How many times do young drivers actually touch their smartphone screens while driving?

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Abstract: Smartphone usage, and particularly texting, poses a major concern for road safety. The goal of this paper is to suggest a novel and objective means to measure the occurrence of texting while driving among young drivers. A naturalistic study was conducted with 254 Israeli young drivers who installed a research oriented smartphone app which continuously monitors smartphones usage while driving. The app captures the actual number of times drivers are "touching" their smartphone screens, the speed at which these screen-touches occur, foreground apps and time stamps. The results, which are based on 3,304 hours of driving performed in 11,528 trips, indicate that young drivers touch their smartphone screen on average 1.6 times per minute of driving. Alarmingly, more than half of the screen-touches are performed while the vehicle is in motion, and some touches occur even at speeds higher than 100 km/h. The screen-touches occurred throughout the trip regardless of trip duration, but more intensively during the beginning of the trip. These findings provide evidence to actual and objective intensive usage of smartphones while driving.

1. Introduction

Smartphone usage poses a major concern for road safety and is likely to remain a key issue as smartphone usage continues its global rise. Of the many types of smartphone usages, texting was found to be the most risky behaviour (Dingus, 2014, Klauer et al., 2014, Victor et al., 2014; Delgado et al., 2016). No doubt, texting while driving negatively affects lane position control, reaction time, speed and headway deviation (Fitch et al., 2013; Owens et al., 2011; Yager, 2013; He et al., 2014). Recent studies show that texting results in drivers taking their eyes off the road for an average of 23 seconds in total and increase the risk of a crash or near-crash by two times (Hedlund, 2011; NHTSA, 2015). Texting while driving reveals a paradoxical behaviour according to which drivers unanimously agree that texting while driving is dangerous and poses serious risks to safety, yet, at the same time they admit to doing it, and even on a regular basis (Atchley et al., 2011; Musicant et al., 2015).

Among all age groups, young drivers, who are involved in car crashes more than any other age group, also tend to text more while driving. A recent survey (NHTSA, 2015) indicated that the number of young drivers (aged 16 - 24) who visibly manipulated their cell phones while driving has increased significantly, from 1.0% in 2007 to 4.8% in 2014. Hence, they are exposed to significantly increased risk (O'Brien et al, 2014; Ehsani et al., 2013; NHTSA, 2015; Delgado et al., 2016).

While it is widely agreed that texting while driving poses a serious risk, it is difficult to objectively measure it. Traditional studies are based on self-reports (see for example studies dealing with young drivers: NHTSA, 2015; Creaser et al., 2015) in which drivers are asked to report on their actual texting behaviour and to evaluate their engagement in distracting activities while driving. More advanced methods are based on controlled simulator studies in which participants are either asked to behave as they would in their own cars, or are given structured tasks of texting (Yannis et al., 2013; Yager; 2013; He et al., 2015) and on driving in an instrumented car equipped with in-vehicle systems (Owens et. al. 2011; Reimer et al., 2016).

Recently, with the introduction of naturalistic studies, new and more objective measures of driving behaviour have been obtained. In naturalistic studies, drivers drive their own cars in their normal settings and circumstances while being monitored. For example, Klauer et al. (2014) investigated in naturalistic setting distraction among 42 newly licensed drivers and 109 experienced drivers. Their findings, based on analysis of 167 crashes and near-crashes of young drivers, confirm that they are exposed to significant increased risk when dialling a cell phone, reaching for a cell-phone or sending and receiving text messages. Simons-Morton et. al., 2014 further analysed the same data and found that crash risk increased with the duration of the glances towards wireless secondary tasks. Hence they concluded that young drivers' crash risk increased according to duration of distraction. However, it should be noted that naturalistic studies are extremely complex to conduct and require extensive resource allocation.

This paper presents a research which is based on naturalistic data gathered through monitoring of actual smartphone usage while driving. The data was collected through a smartphone app and hence did not require expensive and extensive data collection mechanisms. To the best of our knowledge, this is a first attempt to capture distraction through a smartphone app which monitors actual number of times the driver touches the smartphone screen. The goal of this paper is to present a monitoring scheme of texting, to suggest a measure of texting while driving and to provide empirical evidence to the feasibility of obtaining it and its occurrence among young drivers. While constructing this monitoring scheme, we highlight the actual texting phenomenon.

