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Repeat Drink-Driving Offenders in Western Australia, **1984** to **1994**

Authors

G Anthony Ryan, Anna Ferrante, Nini Loh & L Rina Cercarelli

Performing Organisation

Road Accident Prevention Research Unit
Department of Public Health
The University of Western Australia
NEDLANDS WA **6907**

Crime Research Centre
The University of Western Australia
NEDLANDS WA **6907**

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Federal Office of Road Safety
GPO **Box** 594
CANBERRA ACT **2601**

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Abstract

The role of alcohol in road crashes is well documented. Previous research has suggested that drivers involved in crashes with an elevated blood alcohol concentration may be more likely than other drivers to also have prior convictions for drink-driving. The aim of this study was to determine patterns of drink-driving arrests in Western Australia, and the characteristics of repeat drink-drivers. Over the 11 year period from **1984** to **1994,** drink-driving arrests comprised 22.4% of **597,637** arrests made in Western Australia. The best predictors of repeat drink-driving arrests were being male, under 20 years of age, having prior arrests, and being Aboriginal. The data were not available to determine whether the arrest events were associated with road crashes. This could be established in future research by linking the arrest records with crash records.

Keywords

Drink-Driving, Recidivist, Offender

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Prepared by

G Anthony Ryan
Anna Ferrante
Nini Loh
L Rina Cercarelli

Road Accident Prevention Research Unit
Department of Public Health
The University of Western Australia
&
Crime Research Centre
The University of Western Australia

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Introduction

The aim of this study was to determine patterns of drink-driving arrests in Western Australia, and the characteristics of repeat drink-drivers. For the purpose of this study, drink-drivers were defined as those arrested for a drink-driving offence between 1984 and 1994. Repeat drink-drivers were those re-arrested for a drink-driving offence during the study period.

Data

The Crime Research Centre at The University of Western Australia maintains a database of police apprehensions which contains demographic details of the alleged offender, identity checks, details of the charge (including date, place and nature of the alleged offence) and information describing the arrest process (that is, date of arrest, place of arrest, custody or bail arrangements). Demographic details were limited to gender, race (Aboriginal or other), date of birth, place of birth, and occupation.

Over the 11 year period from 1984 to 1994, 597,637 arrests were made by the Western Australian Police Service. Drink-driving arrests, that is, arrests that included at least one drink-driving offence (as specified above), comprised 133,599 or 22.4% of all arrests. **A** total of 127,225 individuals were arrested for drink-driving offences.

Methods of Analysis

First, a cross-sectional analysis of drink-driving offences was carried out, defining trends, rates, and demographic characteristics of persons arrested for drink-driving. There were rather more arrests than persons arrested, as each year there were a number of persons with multiple arrests.

The second stage of analysis consisted of a longitudinal study of the offending patterns of drink-driving offenders. A 'criminal career' model was used to explore various aspects of offending and re-offending - namely the interaction between age and offending (both age of onset of drink-driving offending and the peak and median ages of drink-driving offending were considered); frequency of offending; the patterns or 'types' of criminal careers; and the extent (if any) of specialisation or escalation in the types of offences committed by drink-driving offenders. An important aspect of any longitudinal criminal research is the temporal ordering of arrest events, from the time of first (ever) arrest, for each offender.

However, the data in use were 'censored', meaning that the complete criminal careers of each offender was not known because the study cut-off date was 31 December 1994. Without consideration for the effects of censoring, estimates of re-offending are likely to be seriously biased because the follow-up times for each offender vary. For example, a person arrested on the cut-off date would have had no opportunity to be re-arrested or establish any kind of criminal career. Data from a single year (1985) were used to provide some (crude) control of follow-up time, as this provided a follow-up period of nine years. The year 1984 was not suitable because of under-enumeration of cases for that year. This approach, while providing maximum follow-up time, markedly reduced the number of cases available for analysis.

The third and most sophisticated approach involved the use of a statistical method known as failure or survival rate analysis to determine the re-arrest probabilities of drink-driving offenders. Using a parametric statistical model known as the Weibull mixture model, the ultimate probability of re-arrest for all drink-driving offenders and for subgroups of the offenders arrested for drink-driving offences were estimated. In addition, a method of co-variate analysis was employed to test for significant differences in the probabilities of re-arrest between groups.

Results

There are 10,000 to 12,000 arrests for drink-driving in Western Australia each year. These account for about one quarter of all arrests made by the police. For males, the rate of drink-driving arrests fell over the period examined but rose for Aboriginals, and was generally

constant for females. About 45% of those arrested were under 25 years and about 60% were aged under 30 years. About 13% were female, about 66% had blue collar occupations, and about 10% were Aboriginal.

First time offenders, that is, individuals not previously arrested by police for any offence, made up two thirds of all drink-driving arrests. These first time offenders were much less likely to he re-arrested for a drink-driving offence or for any other offence, and also tended to be older at first arrest.

About 40% of arrests were for Driving Under the Influence (where the driver had a BAC of 0.15% or greater, or was deemed to be incapable of proper control of the vehicle), and 55% were for Excess 0.08% offences.

After nine years, about 70% of all offenders arrested in 1985 had only one drink-driving offence and about 20% had two offences. Around 80% of females had only one drink-driving arrest. Aboriginals tended to have a larger number of offences; one quarter had two offences, and 10% had four or more.

About half of drivers first arrested for any offence in 1985 combined drink-driving offences with arrests for other offences. About 30% of the 1985 drivers had multiple drink-driving offences, of whom two thirds also had arrests for other criminal offences.

Using failure analysis and the whole data set, rather than just one year of data, took into account the effect of different periods of follow-up available and confirmed the above findings. For all drink-driving offenders the probability of re-arrest for any offence was 0.47, and for a drink-driving offence, 0.32. These risks are lower for women (0.37 and 0.22). They are higher for males, Aboriginals, and for those with prior arrests. First time drink-drivers are much less 'criminal' than other offenders, while drink-driving offenders with prior arrests are considerably more ***so.*** For about 70% of those arrested, the drink-driving offence is their first and only arrest for any offence.

Repeat drink-drivers, compared with drivers with single drink-driving offences, were younger (65% less than **25** years v 45%), fewer were female (10% v 16%), more were Aboriginal (4% v 2%), and a greater proportion had the more serious, DUI offences (43% v 39%). Two thirds had other criminal offences. Aboriginals were over-represented in this group and tended to have greater numbers of arrests than non-Aboriginals.

Discussion

The best predictors of repeat arrests for drink-driving were being male, under 20 years of age, having prior arrests, and being Aboriginal. These characteristics define a group for whom it may be difficult to define effective countermeasures. It may be better to concentrate on the larger number of offenders with single drink-driving offences, particularly those with the higher BAC offences. There is some evidence that there was a change in behaviour of these offenders after the introduction of random breath testing in 1988.

