locations with adequate overhead lighting when possible. Observers only used night vision equipment when roadway lighting was insufficient to make observations. The near-military grade equipment (night vision goggles and infrared spotlights not visible to the naked eye) provided visibility in both dark and less dark conditions. This made vehicle occupants visible for belt observations even in total darkness. Local enforcement agencies were made aware of survey operations.

## Data Collection and Analysis

Data collection for the 2019 nighttime survey was conducted from July 19 through July 24, 2019. One person on the team served as the observer and would do the actual observation while the second team member served as a recorder who wrote down the information verbalized by the observer. Six observers gathered observation data over the 2019 study period with 1,340 vehicles observed, and belt use notated for 1,840 occupants (see Table 4). The data collection sheet used for nighttime observations is included in Appendix III.

**TABLE 4**  
Vehicles and Occupants Observed in Official Nighttime Seat Belt Surveys, New Mexico, 2015-2019

	2015	2016	2017	2018	2019
Number of Observers	7	6	5	6	6
Total Vehicles Observed	1,142	1,588	1,452	1,261	1,340
Total Occupants Observed	1,505	2,174	1,990	1,735	1,840

Data collected by the observers in the field were examined for completeness and checked for accuracy prior to submission. Completed observation data forms were sent to Preusser Research Group for data entry using Excel and/or SPSS. Data cleaning procedures were performed including 10 percent entry checks to assess entry accuracy across all data entry forms completed and variable frequency counts to identify ineligible entry values or outliers.

Weighting procedures were not required for the nighttime observation data analysis.

## Results

Table 5 shows the number of occupants and nighttime seat belt use by vehicle type.

**TABLE 5**  
Seat Belt Usage from New Mexico 2019 Nighttime Occupant Seat Belt Observation Study

Type of Vehicle	Number of Occupants Observed	Number of Seat Belt Users	Seat Belt Use (Percent)
Car/Van/SUVs (all)	1,520	1,348	88.7%
Driver	1,090	966	88.6%
Passenger	430	382	88.8%
Pickup Trucks (all)	320	262	81.9%
Driver	250	202	80.8%
Passenger	70	60	85.7%
All Vehicles (all)	1,840	1,610	87.5%
Driver	1,340	1,168	87.2%
Passenger	500	442	88.4%

Shoulder belt use status was observed and recorded on 1,840 front seat occupants, including 1,340 drivers and 500 passengers. Drivers accounted for 72.8 percent of persons observed and passengers accounted for 27.2 percent of persons observed. New Mexico nighttime drivers and front outboard passengers had a combined unweighted seat belt use of 87.5 percent. Nighttime use rates for 2015, 2016, 2017 and 2018 varied (82.4%, 89.4%, 87.6%, and 85.7% respectively). Driver usage was recorded at 87.2 percent and front seat outboard passenger usage at 88.4 percent.

Shoulder belt use status in Cars/Van/SUV categories were observed and recorded on 1,520 front seat occupants, including 1,090 drivers and 430 passengers. Driver accounted for 71.7 percent of persons observed. Nighttime drivers and front outboard passengers in these vehicle categories had a combined seat belt use of 88.7 percent. Driver usage was recorded at 88.6 percent and front seat outboard passenger usage at 88.8 percent.



Pickup driver nighttime seat belt use for drivers and front outboard passengers combined was 81.9 percent. Pickup Truck driver use was recorded at 80.8 percent and front passenger seat belt use was recorded at 85.7 percent. The difference between observed truck driver seat belt use (80.8%) and Car/Van/SUV driver seat belt use (88.6%) is statistically significant.

During the 2019 nighttime survey period, 1,192 occupants were observed on Primary roads, 299 occupants were observed on Secondary roads, and 349 occupants were observed on Local roads. Table 6 illustrates observed seat belt use for Car/Van/SUV belt use and pickup truck belt use on the three road classifications. Local roads had the lowest percentage of observed seat belt usage at 77.7 percent.

