Use of mobile phones among drivers of heavy vehicles in Denmark

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Abstract
This paper presents the initial findings of a study on the use of mobile phones while driving among professional drivers of heavy vehicles in Denmark. The last decade has seen an increasing concern for the traffic safety implications because of mobile phone use while driving. Studies have shown that as the general use of mobile phones has increased an increasing number of drivers also use mobile phones while driving. However few reports have investigated the amount of phone use among professional drivers.
The mobile phone usage in this study was investigated through a questionnaire sent to 2.000 randomly selected and currently active professional drivers in Denmark. The response rate was 56% (n=1081).
The results showed that more than 95% (n=1040) of the interviewed drivers used mobile phones while driving. Of these 33% (n=376) used hand-held phones while driving. To analyse differences between phone use per driving hour and characteristics of the drivers (age, gender, driving experience, occupational affiliation, geographical driving, average number of stops) linear normal regression with a signifcance level set at 0.05 were conducted.
All variables were significant in univariate analysis. However only age and number of stops were significant ($p<0.0001$) in multivariate analysis. Young drivers (>35 years) and drivers with many stops had a high amount of phone use meaning that high usage could both be ascribed to occupational and individual effects.
0.5% (n=6) reported that their use of mobile phones had been a contributing factor to their involvement in an accident while 6% (n=57) reported that mobile phone use had contributed to a dangerous situation. 75% (n=43) of the drivers having experienced dangerous situations reported that this only happened several times a year or less while 2% (n=2) reported that it happened daily or on a weekly basis. When the drivers were asked how often they experienced dangerous situations because other road users used mobile phones 38% (n=410) reported that this occurred several times a year or less, while 9% (n=97) reported that it occurred on a weekly basis while 6% (63) reported that it happened daily.
It was concluded that the amount of usage of mobile phones among professional drivers varies thus indicating large differences in exposure level. Various factors contributing to the differences and suggestions on reduction of phone usage are proposed.

1. Introduction

The last years have witnessed an increasing scientific, political and media interest in the traffic safety implications of the use of mobile phones while driving. Concern has been raised about the impact of phone use on driving performance especially as a potential source of either physical or cognitive driver distraction. Fears have been raised that mobile phones might contribute to a higher rate of road traffic accidents especially because use of mobile phones while driving seems to be on the rise

(Lamble, 2002; RoSPA, 2001; Sagberg, 1998). Several studies have been conducted on the issue. Most of these are experimental and investigates the influence of mobile phone use on driving performance. The different performance indicators studied have varied but in general relate to vehicle control, interaction with the traffic environment and general control activity. The experimental set-ups have typically either used driving simulators (Haigney et al 2000; Alm and Nilsson, 1995; Alm and Nilsson, 1994) driving in instrumented vehicles (Harbluk and Noy, 2002; Lamble et al, 1999; Brookhuis et al, 1991) or computer-based experiments (McKnight and McKnight, 1993). Although the studies differ in scope they have all documented that use of mobile phones has an adverse impact on driving in areas such as reaction time, mental workload and lateral control of the vehicle and maintaining speed.

Policy on mobile phone use. Since the mid-1990ies many OECD countries imposed bans on the use of hand-held phones during driving e.g. Denmark, Norway, Italy, France, Australia and some states in the USA (RoSPA, 2002). This ban was made in conjunction with the introduction of hands-free sets, which made it possible to conduct conversations without physically handling the phone, except when dialling or receiving a call. However the effect of the bans have been much debated. A major point of focus in many studies has been whether it is the handling of the mobile phone or the conversation, which is the cause of most distraction. A comparative study on the effects of self-reported workload when using either hand-held, hands-free speaker or personal hands-free mobile phones showed that workload increased significant when using either type of mobile phone compared to a driving condition not using a phone (Matthews et al, 2003). In a Swedish study Patten el al (2003) found a significant increase in reaction time among drivers using mobile phones. There was no difference between a hand-held and hands-free set. Instead it was found the major cause for distraction was the content of the conversation. The more complex conversations resulted in significantly more distraction than the simple conversations or situations without conversation. The same findings regarding complexity of conversations were found by Harbluk and Noy (2002).