Unfortunately the arrest record does not have any information as to whether the arrest event was associated with a road traffic crash, therefore we are not able to say anything about the crash records of drivers in this study. The use of this set of data could be extended by linking the arrest records with traffic infringement data and with crash records. After obtaining the appropriate permissions it would be possible to define other important driving and crash-related characteristics of drink-driving offenders. These data could also be used **to** evaluate the effects of different countermeasure programs.

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The authors wish to acknowledge the assistance provided **by** Ms Margaret Hall, Librarian, of the Road Accident Prevention Research Unit. We also wish to thank the Western Australian Police Service for allowing access to their data and Mr Max Maller of the Crime Research Centre for his technical assistance and advice in the drafting of this paper.

1. INTRODUCTION

The role of alcohol in road crashes in Australia is well documented (eg. Federal Office of Road Safety, 1995). It is also known that the risk of crash involvement increases as the blood alcohol concentration (BAC) of a driver increases. It has been found that drivers involved in crashes with an elevated BAC may be more likely than other drivers to also have prior convictions for drink-driving (Bailey, 1993). However, the characteristics of drink-drivers who have a history of drink-driving-related offences is not well known in Australia.

The aim of this study was to determine patterns of drink-driving arrests in Western Australia, and the characteristics of repeat drink-drivers.

1.1 Incidence and Prevalence of Drink-Driving

It is difficult to determine the incidence and prevalence of drink-driving in the community. The information that is available is usually obtained once people have been involved in a crash. However, this does not tell us about the number and type of people who drink and drive at any given point in time and who are not involved in a road crash. One way of determining this is through roadside surveys of drivers. However, these studies are rare. Barker, Moore and Ryan (1990) reported on roadside surveys conducted in the Adelaide metropolitan area in 1987 and 1989 to examine night time drink-driving behaviour and found that about 25% of drivers interviewed between 10.00pm and 3.00am had positive BAC levels, with about 4% having BAC levels over 0.08%.

Other sources of data sometimes used to examine the characteristics of drink-drivers are surveys of the general population where self reportedestimates of

drinking and driving are obtained. A brief description of [illegible] is known of drink-driving is presented below.

1.1.1 Crash Data

In Western Australia, 27% of fatal crashes in 1994 involved a driver or rider with a BAC greater than 0.05% (Menhennett, Trent & Maisey, 1995). The number of less serious crashes involving alcohol (that is, non-fatal crashes) is uncertain as BAC measurements of people involved in crashes are not taken unless alcohol is suspected to have been a factor in the crash.

Holubowycz, Kloeden and McLean (1992) interviewed drivers and motorcyclists admitted to hospital in Adelaide, South Australia, after a road crash to examine the demographic characteristics and usual drinking and driving behaviour of these people. It was found that drivers and riders with high BAC levels tended to consume alcohol more often and in larger quantities. Furthermore, a larger proportion of females than males recorded a BAC of **zero.** Females also had a statistically significantly lower BAC than males.

1.1.2 Self Reported Data

A Western Australian survey reported in 1987 that drink-driving was common amongst young adult males, with over 58% claiming that they drove a vehicle at least occasionally after drinking alcohol (Binns, Knowles & Blaze-Temple, 1987). Another study found that 41% of people reported ever driving with a BAC around the legal limit at least once (Loxley, Saunders, Blaze-Temple & Binns, 1989). While these estimates were made in the late 1980's, it is relevant to the present study as data from this time period were included in the analyses.

A New South Wales report (Road Safety Bureau, 1992) found that about 24% of people reported having ever driven when they were around the legal limit. In the most recent Federal Office of Road Safety Community Wave survey (Federal Office of Road Safety, 1994), 1% of people interviewed responded that if they were driving they did not restrict what they were drinking. In the United States it has been estimated that about 1% of licensed drivers in the population were arrested for drink-driving in 1992 (Fell, 1994).

Norstrom (1996), in Europe, found that how often a person drank and drove was affected by the degree of criminality (that is, the number of non-drink-driving offences), while BAC levels depended on the degree of alcohol misuse. This therefore suggests that drinking and driving behaviour is just one of a repertoire of illegal activities. This point will be discussed further in the following section.

1.2 Demographic Characteristics **of** Drink-Drivers

Not all individuals who drink are problem drivers, and not all individuals who drink and drive continue to do *so* after their first offence, yet there are some drink-drivers who continue to do so regardless of previous arrests, crashes, alcohol rehabilitation programs, or licence revocation. Research is therefore needed to identify the characteristics of individuals who are at risk (Haight, 1985). Understanding the characteristics of repeat drink-drivers is also important for the development of effective countermeasures.

Estimates of recidivism are useful in assessing the effect of penal policies and the utility of specific interventions upon offending driver behaviour (Broadhurst & Loh, 1995). However, it is often very difficult to determine levels of recidivism because of the lack of data. Yu and Williford (1991) noted that knowledge of the levels of recidivism in a community could indicate the seriousness of drink-driving as a social and public health

problem, the effectiveness of various drink-driving laws and interventions, and the degree to which the role of the problem of alcohol abuse played in drinking and driving.

One study that attempted to determine the characteristics of drink-drivers was that conducted by Bailey (1993). He analysed the traffic and criminal convictions of all drivers involved in fatal crashes in New Zealand in 1986 to establish the criminal and traffic histories of drivers involved in alcohol-related fatal crashes. The study included the traffic convictions of the drivers occurring before their fatal crashes, and the convictions of the surviving drivers for the following four years. About a quarter (26%) of all drink-drivers in the study had a previous conviction for drinking and driving. However, for those drivers involved in a fatal crash with a BAC above 0.20%, 46% had a previous drink-driving conviction.

Bailey also found that the largest group of drivers involved in alcohol-related fatal crashes was the 20 to 24 year age group (about ***65%).*** The proportion involved declined steadily with age. Males were also more likely to be involved in alcohol-related crashes than females. These findings are supported by many other reports. For example, Wells-Parker, Pang, Anderson, McMillen and Miller (1991) noted that men constituted the largest proportion of the drink-driving population in the United States. However, they suggested that the number of women becoming drink-drivers may be increasing.

In his study of drink-drivers, Bailey also found that drinking drivers were about three times more likely to have a criminal conviction than a sober driver at fault, and about one and a half times more likely to have one or more traffic convictions. Female drink-drivers had a lower rate of traffic convictions than males. The proportion of drink-drivers with one or more prior traffic convictions was at a peak for ages 20 to **44,** whereas the mean number of prior traffic convictions peaked in the **25** to 34 age range. As

expected, teenagers had lower values since they had a shorter period in which to acquire traffic convictions. When examining occupation groups for male drink-drivers, the unskilled and unemployed had higher proportions with drink-driving convictions. In examining the driving records of drivers arrested for drink-driving, Beerman, Smith and Hall (1988) also found that repeat drink-drivers were more likely to be unemployed, and to have a past criminal record.

The research literature therefore suggests that repeat drink-drivers tend to **be** male, young adults, have other criminal convictions, and **be** unskilled or unemployed.

