CALIFORNIA OFFICE OF TRAFFIC SAFETY

OBSERVATIONAL STUDY OF HANDHELD CELLPHONE AND TEXTING USE AMONG CALIFORNIA DRIVERS 2017

SUMMARY REPORT

PROVIDED TO THE CALIFORNIA OFFICE OF TRAFFIC SAFETY
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I. 2017 EXECUTIVE SUMMARY

The Office of Traffic Safety (OTS) has commissioned a survey on hand held cellphone use since 2011. This is the first year California State University, Fresno (CSUF) has conducted the study. In order to obtain a more representative study of actual hand held cell phone use on California's roads, both CSUF and OTS have agreed to utilize the National Highway Traffic Safety Administration (NHTSA) survey methodology and a larger sample to achieve this goal. This method provides a weighted average applied to all observations so that both urban and densely populated area can be considered equally. Past surveys were more heavily weighted towards urban areas. Additional changes from previous surveys include an increase in survey locations to 204 locations that resulted in over triple the observations from previous years. These factors, including the increase in sample size, may have contributed to a lower percentage of hand held cellphone use as compared to previous years surveys.

Distracted driving due to hand-held and estimated hand-free electronic devices fell in 2017. More specifically, for hand-held usage, a rate of 3.58% was found which was down from 7.6% in 2016, 5.4% in 2015, and 3.8% in 2014). Further analyses of these findings indicated that use was higher on local roads (3.89% on local roads versus 2.98% on highways and 2.63% on secondary roads). Further, vans/SUVs had much higher usage rates than did other vehicle types (4.75% for vans/SUVs versus 3.51% for pickups and 2.93% for cars). Additional overall findings indicated that usage was higher when passengers were not present (5.4% when no passenger was present versus only 0.47% when passengers were in the vehicle) and slightly higher when children were not present (3.59%) than when children were present (3.21%).

The numbers above do not include use of hands-free devices (e.g., Bluetooth headsets), because the device may not be visible to the observer. Consequently, NHTSA has developed a methodology to correct for this difficulty. The correction allows for an overall cell phone usage rate of 7.64% to be calculated for 2017, which compares to 12.8% rate in 2016, a 9.2% rate in 2015, and a 6.6% rate in 2014.

In terms of geography, of the counties surveyed, three counties showed hand-held usage rates significantly about the state average. These counties were San Bernardino (8.19%), Contra Costa (6.30%) and San Joaquin (5.8%).

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II. INTRODUCTION

This report explains the methods and the results associated with the "Observational Study of Handheld Cellphone and Texting Use Among California Drivers 2017" conducted by California State University, Fresno for the California Office of Traffic Safety (OTS).

This report describes CSU Fresno's observational data collection procedures and compares these findings to the previous six years of data collected for OTS. The goal of these surveys has been to obtain observational data of a statistically valid, representative sample of drivers' distracted driving behaviors, including cell phone and other electronic device use.

The overall study design included the observation of drivers where traffic was controlled. Usually, this means that the observations occur at traffic lights, stop signs, or in other places where traffic is moving at relatively low speeds. Observing traffic at low speeds is necessary to make accurate observations and to ensure the safety of the observers. The data collection approach was designed to maximize comparability with previous observational surveys. These previous surveys used a data collection protocol similar to the National Occupancy Protection Use Study (NOPUS) methodology published by the National Highway Transportation Safety Administration (NHTSA) on electronic device use by drivers in their Traffic Safety Facts publications, DOT HS 811 372 and DOT HS 811 361. The data collection plan also incorporated sections of the methodological outline of the Seat Belt Survey Regulation for Section 157 Surveys: 23CRF Part 1340, published by NHTSA. As a result, the current observational data were collected using the same basic procedures.

III. METHOD

A. Sample Methodology and Sample Site Selection

The counties and sites for the Distracted Driving survey were the same as those selected for the annual restraint usage survey, which the National Highway Safety Administration (NHTSA) requires of all states and territories. The counties and sites for the 2017 California restraint use survey were new in 2017 due to a required resampling which ensures that the sites are representative of California's current road inventory (in this case, the TIGER road database). Consistent with the restraint use survey, the current survey had 204 road sites located in 17 California counties, with each county having 12 sites. Data from each site were weighted by the likelihood of the county selection, the road site's selection, the number of lanes observed, and the number of vehicles observed during the observation period.

