Factors involved in the long term benefits of Random Breath Testing in NSW

by

T. Prabhakar
S.H.V. Lee
R.F.S. Job

Department of Psychology
University of Sydney
NSW 2006
Australia

Report to the Federal Office of Road Safety

1993 ?

ACKNOWLEDGMENTS

We wish to thank the following people for their expert and helpful advice and opinions on RBT and drink-driving which were offered at a workshop conducted when the project was in its early stages:- Dr Barbara Black and Dr David Span (also supply of crash data) from the Road Safety Bureau of the Roads and Traffic Authority of NSW; Dr Chris Horneman who is the Leader of the Driver Education Unit, Armidale; and Dr Doris McIlwain and Dr Robert Heard from the Department of Behavioural Sciences of Cumberland College of Health Sciences.

This study was funded by a grant to Dr R.F.S. Job, from the Federal Office of Road Safety, of the Department of Transport and Communications.

EXECUTIVE SUMMARY

This study investigated the long term effects of Random breath testing (RBT) on NSW driver's attitudes, knowledge, and self-reported behaviour towards drink-driving. It was conducted to examine the possible mechanisms which underlie the effectiveness of RBT, with a view to understanding its effects and ensuring that its success continues.

To enable direct comparison of pre-RBT and post-RBT attitudes and behaviour a questionnaire was designed which predominantly contained questions used in the original pre-RBT survey. Previous longitudinal comparisons which have been conducted have not included results collected prior to the introduction of RBT, which is necessary for direct comparisons of pre-and post- RBT attitudes and behaviours . Data collected (for the NSW RTA) prior to the introduction of RBT in 1982, following RBT on 1983, 1984 and 1987, were compared with data from the present survey (1993). Only the door-to-door survey data from the 1987 study were considered here in order to ensure comparability. All interviews were door-to-door to ensure that possible sample selection and response biasing was not confounded by changes in the interviewing technique from survey to survey.

The results suggested that the perceived probability of apprehension by RBT has been maintained since the introduction of RBT. However, results support the suggestion that the long term success of RBT is not due only to a legal deterrence effect.

Since RBT was introduced, there has been a general attitudinal change to drink-driving. There has been an increase in the disapproval of a drink-driver who is either involved in a serious crash or caught driving over the legal blood alcohol concentration (BAC) limit. This suggests that there has been a change in responsibility for drink-driving outcomes towards individual responsibility. The drink-driver has been viewed increasingly as irresponsible, a criminal and even a potential murderer. The social environment also seems to be changing such that while the social pressure to drink may still exist as part of the Australian ethos, RBT is accepted as a legitimate reason for abstinence. This attitudinal change can be accounted for in terms of cognitive dissonance. Forced behavioural compliance (due to threat of legal sanctions) has caused some dissonance which has been at least partially reconciled by less favourable attitudes towards drink-driving.

It is recommended that despite some indication of attitudinal change, a high profile RBT presence should be maintained as a deterrence. The RBT campaign has not dramatically changed the perceived effect of alcohol on driving ability, particularly in male drivers. Therefore, if people think that they are still competent drivers when

under the influence of alcohol, they are likely to drink and drive if they think the basis for apprehension is a non-random operation, and their own skill will avoid their apprehension.

Further, many drivers are still overestimating the number of drinks which can be consumed while staying below the legal limit, especially for beer. It is also suggested that drivers have quite disparate perceptions about how the official limit applies to them personally. Their perception may be based on whether they believe that the limit pertains to males or females or a specific physical stature. An exploration of beliefs about consumption and the legal limit may have important ramifications for educational/informational campaigns in the future.

An investigation of the factors upon which the decision to drink-drive are based, in terms of specific instances rather than global impressions would be useful. For instance, the results of the current study identified the length of the journey to be travelled as an important factor in the decision-making process. Determination of such factors in the decision to drink-drive may be of value in deterrence campaigns and attitude change.

CONTENTS

Executive Summary
Acknowledgments
Table of Contents

1. INTRODUCTION

1.1 The Drink-driving problem 7
1.2 Introduction of Random Breath Testing in NSW 8

2. EFFECTS OF RBT IN NSW

2.1 Crash Statistics 10
2.2 Previous surveys on attitude change 11

3. AIMS AND OBJECTIVES OF PROJECT 12

4. LITERATURE REVIEW

4.1 Theoretical accounts of drink-driving and Drink-driving Countermeasures 13
Deterrence Theory 13
Cognitive Dissonance 16
Optimism Bias 18
Attribution Theory 19
Problem-Behaviour Theory 22

4.2 Methodology 26

4.3 Young Drivers 33

5. METHOD 36

6. RESULTS AND DISCUSSION

6.1. Survey 1993

1.1 Exposure to RBT and Deterrence of Drink-driving

40
1.2 Moral values regarding drink-driving 46
1.3 Knowledge and perception of drink-driving laws 47
1.4 Optimism Bias 53
1.5 Drinking and drink-driving social environment 56
1.6 Attitudes towards RBT 58
1.7 The decision-making process 59
1.8 Self-reported drink-driving behaviour 63
1.9 Factors which predict self-reported drink-driving behaviour 65
1.10 Knowledge of penalties 66

6.2. Longitudinal Study

2.1 Deterrence of Drink-driving by RBT 69
2.2 Moral Values Regarding Drinking and Driving 71
2.3 Knowledge of Drink-driving Laws 73
2.4 Optimism Bias and Driver Overconfidence 83
2.5 Friend's Influence on potential Drink-driver 87
2.6 Self-Reported Drink-driving Behaviour 89

7. CONCLUSION 91

8. RECOMMENDATIONS 92
9. REFERENCES 94
10. APPENDICES 103

1. INTRODUCTION

1.1 The Drink-driving Problem

Drink-driving is a major contributor to road accidents in many countries throughout the Western world (Ross, 1982). Alcohol consumption is directly associated with accident occurrence. Many countries have attempted to reduce the incidence of drink-driving, to address this serious problem.

The incidence of alcohol in traffic accident victims has been found to be up to fifty percent (Vine and Watson, 1983). As alcohol in the blood of drivers/riders increases, the probability of a crash also increases exponentially (Lloyd, 1992). Evidence for this includes the increased likelihood of alcohol involvement as the severity of the crash increases (Cashmore, 1985).

The effects of alcohol on the behaviours necessary for safe driving are clearly a major factor in alcohol crash involvement. For example, Stein and Allen (1986) conducted a study of 21 to 65 year old licensed males who were also heavy drinkers (defined as being able to reach a peak blood alcohol concentration (BAC) of .15 %). Subjects were given a simulator or a field test of driver decision-making and risk taking at BAC of 0.0, 0.10 (ascending), 0.15 (peak) and 0.10 (descending). Motivation for best performance was based on a reward/penalty structure (eg. bonus or ticket). Stein and Allen (1986) reported that overall driving performance was significantly impaired by alcohol. Further, the driver's perception of speed and of speed and distance was impaired, although this effect was minimal at 0.10 (descending). At intersections, there was increased "go" behaviour under the influence of alcohol. However, they also found that drivers were consistent in their risk acceptance behaviour. Stein and Allen (1986) concluded that alcohol contributes to the perceptual level of risk-taking. Stein and Allen's results typify laboratory and driving simulator studies of the effects of alcohol. Alcohol has been found to impair a variety of perceptual, motor and judgement skills related to driving. These include:- reaction time (Wong, 1976; Young, 1970); balance (Starmer, Mascord, Tattam, Vine and Watson, 1993); perception (Franks, Hensley, Hensley, Starmer and Teo, 1976); cognitive functioning (Jones, 1973; Ryback, 1971; Wong, 1976); divided attention tasks (Job and Starmer, 1983); and motor performance (Franks et al., 1976). Alcohol influences the impact of other drugs on driving ability (Starmer, McDonald, and Teo, 1980; Starmer et al., 1993).

In Australia, there is a social pressure to consume alcohol in social settings (Henderson, 1972). Further, in past years it has been shown that driving after drinking too much is considered normal behaviour, particularly by males (Freedman,

Henderson and Wood, 1973). It has been demonstrated that there has generally been direct social pressures to drink and drive at particular social settings such as a party or at the pub (Freedman et al., 1973). Gusfield (1981) claims that drinking patterns are largely governed by whether people are portrayed as competent drinkers in their own eyes and in the eyes of their peers. One determination of competence is the ability to take risks, such as driving after drinking. Gusfield (1981) states that there is an implicit assumption that adequate drinkers do not get caught and can avoid having an accident.

It has been suggested that there is a relationship between alcohol consumption per capita and road accidents. Mann and Anglin (1988) conducted a study of the relationship between alcohol-related traffic fatalities and per capita consumption of alcohol for Canadian drivers from Ontario between 1957 and 1983. Their regression analysis suggested that per capita consumption and road safety trends were significant contributors to measures of alcohol-involved fatalities (drink-drivers involved in fatal accidents; single-vehicle fatal accidents; and night time fatal accidents).

1.2 Introduction of Random Breath Testing in New South Wales.

Prior to Random Breath Testing, several attempts to reduce the number of alcohol-related crashes in New South Wales (NSW) were made, all with no or little effect. For example, a mass media "slob" campaign was introduced in 1974 in an attempt to increase knowledge about alcohol and traffic crashes, and to change attitudes to drink-driving. This campaign may have increased knowledge about drink-driving (Freedman and Rothman, 1979), but there were no detectable effects on drink-driving behaviour as the rate of alcohol-related crashes did not change and in fact continued to climb (Road Safety Bureau, 1991). The lowering of the legal blood alcohol limit from .08 to .05 in 1980 also had limited effects.

Therefore, in another attempt to overcome the serious problem of drink-driving in the community, the New South Wales Government introduced "random breath testing", effective from December 17, 1982. The main goal was to produce a reduction in alcohol-related serious injury crashes (Staysafe, 1982). Unlike other enforcement procedures, drivers could be stopped by the police "at random" and tested for blood alcohol concentration.

The "random breath testing" (RBT) procedure is such that breath testing units are set up at various locations by the roadside. Drivers who drive past this point are selected at random and requested to undergo a "breath test" which is a test of blood alcohol concentration (BAC). If a driver is found to be above the legal limit of .05mg/100ml, then he or she is under arrest to be taken to a station for further tests and, if the

driver's BAC is confirmed, he or she faces a series of penalties (See Cashmore, 1985). It should be noted that the location of the breath testing unit is not chosen at random, although this public perception has been encouraged. The randomness of the procedure refers to the selection of vehicles from the traffic flow past the test location.

RBT was introduced with a massive media and publicity campaign. This included conspicuous police presence, highly visible breath testing, media publicity (in television, radio and print media) and education (Staysafe, 1982). There was a concerted attempt to ensure that at least one in every three drivers was breath tested (Cashmore, 1985). Thus, the introduction of RBT in NSW differed from the introduction of RBT in other countries (eg. Sweden, Homel, 1988) in that is was a far more intensive campaign that aimed from the outset to produce long-term effects (Homel, 1990; Job, 1985).

In 1987, random breath testing procedures were developed further with the introduction of mobile-mode RBT (Carseldine, 1988). This followed public perception that RBT could be avoided by the use of back streets (Job, 1983). This involved the addition of "mobile" RBT checking from single police cars in the vicinity of RBT stations, which again can pull-over cars at random and test the driver for BAC.

2. EFFECTS OF RBT IN NSW

2.1 Crash Statistics

Random Breath Testing was introduced in NSW in December 1982. Since the introduction of RBT there has been a dramatic decline in the number of fatal crashes (Road Safety Bureau, 1991), see Table 1 below.

YEAR	FATALITIES	TOTAL CRASHES
1981	1,291	68,290
1982	1,253	64,056
1983	966	61,606
1984	1,037	65,203
1985	1,067	70,848
1986	1,029	68,664
1987	959	69,214
1988	1,037	64,012
1989	960	62,801
1990	797	59,407
1991	663	53,762

Table 1. Fatality and Total Crash trends in NSW from 1981 to 1991.

During the six years prior to the introduction of RBT, the number of fatal crashes was stable, at an average of 1148.5 (Kearns, Vasey, Carseldine and Arthurson, 1987). The number of fatal crashes in 1983 was significantly less than for the past six years (Job, 1985; Kearns and Goldsmith, 1984).

Arthurson (1985) claims that overall crash rates alone are a not sufficient indicator of the effects of RBT. An effective drink-driving countermeasure will reduce specific crash types such as severe crashes, late night crashes, and the BACs of controllers killed in traffic crashes. Arthurson found that a comparison of data pre- and post-RBT yielded:-

(i) a significant decrease in the proportions of fatal crashes and serious injury crashes;

(ii) a significant decrease in the proportion of crashes occurring late on week nights and on weekends;

(iii) a significant decrease in the proportion of controllers killed with alcohol in their blood, and a decrease in the proportion of controllers killed with a BAC of .05g/100ml or more. However, of those killed with *alcohol in their blood*, the

distribution of BACs had not changed. A reduction in alcohol-related fatalities has also occurred (Homel et al., 1988).

The decline in the road toll could be accounted for by other factors, other than the introduction of RBT in 1982. Arthurson (1985) argued that the reduction in crash rates is not part of a natural fluctuation in social data, or explicable in terms of a along-term trend. Further, he suggests that the economic recession in Australia that began in the mid 1970s would have made a small contribution to the crash statistics in NSW, if at all (see Arthurson (1985) for problems with measurement of effects of economic indicators).

The estimated savings of RBT can be determined by examination alcohol involvement in fatal crashes (controllers killed). The fatal crashes which involved alcohol are outlined below, Table 2.

ALC	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Illegal	439	425	262	247	277	279	248	243	217	204	171	136
Legal	690	689	614	662	677	629	610	669	566	498	414	441
% Illegal	39	38	30	27	29	31	29	27	28	29	29	24

Table 2. Alcohol Involvement in Fatal Crashes 1981-1992.[1]

The average alcohol involvement for the pre-RBT years of 1981 and 1982 is 38.52%. The predicted alcohol involvement in fatal crashes, given this pre-RBT estimate can therefore be calculated, as shown in Table 3. From these figure the estimated savings in terms of lives saved can be calculated.

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Illegal if 38%	385	415	424	394	382	419	355	312	259	276
Saving	123	168	147	116	135	176	138	108	88	141

Table 3. Estimated lives saved each year from 1983 to 1992, based on pre-RBT fatalities.

1. NB There are rounding errors in certain totals

The saving in lives each year since the introduction of RBT amounts to a total saving of 1338 lives. The cost of a fatal crash in 1993 dollars (based on 1992 data) is $848,600. Therefore, the total savings in 1993 dollars, at $848,600 per fatal crash is $1135 million. It should also be noted that this calculation is a reflection of a minor part of the *real* cost of alcohol involvement in crashes.

2.2 *Surveys of Attitude Change*

Several surveys have been conducted to assess attitudes and behaviour towards drink-driving and RBT since the introduction of RBT (eg Homel, 1986). However, as Job (1985, 1990) points out, while an indication of current attitudes and behaviours can be useful, an assessment of attitudinal change needs to include data which have been collected *before* the countermeasure has been introduced, in order to identify its effects. In addition, many of these surveys have failed to include important questions from the original survey which was conducted prior to the introduction of RBT in 1982 (eg Cairney and Carseldine, 1989).

The longitudinal analysis for the present study will therefore include data which were collected prior to and following the introduction of RBT. Further, the exploration of current attitudes will utilise many relevant questions which were used in the original survey, to allow direct comparisons between early RBT years and 1993.

3. AIMS AND OBJECTIVES OF THIS STUDY

This study aims to provide an account of the unprecedented long-term effectiveness of RBT as a drink-driving countermeasure in NSW. In particular, to what extent is the effect due to changes in perceived probability and/or consequences of being caught, perceived effects of alcohol on driving, changes to the approval of drink-driving, and moral/ethical prescriptions about drink-driving.

The introduction of RBT was accompanied by paid advertising and considerable media publicity over and above the official campaign. Thus, RBT's introduction included education on the effects of alcohol; education about the law; education about how much could be consumed (although this was inaccurate in some respects: Job, 1983); publicity regarding penalties; deterrence by increased probability of detection; high profile roadside RBT conducted from large bases; and social commentary on the evils of alcohol and drink-driving. Thus, it is not clear from the direct success of the program, which aspects actually worked. Further, it cannot be assumed that the aspects which were responsible for RBT's early success are responsible for long-term success. For this reason, the present study was designed to identify the factors involved in the long term success of RBT in NSW.

This analysis of potential principles by which longer term behaviour change can be achieved would be of considerable potential benefit for future deterrence programs and/or other social change programs designed for various areas of road safety. This would also lead to a greater understanding of the theoretical basis for deterrence, and attitude and behaviour change.

This will be achieved by direct comparisons of current attitudes, moral values, knowledge and self-reported behaviour towards drink-driving and RBT, and those recorded prior to and soon after the introduction of RBT. Therefore, an examination of current attitudes etc. will also be made.

An attempt to meet these aims will be made by first an investigation of current attitudes, knowledge and behaviour towards drink-driving and RBT. Secondly, this study will involve a longitudinal analysis of attitudes, knowledge and behaviour prior to and following the introduction of RBT.

4. LITERATURE REVIEW

4.1 *Theoretical Accounts of Drink-driving and Drink-driving Countermeasures.*

Given the seriousness of the drink-driving problem, possible explanations for this problem should be explored. In particular, factors which may have contributed to the long term success of a drink-driving countermeasure, such as RBT, should be considered. Theoretical accounts of long term behaviour change would have considerable potential value for future deterrence programs in various road safety areas.

Therefore, a brief outline of some theoretical accounts of drink-driving behaviour and drink-driving countermeasures is given below.

Deterrence Theory

One account of the effectiveness of Random Breath Testing is that it operates as a deterrence effect. A deterrence approach to drink-driving is based on legal deterrence through the criminal justice system (Vingilis, 1987, 1990). Generally, deterrence can be defined as "the effects of legal sanctions on behaviour through the mechanism of fear of legal punishments" (Homel, 1988:30). That is, if the probability of apprehension for drink-driving is high and the punishment is certain and aversive, then there should be a low level of drink-driving. It has been argued that the success of RBT is due to the fact that it yields a high level of deterrence. Certainly, the media campaign and high visibility operation of RBT aimed to produce the impression of high probability of detection.

Ross (1985, 1987) argues that the deterrence approach to drink-driving will only produce short-term results. This deterrence is primarily due to an increase in perceived certainty of punishment. Ross (1985) claims that drivers initially overestimate the risk of apprehension. However, lack of continued enforcement leads to a waning of the effect as the public re-evaluates the risk. Ross' (1985) reservations about the longevity of deterrence effects may be relevant only to countries where the approach has failed to be supported by an increase in the level of enforcement, such as Sweden or France (Cashmore, 1985). Ross himself admits that the approach in NSW and other Australian states is likely to be successful in the long term due to continued enforcement levels.

Homel (1986, 1988, 1990), proposes a descriptive model of deterrence which includes both legal and non legal sanctions. For example, a non legal sanction is the inconvenience of *not* committing an offence. The potential inconvenience of not committing the offence was anticipated prior to the introduction of RBT, and was incorporated by Homel. In fact, the RBT messages were designed to include this, by education on alternative behaviours such as taxis, sleeping over, counting drinks, organising drivers. These non legal sanctions can be influenced by the various forms of legal sanctions. The first component of the deterrence process is that the individual must be exposed personally to law enforcement or must receive information about law enforcement. The individual then evaluates the significance of enforcement, including the probability of arrest for committing the offence. This leads to the individual's perceptions of the properties of legal and non legal sanctions. Legal sanctions include the perceived likelihood of being caught by the police. Non legal sanctions involve the operation of three social control mechanisms:-

(i) guilt feelings which result from the internalisation of norms;

(ii) threat of social stigma resulting from internal sanctions; and

(iii) threat of physical and/or material deprivation, for example legal punishments can lead to loss of licence.

The personal significance of these perceptions, which differs for each individual, is evaluated. Therefore, according to deterrence theory the decision to drink and drive is based on a choice among losses. The uncertain losses are apprehension and crashing. The certain losses may be guilt, social sanctions, ridicule of friends and making alternate transport arrangements (eg taxi hire). It is suggested that legal sanctions may impact on non legal sanctions, which in turn may lead to alterations in behaviour. The change in sanctions will cause alterations in the social or physical environment, perhaps to the extent that opportunities to commit offences are limited.

Homel's deterrence model makes two predictions. First it predicts that past offenders will be more responsive to the threat of further punishment than those who have never experienced arrest and conviction. It should be noted that previous convictions may not be any more sensitive to the legal threat. however, Homel (1986) asserts that such drink-driving offenders will have a greater fear of punishment. Second, Homel (1990) argues that those who have committed an offence but have escaped punishment will have lower perceptions of the chances of arrest than those who have not committed the offence. That is, there is a perception in the community at large that there is a high risk of being caught drink-driving and the result of this is certain arrest and loss of licence. Therefore, the majority of motorists are deterred from drink-driving.

Gusfield (1981) argues that the desire to be portrayed as a competent drinker is essential to maintain prestige in social environment. Therefore, according to Homel (1988), RBT may have achieved its impact by allowing many drinkers to maintain their image of competence while reducing their level of drinking.

Evidence for the effectiveness of different deterrence methods in other countries often difficult to compare and assess. For example, Wesemann (1987) conducted a comparison of two different cities in the Netherlands, one which was exposed to an intensive media campaign and the other was exposed to a moderate campaign. Drivers in each city were given pre- and post- advertising tests, with 400+ people interviewed in each city. The results suggest that only the moderate advertising campaign was necessary to cause some change attitude towards drink-driving towards an increase in disapproval. It should be noted, however, that attitudes were only measured 3 months after the campaign, which could indicate only a short term attitude change. Further, there was no attempt to measure if the attitudinal changes had any effects on drink-driving behaviour. However, Harrison (1988) conducted a survey prior to and following an enforcement and advertising campaign. The campaign emphasised the penalties for drink-driving, the enforcement of drink-driving legislation, and possible alternatives to driving while over the maximum permitted blood alcohol content. Following the introduction of the provision for police to breath test any driver who is pulled over for any reason, in mid-1987 which, from the motorist's point of view, should indicate an increase in perceived risk of being caught. A publicity campaign commenced 23 Nov 1987 and ended 30 Jan 1988. The surveys indicated that the target group of 400 males had been reached (18-30 males) and that the campaign had resulted in an increased perception of the chance of apprehension.

Studies in other countries have not always supported Homel's deterrence model. For example, Aberg (1987) conducted roadside interviews of 1,920 Swedish drivers from two different counties, one which had the usual amount of breath testing and one which increased the amount of breath testing fourfold. The most important factor in perceived probability of being breath tested was own experience of breath testing. Even if drivers had heard about intensified enforcement (eg. mass media), this information had no impact on their perceived probability of being breath tested.