Another line of research has used epidemiological data to estimate the risk of being involved in traffic accidents when using a mobile phone. Violanti & Marshall (1996) found that the risk of accidents increased with increased use of mobile phones. A use of >50 minutes a month increased the risk being involved in a traffic accident by more than 5 times. However the sample of mobile phone users were only 14 out of 140 in the whole sample. From a sample of 700 drivers with reported accidents Redelmeier and Tibshirani (1997) related the time of conversation to the time of an accident and estimated an increased risk of 4 times within 5 minutes of a conversation and an increased risk of 1.3 within 15 minutes of a conversation. Sagberg (1998) estimated that the risk of causing an accident increased by 1.7 when conducting a phone conversation. However in a recent study LaBerge-

Nadeau et al (2003) found after correction for background variables an increased risk of 1.1 for men and 1.2 for women.

Studies on the amount of phone use while driving. In Denmark, as in most other OECD countries the last years, have seen a dramatic increase in the use of mobile phones as the price and quality have made it possible for most people to use a cellular phone regularly. In 2002 77 of 100 adults had a mobile phone subscription (National IT and Telecom Agency, 2002). The same tendencies have been seen in most OECD countries (Eurostat, 2001).

In general, studies on the amount of use of mobile phones during driving have found that it is a frequently used tool for communication. However from these studies it is also clear that there are large differences among drivers with respect to frequency of use. A survey among 1.000 drivers in Britain found that 37% used mobile phones while driving of whom 1/3 reported to do it often. There was also a relationship between phone use and mileage driven: 78% of drivers of long trips reported using mobile phones while driving, and 45% of these reported they used the phone often. Younger drivers (45%) tended to use the phone more often whereas female drivers used the phone less often than male drivers (30% vs. 44%). (Greenflag, 2000 from RoSPA, 2002)

A survey among drivers in the USA found that 27% used a mobile phone while driving either "on most" or "about half their trips", whereas 58% used mobile phones on "less than half" of their trips or on "very few trips" (Cain & Burris, 1999). A more recent estimate is that 73% of the mobile phone subscribers in the USA use their phones while driving (Sundeen, 2001 from RoSPA, 2002). An observational study of drivers at intersections in Michigan, USA found that 2.7% of the observed drivers used mobile phones while driving at any given daytime. However as the authors point out, only drivers using hand-held phones were recorded, meaning that the actual use was probably slightly higher (Eby and Vivoda, 2003).

From a sample of around 9.000 drivers involved in accidents in Norway, Sagberg (1998) found that 50% of the drivers used mobile phones during driving. 2/3 of these received or made calls less than once a day. 22% had conversations 1-3 times a day, while 10% received or made 4-10 calls a day. Interestingly, 80% of the drivers used hand-held phones with 1/4 of these having dashboard-mounted phones. However the users of hand-free phones had the highest frequency of calls, 25% of them receiving more than three calls a day against 8% among users of hand-held phones. In addition, the author found that a higher proportion of mobile phone users were men and below 30 years and drove longer or more than the average sample. Lamble et al (2002) also found differences in phone usage: 31% used the phone less than daily; 21% used the phone between 0-5 minutes; 9% used mobile phone between 6-15 minutes and 6-7% used the phone +16 minutes. In addition the amount of time spent talking varied among age groups. The younger groups (15-24 years and 25-

34 years) used a phone more often than older drivers: 40% of the age group between 15-24 year old used their phone between 0-5 minutes 20% in the group 25-34; 35-44; 45-54, whereas the number was only 13% and 8% in the older groups (55-64 and 64+). The same tendency was seen in the groups talking between 6-15 minutes and 16+ minutes.

