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**The National Surface Transportation Safety  
Center for Excellence**

# **In-Vehicle Device Acquisition and Usage in Personal Vehicles**

**Commercial versus Non-commercial  
Driver's License Holders**

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Lighting	Technology
Fatigue	Aging

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## TABLE OF CONTENTS

<b>LIST OF FIGURES .....</b>	<b>iii</b>
<b>LIST OF ABBREVIATIONS AND SYMBOLS .....</b>	<b>v</b>
<b>CHAPTER 1. INTRODUCTION .....</b>	<b>1</b>
<b>CHAPTER 2. METHODS .....</b>	<b>3</b>
<b>CHAPTER 3. RESULTS AND DISCUSSION.....</b>	<b>5</b>
<b>AGE AND GENDER.....</b>	<b>5</b>
<b>DEVICES OWNED.....</b>	<b>5</b>
<b>CELL PHONE USAGE WHILE DRIVING.....</b>	<b>6</b>
<b>TEXT MESSAGING WHILE DRIVING.....</b>	<b>7</b>
<b>AVOIDANCE OF USE IN SITUATIONS .....</b>	<b>8</b>
<b>CHAPTER 4. GENERAL DISCUSSION .....</b>	<b>11</b>
<b>APPENDIX A. ELECTRONIC DEVICE USAGE SURVEY .....</b>	<b>13</b>
<b>REFERENCES.....</b>	<b>25</b>



## LIST OF FIGURES

Figure 1. Respondent age distributions: CDL vs. non-CDL holders.....	5
Figure 2. Percent of device ownership.....	6
Figure 3. Cell phone usage while driving.....	7
Figure 4. Frequency of texting while driving.....	8
Figure 5. Cell phone use avoidance by situation.....	9



## **LIST OF ABBREVIATIONS AND SYMBOLS**

CDL	Commercial Driver's License
FARS	Fatality Analysis Reporting System
GES	General Estimates System
VTTI	Virginia Tech Transportation Institute



## CHAPTER 1. INTRODUCTION

In 2008 according to the Fatality Analysis Reporting System (FARS), a total of 34,017 fatal crashes occurred in the United States. Some form of distraction was reported for 11% of all crashes, accounting for 5,501 people killed (FARS 2004-2007 as cited in Ascone, Lindsey, and Varghese, 2009).<sup>(1)</sup> Additionally, the General Estimates System (GES) showed 2,346,000 individuals were injured in motor vehicle crashes during the same year. Twenty-two percent of the crashes involved some type of distraction (GES 2004-2008 as cited in Ascone, Lindsey, and Varghese, 2009).<sup>(1)</sup> While the estimated number of injuries resulting from distraction has fallen 28% since 2004, the number of fatalities has risen from 11% to 16% (Ascone, Lindsey, and Varghese, 2009).<sup>(1)</sup> This indicates that distraction remains a formidable problem in traffic safety.

Through past research we have begun to understand device usage by drivers while operating a motor vehicle (Klauer, Dingus, Neale, Sudweeks and Ramsey, 2006<sup>[2]</sup>; Olson, Hanowski, Hickman, and Bocanegra, 2009<sup>[3]</sup>). An in-depth analysis of driver inattention surrounding crashes and near-crashes was conducted using data from the 100-Car database at the Virginia Tech Transportation Institute (VTTI). As part of the analysis, driver distraction was investigated. Secondary task distraction contributed to more than 42% of all crashes and near-crashes. Additionally, handheld device usage was shown to be the most frequent type of secondary task engagement. Drivers were found to have an increased crash risk when dialing a handheld device (OR = 2.8; Klauer et al., 2006<sup>[2]</sup>).

Olson et al. (2009)<sup>(3)</sup> conducted an analysis of driver distraction using naturalistically collected commercial truck data. The naturalistic data set resulting from 203 drivers included 4,452 safety-critical events (e.g., crashes, near-crashes, crash-relevant conflicts, and unintentional lane deviations). Drivers were reported to have engaged in non-driving-related tasks in 71% of crashes and 46% of all near-crashes. Additionally, following the methods used in Klauer et al. (2006)<sup>(2)</sup>, Olson et al. (2009)<sup>(3)</sup> noted 81.5% of the safety-critical events involved some type of driver distraction as a potential factor.

The previous studies implied some device usage among both commercial driver's license (CDL) holders while in their commercial vehicles and non-CDL holders in their personal vehicles, but an examination of device ownership and usage amongst CDL holders in their personal vehicles was not evaluated. Of particular interest is the difference of device ownership and usage between CDL and non-CDL licensees in their personal vehicles. The objective of this study was to investigate the differences between these two groups in terms of their respective device acquisition and in-vehicle usage patterns.



## **CHAPTER 2. METHODS**

A survey was created to investigate various aspects of handheld device acquisition and usage while driving (see Appendix A). Survey items ranged from basic demographics to specific situations or settings where certain nomadic devices were used. The survey was administered and disseminated by the Center for Survey Research at Virginia Tech. A total of 1,524 respondents completed the survey, 1,425 of which were non-CDL holders and 72 of which held CDLs. The results discussed below should be interpreted with caution as the sample sizes differed greatly between CDL-holders and non-CDL-holders.



