1. Introduction

New Zealand has a high rate of alcohol involvement in injury road accidents. In the period 1987-1991, 55% of the 1593 fatally injured drivers at fault were either proven to have a blood alcohol level in excess of 80 mg/100 ml or to be suspected of drinking and driving. In proposing effective countermeasures against such drivers it is important to understand the characteristics of these drivers. This study presents an analysis of the traffic and criminal convictions of all drivers involved in fatal accidents in New Zealand in 1986. The traffic convictions of the drivers before their fatal accident are studied, and for the surviving drivers their convictions for the following four years.

2. Method

I started with the official Ministry of Transport (MOT) fatal accident file, recording demographic, traffic engineering and severity of injury data. These data are well known to be deficient in blood alcohol values. I therefore matched the data by name to the post mortem file held by my laboratory. As the base data had no information on ethnicity or marital status, this was obtained by matching by name with the mortality file from the Department of Health.
The data on traffic and criminal convictions were obtained from names and dates of birth supplied to the Wanganui Computer Centre, the central law enforcement computer in New Zealand. About 5% of the drivers in the MOT data did not have a date of birth recorded. The initial computerised data from MOT had only surnames and initials. Full Christian names were obtained from copies of the original forms; these forms were handwritten. Some of these were hard to read; in other cases errors were found in the computerised names arising from poor quality data entry. Recorded convictions dated from about 1970, although in a few cases earlier convictions had been entered.

Initially the names and dates of birth were checked against the drivers' licence register. If a match was found, the appropriate traffic conviction history was copied and eventually transferred to a floppy disk, or a note made that there were no traffic convictions for this driver. For 100 of the 993 drivers in the study a match could not be obtained against the register so it was not possible to determine whether or not there were any traffic convictions for these drivers.

The characteristics of the unmatched drivers were studied. Some 21% were unlicensed. Since they had not shown up with a "pseudolicence", assigned on the Wanganui Computer to offending unlicensed drivers, it is possible that they had not previously offended. They were about as likely as the matched drivers to be drinking drivers: 27% compared with 30%. 19% did not have a date of birth recorded, making the matching process difficult. Some of them may have been using aliases or false dates of birth. Only 7% of them were located as having a criminal record, compared with 27% of the matched drivers. The proportion of them who were at fault was almost identical with that for the matched drivers. All calculated percentages of drivers with traffic convictions refer to the 893 matched drivers.

For the criminal convictions the assignment is not so certain, since there is no drivers' licence register to check against. All names matched according to the phonocode algorithm used for the matching were printed out for each name and date of birth, and a manual choice made as to whether a match had been achieved. The data on criminal convictions must therefore be regarded as a lower bound, since a mis-match may merely have indicated that the name and date of birth were not recognised rather than there being no criminal conviction history.

The phonocode algorithm used was designed for manual querying of the system, through computer terminals, rather than by checking names under computer program control as employed here. An alternative algorithm may be needed to take account of mis-spellings, mis-hearings and data preparation errors.
3. Blood Alcohol Results

The original MOT file showed 7.6% of the 395 fatally injured drivers had recorded blood alcohol levels including zero alcoughs, with 41.4% being listed as alcohol suspected. After the matching to the post mortem data these figures increased to 61.3% and 48.8%. Of the 242 drivers with recorded blood alcohol levels, 100 (41.3%) were over the legal limit, 80 mg/100 ml. Thus 25.3% of the 395 fatally injured drivers had a blood alcohol (BAC) of over 80.

Of the total 993 drivers, 594 survived and 628 were considered by the investigating traffic engineer to be at fault in the accident. The number with a blood alcohol recorded was 299, ie 47.6%. Of those at fault, 24.7% had a BAC of over 80 and 47.3% were alcohol suspected.

The proportion of the drivers at fault who were suspected of being drinking drivers, and their mean blood alcohol levels for cases over 80 mg/100 ml, for each age group, are presented in figure 1. The highest proportion occurs for 20-24 year olds. The proportion then declines steadily with age. In contrast the mean blood alcohol level for the drinking drivers is approximately constant from age 15-19 to 25-34 and then climbs steadily to the oldest ages. However, there were only three drinking drivers in the over 64 age group.

31.6% of the 98 female drivers at fault were alcohol suspected, compared with 51.9% of the 526 male drivers at fault.

Of the 14 disqualified drivers at fault 64.3% were alcohol suspected, as were 55.7% of the 61 unlicensed drivers and 43.3% of the fully licensed drivers at fault.
4. Traffic and Criminal Convictions

This study focuses on convictions prior to the fatal accident in 1986. Traffic convictions after the fatal accident, for surviving drivers, were also studied.

One or more traffic convictions was found for 38.3% of the 893 drivers, with an average of 3.13 traffic convictions for each driver with one or more traffic convictions. One or more criminal convictions was found for 25.0% of the 993 drivers, with an average of 7.77 criminal convictions for each driver with at least one criminal conviction.

The maximum number of traffic convictions for any one driver was 28, the maximum for criminal convictions being 97. The maximum number of prior convictions for drinking and driving was 8. One driver had 8 prior and 9 subsequent drinking driving convictions.

