TRAFFIC ACCIDENT RESEARCH UNIT

DEPARTMENT OF MOTOR TRANSPORT N.S.W.

CRASH INJURY DATA -
A comparison of police and insurance information in New South Wales.

Rosamond Wood, M.Sc.
1974

DEPARTMENT OF MOTOR TRANSPORT NEW SOUTH WALES

CRASH INJURY DATA -
A comparison of police and insurance information in New South Wales.

Rosamond Wood, M.Sc.

1974

TARU research note RN 2/74

Introduction

When police report traffic crashes they are currently required to record details about people injured in the crash on Traffic Accident Information forms (P4 and P4B). A P4 form is filled out for all crashes reported, and details of injured drivers, riders and pedestrians (i.e. road users in control of a "traffic unit") can be written on it. The P4B form is a supplementary form for injured people not included on the P4 (e.g. passengers). The police fill out the injury details from their own or eyewitness accounts, and/or by follow-up of cases taken to hospitals.

A lot of this injury data is not coded by the Traffic Accident Research Unit (TARU) and hence is not available en masse. A redesign of the coding system currently underway should make this information accessible. It is therefore likely to be used more than it is now, and its quality needs to be ascertained. It would be desirable, for instance, to find out what percentage of injuries are included on police reports, and also what the accuracy is of the details of the injuries which are reported.

To perform such a check, access to an independent data source is needed. Needless to say, there are not many agencies collecting extensive data on traffic crash injuries. Hospitals are computerizing their records to an increasing extent, but the matching of their files with those held by TARU would currently be an extremely tedious business. However the Government Insurance Office (G.I.O.) holds extensive files of third party insurance claims for crash injuries, and these files often contain a copy of the corresponding police report. For files not containing a police report, there is generally enough information about the time and place of the crash to make a search for the report quite feasible, either at TARU or failing that, at the police Accident Information Bureau.

Sampling of the independent data source

In the course of the research carried out by the National Compensation and Rehabilitation Enquiry, a sample of 3rd party claims was drawn from the G.I.O. files. Claims were eligible for inclusion

if they were finalized by the end of 1972. The sampling scheme gave increased weighting to claims of amounts greater than $5,000, in order to obtain more information on the more serious injuries.

It was arranged that TARU could have access to these sample files, in order to code injury data from them. The quality of the G.I.O. injury data is fairly high, since for most of the claims, detailed medical reports were on file. Therefore the G.I.O. data is a suitable standard against which to compare the TARU data, as contained on the P4 and P4B forms.

When comparing G.I.O. records with TARU's however, the different inclusion criteria should be kept in mind. A person may be reported by the police as injured nominally only if he required medical treatment. However, police instructions make it likely that a person will also be reported as injured if he had any visible sign of injury such as bruising, abrasions, or if he complained of pain or momentary unconsciousness. In comparison, a person will appear in the G.I.O. 3rd party vehicle insurance files if

(i) as the result of a traffic crash he incurred medical expenses or suffered loss of wages;

(ii) the driver of the vehicle "responsible"* for his injury was insured with the G.I.O.; and

(iii) he was not himself deemed entirely "responsible" and therefore not able to claim under the 3rd party scheme.

The G.I.O. handles over 95% of N.S.W. 3rd party vehicle insurance policies, and therefore condition (ii) should not exclude many crashes from possible inclusion. Condition (i), however, is a slightly different criterion from that of the police. By and large, people who have incurred sizable medical expenses will have mentioned an injury to the police, and, conversely, people who fall within the police definition will incur some expense, even if only a chemist's prescription or an x-ray. However, a person with a delayed reaction

* "Responsibility" is as determined legally, and factors such as contributory negligence may complicate the matter.

could incur medical expenses at a later date, without having mentioned an injury to any police attending the accident. A more serious source of discrepancy between the inclusion criteria is provided by condition (iii), which will tend to exclude from the G.I.O. data the injuries of entirely "responsible" drivers. The injuries of such drivers are very likely to be reported by the police. Hence their exclusion from a comparison sample could make the police data appear less thorough than it actually is, as the sample would contain a disproportionate number of injuries less likely to be reported.

Coding of sample data

A coding form was drawn up (see Appendix I). Initially, details available from the 3rd party files were entered on one such form for each claim in the sample. If the police forms were in the G.I.O. file, they were coded immediately (Items 10, 11, 12). If not present, they were sought, first in the accident files at TARU, and then, if not located there, at the AIB. The name of the claimant was recorded only to facilitate this search.