B. Observation Locations, Times, and Duration

Field observations were conducted between April 3, 2017 and August 1, 2017, within times of day that were consistent with previous collection efforts. More specifically, all data collection occurred between the hours of 7:30 am and 6:00 pm during non-rainy days and included all seven days of the week. This was the same time frame as previous years of data collection. Pairs of surveyors visited all 204 road sites. All staff were rigorously trained in the methods and procedures and assigned defined sites where they would conduct the 50-minute observation. The average surveyor had over eight years of experience in collecting roadside observational data.

C. Observational Study Outcomes

All 204 sites across the 17 counties were included in the current study. This procedure yielded 19,387 observations. This was almost a 4x increase over the number of drivers observed using the previous sampling methods and a more than 3x increase over any year that that the study was conducted between 2011 and 2016. This increased sample size serves to provide smaller standard errors for the findings and to increase the statistical confidence of the conclusions reached.

Using the data collected, we were able to assess an overall "distracted driving" rate as well as individual usage rates for the specific types of electronic distractions observed.

IV. RESULTS

A. Results on Distracted Driving Due to Electronic Device Use

Overall electronic device use and distracted driving due to electronic devices variable

The variable "distracted driving due to electronic devices (DD)" was created based on three behaviors observed by field staff and included:

1. Holding a phone to the ear,
2. Manipulating a hand-held electronic device while driving, and
3. Talking on a hand-held device.

The calculated percentage of driver behavior and electronic device use across the 204 observed road sites is shown in Table 1. Talking on a phone using a headset or Bluetooth device was NOT included in the variable created for the purpose of this evaluation. Any observed instance of the three behaviors was coded as "distracted driving due to electronic device use" in a separate variable (labelled DD). The data collection on these three driver behaviors included every instance observed and was noted as an exclusive occurrence on the observation form. The DD variable created reflects the number of unique vehicles in which the behavior was observed; the number of unique observations of distracted behavior is higher. As a result, the total usage numbers in Table 1 are less than the sum of the individual forms of distraction as a single driver may have been engaged in multiple distractions at once.

For a further analysis, we used estimates provided by the 2017 California Traffic Safety Survey to calculate a correction factor for an estimate of headset/Bluetooth usage. These numbers are not in the main body of the report, as they are estimates, but have been provided in Appendix A to allow for a direct comparison of this year's results with other historically relevant findings.

Table 1. Distracted Driving Due to Electronic Devices

	2017	2016	2015	2014	2013	2012	2011
Total Usage	3.58%	7.6%	5.4%	3.8%	4.6%	6.4%	4.2%
Phone to Ear	1.04%	2.6%	1.7%	1.1%	1.6%	2.4%	2.1%
Manipulating Hand-Held	1.51%	4.5%	3.3%	2.2%	2.5%	3.3%	1.7%
Talking on Hand-Held	1.33%	0.9%	1.0%	0.7%	0.7%	0.9%	0.6%
Sample Size	**19,387**	**5,341**	**5,349**	**5,693**	**6,099**	**5,664**	**5,413**

In addition to calculating an overall usage rate and examining the rates of specific types of electronic distractions, the observational survey is also designed to separate these usage figures by a set of other factors. These other factors included:

- Road type where the distracted driving was observed
- Vehicle type in which the behavior occurred
- Whether a passenger was present in the vehicle
- Whether a young child was a passenger in the vehicle
- The county in which the distracted driving was observed.

The results of these analyses are presented in the subsequent tables.

Table 2. Distracted Driving Due to Electronic Devices by Road Type in 2017

	Combined	Highways	Secondary	Local
Total Usage	3.58%	2.98%	2.63%	3.89%
Phone to Ear	1.04%	0.98%	0.72%	1.14%
Manipulating Hand-Held	1.51%	1.55%	1.33%	1.56%
Talking on Hand-Held	1.33%	0.73%	0.68%	1.55%
Sample Size	**19,387**	**6,238**	**9,481**	**3,668**

Table 3. Distracted Driving Due to Electronic Devices by Vehicle Type in 2017

	Combined	Car	Van/SUV	Pickups
Total Usage	3.58%	2.93%	4.75%	3.51%
Phone to Ear	1.04%	0.84%	1.24%	1.33%
Manipulating Hand-Held	1.51%	1.13%	2.70%	0.57%
Talking on Hand-Held	1.33%	1.21%	1.00%	2.34%
Sample Size	**19,387**	**9,770**	**5,916**	**3,698**