There are wide variations in the number and average of convictions, when various sub groups are examined. Figure 2 shows the proportion of drivers with one or more convictions, for drivers at fault or not at fault, or for drinking (N=276) or sober drivers (N=295) at fault. The drivers not at fault are about two thirds as likely to have one or more criminal convictions, but are nearly as likely to have a traffic conviction. However, the drivers not at fault had an appreciably smaller number of convictions per driver, for those who had any convictions: 2.42 traffic convictions compared with 3.47 for drivers at fault, or 4.48 criminal convictions compared with 9.21 for drivers at fault.

Proportion of Drivers in Fatal Accidents with One or More Criminal or Traffic Convictions

![Figure 2](image_url)
The drinking drivers were about three times as likely to have a criminal conviction as a sober driver at fault, and about one and a half times more likely to have one or more traffic convictions. Once again the drinking drivers had a higher mean number of convictions than sober drivers, for drivers having any convictions: 3.94 vs 2.75 for traffic convictions and 9.75 vs 7.85 for criminal convictions.

Figure 3 shows the proportion of drivers with one or more previous convictions for drinking and driving. Even for the drivers not at fault the proportion is about 7% and similar to the figure for sober drivers at fault. Over one quarter of the drinking drivers had a previous conviction for drinking and driving.

**Proportion of Drivers in Fatal Accidents with One or More Traffic Convictions for Drink-Driving**

![Figure 3](image)

To relate these figures to the traffic conviction histories of drivers on the road, the traffic convictions up to 1990 of a random sample of 10,000 drivers from the drivers' licence register were obtained. The proportion of this group of licensed drivers, and those of the drinking, sober at fault and not at fault, from the fatal study, are compared in figure 4, for five groups of offences.

**Comparison of Traffic Convictions for Drivers in Various Categories in Fatal Accidents and in Drivers' Licence Register**

![Figure 4](image)

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Clearly the drinking drivers in the fatal accident study have an appreciably greater proportion with a previous drink driving conviction, than do any of the other three groups, which are about equal in the proportions. Neither of the speeding offences seems to be related to the type of driver involved in a fatal accident. However, there are proportionately appreciably more drivers with convictions for dangerous driving in all the fatal accident groups in comparison with the licensed driver group, with the drinking group being particularly prominent. Similarly the drinking group is prominent in having a conviction for careless driving, in comparison with the other groups.

Figure 5 shows the proportion of drink drive and criminal convictions by age group of drinking driver. Criminal convictions are recorded in significant numbers from the youngest age group, but peaking at age 25-34. In contrast few teenage drinking drivers have a conviction for drinking and driving, whereas the rate is approximately constant for ages 20-64 but strictly zero beyond.

Figure 6 compares the proportion of drinking drivers with drink-drive, traffic or criminal convictions, by male occupation group. The proportion with drink drive convictions is highest for the unskilled and unemployed groups. Traffic convictions are fairly uniformly spread across the occupation groups, with somewhat fewer for the semi-skilled. Criminal convictions are most common amongst the unskilled and unemployed groups, and least common amongst the professional/managerial group. The unemployed group has a particularly high mean number of drink drive convictions: 2.91 compared with the average of 1.84 for all the male drinking drivers.
Proportion of Drinking Drivers in Fatal Accidents with One or More Convictions for Drink-Driving, Criminal Offence or Traffic Conviction, by Occupation Group

Figure 6

Figure 7 compares the proportion of drinking drivers with drink drive, driving while disqualified and criminal convictions, by licence status. Not surprisingly the disqualified drivers have appreciably higher proportions of convictions, since nearly 80% of them have apparently been disqualified through a previous drink driving conviction. Most of them have been convicted of driving while disqualified and most have a criminal record. The unlicensed group seem to have different characteristics from the licensed group.

Proportion of Drinking Drivers in Fatal Accidents with One or More Convictions for Drink-Driving, Criminal Offence or Driving While Disqualified, by Licence Status

Figure 7
Figure 8 shows the proportion of drivers with traffic or drink-drive convictions in relation to blood alcohol level. For the drivers over 200 mg/100 ml in their fatal accidents, 45% had a previous conviction for drinking and driving.

Proportion of Drivers in Fatal Accidents with One or More of Any Traffic Convictions, or for Drink-Driving, by Blood Alcohol Level

Figure 8

Figure 9, for drivers at fault aged 15-24, shows that drivers considered travelling at an excessive speed have similar drinking and speeding conviction proportions to those not considered travelling at excessive speed.

Proportion of Drivers at Fault Aged 15-24 in Fatal Accidents with One or More Convictions for Drink-Driving or Speeding by Whether Travelling at Excessive Speed

Figure 9
5. Conclusion

In some sub groups high proportions of drivers at fault have previous drink drive, traffic or criminal convictions.

Clearly focus must be placed on minimising the chance that a convicted drinking driver will offend again, given that 26% of drinking drivers in these fatal accidents had a previous conviction for drinking and driving.

There seems to be little correlation between previous convictions for speeding and being involved in a fatal accident, whether involving excessive speed or not.