## CHAPTER 3. RESULTS AND DISCUSSION

### AGE AND GENDER

Respondent age was heavily skewed towards younger individuals in the age range of 18-30 years old with slightly more diversity of non-CDL licensees (18-40 years of age; see Figure 1). The age distribution was in the direction expected – as many of the respondents worked with the local college. Among non-CDL licensees, gender was approximately equally represented (female – 752, male – 670) while more than twice the respondents who held CDLs were male (female – 20, male – 52).

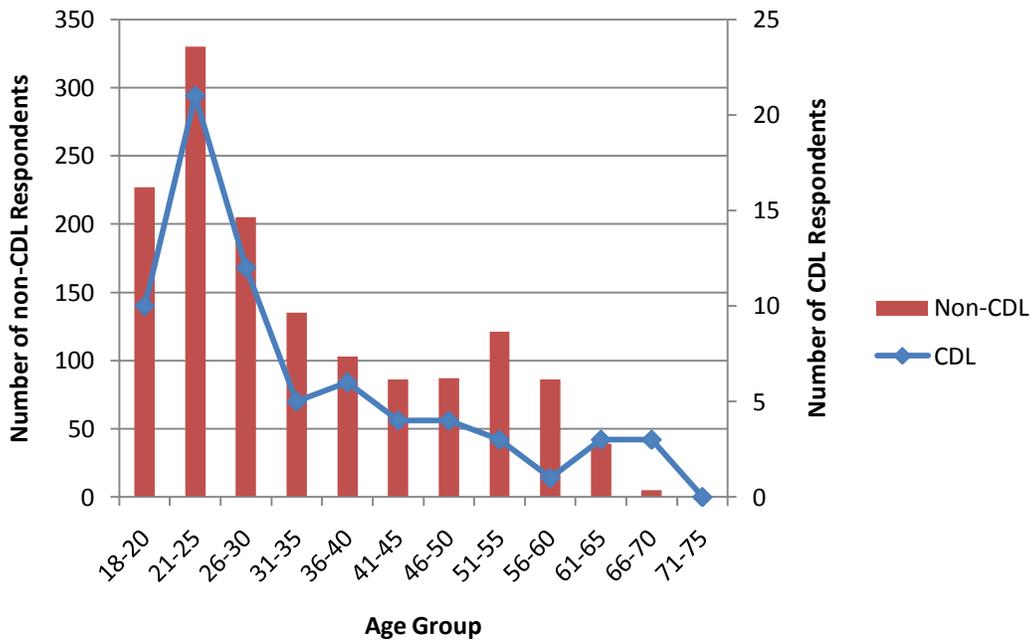
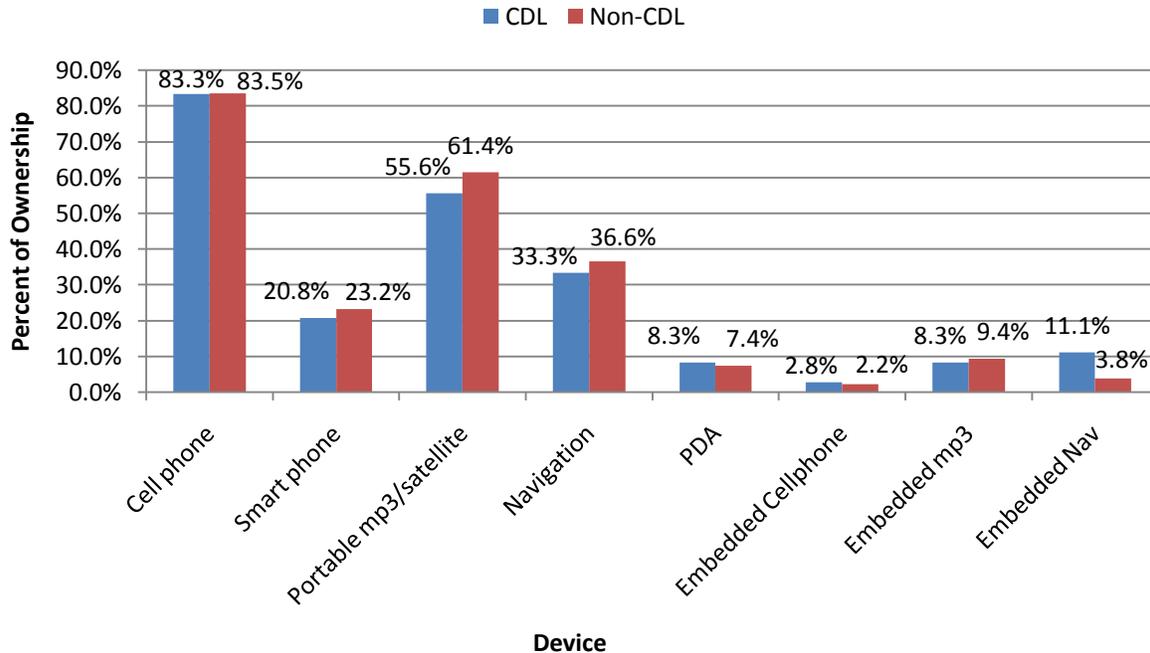


Figure 1. Chart. Respondent age distributions: CDL versus non-CDL holders.

### DEVICES OWNED

A series of survey questions addressed device ownership (see Figure 2). All survey respondents answered this question (72 CDL licensees and 1,425 non-CDL licensees). Device ownership was very similar among CDL versus non-CDL holders.