Results

The sample gave rise to data on 294 crashes, involving 14 fatalities and 384 claims made for non-fatal injuries.

The 14 crashes involving fatalities were all reported to the police. The fatalities themselves were reported as such, even when death took place a couple of weeks after the crash.

Tabulations of the data for non-fatal crashes are presented in Appendix II, and are discussed in the following.

Sample Description

Table 1 shows the age and sex distributions for the different classes of road users. If this table is compared with a similar table compiled for police accident report forms (Table 1a), then the significance of the sample inclusion criteria becomes apparent.

Relative to the police figures for 1970, the sample included:-

(a) fewer drivers, and more vehicle passengers;

(b) fewer males;

(c) fewer people in the 21-39 age group, and more in the 50-59 age group;

It is likely that the road users under-represented in the sample are groups likely to be legally "responsible" in crashes. This is obviously the reason for the under-representation of drivers.

Table 2 illustrates a similar bias inherent in the sample, when compared with Table 2a taken from the 1970 Statistical Statement. The sample includes relatively fewer single vehicle crashes, and relatively more multiple vehicle crashes. This is again because the sample is taken from injuries claimed on, rather than injuries sustained - there will be relatively fewer claims legally possible for single vehicle crashes than for multiple vehicle crashes.

This aspect of legal "responsibility" seems to be a more likely explanation for these discrepancies, than the weighting towards bigger claims in the sample selection procedure.

Presence of police information

Table 3a shows that in the sample taken:

(a) under 70% of those claiming less than $1,000 appeared as injuries in police reports found;

(b) about 80% of those claiming $1,001-$5,000 appeared as injuries in police reports found;

(c) more than 90% of those claiming over $5,000 appeared as injuries in police reports found. All four injuries claiming more than $20,000 were recorded by the police;

(d) overall, about 70% of people making third party claims for crash injuries were mentioned as injuries on corresponding police reports found.

(Table 3a(viii) was broken up into one-claim crashes, two-claim crashes and three-claim crashes. The above percentages did not change, and the tabulations have not been included in this report.)

Thus it might be expected that crash injury statistics compiled from police reports might represent about 70% of corresponding figures compiled from third party insurance files. The relationship of either source to any universal ledger-in-the-sky of crash injuries is not known.

Severity of injury, as estimated by size of claim, does appear to increase the chances of a person's appearing on a police report, but not to the extent that a uniform reportability criterion could be established on the basis of claim size.

Table 3b indicates the presence or absence of police information for each of the classes of road user in the sample. Motor vehicle drivers are the most frequent omissions. However, these drivers are ones who have been considered "not responsible" and thus are not representative of the population at large.

Accuracy of police information

Tables 4 indicate the accuracy of police information where present, and the nature of the injuries omitted altogether from police reports.

Table 4(a) indicates that even when the police report a person as injured, the account of the injuries is not complete. This is not serious, of course, for minor injuries such as bruising. But the under-reporting of arm and thoracic injuries, for instance, is echoed even in the category of fractures.

Table 4(b) sets out the injuries of 84 people not reported injured, even when relevant police forms were found. On the whole, these injuries were not serious, and include only 5 fractures.

Table 4(c) shows that there were 4 quite serious injuries (fractures) to the 18 people injured in crashes with no police report locatable.

These three tables, taken together, do suggest that the police do report as injured a fairly high proportion of seriously injured people. Of the 128 fractures claimed, people accounting for only 9 of them failed to appear on police reports. However, for those people who did appear on police reports, the injury details were rather inaccurate.

Table 4(d) gives an idea of the different picture of injuries that the two data sources would provide. The police figures would give a lower estimate of injury frequency to all parts of the body, but the percentage discrepancy is not consistent. The orders of magnitude are comparable, and both tables do give essentially the same ranking of locations in terms of frequency (head, leg, arm being the three most common locations). This is illustrated by the histogram in Figure 1. A particular feature is that the police figures would give a lower estimate of fractures to the arm and to the thoracic and abdominal regions. There is a corresponding underestimate of "strains" to the neck, mainly because of delayed whiplash symptoms. The general discrepancy in bruise-reporting is quite understandable as the police don't have the same motivation for reporting the minutiae of the disaster, as the injured claimants do.