Texting in the context of driving is a relatively new concept. One traditional definition of text messaging is: "the sending of short text messages electronically especially from one cell phone to another" (Merriam-Webster Dictionary). Wikipedia adds to the definition of text messaging the action of composing the message: "text messaging, or texting, is the act of composing and sending electronic messages, typically consisting of alphabetic and numeric characters, between two or more users of mobile phones, fixed devices (e.g., desktop computers) or portable devices (e.g., tablet computers)". However, when considering texting while driving, the length of the texting activity plays a role as well as the acts of receiving and reading messages (Albert et al., 2016).

Furthermore, portable devices (such as smartphones) are used while driving not only to read and write massages, but for other activities such as: conduct phone conversations, operate and use navigation systems, access infotainment channels (e.g. music, video), use the internet to retrieve information and more. Some of these activities are even legal under certain restrictions (e.g. performing phone calls using devices that are fixed to the car, or use of navigation systems). Clearly when drivers operate their phone they experience visual, manual and cognitive distractions which were significantly found to be associated with increased risk. However, it should be acknowledge that it is problematic to differentiate between the various types of smartphone usage, e.g., using the phone to send a message, enter an address in the navigation app., or search the media player to choose a particular song.

Moreover, a crucial issue that, to the best of our knowledge, has rarely been addressed in previous studies, is the speed of the vehicle at the time in which texting occurred. There is no doubt that texting at high speeds is extremely dangerous. As Delango et al., 2016 indicated, the biggest problem is to distinguish between usages while stopped vs. usages while the car is in motion.

Hence, for the purpose of this paper we focus on the actual number of times drivers are "touching" their smartphone screens while driving. Clearly, while the driver touches the smartphone screen, his/her eyes are off the road. Moreover, we refer, when applicable, to the speed in which the screen-touches occurred which may serve as an indication to extreme risky driving behaviour, to foreground apps and to time stamps. The paper is organized as follow: the following section presents the methodology and describes the monitoring technology and the study. Then we present the study measures and the results. Finally, we conclude and discuss.

2. Methodology

Two hundred fifty four Israeli young drivers aged 17-23 who hold a valid driver's license for at least three months and drive, on average, at least two hours a week, participated in a study titled "Drive Mode". Each participant was driving for a period of four months in his or her family owned car. However, not all participants started at the same point of calendar time. Participants installed a smartphone app called ProtextMe ®, which was adjusted and configured especially for this study, on their own smartphones. During the study participants were introduced to various interventions aimed to mitigate smartphone distraction. However, in the first month of the "Drive Mode" study – hereby denoted by the "study period", no intervention has been presented and only monitoring of actual smartphone usage while driving has been performed by the app.

2.1 Monitoring technology

ProtextMe® is a smartphone app available for Android mobile operating system which has been adjusted and configured especially for this research. In its research oriented version the app is continuously monitoring smartphones usage while driving. The monitoring is automatically done through a smart detection of driving via several indicators (e.g. Bluetooth connection, GPS and NFC identification) and includes (depending upon smartphones' type and operating system): foreground apps, time stamps, and speed. Most importantly: the monitoring captures the number of times the young driver is actually touching the smartphone screen. If, for some reason, the app starts monitoring when the young driver is not driving, then he/she are asked to turn off the app by marking the "I am not driving" button. In order to respect privacy and increase acceptance among users, the content was absolutely not monitored.

2.2 Participants and recruiting procedure

Participants have been recruited during the first half year of 2016 through two main channels: the first was posts published in three different dates on the Facebook page of Or Yarok Association for safer driving in Israel. The second was a note distributed through various e-mail lists, among WhatsApp groups, friends and colleagues. In both cases, candidates were asked to fill in a short google form for screening, including: age, gender, driving license ownership, driving experience, type of smartphone and operation system. In

total, during the six months of recruitment, 1,850 forms have been received. All of them have been carefully screened and checked for duplicates, balancing gender and age, and essential technical requirements (e.g. Android operating system version 4.3 and up). After deleting the irrelevant candidates, personal contact by phone was made with 1,108 candidates. During the phone conversation the research staff briefly described the research and, if the candidate agreed to proceed (745 candidates did), sent him or her written information and asked to get in return various forms, including: a signed consent agreement, copy of driving license, and personal contact information.

In total, completed forms from 297 candidates were received. Each one of the candidates was instructed how to download the research app and was provided with a specific user name and password. However, despite of the careful screening that was done throughout the recruitment process regarding smartphones technical compatibility, 18 candidates encountered unresolved technical issues and hence their trips were not monitored. Additional 15 candidates did not complete the entire "Drive Mode" research study from various reasons (e.g., changed smartphone, decided to discontinue participation due to request to fill in personal questionnaires), and therefore were excluded from the study and from further analysis. Each participant received a modest compensation at the end of the study (equivalent to $US50) independent of actual behavior during the study.

