

## 6.1 INTRODUCTION

### SECTION SIX: SAFETY ASPECTS

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**Sub-problem 7:** To investigate the relationship between outdoor advertising and road safety.

**Hypothesis 7:** A relationship exists between outdoor advertising and road safety.

This section focuses on the degree to which outdoor advertising distracts the attention of the driver and consequently creates a safety hazard. Section six comprises the following sub-sections:

6.1 INTRODUCTION

6.3 OUTDOOR ADVERTISING AND ROAD SAFETY

6.3 CONCLUSIONS

## 6.1 INTRODUCTION

After local and international research, the Automobile Association of Southern Africa (AA) accepted the following policy statement in 1980: **"The AA is concerned about the negative effects of open-air/ external advertisement boards next to public roads and is also against the erection of signs and boards which can be dangerous, such as reducing visibility on a stretch of road, or for other traffic, distract, shine in one's eyes or confuse with traffic signs, markings or signals"**

The belief that outdoor advertising, in any form, is a disturbance to traffic as well as visual clutter, is a perception common to roads authorities, motoring organizations and the general public. A number of studies have probed this hypothesis, with various degrees of success:

- The Australian Road Research Board concluded in an unpublished report titled "Advertising signs and road safety" that smaller signage actually causes visual clutter and confusion amongst motorists. A motorist with the intention, for example, to stop for take away food, will try to investigate the signs for the appropriate one. Usually these signs appear between ground level and first floor level and so compete with traffic signs for the motorist's attention.
- Laboratory studies in Melbourne 1976 (Johnston & Cole, 1976), came to the conclusion that motorists have the ability to ignore unnecessary information and that the general effect to distraction through outdoor advertising is not especially large. Studies in America have come to the conclusion that motorists' reactions are not influenced by the presence of a large number of advertising boards.
- Studies in Brisbane (Brown, 1988), investigated the perplexing effect of advertising on the task of driving and found that there was no obvious effect on either young or old drivers.
- The presence of advertisement boards in rural areas, has been seen by some as a positive element (Lauer, 1959)(Cumming, 1971)(Tindall, 1977), because it can reduce boredom and so make a positive contribution to road safety.

Seen holistically, research up to the present, has found that outdoor advertising does not result in considerably more distraction when compared to the normal traffic environment.

Looking at it rather more specifically, research has proved that 95% of information going into the human eye is not linked to the road or the vehicle. In addition to this, it has also been proved that 95% of the information that drivers absorb, is provided by vision. Furthermore it is agreed that outdoor advertising provides visual information and this influences the driving task mainly because it is designed and aimed at distracting the attention of the driver.

## 6.2 OUTDOOR ADVERTISING AND ROAD SAFETY

Traffic engineers, Stanway Edwards and Associates, were commissioned to undertake a sub-study on outdoor advertising and its relationship to road safety. The report is quoted in full below.

### 6.2.1 INTRODUCTION

This section deals with outdoor advertising and its relationship to road safety.

It will cover the following subjects:

- outdoor advertising specifically;
- traffic safety on its own;
- the effect of outdoor advertising on the driving task, covering what the motorist can absorb in terms of information load; and
- research into the relationships between traffic safety and outdoor advertising before concluding with specific considerations.

### 6.2.2 OUTDOOR ADVERTISING

The main purpose of outdoor advertising is to communicate its message, and to do that it must be seen by the audience at which it is aimed. In terms of the road network, one can say that roads are the only medium where the audience is brought to the advertising, and has no choice whether to read it or not. In addition, roads are the only medium, (versus magazines, newspapers, television and radio) which provides the audience but does not benefit from it. However, if advertising is allowed in future, an agreement could be struck with regard to this issue.

### 6.2.3 TRAFFIC SAFETY

If one analyses traffic safety and its fundamentals, one can say that traffic safety is a function of the three elements of the transportation environment, namely:

- the driver,
- the vehicle, and
- the road.

From these elements it is obvious that there is a strong relationship between traffic safety, the driver and outdoor advertising.

Looking at it rather more specifically, research has proved that 95% of accidents are a result of human error and not linked to the road or the vehicle. In addition to this, it has also been proven that 95% of the information that drivers absorb, is provided by vision. Furthermore it is agreed that outdoor advertising provides visual information and this influences the driving task mainly because it is designed and aimed at distracting the attention of the driver.