**TABLE 6**  
Nighttime Surveys by Road Classification and Vehicle Type,  
New Mexico, 2019

Road Classification	Car/Van/SUVs	
	# People Observed	Belt Use
Primary Roads	1,003	89.8%
Secondary Roads	229	93.9%
Local Roads	288	80.6%
Statewide Total	1,520	88.7%

Road Classification	Pick Up Trucks	
	# People Observed	Belt Use
Primary Roads	189	84.7%
Secondary Roads	70	90.0%
Local Roads	61	63.7%
Statewide Total	320	81.9%

Road Classification	All Vehicles	
	# People Observed	Belt Use
Primary Roads	1,192	89.0%
Secondary Roads	299	93.0%
Local Roads	349	77.7%
Statewide Total	1,840	87.5%



As illustrated in Table 6, in 2019 Secondary roads had the highest nighttime seat belt usage at 93.0 percent, followed by Primary roads at 89.0 percent. The lowest percentage of seat belt usage was observed on Local roads at 77.7 percent. The percent difference in seat belt use between both Primary and Secondary roads was not significant. Belt use on Local roads was significantly lower than Primary roads. Belt use by Car/Van/SUV occupants showed a similar pattern, with highest belt use observed on Secondary roads (93.9%), followed by Primary roads (89.8%), and Local roads (80.6%). Belt use in pickup trucks was highest on Secondary roads (90.0%), followed by Primary roads (84.7%), and lowest on Local roads (63.7%).

## Discussion

A 2-percentage point reduction in use from 2017-2018 was followed by a 1.5-point increment from 2018-2019. Despite that the 2019 rate was higher than in 2018, the rates were still below highest recorded (89.4%) in 2016. It appears that nighttime vehicles tend to include proportionally more local vehicles and more passengers than daytime observations. Both these groups tend to have lower belt use. Additionally, as with daytime belt use, pickup truck drivers demonstrate lower nighttime belt use. These should be considered important populations to target.



## RECOMMENDATIONS AND REFERENCES

NEW MEXICO OCCUPANT SEAT BELT  
OBSERVATION STUDY

### Recommendations

New Mexico's seat belt use rate has been declining over the last three years. However, the 2019 use rate is 91.8; an increase over last year and higher than the national average.

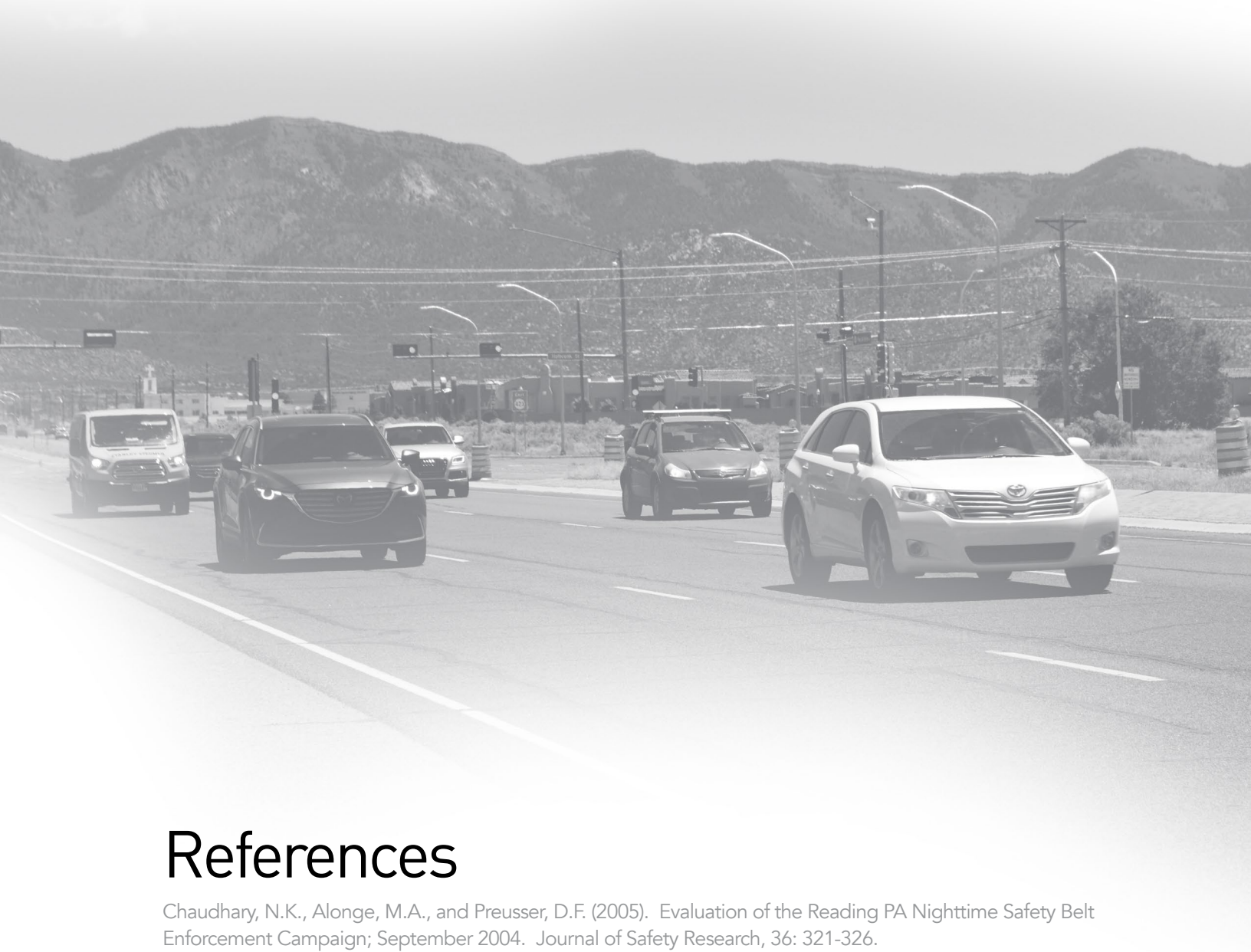
The increase in both the day and the night 2019 rate are positive indications of increased seat belt use. Given the prior existing downward trend the state should maintain focus on enforcement during CIOT in 2020 to maintain or increase seat belt use. The fact that the pre-survey showed weighted use at exactly 90 percent could be a cause for alarm. However, to the extent that enforcement was effective at increasing the use rate this year, prior research suggests that the pre-rate in 2020 should be slightly increased. If other waves of enforcement are undertaken in the year (prior to the 2020 CIOT enforcement effort) the chances of higher use in both the pre-and post-measures for 2020 are even greater.