In summary, 254 young drivers (average age = 19.4 years old, SD=1.7) participated in the study. Among them, 164 participants (65%) were male and 90 (35%) were female. The higher percentage of males is a result of the gender distribution of Or Yarok's Facebook page, according to which 70% of followers under the age of 24 are males. As mentioned earlier, Or Yarok's Facebook page was the major recruiting channel.

3. Results

3.1 Trips characteristics

During the monitoring phase of the study, i.e., the study period, a total of 11,528 trips (with a minimum duration of 3 minutes each) were undertaken by the participants and 3,304 hours of driving have been collected. In 9,274 trips (80%), the GPS feature on the smartphone was switched on, and therefore also speed data have been collected. Table 1 presents summary statistics of the trips performed by the participants.

Table 1: Characteristics of the trips undertaken by the participants

	Average	SD
No. of trips per participant	45.4	47.3
Trip duration (minutes)	18.2	9.0

These statistics regarding driving patterns and trip characteristics agree with figures reported from other naturalistic studies which dealt with young drivers in Israel (Toledo et. al. 2014, Albert et al., 2014).

3.2 How many times do young drivers touch their smartphone screens?

According to the study's results, young drivers touch their smartphone's screens on average 1.6 times per minute of driving (SD=1.4, min=0.0, max=6.7). The distribution of the number of screen-touches per minute of driving among all participants is presented in Figure 1.

As can be seen 109 participants (that is, 43% of the sample) touched the smartphone screen, on average, not more than once per a minute. It should be noted that many types of smartphone usages involve touching the screen (even performing phone calls which is legal), and therefore "zero screen-touches while driving" may be unrealistic. However, higher averages, as revealed by most of the participants may lead to worrisome consequences from a safety point of view.

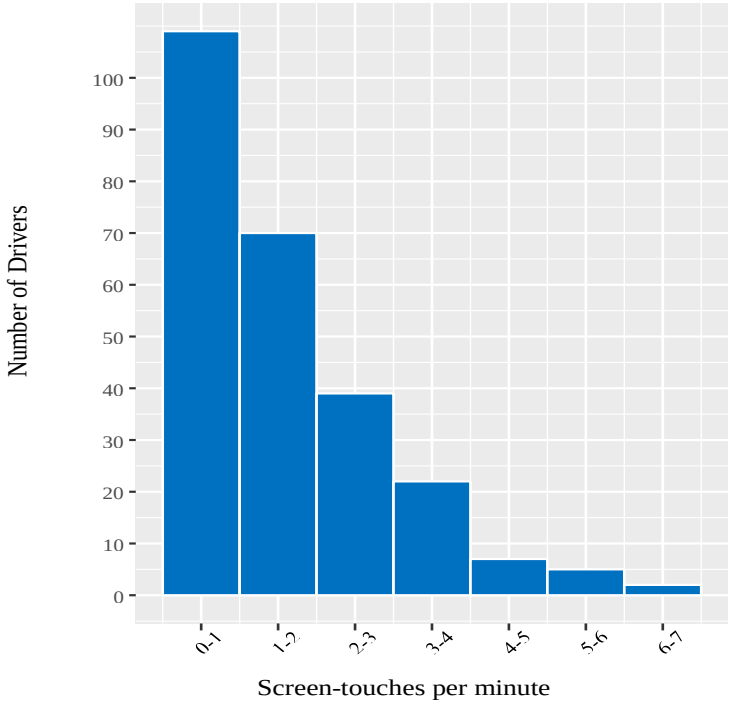

Figure 1: Distribution of average screen-touches per minute of driving (N=254)

Figure 2 presents the frequency distribution of the number of screen-touches per minute of driving by gender. Figure 3 describes some statistics by gender; the diamond presents the average, the bold line presents Q_2 (i.e., the median), and the rectangle's bottom and upper borderlines present Q_1 and Q_3, respectively. As can be seen, screen-touching behaviour is common, regardless the young driver's gender. Although it seems that females tend to have somewhat higher figures and variability, no significant statistical differences were found. These results are similar to the results reported in Creaser et al., 2015 who probed texting behavior with regard to gender. They found, based on self-reports, that males sent fewer text messages per mile driven, on average, than females, but indicated that gender was marginally predictive for the rate of text messages sent while driving.