**Figure 2. Chart. Percent of device ownership.**

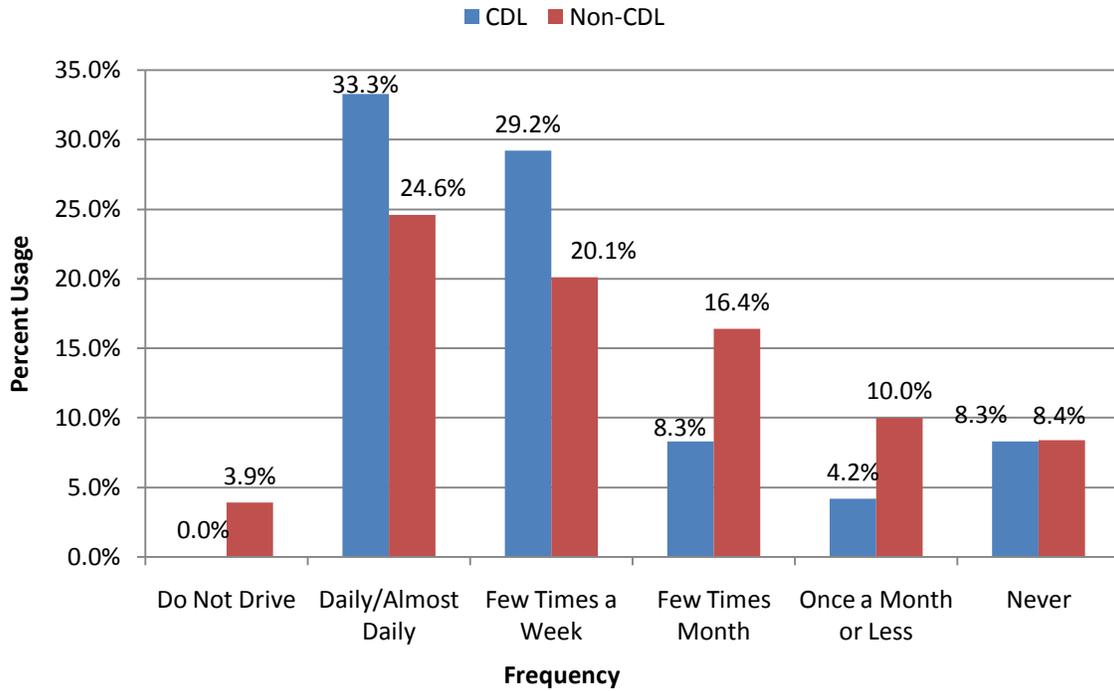
Two discrepancies of device ownership were uncovered by the survey. The single largest difference was for owners of an embedded navigation system: 11.1% of drivers who hold a CDL own an embedded navigation system whereas only 3.8% of non-CDL holders own one (see Figure 2). The second discrepancy (~5.8%) occurred for portable MP3 and satellite radio owners where 61.4% of non-CDL holders own a device with these capabilities while only 55.6% of CDL holders own such a device. Other devices showed very little difference in ownership between the two types of license holders. For instance, CDL holders own a cell phone 0.2% less than non-CDL license holders (83.3% for CDL versus 83.5% for non-CDL). Additionally 20.8% of CDL holders were found to own a smart phone whereas 23.2% of non-CDL holders own a smart phone.

### **CELL PHONE USAGE WHILE DRIVING**

The survey also probed the frequency of use of devices while driving, and the focus here will be on cell phone use while driving. A total of 60 of 72 CDL licensees and 1,187 of 1,425 non-CDL licensees responded to this question

CDL holders engaged their cell phones more often while driving than those without a CDL: 33.3% of CDL holders and only 24.6% of non-CDL holders noted they use cell phones “daily” or “almost daily.” The same pattern existed for those who noted using their cell phone “a few times a week” (29.2% of CDL holders versus 20.1% of non-CDL holders; see Figure 3). Interestingly, those who admitted to using their cell phone while driving “a few times a month” to “once a month or less” showed a reverse trend; i.e., fewer CDL holders admitted to using their cell phone while driving during those timeframes (“few times a month”: 8.3% CDL holders

versus 16.4% non-CDL holders; “once a month or less”: 4.2% CDL holders versus 10.0% non-CDL holders).