That is, timely and strong programming should be undertaken to maintain or, hopefully, increase the use rate in the state. There are many factors that can impact use rates like, type or intensity of media or seat belt enforcement. High visibility enforcement is generally considered to be the best means for achieving increases in belt use. Enforcement rates are declining in much of the country.

It may be that sampling based on a measure of traffic volume, versus the current length of roadway, will result in a "better" representation of actual traffic flow in the state.

As with previous years, there are areas deserving of extra efforts to continue to make New Mexico roads safer. Particularly, drivers of pickup trucks and drivers on local roads have the lowest daytime seat belt use rates. In addition, findings from the nighttime study showed lower belt use for the same subgroups of vehicles and road types compared to their corresponding daytime seat belt use rates.





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NEW MEXICO  
OCCUPANT SEAT BELT  
OBSERVATION STUDY  
**REPORT**  
PREPARED BY:

Preusser Research Group, Inc. for the New Mexico Department of Transportation  
Content design and edited by Safer New Mexico Now

Electronic version available at [www.preussergroup.com](http://www.preussergroup.com) and [www.safernm.org](http://www.safernm.org)



APPENDIX I

# Weighting and Calculations

The following were taken from the New Mexico report 2014 (CITE).

## A.0 Imputation, Estimation and Variance Estimation

### A.1 Imputation

No imputation will be done on missing data.

### A.2 Sampling Weights

The following is a summary of the notation used in this section.

- $h$  – Subscript for road segment strata
- $i$  – Subscript for road segment
- $j$  – Subscript for time segment
- $k$  – Subscript for road direction
- $l$  – Subscript for lane
- $m$  – Subscript for vehicle
- $n$  – Subscript for front-seat occupant

Under this stratified multistage sample design, the inclusion probability for each observed vehicle is the product of selection probabilities at all stages:  $\pi_{hi}$  for road segment,  $\pi_{j|hi}$  for time segment,  $\pi_{k|hij}$  for direction,  $\pi_{l|hij}$  for lane, and  $\pi_{m|hijl}$  for vehicle. So the overall vehicle inclusion probability is:

$$\pi_{hijklm} = \pi_{hi} \pi_{j|hi} \pi_{k|hij} \pi_{l|hij} \pi_{m|hijl}$$

The sampling weight (design weight) for vehicle  $m$  is:

$$whijklm = \pi_{hijklm}$$

### A.3 Nonresponse Adjustment

Given the data collection protocol described in this plan, including the provision for the use of alternate observation sites, road segments with non-zero eligible volume, and yet zero observations conducted should be a rare event. Nevertheless, if eligible vehicles passed an eligible site or an alternate eligible site during the observation time but no usable data were collected for some reason, then this site will be considered as a “nonresponding site.” The weight for a nonresponding site will be distributed over other sites in the same road type.