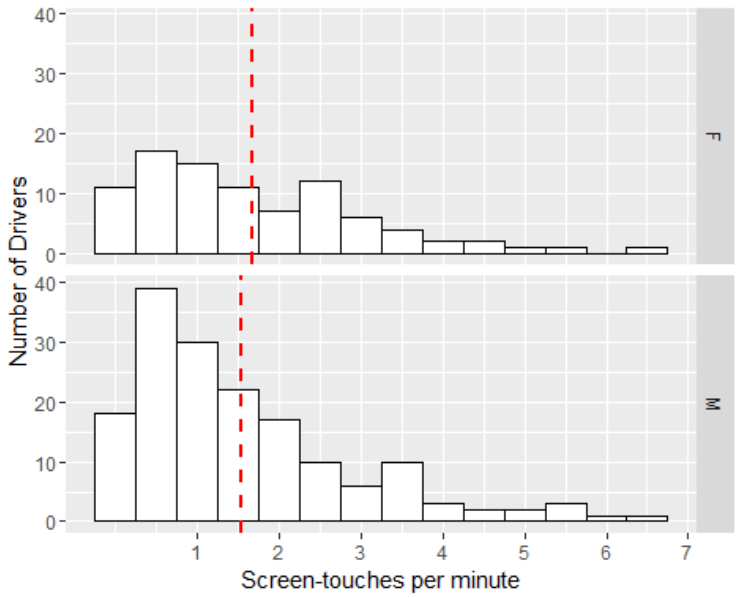

Figure 2: Distribution of average screen-touches per minute of driving by gender

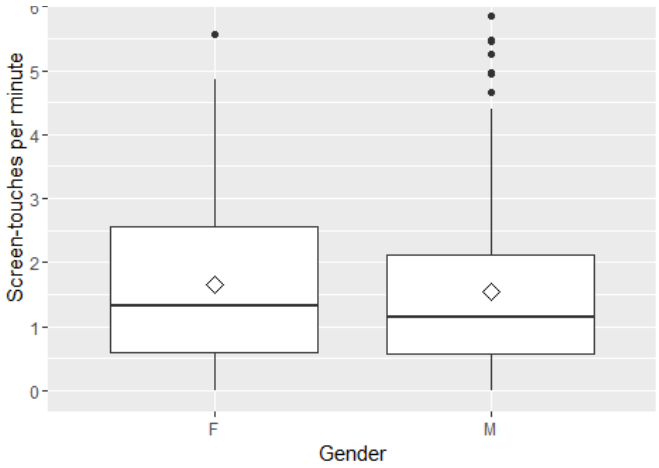

Figure 3: Statistics of average screen-touches by gender

3.3 What are the prevalent usages of smartphones while driving?

According to our findings, a total of 324,726 screen touches have been performed during the study period. The monitoring enables to capture also the type of smartphone usage in which the screen-touch occurs. As expected, the most common usage relates to apps. However, due to technological issues such as android operation system and smartphone types, in 53% of the screen touches, the monitoring could not specify the type of app. In the rest of the 47% of the screen touches, that is 150,868 screen-touches, the specific use has been monitored, and the distribution among the various smartphone usages is shown in Figure 4.

As is notably seen from the figure, the majority of the screen-touches (45%) were performed while using WhatsApp, a popular free messaging app. In Israel, the usage of WhatsApp is wide spread; a survey

from 2013 showed that WhatsApp is installed on approximately 92% of all smartphones and about 86% of users reported using it daily or almost daily (Globes, 2013). These figures may be even higher for young adults. Waze, the most common navigation app in Israel, accounts for 9% of the screen-touches and Facebook, the well-known social network accounts for 8% of the screen-touches. Alarmingly, the YouTube app, which enables to watch videos, accounts for 7% of the screen-touches.

