2021 NEW MEXICO OCCUPANT SEAT BELT OBSERVATION STUDY

BKLUP

DAYTIME AND NIGHTTIME SURVEYS

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2021 NEW MEXICO OCCUPANT SEAT BELT OBSERVATION STUDY

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89.6%

New Mexico's
2021 Seat Belt Use Rate

Executive SUMMARY

NEW MEXICO
OCCUPANT SEAT BELT
OBSERVATION STUDY

Report Organization

This report summarizes the results of New Mexico's 2021 Occupant Seat Belt Observation Study providing daytime and nighttime seat belt results. Recommendations based on the findings are presented. Appendices are provided at the end of the report.

2021 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 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 since the 2018 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% 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; 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.

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.

2021	Vehicles	Occupants	Drivers	Passengers
PRE-Campaign	5,025	6,337	5,025	1,312
POST-Campaign	5,365	6,881	5,365	1,516

Daytime data collection efforts for the 2021 New Mexico Occupant Seat Belt Observation Survey included a pre-measure conducted from April 5 through 27, 2021, and a post measure conducted between June 5 through 17, 2021. Four observers gathered observation data for both waves.

The weighted seat belt use rate for 2021 is 89.6%. Analyses were also conducted using weighted data to explore pre to post program changes in daytime belt use for 2021. New Mexico drivers and front outboard passengers had a seat belt use rate of 91.6% (89.5% weighted) during the pre-measure and 92.0% (89.6% weighted) 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 (91.7%) to post (91.4%). While passenger use rate increased significantly (91.2% pre to 94.1% post). Pickup Truck seat belt use showed non-significant change, from pre to post (90.3% and 89.4%, respectively). Car/Van/SUV seat belt use also showed non-significant change, from pre to post (92.2% to 93.0%, respectively). Road stratification analyses showed small changes from pre to post CIOT. Primary road belt use decreased slightly from 94.7% to 93.8% (not significant); Secondary Road belt use increased (88.5% and 90.0%, pre to post, not significant); and Local Road belt use increased from 88.4% (pre) to 89.9% (post) (not significant).

The difference between Car/Van/SUV Driver and Pickup Truck Driver seat belt use post measures (92.4% and 89.4%, respectively) is statistically significant. The difference between Car/Van/SUV Passenger belt use (94.7%) and Pickup Truck Passenger belt use (92.1%) was not significant.

During the study, 3,643 occupants were observed on Primary roads, 1,813 occupants were observed on Secondary roads, and 1,425 occupants were observed on Local roads. Primary roads had the highest seat belt usage rates at 93.8%. Secondary roads (90.0%) and Local roads (89.9%) showed lower use rates.

Daytime seat belt use in New Mexico decreased from 2019 (from 91.8% to 89.6%). The pre-measure was 89.5% —barely lower than the final statewide value. The 2019 rate was the first rate increase in several years. The 2021 rate may have continued a downward trend that existed aside from the 2019 rate. That is, the increase in 2019 may have been a chance occurrence. It may also be the case that the global pandemic played a role in the relatively low 2021 rate. This impact may have been due to the increase (at least anecdotally) of higher risk drivers making up a higher percentage of the total drivers or even by lower levels of law enforcement efforts (noting that this may be exacerbated by the events of 2020 condemning law enforcement).

2021 New Mexico Occupant Seat Belt Observation Study (Nighttime)

The sixth New Mexico Nighttime Occupant Seat Belt Observation Study occurred in 2021. This study provides a statewide estimate of seat belt use for night drivers using the same 94 sites examined as part of the National Highway Traffic Safey Association (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.

Six observers gathered observation data for the 2021 New Mexico Nighttime Occupant Seat Belt Observation Survey from July 16 to 21, 2021. Shoulder belt use status was observed and recorded on 1,563 front seat occupants, including 1,171 drivers and 387 passengers (5 of these had unknown use). New Mexico nighttime drivers and front outboard passengers had a combined unweighted seat belt use of 86.0%. Driver usage was recorded at 85.4% and front seat outboard passenger usage at 87.9%.

Shoulder belt use status in Cars/Van/SUV categories were observed and recorded on 1,235 front seat occupants, including 929 drivers and 306 passengers. Drivers in these vehicle categories accounted for 75.2% of persons observed. Nighttime drivers and front outboard passengers in these vehicle categories had a combined seat belt use of 87.5%. Driver usage was recorded at 86.8% and front seat outboard passenger usage at 89.9%.

Pickup occupant nighttime seat belt use was 80.2%. The rate was identical for both drivers and passengers (80.2%).

During the 2021 nighttime surveying period, 1,064 occupants were observed on Primary roads, 248 occupants were observed on Secondary roads, and 246 occupants were observed on Local roads. Primary roads had the highest nighttime seat belt usage at 88.1%, followed by Secondary roads at 86.3%. The lowest percentage of seat belt usage was observed on Local roads at 76.8%.

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. There was an increase in the use rate by 1.5 percentage points in 2019 (use rate: 87.5%). However, the 2021 use rate decreased by 1.5 percentage points to 86.0%. The day and night use rates had a similar decline from 2019 to 2021. As with daytime belt use, pickup truck drivers demonstrate lower belt use at night. These should be considered important populations to target. The nighttime rate was about four percentage points lower than the daytime rate.

Recommendations

New Mexico's seat belt use rate has been declining over the past several years except for 2019 where there was an increase. The rate in 2021 once again declined and was the first time in many years that New Mexico fell below the target rate of 90%.

The decrease in both the day and the night 2021 rate are potentially problematic. It is unclear whether the decline was a continuation of the pre-existing decline (noting that 2019 may have been an aberration) or whether elements of 2020 (public protests and global pandemic) may have played a role in the lowest rate in many years. Unfortunately, there is no empirical way to answer that question. Given the prior existing downward trend the state should maintain focus on, and possibly increase enforcement during CIOT in 2022 to reverse the decline in use. The pre-survey in 2019 showed a weighted use at exactly 90% indicating that the state was teetering on dropping below 90% even in 2019. Indeed, it was noted in the 2019 report that the 2019 official statewide rate should not be relied upon in terms of assuming an upward future trend.

As with prior recommendations, timely and strong programming should be undertaken to, 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 were declining in much of the country headed into 2019 and the events of 2020 and 2021 may have strengthened that decline.