Cognitive Dissonance

However, there could be other theoretical explanations for the effects of RBT. The continued success of RBT could arise through cognitive dissonance. Cognitive dissonance theory was first proposed by Festinger (1959). Festinger (1959) suggested that any decision between alternative courses can lead to an experience of tension or

"dissonance". This state of tension can continue even after the decision has been made if the individual has any doubt that the action chosen was correct. It is assumed that this state of "imbalance" or "cognitive inconsistency" is unpleasant and will therefore motivate the individual to engage in several kinds of cognitive restructuring to redress this imbalance. Hence, the uncertainty and tension will be lifted. One example of cognitive dissonance is that the cognition that an individual has chosen to behave in a particular way is inconsistent with the cognition that this behaviour is somehow "bad" or may have "bad" consequences.

Recent studies have led to the development of a theory which incorporates not only cognitive inconsistency, but also emphasises an interpretation of attitude change in terms of the motivational and/or emotional effects of being responsible for a bad decision (Cooper and Fazio, 1984). Induced compliance is very successful if the individual is forced to perform counter attitudinal behaviours (Eiser and van der Pligt, 1988). According to cognitive dissonance, the extent to which dissonance will be created and attitude change is likely will be influenced by two factors: the assumed level of responsibility; and the consequences of the outcome. Perceived level of responsibility is largely due to perceived choice. That is, if one believes that one is free to decide whether to perform the behaviour or not, this induces a high level of responsibility. The greater the seriousness of the outcome of the behaviour, the greater levels of dissonance that will be maintained and hence greater likelihood of attitude change.

There are some assumptions made by cognitive dissonance theory which are problematic. First, it is not clear that the experience of dissonance is unpleasant for all individuals. Indeed it is possible that some individuals may become used to dissonance after a certain time. Further, the point at which, for example, behaviour and attitudes become "balanced" so that they are acceptable to the individual is not known.

Cognitive dissonance could occur with RBT in that our behaviour, not drink-driving (because of the legal sanctions), may be inconsistent with our attitude that we are safe drink-drivers or that drink driving is a reasonable thing to do. Thus, to bring these into line we may change our attitude to : drink-driving is not safe for us or not ethically or socially acceptable, therefore we explain why we do not do it. Thus, cognitive dissonance could explain why the deterrent effect of RBT has had unprecedented long-lasting effects in NSW. A change in behaviour may produce a change in attitude.

Rothengatter and Jansen (1987) conducted a study of 326 people (in the Netherlands) from the age of 17 to 24 year (mean age 18.9). They found that 57 % had a valid

driving at least once a week. 92 % of the sample reported having consumed alcohol (82 % drink beer, on average 5-9 glasses on each drinking occasion). Of those surveyed, 54 % reported that they drink and drive. The questionnaire was analysed using the Ajzen model of reasoned action which describes the relationship between beliefs, attitudes and ultimately behaviour. This model assumes that behaviour is a function of the intention to display the behaviour, which in turn is dependent on the attitude towards the behaviour and the subjective norm. A multiple regression analysis yielded four factors, suggesting the following findings:-

(1) Drink-drivers were different from non drink-drivers with respect to negative motivational factor and performance factor. That is, drink-drivers consider it less likely that problems in driving will occur. However, the negative consequences of drink-driving are evaluated just as negatively by non drink-drivers as drink-drivers.

(2) Drink-drivers and non drink-drivers both consider it equally likely that they will become more sociable or cheerful through the use of alcohol. But, drink-drivers evaluate this more positively than non drink-drivers.

(3) Likelihood of "getting into problems with the police" was the same for drink-drivers as non drink-drivers.

The implication of these findings is that those who do not engage in drink-driving do this because they are more aware of the negative consequences of alcohol usage as such, and not because they are more concerned with the possible consequences of drink-driving. This pattern supports the contention that high probability of occurrence of negative consequences is a more important determiner of action than the extreme nature of the consequences (Job, 1988a).

Optimism Bias

A third effect which may be operating in conjunction with cognitive dissonance is optimism bias. This is a robust effect that people tend to be optimistic about their own chances of the occurrence of an event (Weinstein, 1980). For example, people tend to believe that their chances of being involved in a traffic accident, or contracting a disease, are less than the rest of the population. That is, people tend to believe that they are better drivers than the average person. Therefore, even when they have been drinking, people may believe that they are safer to drive than the average person who has been drinking.

This has been shown in studies of driver overconfidence. In a cross cultural study, Goszczynska and Roslan (1989) found that the majority of American (93%) and Swedish (69%) drivers viewed themselves as more skilful than the average driver.

Job (1990) found that NSW drivers are generally overconfident. Subjects were asked how they regarded themselves as a driver on a seven-point scale ranging from much

better than average, better than average, an average driver, slightly worse than average, worse than average, much worse than average. It was found that 53.6% of subjects rated themselves as one of the "above average" categories, 44.3% rated themselves as average, and only 2.1% rated themselves as one of the below average categories. Job (1990) also found that confidence among the drivers sampled increased with age. He also found that overconfidence when driving after consuming alcohol increased with age. Males showed greater driving confidence after alcohol consumption than females. These findings are consistent with optimism bias or unrealistic optimism about future life events (Weinstein, 1980; Weinstein, 1988), and confirm the relevance of optimism bias to road safety.

Thus, people's optimism bias may mean that although people will alter their drink-driving behaviour, it will be due to the fear of being caught by RBT, not fear of having an accident as most people assume that they have very little chance of being involved in an accident.

It could in fact be the case that the successful communication of the risk of being caught by RBT has had the long term effect (through cognitive dissonance) of changing moral values. That is, many NSW drivers may not drink-drive due to the risk of being caught by RBT and social/moral pressure not to drink-drive. However, due to optimism bias, the risk of a car accident is perceived to be low and does not play a major role in the decision-making process in assessment of risk of drink-driving.

This study therefore intends to gain insight into the factors which govern the decision to drink-drive or not drink-drive. Is the moral value that it is wrong to drink-drive a main factor and is the fear of being RBTd an important factor?

Attribution Theory

Attribution theory has been offered as a theoretical framework for an explanation of attitudes towards drink-driving by DeJoy (1989a). According to Attribution Theory, the individual constantly examines probabilities in order to understand and predict occurrences in the environment. An individual's perceptions of causality are important determinants of subsequent behaviour. DeJoy (1989a) points out that research shows that causal perceptions are subject to numerous distortions and biases. This phenomenon is relevant to the attribution of responsibility for alcohol-impaired driving.

Generally, the seriousness of impaired driving is related to the outcome which occurs (eg DeJoy and Klippel, 1984). That is, if the outcome is severe, involving serious

personal injury and property damage, more responsibility is assigned to the driver than when the outcome is minor (eg near miss). According to Attribution theory, the existence of a severe event creates in the individual a need to believe that the event was controllable and thus could have been avoided. However, minor events are assigned less responsibility as they represent less of a threat and less need exists to perceive them as controllable. Therefore, if driving under the influence of alcohol is seen as a serious or severe event, it should be judged as controllable and thus avoidable.

DeJoy and Klippel (1984), however, found in a study of US college students, that driving while intoxicated may not be sufficient to be perceived as negligent behaviour and hence an increased responsibility attribution. Their study suggested that both speeding and intoxication were required to cause a significant overall effect for responsibility. Further, alcohol consumption alone prior to driving is not usually seen as culpable.

The present and previous surveys include a comparison of judgement of a drink-driver involved in a serious crash and a drink-driver who is caught drink-driving. Attribution Theory would predict that individuals would judge the "serious crash" outcome as more controllable than the "caught drink-driving" outcome, if the " caught drink-driving" outcome is believed to be less serious. Therefore, an examination of the surveys in NSW will provide an interesting test of this theory.

DeJoy (1989a) also suggests that internal attribution judgements are made to explain the behaviour of others, for example, carelessness. However, people tend to explain their own behaviour in terms of factors that are external, for example, unsafe conditions. For instance, a study of US college students suggested that the decision to drive home after drinking or chose alternative transportation was a function of both intoxication level and the weather conditions (clear or raining) (Turrisi, Suls, Serio and Reisman, 1988). Alcohol intoxication, it is asserted, would provide a basis for making internal attributions of causality. Finally, those who had engaged in drink-driving in the past, perceived the behaviour as being less serious than those who did not engage in such behaviour (DeJoy, 1989b).

Martens, Ross and Mundt (1991) found that young (18-20) year old US drivers believed that the three components of driving - control/manoeuvring; attention; and emergency responses are all of equal importance in contributing to safe driving when alcohol is not involved. However, the students also reported that components of driving are differentially effected by alcohol such that emergency responses are most effected. This finding is consistent with Finn and Braggs's (1986) finding that young drivers view driving situations requiring personal skill and control to be less risky

than those involving elements of surprise. Further, DeJoy (1989a) found that judgments of personal risk related to accident involvement were less optimistically biased than risk judgements related to general driving safety and skill. That is, subjects rated themselves as significantly less at risk than an average driver to cause an accident while intoxicated. It would therefore be interesting to examine whether RBT has led to less optimism about the likelihood of having an accident while intoxicated.

This possibility can be extended to hypothesise why many individuals may believe that drink-driving is acceptable. That is, drivers may firstly believe that they will not cause a crash (as found by DeJoy, 1989a), and that they will not be killed (optimism bias). In addition, drivers believe that they have to be able to handle alcohol and still drive (as part of the social environment) and the belief that they are less at risk than an average driver to cause an accident while intoxicated (DeJoy, 1989a). These beliefs may perpetuate the notion that, because they drive well under the influence of alcohol, police will not detect them. This is particularly related laws in for example the US where drivers cannot be breath tested unless their driving (or other factors) suggest that they are intoxicated (Homel, 1990).

However, RBT has the potential to overcome the drink-driving behaviour which results from these beliefs because it does not matter how well they drive, they can still be caught drink-driving. In fact, this point can be used to defend oneself against the pressure to drink or drink-drive, without admitting that one cannot handle alcohol.

Therefore, personal control appears to be an important factor in perceived driving risk when alcohol intoxication is considered. Thus, young drivers (and perhaps older drivers) tend to view alcohol impairment as important primarily as a reactive rather than initiating factor in accidents. Young drivers see themselves as competent drivers even after drinking, except when unexpected dangerous situations arise. This is consistent with the tendency to overestimate one's personal skills and ability to compensate for the effects of alcohol and the attribution of accidents to external, chance events. These claims are consistent with Weinstein's (1980) finding that controllability is a major factor in optimism bias, in that there is more optimism bias in controllable than uncontrollable driving situations.

Problem - Behaviour Theory

The basic premise of Problem Behaviour Theory is that problem behaviours are interrelated such that different behaviours may be influenced by the same personal and situational factors. It has been applied to younger (under 30 years) persons in road safety research (Jessor, 1987).

According to Problem Behaviour Theory, there are three independent yet linked systems of social influence (Jessor, 1987). First, the behaviour system in which behaviours such as heavy drinking, impaired driving and illicit drug use, are exhibited. These behaviours function to reject conventional norms and authority figures and gain status among peers (Jonah, 1990). The behaviour system is influenced by both the personality system and the perceived environment system. The variables in the personality system are at the sociocognitive level and reflect social meanings and developmental experience, for example, values, expectations and attitudes (Jessor, 1987). The perceived environment system consists of the perceived aspects of the social context that implicate social norms and expectations, sanctions and controls, and exposure to models (Jessor, 1987). The variables in this system include lower parental support, and controls, lower parental disapproval of problem behaviour and greater friend's approval for models of problem behaviour. Jessor (1987) extends the model to include "risky driving behaviour" as a behavioural factor.

There are many studies which implicate attitudes of adolescents with their driving behaviour (See Section 4.3 Young Drivers). However, this is a highly value-laden theory which is largely a reflection of religious conservative morals. For example, in Jessor (1987), "church attendance" is considered to be conventional behaviour and a low attendance is supposedly a measurement of "deviant behaviour". This claim is made despite Jessor's own findings that, for instance, the "non problem drinkers" male group reported similar attendance records to "problem drinkers". Further, the theory is teleological as it assumes that problem behaviours are purposive and directed towards the attainment of goals. This is problematic as the theory does not allow predictions, as events are explained after they occur.

It is, however, important to examine the possibility that most drink-drivers have other social problems. The social environment may have potential effects on behaviour. For example, Monto, Newcombe, Rabow and Hernandez (1992) conducted a study of US college students who had been in a situation in which someone was too drunk to drive. Of the 303 students surveyed, 65 % reported having intervened. They found that persons will intervene regardless of the age, race and gender status of the potential driver and regardless of how similar that person is to themselves on these variables.

Many studies have also argued that the general driving population contains a subgroup which exhibits a high risk behavioural syndrome of which impaired driving is one of many risk behaviours. It is possible that many DUI (driving under the influence (of alcohol)) offenders are habitual violators of other laws as well. Wells-Parker, Cosby and Landrum (1986) examined the arrest histories of DUI offenders

who had been referred to a rehabilitation program. They found that 89% of offenders had more than one offence. Subjects were classified into five subgroups:-

(i) Low offence group where the average number of offences was 4.37 and the predominant offence was DUI.

(ii) "Mixed" group which included an average number of offences of 8.73 and a predominant number of offences of DUI.

(iii) "Traffic" group which had an average of 10.78 offences, most of which were moving violations and not significantly more DUI offences than the "low" group. This group consisted primarily of the youngest drivers (47% of the group was less than 30 years of age).

(iv) "Public Drunkenness" group had an average of 26.75 offences, which included a high number of DUI and other violations. This was smaller, older group.

(v) "Licence" group had the highest number of licence and equipment violations, which included assault. The average number of offences was 18.93.

A major problem with this study is that the sample is not representative of the general driving population as the subjects were all referred to rehabilitation.

In fact, it has been argued that impaired drivers, which includes drink-drivers and high-risk drivers, exhibit certain personality and behavioural traits which can be distinguished from the general population. Donovan, Queisser, Salzberg and Umlauf (1985) conducted a study of US male drivers from three groups:- Driving While (Alcohol) Impaired (DWI) offenders; multiple nonalcohol-related violations or accident offenders (high-risk drivers, HRD); and a random sample of the general driving population. They found that the DWI and HRD groups were more deviant than the general driving population. The DWI and HRD groups differed on aspects of drinking behaviour and driving related attitudes but were similar on measures of personality and hostility. It was suggested that there are four main characteristics which covary with driving risk:- emotional liability; impulsiveness and thrill seeking; overt and covert expressions of hostility; feelings of depression and low levels of perceived personal control. Therefore, Donovan et al. (1985) claimed that DWI and high-risk drivers may be subtypes of a population of high-risk drivers. Wilson (1992), however, partially replicated Donovan et al.'s (1985) work but matched subjects for age and gender. She found that the DWI group was more deviant on measures of behaviour and personality factors than the HRD group which was in turn more deviant than general driving controls. It was asserted that some of the deviance attributed to high risk drivers may have been due to a confounding of age. Further, Wilson (1992) comments that the high-risk driving and DWI groups appear to have high within-group heterogeneity.

It has also been suggested, particularly by the medical profession, that impaired drivers may primarily be alcoholics. Gouvin (1987) argues that at least two-thirds of

the DWI population suffers from alcohol problems, compared with 10% of the general population.

A study by Wilcock, Muslim, Laszlo and Varga (1981) suggested that impaired drivers may suffer from multiple lifestyle hazards. Using a Health Hazard Appraisal technique, convicted drivers were found to have:- diminished life expectancy, higher risk of health due to smoking and alcohol-related diseases; therefore increased risk for diseases such as lung cancer, CHD; drove more miles per year; and used seat belts less often when compared with a control group. Wilcock et al. (1981) therefore concluded that this study was evidence that those who drink-drive show evidence of increased lifestyle hazards in more than one area including alcohol and smoking related diseases, the frequency of automobile accidents, and the likelihood of injury. However, it is important to note that although the subjects for this study were matched for age and gender, they were not matched for socio economic status.

It would therefore useful in this study to examine the driving record of subjects, to determine whether those drivers convicted for DUI have also been convicted for driving offences such as red-light running.

4.2 *Methodology*

Measurement of Exposure

A main problem in road safety research is assessment of the relationship between exposure and other factors such as probability of crash. For example, some drink-drivers may be more likely to be involved in crashes than other drink-drivers, due to amount of exposure.

To attempt to assess exposure to roads, recent surveys have asked motorists, for example, the average distance travelled in the last year/month etc. However, this is not a particularly accurate measure of "exposure". Risk and Shaoul (1982) point out that the mileage measure is only a crude measure of accident opportunities. For example, travelling 40,000 miles per annum does not necessarily mean four times the accident opportunities encountered at 10,000 miles. According to Risk and Shaoul (1982), the general nature of the road determines both the traffic hazards that develop within it and the number of accidents that occur.

Clearly, a major factor which contributes to accident risk is the amount of exposure to the roads. That is, there is a basic assumption that the more a road user is involved with the road system, the more accidents s/he is likely to have (Risk and Shaoul, 1982). According to Risk and Shaoul (1982), a distinction should be made between "exposure" and "probability of an accident" such that increased exposure means that there is an increased number of "trials" during which an accident can occur. They make a distinction between the *extent* of exposure involvement and the *degree* of risk associated with each exposure instance (eg. trips, mileage, traffic intersections). One aspect of the risk associated with accidents is the general nature of the road. for example, the type of intersections to be crossed and manoeuvres required.

According to Brown (1982) the amount of exposure to risk is not an objective factor based on the type of roads on which motorists are travelling. Brown (1982) claims that there is "self-induced" exposure to risk, that is, certain individuals will create far more opportunities than others for accidents to happen. This self-imposed risk exposure varies with age as younger or inexperienced drivers tend to be overconfident and therefore underestimate objective road hazards. This is consistent with the findings of DeJoy (1989).

Johnston (1988) notes that there are specific behaviours which are related to accident occurrence. There are permanent characteristics which pertain to the controller of the vehicle, such as medical conditions, and transient factors such as alcohol intoxication

and fatigue. In addition to this are factors such as the type of vehicle driven (a safety factor).

The amount of exposure to traffic generally will affect the risk of accident. Also, the time of day and day of week will affect the risk of accident. For example, most alcohol-related accidents occur on Thursday, Friday and Saturday late at night and in the early hours of the morning. The risk of casualty accident involvement also increases as a function of the driver occupancy and driver experience. Drummond (1988) reports that novice drivers had a much higher proportion of their accidents while carrying two or more passengers than those drivers with more than two years driving experience.

Selection and Interview methods

Survey samples have been administered by different methods. For example, half of Cairney and Carseldine's (1989) sample were interviewed by telephone. This involves different selection methods, for example, all potential subjects with unlisted telephone numbers, and any tenants or people without telephones are immediately excluded. Although Cairney and Carseldine (1989) do not seem to report refusal rates it has been shown that telephone interviews usually yield a higher refusal rate than door-to-door interviews (Job, and Bullen, 1985). Further, in terms of answers, Cairney and Carseldine (1989) down play the differences observed between the results of the two methods. For example, the door-to-door and telephone samples differed in terms of their preferred alcoholic drink, likelihood of drinking in a restaurant, time spent drinking, feeling guilty versus lucky about driving near the limit and not being tested, the influence of fear of crashing, level of support for RBT, recall of advertising, and numerous attitudinal measures regarding the operation of RBT. It is generally found that the telephone technique will lead to less social desirability effects than face-to-face (Job and Bullen, 1985). However, Cairney and Carseldine (1989) report that the telephone questionnaire produced more socially desirable answers than their face-to-face sample.

Further, the original questionnaire has had to be modified for telephone interviews. Cairney and Carseldine (1989) state that this required that response alternatives be kept simple and restricted in number, and that some responses be given as a direct numerical estimate (eg number of drinks consumed) rather from a range selected from a card. {See also Homel et al., 1988, p133}.

One of the potential disadvantages of the face-to-face interview is that it tends to reduce the perceived confidentiality (Job and Bullen, 1985). It is possible that this problem may be at least partially overcome in the present study by employing an

official form which guarantees anonymity (See Method). Another difficulty with the face-to-face interview is that there may be a greater tendency for interviewer demands to be effective (Job, 1983; Kahn and Cannell, 1957). For example, it may be obvious to the respondent that the interviewer is involved in the field of road safety, although this is also true of a telephone survey. There is also a tendency for the respondents to give the most socially desirable answers, although some studies have found social desirability to be greatest in telephone interviews (Judd, Smith and Kidder, 1991).

However, according to Judd et al. (1991) the most important advantage of personal interviewing is the *quality* of data collected. The face-to-face interview usually yield the highest response rate of all administration techniques and allows more feedback to maximise co-operation (Job and Bullen, 1985; Vinokur, Oksenberg and Cannell, 1979). Further, this interview technique can establish rapport and motivate the respondent to answer accurately and fully (Judd et al., 1991). Face-to-face interviews also allow the interviewer to control the environment to a certain extent, such as the possible biasing presence of other people. For example, in the present study, interviewers were instructed that if they found that two individuals were providing answers to the questions, then they should avoid the other person being present or if this was not possible they could ask that one person (the true subject) responds first and then the second subject responds (data discarded). This ensures that the non-subject only answers after the subject. Finally, visual aids can be used. Visual aids employed in the present study were cards with the set of specified answers for most questions. This aid provided the subject with the range of possible answers without relying on memory, reducing recency and primacy effects in memory.

Problems in Police Data and self-reported data.

The main advantage of self-report interviews is that they allow the investigator to measure subjective states such as perceptions attitudes or emotions (Sears, Peplau and Taylor, 1991). A major problem with self-reported data on driving is the tendency to present socially acceptable behaviour. In the current survey, the bogus pipeline technique will be employed, by asking for authorisation to examine driving records. It is therefore assumed that this technique will increase the accuracy of the account of driving and drink-driving behaviour which is reported.

Another potential problem is the use of police reports to assess drink-driving behaviour. For example, Lang and Stockwell (1991) conducted a study in which police asked 2,166 drivers who had been involved in an accident or RBT or road blocks in WA to report the location of drinking (licensed vs unlicensed). They found that accidents which occurred were more often associated with unlicensed locations

than licensed locations. A number of explanations for this effect were proposed by Lang and Stockwell (1991):-

(i) Persons who drink mainly at licensed premises may have higher tolerance of alcohol, and more experienced drivers are less likely to be involved in a traffic accident.

(ii) Persons who were involved in accidents tended to have higher than average BAL, irrespective of their prior drinking location. But, BALs from all drink-drivers from unlicensed locations were, on average, lower than all from licensed premises.

(iii) In WA there are fewer people drinking at licensed VS unlicensed locations.

(iv) Police may pay more attention to licensed premises and therefore are successful in preventing accidents because they apprehend drink-drivers before they have driven any great distance.