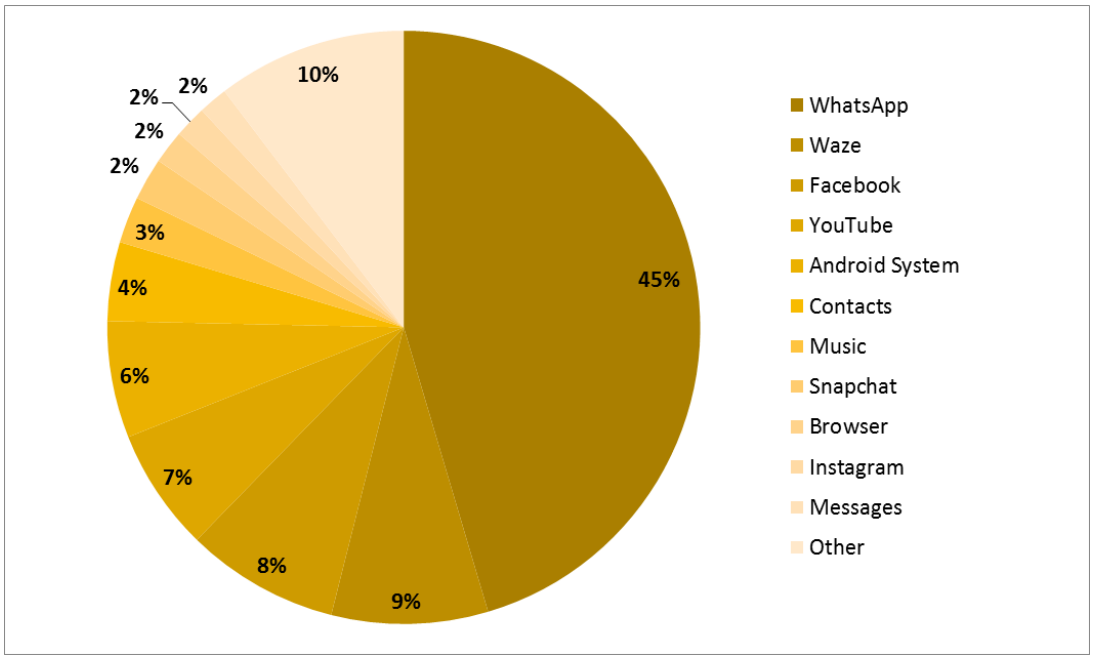

Figure 4: Distribution of screen-touches according to the various smartphone usages

It is also interesting to note that the "traditional" usage of phone for making and receiving phone calls is not that common among young drivers. According to our findings, during the study period, a total of 4,232 outgoing calls were made and a total of 1,961 calls were received. The duration of these calls is short: the average is 84 seconds (both for an outgoing call for an incoming call).

3.4 Does trip duration affects smartphone screen touches?

As reported earlier, a total of 11,528 trips were undertaken by the participants in the study period with an average duration of 18.2 minutes for a trip. Only 1,710 trips (15%) were longer than 30 minutes, 4,937 trips (43%) took 10-30 minutes, and 4,881 (42%) were shorter than 10 minutes. Figure 5 presents the distribution of screen-touches by fraction of trip duration for long trips, medium, and short trips. As expected, longer trip durations account for higher number of screen touches.

Some interesting insights are revealed from Figure 5. As can be seen, regardless the trip duration, screen-touches occurred throughout the trips. However, it seems that at the beginning of a trip (first tenth of its duration) more screen-touches are performed. This pattern can be explained by typical behaviour associated with trip start such as typing an address in the navigation app. A more careful analysis supports this: during the first tenth of trip duration 22% of the screen touches were performed in in Waze compared to 9% in total.