Studies of trends in the use of mobile phones while driving. Only few studies have been conducted on trends in the use of mobile phones while driving. However they have all shown an increased use. Lamble et al (2002) made a comparative investigation between 1998 and 1999 among Finnish drivers and found a significant increase in the number of mobile phone users. From 56% in 1998 to 68% in 1999. A British observational survey of 28.000 cars in April 2002 found that 2.1% of the observed drivers used mobile phones. This was an increase from fall 2000 where 1.3% used mobile phones and 1.7% in April 2001 and 1.9% in fall 2001. The majority 85% used hand-held phones (TRL, 2002).

Accident involvement and mobile phone use. It has been difficult to establish a clear relationship between the increased use of mobile phones and an increasing rate of accidents. It has been argued that the actual number of accidents caused by mobile phone use is underrepresented because accident reports involving mobile phone use in general are sparingly as side activities are either not registered or because the use of mobile phones might not be attributed as the causation of the accidents in case other factors were involved, e.g. speeding (Violanti & Marshall, 1996; Haigney et al, 2000). No recent figures exist from Denmark on the relationship between accident involvement and mobile phone use. The latest figures are from 1996 and showed that between 1989-1994 mobile phones had been in use in 0.03 of all reported accidents (Helberg & Larsen, 1996). Of course these figures do not give an impression of the current situation as mobile phones use at the time of that study was not as widespread as presently. More recent figures from other OECD-countries report of higher accident rates although most reports suffer from being isolated investigations. Sagberg (1998) found that accidents in Norway caused by the use a mobile phone occurred in about 0.82% of all reported accidents in his sample. Based on the proportion of accidents caused by various sources of distraction Sagberg estimated that use mobile phones caused 0.3% of all accidents. Comparatively this amounted to dealing with insects in the car or reading a map. Conversation with passengers amounted to 7.8% of all accidents whereas sleep or fatigue amounted to 3.9%. Changing cassette/CD or adjusting the radio amounted to 1.1% and 1% respectively. An estimate from the California Highway Patrol based on a 6-months period found that out of 491.083 collisions, 5.677 (1%) could be attributed to inattention in various categories. Of these 11% were attributed to mobile phone use, while changing radio/CD amounted to 9% and eating amounted to 3% (California Highway Patrol, 2002). Lamble et al (2002) found a significant increase in the number of drivers

experiencing dangerous situations while using mobile phones rising from 44% in 1998 to 50% in 1999, which relates to an increased use of mobile phones.

Purpose. Even though the use of mobile phones among private drivers seems to be on the rise and is a potential traffic safety problem, no studies have investigated the use of mobile phones among professional drivers e.g. truck and bus drivers, business salesmen. For this group mobile phone use constitute an important working tool and driving is the main occupation meaning that their level of exposure is relatively high.

The purpose of this study was to investigate the use of mobile phones among professional drivers. The main focus was to explore the amount of phone use while driving among the drivers. It was hypothesised that phone use would be a widespread activity and that use of mobile phones would be substantial higher in this group than among private drivers. Communication between the driver and his company offers logistical and strategic advantages in relation to route planning, delivery of goods or other work tasks.

Another objective was to investigate whether variations in phone use existed among the drivers. It was hypothesised that variation of usage in relation to age and driving hours would be explained by occupational variables rather than cohort characteristics because mobile phone use was primarely seen as a working tool.. Occupational variables included geographical driving, occupational affiliation or number of stops. Cohort variables traditionally explaining variations in usage were also investigated such as age, gender and driving experience.

2. Method

Data. The data were collected through written questionnaires sent by mail to a sample of 2.000 randomly selected but currently active drivers from the General Workers Unions register of professional drivers in Denmark. The questionnaires were sent out during the spring of 2003. In all 1153 responded to the questionnaire. 34 of these reported that they had never driven a heavy vehicle or that they were occupied as drivers anymore. 10 responded they did not wish to participate in the study and 28 were excluded from the sample for other reasons making the eligible sample 1081 drivers. The respond rate was 56%. The sample of drivers consisted of 99% (n=1077) men, which reflects the gender distribution among professional truck drivers (DTL, 2002).