Other explanations for these findings which were not considered by Lang and Stockwell (1991) include the possibility that at unlicensed drinking locations, alternative transport may be harder to find. In addition, if people are drinking at unlicensed locations, they may start the journey on backstreets and therefore see their chances of detection as less. Third, licensed places have often provided information on where the RBT stations are located. The length of the journey for each location may differ. It is also possible that those drink-drivers who go to unlicensed premises have become familiar with RBT locations and avoid them. Or, that drinkers at those locations monitor drinks consumed. It is also possible that there are different social factors in operation at different locations. However, a survey in NSW (Road Safety Bureau, 1991), suggests that people who drink away from home are more likely to have higher consumption than those at home. This may indicate that there is a difference between self-reported results and actual police records. Or more likely that police records are biased due to factors already listed. (It is should be noted that this difference may also reflect a difference in behaviours between NSW and WA drivers).

Sample for 1993 Survey

A country sample was included as recent studies have suggested that there may be significant differences in attitudes between drivers from city and country centres.

Cairney and Carseldine (1989), for example, found several differences between responses of city and country drivers. First, a higher proportion of country drivers (15%) reported very heavy alcohol consumption of 10 or more drinks, compared with 6% of Sydney drivers. A smaller proportion of Country drivers were likely to take

steps to remain below .05 limit on every occasion than city drivers. Country drivers would also mostly accept RBT as a reason for not drinking as much.

Cairney and Carseldine (1989) reported that 75% of country drivers reported having seen a RBT station in the last six months compared with 83% of respondents from Sydney and 82% from Wollongong. However, only a relatively small proportion of country drivers agreed that there doesn't seem to be as much RBT as previously. This suggests that there may be greater awareness of RBT in the country. Sydney drivers were less likely to have been random breath tested than other drivers. This could also be due to effects of media, as a higher proportion of country drivers could recall RBT or drink-driving publicity (68%) than Sydney drivers. It is not clear why country drivers would be more affected by advertising of RBT than city drivers.

Questionnaire Design for 1993 Survey

An accurate assessment of the effects of RBT on attitudes requires a direct comparison between attitudes prior to and following the introduction of RBT (Job, 1985). It was therefore essential that the present (1993) survey was directly comparable with pre-RBT data, for detection of attitudinal change. While data collected since the introduction of RBT (Homel, 1983) are useful, the pre- versus post-RBT comparison is not possible.

Therefore, many of the questions employed in the current survey were taken directly from the early (especially pre-RBT) questionnaire.

Many recent surveys have modified the original survey, and have not addressed all of the relevant issues. Several important questions have been dropped from the original surveys. For example, the perceived ability to drive after consuming alcohol (See Job, 1990) would provide valuable comparisons with earlier attitudes to drinking and driving. These data would be of theoretical importance as an indication of the possibility that long-term change in drink-driving is due to cognitive dissonance. That is, the perceived probability of legal detection and the raised profile of drink-driving may have resulted in an attitudinal change such that the effects of alcohol on driving have been accepted.

Recent surveys have included loaded questions. These are questions which transparently give away the "correct" answer. For example, in a recent RTA (1991) survey, subjects were informed about mobile RBT and then asked if they were aware of mobile RBT. A better procedure would be to not provide the information first, and ask them whether police can legally do mobile RBT or only do set stopping points.

(However, it was not very useful to ask about mobile-RBT as drivers tend to confuse it with any police activity).

Further, previous surveys have employed closed questions in which the answers are not balanced. For instance, when asking how important was the fear of being stopped by RBT (in making a decision not to drink and drive)? alternatives were:- very important; quite important; not very important; not important at all (for example, Cairney and Carseldine, 1989; Road Safety Bureau, 1992).

Additions to Original Questionnaire for 1993 Survey

It would be useful to examine the type of journey which is travelled from an unlicensed or licensed location to reach "home". Several factors may be involved which may affect the decision-making process to (i) not exceed the legal limit for driving (ii) to drive after drinking when assume that one is over the limit.

(i) The familiarity of the journey. It is possible that degree of familiarity with the route from the place of drinking to home would affect the perception of risk of accident. This factor could also relate to the exposure to police operations. That is, a drink-driver who always choses the same drinking location and the same route home may become familiar with the occurrence of RBT stations and learn to avoid them. This effect may be due in particular, to the tendency for police to set up RBT units for target groups and usually near specific clubs and pubs etc.

(ii) Another factor which may be involved in the decision-making process is the length of the journey home. That is, is there a reduction in perceived risk of accident/RBT if the journey is relatively short?

(iii) The amount of traffic anticipated to be on the road could also contribute to the decision to drive after drinking. It is hypothesised that if the driver's journey will consist of light traffic, s/he would perceive less risk of accident/RBT. This is also suggested by data in which those drivers who believe that they can avoid RBT tend to do so by using back and side streets. This belief in reduced risk could be viable, in that there would therefore be less cars with which to have a collision.

(iv) Familiarity with police operations may also be relevant. For example, if the driver is in a high exposure group (young, male) s/he may be more likely to be aware of police operations.

It is also possible that all of the above factors could have an interactive relationship. That is, a drivers perceived risk of accident may be reduced if the road is familiar and the distance to be travelled is only going to take 15 minutes and the roads are unlikely to be busy - they know a quiet route through back-streets and will drive slowly. It is also possible that there would be a general acceptance of this level of risk by peers.

However, if the journey is unfamiliar and a long distance on major roads, both the driver and peers may perceive a higher level of risk.

It would be extremely useful to find out what factors play a role in the decision of drink-driving. This is because it may be useful to increase the perception that RBT could be anywhere at anytime. Obviously, mobile-RBT has not had the desired effect if drivers believe that they could avoid RBT by using back streets (Road Safety Bureau, 1992).

4.3 *Young Drivers*

It has been suggested repeatedly that driving experience is an important contributor to traffic casualty rates. McDermott and Hughes (1983) reported that an examination of driving experience profiles of Victorian drivers over a two year period showed that drivers with less than five year's driving experience were over represented in casualty rates. Further, BAC levels in excess of .05g/100ml were more frequent in probationary drivers than fully licensed drivers. An explanation may be that probationary drivers simply drink-drive more often which increases exposure and likelihood of crash and detection. Perhaps younger drivers simply go out socialising with limited planning for transportation home, and often may find taxis too expensive as an alternative. It is also possible that younger drivers simply do more nighttime driving and socialising.

Indeed, Farrow (1985) conducted a study of 192 U.S. high-school students (16 to 19 year olds) and found that the majority of drinkers used a car to "get away". In fact, Farrow claims that: " Many young drivers endorse using an automobile as a means of resolving anxiety and conflict and as a means of getting away or passing the time, and it appears that the automobile offers an environment for socialisation. This appears to be more true for male than female drivers." [p.373]. It is therefore likely that younger drivers raise their risk exposure by virtue of lifestyle.

According to Klepp and Perry (1990), adolescents are exposed to a social environment which emphasises independence from parental control via driving and alcohol consumption. Cameron (1982) also argues that drink-driving among American adolescents is associated with feelings such as rebellion, hostility and alienation towards parents, school and society, although it is unclear whether socio-economis status was controlled. In the present questionnaire, it may be useful to examine the proportion of younger drivers who believe that drink-driving is morally wrong. It would also be interesting to investigate attitudes towards such obvious authoritarian threats as RBT.

If adolescent drink-driving is largely the result of opposition to authority, then it would be predicted that the social or peer pressure would be the only effective deterrent. Many education programmes in the U.S. have aimed at encouraging intervention in drink-driving. Indeed, the majority of teenagers are likely to report that they would intervene if one of their peers intended to drink and drive (Monto, Newcomb, Rabow and Hernandez, 1992). This pattern is reflected in the adult population as well (eg. Cairney and Carseldine, 1989). Self-reported intervention behaviour is biased by social desirability which is not necessarily a true indication of behaviour. This potential problem can be overcome, at least in part, by asking questions about what one's peers would be most likely to do, as utilised in this present survey. This type of programme implies and encourages the notion that individuals are not responsible for their actions. McKnight (1986) argues that it has not been shown that programmes which encourage teenagers to intervene in drinking and driving are more effective than those programmes which focus on encouraging individuals to control their own drinking and driving behaviour.

Some studies have suggested underestimation of the effects of alcohol on driving is a common cause of teenage drink-driving. Russ, Harwood and Geller (1986) interviewed U.S. students as they left a party, asking them if they thought that they were legally alcohol impaired. While most subjects were relatively accurate, those subjects with higher blood alcohol levels tended to overestimate their actual blood alcohol level while underestimating the number of drinks that they had consumed. It would be predicted that the intensive educational campaign in NSW, which emphasises the number of drinks which correspond to the legal limit, would lead to a higher level of knowledge in NSW drivers.

The possible reasons for teenage drink-driving are not well-understood. Many studies are poorly conducted without adult controls and tend to be based on assumptions about adolescent rebelliousness, without accurate testing. For example, a study which attempted to determine the reasons why North American teenagers decide to drink-drive was based on a group discussion (Basch, DeCicco and Malfetti, 1989). A study by Boyd and Hoffman (1984) of 25-34 year old American college students suggested that females are more emotionally mature than males. They also suggested that there is a link between emotional maturity and drink-driving involvement such that persons with lower emotional maturity are more likely to drive under the influence of alcohol. A problem with this study which is common to many studies of younger drivers, is the failure to provide a control group. Further, samples are often biased as they are college students, probably due to availability. However, there is rarely an attempt to control for potentially important variables such as socio-economic status.

6. METHOD

Interviews were conducted in the following areas:- Sydney metropolitan; Wollongong; Dubbo; Albury; and North Coast area (Taree to Forster). Early surveys (Job 1985) were concentrated in Sydney only (due to financial considerations and the emphasis on collecting a large sample of detailed rather than a spread of data). Later studies, however, have suggested that there may be some country and city differences to be explored.

The refusal rate was 45.7%. Also, 281 interviews were terminated as the potential interviewee did not fulfil requirements of being a licensed driver, or had not consumed alcohol within the last year.

Sample

Interviewers were instructed to fill the following seven age groups with approximately equal numbers of respondents:- 17 to 19; 20 to 24; 25 to 29; 30 to 39; 40 to 49; 50 to 59; and 60 to 69 years of age. Equal numbers of male and female respondents was also required.

Random sample

A total of 200 start points were selected at random for all areas. The sample was thus chosen on geographical distribution, rather than population density, which ensured that densely populated city areas were not over-represented. This method of sample selection does, however, mean that potentially, less densely populated areas may be over-represented.

Questionnaire

See Appendix I for the questionnaire.

Procedure

Field team consisted of seven females and three males, of age range 20-40years. Most were quite experienced interviewers. Others received a half-day training course in interview technique.

Sample selection.

Start points for interviews were set at random. Grid map references were determined and the nearest intersection was used as the start point. A maximum of five interviews were conducted per start point. Interviewers moved consistently to the left or right of the start point.

The interviewers were instructed to chose the age group and gender of respondent, following quota specifications, prior to door-knock. The interviewer then asked

" Is there a male (female) driver aged [from specified age group] in the house, to whom I could speak?"

If the qualifying respondent was unavailable, the interviewers were instructed to arrange a call-back time. At least one call-back was attempted before substituting with another household.

Interviews

Interviewers introduced themselves as follows (or very similar wording):-

" Good morning/afternoon/evening. My name is ..... and I'm conducting a survey for Sydney University. We are not selling anything. We are conducting this survey in all parts of NSW. Your household is one of about 1,000 selected to be included in a survey about driving.

If relevant, the following information was also given in response to questions by a potential interviewee.

- It takes only 10-15 minutes.
- It would be of service to the community.

The respondent was then asked to provided written authority for conducting the interview. Appendix II contains the consent form.

If necessary, the interviewer would state any or all of the following:-

- All information would be treated in the strictest confidence. Anonymity is guaranteed.
- This form is the respondent's written proof that s/he has participated in the interview and has been guaranteed anonymity and confidentiality.

The respondent was also asked to grant written authority for access to driving record, by supplying licence number, and signing the authorisation. The authorisation form is reproduced in Appendix III. Subjects were assured that this would not interfere with driving record in any way. Subjects who did not want to sign this form were nonetheless interviewed. Authority for licence number was requested primarily in an attempt to encourage honest account of driving record (see questionnaire).

The questionnaire is reproduced in Appendix I. Interviewees were given or shown a set of cards which contained a series of closed answer alternatives, for easy reference (see Appendix IV).

Statistical Analysis

For the present survey, the sampling technique employed necessitated weightings for each age group. That is, as each interviewer was required to fill an equal quota for each age group, an estimate of the general driving population must be considered. The weightings for each age group are detailed in Appendix V. For example, in this study, 17.9% of the sample was obtained for 30 to 39 year old females, yet females aged 30 to 39 account for 26.4% of the population of drivers/riders in NSW. To account for this discrepancy, the 30 to 39 year males age group was weighted so that their relative importance is increased by a factor of approximately .58. This means that the response of the licensed 30 to 39 year old female driving population is estimated. Job (1985) pointed out that this weighting procedure presupposes that similar proportions of licences were rejected from the sample in all age and gender categories because they drank alcohol less than once per year.

Alpha was set at .05 for all cases.

Responses for each question were compared in terms of gender and age.

For the longitudinal study, the differences between selected results pre- and post-RBT were compared using the Kolmogorov-Smirnov test.

5. RESULTS AND DISCUSSION

(1) Survey 1993.

The results for each question are given below. Chi-squared and MANOVA analysis were carried out and gender, age or gender by age interaction effects, where significant, are reported.

There was not a significant difference in the moral judgement of country versus city drivers [Qu14 x^2=9.22, df=13, p>.05; Q15 x^2=10.99, df=12, p>.05]. The knowledge about the drink-driving limit was compared for city versus country. MANOVA analysis showed that there were no location ($F_{1,288}$=.22, p>.05), or location by "kinds of drinks" interaction ($F_{2,576}$=1.43, p>.05). There was a significant "kinds of drinks" effect ($F_{2, 576}$=4.64, p<.01), such that the number of drinks to be consumed in one hour to stay below the legal limit was greater for beer (mean=1.855, S.D.=1.039) than wine (mean=1.707, S.D.=1.088) which was in turn greater than spirits (mean=1.648, S.D.=1.107). Therefore, the two samples were pooled for this analysis.

(1.1) *Exposure to RBT and Deterrence of Drink-driving*

The vast majority of drivers interviewed reported that they had seen a Random Breath Testing station in action (97.5%). The majority of subjects had been Random Breath Tested (71.3%). This finding is a higher percentage of drivers than publicised government policy, which is one in three drivers breath tested. However, this question is an indication of exposure over the entire RBT programme, rather than an annual estimate. There was, a significant gender effect (x^2=10.92, df=1, p<.01). Of those respondents who reported that they had been Random Breath Tested, a higher frequency were males (57.6%). There was also a significant age effect (x^2=32.99, df=6, p<.001). Drivers from the 30 to 39 and 40 to 49 age groups were more likely to have been breath tested than any of the other age groups, see Table 4. This is not a very sensitive measure as older age groups have been driving during the entire 10 years or the operation of RBT whereas younger drivers would have had less years to be exposed. This question does, however indicate contact with legal sanction which the deterrence model predicts is critical for establishing deterrence.

	(17-19)	(20-24)	(25-29)	(30-39)	(40-49)	(50-59)	(60-69)
yes	7 (3.3)	22 (10.6)	25 (12.0)	54 (24.8)	51 (24.8)	32 (15.6)	15 (7.2)
no	14 (17.6)	9 (11.2)	5 (6.6)	17 (21.4)	10 (12.5)	8 (9.8)	16 (20.7)

Table 4. Frequencies and percentages (row%) of respondents who reported that they had been breath tested, by age group.

A more sensitive indicator of exposure to RBT was given by asking subjects to report when they were last breath tested. As shown in Table 5, of those drivers who reported that they had been breath tested, 71.5% had been tested in the last 6 months or more recently. This means that overall, almost half of the respondents interviewed had been breath tested within the last 6 months.

within last month	2 to 3 months ago	6 months ago	18 months to 2 years ago
20 (26.6)	22 (29.2)	12 (15.7)	21 (28.6)

Table 5. Frequency and percentage (%) of how long ago respondents were Random Breath Tested.

The perceived possibility of avoiding being stopped by RBT may be an indicators of the deterrence effect of RBT. Of those drivers interviewed, 18.4% thought that they could do something to avoid being stopped by RBT. The most common method of avoidance reported by those drivers was to use back streets (48.8%). Therefore, despite the mobile-mode RBT campaign, which was designed primarily to counter the perception that RBT could be avoided by using back streets, those drivers who think that they can avoid RBT would use back streets for journeys.

To further assess the perceived likelihood of being random breath tested, and hence deterrence, subjects were asked whether they agreed that it was "pretty unlikely" that they would be stopped by RBT these days. The

Table 6. Frequency and (%) of respondents who agree that its pretty unlikely that they you'll get stopped by a RBT unit these days.

strongly agree	agree	undecided	disagree	strongly disagree
3 (1.0)	64 (22.5)	9 (3.1)	178 (62.5)	31 (10.9)

Table 7. Frequency and percentage (%) of respondents who agree that they are more worried about the possibility of crashing than being stopped by RBT.

	males	females
strongly agree	6 (4.3)	13 (9.2)
agree	59 (41.3)	76 (55.8)
undecided	17 (11.8)	10 (7.5)
disagree	58 (40.3)	35 (25.6)
strongly disagree	3 (2.3)	3 (1.9)

majority (73.4%) of respondents disagreed with this statement, as depicted in Table 6.

Respondents were asked whether they were more worried about the possibility of crashing than they were about being stopped by a RBT unit. There was a significant gender effect (x^2=11.58, df=4, p<.05). That is, as shown in Table 7, while almost half of the male drivers tend to agree that they are deterred by fear of crashing, almost half are deterred by the fear of being stopped by RBT. In comparison, most females say that they are more concerned by fear of crashing than RBT.

Subjects were also given a series of questions which asked separately how important were each the following factors in their decision not to drive after drinking alcohol, see Table 8. The first factor was the fear of being stoppped for a random breath test, which was important or very important to 70.8% of respondents. The fear of having a crash and hurting someone else was a very important or important factor for 89.2% of subjects. This question had a high moral loading which may have biased questions considerably. The fear of crashing and hurting yourself yielded a significant gender effect (x^2=, df=4, p<.05) as males reported that this was *not* an important factor more often than females. The fear of doing something which respondents thought was morally wrong also produced a gender difference (x^2=11.60, df=4, p<.05). Females more often felt that they were deterred from drink-driving by the fear of doing something which they though was morally wrong more often than males.

The relationship between the perception of the amount of RBT being done and the basis for that perception was examined, see Table 9. An overwhelming 92.8% of respondents reported that they had based their perception on "the amount of RBT that you see". The only other reported category was advertising. Overall there is a slightly higher proportion of drivers who believe that the amount of RBT being done by police each year is increasing.

fear of:	RBT	crash /hurt someone else	crash/ hurt yourself		morally wrong	
			males	females	males	females
very important	146 (51.7)	221 (78.3)	82 (56.5)	97 (71.4)	70 (47.9)	88 (64.4)
important	54 (19.1)	28 (9.9)	26 (17.9)	26 (18.9)	43 (29.0)	30 (21.8)
medium importance	35 (12.4)	14 (4.9)	15 (10.4)	7 (5.2)	15 (10.2)	13 (9.7)
unimportant	42 (14.8)	14 (5.1)	17 (12.0)	4 (2.9)	14 (9.5)	3 (2.4)
very unimportant	6 (2.0)	5 (1.8)	5 3.3	2 (1.6)	5 (3.4)	2 (1.6)

Table 8. Importance of fear of RBT, crash (hurt someone else), crash (hurt self) and moral wrongdoing in decision not to drive after drinking.

	amount of RBT that you see	advertising	total
decreasing	65 (98.4) (31.7)	1 (1.6) (6.6)	66 (29.9)
increasing	78 (85.8) (37.9)	13 (14.2) (80.8)	90 (40.9)
staying the same	62 (96.9) (30.5)	2 (3.1) (12.6)	64 (29.2)

Table 9. Frequencies and percentage (row & column %) showing relationship between perception of the amount of RBT being done by the police each year and the self-reported basis for this perception.

The relationship between exposure to RBT and the perceived risk of apprehension was investigated. First, the relationship between the direct experience of RBT and the perception of possibility of avoidance were examined. It was found that there did not seem to be a relationship between experience of RBT and perceived ability to avoid RBT, see Table 10 below. The perception of the possibility for avoiding RBT was similar, whether one had been RBTd (81.8%) or not RBTd (80.5%).

	can avoid RBT	cannot avoid RBT
Have been RBTd	37 (18.2)	167 (81.8)
Have not been RBTd	16 (19.5)	66 (80.5)

Table 10. Frequency and percentage (%) showing the relationship between the experience of RBT and the perception of chance of avoidance of RBT.

This finding suggests that direct experience of RBT is not necessary for deterrence. However, there are problems with this measure of experience as is does not control for the different time of RBT experience.

Direct experience of RBT also did not appear to have a direct relationship with the perception of RBT being done each year, see Table 11.

	decreasing	increasing	staying the same
RBTd	59 (25.9)	89 (44.3)	53 (26.2)
never RBTd	14 (17.5)	40 (48.9)	28 (33.6)
total	74 (26.0)	130 (45.7)	80 (28.3)

Table 11. Relationship between perception of the amount of RBT being done each year and experience of RBT, as frequencies and percentage (row %).

Of those drivers who have been RBTd, one third thought that the amount of RBT was decreasing. However, of those never RBTd, 17.5% thought that the amount of RBT was decreasing. However, as already noted, this measure of experience is potentially confounded by driving experience.

(1.2) *Moral Values Regarding Drink-driving*

Moral values regarding drink-driving were assessed. Subjects were given a scenario of a man who often drives home after drinking too much and has a serious accident while drink-driving. A classification of the man into one of the following categories was requested:- "unlucky"; "stupid"; "irresponsible"; "criminal"; or "potential murderer". Most respondents thought that the man was irresponsible or worse (76.3%), see Table 12.

unlucky	stupid	irresponsible	criminal	potential murderer	other combination
7 (2.4)	42 (14.7)	95 (33.0)	52 (18.3)	72 (25.0)	19 (6.7)

Table 12. Frequency and percentage (%) of subjects who categorise a drink-driver involved in a serious crash as unlucky, stupid, irresponsible, criminal, potential murderer.

Respondents were also asked to categorise (as before) a man who often drives home after drinking too much and is stopped for an offence and found to be over the legal limit. There was a significant gender effect (x^2=11.05, df=5, p<.05). As can be seen in Table 13, 69.9% of females and 59.9% of males classify the drink-driver as irresponsible or worse. Importantly, 26.7% of males classify the drink-driver as "stupid" compared with only 16.1% of females. The classification "unlucky" does not indicate responsibility for actions, and overall only 8.3% of respondents thought that the drink-driver was "unlucky".

