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Research Article

Texting versus Talking on Cell Phones While Driving: An Observation

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Abstract

Objectives: This study investigated the rate of texting and talking on a cellphone while driving from actual street observation. We suspect that the rate of texting while driving is underreported in self-reporting studies when compared to observed behavior.

Methods: The research population was drivers entering and exiting the main entrance of a large regional mall. There was no limitation by race, sex, or age from the subjects from which these observations were made. The frequency of texting was compared to the frequency of talking on a hand held cell phone in cars entering and exiting the mall. Demographic information (estimated age, sex), passengers, direction of travel and attempts at hiding behavior were also recorded.

Results: Observations were recorded from 522 consecutive drivers entering the mall and 521 exiting. Texting was documented at that one point in time for 2.7% of drivers and 36% of those were trying to hide this behavior. Talking on the cell phone was noted in 5.6% of the observations. The ratio of texting while driving to talking on the cell phone while driving is 20% for the IIHS (Insurance Institute of Highway Safety) self-reporting study and 48% in our observational study; RR 2.42 (95% CI 1.56-3.86, p =0.0002) times higher for direct observation over self-reporting.

Conclusion: The rate of texting while driving with direct street observation is approximately 2.4 times higher than what is described in the IIHS self-reporting studies.

Introduction

Distracted driving was responsible for 3,119 of the 30,800 traffic fatalities in the United States in 2012 [1]. Distracted driving from cell phone use and texting are particularly hazardous, and texting has received increased attention as one of the most dangerous distracted driving activities to perform while operating a motor vehicle [2]. This has been confirmed in experimental, simulator and large truck-camera observational studies [3,4]. Text messaging by drivers of heavy vehicles causes more than a 23 fold greater risk of a safety-critical event when texting [4]. Sending a text message while driving is particularly dangerous because it involves visual, manual and cognitive distractions [5].

Pew Research Center reported that 91% of the US adult population owns a cell phone [6]. In a self-reporting survey conducted by the Insurance Institute of Highway Safety, 65% of cell phone owners reported talking on a cell phone while driving, but only 13% reported texting [7]. The 2008 Nationwide Insurance self-reporting survey found similar ratios of cell phone use (81%) to texting (18%) by drivers [8]. In a recent survey by AT&T, it was found that 49% of drivers admitted to texting behind the wheel. It was also found that in addition to texting, drivers are beginning to be distracted by other activities on their phones such as social media. When asked about social media use on their smartphones, 27% of drivers admitted to using Facebook and 28% browse the Internet while driving [9,10]. There have been limited studies reporting the rates of texting while driving from actual street observations.

Most people are aware that texting is more dangerous than talking on a cell phone while driving. In a 2013 AAA survey, 96.4% of respondents felt it was unacceptable for drivers to text message or email while driving. In addition, 78% of drivers believe that texting while driving is a serious threat to road safety. However, it was found that more than 30% of people have sent a text message while driving a vehicle in the past 30 days [11]. Self-reported information regarding texting while driving is prone to social bias from the underreporting of socially undesirable behaviors [12]. We suspect that the rate of texting while driving is underreported in self-reporting studies compared to the rate of talking on cell phones. In this street-side observational study, we hypothesized that the rate of texting while driving is higher than previously reported.

Method

Study design

The study population was drivers of passenger vehicles entering or exiting the mall at one of two main entrances in the summer. Subjects were not randomized in this convenient observational sample. Two trained recorders were positioned at the street corners of the intersection. Observation protocols were adapted from the NHTSA National Occupant Protection Use Survey observation protocols. This study was approved by our Health Sciences Institutional Review Board.

Study setting and population

All selected observation sites were at one of two traffic lights controlled intersections entering or exiting the largest mall in the region during daylight hours. Observations were made from street corners in the direction of traffic flow with vehicles in the lane closest to the observer. Observers coded time of day, driver gender, estimated age (16-25,25-45,45-65, >65), presence of passengers, direction of travel, whether the driver was holding a cell phone to his or her ear and appeared to be talking, appeared to be texting or manipulating a cell phone, and if the driver was attempting to hide this activity. Drivers were excluded from the study if there were: tinted windows, elevated car chassis, non-passenger vehicle such as a bus, or those drivers whose status could not be determined for any reason.

Texting and talking on cell phone

For the purposes of this study, texting while driving was defined as the act of composing, sending, and reading text messages/email or making other similar use of the web on a mobile phone while operating a motor vehicle. Talking on the cell phone was recorded if the driver had the phone to his or her ear or was talking with what appeared to be a hands free device. Hiding the phone while texting was recorded when the observers sensed an attempt to keep the texting behavior out of the observers' views.