Statistical analyses. Possible associations between characteristics of the drivers; age, gender, driving experience, occupational affiliation, geographical driving, number of stops and phone use while driving were analysed through linear normal regression models with a significance level set at 0.05. Drivers who reported a daily phone use while driving of less than 5 minutes were assigned a phone use equal to 2.5 minutes. Drivers with a daily phone use while driving between 5-15 minutes were assigned a use equal to 10 minutes. Drivers with a daily phone use while driving between 16-30 minutes were assigned a use equal to 22.5 minutes and drivers with a daily phone use while driving above 30 minutes were assigned an use equal to 1 hour. To achieve a sample of drivers with equal driving hours the phone use were scaled (nominated) by daily driving hours (phone use while driving/driving hours).

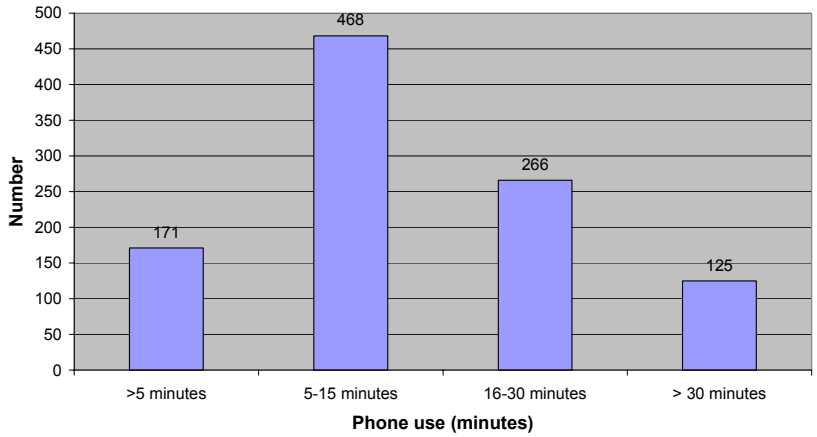
In the analysis of characteristics only reflecting one variable (overall phone use, types of mobile phones used, accidents and dangerous situations due to phone use) all respondents were used (n=1081) whereas respondents were excluded from the regression analysis if data on phone use, driving hours or both were missing resulting in a dataset of 971.

3. Results

Use of mobile phones. It was found that more than 95% (n=1040) of the drivers used a mobile phone while driving. 33% (n=376) responded using a hand-held phone (either hand-held when both dialling and speaking or mounted while dialling but held while speaking). 10.2% (n=117) responded using a mounted hand-held phone when both dialling and speaking. 28.3% (n=325) answered they used a hand-free set while 25.2% (n=290) reported using both hand-held and hand-free phones.

Amount of phone use. 16.6% (n=171) of the drivers had a phone use of less than 5 minutes a day, whereas 45.4% (n=468) spoke 5-15 minutes. 25.8% (n=266) of the drivers spoke 16-30 minutes a day, while 12.1% (n=125) spoke for more than 30 minutes a day **(figure 1)**.

Figure 1: Amount of phone use



Cohort variables. Univariate and multivariate analysis showed that driver age was highly associated with amount of phone use with an increasing level of phone use for the youngest drivers. Test for linear effect of age was rejected. It seemed that drivers between 18-35 years have similar higher usage than the other age groups ($p<0.0001$) **(Table 1).** When comparing the youngest groups (18-24 and 25-34 years) the former had the highest average use though not significant and the group between 35-44 had a significant higher level of phone use than the two oldest groups (45-54 and 55+).

In univariate analysis "driving experience" was found to be highly significant related to phone use with the drivers with the least experience having the highest amount of phone use while driving ($p<0.0001$). However this effect disappeared when adjusting for age since age and experience were closely related.

There was a significant difference in amount of phone use between genders. Female drivers (n=4) spoke more than male drivers ($p<0.05$). This difference disappeared when adjusting for age ($p=0.31$). Due to the small numbers of female drivers in the sample (n= 4) it was impossible to perform any statistical relevant analysis of the results. **(Table 1).**

Occupational variables. Differences were found between phone use and occupational affiliation ($p<0.05$). These differences disappeared when adjusting for age and number of stops ($p=0.4$). The same results were found for geographical driving. The difference disappeared when adjusting for age and number of stops ($p=0.14$).