There is a potential problem with this question: the hypothetical driver is a male. This may have some influence on the gender difference which was found. A hypothetical male driver was used in the original surveys as the question was designed primarily to target male drivers, who were seen as the major part of the drink-driving population.

	unlucky	stupid	irresponsible	criminal	potential murderer	other combination
male	12 (8.3)	39 (26.7)	48 (32.5)	23 (15.8)	17 (11.6)	7 (5.1)
female	8 (5.4)	23 (16.1)	50 (36.0)	17 (12.4)	30 (21.5)	12 (8.6)
total	20 (6.9)	62 (21.6)	98 (34.2)	40 (14.2)	47 (16.5)	19 (6.8)

Table 13. Frequency and percentage (%) of subjects who categorise a drink-driver caught over the legal limit as unlucky, stupid, irresponsible, criminal, potential murderer.

The possible effect of the order of these two questions was assessed by reversing the order for half of the subjects. However, there was no effect of the order of the questions (Q14, x^2=19.34, df=13, p>.05; Q15, x^2=7.83, df=12, p>.05).

(1.3) *Knowledge and perception of Drink-driving laws*

Subjects were given a number of questions which assessed their knowledge of drink-driving laws and their perceptions of those laws. The success of a drink-driving countermeasure is in part due to driver's knowledge of the number of drinks which they can consume before they exceed the legal limit.

Two-way Analysis of variance (gender by age groups) analyses were conducted for all knowledge questions [Q13-15, Q17-19, Q40-45]. There was no gender effect for knowledge of the legal limit for the average driver. All other questions (except Q19) showed significant gender effects, with a general trend that males tended to overestimate their ability to handle alcohol. However, for comparison with other surveys, the number of drinks was separated into the following categories:- 0 to 2 drinks; 3 drinks; and 4 or more drinks. This is also useful as an indication of the proportions of driver's perceptions of numbers, rather than overall averages. Chi-squared tests were then carried out as reported below.

Respondents were asked to report the number of standard drinks which the average person could consume in a one to one and a half hour period, not taken with a meal [Q29](For more detail of frequencies, refer to longitudinal analysis). The results for each type of drink are described below:-

(a) middies of beer

Of those drivers interviewed, 45.1% reported that 0-2 middies of beer could be consumed to stay below the legal limit. There was no significant gender effect (x^2=5.22, df=2, p>.05). This result also highlights the tendency to underestimate the potency of beer (Job, 1985). There was also no significant effect of age (x^2=16.51, df=12, p>.05).

(b) nips of spirits

There was significantly better estimation of the number of spirits which could be consumed to stay below the legal limit, with 66.6% of respondents reporting 0-2 nips. There was no significant gender effect (x^2=3.14, df=2, p>.05), or age effect (x^2=17.42, df=12, p>.05).

(c) glasses of wine (4oz/115ml)

Again, most drivers (61.1%) knew that 0-2 drinks could be consume in about one hour to remain under the legal limit. There was no significant gender effect (x^2=3.73, df=2, p>.05), or age effect (x^2=6.79, df=12, p>.05).

An investigation of the average person's perceptions of how the official guidelines apply to him/her personally was conducted by asking drivers to report how many standard drinks they personally could consume and stay below the legal limit [Q30] (See Longitudinal analysis for more detail of frequencies).

(a) middies of beer

There is a significant gender difference (x^2=33.68, df=2, p<.0001). There is a more conservative estimate of the perceived effects of alcohol by females, from 47.5% estimating that the average person can consume 0-2 middies to 73.9% estimating that they personally could have 0-2 middies. Perhaps this perception is due to the well-known finding that the preferred drink of females is not usually beer. Previous surveys have suggested that drinkers tend to underestimate the effects of their preferred drink (Road Safety Bureau, 1992). Males' perceptions of the number of drinks that they personally can consume is similar to their perception of the number of drinks that the average person can consume. For example, 42.7% estimate that the average person can consume 0-2 middies compared with 44.1% estimating that they personally could consume 0-2 middies to remain below the legal limit. There was no significant age effect (x^2=20.04, df=12, p>.05).

(b) nips of spirits

There is again a gender effect for the perceived number of spirits for "you" to exceed the legal limit (x^2=15.01, df=2, p<.001). Male driver's perception of the legal limit for them personally is similar to their perception of the legal limit for the average person. There was also a significant age effect (x^2=28.93, df=12, p<.05). This effect suggests that younger drivers are more likely to report a 2 drink limit for themselves (88.8%) than any other age group, in particular those drivers over the age of 30 years (67%) and even more extreme in 60-69 year olds (only 58.1%).

(c) glasses of wine

There is another significant gender effect in the perceived number of glasses of wine required remain below the legal limit (x^2=27.92, df=2, p<.0001). A similar proportion of male drivers (57.3%) report that 0-2 glasses of wine would ensure that they personally remained under the legal limit, as the average person (58.7%). However, the proportion of female driver's whose perceptions of the number of drinks required for them personally not to exceed the legal limit for 0-2 glasses of wine was 85.2%, compared with 63.5% reporting that the average person could consume this amount. There was no significant age effect (x^2=8.47, df=12, p>.05).

There is a possible explanation for these gender differences for the perceived number of drinks for the individual's consumption to stay below the legal limit. It could mean that males and females have different perceptions of to whom the "average driver" refers. That is, both groups may perceive the average driver to be a male, and also perceive that males can consume more alcohol than females while still remaining below the legal limit. Then, females will clearly show a shift in judgment from the "average male's" limit to their own.

This possibility was investigated by comparing each subject's choice of number of drinks for the average person to stay below the limit compared with themselves. Each subject's difference score was calculated by taking the difference between their estimate of number of drinks limit for the average person from the estimate of the number of drinks limit for themselves personally. A negative difference score would therefore indicate an overestimation compared with the average limit, zero score is not difference and positive score means underestimation of limit for "you" personally. A one-sample t-test on the difference scores was conducted. Each gender was examined separately.

There was no significant difference between scores for the limit for the average person compared with "you" personally for male respondents on beer (t=.56, df=131, p>.05). There was no significant difference between the personal limit for spirits and average limit, although there was a slight tendency to overestimate the personal limit (mean difference score =-.0284, t=-.60, df=117, p>.05). Again, there was no significant difference in the difference score for wine, with a slight indication of overestimation of own limit (mean difference score =-.0256, t=-.37, df=134, p>.05).

There was a significant tendency for females to underestimate the number of drinks that they could consume compared with the number of drinks that they thought that the average person could consume and remain below .05. For beer, the mean difference score was .8326, which was a significant underestimation (t=9.74, df=118, p<.001). For spirits, the mean difference score was .4306, which was a significant underestimation (t=6.11, df=115, p<.001). Again, for wine there was a significant

underestimation of the number of drinks which were the personal limit (mean difference score=.5051, t=7.28, df=122, p<.001).

An additional comparison was made by comparing the difference scores of male and female drivers. There was a significant difference in the difference scores of male and female drivers for every type of alcohol:- Beer (t=-6.75, df=245.28, p<.001); Spirits (t=-5.42, df=201,21, p<.001); and Wine (t=-5.68, df=238,94, p<.001). This finding suggests that female drivers may believe that the official legal number of drinks, which has been widely advertised to target the male driving population, applies only to male drivers. Female drivers could also be less confident in their driving ability under the influence of alcohol than male drivers.

Respondents were also asked for their perceptions of the number of drinks that the average person could consume and still be "safe" to drive [Q12].

(a) middies of beer

There was a significant gender effect (x^2=22.65, df=2, p<.0001). About 30% of males thought that 0-2 middies could be consumed, 30% said 3 middies and 30% said 4 or more middies. Only 12.5% of females reported that 4 or more middies would be a safe amount, while 30% reported 3 middies and over half (55.7%) suggested 0-2 was safe.

(b) Nips of Spirits

Again, there was a significant gender effect, with females (76.1%) reporting a conservative estimate (0-2 nips) which corresponded with the legal limit (x^2=15.38, df=2, p<.001).

(c) Glasses of Wine

There was a significant gender effect (x^2=9.28, df=2, p<.01). Almost 70% of female drivers reported a "safe" limit which was the same as the legal limit (0-2 glasses). Slightly less than half of the male respondents reported a "safe" limit which exceeded the legal limit.

Perceptions of the number of drinks "you"" personally could drink and be safe to drive was also investigated.

(a) middies of beer

There was a significant gender effect (x^2=17.64, df=2, p<.001). A higher proportion of males (56.5%) than females (31.8%) thought that 3 or more drinks were a "safe" limit. There was a slight shift for males' reported "safe" limit from "average person" to "you" personally. That is, while 32.1% of the male respondents reported a 3 middy "safe" limit for the average person, only 22.5% reported a 3 drink "safe" limit for themselves. However, the proportion of male drivers who thought that the "safe" limit for the average person was 4 or more drinks (34.5%) remained the same for themselves personally (34.0%).

(b) Nips of Spirits

There was a significant gender effect (x^2=12.29, df=2, 0<.01). About 76% of female respondents thought that the "safe" limit for them was 0-2 nips of spirits whereas only 56.6% of males reported a 0-2 nips limit. It is interesting that the proportion of male respondent's perceptions of s "safe" limit for the average person and themselves does not appear to change for nips but does for beer. Perhaps this is due to the overestimation of the potency of spirits compared with beer.

(c) Glasses of Wine

There was a significant gender effect (x^2=30.26, df=2, p<.0001). Female drivers reported a more conservative limit as 81.2% set 0-2 drinks limit, compared with 50.3% of males. Male respondents tended not to vary in the frequency of estimates for "safe" limits for the average person and themselves. However, female drivers showed a slight shift in that 70% reported a 0-2 drink "safe" limit for the average driver compared with 81.2% who reported a 0-2 drink "safe" limit for themselves. The proportion of females who reported a "safe" limit for the average driver of 4 or more drinks (12.8%) did not differ dramatically from the personal "safe" limit (11.9%).

A further comparison of the difference between each individual's perceived "safe" limit for the average person and the perceived "safe" limit for themselves personally was conducted (The same analysis that was carried out for the estimated number of drinks for the legal limit for the average person and "you").

Males showed a slight tendency to overestimate the "safe" beer limit which applied to themselves personally compared with the "safe" limit for the average person, although it was not significant (mean difference score =-.0582, t=-.37, df=134, p>.05). There was a slight tendency to underestimate the number of spirits, which was not significant (mean difference score=.0312, df=117, p>.05). The estimation of the number of glasses of wine which could be consumed for the average drivers "safe" limit was slightly less than the personal "safe" limit (mean difference score =-.0397, t=-.47, df=113, p>.05).

Females showed a significant underestimation of the number of drinks which they personally could consume and be "safe" to drive compared with the number of drinks the average driver could consume and be "safe", for all types of drinks:- Beer (mean difference score=.6638, t=7.00, df=116, p<.001); Spirits (mean difference score=.3610, t=4.55, df=117, p<.001); and Wine (mean difference score=.5305, t=5.92, df=125, p<.001).

A comparison of the difference scores (for "safe" limit for average person compared with "you" personally) for male and female drivers was conducted. There was a

significant difference in difference scores for each type of alcohol:- Beer ($t=-3.97$, $df=217.79$, $p<.001$); Spirits ($t=-2.53$, $df=219.63$, $p<.05$); and Wine ($t=-4.64$, $df=238.08$, $p<.001$). This finding is very interesting as it suggests that female drivers assume that the "average driver" is more capable of driving under the influence of alcohol than they are, namely, it would seem that the "average driver" is seen as a male. Further, male drivers, it appears, generally believe that the "average driver" refers to a male. Clearly, further investigation into these perceptions is needed. If it is assumed that most drivers think of the average driver as being male, then an important question is what sort of physical stature is this "average driver"? How often does he drink and can he hold his liquor as well as many males think that they can? Addressing these sort of questions would be of considerable importance for future educational programmes.

(1.4) *Optimism Bias*

An assessment of perceptions of driving ability was conducted. It was found that on average, the driving population rates itself as better than the "average" driver, see Figure 1. Job (1990),found that overconfidence increased with age. There was no significant correlation for age and general overconfidence in driving ability ($r=.0221$, $N=288$, $p>.05$) found for 1993. This could mean that attitudes in older drivers have changed such that there is slightly less confidence in driving ability, or that younger drivers have become as confident as older drivers. Comparison of means for the present sample versus the earlier samples suggests that the main difference lies in reduced optimism in the older males.

To examine perceptions of the effects of alcohol on driving, subjects were asked whether alcohol affected their driving ability greater of less than the average driver, see Figure 2. There was a significant gender effect for this question, with males showing greater confidence in their driving ability under the influence of alcohol than females ($F=28.76$, $df=1,232$, $p<.01$). There was also a small but significant correlation between age and perceived effect of alcohol ($r=-.1379$, $p<.05$). These results suggest that driver overconfidence under the influence of alcohol increases with age, as observed by Job (1990).

This survey also explored driver's perceptions of the chance of an accident at the legal limit. Drivers reported that the chance of an accident was the slightly increased for the average person driving at the legal limit, see Table 14. There was a significant age effect , as shown in Figure 3 ($x^2=37.18$, $df=24$, $p<.05$).

When the point of reference was shifted from the "average" driver's chance of an accident at the legal limit to the individual ("you"), a significant gender effect was

found (x^2=16.998, df=4, p<.01). Males show greater confidence in their driving ability under the influence of alcohol than females. There is also a significant age effect (x^2=38.01, df=24, p<.05), see Figure 4.

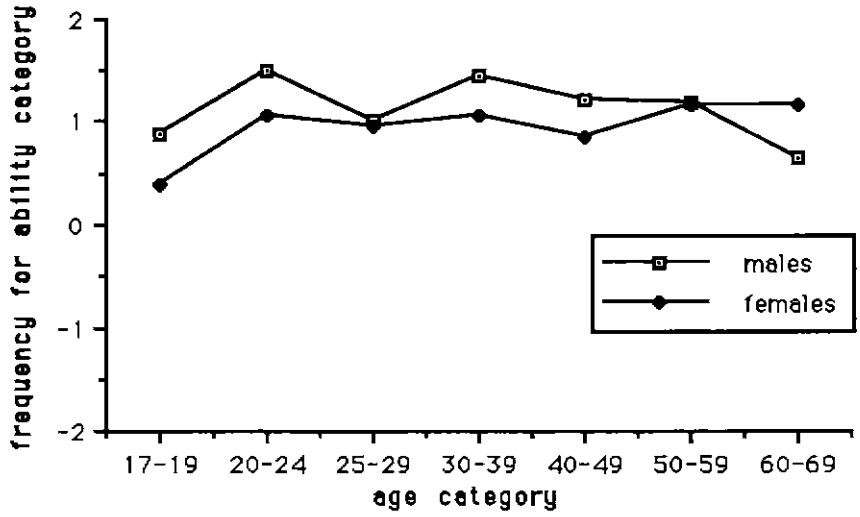

Figure 1. Mean rating for driving ability, across gender. The ratings were:- much better than the average (+3); better than the average (+2); slightly better than average (+1); average (0); slightly worse than average (-1); worse than average (-2); and much worse than average (-3).

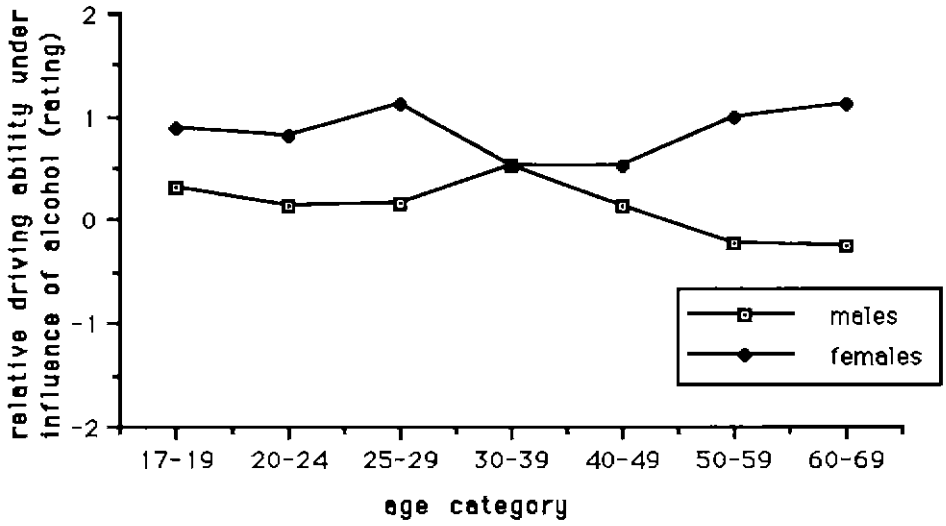

Figure 2. Mean rating for the effects of alcohol on driving ability compared with most drivers, across gender. The ratings (alcohol affects your driving ability..) included:- much more than most drivers (+2); more than most drivers (+!) the same as most drivers (0); slightly less than most drivers (-1); much less than most drivers (-2).

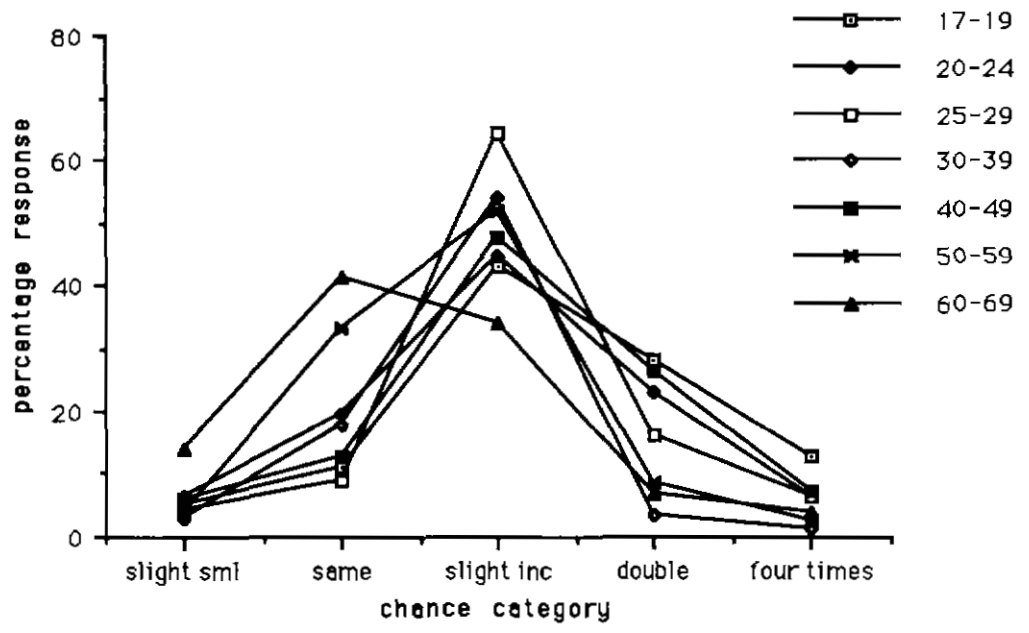

Figure 3. Percentage of frequency of respondents' reported chances of the average driver having an accident at the legal limit, across age.

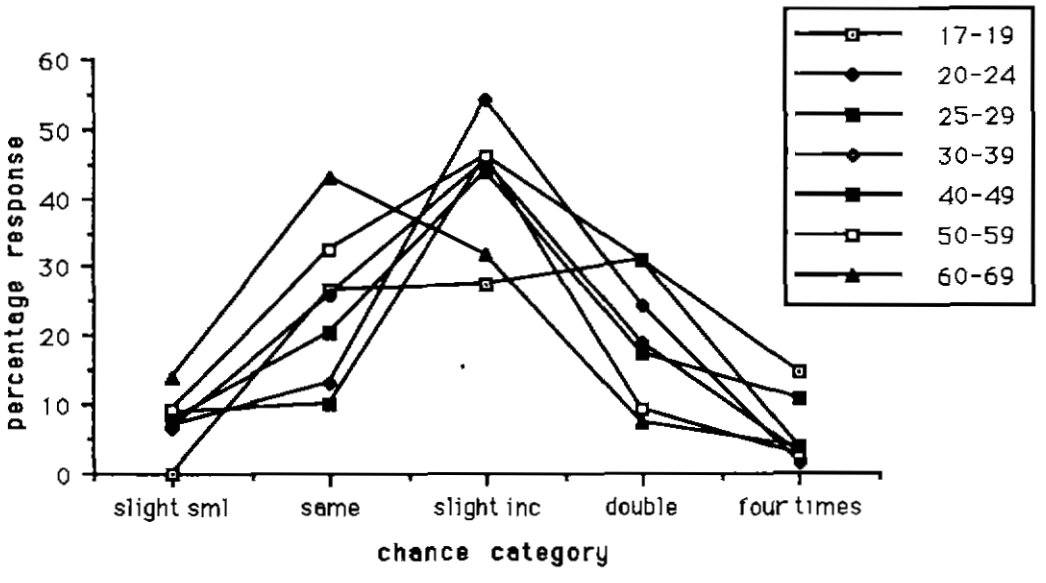

Figure 4. Percentage of frequency of respondents' reported chances of "you" personally having an accident at the legal limit, across age.

age group	slightly smaller chance	same chance	slightly increased chance	double chance	four times chance
(17-19)	1 (6.3)	2 (4.0)	9 (6.3)	6 (10.4)	3 (18.7)
(20-24)	2 (12.4)	6 (10.4)	14 (9.7)	7 (12.5)	2 (14.3)
(25-29)	1 (8.3)	3 (4.6)	19 (13.8)	5 (8.6)	2 (13.7)
(30-39)	2 (13.7)	13 (22.1)	38 (27.2)	17 (29.8)	1 (6.3)
(40-49)	4 (22.8)	8 (13.4)	29 (20.7)	16 (28.7)	4 (31.4)
(50-59)	2 (9.5)	13 (22.4)	21 (14.8)	3 (6.1)	1 (7.2)
(60-69)	4 (27.0)	13 (22.4)	10 (7.5)	2 (3.9)	1 (8.3)
total	16 (5.7)	57 (20.3)	139 (49.5)	56 (19.7)	14 (4.9)

Table 14. Frequency and percentage (column%) of drivers who reported their personal chances of having an accident at the legal limit, across age.

Therefore, in summary most drivers reported that they were better than the average driver. However, males were more likely to report that alcohol affected their driving ability less than the average driver. This overconfidence also increased with age. Younger drivers reported that the average person would have a higher chance of having an accident at the legal limit. There was a gender effect when the emphasis was changed to the individual's chance of having an accident. Males show more optimism about their chance of an accident than females. younger female drivers showed less optimism with chances of having and accident when at the legal alcohol limit.