Statistical analysis

The ratio of texting while driving to talking on the cell phone while driving in our study was compared with several self-reporting studies performed by IIHS and Nationwide Insurance. For the short period of time the drivers were observed, it is assumed that calling and texting are independent events. Additionally, it is presumed that at any instant a text and a call cannot occur simultaneously. Risk Ratios (RR) and their confidence intervals are computed using PROC FREQ in SAS version 9.2 (SAS Institute Inc., Cary, NC). The two text-to-call rates are studied using the method of Altman and Bland to compare two estimates of the same quantity derived from separate studies [13]. Statistical analysis of the study population was performed with the Pearson chi-square for nominal data and Mantel-Haenszel chi-square test for ordinal data. Statistical significance was defined as an alpha < 0.05 and all statistically significant findings are reported in the text.

Result

Observations

A total of 1043 observations of cell phone behavior were recorded (522 upon entering the mall, 521 exiting) that met all inclusion criteria for this study. Fifty-eight drivers (5.56%) were observed making phone calls, while twenty-eight drivers (2.68%) were observed texting and 36% of those were trying to hide this behavior (Table 1). The observed ratio of the text rate to the call rate was 0.48 with 95% confidence interval (0.31, 0.75).

Texting was more common in younger drivers (Mantel-Haenszel Chi-square p = 0.0017) and those driving without passengers (Chi-square p = 0.0027). The rates of texting and cell phone use were similar entering and exiting the mall. The proportion of drivers concealing their text messaging did not differ by age (Mantel-Haenszel Chi-square p = 0.55). The drivers were 42.7% male (445) and 57.3% female (598). Gender of the driver that was texting was 50% males (14/28) and 50% females (14/28). The individual talking on the cell phone was more commonly a female driver (65.5%, 38/58).

Outcomes

The self-reporting study of 1219 drivers from the Insurance Institute for Highway Safety (IIHS) noted 792 drivers (64.97%) who admitted to making phone calls, and 158 drivers (12.96%) who admitted engaging in texting (Table 2). The resulting ratio of text rate to call rate is 0.20 with 95% confidence interval (0.17, 0.23). The ratio of the text-to-call rate from our street-side observational study to the text-to-call rate from the IIHS study is 2.42 with 95% confidence interval (1.56, 3.86). The two studies report estimates of the text-to-call rate that are statistically different (p = 0.0002).

The Nationwide Insurance (NI) study of 1241 drivers reported 1005 drivers (80.98%) making phone calls and 223 drivers (17.97%) texting. The ratio of text-to-call rate was 0.22. The ratio of the text-to-call rate from our street-side observational study to the text-to-call rate from the NI study is 2.18 with 95% confidence interval (1.37, 3.44; p = 0.0009).

When combining the data from the IIHS and Nationwide Insurance self-reporting studies, there were a total of 2460 drivers involved; 1797 drivers (73.05%) who admitted to making phone calls, and 381 drivers (15.49%) who admitted engaging in texting. The resulting ratio of text rate to call rate is 0.21. The ratio of the text-to-call rate from our street-side observational study to the text-to-call rate from the combined study is 2.28 with 95% confidence interval (1.45, 3.58; p = 0.0004).

Table 1: Percentage of drivers observed calling or texting while entering or exiting a mall.

Street-side Study	Yes	No	Total
Calling (%)	58 (5.56)	985	1043
Texting (%)	28 (2.68)	1015	1043

Table 2: Percentage of drivers who self-report calling or texting while driving in the Insurance Institute for Highway Safety (IIHS) study.

IIHS Study	Yes	No	Total
Calling (%)	792 (64.97)	427	1219
Texting (%)	158 (12.96)	1061	1219

Discussion

This report provides one of the first studies of the rates of texting while driving from direct street side observations. The ratio of texting versus talking while driving at a mall at one point in time was recorded for 1043 drivers. In comparison to self-reporting studies, our investigators provide a more accurate representation of the prevalence of texting while driving. We utilized both the IIHS study and the Nationwide Insurance self-reporting studies as comparators to the street-side observations. Underestimating reporting surveys. This study suggests that the actual rate of texting while driving may be 2.2-2.4 fold greater than the currently reported rates from self-reporting surveys. Utilizing this data, one can estimate that texting while driving is done by approximately 31-41% of all drivers. This study more dangerous behaviors is commonly seen in self- is particularly important because it accurately presents and describes the seriousness of the texting while driving problem.

Adding the rates of talking and texting while driving in this study gives a single point in time cell phone use rate of 8.25% of drivers at this location. Another observational study performed by the National Occupant Protection Use Survey (NOPUS) in 2013 reported that approximately 6.8%of drivers operating a vehicle during daylight hours are either talking on their cell phone or manipulating a device by hand [14]. This suggests that our study population and observational methodology was fairly similar to what was reported by NOPUS in June 2013.

Impact of texting while driving

An experimental study by Car and Driver Magazine demonstrated that texting while driving had a greater impact on safety than driving drunk. The stopping distance from 70 mph increased by 4 feet while driving legally drunk, but increased by 36 feet when reading a message and 70 feet when sending a text message [15]. Effects of composing and reading text messages include variations in detection of hazards, reaction time to events, and control of the vehicle [16]. In addition, a simulation study performed at the University Utah found a six-fold increase in distracted driving related accidents while texting [17].

