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TITLE Road accidents in Malaysia

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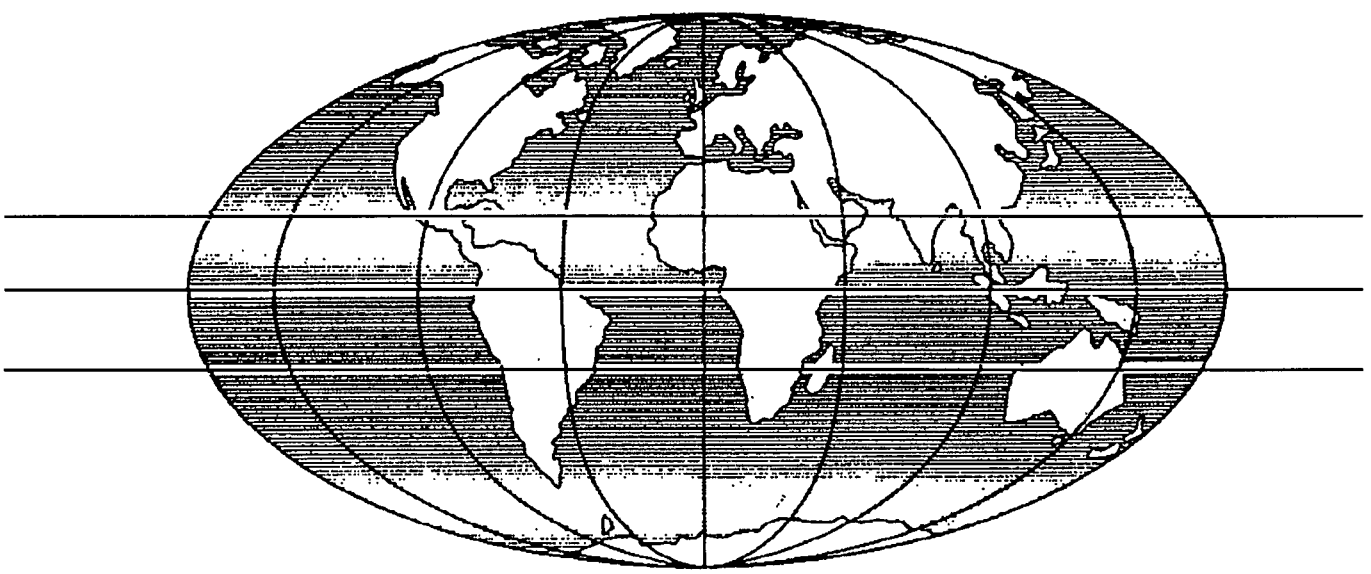

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ROAD ACCIDENTS IN MALAYSIA

by Norliah Saidon and Chris Baguley

1.0 INTRODUCTION

Road Safety is a global problem but the number of deaths are decreasing in many industrialized countries whereas they are still increasing in developing countries. In Malaysia in 1992 road accidents caused more than 4,500[1] deaths and more than 31,000 injuries. The economic consequences are costs to the community which include loss of output, property damage, medical cost, administrative costs and human suffering, and the total sum is very high indeed. It has been shown that, on average, road accidents tend to cost a country in the region of 1% of its Gross National Product(GNP).

The cost in grief and misery to those affected directly is obviously unacceptable though difficult to quantify. But one must be realistic and accept that wherever there are people and motorized transport there will inevitably be road accidents. However, by supporting the Government's target to reduce the number of road deaths through planned programmes of education, engineering and enforcement, perhaps these accidents and the toll of deaths could be reduced considerably such that Malaysia would become a lot safer for road users of all ages.

2.0 BACKGROUND

2.1 TARGET - 30% REDUCTION

The Cabinet Committee has set a target to reduce fatalities due to road accidents by 30% by the year 2000 (as shown in Fig. 1) taking 1989 as the base year; ie. to reduce the death rate from 7.1 deaths/10,000 vehicles in the year 1989 to 3.1 deaths/10,000 vehicles in the year 2000. To achieve this target, the Road Safety Council (RSC) has