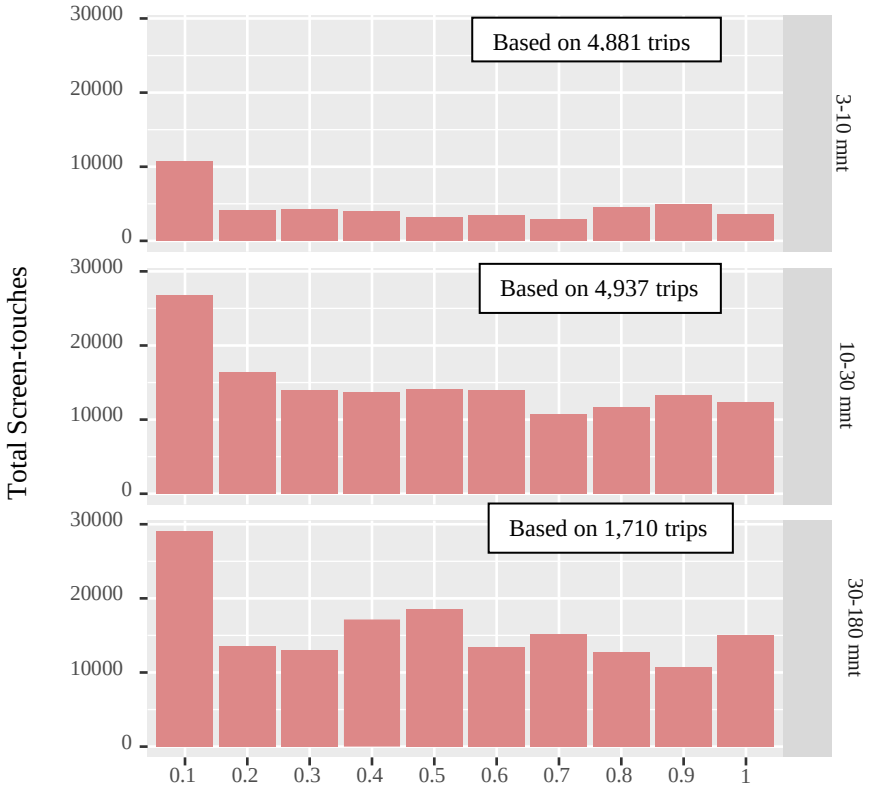

Figure 5: Distribution of screen-touches by fraction of trip duration for short, medium and long trips

3.5 Do young drivers touch their smartphone screen while the vehicle is in motion?

As mentioned, in 9,274 trips (80% of the total number of collected trips), the GPS feature on the smartphone was switched on, and therefore also speed data was monitored and documented. Those trips reflect 2,555 hours of driving (77% of the total duration driving time) and include 249,403 screen-touches (77% of the total number of screen-touches).

Those 9,274 trips were performed by 241 participants (that is, 13 participants drove with GPS switched off in all their trips). Figure 6 shows the distribution of the number of screen-touches by speed in those trips. As can be seen, about half (51%) of screen-touches are performed when the vehicle speed is less than 5 km/h, that is, probably in traffic light, traffic jam, etc. However, about half of the screen-touches occurred while the vehicle is in motion, a behavior which is extremely dangerous from a safety point of view. As is alarmingly revealed from the figure, screen touches were also performed at high speeds and even at speeds higher than 100 km/h.

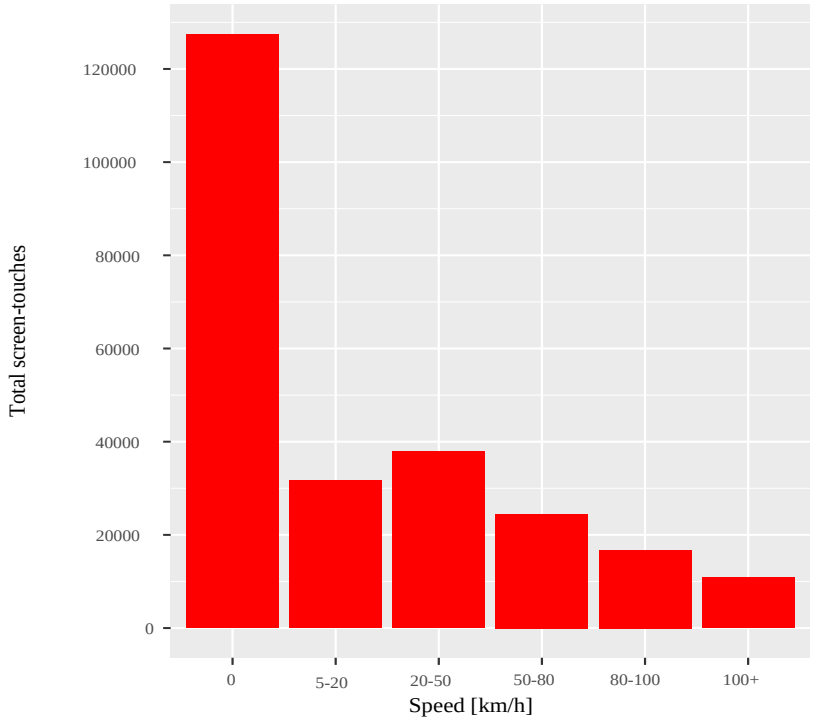

Figure 6: Distribution of screen-touches by speed

4. Conclusion and Discussion

This paper presents a first attempt, to the best of our knowledge, to capture distraction through a smartphone app which continuously monitors smartphones usage while driving. The focus is on young drivers who are involved in car crashes more than any other age group and also tend to reveal, more than any other age group, the most worrisome type of distraction - texting. This behaviour involves manual, visual and cognitive distraction. In this paper we focus on texting and present a novel scheme of objective means to measure it by monitoring and documenting the actual number of times drivers touch their smartphone screens. We also provide empirical evidence to the feasibility of measuring screen touches and initial descriptive results of its occurrence among young drivers.