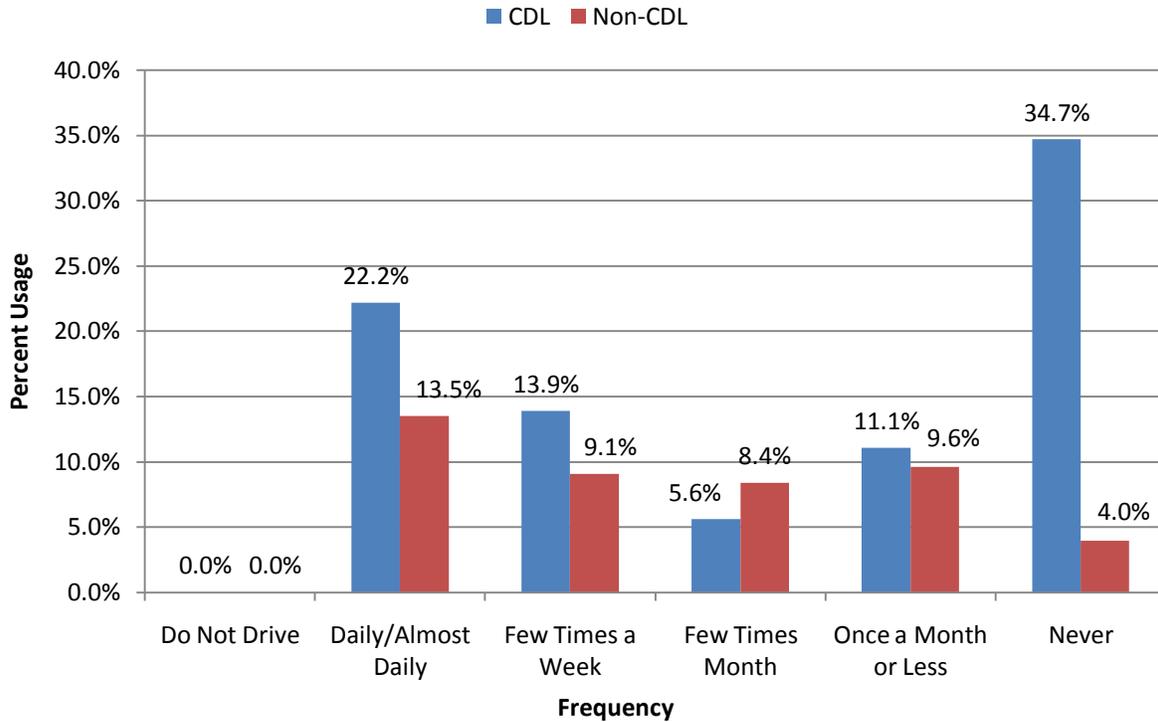


**Figure 3. Chart. Cell phone usage while driving.**

The survey showed interesting discrepancies of cell phone usage while driving between drivers who hold CDLs and those who do not. The greater frequency of use while driving by CDL holders may have been due, in part, to the level of training they receive. With a higher degree of training than their non-CDL counterparts, CDL holders perhaps feel more confident in their ability to drive safely while and engaging in a cell phone conversation. Additionally, those who professionally drive transfer trucks have been known to engage in cell phone conversations to help offset the tedium of long drives. These drivers could become accustomed to talking on a cell phone while driving, and this tendency may transfer to use in their private vehicle.

### **TEXT MESSAGING WHILE DRIVING**

Another question on the survey investigated the frequency drivers communicated via text message while driving. A total of 63 of 72 CDL holders and 1,143 of 1,425 non-CDL holders responded to this question. A higher proportion of CDL holders admitted to texting “daily/almost daily,” a “few times a week,” and “once a month or less” compared to the non-CDL holders (see Figure 4). Of particular interest are the two frequency categories “daily/almost daily” and “never.”



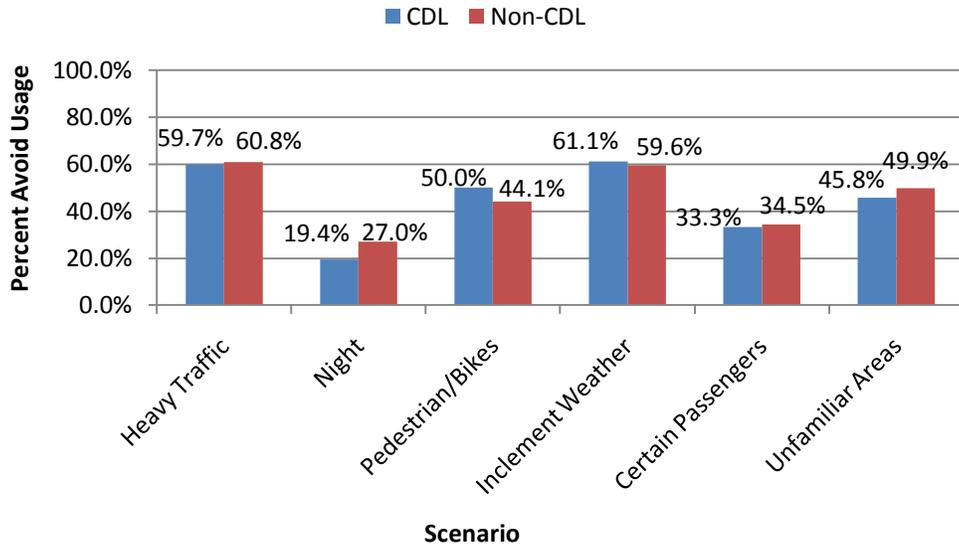
\*note: totals do not add to 100% as there was missing data for both CDL and Non-CDL users

**Figure 4. Chart. Frequency of texting while driving.**

Roughly 22% of CDL holders indicated that they text daily or almost daily while driving compared to only 13.5% of non-CDL holders. This is in stark contrast to the 34.7% of CDL holders who never text while driving versus the 4.0% of non-CDL holders who never text and drive.

#### **AVOIDANCE OF USE IN SITUATIONS**

A series of questionnaire items also probed avoidance of cell phone usage during a variety of situations: heavy traffic, nighttime, near pedestrians/bicyclists, in inclement weather, while transporting certain passengers and in unfamiliar areas. In total, 62 of 72 (86%) CDL holders and 1,146 of 1,425 (80%) non-CDL holders responded to the questionnaire item. On average, the distribution of cell phone avoidance during certain situations was very similar between the two driver groups (see Figure 5). Most drivers (regardless of license type) noted avoiding use of their cell phone in inclement weather and heavy traffic most often (roughly 60% avoidance). On average, however, only 20-25% of drivers noted avoiding use of their cell phone at night.