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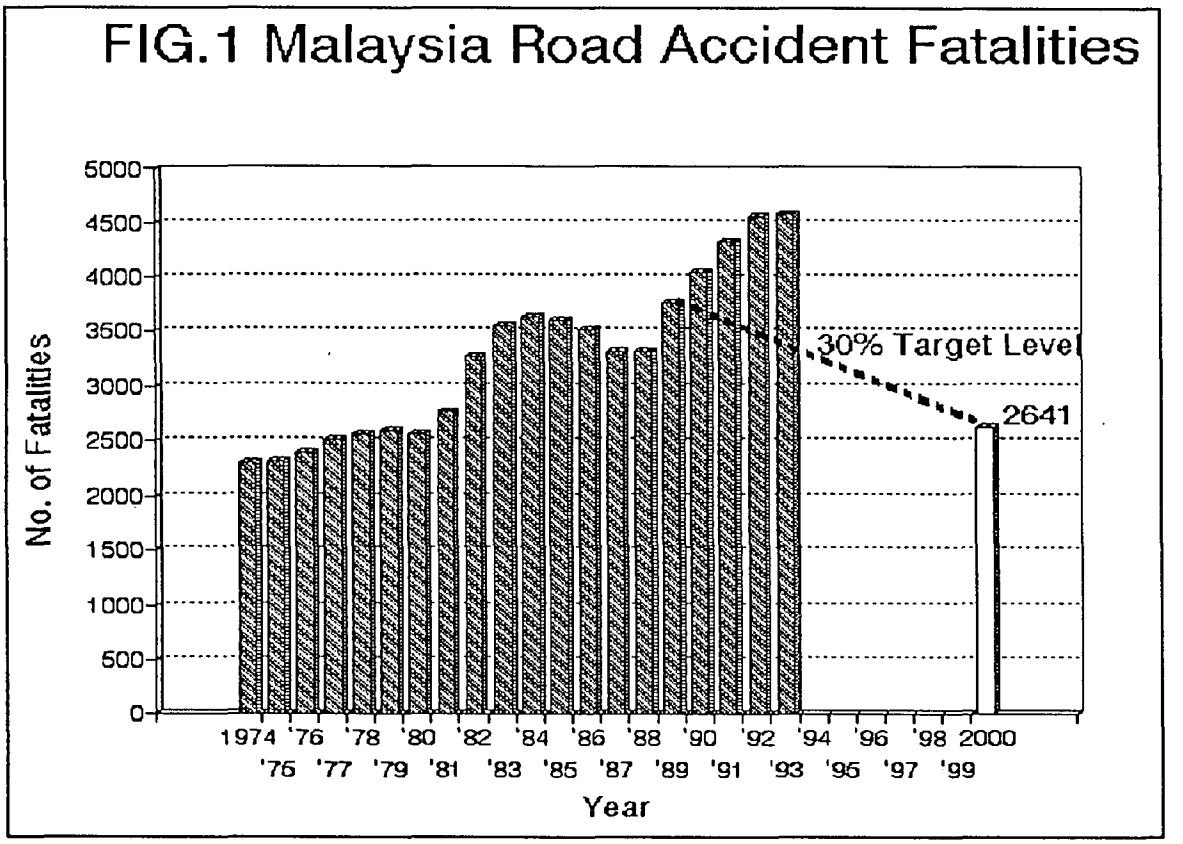
[1] Statistical Report Road Accidents Malaysia 1992 by the Royal Malaysia Police (1993). The figures obtained from RMP are higher than figures in the computerised accident database as the former include deaths occurring up to 30 days after the accident and also uncompleted accident report forms.



formulated a national action plan for appropriate action to be taken by the various sub-committees to improve the level of road safety in the country.

3.0 PROGRESS TOWARDS TARGET

In a recent paper, Baguley indicated that there has been a steep increase in both the number of fatalities and seriously injured casualties in the last few years. Looking at fatalities only (as in fig.1), there are approximately 4,500 fatalities each year on the Malaysian road network. This means about 1 person in every 4,100 will be killed each year in a road accident in Malaysia compared to 1 person in every 14,400 in the U.K. Hence the risk of dying in a road accident in Malaysia is generally much higher compared to those of developed motorized countries.

It is clear from fig.1 that accident fatalities appear to be increasing annually at about the same rate they should be decreasing if the target is to be met. This gradual but

nevertheless disturbing increase in fatalities in the last 4 years after the Government's target was set, certainly requires the agencies responsible for promoting road safety to take concerted action now. It is essential that this situation be brought under control as quickly as possible.