2. METHOD

2.1 Definitions

In Western Australia, under the Road Traffic Act, drink-driving offenders can be charged with an Excess 0.02% offence (for probationary drivers), an Excess ***0.05%*** offence (for 1993 and later), an Excess 0.08% offence, or with Driving Under the Influence (DUI), as well as other offences for non-compliance, listed below.

For this study, drink-drivers were defined as those arrested for a drink-driving offence. An arrest was defined as a charge or charges laid on a given date; if more than one charge was laid on the same date, all were counted as one arrest event. Repeat drink-drivers were those re-arrested for a drink-driving offence at any time during the study period.

2.2 Data

This study examined the records of those individuals arrested by the Western Australian Police Service for drink-driving offences from 1 January **1984** to 31 December 1994 (the cut-off date). The records were obtained from the database of police apprehensions maintained by the Crime Research Centre, The University of Western Australia. The database consists of records of all persons charged, either by way of arrest or by summons, by the Western Australian Police Service between 1 January 1984 and 31 December 1994. Offenders in this database are identified by a unique INOIS (Integrated Numerical Offender Identification System) number. The INOIS system is part of a more complex research program based on the development of a comprehensive individual unit record collection designed to link data from various agencies (Ferrante, 1993). The data are derived from the police P18

form (arrests/summonses) which contains demographic details about the alleged offender, identity checks, details of the charge (including date, place and nature of the alleged offence) and information describing the arrest process (that is, date of arrest, place of arrest, custody or bail arrangements). Demographic details are limited to gender, race (Aboriginal or other), date of birth, place of birth, and occupation.

The following offences (as specified by the police) were considered to be drink-driving offences for the purposes of this study:

- Driving under the influence of alcohol/drugs;
- Driving under the influence of drugs';
- Driving under the influence of alcohol;
- Excess 0.02%;
- Excess 0.05%;
- Excess 0.08%;
- Fail to comply with required blood/urine analysis;
- Fail to comply with required breath analysis;
- Fail to comply with required preliminary test;
- Refuse blood test;
- Refuse breath and blood test;
- Refuse breath test;
- Refuse preliminary breath test; and
- Refuse urine test.

Over the 11 year period from **1984** to **1994,** 597,637 arrests were made by the Western Australian Police Service. Drink-driving arrests, that is, arrests that included at least one drink-driving offence (as specified above),

[1] Though included here, charges of driving under the influence of drugs were rarely laid between **1984** and **1994. Of** the **133,599 DUI** arrests during those years, only **246** cases **(0.2%)** involved a **charge** of driving under the influence of drugs.

comprised 133,599 or **22.4%** of all arrests. **A** total of 127,225 individuals were arrested for drink-driving offences.

2.3 Methods of Analysis

First, a cross-sectional analysis of drink-driving offences was carried out, defining trends, rates, and demographic characteristics of persons arrested for drink-driving. There were rather more arrests than persons arrested, as each year there were a number of persons with multiple arrests.

The second stage of analysis consisted of a longitudinal study of the offending patterns of drink-driving offenders. We used the 'criminal career' model[2] (Blumstein, Cohen, Roth & Visher, 1986) to explore various aspects of offending and re-offending - namely the interaction between age and offending (we consider both age of onset of drink-driving offending and the peak and median ages of drink-driving offending); frequency of offending; the patterns or 'types' of criminal careers; and the extent (if any) of specialisation or escalation in the types of offences committed by drink-driving offenders.

An important aspect of any longitudinal criminal research is the temporal ordering of arrest events, from the time of first (ever), for each offender. For this part of the research, therefore, we selected a subgroup of the larger drink-driving arrest data set.

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[2] As Blumstein and colleagues explain:
"The concept of a criminal career refers to the longitudinal sequence of offences committed by an offender who has a detectable rate of offending during some period...[A]t one extreme a criminal career could consist of only one offence. At the other extreme are "career criminals'' who commit serious offences at high rates and over extended periods of time...The term "career" is intended to describe the sequence of offending during some part of an individuals lifetime. It is characterised by a beginning (onset), and an end (termination) and a duration. During the interval between onset and termination, one is interested in learning about such features as the rate of offending, the pattern of offence types, and any discernible trends in offending patterns". [18 p391].

We approached the study of criminal careers in three ways. In the first instance, we used simple statistical techniques to describe age, frequency and patterns of offending.. We noted, however, that our data were 'censored', meaning that the complete criminal careers of each offender was not known because the study cut-off date was 31 December 1994. Without consideration for the effects of censoring, estimates of re-offending are likely to be seriously biased. For example, a person arrested on the cut-off date would have had no opportunity to be re-arrested or establish any kind of criminal career. Follow-up times for each offender also varied in the data and, therefore, required some (crude) control. For this purpose, data from one year (1985) were used, as this provided a follow-up period of nine years. The year 1984 was not suitable because of under-enumeration of cases for that year. This approach markedly reduced the number of cases available for analysis.

The third and most sophisticated approach involved the use of a statistical method known as failure or survival rate analysis to determine the re-arrest probabilities of drink-driving offenders. The approach follows that taken by Broadhurst and Loh (1995) in which they estimated general re-arrest probabilities for apprehended Western Australians. Using a parametric statistical model known as the Weibull mixture model (Broadhurst, Maller, Maller & Duffecy, 1988; Broadhurst & Maller, 1990, 1991), we estimated the ultimate probability of re-arrest for all drink-driving offenders and for subgroups of the offenders arrested for drink-driving offences. In addition, a method of co-variate analysis developed by Maller (1993) and used by Broadhurst and Loh (1995) was employed to test for significant differences in the probabilities of re-arrest between groups.

3. RESULTS

3.1 Number of Arrests

Between 1984 and 1994 there were about 10,000 to 12,000 arrests each year for drink-driving charges in Western Australia. From a total of about 14,000 in 1986 there was a steady decrease to just over 10,000 in 1993, with a sharp increase to 12,400 in 1994 (Table 1). The rate per 100,000 Western Australian residents peaked in 1986 at 971 but declined to 616 per 100,000 residents in 1993. The increase between 1984 and 1985 was most probably the result of under-enumeration of records for 1984 due to the computerisation of arrest and charging data which took place during that year.

TABLE 1. Drink-Driving Arrests in Western Australia, 1984-1994.

Year	Number	Rate per 100,000 Persons	% of all Arrests
1984	10.195	732.8	23.5
1985	13,307	938.1	27.0
1986	14,169	971.1	26.8
1987	13,838	925.9	24.5
1988	13,037	849.2	23.4
1989	12,099	166.5	20.6
1990	11,553	716.2	20.1
1991	11,635	711.1	18.8
1992	10,964	661.5	19.3
1993	10,328	616.1	19.6
1994	12.474	732.9	23.8
Total	133,599		22.4

Drink-driving arrests accounted for, on average, 22.4% of all arrests made by police during that period, ranging from 27.0% in 1985 to 19.3% in 1992. In

most cases (94.1%), the offence of 'driving under the influence' constituted the most serious charge of the arrest[3]. In the remaining 5.9% of cases other more serious charges were laid against the offender. In more than half of these 'other' instances, charges either related to resisting arrest or supplying a false name to the police. Other charges involved stealing a motor vehicle or assaulting a public officer.

