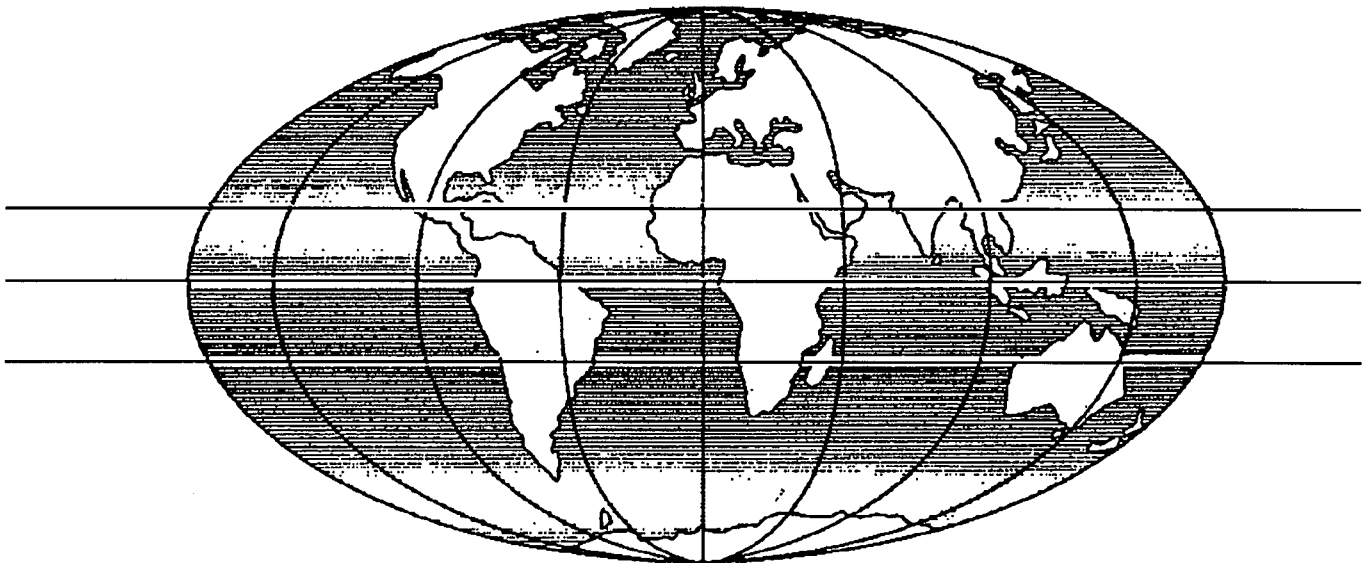




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Guinea**

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**A ROADSIDE AND HOSPITAL SURVEY OF DRINKING AND DRIVING  
IN PORT MORESBY, PAPUA NEW GUINEA**

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**I. INTRODUCTION**

Alcohol has been a growing social problem for over twenty years or more in Papua New Guinea and is now a serious social and health problem. This paper is concerned with just one aspect of the alcohol problem - drinking and driving, which is acknowledged to be a problem in a number of Developing Countries (Jacobs, 1982; WHO, 1984).

A number of studies of the alcohol problem have been undertaken by the Faculty of Medicine of the University of Papua New Guinea. Blood alcohol levels are routinely obtained from every fatally injured Road Traffic Accident (RTA) victim arriving at Port Moresby General Hospital. As part of a larger study of road accident fatalities, Sinha et al (1989) have analysed those tests that have been carried out and found that 16 out of 33 driver fatalities who were tested were over 80 mg% and 20 out of 30 pedestrians tested were over 80 mg%.

Hills and Baguley (1993) have compared the variation in accidents by day of week for five Asian countries, including Papua New Guinea. Three of the four other countries (Indonesia, Malaysia and Pakistan) were Muslim, the fourth country being Sri Lanka. Of these countries, Papua New Guinea was only one to show a strong variation across the week, the authors concluding that this was 'almost certainly associated with the weekend alcohol problem'.

There is now a considerable body of research throughout the world that has shown that (i) the risk of having an accident rises with the amount of alcohol consumed, but (ii) that there is a wide range in the susceptibility of different drivers to the amount of alcohol they have consumed. This research is summarised in Figure 1, taken from a Transport Research Laboratory leaflet (TRRL, 1986). The figure also shows the relationship between Blood Alcohol Concentration (BAC) and Breath Alcohol concentration (BrAC).

