

Hazardous attraction: External-to-vehicle distraction caused by billboard advertisements in Lahore

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Abstract

In growing metropolitan cities around the world, drivers operate in an increasingly complex visual environment. Research on roadside billboard advertisements and its link to driving distraction and traffic accidents suggest that billboards distract drivers from forward roadways. This paper gauges external-to-vehicle driver distraction caused by billboard advertising in Lahore, one of the provincial capitals of Pakistan and a metropolitan with its population increasing at a record rate. One thousand respondents filled a survey questionnaire that was designed to answer research questions about distraction caused to drivers by roadside billboard advertising. Results supported the argument of this paper and revealed a link between placement of billboard advertisements and road accidents in Lahore.

Keywords: *Billboard advertisements, external-to-vehicle distraction, road safety, driving.*

Overview

Visual communication draws attention quicker than verbal communication. Roadside billboard advertising is one example attracts passers-by towards written messages and images on them. Drivers use a large proportion of the visual sensory input, since visually conspicuous items, such as billboards, are most likely to interfere with visual processing tasks (Wickens, 2008).

Driving is becoming a more complex task than ever. Research on drivers' eye movements (e.g Luoma, 1992) suggest that drivers look at almost every [traffic] sign. In addition to this, there are far more potential distractions available within the car like mobile phones, radio, music players, etc. but the external environment has also become far more complex, with more cars on the road (Wallace 2003).

A growing body of evidence suggests that advertising billboards on roadside have a great tendency to impair aspects of a driving performance such as visual search and the detection of hazards. Therefore scholars and other research experts have emphasised on and stressed the need for a more precise regulation in order to ensure a safe road system (Edquist, J., et.al. 2011).

In most unchallenging on-road driving situations, drivers often let their eyes wander to irrelevant objects (Crundall et al., 2005). On an average, a driver's chance of being distracted by scenery and other irrelevant items lie between 20 per cent and 50 per cent (Green, 2002; Hughes and Cole, 1986; Land and Lee, 1994).

While globally it has been acknowledged that there is limited research on out-of-vehicle distraction caused by roadside advertisements (Beijer et al., 2004), there is absolutely no record of any study that demonstrate research on roadside advertisements and their distraction-causing effects on drivers in Pakistan. A few international studies conducted in

the last three decades have demonstrated that drivers look at and process roadside advertisements (Hughes and Cole, 1986), and that fixations upon advertisements can cause unsafe circumstances (Smiley et al., 2004) for the drivers and passers-by. Studies of accident statistics have also identified external distractors, including roadside advertisements, as a significant self-reported cause of traffic accidents (Stutts et al., 2001).

Billboard advertisements are designed in a way so that they catch maximum number of people's attention and create a memorable impression in a shortest possible time, leaving viewers still thinking about the advertisement in the few moments after they have driven past it. Therefore billboard advertisements are catchy and easily readable in the shortest time possible because most of them are usually read by drivers while they drive past them, often at high speeds. Due to this, billboard advertisements contain fewer words and big pictures, often too large, which can prove to cause distraction most of the times.

In a particular study that linked advertisements to accidents, it appeared that the combination of an extremely eye-catching advertisement and poor billboard location increased the number of accidents on that stretch of road compared to a control location (Ady, 1967).

Studies have argued the destructive side of billboard advertisements as a major source of out-of-vehicle distraction. Signs with bright colours and eye-grabbing pictures cause drivers to look away from the road during a crucial moment (Alam, 2007). Electronic billboards in particular have been singled out as a cause. Studies have also shown that billboards at junctions, bends and on long stretches of highway may have a particularly detrimental effect on road safety (Crundall et al., 2005; Beijer et al., 2004; Wallace, 2003).

In addition to their placement, their type also plays a role in the level of distraction a billboard advertisement can cause. Billboards are now getting makeovers. Billboard companies are adopting digital technology that rotates advertiser images every six or eight seconds to the better catch the attention; the new billboards look like television screens, even if the images do not move (Story, 2007).

