Transportation Research Part F 15 (2012) 272–278

Contents lists available at SciVerse ScienceDirect

Transportation Research Part F

journal homepage: www.elsevier.com/locate/trf

An observational study of driver distraction in England

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ARTICLE INFO

Article history:
Received 5 July 2010
Received in revised form 9 January 2012
Accepted 9 January 2012

Keywords:
Driver distraction
Distraction
Cell phone
Mobile phone
Crash risk
Observation

ABSTRACT

This study set out to investigate the proportion of UK drivers who engage in some form of distracting behaviour whilst driving. Data were collected by roadside observation in six urban centres in the South of England. The observations took place on randomly selected roads at three different time periods during two consecutive Tuesdays. The data revealed that 14.4% of the 7168 drivers observed were found to be engaged in a distracting activity. The most frequently observed distraction was talking to a passenger, followed by smoking and using a mobile phone. Younger drivers were significantly more likely to be distracted in general and by talking to passengers, while older drivers were less likely to be distracted by adjusting controls or using a mobile phone.

1. Introduction

Driver distraction is now recognised as a contributing factor in at least a quarter of motor vehicle crashes (McEvoy, Stevenson, & Woodward, 2007; Stutts, Reinfurt, Staplin, & Rodgman, 2001; Wang, Knipling, & Goodman, 1996). This proportion, however, could increase, in line with the increased use of portable technologies such as smart phones and satellite navigation systems. Therefore it is extremely important that we have a clear understanding of the types of distractions drivers currently engage in, their prevalence and the types of drivers who are more likely to be distracted.

Driver distraction can be defined as any secondary activity that draws the driver's attention away from the main task of driving (Ranney, 1994). Although the research investigating the impact of distractions on driving performance is well advanced, the research measuring exposure to driver distractions is still in its infancy (McEvoy & Stevenson, 2008). McEvoy and Stevenson (2008) identify four broad approaches to investigating this issue; cross sectional surveys, roadside observation, naturalistic observation and epidemiological approaches. Despite roadside observation being one of the four main methods for investigating drivers exposure to driver distraction, surprisingly few studies have investigated driver distraction using roadside observation and most of those that do exist have solely concentrated on the prevalence of one type of distracter, the mobile phone (e.g. Eby, Vivoda, & Louis, 2006; Horberry, Bubnich, Hartley, & Lamble, 2001; Knowles, Walters, & Buckle, 2008; McEvoy et al., 2007; NHTSA, 2010; Taylor, MacBean, Das, & Rosli, 2007). Nevertheless, there has also been some research which has observed more general distractions, but these have mostly been conducted amongst professional truck drivers (e.g. Hanwoski, Hickman, Wierwille, & Keisler, 2007; Hanwoski, Perez, & Dingus, 2005) or private vehicle drivers (Dingus et al., 2006) in order to look at critical incidents and the distractions which lead up to these critical incidents. There are currently only two peer reviewed studies which have looked at more general distraction amongst the general public.

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doi:10.1016/j.trf.2012.01.001

In one of the two peer reviewed studies to look more broadly at the issue of driver distraction in car drivers, Stutts et al. (2005) installed video cameras into 70 cars in America to observe what distracted car drivers. They found that the drivers in their study spent around 30% of the total time the vehicle was moving engaged in some form of distracting activity. The most common distraction was conversing with passengers (15.32%), followed by eating and drinking (4.61%), smoking (1.55%), and manipulating controls (1.35%). They also found that although using a mobile phone while driving was one of the many distracters, it was only observed 1.30% of the time. Unfortunately this research only included 70 drivers, meaning that it would be difficult to generalise these results to the general public and that it was not possible to reliably test for age or gender differences. This type of research is also very expensive, reliant on technology and the good will of volunteers. There is also a strong likelihood that some experimenter effect may have contaminated their data, as the drivers knew that they were being monitored and may have altered their behaviour to some degree. This issue was clearly acknowledged by Stutts et al. when they reported that almost 22% of the drivers in their study reported having the equipment in their car altered their driving.

One way of reducing the experimenter effect is to conduct the observations from outside of the vehicle, unobtrusively. This was attempted by Johnson, Voas, Lacey, McKnight, and Lange (2004) who analysed 40,000 high quality digital photographs of drivers passing through a New Jersey turnpike. They found that less than 5% of the 40,000 photographs showed evidence of distraction. However, in contrast to Stutts et al. (2005) they found using a mobile phone was the most commonly observed distraction, with one third of those drivers judged to be distracted observed to be using a mobile phone. Smoking was the second most commonly observed distraction, with eating/drinking and interacting with a passenger accounting for most of the rest.

As the research by Johnson et al. (2004) included large numbers of participants they were also able to test for age and gender differences. Surprisingly, they did not find any pattern for general distractions by age or gender. However, looking just at the use of mobile phones, Johnson et al. found that younger drivers (<45) were more likely to be observed using a handheld mobile phone than older drivers.

Overall the top five distractions observed were reasonably similar for both studies, but the prevalence and orders were slightly different. These differences may have been for several reasons, such as the angle of view the observers had or the fact that Stutts et al. (2005) had much richer data upon which to base their decisions (e.g. movements, long periods to view their behaviour and the ability to review situations/behaviours). An observational method which would allow the collection of more rich data, than that collected by Johnson et al. (2004), would be through the use of roadside observation in a similar way to which handheld mobile phone use has been observed (e.g. Horberry et al., 2001).

As there is very little peer reviewed research investigating the issue of driver distraction using roadside observation and none currently from the UK, the present study set out to investigate the proportion of UK drivers who engage in an observable in-car secondary task whilst driving. The research also investigated the relative frequencies of the secondary tasks or distractions and whether there were any age and gender differences. In order to provide information necessary for the development of interventions (e.g. education, enforcement) it is important to know the type of driver who is more likely to be distracted and the types of distracting behaviours that they are more likely to engage in.

2. Method

2.1. Locations and timing

Six urban centres in the south of England were chosen, based upon convenience. These were; Bedford, Hatfield, Gloucester, Luton, Leigh-on-Sea and London. The observational sites within each urban centre were selected with the aid of an online random number generator. In the smaller centres, a map of the urban centre was obtained and every 30 mph zone street within the city limits was given a number. Following this one random number was generated using an online random number generator and was matched to the corresponding road on the map. In the larger centres, the first step was to number all the grid squares and a random number generator was used to select which grid square to use. Following this all 30 mph roads in that grid were given a number and a random number generator was again used to select the site for the observations to take place. Only 30 mph roads were selected to facilitate observation of the drivers.

All sites were observed by the same single observer at three different time periods (10–11 am, 2–3 pm and 5–6 pm) on two consecutive Tuesdays, to allow comparison with previous research (Taylor et al., 2007) and to encapsulate both peak and non-peak traffic times. All observations took place at least 100 m from controlled intersections, meaning that the traffic was relatively free flowing. The study was carried out in the spring, so daylight and weather conditions allowed a clear view of the drivers on all occasions. The observers were all students trained in what constitutes each type of distraction.

2.2. Procedure

The data were collected via roadside observation using a clipboard, form and pen. The observer noted every vehicle that drove past and whether they were engaged in a secondary activity. The observer was positioned so that the cars and the drivers were clearly visible and that they were as unobtrusive as possible. In most cases, the observer was not visible, in advance, to the motorist. In all occasions the traffic on the same side of the street (as the observer) coming towards the observer