Just over 66% of drink-driving arrests in 1994 involved first-time offenders, that is, individuals who had not previously been arrested and charged by the police for any offence, and this percentage had been increasing gradually over the preceding years (Table 2). The percentage born overseas fell gradually, while the percentage with blue collar occupations and arrested on weekends increased. The percentage bailed increased to about **85%** in 1994. Aboriginals made up 11.8% (n = 15,530) of drink-driving arrests over the whole period.

TABLE 2. Characteristics of Drink-Driving Arrests in Western Australia, 1984-1994.

Year	First Time Offenders %	Bailed %	Age < 20 %	Overseas Born %	Blue-collar %	Weekend Arrest %
1984	64.6	76.1	16.5	27.4	66.5	68.6
1985	62.5	75.6	16.1	26.6	68.0	69.0
1986	61.7	76.4	17.1	26.5	69.0	70.3
1987	61.4	76.9	15.9	26.5	69.1	69.7
1988	63.4	81.4	17.4	26.7	69.7	71.0
1989	63.4	84.8	15.6	22.6	71.1	70.1
1990	68.7	86.6	15.5	24.9	71.5	66.4
1991	67.9	85.4	15.2	24.6	68.2	64.0
1992	65.8	85.9	14.8	22.9	68.4	62.0
1993	65.5	86.6	14.8	22.2	68.9	63.9
1994	66.3	84.3	14.3	21.7	70.8	65.5
Total	62.7	81.4	15.8	25.0	69.2	67.5

[3] Seriousness of offences were ranked using the Draft Seriousness Index produced by the Crime Research Centre. The Index **groups** ANCO-based offences into **16** broad seriousness categories. Refer to Appendix B of ***Crime and Justice Statistics for Western Australia: 1994,*** Crime Research Centre, The University of Western Australia, May **1996.**

3.2 Type of Drink-Driving Offence

The title of the offence for which the arrested driver was charged gives an indication of the blood alcohol levels of the drivers involved. Although the BAC of drink-drivers is measured by police at time of arrest, these readings are usually kept in other traffic-related databases rather than in the arrest database. The drink-driving offences were categorised into six groups. These were:

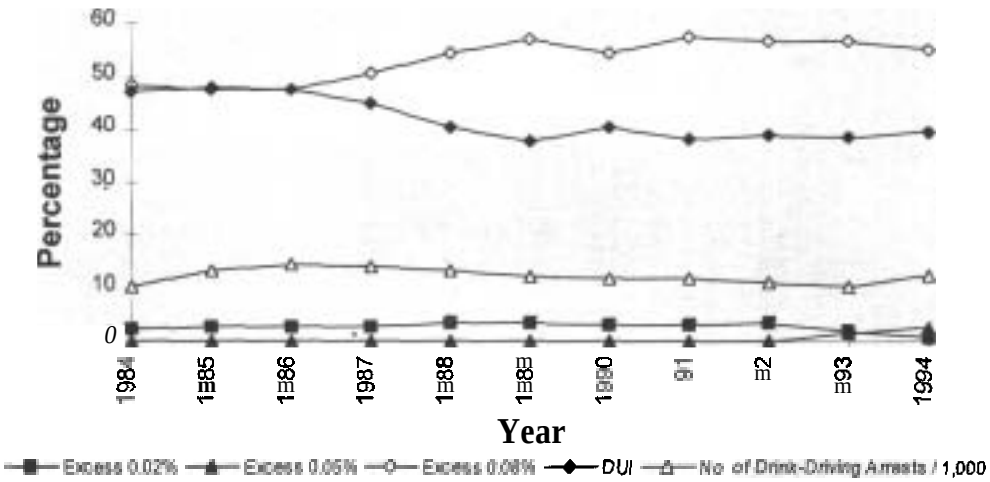
1. Excess **0.02%** (applied to probationary drivers only);
2. Excess 0.05% (introduced in **1993** following the introduction of uniform national drink-driving laws);
3. Excess **0.08%;**
4. Driving under the influence (DUI) (driver with a BAC greater than 0.15%, or deemed incapable of proper control of a vehicle);
5. Failure to comply offences; and
6. Refusing to comply offences.

Figure 1 and Table 3 show the distribution of drink-driving offences by BAC level for the period from **1984** to **1994.** DUI is the most serious offence, with the highest BAC and involves more severe penalties. About 40% of all cases involved this charge which was most commonly found in the arrest records of offenders with prior criminal records, older offenders and Aboriginal offenders. There was a fall from about **45%** to **47%** before **1988** to about **40%** after **1988,** when random breath testing was introduced. Excess **0.08%** cases rose from **48%** to 57% in the same years. Excess **0.02%** cases increased steadily from **2.3%** in **1984** to **3.3%** in **1992,** then fell to **2.0%** in **1993** and 0.8% in **1994,** while Excess **0.05%** cases increased from **1.4%** in **1993 to 2.6%** in **1994.** This corresponds to the change in the prescribed concentration of alcohol from **0.08%** to 0.05%.

TABLE 3. Drink-Driving Arrests by Offence in Western Australia, 1984-1994.

Year	Offence						
	Excess 0.02%	Excess 0.05%	Excess 0.08%	DUI	Fail to Comply	Refuse Test	Total
1984 n	238	1	4.915	4.818	0	223	10.195
%	2.3	0.01	48.2	47.3	0.0	2.2	
1985 n	339	0	6,316	6,379	0	213	13,307
%	2.6	0.0	47.5	47.9	0.0	2.1	
1986 n	394	0	6,748	6,726	0	301	14,169
%	2.8	0.0	47.6	47.5	0.0	2.1	
1987 n	362	0	6,968	6,231	0	271	13,838
%	2.6	0.0	50.4	45.0	0.0	2.0	
1988 n	441	0	7,064	5,244	0	288	13,037
%	3.4	0.0	54.2	40.2	0.0	2.2	
1989 n	397	0	6,892	4,590	0	220	12,099
%	3.3	0.0	57.0	37.9	0.0	1.8	
1990 n	356	0	6,299	4,640	0	258	11,553
%	3.1	0.0	54.5	40.2	0.0	2.2	
1991 n	350	0	6,668	4,417	0	200	11,635
%	3.0	0.0	57.3	38.0	0.0	1.7	
1992 n	360	0	6,191	4,273	0	140	10,964
%	3.3	0.0	56.5	39.0	0.0	1.3	
1993 n	204	142	5,855	3,962	0	165	10,328
%	2.0	1.4	56.7	38.4	0.0	1.6	
1994 n	99	319	6,862	4,956	62	176	12,474
%	0.8	2.6	55.0	39.1	0.5	1.4	
Total n	3,540	462	70,778	56,236	62	2,521	133,599
%	2.7	0.4	53.0	42.1	0.05	1.9	100.0

Figure 1. Type of Drink-Driving Arrests in Western Australia, 1984-1994



3.3 Persons with Drink-Driving Arrests

More drink-driving arrests are recorded each year than people arrested, since some drivers are arrested more than once. In 1994, for example, 11,677 people were involved in 12,474 arrests, an average of 1.07 arrests per person.