"The average number of stops" during a working day was a strong univariate predictor of phone use ($p<0.001$) with an increased phone use for drivers with many stops. Adjusting for age did not alter this effect ($p<0.0001$).

Table 1: statistical relationships between variables

Variable	no. obs.	mean	Univariate estimate	95% CI	Multivariate estimate[1]	95% CI
Age			**p<0.0001**		**p<0.0001**	
18-24	32	3.47	ref.	[2.72;4.21]	ref.	[2.02;3.60]
25-34	185	3.35	-0.12	[1.79;4.90]	-0.06	[1.16;4.35]
35-44	315	2.56	-0.91	[1.02;4;09]	-0.82	[0.42;3.55]
45-54	311	1.74	-1.73	[0.20;3.27]	-1.65	[-0.41;2.72]
55+	127	1.51	-1.96	[-.08;3.09]	-1.86	[-0.67;2.56]
Missing	1	1.62	-1.84	.	-1.80	[-4.02;6.04]
Experience			**p<0.0001**		**p=0.58**	
0-6	175	3.07	ref	[2.74;3.39]	ref.	.
7-16	278	2.70	-0.36	[1.96;3.45]	-0.16	.
17-26	285	2.06	-1.00	[1.32;2.79]	-0.24	.
27-36	175	1.54	-1.53	[0.74;2.32]	-0.46	.
37+	37	1.71	-1.36	[0.06;2.81]	-0.17	.
Missing	21	3.00	-0.07	[1.68;4.31]	0.35	.
Gender			**p<0.029**		**p=0.31**	
Male	964	2.33	ref.	[2.19;2.47]	ref.	.
Female	4	2.88	2.28	[2.87;7.56]	1.66	.
Missing	3	1.60	-0.73	[-1.09;4.29]	-0.27	.
Occupational affiliation			**p<0.03**		**p=0.40**	
	176	1.95	ref	[1.62;2.29]	ref.	.
Export Goods	319	2.42	0.46	[1.67;3.17]	-0.23	.
Haulage employed	252	2.29	0.33	[1.52;3.06]	-0.45	.
Company employed	116	2.81	0.86	[1.95;3.68]	-0.00	.
Other	108	2.35	0.40	[1.48;3.23]	-0.16	.
Missing						
Geographical driving			**p<0.013**		**p=0.14**	
	190	1.88	ref.	[1.56;2.20]	ref.	.
Export	281	2.43	0.54	[1.70;3.16]	0.48	.
National	250	2.59	0.71	[1.84;3.33]	0.46	.
Regional	152	2.2	0.32	[1.40;3.00]	0.05	.
Local	98	2.54	0.66	[1.68;3.41]	0.64	.
Missing						
Number of stops			**p<0.0001**		**p<0.0001**	
0-5	191	1.79	ref.	[1.47;2.10]	ref.	[2.02;3.60]
6-10	294	2.21	0.41	[1.48;2.92]	0.49	[2.11;4.48]
11-15	187	2.33	0.54	[1.56;3.09]	0.61	[2.20;4.64]
15+	264	2.91	1.12	[2.18;3.64]	1.09	[2.71;5.09]
Missing	35	2.24	0.45	[1.11;3.35]	0.53	[1.79;3.90]
Total	971	2.34?				

[1]Effect parameters of age and number of stops are estimated in the model with only age and stop included whereas experience, gender, occupational affiliation and geographical driving are modelled in a model with all variables included.

Mobile phone use and influence on driving performance. Overall 35% (n=) of the drivers reported that, their use of mobile phones influenced their driving performance. 15% stated that they drove slower when using a phone while driving and 12% reported that they paid lesser attention to the traffic.