## 11. THE PORT MORESBY SURVEYS

### II.1 AIM OF THE SURVEYS

With the background of growing concern about drinking and driving in Papua New Guinea, it was decided in 1990 to carry out roadside surveys similar to those conducted in the UK and Australia. The work formed part of a program of co-operative road safety research between the Department of Transport and the Transport Research Laboratory, and involved close collaboration with the Port Moresby General Hospital, the University of Papua New Guinea, the Royal Papua New Guinea Constabulary and the Alcohol and Drugs Abuse Sub-Committee of the National Health Education Advisory Committee.

The original objective of the surveys was to establish the general levels of alcohol in drivers in Port Moresby during the weekend night drinking periods, and to compare these with the alcohol levels of drivers involved in accidents in the same periods. It was intended that three separate sets of measurements would be carried out at the same time during the hours of the survey.

- A roadside survey of a sample of all drivers in which breath alcohol is measured and a brief questionnaire carried out.
- Roadside measurements of the breath alcohol levels of all drivers involved in accidents during those hours.
- Measurements of the breath or blood alcohol levels of all drivers, passengers or pedestrians brought into Port Moresby General Hospital during those hours.

In carrying out the survey, it was found that for those accidents that were attended during the hours of the roadside survey, only two drivers were not injured and were breathalysed at the scene of the accident; all the other drivers in the accidents attended were injured and were breathalysed as part of the hospital survey. Thus, in effect there were just two surveys, the main roadside random survey and the hospital survey.

## III. SURVEY TECHNIQUES

### III.1 ROADSIDE BREATHALYSER SURVEY

It was decided to adopt a mixture of TRL (calling drivers into a lay-by) and Adelaide (using drivers stopped at traffic signals) techniques for Port Moresby. A mobile team of DoT staff was formed and trained. Generally two sites per night were used. The survey time periods was set to be 10pm - 2 am for Thursdays, Fridays, Saturdays and Sundays. Two of the survey team were equipped with Breathalysers and carried out measurements in turn. When one of the two breath testers became available to carry out another test, a third member of the team waved down the next vehicle to appear. The survey team were supported by RPNGC police discreetly in the background.

After a breath sample had been given, the drivers were asked how old they were and how long ago it was since they last had a drink. The second question was necessary because strictly 20 minutes should have elapsed before a breath sample is taken. The interviewer also noted the sex of the driver and whether or not the driver was a National or Expatriate.

After the interview, the driver was handed a card with a serial number on it. The serial numbers of each driver Breathalysed with their alcohol readings were published in a national newspaper the following Friday.

The local press and television were used extensively to publicise the surveys.

### III.2 HOSPITAL SURVEY

The Faculty of Medicine team of the University of Papua New Guinea (UNPG) were involved in blood and breath alcohol measurements for patients arriving in the Casualty Department of Port Moresby General Hospital and they have also carried out interview surveys of patients. During the time periods of the Port Moresby roadside surveys, the UPNG team were on call at the Hospital. For the badly injured or fatal road casualties, it was possible to carry out an alcohol analysis during the routine blood tests, as the information was for research purposes only. The less seriously injured casualties were invited to give breath samples. The Hospital survey ran from 11pm to 3am. This was to allow time for the casualties to get from the accident scene to the hospital. Both the TRL and Adelaide teams used the Lion Laboratories Alcolmeter S-D2, and this was the same device used by the UPNG team at Port Moresby General Hospital during their own alcohol studies. Six devices were acquired for the surveys in this study and the survey teams were trained in their use.

### I.V RESULTS

#### I.V.1 THE ROADSIDE SURVEY

A total sample of 893 drivers gave valid breath tests over the five week period in September/October 1990 of which 97% were males. Because of the large expatriate community in Port Moresby, it was decided to record whether or not the driver was a National or Expatriate. 110 of the drivers (12%) were Expatriates. Twelve different locations were used.

Overall, 24% of the drivers had BACs over 80 mg% (the UK legal limit). 12% had BACs greater than 150mg% and 4% were greater than 215mg%. The worst night was Friday night/Saturday early morning, with 29% of the drivers over 80mg%. Thursday and Saturday nights were only marginally lower with 27% and 25% respectively, but Sunday nights were much lower with 8% of drivers over 80 mg%.