Under the umbrella of the Road Safety Council, the Highway Planning Unit (HPU) which holds the Chairmanship of the Engineering Sub-Committee of the Council, is entrusted with the responsibility of promoting road safety via road and vehicle engineering. Of crucial importance in HPU'S efforts to improve road safety is the availability of reliable and comprehensive accident data. This is required primarily to identify hazardous sections of the road network so that appropriate remedial measures can be implemented to reduce the likelihood and severity of accidents at those locations.

4.0 CURRENT ACCIDENT DATA COLLECTION MECHANISM

The Royal Malaysian Police (RMP) started using the revised accident reporting forms (POL 27) nationwide to report details of road accidents from 1st January 1992. With the implementation of the revised POL 27 forms came the requirement for the Police to record many more details than the previous forms. All accident details are filled in by the Police Investigating Officer or his assistant as follows:

A. REFERENCE DETAILS OF REPORT/TIME OF OCCURRENCE

B. CARRIAGEWAY DETAILS

C. ENVIRONMENT

D. LOCATION

E. DETAILS OF VEHICLE

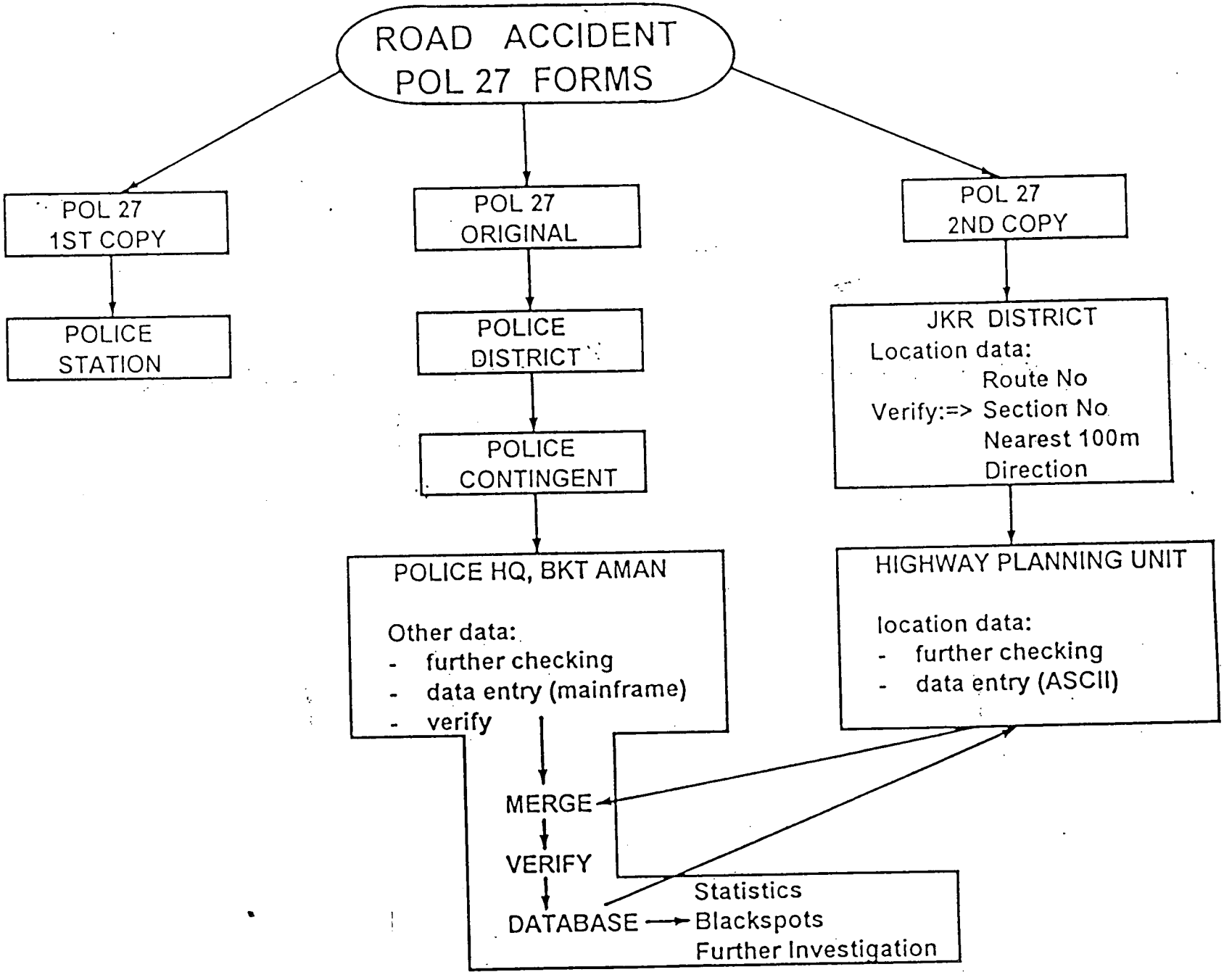
F. DETAILS OF DRIVER

G. DETAILS OF PASSENGERS AND PEDESTRIANS

H. SKETCH DIAGRAMS OF ACCIDENT AND LOCATION

The original POL 27 forms are sent to Cawangan Trafik, Bukit Aman where all the above details except item D on precise accident location data, are entered onto Police mainframe computer (refer to fig. 2). The second copy of

FIG. 2 : ROAD ACCIDENT DATA COLLECTION



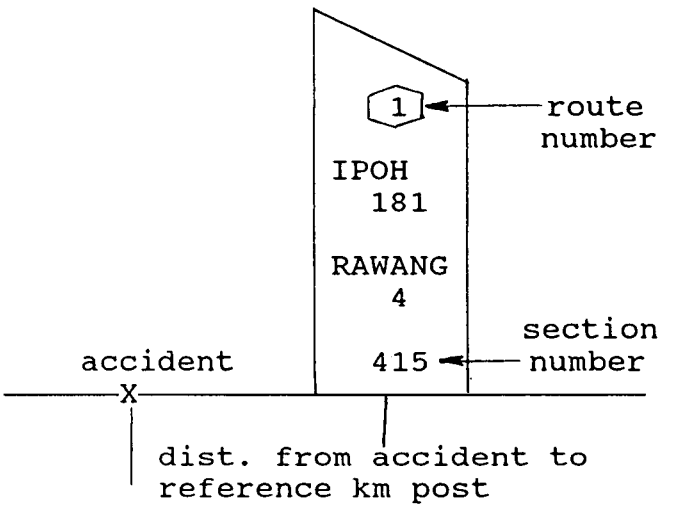
the POL 27 form (page 4) and sketch plans of the accident (last page) are sent to the respective JKR District office because it was agreed that JKR assume the responsibility for checking accident location data with respect to JKR'S kilometre post and route numbering system. The respective JKR District has to verify under item D (see page 4 of POL 27 forms) the following details:

(i) Route Type and Number

1. Expressway
2. Federal
3. Urban
4. Others

E			
F			

(ii) Section Number of kilometre post



(iii) Distance (to nearest 100m) from where accident occurred to the reference kilometre post

(iv) Direction of vehicle at fault

The verified POL 27 forms are then sent to HPU so that this information on accident location data, ie. section number of km post and route number, distance of accident to km post together with 5 other key reference fields of each accident record, is sent for data entry. These sets of accident data are later merged with the other accident

details on Police mainframe computer at Bukit Aman. The data files are subsequently downloaded to ASCII files. A conversion programme has also been written so that these files can be subsequently analysed or edited by TRL's Microcomputer Accident Analysis Package (MAAP)[3] on any IBM-compatible PC. It should be noted that location data is currently only available on computer for Federal and some State roads. Location coding for urban and other roads has not yet been introduced at the national level.

5.0 THE ACCIDENT DATABASE (MAAP)

Achieving the casualty reduction target is only possible if HPU have an accurate and reliable database for easy retrieval of accident data. Its most important use is for identifying sites with bad accident records (blackspots) preferably over 3 years, which are dangerous to road users and thus where treatments/remedial measures are required. In this respect, the database should assist engineers in providing information for them to investigate patterns of accidents.

The MAAP software[3] is an important tool for those investigating the nature and cause of road accidents as this easy-to-use package can provide:

(i) Retrieval of specific accident records

(ii) A priority listing of the worst accident sites (as in Table 1) by kilometre, 1/10ths km, nodes, links or grid coordinates.