Accident involvement and dangerous situations. Only 0.5% (n=6) of the drivers reported to have been in an accident where their use of a mobile phone was a contributing cause.
6% (n=57) of the drivers reported to have experienced a dangerous situation where the use of mobile phone was a contributing factor. In this group 3/4 (n=43) reported that dangerous situations, where the use of mobile phones had been a contributing factor, occurred "several times a year or less", while 12% (n=7) reported that it happened "several times a month or less". 2% (n=1) reported that it happened "several times a week" while 2% (n=1) reported that dangerous situations occurred "daily". When the drivers were asked to indicate how often the use of mobile phones by other road user was the cause of dangerous situations the figures were different. 2/3 (n=962) reported having experienced dangerous situations and of these 38% (n=410) reported that it happened several times a year or less, 9% (n=97) reported that this happened several times a week. 6% (n=63) reported that it happened daily.

4. Discussion

Method and analysis. One could easily argue that linear models are not appropriate to investigate multinomial data with only 4 different response categories. In particular the violation of independent normal distribution errors effect the test-statistics and the least-square estimates of the effect parameters are highly dependent on the arbitrary scaling of the four response categories. However performing ordered multinomial logistic regression result in the same results with the significance of the explanatory variables are identical and the effect of the explanatory variables alike

Amount of phone use. As expected the analysis revealed that use of mobile phones is an integral working tool for the vast majority of professional drivers. Though it is difficult to make direct com-

parison between our sample of drivers and other studies on the use of mobile phones while driving, it seems reasonable to support our hypothesis that both the number of users and frequency of use are higher among professional drivers than private drivers. In studies among private drivers the usage rate is somewhere between 37% (Greenflag from Rospa 2002) and 73% (Sundeen, 2001 from RoSPA, 2002). Even though the amount of usage among private drivers seem on the rise, there is still a considerable leap to the 95% of drivers using mobile phones in our sample. When comparing the drivers with a high amount of phone use in our sample with that of Lamble et al's (2002), our sample contains a profound larger proportion of frequent users: In Lamble et al (2002) 9% used mobile phone between 6-15 minutes and 6-7% used the phone +16 minutes whereas the same figures in our sample would amount to 45% and 38% respectively. These figures even include a substantial amount of drivers (12%), who spoke for more than 30 minutes.

It was seen that the frequency of use was heterogeneous distributed among professional drivers. It was only partially confirmed that occupational variables could explain high phone usage as both occupational variables (number of stops) and individual characteristics (age) were predictors of high usage. When relating the distraction potential of mobile phone use and time spent using mobile phones while driving, the relative risk of accidents or dangerous situations seems to be particular concentrated among younger drivers and drivers with a large number of stops. Intuitively it makes sense that many stops are related to higher amount of phone use as many stops indicates more deliveries thus making the need of contact between the driver and the company or customers more likely to occur.

The high usage among the younger drivers is more difficult to explain. Even if we assume that the phone usage is primarily used for professional purposes, it is likely that younger drivers have a different phone use pattern than their older colleagues. Wireless communication is probably a much more integrated in both work and communication activities among younger drivers. Since mobile phone use is a relatively new phenomenon it still remains unclear whether high amount of phone usage in general is an age related phenomenon or if it truly represents radical changes in communicational patterns. If it is primarily age related it could mean that the increase might not be as drastically when present young generations of both private and professional drivers grow older.

In case of the latter it might be expected as Lamble (2002) and Sagberg (1998) suggest that, as generations who are used to wireless and instant communication enter the driving population, the use of mobile phones while driving might increase even more among road users in general and truck drivers specifically thus posing as a much greater problem for traffic safety than presently.

For both groups of frequent users among the drivers of this sample their tendency might be prevented if company safety culture support less use of mobile phone while driving. Studies show that

the involvement in safety issues from the higher levels of an organisation tends to have a positive effect on the lower levels (Pidgeon, 2001).