**Figure 5. Chart. Cell phone use avoidance by situation.**



## CHAPTER 4. GENERAL DISCUSSION

In summary, the survey contained a number of questionnaire items probing device ownership and usage in private vehicles for two groups of drivers: those with and without CDLs. Only the results deemed most interesting have been presented above. The collection of survey results indicates that specific types of device usage may be substantively different for these two groups (see Figure 3 and Figure 4).

The results of the survey indicated the relatively similar device usage between drivers who hold a CDL and those who do not. However, these similarities may indicate the need to focus on those devices where a discrepancy in ownership did occur; i.e., portable MP3 players and satellite radio as well as embedded navigation systems. Additionally, it would be worthwhile to investigate why the differences in device ownership exist – for instance, does a higher prevalence of embedded navigation systems, which are most-often found in higher-end vehicles, simply signify a difference in income level?

A large discrepancy in the number of respondents exists between the CDL (72) and non-CDL-holders (1,425). The disproportional number of CDL-holders arose due to a sample of convenience. Ideally, the survey would include an equal sample size with the non-CDL-holders. One should exercise caution when interpreting the results above as the relatively low number of CDL-holders may not truly represent device ownership and usage in that population.

Future research should include statistical testing to investigate where the true differences between the two groups of drivers occurs. Several questions arose from the examination of only a select group of survey items – for instance, why do CDL-holders have a bimodal distribution of texting while driving while non-CDL holders do not? Why do 34.7% of the CDL respondents say they never text and drive while 41% admit to texting while driving a few times a week to nearly every day? Does being trained as a professional driver influence their choice to send text messages while driving? Further research should investigate the key underlying reasons for the reported differences above.



## APPENDIX A. ELECTRONIC DEVICE USAGE SURVEY



# ELECTRONIC DEVICE USAGE SURVEY

The Virginia Tech Transportation Institute (VTTI) is interested in learning about the decisions people make when selecting, purchasing, and using different electronic devices, particularly when the devices may be used while driving. Such devices might include cell phones, navigation aids, or MP3 players. Because you are one of a randomly selected group of campus community members invited to participate in the survey it is very important that we receive your response. The Virginia Tech Center for Survey Research is coordinating the survey and will keep all of your answers strictly confidential. All respondents (perhaps several hundred individuals) will be provided with an opportunity to win one of ten \$100 gift cards (e.g., from American Express or similar). The survey takes about 10-15 minutes to complete.

### 1. Please indicate your age group below.

- ± 18-20 years of age
- ± 21-25 years of age
- ± 26-30 years of age
- ± 31-35 years of age
- ± 36-40 years of age
- ± 41-45 years of age
- ± 46-50 years of age
- ± 51-55 years of age
- ± 56-60 years of age
- ± 61-65 years of age
- ± 66-70 years of age
- ± 71-75 years of age
- ± 76 years of age or over

### 2. Please indicate your gender below.

- ± Female
- ± Male

### 3. Do you have a valid driver's license?

- ± Yes
- ± No

### 4. Do you have a valid commercial driver's license (CDL)?

- ± Yes
- ± No [GO TO Q6]

**5. Please indicate below which endorsements or restrictions you have. Please click on all options that apply.**

- ± H, permits you to transport hazardous materials, endorsement cannot be transferred from another state or foreign country, must complete haz mat knowledge exam/background check
- ± N, permits you to drive a tank vehicle
- ± P, permits you to drive a passenger-carrying vehicle, must take road test in class vehicle you intend to operate
- ± S, permits you to drive a school bus, endorsement cannot be transferred from another state or foreign country, must complete the school bus knowledge exam and road skills test
- ± T, permits you to drive a vehicle towing a double or triple trailer
- ± J (restriction), you may only operate a school/activity bus. You may not operate any other type of commercial motor vehicle

**6. Do you currently have children under the age of 18 living with you? (Please Click One Response Option)**

- ± Yes
- ± No [GO TO Q8]

**7. Please type in how many children you have in each of the categories listed below. If you have no children in a category, please leave the category blank.**

- \_\_\_ 0-2 years of age
- \_\_\_ 3-4 years of age
- \_\_\_ 5-12 years of age
- \_\_\_ 13-17 years of age

**8. Please indicate your race/ethnicity below.**

- ± Asian/Pacific Islander
- ± Black/African American
- ± White/Caucasian
- ± Other (Please specify: \_\_\_\_\_)

**9. Which of the devices below do you have currently? Please click on all devices that apply.**

- ± Portable cell phone
- ± Smart phone (advanced mini-computer with operating system, Internet, email, and/or keyboard but also phone)
- ± Portable MP3/satellite music player
- ± Portable GPS/navigation unit
- ± Personal digital assistant (PDA, such as a Palm Pilot)
- ± Cell phone embedded (built in) in vehicle
- ± MP3 player/satellite music embedded (built in) in vehicle
- ± GPS/navigation unit embedded (built in) in vehicle
- ± I have none of the devices listed above [GO TO Q26]

**10. Did you personally select your [DEVICE INSERTED]? [ASKED FOR PORTABLE DEVICES]**

- ± Yes
- ± No

**11. Did you purchase your [DEVICE INSERTED] or did you receive it as a gift? [ASKED FOR PORTABLE DEVICES]**

- ± I purchased it
- ± I received it as a gift from a family member or members (such as parents)
- ± I received it as a gift from a friend
- ± I received it some other way (Please describe: \_\_\_\_\_)