(iii) Cross tabulations

Tables of frequencies or percentages of any recorded accident parameters can be produced for:

(a) ACCIDENTS

(b) CASUALTIES

(c) VEHICLES

For each of these three types, the operator may either select pre-defined standard cross-tabulations or he may ask for his own special tabulations.

TRL ACCIDENT ANALYSIS PACKAGE

TABLE 1 ACCIDENTS ON A ROUTE
****

ACCIDENT FILE: SHRECO91

CONDITIONS SET: No. Laluan = FT002
Pos Kilometre(X10) = 14-30

Kilometre Post 21.0	59 accidents
Kilometre Post 18.0	44 accidents
Kilometre Post 19.5	43 accidents
Kilometre Post 19.0	39 accidents
Kilometre Post 20.0	35 accidents
Kilometre Post 26.0	22 accidents
Kilometre Post 23.0	14 accidents
Kilometre Post 20.5	11 accidents
Kilometre Post 24.0	11 accidents
Kilometre Post 18.4	10 accidents

(iv) Stick Diagrams which are frequently used to display the key features in the form of a column (or stick) of data to assist recognition of accident patterns

(v) Export of summary tables to other packages

The cross tabulation data can be exported as an image or comma-delimited Ascii file making it available for import by various other software packages. This is normally done when good graphical outputs of the tables in the form of bar graphs or pie charts are needed. This can be achieved easily via a special interface with QUATTRO (commercial spreadsheet package) which produces the latter without the user needing any previous experience in the use of this package.

6.0 DRAWBACKS OF EXISTING SYSTEM

The introduction of the revised method of accident reporting involving local JKR District staff verifying the location of the accident, has some drawbacks. These are:

a) HPU have to depend on the RMP to record accident data and JKR districts to verify the accident data with respect to the location of the accident. The absence of strong inter-agency relationships, particularly between RMP and JKR districts and also between HPU and JKR districts, often result in inaccurate and inadequate accident data as well as delays in receiving the locational data from JKR districts.

However HPU has tried to resolve this problem by briefing the RMP and JKR districts on the importance of having accurate and adequate data, how to fill in the accident location data correctly, and also to define clearly their areas of responsibility as well as stressing the need to communicate and co-operate with respect to accident data collection and verification.

b) There are not enough Police Investigating Officers and assistants to cope with accident reporting now that more details need to be recorded. There are also very few/no technicians at JKR districts assigned to verify the accident location data.

c) The kilometre post system particularly with respect to section numbers have not been maintained properly for Federal roads, whilst kilometre posts have not even been installed fully for most of the State roads. There is also no route numbering and kilometre post system for roads in Sabah and Sarawak.

7.0 MAIN FEATURES OF 1992 ACCIDENT STATISTICS

Accident figures for 1992, which are currently the only available data on MAAP, show that out of a total of 66,822 accidents in the country, there were 59,464 accidents recorded for Peninsular Malaysia (see table 2). The majority of accidents occurred in Kuala Lumpur followed by the states of Selangor and Perak. Perak, however, has the highest number of fatal road accidents followed closely by the State of Selangor. From table 3, it is obvious that a high percentage of accidents occurred on Federal roads (29.0%) followed closely by State roads (18.6%).

Baguley[2] has indicated that although car drivers are by far the biggest group of road users involved in road accidents, it is obvious that the more vulnerable road users would be the ones who are killed or suffer injuries in such

ACCIDENT TABLE 2 TYPE A: ALL ACCIDENTS

State	Accident Severity				
	*Fatal	*Hospl	*Not-l	*Damge	*Total*
P'lis	8	126	190	156	* 480*
Kedah	265	767	1231	1408	* 3671*
Perak	469	1115	1624	4516	* 7724*
Pnang	126	444	1134	2773	* 4477*
K Lum	146	575	1238	16597	* 18556*
S'gor	457	666	1478	7479	* 10080*
Neg.9	125	315	445	792	* 1677*
M'aka	113	383	390	698	* 1584*
Johor	323	1052	1171	3406	* 5952*
Phang	179	334	603	1573	* 2689*
T'gnu	112	241	166	347	* 866*
K'tan	173	385	423	727	* 1708*
Sabah	213	208	421	3251	* 4093*
S'wak	124	246	608	2287	* 3265*
Total	2833	6857	11122	46010	* 66822*