The Virginia Tech Transportation Institute performed studies of drivers of commercial vehicles utilizing video camera recordings of the drivers' behavior. The study revealed that when traveling at 55 miles per hour, a driver texting for 6 seconds was looking at the phone for 4.6 seconds. During that time, the driver travels a distance of a football field without looking at the road. Text messaging had the greatest relative risk of all cell phone activities. Drivers of heavy trucks were more than 23 times more likely to experience a safety-critical event when texting [4].

Driver age

Our study found texting to be significantly more common in younger drivers, particularly when driving alone. Inexperienced younger drivers and their inability to understand the risks associated with multi-tasking while driving could explain this trend. In the Insurance Institute for Highway Safety study, 13% of drivers self-reported some texting while driving; however, this percentage was highest (43%) amongst drivers less than 24 years old [7]. Texting is more often done by teenagers, and 75% of American teens report texting daily. In addition, they state that teenagers on average send 60 messages per day and one-third text over 100 messages per day [18].

A survey of 1,200 teenagers ages 15-19 by AT&T found similar results when 43% of teenagers admitted to texting while driving, 60% text while at a red light, and 73% say they glance at their phone while driving. A large proportion (61%) also says that their friend's text while driving and 75% admit that it is common within their friend group [19]. Furthermore, the 2016 Traffic Safety Culture Index identified drivers ages 19-24 as more likely to report reading or typing text messages while driving and also more likely to find the behavior acceptable [20], and a recent self-reporting study showed that young drivers with peers who reported texting while driving were more likely to report texting and driving themselves [21]. A report on a Delphi survey of young drivers alongside experts on the topic of cellphone use and driving revealed that behaviors beyond sending and receiving text messages while driving may frequently occur in young drivers. The young drivers identified playing music and social media and app use among the five most important behavioral indicators, whereas none of the experts proposed these possible sources of distracted driving [22].

Legislation to deter texting while driving

Approximately 76% of states have banned texting while driving for all drivers. An additional number of states have banned texting for novice drivers or those driving a school bus and/or other public transportation vehicles. These numbers have changed significantly in the last several years, and more and more states are considering additional laws related to texting while driving [23]. At the time of this study, the penalty in New York State for texting while driving was a fine of $150 and 3 points added to your driver's license. After June 2013, legislation criminalized texting while driving with even more significant penalties (a fine of $50 to $200 and 5 points added to driver's license) [24]. The locality where this study took place has aggressively publicized and enforced the cell phone and texting while driving bans. In 2012, Erie County had the highest per capita rate of ticketing for texting while driving in New York State outside of New York City [25].

Education and public opinion

The NHTSA distracted driving demonstration programs in Syracuse, NY and Hartford, CT proved effective in conveying the dangers of texting while driving. Using the slogan "Phone in One Hand, Ticket in the other", residents became more aware of the local law enforcement's program to penalize individuals not abiding by the law and using cell phones while driving. Following the campaign, there was a reported decrease of 43% in texting while driving in Hartford and 32% decrease in Syracuse [26].

Technological innovations

There have been a number of modifications to roadways, such as rumble strips, to alert drivers to distracted or drowsy driving. There are a number of technological innovations that could be implemented to detect or deter distracted driving. Sensors can monitor and alert the driver when the eyes are not focused on the roadway or warn the driver of pending crashes with radar systems. In addition, there are cell phone features that could limit texting while the vehicle is moving, which have been shown to be effective means of curbing cell phone use while driving among novice teenage drivers [27].

Future issues

The next generation of vehicles may make multitasking motorists even more of a hazard. It is estimated by Business Insider that by 2020, 75% of cars will have Internet connecting features. Motorists will be able to buy movie tickets with steering wheel controls, update a Facebook account, read information on their windshields and utilize cell phones as routers to the Internet [28]. It will be particularly important that guidelines are developed that require some of these features to be automatically turned off when a car starts moving. In 2013 for instance, AT&T developed the app called "AT&T DriveMode", which provides drivers with the option to set up a customized reply message to texts, emails, and calls once the vehicle reaches 25 mph [29]. The public awareness of these safety features on cell phones may increase driver's ability to resist the temptation of using their cell phone while driving and reduce distracted driving while behind the wheel.

Limitations

In reviewing this study, one limitation could be that people may be doing other things on their phones rather than texting or calling, such as singing to music. This may have caused some minimal inaccuracies in our estimations. However, the close proximity of both investigators to the vehicles makes this misinterpretation of behavior fairly unlikely. Additionally, at this mall, the overall population of drivers is somewhat younger and may be more likely to text and drive than the population of drivers as a whole. Finally, the slightly older age of those surveyed (18 + year old) in the IIHS study may report fewer drivers texting than a survey of 16 + year old drivers, such as the Nationwide Insurance study. Both studies were utilized to correct for this potential bias.

Conclusion

The rate of texting while driving from direct street observation is approximately 2.2-2.4 times higher than what is described in self-reporting studies. This suggests that texting while driving may be a significantly greater problem than previously reported. This has occurred despite aggressive local enforcement of new anti-texting driving legislation in New York State that has significantly increased the penalties for texting while driving.

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