It is recommended that 20 minutes should elapse between the last drink of alcohol and the breath test, although in practice, if 10 minutes have elapsed, the error should be negligible. In the Port Moresby roadside survey, it was not practical to ask drivers to wait 20 minutes to ensure that all alcohol in the mouth had dissipated. Therefore, during the survey, the drivers were asked to estimate how long ago it was since their last drink. Whilst these subjective estimates will inevitably be unreliable, they do give some insight into the likely effects of strictly adopting the 20 minutes criterion. Analysis of the BAC data with those drivers who estimated it was less than 20 minutes since they had had a drink excluded from the survey reduced the sample size from 893 to 771. There were still 17% of drivers over the 80mg% level.

Results also showed that there were 33% of Expatriate drivers and 22% of nationals (Papua New Guineans) with BACs greater than 80mg%. In considering these data, it must be appreciated that the sampling errors for the Expatriate group is greater since the sample size for this group (110) was much smaller than that of the Nationals (781). The Kolmogorov-Smirnov test indicates that the differences between the two groups were statistically significant ( $p < .05$ ).

The data also suggest major differences in the drinking habits of the two groups: 66% of Papua New Guinean drivers had not been drinking at all or had very low levels of alcohol (0-5 mg%), whereas for Expatriates, only 30% of drivers had BACs in this range. However, almost 40% of Expatriate drivers had BACs of 10-80 mg%; this sizeable group of drivers would probably consider themselves "social drinkers". Only about 12% of Papua New Guinean drivers had BACs in this range. Almost 22% of Expatriate drivers had BACs in the range 85-150mg%. There is some evidence of a rather greater proportion of National drivers who are very heavy drinkers, with 8% of drivers with BACs greater than 180 mg%, whereas the figure is 5% for Expatriates. (The sample sizes for the Expatriates are very small at these high ends of the BAC distributions, and therefore it was not possible to show the differences were statically significant).

An analysis was made of the equivalent Blood Alcohol Concentrations against driver age. It was found that there was no evidence that older drivers or younger drivers were over-represented in those drivers with BACs of more than 80 mg%. In the UK, there is evidence that the heavy drinking driver problem is more prominent amongst older drivers (Everest, Davies and Banks, 1991).

Only 3% of the drivers who took part in the survey were females. However results suggest that of those female drivers, similar proportions had been drinking heavily as compared with male drivers, with 21% of the female drivers being over 80% compares with 24% of male drivers. However, the small sample sizes in the female group make this a tentative conclusion. The UK surveys have found a greater incidence of drinking and driving amongst male drivers.

A series of roadside surveys were carried out in the UK in 1988, 1989 and 1990 (Sabey et al, 1988; Everest et al, 1990; Everest et al, 1991). A comparison between these three UK surveys and the Port Moresby survey is shown in Figure 2. There is clearly a huge difference between the proportion of drivers with BACs over 80 mg% (the legal limit) in Port Moresby (24%) and in the UK (less than 2%).

#### IV.2 HOSPITAL SURVEY

The Port Moresby Hospital survey took place over 15 weekends between September and December 1990. Members of the hospital survey team were on call between 10pm and 3am. Breathalyser tests were made or blood samples were taken from a total of 37 casualties: 10 drivers, 23 passengers and 4 pedestrians. Of these, there were 4 blood samples taken from fatal or seriously injured patients. Of the total 37 casualties, there were 2 fatalities, 7 hospitalised and 28 non-hospitalised casualties.

It was found that nearly 50% of all the hospital casualties had BACs greater than 80 mg%, this figure rising to 80% for the drivers in the survey. These rates compare with the 24% of drivers for over 80 mg% in the road side survey. Figure 3 compares the distributions of BACs for the two surveys, and shows the high proportion of very high BAC readings in the Hospital survey group.

#### V. CONCLUSION AND DISCUSSION

The main finding of the roadside survey has been that at weekends, between the hours of 10pm and 2am, 24% of drivers in Port Moresby exceed equivalent Blood Alcohol Concentrations of 80 mg%. This is a level of drinking and driving that is an order of magnitude greater than that found in the UK (1.7%) and Adelaide, Australia (4%). The hospital survey found very high levels of alcohol, with eight of the ten drivers admitted to hospital having BACs over 80 mg% and 50% of all casualties having BACs over 80%. This survey confirms earlier hospital survey findings of the very high levels of alcohol in the road accident casualties.

Drinking and driving is part of the much wider general problem of alcohol abuse in Papua New

Guinea, and there have been a number of initiatives to combat it. Much of the work, particularly in government departments, is co-ordinated by the Department of Health's Alcohol and Drug Abuse Subcommittee of the National Health Education Advisory Committee. Its work includes proposing and drafting amendments to legislation, such as restrictions on the sale of liquor to under 21-year olds, limiting the number of liquor licences, and controls on advertising. It also runs a variety of publicity campaigns and frequently addresses the problem of alcohol abuse in its regular Health News feature in national newspapers.