Just under half (44%) of offenders were under 25 years when arrested and about 60% under 30 years. About **13%** were female. The age distributions of both males and females were similar (Table 4).

TABLE 4. Age and Gender of Persons Arrested for Drink-Driving Offences in Western Australia, 1984-1994.

Gender	Age (Years)								Total
	<15	15-19	20-24	25-29	30-39	40-49	50-59	60+	
Male %	0.05	15.6	27.6	19.6	22.3	10.0	3.7	1.2	110,313 *87 4%*
Female%	0.06	16.5	29.7	20.5	23.1	8.2	1.6	0.4	15,917 *12.6%*
Total %	0.05	15.7	27.9	19.7	22.4	9.8	3.4	1.1	126,230 *100%*

Table 5 shows that the number of people involved in drink-driving arrests each year decreased from a maximum of 13,500 in 1986 to 9,700 in 1993. The rate per 100,000 population decreased in similar fashion. The large decrease between 1988 and 1989 may have corresponded with the introduction of random breath testing.

The male rate fell from 1,636 per 100,000 males in 1986 to 1,147 in 1994, a reduction of 30%. In contrast, the female rate fell by less than 4% during the same time. The rate of Aboriginal drink-driving arrests increased from three to just over six times the non-Aboriginal rate. In 1994, the Aboriginal arrest rate for drink-driving offences exceeded the 1985 rate by about 30%, while the non-Aboriginal rate was 28% lower.

TABLE 5. Persons Arrested for Drink-Driving Offences in Western Australia, 1984-1994.
(Rates per **100,000** population).

Year	Persons		Male Rate	Female Rate	m:f Ratio	Aboriginal Rate	Non-Aboriginal Rate	Ab:Non-Ab Ratio	% of all Persons Arrested
	Number	Rate							
1984	9,806	704.8	1,264.8	133.1	9.5	2,123.7	650.3	3.3	31.1
1985	12,701	895.3	1,609.8	167.7	9.6	2,905.0	810.4	3.6	34.6
1986	13,523	926.9	1,636.4	201.8	8.1	3,274.3	860.6	3.8	35.1
1987	13,263	887.5	1,545.6	217.4	7.1	2,959.3	829.3	3.6	32.4
1988	12,468	812.1	1,409.2	204.6	6.9	2,657.7	759.7	3.5	31.6
1989	11,556	732.1	1,263.2	192.5	6.6	2,659.6	675.9	3.9	28.8
1990	I 1,040	684.4	1,176.1	182.7	6.4	2,896.5	603.7	4.8	28.2
1991	11,067	676.4	1,144.6	198.8	5.8	3,044.3	597.3	**5.1**	27.3
1992	10,357	624.9	1,035.3	178.1	5.8	3,288.9	525.1	6.3	27.6
1993	9,767	582.7	986.9	167.3	5.9	3,276.0	490.7	6.7	28.2
1994	11.677	686.1	1,147.5	209.1	5.5	3,776.0	582.0	6.5	33.1

3.4 Age of First Drink-Driving Arrest

As Table 6 shows, age of first drink-driving arrest varied by race and gender. Females had a slightly lower age of first drink-driving arrest than males. The mean and median ages of first drink-driving offence for Aboriginals were much lower than for non-Aboriginals. Age of first drink-driving offence also varied with previous criminal history. Drink-driving offenders with prior records (that is, those offenders arrested and charged for ***other*** offences ***prior*** to their first drink-driving arrest) generally acquired their first drink-driving arrest at a much younger age (21 years) than first-time offenders (25 years). Note that the age at which the first drink-driving arrest occurs is later than the 'age of onset' for other forms of offending (usually around 15 or 16 years of age). There are a number of likely explanations for this: age restrictions on acquiring a driver's licence will delay entry into this form of offending; other factors such as the alcohol consumption patterns of the general population; and the continued risks of detection (through the use of random breath testing, for example) will also play a **part.**

TABLE 6. Age at First Drink-Driving Arrest for all Drink-Driving Arrested Persons (DAPs), First Time Offender DAPs, and DAPs with Prior Arrests by Gender and Race in Western Australia, 1984-1994.

	Total DAPs			First Time Offender DAPs			DAPs with Prior Arrests		
	mean aee	(sd)	median age	mean age	(sd)	median age	mean age	(sd)	median age
By Gender									
- Male	27.1	10.3	24.0	28.8	10.9	25.0	22.5	6.5	21.0
- Female	26.6	8.7	24.0	27.1	9.0	24.0	23.8	6.6	21.0
By Race									
-Aboriginal	23.1	8.4	21.0	26.3	9.9	24.0	20.9	6.4	19.5
- Non-Aboriginal	27.2	10.1	24.0	28.5	10.6	25.0	22.9	6.5	21.0
Total	27.0	10.0	24.0	28.4	10.5	25.0	22.6	6.5	21.0

3.5 Number of Drink-Driving Arrests

Table 7 shows that when followed up for about nine years, almost three quarters of all offenders had only one drink-driving arrest in that time. Another 20% had two arrests and about 2% had four or more arrests. About 80% of females only had one offence. This is in marked contrast to Aboriginals where one half had two or more offences, and 10% had four or more.

TABLE 7. Number of Drink-Driving Arrests by Gender and Race.
(For persons first arrested for drink-driving offences in 1985 in Western Australia).

		Number of Arrests				Total
		1	2	3	4+	
Male	%	70.4	20.5	6.5	2.6	4,786
Female	%	81.4	15.0	3.1	0.5	775
Aboriginal	%	48.0	27.6	13.0	11.4	123
Non-Aboriginal	%	72.3	19.7	5.9	2.1	5,385
Total	%	72.0	19.7	5.9	2.4	5,562

Note: 1 case **of unknown sex** and **54 cases** of unknown race excluded.

The mean number of drink-driving arrests for the 1985 drink-driving arrested population was 1.4; for males, 1.42; for females, 1.23; for first time offenders, 1.34; for those with prior offences, 1.85; for Aboriginals, 2.05; and for non-Aboriginals, 1.38. The mean number of arrests decreased with age; drivers under 20 years of age, 1.72; drivers 60 years and over, 1.08.

3.6 Arrest 'Careers'

Like frequency of offending, the length and nature of a criminal 'career' established by an offender will be influenced by the length of follow-up. The longer the follow-up time, the longer (and, potentially, more defined) their career. The 1985 arrested population was used **to** provide the longest available period of follow-up.