(Total Number of Accidents on File = 66822)

ACCIDENT TABLE 3 TYPE A: ALL ACCIDENTS

State	Road Type					
	*Exway	*Fedrl	*State	*Urban	*Other	* Total*
P'lis	3	146	280	17	34	* 480*
Kedah	237	1324	1251	513	346	* 3671*
Perak	166	3245	1436	2342	535	* 7724*
Pnang	17	1976	1055	1182	247	* 4477*
K Lum	93	1034	33	17068	328	* 18556*
S'gor	632	3295	1894	3311	948	* 10080*
Neg.9	175	635	345	356	166	* 1677*
M'aka	44	400	518	307	315	* 1584*
Johor	120	2472	2352	433	573	* 5950*
Phang	11	1731	456	254	237	* 2689*
T'gnu	4	439	217	152	54	* 866*
K'tan	1	753	770	59	119	* 1702*
Sabah	3	1555	1547	684	304	* 4093*
S'wak	3	373	245	2296	348	* 3265*
Total	1509	19378	12399	28974	4554	* 66814*

(Total Number of Accidents on File = 66822)
(Number of Unknown = 8)

accidents (see fig. 3). Table 4, also taken from this paper, further indicated that motorcyclists and their pillion rider topped the list of road user casualties for both urban and rural roads in 1992. Although pedestrian casualties constitute a slightly higher proportion in urban areas, the proportion is still remarkably high on rural roads at 13%.

Table 4: Road User Casualties

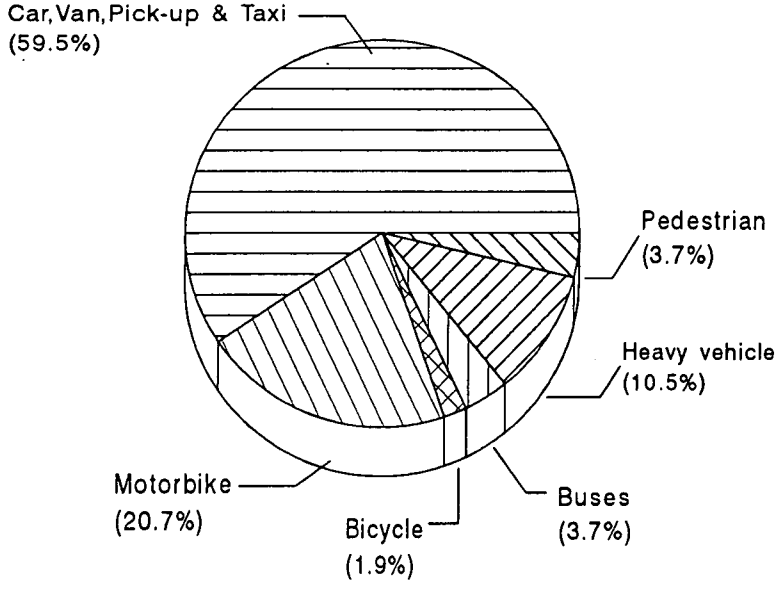
Road User	Rural	Urban
1. Motorcyclists		
- < 250 cc	37%}	43%}
	} 56%	} 63%
- > 250 cc	19%}	20%}
2. Motorists	16%	11%
3. Pedestrians	13%	17%
Total Casualties	15,212	13,758