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 2021 New Mexico Occupant Seat Belt Observation Survey 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
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.

2021

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 since the 2018 survey occurred at brand new sites which are different from the sites observed 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% 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 2021 New Mexico Occupant Seat Belt Observation Study. Observers from the local organization Safer New Mexico Now provided Preusser Research Group with experienced 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 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 years since 2013.

Sites selected in the 2017 resample were used for the 2021 survey 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% 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, all 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 manage resources most effectively while also meeting the NHTSA-required standard error rate of 2.5% 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% 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 the same sites were used for 2021. The distribution of sites across roadway type remained consistent.

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 site survey, the observer:

- OBSERVED AS MANY LANES OF TRAFFIC AS COULD BE COMFORTABLY MONITORED WHILE OBTAINING DATA ON 99% 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 SAFETY SEATS WITH HARNESS STRAPS).

All observers used audio recorders when observing in high traffic volume segments and then transcribed them to the 2021 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 5% 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 2021 New Mexico Occupant Seat Belt Observation Survey included a pre-measure conducted from April 5 through 27, 2021, and a post measure conducted between June 5 through 17, 2021. Four 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 included 10% 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 6,337 front seat occupants including 5,025 drivers and 1,312 passengers. Drivers accounted for 79.3% of persons observed with passengers accounting for 20.7%. For the post measure, shoulder belt use status was observed and recorded on 6,881 front seat occupants, including 5,365 drivers and 1,516 passengers. Drivers accounted for 78.0% of persons observed and passengers accounted for 22.0% of persons observed.

A total of 232 (117 in pre-and 115 in post) observations (less than 2%) 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 2021 post measures are presented in Table 1. (Reduced numbers of vehicles and occupants observed beginning in 2013 resulted from 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% to deem the difference significant.

T.1

TABLE 1
Vehicles and Occupants Observed in Official Seat Belt Surveys, New Mexico, 2005-2021

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

	2009	2010	2011	2012
Number of Observers	**4**	**4**	**4**	**4**
Total Vehicles Observed	14,756	14,977	14,531	14,059
Total Occupants Observed	17,314	17,411	16,588	16,151

	2013	2014	2015	2016
Number of Observers	**3**	**3**	**4**	**4**
Total Vehicles Observed	5,215	3,870	6,540	6,660
Total Occupants Observed	6,874	5,013	8,449	8,530

	2017	2018	2019	2021
Number of Observers	**4**	**4**	**4**	**4**
Total Vehicles Observed	6,780	4,060	5,378	5,424
Total Occupants Observed	8,642	5,158	6,990	6,881

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 2021. The official daytime use rate for New Mexico was 89.6%, compared to 91.8% in 2019. The total number of observations in 2021 was less than in 2019. The 2019 and 2021 confidence intervals show a large amount of overlap, thus indicating no significant change. New Mexico Drivers and front outboard Passengers had a seat belt use rate of 89.5% during the pre-measure—0.1 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 2021.

For the pre-measure, New Mexico Drivers had an unweighted seat belt use rate of 91.6% (89.5% weighted). Unweighted belt use rate increased to 92.0% (89.6% weighted) post-measure (significant). The percent of pre vs. post belted Drivers was slightly lower (91.7% vs. 91.4%), which is not significant. The percent of pre vs post belted Passengers significantly increased in post measure from 91.2% to 94.1%.

T.2A

TABLE 2A
Pre-Enforcement Seat Belt Use 2021

Type of Vehicle	Number of Occupants Observed (PRE)	Seat Belt Use Percent (PRE)
Car/Van/SUVs (all)	4,496	92.2%
Driver	3,523	92.3%
Passenger	973	91.8%
Pickup Trucks (all)	1,841	90.3%
Driver	1,502	90.5%
Passenger	339	89.7%
All Vehicles (all)	6,337	91.6%
Driver	5,025	91.7%
Passenger	1,312	91.2%

T.2B

TABLE 2B
Post-Enforcement Seat Belt Use 2021

Type of Vehicle	Number of Occupants Observed (POST)	Seat Belt Use Percent (POST)
Car/Van/SUVs (all)	5,001	93.0%
Driver	3,841	92.4%
Passenger	1,160	94.7%
Pickup Trucks (all)	1,880	89.4%
Driver	1,524	88.8%
Passenger	356	92.1%
All Vehicles (all)	6,881	92.0%
Driver	5,365	91.4%
Passenger	1,516	94.1%

Changes pre to post belt 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 decreased from pre to post (90.3% and 89.4% respectively), which is a significant change. Car/Van/SUV seat belt use also showed an increase in use (significant increase from pre to post 92.2% and 93.0%, respectively).

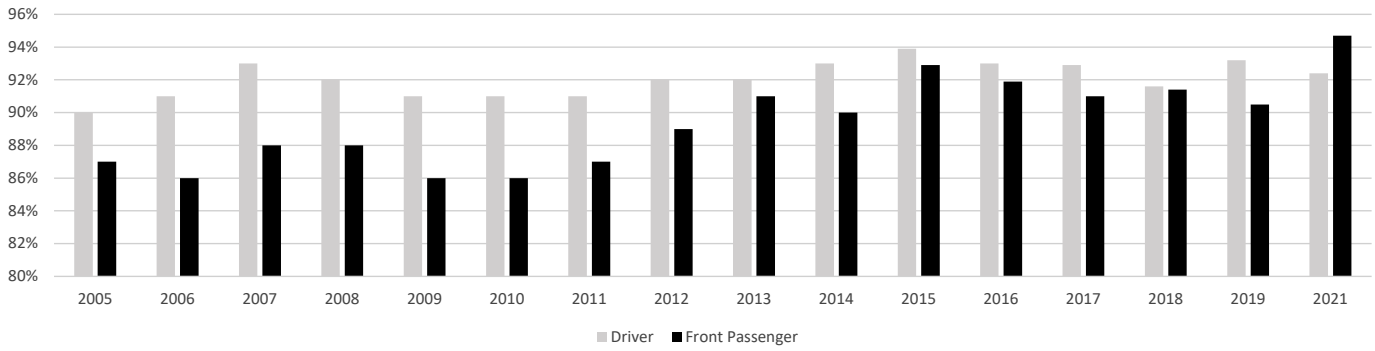
The three road types were analyzed separately for pre to post changes in belt use. Primary road belt use decreased slightly (non-significant) from 94.7% to 93.8%. Secondary road belt use increased from pre to post (88.5% to 90.0%, respectively non-significant). Local road belt use increased slightly from 88.4% to 89.9% (non-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% in 2015, decreased slightly to 93% in 2016 and 2017, and decreased further to

92% in 2018. Again in 2019 the rate increased to 93.2%. However, in 2021 the rate decreased to 92.4%. Passenger use showed a positive trend from 2010 to 2015 (peaking at 93%) and decreased slightly to 92% in 2016, and 91% in 2017, 2018, and 2019. The Passenger seat belt use increased to 94.7% in 2021.