Let:

$$whi = \pi_{hi}$$

be the road segment weight. The nonresponding site nonresponse adjustment factor:

$$f_h = \sum_{responding\ i} whi$$

will be multiplied to all weights of non-missing road segments in the same road type of the same county and the missing road segments will be dropped from the analysis file. However, if there were no vehicles passing the site during the selected

observation time (20 minutes) then this is simply an empty block at this site and this site will not be considered as a nonresponding site, and will not require nonresponse adjustment. In the event that the number of “unknown” seat belt use values exceeds ten percent of the total number of use data collected, observers will be sent to the sites with the largest proportions of unknown (i.e. nonresponse) values. Additional observations will be made, on the same day of the week and at the time of day as the original observations, until the total nonresponse rate is ten percent or less.

### A.4 Estimators

#### *Seat Belt Use Rate Estimators*

Noting that all front-seat occupants were observed, let the driver/passenger seat belt use status be:

$$y_{hijklm} = \begin{cases} 0 & otherwise \end{cases}$$

The seat belt use rate estimator is a ratio estimator:

$$\rho = \frac{\sum_{all\ hijklmn} whijklm}{\sum_{all\ hijklmn} y_{hijklm}}$$

This estimator captures traffic volume and vehicle miles traveled through design weights (which will include nonresponse adjustment factors as described in section 5.3, if any) at various stages and it does not require knowledge of VMT/DVMT.

### A.5 Variance Estimation

The Survey means procedure available in SAS is well suited to provide the variance for this sample design. The procedure provides options to accommodate a clustered, PPS sample with different weights based on the proportion of road segments from the different MTFCC classes.



APPENDIX II

Daytime Seat Belt Survey Instrument

Sheet Number \_\_\_\_ of \_\_\_\_ for this Observation Site

Official Seat Belt Observation Form

MAY 2019

OBSERVER NAME: \_\_\_\_\_

Observation Date/Time	Day of the week (Circle one)
Date of Observation: ____/____/2019	Mon Tue Wed Thur Fri Sat Sun
Time Observation Began _____ Ended _____	

OBSERVATION SITE LOCATION/DESCRIPTION	
Designated Site Number: _____	Sheet Number ____ of ____ for this Observation Site
City & County: _____	Roadway/Street Name: _____
Number of Travel Lanes in Observed Direction: _____	Posted Speed Limit: _____
Observed Travel Lane: (circle one) 1 2 3 4 Other: _____	

OBSERVATION SURVEY  
INSTRUCTIONS: For each observed vehicle start a new row. Place an "X" in the appropriate column for driver and outboard front passenger (if applicable). Passenger children are to be counted under "YES" if restrained with seat belt or car seat, or "NO" if unrestrained. For EXEMPT VEHICLES (trucks over 10,000 lbs. and cars older than 1968 model year) seatbelt information is not required.

Please use the box below to draw a diagram of the area where the survey was conducted. Include roadway design, lanes of travel, direction of lanes, road name, and lane observed for survey.

Diagram Box

New Mexico Daytime Seat Belt Observation Data Collection Form

#	Vehicle Type		Driver Seat Belted			Passenger Seat Belted			#	Vehicle Type		Driver Seat Belted			Passenger Seat Belted		
	C	T	Yes	No	Unk	Yes	No	Unk		C	T	Yes	No	Unk	Yes	No	Unk
1									36								
2									37								
3									38								
4									39								
5									40								
6									41								
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34									69								
35									70								
Totals									Totals								