Table 5 gives more detail of how accurately the police report a fairly serious and well-defined injury. Fractures to the leg are the most accurately reported, but even these are correctly specified in only 75% of the cases. The most serious feature is the total omission of 13 of the 27 arm fractures, and 14 of the 15 thoracic fractures. The reason for the latter is obvious, as fractured ribs generally require x-rays for confirmation. However it does seem that medical follow-up after the accident is often not done. This bore out

a subjective impression gained during coding - viz. that the police reporting of injury detail was equivalent to that of a conscientious layman present at the scene of the crash.

Summary of results for non-fatal injury

The results should be looked at in the light of the inherent differences already discussed, between the two data sources being compared. The most important of these differences is believed to be the exclusion from G.I.O. files of injured road users "responsible" for crashes.

Of the sample of people making 3rd party claims, about 70% were reported injured on police forms found. This figure was higher for the more serious injuries, whether "seriousness" was estimated by claim size of by the presence of an injury such as a fracture. Over 90% of people with fractures were reported as injured, although the description of their injuries was very unreliable.

Accurate injury reporting requires both the accurate location of injury and the accurate use of consistent terms to describe the nature of the injury. The police data gives cause for concern in both these respects. For the 70% of people reported injured, the police data under-reported all locations of injury. Further, the police specification of the nature of injury for any given location showed poor matching with G.I.O. claims even for well-defined injuries such as fractures.

Discussion

The deficiencies found in the police injury data should not be interpreted as criticisms of the police. They only indicate an incompatibility between the information they are asked to provide and the reporting procedures which can reasonably be expected of police officers. These procedures are probably not appropriate to the collection of specialist data on injuries; they are more appropriate to the recording of information available to a trained and observant reporter at the scene of the crash.

Conclusion

Data provided on police reports considerably under-reported numbers of people injured, when compared with a sample of G.I.O. 3rd party claims. Further, reports, where present, did not appear exhaustive, nor description of the nature of injury accurate.

These deficiencies are possibly not curable given the current structure of police procedures, which could probably not absorb the extra load of providing accurate, specific injury information.

The interpretation of N.S.W. Department of Motor Transport injury statistics thus requires care, and their use should be limited as suggested in the discussion. When accuracy of data relating either to frequency or nature of injury is required, alternative sources should be used.

The most promising of these sources is the data coded in the hospitals on the N.S.W. Hospitals Commission In-Patient Statistical Forms. This computerizing of hospital data has been under way for some years, and it is planned to cover ultimately all N.S.W. hospitals, both public and private. A desirable long-term objective for N.S.W. crash researchers would be the linkage of this hospital data system with the crash mass data system. Such a link would have additional importance if an injury severity score were developed, derivable from hospital injury codes. The potential uses of such a score (e.g. in the improvement of health services and in the evaluation of countermeasures) are discussed in the paper by Baker et al (1974).

To make the link feasible, police reporting of names, dates and, in particular, hospital names would have to be close to 100% accurate. However the police would thereby be relieved of the task of providing injury data. The end product could be the simultaneous availability of accurate crash information from police data, and specialist injury information from hospital data.

Similar findings were obtained by Bull and Roberts (1973), who sampled crash injury cases at a hospital in Birmingham. By tracing the corresponding police records they came to the conclusion that "official figures underestimate serious injuries by a moderate amount and that the figures for slight injuries are more deficient again". The amount by which official statistics anywhere underestimate crash injuries will be dependent on the local legal and insurance requirements for reporting crashes to police.

Interpretation of injury statistics culled from police reports is therefore fraught with difficulties.

The statistics do give an idea of the order of magnitude of crash injury as a community problem.

If it could be established that the biases in the N.S.W. data were constant in time, then the data could be used to examine trends, and thus, to a limited extent, to examine the effect of countermeasures aimed at reducing crash trauma. In particular it appears that the figures may indicate the relative importance of injuries to the different parts of the body. Thus, for instance, if some feature of vehicle design were aimed specifically at preventing head injury, the success of this feature could be indicated if head injury became less frequent than leg injury. Since no body location has better than 75% correct reporting of fractures, even fracture statistics could not be used unless it were established that this bias is constant with time.

From the point of view of crash reporting (rather than injury reporting) the results were encouraging, as only 18 fo the 384 people making injury claims did not have the crashes reported to the police. This confirms a previous estimate that police figures do include about 95% of casualty accidents. However it may present a slightly optimistic picture in that people claiming insurance benefits are likely to want police reports to support their claim.