F.1

FIGURE 1
Official Observed Car/Van/SUV Seat Belt Use, New Mexico, 2005-2021



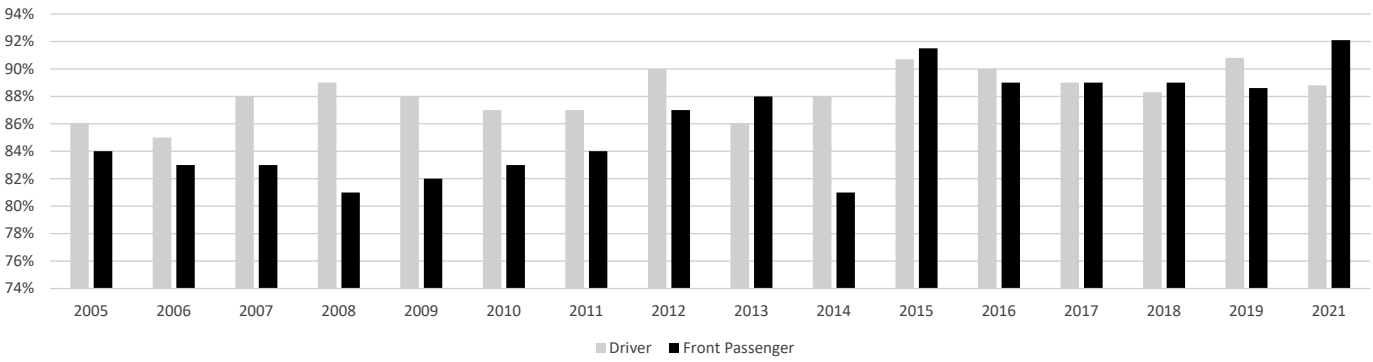
Source: 2021 Annual New Mexico Official Seat Belt Observation Survey; percentages rounded to the nearest whole number.

Pickup driver seat belt use measured in 2021 was recorded at 88.8% compared to Car/SUV/Van driver use of 92.4%. Pickup truck passenger use (92.1%) was not significantly different than non-pickup truck passenger use (94.7%). Figure 2 shows fluctuations in pickup truck driver belt use. It reached a peak of 91% 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, and then decreased again in 2021 (88.8%).

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% belt use for 2015. Since then, pickup truck passenger belt use has remained stable at 89% and increased in 2019 (89.2%). Pick-up truck passenger seat belt use peaked in 2021 (92.1%).

F.2

FIGURE 2
Official Observed Pickup Truck Seat Belt Use, New Mexico, 2005-2021



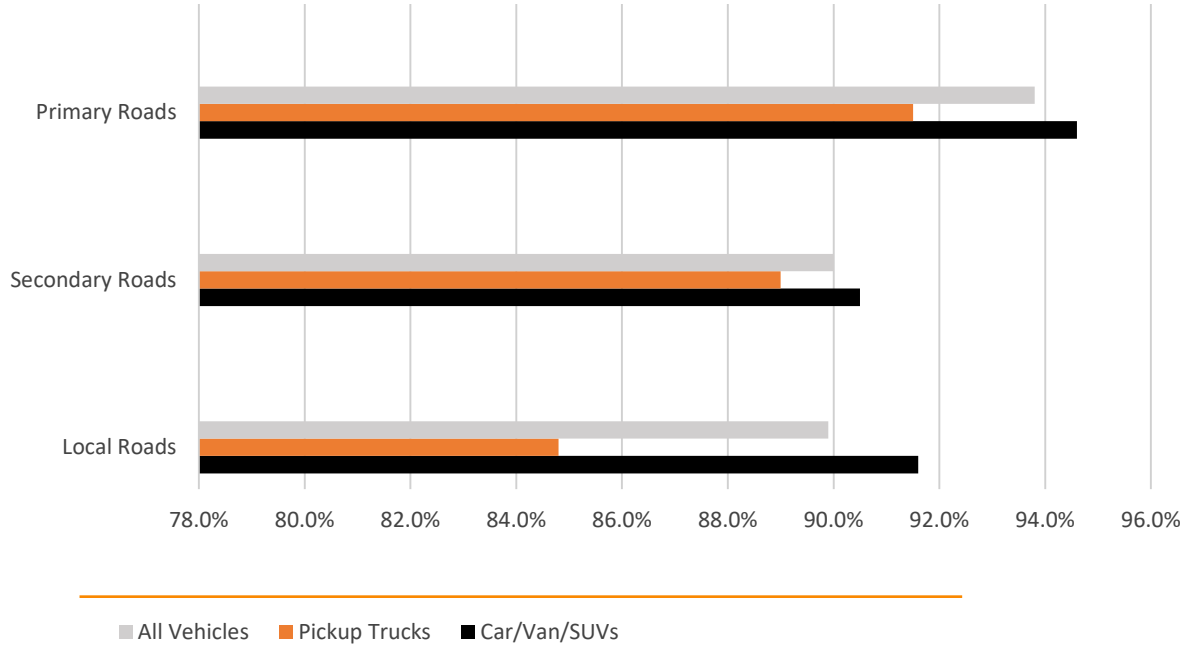
Source: 2021 Annual New Mexico Official Seat Belt Observation Survey; percentages rounded to the nearest whole number.

Road class differences in observed seat belt use were also explored. During the 2021 New Mexico Occupant Seat Belt Observation Official Study, 3,643 occupants were observed on Primary roads, 1,813 occupants were observed on Secondary roads, and 1,425 occupants were observed on Local roads. Most vehicles observed fell into the Car/Van/SUV categories (5,001) and 1,880 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 belt use and pickup truck belt use on the three road classifications.