The results presented here are based on a naturalistic study in which 254 young drivers aged 17-23 participated for a study period which lasted, on overage 24 days per participant. Among them, 164 participants (65%) were male and 90 (35%) were female. Participants drove in their own cars and used their own smartphone. All of them installed the smartphone app which was adjusted and configured especially for this study, on their personal smartphones. During the study period a total of 11,528 trips were undertaken by the participants and 3,304 hours of driving have been collected. The obtained trips characteristics are similar to the figures reported for young drivers in Israel: they usually undertake few trips (on average 1.9 per day) with short duration (on average 18.2 minutes, but 42% of the trips were shorter than 10 minutes).

How many times do young drivers actually touch their smartphone screens while driving? According to our results the average is 1.6 times per minute of driving (SD=1.4, min=0.0, max=6.7). It is well recognized in the safety literature that young males tend more to reckless, aggressive, and risky driving

behavior compared to females, (see for example, self-report evidence in Smart et. al, 2004, observational study in Shinar and Compton 2004, and naturalistic evidence in Prato et.al. 2010). Still, we did not find in this study any evidence to significant gender differences. This may suggest that the risky behaviour of touching the smartphone screen while driving is common, regardless the young driver's gender.

Unrelated to the trip duration, screen-touches occurred throughout the trip length. However, it seems that in the beginning of a trip (first tenth of its duration) more screen-touches are performed. This pattern can be explained by a common behaviour such as: informing its beginning to others, searching for music, typing an address, etc, which is typically done at the beginning of a trip.

Various types of smartphone usages involve touching the screen (even performing phone calls which is legal worldwide), however our results indicate that notably, most of the screen-touches (45%) were performed while using WhatsApp, the popular free messaging app, followed by 9% in Waze, 8% in Facebook, and 7% in YouTube. The fact that social apps are so intensively used while driving is very worrisome from a safety point of view. In the first tenth of trip length, 58% of the screen-touches were performed in WhatsApp and 22% were performed in Waze, indicating these usages are prominent once trips start.

The measure of “screen-touches” used in this paper is directly related to increased risk. Although this paper does not refer to a causal link between screen-touches and crash risk, we can rely on the solid assumption that while the driver touches the smartphone screen, his/her eyes are clearly off the road. Furthermore, our results show that half of the screen-touches occurred while the vehicle was in motion. This indicates an extremely risky driving behavior portrayed through screen-touches at high speeds, even above 100 km/h. Although the vision of "zero screen-touches while driving" may be unrealistic in this era, the effort should be put on countermeasures that have the potential to reduce the number of screen-touches, especially those associated with engagement with social and entertainment apps performed while the vehicle is in motion.

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References

Albert, G., Lotan, T., Toledo, T., Grimberg, E. and Lasebnik, M. (2014) Are Young Drivers as Careful as They Deem? In Vehicle Data Recorders and Self Reports Evaluations. *European Transport Research Review*, Vol. 6, (4), pp.469-476.

Albert, G., Musicant, O., Oppenheim, I. and Lotan, T. (2016). Which Smartphone's Apps May Contribute to Road Safety? An AHP Model to Evaluate Experts' Opinions. *Transport Policy*, 50, pp. 54-62.

Atchley, P., Atwood, S., & Boulton, A. (2011). The choice to text and drive in young drivers: Behavior may shape attitude. *Accident Analysis and Prevention*, 43, 134–142.

Creaser, J. I., Edwards, C. J., Morris, N. L., & Donath, M. (2015). Are cellular phone blocking applications effective for novice teen drivers? *Journal of safety research*, *54*, 75-e29.

Delgado, M. K., Wanner, K. J., & McDonald, C. (2016). Adolescent cellphone use while driving: an overview of the literature and promising future directions for prevention. *Media and communication*, 4(3), 79-89.

Dingus, T. A. (2014). Estimates of prevalence and risk associated with inattention and distraction based upon in situ naturalistic data. *Annals of advances in automotive medicine*, 58, 60.

Ehsani, J., Brooks-Russell, A., Li, K., Perlus, J., Pradhan, A., and Simons-Morton, B.G. (2013). Novice teenage driver cell phone use prevalence. Proceedings of the Seventh International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design. Iowa City, IA.