REFERENCES

Bull, J. P. and Roberts, B. J. (1973): Road Accident statistics - a comparison of police and hospital information. Accid. Anal. & Prev., 5, 45-53.

Baker, S.P., O'Neill, B., Haddon, W. Jnr., Long, W. B. (1974): The injury severity score : a method for describing patients with multiple injuries and evaluating emergency care. Journal of Trauma, 14, 187-196.

APPENDIX I

1. Date of accident : (1 2 3 4 5 6)

2. Place :

3. Description : (1 - vehicle - vehicle, 2 - single vehicle, 3 - vehicle pedestrian) Acc. Descrip. (7)

Comments :

4. Name of claimant (injury) :

5. Age : (in years) 99 - DK/NS Age (8 9)

6. Sex : (1 - M, 2 - F, 9 - DK/NS) Sex (10)

7. Class of road user : Class r.u. (11)

1 - Driver of m.v. 4 - Pedestrian 7 - P.cycle passenger

2 - Motor cyclist 5 - M.v. passenger 8 - Horse riders/drivers

3 - Pedal cyclist 6 - M.cycle passenger 9 - Others

8. Injury as reported in 3rd party claim :

	1. Abrasion	2. Laceration	3. Sprain, Bruise, Soreness	4. Dislocation	5. Fracture	6. Haemorrhage	7. Visceral Damage	8. Unspec. Injury	9. Shock, Nervous symptoms	Inj. (as 3P)
Head										Head (12)
Neck										Neck (13)
Arm										Arm (14)
Hand										Hand (15)
Spine										Spine (16)
Thorax										Thorax (17)
Abdomen										Abdomen (18)
Leg										Leg (19)
Foot										Foot (20)
Unspec. area										Unspecified Area (21)

9. Claim .

1 - $0 - $100	3 - $501 - $1000	5 - $5,001 - $20,000	7 - > $50,000	Claim (22)
2 - $101 - $500	4 - $1,0001 - $5,000	6 - $20,001 - $50,000	9 - DK/NS	Success (23)

9a. Success of Claim : 1 - yes, 2 - Disallowed, 9 DK/NS

10. Police Report :

1 - P4, P4B present	3 - P4, P4B present after search	9 - no form found	Report (24)
2 - P4, no P4B	4 - P4, no P4B " " "	* form to be located	

11. Person mentioned as an injury in police report :

1 - Yes 2 - No 8 - N.A. * to be located Presence (25)

12. Injury as reported by police :

	1. Abrasion	2. Laceration	3. Sprain, Bruise, Soreness	4. Dislocation	5. Fracture	6. Haemorrhage	7. Visceral Damage	8. Unspec Injury	9. Shock, Nervous symptoms	Inj (as police)
Head										Head (26)
Neck										Neck (27)
Arm										Arm (28)
Hand										Hand (29)
Spine										Spine (30)
Thorax										Thorax (31)
Abdomen										Abdomen (32)
Leg										Leg
Foot										Foot
Unspec Area										Unspecified Area (35)

TABLE 1

SAMPLE DESCRIPTION : Age x sex distribution for each class of road user in sample of injury claims.

ROAD USER	SEX	AGE											TOTAL	% OF GRAND TOTAL
		0-7	8-12	13-16	17-20	21-24	25-29	30-39	40-49	50-59	60-69	70+	N.S.	
Vehicle Drivers	M	0	0	0	11	12	4	8	9	11	2	0	7	64
	F	2	0	0	4	4	3	4	6	5	0	0	1	29
	NS	0	0	0	0	0	0	0	0	1	0	0	1	2 95	25
Motor Cyclists	M	0	0	1	13	2	3	1	0	0	0	0	3	23
	F	0	0	0	4	0	0	0	0	0	0	0	0	4
	NS	0	0	0	0	0	0	0	0	0	0	0	0	0 27	7
Pedal Cyclists	M	0	4	2	0	0	0	1	0	1	1	0	0	9
	F	0	0	0	0	0	0	0	0	1	0	0	0	1
	NS	0	0	0	0	0	0	0	0	0	0	0	0	0 10	3
Pedestrians	M	4	2	0	2	3	1	5	2	2	6	1	0	28
	F	2	2	2	3	0	1	3	4	1	2	2	3	25
	NS	0	0	0	0	0	0	0	0	0	0	0	1	1 54	14
Motor Vehicle Passengers	M	4	1	3	20	11	10	5	3	9	1	2	4	73
	F	12	2	5	20	14	8	6	11	15	4	2	11	110
	NS	0	0	0	1	0	0	0	0	0	0	0	1	2 185	48
Motor Cycle	M	0	0	1	3	0	1	0	0	0	0	0	0	5
	F	0	0	0	0	1	0	0	0	0	0	0	0	1
	NS	0	0	0	0	0	0	0	0	0	0	0	0	0 6	1