F.3

FIGURE 3
Seat Belt Use Comparison by Road Classification, New Mexico, 2021

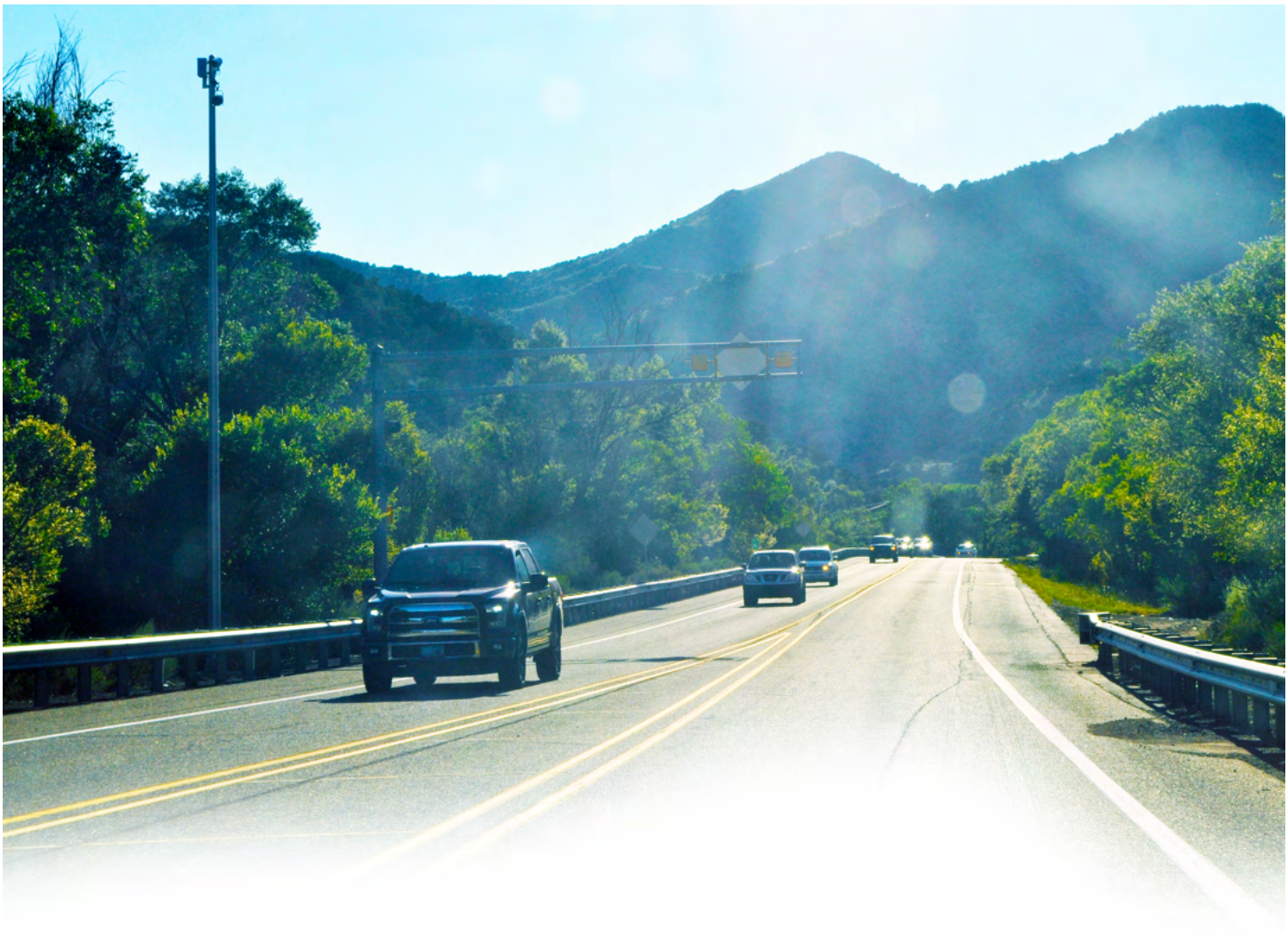


T.3

TABLE 3
Surveys by Road Classification and Vehicle Type, New Mexico, 2021

Road Classification	Car/Van/SUVs		Pickup Trucks		All Vehicles	
	# People Observed	Belt Use	# People Observed	Belt Use	# People Observed	Belt Use
Primary Roads	2,713	94.6%	930	91.5%	3,643	93.8%
Secondary Roads	1,225	90.5%	588	89.0%	1,813	90.0%
Local Roads	1,063	91.6%	362	84.8%	1,425	89.9%
Statewide Total	**5,001**	**93.0%**	**1,880**	**89.4%**	**6,881**	**92.0%**