Glowing signs, for instance, offer advertisers a tantalising new means of cutting through the urban clutter; bright billboards which display a new image every few seconds are another dangerous distraction for drivers, many of whom are already multitasking behind the wheel (Condon, 2007). Researchers have highlighted two types of major distractions (e.g. Ady, 1967). The first is associated with visual 'clutter', and the other main kind is associated with 'low arousal' monotonous situations, and occurs either when the driver is 'surprised' by a billboard or sign, or else when s/he fixates on it after a long period of driving.

In an epidemiological study, researcher from University of Alabama at Birmingham, analysed crash records from the states of Alabama and Florida and established statistical correlations between crash location occurrence and proximity to billboards, and discovered that billboards can become increasingly distracting given their characteristically bright and dynamic displays, which may divert drivers' glances from the forward roadway (Hester, D. et.al., 2003).

The case of billboard advertisements in Lahore

Billboards are very commonly found in Pakistan and cater to all types of audience. In Lahore, the provincial capital of Punjab province, there are about 1200 XL billboards, and most of these are installed without proper security checks, resulting in numerous accidents in the city. A few huge billboards were placed at busy places without even taking preventive measures (Ahmed, 2008).

To assess the sustainability of the billboards, Punjab Horticulture Authority (PHA) then enlisted six structural engineers, all members of Pakistan Engineering Council. The panel engineers are obligated to check the size specifications of billboard, which are 90 feet into 30 feet on land and 60 feet into 20 feet on rooftop of the commercial building. These engineers are bound to visit the site and issue NOC. In case, the billboard falls down and cause any casualty and damage to adjacent building, advertisers will be obligated to give compensation to the affected party. Pakistan Medical Association Karachi has been expressing its deep concerns over the irregular mushroom growth of hoardings, billboard advertisements, neon-signs and different other advertisement boards and banners, stating them as 'severe life threats', among other damaging impacts (Khan, 2006).

It has been observed that most local news reports about roadside accidents in Lahore at points with billboard advertisements in the vicinity have considered billboard advertisements as one of the causes of the accident during the investigation. As an academic investigation into the hypothesis, the current study aimed at identifying whether billboard advertisements are a cause of distraction for drivers in Lahore, one of the largest cities of the country which is expanding both geographically and by population size at a record rate. Till the completion of this research, no academic or commercial research was recorded on external-to-vehicle distraction caused by billboard advertising in the city.

Method

Participant

A total of 1,000 randomly selected respondents (383 females and 617 males) were approached to fill the survey questionnaire. Respondents were between 18 and 66 years of age and included randomly selected drivers who lived in Lahore. Their average annual mileage was 5,900. Respondents were further grouped depending on their years of driving experience. Table 1 has further characteristics of respondents.

Table 1. Respondent characteristics

Group	Mean age	Mean driving experience	(self-estimated) Mean annual mileage
New drivers	21	1.2 years	3,700
Mid-level drivers	28	7 years	6,000
Experienced drivers	46	20 years	8,000

Survey questionnaire

The survey questionnaire contained 20 questions aimed at assessing distraction caused by billboard advertising and to identify, if there was any, a link between driving distraction caused by billboard advertisements and subsequent road accidents. All questions were closed-ended.