Table 4. Distracted Driving Due to Electronic Devices by Passenger Presence

	Combined	Passenger is Present	No Passenger Present
Total Usage	3.58%	0.47%	5.40%
Phone to Ear	1.04%	0.11%	1.59%
Manipulating Hand-Held	1.51%	0.04%	2.37%
Talking on Hand-Held	1.33%	0.41%	1.87%
Sample Size	**19,387**	**6,026**	**13,361**

Table 5. Distracted Driving Due to Electronic Devices by Whether a Child Under Age 8 is Present

	Combined	Child is Present	No Child Present
Total Usage	3.58%	3.21%	3.59%
Phone to Ear	1.04%	3.10%	1.02%
Manipulating Hand-Held	1.51%	0.12%	1.53%
Talking on Hand-Held	1.33%	2.76%	1.31%
Sample Size	**19,387**	**262**	**19,125**

Table 6. Distracted Driving Due to Electronic Devices by County

	Sample Size	Combined Total usage	Phone to Ear	Manipulating Hand-Held	Talking on Hand-Held
Total Usage	**19,378**	**3.58%**	**1.04%**	**1.51%**	**1.33%**
San Bernardino	1,563	8.19%	2.56%	5.22%	3.00%
Contra Costa	1,443	6.30%	2.09%	2.10%	2.11%
San Joaquin	726	5.80%	2.46%	2.91%	0.43%
Sacramento	1,191	3.35%	0.12%	2.95%	0.30%
Orange	1,269	2.73%	0.94%	0.17%	2.56%
Santa Barbara	815	2.67%	2.67%	0.00%	1.58%
Alameda	1,830	2.66%	0.50%	1.52%	0.64%
Los Angeles	1,500	2.52%	0.75%	0.60%	1.17%
Sonoma	951	2.35%	0.63%	1.68%	0.67%
Riverside	1,351	2.34%	1.23%	1.09%	0.02%
Solano	1,100	2.13%	0.13%	1.46%	0.54%
Kern	664	1.90%	1.84%	0.00%	0.05%
San Diego	978	1.72%	1.14%	0.11%	0.47%
San Luis Obispo	555	1.22%	0.98%	0.15%	0.09%
San Mateo	1,766	1.05%	0.10%	0.39%	0.62%
Ventura	878	1.02%	0.97%	0.06%	0.00%
Monterey	807	0.89%	0.30%	0.17%	0.42%

V. INTERPRETATION OF RESULTS

A. Overall usage rates compared to previous years.

As reported in Table 1, the rate of distracted driving showed a considerable decrease between 2016 and 2017.

First, the differences in the observation sampling likely played a significant role. The previous surveys were based on the daily vehicle miles traveled (DVMT) of specific geographic locations within seventeen counties. DVMT represents the average vehicle miles of travel. In other words, DVMT is a measure of how much traffic is on the roads in a given area. The NHTSA methodology, based upon the length of the road as the measure of size, weights the values for a series of corrections providing an accurate estimation of distracted driving across the entire state. This is not to suggest that the previous method was incorrect, but the differences in approaches, in the past, led to a sampling that was heavily influenced by highly sampled urban areas.

Overall, the distracted driving due to electronic devices was 3.58% in 2017. This showed a significant decrease from recent years, but was very similar to the usage in 2014. It is important to note that this value indicates that *at any one time*, the number of people distracted due to using an electronic device was 3.58%, but the number of people engaging in this behavior across their time on a given trip is likely *much higher*. In other words, a person may have been a phone call or sending a text five minutes before they were observed and these cases are not included in the distracted driving figures. In this way, distracted driving is significantly different from other behaviors (e.g., seat belt usage), which tend to be more stable across the time spent in a vehicle.

Of the types of behaviors observed, manipulating a handheld device was the most common. This is generally "texting while driving", although it could certainly be email checking, GPS usage, or other activities being carried out on a handheld instrument (usually a phone). The next two categories of behavior involve actually speaking on a telephone. Talking on a hand-held (e.g., using the speaker phone while the phone is in the driver's hand) and holding the phone to the driver's ear both directly involve talking to others while driving Interestingly, the practice of talking on a handheld appears to have increased from recent years while manipulating a handheld device has decreased.