It was a surprise that almost one third of the drivers in this sample used handheld phones. As mentioned earlier it has been prohibited since the mid-nineties to use handheld phones while driving in Denmark. No figures exist for the proportion of private drivers using handheld phones in Denmark but studies from Norway and Britain showed that around 80% of the private drivers used handheld phones (Sagberg, 1998; TRL, 2002). Compared to these figures it might be argued that the proportion of handheld phones is low among the professional drivers. What seems problematic is that the drivers usually are not responsible for the communication equipment thus indicating that the use of hand-held phones also reflects company safety culture. Of course driver preferences might also influence the choice of mobile phone. A study by Haigney et al (2000) found that intelligibility between different types of hand free phones were different with hands-free speaker phones obtaining the poorest intelligibility score. A hands-free phone with earplug might be considered uncomfortable when used for longer periods by some drivers. Further research will have to explore these issues but it could be expected that the amount of hand-held phones could be further reduced as the technical quality increases or if company safety policies would disallow their use. It should be remembered that an abandonment of hand-held phones is not the major concern for traffic safety. It should be emphasised use of mobile phones while driving, regardless of type, is in it-self compromising driving performance, as the conversation is the major cause of distraction. Though the physical handling might pose problems in certain driving situations the exposure through conversation is usually both longer and in case of high level of conversational complexity the distraction potential have been shown to significant higher than driving without use of mobile phones (Patten et al, 2003; Harbluk & Noy 2002).

Even though this study has only dealt with mobile phones, a comment should also relate to mobile phones as devices for communication in general. Mobile phones can be seen as the introduction of the whole generation of different wireless communicational devices. Fax, computer or even Internet access might introduce new ways of communication between companies and their drivers. According to Hahn et al (2002) 7% of all vehicles in the US already have access to the Internet while 3% have fax-facilities installed. It is not stated whether or not these installations are work related or how often they are in use. Even though proper use of these devices might reduce the amount of time using mobile phones, they might also pose an even larger safety threat if used while driving. Most of these devices have a visual interface thus making their distraction potential even bigger than mobile

phones. For instance Harms and Patten (2003) showed that orientation by In-vehicle Information Systems (route planning) increased the drivers workload significantly. In conjunction with the introduction of various Advanced Drivers Assistance Systems the potential risk of driver inattention or cognitive and perceptual overload might not be eliminated unless a safer way of dealing with communication is also practised. It might be suggested that we have not seen the full consequences of wireless communication while driving when studying mobile phones.

This tendency cannot be deducted from our results. Only 6% of the drivers reported that their use of mobile phones had contributed to a dangerous situation, a figure surprisingly low. In contrast Lamble et al. (2002) found that 50% of drivers who used mobile phones while driving had experienced dangerous situations. In this study 662 of the truck drivers reported to have experienced a dangerous situation where other road users' use of mobile phones had caused a dangerous situation. This is about the same amount as Lamble et al's sample, as drivers within our sample both have substantial longer driving hours and data are of newer date probably reflecting an increased usage. There might be several explanations for the large difference in reporting dangerous situations. Of course it might just indicate that truck drivers are simply better at handling mobile phones while driving than private drivers due to their driving experience. However it might also reflect that truck drivers do not see all the consequences of their traffic actions due to their physical location. Lamble et al (2002) also suggested that the present road environment is fairly forgiving because other road users currently compensate for phone using drivers' attentional lapses. Thus it might be suggested that other road users take extra care or compensate for the truck drivers because they consider trucks potential dangerous objects. In the future it might be expected that the both accident involvement and dangerous situations might increase in case of an increased use of mobile phones.

5. Conclusion

It was found that use of mobile phones during driving was a widespread activity among drivers of heavy vehicles. However a large difference existed between drivers and relates both to occupational variables (number of stops) and cohort variables (age) thus indicating that different patterns in use exist between the age categories. Even though the use might pose a threat for traffic safety it was not possible to establish a relationship between accidents and dangerous situations on the basis of our data. Still if goods companies wish to reduce the amount of phone use possibilities exist by imposing restrictions in use.

The results presented in this paper are still preliminary and further analyses of parameters will hopefully contribute further to the understanding of the patterns of use of mobile phones among the drivers.

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