APPENDIX III

Nighttime Seat Belt Survey Instrument

New Mexico Nighttime Seat Belt Observation Data Collection Form

SITE ID NUMBER: \_\_\_\_\_

CITY: \_\_\_\_\_

OBSERVER NAME: \_\_\_\_\_

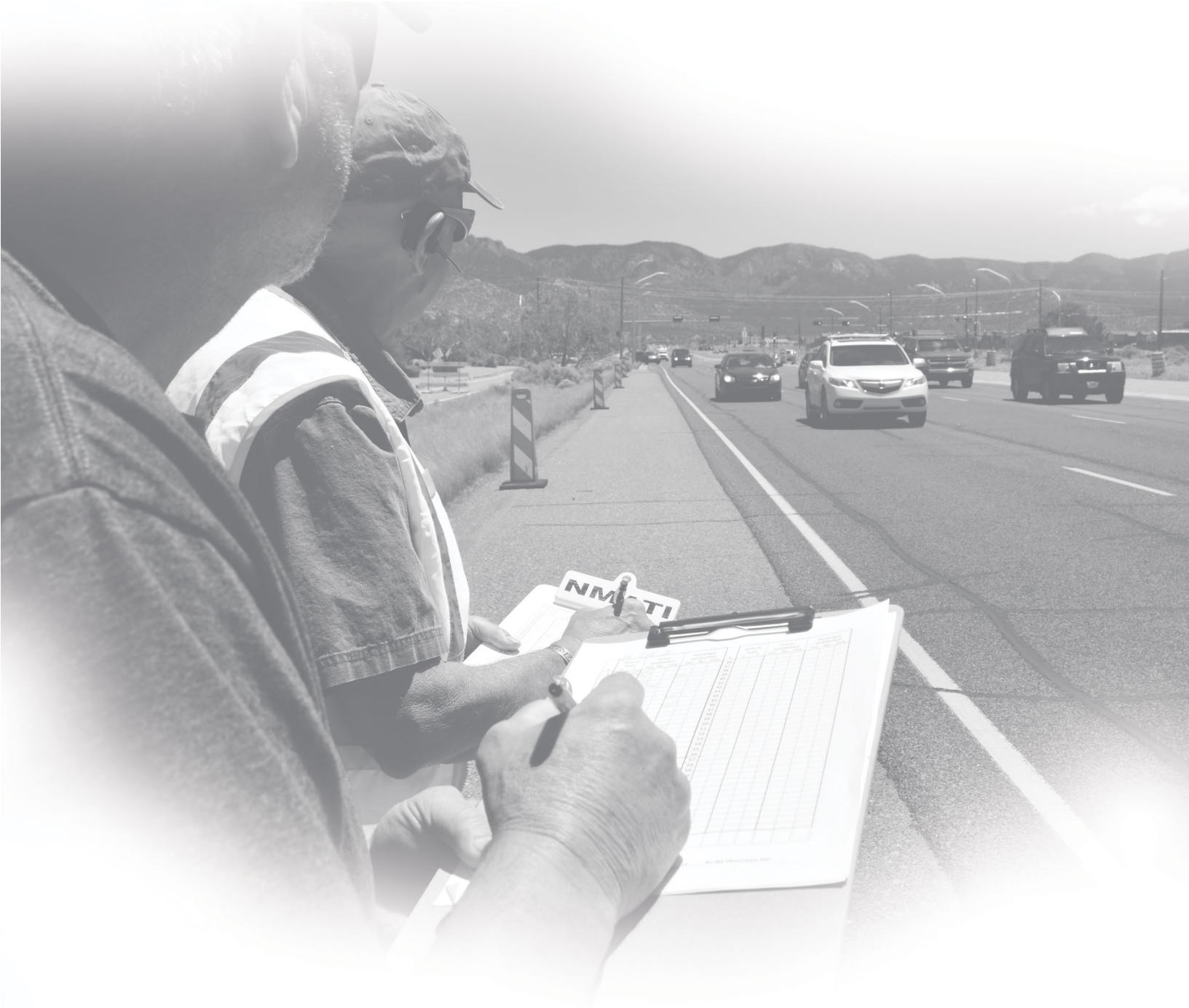
LOCATION: \_\_\_\_\_  

(Observed Street) (Cross Street or other landmark)

DATE: \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ DAY OF WEEK: \_\_\_\_\_ WEATHER CONDITION (circle one):  
1) Clear/Sunny 2) Light Rain 3) Cloudy 4) Fog 5) Clear but wet

TRAFFIC DIRECTION (circle one): N S E W START TIME (Observation period will last exactly 45 minutes): \_\_\_\_\_ AM or PM (circle one)