As Table 8 shows, about 43% of drivers first arrested for any offence in 1985 had only a single drink-driving arrest and had not been re-arrested up to the cut-off date, 31 December 1994 (category **A). A** further 28% of 1985 drivers had a single drink-driving arrest plus other arrests for other offences (category B). About 10% had multiple drink-driving arrests up to the cut-off date (category C), and a further 20% had multiple arrests for drink-driving and for other offences (category D).

TABLE 8. Combinations of Arrests for Drink-Driving and Arrests for Other Offences.
(Drivers first arrested for any offence in 1985, n = 10,515).

Single drink-driving arrest	42.7%	(A)
Single drink-driving arrest plus arrests for other offences	27.6%	(B)
Multiple drink-driving arrests only	9.8%	(C)
Multiple drink-driving arrests plus arrests for other offences	20.0%	(D)
These groups** can **be re-arranged:		
Single drink-driving offenders	70.3%	(A+B)
Multiple drink-driving offenders	29.8%	(C+D)
or:		
Drink-driving offences only	52.5%	(A+C)
Drink-driving plus other offences	47.6%	(B+D)

Thus, while about 70% of the drink-driving arrested population had only a single drink-driving arrest (A+B), about one quarter (B) combined this with **at** least one

other arrest for another offence. Of those with multiple drink-driving arrests (C+D), two thirds (D) combined this with at least one arrest for another offence. In total, about one half of all drink-drivers had arrests for other criminal offences (C+D).

3.7 Repeat Drink-Drivers

Repeat drink-drivers tended to be younger, with 65% aged less than 25 years, compared with 45% of single offenders (Table 9). About 9% of repeat drink-drivers were female, compared with 16% of one time offenders (Table 10). Aboriginals comprised **4%** (n = 60) ***of*** repeat drink-drivers and less than 2% (n = 55) ***of*** single drink-drivers. Over 20% (n = 27) of Aboriginal single and repeat offenders were female (Table 10). Aboriginal repeat drink-drivers tended to be younger than non-Aboriginals with **48%,** compared with 36%, being aged less than 20 years.

TABLE **9.** Age Distribution **of** Single and Repeat Drink-Drivers.
(First drink-driving arrest in 1985, n = 5,562).

Drink-Drivers	Age (Years)								Total
	<15	15-19	20-24	25-29	30-39	40-49	50-59	60+	
Single %	0.0	17.0	27.6	17.7	21.4	10.4	4.2	1.6	3,997 (72%)
Repeat %	0.0	36.5	28.9	12.5	14.1	5.7	1.7	0.4	1,555 (28%)
Total %	0.0	22.5	28.0	16.2	19.3	9.1	3.5	1.3	5,552

Note: 10 cases of unknown age excluded

TABLE 10. Single and Repeat Drink-Drivers by Gender and Race,

(First drink-driving arrest in 1985, n = 5,562).

Single Drink-Driving Arrest	72.0%
(Female 15.8%)	
Aboriginal	1.5%
(Female 23.7%)	
Non-Aboriginal	*98.6%*
(Female 15.6%)	
Repeat Drink-Driving Arrests	*28.0%*
(Female 9.3%)	
Aboriginal	3.9%
(Female 20.3%)	
Non-Aboriginal	96.1%
(Female 8.6%)	

Repeat drink-drivers tended to have more DUI offences (43.3%) than single drink-drivers (39.5%), and fewer Excess 0.08% offences, but the differences were not great (Table 11). Repeat drink-drivers with three or more offences (n = 1,572) tended ***to*** be younger (48.0% less than 20 years, 73.1% less than 25 years), and included more Aboriginals *(28.8%)* and fewer females (7.2%).

TABLE 11. Type of Offence for Single and Repeat Drink-Driving Offenders.
(Drink-driving offences committed by drivers first arrested for a drink-driving offence in 1985).

Drink-Driving Offender	Arrest						
	Excess 0.02%	Excess 0.05%	Excess 0.08%	DUI	Fail to Comply	Refuse Test	Total
Single %	4.0	0.0	55.4	39.5	0.0	1.1	4,002
Repeat %	2.9	0.2	52.0	43.3	0.0	1.6	3,768
Total %	3.4	0.1	53.7	41.3	0.0	1.4	7,770

3.8 First Time Offenders

Drivers with no prior criminal record constituted almost three quarters (n = 47,375) of the drink-driving arrest population. The mean age at which this group was first arrested (28.4 years) was much later than those with prior criminal records (22.6 years), and the frequency of re-offending was much lower than those with prior records (1.34 v 1.85). Table 12 shows that first time drink-driving offenders were much less likely to be re-arrested for a drink-driving offence, or for another offence, than those with prior arrests.

TABLE 12. 'Careers' of First Time Drink-Driving Offenders and those with Prior Arrests.
(Drivers first arrested for any offence in 1985).

Offender Type	One ***Drink***-Driving Arrest %	Multiple Drink-Driving Arrests %	Drink-Driving Only %	Drink-Driving Plus Other Offences %
First Time	74.5	25.5	77.7	22.3
Prior Arrests	50.0	50.0	40.7	59.3

3.9 Failure Analysis

Data presented above on frequency of re-arrest, and number of arrests, were limited by the length of follow-up period available. The population of drivers arrested in **1985** was used to approximate the long term outcomes of these drivers. We have used failure rate analysis (the Weibull mixture model), with co-variate analysis, to estimate the long term probabilities of arrest for the drink-driving arrested population using the data available from all years of the database.

As the results presented in Table 13 show, just under half (0.47) of all drink-driving offenders are likely to be re-arrested for any offence (inclusive of another drink-driving offence), and just under one-third (0.32) will be re-arrested for a repeat drink-driving offence. However, these proportions vary with gender and age. For women, the risks are much lower; just over one-third (0.37) are likely to be re-arrested for any offence, and one in five (0.22) will be re-arrested for another drink-driving offence.

TABLE 13. Ultimate Probabilities of Re-Arrest for Drink-Driving Offences in Western Australia, 1984-1994.

	P	CI	md (months)	n	n-fail
Male					
Any Offence	0.49	(0.49 ; 0.50)	16.6	52,139	20,296
Repeat DD	0.33	(0.33 ; 0.34)	30.9	52,139	11,949
Female					
Any Offence	0.36	(0.35 ; 0.38)	25.0	11,244	2,760
Repeat DD	0.22	(0.21 ; 0.24)	39.0	11,244	1,496
Male Non-Aboriginal					
Any Offence	0.48	(0.47 ; 0.49)	17.7	49,274	18,524
Repeat DD	0.32	(0.32 ; 0.33)	31.4	49,274	10,919
Male Aboriginal					
Any Offence	0.82	(0.80; 0.84)	9.0	2,275	1,526
Repeat DD	0.65	(0.61 ; 0.70)	29.5	2,275	889
Female Non-Aboriginal					
Any Offence	0.34	(0.32 ; 0.36)	28.2	10,421	2,342
Repeat DD	0.21	(0.19 ; 0.23)	39.6	10,421	1,293
Female Aboriginal					
Any Offence	0.72	(0.66 ; 0.77)	14.2	719	377
Repeat DD	0.52	(0.40 ; 0.65)	42.3	719	180
All					
Any Offence	0.47	(0.46 ; 0.48)	17.5	63,383	23,056
Repeat DD	0.32	(0.31 ; 0.32)	31.9	63,383	13,445

DD = drink-driving offence; p = ultimate probability of re-arrest; CI = 95% confidence interval; md = median time to re-arrest; n = number of persons arrested; n-fail = number of persons re-arrested during the study period.