(1.5) *The Drinking and Drink-Driving Social Environment*

An examination of perceptions of the social pressures and norms in the drinking and drink-driving environment was conducted. Respondents were given a series of attitude statements upon which they were asked to agree or disagree (on a five point scale).

The general drinking environment was explored. One of the attitude statements was that there is a social pressure to drink alcohol when I'm out socialising. Over half of the respondents disagreed, indicating that there was not a social pressure to drink alcohol. However, 39.2% of drivers did experience a pressure to drink alcohol when socialising. Respondents were also asked to agree or disagree that there is no social pressure to drink alcohol when in a shout. Of the male respondents 50.6% felt that there was a social pressure to drink alcohol when in a shout. There was a significant gender effect (x^2=10.88, p<.05). Most respondents (80.9%) did not feel that there was a social pressure to drink alcohol at work meetings. This set of attitude responses suggested that the Australian social climate is one which emphasises the consumption of alcohol as an expected practice at social events (Henderson, 1972).

It is therefore useful to consider this social pressure in the context of RBT. Studies conducted prior to RBT suggested that driving after drinking was commonly a direct social pressure which was considered normal behaviour (eg Freedman et al., 1973). It is possible that the introduction of RBT has enabled drinkers to maintain social status without the need to drink and drive. Subjects were asked if most people they drank with would accept RBT as a reason for not drinking as much. Overall, 86.5% of respondents agreed that RBT was an acceptable reason for not drinking as much. However, there was a significant age effect (x^2=39.07, df=24, p<.05). This finding suggested that RBT is not always accepted as a reason for not drinking as much among 17 to 19 year old drivers. Of the younger drivers who were interviewed, 36.0% thought that the people they drank with would *not* accept RBT as a reason for not drinking as much.

The perception of social approval/disapproval of drinking and driving was also evaluated. To determine the perception of their friend's moral judgements, respondents were asked what their friends would be most likely to do if they drank too much and planned to drive. Over half of the drivers interviewed declared that their friends would stop them from driving. Overall, 88.5% of respondents reported that their friends would show disapproval towards drinking and driving.

These results were consistent with responses to the question of whether individuals agreed/disagreed that they actively discouraged their friends from driving if they were over the legal limit. This statement yielded a 91.3% agreement by drivers. It is important to note that this question may have indicated the most socially desirable answer. However, an emphasis on the value of appearing to be responsible is in itself an important indication of current attitudes to drink-driving.

(1.6) *Attitudes towards RBT*

An overwhelming majority, 99.7% of respondents agreed that RBT should continue in NSW, with only one person disapproving of RBT.

Respondents were asked if they thought that RBT is too tough on drivers. There was a significant gender effect (x^2=14.86, df=4, p<.01), see Table 15. More females (97.4%) thought that RBT was *not* too tough on drivers than did males (87.5%).

	strongly agree	agree	undecided	disagree	strongly disagree
males	1 (1.0)	10 (6.6)	7 (4.9)	104 (71.1)	24 (16.4)
females	0 (0.0)	4 (2.6)	0 (0.0)	97 (69.5)	39 (27.9)

Table 15. Frequency and percentage (row %) of drivers who agree/disagree that RBT is too tough on drivers.

Respondents were also asked if they thought that putting a RBT unit outside clubs and hotels was too tough. There was a significant gender effect which suggested that males were more likely to believe that this measure would be too tough (x^2=12.35, df=4, p<.05), see Table 16. Nonetheless, a large majority felt that such a measure was not too tough. Given this level of community support, such a countermeasure could be considered.

	strongly agree	agree	undecided	disagree	strongly disagree
males	8 (5.3)	28 (19.0)	8 (5.6)	80 (54.7)	23 (15.5)
females	2 (1.2)	13 (9.5)	5 (3.3)	86 (61.3)	34 (24.6)

Table 16. Frequency and percentage (%) of respondents who agreed/disagreed that the idea of putting a RBT unit outside clubs and hotels is too tough.

Finally, most people interviewed disagreed that RBT was designed more for revenue-making than as a road safety measure, as shown in Table 17.

strongly agree	agree	undecided	disagree	strongly disagree
5 (1.7)	20 (7.2)	25 (8.9)	210 (73.6)	25 (8.6)

Table 17. Frequency and percentage (%) of respondents who agree/disagree that RBT is designed more for revenue-making than as a road safety measure.

This indicates continued high levels of approval of RBT.

(1.7) *The Decision-making Process*

To examine the factors which contribute to the decision to drive after consuming alcohol, respondents were asked to state how they would determine whether they were safe to drive. The majority of subjects (53.9%) counted their drinks and the time over which they were consumed. This is an indication of responsible drink-driving behaviour. Other responses which showed less knowledge were to decide that you are unsafe to drive if you cannot walk or talk normally (11.4%) or if you are feeling sluggish/tired or dizzy (29.6%).

Table 18. Frequency and percentage (%) of ratings of importance of length of journey, amount of traffic on the road, familiarity of route and type of roads to be used, on the decision-making process.

	length of journey	amount of traffic on road	familiarity of route	type of road to be used
very important	124 (45.4)	101 (37.1)	38 (13.8)	44 (16.1)
important	85 (31.0)	85 (31.1)	92 (33.8)	98 (36.2)
medium importance	14 (5.0)	24 (8.7)	50 (18.4)	39 (14.4)
unimportant	41 (15.1)	54 (19.7)	79 (28.8)	75 (27.8)
very unimportant	10 (3.5)	10 (3.5)	14 (5.2)	15 (5.4)

Table 19. Frequencies and percentage (%) of respondents' importance ratings for the location of RBT stations in the decision to drive after drinking.

	(17-19)	(20-24)	(25-29)	(30-39)	(40-49)	(50-59)	(60-69)
very important	7 (10.9)	9 (13.7)	9 (13.9)	13 (20.3)	15 (23.7)	7 (11.0)	4 (6.5)
important	6 (9.9)	10 (16.4)	6 (10.8)	15 (24.5)	10 (17.3)	3 (5.1)	9 (15.9)
medium importance	2 (7.7)	3 (11.1)	1 (2.2)	6 (22.5)	5 (17.8)	10 (38.7)	0 (0.0)
unimportant	3 (3.6)	8 (8.5)	10 (10.7)	25 (27.4)	22 (23.4)	13 (14.0)	11 (12.4)
very unimportant	2 (6.8)	1 (4.5)	3 (13.9)	7 (31.0)	7 (28.8)	0 (0.0)	0 (0.0)

The importance of the characteristics of the journey itself to the decision to drive after drinking (when may be over or near the legal limit) were also assessed, see Table 18. Respondents were asked to report how important the length of the journey would be in this decision-making process. The majority of subjects thought that the length of the journey to be travelled was important/very important (76.4%). This is an interesting finding as responses indicate that people generally think that a shorter journey involves less risk of apprehension, and possibly of crashing, than a longer journey. Indeed, this finding is consistent with data collected from the in-depth interviews in which drivers reported that they would "take the risk" if they only had to drive less than half an hour to reach home.

The amount of traffic on the road was also considered to be an important factor in the decision to drive after drinking for 68.2% of respondents. This finding is consistent with the notion that RBT can be avoided by taking "back streets" rather than main roads.

The familiarity of the journey (travelled that particular route many times before) was rated as important by 47.6% of respondents. This is clearly not seen as important to half of the respondents and in fact 34% of respondents felt that the familiarity of the journey was an unimportant factor in the decision-making process.

The type of roads to be used (eg main , secondary, dirt) was an important factor to 52.3% of respondents, while over 30% reported that this would be an unimportant factor in a making their decision whether or not to drive after drinking.

Subjects were asked to imagine that they knew where the RBT stations were. They were then asked, how important would this knowledge be in their decision to drive after drinking. There was a significant age effect (x^2=37.86, df=24, p<.05) such that the 65.3% of the youngest age group (17 to 19 years) rated this factor as important or very important as a factor in their decision-making process, see Table 19. Further, 61.1% of the 20 to 24 year olds also considered this to be an important factor. This finding suggests that younger drivers are more likely to take RBT into consideration, which could be a product of higher exposure than other age groups, due to direct police activity.

(1.8) *Self-Reported Drink-driving Behaviour*

Subjects were asked several questions to attempt to gain insight into drink-driving behaviour. First, respondents were asked how often they consumed alcohol prior to driving [Q7]. A large proportion of subjects reported that they never drink before driving (40.6%).

Respondents were also asked if they had driven when they had "had too much to drink" over the last 12 months [Q8]. There was a significant gender effect (x^2=7.747, df=1,p<.01), such that a higher proportion of males (20.8%) reported driving after they had consumed too much alcohol than females (8.4%). There was also a significant age effect (x^2=16.43, df=6, p<.05). The respondents from the 17 to 19 years and 40 to 49 years age groups reported driving after they had consumed "too much" alcohol more frequently than any other age group.

A further question to assess self-reported drink-driving behaviour was to ask respondents to report how often they had consumed more than their (self-assessed) "safe" BAC limit [Q11]. Surprisingly, there was not a significant gender effect (x^2=13.78, df=7, p=.0552). The majority of drivers interviewed answered that they had never exceeded their self-assessed "safe" BAC limit in the last 12 months (73.6%). There was no significant age effect (x^2=41.73, df=42, p>.05).

Subjects were asked to report whether they had ever driven when they might have been near or over the limit and not been Random Breath Tested. There was a significant gender effect such that there was a higher frequency of males (36.5%) who reported this behaviour than females (24.3%), see Table 20. This finding is of concern in that according to the deterrence model, drivers must have a high perception of the risk of apprehension, yet on average, one third of drivers have reported drink-driving and not encountered legal sanctions.

	males	females
yes	53 (61.7)	33 (38.3)
no	92 (47.4)	102 (52.6)

Table 20. Frequency and percentage (%) of respondents who report driving near/over limit and not Random Breath Tested.

Those respondents who reported that they had driven when they might be near or over the limit were asked how they felt about their behaviour. Almost one third of respondents felt "lucky". Over a third reported that they "didn't give it any thought". In effect, 10% of the entire sample interviewed report that they have driven near/over the legal limit and have not given it any thought. A further 35.9% of respondents felt "nervous" of "guilty" about their behaviour (See Table 21).

lucky	clever	didn't give it any thought	nervous	guilty
23 (27.7)	1 (1.2)	29 (35.2)	18 (21.5)	12 (14.4)

Table 21. Reported feeling of respondents who drove near/over the limit and were not RBTd, as frequency and percentage (%).

Those respondents who felt nervous or guilty were asked what they felt nervous/guilty about. Over 50% reported that they felt nervous/guilty because they might have been caught by the police, see Table 22.

Breaking the law	Could have been caught by the police	Could have killed somebody	Could have caused an accident	Other
3 (9.8)	19 (55.4)	1 (2.7)	4 (12.5)	7 (19.6)

Table 22. Self-reported reasons for feeling nervous/guilty about driving when near/over the legal limit and not RBTd, as frequency and percentage (%).

This finding suggests that those drivers who report drink-driving are more likely to be concerned about being involved in an accident or law-breaking.

(1.9) *Factors which predict self-reported drink-driving behaviour*

A factor analysis on the attitude statements was conducted and four factors were identified. They were:-

- ATT1 - Approval/Support for RBT
- ATT2 - Social Pressure
- ATT3 - Alcohol Effect
- ATT4 - Likelihood of being booked

Multiple (stepwise) regressions were conducted, and several factors were entered into the equation. First, the reported incidence of drinking prior to driving was predicted most strongly by the knowledge of the average number of drinks that the average person could consume and remain below the legal limit. That is, a high estimation of the number of drinks to be consumed is a predictor of reported drink-driving.

The second most weighted predictor of drink-driving behaviour is approval or support for RBT. The greater the disapproval of RBT, the more likely it is that drink-driving behaviour will be reported. The perceived likelihood of being caught drink-driving is a predictor of drink-driving. The lower the perceived probability of being caught, the increased likelihood of drink-driving.

The final factor which emerged was the perceived alcohol effect. The less the alcohol effect is perceived, the increased tendency to drink and drive.

Another regression was conducted using the dependent variable of frequency of driving when have exceeded the self-assessed "safe" limit for driving, in the last 12 months. The predictor of drink driving was the number of drinks perceived to be to be safe to drive.

(1.10) *Knowledge of Penalties*

Only 7.9% of respondents reported that they did not know the penalties for being caught drink-driving. This suggests that an overwhelming percentage of drivers think that they know what the penalties for being caught drink-driving. According to deterrence theory, this is essential for an effective deterrent effect. The was no significant gender effect (x^2=13.46, df=8, p>.05). There was, however, a significant age effect (x^2=73.30, df=48, p<.05).

Only about one third of respondents thought that imprisonment was a penalty for drink-driving offences. Over two thirds of drivers interviewed reported that there was fine or suspension for drink-driving offences.

It is important to obtain some indication of the severity of the maximum penalties which most drivers estimate. For estimated fine ($), a MANOVA analysis identified a significant age by gender interaction effect (F=2.26, df=6,180, p<.05). The Figure 5 below suggests that as age increases for males there is a tendency for the estimated fine to decline. However, for female drivers, the reverse trend appears to be occurring.

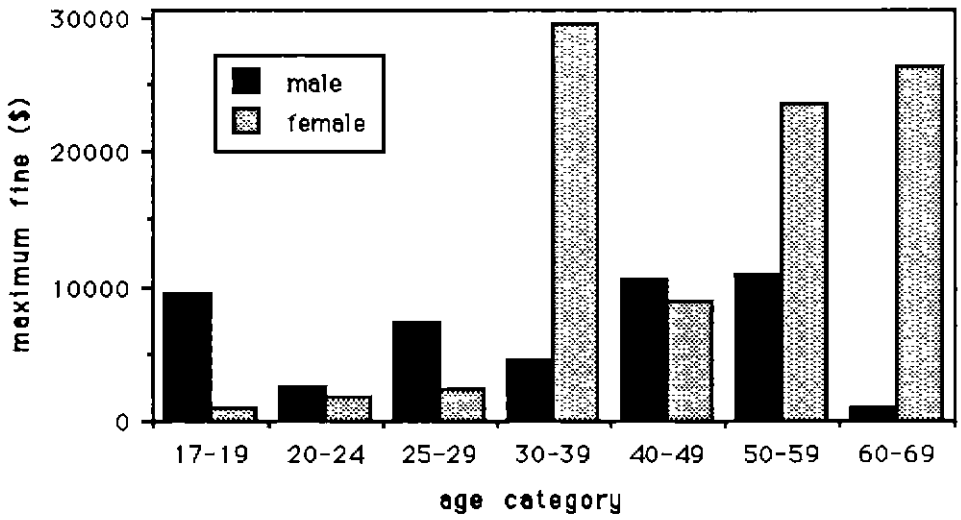

Figure 5. Mean Maximum Fine ($) penalty for drink-driving offence, across age and gender.

The suspension penalty yielded a gender effect which was very close to significance (F=3.78, df=1,178,p=.054) and a significant age effect (F=2.31, df=6,178, p<.05), see Figure 6. Male respondents generally tended to give lower estimates of the maximum suspension penalty than female respondents. It is interesting to note that the groups which reported the least number of months were 20-24 and 60-69 year old males.

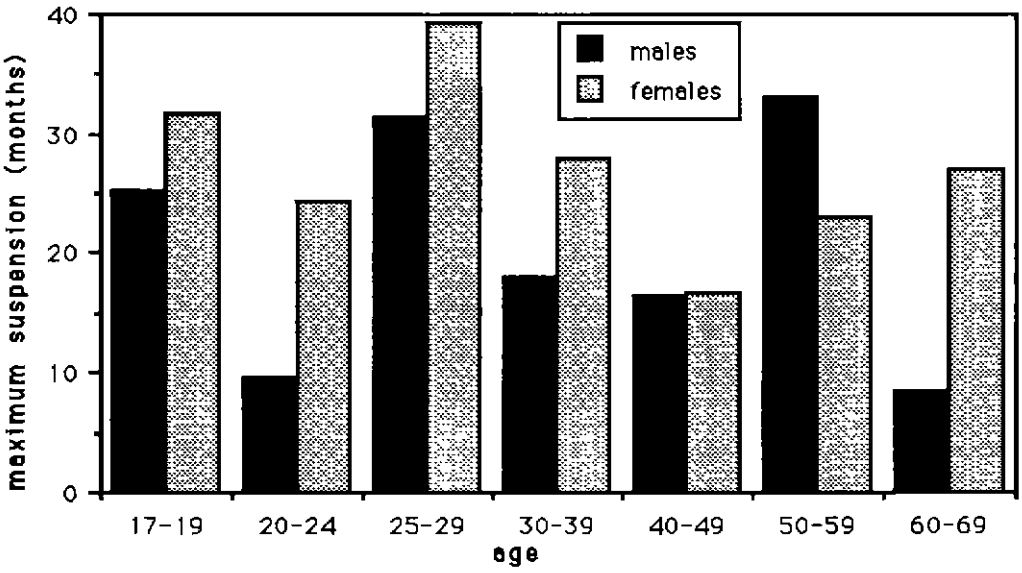

Figure 6. Mean Maximum Suspension (months) penalty for drink-driving offence, across age and gender.

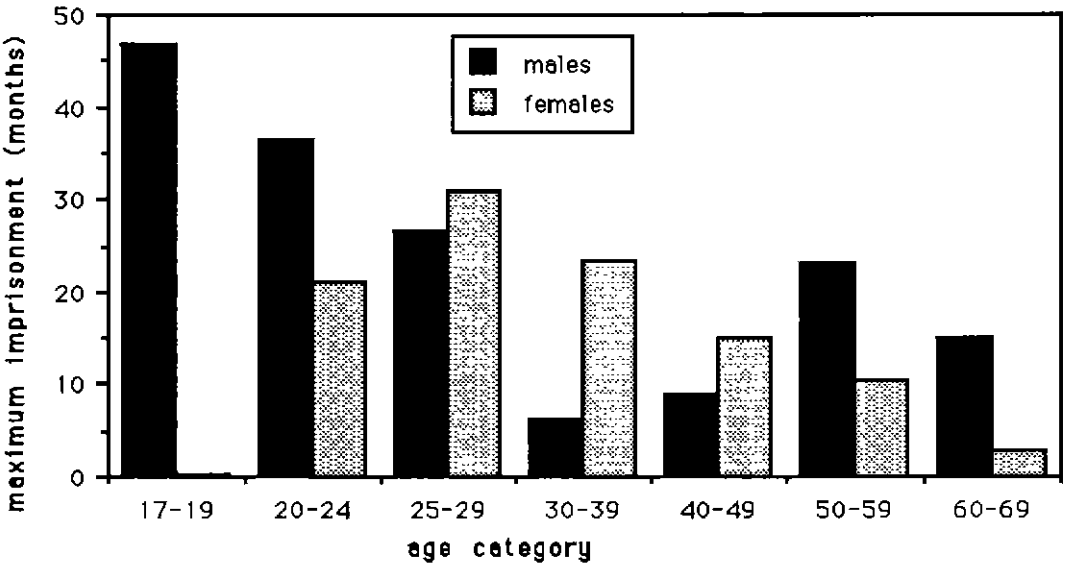

Figure 7. Mean Maximum Imprisonment (months) penalty for drink-driving offence, across age and gender.

Finally, for the imprisonment penalty, there was no significant gender effect ($F=0.352$, $df=1,65$, $p>.05$) and no significant age effect ($F=0.683$, $df=6,65$, $p>.05$). The minimum estimation was for the (17-19) year old females but this was the estimation for one respondent only.

(2) Longitudinal Study

The longitudinal study investigated the possible effects of RBT on deterrence, attitudes, morals, knowledge and social environments. Nonparametric analysis (using the Kolmogorov-Smirnov test) was employed for all comparisons of responses from previous years to the current study. The longitudinal analysis will only include data from the Sydney sample.

(2.1) *Deterrence of Drink-driving by RBT*

An important indicator of the deterrence effectiveness of RBT is the perception of risk of apprehension. According to the Deterrence Model of RBT, the individual's assessment of the threat of legal sanctions is primarily based on the perceptions of the likelihood of being caught by the police. There has been a significant decrease in the perception of the driver's ability to avoid being Random Breath Tested when driving after drinking alcohol since the introduction of RBT, see Table 23. The study conducted in 1983 found that, at least one third of respondents believed that there was something that they could do to reduce their chances of being caught by RBT. However, by 1993, this perception had decreased significantly to 18% of respondents believing that they could do something to reduce their chances of being caught.

It is important to note that major change in the proportion of casualty accidents in back streets was reported by McLean and Holubowycz (1987) after the introduction of RBT in South Australia. On weekends, the proportion of accidents late at night which occurred on back streets increased from 23 to 31 % after the introduction of RBT. Late night single vehicle crashes during the week also increased from 30 to 46 %. Indeed, this problem was also recognised in NSW after the introduction of RBT. Job (1985) found that people thought that they could avoid RBT via back streets. Mobile RBT was added, with an accompanying television campaign. Another possible side effect of the introduction of RBT is a change in the proportion of female drivers (Holubowycz, 1989; McLean and Holubowycz, 1986). When a car is occupied by a male and female in the front seat of a car, the driver is likely to be female if it is late at night or early in the evening. This potential side-effect of RBT could be examined in NSW.

Table 23. Deterrence perception: frequency of drivers who report that they can avoid RBT, over surveys.

category		1983		1984		1987		1993	
can avoid RBT	M	177		148				31	
	F	149		112				21	
	TOT	326	(33.0)	260	(26.8)	110	(22.0)	52	(18.4)
cannot avoid RBT	M	304		352				114	
	F	358		359				117	
	TOT	662	(67.0)	711	(73.2)	392	(78.0)	231	(81.6)
N=		988		971		502		283	
Significance (vs 1993) x^2		p<.001		p<.05		p>.05			

(2.2) *Moral Values Regarding Drink-driving*

One of the indications of social sanctions against drink-driving is the moral values related to drink-driving. Kolmogorov-Smirnov tests which compared each of the listed years with the results of the current study yielded significant differences in categorisation of the drink-driver who was involved in a serious crash. As shown in Table 24, there has been a steady increase in the number of drivers who view a drink-driver involved in a serious crash as "a potential murderer". In 1982 (pre-RBT), 19.5% of respondents labelled the drink-driver as a potential murderer, and by 1993, this figure had increased to 26.8% This suggests that drink-driving and being involved in a serious crash is more likely to be viewed as morally wrong since the introduction of RBT. There has also been a decrease in the proportion of people who would classify a drink-driver as "unlucky". This is an important indicator of perceived responsibility for an event, and does not suggest social undesirability. The "unlucky" category, unlike the other categories, does not suggest blame or that the event has anything to do with the personal aspects of the driver, merely something over which the driver has no control, a chance event. This change over time therefore implies a shift to blame of the individual. These data are not consistent with findings of DeJoy and associates that driving while intoxicated may not be sufficient to produce a responsibility attribution.