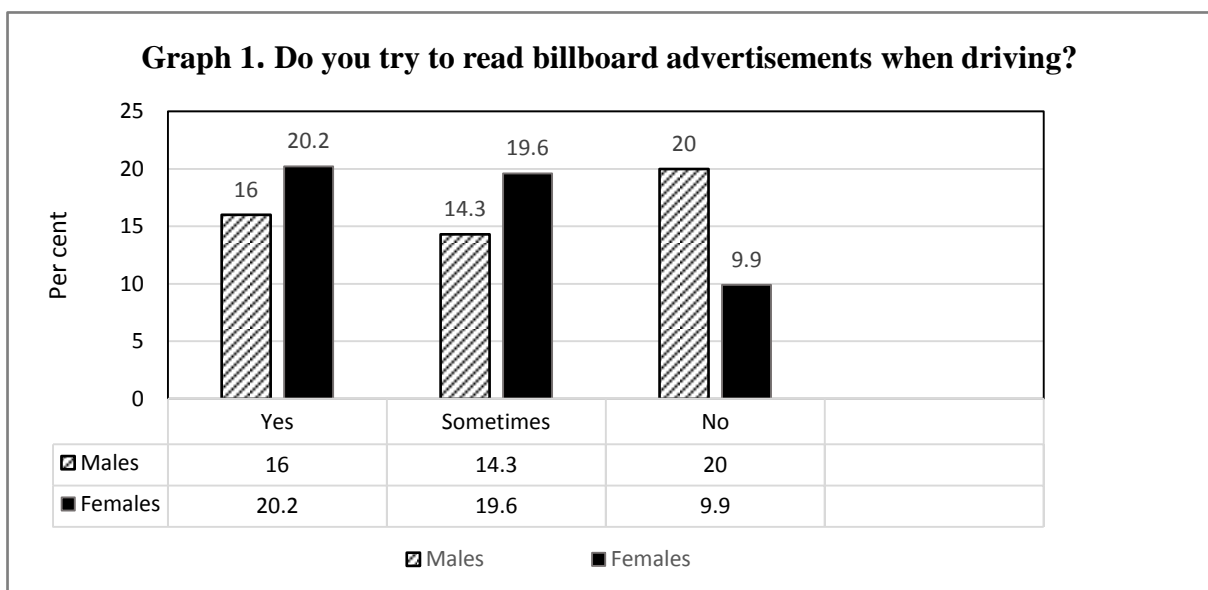
Procedure

Random drivers on the roads and parking lots were handed out the survey questionnaire. The ability to drive was one requirement for each respondent. There were instances where drivers could not read English and had to be assisted with translation from Urdu (Pakistan's national language) to English. Some advertising companies in Lahore were visited during the time this research was conducted, and some of their staff also helped with the distribution and recollection of survey forms.

Results

Data was interpreted using the computer application tool called Statistical Package for the Social Sciences (SPSS). Five questions that directly supported the argument and answered the research questions were put under statistical test using the CI for One Proportion test. Results were collected in the city of Lahore between July 2014 and September 2014. A common sampling methodology – stratified random sampling – was followed with a common questionnaire for each respondent. The sample was stratified by their ability to drive, whether they were regular drivers and the years of driving experience they had in Lahore.

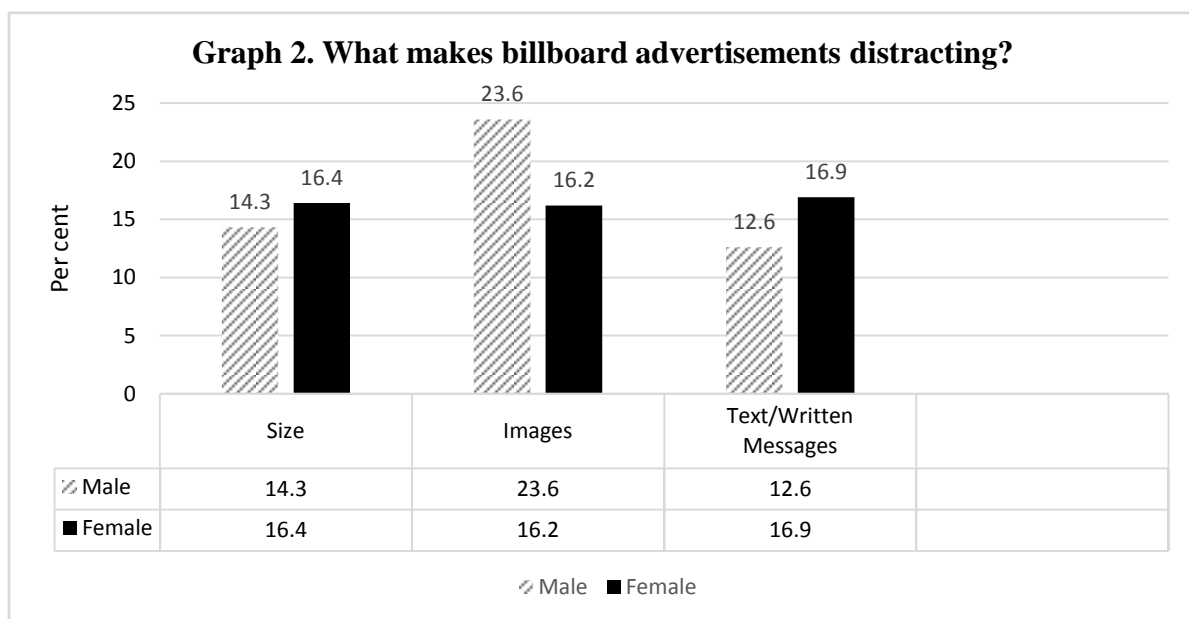
A 70.1 per cent of the total respondents said they read billboards at least once in a journey from point of departure to the destination. Of those, who said they read billboard advertisements at least once while they were driving, 39.8 were female respondents. Graph 1 gives a detailed gender breakdown of the percentage of drivers in Lahore who responded were asked if they read billboard advertisements while driving.