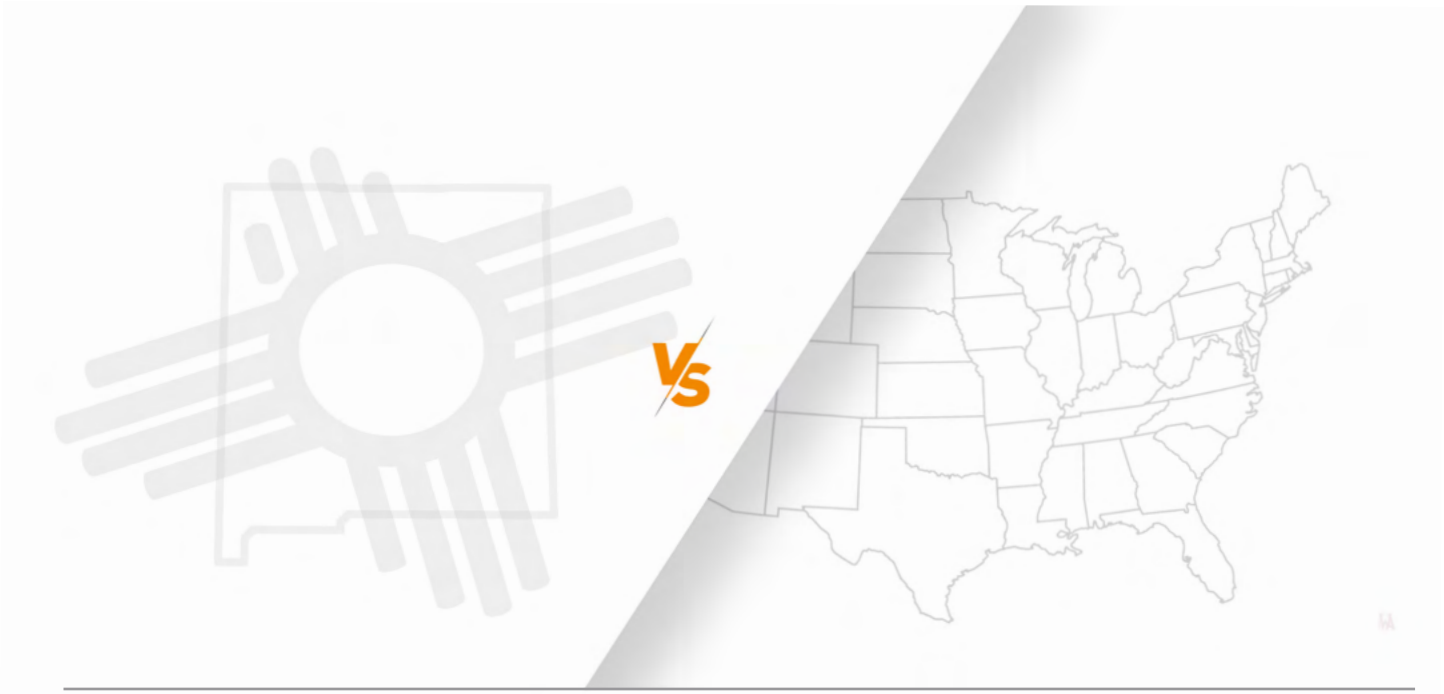
Combining across vehicle types, the lowest percentage of seat belt usage (post) was observed on Local roads at 89.9% compared to 90.0% for Secondary roads and 93.8% for Primary roads. The difference in seat belt use between Primary and Local roads was significant. The lowest belt use rate overall was in pickup truck occupants on local roads, at 84.8%. Pickup truck belt use peaked at 91.5% on Primary roads, followed by Secondary roads at 89.0%. 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 (94.6%), followed by Local roads (91.6%), and was lowest on Secondary roads (90.5%). The difference in Car/Van/SUV belt use was significant between Primary and Secondary roads.



Discussion

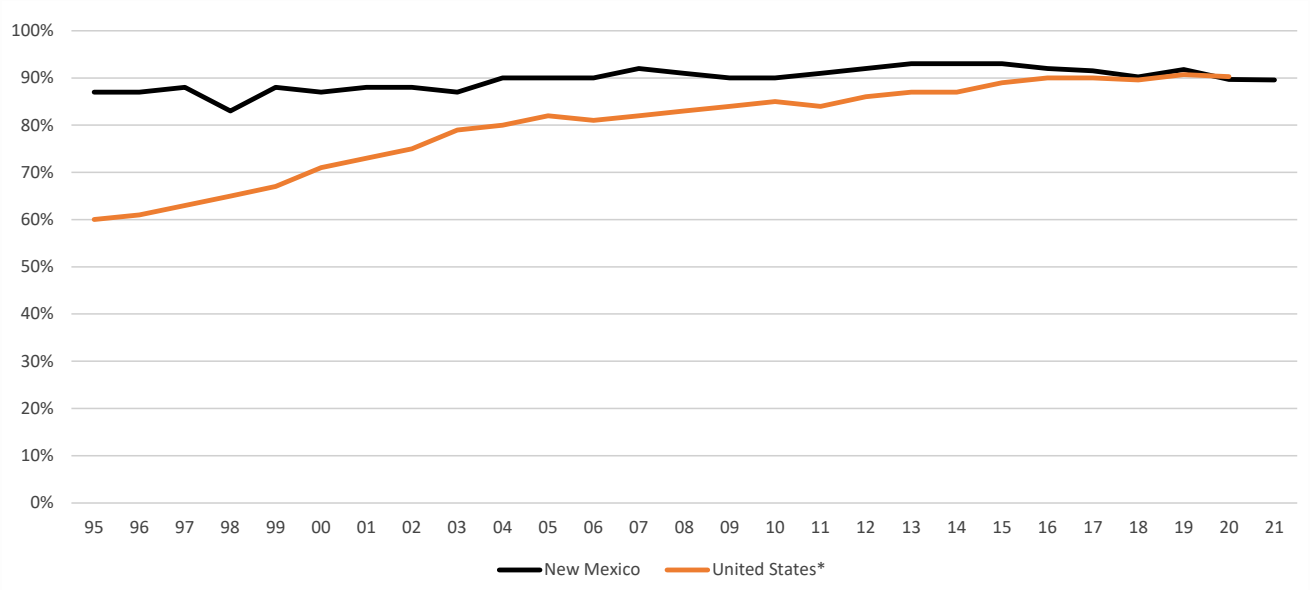
Daytime seat belt use in New Mexico decreased from the previous year (from 91.8% to 89.6%). The weighted pre-measure was exactly 89.5%, barely lower than the final statewide seat belt use rate. The 2019 use rate was the highest use rate in several years. The 2021 rate may have continued a downward trend that existed aside from the 2019 rate. That is, the increase in 2019 may have been a chance occurrence. It may also be the case that the global pandemic played a role in the relatively low 2021 rate. There might be other factors that caused this decreased in the use rate such as increase (at least anecdotally) of higher risk drivers making up a higher percentage of the total drivers or even by a lower levels of law enforcement efforts (noting that this may be exacerbated by the events of 2020 condemning law enforcement).

Some categories showed small increases in belt use from pre to post. Primary road users show consistently high belt use rates (over 90% belted) and showed a slight decrease from pre (94.7%) to post (93.8%) (not significant). Secondary road users showed a slight increase from pre (88.5%) to post (90.0%), and belt use rates on Local roads also showed a slight increase in use (from 88.4% pre to 89.9% post) (not significant). Some subgroups (e.g., Local roads, pickup truck occupants) with substantially lower use rates could be targets for future programmatic and campaign efforts.