Aboriginals had higher risks of re-arrest for either another drink-driving offence or any other offence than non-Aboriginals. Almost two-thirds (0.65) of all Aboriginal males arrested for a drink-driving offence will be re-arrested for a repeat drink-driving offence. This risk is more than twice that faced by non-Aboriginal males. Similarly, for Aboriginal women, more than half (0.52) will be re-arrested for ***drink***-driving offences. Compared to other groups, the probability of another drink-driving arrest for Aboriginal women is greater than that for non-Aboriginal men and significantly greater than that for non-Aboriginal women.

A measure of the time (in months) to the next arrest following a drink-driving arrest is also presented in Table 13. For all groups, the median time to fail (md) *for any* ***offence*** is considerably shorter than the median time to fail for a repeat drink-driving ***offence.*** (This is to be expected given the larger pool of offences available). The median time to fail for a repeat drink-driving offence for non-Aboriginal men (31.4 months) is almost twice that for any offence (17.7 months). For Aboriginal men, however, the median time to fail for repeat drink-driving offence (29.5 months) is more than three times the median time to fail for any offence (9.0 months). It is interesting to note that, for each gender, the median times to fail for a repeat drink-driving offence do not differ significantly between racial groups. Rather, it is the median times to fail for any offence that differ most significantly between them. (This is an indication of the high re-arrest rates of Aboriginal people, particularly for non-drink-driving offences).

Table 14 presents the probabilities of re-arrest *for* any ***offence*** for both first time drink-drivers and those with prior criminal records. The table shows that for all gender and race groups, the likelihood of re-arrest is considerably greater for drink-driving offenders with prior records than for first time offenders. Note, however, that for Aboriginals, differences in probabilities for first time and other offenders are not very great and, again, reflect the exceptionally high rates of re-arrest experienced by Aboriginal people.

The risk of re-arrest within a shorter period, say two years, is lower than in the longer term. The likelihood of re-arrest within two-years is about 0.13 for a repeat drink-driving offence and about 0.30 for any offence. The risk of re-arrest is higher and more rapid for **any *offence*** than *for* repeat drink-driving ***offences.***

TABLE 14. Probabilities of Re-Arrest (for any Offence) for Drink-Driving Offenders.

	p	CI	md	n	n-fail
Male Non-Aboriginal					
No Prior Arrests	0.42	(0.41 ; 0.43)	23.7	36,850	11,451
Prior Arrests	0.71	(0.70 ; 0.72)	11.4	12,424	7,073
Male Aboriginal					
No Prior Arrests	0.76	(0.67 ; 0.83)	22.4	885	434
Prior Arrests	0.94	(0.91 ; 0.96)	6.5	1,390	1,092
Female Non-Aboriginal					
No Prior Arrests	0.30	(0.28 ; 0.32)	31.4	8,984	1,750
Prior Arrests	0.64	(0.56 ; 0.71)	20.1	1,437	592
Female Aboriginal					
No Prior Arrests	0.84	(0.76 ; 0.90)	53.9	347	135
Prior Arrests	0.84	(0.76 ; 0.90)	8.0	372	242

3.10 Criminality of Drink-Drivers

At a criminological level one may ask: How does the criminality of drink-drivers compare to that of the general offending population? To answer this, we compared the long-term probability estimates of re-arrest for the drink-driving population with those of the general arrested population, as computed by Broadhurst and Loh (1995, p295).

TABLE 15. Probabilities of Re-Arrest: Drink-Driving Offenders Compared to all Offenders.

	Drink-Driving Arrested Popn.			Total Arrest Population		
	P	CI	n	P	CI	n
Male						
Aboriginal	0.82	(0.80, 0.84)	2,275	0.88	(0.86, 0.90)	5,518
Non-Aboriginal	0.48	(0.47, 0.49)	49,274	0.52	(0.51, 0.52)	97,572
Female						
Aboriginal	0.72	(0.66, 0.77)	719	0.85	(0.79, 0.89)	3,323
Non-Aboriginal	0.34	(0.32, 0.36)	10,421	0.36	(0.34, 0.38)	31,440

Note that the probabilities of re-arrest for the total arrest population were based on all arrests to 30 June 1993. Re-arrest probabilities for the drink-driving population were estimated from records to **31** December 1994.

Table 15 shows that, for all subgroups, the probability of re-arrest (for ***any*** offence) is slightly lower for drink-drivers than for the general arrest population, suggesting that, on the whole, drink-driving offenders are only marginally less delinquent than the general offender population. However, this comparison overlooks the substantially different recidivism rates of first time offenders compared with those of drink-drivers with **prior** records. For non-Aboriginal males, the recidivism of first time offenders is significantly less than the re-offending rates of drink-driving offenders with prior records (see Table **15).** Having distinguished between both groups, we find that first time drink-driving offenders are much less 'criminal' than other offenders, while those with prior records are considerably more so.

4. DISCUSSION

Using a variety of methods, our study has shown that drink-drivers in Western Australia are not an homogenous group. Gender, race, age, occupation, and previous criminal history are all factors which significantly influence the risks and timing of arrest and re-arrest.

Annual rates of arrest for drink-driving offences have generally declined since the mid-1980s from 927 per 100,000 persons in 1986 to 686 per 100,000 persons in 1994. However, this decline was not experienced by all groups within the general population. In particular, the drink-driving arrest rate for Aboriginals did ***not*** decline between 1986 and 1994, instead rising from 3,274 to 3,776 per 100,000 persons. This, in effect, has meant that the relative risk of drink-driving arrest faced by Aboriginals has ***increased*** since 1986.

The reliance on police apprehension records to study drink-driver:: brings with it both advantages and disadvantages. Clearly, the availability of a longitudinal data set provides a **unique** opportunity to explore the long term criminal careers of drink-driving offenders. However, the information contained in arrest records is limited and does not include other useful variables such as marital status, education, drug and alcohol use, blood alcohol content, and crash history. A further limitation is that arrest data only provide a measure of the 'detected' level of drink-driving in the community, not the 'true' level of such activity. Accurate measures of the 'true' level of drinking and driving must be derived from other sources such **as** broad-based, random community surveys similar to those carried out in Adelaide. An additional feature of police arrest data is that these records are influenced by changes to enforcement policies and practices. As we have noted, the introduction of random breath testing in 1988 was associated with a reduction in DUI charges and an increase in Excess 0.08% charges. The introduction of a national 0.05% BAC limit in 1993 coincided with an increase from 50% to 75% in the percentage of drivers stopped at random breath test stations who were tested. This makes it difficult to determine the effect of either measure.