8.0 RECOMMENDATIONS

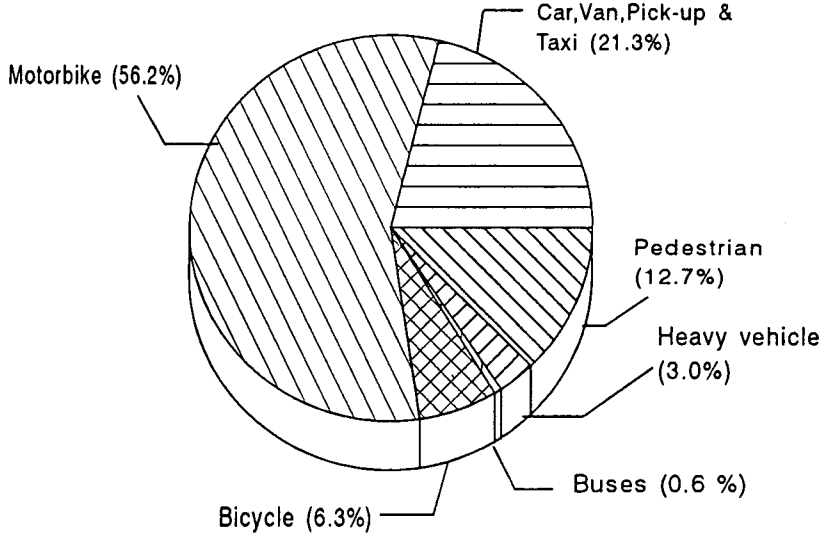
For road safety matters to be dealt with efficiently and effectively, it is necessary to allocate adequate funds and staff in agencies responsible for promoting road safety. The cost of road fatalities to society is estimated at over RM 1200 million (about 1.3% of 1992 GNP {RM 89557 million}) annually based on 1992 accident figures. Although 'education' via schools, driver training and publicity campaigns and also 'enforcement' of traffic laws obviously have large roles to play in improving road user behaviour, it has been shown elsewhere that 'engineering' improvements (particularly low cost treatments) can produce direct and long term casualty reductions. Hence road safety should have its own separate budget so that safety-related actions in the form of engineering countermeasures can be planned and implemented regularly and as cost-effectively as possible. That is, they should achieve casualty savings whose economic value exceeds the cost of implementation of the measures. To achieve the Government's target of reducing fatalities by 30% by the year 2000 based on projected growth rates for vehicles and deaths, the country will have to progressively worked towards saving 3,100

FIG. 3 VEHICLE TYPES INVOLVED IN ROAD ACCIDENTS

Road users in rural accidents- 1992



All casualties in rural accidents- 1992



deaths annually by that year. This very challenging target needs to be tackled by an integrated approach with much more effort than has hitherto been applied, and without delay.

The present levels of injury and death on Malaysian roads are still unacceptably high and the situation is worsening. There is considerable potential for road accident savings by the more widespread implementation of proven solutions and by the introduction of newly developed measures and approaches. However in a report[4] by the Department Of Transport (DTp), U.K. the formulation of an effective strategy for reducing road casualties depends heavily on a well directed research programme. The 1992 accident statistics clearly show that priority needs to be given to vulnerable road users, though the road and vehicle safety research programme should cover a wide variety of areas. Based mainly on the DTp report, it should include the followings :

(a) Improving accident data collection and analysis methods. This is essential for the effective management of safety ie. to be certain where problems exist, what they are, and to monitor the effect of the actions taken

(b) A major programme of research into driver behaviour which should ultimately indicate how driver training and testing can be improved to produce safer drivers

(c) Publicity campaigns specifically targeted at local problems are the most effective way of improving awareness of road users to poor behaviour

(d) Development of material on road safety for use in the national curriculum in schools. The involvement of the 6 to 10 year old pedestrians in road accidents in Malaysia is alarmingly high

(e) Vulnerable road users:
(i) Motorcyclists

- There must be a continuing effort to improve riding standards by identifying more effective inducements for learners to take formal training

- The possibilities of improving the safety of the machine should be investigated

- The substantial contribution which highway safety

engineering can make to the reduction of motorcycle casualties should be implemented where necessary

(ii) Pedestrians

- Research should be undertaken to look into the factors involved in pedestrian accidents and recommend appropriate measures including facilities for walking and road crossing.

(f) Research into self-enforcing, innovative engineering devices to improve safety, eg. speed control traffic devices/traffic calming.

9.0 CONCLUSION

Although road accidents are usually the result of mistakes made by road users, poor road design and planning have often contributed to or compounded these errors. TRL research attributed the high levels of casualties from road accidents in most developing countries to a wide range of factors such as road user attitudes and behaviour, the traffic mix, the condition and use of vehicles, and the design and state of the roads themselves. There is a need to take effective action now. However, research is essential to determine the most effective road safety measures/approaches required and to assess the effectiveness of measures implemented so that the inevitably limited resources are channelled in the most efficient manner. In order to achieve this, the importance of full, reliable accident data as the base measure of safety problems, their nature, guidance to solutions and ultimately of success, cannot be stressed enough.

10.0 REFERENCES

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