DRIVER			PASSENGER		DRIVER			PASSENGER	
Vehicle Type	Sex	Use	Sex	Use	Vehicle Type	Sex	Use	Sex	Use
C = Car T = Pick Up S = SUV V = Van	M = Male F = Female U = Unsure	Y = Yes N = No	M = Male F = Female U = Unsure	Y = Yes N = No U = Unsure	C = Car T = Pick Up S = SUV V = Van	M = Male F = Female U = Unsure	Y = Yes N = No	M = Male F = Female U = Unsure	Y = Yes N = No U = Unsure
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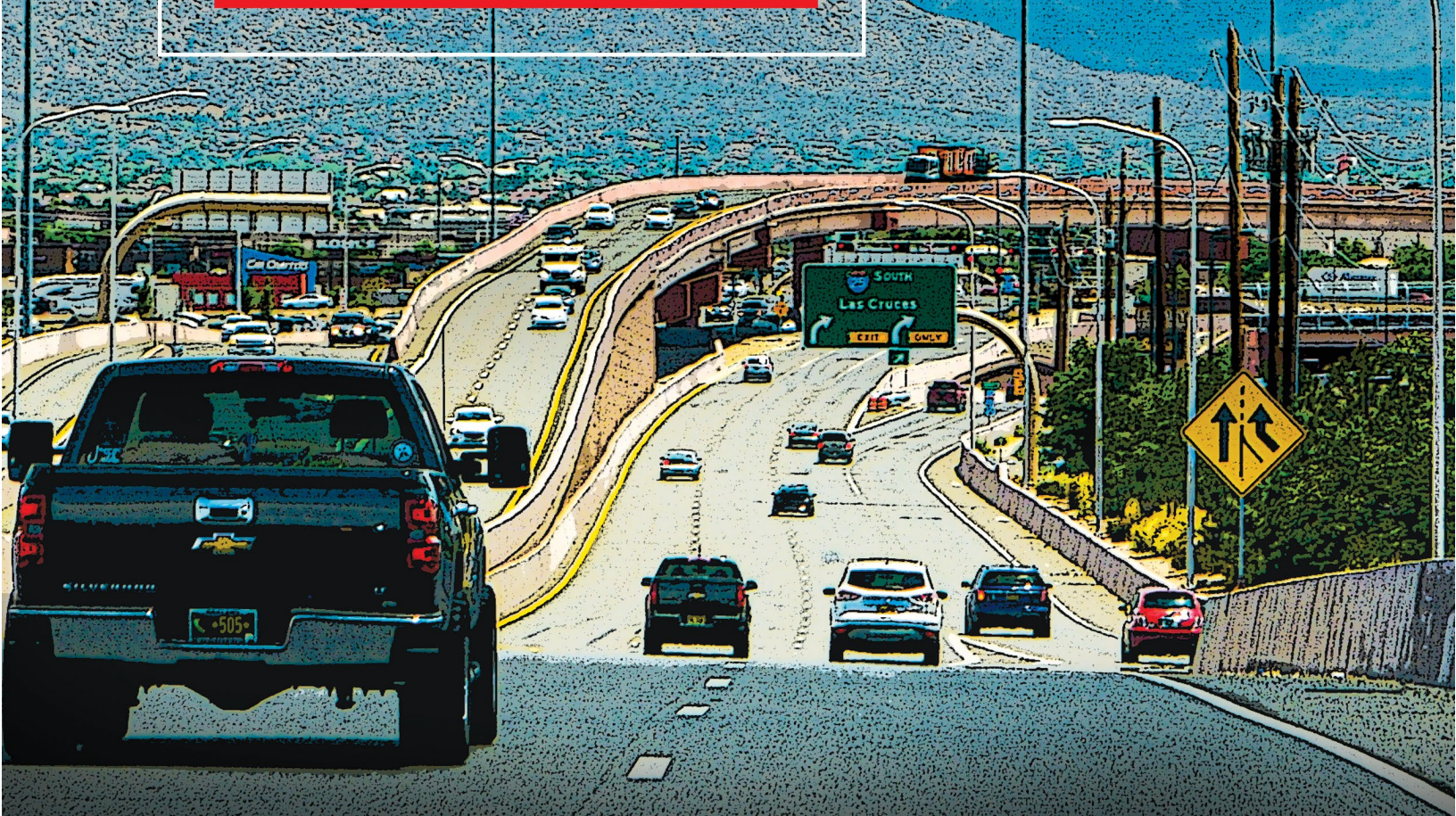




# 2019 NEW MEXICO

## OCCUPANT SEAT BELT OBSERVATION STUDY

DAYTIME AND NIGHTTIME SURVEYS



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THE HONORABLE GOVERNOR MICHELLE LUJAN GRISHAM

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*New Mexico* DEPARTMENT OF  
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MOBILITY FOR EVERYONE