The use of survival analysis and, in particular, the Weibull mixture model has proven to be an accurate method of describing re-arrest data, taking account of the effects of censoring as well as the interactions between gender, race, and a number of other co-variates.

The results have shown that being arrested for drinking and driving begins early in adult life. Peak age of onset is around 19 or 20 years of age and median age of onset is around 24 years of age. The later median age indicates that the risk of being arrested for drink-driving does not diminish rapidly with age. Rather, the risk of being "caught" for the first time remains high (well into the 30 and 40 year age groups) for most drivers. We found that this is particularly so for first-time offenders (who comprised almost three quarters of all drink-driving offenders). The most likely reason for the continued arrest of older offenders is the randomised enforcement strategies adopted by the police, that is, the use of random breath testing and "booze-buses".

Our results have also shown that the frequency or the number of drink-driving re-arrests vary with gender, race and age. Males, Aboriginals, younger offenders (especially those aged under 20 years), and those with prior criminal records were identified as the most likely groups to accumulate the greatest number of drink-driving arrests. First time offenders (that is, those with no previous criminal history) were least likely to be re-arrested for *any* offence, including a repeat drink-driving offence.

The best predictors of repeat arrests for drink-driving were being male, under 20 years of age, having prior arrests, and being Aboriginal. These characteristics define a group for whom it may be difficult to devise effective countermeasures. It may be better to concentrate on the larger number of offenders with single drink-driving offences, particularly those with the higher **BAC** offences. There is some evidence that there was a change in behaviour of these offenders after the introduction of random breath testing in **1988.**

Our study found that for Aboriginals, the risk of arrest (and re-arrest) for drink-driving offences is particularly high. This is a worrying result, especially in view of the increasing prevalence of drink-driving arrests among Aboriginals. For some readers these findings will come as no surprise, since the risk of arrest and re-arrest ***for any*** *offence* is alarmingly high for Aboriginals in Western Australia (see Broadhurst & Loh, 1995, especially Table IV p301; also Harding, Broadhurst, Ferrante & Loh, 1995). In this respect, our study provides yet another example of the extent of Aboriginal involvement in the criminaljustice system.

There was little evidence to suggest that drink-driving offenders progressed to more serious offences. In the specific case of repeat drink-driving while under suspension, we found few instances of such events in the database. Estimates of the likelihood of re-arrest for such activity were low, however, male Aboriginals were found to be at greatest risk.

Our results demonstrated a relationship between prior record (or lack of one) and the risks of re-arrest. While first time offenders had low risks of re-arrest for any type of offence (including repeat drink-driving offences), offenders with prior criminal records had significantly higher risks. These findings accord with those from other studies (Gould & Gould, 1992; Blumstein et al, 1986) that have established a connection between criminal careers and high rates of alcohol consumption. Strong links between criminality and repeat drink-driving have implications for intervention strategies. As Gould and Gould suggest,

"the high number of career criminals in multiple-D[UI] offender groups has implications for treatment policies... [P]rior to sentencing or being assigned **to** a treatment program, the offender, particularly a multiple-D[UI] offender, should be evaluated based upon prior criminal record in addition to the circumstances of the current driving offence".

Implications also exist for future evaluation of intervention strategies. Closer examination of the variation in probabilities of re-arrest will be necessary if the effectiveness of particular policies are to be evaluated adequately.

It is not possible to determine the relationship between arrests for drink-driving and risk of crash involvement using this database. Bailey (1993) found that about **a** quarter of drivers involved in fatal crashes in New Zealand had a previous conviction for drink-driving and this percentage was higher for those with high BAC levels at the time of the crash. Hedlund and Fell (1995) reported that **4.5%** of drivers involved in fatal crashes in the USA had drink-driving convictions within the previous three years. There are no similar data available for Australia. Therefore it is important to determine in Australia the relationship between crash involvement and arrests for drink-driving and for other offences. This could be done by linking crash records and traffic infringement records to the arrest records held in this database, with the appropriate safeguards for confidentiality of identity.

5. SUMMARY

There are 10,000 to 12,000 arrests for drink-driving in Western Australia each year. These account for about one quarter of all arrests made by the police. For males, the rate of drink-driving arrests fell over the period examined but rose for Aboriginals, and was generally constant for females. About 45% of those arrested were under 25 years and about 60% were aged under 30 years. About 13% were female, about 66% had blue collar occupations, and about 10% were Aboriginals.

First time offenders, that is, individuals not previously arrested by police for any offence, made up two thirds of all drink-driving arrests. These first time offenders were much less likely to be re-arrested for a drink-driving offence or for any other offence, and also tended to be older at first arrest.

About 40% of arrests were for DUI (where the driver had a BAC of 0.15% **or** greater, or was deemed to be incapable of proper control of the vehicle), and 55% were for Excess 0.08% offences.

After nine years, about 70% of all offenders arrested in 1985 had only one drink-driving offence and about 20% had two offences. Around 80% of females had only one drink-driving arrest. Aboriginals tended to have a larger number of offences; one half had two or more offences, and 10% had four or more.

About half of drivers first arrested for any offence in 1985 combined drink-driving offences with arrests for other offences. About **30%** of the 1985 drivers had multiple drink-driving offences, of whom two thirds also had arrests for other criminal offences.

Using failure analysis and the whole data set, rather than just one year of data, took into account the effect of different periods of follow-up available and confirmed the above findings. For all drink-driving offenders the probability of re-arrest for any offence was 0.47, and for a drink-driving offence was 0.32. These risks are lower for

women (0.37 and 0.22). They are higher for males, Aboriginals, and for those with prior arrests. First time drink-drivers are much less 'criminal' than other offenders, while drink-driving offenders with prior arrests are considerably more *so.* For about 70% of those arrested, the drink-driving offence is their first and only arrest for any offence.

Repeat drink-drivers, compared with drivers with single drink-driving offences, were younger (65% less than 25 years v 45%), fewer were female (10% v 16%), more were Aboriginal (4% v 2%), and a greater proportion had the more serious, DUI offences (43% v 39%). Two thirds had other criminal offences.

The best predictors of repeat arrests for drink-driving were being male, under 20 years of age, having prior arrests, and being Aboriginal. These characteristics define a group for whom it may be difficult to devise effective countermeasures. It may he better to concentrate on the larger number of offenders with single drink-driving offences, particularly those with the higher BAC offences. There is some evidence that there was a change in behaviour of these offenders after the introduction of random breath testing in 1988.

Unfortunately the arrest record does not have any information as to whether the arrest event was associated with a road traffic crash, therefore we are not able to say anything about the crash records of drivers in this study. The use of this set of data could he extended by linking the arrest records with traffic infringement data and with crash records. After obtaining the appropriate permissions it would be possible to define other important driving and crash-related characteristics of drink-driving offenders. These data could also be used to evaluate the effects of different countermeasure programs.

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