Further, respondents were also given a similar scenario but this time the drink-driver was simply caught driving over the legal limit. Since pre-RBT and early RBT years, there has been a significant difference in the categorisation of this drink-driver, see Table 25. There has been a trend towards classification of the drink-driver who is caught, to "criminal" or "potential murderer". There has again been a significant shift in the frequency of respondents who consider the drink-driver to be "unlucky". This finding is again indicative of the shift in responsibility to the individual. According to DeJoy's attributional account of drink-driving, minor events represent less of a threat and they do not need to be perceived as controllable. Therefore, these minor events are assigned less responsibility. The current data possibly suggest therefore, that NSW drivers tend to regard being caught drink-driving as a serious event, which is controllable.

Table 24. Frequency and percentage(%) of respondents' classifications of a drink-driver who is involved in a serious crash, over surveys.

category		1982 (pre-RBT)		1983		1984		1987		1993	
unlucky	M	64		45		34				5	
	F	20		27		23				2	
	TOT	84	(8.5)	72	(7.3)	57	(5.9)	30	(6.0)	7	(2.5)
stupid	M	86		100		99				29	
	F	63		73		82				13	
	TOT	149	(15.0)	173	(17.5)	181	(18.8)	76	(15.0)	42	(15.7)
irresponsible	M	208		178		207				46	
	F	232		230		180				49	
	TOT	440	(44.3)	408	(41.3)	387	(40.3)	206	(41.0)	95	(35.4)
criminal	M	76		71		86				29	
	F	50		62		75				23	
	TOT	126	(12.7)	133	(13.5)	161	(16.8)	56	(11.0)	52	(19.6)
potential	M	83		87		74				29	
murderer	F	111		115		101				42	
	TOT	194	(19.5)	202	(20.4)	175	(18.2)	131	(26.0)	72	(26.8)
N=		993		988		961		502		268	
Significance (Vs 1993) x^2		p<.001		p<.01		p<.01		p<.05			

Table 25. Frequency and percentage(%) of respondents' classifications of a drink-driver who is caught drink-driving, over surveys.

category		1982 (pre RBT)	1983	1984	1987	1993
unlucky	M	116	63	73		12
	F	54	57	45		8
	TOT	170 (17.1)	120 (12.3)	118 (12.2)	(11.1)	20 (7.4)
stupid	M	99	125	109		39
	F	102	111	99		23
	TOT	201 (20.2)	236 (24.1)	208 (21.4)	(21.0)	62 (23.1)
irresponsible	M	189	181	199		48
	F	227	222	212		50
	TOT	416 (41.9)	403 (41.2)	411 (42.3)	(45.0)	98 (36.7)
criminal	M	52	50	72	(7.0)	23
	F	33	46	47		17
	TOT	85 (8.6)	96 (9.8)	119 (12.3)		41 (15.2)
potential murderer	M	61	51	47	(16.0)	17
	F	60	71	68		30
	TOT	121 (12.2)	122 (12.5)	115 (11.8)		47 (17.7)
N=		993	977	971	502	268
Significance (Vs 1993) x^2		p<.01	p<.05	p<.05	p<.05	

(2.3) *Knowledge of Drink-driving Laws*

A direct test of the knowledge of drink-driving rules was to ask respondents to provide an estimate of the number of drinks which could be consumed by the average person in a 1 to 1 and $^1/_2$ hour period, not taken with a meal, to remain below the legal limit, see Table 26. The question was divided into three parts to correspond with middies of beer, nips of spirits and glasses of wine.

(a) Middies of Beer

Kolmogorov-Smirnov tests revealed that there was a significant decline in the perception of the number of middies of beer which could be consumed to remain below the legal limit since pre-RBT and early RBT years. In 1982, only 22.6% of drivers estimated that the average person could drink 0 to 2 drinks and remain under the legal limit, compared with 45% in 1993. There is an important reason for the inaccuracy found in early years, possibly until 1992. The original campaign proposed

that three drinks in the first hour and one every hour after that may put you over the [legal] limit. This slogan clearly mislead the public, as pointed out by Job (1985), as most people believed that three drinks in the hour could be safely consumed before driving. It was not until 1992 that a campaign was launched which attempted to correct the three drink limit problem. This advertising campaign has clearly increased awareness such that 45% of drivers in 1993 thought that 0 to 2 middies would keep the average person below the legal limit, compared with 35.3% in 1984.

(b) Nips of Spirits

There was a significant difference in responses for the number of nips of spirits which could be consumed before exceeding the legal limit from pre-RBT and 1983, to the 1993 survey. There is a greater knowledge of the number of nips of spirits which can be consumed in 1993, with 66.6% of drivers interviewed reporting that the limit was 0 to 2 nips.

(c) Glasses of Wine

There was again a significant decline in the number of respondents who thought that three glasses of wine would keep an average person under the legal limit from pre-RBT and early RBT years to 1993.

The results indicate that there has been an overall increase in the accuracy of the estimates of the number of drinks which can be consumed to remain below the legal limit. However, the is a tendency to underestimate the alcoholic potency of beer compared with other alcoholic beverages. This inaccuracy could in part be due to the introduction of low-alcohol beer.

In the survey of 1987 subjects were asked to comment on the number of "standard" drinks only which could be consumed, although the above surveys have clearly shown different perceptions for different types of beverage. The overall mean for the number of "standard" drinks in 1987 was 2.6. This result is also not very useful as the standard deviation is not given, nor does it indicate how many drivers were overestimating the limit.

A second set of questions pertained to respondent's perceptions of the number of drinks that they personally could consume and still remain below the legal limit, see Table 27. These questions were therefore an indication of driver's acceptance of the official guidelines.

(a) Middies of Beer

The pre-RBT and 1983 results were significantly different to 1993, with a shift to a higher frequency of respondents estimating 0 to 2 beers as the limit for them. By 1984, however, there was a large proportion of the drivers interviewed who estimated that 3 middies would keep them below the limit (63.7%) and a further 22.7% who thought that they could consume 4 or more middies and remain under .05 BAC. By

1993, the perception had changed so that over half of drivers (58.6%) interviewed thought that they could drink 0 to 2 middies and still remain under the legal limit.

(b) Nips of Spirits

There was a significant reduction in the number of drivers who estimated that they could consume 3 nips and stay under the legal limit., from over one third in 1982, 1983 and 1984, to only 14.8% in 1993. There has also been an increase in the number of drivers who reported that they could consume only 0 to 2 nips to stay below the legal limit, from 48.4% in 1982 (pre-RBT) to 66.6% in 1993. However, it appears that the proportion of drivers who think that they personally can consume four or more nips and remain below the limit has shifted back to pre-RBT levels, at 18.5% in 1993.

(c) Glasses of wine

Since the introduction of RBT, there has been a significant increase in the proportion of drivers who estimate that they can consume 0 to 2 glasses of wine, from 38.0% in 1982 to 61.1% in 1993. The proportion of drivers who estimate that they could drink 3 glasses of wine an remain under the limit has declined by half since early RBT years. However, there has been a slight increase in the proportion of drivers who believe that they can consume four glasses of wine and remain under the legal limit, from around 13% in 1983 and 1984, to 17.5% in 1993.

There appears to be an interesting trend in the report of the legal limits for the average person compared with the perceived number of drinks for "you" personally. That is, a higher proportion of respondents report that there is a 0-2 drinks limit for themselves personally than report a 0-2 limit for the average person. There is a corresponding effect such that a higher proportion of drivers reported a 3 drink limit for the average person than for themselves personally. For example, in 1983 22.6% of respondents reported that the average person could drink 0-2 middies of beer and remain under the legal limit, and 64.4% thought that the average person could consume 3 middies without exceeding the legal limit within a about a one hour period, without a meal). However, again in 1983, when subjects were asked to report the number of middies that they could consume personally, 46.6% reported that they could consume 0-2 middies and 39.5% reported that they could consume 3 middies in about one hour and stay below .05.

However, when the focus is changed from "the average person" to the interviewee personally, there is not a difference in the proportion of respondents who report 4 or more middies to remain below the legal limit. For example, in 1993, 17.4% of respondents reported that the average person could consume 4 or more middies of beer and stay below the legal limit, and 18.7% of respondents reported that they personally could consume 4 or more middies and not exceed the legal limit. It is possible that these respondents represent a proportion of the population who

consistently drink and drive. The regression analysis on the current survey (1993) supports this assertion. The reported number of drinks that the average person could consume and remain under the legal limit predicted self-reported drink-driving.

Table 26. Knowledge: Number of drinks to stay below the legal limit, for the average person, over surveys, for (a) beer, (b) spirits, and (c) wine.

(a) Middies of Beer

number of drinks		1982 (pre-RBT)		1983		1984		1993	
(0 - 2)	M	86		98		80		63	
	F	127		114		186		66	
	TOT	213	(23.7)	212	(22.6)	266	(35.3)	129	(45.0)
(3)	M	281		297		235		51	
	F	201		307		95		56	
	TOT	482	(53.6)	604	(64.4)	330	(43.8)	107	(37.5)
(4 or more)	M	122		75		133		33	
	F	83		47		25		17	
	TOT	205	(22.7)	122	(13.0)	158	(20.9)	50	(17.4)
N=		900		938		754		286	
Significance (vs 1993) x^2		p<.001		p<.001		p<.001			

(b) Nips of Spirits

number of drinks		1982 (pre-RBT)		1983		1984		1993	
(0 - 2)	M	209		209		182		91	
	F	221		277		243		100	
	TOT	430	(48.4)	486	(53.0)	425	(59.6)	191	(66.6)
(3)	M	170		173		142		24	
	F	131		148		79		19	
	TOT	301	(33.6)	321	(37.7)	221	(31.0)	43	(14.8)
(4 or more)	M	52		27		49		32	
	F	114		18		18		21	
	TOT	166	(18.1)	45	(5.3)	67	(9.4)	53	(18.5)
N=		897		852		713		297	
Significance (vs 1993) x^2		p<.001		p<.05		p>.05			

(c) Glasses of Wine

number of drinks		1982 (pre-RBT)		1983		1984		1993	
(0 - 2)	M	149		164		146		86	
	F	166		178		244		89	
	TOT	315	(38.0)	342	(38.9)	390	(49.5)	175	(61.1)
(3)	M	187		192		160		29	
	F	157		228		131		33	
	TOT	344	(41.5)	420	(47.8)	291	(37.0)	61	(21.5)
(4 or more)	M	97		64		75		32	
	F	72		53		31		18	
	TOT	169	(20.4)	117	(13.3)	106	(13.5)	50	(17.5)
N=		828		879		787		286	
Significance (vs 1993) X^2		p<.001		p<.001		p<.01			

Table 27. Perception of Legal Limit: Number of drinks to stay below the legal limit for YOU personally, over surveys.

(a) Middies of Beer

number of drinks		1982 (pre-RBT)		1983		1984		1993	
(0 - 2)	M	110		138		48		65	
	F	195		251		68		103	
	TOT	305	(43.1)	389	(46.6)	116	(13.6)	168	(58.6)
(3)	M	213		221		313		52	
	F	80		109		232		13	
	TOT	293	(36.0)	330	(39.5)	545	(63.7)	65	(22.7)
(4 or more)	M	147		95		109		30	
	F	69		21		86		24	
	TOT	216	(20.9)	116	(13.9)	195	(22.7)	54	(18.7)
N=		814		835		856		287	
Significance (vs 1993) X^2		p<.001		p<.05		p<.001			

(b) Nips of Spirits

number of drinks		1982 (pre-RBT)		1983		1984		1993	
(0 - 2)	M	208		229		163		90	
	F	235		328		175		111	
	TOT	44	(63.3)	559	(68.9)	338	(43.9)	200	(69.9)
(3)	M	123		135		200		23	
	F	72		72		162		5	
	TOT	195	(25.1)	207	(25.5)	362	(47.0)	29	(10.1)
(4 or more)	M	76		32		41		34	
	F	62		13		29		24	
	TOT	138	(11.6)	45	(5.6)	70	(9.1)	57	(2.0)
N=		776		809		770		286	
Significance (vs 1993) X^2		p>.05		p>.05		p<.001			

(c) **Glasses of Wine**

number of drinks		1982 (pre-RBT)		1983		1984		1993	
(0 - 2)	M	156		196		123		84	
	F	254		301		136		119	
	TOT	410	(54.2)	497	(56.7)	259	(31.7)	203	(70.9)
(3)	M	155		151		207		31	
	F	104		127		214		7	
	TOT	259	(32.0)	278	(31.7)	421	(51.6)	38	(13.3)
(4 or more)	M	99		68		75		32	
	F	42		33		61		13	
	TOT	141	(13.8)	101	(11.5)	136	(16.7)	45	(15.8)
N=		810		876		876		286	
Significance (vs 1993) X^2		p<.001		p<.001		p<.001			

(2.4) *Optimism Bias and Driver Overconfidence*

A measure of optimism bias was employed across surveys, see Table 28. Subjects were asked how they would rate themselves compared with the average driver. There was no significant difference in optimism bias across years. That is, the vast majority of the drivers interviewed rated themselves as average or above in each year. Over 50 % of subjects rated themselves as much better or better than average. This finding shows that the introduction of RBT has not affected the perceptions of most drivers that they are reasonably good drivers.

These results are consistent with Job's (1990) findings. He suggests that optimism bias in driving ability is displayed due to the following process. Drivers are exposed to crash rates and road tolls on all form of the media constantly. Drivers are exposed to the road over multiple trials without being harmed, analogous to procedures such as systematic desensitisation and flooding. Hence, drivers are exposed to an environment which is portrayed in the media as being dangerous, but they do not have crashes every day. This experience indicates to many people that as they have not been seriously injured or killed, they must be superior drivers compared with the "average".

Job (1990) found that driver overconfidence was prevalent in NSW drivers, and increased with age. He also found that driver overconfidence in driving ability when under the influence of alcohol persisted. Job (1990) predicted that the introduction of RBT and the alcohol education campaign which was launched in conjunction with RBT would have marked effects on this perception. That is, while most people may regard themselves as good drivers, it is possible that the RBT campaign may lead to a decrease in confidence in ability to drive when under the influence of alcohol. Job's (1990) data from 1982,1983 and 1984 did not support his prediction.

A comparison of the earlier years to the 1993 survey revealed that there was in fact a significant decline in driver confidence when under the influence of alcohol, see Table 29. There was a reduction in the proportion of drivers believing that alcohol affected their driving ability less or much less than the average from around 20% in 1982, 1983 and 1984, to only 12.3% in 1993.

Table 28. Optimism Bias: Judgement of driving ability compared with the average driver, across surveys.

category		1982 (pre-RBT)		1983		1984		1993	
much better than average	M	77		67		76		14	
	F	24		39		24		7	
	TOT	101	(10.2)	106	(10.7)	100	(10.3)	21	(7.4)
better than average	M	147		138		152		46	
	F	94		105		104		39	
	TOT	241	(24.3)	243	(24.6)	256	(26.4)	85	(29.8)
slightly better than average	F	110		104		112		35	
	M	100		109		100		41	
	TOT	210	(21.1)	213	(21.6)	212	(21.9)	75	(29.1)
average	M	176		163		154		49	
	F	244		245		232		52	
	TOT	420	(42.3)	408	(41.3)	386	(39.9)	101	(37.1)
slightly worse than average	M	7		8		6		1	
	F	10		9		8		2	
	TOT	17	(1.7)	17	(1.7)	14	(1.4)	3	(1.1)
worse than average	M	0		1		0		0	
	F	2		0		0		0	
	TOT	2	(0.2)	1	(0.1)	0	(0.0)	0	(0.0)
much worse than average	M	0		0		0		0	
	F	2		0		0		0	
	TOT	2	(0.2)	0	(0.0)	0	(0.0)	0	(0.0)
N=		993		988		968		285	
Significance (Vs 1993) x^2		p>.05		p>.05		p>.05			

Table 29. Optimism Bias: Judgement of relative effect of alcohol on driving ability, across surveys.

category		1982 (pre-RBT)		1983		1984		1993	
much more than average	M	29		33		12		12	
	F	45		49		35		30	
	TOT	74	(8.7)	82	(9.6)	47	(5.5)	41	(16.6)
slightly more than average	M	58		52		70		17	
	F	58		78		94		19	
	TOT	116	(13.6)	130	(15.2)	164	(19.2)	35	(14.2)
the same as average	M	284		252		261		83	
	F	220		211		209		60	
	TOT	504	(58.9)	463	(54.1)	470	(54.9)	142	(57.0)
slightly less than average	M	67		70		76		20	
	F	33		50		48		5	
	TOT	100	(11.7)	120	(14.0)	124	(14.5)	25	(9.9)
much less than average	M	43		39		39		6	
	F	18		22		12		0	
	TOT	61	(7.1)	61	(7.1)	51	(6.0)	6	(2.4)
N=		855		856		856		249	
Significance (Vs 1993) x^2	M	p>.05		p>.05		p>.05			
	F	p<.05		p<.05		p<.01			
	TOT	p<.05		p<.05		p<.01			

This result suggested a change, from previous findings. Job (1990) had reported a gender effect in driver overconfidence such that males show more confidence in their driving ability than females. Therefore, a further analysis was conducted on each gender separately. An interesting finding was that for males, driver overconfidence under the influence of alcohol has not changed since the introduction of RBT. Kolmogorov-Smirnov tests showed no significant differences in male overconfidence, when 1993 was compared with 1982 (x^2=.908, df=2,p>.05); 1983 (x^2=1.23, df=2, p>.05); and 1984 (x^2=1.58, df=2, p>.05).

However, there has been a significant decline in driver confidence when under the influence of alcohol for female drivers. Females reported significantly different driver confidence under the effects of alcohol 1982 compared with 1993 (x^2=8.5, df=2, p<.05); 1983 compared with 1993 (x^2=7.4, df=2, p<.05); and 1984 compared with 1993 (x^2=10.98, df=2, p<.01).

This gender effect is has great practical importance. Clearly, females' perceptions of the effects of alcohol on driving have changed since the introduction of RBT. However, the belief held by the majority of male drivers is that they can drive at least as well as average, even when under the influence of alcohol. Perhaps males believe that they are good drivers but there are also legal sanctions and nonlegal sanctions which deter them from drink driving. The possibility arises that disapproval by females has a significant effect on males, so the more disapproving attitudes of females may be important to male driving habits. Since most males are heterosexual, female opinions matter to them and may have some influence on them. Further, a lot of social drinking and driving is by single males; who desire the approval of females.

(2.5) *Friend's Approval/Disapproval of Drink-driving.*

An important indicator of people's perceptions of their peer's attitudes is a report of the probable behaviour of their friends. There was a significant decline in the proportion of drivers who reported that their friends would show approval or indifference towards them drinking and driving from pre-RBT to post-RBT years (x^2=8.51, df=2, p<.05), see Table 30. However, there has been no significant difference in reports of friend's likely behaviour across post-RBT years:- 1983 not significantly different to 1993 (x^2=2.57, df=2, p>.05); and 1984 not significantly different to 1993 (x^2=2.55, df=2, p>.05).

That is, RBT appears to have had a direct effect on perceived peer disapproval of drink-driving, which has been maintained in the post-RBT years.

Table 30. Friend's Reactions if Planned to Drink-drive, across surveys.

category		1982 (pre-RBT)		1983		1984		1993	
stop you driving	M	204		210		215		78	
	F	236		301		285		85	
	TOT	440	(47.3)	511	(51.8)	500	(51.8)	162	(57.2)
disapprove, final decision to you	M	123		132		169		34	
	F	102		105		100		27	
	TOT	225	(24.2)	237	(24.0)	269	(27.9)	61	(21.6)
be careful	M	86		70		61		16	
	F	89		66		49		11	
	TOT	175	(18.8)	136	(13.8)	110	(11.4)	27	(9.5)
neither agree nor disagree	M	53		38		37		6	
	F	30		23		16		7	
	TOT	83	(8.9)	61	(6.2)	53	(5.5)	13	(4.6)
drunk too much, too	M	46		27		16		8	
	F	14		12		14		7	
	TOT	6	(0.6)	39	(3.9)	30	(3.1)	15	(5.3)
be impressed	M	1		1		0		0	
	F	1		0		1		1	
	TOT	2	(0.2)	1	(0.1)	1	(0.1)	1	(0.4)
encourage	M	0		2		1		3	
	F	0		0		1		1	
	TOT	0	(0.0)	2	(0.2)	2	(0.2)	4	(1.4)
N=		931		987		965		283	
Significance (Vs 1993) X^2		p<.01		p>.05		p>.05			

(2.6) *Self-Reported Drink-driving Behaviour*

A test of self-reported drink-driving behaviour across survey years was conducted. The number of times in the last 12 months in which drivers reported that they had driven over their (self-assessed) "safe" BAC limit was considered. The results confirmed predictions that there would be a general decline in self-reported drink-driving behaviour. There has been a significant decline in self-reported drink-driving behaviour since pre-RBT and the survey year immediately following its introduction, 1983, and 1993, see Table 31.

Table 31. Self-reported drink-driving behaviour, across surveys.

category		1982		1983		1984		1993	
3 or more times a day	M	3		0		0		0	
	F	3		0		0		0	
	T	6	(0.6)	0	(0.0)	0	(0.0)	0	(0.0)
twice a day	M	1		0		0		0	
	F	0		1		0		0	
	T	1	(0.1)	1	(0.1)	0	(0.0)	0	(0.0)
once a day	M	4		1		0		0	
	F	1		2		0		0	
	T	5	(0.2)	3	(0.3)	0	(0.0)	0	(0.0)
nearly every day	M	4		4		0		1	
	F	0		1		0		0	
	T	4	(0.4)	5	(0.5)	0	(0.0)	1	(0.4)
3-4 times per week	M	4		3		1		1	
	F	1		2		1		0	
	T	5	(0.2)	5	(0.5)	2	(0.2)	1	(0.4)
1-2 times per week	M	27		24		5		2	
	F	4		6		3		0	
	T	31	(3.1)	30	(3.0)	8	(0.8)	2	(0.7)
2-3 times per month	M	19		17		11		5	
	F	10		8		6		0	
	T	29	(2.9)	25	(2.5)	17	(1.8)	5	(1.8)
about once a month	M	57		48		24		5	
	F	16		19		10		3	
	T	73	(7.4)	67	(6.8)	34	(3.4)	8	(2.8)
less once a month at least once a year	M	125		86		98		28	
	F	67		67		54		20	
	T	192	(19.3)	153	(15.5)	152	(15.7)	48	(16.9)
less than once a year	M	103		105		28		2	
	F	83		75		19		7	
	T	186	(18.7)	180	(18.2)	47	(4.8)	9	(3.5)
never	M	170		193		333		101	
	F	291		326		378		109	
	T	461	(46.4)	519	(46.4)	711	(73.2)	210	(73.9)
N=		993		988		971		284	
Significance (Vs 1993) X^2		p<.001		p<.001		p>.05			

7. CONCLUSION

1. It appears that the deterrence effect of RBT has persisted over the last ten years. A high proportion of drivers think that their chances of apprehension when drink driving are high.