.../2

ROAD USER	SEX	AGE											TOTAL	% OF GRAND TOTAL
		0-7	8-12	13-16	17-20	21-24	25-29	30-39	40-49	50-59	60-69	70+	N.S.	
Others (e.g. horse riders, pedal cycle passengers etc)	M	1	0	0	0	0	0	0	0	0	0	0	0	1
	F	0	0	1	2	0	1	0	1	1	0	0	0	6
	NS	0	0	0	0	0	0	0	0	0	0	0	0	0
														7
TOTAL	M	9	7	7	49	28	19	20	14	23	10	3	14	203
	F	16	4	8	33	19	13	13	22	23	6	4	15	176
	NS	0	0	0	1	0	0	0	0	1	0	0	3	5
GRAND TOTAL		25	11	15	83	47	32	33	36	47	16	7	32	384

	2
	46
	1

TABLE 1(a)

Table of "Persons Injured", from D.M.T. Statistical Statement for year ending 30th December, 1970.

		-5	5-6	7-12	13-16	17-20	21-24	25-29	30-39	40-49	50-59	60+	N.S.	TOTAL	% OF GRAND TOTAL
Motor Drivers	M	-	-	-	41	2,429	2,045	1,467	1,761	1,415	926	655	36	10,775	
	F	-	-	-	9	490	473	373	571	507	309	190	13	2,935	
Total		-	-	-	50	2,919	2,518	1,840	2,332	1,922	1,235	845	49	13,710	39
Motor Cyclists	M	-	-	-	101	1,411	599	236	145	70	33	17	21	2,633	
	F	-	-	-	6	223	64	14	14	7	3	1	2	334	
Total		-	-	-	107	1,634	663	250	159	77	36	18	23	2,967	9
Pedal Cyclists	M	-	12	259	262	54	19	8	19	16	22	35	3	709	
	F	-	1	37	9	3	3	1	1	4	3	-	-	62	
Total		-	13	296	271	57	22	9	20	20	25	35	3	771	2
Pedestrians	M	210	192	434	160	159	123	122	216	274	272	447	38	2,647	
	F	96	108	228	154	145	93	90	124	155	166	318	22	1,699	
Total		306	300	662	314	304	216	212	340	429	438	765	60	4,346	13
Passengers	M	393	168	420	524	1,658	839	439	495	392	272	232	187	6,019	
	F	297	135	413	685	1,564	752	441	610	702	633	613	187	7,033	
Total		690	303	833	1,209	3,222	1,591	880	1,105	1,094	905	845	374	13,051	37
Miscel-laneous	M	1	-	6	5	1	-	1	2	2	4	2	-	24	
	F	-	-	3	9	3	-	-	1	1	-	-	-	17	
Total		1	-	9	14	4	-	1	3	3	4	2	-	41	0
Total	M	604	372	1,119	1,093	5,712	3,625	2,273	2,638	2,169	1,529	1,388	285	22,807	65
	F	393	244	681	872	2,428	1,385	919	1,321	1,376	1,114	1,122	224	12,079	35
GRAND TOTAL		997	616	1,800	1,965	8,140	5,010	3,192	3,959	3,545	2,643	2,510	509	34,886	

TABLE 2

SAMPLE DESCRIPTION : Injuries by year and type of crash.

Year	Type of Crash				
	Vehicle-Vehicle	Single Vehicle	Vehicle-Pedestrian	DK/NS	TOTAL
1967	0	0	0	0	0
1968	13	5	4	1	23
1969	49	7	19	0	75
1970	133	25	18	1	177
1971	72	9	13	0	94
1972	10	1	0	1	12
Not stated	3	0	0	0	3
TOTAL	280	47	54	3	384
% of 384	73	12	14	1	

TABLE 2a

COMPARISON TABLE: Injuries by type of crash, from D.M.T. 1970 Statistical Statement.