**12. Please click on all of the settings below in which you use your [DEVICE INSERTED]. [ASKED FOR PORTABLE DEVICES]**

- ± Home
- ± Work
- ± In vehicle
- ± Other (Please list the other places where you use this device: \_\_\_\_\_)

**13. In a typical month, how often do you use your [DEVICE INSERTED] while driving? [ASKED FOR ALL DEVICES]**

- ± I do not drive [GO TO Q26]
- ± Daily/almost daily
- ± A few times a week
- ± About once a week/a few times a month
- ± About once a month or less
- ± Never

**14. When using your phone while driving, how often do you use your phone with a hands free device or in hands free mode? [ASKED IF ANY TYPE OF PHONE IS USED WHILE DRIVING]**

- ± Daily/almost daily
- ± A few times a week
- ± About once a week/a few times a month
- ± About once a month or less
- ± Never

**15. Please indicate how often you use a phone while driving for each of the reasons listed below. [ASKED IF ANY TYPE OF PHONE IS USED WHILE DRIVING]**

	Daily/ Almost Daily	A Few Times a Week	About Once a Week/A Few Times A Month	About Once a Month or Less	Never
-----Please Click One Response Option---					
---					
a. For personal business (making appointments, plans, etc.)	±	±	±	±	±

b. For personal conversations	±	±	±	±	±
c. For business/work communication	±	±	±	±	±

	Daily/ Almost Daily	A Few Times a Week	About Once a Week/A Few Times A Month	About Once a Month or Less	Never
-----Please Click One Response Option----- ---					
d. To be reachable at all times a day for business or family/friends	±	±	±	±	±
e. For text messaging	±	±	±	±	±
f. To check voicemail or email	±	±	±	±	±
g. To screen incoming calls	±	±	±	±	±
h. To seek information (e.g., news, stock prices, driving directions, etc.)	±	±	±	±	±
i. To save information (e.g., phone numbers or personal notes)	±	±	±	±	±
j. For entertainment or special applications like games or music	±	±	±	±	±
k. To make purchases (M-commerce or banking on the phone)	±	±	±	±	±
l. To manage time using alarms or scheduling reminders	±	±	±	±	±
m. To take and/or share photos	±	±	±	±	±
n. For safety and security (in case of emergencies)	±	±	±	±	±
o. For use of other functions integrated with phone	±	±	±	±	±
p. I use the phone while driving for other reasons	±	±	±	±	±

**16. Please specify the other functions integrated with your phone that you use while driving. [ASKED IF “OTHER FUNCTION” IS USED AT LEAST ONCE A MONTH]**

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**17. Please specify the other reasons you use the phone while driving. [ASKED IF PHONE IS USED FOR “OTHER REASONS” AT LEAST ONCE A MONTH]**

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**18. Please indicate any of the activities below that you do while using a phone and driving. [ASKED IF ANY TYPE OF PHONE IS USED WHILE DRIVING]**

- ± Use phone only while vehicle is stopped at a light/sign or when parked
- ± Avoid typing, texting, manually dialing numbers, or keypad, keyboard use while driving
- ± Avoid using phone in heavy traffic
- ± Avoid using phone at night
- ± Avoid using phone in areas with pedestrian/bike traffic
- ± Avoid use in bad weather
- ± Avoid use when certain passengers are in the vehicle (e.g., parents or children)
- ± Avoid use in locations/areas unfamiliar to you

**19. Are there any other practices that you engage in while using a phone in your vehicle in order to avoid distraction while driving?**

- ± Yes (Please describe these practices: \_\_\_\_\_)
- ± No

**20. Please indicate how often you use a navigation system while driving for each of the reasons below. [ASKED IF ANY TYPE OF NAVIGATION SYSTEM IS USED WHILE DRIVING]**

		Daily/ Almost Daily	A Few Times a Week	About Once a Week/A Few Times A Month	About Once a Month or Less	Never
-----Please Click One Response Option---						
---						
a.	To plan routes to unfamiliar destinations or points of interest	±	±	±	±	±
b.	To get or receive driving directions while on the way to unfamiliar destinations	±	±	±	±	±
c.	To get restaurant or shopping recommendations	±	±	±	±	±
d.	To avoid heavy traffic or construction delays in advance of travel	±	±	±	±	±
e.	To get real time traffic information or deal with traffic congestion or construction while en route	±	±	±	±	±
f.	To find the shortest route	±	±	±	±	±
g.	To find the quickest route	±	±	±	±	±
h.	To find a route that meets some other criterion (e.g., avoiding the interstate, seeing specific sites, etc.)	±	±	±	±	±
i.	To avoid getting lost	±	±	±	±	±
j.	To recover from an unexpected departure from a planned route	±	±	±	±	±
k.	For re-routing, if changes to the route are needed	±	±	±	±	±
l.	To arrive on time	±	±	±	±	±
m.	To use non-navigation functions which are offered in the device (phone, Bluetooth, etc.)	±	±	±	±	±

**21. Please indicate any of the activities below that you do while using a navigation system and driving. [ASKED IF ANY TYPE OF NAVIGATION SYSTEM IS USED WHILE DRIVING]**