A number of Non-Government Organisations also run campaigns to counter the alcohol problem. For example, the churches in Papua New Guinea collaborate each year in running an Alcohol Awareness Week organised by Melanesian Alcohol Study Institute. The Women and Law Committee has issued a Public Information Leaflet on the laws about drinking.

Despite the many initiatives, alcohol abuse remains a serious social problem in Papua New Guinea. The surveys in this study have shown an extremely high incidence of drinking and driving and accident statistics provided by the police (albeit dependent upon the classification "Alcohol Suspected"), suggest that at least 300 people are killed or seriously injured every year as a result of drinking and driving. Given the total fleet size of only 50,000 vehicles, these are alarming levels of injury. Many of these casualties are potentially avoidable through a well planned and targeted campaign of countermeasures. The introduction of the breathalyser is probably the most promising countermeasure, although the problems of implementation should not be underestimated, including the need for close supervision and calibration of the instruments. Perhaps the greatest need is for there to be a change of attitude to drinking and driving in Papua New Guinea. A sea-change in attitudes has come about in a number of developed countries in recent years, with groups of young people regularly appointing one of their number to be the driver and avoid drinking alcohol for the evening. This change has been brought about through the combination of Enforcement, Education and Publicity programmes over many years. Such a concerted programme should remain a very high priority in Papua New Guinea.

As stated by the (then) Minister of Transport, when the results of this survey were first published in newspaper advertisements in November 1990, "It is hoped that this survey and the preliminary results outlined above will have some educational value for those drivers who took part, and that there will be a reduction in the level of drink/driving so that our roads become safer for everyone to travel on."

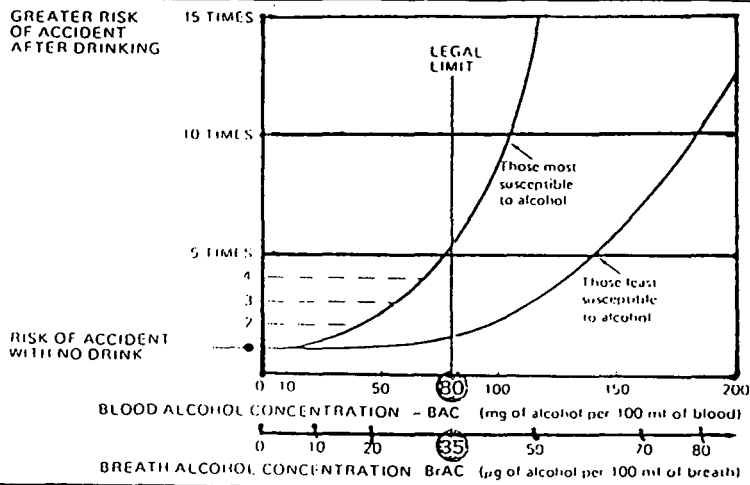
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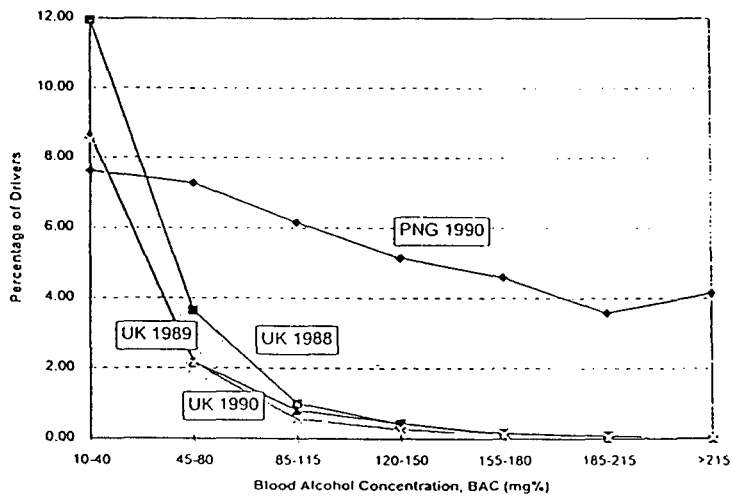
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**Figure 1: Summary of research showing the relationships between accident risk and alcohol levels for different degrees of susceptibility to alcohol (TRRL, 1986)**



**Figure 2: Comparison of Port Moresby and three UK surveys**



**Figure 3: Comparison of Hospital and Roadside Surveys**