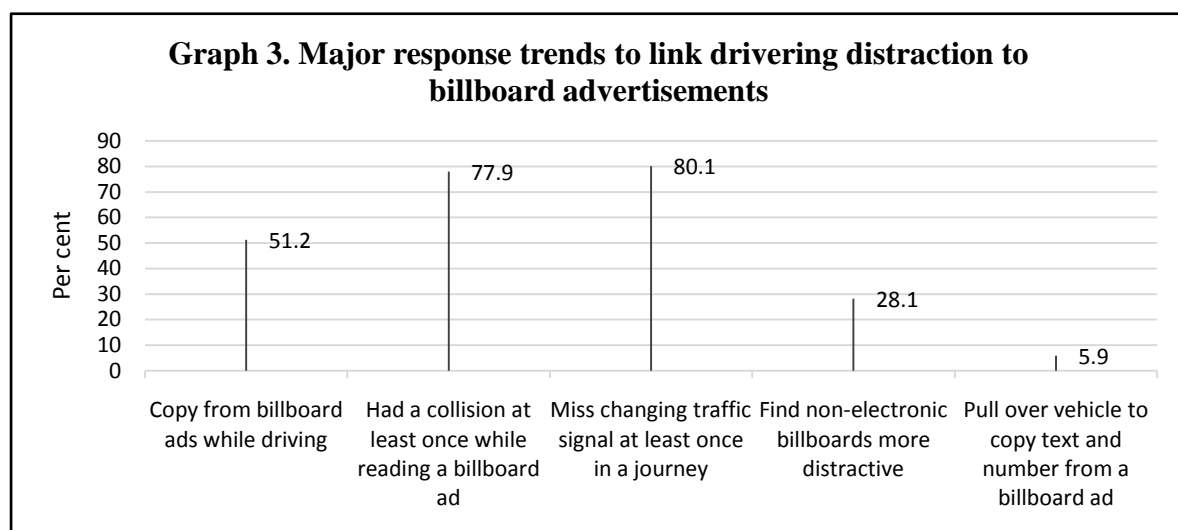
An 85.8 per cent of the respondents said they were distracted by billboards when driving, $X=858$, sample $p=0.858$, 95.0% CI, $P\text{-Value}=0.000 < 0.05$.

Eighty-six per cent of the respondents said that they read billboards even if they were not driving and were front of back-seat passengers; $X=863$, sample $p=0.863$, 95.0% CI, $P\text{-Value}=0.000 < 0.05$. A 12.9 per cent of the respondents said they were distracted by billboards even if they were not driving and doing things that included using a mobile phone, talking to the driver or a fellow passenger(s), handling a child and/or writing down something.

Forty seven per cent of the respondents said they believed that roadside billboard advertisements contributed to road accidents since they increased the likelihood of a driver getting distracted away from the road. To 30.7 per cent of the respondents the bigger the billboard (advertisement) was, the more distracting it became [for drivers]. Over 39 per cent (39.8) of the respondents said images on billboards took away drivers' attention from roadways; and 29.5 per cent of the respondents said text and words written on billboards attracted their attention, as they tried to read each work in the quickest possible way while passing by it. Graph 2 gives a gender breakdown of the percentage of drivers in Lahore according to what characteristic of billboard advertisements they find most distracting.