- ± Avoid planning route/destinations while driving (I do it ahead of time)
- ± Avoid entering destination by typing it in
- ± Avoid scrolling the map
- ± Avoid searching long lists for destinations or points of interest
- ± Avoid hunting for points of interest
- ± Avoid use of visual mode
- ± Avoid use of full moving map display; instead use simplified map or visual displays
- ± Avoid use of voiced instructions
- ± Avoid using it when I am familiar with the area
- ± Avoid using it when there are problems on the road (road closures, etc. that system won't know about)
- ± Avoid using it at night
- ± Avoid using it at dawn, dusk
- ± Avoid use under glare

**22. Are there any other practices that you engage in while using a navigation device in order to avoid distraction while driving?**

- ± Yes (Please describe these practices: \_\_\_\_\_)
- ± No

**23. Please indicate how often you use an MP3/satellite music player while driving for each of the reasons listed below. [ASKED IF ANY TYPE OF MP3/SATELLITE PLAYER IS USED WHILE DRIVING]**

	Daily/ Almost Daily	A Few Times a Week	About Once a Week/A Few Times A Month	About Once a Month or Less	Never
-----Please Click One Response Option-----					
a. To pass the time pleasantly	±	±	±	±	±
b. To entertain passengers	±	±	±	±	±
c. To help stay awake	±	±	±	±	±
d. To find particular songs to listen to	±	±	±	±	±
e. To find particular albums/CDs to listen to	±	±	±	±	±
f. To find particular artists to listen to	±	±	±	±	±
g. To listen to random songs (e.g., shuffle) or a playlist	±	±	±	±	±
h. To find and play favorite songs for passengers	±	±	±	±	±
i. To listen to books, podcasts, or other audible content	±	±	±	±	±
j. To find new music	±	±	±	±	±
k. To identify new genres, artists, and songs	±	±	±	±	±

l.	To upload or download music from a source while in the parked vehicle	±	±	±	±	±
m.	To upload or download music from a source while driving in the vehicle	±	±	±	±	±
n.	To store genres, artists, songs for later listening	±	±	±	±	±

**24. Please click on any of the activities below that you do while using an MP3/satellite music player and driving. [ASKED IF ANY TYPE OF MP3/SATELLITE MUSIC PLAYER IS USED WHILE DRIVING]**

- ± Use hands-free mode only
- ± Avoid using while vehicle is moving, wait for a stop
- ± Avoid searching for items; typically let the device play current list of songs
- ± Avoid changing mount, or removing player from mount while driving
- ± Avoid using controls on device; instead use a vehicle-integration so that vehicle controls are available
- ± Avoid using in heavy traffic
- ± Avoid using at night
- ± Avoid using in areas with pedestrian/bike traffic
- ± Avoid use in bad weather
- ± Avoid use when certain passengers are in the vehicle (e.g., parents or children)
- ± Avoid use in locations/areas unfamiliar to you

**25. Are there any other practices that you engage in while using an MP3 or satellite music player device in order to avoid distraction while driving?**

- ± Yes (Please describe these practices: \_\_\_\_\_)
- ± No

**26. Please indicate how important each of the factors below is when you are making decisions regarding which phone, navigation, and music player devices to purchase.**

		Very Important	Somewhat Important	Not Very Important	Not at All Important
-----Please Click One Response Option----- -----					
a.	Lowest price or free device (e.g., cell phones provided with service subscription)	±	±	±	±
b.	Brand name recognition	±	±	±	±
c.	Color	±	±	±	±
d.	Brand status	±	±	±	±
e.	Features per dollar	±	±	±	±
f.	Size of device/portability	±	±	±	±
g.	Quality	±	±	±	±
h.	Ease of use	±	±	±	±
i.	Minimizing distraction	±	±	±	±

j.	Coolness; self expression	±	±	±	±
k.	Latest technology	±	±	±	±
l.	Display screen quality	±	±	±	±
m.	Performance (coverage, accuracy, speed, reliability, etc.)	±	±	±	±
n.	Cost of service or associated fees	±	±	±	±
o.	Number of different functions and features offered	±	±	±	±
p.	Availability of hands-free voice mode	±	±	±	±
q.	Availability of mount to use in vehicle	±	±	±	±
r.	That it is “green” technology	±	±	±	±

**27. Other than the factors listed above, please list any factors that are important to you when making decisions regarding which phone, navigation, or music player devices to purchase.**

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**28. If you needed to select a new electronic device that would be used in your vehicle, please indicate how important each of the factors below would be in your decision regarding which device to select.**

		Very Important	Somewhat Important	Not Very Important	Not at All Important
		-----Please Click One Response Option-----			
a.	Whether it will integrate with my vehicle (through a hardware connection)	±	±	±	±
b.	Whether my vehicle already provides a system like it	±	±	±	±
c.	Whether I am going to use it in more settings than just while driving	±	±	±	±
d.	Whether it will be distracting while I’m driving	±	±	±	±
e.	Whether I am going to use it in more than one vehicle	±	±	±	±
f.	The cost of its associated service fee	±	±	±	±

**29. Other than the factors listed above, please list any factors related to use of the devices in your vehicle that are important to you when making electronic device purchasing decisions.**

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**30. If you needed to buy a new vehicle how important would a vehicle having each of the features listed below be to your decision to buy a particular vehicle.**

		Very Important	Somewhat Important	Not Very Important	Not at All Important
--	--	----------------	--------------------	--------------------	----------------------