2. An explanation for the long term success of this drink-driving countermeasure is offered.

There have been changes in the perceived probability of apprehension, which leads to deterrence. There has also been a general change in attitudes towards drink-driving. It has become classified by increasing numbers of drivers as a criminal act. Accordingly, attributions for alcohol-related crashes have shifted to an internal locus. The responsibility for effects of drink-driving have shifted to the individual. The belief that peers disapprove of drink-driving arose soon after the introduction of RBT and has remained. Therefore, it appears that legal and nonlegal sanctions are operating. The social environment has changed due to this change in attitudes such that drink-driving is an unfavourable behaviour among peers. This change in attitude can be accounted for in terms of cognitive dissonance. That is, threat of legal sanctions for drink-driving has caused dissonance as most attitudes towards drinking and driving have formerly been favourable, in Australian culture. This dissonance may have, at least in part, been reconciled by a change to less favourable attitudes towards drink-driving.

However, the success of RBT has not come about by increased knowledge about the perceived effects of alcohol, in males. The campaign has failed to change the perceived effect of alcohol on driving ability in male drivers. Female driver's overconfidence has been reduced substantially. However, males have not responded in this way.

Further, this overconfidence leads to an overestimation of the number of drinks which can be consumed and be safe to drive. The majority of males are aware of the official drinking limits and tend to believe that the number of drinks applies to them personally as well in relation to BAC. However, they still believe that they can consume more than the prescribed amount and be safe drivers.

3. Confidence in ability to drive after consuming alcohol has reduced in female drivers over the course of RBT.

8. RECOMMENDATIONS

1. This study indicates the need for continued high-visibility of police presence as this is the main basis for perceptions of the amount of RBT being done by police each year. However, advertising the presence of RBT would also help. The majority of those drivers who based their perceptions of the amount of RBT being done on advertising, thought that RBT was increasing.

2. Deterrence seems to be a continuing part of RBT's impacts. Therefore, RBT is needed, and cannot be replaced by non-random drink-driving methods. This is because so many drivers (especially males) believe that they drive well under the influence of alcohol, and so would believe that they would not be detected. The belief that RBT is random means that drivers assume that it does not matter how well they drive under the influence of alcohol, they could still be apprehended.

3. Most people reported that an important basis for their decision to drink-drive is the length of the journey to be travelled. Results suggest that people believe that they are less at risk on a shorter journey than a longer journey. Given that a large proportion of accidents occur within a short radius of the home, this finding should be further investigated. Perhaps further research would indicate the need to inform drivers that the risk of crashing and/or being caught by RBT per kilometre, is relatively constant. Alternatively, promotion of examples of being caught alone to home may help.

4. It is essential that drivers understand how many drinks can be consumed, and the time over which they can be consumed, to stay below a BAC of .05 mg/100ml. Previous studies showed that the majority of drivers thought that the legal limit was 3 drinks in 1-1.5 hours (eg. Job, 1985). Recent advertising has improved knowledge of the 2-drink limit (redressing earlier less clear advertising). However, 30-40% of the population still believe that the official guidelines are 3 drinks (or more). This inaccuracy is even greater for beer. Perceptions that beer is less intoxicating than other types of alcohol have persisted, with over 50% of drivers overestimating the legal limit for beer. Educational programmes about the number drinks which correspond to the legal limit should continue, to redress the inaccuracy of many drivers.

5. It is possible that drivers vary considerably in their evaluation of the meaning of the legal limit for them personally. That is, while females tend to estimate the correct legal limit for the "average person" they underestimate the legal limit for themselves. Possibly, female drivers judge the official legal limit to be for a male driver. Male drivers seem to think that the legal limit is relevant to them, that they are

the "average" driver, although there is some suggestion that a proportion of male drivers may believe that the limit for them is even higher than other males of, perhaps different stature. Further research into the perceptions of to whom the legal limit refers would be important in consideration of educating drivers about the number of drinks which can be consumed to stay below the legal limit.

6. The optimism bias effects which have been identified in relation to driving under the influence of alcohol also warrants further investigation. According to Weinstein and Lachendro (1982), a contributing factor to unrealistic optimism is egocentrism. Lee and Job (1992), found that if people are encouraged to think about other people's precautionary behaviour, it will reduce their optimism bias. Therefore, an educational programme which provides statistical information on for example alcohol-related crashes, which is relevant to a target age group and gender, could be considered.

7. High public approval raises the possibility of placing RBT stations close to pubs and licensed clubs.

9. REFERENCE LIST

Aberg, L. (1987). Routine Breath Testing and Drivers' Perceived Probability of Breath Test. Alcohol, Drugs and Traffic Safety-T86. Noordzij, P.C. and Roszbach, R. (Eds) (Proceedings of the 10th International Conference on Alcohol, Drugs and Traffic Safety, Amsterdam, 9-12 September, 1986).

Arthurson, R.M. (1985). Evaluation of Random Breath Testing. Traffic Authority Research Note, RN 10/85. RTA NSW.

Basch, C.E., DeCicco, I.M. and Malfetti, J.L. (1989). A Focus Group Study on Decision Process of Young Drivers: Reasons That May Support a Decision to Drink and Drive. Health Education Quarterly, 16 (3), p.389-396.

Boyd, N.R. and Huffman, W.J. (1984). The Relationship between Emotional Maturity and Drinking-and-Driving Involvement among Young Adults. Journal Safety Research, 15 (1), p.1-6.

Brown, I.D. (1982). Exposure and Experience are a Confounded Nuisance in Research on Driver Behaviour. Accident Analysis and Prevention, 14 (5),p.345-352.

Cairney, P.T. & Carseldine, D. (1989). Drink driving and random breath testing: a survey of knowledge, attitudes, beliefs and reported behaviour. Road Safety Bureau research Note RN 3/89 Roads and Traffic Authority (NSW).

Cameron, T.L. (1982). Drinking and driving among American youth: beliefs and behaviours. Drug and Alcohol Dependence, 10, p.1-33.

Carseldine, D.C.A. (1988). Evaluation of the Trial of Mobile Random Breath Testing - The First Three Months. Traffic Authority Research Note, RN 2/88. Roads and Traffic Authority (NSW).

Cashmore, J. (1985). The Impact of Random Breath Testing in New South Wales. New South Wales Bureau of Crime Statistics and Research Attorney General's Department: Sydney.

Cooper, J. and Fazio, R.H. (1984). A new look at cognitive dissonance theory. In Berkowitz (Ed) Advances in Experimental Social Psychology. Academic Press: New York.

DeJoy, D.M. (1989a). An Attribution Theory Perspective on Alcohol-Impaired Driving. Health Education Quarterly, 16 (3), p.359-372.

DeJoy, D.M. (1989b). The Optimism Bias and Traffic Accident Risk Perception. Accident Analysis and Prevention, 21 (4), p.333-340.

DeJoy, D.M. and Klippel, J.A. (1984). Attributing Responsibility for Alcohol-Related Near-Miss Accidents. Journal of Safety Research, 15, p.107-115.

Donovan, D.M., Queisser, H.R., Salzberg, P.M. and Umlauf, R.L. (1985). Intoxicated and Bad Drivers: Subgroups within the Same Population of High-Risk Men Drivers. Journal of Studies on Alcohol, 46 (5), p.375-382.

Eiser, J.R. and van der Pligt, J. (1988). Attitudes and Decisions. The Guernsey Press Co Ltd: Great Britain.

Farrow, J.A. (1985). Drinking and Driving Behaviours of 16 to 19 Year-Olds. Journal of Studies on Alcohol, 46 (5), p.369-374.

Festinger, L. (1959) A Theory of Cognitive Dissonance. Tavistock Publications Ltd: USA.

Finn, P. and Braggs, B.W.E. (1986). Perception of the risk of an accident by young and older drivers. Accident Analysis and Prevention, 18(4), p.289-298.

Franks, H.M., Hensley, V.R., Hensley, W.J., Starmer, G.A. and Teo, R.K.C. (1976). The relationship between alcohol dosage and performance decrement in humans. Journal of Studies on Alcohol, 37, p.284-297.

Freedman, K. and Rothman, J. (1979). The "slob" campaign: An experimental approach to drink-driving mass media communications. Traffic Accident Research Unit 2/73. Department of Motor Transport (NSW).

Freedman, K., Henderson, M. and Wood, R. (1973). Drinking and Driving in Sydney: A Community Survey of Behaviour and Attitudes. Traffic Accident Research Unit 1/73. Department of Motor Transport (NSW).

Goszczynska, M. and Roskan, A. (1989). Self-Evaluation of Driver's Skill: A Cross-Cultural Comparison. Accident Analysis and Prevention, 21 (3), p.217-224.

Gouvin, E. (1987). Drink-Driving and the Alcoholic Offender: A New Approach to an Old Problem. American Journal of Law and Medicine, 12 (1), p.99-130.

Gusfield, J. (1981). The culture of public problems: Drink-driving and the symbolic order. University of Chicago Press: Chicago.

Harrison, W. (1988). Evaluation of a drink-driving publicity and enforcement campaign. Roads and Traffic Authority (Victoria), Melbourne.

Henderson, M. (1972). Drinking and Driving: Sociological Aspects. (Paper presented at the National Road Safety Symposium, Canberra, 14-16 March, 1972) Traffic Accident Research Unit, 2/72, Department of Motor Transport, NSW.

Holubowycz, O.T. (1989). Gender Differences in Drink-driving. NH and MRC Road Traffic Accident Research Unit (U Adelaide). Federal Office of Road Safety.

Homel, R. (1986). Policing the drinking driver: Random Breath Testing and the process of deterrence. Federal Office of Road Safety: Canberra, ACT.

Homel, R. (1988). Policing and punishing the drinking driver: A study of general and specific deterrence. Springer-Verlag: New York.

Homel, R. (1990). Random Breath testing and Random Stopping programs in Australia. In Wilson, R.J. and Mann, R.E. (Eds) Drinking and Driving. Advances in Research and Prevention. The Guildford Press: London.

Homel, R., Carseldine, D., and Kearns, I. (1989). Drink-driving Countermeasures in Australia. Alcohol, Drugs and Driving, 4 (2), p.113-140.

Jessor, R. (1987). Risky Driving and Adolescent Problem Behaviour: An Extension of Problem-Behaviour Theory. Alcohol, Drugs and Driving, 3 (3-4), 1-10.

Job, R.F.S. (1983). The use of Seat Belts and Child Restraints: Survey Methodology. Traffic Accident Research Unit Report RN 3/83 Traffic Authority, Rosebery NSW.

Job, R.F.S. (1985). Reported attitudes, practices and knowledge in relation to drink-driving: the effects of the introduction of random breath testing in NSW, Australia. Alcohol, Drugs and Traffic Safety (Proceedings Ninth International Conference on Alcohol, Drugs and Traffic Safety, San Juan, Puerto Rico, 1983). S. Kaye and G.W. Meier (Eds.) U.S. National Highway Safety Administration.

Job, R.F.S. (1988). Drink-driving: the effects of random breath testing on attitudes, knowledge and behaviour. Chapter 8 in J. Sheppard (Ed) Advances in Behavioural Medicine, Volume 5, p.107-117. Cumberland College of Health Sciences: Sydney.

Job, R.F.S. (1990). The application of learning theory to driving confidence: The effect of age and the impact of random breath testing. Accident Analysis and Prevention, 22, p.97-107.

Job, R.F.S. & Bullen, R.B. (1985). Social Survey Methodology. National Acoustics Laboratory Report No 106, Canberra: Australian Government Publishing Service.

Job, R.F.S. and Starmer, G.A. (1983). The Effects of Alcohol, Marijuana and Diazepam on a Divided Attention Task. Research Note RN 7/83. Roads and Traffic Authority Traffic Accident Research Unit, NSW.

Johnston, I.R. (1988). Commentary: Drink-driving - The Nexus Between Social Attitudes, Social Action and Research Directions. Community Health Studies, VIII (2), p.229-234.

Jonah, B.A. (1990). Psychsocial Characteristics of Impaired Drivers: An Integrated Review in Relation to Problem Behaviour Theory. In Wilson, R.J. and Mann, R.E. (Eds) Drinking and Driving. Advances in Research and Prevention. The Guildford Press: London.

Jones, B.M. (1973). Memory impairment of the ascending and descending limbs of the blood alcohol curve. Journal of Abnormal Psychology, 82, p.24-32.

Judd, C.M., Smith, E.R. & Kidder, L.H. (1991) Research Methods in Social Relations (6th Ed) Holt, Rinehart & Winston, Inc: Sydney.

Kahn, R.L. and Cannell, C.F. (1957). The Dynamics of Interviewing. John Wiley and Sons: New York.

Kearns, I. and Goldsmith, H.J. (1984). The Impact on Traffic Crashes of the Introduction of Random Breath Testing in New South Wales. Proceedings from the 12th Australian Road Research Board (ARRB) Conference, Hobart, Tasmania, 27-31 August, 1984, Vol12, Part7-Safety.

Kearns, I., Vasey, B., Carseldine, D. and Arthurson, R. (1987). An Overview of the Random Breath Testing Trial in New South Wales. Alcohol, Drugs and Traffic Safety-T86. Noordzij, P.C. and Roszbach, R. (Eds) (Proceedings of the 10th

International Conference on Alcohol, Drugs and Traffic Safety, Amsterdam, 9-12 September, 1986).

Klepp, K. and Perry, C.L. (1990) Adolescents, Drinking and Driving: Who Does It and Why? In Wilson, R.J. and Mann, R.E. (Eds) Drinking and Driving. Advances in Research and Prevention. The Guildford Press: London.

Lang, E. and Stockwell, T. (1991). Drinking Locations of Drink-drivers: A Comparative Analysis of Accident and Nonaccident Cases. Accident Analysis and Prevention, 23 (6), p.573-584.

Lee, S.H.V. and Job, R.F.S. (1992). The role of contingency judgement errors in optimism bias. Australian Journal of Psychology, 44, p.123.

Lloyd, C.J. (1992). Alcohol and Fatal Road Accidents: Estimates of Risk in Australia 1983. Accident Analysis and Prevention, 24 (4), p.339-348.

McDermott, F.T. & Hughes, E.S.R. (1983). Driver casualties in Victoria (1978-1980). Predominant influences of driver inexperience and alcohol. Medical Journal of Australia, 1, p.609-611.

McKnight, A.J. (1986). Intervention in Teenage Drunk Driving. Alcohol, Drugs and Driving, 2(1), p.17-28.

McLean, J. and Holubowycz, O. (1987). Side-Effects of Random Breath Testing by the Police. Alcohol, Drugs and Traffic Safety-T86. Noordzij, P.C. and Roszbach, R. (Eds) (Proceedings of the 10th International Conference on Alcohol, Drugs and Traffic Safety, Amsterdam, 9-12 September, 1986).

Mann, R.E. and Anglin, L. (1988). The Relationship Between Alcohol-related Traffic Fatalities and per capita Consumption of Alcohol, Ontario, 1957-1983. Accident Analysis and Prevention, 20 (6), 441-446.

Martens, C.H., Ross, L.E. and Mundt, J.C. (1991). Young Driver's Evaluation of Driving Impairment Due to Alcohol. Accident Analysis and Prevention, 23 (1), p.67-76.

Monto, M.A., Newcomb, M.D., Rabow, J. and Hernandez, A.C.R. (1992). Social Status and Drunk-Driving Intervention. Journal of Studies on Alcohol, 53 (1), p.63-68.

Risk, A. and Shaoul, J.E. (1982). Exposure to risk and the risk of exposure. Accident Analysis and Prevention, 14 (5), p.353-357.

Road Safety Bureau (1991). Road Traffic Accidents in NSW 1991. (Statistical Statement: Year ended 31 December 1991). Roads and Traffic Authority, NSW.

Ross, H.L. (1985). Deterring Drunken Driving: An Analysis of Current Efforts. Journal of Studies on Alcohol, Supplement No. 10, July, 1985., p.122-128.

Ross, H.L. (1987). Britain's Christmas Crusade against Drinking and Driving. Journal of Studies on Alcohol, 48 (5), p.476-482.

Rothengatter, J.A. and Jansen, H.J. (1987). Attitudes, Opinions and Drink-Driving Patterns of Young Drivers. Alcohol, Drugs and Traffic Safety-T86. Noordzij, P.C. and Roszbach, R. (Eds) (Proceedings of the 10th International Conference on Alcohol, Drugs and Traffic Safety, Amsterdam, 9-12 September, 1986).

Russ, N.W., Harwood, M.K. and Geller, E.S. (1986). Estimating Alcohol Impairment in the Field: Implications for Drunken Driving. Journal of Studies on Alcohol, 47 (3), p.237-240.

Ryback, R.S. (1971). The continuum and specificity of the effects of alcohol on memory: A review. Quarterly Journal of Studies on Alcohol, 32, p.995-1016.

Sears, D.O., Peplau, L.A. and Taylor, S.E. (1991). Social Psychology. Prentice-Hall International, Inc.:USA.

Starmer, G.A., Mascord, D.J., Tattam, B., Vine, J.H. and Watson, T.R. (1993). The Effects of Single Acute Therapeutic Doses of Pentobarbitone, Alone and in Combination with Alcohol, on Human performance in Driving-Related Tests: Exploration of the Relationships Between Performance Decrements and Blood Concentrations of Pentobarbitone and Alcohol. For the Roads and Traffic Authority of New South Wales. Road Safety Bureau Consultant Report CR 2/93.

Starmer, G.A., McDonald, G. and Teo, R.K.C. (1980). Alcohol, drugs and accident risk, Second Report. Traffic Accident Research Unit, 1/80, Department of Motor Transport NSW.

Staysafe (1982). Alcohol, Other Drugs and Road Safety (First report of the parliament of NSW Joint Standing Committee on Road Safety). Parliament of NSW: Sydney.

Stein, A.C. & Allen, R.W. (1986). The effects of alcohol on driver decision making and risk taking. 30th Annual Proceedings American Association for Automotive Medicine, October, 6-8, 1986, Montreal, Quebec.

Turrisi, R.J., Suls, J., Serio, S. and Reisman, S. (1988). Drinking and Driving: Perceptions and Evaluations as a Function of Level of Intoxication and Weather. Journal of Applied Social Psychology, 18 (10), p.891-903.

Vine, J. & Watson, T.R. (1983). Incidence of drug and alcohol intake in road traffic accident victims. Medical Journal of Australia, 1, p.612-615.

Vingilis, E.R. (1987). The six myths of drink-driving prevention. Health Education Research, 2 (2), p.145-149.

Vingilis, E.R. (1990). A New Look at Deterrence. In Wilson, R.J. and Mann, R.E. (Eds) Drinking and Driving. Advances in Research and Prevention. The Guildford Press: London.

Vinokur, A., Oskenberg, L. and Cannell, C.F. (1979). Effects of feedback and reinforcement on the report of health information. In Cannell et al. (Eds) Experiment in Interviewing Techniques, Field Experiments and Health Reporting, 1971-1977. Survey Research Centre University of Michigan.

Weinstein, N.D. (1980). Unrealistic optimism about future life events. Journal of Personality and Social Psychology, 39, p.806-820.

Weinstein, N.D. (1988). The precaution adoption process. Health Psychology, 7 (4), p.355-386.

Weinstein, N.D. and Lachendro, E. (1982). Egocentrism as a source of unrealistic optimism. Personality and Social Psychology Bulletin, 8 (2), p.195-200.

Wells-Parker, E., Cosby, R.J. and Landrum, J.W. (1986). A Typology for Drink-Driving Offenders: Methods for Classification. Accident Analysis and Prevention, 18 (6), p.443-453.

Wesemann, P. (1987). Mass-Media Publicity Campaign on Driving While Intoxicated. Alcohol, Drugs and Traffic Safety-T86. Noordzij, P.C. and Roszbach, R. (Eds) (Proceedings of the 10th International Conference on Alcohol, Drugs and Traffic Safety, Amsterdam, 9-12 September, 1986).

Wilcock, A.R., Milsum, J.H., Laszlo, C.A. and Varga, L.E. (1981). Evaluation of Relative Health-Risk levels of a Group of Impaired Drivers Through Health Hazard Appraisal. Canadian Journal of Public Health, 72 (July), p.264-268.

Wilson, R.J. (1992). Convicted Impaired Drivers and High-Risk Drivers: how Similar Are They? Journal of Studies on Alcohol, 53 (4), p.335-344.

Wong, K.H. (1976). The effects of alcohol on recall, recall confidence, response latency, and mood during the ascending and descending limbs of the blood alcohol curve of nonalcoholics. Alcohol Technical Reports, 5, p.19-27.

Young, J.R. (1970). Blood alcohol concentration and reaction time. Quarterly Journal of Studies on Alcohol, 31, p.823-831.

10. APPENDICES

Appendix I	-	**Reproduction of Questionnaire**	**96**
Appendix II	-	**Consent Form**	**108**
Appendix III	-	**Authority Form**	**110**
Appendix IV	-	**Interview Show Cards**	**112**
Appendix V	-	**Sample Weightings**	**118**

APPENDIX I-Reproduction of Questionnaire

QUESTIONNAIRE

DATE:.....TIME:.....SubNO:.....

DWELLING..... INTERVIEWER:.....

SUBURB: .....

..... AREA: CITY (1) METR0 (2)

COUNTRY (3)

Good morning/afternoon/evening. My name is ..... and I'm conducting a survey for Sydney University. We are not selling anything. We are conducting this survey in all parts of Sydney. Your household is one of about 1,000 selected to be included in a survey about driving.

A. Following quota specifications. Is there a male/female driver aged [from specified age group] in the house, to whom I could speak?

B. QUALIFIERS

SHOW CARD A

IF QUALIFYING RESPONDENT UNAVAILABLE, ARRANGE CALL-BACK TIME. YOU MUST ATTEMPT ONE CALL-BACK BEFORE SUBSTITUTING WITH ANOTHER HOUSEHOLD.