	Type of Crash				
	Vehicle-Vehicle	Single Vehicle	Vehicle-Pedestrian	Other	TOTAL
1969	19,168	8,895	4,363	326	32,752
1970	20,830	9,398	4,327	331	34,886
TOTAL	39,998	18,293	8,690	657	67,648
% of 67,638	59	27	13	1	

TABLE 3

PRESENCE OF POLICE INFORMATION -

(a) as it varies with claim size

Size of Claim:		Person mentioned as injured Yes	No	TOTAL
(i) Up to $100	P4,P4B forms found	67	10	77
	P4, no P4B found	12	24	36
	No forms found	0	6	6
	Total	79	40	119
(ii) $101-$500	P4,P4B forms found	23	4	27
	P4, no P4B found	4	4	8
	No forms found	0	6	6
	Total	27	14	41
(iii) $501-$1000	P4,P4B forms found	25	6	31
	P4, no P4B found	7	7	14
	No forms found	0	1	1
	Total	32	14	46
(iv) $1001-$5000	P4,P4B forms found	68	12	80
	P4, no P4B found	12	10	22
	No forms found	0	3	3
	Total	80	25	105
(v) $5000-$20,000	P4,P4B forms found	49	2	51
	P4, no P4B found	1	0	1
	No forms found	0	2	2
	Total	50	4	54
(vi) More than $20,000	P4,P4B forms found	3	0	3
	P4, no P4B found	1	0	1
	No forms found	0	0	0
	Total	4	0	4
(vii) Claim size unknown	P4,P4B forms found	10	4	14
	P4, no P4B found	1	0	1
	No forms found	0	0	0
	Total	11	4	15
(viii) TOTAL SAMPLE	P4,P4B forms found	245	38	283
	P4, no P4B found	38	45	83
	No forms found	0	18	18
	Total	283	101	384

TABLE 3

PRESENCE OF POLICE INFORMATION -

(b) as it varies with class of road user

Class of Road User	Person mentioned as injured		TOTAL
	Yes	No	
Driver of motor vehicle	56	39	95
Motor cyclist	23	4	27
Pedal cyclist	9	1	10
Pedestrian	46	8	54
Motor vehicle passenger	140	45	185
Motor cycle passenger	6	0	6
Others	3	4	7
TOTAL	283	101	384

TABLE 4 : Accuracy of Police Information

4(a) Comparison of injury information for the 283 people who were reported injured on the relevant police forms found.

Frequency distribution of injuries in 3rd party claims

	Abrasion	Laceration	Sprain, bruise, soreness	Dislocation	Fracture	Haemorrhage	Visceral damage	Unspec. injury	Total reported injuries to this location	Shock, nervous symptoms	Frequency of no reported injury
Head	12	70	33	0	20	0	1	17	153	29	101
Neck	0	2	14	0	0	0	0	2	18		265
Arm	11	12	13	3	24	0	1	6	70		213
Hand	6	5	2	0	6	0	0	2	21		262
Spine	0	0	5	0	2	0	1	10	18		265
Thorax	1	2	13	0	18	0	1	8	43		240
Abdomen	2	0	7	1	11	0	1	4	26		257
Leg	14	37	27	1	36	0	0	16	131		152
Foot	0	2	4	0	2	0	0	3	11		272
Unspec. area	13	2	12	0	0	0	0	16	45		240

4(a) Cont.

Frequency distribution of injuries in police reports

	Abrasion	Laceration	Sprain, bruise, soreness	Dislocation	Fracture	Haemorrhage	Visceral damage	Unspec. injury	Total reported injuries to this location	Shock, nervous symptoms	Frequency of no reported injury
Head	14	53	15	0	21	0	0	23	126	27	130
Neck	0	1	3	0	0	0	0	4	8		275
Arm	6	11	8	0	15	0	0	3	43		240
Hand	3	6	1	0	2	0	0	2	14		269
Spine	1	0	8	0	2	0	0	4	15		268
Thorax	1	3	4	0	2	0	0	5	15		268
Abdomen	0	1	2	0	6	0	1	3	13		270
Leg	13	25	22	1	34	0	0	9	104		179
Foot	0	3	1	0	0	0	0	0	4		279
Unspec. area	16	13	6	0	0	0	3	2	40		243

4(b) Claimed injuries of 84 people NOT reported injured on the relevant police forms found (P4, P4B).