B. Distracted Driving by Road Type

The results of the 2017 survey (presented in Table 2) found that local roads were the most frequently sites of distracted driving behaviors. This is problematic as local roads also tend to be the most dangerous when it comes to fatalities and injuries on a per mile basis.

C. Distracted Driving by Vehicle Type

The results included in Table 3 clearly showed that distracted driving due to electronic devices was highest in vans/SUVs. In fact, the usage rates for Vans and SUVs was about 35% higher than in pickup trucks and electronics usage in vans and SUVs was about 60% higher than it was in passenger cars.

D. Distracted Driving by Whether a Passenger is Present

Table 4 includes data showing that across all types of electronic devices, being alone in a vehicle greatly increased the likelihood of engaging in electronics use. In fact, being alone was associated with an overall electronic usage rate that was more than 10 times the rate shown by people who had a passenger in the vehicle and a 58 times greater likelihood of manipulating a handheld device.

The reasons for this would seem straightforward. When a passenger is present, the driver will be less likely to call another person as he or she already has a person in the vehicle with whom to communicate. Further, it is likely that in many cases, the passenger can place the call (or send the text) for the driver. On the downside, however, it is likely that the presence of the passenger also adds to the overall level of distraction of the driver due to conversations with the passenger and the tendency for drivers to look at their passengers while driving.

E. Distracted Driving by Whether a Child Under 8 years of Age is Present

Table 5 presents data that specifically compares distracted driving due to electronic devices in cases where a young child is present versus when a young child is not present. Although the number of cases of having a young child present is somewhat low, the frequency of actually speaking on a phone (either with the phone to the ear or speaking into a hand held device) when a young passenger is present was found to be more prevalent than when a young child was not present. Manipulating a handheld device, however, was less likely. It appears that more parents are heeding the advice regarding "texting", while talking on a phone may be perceived to be "more acceptable" or "less dangerous".

F. Distracted Driving by County

Table 6 shows the full results of the observational survey broken down by county. There were no strong geographic trends found in the data. The three counties, which showed the most distracted driving due to electronic usage, were San Bernardino, Contra Costa, and San Joaquin and the three counties with the least usage of electronic devices were San Mateo, Ventura, and Monterey.

At a county-specific level, however, San Bernardino and Contra Costa showed consistently high levels of distracted driving across the three categories measured in this observational survey and were also based on large sample sizes.

APPENDIX A

Distracted Driving in California: Results overview and Additional Analysis

Overall electronic device use and distracted driving due to electronic devices variable

The variable "distracted driving due to electronic devices (DD)" was created based on three behaviors observed by field staff and included:
1. Holding a phone to the ear,
2. Manipulating a hand-held electronic device while driving, and
3. Talking on a hand-held device.

The fourth variable observed was NOT included in the DD behaviors.
4. Talking on a phone using a headset or Bluetooth device

Talking with headset/Bluetooth is likely to be underestimated via observation since it is very difficult to observe. This usage, however, can be estimated by using data from the California Traffic Safety Survey. This has been done by estimating the ratio between drivers who self-report talking with a hands-free device and drivers who self-report talking with a hand-held device. Using the California Traffic Safety Survey results from 2017 a correction factor of 1.58 was obtained (i.e., 74.47% of people used a hands free device in the past 30 days whereas 47.08% used a hand-held device, resulting in a ratio of 1.58). As a result, our observational findings of "holding phone to ear and talking on hand-held" were summed and then multiplied by 1.58 to provide an estimate for the actual headset/Bluetooth usage. These total values are reported in Table A1.

Table A1. Cellphone and Electronic Device Use Rates

	2017	2016	2015	2014
Total Cellphone Use Rates	7.64%	12.8%	9.2%	6.6%
Phone to Ear	1.04%	2.6%	1.7%	1.1%
Manipulating Hand-Held	1.51%	4.5%	3.3%	2.2%
Talking on Hand-Held	1.33%	0.9%	1.0%	0.7%
*Talking with headset/Bluetooth	3.74%	4.8%	3.3%	2.5%
Sample Size	**19,387**	**5,341**	**5,349**	**5,693**