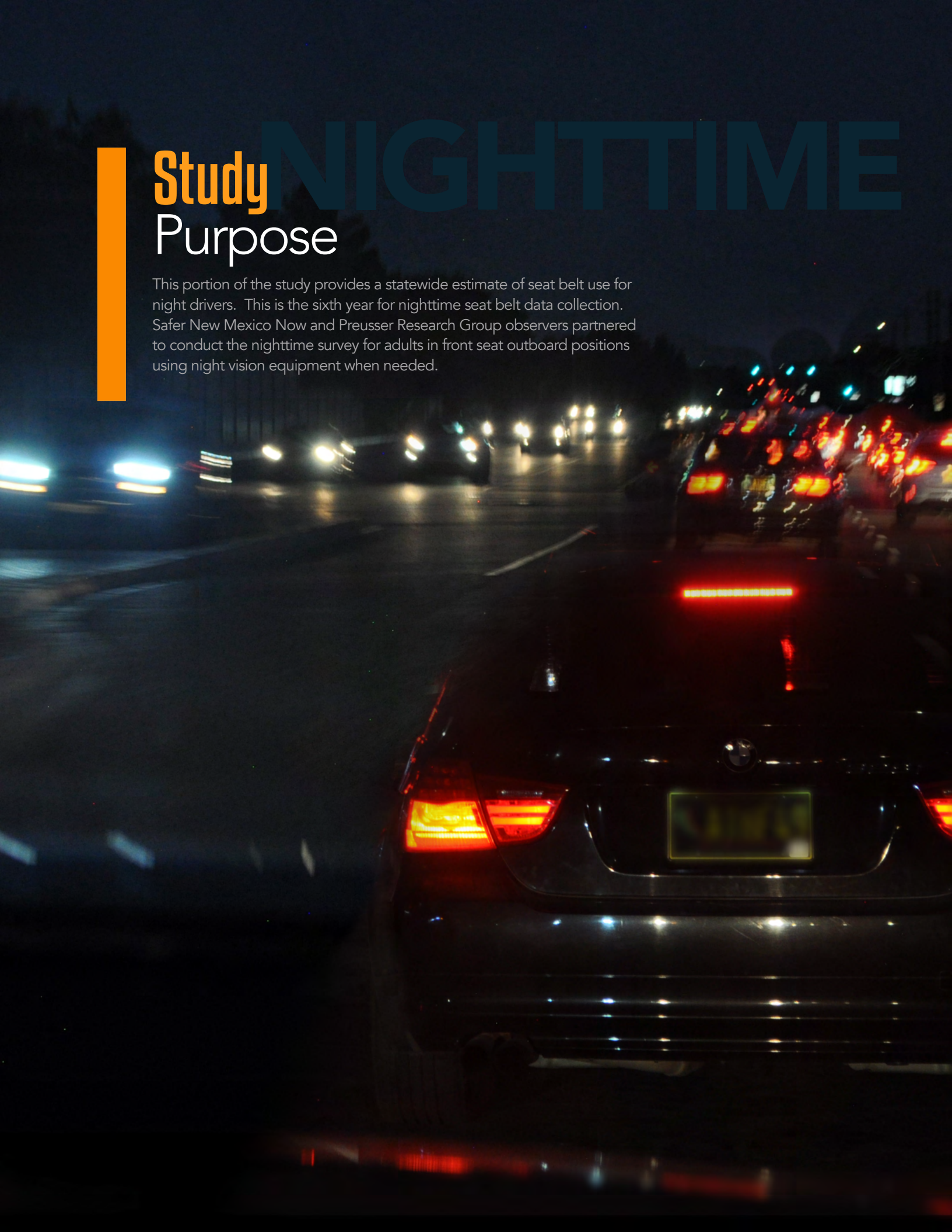


F.4

FIGURE 4
Official Observed Seat Belt Use -- New Mexico vs. U.S. 1995-2021 (Weighted)



***Seat Belt Use in 2021 -** Overall Results. Traffic Safety Facts. NHTSA. June 2021.



NIGHTTIME

Study Purpose

This portion of the study provides a statewide estimate of seat belt use for night drivers. This is the sixth 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.

2021
NEW MEXICO
OCCUPANT SEAT BELT
OBSERVATION STUDY
Nighttime

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 Safer New Mexio Now 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 sixth New Mexico Nighttime Occupant Seat Belt Observation Study occurred in 2021. 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 2021 nighttime survey was conducted from July 16 through 21, 2021. 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. The data sheet used for nighttime observations is included in Appendix III.

T.4

TABLE 4
Vehicles and Occupants Observed in Official Nighttime Seat Belt Surveys, New Mexico, 2015-2021

	2015	2016	2017	2018	2019	2021
Number of Observers	**7**	**6**	**5**	**6**	**6**	**6**
Total Vehicles Observed	1,142	1,588	1,452	1,261	1,340	1,171
Total Occupants Observed	1,505	2,174	1,990	1,735	1,840	1,563

***2020 -** Due to the global pandemic, no nightime survey was conducted in 2020.

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 included 10% 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.

T.5

TABLE 5
Seat Belt Usage from New Mexico 2021 Nighttime Occupant Seat Belt Observation Study (known use)

Type of Vehicle	Number of Occupants Observed	Number of Seat Belt Users	Seat Belt Use (Percent)
Car/Van/SUVs (all)	1,235	1,081	87.5%
Driver	929	806	86.8%
Passenger	306	275	89.9%
Pickup Trucks (all)	323	259	80.2%
Driver	242	194	80.2%
Passenger	81	65	80.2%
All Vehicles (all)	1,558	1,340	86.0%
Driver	1,171	1,000	85.4%
Passenger	387	340	87.9%

*Belt use missing for 5 occupants

Shoulder belt use status was observed and recorded on 1,563 front seat occupants, including 1,171 drivers and 387 passengers, five of these had unknown use (see Table 4). New Mexico nighttime drivers and front outboard passengers had a combined unweighted seat belt use of 86.0%. Driver usage was recorded at 85.4% and front seat outboard passenger usage at 87.9%.

Shoulder belt use status in Cars/Van/SUV categories were observed and recorded on 1,235 front seat occupants, including 929 drivers and 306 passengers. Drivers in these vehicle categories accounted for 75.2% of persons observed. Nighttime drivers and front outboard passengers in these vehicle categories had a combined seat belt use of 87.5%. Driver usage was recorded at 86.8% and front seat outboard passenger usage at 89.9%.

Pickup occupant nighttime seat belt use was 80.2%. The rate was identical for both drivers and passengers (80.2%).

During the 2021 nighttime survey period, 1,064 occupants were observed on Primary roads, 248 occupants were observed on Secondary roads, and 246 occupants were observed on Local roads. Table 6 illustrates observed seat belt use for Car/Van/SUVs and pickup trucks on the three road classifications.