Frequency distribution of injuries in 3rd party claims

	Abrasion	Laceration	Sprain, bruise, soreness	Dislocation	Fracture	Haemorrhage	Visceral damage	Unspec. injury	Total reported injuries to this location	Shock, nervous symptoms	Frequency of no reported injury
Head	1	5	10	0	0	0	0	3	22	9	55
Neck	0	0	23	0	0	0	0	0	23		60
Arm	1	0	8	0	3	0	0	3	15		68
Hand	0	0	1	0	0	0	0	0	1		82
Spine	0	0	5	0	0	0	0	2	7		76
Thorax	0	0	4	0	1	0	0	0	5		78
Abdomen	0	0	4	0	0	0	0	2	4		77
Leg	0	1	11	0	1	0	2	3	16		65
Foot	0	0	1	0	0	0	0	2	3		80
Unspec. area	4	0	10	0	0	0	0	9	23		60

4(c) Claimed injuries of the 18 people injured in crashes for which no police reports were found.

Frequency distribution of injuries in 3rd party claims

	Abrasion	Laceration	Sprain, bruise, soreness	Dislocation	Fracture	Haemorrhage	Visceral damage	Unspec. injury	Total reported injuries to this location	Shock, nervous symptoms	Frequency of no reported injury
Head	1	1	1	0	0	0	0	1	4	1	13
Neck	0	0	3	0	0	0	0	0	3		15
Arm	3	0	0	0	2	0	0	0	5		13
Hand	0	0	0	0	0	0	0	0	0		18
Spine	0	0	0	0	0	0	0	0	0		18
Thorax	0	0	0	0	0	0	0	0	0		18
Abdomen	1	0	0	0	1	0	0	1	3		15
Leg	3	0	0	0	1	0	1	1	6		12
Foot	1	0	0	0	0	0	0	0	1		17
Unspec. area	0	0	1	0	0	0	0	4	5		13

4(d) Total Sample.

Frequency distribution of injuries in 3rd party claims

	Abrasion	Laceration	Sprain, bruise, soreness	Dislocation	Fracture	Haemorrhage	Visceral damage	Unspec. injury	Total reported injuries to this location	Shock, nervous symptoms	Frequency of no reported injury
Head	14	76	44	0	20	0	1	21	176	39	169
Neck	0	2	40	0	0	0	0	2	44		340
Arm	15	12	21	3	29	0	1	9	90		294
Hand	6	5	3	0	6	0	0	2	22		362
Spine	0	0	10	0	2	0	1	12	25		359
Thorax	1	2	17	0	19	0	1	8	48		336
Abdomen	3	0	11	1	12	0	1	7	35		349
Leg	17	38	38	1	38	0	3	20	155		229
Foot	1	2	5	0	2	0	0	5	15		369
Unspec. area	17	2	23	0	0	0	0	29	71		313
TOTAL	74	139	212	5	128	0	8	115			

4(d) Cont.

Frequency distribution of injuries in police reports

	Abrasion	Laceration	Sprain, bruise, soreness	Dislocation	Fracture	Haemorrhage	Visceral damage	Unspec. injury	Total reported injuries to this location	Shock, nervous symptoms	Frequency of no reported injury
Head	14	53	15	0	21	0	0	23	126	27	231
Neck	0	1	3	0	0	0	0	4	8		376
Arm	6	11	8	0	15	0	0	3	43		341
Hand	3	6	1	0	2	0	0	2	14		370
Spine	1	0	8	0	2	0	0	4	15		369
Thorax	1	3	4	0	2	0	0	5	15		369
Abdomen	0	1	2	0	6	0	1	3	13		371
Leg	13	25	22	1	34	0	0	9	114		280
Foot	0	3	1	0	0	0	0	0	4		380
Unspec. area	16	13	6	0	0	0	3	2	40		344
TOTAL	54	116	70	1	82	0	4	55			