## 6.2.4 THE DRIVING TASK

In addition to traffic safety and the driving task, it can be said that the fundamental principles of how people see things are already well established. Seeing takes time. There are limits to the detail that can be discerned and the angle of the visual field that is observed by the driver. Furthermore it is also of vital significance to look at the contrast and the placement of this information. In terms of seeing, these are the important issues, namely:

- Seeing takes time.
- There are limits to the detail that can be discerned.
- The angle of the visual field is important.
- Contrast is important.
- Placement is important.

With reference to the time it takes to see, again from research it has been proven that as the driving speed increases, one finds that the driver's concentration increases, the point of concentration recedes, peripheral vision decreases and the foreground details begin to fade. Taking all of this into account, it is clear that perception of space and speed deteriorates and therefore the driver's judgement becomes more dependent on the visual clues picked up along the highway.

## 6.2.5 THE PROCESSING OF VISUAL INFORMATION

When analysing how the driver processes the visual information, it has also been proven that there is a limit to the amount of information that a driver can be expected to see, process, remember and respond to. In terms of quantifying this, the term "item" or "bits" of information has been defined as one syllable, a symbol or a logo, an abbreviation or a group of numbers. Again from overseas experience, and this has been applied in the South African road signs environment as well, it is recommended that a limit of ten items of information is displayed. In the Baltimore case, they defined that as ten items per property frontage. In the Introduction to the Revised South African Road Traffic Sign System (Department of Transport, 1993), it is defined as eight to ten bits of information per 100 metres.

## 6.2.6 OVERSEAS RESEARCH

In previous research with regard to the relationship between advertising and accidents, it was found that the link between advertising causing accidents was inconclusive in all research, but the fact that advertising is not affecting accidents is also inconclusive, so the research is actually completely inconclusive in this matter. However, other research has proven conclusively that information overload distracts the driver. Furthermore it has been proven that distracting the driver will influence the driving task and will cause accidents and this research is also conclusive.

One can conclude by saying that one should limit the information to a motorist to that which he can read while driving, without being distracted to the extent that it influences his driving task.

## 6.3 CONCLUSIONS

### 6.2.7 LEGIBILITY ASPECTS

If we look in a bit more detail at what a driver can read whilst driving, the legibility analysis shows that there are two primary factors in determining the legibility of what a driver can read. These are:

- the driving speed, and
- the number of traffic lanes.

Furthermore the driver needs time to react, and this reaction time is determined by the time it takes the driver

- to see the display,
- to read the full message, and
- to respond to this message.

In addition to that, the faster a car is moving, the farther it travels while the driver is reacting to that message. It is therefore clear that the longer a message is, the larger and more readable that message should be in terms of the letter size, for the driver to see it soon enough, have enough time to read it and to respond to it.

This leads us to the issue of the size of letters and the obvious question is: "How large must these letters be to be legible given the fact that one does not want to exceed ten bits of information?" And again the size of the letters depends on the distance from which they are viewed, the function of seeing and reaction time has described earlier, and it is determined by the driving speed and the number of lanes. However, a rule of thumb is that for every fifteen metres distance, the letter size should be increased by 25 mm.

### 6.2.8 INFORMATION LOAD

Information overload occurs when the viewer is confronted with more items than what the eye can readily see or the mind can readily process.

The factors influencing this information load are many. Some of these are:

- the driving speed,
- the traffic conditions,
- the personal stress situation,
- the time of day,
- weather conditions,
- legibility of the information,
- the placement,
- the number of signs, and
- the design of the sign.

## 6.3 CONCLUSIONS

No conclusive evidence exists linking road accidents to outdoor advertising. However, outdoor advertising cannot be excluded as a possible contributor to road accidents.

In light of the above, a precautionary approach is advised;- the following 'common sense' measures should be applied as a minimum requirement:

Outdoor advertising signs and structures:

- should not be hazardous to passers-by;
- should not obscure a driver's or pedestrian's view of road vehicles, pedestrians or features of the road, railway or footpath such as junctions, bends, changes in width;
- should not be so highly illuminated that they cause discomfort to, or inhibit the vision of approaching drivers or pedestrians;
- should not obscure road traffic signs, interface with the functioning of a road traffic sign or create a road safety hazard;
- should not be liable to interpretation as an official traffic sign or be confused with instructions given by traffic signals or other devices or impair the conspicuous nature of traffic signals or signs (in competing for this information transfer, road traffic signs should get preference); and
- should be located at a height that avoids impact from footpath and other maintenance vehicles and discourages vandalism.

Some further considerations for the proper transfer of information are that a motorist should not be exposed to more than ten bits of information per 100 metres.