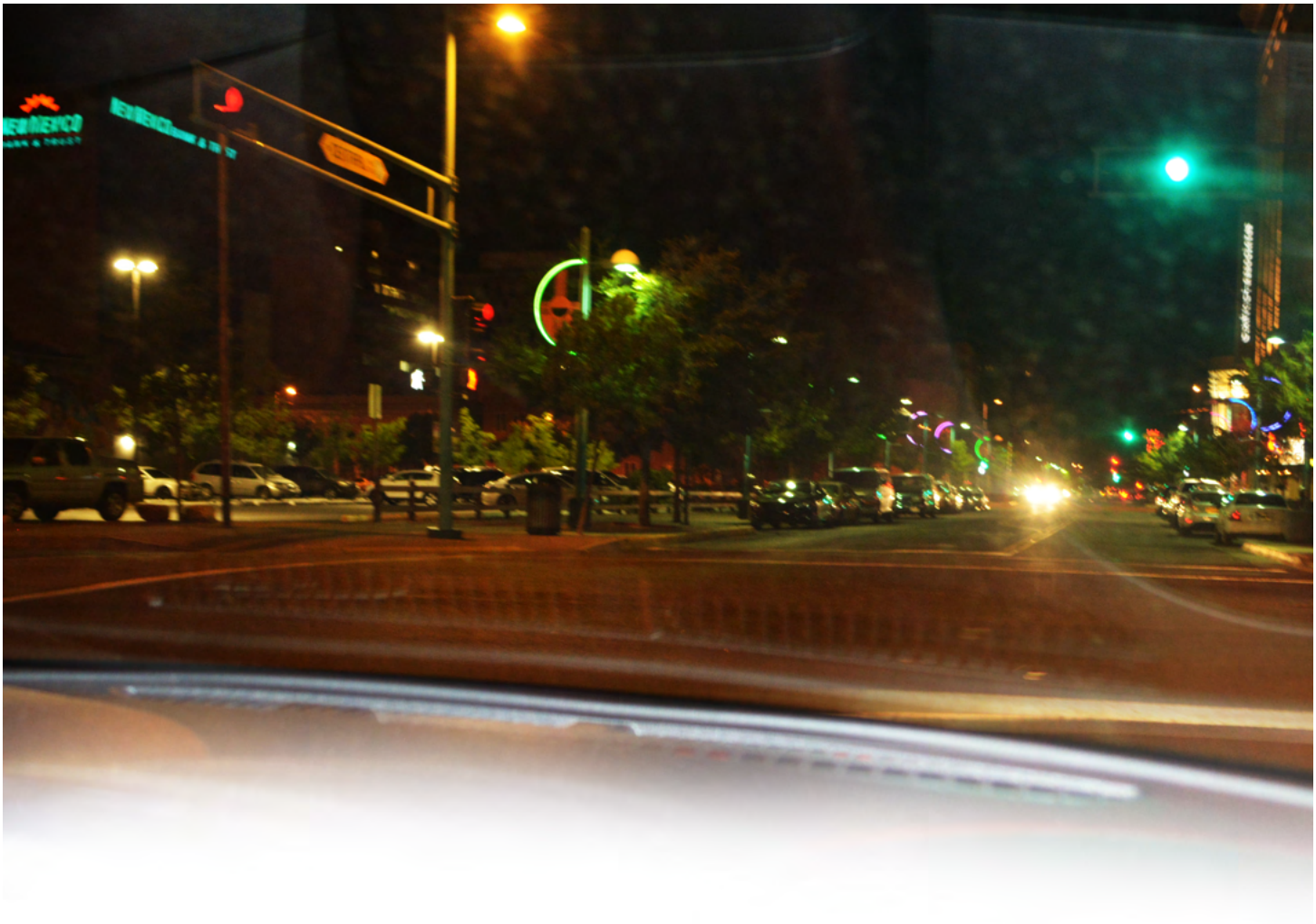
T.6

TABLE 6
Nighttime Surveys by Road Classification and Vehicle Type, New Mexico, 2021 (known use)

Road Classification	Car/Van/SUVs		Pickup Trucks		All Vehicles	
	# People Observed	Belt Use	# People Observed	Belt Use	# People Observed	Belt Use
Primary Roads	853	88.9%	211	84.8%	1,064	88.1%
Secondary Roads	188	89.4%	60	76.7%	248	86.3%
Local Roads	194	79.9%	52	65.4%	246	76.8%
Statewide Total	**1,235**	**87.5%**	**323**	**80.2%**	**1,558**	**86.0%**

*Belt use missing for 5 occupants

As illustrated in Table 6, in 2021, Primary roads had the hightest nighttime seat belt usage at 88.1%, followed by Secondary roads at 86.3%. The lowest percentage of seat belt usage was observed on Local roads at 76.8%. The percent difference in seat belt use between both Primary and Secondary roads was significant. Belt use on Local roads was significantly lower than Primary roads. Belt use by Car/Van/SUV occupants showed the highest use rate among Secondary roads (89.4%), followed by Primary roads (88.9%), followed by Local roads (79.9%). Belt use in pickup trucks was highest on Primary roads (84.8%), followed by Secondary roads (76.7%), and lowest on Local roads (65.4%).



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 the highest recorded (89.4%) in 2016. The use rate further decreased in 2021 to 86.0%. It appears that nighttime vehicles tend to include proportionally more Local road's 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.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Recommendations and References

NEW MEXICO OCCUPANT SEAT BELT OBSERVATION STUDY

Recommendations

New Mexico's seat belt use rate has decreased after increasing in the year 2019 (91.8%). This year's seat belt use rate (89.6%) is below the 90% use rate goal.

The decrease in both the day and the night 2021 rate are potentially problematic. Given the prior and existing downward trend, the state should expand focus on enforcement during CIOT in 2022 to increase seat belt use. The fact that the post-survey showed weighted use increased by only a 0.1 percentage point could be a cause for alarm. It is unclear whether the decline was a continuation of the pre-existing decline (noting that 2019 may have been an aberration) or whether elements of 2020 (public protests and the global pandemic) may have played a role in the lowest rate in many years. Unfortunately, there is no empirical way to answer this question. Given the prior existing downward trend, the state should maintain focus on, and possibly increase enforcement during, CIOT in 2022 to reverse the decline in use rate. The pre-survey in 2019 showed a weighted use at exactly 90% indicating that the state was teetering on dropping below 90% even in 2019. Indeed, it was noted in the 2019 report that the 2019 official statewide rate should not be relied upon in terms of assuming an upward future trend.