Fitch, G. A., Soccolich, S. A., Guo, F., McClafferty, J., Fang, Y., Olson, R. L., Perez, M. A., Hanowski, R. J., Hankey, J. M., and Dingus, T. A. (2013). The impact of hand-held and hands-free cell phone use on driving performance and safety-critical event risk. Report No. DOT HS 811 757.Washington, DC: National Highway Traffic Safety Administration.

Globes (2013) (http://www.globes.co.il/news/article.aspx?did=1000893814 (In Hebrow)Accessed Sep 29th, 2016.

He, J., Chaparro, A., Nguyen, B., Burge, R. J., Crandall, J., Chaparro, B., & Cao, S. (2014). Texting while driving: Is speech-based text entry less risky than handheld text entry? *Accident Analysis & Prevention*, 72, 287-295.

He, J., Choi, W., McCarley, J. S., Chaparro, B. S., & Wang, C. (2015). Texting while driving using Google Glass™: promising but not distraction-free. *Accident Analysis & Prevention*, *81*, 218-229.

Hedlund, J. (2011). Distracted driving: What research shows and what states can do.

Klauer, S. G., Guo, F., Simons-Morton, B. G., Ouimet, M. C., Lee, S. E., & Dingus, T. A. (2014). Distracted driving and risk of road crashes among novice and experienced drivers. *New England journal of medicine*, *370(1)*, *54-59.*

Musicant, O., Lotan, T., and Albert, G. (2015). Do We Really Need to Use Our Smartphones while Driving? *Accident Analysis and Prevention*, 85, pp. 13-21.

NHTSA (2015) National Highway Traffic Safety Administration, Driver Electronic Device Use in 2014. Traffic Safety Facts Research Note (National Highway Traffic Safety).

O'Brien, N.P, Goodwin, A.H., and Foss, R.D. (2014). Talking and texting among teenage drivers: A glass half empty or half full? *Traffic Injury Prevention*, 11:6, 549-554.

Owens, J. M., McLaughlin, S. B., & Sudweeks, J. (2011). Driver performance while text messaging using handheld and in-vehicle systems. *Accident Analysis & Prevention*, 43(3), 939-947.

Prato C.G., Toledo T., Lotan T. and Taubman Ben-Ari O. (2010). Modeling the behavior of novice young drivers during the first year after licensure. *Accident Analysis and Prevention*, 42(2), pp. 480-486.

Reimer, B., Mehler, B., Reagan, I., Kidd, D., & Dobres, J. (2016). Multi-modal demands of a smartphone used to place calls and enter addresses during highway driving relative to two embedded systems. *Ergonomics*, 1-21.

Simons-Morton B.G., Guo F., Klauer S.G., Ehsani J.P., and .Pradhan A. K. Keep Your Eyes on the Road: Young Driver Crash Risk Increases According to Duration of Distraction, *Journal of Adolescent Health*, Volume 54, Issue 5, Supplement, May 2014, Pages S61–S67

Shinar D. and Compton R. (2004). Aggressive driving: an observational study of driver, vehicle, and situational variables. *Accident Analysis and Prevention*, vol 36 issue 3, pp. 429-437.

Smart R. G.. Stoduto R., Mann R. E. and Adlaf E.M. (2004). Road Rage Experience and Behavior: Vehicle, Exposure, and Driver Factors. *Traffic Injury Prevention*, 5, pp.229-231.

Toledo T., Farah H,. Morik S. and Lotan T. (2014), Driving exposure of Israeli young male drivers within a graduated driver licensing system, *Transportation Research* F, vol 26, part A, pp. 180-189.

Victor, T., Dozza, M., Bärgman, J., Boda, C. N., Engström, J., & Markkula, G. (2014). Analysis of Naturalistic Driving Study Data: Safer Glances, Driver Inattention, and Crash Risk.

Wikipedia https://en.wikipedia.org/wiki/Text_messaging. Accessed September 5th, 2016.

Yager, C. (2013). An evaluation of the effectiveness of voice to-text programs at reducing incidences of distracted driving. College Station, Texas: Texas A &M Transportation Institute, the Texas A&M University System.

Yannis, G., Laiou, A., Papantoniou, P., & Gkartzonikas, C. (2013). Impact of Texting on Young Driver's Behaviour and Safety on Motorways by the Use of a Driving Simulator. In Proceedings of the 3rd International Conference on Driver Distraction and Interaction. Internet: http://www. google. de/url.