Of the total respondents, 51.2 per cent said they did not stop their car(s) when noting



down contact numbers, email addresses, street addresses, dates and other details from billboard advertisements. Only 5.9 per cent of the respondents said they always pulled over to copy information from billboard advertisements. As many as 68.5 per cent of the respondents said that when not driving themselves, they had, at least once, stopped the 'distracted' driver of their vehicle from looking at a billboard advertisement while driving. A 77.9 per cent of the respondents said they had collided with another car, at least once, when driving a vehicle and getting distracted by a billboard advertisement; $X=779$, sample $p=0.779$, 95.0% CI, $P\text{-Value}=0.000 < 0.05$; while 80.1 per cent of the respondents said they had, at least once, missed out on a red traffic signal turning green and were reminded by a passenger or another driver, while they were looking at a billboard advertisement, $X=801$, sample $p=0.801$, 95.0% CI, $P\text{-Value}=0.000 < 0.05$. At least 28.1 per cent of the respondents found non-electronic billboards more distracting than glowing signs. Graph 3 gives the numeric representation of major responses that supported the argument of this paper, linking billboard advertisements to driving distraction.

As many as 34.6 per cent of the respondents said they believed road accidents were caused by external-to-vehicle distraction from billboard advertisements installed at inappropriate places, including those on flyovers and turns.

A 76.8 per cent of the respondents said that billboard advertisements served as a major cause of distraction to drivers and hence affected traffic flow negatively. $X=768$, sample $p=0.768$, 95.0% CI, $P\text{-Value}=0.000 < 0.05$.

Discussion

Using a survey questionnaire that produced consistent results, this paper finds that billboard advertisements affect drivers' concentration while driving. Data shows that larger percentage of people gets distracted by billboards and they are aware of the fact that billboards can be a cause of a serious accident (s). Drivers get distracted due to text and images on billboards, specifically those that are oversize.

This study makes two very important findings. One that drivers (both when driving or as passengers) are distracted by the presence of billboards on roadsides and second that they [try to] copy information off billboard advertisements, admitting at the same time that they are aware of the safety hazards such behaviour can cause. These results lend support to the argument that billboards increase the likelihood that drivers are distracted by billboard advertisements, increasing their chances of collision and other serious traffic accidents by automatically attracting their attention. The results also suggest that drivers are likely to miss changes on the road (e.g. changing traffic lights) and are even distracted when not driving and doing other things such as reading, using a cell phone and/or handling a child (ren). This suggestion is supported by the results of recent driving simulator experiments, which have concluded that advertising billboards affect both recall of road signs (Ewing & Dumbaugh, 2009), and response to road signs (Hosking, Horberry, Edquist & Johnston, 2011), perhaps due to placement patterns and increased mental workload (Young & Mahfoud, 2007).

Conclusion

The drivers' attention and distraction paradigm is useful for driving research. Locally, there is absolutely no research on external-to-vehicle distraction caused by billboard advertisements. After the application of statistical tests, and analysis of results, I reached the conclusion that

billboard advertisements are, to a great extent, a traffic safety hazard, triggering drivers' attention away from the road. The hypothesis for this research has been accepted.

Limitations

The present study is limited since it does not include other cities of Pakistan. However, given that the results are consistent and supported by a mounting body of evidence showing that billboards on roadsides attract drivers' attention and impair aspects of driving performance, thus becoming a driving hazard that is likely to result in a road accident. In light of these findings, it is recommended that road safety authorities in Lahore take a precautionary approach to limit these effects. An instant balance is required by the regulatory authorities to maintain the size and number of billboards in the city. Moreover, Horberry, Regan and Edquist (2009) argue that rather than waiting until it can be proven beyond doubt that roadside advertising is responsible for a particular collision, road authorities should regulate billboards to minimise the probability of interference with driving (Edquist, J., et.al., 2011).

Suggestions

After completing this research, I came up with some important suggestions for future research on the topic. This topic has a vast scope for research. International researches are very useful but they are only applicable to traffic, surroundings and environment locally. Research on billboards and their effects in Pakistan needs to be conducted to get a clearer picture of the situation locally. This research paper presents one picture as it concentrates on drivers in Lahore only. Researches on other aspects of billboards can also be done, for instance use of billboards as a tool of political campaigning and communication; drivers' response to billboard advertisements in a clutter environment; change in the pattern of effects of billboards depending on their placement from the road; and a comparative study of billboard advertising in major cities of Pakistan.

About the author

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