As with prior recommendations, timely and strong programming should be undertaken to, 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 were declining in much of the country headed into 2019 and the events of 2020 and 2021 may have strengthened that decline.

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.

References

Chaudhary, N.K., Alonge, M.A., and Preusser, D.F. (2005). Evaluation of the Reading PA Nighttime Safety Belt Enforcement Campaign; September 2004. Journal of Safety Research, 36: 321-326.

Davis, M., Pearce, F. and Logstead, D.S. (2014). 2014 New Mexico Occupant Seat Belt Observation Study.

Enriquez, J., & Pickrell, T. M. (2019, January). Seat belt use in 2018 – Overall results. (Traffic Safety Facts Research Note. Report No. DOT HS 812 662). Washington, DC: National Highway Traffic Safety Administration.

Nichols, J.L., Chaudhary, N.K. and Tison, J. (2009). The Potential for Nighttime Enforcement and Seat belt Law Upgrades to Impact Alcohol-Related Deaths Among High-Risk Occupants. Transportation Research Circular, Number E-C132; 187-203.

Enriquez, J., & Pickrell, T. M. (2019, January). Seat belt use in 2018 – Overall results. (Traffic Safety Facts Research Note. Report No. DOT HS 812 662). Washington, DC: National Highway Traffic Safety Administration.

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OCCUPANT SEAT BELT OBSERVATION STUDY

BKLUP

DAYTIME AND NIGHTTIME SURVEYS

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 and 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: πhi 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:

$$fh = \sum responding\ i\ whi$$

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:

$$\rho = \sum_{all\ hijklmn} w_{hijklm}$$

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								
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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 C = Car T = Pick Up S = SUV V = Van	**Sex** M = Male F = Female U = Unsure	**Use** Y = Yes N = No	**Sex** M = Male F = Female U = Unsure	**Use** Y = Yes N = No U = Unsure		**Vehicle Type** C = Car T = Pick Up S = SUV V = Van	**Sex** M = Male F = Female U = Unsure	**Use** Y = Yes N = No	**Sex** M = Male F = Female U = Unsure	**Use** Y = Yes N = No U = Unsure
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2						37					
3						38					
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20 NEW MEXICO OCCUPANT SEAT BELT OBSERVATION STUDY

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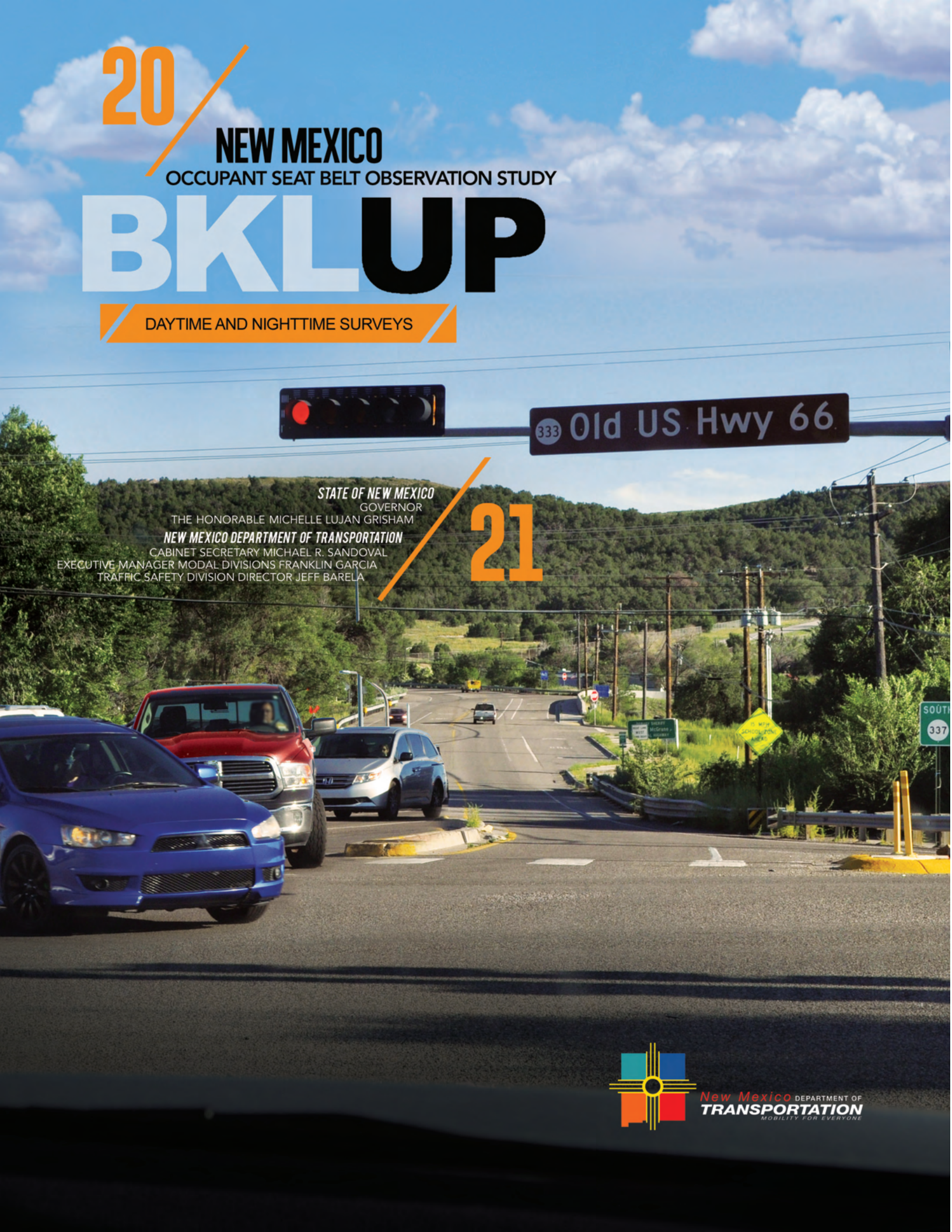
DAYTIME AND NIGHTTIME SURVEYS



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