MALE	1
FEMALE	2
AGE 17 -19	1
20 -24	2
25 - 29	3
30 - 39	4
40 - 49	5
50 - 59	6
60 - 69	7
Q1. We want to find out about people's motoring habits, their opinions on what causes accidents and how they feel about our present traffic laws - and most important we want to find information on aspects of the driving scene that are of special relevance to the Australian way of life. All information given by you will be treated as completely confidential. Results are going to be analysed by computer and only group findings will be published. Are you.....	
A CURRENT DRIVER/RIDER LICENCE HOLDER	1
AT PRESENT DISQUALIFIED FROM DRIVING	2
Q2. Do you ever have an alcoholic drink such as beer, wine or spirits? YES	1

DISCONTINUE.....NO	2
Q3. Are you at present licensed to/ before you were disqualified were you the holder of a current licence to.....	
DRIVE A CAR (CLASS 1)	1
DRIVE A rigid TRUCK OR BUS (CLASS 3 OR 4)	2
DRIVE AN ARTICULATED VEHICLE - SEMI-TRAILER (CLASS 5)	3
RIDE A MOTOR CYCLE	4

Q4. **SHOW CARD B.** Which of the following best describes your drinking habits?	
THREE OR MORE TIMES A DAY	1
TWICE A DAY	2
ONCE A DAY	3
NEARLY EVERY DAY	4
THREE OR FOUR TIMES A WEEK	5
ONCE OR TWICE A WEEK	6
TWO OR THREE TIMES A MONTH	7
ABOUT ONCE A MONTH	8
LESS THAN ONCE A MONTH BUT AT LEAST ONCE A YEAR	9
LESS THAN ONCE A YEAR *** **DISCONTINUE**	10
Q5. For how many hours did you drive in the last seven days? **SHOW CARD C**	
NONE	1
LESS THAN 5 HOURS	2
BETWEEN 5 AND 10 HOURS	3
BETWEEN 10 AND 20 HOURS	4
MORE THAN 20 HOURS	5
Q6. And how many kilometres would you estimate you drive annually? (DO NOT READ OUT)	
Under 2,000	1
2,000 - 4,999	2
5,000	3
5,001 - 6,000	4
6,001 - 9,999	5
10,000	6
10,001 - 14,999	7
15,000 - 19,999	8
20,000	9
20,001 - 29,999	10
30,000 - 49,999	11
50,000 and over	12

Q7. Some people say that you should never drink alcohol before driving, while others say it doesn't matter very much. How often do you have something to drink before driving? Not necessarily immediately before. **SHOW CARD B**	
THREE OR MORE TIMES A DAY	1
TWICE A DAY	2
ONCE A DAY	3
NEARLY EVERY DAY	4
THREE OR FOUR TIMES A WEEK	5
ONCE OR TWICE A WEEK	6
TWO OR THREE TIMES A MONTH	7
ABOUT ONCE A MONTH	8
LESS THAN ONCE A MONTH BUT AT LEAST ONCE A YEAR	9
LESS THAN ONCE A YEAR	10
NEVER	11
Q8. Thinking back over the last 12 months, have you ever driven when you feel you have had too much to drink? YES	1
NO	2
Q9. If you were out drinking with friends and you drank too much and planned to drive, what would your friends be most likely to do? **CARD D**	
STOP YOU DRIVING	1
DISAPPROVE BUT LEAVE THE FINAL DECISION TO YOU	2
SAY TO BE CAREFUL BUT NOT STOP YOU FROM DRIVING	3
NEITHER APPROVE NOR DISAPPROVE	4
THEY WOULD PROBABLY ALSO HAVE DRUNK TOO MUCH SO WOULD NOT DO ANYTHING	5
BE IMPRESSED BY YOUR BEHAVIOUR	6
ACTUALLY ENCOURAGE YOU TO DRIVE	7
OTHER (specify).....	8
Q10. If you personally were going to drive, what is the largest amount beer you think you could drink and still be safe to drive? Not that you necessarily would drink this amount. I'd like you to think about a one to one and a half hour period, not taken with a meal. How many MIDDIES OF NORMAL BEER could you drink and still be safe? MIDDIES (10oz - 285ml)	
REPEAT FOR SPIRITS IN 1oz NIPS (25ml)	
REPEAT FOR WINE IN 4oz GLASSES (115ml)	

Q11. Thinking back over the last 12 months, how often have you driven when you've had more than this amount? **SHOW CARD B**	
THREE OR MORE TIMES A DAY	1
TWICE A DAY	2
ONCE A DAY	3
NEARLY EVERY DAY	4
THREE OR FOUR TIMES A WEEK	5
ONCE OR TWICE A WEEK	6
TWO OR THREE TIMES A MONTH	7
ABOUT ONCE A MONTH	8
LESS THAN ONCE A MONTH BUT AT LEAST ONCE A YEAR	9
LESS THAN ONCE A YEAR	10
NEVER	11
Q12. What is the largest amount of beer the average person can drink and still be safe to drive- that's in a 1 - 1 1/2 hour period and not taken with a meal? IF NECESSARY CLARIFY WITH : "It's your impression I'm interested in - not what you may have read in the newspapers". MIDDIES	
REPEAT FOR SPIRITS 1 oz NIPS (29ml)	
REPEAT FOR WINE 4 oz GLASSES (115ml)	
Q13. Which of the statements on this card best describes how you see yourself as a driver? **CARD E** MUCH BETTER THAN AVERAGE DRIVER	1
BETTER THAN AVERAGE DRIVER	2
SLIGHTLY BETTER THAN AVERAGE DRIVER	3
AN AVERAGE DRIVER	4
SLIGHTLY WORSE THAN AVERAGE DRIVER	5
WORSE THAN AVERAGE DRIVER	6
MUCH WORSE THAN AVERAGE DRIVER	7

ASK BOTH Qs. 14 &15 BUT ROTATE ORDER AT ALTERNATIVE INTERVIEWS. RECORD QUESTION ASKED FIRST..... Q.14	1
Q.15	2
Q14. SHOW CARD A man goes out for a drink every week. Quite often he drives home when he has had too much to drink. One such night he is involved in a serious crash on the way home. Would you say he was: UNLUCKY	1
SHOW CARD F STUPID	2
IRRESPONSIBLE	3
CRIMINAL	4
A POTENTIAL MURDERER	5
Q15. A man goes out for a drink every week. Quite often he drives home when he has had too much to drink. One such night he is pulled up for a driving offence an found to be over the legal limit (PRESCRIBED CONCENTRATION OF ALCOHOL) Would you say he was: UNLUCKY	1
STUPID	2
IRRESPONSIBLE	3
CRIMINAL	4
A POTENTIAL MURDERER	5
Q16. Last time you were out and had a drink (alcoholic), how did you get home?	
MY SPOUSE DROVE ME HOME	1
A FRIEND DROVE ME HOME	2
I CAUGHT A TAXI/BUS/TRAIN	3
DROVE YOURSELF HOME	4
OTHER (specify).....	5
Q17. At what stage did you decide to go home that way?	
BEFORE I WENT OUT	1
DURING THE OUTING	2
JUST BEFORE IT WAS TIME TO GO HOME	3
Q18. Thinking back, do you feel that you would still have been capable of driving safely (even if you did not drive)? CAPABLE	1
NOT CAPABLE	2
Q19. When you've been out drinking, you may decide not to drive. How important is the fear of being stopped for a random breath test in making your decision? **SHOW CARD G** VERY IMPORTANT	1
IMPORTANT	2
AVERAGE IMPORTANCE	3
UNIMPORTANT	4
VERY UNIMPORTANT	5

Q20. And how important is the fear of having a crash and hurting someone else in making your decision? **SHOW CARD G**	
VERY IMPORTANT	1
IMPORTANT	2
AVERAGE IMPORTANCE	3
UNIMPORTANT	4
VERY UNIMPORTANT	5
Q21. And how important is the fear of having a crash and hurting yourself in making your decision? **SHOW CARD G**	
VERY IMPORTANT	1
IMPORTANT	2
MEDIUM IMPORTANCE	3
UNIMPORTANT	4
VERY UNIMPORTANT	5
Q22. And how important is the fear of doing something which you think is morally wrong in making your decision? **SHOW CARD G**	
VERY IMPORTANT	1
IMPORTANT	2
MEDIUM IMPORTANCE	3
UNIMPORTANT	4
VERY UNIMPORTANT	5
Q23. When you've been out drinking you may have decided that you were not safe to drive. How would you decide this?	
COUNT YOUR DRINKS & THE TIME OVER WHICH THEY WERE DRUNK	1
UNSAFE IF UNABLE TO WALK OR TALK NORMALLY	2
UNSAFE IF FEELING SLUGGISH/TIRED/DIZZY	3
Q24. Do you find that alcohol affects your driving ability..... **SHOW CARD H**	
MUCH MORE THAN MOST DRIVERS	1
SLIGHTLY MORE THAN MOST DRIVERS	2
THE SAME AS THE AVERAGE DRIVER	3
SLIGHTLY LESS THAN MOST DRIVERS	4
MUCH LESS THAN MOST DRIVERS	5
(Do not read out. Probe before accepting this answer) DON'T DRINK & DRIVE	6
Q25. Have you ever seen a Random Breath Testing station in action? YES	1
NO	2
Q26. Have you ever been RBTd? YES	1
NO	2

Q27. IF YES. When was the last time that you were Random Breath Tested?	
WITHIN THE LAST MONTH **[[CARD I]]**	1
ABOUT 2-3 MONTHS AGO	2
ABOUT 4-5 MONTHS AGO	3
ABOUT 6 MONTHS AGO	4
ABOUT A YEAR AGO	5
18 MONTHS TO 2 YEARS AGO	6
MORE THAN 2 YEARS AGO	7
Q28. What penalties are imposed on a driver convicted of exceeding the legal limit ? (MAXIMUM PENALTY) {DO NOT READ OUT}	
FINE ONLY YES/NO	1
FINE AND SUSPENSION YES/NO	2
FINE AND IMPRISONMENT YES/NO	3
FINE, SUSPENSION AND IMPRISONMENT YES/NO	4
SUSPENSION ONLY YES/NO	5
SUSPENSION AND IMPRISONMENT YES/NO	6
IMPRISONMENT ONLY YES/NO	7
DON'T KNOW	8
OTHER (eg embarrassment - specify).....	9
Q28a. FINE: How much?	
Q28b. SUSPENSION: For how long?	
Q28c. IMPRISONMENT: For how long?	
Q29. What is the largest amount the average person can drink and still be below the legal limit? MIDDIES OF BEER (10oz - 285ml)	
SPIRITS (1oz NIPS - 29ml)	
GLASSES OF WINE (4oz - 115ml)	
Q30. What is the largest amount you could drink and still be below the legal limit? (in a 1 -1 1/2 hour period, not taken with a meal)	
MIDDIES OF BEER (10oz - 285ml)	
SPIRITS (1oz NIPS - 29ml)	
GLASSES OF WINE (4oz - 115ml)	
Q31. People have different attitudes and opinions about RBT and drinking and driving. I would like to find out whether you agree or disagree with these statements. **SHOW CARD J [write in answer in code column, 1 to 5]**	
A. I think you can be a bit over .05 and still drive okay, as long as you are careful.	
B. It's pretty unlikely that you'll get stopped by an RBT unit these days.	
C. Random Breath Testing is far too tough on drivers.	
D. I think the idea of putting an RBT unit outside clubs and hotels is too tough.	

E. I'm more worried about the possibility of crashing after I've had a few drinks than I am of being stopped by RBT.	
F. I actively discourage my friends from driving if they have drunk over the limit.	
G. There is a social pressure to drink (alcohol) when I'm out socialising.	
H. There is no pressure to drink (alcohol) when I'm in a shout.	
I. There is a pressure to drink at work meetings.	
J. RBT is designed more for revenue-making than a road safety measure.	
K. Most people I drink with would accept RBT as a reason for not drinking as much.	
Q32. At the legal limit of .05 an average drinker has..... **SHOW CARD K**	
A SLIGHTLY SMALLER CHANCE OF HAVING AN ACCIDENT AS AVERAGE	1
THE SAME CHANCE OF HAVING AN ACCIDENT AS AVERAGE	2
A SLIGHTLY INCREASED CHANCE	3
DOUBLE THE CHANCE	4
FOUR TIMES THE CHANCE	5
Q33. At the legal limit of .05 you would have ..... **SHOW CARD K**	
A SLIGHTLY SMALLER CHANCE OF HAVING AN ACCIDENT AS AVERAGE	1
THE SAME CHANCE OF HAVING AN ACCIDENT AS AVERAGE	2
A SLIGHTLY INCREASED CHANCE	3
DOUBLE THE CHANCE	4
FOUR TIMES THE CHANCE	5
Q34. Do you think that the amount of RBT being done by the police each year has been decreasing, increasing, or staying the same? DECREASING	1
INCREASING	2
STAYING THE SAME	3
Q35. What makes you say that? (DO NOT READ OUT)	
THE AMOUNT OF RBT THAT YOU SEE	1
ADVERTISING	2
HEAR/TALK ABOUT RBT	3
MEDIA/NEWS REPORTS	4
Q36. If you were driving and you were worried about being stopped at a random breath testing station, do you feel there is anything you could do to reduce your chances of being stopped? YES	1
NO	2

Q37. IF YES. What could you do? (DO NOT READ OUT)	
USE BACK STREETS FOR JOURNEY	1
AVOID FREQUENTLY USED RBT LOCATIONS	2
WHEN YOU SEE A RBT STATION..... MAKE A U-TURN	3
STOP	4
USE A SIDE STREET	5
CHANGE DRIVERS	6
CHANGE LANES	7
OTHER.....	8
.....	
Q38. Just thinking about advertising for the moment, can you recall seeing or hearing any advertising for Random Breath Testing or Drink-Driving over the last few months? YES	1
NO	2
(IF MENTION : TV / RADIO / NEWSPAPER)	
Q39. During the last year, have you ever driven when you might have been near or over .05 and not been RBTd? YES	1
NO	2
Q40. How did you feel about this? Did you feel (READ) **SHOW CARD L**	
LUCKY	1
CLEVER	2
DIDN'T GIVE IT ANY THOUGHT	3
NERVOUS	4
GUILTY	5
Q41. Why is that? What did you feel nervous/guilty about? (DO NOT READ)	
THAT I MIGHT HAVE BEEN BREAKING THE LAW	1
THAT I MIGHT HAVE GOT CAUGHT BY THE POLICE	2
THAT I COULD HAVE KILLED SOMEBODY	3
THAT I COULD HAVE CAUSED AN ACCIDENT	4
OTHER.....	5
Q42. When you have been drinking and may be near/over the limit how important would the following factors be in your decision to drive?	
Q42a. the length of the journey **SHOW CARD M**	
VERY IMPORTANT	1
IMPORTANT	2
AVERAGE IMPORTANCE	3
UNIMPORTANT	4
VERY UNIMPORTANT	5

Q42b. The amount of traffic on the road	
VERY IMPORTANT	1
IMPORTANT	2
AVERAGE IMPORTANCE	3
UNIMPORTANT	4
VERY UNIMPORTANT	5
Q42c. The fact that you have travelled on that particular route many times and know the road very well.	
VERY IMPORTANT	1
IMPORTANT	2
AVERAGE IMPORTANCE	3
UNIMPORTANT	4
VERY UNIMPORTANT	5
Q42d. The type of roads to be used (main, secondary, dirt track)	
VERY IMPORTANT	1
IMPORTANT	2
AVERAGE IMPORTANCE	3
UNIMPORTANT	4
VERY UNIMPORTANT	5
Q42e. Imagine that you know where the RBT stations are	
VERY IMPORTANT	1
IMPORTANT	2
AVERAGE IMPORTANCE	3
UNIMPORTANT	4
VERY UNIMPORTANT	5
Q43. Do you agree or disagree that RBT should continue to operate in NSW?	
STRONGLY AGREE	1
AGREE	2
NEITHER AGREE NOR DISAGREE	3
DISAGREE	4
STRONGLY DISAGREE	5

Q 44. What type of licence do you currently have?		
LEARNING		1
PROVISIONAL		2
ORDINARY/STANDARD		3
SILVER		4
GOLD		5
Q45. How often have you been booked for the following?		
a. DRINK - DRIVING	MORE THAN 5 TIMES	1
	3 - 5 TIMES	2
	2 TIMES	3
	ONCE	4
	NEVER	5
b. SPEEDING	MORE THAN 5 TIMES	1
	3 - 5 TIMES	2
	2 TIMES	3
	ONCE	4
	NEVER	5
c. RUNNING A RED LIGHT	MORE THAN 5 TIMES	1
	3 - 5 TIMES	2
	2 TIMES	3
	ONCE	4
	NEVER	5
Q46. Just a final question to make sure that we have spoken to a cross section of people. Would you tell me your occupation? Which of these categories do you fall under? **SHOW CARD N**		
STUDENT - HIGH SCHOOL		1
STUDENT - TERTIARY		2
MANAGER/ADMINISTRATOR		3
PROFESSIONAL (eg. scientists, building professionals, engineers, teachers)		4
PARA-PROFESSIONAL (eg. nurse, police, technicians)		5
TRADESPERSON (eg. electrical, building, printing, food, horticulture)		6
CLERK (eg. data processing, receptionists)		7
SALESPERSON & PERSONAL SERVICE WORKER (eg. sales assistant, real estate sales, tellers, cashiers)		8
PLANT & MACHINE OPERATOR & DRIVER (eg. road & rail transport drivers)		9
LABOURER & RELATED WORKER (eg. factory hands, ag. labourers, cleaners, construction & mining)		10
HOME DUTIES		11

OTHER.....	12

APPENDIX II - Consent Form

The University of Sydney

Department of Psychology
N.S.W. Australia 2006

Telephone (02) 692 2859 Telex AA26169 UNISYD Fax (02) 692 2603
E-mail: soamesj@psychvax.psych.su.oz

From: Dr. R.F.S. Job

INFORMATION

This interview is part of a long-range research project on driving and road safety being conducted by the University of Sydney. It is intended to help develop programmes that will prevent serious traffic accidents and injuries. We hope to gain a better understanding of what influences driving behaviour by asking you about your driving, personal history, and related areas. The information gathered in this questionnaire will be used for research purposes only. Your answers will be treated in the strictest confidence and will be seen only by our research staff.

I hereby agree to this interview. However, I understand that I am able to terminate the interview at any point, should I so desire.

_____ (signature)

_____ (date)

APPENDIX III - Authority Form

The University of Sydney

Department of Psychology
N.S.W. Australia 2006

Telephone (02) 692 2859 Telex AA26169 UNISYD Fax (02) 692 2603
E-mail: soamesj@psychvax.psych.su.oz

From: Dr. R.F.S. Job

For the purpose of this research we need your name and driving licence number in order to obtain your driving record from the Roads and Traffic Authority. Again, we guarantee that your answers to this questionnaire will be kept confidential. This page will be separated from the rest of the questionnaire. This questionnaire will be identified only by the interviewer number. Anonymity will thus be assured. The accessing of records will in no way affect your driving record itself or your licence.

I hereby give permission for my driving record to be accessed, for the purposes of researrch only, on the understanding that this will in no way influence my record.

MY NAME_____

(first) (full middle name) (last)

My Driver's Licence Number_____

_____ (signature)

_____ (date)

APPENDIX IV - Interview Show Cards

CARD A

17-19
20-24
25-29
30-39
40-49
50-59
60-69

CARD B

THREE OR MORE TIMES A DAY

TWICE A DAY

ONCE A DAY

NEARLY EVERY DAY

THREE OR FOUR TIMES A WEEK

ONCE OR TWICE A WEEK

TWO OR THREE TIMES A MONTH

ABOUT ONCE A MONTH

LESS THAN ONCE A MONTH BUT AT LEAST ONCE A YEAR

LESS THAN ONCE A YEAR

NEVER

CARD C

NONE

LESS THAN 5 HOURS

BETWEEN 5 AND 10 HOURS

BETWEEN 10 AND 20 HOURS

MORE THAN 20 HOURS

CARD D

STOP YOU DRIVING

DISAPPROVE BUT LEAVE THE FINAL DECISION TO YOU

SAY TO BE CAREFUL BUT NOT STOP YOU FROM DRIVING

NEITHER APPROVE NOR DISAPPROVE

THEY WOULD PROBABLY ALSO HAVE DRUNK TOO MUCH SO

WOULD NOT DO ANYTHING

BE IMPRESSED BY YOUR BEHAVIOUR

ACTUALLY ENCOURAGE YOU TO DRIVE

CARD E

MUCH BETTER THAN AVERAGE DRIVER

BETTER THAN AVERAGE DRIVER

SLIGHTLY BETTER THAN AVERAGE DRIVER

AN AVERAGE DRIVER

SLIGHTLY WORSE THAN AVERAGE DRIVER

WORSE THAN AVERAGE DRIVER

MUCH WORSE THAN AVERAGE DRIVER

CARD F

UNLUCKY

STUPID

IRRESPONSIBLE

CRIMINAL

A POTENTIAL MURDERER

CARD G

VERY IMPORTANT

IMPORTANT

AVERAGE IMPORTANCE

UNIMPORTANT

VERY UNIMPORTANT

CARD H

MUCH MORE THAN MOST DRIVERS

SLIGHTLY MORE THAN MOST DRIVERS

THE SAME AS THE AVERAGE DRIVER

SLIGHTLY LESS THAN MOST DRIVERS

MUCH LESS THAN MOST DRIVERS

CARD I

WITHIN THE LAST MONTH

ABOUT 2-3 MONTHS AGO

ABOUT 4-5 MONTHS AGO

ABOUT 6 MONTHS AGO

ABOUT A YEAR AGO

18 MONTHS TO 2 YEARS AGO

MORE THAN 2 YEARS AGO

CARD J

STRONGLY AGREE

AGREE

NEITHER AGREE NOR DISAGREE

DISAGREE

STRONGLY DISAGREE

CARD K

A SLIGHTLY SMALLER CHANCE OF HAVING AN ACCIDENT AS AVERAGE

THE SAME CHANCE OF HAVING AN ACCIDENT AS AVERAGE

A SLIGHTLY INCREASED CHANCE

DOUBLE THE CHANCE

FOUR TIMES THE CHANCE

CARD L

LUCKY

CLEVER

DIDN'T GIVE IT ANY THOUGHT

NERVOUS

GUILTY

CARD M

VERY IMPORTANT

IMPORTANT

AVERAGE IMPORTANCE

UNIMPORTANT

VERY UNIMPORTANT

CARD N

STUDENT - school

STUDENT - tertiary

MANAGERS AND ADMINISTRATORS

PROFESSIONALS (eg. scientists, building professionals, health, teachers)

PARA-PROFESSIONALS (eg. technicians, nurses, police)

TRADESPERSONS (eg. electrical, building, printing, food, horticultural)

CLERK (eg. receptionists, typists, data processing)

SALESPERSONS AND PERSONAL SERVICE WORKERS
(eg. sales assistants, cashiers, real estate sales)

PLANT AND MACHINE OPERATORS AND DRIVERS
(eg. road and rail transport drivers)

LABOURERS AND RELATED WORKERS (eg. factory hands,
ag. labourers, cleaners, construction & mining labourers)

HOME DUTIES

OTHER

APPENDIX V - Sample Weightings

Weightings for each age by gender group.

	17-19	20-24	25-29	30-39	40-49	50-59	60-69
male	.57	1.04	.74	.87	1.31	1.85	1.00
female	1.01	.93	.58	1.09	1.01	1.52	1.15