-----Please Click One Response Option-----					
a.	Embedded (built in) phone service (such as OnStar, on Sync)	±	±	±	±
b.	Embedded (built in) XM or satellite radio, MP3 player	±	±	±	±
c.	Embedded (built in) navigation system	±	±	±	±
d.	Embedded (built in) interactive information system with wireless connectivity	±	±	±	±

**31. Other than the features listed above, please list any other electronic features that would influence you to purchase a particular vehicle.**

**32. [SKIP IF Q13=1] Which of the features below are included in the vehicle you currently drive most often? Please click on all features that apply.**

- ± Embedded (built in) phone
- ± Embedded (built in) GPS/navigation system
- ± Embedded (built in) MP3/music player/satellite radio with memory storage
- ± Interfaces for connecting your portable devices to the vehicle so that they are integrated while you drive
- ± Devices that have been permanently installed after the purchase of your vehicle for phoning, navigation, MP3/music, or to allow you to connect your portable devices
- ± The vehicle I drive most often has none of the devices listed

**33. If you had to shop for an electronic device, how likely are you to do each of the things listed below to help you decide which device to buy?**

					Very Likely	Somewhat Likely	Somewhat Unlikely	Not at All Likely
-----Please Click One Response Option-----								
a.	Ask a knowledgeable or valued family member, friend, or coworker	±	±	±	±			
b.	Look for ads/deals on <u>new</u> devices in the local paper	±	±	±	±			
c.	Look for ads/deals on <u>used</u> devices in the local paper	±	±	±	±			
d.	Listen to ads on television or radio	±	±	±	±			
e.	Look for ads/deals on used devices using online tools (e.g., Craigslist, Ebay, etc.)	±	±	±	±			
f.	Read trade magazines (e.g., Wired, Technology Review, etc.)	±	±	±	±			
g.	Look for consumer support magazines/services (e.g., JD Power, Consumers Digest, Consumer Reports, etc.)	±	±	±	±			
h.	Look for consumer support online (Consumer Reports website or other similar websites)	±	±	±	±			

i.	Go to physical store to shop (e.g., WalMart, Best Buy, Office Depot, Verizon, AT&T, etc.)	±	±	±	±
j.	Go to website of physical store to shop (e.g., WalMart, Best Buy, Office Depot, Verizon, AT&T, etc.)	±	±	±	±
k.	Search online using general purpose search engines (e.g., Google, Yahoo!, etc.)	±	±	±	±
l.	Search online trade magazines (e.g., PCMag.com, ZDNet.com, cnet.com, etc.)	±	±	±	±
m.	Search online shopping integrators (e.g., Amazon.com, Yahoo!Shopping.com, buydig.com, etc.)	±	±	±	±
n.	Use information printed on product packaging	±	±	±	±

**34. If you were to buy an electronic device for someone else, for a new young driver for example, or for your parents, would your purchase considerations change?**

- ± Yes (Please describe how your considerations would change: \_\_\_\_\_)
- ± No

**35. If you wanted to find information on how distracting the use of a particular electronic device was during driving, or to identify which models were least distracting, where would you go first to look for that information?**

- ± Magazines, newspapers
- ± Website or web search
- ± Consumer Reports
- ± Secretary of State Office or Department of Motor Vehicle Licensing/Registration
- ± Product box

**36. Are there any other sources of information you would use to find information related to the driving distraction potential of electronic devices?**

- ± Yes (Please describe how your considerations would change: \_\_\_\_\_)
- ± No

**37. If test results were made available about each electronic device’s “ease of use while driving,” to what extent would you use this information in your purchase decisions related to portable or embedded (built in) electronic devices?**

- ± Very likely to use this information to inform my purchase decisions
- ± Somewhat likely to use this information to inform my purchase decisions
- ± Not sure if I would use this information
- ± Would probably not use this information to inform my purchase decisions
- ± Would definitely not use this information to inform my purchase decisions

**38. If test results were made available about each electronic device’s “effects on driving safety,” to what extent would you use this information in your purchase decisions related to portable or embedded (built in) electronic devices?**

- ± Very likely to use this information to inform my purchase decisions
- ± Somewhat likely to use this information to inform my purchase decisions
- ± Not sure if I would use this information

- ± Would probably not use this information to inform my purchase decisions
- ± Would definitely not use this information to inform my purchase decisions

**39. May we contact you again with additional questions?**

- ± Yes
- ± No

**40. May we contact you via telephone for an interview?**

- ± Yes (Please provide your phone number: \_\_\_\_\_)
- ± No

**41. Would you like to be entered into the drawing to win one of ten \$100 gift cards? (The winners will be contacted at the email address to which their survey invitation was sent.)**

- ± Yes
- ± No

**Thank you for your help with our study. Please click “submit” to end the survey.**



## REFERENCES

1. Ascone, D., Lindsey, T., and Varghese, C. (2009). Traffic safety facts research note. Department of Transportation Contract No. HS 811 216.
2. Klauer, C., Dingus, T., Neale, V., Sudweeks, J., and Ramsey, D. (2006). The impact of driver inattention on near-crash/crash risk: an analysis using the 100-car naturalistic driving study data. National Highway Traffic Safety Administration Contract No. DTNH22-00-C-07007 Task Order 23.
3. Olson, R., Hanowski, R., Hickman, J., and Bocanegra, J. (2009). Driver distraction in commercial vehicle operations. Federal Motor Carrier Safety Administration Contract No. DTMC 75-07-3-00006.