Figure 1 : COMPARATIVE HISTOGRAM FOR TABLE 4(d) - FREQUENCY DISTRIBUTION OF INJURIES

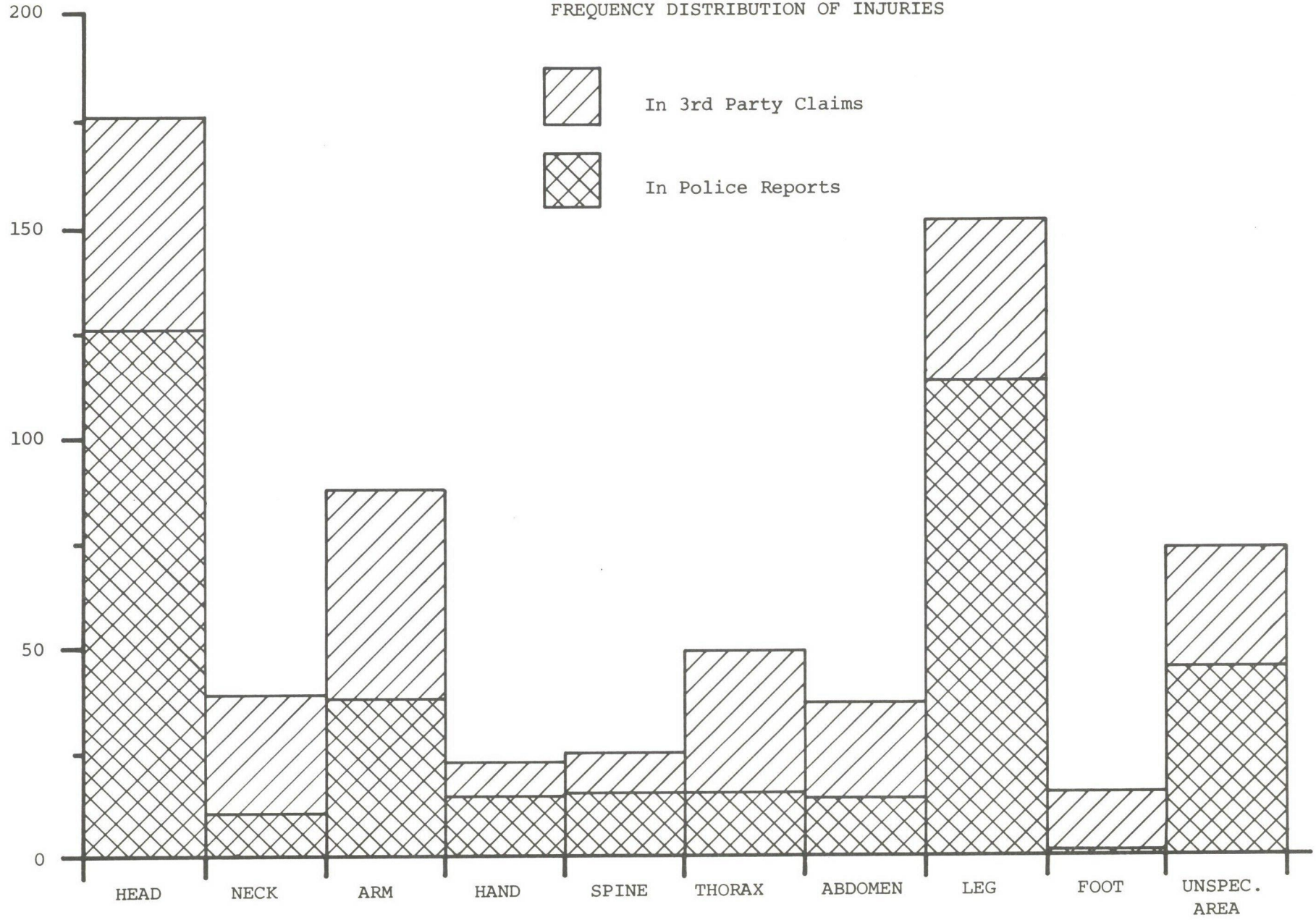

TABLE 5 : Accuracy of Reporting of Fractures

Frequency distribution of injuries to same body location

(from police reports)

Injury claimed for:	Abrasion	Laceration	Bruising	Dislocation	FRACTURE	Haemorrhage	Visceral	Unspecified	Shock, Nerves	NONE	Total
Fractured head	0	0	1	0	13	0	0	4	0	2	20
Fractured neck	0	0	0	0	0	0	0	0	0	0	0
Fractured arm	1	0	0	0	14	0	0	1	0	13	29
Fractured hand	0	0	0	0	2	0	0	1	0	3	6
Fractured spine	0	0	0	0	1	0	0	0	0	1	2
Fractured thorax	0	0	1	0	1	0	0	3	0	14	19
Fractured abdomen/ pelvis	0	1	0	0	5	0	0	1	0	5	12
Fractured leg	0	0	3	0	29	0	0	1	0	5	38
Fractured foot	0	0	0	0	0	0	0	0	0	2	2
TOTAL	1	1	5	0	65	0	0	11	0	45	128